Town of Atherton

Neighborhood Traffic Management Program

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EXECUTIVE SUMMARY

The Neighborhood Traffic Management Program (NTMP) is an important policy document which provides a comprehensive, thoughtful, and systematic program to address neighborhood traffic concerns, improve pedestrian and bicycle safety, and maintain the scenic and quiet rural character of Atherton neighborhoods. It is a community-based approach to reduce vehicle speeds and improve the behaviors of drivers to "calm" traffic in residential neighborhoods.

Town staff has the authority to implement necessary traffic control measures. The NTMP does not affect staff authority to implement necessary traffic control measures in residential neighborhoods in response to observed traffic safety concerns. The NTMP is an additional tool which provides a systematic framework to educate and encourage residents to participate in identifying and implementing equitable and effective neighborhood traffic solutions.

There are no single answers or solutions to the emotional issues of excessive vehicle speeds on residential streets. There are also varying opinions regarding appropriate solutions and the installation of devices to calm neighborhood traffic. All successful Neighborhood Traffic Management Programs includes involvement of the affected neighborhoods to identify and agree on neighborhood traffic problems and then take responsibility for the solutions. Accordingly, an important program element includes criteria which must be met to qualify for the NTMP along with a survey mechanism to insure a high level of neighborhood support prior to the installation of any devices or improvements.

This document provides a framework for the selection, application, and implementation of traffic calming improvement measures in the Town of Atherton. Traffic management measures include educational, enforcement, and physical measures used to influence the behavior of drivers (see the Toolbox in **Appendix A**).

The NTMP is developed on the following principles and philosophies:

- Stable residential neighborhood traffic requires efficient arterial and collector traffic flow to minimize incentives to cut through residential neighborhoods. The primary defense against neighborhood traffic problems is an efficient arterial and collector grid.
- Streets are a community resource. Denial of access through the closing of public streets is not a goal of the NTMP, nor is modifying traditional traffic patterns within a neighborhood or between neighborhoods.
- Residents of residential streets have a right to a safe and peaceful environment, a fair share of law enforcement resources, and protection from disproportionate increases in undesirable traffic conditions.
- The public at large has an equal right to access public streets free of hazardous measures designed to impede vehicular traffic.
- Slowing traffic by means of traffic calming can be beneficial to neighborhoods and can improve safety for pedestrians, bicyclists, and other non-motorized roadway users. However, there are potential trade-offs with some traffic calming treatments, such as slowing emergency response times and increasing commute times. The full extent of these potential trade-offs needs to be weighed when reviewing a traffic calming plan prior to its implementation.

- Traffic calming measures, in and of themselves, can only directly address some of the traffic volume and safety issues that concern the citizens of Atherton. That said, they are an important piece of an overall approach to those issues that can be directly applied to the Atherton street network by the Town of Atherton.

PROGRAM GOALS

The Town of Atherton establishes its NTMP with a number of goals as follows:

- Improve local residents' sense of well-being about their neighborhood streets and enhance traffic safety in residential areas.
- Incorporate the preferences and interests of residents into the design and operation of streets within their neighborhoods.
- Provide objective criteria to help Town staff identify and prioritize projects.
- Provide residents of residential streets with protection and relief from disproportionate traffic increases.
- Provide a NTMP format that is responsive and equitable to all neighborhoods in the Town of Atherton.
- Ensure the program is cost effective by encouraging high standards of acceptance before measures are implemented.
- Clearly state procedures to provide clarity to the process and the basis for determining appropriate measures.

PROGRAM OBJECTIVES

The objectives of the NTMP are as follows:

- Provide a format for citizen involvement and collaboration in identifying traffic concerns and objectives, as well as traffic management measures that best suit the needs of their neighborhood.
- Provide a process that includes clear opportunities for members of the affected community to provide input on the recommended plan prior to its implementation.
- Integrate engineering, enforcement, and education initiatives to encourage positive driver behavior in residential neighborhoods.
- Improve neighborhood livability by encouraging compliance with designated speed limits.
- Discourage cut-through traffic within residential neighborhoods.
- Maintain capacity and facilitate traffic flow on the Town's arterial and collector roadway network.
- Effectively balance public safety interests including traffic mitigations and emergency response. In other words, recommend neighborhood traffic improvement plans that clearly address provisions for emergency response.

PROGRAM GUIDELINES

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

Compliance with Operational and Design Guidelines: Recommended traffic improvement measures must comply with applicable operational and design guidelines, including the state and federal *Manual on Uniform Traffic Control Devices* (MUTCD), the Institute of Transportation Engineers (ITE) and Federal Highway Administration (FHWA) *Traffic Calming: State of the Practice*, the Caltrans *Highway Design Manual*, the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets*, the National Association of City Transportation Officials (NACTO) *Urban Street Design Guide*, and the Americans with Disabilities Act (ADA) requirements.

Town Liability: Neighborhood traffic improvement plans must not result in unreasonable/unacceptable liability exposure for the Town.

Neighborhood Focus: Implementation of traffic improvement 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 Town streets.

Cut-Through Traffic: The NTMP should not alter traditional sharing of streets in neighborhoods or between adjacent neighborhoods. Neighborhood traffic improvement 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 Town arterial and collector streets. This should be consistent with the functional roadway classifications identified in the Town's General Plan. Cut-through traffic can be estimated based on an Origin-Destination (O-D) survey.

Petitions and Surveys: Definition of ***affected residences*** is to include addresses of project streets, side streets within one block, and streets likely to be adversely affected (i.e. diverted traffic, delayed emergency response, etc.) by proposed traffic improvement measures.

Due to the design and orientation of the existing Atherton street network, it is anticipated that the ***affected residences*** will be residents of the streets(s) identified on the Neighborhood Action Request Form (NARF). The determination of affected residents may be expanded by the Town Staff if it is determined through a traffic engineering review and analysis that adjacent streets could be adversely impacted (diverted traffic, delayed emergency response, etc.) by implementation of traffic calming measures. The traffic engineering review and analysis will be based upon a number of factors including the physical layout of the neighborhood, prevailing travel patterns, and the number of vehicular access points within the neighborhood.

- Petition to study: 25% support of all affected residences.
- Survey to install: 67% of all affected residences and 100% of residences adjacent to traffic calming measure required before measure can be considered for implementation. The Town Council has the ultimate authority to determine what, if any, measure are installed.
- Unreturned petitions/surveys will be counted as a "No" vote in determining the required approval threshold, unless documentation can be provided to indicate that the non-responding

address was unable to be contacted (using methods such as a certified letter, records of homeowners associations of intermittent residents or other methods deemed acceptable to Town staff).

Surveys may be mailed or hand delivered to each Atherton address within the study area. A follow up survey may be mailed or hand delivered to those addresses that do not respond to the first survey. Only one survey from each address will count towards reported final results.

Multi-Modal Traffic Movements: Neighborhood traffic improvement plans and designs should integrate the travel needs of public transit, pedestrians, bicyclists, and Emergency Service Providers.

Warrant Analysis: Some traffic control measures, such as stop signs and traffic signals, shall only be installed when warrants are satisfied or when deemed appropriate by the Town. A "warrant" is described by the California Manual of Uniform Traffic Control Devices (CA MUTCD) as the generally accepted numerical threshold that, if met, "warrants" consideration for the placement of traffic control devices such as a stop sign or traffic signal. Warrants are provided in the CA MUTCD.

Sight Distance: Traffic calming measures shall not be placed in locations where they may restrict sight distance below applicable standards or in areas that already have restricted sight distance.

Emergency Response: Emergency vehicle access and response should be preserved for the benefit of the entire community. To this end, the Menlo Park Fire Protection District (Fire District) has developed a map shown in **Appendix B** indicating the primary routes of travel throughout the Town of Atherton. The Town will work with the Fire District to identify the potential delay (based on Fire District tests or generally accepted traffic engineering standards) caused by each measure 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 measure 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 increases emergency response times by more than one minute or a cumulative three minutes from successive projects. The use of stop signs and all Level 2 measures (as listed in the Traffic Improvement Measures section) 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 2 measures are implemented. 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 2 measures.

Area Coverage: The Town 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 improvement measures.

Priority Ranking: Level 1 projects (as listed in the Traffic Improvement Measures section) will initially be carried out promptly in consideration of availability of Town staff and availability of project funding. Should a number of projects arrive around the same time, or as projects accumulate on the Town'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 and pedestrian activity, as well as vehicular traffic volumes and speeds. The Town's General Plan also prioritizes streets that are deemed to have unusual conditions, such as limited visibility of pedestrians, irregular roadway design measures, or indication of unreported crashes. Level 2 projects will be ranked based on the criteria listed later in this document, using the Prioritization Worksheet shown in **Appendix C**.

Funding: The Town will pursue funding through grants where possible to fund the implementation of neighborhood traffic improvement 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 on funding is provided later in this document.

GENERAL PLAN STREET CLASSIFICATIONS

Traffic congestion typically occurs on highways and arterial roadways. In congested urban areas, vehicular traffic can cut-through residential streets to avoid the more congested main roadway network. The Town of Atherton General Plan identifies a number of street classifications, namely highways, minor arterials, collectors, and local streets. While state highways are controlled by the State of California, Atherton controls its minor arterials, collectors, and local streets. Minor arterials primarily serve through traffic and provide access to abutting properties as a secondary function. They link residential districts to other transportation facilities and act as emergency service and evacuation routes. Collector streets provide both access and traffic circulation service within residential areas. Local streets provide access to abutting property and are typically designed to serve shorter 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 Town of Atherton.

BICYCLE AND PEDESTRIAN MASTER PLAN

In 2014, the Town of Atherton adopted a Bicycle and Pedestrian Master Plan which addresses the Town's priorities with regard to bicycle and pedestrian improvements. Many of the improvements within that Plan can also reduce travel speeds, including bicycle lanes and high-visibility crosswalks. Also, as noted within the Plan, traffic calming measures can enhance bicyclist and pedestrian safety.

TRAFFIC IMPROVEMENT MEASURES

Depending on the nature of the request, Town staff will recommend and/or assist the community in identifying appropriate traffic improvement 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 1

Level 1 measures include education and enforcement initiatives. They also include engineering measures that are relatively low in cost and simple in their implementation. All roadways under the jurisdiction of the Town of Atherton are eligible for Level 1 measures. Town staff has the discretion to implement Level 1 measures without the prior approval of the Town Council.

Level 1 measures allowed in the Town of Atherton:

- Educational programs
- Targeted police enforcement
- Speed Limit signs
- Truck restriction 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 measures
- High-visibility crosswalks
- Speed feedback signs

Typical costs associated with various Level 1 measures are indicated in the Toolbox (**Appendix A**).

Level 2

Level 2 measures are more restrictive traffic improvement measures that may divert traffic and impact access to properties. Level 2 measures are generally higher in cost than Level 1 improvements.

Some Level 2 measures – denoted below with an asterisk ("*") – may also reduce emergency response times. These measures are only allowed on non-emergency response routes under the jurisdiction of the Town of Atherton, unless specifically approved for installation by Town Council. The current map indicating the emergency response routes within Atherton is included in **Appendix B** of this NTMP. Town staff has the discretion to implement measures that do not affect emergency response times directly to Town Council for approval without a neighborhood survey and petition process.

Level 2 Measures allowed within the Town of Atherton:

- Flashing Beacons
- Crosswalk Warning Systems
- Textured pavement
- Gateways and entry treatments
- Traffic Circles*
- Speed Lumps*
- Roadway narrowing (via landscaping)*
- Turn prohibition signs

Typical costs associated with various Level 2 measures are indicated within the Toolbox (**Appendix A**).

GENERAL IMPACTS

Measures listed under Levels 1 and 2 are described in detail in the toolbox section of this document (**Appendix A**). In addition to the information provided in the toolbox, general potential advantages and disadvantages associated with Level 2 measures 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 measures 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 measures due to vehicles braking, and driving over and around the physical measures
- Increased pollution and fuel consumption from slowing and accelerating vehicles
- Increased vehicle maintenance
- Loss of street-side parking spaces adjacent to the measures
- Liability exposure to the Town 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 measures, such as speed lumps, 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 measures
- Increased tripping hazards for pedestrians

- Additional travel time due to slowing to negotiate traffic calming measures

QUALIFYING CRITERIA

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

1. The 85th percentile speed must be in excess of the posted speed limit by more than 5-10 miles per hour (mph). The 85th 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. Collision data during the last available 36 months demonstrates the number of collisions is at least two times the Town-wide average for a similar type of street/intersection.

LEVEL 2 PRIORITY CRITERIA

Implementation of Level 2 projects will be prioritized based on the following qualifying criteria. (Level 1 projects will be completed promptly in consideration of availability of Town staff and availability of project funding. Should the Town receive a number of projects around the same time, or as projects accumulate on the Town's work program, the priority ranking system may be triggered.)

1. Collision History: Locations with a larger number of collisions receive a higher priority ranking.
2. Travel Speeds: The greater the 85th percentile speed exceeds the designated speed limit 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 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.
6. Emergency Response: Higher priority will be given to streets with below average incident activity history or response times, as well as if the typical response routes do not already have traffic calming measure.

The prioritization worksheet describing the calculation of ranking points is included in **Appendix C** for reference.

NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM PROCESS

Completion of a traffic improvement plan is described below.

Process for Level 1 Measures

Implementation of Level 1 measures will follow the process described below and summarized in **Figure 1**.

Receipt of a Request: A resident alerts the Town Engineer 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): Town 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 and inclusive of alternate travel routes.

The person requesting the traffic improvements will be responsible for completing a "Neighborhood Action Request Form" (NARF) which must include signatures from at least 51% of Atherton study area addresses. (A sample NARF is included as **Appendix D**.) The completed form must include a written description of the location, nature of reported concerns, and requested corrective measures.

Town staff may expand the study area/impacted area during any phase of the planning process prior to the implementation of measures. This will take place if staff experience, gathered data, public input, or analysis results show that additional neighborhood streets may be impacted by any proposed measure. 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 jurisdictions as appropriate to evaluate the plan impacts.

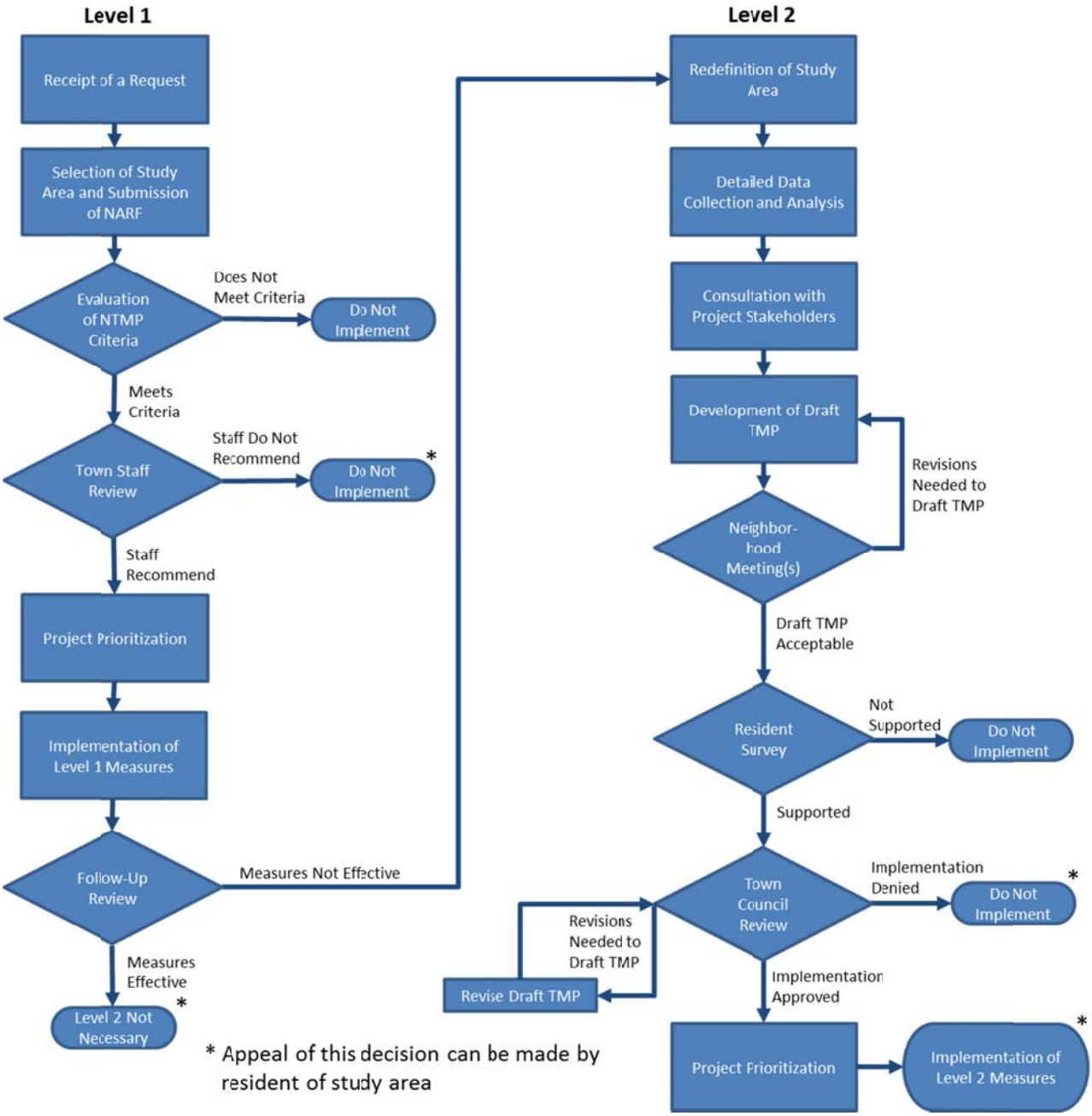


Figure 1: Neighborhood Traffic Management Program Review Process

Evaluation of NTMP Criteria: Town staff will undertake a cursory review of reported concerns including any needed data collection of collision statistics and speeds. This is to determine if raised traffic issues meet the NTMP qualifying criteria. If Town 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 Town.

Town Staff Review and Recommendation: Town staff will prepare an existing conditions traffic analysis report and recommend feasible Level 1 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, cost of lost time to passing vehicles, changes in vehicle noise and pollution, 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.

Appeals: A resident of the study area may submit an appeal of the Town staff's decision to the Town's Transportation Committee. The Committee will then discuss the merits of the appeal and make a recommendation as a part of the appeal submittal to the Town Council. The Council may either deny the appeal, request additional information or instruct Town staff to reverse its denial of the improvements.

Project Prioritization: Level 1 projects will be carried out promptly in consideration of availability of Town staff and availability of project funding.

Implementation of Level 1 Measures: Level 1 traffic management options such as the installation of signing or pavement markings should be implemented within six weeks of the Town staff's recommendation (whenever possible).

Follow-Up Review: Town staff may perform "After" studies following at least four months of implementing the Level 1 measures. Based on these "After" studies, staff may recommend either removing or retaining the Level 1 measures and may also recommend continuing the process on a Level 2 basis.

Revision or Removal of Level 1 Improvements: Following implementation of Level 1 improvements, a resident of the study area may submit an appeal to the Town's Transportation Committee for improvement revision or removal. The Committee will then discuss the merits of the appeal and make a recommendation as a part of the appeal submittal to the Town Council. The Council will then either deny the appeal or instruct Town staff to revise or remove the improvements.

Process for Level 2 Measures

If Level 1 Measures are not effective, Level 2 Measures should be evaluated. Implementation of Level 2 measures will follow the process described below and summarized in **Figure 1**. However, note that Level 2 measures are only allowed on non-emergency response routes under the jurisdiction of the Town of Atherton, unless specifically approved for installation by Town Council.

Redefinition of Study Area: Town staff will modify (as necessary) the previously-identified 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.

Detailed Data Collection and Analysis: Town staff will conduct detailed data collection that may include speeds, volumes, collision history, emergency response incident activity history, and other information needed to define the problem and later measure the success of the plan. Enough data will be collected and evaluated to provide an accurate picture of the current conditions throughout the neighborhood. Performed analyses will help determine if/which Level 2 measures are warranted. This review will include items such as conformance with state and federal laws, the Town's General Plan, type and function of streets involved, compliance with engineering regulations, existing traffic conditions, projected traffic conditions, potential for traffic diversion to other residential streets, and

estimated delay of emergency vehicles. The review will also include other potential disadvantages associated with implementation of traffic calming, such as loss of on-street parking, visual impacts, safety effects, increased Town maintenance costs, etc.

Consultation with Project Stakeholders: Consultation with the Police Department and Fire District will take place to determine if the street is a critical emergency vehicle response route, and therefore not eligible for certain measures. Consultation will also take place with emergency services, school districts, and any other service provider affected by the requested traffic improvement 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 Improvement Plan (TIP): Town staff, with the help of qualified consultants, if needed, will develop a draft neighborhood traffic improvement plan (TIP) based on the information gathered and desires of residents and other project stakeholders. Components of the TIP will include the different types of recommended traffic calming measures within the neighborhood and their approximate locations on the neighborhood roadways. The TIP will be based on the NTMP Goals, Objectives, and Guidelines, as well as approved measures included within this program.

Neighborhood Meeting(s): Once a draft TIP is prepared, Town staff will hold a meeting with the 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, as determined by Town staff.

Resident Survey for Installation: A survey describing the investigated issues and proposed TIP will be circulated to Atherton addresses throughout the study area. Each address shall count as one vote. Goals, benefits, estimated costs, and potential delay to emergency vehicles will be stated in the survey. Support by at least 67% of returned surveys, with a minimum of 67% of the circulated surveys returned to the Town, must be demonstrated through this process prior to considering plan implementation. In addition, 100% of the addresses within 100 feet of each Level 2 traffic measure must also approve the proposed TIP. Unreturned surveys will count as a "No" vote, unless documentation can be provided to indicate that the non-responding homeowner was unable to be contacted (as previously described on Pages 3-4 of this document). If the overall survey is supported by 67% and 100%, as described above, the TIP will be forwarded to the Town Council for review.

Town Council Review: The Town Council will review the prepared TIP along with its background information. The Council will either deny, recommend plan revisions, or approve implementation of the TIP. Based on the Council's direction, necessary revisions will be made to the TIP.

Project Prioritization: Town staff will proceed to rank Level 2 projects based on the aforementioned priority criteria and attached prioritization worksheet. A ranking list of all Level 2 NTMP requests will be confirmed with the Town Council on an annual basis. The Town Council will schedule neighborhood meetings to address projects based on their approved priority ranking, availability of Town staff, and availability of project funding.

Implementation of Level 2 Measures: If the TIP is approved for implementation, detailed design drawings will be 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 construction to ensure they represent what was agreed to. Residents will need to be informed in advance regarding construction impacts (noise, dust, potential traffic rerouting, etc.) and the anticipated construction schedule to minimize frustrations. Once funding is secured, permanent construction of the Level 2 measures can then take place by an approved contractor under an encroachment permit from the Town. Twelve months after the measures have been implemented the Town may evaluate the measures to determine how individual measures and a system of measures affect drivers' behavior.

Temporary Measures: As directed by the Town Council, a temporary equivalent of the approved Level 2 improvements can be implemented. Note that a temporary equivalent may not be available for all Level 2 improvements.

Revision or Removal of Level 2 Improvements: Revision or removal of a previously approved traffic improvement plan with Level 2 improvements will require following the same process that was used to install the plan initially. If 67% of voting addresses decide later that the permanent measures are not desirable, staff will present the revision or removal request to the Town Council for final approval. If the measure conflicts with access to a new development, it will be the responsibility of the developer of that project to modify, relocate, or remove the measure. 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 community needs. After the completion of any TIP, the Town 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 Town Council. Staff may also seek outside funding, such as state and federal grants, for the project.

The Town has determined that high aesthetic/low maintenance designs are preferred to reduce the future burden on Town forces to maintain traffic improvement measures. These types of measures 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 and will be responsible for its future maintenance.

REFERENCES

1. *Town of Atherton General Plan*, Neal Martin & Associates, Adopted November 2002.
2. *Town of Atherton Bicycle and Pedestrian Master Plan*, Alta Planning & Design, Adopted November 2014.
3. *City of Menlo Park Neighborhood Traffic Management Program*, Kimley-Horn and Associates, November 2004.
4. *City of San Mateo Neighborhood Traffic Management Program,* Hexagon Transportation Consultants, Adopted October 16, 2006.
5. *Town of Los Altos Hills,* Traffic Calming Guide, Town of Los Altos Hills, Adopted May 15, 2014.
6. *City of Anaheim Neighborhood Traffic Management Program*, Fehr & Peers, May 2008.
7. *City of Sunnyvale Neighborhood Traffic Calming,* Fehr & Peers, December 2002.
8. *Traffic Calming: State of the Practice*, Institute of Transportation Engineers and Federal Highway Administration, August 1999.
9. *Costs for Pedestrian and Bicyclist Infrastructure Improvements*, Max A. Bushell, Bryan W. Poole, Charles V. Zegeer, Daniel A. Rodriguez, UNC Highway Safety Research Center, October 2013.

APPENDIX A
Traffic Calming Toolbox

TRAFFIC CALMING TOOLBOX

Traffic management is the combination of education, enforcement, and engineering 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 traffic safety issues. Engineering includes design and implementation of roadway features and physical elements such as speed lumps and street narrowing features. Of the three traffic management areas, public education and enforcement should be, as described below, implemented before physical traffic calming (i.e. engineering) improvements.

The following pages describe and illustrate traffic management plan measures that may be used on residential local and collector streets in Atherton. 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 Town, and the 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 stripping. The next level includes active measures that physically constrain the driver to certain paths or areas in the roadway. The most 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 lumps.

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 Town of Atherton including:

- Bicycle rodeos at local schools sponsored by the Police Department
- Free helmet programs sponsored by the Police Department
- Bicycle safety classes sponsored by members of the Bicycle and Pedestrian Committee

The following are samples 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, fliers 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, compliance with reduced speed limits in school zones, etc. Middle and high school presentations could be undertaken by School Resource Officers (SRO) or Traffic Officers and 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 for oncoming 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 use 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 pedestrian 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 ride on sidewalks or against traffic.

NEIGHBORHOOD TRAFFIC MANAGEMENT DEVICES

The following pages describe the "toolbox" of devices that are available to community members and the Town of Atherton Public Works staff when developing neighborhood traffic management plans. The "toolbox" contains 11 different categories of devices that address neighborhood traffic-related concerns such as: speeding vehicles, high traffic volumes, cut-through traffic, or safety concerns. The devices vary in their ability to treat various traffic-related concerns.

Traffic signals and one-way street conversions are not included in the toolbox as those are traditionally not considered traffic calming devices. However, these treatments could be included as part of a traffic calming package for a neighborhood. Note that traffic signals will only be installed if warranted.

The toolbox of neighborhood traffic management devices is grouped into two categories:

- Level 1 Measures
- Level 2 Measures

For each device in the toolbox, the following information is provided:

- Description of the measure
- Photograph and/or schematic
- List of advantages and disadvantages
- Cost estimate

Cost approximations are provided for informational purposes only. Actual costs depend on many factors, including: dimensions of device, construction materials, and recent labor and material costs.

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 Atherton.

LEVEL 1 MEASURES

TARGETED SPEED ENFORCEMENT

Town Staff identifies locations for temporary targeted enforcement, based on personal observations and survey comments. A request can be submitted to the Town of Atherton Police Department for the desired enforcement. Depending on police department resources, the targeted enforcement may be limited in duration. Targeted enforcement may also be used in conjunction with new neighborhood traffic management devices to help drivers become aware of the new restrictions.

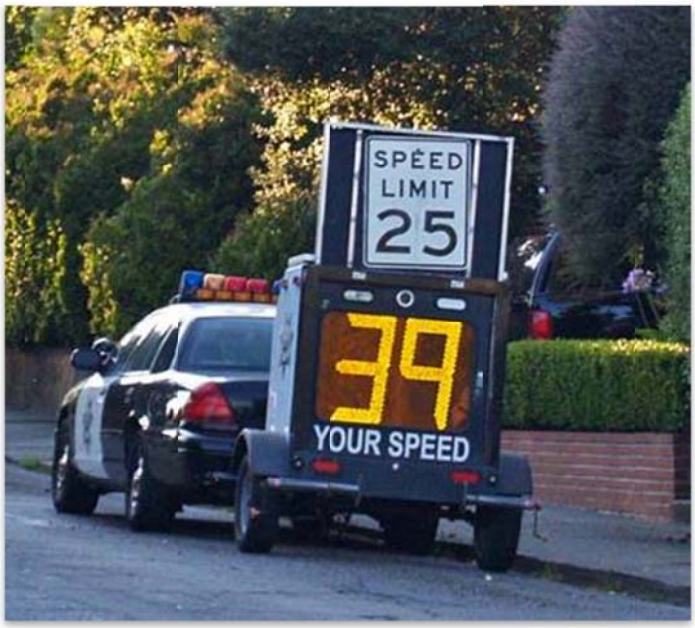
Advantages

- Inexpensive if used temporarily
- Does not physically slow emergency vehicles or buses
- Quick implementation

Disadvantages

- Diverts enforcement resources during transport, setup, and take-down
- Effectiveness may be temporary

Approximate Cost: No incremental cost



SPEED FEEDBACK SIGN

Speed feedback signs measure each approaching vehicle's speed. Real-time speeds are relayed to drivers and flash when speeds exceed the limit. Speed feedback signs are typically mounted on or near speed limit signs and are most common in school zones.

Approximate Cost: $15,000 - $20,000

Advantages

- Real-time speed feedback
- Does not physically slow emergency vehicles or buses
- Permanent installation

Disadvantages

- May require power source
- Only effective for one direction of travel
- Long-term effectiveness varies

SIGNAGE

Signage that can be used as a neighborhood traffic management measure include:

- *Truck Restriction Signs*
- *Neighborhood District Signs*
- *Other Static Warning and Specialty Signs*

Note: Turn-movement restriction signs have been included in the Volume Control Devices section.

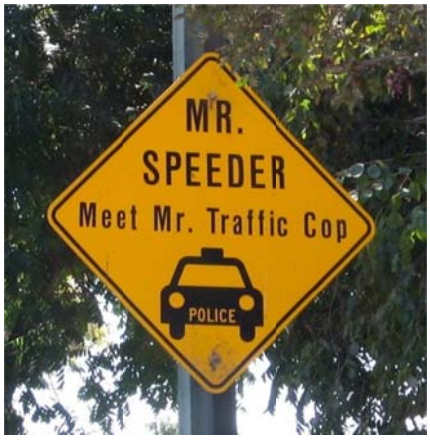
Advantages

- Inexpensive
- Reinforce need to travel at a reasonable speed
- Truck restrictions can reduce through truck traffic
- Does not slow emergency vehicles or buses

Disadvantages

- Requires periodic maintenance
- Speed limit signs do not necessarily change driver behavior

Approximate Cost: $300 - $500 per sign



SPECIALTY STRIPING AND MARKINGS

Specialty Striping and Markings include speed legends, advance warning markings and other pavement striping improvements. Speed legends are numerals painted on the roadway indicating the current speed limit in miles per hour. They are usually placed near speed limit signposts. Speed legends can be useful in reinforcing a reduction in speed limit between one segment of a roadway and another segment. They may also be placed at major entry points into a residential area. Advance warning markings can be added in advance of crosswalks, traffic calming, or other roadway features to add an additional reminder to drivers to reduce their travel speed in advance of those upcoming features.

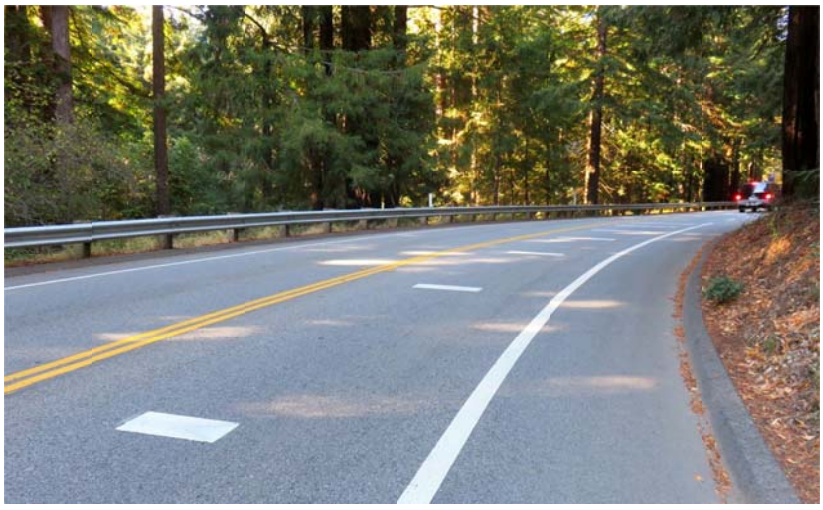
Advantages

- Inexpensive
- Helps reinforce safe travel speeds
- Does not slow emergency vehicles

Disadvantages

- Has not been shown to significantly reduce travel speeds
- Requires periodic maintenance

Approximate Cost: $200-$600



PEDESTRIAN IMPROVEMENTS

Pedestrian signing and striping improvements increase the visibility of pedestrian crossings. Ladder and zebra crosswalk patterns are illustrated below, some with advance yield markings. They help indicate the presense of crosswalks, improving the safety of pedestrians. This passive system relies on enhanced crosswalk markings and signage to channelize pedestrian crossings and alert drivers to their presence.

Approximate Cost: $1,000 to $4,000

Advantages

- Inexpensive
- Improves visibility of the crosswalk
- Improves safety for pedestrians

Disadvantages

- Effectiveness can diminish over time

LEVEL 2 MEASURES

GATEWAYS AND ENTRY TREATMENTS

Gateways and entry treatments may be implemented in the unpaved parking area, typically near an intersection, to create a sense of a narrower roadway. These decorative features may indicate the start of a residential area or display the name of the neighborhood.

Approximate Cost: $5,000 to $65,000 per structure

Advantages

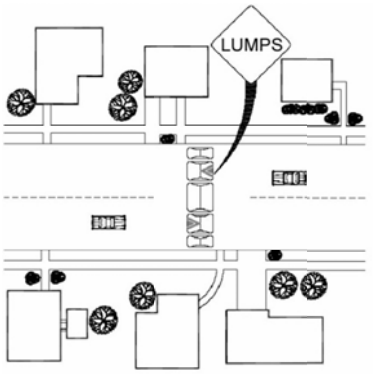
- Positive aesthetic value
- Discourages cut-through traffic

Disadvantages

- Potentially reduces parking supply
- May require frequent maintenance

SPEED LUMPS

Speed lumps are rounded raised areas placed across the road with two wheel cut-outs designed to allow large vehicles, such as emergency vehicles and buses, to pass with minimal slowing. The design limits passenger cars and mid-size SUVs from fully passing through the cut-outs and requires travel over the lump. They are slightly less than four inches high, typically parabolic in shape, and have a design speed of 15 to 20 MPH. They are usually constructed with a taper on each side to allow unimpeded drainage between the lump and curb or edge of pavement. When placed on a street with rolled curbs or no curbs, bollards are occasionally placed at the ends of the speed lump to discourage vehicles from veering outside of the travel lane to avoid the device.



The magnitude of reduction in speed is dependent on the spacing of speed lumps between points that require drivers to slow. The design of the speed lumps to be used in Atherton shall follow that which is included within **Appendix E**.

This measure is only allowed on non-emergency response routes under the jurisdiction of the Town of Atherton, unless specifically approved for installation by Town Council.

Approximate Cost: $7,000 (per assembly)

Advantages

- Effective in reducing speeds
- Minimal impact on emergency response times
- Relatively easy for bicyclists to cross

Disadvantages

- Vehicles with wide wheel base can pass through the lump using the wheel cut-outs
- Increased noise and pollution
- Increased risk to bicyclists, roller skaters and physically challenged pedestrians
- Increased pedestrian tripping hazards
- Aesthetics
- Signs may be unwelcome by adjacent residents

ROADWAY NARROWING (VIA LANDSCAPING)

Roadway narrowing via landscaping utilizes trees or large bushes in the unpaved parking area to create a sense of a narrower roadway. The landscaping may be placed on both sides along a section of roadway, either in pairs or alternating.

This measure is only allowed on non-emergency response routes under the jurisdiction of the Town of Atherton, unless specifically approved for installation by Town Council.

Approximate Cost: $10,000 to $15,000

Advantages

- Relatively inexpensive
- Relatively simple to design
- Positive aesthetic value

Disadvantages

- Reduces parking supply
- Requires regular maintenance
- Increased risk to bicyclists, roller skaters and physically challenged pedestrians
- Increased tripping hazard for pedestrians

FLASHING BEACONS AND CROSSWALK WARNING SYSTEM

This device improves the visibility of crosswalks through the combination of signage and flashing beacons. This active system is often triggered by the pedestrian and alerts nearby vehicles of their presence.

Approximate Cost: $15,000 to $50,000

Advantages

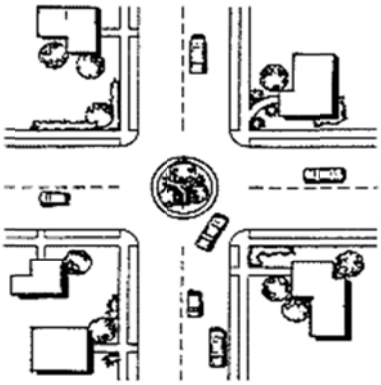
- Relatively inexpensive
- Improves visibility of the crosswalk
- Improves safety for pedestrians

Disadvantages

- Most effective when implemented with other traffic calming measures
- Requires regular maintenance

TRAFFIC CIRCLE

Traffic circles are raised islands, placed in intersections, around which traffic circulates. Stop signs or yield signs can be used as traffic controls at the approaches of the traffic circle. Circles prevent drivers from speeding through intersections by impeding the straight-through movement and forcing drivers to slow down to yield. Depending upon the size of the intersection and circle, trucks and buses may be permitted to turn left in front of the circle.



This measure is only allowed on non-emergency response routes under the jurisdiction of the Town of Atherton, unless specifically approved for installation by Town Council.

Approximate Cost: $60,000 - $100,000

Advantages

- Very effective in moderating speeds and improving safety
- Can have positive aesthetic value

Disadvantages

- If not designed properly, difficult for emergency vehicles or large trucks to travel around
- Must be designed so that the circulating traffic does not encroach on crosswalks
- Potential loss of on-street parking
- Expensive design and construction costs
- Requires regular maintenance

TURN-MOVEMENT RESTRICTIONS

Turn-movement restrictions involve the use of signs to prevent undesired turning movements without the use of physical devices. The restrictions may generally apply to turning movements in or out of a residential street to a larger street. The turn-movement restrictions may be permanent or only during peak commute hours.

As the turn restrictions can divert traffic to adjacent streets, this measure is classified as a Level 2 measure.

Approximate Cost: $200 - $1,000 (plus enforcement)

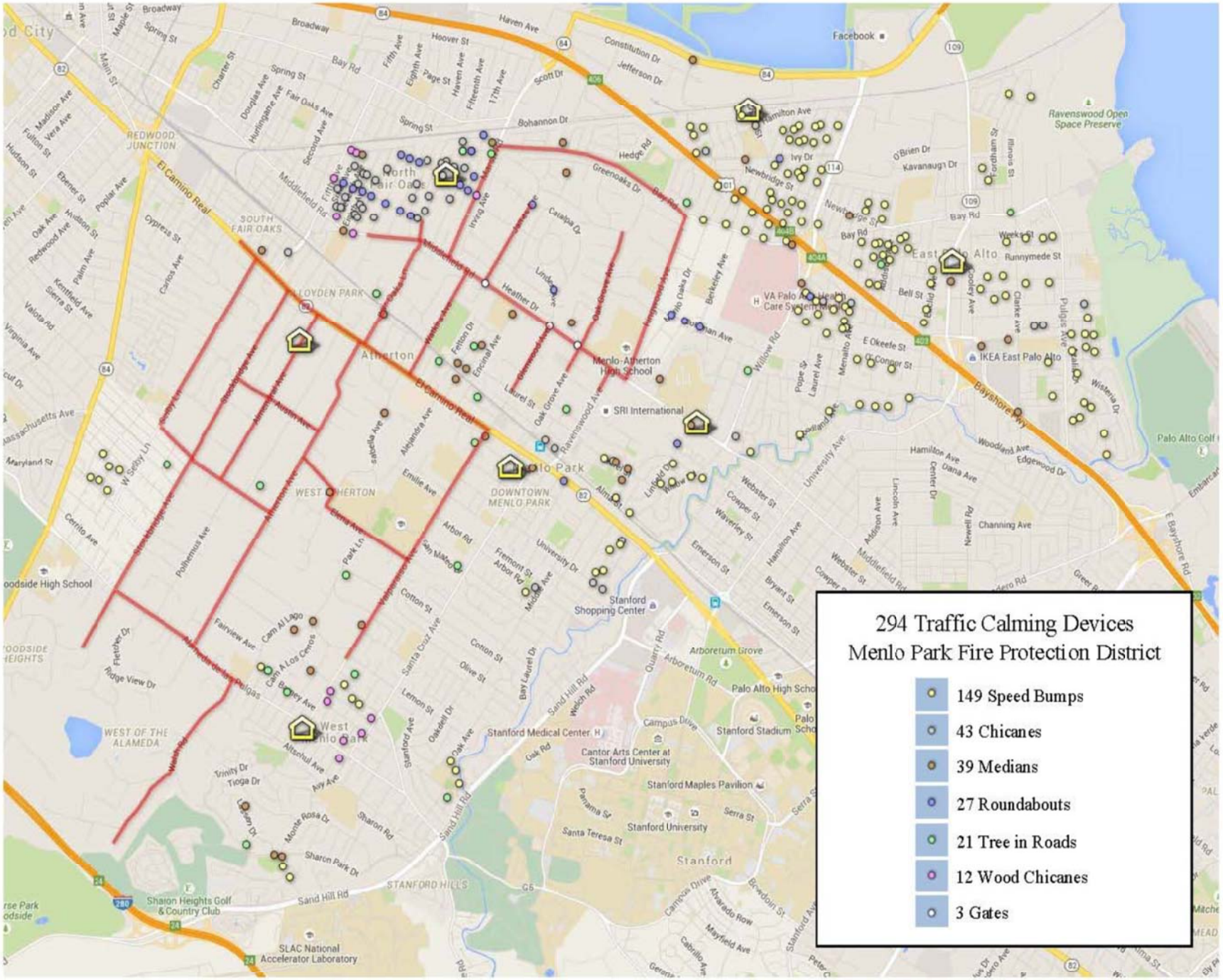
Advantages

- Can reduce cut-through traffic at specific time-of-day
- Can increase safety at an intersection by prohibiting certain turning movements
- Low cost

Disadvantages

- Restrictions apply to resident and non-residents
- Requires enforcement during time of restriction to be effective
- May divert a traffic problem to another street

APPENDIX B
Emergency Response Routes in Atherton


294 Traffic Calming Devices
Menlo Park Fire Protection District
149 Speed Bumps
43 Chicanes
39 Medians
27 Roundabouts
21 Tree in Roads
12 Wood Chicanes
3 Gates

APPENDIX C
Prioritization Worksheet

PRIORITIZATION WORKSHEET
Neighborhood Traffic Management Program (NTMP)

This worksheet will be completed by the Town of Atherton staff in accordance with the Town's NTMP. It will be used to prioritize the potential initiation of specific neighborhood traffic improvement processes. The highest scoring residential street will get the highest ranking and so forth.

Date: _____
Name of Neighborhood: _____
Street Name: _____
Limits of Study Area: _____
Total Estimated Score: _____

COLLISION HISTORY:

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

RESIDENTIAL TRAFFIC VOLUMES:

A Local Street

- Less than 1,500 vpd = 0 points
- 1,500 to 2,000 vpd = 4 points
- 2,000 to 2,500 vpd = 8 points
- Greater than 2,500 vpd = 12 points --------

A Collector Street

- Less than 3,000 vpd = 0 points
- 3,000 to 3,500 vpd = 4 points
- 3,500 to 4,000 vpd = 8 points
- Greater than 4,000 vpd = 12 points --------

TRAVEL SPEEDS:

- 85^{th} percentile speed < 12 mph over the speed limit = 5 points
- 85^{th} percentile speed > 12 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 ---------

EMERGENCY RESPONSE INCIDENT ACTIVITY HISTORY:

Using incident activity history from the Fire District and Police Department from the most recent available 12 months:

- The street is at or above the average = 0 points
- The street is below the average = 3 points ---------

EMERGENCY RESPONSE TIMES:

Using typical emergency response times from the Fire District and Police Department from the most recent available 12 months:

- The street is at or above the average = 0 points
- The street is below the average = 5 points ---------

EXISTING TRAFFIC CALMING MEASURES:

Using typical emergency response routes for the Fire District and Police Department:

- The response route already has traffic calming measures = 0 points
- The response route does not have traffic calming measures = 3 points ---------

TOTAL PROJECT POINTS ☐

APPENDIX D
Sample Neighborhood Action Request Form (NARF)

NEIGHBORHOOD ACTION REQUEST FORM (NARF)

Town of Atherton

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, etc.):

_____

_____

_____

_____

Location Map Attached Sketch of Problem Area Attached

FOR STAFF USE ONLY	Date Received:	Tracking Number:
Review Action: Forward to Engineer Review Forward to Transportation Committee		
Action Taken: Staff Action Town Council/Transportation Committee Action		
Action Description:		
W/O Number:	Requested on:	
Applicant Notified of Outcome on:	Completed on:	

INSTRUCTIONS FOR COMPLETING NARF PETITION

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

1 - Staff to attach the description of concerns from NARF application.
2 - Staff to attach a map of the project study area with a sketch of the problem area.
3 - Staff to attach a description of the requested corrective measures.

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 67% of households in project study area identified on the attached map.
3 - Only one petitioner per household 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 Town of Atherton Public Works Department, 93 Station Lane, Atherton, CA 94027.

ADVANTAGES AND DISADVANTAGES OF TRAFFIC CALMING MEASURES

Advantages of traffic calming measures include reductions in travels speed; shorter pedestrian crossing distances; improvements in pedestrian-motorist visibility; enhancing identity of neighborhood; adding space for pedestrians, landscaping, or installation of decorative features; reductions in the number and severity of collisions; and reductions in the need for police enforcement.

Disadvantages of traffic calming include increases in emergency vehicle response times (e.g. fire apparatus and ambulances); hindering the movements of transit buses and utility trucks, inconveniencing local residents who are forced to drive longer and more circuitous routes to/from their homes; increase vehicle queues at intersections; increased risk to bicyclists, roller skaters, and physically challenges pedestrians; increased traffic noise at individual measures (due to breaking vehicles and driving over/around measures); increase pollution and fuel consumption from slowing and accelerating vehicles; increased vehicle maintenance; loss of street-side parking adjacent to the measures; increase liability exposure, expensive design and construction costs; increased street maintenance costs; increased tripping hazards for pedestrians; and additional travel time due to slowing to negotiate traffic calming measures.

TOWN OF ATHERTON
NEIGHBORHOOD ACTION REQUEST FORM (NARF) PETITION
Neighborhood Traffic Management Program (NTMP)
Traffic Management Measures

Signature Collector Name: _____ Day Phone: _____.

Address: _____City: _____Zip: _____.

We, the undersigned, request a Town staff review of the attached traffic concern, located within the geographic area shown on the attached map.

TOWN STAFF TO ATTACH DESCRIPTION OF CONCERNS FROM NARF, LOCATION MAP, AND REQUESTED CORRECTIVE MEASURES

	Print Name	Address	Phone (Optional)	Initial *
	Signature		Date	
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

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

APPENDIX E
Specialty Designs of Traffic Calming Measures

Menlo Park Fire Protection District
Fire Prevention Bureau

170 Middlefield Road
Menlo Park, CA 94025
Phone: (650) 688-8425 Fax: (650) 473-9847

MENLO PARK FIRE PROTECTION DISTRICT

GUIDELINE FOR THE INSTALLATION OF TRAFFIC CALMING DEVICES

Section 503.4.J Traffic Calming Devices

Scope. When allowed by the fire code official, the installation of any traffic calming device shall be in accordance with Federal, State, and County guidelines and the requirements set forth in this Standard.

Emergency Response Issues:

- Concern over jarring of emergency rescue vehicles
- Approximate delay of between 3 and 5 seconds per hump for fire trucks and up to 10 seconds for ambulances with patients

Locations. Traffic calming devices shall not be allowed on designated fire apparatus response routes, see attached map. When approved by the fire code official, traffic calming devices shall be installed in accordance with the following Federal Highway Administration guidelines:

1. Traffic calming devices may only be installed on residential streets. They shall not be used on major roads, bus routes, or primary emergency response routes.
2. Speed humps shall not be placed mid-block or at intersections.
3. Traffic calming devices shall not be located on grades greater than 8 percent.
4. The maximum height of a speed hump shall not exceed 3.5 inches.
5. In accordance with San Mateo County Policy, speed humps shall not be placed on streets where posted speed limits are 30 miles per hour or more.

Installation of traffic calming devices. When allowed by the fire code official, traffic calming devices such as roundabouts or other devices that are meant to disrupt the normal flow of traffic, such devices shall be installed in a manner that does not obstruct the required width of a fire lane as specified by Section 503.2.1 of the California Fire Code.

Installation of speed humps. Speed humps may be installed in accordance with the Federal Highway Administration *Manual on Uniform Traffic Control Devices* or the attached San Mateo County Department of Public Works traffic humps drawing.

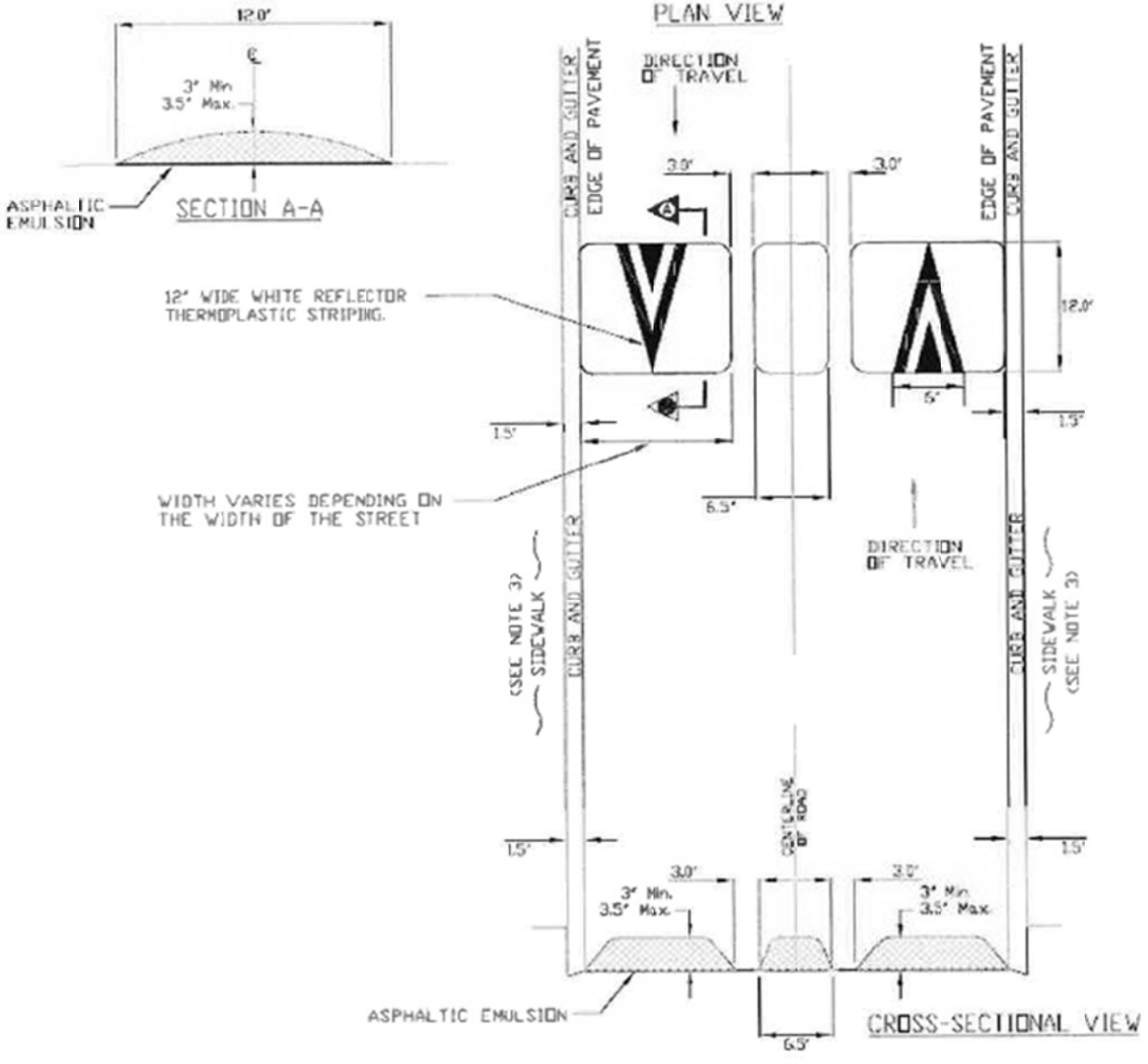
Revised October 24, 2013

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

DRAWN BY: EPC
CHECK BY: LE
APPROVED BY: LE

SCALE: NONE
DATE: 11/04
REVISED:



TYPICAL CONSTRUCTION DETAIL: SPEED LUMP

NOT TO SCALE

NOTES:
1. SPEED HUMP STRIPING MAY BE ELIMINATED, AT THE DIRECTION OF THE ENGINEER.