



Citywide Traffic Calming Policy

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GLOSSARY OF TERMS

85th Percentile Speed

The speed at and below which, eighty-five percent of vehicles travel is called the 85th percentile speed. A statement that says, “the 85th percentile speed on 5th Street East between Avenue J and Avenue K is 50 miles per hour” also implies that if 5,000 vehicles travel through the given segment of 5th Street East, then 15%, or 750 vehicles, travel at speeds *above* 50 mph.

Arterial

An arterial is a street that traverses the city, its communities, areas or districts, serving as a major thoroughfare. Its primary function is to provide a connection to other arterials and a few lesser roadways. It is designed to carry large volumes of vehicle traffic across long distances at speeds of 35 miles per hour or higher. Most of Lancaster’s mile point and half-mile point avenues and streets are arterials.

Business Park

This term is used freely in this document to refer to districts, neighborhoods, zones and other areas in the City that are predominantly occupied by offices, small business, retail, commercial or service establishments and light industrial buildings. The intent is simply to distinguish such areas from residential neighborhoods where traffic calming issues generally arise. In some instances, traffic calming measures may be desirable in such non-residential areas.

Collector

A collector or “collector street” links local streets to (mostly secondary) arterials. Although typically wider than a local street, a collector would usually carry only two lanes of traffic.

Couplet

In the context of street patterns and networks, a street couplet is a matched pair of parallel, one-way streets with opposite directions of traffic.

Cul de sac

A cul de sac is a type of dead end where the street’s terminus is rounded to a sufficient radius to facilitate a U-turn instead of a three-point turn.

Level of Service (LOS)

Street segments and intersections are often rated in terms of their Level of Service or LOS. Six ratings from LOS A through LOS F range from light, free flowing traffic to heavy, interrupted flow. More objectively, the ratings simply correspond to six volume-to-capacity (v/c) ratio intervals. An intersection is said to be operating at LOS A if its v/c ratio is 0.600 or less. A v/c ratio from 0.601 to 0.700 is rated LOS B, and so forth. LOS F corresponds to v/c ratios above 1.000. The City of Lancaster uses LOS D (v/c ratio between 0.801 and 0.900) as the target Level of Service for its highways.



Livable Speed

Derived from the concept of livable neighborhoods, a livable speed is the desirable speed at which vehicle traffic is perceived to have little or no impact on the quality of life that constituents expect to restore and maintain in the City of Lancaster. This Policy attempts to define this inherently subjective concept in objective terms based on generally accepted traffic engineering principles.

Local

A local or “local street” provides direct access to a home or business. It serves as the transportation link between the property and the next local or collector.

Manual of Uniform Traffic Control Devices (MUTCD)

This is a uniform code that guides transportation and traffic agencies at the state and local levels in the application of traffic control devices. A few states such as California have adopted the uniform code with certain qualifications brought about by each one’s unique experience. Thus, the California Manual of Uniform Traffic Control Devices is the manual followed in California.

Neighborhood

In the context of traffic calming, “neighborhood” is a group of constituents in an area bordered by the nearest arterials and characterized, more or less, by a commonality of land use.

Neighborhood Street Network

The system of local and collector streets which provides a neighborhood’s internal circulation is referred to as the neighborhood street network.

Neighborhood Traffic Committee (NTC)

A committee consisting of a minimum of three to a maximum of seven members who geographically represent, more or less, the constituency in a neighborhood, formed for the purpose of developing, promoting and implementing a Neighborhood Traffic Calming Plan with the technical assistance of the City Traffic Engineer.

Open House

The Open House is the final iteration in the development of a Neighborhood Traffic Calming Plan (Plan) wherein the NTC hosts an open exhibit. NTC members deal with their neighbors’ questions one-on-one, while City staff provide technical support. Neighborhood constituents’ written comments are tallied to assess consensus.

Petition

The petition process can happen at two levels. The first level involves limited constituency petitions which are required for specific traffic calming tools such as speed humps, mini-roundabouts (neighborhood traffic circles) and raised medians. Because these processes are more localized and stringent than



second level petition processes, they can proceed independently of second level petitions and neighborhood surveys.

The second level petition process exclusively involves the ninth iteration of a Neighborhood Traffic Calming Plan for a Plan area where the number of constituent units is deemed small enough by the City Traffic Engineer. A successful, second level petition will not preclude the need to run first level petitions for any specific traffic calming tools proposed in the Plan.

Super Majority

A super majority is equal to two-thirds of responses counted in a survey.

Traffic Calming

Traffic calming is the general term used in referring to measures, tools, plans and programs intended to mitigate quality of life impacts created by vehicle traffic due to excessive speeds, volumes and commuter intrusion. Traffic calming issues are not necessarily traffic safety issues. In situations where a traffic control device could contribute to traffic calming, the device cannot be employed unless California MUTCD-required traffic safety criteria are met.

Planners look upon traffic calming as a form of traffic planning that emphasizes the fact that streets are meant to be shared by drivers, pedestrians and other users.

Traffic Calming Designation (TCD)

This Policy establishes the process by which a traffic calming designation may be assigned to specific City arterials. The TCD determines the livable speed which is used under this Policy in applying the speed criterion for traffic calming intervention on an arterial.

Traffic Calming Tool

A traffic sign, striping or other device, roadway feature, roadway or off-road treatment, or a measure consisting of two or more of the aforesaid items that, when installed, mitigates the quality of life impacts created by vehicle traffic in the eyes of affected constituents.

Traffic Control Device

A traffic signal, stop sign, crosswalk marking or other device that is used to control the movement of traffic in the public right of way, authorized and installed to address a demonstrated traffic safety issue according to criteria and warrants stipulated by Code (California Vehicle Code and California Manual of Uniform Traffic Control Devices).

Traffic Safety

A traffic calming concern would also involve a traffic safety issue if property damage and/or personal injury are a likely consequence if the concern is not properly addressed. A good test of whether or not a traffic concern is a traffic safety issue is whether or not the traffic measure needed to address it must meet



specific authorization and installation criteria set forth in the California Manual of Uniform Traffic Control Devices (MUTCD). This is not to say that some of those traffic measures cannot also address non-safety related traffic concerns. One such example is the Stop Sign. It is a traffic control device that is designed primarily for assigning right of way at intersections. The California MUTCD provides specific criteria by which stop sign installation may be justified. Stop signs can, under certain conditions, effectively reduce 85th percentile speeds along a useful stretch of roadway. Therefore, they can provide a secondary function in traffic calming. However, stop signs cannot be authorized for the purpose of traffic calming alone. The California MUTCD specifically prohibits the use of stop signs to control speed.



INTRODUCTION

The City of Lancaster Citywide Traffic Calming Policy is intended to address a felt need to calm traffic on two fronts: on neighborhood streets and on City arterials. This policy will provide constituents who have specific concerns about traffic impacts in their neighborhoods a process by which to mitigate those impacts. It will also provide the City with a basis and methodology for authorizing and implementing traffic calming measures on City arterials.

The goal of traffic calming is to restore and preserve a quality of life where traffic impacts are minimized to reasonable levels that are acceptable to constituents. Some of these impacts are noise, emissions, impeded driveway access and a pervasive sense among constituents that their street is not traffic-safe. Because these impacts are generally created by excessive speeds, excessive volumes and excessive cut-through traffic, traffic calming tools are employed to reduce speeds, reduce volumes or restrict access. Some of these tools are traditional traffic control devices, such as stop signs and turn restrictions, for which certain warrants are required to ensure the safe and orderly movement of traffic. However, many traffic calming tools such as speed humps and diverters are not traffic control devices that can be warranted into place. These types of traffic calming tools require consensus.

Traffic calming in local neighborhoods must therefore be community-driven to the extent and degree necessary to obtain consensus. A simple speeding problem on a street block, for instance, may only require a consensus among block constituents. But a neighborhood plagued by commuter traffic speeding on their streets may have to first put together a traffic calming plan, get support from the entire neighborhood and ultimately secure approval by the City Council.

Although traffic calming on City arterials has the same goal about quality of life, some traffic calming tools that work well on neighborhood streets are not applicable on arterials. As the primary and secondary conduits for circulation across the City and beyond, arterials must move high volumes of traffic in a safe, orderly and timely manner. Therefore, certain roadway widths, vehicle speeds and system connectivity need to be maintained on arterials in order for them to function as arterials. This policy provides guidelines for the review and establishment of design standards for the different types and designations of City arterials. The design standards must incorporate the appropriate traffic calming values and objectives in their application to specific types and designations of arterials. This policy also recognizes the need to carefully evaluate each traffic calming proposal in a way that preserves arterial integrity and protects adjacent residential neighborhoods from arterial traffic intrusion. A “Tool Box” of traffic calming measures that are acceptable in the City of Lancaster is included in Appendix A. The Tool Box includes a discussion of each tool’s advantages and disadvantages, parameters for use, implementation policy and procedure and graphic representation.



OBJECTIVE

The objective of the Lancaster Citywide Traffic Calming Policy is to improve the livability of City neighborhoods while maintaining a safe and efficient arterial street system that also complements the local neighborhood street system in traffic calming content.

PART 1

NEIGHBORHOOD TRAFFIC CALMING

STRATEGIES

- Reduce vehicle speeds on neighborhood streets with demonstrated speeding concerns to levels consistent with residential or business speed limits (25 mph) or other posted limits as determined by the Municipal Code or California Vehicle Code.
- Reduce traffic volumes to levels consistent with the environmental capacity of neighborhood streets.
- Reduce the proportion of cut-through traffic to a level consistent with the street's position in the neighborhood street network.
- Incorporate traffic calming elements in the design of streets for residential subdivisions and business parks.

When implementing the strategies, care will be taken to:

- Encourage wide and representative public participation throughout the process by seeking the input of affected residents and property owners through neighborhood meetings, written communication, workshops and public hearings before the City Council.
- Minimize potential impacts on emergency vehicle response times.
- Limit the potential of diverting traffic from one neighborhood to another.



PROCESS

The process by which a traffic calming concern is raised, initially reviewed and possibly mitigated is similar to the way that any other traffic concern or complaint is handled (Steps i, ii and iii below). The difference lies in the steps after Steps ii or iii, when a determination is made that the available solutions consist of discretionary measures which require a reasonable level of neighborhood support. From this point on, the process essentially becomes the responsibility of neighborhood constituents, with City staff lending technical advice and support.

If the traffic calming concern can be addressed with measures and tools that impact only a single street, City staff will select the appropriate traffic calming tool/s and establish local support through a constituent-driven petition process. Otherwise, if the concerns and potential solutions impact an entire neighborhood area, an area wide traffic calming plan is put together by neighborhood constituents through a committee. The area wide plan is developed with facilitation and technical support from City staff. Ultimately, it goes through a series of affirmations: first, informally through an open house event; second, formally through a neighborhood petition or survey; and last, through City Council action. Figure 1 on Page 7 is a schematic of the traffic calming plan development process from initial request to approval. Figure 2 on Page 9 continues the flowchart to show the steps involved in the implementation of a traffic calming plan.

Normal Routine

i – Request from Neighborhood

The City is requested to address a neighborhood traffic concern by a constituent or a group of residents, business and/or property owners (“Requestor”).

ii – Initial Review by Staff

Staff conducts an initial review of the request. A part of this review is to verify if the reported traffic concern also involves a traffic safety issue. The review may include traffic counts, speed surveys, field observations, and analyses of collision records.

iii – Possible Mitigation by Correction

If the request is found to involve a traffic safety issue, the City will take immediate steps to correct the traffic condition with any or all of the following actions:

- a. Implement a change in existing traffic controls
- b. Request for increased enforcement
- c. Increase public awareness of traffic conditions

The mitigation of adverse traffic conditions with the use of warranted traffic controls could also result in traffic calming. If concerns about traffic calming persist, or if it is



verified in Step ii above that the request involves traffic calming issues *only*, the City will move on to Step 1 below.

1 – Local or Area-wide

City staff will determine if the traffic calming issues are local in extent and whether the issues or their potential resolution would affect only one street or a street couplet and not a network of streets. If so, then a localized traffic calming measure can be investigated and resolved with minimal constituent involvement. An example is excessive speeding on a local street which can be addressed by installing speed humps. A valid and adequate petition for speed humps by residents on the street would be the extent of constituent involvement in this situation.

However, if the issues or their potential resolution would affect a network of streets, the process moves on to Step 2.

Traffic Calming Plan Development

2 – City Staff Meets the NTC

City staff will define the appropriate study area for traffic calming (“Plan area”) and ask the Requestor to form a Neighborhood Traffic Committee (NTC). City staff will provide the Requestor with a Constituents’ Neighborhood Traffic Calming Toolkit which will contain a copy of this Policy, instructions for the formation of the NTC, standard forms and related literature.

Once formed, the NTC will formulate a conceptual traffic calming plan which shall consist of a list of the neighborhood’s traffic concerns, a corresponding list of traffic calming tools that the NTC proposes to address those concerns, an outline of how the neighborhood intends to fund and implement the plan, a list of the heads of households within the Plan area with their respective contact information and a map that shows the Plan area boundaries and the points of application of proposed traffic calming tools. Upon completion, the conceptual plan will be presented by the NTC in a meeting with City staff and submitted to the City Traffic Engineer with a valid Petition for Traffic Calming. (See Exhibit 1 for a sample petition form.)

3 – First Workshop (Validation)

City staff will review the conceptual plan to gain a better understanding of the neighborhood’s concerns and collective sentiment. Further investigation may be conducted by City staff to validate or evaluate specific traffic issues cited in the conceptual plan, check the proposed traffic calming tools if appropriate, and identify other viable traffic calming measures, if any. This review may take anywhere from two to six months, depending on the size of the Plan area and the complexity of the conceptual plan.

After completing the review, City staff will invite the NTC to a traffic calming workshop. At the workshop, staff will present its recommendations to the NTC and encourage discussion towards the identification of high priority concerns and any additional areas



for investigation. Specific tasks for NTC members and City staff will be assigned and a second workshop will be scheduled. Some of these tasks may involve NTC-conducted neighborhood surveys and mini-workshops to determine the collective priorities, inclinations and issues among constituents. Other tasks may involve the securing of such clearances from other public agencies, such as the Los Angeles County Fire Department and the Sheriff's Department, whose services may be impacted by the traffic calming measures being proposed.

4 – Second Workshop (Consensus)

Any submittals required from the NTC in preparation for the second workshop with City staff must be made at least two months prior. At this workshop, the NTC will endeavor to arrive at a consensus on a preliminary traffic calming plan that can be presented for review and comment to the neighborhood-at-large. To help in this task, City staff will present an evaluation of viable options, discussing potential benefits, costs, processes, timelines and other considerations.

The date and venue for a third iteration, the Open House event, will also be established at this workshop.

5 – Open House (Neighborhood Comment)

For a third iteration, an Open House meeting will be held where the NTC presents the draft of the traffic calming plan to their individual neighbors for reaction and comment. City staff will be in attendance to provide technical support.

Elements of the traffic calming plan will be on display via charts, tables and graphics. Each neighborhood constituent may come in at anytime during the open house hours and walk through the exhibits. The open house format allows each constituent the opportunity to examine the plan up close and ask questions of the NTC members and City staff who are on hand. Before leaving, each constituent will be requested to complete and submit a comment form.

City staff will collate all comments received at the Open House meeting and through any other designated media, if any. If the comments show that a majority of Plan area constituents generally support the Plan, the process moves on to Step 6. Otherwise, City staff will meet with the NTC to discuss the comments and facilitate a decision to go back to Step 3 or 4, or shelf the initiative for another time.

6 – Final Traffic Calming Plan

A final traffic calming plan will be prepared by City staff with due consideration of pertinent Open House comments. Depending on the size of the Plan area, the City Traffic Engineer will determine if either a petition or a survey will be conducted to formally establish the level of neighborhood support for the Plan. If a neighborhood petition is required, at least two-thirds of the households or business units in the Plan



area must be duly represented in the petition. The NTC will be responsible for collecting the petition signatures.

For a neighborhood survey, at least a third of the households or business units in the Plan area must return the survey forms, out of which a super majority, i.e. two-thirds of respondents, must be in support of the Plan. The City will be responsible for conducting the survey by mail and/or by other appropriate media.

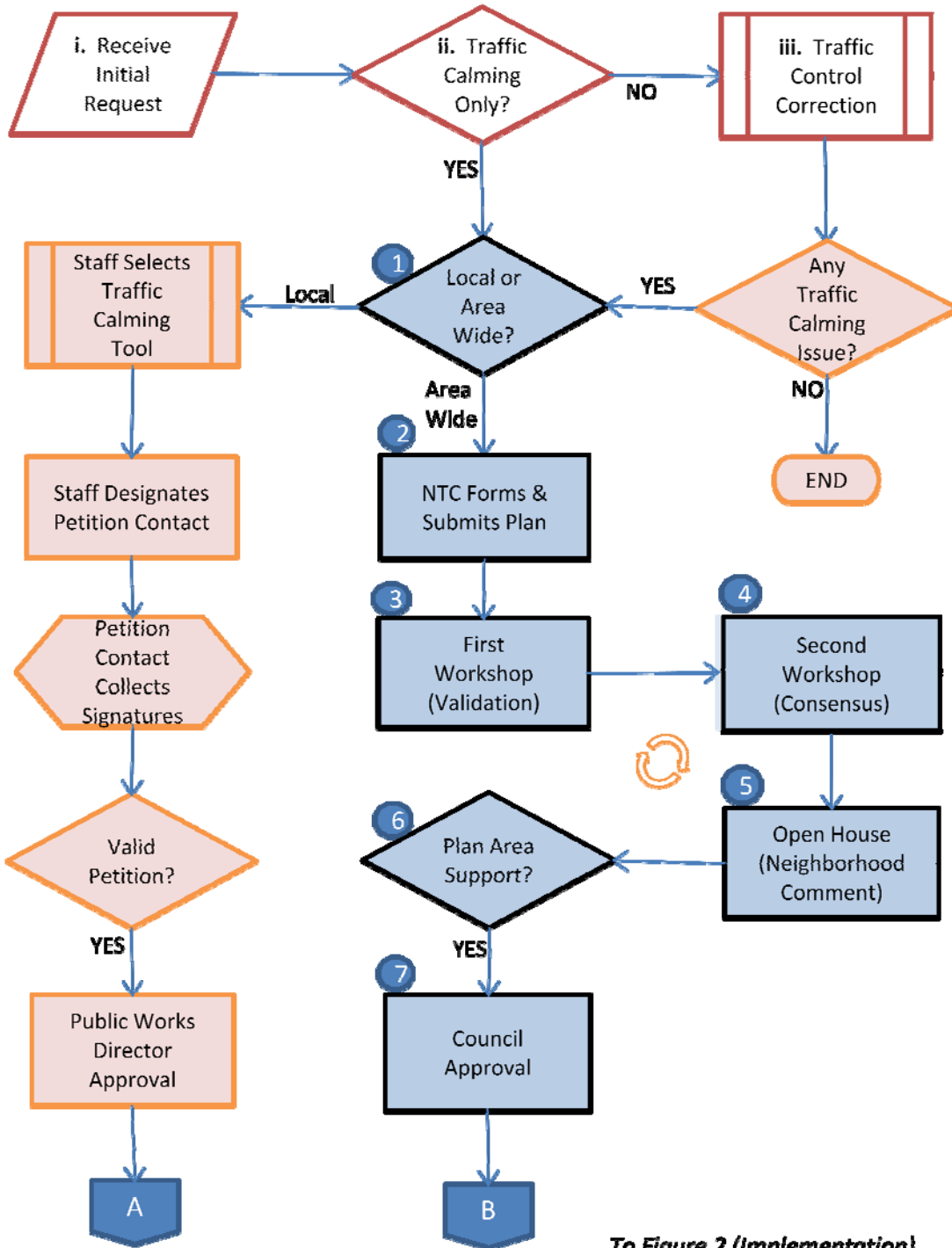
If the minimum support level is indicated, the process moves to Step 7. Otherwise, City staff will meet with the NTC to discuss the results and facilitate a decision to go back to Step 5 or 6, or shelf the Plan.

7 – Council Approval

The Plan shall be submitted to the City Council for approval. A staff report shall accompany the Plan, which will review the Plan's development process and recommend conditions for its implementation. The report may also recommend a trial period during which temporary installations of the Plan or parts thereof would be put in place.



Figure 1
NEIGHBORHOOD TRAFFIC CALMING
PLAN DEVELOPMENT



To Figure 2 (Implementation)



Implementation

Once approved by City Council, the Neighborhood Traffic Calming Plan may be implemented. If the approval is conditioned upon a successful trial, the Plan measures will be implemented with temporary installations. After a sufficient trial period has elapsed, an interim review will follow which would determine whether or not the traffic calming plan should be installed permanently.

The trial plan will be implemented by the City with temporary installations to simulate the operation of the traffic calming tools included in the Plan. Permanent installations of traffic calming devices will be implemented with funds provided by or on behalf of the Plan area constituency.

Petition Work by NTC

There may be traffic calming tools included in the Plan such as speed humps, raised median islands or mini-roundabouts which require specific street segment petitions independently of Plan approval. The NTC shall be charged with the responsibility of securing such petitions according to guidelines established by the Director of Public Works.

Work Orders and Private Contracts

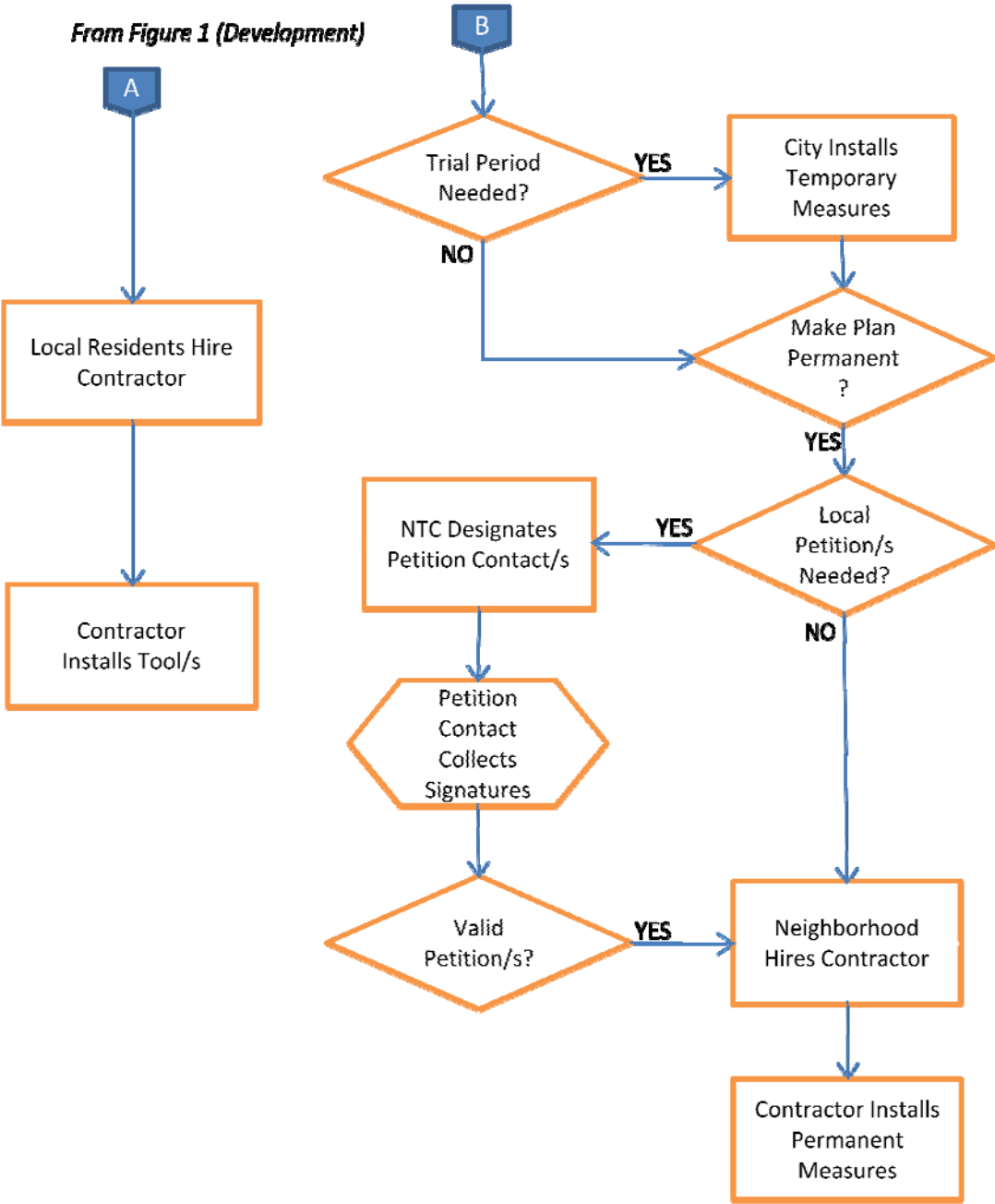
City staff will prepare the work orders for traffic control devices, *not traffic calming tools*, that complement or enhance the approved traffic calming plan, provided that California MUTCD installation criteria are met. All traffic calming measures and tools shall be constructed and installed by contractors hired by the neighborhood constituents through the NTC or other duly designated neighborhood representative.

Additional Outreach and Education

To facilitate the smooth implementation of certain traffic calming measures and prepare the public adequately, further outreach and education via available City media may be required.



Figure 2
NEIGHBORHOOD TRAFFIC CALMING
PLAN IMPLEMENTATION



CRITERIA FOR INTERVENTION

For purposes of scope, this Policy defines neighborhood traffic impacts as traffic-induced conditions that diminish the quality of life in local neighborhoods. Examples of these conditions are noise, air pollution, impeded driveway access and a general feeling that the street is unsafe for pedestrians, bicyclists and pets. Traffic safety is set apart and outside of this definition because it is the prime goal of traffic control and regulation, and its tools and procedures are already established in code at all levels of government.

Neighborhood traffic impacts are mostly attributed to excessive vehicle speeds, excessive traffic volumes and excessive cut-through traffic. While there may be other contributors of adverse impacts such as driver habits and attitudes, these three are parameters that can be measured with reasonable accuracy and there are practical tools available for reducing their levels significantly.

Therefore, the basic criteria for neighborhood traffic calming are the thresholds for speed, volume and cut-through traffic that define the line between what is acceptable and what is excessive.

1. SPEED

When vehicle speeds observed during a typical 24-hour period show an 85th percentile speed in excess of 10 miles-per-hour above the speed limit, evidence of excessive speeding is demonstrated. Therefore, traffic calming measures shall be considered to reduce the 85th percentile speed to within 10 miles-per-hour of the speed limit.

2. VOLUME

When traffic volume observed during a typical 24-hour period exceeds 2,000 vehicles on a residential local street or 10,000 vehicles on a residential collector street, or when peak hour volumes exceed 300 vehicles on a residential local street or 1,000 vehicles on a residential collector street, evidence of excessive traffic volume is demonstrated along those street segments.

For local and collector streets in business settings, the 24-hour volume thresholds shall be 5,000 vehicles and 20,000 vehicles respectively, and the peak hour thresholds shall be 1,000 vehicles and 2,000 vehicles respectively.

Streets are designated “local” or “collector” according to the circulation element of the General Plan. For purposes of this Policy, the City Traffic Engineer may make a finding that a designated local street is a “collector” if the street is observed to function as a collector street, or that a designated collector street is a “local” if the street is observed to function as a local street.



3. CUT-THROUGH TRAFFIC

Vehicular traffic that travels through one or a network of residential streets in-lieu of an equally or more direct and viable route to an arterial street is herein defined as cut-through traffic.

When the proportion of cut-through traffic exceeds 25% of the neighborhood street's total peak hour volume, evidence of excessive cut-through traffic is demonstrated. Actual measurement of the number of vehicles that neither begin nor end their trip within a certain segment of street is generally difficult and impractical. For purposes of this criterion, a finding can be made that evidence of excessive cut-through traffic is sufficiently demonstrated when:

- a. On residential local streets, peak hour traffic on the study street exceeds by more than 25% the peak hour traffic on a parallel, residential local street that shares at least one common feeder street and the study street has an observed peak hour traffic volume in excess of 200 vehicles.
- b. On residential collector streets, peak hour traffic on the study street exceeds by more than 25% the peak hour trip generation (based on average rates published by the Institute of Transportation Engineers) of the residential units with access on streets that are within an eighth-mile of the collector and are so connected as to potentially feed traffic to the study street.

In spite of any determination described above, if the study street is so configured in such manner that it is the only route available for traffic originating from neighborhood areas on either end, then there cannot be a finding of excessive cut-through traffic on the study street.

In addition, cut-through traffic shall not be applied as a criterion for intervention on any street in a business setting, whether office, commercial, industrial or institutional.



DESIGNING TRAFFIC CALMING IN NEW DEVELOPMENT

With large undeveloped areas in its jurisdiction, the City of Lancaster has the opportunity to incorporate traffic calming values in the design of residential and business neighborhoods such as housing tracts, office parks and commercial/industrial complexes. The neighborhood street network can be laid out in a configuration that discourages excessive speeding behavior, precludes congestion and minimizes the potential for excessive cut-through traffic. Where the neighborhood street network design cannot be fully exploited for traffic calming purposes, roadway features that limit sight distance, increase side friction and markedly impress the residential or business character of the neighborhood upon the motorist can be stipulated as project approval conditions for tract maps, site plans, conditional use permits and other development review cases filed with the City for discretionary action.

1. Street Network Elements

- a. Short Segment – a straight, uninterrupted street segment should not exceed 660 feet between cross street centerlines. Short segments diminish the opportunity for vehicles to gather speed.
- b. Curve – horizontal and vertical curves should be utilized on longer, uninterrupted street segments. The curve should be of such radius as to limit the sight distance from any cross street between 150 and 300 feet. A limited sight distance forces slowing of vehicle traffic.
- c. Elbow and Tee – intersections should be limited to 90-degree elbows and tees whenever practical. Right angle turns force slowing.
- d. Dead End – a short-stemmed dead end (e.g., cul de sac), serving as a greenbelt access point, can discourage cut-through while preserving a neighborhood's walkability. A dead end is short-stemmed if a driver along the cross street can tell that it is a dead end without the aid of signs and without having to turn into the dead end street. Dead end streets discourage cut-through traffic.

2. Roadway Features

- a. Median island – a landscaped median island may be added to break a long and uninterrupted, straight segment of street, or at approaches to intersections.
- b. Curb extension - street corners may have the curb extended into the roadway to discourage fast turns around the corner. Curb extensions also shorten street crossing distances for pedestrians.
- c. Raised crosswalk – an elevated crosswalk can lend higher visibility to pedestrians and slow traffic on approaches to intersections.



- d. Speed hump – properly designed and installed, speed humps can “enforce” neighborhood speed limits at all hours every day of the week.
- e. Mini-roundabout – four-legged intersections may be considered if controlled with a mini-roundabout (modern traffic circle). Mini-roundabouts are superior to stop sign control in assigning right-of-way safely and efficiently. They also force slowing of vehicle traffic.
- f. Gateway – medians, curb extensions, mini-roundabouts, monuments and arches may be placed at entrances to residential neighborhoods to demarcate the local street network from the arterial roadway system, serving as a visible reminder for motorists to adapt their driving attitude and behavior to the changed environment.
- g. Paths and Trails – bike paths and trails within parkways promote human activity alongside the street, reinforcing the neighborhood’s “peopled” character.

STANDARD DRAWINGS AND SPECIFICATIONS

In general, the design and construction of traffic calming devices shall comply with Caltrans Standard Plans and Specifications. Any other drawings and specifications that may be required to ensure the proper application, design and construction of traffic calming devices shall be established by the Director of Public Works.

A few traffic calming devices, such as speed humps and mini-roundabouts are standardized for uniformity of application. For these types of traffic calming tools, the Director of Public Works shall establish specific standard drawings and specifications.

The design and construction of other types of traffic calming tools should be specific to their application and must be submitted for approval by the Director of Public Works through the City’s plan check process.



PART 2

TRAFFIC CALMING ON ARTERIALS

STRATEGIES

- Regulate vehicle speeds on arterial streets within levels consistent with the specific types and designations of arterials in the City of Lancaster.
- Restore and maintain levels of service at LOS D or better at all segments and intersections of arterials through access management, signal coordination and geometric intersection control alternatives.
- Implement selective enforcement initiatives at arterial street locations where speeding and speeding-related traffic collisions have been documented.
- Incorporate traffic calming elements in the design and construction of arterials consistent with each type and designation.

When implementing the Policy Strategies, care will be taken to:

- Encourage business owner participation throughout the process by seeking the input of affected businesses, interested business associations, and non-resident property owners through written communication, open forums, workshops and public hearings.
- Minimize impacts on emergency vehicle response times caused by implementation of arterial traffic calming measures.
- Minimize the potential of diverting traffic from the arterial street system to residential neighborhoods when implementing traffic calming measures.
- Keep the general public informed throughout the process.

PROCESS

While the basic concept and need for arterial traffic calming shares some commonality with that of neighborhood traffic calming, the process by which arterial street concerns are identified, reviewed, and possibly mitigated differs widely from that of neighborhood traffic calming.

This is most evident from the nature and purpose for the arterial street system when contrasted with the neighborhood street layout. Neighborhood streets provide immediate access to residences through localized circulation, while arterial streets provide travel routes between neighborhood areas, business districts, industrial parks,



commercial centers and neighboring communities. As such, arterials must operate at higher traffic volumes and speeds.

Because arterials traverse neighborhood areas and districts across the City, the stakeholders in the arterial traffic calming process are as diverse as those areas and districts. Therefore, arterial traffic calming is a City-wide public concern and the process is simply an extension of the series of planning and engineering steps through which many public works projects are proposed, evaluated, approved and implemented.

More than the process which is already established, this Policy provides the guidelines by which traffic calming needs on arterial streets may be identified and by which traffic calming goals, values and elements shall be incorporated in the design, construction and operation of the City's arterial street system.

CRITERIA FOR INTERVENTION

Due to inherently higher speed limits posted on arterial streets, the impacts of excessive vehicle speeds only become apparent when speed-related collisions occur. Therefore, the amount of collisions can be a reliable indicator of when and where intervention may be called for. Still, "if it ain't broke, don't fix it" is not an adequate rule to go by in managing arterials because the consequences of arterial collisions can be catastrophic if not fatal. The absence of a collision history does not guarantee that an arterial is safe and livable. Therefore, the major contributor to arterial collisions - excessive vehicle speeds - should also be considered as sufficient cause for intervention.

1. COLLISIONS

Traffic collisions already trigger public agency intervention because they are a public safety concern. Law enforcement officers look to collision reports to identify hot spots for special enforcement action. City traffic professionals review collision records to focus on locations that may need traffic control corrections. When safety thresholds are exceeded, these public agencies employ engineering, education and enforcement measures designed to improve traffic safety. Therefore, as a criterion for traffic calming intervention, the threshold for collisions needs to be at a higher standard than the safety threshold.

For purposes of this Policy, a finding for traffic calming intervention can be made if the collision rate at an intersection or along a segment of the arterial street exceeds the county-wide expected rate as reported by Los Angeles County by more than ten percent.

2. SPEED

Speed limits on arterial streets are generally established on the basis of the 85th percentile speeds observed during an engineering and traffic survey. Therefore, as the driving population travels at even higher speeds than before, speed limits rise with rising 85th percentile speeds. From a legal and traffic engineering



standpoint, these speed limits are appropriate for traffic operation and should remain as the thresholds for law enforcement. For traffic calming intervention, however, the threshold for excessive vehicle speeds on arterials should be defined in terms of the “livable” speed limit for the specific type and designation of the arterial.

For purposes of this Policy, a finding for traffic calming intervention can be made if the 85th percentile speed observed during a typical 24-hour period exceeds the livable speed limit for the arterial by more than 10 miles-per-hour.

LIVABLE SPEEDS

The livable speed limit for a given City arterial shall correspond to its traffic calming designation. For this purpose, each City arterial in the Master Plan of Streets and Highways shall have added to its description a property that denotes its traffic calming designation. The Departments of Planning and Public Works shall jointly recommend each City arterial’s traffic calming designation to the City Council for approval.

Livable speed limits are:

- 35 Miles Per Hour – Urban Residential/Business Arterial
- 40 Miles Per Hour – Rural Residential Arterial
- 45 Miles Per Hour – Rural Non-Residential Arterial
- 50 Miles Per Hour – Secondary Expressway in undeveloped area
- 55 Miles Per Hour – Primary Expressway in undeveloped area

In determining an arterial’s traffic calming designation, the following criteria shall be considered:

1. Function – the current role of the arterial in the circulation system
2. Adjacent land use – current land uses served by the arterial
3. Integrity – the degree to which access points are restricted
4. Critical speed – the livable speed limit should not be lower than 10 miles per hour below the 85th percentile speed

DESIGN ELEMENTS FOR NEW ARTERIALS

In order for an arterial to have traffic calming attributes, certain elements need to be incorporated in its geometric design. Roadway designers have traditionally known these elements as items to guard against or eliminate because they tend to reduce speeds or even create a safety hazard. In traffic calming, roadway designers are asked to carefully place them back in the design, at the right places and the correct amounts, so that excessive speeds are discouraged while maintaining the safety and capacity of arterials.



1. Side Friction

Increasing side friction along arterials to a level of slight discomfort for the driver can lower vehicle speeds. Narrower lanes and roadways are common ways to increase side friction. Parking lanes and roadway edge delineation also increase side friction. High curbs can also increase side friction.

2. Sight Distance Limitation

Given specific roadway conditions, there are minimum sight distance requirements that must be met for traffic safety. However, at the other end of the spectrum, excessive sight distance can give drivers a false confidence of being in complete control of the roadway which, in turn, leads to inattention - a potential hazard. Appropriately limited amounts of sight distance along an arterial can keep drivers alert and attentive to the roadway, and discourage excessive speeding. Median plantings offer a way to reduce excessive sight distance to near the minimum required for traffic safety. Horizontal and vertical curves can also limit sight distance. The topography of Lancaster does not offer many opportunities for curved roadways, so whenever feasible, every chance to utilize curves should be explored to regulate sight distance along an arterial.

On straight-aways, some drivers tend to look beyond the traffic signal they are approaching to the next one or two ahead. Facing a series of green indications, they are tempted to speed up under the mistaken notion that doing so would take full advantage of the signal progression. The use of programmed visibility heads and visors should be considered on traffic signals to limit a driver's sight distance to only the amount required for traffic safety.

Another way to regulate sight distance is to place a visual obstruction at the center of the roadway itself. This type of sight distance restriction is a key attribute of the modern roundabout which slows approaching traffic while assigning right-of-way at intersections of arterials. The safety record of roundabouts as documented by the Insurance Institute for Highway Safety is superior to traffic signals. This Policy requires that the alternative geometric control offered by a roundabout be investigated concurrently with any proposed traffic signal project, including signal upgrades that would cost over \$200,000.

3. Managed Access

Each point of access to an arterial introduces points of potential conflict between traffic movements. As such, arterial access needs to be managed carefully and correctly, so that the arterial's integrity is not compromised, allowing it to fulfill its volume-carrying function with safety and efficiency. Without undermining traffic safety, managed arterial access can be utilized for traffic calming purposes. In particular, access that creates the potential for the relatively more benign types of potential conflict, such as sideswipes and rear end collisions, can be allowed or



promoted as alternatives to existing types of access, such as full-service driveways, which create the potential for more devastating right angle collisions.

Therefore, a right turn ingress and egress driveway to provide access off an arterial may be considered at points other than the usual quarter-mile for major arterials, or the eighth-mile for secondary arterials. Although right turn ingress or egress movements pose the potential for sideswipes and rear-end collisions, their likelihood can be significantly diminished by the application of sound traffic engineering design. To physically enforce limited access, channelized raised medians should be installed on the arterial.

4. Off-Road Enhancements

To some extent, the perception of excessive speeding on arterial roadways is brought about by the reaction to the ambience that the layout and physical attributes of the off-road facilities create. For instance, pedestrians walking on paths and trails buffered from the roadway by space or vegetation would hardly notice or be concerned with traffic on the highway. In contrast, those on a sidewalk next to the curb who hear engines drone and feel the wake of traffic on their faces would tend to wonder if perhaps traffic is going too fast.

Where an arterial traverses areas with the potential for moderate to high pedestrian activity, there should be parkways instead of sidewalks. Pedestrian and bicycle paths, walkways and trails shall be sufficiently offset from the curb and/or buffered with vegetation so as to provide pedestrians a sense of being detached from highway traffic.

5. Intersection Control

Livable speeds can be promoted by designing appropriate intersection controls along an arterial. A series of traffic signals can be timed and coordinated to progress traffic along an arterial at the desired speed. Drivers who tend to speed would quickly realize that travel at the posted speed limit increases the likelihood of their going through a series of green light indications without interruption. Drivers who continue to speed above the livable speed would be out of synch with the signal progression and consequently experience more delay.

Roundabouts can be interspersed with traffic signals along major highway corridors to slow vehicle speeds without adversely impacting arterial capacity. When properly positioned in the arterial network, roundabouts have the unique ability to provide safe U-turn opportunities, thereby facilitating conflict point reduction at minor street intersections and commercial driveways by restricting arterial access to right turn movement only.

6. Interim Treatment for Arterials in New Developments

As a condition of approval for commercial or residential development, project owners and proponents are generally required to dedicate right of way and



improve adjacent streets. The usual condition would have the street constructed with curb and gutter and paved to a width that is, in the case of arterials, 20 feet beyond the street's centerline, unless the other half of the street has already been improved by an earlier development project. Too often, this process has led to a fully-improved arterial having a capacity for four or six traffic lanes long before there is an actual traffic demand for such a capacity. The end result is a wide open arterial that invites speeding behavior.

To preclude the scenario described above, this Policy prescribes an interim treatment for arterials whereby the roadway will be paved only up to the width necessary to handle the post-project traffic volume plus ten percent. Street dedication and all other street improvements will still be at ultimate right of way alignments and locations. Conceivably, this treatment would start off a brand new arterial with a two-way roadway along the developed side of the public right of way, leaving the rest unimproved. As development occurs on the other side, a similar roadway would be built along that side of the public right of way, leaving an unimproved area between the roadways. Eventually, the arterial would be fully improved by the City to satisfy traffic demand, with funds earlier deposited by development projects in lieu of paving the roadway 20 feet beyond the street centerline.



EXHIBIT 1

PETITION FOR TRAFFIC CALMING

To: City Traffic Engineer

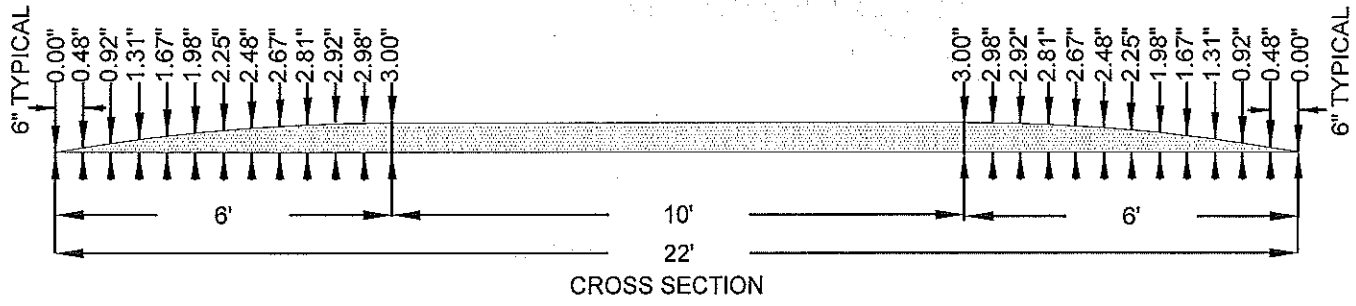
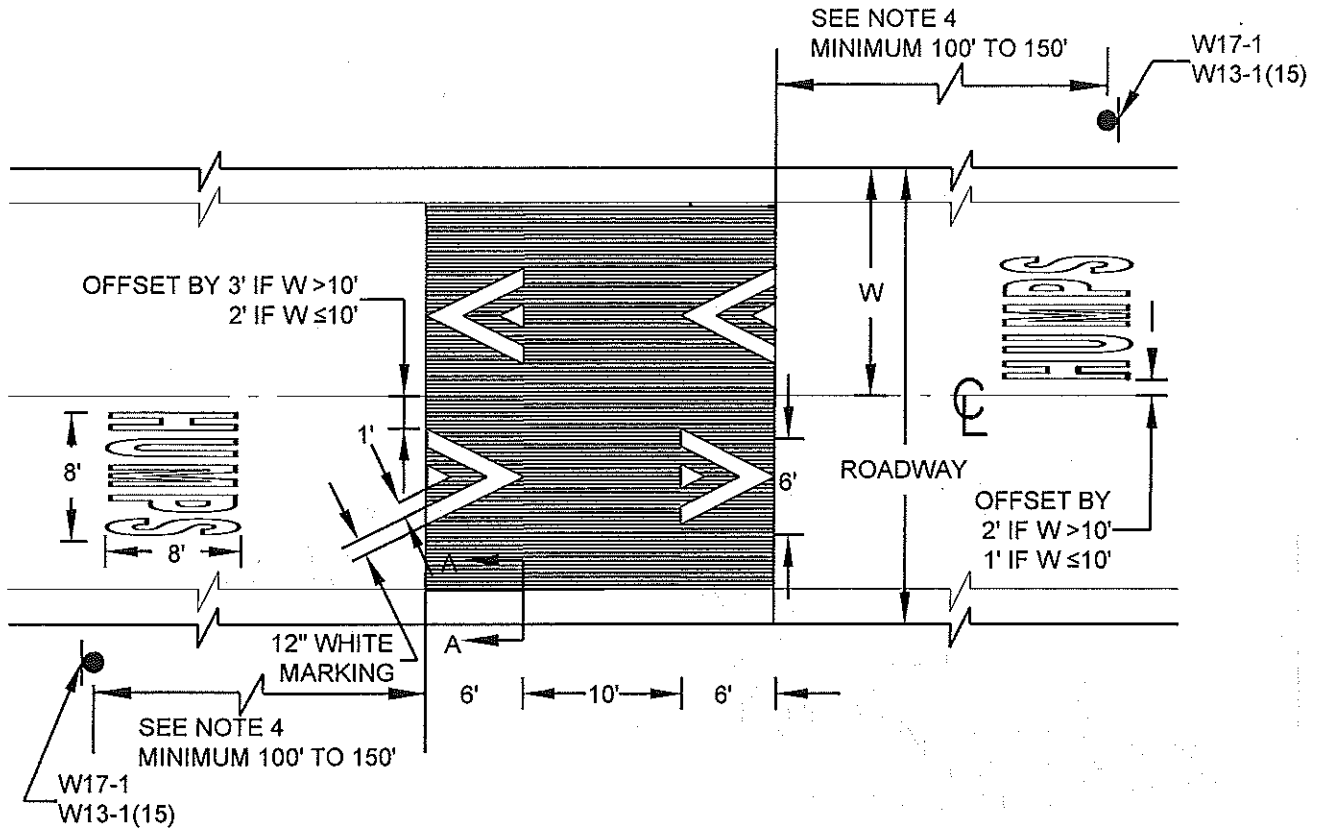
NAME OF NEIGHBORHOOD	NTC CONTACT PERSON NAME	
PLAN AREA BOUNDARIES	ADDRESS	PHONE
		E-MAIL

The undersigned who comprise a quorum of the Neighborhood Traffic Committee (NTC) for the above-named neighborhood, hereby petition the City of Lancaster to consider for review, development and approval, the traffic calming plan described in the Conceptual Traffic Calming Plan (Plan), prepared according to the City's Traffic Calming Tool Kit and submitted herewith. By our signatures below, we affirm that this petition, in object and content, represents the initial consensus of the Plan Area constituents represented by the NTC membership.

NAME	MEMBERSHIP	SIGNATURE	DAYTIME PHONE
	<i>Primary</i>		
	<i>Alternate*</i>		
	<i>Primary</i>		
	<i>Alternate*</i>		
	<i>Primary</i>		
	<i>Alternate*</i>		
	<i>Primary</i>		
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	<i>Alternate*</i>		
	<i>Primary</i>		
	<i>Alternate*</i>		
	<i>Primary</i>		
	<i>Alternate*</i>		

*List all NTC members above. An alternate member's signature will count only if the primary member's signature is absent.

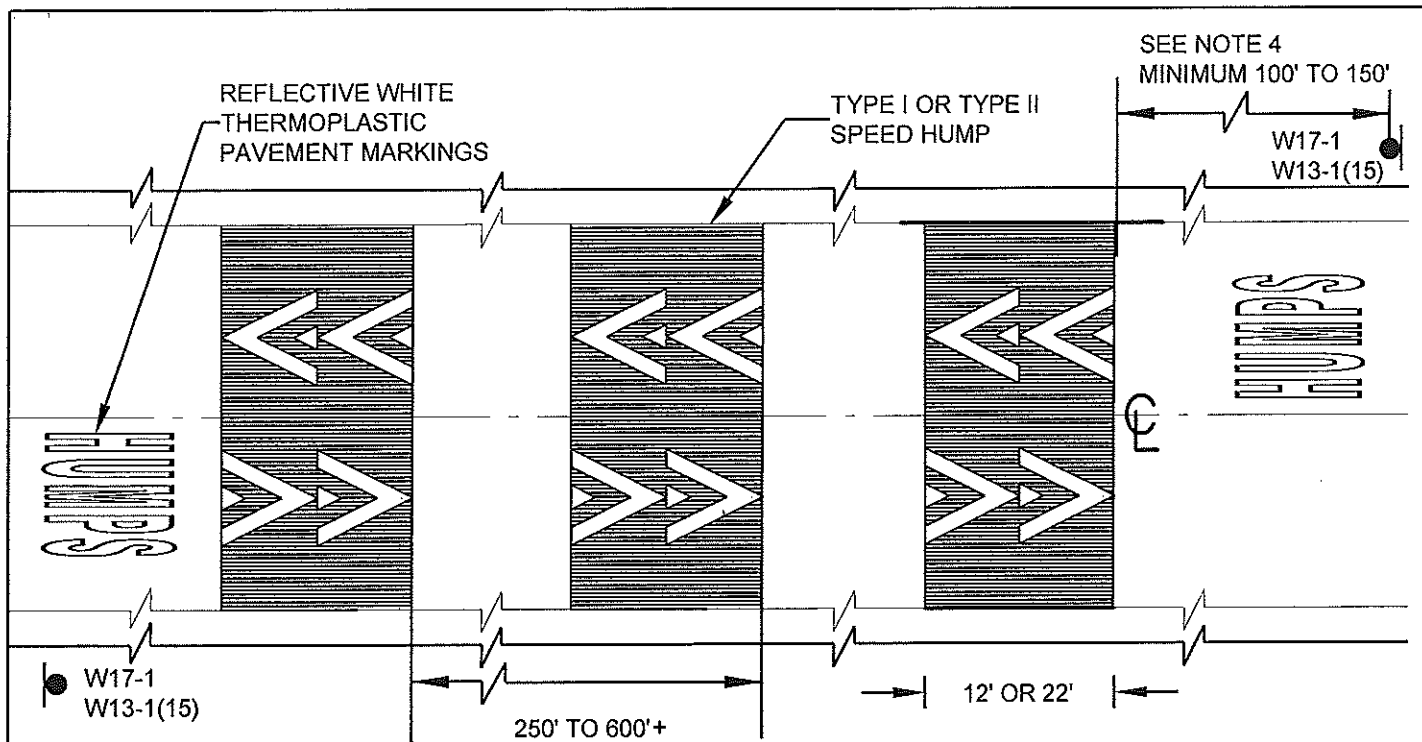
FOR CITY STAFF ONLY					
Iteration	First	Second	Open House	Neighborhood	City Council
Date Recd					
Date Held					
Posted By					



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it's positively clear.

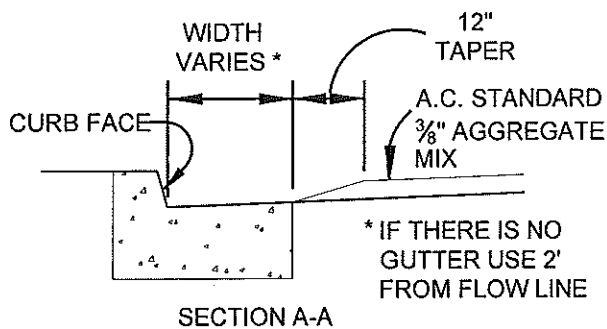
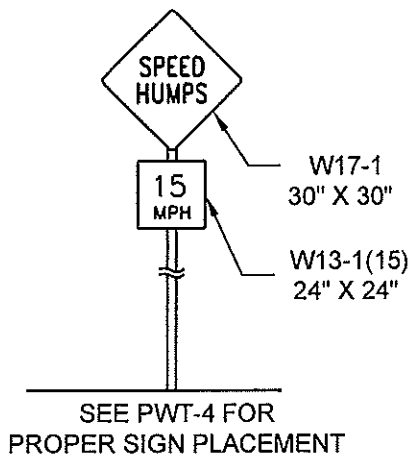
DEPARTMENT OF PUBLIC WORKS		
STANDARD PLAN		
SPEED HUMP TYPE I & TYPE II 3" HIGH X 12' OR 22' WIDE	PWT-8	2/3

NOT TO SCALE



SPEED HUMP INSTALLATION NOTES

1. SPEED HUMPS SHALL BE INSTALLED ONLY WHEN AUTHORIZED BY THE CITY TRAFFIC ENGINEER. INSTALLATION SHALL CONFORM TO THE LATEST CITY OF LANCASTER AND CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES STANDARDS.
2. SPEED HUMPS SHALL NOT BE PLACED OVER MAINTENANCE COVERS, WATERGATES, JUNCTION CHAMBERS ETC.
3. EDGE OF SPEED HUMPS SHOULD BE 5' OR MORE FROM EDGE OF DRIVEWAY OR CATCH BASIN.
4. EXACT LOCATION AND TYPE OF SPEED HUMP AND SIGN LOCATION SHALL BE DETERMINED BY CITY OF LANCASTER PUBLIC WORKS TRAFFIC ENGINEERING DIVISION.
5. ASPHALT JOINS SHALL BE ACCOMPLISHED BY FEATHER EDGING.
6. ACCEPTABLE TOLERANCE FOR 3" HEIGHT OF THE SPEED BUMP IS $\pm \frac{1}{4}$ ".



NOT TO SCALE

lanaster  ca
it's positively clear.

DEPARTMENT OF PUBLIC WORKS

STANDARD PLAN

SPEED HUMP TYPE I &
TYPE II 3" HIGH X 12'
OR 22' WIDE

PWT-8

3/3

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Appendix A

NEIGHBORHOOD TRAFFIC CALMING TOOL BOX

The neighborhood traffic calming devices or “tools” described in the following pages comprise most of the tools that are acceptable in the City of Lancaster. Their application shall be limited to neighborhood local and collector streets only. They are not applicable on arterials, alleys and drive aisles in parking lots.

In addition to meeting the general criteria for traffic calming intervention discussed in the text of this Policy, each tool must meet other criteria which relate to its suitability of application to specific conditions. The more typical of these criteria are listed under the “Guidelines” heading on the tool page.

The Director of Public Works may consider other traffic devices, roadway and off-roadway features that can be used for traffic calming purposes on a case-to-case basis.



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Education and Enforcement

Description:

Education and enforcement are traffic calming measures that can be applied during the entire traffic calming process. The measures include workshops, speed trailers, speed feedback signs, and traditional enforcement.

Purpose:

The primary purpose is to inform and educate citizens and motorists of traffic calming measures.

Effectiveness:

Education is very effective in developing a better understanding of neighborhood traffic calming, and enforcement is effective in promoting compliance with traffic laws.

Cost:

Cost for education and enforcement varies from \$200 to \$11,000, and is generally measured in person-hours.

Parking Impacts:

None.

Emergency Service Impacts:

None.

Noise Impacts:

None.

Other Considerations:

Depending on the level of neighborhood support for the measure, ongoing enforcement may be required.

Guidelines:

Education and enforcement are an integral part of any traffic calming plan. In some cases, education and enforcement may be imposed as a prerequisite to the final implementation of any formal Neighborhood Traffic Calming Plan.



Education - Workshop

Description: Activities that inform and seek to modify driver behavior. Techniques include printed information, meetings and workshops with staff, interaction with neighbors, enforcement activities, school programs, public outreach, etc.



Advantages	Disadvantages
<ul style="list-style-type: none">• Can be relatively effective and inexpensive.• Involves and empowers citizens.• Works well with other mitigation tools.	<ul style="list-style-type: none">• Not likely to be as effective on non-neighborhood traffic.• May be difficult to measure effectiveness.• Can be time consuming.• May take time to be effective.• Effectiveness may decrease over time.



Education - Radar Speed Monitoring Trailer

Description: Mobile radar display advises motorists of their speed.



Advantages	Disadvantages
<ul style="list-style-type: none">• Good educational tool.• Very good public relations tool.• Quickly deployed.	<ul style="list-style-type: none">• Requires periodic enforcement.• Effective for limited duration.• Frequent movement can be costly.



Education - Speed Feedback Sign

Description: Pole mounted display advises motorists of their speed.



Advantages	Disadvantages
<ul style="list-style-type: none">• Good educational tool.• Very good public relations tool.• Particularly useful in school zones where speed limits change at certain hours of the day.	<ul style="list-style-type: none">• Requires periodic enforcement.• Effective for limited duration.• Is not easily moved.



Enforcement - Traditional

Description: Periodic enforcement of speed limits, turn restrictions and other traffic laws by police.



Advantages	Disadvantages
<ul style="list-style-type: none">• Good temporary public relations tool.• Citations can deter speeding and other undesirable driver behavior.	<ul style="list-style-type: none">• Residual effect is minimal.• Enforcement can be costly.• Takes officers away from crime prevention.



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Roadway and Lane Narrowing

Description:

Curb extensions (also called bulbouts or chokers) narrow the roadway by pulling the curb toward the centerline. Striping treatments can also create traffic lane narrowing.

Purpose:

These roadway design features are employed to slow traffic and shorten pedestrian crossing distances.

Effectiveness:

Roadway and lane narrowing influence driver behavior by introducing choke points along the street and changing its overall appearance. Curb extensions at intersections effectively reduce a crossing pedestrian's exposure to vehicle conflict. They also reduce the likelihood of fast turns around corners, enhancing a neighborhood street's walkability.

Cost:

Curb extensions cost about \$25,000 (retrofit).

Parking Impacts:

Parking impacts will vary with the design. Each curb extension would require roadway space and a transition area that might otherwise be available for on-street parking.

Emergency Service Impacts:

Insignificant, provided a 20-foot clear berth is maintained.

Noise Impacts:

None.

Other Considerations:

Where the crowns of the street are steep, curb extensions may actually go "uphill" because the new curb is higher than the original curb. This and other street drainage issues should be considered during the design.

A walkway feature should be incorporated into the narrowing design to provide for pedestrian activity when conventional sidewalks are not present.



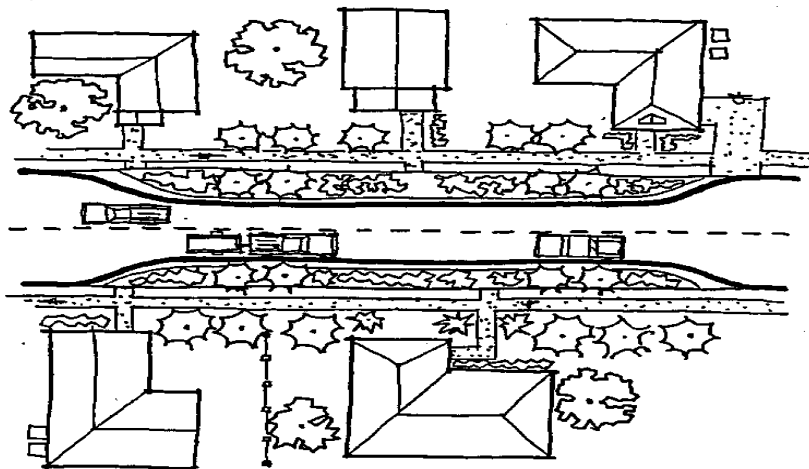
Guidelines:

Curb extensions may be considered only for neighborhood streets with no more than one traffic lane in each direction. At intersections, there should be only one approach lane and one departure lane within a minimum of 150 feet from the intersection centerline. Any median between the opposite lanes should be raised or otherwise textured or constructed so as to preclude vehicle travel.



Roadway Narrowing – Choker

Description: The roadway width is physically narrowed by pulling the curb toward the street centerline. The example below shows a *choker*, which is a mid-block application of a curb extension.



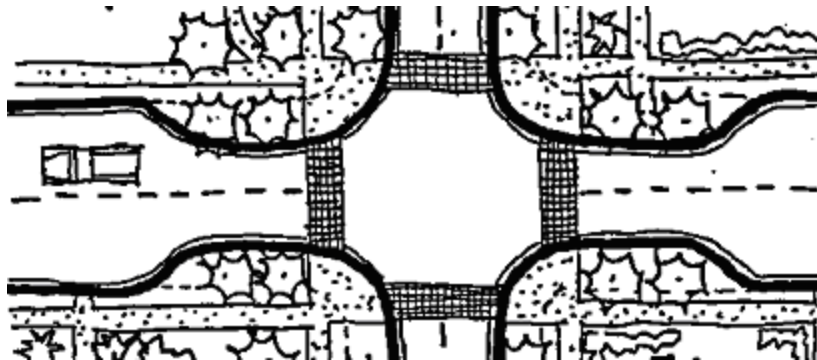
PLAN VIEW

Advantages	Disadvantages
<ul style="list-style-type: none">• Minimal inconvenience to local traffic.• Provides landscaping option.• Minimal impact on emergency response vehicles.	<ul style="list-style-type: none">• Drainage issues increase cost.• Reduces on-street parking space.• Increases maintenance if landscaped.• Can restrict driveway access.



Roadway Narrowing - Bulbout

Description: Curb extensions applied at the intersection are also called *bulbouts*.



PLAN VIEW

Advantages	Disadvantages
<ul style="list-style-type: none">• Shorter pedestrian crossing.• Provides landscaping option.• Minimal impact on emergency response vehicles.• Curtails fast corner turns.	<ul style="list-style-type: none">• Requires complex design on streets with bike lanes.• Increased maintenance if landscaped.• Drainage issues can increase cost.• Could impact on-street parking.



Lane Narrowing - Striping

Description: Striping treatment to create a narrowing effect on the roadway and increase driver awareness. This example uses a painted median and roadway edge treatment that also defines space for bicyclists.



Advantages	Disadvantages
<ul style="list-style-type: none">• Relatively low cost.• May reduce speed.• Edge treatment reduces potential vehicle conflict with bicyclists and pedestrians.• Low maintenance.	<ul style="list-style-type: none">• May not reduce vehicle speeds by as much as other measures.



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Raised Median

Description:

For neighborhood street applications, a raised median is a small island of short length, installed midblock or on the approach to an intersection. Typically constructed with concrete curb around an area of roadway, it can sometimes provide an opportunity for landscaping.

Purpose:

These roadway design features are intended to narrow the roadway and break up the linear appearance of the street. These features are employed to discourage cut-through traffic and slow traffic in the vicinity of the median treatment.

Effectiveness:

To the extent that they narrow traffic lanes, medians can reduce vehicle speeds. They can also reduce vehicle-pedestrian conflicts by offering a place of refuge in the middle of the street.

Cost:

Neighborhood raised medians can cost from **\$5,000 to \$20,000** depending on size and landscaping treatment.

Parking Impacts:

To be effective, medians should be wide enough to narrow down the traffic lane on either side. Consequently, on-street parking adjacent to the median would be restricted.

Emergency Vehicle Impact:

A raised median would impact emergency response vehicles whose access can be restricted if there is no 20-foot clear berth on either side of the median. Because most neighborhood streets are only 40 feet wide or less, it is nearly impossible to consider raised medians at all. However, on a case-to-case basis, the Fire Department may accept raised medians with mountable curbs and aprons.

Other Considerations:

Drainage is usually not an issue with medians. However, they can be unfriendly to bicyclists. Also, medians tend to force vehicles closer to sidewalk/parkway areas and closer to homes.

A walkway feature should be incorporated into the narrowing design to provide for pedestrian activity when conventional sidewalks are not present.

Guidelines:

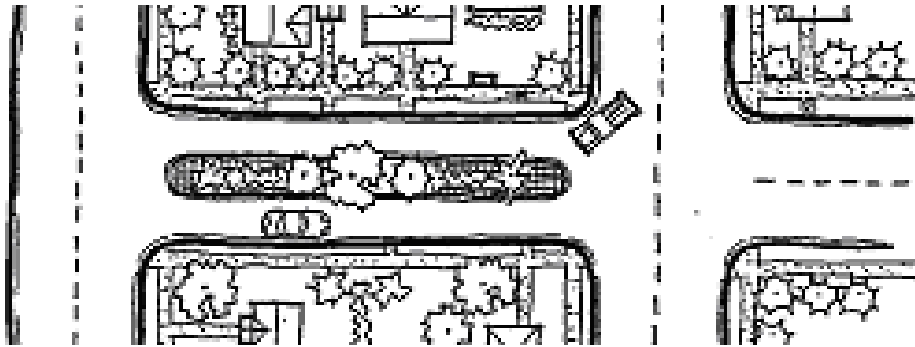


Raised medians that create lanes less than 20 feet wide must have the approval of the Los Angeles County Fire Department.



Raised Median

Description: An island or barrier along the middle of a street that separates opposing traffic.



PLAN VIEW

Advantages	Disadvantages
<ul style="list-style-type: none"> May reduce vehicle speeds. Provides a refuge for crossing pedestrians. May improve streetscape if landscaped. Provides barrier between opposing traffic. 	<ul style="list-style-type: none"> Increased maintenance. Forces vehicle traffic closer to homes. Impacts street parking. Can restrict driveway access.



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Gateway Treatment

Description:

Gateway treatments consist of physical and textural changes to streets and are located at key entries into a neighborhood.

Purpose:

Gateway treatments create visual, and in some cases tactile cues that tell drivers they are entering a local residential area, business park or industrial area where a change to more courteous and relaxed driving attitude and behavior is expected by the local neighborhood constituents.

Effectiveness:

To unfamiliar drivers, a gateway treatment that is welcoming and hospitable can appeal to the benevolent side of human nature in the same way that a gracious host can elicit polite response from a guest that is courteously greeted at the door. Drivers who enter implicitly agree to measure up to the neighborhood's expectations, and those who cannot agree would choose not to enter. However, to familiar drivers, who usually are the local constituents themselves, gateway treatments have minimal influence. Their driving behavior would depend more on how they regard their neighbors.

Cost:

The cost of gateway treatments can range from approximately \$25,000 for a simple arch to \$250,000 for plaza-style entrances.

Parking Impacts:

On street parking adjacent to gateway could be impacted, depending on design.

Emergency Service Impacts:

None.

Noise Impacts:

Textured pavements will introduce some additional noise.

Other Considerations:

None.

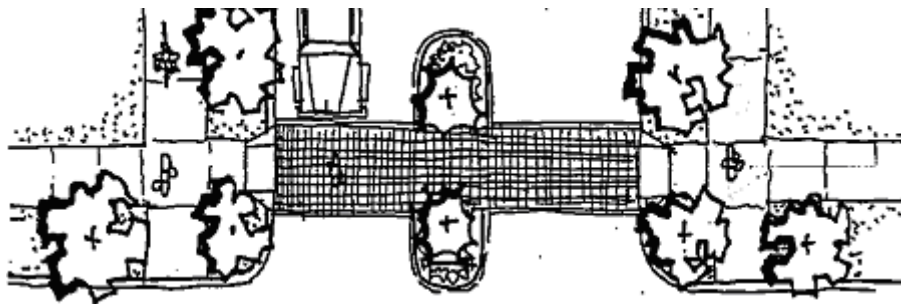
Guidelines:

Care should be taken not to let gateway treatments create delay in the flow of traffic along the adjacent arterial.



Gateway Treatment

Description: Treatment to a street that helps to communicate a sense of neighborhood identity. It may include signs or banners, landscaping, arches or other architecture.



PLAN VIEW

Advantages	Disadvantages
<ul style="list-style-type: none">• Visual alert for drivers to shift from highway commute mode to neighborhood visiting mode.• Reduces entry speed.• Helps give neighborhood a sense of identity and ownership.	<ul style="list-style-type: none">• Can be a high maintenance item for neighborhood.• May impact on-street parking.• With median treatments, potential for vehicles to clip or jump the median.



Mini-Roundabout

Description:

A mini-roundabout is a circular island in the center of a neighborhood street intersection. Traffic approaching the intersection yields to traffic already in the circular path around the island. Diverters channel entering traffic to go around the circular island in counter-clockwise fashion.

Purpose:

Mini-roundabouts are designed to assign right of way by forcing all traffic to enter the intersection in one direction at reduced speed. As such, they can be suitable traffic calming devices.

Effectiveness:

Mini-roundabouts are very effective at lowering speeds in their immediate vicinity. They are also very effective at reducing collisions at intersections.

Cost:

Mini-roundabouts can cost from \$30,000 to \$50,000 each.

Parking Impacts:

Due to the approach diverter islands associated with a mini-roundabout, 30-50 feet of on-street parking prohibitions may be required at all four corners of an intersection.

Emergency Service Impacts:

Emergency service response times can be slightly reduced by a mini-roundabout.

Noise Impacts:

Noise impacts are minimal.

Other Considerations:

Additional right of way may be required at the corners for the circular path.

Landscaping must be maintained to keep it from encroaching onto the circular path. ADA ramps may need to be relocated or modified.

Also, the change from stop sign control to all-way yield control should be carefully evaluated, especially if major and minor street approach volumes are about equal.

Guidelines:

Time and tips for drivers to learn to negotiate mini-roundabouts should be provided.



Mini-Roundabout

Description: Mini-roundabouts are raised circular islands at the center of neighborhood street intersections. Entering traffic yields to traffic already in the circular path where all traffic travel in a counter-clockwise direction until they exit.



Advantages	Disadvantages
<ul style="list-style-type: none">• Reduces potential vehicle conflicts.• Reduces speed at intersection.• Provides options for landscaping.• Reduces delay, noise and emissions due to stops.	<ul style="list-style-type: none">• May impede larger vehicles if not mountable.• May require additional lighting and signage.• May have right of way issues in built-up areas.• May have initial safety issues as drivers adjust.• Maintenance responsibility if landscaped.• Relative novelty generates initial resistance.



Speed Hump

Description:

A *speed hump* is a raised area of pavement that runs across the width of the roadway, installed to regulate vehicle speeds in neighborhood streets. Usually three inches in height and 12 feet along the line of vehicle travel, the profile of a speed hump is engineered to cause driver/passenger discomfort when negotiated at a speed greater than approximately 30 miles per hour. Another type of speed hump, the *speed table*, is 22 feet long. It has 10-foot flat top at mid-travel which provides a gentler ride. Speed tables are more suitable on higher-volume streets such as a collector, on a local street with significant truck traffic, or on a street that is part of the primary response route of emergency response vehicles.

During the years when U.S. cities just began using the speed hump for traffic calming, it was alternately referred to as a *speed bump*. Today, there is a clear distinction between a speed hump and a speed bump. The term speed bump now refers only to drive aisle devices commonly used in parking lots and garages to limit vehicle speeds at about five miles per hour. They are three or four inches high and only one to three feet long. They are not legal in some jurisdictions, including the City of Lancaster.

Purpose:

Speed humps are intended to reduce vehicle speeds on neighborhood streets (local and collector streets).

Effectiveness:

Speed humps are generally effective at keeping 85th percentile speeds within five miles per hour above the speed limit.

Cost:

Speed humps and tables cost approximately \$2,500 to \$3,500 each, depending on roadway widths.

Parking Impacts:

None.

Emergency Service Impacts:

Speed humps may slightly reduce emergency response times.

Noise Impacts:

Vehicles with unfastened loads may create rattling noises when going over humps.



Other Considerations:

Traffic may be diverted to other streets.

Guidelines:

In addition or in preeminence to the criteria for traffic calming intervention, the installation of speed humps may be authorized if the criteria listed below are all met:

1. The speed limit on the proposed street must not be more than 30 miles per hour.
2. The street must have no more than one exclusive traffic lane in each direction.
3. No speed hump may be installed on any street that is part of a regular transit route or a primary emergency response route.
4. Support from constituents on the proposed street segment must be demonstrated through a valid petition by at least two-thirds of the residential or business units, which petition is completed and submitted according to procedure established by the Director of Public Works.



Speed Hump

Description: A speed hump is a transverse raised area on the roadway. The first half rises to 3 inches over 6 feet and the second half falls to zero height over another 6 feet. The profile is designed to cause driver/passenger discomfort and even minor vehicle damage if negotiated at high speeds. Speed humps are more effective when placed in series over a length of roadway rather than singly.



Advantages	Disadvantages
<ul style="list-style-type: none"> • Reduces vehicle speeds. • Self-enforcing 24/7. • Relatively low cost. 	<ul style="list-style-type: none"> • May create noise from loose cargo. • May delay emergency vehicles. • May impact drainage. • Warning signs may be unsightly. • May cause some diversion.



Speed Table

Description: Speed tables are elongated speed humps. They are typically 22 feet in length with the 3-inch rise occurring over the first and last 6 feet and a 10-foot flat top in the middle.



Advantages	Disadvantages
<ul style="list-style-type: none">• Reduces vehicle speeds.• Self-enforcing 24/7.• Relatively low cost.• Suitable on streets that would otherwise not qualify for regular speed humps.	<ul style="list-style-type: none">• May create noise from loose cargo.• May delay emergency vehicles.• May impact drainage.• Warning signs may be considered unsightly.



Raised Crosswalk

Description: A speed hump or table designed as a pedestrian crossing.



Advantages	Disadvantages
<ul style="list-style-type: none">• Effective speed control at the installation.• Desirable pedestrian amenity.• May be designed to be aesthetically pleasing.	<ul style="list-style-type: none">• May create noise from loose cargo.• May delay emergency vehicles.• May entail drainage issues.• Drivers may speed up between humps.• Warning signs may be considered unsightly.



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Diagonal Diverter

Description:

Diagonal diverters are physical barriers that are placed diagonally across an intersection, closing off access to the other legs of the intersection without creating a dead-end.

Purpose:

Diagonal diverters are intended to discourage cut-through traffic by preventing through moves and imposing a circuitous route through a neighborhood.

Effectiveness:

Diagonal diverters are very effective in reducing traffic volume, including cut-through traffic.

Cost:

Diagonal diverters cost approximately \$10,000 to \$30,000.

Parking Impacts:

None.

Emergency Service Impacts:

Diagonal diverters can be designed and installed to provide for emergency vehicle access. Otherwise, the disrupted route pattern can cause delay and confusion.

Noise Impacts:

None.

Other Considerations:

Diagonal diverters apply to all drivers, including local residents. Very special care must be taken to consider the availability, capacity, and appropriateness of the alternative routes drivers might use if a diagonal diverter is constructed. Provisions should be made to maintain access for pedestrians and bicyclists.

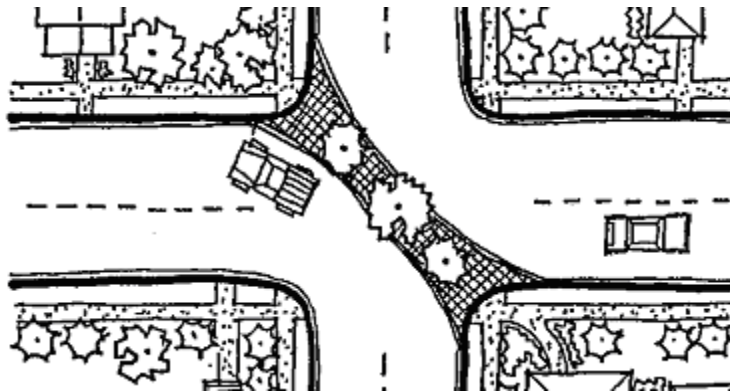
Guidelines:

The criteria for traffic calming intervention must be satisfied. Temporary installations should be considered before permanent diagonal diverters are constructed.



Diagonal Diverter

Description: A barrier placed diagonally across a four-legged intersection, preventing through traffic flow across the intersection.



PLAN VIEW

Advantages	Disadvantages
<ul style="list-style-type: none">• Eliminates through traffic.• Provides area for landscaping.• Reduces traffic conflict points.• Increases pedestrian safety.• Can include bicycle path connection.	<ul style="list-style-type: none">• May inconvenience residents gaining access to their properties.• May inhibit access by emergency vehicles.• May divert through traffic to other local streets.• Altered traffic patterns may increase trip length.• Corner properties need protection from run-ins by violators.



Partial Street Closure

Description:

Partial street closures are physical barriers that limit ingress into a street by blocking the receiving lane of the street.

Purpose:

Semi-diverters can reduce traffic volumes on a street, including cut-through traffic.

Effectiveness:

Semi-diverters can be very effective at reducing cut-through traffic volumes.

Cost:

Semi-diverters cost approximately \$7,000 to \$15,000.

Parking Impacts:

Semi-diverters can impact on-street parking.

Emergency Service Impacts:

Semi-diverters allow a higher degree of emergency vehicle access than cul-de-sacs or diagonal diverters.

Noise Impacts:

None.

Other Considerations:

Semi-diverters apply to all drivers, including local residents. Very special care must be taken to consider the availability, capacity, and appropriateness of the alternative routes drivers might use if a semi-diverter is constructed.

Frequent violations by local drivers going around the diverters may occur. The “half-closure” may need to be of adequate distance (60 to 100 feet) to discourage this unlawful activity.

Guidelines:

The criteria for traffic calming intervention must be satisfied. Opportunity to comment must be afforded agencies involved in emergency response, transit and street services.



Partial Street Closure – Semi Diverter

Description: Physical blockage of one direction of traffic on a two-way street. The open lane of traffic is signed “one way”.



Advantages	Disadvantages
<ul style="list-style-type: none"> • Reduces through-traffic in one direction and possibly in the other. • Allows two-way traffic in the remainder of the street. • Good for pedestrians due to shorter crossing distance. • Provides space for landscaping. • Can be designed to provide two-way access for bicycles. 	<ul style="list-style-type: none"> • Reduces access for residents. • Emergency vehicles are only partially affected as they can legally drive around closure during emergency. • 100% compliance is not likely. • May increase trip length for some residents. • Maintenance responsibility if landscaped.



Partial Street Closure - Forced Turn Barrier

Description: Small traffic islands installed at intersections to channel turning movements.



Advantages	Disadvantages
<ul style="list-style-type: none">• Changes driving patterns.• May reduce cut through traffic.• May be attractive if landscaped.	<ul style="list-style-type: none">• May increase trip lengths for some drivers.• Can be aesthetically unattractive if not landscaped.• May increase response times for emergency vehicles.• Maintenance responsibility if landscaped.



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Full Street Closure (Cul-de-sac)

Description:

A cul-de-sac is created by closing a street at an intersection or mid-block location with a provision for vehicle turnaround.

Purpose:

The purpose of a cul-de-sac is to eliminate through traffic on a street and help reduce cut-through traffic volumes in the neighborhood

Effectiveness:

A cul-de-sac is very effective at reducing traffic volumes, but it may divert traffic on adjacent roadways.

Cost:

Installing a cul-de-sac on a roadway could cost approximately \$50,000 to \$100,000.

Parking Impacts:

Up to 150 feet of curbside parking should be prohibited at the location where cul-de-sac will be installed.

Emergency Service Impacts:

A cul-de-sac will negatively impact emergency response times, especially when installed on primary response routes. However, the island barrier can be designed to be traversable by emergency vehicles.

Noise Impacts:

Noise impacts are minimal if not even reduced by the reduction in cut-through traffic.

Other Considerations:

Installing a cul-de-sac on a roadway could shift a problem elsewhere in the neighborhood, unless it is integral to a comprehensive traffic calming plan. A cul-de-sac can also be confusing for unfamiliar drivers. Provisions should be made to make the cul-de-sac passable for pedestrians and bicycles.

Guidelines:

The street closure must comply with the City Municipal Code and the California Vehicle Code.



Full Street Closure (Cul-de-sac)

Description: Street is closed to motor vehicles by installing physical barriers.



Advantages	Disadvantages
<ul style="list-style-type: none">• Eliminates through traffic.• Reduces speed of the remaining vehicles.• Reduces potential conflicts for street users.• Pedestrian and bicycle access maintained.	<ul style="list-style-type: none">• Reduces emergency vehicle access.• Reduces access to properties for residents.• May be perceived as inconvenient by some neighbors and an unwarranted restriction by the general public.• May increase trip lengths.• May increase volumes on other streets.

