TRAFFIC AND MOBILITY COMMISSION

Agenda

Sept. 5, 2023, 4 p.m.

Council Chamber
1200 Carlsbad Village Drive
Carlsbad, CA 92008

Welcome to Your Traffic and Mobility Commission Meeting

We welcome your interest and involvement in the city's legislative process. This agenda includes information about topics coming before the Traffic and Mobility Commission and the action recommended by city staff.You can read about each topic in the staff reports, which are available on the city website and in the Office of the City Clerk. The Minutes Clerk is also available to answer any questions you have about Traffic and Mobility Commission meeting procedures.

How to watch

In Person

City Council Chamber

1200 Carlsbad Village Drive

Online

Watch the livestream at

carlsbadca.gov/watch

How to participate

If you would like to provide comments to the Traffic and Mobility Commission, please:

- Fill out a speaker request form, located in the foyer.
- Submit the form to the Minutes Clerk before the item begins.
- When it's your turn, the Chair will call your name and invite you to the podium.
- Speakers have three minutes, unless the presiding officer (usually the Chair) changes that time.
- You may not give your time to another person, but groups can select a single speaker as long as three other members of your group are present. Group representatives have 10 minutes unless that time is changed by the presiding officer or the Commission.

- **In writing**: Email comments to traffic@carlsbadca.gov. Comments received by 2 p.m. the day of the meeting will be shared with the Traffic and Mobility Commission prior to the meeting. When e-mailing comments, please identify in the subject line the agenda item to which your comments relate. All comments received will be included as part of the official record.
  Written comments will not be read out loud.

Reasonable Accommodations

Persons with a disability may request an agenda packet in appropriate alternative formats as require by the Americans with Disabilities Act of 1990. Reasonable accommodations and auxiliary aids will be provided to effectively allow participation in the meeting. Please contact the City Manager's Office at 442-339-2821 (voice), 711 (free relay service for TTY users), 760-720-9461 (fax) or manager@carlsbadca.gov by noon on the Monday before the meeting to make arrangements. City staff will respond to requests by 2 p.m. on Tuesday, the day of the meeting, and will seek to resolve requests before the start of the meeting in order to maximize accessibility.

More information about Traffic and Mobility Commission meeting procedures can be found at the end ofthis agenda and in the Carlsbad Municipal Code chapter 1.20.

CALL TO ORDER:

ROLL CALL:

PLEDGE OF ALLEGIANCE:

APPROVAL OF MINUTES:
Minutes of the Regular Meeting held on Aug. 7, 2023

PUBLIC COMMENT: *In conformance with the Brown Act, no Commission action can occur on items presented during Public Comment. A total of 15 minutes is provided so members of the public can address the Commissioners on items that are not listed on the Agenda. Speakers are limited to three (3) minutes each. If you desire to speak during Public Comment, fill out a SPEAKER CARD and submitit to the Minutes Clerk. If there are more than five (5) speakers, the remaining speakers will be heardat the end of the agenda just prior to Commissioners Reports.*

CONSENT CALENDAR: *The items listed under Consent Calendar are considered routine and will be enacted by one motion as listed below. There will be no separate discussion on these items prior to the time the Commission votes on the motion unless members of the Traffic and Mobility Commission, the Liaison or the public request specific items be discussed and/or removed from the Consent Calendar for separate action. A request from the public to discuss an item must be submitted to the Minutes Clerk in writing prior to Traffic and Mobility consideration of the Consent Calendar.*

DEPARTMENTAL REPORTS:

1. POLICE REPORT REGARDING TRAFFIC & MOBILITY-RELATED MATTERS DURING THE MONTH OF JULY 2023, INCLUDING NOTABLE NEWS FOR THE MONTH OF AUGUST – Receive a presentation from a representative of the City of Carlsbad's Police Department that will provide an overview of traffic and mobility-related police matters during the month of July 2023, including notable news for the month of August. (Staff Contact: Alonso DeVelasco, Police Department).

   Staff's Recommendation: Receive the presentation.

2. ALL-WAY STOP CONTROL AT THE INTERSECTION OF MADISON STREET AND OAK AVENUE – Support staff's recommendation to install an All-Way Stop at the intersection of Madison Street and Oak Avenue. (Staff Contact: Lindy Pham and Miriam Jim, Public Works Department).

   Staff's Recommendation: Support staff's recommendation.

3. CARLSBAD RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM REVISION – Provide input on the additional proposed changes to the Carlsbad Residential Traffic Management Program Revision. (Staff Contact: Miriam Jim and John Kim, Public Works Department).

   Staff's Recommendation: Provide input to staff.

CITY TRAFFIC ENGINEER COMMENTS:

COMMISSION COMMENTARY AND REQUESTS FOR CONSIDERATION OF MATTERS: *This portion of the agenda is for the Commission Members to make brief announcements, brief reports of their activities and requests for future agenda items.*

PUBLIC COMMENTS: Continuation of the Public Comments

This portion of the agenda is set aside for continuation of public comments, if necessary, due to exceeding the total time allotted in the first public comments section. When you are called to speak, please come forward to the podium and state your name. The remainder of the categories are for reporting purposes. In conformance with the Brown Act, no public testimony and no Commission action can occur on these items.

ADJOURNMENT:

ABOUT THE TRAFFIC AND MOBILITY COMMISSION AGENDA

Per Carlsbad Municipal Code 2.28.050 the Traffic and Mobility Commission is an advisory commission to the City Council directed to study all matters referred to it concerning traffic safety and pedestrian safety and tomake written recommendations to the city council regarding traffic and pedestrian safety within the city.

The Ralph M. Brown Act (commonly referred to as the "Brown Act") governs open meetings for local government bodies in the state of California. The Brown Act guarantees the public's right to attend and participate in meetings of local legislative bodies and is contained in section 54950 et seq. of the Government Code. The Brown Act also includes requirements for the distribution of agendas for these public meetings.

TRAFFIC AND MOBILITY COMMISSION PROCEDURE

For each item on the agenda, City of Carlsbad staff will present a report to the Traffic and Mobility Commission. The Traffic and Mobility Commissioners may then ask clarifying questions about the staff report in advance of the public outreach. The audience will then be asked for comment. The Traffic and Mobility Commission is interested to hear all persons wishing to give testimony. Please file a **"Request to Speak"** formto speak on items listed on the agenda. Persons not desiring to speak but, wishing to be recorded as proponents or protesters of record, may do so by submitting their name and address to the minutes clerk. If

anyone wishes to question a Traffic and Mobility Commission recommendation, they may contact the Trafficand Mobility Division at 1635 Faraday Avenue, between the hours of 7:30 a. m. and 5:30 a.m., Monday through Thursday, and 8 a.m. to 5 p.m. on Friday.

Visual materials should be submitted to the Transportation Department at 1635 Faraday Avenue no later than noon the Friday before the meeting. Please label all materials with the agenda item number you are representing. All materials exhibited to the Traffic and Mobility Commission during the meeting (slides, maps, photos, etc.) are part of the public record and must be kept by the Traffic and Mobility Division for at least 60 days after final action on the matter. Your materials will be returned upon written request. **Video clips cannot be accommodated.**

The Public Comment portion of the Agenda allows community members to speak on items that are not on the agenda. If you desire to speak about an item not listed on the agenda, a **"Request to Speak"** form shouldbe filed with the Minutes Clerk. In conformance with the Brown Act, no action can occur on items presentedduring Public Comment.

Any agenda related writings or documents provided to the majority of the Traffic and Mobility Commission after distribution of the Agenda packet will be available for public inspection at the Transportation Department located at 1635 Faraday Avenue, Carlsbad, CA 92008. In addition, a binder containing all agendarelated writings and documents will be held by the Minutes Clerk at each Traffic and Mobility Commission meeting and available for public review.

Those wishing to speak to the Traffic and Mobility Commission are asked to come forward, speak into the microphone, and give their name and address for the taped record. A time limit of three minutes is allottedto each speaker. Members of the public are asked to observe order at this meeting and to conduct themselves in a courteous and respectful manner.

TRAFFIC AND MOBILITY COMMISSION

Minutes

Council Chambers
1200 Carlsbad Village Drive
Carlsbad, CA 92008

Aug. 7, 2023, 4 p.m.

CALL TO ORDER: 4:02 p.m.

ROLL CALL: Coelho, Fowler, Penseyres, Proulx, Newlands, and Kohl.
Garcia – Absent.

PLEDGE OF ALLEGIANCE: Chair Coelho led the Pledge of Allegiance.

APPROVAL OF MINUTES:
Minutes of the Regular Meeting held on June 5, 2023

Motion by Commissioner Newlands, seconded by Commissioner Kohl to approve the minutes of the Regular Meeting held on June 5, 2023, as presented. Motion carried, 6/0/1 (Garcia – Absent).

PUBLIC COMMENT:
Sonja Pratt spoke about the dangers of the intersection at Chestnut Avenue and Adams Street due to lack of visibility and she shared concerns about speeding on Chestnut Avenue.

Scott Carcella spoke about the dangerous driving on Chestnut Avenue and he suggested adding stop signs, roundabouts, or speedbumps to improve the road.

Jeff Pratt spoke about his concerns regarding speeding and dangerous driving on Chestnut Avenue.

CONSENT CALENDAR:
Motion by Vice-Chair Fowler, seconded by Commissioner Kohl to approve Consent Item No. 1. Motion carried, 6/0/1 (Garcia – Absent).

1. TRAFFIC CALMING PLANS FOR VICTORIA STREET, HIGHLAND DRIVE, MONROE STREET, NUEVA CASTILLA WAY, CIRCULO SEQUOIA AND CELINDA DRIVE – Support staff recommendations to the City Council to approve the plans and specifications for the Traffic Calming Plans for Victoria Street, Highland Drive, Monroe Street, Nueva Castilla Way, Circulo Sequoia and Celinda Drive, Capital Improvement Program Project No. 6070. (Staff Contact: Lindy Pham and Miriam Jim, Public Works Department).

   Scott Engle spoke in favor of the traffic calming plans on Victoria Street and Highland Drive but questioned the number of features. He recommended traffic observations to be performed after implementation of measures to see their effectiveness.

DEPARTMENTAL REPORTS:

2. POLICE REPORT REGARDING TRAFFIC & MOBILITY-RELATED MATTERS DURING THE MONTHS OF MAY AND JUNE 2023, INCLUDING NOTABLE NEWS FOR THE MONTH OF JULY – Receive a presentation from a representative of the City of Carlsbad's Police Department that will provide an overview of traffic and mobility-related police matters during the months of May and June 2023, including notable news for the month of July. (Staff Contact: Alonso DeVelasco, Police Department).

   Staff's Recommendation: Receive the presentation.

   Lieutenant Alonso DeVelasco presented the report and reviewed a PowerPoint presentation (on file in the Office of the City Clerk).

   The Commission received the PowerPoint presentation by Lieutenant DeVelasco.

   In response to Commissioner Kohl's inquiry about the possibility of placing motor units on the intersection of Chestnut Avenue and Adams Street a couple times a week for strict enforcement, Lieutenant DeVelasco explained that it is possible to request that officers be placed there to increase enforcement. He further explained that since the school year is approaching, enforcement around the schools is going to increase.

   Chair Coelho requested that the Commission receive periodic updates on traffic speedbumps such as those placed on Tamarack Avenue.

3. TRAFFIC CALMING PLANS FOR PARK DRIVE, BLACK RAIL ROAD, PLUM TREE ROAD, CARRILLO WAY AND CARSLBAD RESIDENTIONAL TRAFFIC MANAGEMENT PROGRAM EXCEPTION FOR HUMMINGBIRD ROAD – 1) Receive the presentation based on the findings contained in this report and the Carlsbad Residential Traffic Management Program; and
   2) Support staff's recommendation for the proposed traffic calming plans on Park Drive, Black Rail Road, Plum Tree Road and Carrillo Way; and
   3) Support staff's recommendation to approve Hummingbird Road from Batiquitos Drive to Rock Dove Street as an exception into Phase II of the Carlsbad Residential Traffic Management Program. (Staff Contact: Lindy Pham and Miriam Jim, Public Works Department).

   Staff's Recommendation: Receive the presentation and support staff's recommendations.

   Associate Engineer Lindy Pham and Senior Engineer Miriam Jim presented the report and reviewed a PowerPoint presentation (on file in the Office of the City Clerk).

   The Commission received the the PowerPoint presentation by Associate Engineer Pham and Senior Engineer Jim.

   Nichola Riggle spoke in favor of the traffic calming plans.

   In response to Vice-Chair Fowler's inquiry about the term "cost effective" traffic calming, Senior Engineer Jim explained that it is used to distinguish between Phase II and Phase III when

they implement traffic calming measures. She further added that Phase II starts with cost effective solutions, such as speed bumps, features that can be implemented relatively quickly and Phase III involves more complex solutions such as realigning intersections and turn restrictions.

Motion by Commissioner Kohl, seconded by Commissioner Proulx to support staff's recommendation for the proposed traffic calming plans on Park Drive, Black Rail Road, Plum Tree Road and Carrillo Way and to approve Hummingbird Road from Batiquitos Drive to Rock Dove Street as an exception into Phase II of the Carlsbad Residential Traffic Management Program. Motion carried, 6/0/1 (Garcia – Absent).

4. REVISE SPEED LIMIT ON SOUTHBOUND CARLSBAD BOULEVARD BETWEEN 1,400 FEET SOUTH OF MANZANO DRIVE AND ISLAND WAY – Support staff's recommendation to the City Council to revise speed limit on southbound Carlsbad Boulevard between 1,400 feet south of Manzano Drive and Island Way from 50 mph to 45 mph. (Staff Contact: Miriam Jim and John Kim, Public Works Department).

   Staff's Recommendation: Support staff's recommendation.

   Senior Engineer Miriam Jim and City Traffic Engineer John Kim presented the report and reviewed a PowerPoint presentation (on file in the Office of the City Clerk).

   The Commission received the PowerPoint presentation by Senior Engineer Jim and Traffic Engineer Kim.

   In response to Commissioner Kohl's inquiry about lowering the speed limit further to 40 mph, City Traffic Engineer Kim explained that Assembly Bill 43 enacted changes in the California Manual on Uniform Traffic Control Devices that allows local agencies more flexibility in lowering speed limits. He further added that towards early next year staff should have recommendations regarding the possibility of lowering speed limits based on AB43.

   In response to Commissioner Kohl's inquiry about performing another traffic study, if the 45-mph speed limit were implemented, to see if the 85th percentile drops below 40 mph, City Traffic Engineer Kim explained that engineering studies have shown that critical speeds do not typically vary over time unless the conditions of the road have changed or traffic volumes change. He further explained that if everything were to stay the same, there would be no reason to believe that the roadway speed would change.

   Motion by Commissioner Proulx, seconded by Commissioner Kohl to support staff's recommendation to the City Council to revise speed limit on southbound Carlsbad Boulevard between 1,400 feet south of Manzano Drive and Island Way from 50 mph to 45 mph. Motion carried, 6/0/1 (Garcia – Absent).

5. STATUS UPDATE ON CAPITAL IMPROVEMENT PROGRAM NO. 6028 COLLEGE BOULEVARD AND PALOMAR AIRPORT ROAD IMPROVEMENTS AND CAPITAL IMPROVEMENT PROGRAM NO. 6034 MELROSE DRIVE AND PALOMAR AIRPORT ROAD – Receive status update report on Capital Improvement Program (CIP) No. 6028 College Boulevard and Palomar Airport Road

Improvements and CIP No. 6034 Melrose Drive and Palomar Airport Road Improvements. (Staff Contact: Tom Frank, Public Works Department).

Staff's Recommendation: Receive the report.

Transportation Director Tom Frank presented the report and reviewed a PowerPoint presentation (on file in the Office of the City Clerk).

The Commission received the PowerPoint presentation by Transportation Director Frank.

In response to Chair Coelho's inquiry about the possibility of restricting U-turns at an intersection during rush hour, Transportation Director Frank responded that staff would look into it and provide additional information at a following Commission meeting.

Chair Coelho recommended further contemplation on not allowing U-turns at the intersection.

6. ACTIVE TRANSPORTATION MONITORING PROGRAM – YEAR TWO – Receive a presentation and provide input to city staff on the Draft Active Transportation Monitoring Program Report. (Staff Contact: Nathan Schmidt, Public Works Department).

Staff's Recommendation: Receive the presentation and provide input.

Transportation Planning & Mobility Manager Nathan Schmidt presented the report and reviewed a PowerPoint presentation (on file in the Office of the City Clerk).

The Commission received the PowerPoint presentation by Transportation Planning & Mobility Schmidt.

Chair Coelho recommended the addition of information on the costs associated with public transportation, specifically for buses and the Coaster.

CITY TRAFFIC ENGINEER COMMENTS:

Transportation Planning & Mobility Manager Schmidt commented that SANDAG has opened a public response window where people can provide comments with specific locations on an interactive map.

City Traffic Engineer Kim commented that the Tamarack Avenue expedited traffic calming project is nearly complete with four of the five features completed.

In response to Commissioner Kohl's question about the traffic signal time at Fire Station No. 2, City Traffic Engineer Kim explained that staff have been working with the fire department to address observed signal delays. He further added that they had either addressed it or will do so shortly.

COMMISSION COMMENTARY AND REQUESTS FOR CONSIDERATION OF MATTERS:

In response to Commissioner Kohl's inquiry regarding the city's status on the fiberoptic connection network, City Traffic Engineer Kim responded that he would ask Senior Engineer Mangohig to provide a thorough presentation at a future Commission meeting.

Commissioner Kohl commented that signal problems can be reported to 442-339-5331. Transportation Planning & Mobility Manager Schmidt commented that general traffic issues can be reported to 442-339-5332.

ADJOURNMENT: Chair Coelho adjourned the Traffic & Mobility Commission Regular Meeting on Aug. 7, 2023, at 6:55 p.m.

Eliane Paiva
Secretary

TRAFFIC AND MOBILITY COMMISSION

Staff Report

Meeting Date: Sept. 5, 2023

To: Traffic and Mobility Commission

Staff Contact: Alonso DeVelasco, Police Lieutenant
Alonso.develasco@carlsbadca.gov, 442-339-5578

Subject: Police Report Regarding Traffic & Mobility-Related Matters During the Month of July 2023, including Notable News for the Month of August

Recommended Action

Receive a presentation from a representative of the City of Carlsbad's Police Department that will provide an overview of traffic and mobility-related police matters during the month of July 2023, including Notable News for the month of August.

Fiscal Analysis

This action has no fiscal impact.

Environmental Evaluation

In keeping with California Public Resources Code Section 21065, this action does not constitute a "project" within the meaning of the California Environmental Quality Act in that it has no potential to cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. Therefore, it does not require environmental review.

Public Notification and Outreach

This item was noticed in keeping with the Ralph M. Brown Act and it was available for public viewing and review at least 72 hours before the scheduled meeting date.

Exhibits

None

TRAFFIC AND MOBILITY COMMISSION

Staff Report

Meeting Date: Sept. 5, 2023

To: Traffic and Mobility Commission

Staff Contact: Lindy Pham, Associate Engineer
Lindy.Pham@carlsbadca.gov or 442-339-2768

Miriam Jim, Senior Engineer
Miriam.Jim@carlsbadca.gov or 442-339-5796

Subject: All-Way Stop control at the intersection of Madison Street and Oak Avenue

Recommended Action

Support staff's recommendation to install an All-Way Stop at the intersection of Madison Street and Oak Avenue.

Background

Madison Street and Oak Street are classified as Village Street in the City's General Plan Mobility Element. They are located in the northwest quadrant of the city, generally known as the Village and Barrio communities. Both streets have a posted speed limit of 25 miles per hour, or mph. The surrounding land uses include residential and commercial along both streets.

The intersection of Madison Street and Oak Avenue is side-street stop-controlled on Oak Avenue. The roadway width on Madison Street north of the intersection measured 60 feet from curb to curb, which accommodates a single travel lane, a bike lane and a parking lane in the northbound direction and a single travel lane with sharrow markings and marked angle parking in the southbound direction. To the south of the intersection, the width of the roadway reduces to 48 feet and accommodates a single travel lane, a bike lane and a parking lane in each direction. Oak Avenue has a roadway width of 48 feet and accommodates a single travel lane and on-street parking in each direction.

Residents have expressed concerns about navigating this intersection from Oak Avenue due to limited sight distance and have requested All-Way Stop control at the intersection. City staff who work at the Public Works yard located at 405 Oak Avenue and use this intersection on a daily basis have also expressed concerns about crossing Madison Street at this intersection due to limited sight distance available. This report summarizes the results of the multi-way stop analysis conducted at the intersection of Madison Street and Oak Avenue.

Discussion

In response to requests for an All-Way Stop at the intersection of Madison Street and Oak Avenue, a multi-way stop analysis was performed per the guidelines found in the California Manual on Uniform Traffic Control Devices, or CA MUTCD. Multi-way stop analysis considers vehicular, pedestrian and bike volumes as well as other factors such as sight distance, movement conflicts, and traffic operation to determine if multi-way stop control is justified at a particular intersection. The CA MUTCD multi-way stop criteria and corresponding analysis results for the intersection of Madison Street and Oak Avenue are summarized below.

Criteria A of the CA MUTCD multi-way stop criteria allows consideration of a multi-way stop as an interim measure prior to installation of a traffic signal.

A traffic signal at the intersection of Madison Street and Oak Avenue is not planned or programmed in the city's Capital Improvement Program, therefore Criteria A was not satisfied.

Criteria B allows for consideration of a multi-way stop when there have been five or more reported collisions within a 12-month period that are susceptible to correction by a multi-way stop.

A review of the collision history between January 2018 and November 2022 revealed no reported collisions at the intersection of Madison Street and Oak Avenue. Therefore, Criteria B was not satisfied.

Criteria C evaluates the traffic volumes to determine if a multi-way stop can be considered. Criteria C is satisfied if 1) the average volume on a major street, in this case Madison Street, is at least 300 vehicles per hour for any 8 hours of an average day; and 2) the combined vehicular, pedestrian and bicycle volumes entering the intersection from the minor street, in this case Oak Avenue, averages at least 200 units per hour for the same 8 hours.

Table 1 summarizes the traffic volumes collected at the intersection of Madison Street and Oak Avenue on Tuesday, Dec. 6, 2022. Based on the average traffic volumes presented, the minimum traffic volumes in Criteria C were not satisfied.

Table 1. Average Traffic Volumes on Tuesday, December 6, 2022

Intersection	Average Veh. Volume on Major Street, Madison St (300 or more)	Average Volume on Minor Street, Oak Avenue, Veh., Peds and bikes combined (200 or more)	Meet both Average Volume thresholds?
Madison Street at Oak Avenue	123	150	NO

Criteria D allows consideration of a multi-way stop where no single criterion is satisfied but where Criteria B and C are satisfied to 80 percent of the minimum values.

Since Criteria B results indicate zero qualifying collisions and the reduced minimum value for Criteria C of 160 is not met, Criteria D was not satisfied.

In addition to the four criteria listed above, the CA MUTCD includes optional criteria which can also be considered. The optional criteria are described as:

A. The need to control left-turn conflicts;
B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;
C. Locations where a road user, after stopping cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and
D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where all-way stop control would improve traffic operational characteristics of the intersection.

Staff reviewed the optional criteria for the subject intersection and determined that Option C was satisfied. Table 2 summarizes the minimum and available Intersection Sight Distance, or ISD, at the intersection.

Table 2: Intersection Sight Distance (ISD) on Madison Street at Oak Avenue

Minor Street Approach	Left Turn			Right Turn		
	Minimum ISD*	Available ISD	Meet ISD Requirement?	Minimum ISD*	Available ISD	Meet ISD Requirement?
Oak Ave (EB)	280’	235’	NO	240’	152’	NO
Oak Ave (WB)	280’	430’	YES	240’	245’	YES
**Per California Highway Design Manual for roadway with speed limit of 25 mph*						

Figure 1 shows the line of sight from eastbound Oak Avenue onto Madison Street. The available sight distance on Oak Avenue traveling eastbound did not meet the minimum sight distance requirements due to the existing angle parking on the west side of Madison Street, north of the intersection, and the parallel parking lane south of the intersection.

Figure 1: Line of Sight on Eastbound Oak Avenue to Madison Street

Eastbound Oak Avenue looking north on Madison Street

Eastbound Oak Avenue looking south on Madison Street

In order to provide the minimum sight distance for eastbound traffic on Oak Avenue, eight parking spaces on Madison Street, six angle parking stalls north of the intersection and two parallel parking spaces south of the intersection, would need to be removed. With the increasing demand for parking in the Village and Barrio communities, staff do not support removal of on-street parking at this location.

Based on staff findings, which are consistent with the recommendations found in the CA MUTCD, staff recommend the installation of All-Way Stop control at the intersection of Madison Street and Oak Avenue.

Necessary Council Action

The City Council must adopt an ordinance to establish an All-Way Stop control at the intersection of Madison Street at Oak Avenue.

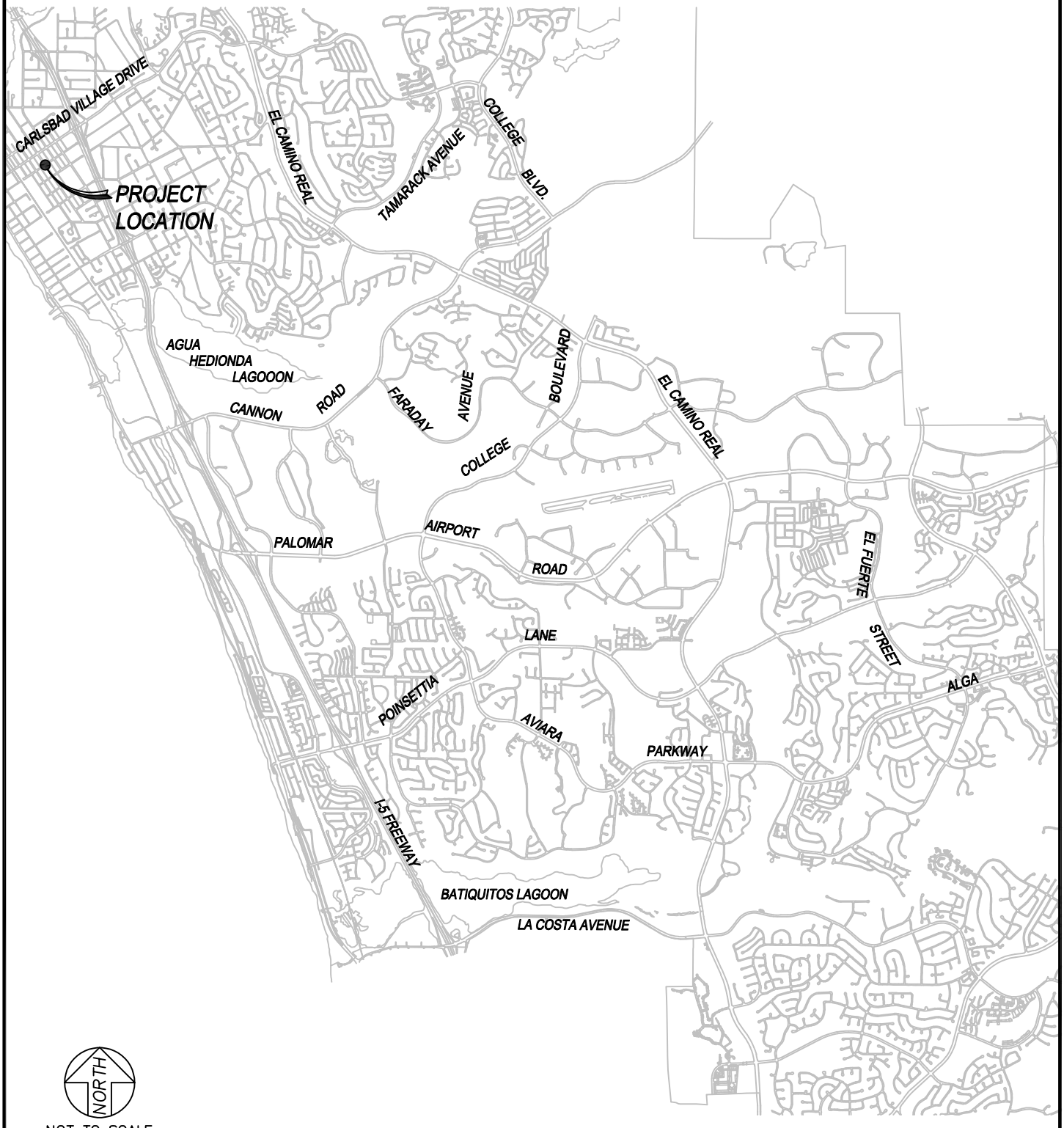
Next Steps

Upon receiving support from the Traffic and Mobility Commission, staff will introduce an ordinance to establish an All-Way Stop control at the intersection of Madison Street and Oak Avenue for City Council adoption. Once an ordinance is adopted, staff will issue work orders to install STOP signs and pavement markings at the intersection in compliance with the CA MUTCD.

Exhibits

1. Location Map
2. CA MUTCD Multi-Way Stop Criteria Worksheet

LOCATION MAP



NOT TO SCALE

MADISON STREET AND OAK AVENUE

ALL-WAY STOP CONTROL AT MADISON STREET AND OAK AVENUE

EXHIBIT 1

MULTI-WAY STOP CRITERIA
Transportation Department, City of Carlsbad

CALC MB DATE 1-26-2023
CHK DD DATE

Major St: **Madison Street** Critical Approach Speed 25mph mph
Minor St: **Oak Avenue** Critical Approach Speed mph

Critical speed of major street traffic > 40mph ---------- ☐ **RURAL (R)**
Otherwise ---------- ☒ **URBAN (U)**

The decision to install multiway stop control should be based on an engineering study. The following criteria should be considered in the engineering study for multiway stop sign installation:

Criteria A - Interim Traffic Control Measure **SATISFIED** **YES** ☐ **NO** ☒

Where traffic control signals are justified, the MULTI-WAY STOP is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

Criteria B - Accident Experience **SATISFIED** **YES** ☐ **NO** ☒

Five or more reported crashes within a 12-month period that are susceptible to correction by a MULTI-WAY STOP installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.

Criteria C - Minimum Traffic Volumes **SATISFIED** **YES** ☐ **NO** ☒

(All Parts C.1, C.2a and C.2b below must be satisfied)

C.1 Major Street Vehicular Volume **Yes** ☐ **No** ☒

	U	R	10AM	11AM	12PM	1PM	2PM	3PM	4PM	5PM	Hour	
Both Approaches Major Street	**300**	**210**	99	119	133	135	147	106	135	106	Average=	123

C.2 a. Minor Street Vehicular, Pedestrian & Bicycle Volume **Yes** ☐ **No** ☒

	U	R	10AM	11AM	12PM	1PM	2PM	3PM	4PM	5PM	Hour	
Both Approaches Minor Street	**200**	**140**	117	116	171	138	132	171	199	158	Average=	150

b. Minor Street Vehicle Delay **Yes** ☐ **No** ☐ **N/A** ☒

Peak Hour	Peak Hour Volume	Minimum Delay Requirement, seconds per vehicle	Average Delay, seconds per vehicle
		30 seconds	

Criteria D – Combination of Criteria **SATISFIED** **YES** ☐ **NO** ☒

REQUIREMENT	CRITERIA	FULFILLED
THREE CRITERIA SATISFIED 80%	B. Four or more reported crashes within a 12-month period.	Yes ☐ No ☒
	C.1. Major Street Volume of at least 240 vehicles per hour	Yes ☐ No ☒
	C.2. Minor Street Volume of at least 160 units per hour	Yes ☐ No ☒

MULTIWAY STOP CRITERIA
Transportation Department, City of Carlsbad

Major St:	**Madison Street**	Critical Approach Speed	25mph	mph
Minor St:	**Oak Avenue**	Critical Approach Speed		mph

Other criteria that may be considered in an engineering study include:

Option A – Left Turn Conflicts **SATISFIED** **YES** ☐ **NO** ☒

The need to control left-turn conflicts;

Option B – Vehicle/Pedestrian Conflicts **SATISFIED** **YES** ☐ **NO** ☒

The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;

Option C – Sight Distance **SATISFIED** **YES** ☒ **NO** ☐

Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and

Option D – Residential Street **SATISFIED** **YES** ☐ **NO** ☒

An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

TRAFFIC AND MOBILITY COMMISSION

Staff Report

Meeting Date:	Sept. 5, 2023
To:	Traffic and Mobility Commission
Staff Contact:	Miriam Jim, Senior Engineer Miriam.Jim@carlsbadca.gov, 442-339-5796 John Kim, City Traffic Engineer John.Kim@carlsbadca.gov, 442-339-2757
Subject:	Carlsbad Residential Traffic Management Program Revision

Recommended Action

Provide input on the additional proposed changes to the Carlsbad Residential Traffic Management Program Revision.

Background

The Carlsbad Residential Traffic Management Program, or CRTMP, was adopted by the City Council in 2001 and revised in 2011. The current version of the CRTMP is provided in Exhibit 1. This program was developed to outline a traffic management process and established procedure to improve the quality of life in neighborhoods by implementing features that reduce speeding and discourage cut-through traffic on residential streets.

Traffic calming measures, techniques and methodologies continue to evolve and best practices in the industry therefore may have changed over the years. For this reason, the CRTMP is intended to be a dynamic program where staff will re-evaluate the procedure and traffic calming toolbox in the program periodically to determine if adjustments are needed.

On Dec. 6, 2021, staff presented to the Traffic & Mobility Commission major changes proposed to the CRTMP revision. Staff received comments from the Commission provided in Exhibit 2. These changes included removal of STOP signs and high visibility crosswalks from the CRTMP Toolbox and limit deployment of temporary speed feedback signs on a residential street to once every two years.

On Sept. 6, 2022, staff presented to the Traffic & Mobility Commission additional changes proposed to the CRTMP revision. Staff received comments from the Commission provided in Exhibit 3. These changes included removal of Phase III of the program and further revisions to the CRTMP Toolbox.

Discussion

The CRTMP is currently a three-phase program, which offer solutions at increasing levels of cost and complexity.

Phase I: The initial phase of the program focuses on education and enforcement and offers some preliminary engineering strategies:

- Police presence and police enforcement
- Basic engineering tools such as speed limit signs, warning signs, pavement legends and temporary speed feedback signs

Phase II: If Phase I tools do not solve the community's concern and if the minimum critical speed, the speed at which 85% of the vehicles are traveling at or below, of the street is 32 miles per hour, or mph, Phase II can be considered. Staff will meet with residents who live on the street of concern to design a plan that will address community concerns. Traffic calming strategies commonly include features such as:

- Speed cushions
- Traffic circles
- Narrowing lanes through striping
- Curb extensions

This phase utilizes a public input process, including neighborhood meetings, to establish community consensus on a preferred traffic calming concept plan. A mail survey is then used to quantify community support of the preferred plan. If community support requirements are satisfied, the preferred traffic calming plan is presented to the Traffic and Mobility Commission for their input and recommendation and then to City Council for project approval. Upon approval by the City Council, the approved traffic calming plan can be implemented.

Phase III: If the implemented Phase II solutions do not adequately address the reported issues, residents can request Phase III of the CRTMP that considers further traffic calming strategies such as:

- Center island narrowing
- Raised intersections
- Lateral shift in lanes
- Realigned intersections
- Forced turn channelization
- Median barriers and traffic diverters

Because of the success of CRTMP Phase II measures, Phase III of the CRTMP has not yet been requested or implemented on any street in the city since the traffic calming program was adopted in 2001.

Key changes to the CRTMP Revision previously presented to Traffic and Mobility Commission

The major changes presented to and supported by the Traffic & Mobility Commission in the past and will be incorporated in the CRTMP Revision include the following:

1. Removal of STOP Signs from Phase II Toolbox. Per the CA MUTCD, STOP signs should not be used for speed control as they are intended to assign right-of-way at an intersection. Installation of STOP signs should be evaluated based on traffic volume, crash records and sight distance. When unwarranted STOP signs are installed, it can lead to unintended consequences such as non-compliance, increase in speed between stop signs and noise and air pollution.

2. Remove High Visibility Crosswalks from Phase II Toolbox. Marked crosswalks alone have not been found to be effective in slowing traffic. High visibility crosswalks can be included in a proposed traffic calming plan in combination with other features, if appropriate.

3. Limit deployment of temporary speed feedback signs for speed data collection on a residential street to once every two years. Based on staff experience and speed data collected in the past, vehicle speeds on a roadway remain fairly constant without significant changes to roadway characteristics or surrounding roadway network and land uses. If a residential street does not qualify for Phase II of the CRTMP, repeated speed measurements within a short period of time would likely yield the same result and becomes an unnecessary drain on staff resources. This change will allow staff to prioritize resources on streets that have not yet been evaluated for traffic calming in the past.

4. Removal of CRTMP Phase III
   At its December 2021 meeting, the Traffic & Mobility Commission commented that the current Phase III qualification criteria may be too restrictive, and a street given Phase II treatment may not meet those criteria. The Commission requested staff to re-evaluate the Phase III qualification criteria. Upon receiving comments from the Commission, staff reviewed past program efforts and recommended the removal of Phase III from the program and the incorporation of selected Phase III tools into Phase II.

   Removal of Phase III will simplify the CRTMP and yield a two-phase program that is straight forward, proven to be effective in addressing speeding and cut-through concerns on residential streets.

   The current Phase II criteria and procedures will remain unchanged. In order to provide an avenue for residents to request modifications to the already implemented Phase II traffic calming treatments, the current “Traffic Calming Measures Removal Process” will be revised to a “Traffic Calming Measures Modification/Removal Process”. Requests for modifications and/or removal would require a petition from the community with signatures from 80% of the eligible individuals within the project area. Such requests would be considered by staff after a one-year monitoring period following completion of Phase II traffic calming installation.

5. Revisions to CRTMP Toolbox
   Upon the removal of Phase III of the program, most of the Phase III measures will remain in the toolbox as part of Phase II measures. This provides a variety of traffic calming tools to be available for staff and residents to consider during Phase II conceptual plan development.

Removal of some Phase III measures, however, were recommended and supported by the Traffic and Mobility Commission at its Sept. 5, 2022, meeting. Six measures that will be removed from the toolbox include:

- textured pavement
- realigned intersection
- forced turn channelization
- semi-diverter
- partial diverter
- diagonal diverter.

Most of these treatments are designed for grid roadway networks that Carlsbad does not have. Implementing these measures would alter traffic patterns in the neighborhood and as a result could impact traffic and residents on other streets in the nearby area. To minimize traffic diversion to other streets, these six measures will be removed from the CRTMP toolbox.

Additional changes proposed to the CRTMP Revision

1. Include language in the CRTMP regarding implementation of traffic calming measures on non-residential streets in accordance with the City's General Plan Mobility Element, shown in Exhibit 4.

   The Mobility Element of the General Plan provides guidelines on the city's livable street system. It identifies the modes of travel that are prioritized on different street typologies to provide a balanced mobility system that meets the mobility needs for all modes and persons of all ages and abilities. The Carlsbad Livable Streets Guide from the Mobility Element identifies preferred attributes for each of the street typologies and provides guidance on traffic calming measures that should be considered according to street typology.

   Staff recommends adding language to indicate that implementation of traffic calming measures on streets that do not meet the program eligibility criteria of the CRTMP should be evaluated in accordance with the guidelines as described in the Mobility Element of the General Plan. Traffic and Mobility Commission's review and approval of these exceptions is recommended.

2. Project Area of Influence and Mail Survey Results

   Project Area of Influence, or PAOI, for a CRTMP project is established by city staff with input from the residents in the neighborhood. The PAOI typically includes all single-family home residences on the subject street segment and all cul-de-sac streets connecting to that segment. Inclusion of connecting cul-de-sac streets is based on the assumption that access to and from these residences would require traveling on the subject street segment and therefore would be directly impacted by the proposed traffic calming measures.

   Under the current traffic calming program, the survey results are calculated based on the mail surveys sent out to the residents and non-resident owners within the PAOI. The survey

is considered valid if 50% of the surveys are returned. The proposed traffic calming plan will move forward to Traffic & Mobility Commission if 67% or more of the returned surveys support such plan.

Residents, in past CRTMP projects, have expressed concerns about including homes on connecting cul-de-sac streets as part of the PAOI. They were concerned that these residents may not be as concerned about speeding and cut-through traffic on the subject street segment and could skew the survey results toward non-support.

Based on staff experience, it is recommended to add language to the program regarding how the mail survey results will be calculated for projects with connecting cul-de-sac streets within the PAOI. For these projects, staff will calculate mail survey results in two ways: 1) mail surveys returned within the entire PAOI and 2) mail surveys returned on the subject street only. These results will provide information on the level of support from residents living on the subject street segment and those who are not. Staff and the Traffic and Mobility Commission can then provide recommendations on the proposed traffic calming plan based on these survey methodologies.

3. Include language in the CRTMP requiring a petition to initiate the process to consider an otherwise non-eligible street as an exception into Phase II of the program.
   The current program recommends Traffic and Mobility Commission's review and approval of an exception to include a street as part of Phase II of the program. Staff have received requests for exception, typically by individual residents, and staff have presented these requests to Traffic and Mobility Commission for their consideration.

   The need for and the effectiveness of traffic calming measure is reduced when measured speeds are less than 32 mph. If the perceived need for traffic calming is reduced, community support for traffic calming measures may also be reduced.

   To prioritize resources on streets where traffic calming measures are most needed and would be supported by residents, staff recommend that for streets that are not eligible for Phase II of the program, a resident-led petition be required to indicate community support for traffic calming. The petition should include signatures, one signature per residence, from a minimum 50% of the residences within the Project Area of Influence. If the required signatures are obtained, staff will present the request for exception to Traffic and Mobility Commission for their review and approval.

Recommendations

Provide input on the additional proposed changes to the CRTMP Revision.

Next Steps

Upon receiving input from the Traffic & Mobility Commission, staff will finalize the draft document of the CRTMP Revision. Staff will present the CRTMP Revision document to the Traffic & Mobility Commission for review at a future meeting. Thereafter, staff will present the final CRTMP Revision for City Council adoption.

Exhibits

1. Current Carlsbad Residential Traffic Management Program
2. Staff report from 12/06/21 Traffic & Mobility Commission Meeting
3. Staff report from 09/06/22 Traffic & Mobility Commission Meeting
4. Mobility Element of the General Plan

Exhibit 1

Carlsbad Residential Traffic Management Program

CITY OF CARLSBAD

May 2011

Carlsbad Residential Traffic Management Program

May 2011 Revision

Traffic Division

Transportation Department

Acknowledgments

May 2011 Program Update

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May 2001 Program Development

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EXECUTIVE SUMMARY

In all areas of Carlsbad, daily commuter traffic or other types of traffic drive on neighborhood streets. Speeding and/or excessive volumes may cause residents to become alarmed about safety and quality of life. When the tranquility and ambiance of the neighborhood is disrupted by drivers speeding or trying to find short-cuts, concerned citizens contact City officials.

This scenario, repeated each day in some areas of the City, alerted the City Council to the need for a comprehensive citywide program to minimize excessive speeds and high volumes in neighborhoods. Similar problems in California and throughout the country have inspired engineering solutions called traffic calming, which is a method of slowing cars and discouraging cut-through traffic. With traffic calming in mind, the City Council elected to use a citizen-based approach to develop such a program, appointing a committee of seven citizens to work with staff in developing solutions for any Carlsbad neighborhoods seriously affected by traffic problems.

The citizen's committee developed a three-phase approach to addressing traffic problems in Carlsbad neighborhoods. After reviewing and evaluating programs from many cities, the committee recommended a program it suitable for Carlsbad and which would achieve the three goals that must be met if traffic calming is to be successful. The first requirement is support of the residents in any neighborhood where such calming is needed. Second, the traffic calming measures must meet with the approval of emergency agencies concerned about response times, as well as the needs of other utilities whose large vehicles could be adversely affected or damaged by the traffic calming measures. Finally, the residents must be willing to live with the actual traffic calming measures designed to slow traffic and cut-through traffic volumes in their neighborhood.

This document represents the first revision to the initial program developed by the Carlsbad Residential Traffic Management Program Committee. The primary reasons for revising the program were to add lower cost traffic management tools such as residential stop signs and speed cushions and to establish benchmark criteria for the funding of future traffic calming projects. The revised program is divided into the following three phases:

Phase I: application of enforcement and education to resolve non-compliance issues.

Phase II: utilizing engineering-based measures to increase compliance with posted speed limits and discourage cut through traffic.

Phase III: development and implementation of a comprehensive plan comprised of traditional traffic calming measures to address traffic issues while enhancing the residential character of the street.

Ultimately leading to improvement in the quality of life of affected neighborhoods, the Carlsbad Residential Traffic Management Program is still another way in which the City provides for the health, safety and welfare of its citizens.

CARLSBAD
RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM

INTRODUCTION

Virtually every day, on many residential streets, Carlsbad residents are faced with the potentially dangerous intrusion of speeding vehicles and/or cut-through traffic. Carlsbad streets have experienced escalating traffic impacts due to population and employment growth. As a result, an increasing number of citizens have expressed concerns to City officials, the Police Department and Engineering staff about these traffic problems.

Carlsbad residents are not unique in voicing such concerns. Cities throughout the United States have struggled with the issue of escalating traffic speeds and volumes on residential streets. As a result, citizens have asked that their neighborhood quality of life be improved through a reduction of vehicle speeds and volume. Many desire the simple pleasure of being able to walk or ride bicycles through their neighborhoods without fear of vehicular traffic, a key factor in neighborhood livability.

"Livable" cannot be precisely defined as it relates to community or neighborhood. However, the residents' expectation that fewer vehicles should be speeding down neighborhood streets is an indication of their desire to reside in a livable neighborhood. Characteristics of such a desirable neighborhood include:

- a sense of community
- a safe place to walk or bicycle
- interaction among neighbors
- a general feeling of security and safety
- the opportunity for residents to enjoy their homes and property
- streets that do not penalize drivers traveling at the posted speed limit

"Traffic calming" is a term that has, in recent years, become synonymous with providing the means to slow vehicles, reduce cut-through traffic volumes and help achieve a livable community. Through the use of a variety of measures, physical or otherwise, traffic calming helps reduce the undesirable effects of the motor vehicle in residential neighborhoods.

In response to the concerns of Carlsbad residents, the City Council has established the Carlsbad Residential Traffic Management Program, referred to as the CRTMP, to address neighborhood concerns about unwanted traffic. The Institute of Transportation Engineers (ITE), an international organization of transportation professionals, has defined traffic calming as:

> *"The combination of mainly physical measures that reduces the negative effects of motor vehicle use, alters driver behavior and improves conditions for non-motorized street users."*

Carlsbad's Residential Traffic Management Program is designed to have significant neighborhood involvement. Staff plans to work closely with residents to identify problems and their solutions and to gather the support necessary to ensure the success of any traffic calming plan that may merit adoption. Communication with the residents at each step is critical and the urgency of plan development will not

be allowed to override the need for thorough understanding, commitment and approval by the neighborhood.

Since neighborhood involvement is the key, the program is designed to solicit and encourage residents' active participation in identifying concerns, developing reasonable solutions and supporting the final outcome. In the traffic engineering field, the manner in which this occurs is a process that contains the elements of the “4E's":

Education
Engineering
Enforcement
Enhancement

By utilizing the "4E" process, which incorporates a comprehensive, integrated involvement of concerned residents, the challenge of identifying and resolving problems can successfully take place.

The basic elements of the 4E process include:

- Education: Providing resource materials and information to residents to inform them about all aspects of traffic calming.

- Engineering: Physical measures and other techniques utilized in the traffic calming program that are based upon input and concurrence by residents, engineering principles, financial and environmental considerations.

- Enforcement: Police presence and selective enforcement of vehicle code violations.

- Enhancement: Using special treatments in the physical measures through design and/or landscaping features to improve livability, aesthetics, community pride.

This program has been established with and conforms to authority and responsibility given to local authorities by the California Vehicle Code to protect the health and welfare of its citizens. Additionally, it meets one of the goals in the Circulation Element of the General Plan that states Carlsbad is a "City with an integrated transportation network, serving local and regional needs, which accommodates a balance of different travel modes based upon safety, convenience, attractiveness, costs, environmental and social impacts".

It is the policy of the State of California that all persons have an equal right to use public streets and that no agency may restrict the use of streets to only certain individuals. With certain exceptions provided for in the California Vehicle Code, the specific authority to regulate travel upon streets can only occur in specific instances related to:

- implementation of the Circulation Element of the General Plan
- criminal activity
- regulating or prohibiting processions or assemblages
- streets dividing school grounds to protect students attending such schools or school grounds

Requests to implement the CRTMP will ultimately be considered through the process outlined in this program. Careful consideration will be given to each request to ensure that it meets State law and the criteria contained in the program.

GOALS

The City Council established the CRTMP as a countermeasure to intrusion by excessive traffic and/or higher than normal vehicle speeds in the neighborhood and thus, to help improve the quality of life. With a defined traffic management process and established procedures contained in this document, Carlsbad residents will have the measures and techniques ("tools") at their disposal to avert many negative impacts associated with vehicular traffic on residential streets.

The goals of a traffic management program include:

- improving the quality of life in the neighborhood
- creating safe streets by reducing the collision frequency and severity
- reducing negative effects of motorized vehicles
- design of features that encourage self-enforcement

PROGRAM STRATEGIES

The City of Carlsbad strives to achieve neighborhood livability through implementation of current standards and policies. Managing traffic is a key component in this endeavor and one that is vital for promoting characteristics of livable neighborhoods. Therefore, strategies are needed to identify and address issues revolving around speeding, excessive volumes and safety concerns on residential streets when it occurs. These strategies include:

- developing recommendations that adhere to State law
- satisfactorily addressing legal and liability issues
- preserving reasonable emergency vehicle access and response time consistent with response standards
- maintaining reasonable vehicular access
- promoting neighborhood safety for pedestrians, bicyclists, motorists and residents
- encouraging and incorporating citizen participation in identifying traffic calming measures and techniques
- utilizing City resources and funds efficiently and effectively
- utilizing a combination of education, engineering, enforcement and enhancement (4E's)
- maintaining, encouraging and enhancing pedestrian, bicycle, transit and alternative modes of travel
- balancing on-street needs (such as parking) with the reasonable and safe function of the street
- considering achievable options for funding

According to the ITE resource, “Transportation and Land Development, 2nd Edition”, residential streets should ideally be designed and constructed to a “residential neighborhood scale” to achieve vehicle speeds and traffic volumes consistent with typical neighborhood uses. Residential neighborhood scale is

typically accomplished by restricting roadway length so that a driver slows, stops, or makes a significant turning movement every 300-700 feet. Drivers tend to comply with speed limits in residential neighborhoods when the effective, uninterrupted street length is less than 700 feet.

Complaints related to excessive vehicle speeds often originate on residential streets that have not been designed to this residential neighborhood scale. The CRTMP attempts to resolve these types of speeding issues by installing a series of traffic management measures to reduce the effective street length so that a driver slows, stops, or makes a significant turning movement every 300 to 700 feet. Traffic management measures are recommended to be spaced, on average, at approximately 500 foot intervals. The traffic management strategies included in the CRTMP toolbox are designed to work in concert with one another to limit the effective, uninterrupted length of an existing street to approximately 500 feet, which should result in a reduction in vehicle speeds and render the route less attractive to cut-through traffic.

PROCEDURES

The procedures to implement traffic management measures and techniques are described on the following pages and are referred to as phases. In general, the established procedures are consistent with the methodology currently used in Carlsbad to address any traffic-related concerns. The procedures require, and are designed to encourage, substantial neighborhood participation, following the process used by staff to formulate solutions to problem locations and the methods for proposing those solutions to the Traffic Safety Commission and City Council for final resolution.

Carlsbad's Residential Traffic Management Program has been developed as a three-phase program, consisting of the following structure approach:

Phase I : Enforcement and Education
Phase II : Traffic Management
Phase III : Traffic Calming

The program is designed in such a way that residents of each street with identified problems, and with neighborhood support and commitment, can play a part in the program. The cost, complexity, effectiveness and impact to residents increase with each phase. Phase I features are generally considered simple improvements that can be initiated internally and provided by city staff. Phase II consists of cost-effective traffic management features that may reduce vehicle speeds but may also penalize those who drive at the legal speed limit. Phase III features are the most effective at traffic calming but are expensive and may negatively impact parking.

PROGRAM ELIGIBILITY

Participation in the Carlsbad Residential Traffic Management Program requires the following:

1. The subject street must meet the legal definition of residence district (as defined by the California Vehicle Code) or designated school zone (as defined by the California Manual on Uniform Traffic Control Devices).
2. The subject street must have a curb-to-curb width of 40 feet or less.
3. A letter sent by a resident or residents requesting that staff consider a subject street for inclusion into the CRTMP process.

Any street that does not meet the program eligibility criteria but is nevertheless considered by city staff to be a candidate for traffic calming will be scheduled for review and possible approval by the Traffic Safety Commission. If the Commission's review leads to the conclusion that the street merits an exception, it will be processed through the CRTMP as if program eligibility criteria were met. Any street recommended by the Traffic Safety Commission as not qualifying for an exception may be requested by a citizen to be reviewed by the City Council for a final determination. The exception process may be used for consideration for inclusion into each phase of the program.

PHASE I: EDUCATION AND ENFORCEMENT

When a resident, or group of residents, from a neighborhood has a traffic-related concern that they believe should be addressed by the Carlsbad Residential Traffic Management Program and have sent a letter to the Traffic Division of the Transportation Department, the process will be initiated in the following manner.

Step 1 Initiate Traffic Request (TR) Procedure

Upon receipt of the correspondence and verification that the subject street satisfies program eligibility requirements, staff will initiate a Traffic Request (TR) that includes the information contained in the letter. The TR is an internal logging and tracking system in the Transportation Division used to initiate action and file correspondence. An engineer will be assigned to investigate and conduct an engineering study of the street(s).

Step 2 Investigation/Studies

Staff will gather preliminary data about the expressed concern. Field reviews and appropriate traffic studies will be conducted. They may include:

- geometric conditions of the road
- parking availability/restrictions
- location of existing traffic control devices
- speed surveys
- volume counts
- pedestrian counts
- collision analysis
- other studies as determined appropriate

Phase I strategy will be formulated after the data is collected.

Step 3 Coordination with the Police and Fire Departments

Staff will discuss with the Police Department solutions that can be addressed through enforcement. An enforcement strategy will be prepared and implemented by the officer in charge of the Traffic Division of the Police Department. Concurrently, staff will discuss with the Fire Marshal emergency response route issues and other fire safety issues.

Step 4 Issue Work Order

Implementation of Phase I can be accomplished by city forces. Staff can usually issue work orders for the installation of signs or striping or implementation of speed feedback signs.

Step 5 Communication with Residents

Information on appropriate traffic calming strategies and techniques proposed to address the identified concern is shared with the person or group that initiated the request, including information about the issuance of work orders. Staff also outlines the engineering and enforcement approach that will be utilized to mitigate neighborhood concerns.

Step 6 Monitor

Effectiveness of the implemented measures and/or strategies is monitored by Engineering Department staff and, as appropriate, by the Police Department. The resident or group originating the request is then informed of the monitoring results.

PHASE II: TRAFFIC MANAGEMENT

If all applicable Phase I options have been completed and do not appear to adequately address the problem after being in place for an appropriate amount of time as determined by the city staff, Phase II of the CRTMP may be considered.

Step 1 Written Request

Phase II will be initiated when an affected resident that resides on the street where the concern exists sends a letter to the Traffic Division of the Transportation Department requesting Phase II consideration. The letter will be generated by a resident, following discussions with city staff to review what might be accomplished through Phase II of the program.

Step 2 Phase II Eligibility Determination

Not all residential streets and/or residential areas will qualify to participate in Phase II of the Carlsbad Residential Traffic Management Program based upon the established process. Eligibility criteria for Phase II are as follows:

1. Completion of Phase I of the CRTMP; and
2. The 85th percentile speed (critical speed) must be 32 miles per hour or greater as determined by a speed survey(s).

Both of the eligibility criteria must be met for a street to be considered for further processing through the CRTMP. However, on a case-by-case basis, city staff may determine exceptions. A street considered as an exception must be approved by the Traffic Safety Commission.

Step 3 Determine Project Area of Influence (PAOI)

The street or streets significantly impacted by neighborhood concerns or potential solutions, including all dwelling units or other land uses bordering the subject street or streets, comprise the Project Area of Influence (PAOI). The PAOI will be established by city staff, with input from the neighborhood representatives. The establishment of the PAOI by staff shall consider the implementation of measures on a roadway system as opposed to singular, isolated installations.

Step 4 Phase II Concept Plan

All residents from the PAOI will be invited to a neighborhood meeting hosted by the city. At the meeting, staff will explain the Phase II process that may lead to installation of the traffic management measures proposed for their neighborhoods. Discussion will include:

- neighborhood concerns
- traffic data gathered
- results from Phase I
- potential Phase II solutions
- advantages/disadvantages of specific Phase II features
- Phase II approval process

A Fire Department representative will be invited to attend the meeting to explain response needs of the emergency service providers and any concerns with potential traffic management on the candidate

street. Also, a Police Department representative will be invited to attend the meeting to respond to questions about enforcement issues.

Staff, using the data collected in Phase I, and working with affected residents, will draft a plan of proposed Phase II measures within the boundaries of the PAOI. Since Phase II measures are limited in application, they may not be appropriate for a given situation. For example, if a subject street does not feature intersections, residential STOP signs would not be appropriate. Staff will work with residents to prepare the Phase II concept plan which will be presented to the neighborhood via mail survey for support.

The concept plan will be presented to the Traffic Safety Coordinating Committee to allow city staff such as Fire Department and Police Department representatives to review and comment.

Step 5 Mail Support Survey for Phase II Concept Plan

A mail support survey will be conducted by City staff upon completion of the Phase II concept plan developed by staff. The purpose of the survey will be to determine if the neighborhood (as defined by the PAOI) is in favor of the proposed plan.

Residents and non-resident owners within the PAOI are eligible to participate in the mail support survey. Distribution of the support survey will be conducted by the City through the mail. The survey will be considered valid if a minimum of 50% of the residents contacted fill out and return the completed survey. Staff will then analyze the returns to determine if 67% or more of the PAOI community responding supports the Phase II plan.

If the Phase II concept plan includes measures with vertical deflection such as speed cushions or speed tables, support for these measures from residents directly affected will be highly desirable. Staff will work with these residents and will strive to balance the concerns of individual residents with the overall success of the concept plan as a system of interdependent features. Since the success of Phase II will be dependent on the spacing of proposed features, the removal of any measure from the concept plan due to lack of support may have a detrimental effect on the concept as a whole.

If 50% of the surveys are not returned, an outreach program may be initiated by the resident(s). Re-survey will occur after all steps established in the outreach program are completed. A re-survey will be valid if 50% or more of the surveys are returned to staff. If the plan is not approved by 67% or more of the returned surveys, the resident(s) may request that staff develop an alternative plan or abandon their efforts. A revised Phase II plan will be tested by the support survey process in this step. If the revised plan fails to garner support of the residents in the PAOI after the second survey, no further surveys will be conducted by City staff for a minimum of one year.

Step 6 Final Approval by the City Council

The approved Phase II concept plan will be brought forward to the Traffic Safety Commission for recommendation and to hear public testimony on the matter. A duly noticed public meeting will be held by the City Council to receive the recommendations of the Traffic Safety Commission for Phase II implementation. If Council decides that Phase II is acceptable as presented, it will so indicate by adopting an ordinance authorizing installation of residential STOP signs and/or other proposed measures and authorizing the appropriation of any necessary funds. The Council may consider other

options such as returning to the neighborhood for refinement of the Phase II concept plan or proceeding to Phase III of the CRTMP.

Step 7 Phase II Implementation

Implementation of Phase II, in most cases, will be performed by city forces via work orders issued by staff.

Step 8 Phase II Monitoring

Phase II measures that have been installed will be monitored for effectiveness during the first year following completion of the installation. Staff will analyze traffic data results, accident history, observed deficiencies and/or impacts of the Phase II measures, comments, and suggestions or complaints received.

If some residents of the neighborhood believe that the impacts and results of Phase II do not meet their expectations, they may request removal of the permanent measures. The request for removal must follow the Traffic Calming Measures Removal Process and be submitted at least one year from date of Phase II installation.

PHASE III: TRAFFIC CALMING

If applicable Phase II options have been evaluated and do not appear to adequately address the problem as described previously, Phase III of the CRTMP may be considered. Phase III of the CRTMP is designed to allow traditional traffic calming measures to be used in areas where Phase II options have not adequately resolved the traffic issues. Due to the potential fiscal impacts of Phase III and probable impacts to parking capacity and limit access to properties, residents will be required to first utilize Phase II measures before requesting to proceed to Phase III. Phase III measures will be limited to locations where re-routed traffic will only impact higher classified roadways. Residents have the option to bypass Phase II only if funding is privately secured and all Phase III criteria are satisfied.

Step 1 Written Request

Phase III will be initiated when the affected residents send a letter to the Traffic Division of the Transportation Department requesting Phase III consideration. The letter will be generated by the residents following discussions with city staff, study of Police Department results of Phase II, and anticipation of what might be accomplished through further utilization of the CRTMP process. The Phase III process will require an evaluation of a qualification criteria as well a neighborhood-initiated support petition.

Step 2 Project Scoring and Qualification Criteria

Candidate streets will be evaluated on the following factors and associated points for the purpose of establishing a project score for funding considerations. Streets with a score exceeding 50 points will be eligible for Phase III.

Criteria and points assigned are as follows:

1. Travel Speed (maximum 40 points):
   6 points for each mile per hour the 85th percentile speed is over 32 miles per hour.

2. Traffic Volumes (maximum 30 points):
   Typical weekday ADT divided by 100 and rounded to the nearest whole number or the weekday peak hour volume divided by 10 and rounded to the nearest whole number.

3. Collision History (maximum 15 points):
   Five points will be assigned for each correctable collision on a street, including intersections, within the past five years. A correctable collision is one that might have been prevented by the installation of a traffic control device or traffic calming measure.

4. Sidewalks (maximum 5 points):
   5 points if no sidewalk or pedestrian pathway exists on either side of the street.
   5 points if no sidewalk or pedestrian pathway exists along at least one side of the street.

5. School Proximity (5 points maximum):
   5 points if school grounds abut the candidate street.
   3 points if the PAOI is within 500 feet of school grounds.
   1 point if the PAOI is located within 1,000 feet of school grounds.

6. Pedestrian Crossings (5 points maximum):
   5 points if a school crosswalk (yellow crosswalk) is located on a street in the PAOI.
   5 points if a major or midblock crosswalk is located on a street in the PAOI. A major crosswalk is defined as having 10 or more pedestrians crossing per hour during any eight hours of a typical weekday.

A maximum total of 100 points may be given for the street under consideration, using the Traffic Management Program Priority Scoring Worksheet. **A minimum score of 51 points is required for the subject street to qualify for Phase III.**

Carlsbad Residential Traffic Management Program
Phase III Qualification Criteria
Scoring Worksheet

This worksheet will be completed by City of Carlsbad staff. It will be used to assign points to a street for Phase III qualification and prioritization of a potential specific neighborhood traffic calming project.

Name of neighborhood (street location): _____

Points

1. **Travel Speed (40 pts. max.)** _____
   For each mile per hour the 85th percentile speed is over 32 miles per hour, 6 points will be assigned.
   Critical Speed: _____

2. **Traffic Volumes (30 pts. max.)** _____
   Total weekday ADT divided by 100, rounded to nearest whole number
   or weekday peak hour volume divided by 10, rounded to nearest whole number (use higher number)
   Volume: _____ Date Counted: _____

3. **Collision History (15 pts. max.)** _____
   Five points for each correctable collision during the past 5 years
   Number of collisions: _____

4. **Sidewalks (5 pts. max.)** _____
   No sidewalk or pedestrian pathways exists on either side of the street = 5 points
   No sidewalk or pedestrian pathway exists along at least one side of the street = 5 points

5. **School Proximity (5 pts. max.)** _____
   School grounds abut candidate street = 5 points
   PAOI is located within 500 feet of school grounds = 3 points
   PAOI is located within 1,000 feet of school grounds = 1 point

6. **Pedestrian Crossings (5 pts. max.)** _____
   School crosswalk (yellow crosswalk) is located on a street in the PAOI = 5 points
   Major or midblock crosswalk is located on a street in the PAOI = 5 points

Total Score: _____

_____

Evaluator Date

A MINIMUM SCORE OF 51 POINTS IS REQUIRED TO QUALIFY FOR PHASE III.

Step 3 Neighborhood Support Petition

If the subject street meets the Phase III Qualification Criteria, concerned residents will need to establish resident support for continuation of the Phase III process. The support petition is initiated by the neighborhood representative and serves as the mechanism to establish that residents' support the City's consideration of a Phase III traffic calming project. Documentation of support for consideration of a future project is indicated by a simple majority (50% plus one signature) of those eligible individuals located within the PAOI that sign the petition. The petition form will be developed by staff but it will be the responsibility of residents to circulate the petition and submit the results.

Step 4 Project Funding

Upon satisfaction of Steps 2 and 3 of the Phase III process, the subject street may be considered for funding as a future project through the Capital Improvement Program (CIP) process. If more than one CRTMP project is submitted in a given fiscal cycle, priority will be established by the Phase III Qualification Criteria scoring. Many different fiscal factors must be considered to establish if and to what level funds will be allocated for projects on the priority list. Staff will recommend a funding level and the City Council will consider and adopt the annual budget before the fiscal year ending on June 30.

As an alternative to the City funding the design and construction of Phase III improvements, residents may choose to collect funds themselves in any manner they choose, including the formation of an assessment district. This private funding must be for 100% of the project cost including design, construction, inspection, administration and contingency costs associated with the project. Private funds must be deposited with the city prior to proceeding to Step 4.

Phase III will not proceed until funding source is identified and funds are secured.

Step 5 Kick-off Meeting with the Neighborhood

All individuals from the PAOI will be invited to a neighborhood kick-off meeting hosted by the City. At the meeting, staff will explain to those in attendance the Phase III process that may lead to installation of the traffic calming measures proposed for their neighborhoods. Discussion will include:

- neighborhood concerns
- traffic data gathered
- results from Phase I and II
- potential solutions
- traffic calming plan development process
- before and after traffic study process

A Fire Department representative will attend the meeting to explain response needs of the emergency service providers and any concerns the Fire Department has with potential traffic calming on the candidate street. Also, a Police Department representative will attend the meeting to respond to questions about enforcement issues.

Step 6 Develop the Conceptual Neighborhood Traffic Calming Plan

By meeting and working closely with the residents, staff will be able to assist in:

- assessing neighborhood needs
- identifying alternatives
- developing initial plans or solutions
- finalizing the comprehensive plan based upon
    - sound engineering principles
    - neighborhood input
    - state-of-the-art traffic calming practices

Throughout design development of the conceptual plan, all residents within the PAOI will be provided updates and will be encouraged to offer input. The residents will be actively involved in all aspects of developing the comprehensive neighborhood traffic calming plan and will be expected to commit the time and effort needed to develop a successful plan. Directly affected residents and property owners will be notified and involved with the development of the conceptual plan.

The length of time needed to develop the conceptual plan is dependent upon the complexity of the issues, the level of neighborhood involvement and support, project cost and the willingness of the residents to aggressively pursue plan development. The series of meetings leading to completion of a final conceptual plan for presentation to the neighborhood could take six months or longer.

Step 7 Mail Support Survey for Final Conceptual Plan

A mail support survey will be conducted by city staff upon completion of the conceptual plan developed by residents and staff and evidence of a generally favorable consensus on the plan by interested residents. The purpose of the survey will be to determine if the neighborhood (PAOI) is in favor of the proposed plan by a super majority (67% or more).

Residents and non-resident owners within the PAOI will be included in the survey, essentially following the eligibility procedures addressed in Phase II. If necessary, and as determined by city staff based upon the proposed conceptual traffic calming plan, additional properties may be included or excluded by expanding or reducing the boundaries of the PAOI. The revised PAOI will become the new PAOI for purposes of the survey and other communications with residents affected by the proposed traffic calming project.

Distribution of the support survey will be conducted by the City through the mail. The survey will be considered valid if a minimum of 50% of those contacted fill out and return the survey. Staff will then analyze the returns to determine if 67% or more of the PAOI community responding supports proceeding to the final plans, specifications and estimates (PS&E) stage and for the installation of temporary features. Staff will notify by mail all individuals within the PAOI of the survey results and the next steps in the process.

If 50% of the surveys are not returned, an outreach program must be developed by the residents with the assistance of staff. Re-survey will occur after all steps established in the outreach program are completed.

A re-survey will be valid if 50% or more of the surveys are returned to staff. If the plan is not approved by 67% or more of the returned surveys, the residents may choose to develop an alternative plan or abandon their efforts. A revised conceptual plan, after an appropriate outreach program, will be tested by the support survey process in this step. If a conceptual plan fails to garner support of the residents in

the PAOI after the second survey, no further surveys will be conducted by city staff for a minimum of one year.
If neighborhood support for the Phase III traffic calming concept plan is established, staff can proceed to Step 8.

Step 8 Environmental Review

Upon confirming the neighborhood support for the Phase III concept plan and funds have been identified, allocated and approved, staff will initiate environmental review of the proposed project through the City of Carlsbad Planning Department. Generally, traffic calming improvements proposed within the existing street right-of-way are found to be exempt from detailed environmental review.

Step 9 Complete Final Design

Final design of the traffic calming plan can be started by staff concurrent with processing the environmental document. However, the final plan cannot be completed beyond the 30% stage until environmental certification is received and funding for the project is secured. Depending upon the complexity of the final plan, a consultant may be hired by the city. After completion of the final design, staff will initiate installation of temporary measures to simulate the effect of the proposed permanent traffic calming measures. The Police and Fire Departments will have considerable input during the final design.

Step 10 Final Approval by the City Council

The approved Phase III design plan will be brought forward to the Traffic Safety Commission for recommendation and to hear public testimony on the matter. A duly noticed public meeting will be held by the City Council to receive the recommendations of the Traffic Safety Commission for the final traffic calming project and to hear public testimony on the matter. If Council decides the project is acceptable, it will so indicate by adopting a resolution authorizing advertising for construction bids, thus taking the first step toward installation of the project. If, on the other hand, the Council does not support the proposal, staff may be directed to abandon the plan, or to return to the neighborhood for refinement of the plan, or to take no further action.

Step 11 Project Construction

Construction of the approved project, in most cases, will be performed by a licensed contractor selected through the city's formal construction bidding process. After a contractor is selected by the city, individuals within the PAOI will be notified of the construction schedule.

Step 12 Project Monitoring

Traffic calming projects that have been constructed will be monitored for effectiveness during the first year following completion of the installation and also during the second year after the installation.

If residents of the neighborhood believe that the traffic calming measures, impacts and results do not meet their expectations, they may request removal of the permanent measures. The request for removal must follow the Traffic Calming Measures Removal Process and be submitted at least one year from date of Phase III installation.

Traffic Calming Measures Removal Process (Phase II and III)

Individuals within a neighborhood may determine that one or more traffic calming measures should be removed. If so, a petition favoring removal and signed by 80% of the eligible individuals within the PAOI or expanded PAOI, if applicable, must be sent to staff. Eligibility criteria for signing the petition will be the same as for previously indicated voting procedures (one signature per household or property). A sample petition is provided on the next page for use by the neighborhood contact person to collect signatures.

Staff will review the petition, determine if the 80% threshold is met and notify all residents and non-resident owners within the PAOI of the results. No removal petition will be accepted by staff during the test period when temporary measures are being reviewed.

If the petition has 80% or more valid signatures, it will be submitted to the Traffic Safety Commission for consideration. All individuals within the PAOI will be notified in writing of the meeting and will have the opportunity to address the Commission with their concerns. The Traffic Safety Commission recommendation, whether to deny or sustain the removal petition, will be forwarded to the City Council.

All residents and non-resident owners within the neighborhood PAOI will be notified by mail of the date when the City Council will consider their request for removal of the traffic calming measure(s). Each interested resident will have the opportunity to address the City Council. A final decision will be made by the City Council based upon staff input, Traffic Safety Commission recommendations and citizen comments. As appropriate, staff will initiate action on the City Council's decision. All residents and non-resident owners within the PAOI will be notified of the City Council decision by mail.

PETITION

REQUEST TO REMOVE TRAFFIC CALMING MEASURE(S)
CARLSBAD RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM

CONTACT PERSON: _____ DATE: _____

CONTACT PERSON ADDRESS: _____

_____

CONTACT PERSON TELEPHONE: _____

The undersigned state they that they are requesting that the City of Carlsbad consider removing the traffic calming measure(s) installed on _____*(street name).*

The measure or measures to be removed are: _____

_____

_____.

The undersigned further state they have read the Travel Calming Removal Process section contained in the Carlsbad Residential Traffic Management Program.

Name *(please print)*	**Address *(please print)***	**Telephone**	Signature
1.			
2.			
3.			
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20.			

(attach additional sheets as necessary)

PROGRAM UPDATE PROCEDURES

It is intended that the Carlsbad Residential Traffic Management Program be dynamic and subject to change. Traffic calming measures, techniques and/or methodologies continue to evolve. What was once in favor and popular to implement may have been subsequently found by agencies to be undesirable, unworkable or unacceptable to the neighborhood.

Revisions to the Carlsbad Residential Traffic Management Program (CRTMP) are expected. When revisions are suggested, a formal review and approval process of the revision(s) will be followed.

Steps in the revision/update process are as follows:

Step 1 Initiation of Revision

A change or revision may be initiated by the City Council, staff or a citizen. It is suggested that the requested revision be made in writing, with the reasons for or intent of the revision clearly stated. A compelling reason to initiate the update process or to change the process must be offered to be favorably received.

Step 2 Review by Staff

Suggested revisions will be thoroughly researched and reviewed by staff to determine if they are appropriate for inclusion in the Carlsbad Residential Traffic Management Program. Other City departments will also be consulted and, as necessary, comments from stakeholders will be solicited. Changes to traffic calming measures, procedures or methodologies will only be considered by the Traffic Safety Commission once a year, unless such measures, procedures or methodologies are determined to be illegal.

Step 3 Response to Initiator

Staff will respond in writing to the individual proposing the revisions, commenting on their suitability or requesting additional information as needed. Revisions deemed unacceptable by staff will not be processed further. Revisions recommended by staff for further consideration will be scheduled for discussion at a Traffic Safety Commission meeting. Only those suggested revisions that significantly enhance the overall Carlsbad Residential Traffic Management Program will be considered for acceptance and submitted to the Traffic Safety Commission.

Step 4 Review by the Traffic Safety Commission

All revisions proposed during any 12-month period will be reviewed by the Traffic Safety Commission at the end of such period. The recommendations of the TSC on all such proposed revisions will be forwarded to the City Council. The TSC review meetings will be duly noticed and open to the public for their input on revisions or changes.

Step 5 Review and Approval by the City Council

In a public meeting, the City Council will consider the recommendations of the Traffic Safety Commission. Staff may be directed by the Council either to implement the revisions to the program and the supporting documents or to take no action on the requested revision. Noticing procedures for the Council meeting will be the same as for the Traffic Safety Commission meeting and all interested residents will be encouraged to attend the Council meeting to make their opinions known.

Proposed revisions will not interfere with or delay the processing of a neighborhood traffic calming program in progress. A neighborhood that has started development of its traffic calming program will continue the process without change.

Measures Not Recommended for Use

Several traffic management measures were evaluated and determined to be unsuitable for use in Carlsbad. Listed following are measures not recommended for installation on public streets and, therefore, not proposed for consideration as part of a neighborhood traffic calming project.

Rumble Strip

A rumble strip is an alteration to the paved street surface by various techniques to draw the driver's attention to a roadway condition. This measure is not acceptable in a residential neighborhood due to the noise and vibration created when a vehicle is driven over the rumble strip.

One-Way Street

A one-way street may encourage increased speeds and may result in additional traffic volumes on a nearby street due to diverted traffic. On a residential street, confusion and wrong-way travel may result as a one-way street is an atypical encounter for drivers when leaving a single-family residence.

Miscellaneous Non-Standard Devices

Signs and/or striping not recognized by the State of California Department of Transportation (Caltrans) as an official traffic control device shall not be used in the public right-of-way. These signs typically include CHILDREN AT PLAY, SLOW and others. Non-official signs are of the novelty type, many have messages that are misinterpreted by drivers, have no legal meaning and their use can expose the City to tort liability. These types of signs do not command the attention or respect of drivers that are repeat users of the street. Using signs that are not officially approved may give a false sense of security to residents. Additionally, the signs raise expectations that some degree of protection is provided through their use when, in reality, this is not the case.

Cul-de-Sacs and Road Closures

Streets have been designed and constructed to facilitate multiple points of egress for the residents and multiple ways for an emergency vehicle to respond to an incident. Basic circulation patterns are intended to remain. Streets will not be truncated through the construction of a barrier to cause a road closure or by converting the end of the street into a cul-de-sac through construction of a turnaround.

ACRONYMS AND GLOSSARY

California Vehicle Code	A document published by the Department of Motor Vehicles containing laws relating to the use of streets and the operation of vehicles thereon.
Circulation Element	Comprehensive plan in Carlsbad for the safe and efficient movement of people and goods.
Critical Speed (85th percentile)	The speed at which 85% of the vehicles are traveling at or below.
General Plan	A document required by law that contains the overall goals, objectives and policies for development of the City.
ITE	Institute of Transportation Engineers
Midblock	Any point located between two successive intersections.
NTCC	Neighborhood Traffic Calming Committee
PAOI	Project Area of Influence
PS&E	Plans, specifications and estimates used to construct projects.
Traffic Calming	The combination of mainly physical measures that reduces the negative effects of motor vehicle use, alters driver behavior and improves conditions for non-motorized street users—ITE definition.
CRTMP	Carlsbad Residential Traffic Management Program
Toolbox	Traffic calming measures ("tools") used to reduce vehicle speeds and/or minimize volumes on residential streets.
TR	Traffic Request. Used by transportation staff to log, file and track project requests.
TSC	Traffic Safety Commission
Warrants	Established, objective criteria used to evaluate traffic conditions.

Exhibit 1

RESOLUTION NO. 2011-115

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CARLSBAD, CALIFORNIA, APPROVING THE REVISED CARLSBAD RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM THAT ESTABLISHES THE POLICY FOR TRAFFIC CALMING ON RESIDENTIAL STREETS.

WHEREAS, the City of Carlsbad is committed to recognizing the residential character of its residential public streets; and

WHEREAS, the City has responded to concerns regarding traffic issues in neighborhoods; and

WHEREAS, the City has determined that speeding and excessive traffic volumes on residential streets are to be discouraged; and

WHEREAS, through the traffic management process, the City desires to have a logical, consistent, and viable methodology for managing traffic issues in residential neighborhoods; and

WHEREAS, the policies, procedures and methodology for traffic management on residential public streets are specified in the Carlsbad Residential Traffic Management Program, as revised May 2011.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Carlsbad, California, as follows:

1. That the above recitations are true and correct.

2. That City Council hereby establishes that the policy, standards and methodology to be considered for managing traffic on residential public streets is set forth in the Carlsbad Residential Traffic Management Program, as revised May 2011, and any subsequent revisions thereof.

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PASSED, APPROVED AND ADOPTED at a Regular Meeting of the City Council of the City of Carlsbad on the 24th day of May , 2011, by the following vote to wit:

AYES: Council Members Hall, Kulchin, Blackburn, Douglas, Packard.

NOES: None.

ABSENT: None.

MATT HALL, Mayor

ATTEST:

LORRAINE M. WOOD, City Clerk
(SEAL)

TRAFFIC CALMING TOOLBOX

Traffic control devices are those official signs and striping placed in the public right-of-way and recognized by the public such as STOP signs, curve warning signs, centerline striping, etc. These devices have been officially approved by the State of California Department of Transportation (Caltrans) pursuant to legislative authority provide for in the California Vehicle Code.

Traffic calming measures, however, have evolved to include features that may not be officially approved through legislative action by the State of California. Commonly referred to as "tools", the traffic calming measures or features available for use in Carlsbad are available in this program's "toolbox".

Each tool listed is unique and has a specific purpose for addressing residential street traffic concerns that require some form of traffic calming. Each tool has its own set of advantages and disadvantages and a range of costs. More than just a structural feature on a street, traffic calming tools also encompass education, enforcement, engineering and enhancement.

The following pages identify tools that have been endorsed and available for use in Carlsbad. They were chosen for:

- Appropriateness to address traffic concerns in Carlsbad.
- Acceptability to stakeholders including the Fire and Police Departments.
- Suitability for use in residential neighborhoods.

Each traffic calming measure is briefly described, application for usage listed, and possible advantages and disadvantages outlined. Estimated costs have been provided when the cost of the measure was able to be determined.

Phase I

Education

Description:

Conversations, meetings, e-mails, letters and handouts to residents regarding neighborhood traffic and pedestrian safety issues.

Application:

Traffic education is intended to make residents aware of local residential speed limits and other neighborhood traffic and safety concerns.

Advantages:

- Allows residents to express views and obtain answers.
- Identifies issues of concern and solutions.

Disadvantages:

- Effectiveness may be limited.
- Potentially time consuming.
- Limited audience.

Special Considerations:

- Meetings need to stay focused on specific traffic issues.

Cost:

- Varies (staff time and published materials).

Phase I

Police Presence

Description:

Police vehicles drive through or stop for a few minutes on residential streets to observe driver behavior.

Application:

Police presence is used to make a visual showing in residential neighborhoods to help discourage speeding.

Advantages:

- Shows an enforcement presence.
- May help slow vehicle speeds.

Disadvantages:

- Presence without enforcement has limited effectiveness.
- Limited police resources.

Special Considerations:

- Typically only effective when officer is present.
- Used on residential streets with complaints of speeding.

Cost:

- N/A

Phase I

Police Enforcement

Description:

The Police Department deploys motorcycle or automobile officers to perform targeted enforcement on residential streets.

Application:

Targeted police enforcement used to make drivers aware of local speed limits and to reduce speeds by issuing citations.

Advantages:

- Effective, visible enforcement.
- Driver awareness increased.
- Can be used on short notice.
- Can reduce speeds temporarily.

Disadvantages:

- Temporary measure.
- Requires long-term use to be effective.
- Limited police resources.

Special Considerations:

- Typically only used on residential streets with documented speeding problems.
- Typically only effective while officer is actually monitoring speeds.
- Benefits are short-term without regular periodic enforcement.
- Expensive.

Cost:

- N/A

Phase I

Speed Feedback Signs

Description:

A portable device equipped with a radar unit that detects, displays and records the speed of passing vehicles. The sign can be set to display the speed on its screen or show a blank screen for data collection only.

Application:

May help discourage speeding on neighborhood streets through education (when set on display mode) by showing drivers their current speed.

Advantages:

- Effective educational tool.
- Good public relations tool.
- Encourages speed compliance.
- Can reduce speeds temporarily.

Disadvantages:

- Not an enforcement tool.
- Ineffective on multi-lane roadways.
- Less effective on high volume streets.
- Limited Police Department resources to install

Special Considerations:

- Can be installed on a street light standard where a resident indicates there is a speeding problem.
- Typically only effective in reducing speeds when the sign is present and set on display mode.
- Some motorists may speed up to try to register a high speed (when on display mode).
- Recommend for temporary use only.

Cost:

- $5,000 each unit

Phase I

Speed Limit Signs

Description:

25 mile per hour speed limit signs are installed on neighborhood residential streets that meet the legal definition of a RESIDENCE DISTRICT.

Application: Speed limit signing encourages slower vehicle speeds along residential streets. Signs are only installed along streets where speeding is a problem.

Advantages:

- Clearly indicates prima facie speed limit.
- Usually popular with residents.
- Low cost of installation.

Disadvantages:

- Not effective by themselves.
- May add to sign clutter.
- Increased cost of sign maintenance.

Special Considerations:

- Typically only installed on streets where speeding is a documented problem.
- Requires police enforcement to be effective.

Cost:

- $200 per sign.

Phase I

Speed Limit Pavement Legends

Description:

Painting of speed limit legends on the roadway adjacent to speed limit signs.

Application:

Speed limit pavement legends increase driver awareness of the speed limit to help reduce speeding.

Advantages:

- Supplement to speed limit signs.
- May help reduce speeds.
- Usually popular with residents.

Disadvantages:

- Not effective or legal by themselves.
- Increase in maintenance cost.

Special Considerations:

- Should only be installed on streets where speeding is a documented problem.

Cost:

- $350 per legend.

Phase I

Warning Signs

Description:

Standard warning signs give drivers advanced notice of roadway conditions.

Application:

Warning signs advise motorists to reduce their speed.

Advantages:

- Informs motorists of roadway conditions.
- Low cost of installation.

Disadvantages:

- May add to sign clutter.
- Increased cost of sign maintenance.
- Not a regulatory sign.

Special Considerations:

- Advisory only, cannot be enforced.

Cost:

- $200 per sign.

Phase I

Neighborhood Speed Monitoring Program

Description:

Resident writes down the license plate number of vehicle(s) observed to be speeding noting date, time & location. Information is called in to the Traffic Division of the Police Department. The Police Department sends a letter to the registered vehicle owner informing them their vehicle was observed to be speeding on the stated street on the specified date, time & location. The vehicle owner is informed that residents are very concerned about speeding & are requested to observe the 25 mph residential speed limit.

Application:

The Neighborhood Speed Monitoring Program helps to discourage speeding through neighborhood & Police Department involvement, awareness & neighborhood peer pressure.

Advantages:

- Encourages speed compliance.
- Creates neighborhood involvement and awareness.

Disadvantages:

- Not an enforcement tool.
- Requires Police Department resources to send letters.

Cost:

- police Department staff time to send out letters.

Phase II

Residential STOP Signs

Description:

Residential stop signs may be considered for installation under special circumstances for speed reduction at intersections on residence district streets.

Application:

The installation of residential stop signs at intersections reduces the uncontrolled length of a street, which may help to reduce vehicle speeds on the street.

Advantages:

- May help reduce vehicle speeds within 150-200 feet of intersection.
- Favored by many residents.
- Low cost of installation.

Disadvantages:

- Non-enforcement may lead to a general non-compliance of stop signs.
- May divert traffic to other streets.
- Emergency response times slightly impacted.
- Increased maintenance costs
- May lead to increased noise/air pollution
- Not as effective as horizontal deflective measures such as traffic circles.

Special Considerations:

- To control vehicle speeds, the recommended spacing of this traffic calming measure on a residential street is typically between 300 to 700 feet.
- Requires stop limit line and stop legend to be painted on the street which may lead to sign clutter.
- Requires stop limit line and stop legend to be painted on the street.

Cost:

- $2,000 (two approaches) - $4,000 (four approaches).

Phase II

Speed Table

Description:

Speed tables are constructed 3 to 4 inches above the elevation of the street. They feature ramps on the approaches and a flat top, typically about the length of a passenger car.

Application:

Speed tables help reduce vehicle speeds at mid-block locations.

Advantages:

- Reduces vehicle speeds.
- Access not affected.
- Generally results in a gentler ride as compared to speed lumps.

Disadvantages:

- May increase noise.
- Emergency response times affected.
- Increased maintenance costs.
- Perception of reducing property values.
- May not be as aesthetically pleasing as chicanes.

Special Considerations:

- Requires special signing and markings which may lead to sign clutter.
- Careful attention required for drainage issues and other design issues.
- Works well in combination with curb extensions and curb radius reductions.
- At existing crosswalk locations, a crosswalk may be painted on the proposed speed table.

Fire Department and Police Department Evaluation:

Fire Department and Police Department shall have final approval of speed table locations and spacing.

Cost:

- $8,000 - $14,000 each (prefabricated).

Phase II

Speed Cushions

Description:

Prefabricated rubber or field formed asphalt approximately 3 inches in height and 7-12 feet in length installed in a series across a roadway. Transverse cuts across the cushion allow some emergency vehicles to pass without vertical deflection.

Application:

Reduce vehicle speeds without significantly impacting some emergency vehicle response time.

Advantages:

- Reduces vehicle speeds.
- May reduce vehicle volumes.

Disadvantages:

- May increase noise.
- Aesthetics.
- May divert traffic to other streets.
- Perception of reducing property values.
- Increased maintenance costs.
- Some emergency vehicles impacted by slowing response times.

Special Considerations:

- Requires special signing and markings.
- To control vehicle speeds, the spacing must be carefully evaluated.

Fire Department and Police Department Evaluation:

Fire Department and Police Department shall have final approval of speed lump locations and spacing.

Cost:

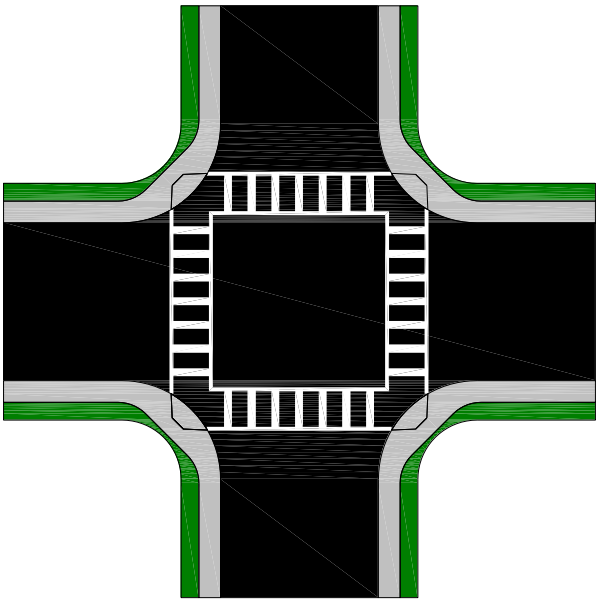
- $4,000 - $6,000 each (prefabricated).

Phase II

High Visibility Crosswalks

Description:

High visibility crosswalks established by painting stripes between the crosswalk's outer boundary stripes.



Application:

High visibility crosswalks increase crosswalk visibility to drivers.

Advantages:

- More visible to the driver than traditional crosswalks.

Disadvantages:

- May give false sense of security to pedestrians.
- Higher maintenance costs.

Special Considerations:

- Should only considered at controlled intersections where painted crosswalks already exist.
- Pedestrians may place too high a reliance on its ability to control driver behavior.
- Can be used at high pedestrian volume crossing locations.

Cost:

- $1500 to $7,000 each.

Phase II

Narrowing Lanes (Striping)

Description:

Striping used to narrow traffic lanes. The "extra" pavement width can be used to create or add to bicycle and/or parking lanes. Lane striping can also be used to visually simulate the hardscape features that define the horizontal traffic calming measures found in Phase III.

Application:

Narrowing lanes with striping used to help slow vehicle speeds. Horizontal measures can be simulated with striping but are not as effective as Phase III traffic calming measures that use hardscape to deflect traffic.

Advantages:

- Can be quickly implemented in some circumstances.
- May reduce travel speeds.
- May improve safety.

Disadvantages:

- Not effective as stand-alone measure.
- May lead to loss of parking.
- Increases regular maintenance.
- Some residents may oppose striping on neighborhood streets.
- Increases resurfacing costs.

Special Considerations:

- Narrowed travel lanes create "friction" to help slow vehicle speeds.
- Can be installed quickly.
- Designated bicycle lanes and/or parking lanes can be created.
- Adds centerline and edgeline striping to neighborhood streets.

Cost:

- $0.75 per linear foot.

Phase II

Neighborhood Signs

Description:

Neighborhood signs involve the use of special signs such as "ENTERING A TRAFFIC CALMED NEIGHBORHOOD" to increase motorist awareness.

Application:

Neighborhood signs help reduce speeding on residential streets.

Advantages:

- May increase driver awareness.
- May cause drivers to slow down.
- Low cost of installation.

Disadvantages:

- May have no lasting effect.
- Can create false sense of security.
- Adds to sign clutter.
- Increased cost of sign maintenance.
- Not a standard MUTCD sign.

Special Considerations:

- Installed at entry points to a neighborhood.

Cost:

- $$200 per sign.

Phase III

Turn Restrictions via Signs

Description:

Standard "No Left Turn", "No Right Turn", or "Do Not Enter" signs used to prevent undesired turning movements onto residential streets.

Application:

Turn restriction signing used to reduce cut-through traffic on residential streets.

Advantages:

- Redirects traffic to main streets.
- Reduces cut-through traffic.
- Low cost.

Disadvantages:

- May divert traffic to other streets.
- Inconvenient to residents.
- Enforcement required.
- Adds to sign clutter.
- Violation rates can be high without enforcement.

Special Considerations:

- Installed at entry points of a neighborhood to prevent traffic from entering.
- Has little or no effect on speeds for through vehicles.
- With active enforcement, violation rates can be reduced.

Cost:

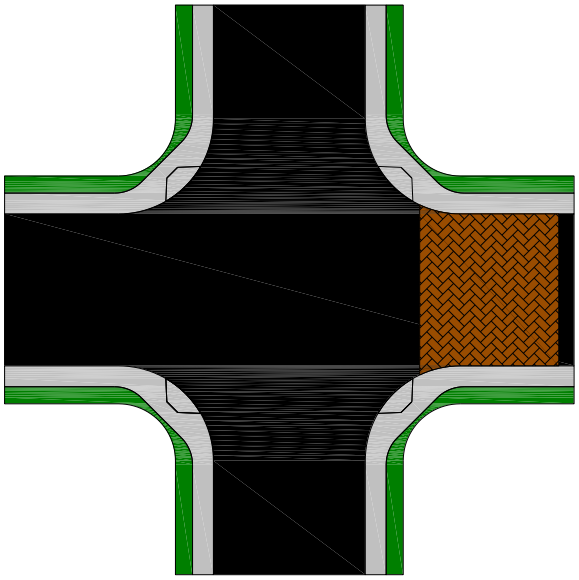
- $200 per sign.

Phase III

Textured Pavement

Description:

Textured pavement is installed in the roadway typically to provide an entry statement to the neighborhood.



Application:

Used as a visual cue for drivers to slow down.

Advantages:

- Aesthetic/visual enhancement.
- Provides entry statement to traffic calmed area.

Disadvantages:

- Increase in maintenance.
- Increase in noise.
- Expensive.

Special Considerations:

- Textured pavement has minimal influence on drivers routine behavior.
- Overall speeds and volumes are usually only minimally influenced.

Cost:

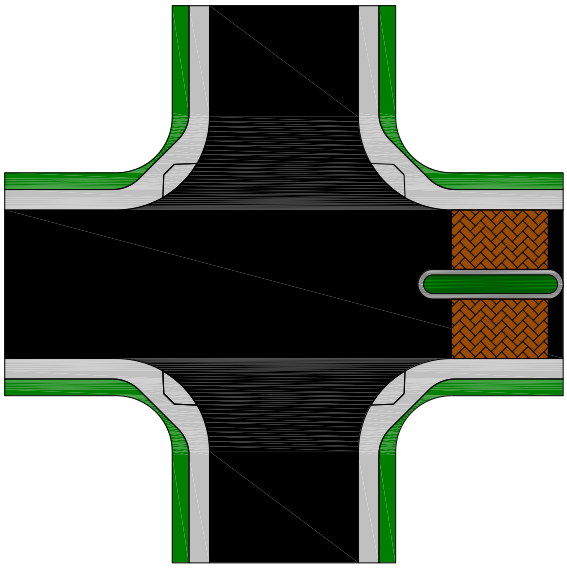
- $10 per square foot.

Phase III

Entry Treatment

Description:

Entry treatments consist of raised landscaped median islands and textured pavement features and are located at entries to neighborhoods.



Application:

Entry treatments help reduce speed. They provide visual cues to drivers they are entering a residential area or that surrounding land uses are changing.

Advantages:

- May reduce vehicle speeds.
- Creates an identify for the neighborhood.
- May reduce cut-through traffic.
- Opportunity for landscaping.

Disadvantages:

- Increase in noise.
- May require removal of parking.
- Can impede truck movements.
- Creates physical obstruction.
- Increase in maintenance.

Special Considerations:

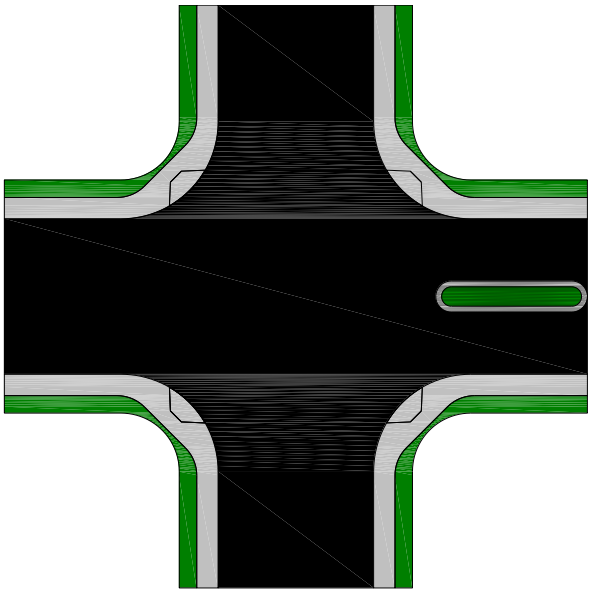
- Entry treatments have minimal influence on drivers routine behavior.
- Overall speeds and volumes are usually only minimally affected.
- Entry treatments make drivers more aware of the neighborhood environment.
- Care should be taken not to restrict pedestrian visibility at adjacent crosswalk.

Cost:

- $21,000 to $35,000 per approach.

Phase III

Center Island Narrowing



Description:

Center island narrowing is the construction of a raised island in the center of a wide street.

Application:

Center islands are installed on wide streets to help lower speeds and/or to prohibit left-turning movements. They also provide a mid-point refuge area for pedestrians.

Advantages:

- Reduces vehicle speeds.
- Can reduce vehicle conflicts.
- Reduces pedestrian crossing width.
- Landscaping opportunity.

Disadvantages:

- May require parking removal.
- May reduce driveway access.
- May impact emergency vehicles.
- May divert traffic to other streets.

Special Considerations:

- When used to block side street access, may divert traffic.
- May visually enhance the street with landscaping.
- Bicyclists prefer not to have travel way narrowed.

Cost:

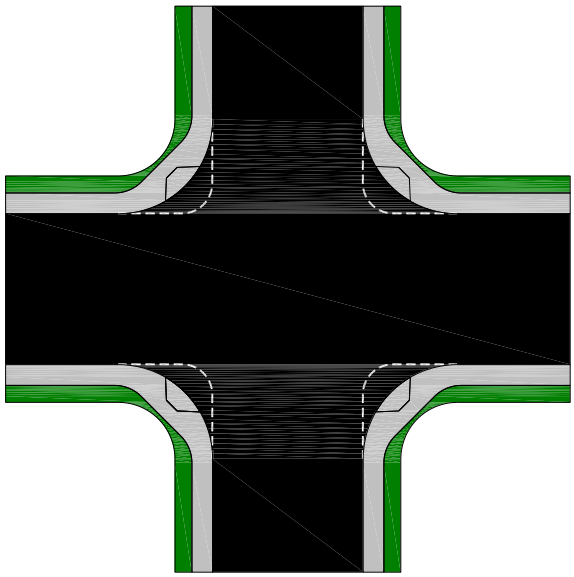
- $14,000 to $28,000 each.

Phase III

Curb Radius Reduction

Description:

Removal of existing larger radius curb returns at an intersection and construction of smaller radius curb returns.



Application:

Curb radius reductions slow vehicle turning speeds and shorten pedestrian crossing distance.

Advantages:

- Shorter pedestrian crossing width.
- Slower vehicle turning speeds.
- Opportunity for landscaping.

Disadvantages:

- Impacts large vehicle turns.

Special Considerations:

- Careful attention needs to be given to drainage issues and turning radii.

Cost:

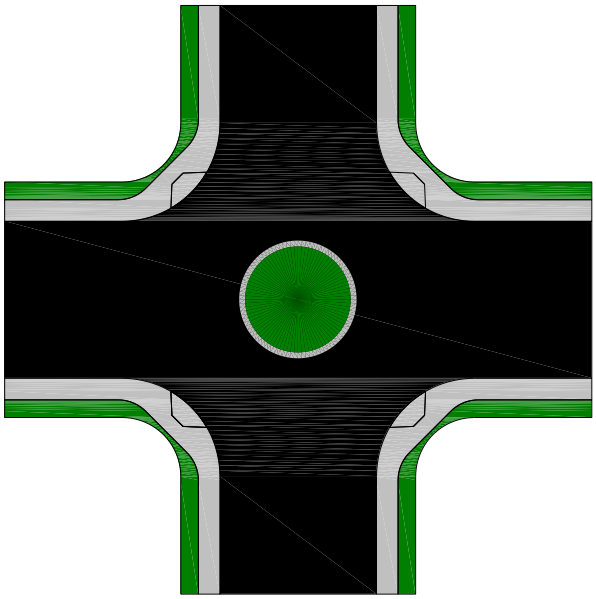
- $12,000 to $18,000 (four-leg intersection)

Phase III

Traffic Circle

Description:

Traffic circles are raised circular islands installed in an existing intersection. Traffic circles require drivers to slow down to maneuver around the circle.



Application:

Traffic circles provide speed control.

Advantages:

- Effectively reduces vehicle speeds.
- Reduces collision potential.
- Better side-street access.
- Opportunity for landscaping.

Disadvantages:

- May increase bicycle/automobile conflicts.
- Can increase emergency vehicle response time.
- Can restrict large vehicle access.
- Expensive.
- Some left-turning vehicles must negotiate circle clockwise.

Special Considerations:

- Traffic circles are best used in a series or with other devices.
- About 30 feet of curbside parking must be prohibited in advance of circle.
- Requires the installation of signs and pavement markings.
- Traffic circles are less effective at T-intersections.

Fire Department and Police Department Evaluation:

Fire Department and Police Department shall have final approval of traffic circle locations.

Cost:

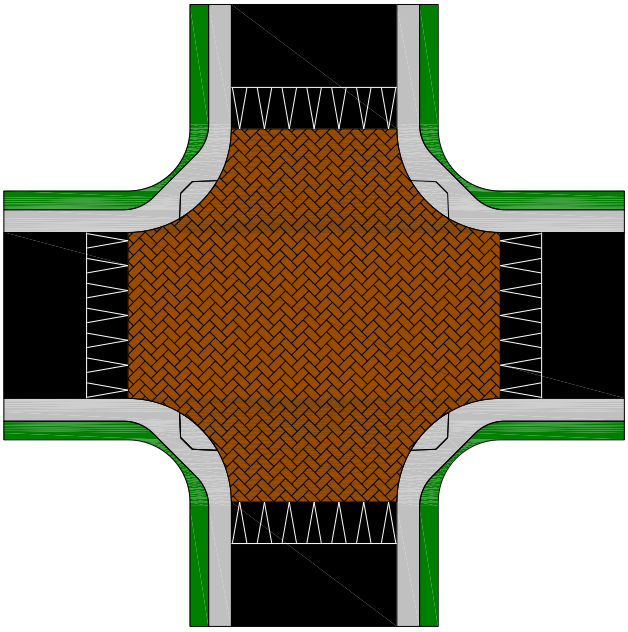
- $20,000 to $35,000 per intersection.

Phase III

Raised Intersection

Description:

A raised intersection is a flat, raised area covering an entire intersection. There are ramps on all approaches. The plateau is generally about 4" high. Typically, the raised intersection is finished with textured pavement.



Application:

Raised intersections reduce vehicle speeds and provide for safer pedestrian crossings.

Advantages:

- Effectively reduces vehicle speeds.
- Enhances pedestrian safety.
- Can be aesthetically pleasing.

Disadvantages:

- Expensive to construct and maintain.
- Requires drainage modifications.
- Affects emergency vehicle response time.
- May require bollards around corners.

Special Considerations:

- Makes intersections more pedestrian-friendly.
- Special signing is required.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and the Police Department and its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

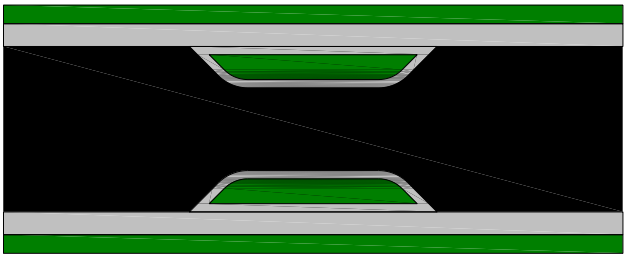
- $48,000 to $110,000 per intersection.

Phase III

Mid-Block Choker

Description:

Mid-block chokers are curb extensions that narrow a street by extending the curbs towards the center of the roadway. The remaining street cross-section consists of two narrow lanes.



Application:

Reduces speeds by narrowing the roadway so two vehicles can pass slowly in opposite directions.

Advantages:

- Effectively reduces vehicle speeds.
- Shorter pedestrian crossing width.
- Improves sight distance.
- Opportunity for landscaping.

Disadvantages:

- May require parking removal.
- May create hazard for bicyclists.
- May create drainage issues.
- May impede truck movements.
- May impact driveway access.

Special Considerations:

- Preferred by many emergency response agencies to other measures.
- Provide excellent opportunities for landscaping.

Cost:

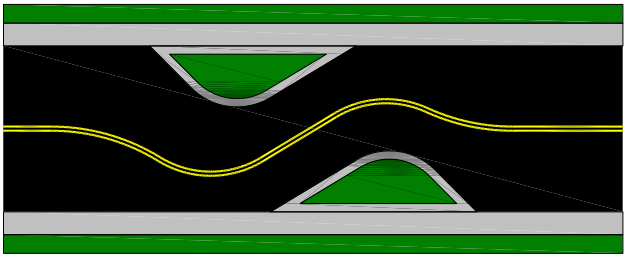
- $14,000 per location

Phase III

Lateral Shift

Description:

A lateral shift is the construction of curb extensions into the roadway that creates a horizontal deflection drivers must negotiate.



Application:

A lateral shift helps reduce vehicle speeds.

Advantages:

- Effectively reduces vehicle speeds.
- Low impact on emergency vehicles.
- Opportunity for landscaping.

Disadvantages:

- Loss of parking.
- Increased maintenance.
- May impact driveways.
- May be expensive.

Special Considerations:

- Most effective when traffic volumes are approximately equal in both directions.
- May increase conflicts with pedestrians and bicyclists.

Cost:

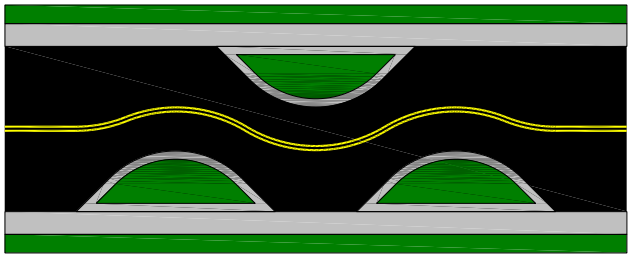
- $14,000 to $28,000 per location.

Phase III

Chicane

Description:

A chicane is a series of two or more staggered curb extensions on alternating sides of a roadway. The horizontal deflection causes motorists to reduce speed.



Application:

Chicanes help reduce vehicle speeds.

Advantages:

- Effectively reduces vehicle speeds.
- Low impact on emergency vehicles.
- Opportunity for landscaping.

Disadvantages:

- Loss of parking.
- Increased maintenance.
- May impact driveways.
- May be expensive.

Special Considerations:

- May require removal of substantial amounts of on-street parking.
- Most effective when traffic volumes are approximately equal in both directions.
- May increase conflicts with pedestrians and bicyclists.
- Provide landscaping opportunities.
- Most residents would have their driveways affected.

Cost:

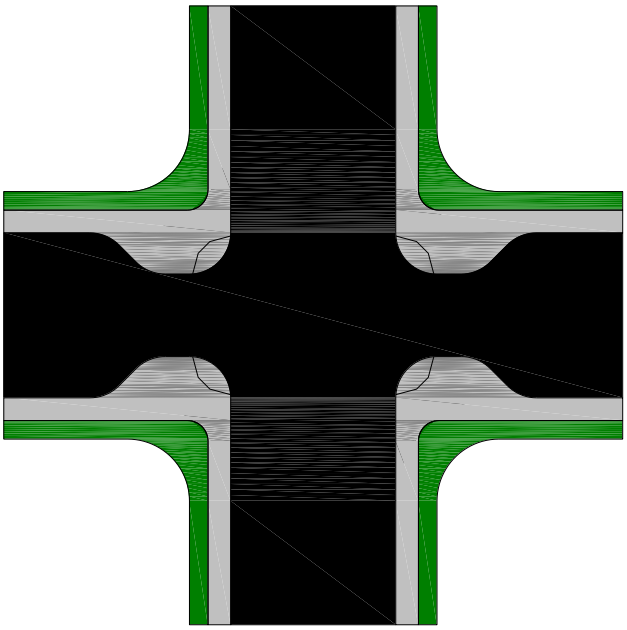
- $40,000 to $80,000 per location.

Phase III

Intersection Bulb-Out

Description:

Intersection bulb-outs narrow the street by extending the curbs toward the center of the roadway.



Application:

Used to narrow the roadway and to create shorter pedestrian crossings. They also influence driver behavior by changing the appearance of the street.

Advantages:

- Improve pedestrian visibility.
- Shorter pedestrian crossing width.
- May reduce vehicle speeds.
- Opportunity for landscaping.

Disadvantages:

- May require parking removal.
- May create hazard for bicyclists.
- May create drainage issues.
- Impacts large vehicle turns.

Special Considerations:

- Intersection bulb-outs at transit stops enhance service.
- May require landscape maintenance to preserve sight distances.

Fire Department Evaluation:

- Intersection Bulb-Outs shall be restricted to only one of the two intersecting streets.

Cost:

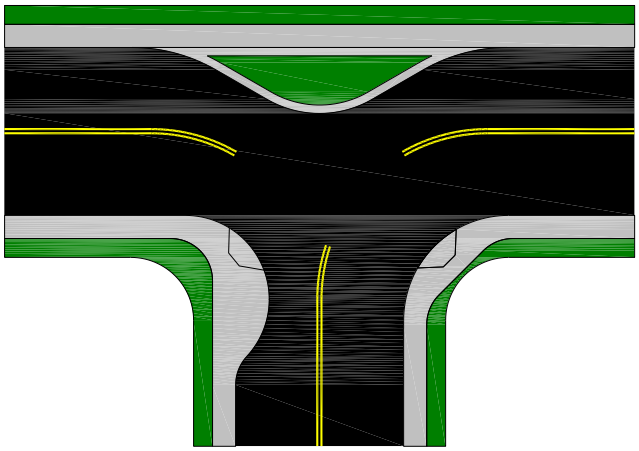
- $14,000 to $28,000 (four-leg intersection).

Phase III

Realigned Intersection

Description:

"T" intersections are realigned/modified by constructing horizontal deflection which forces previous straight-through movements to make slower turning movements.



Application:

Realigned intersections help reduce vehicle speeds.

Advantages:

- Reduces vehicle speeds.
- No significant impact on emergency and transit service.
- May discourage through traffic.
- Opportunity for landscaping.

Disadvantages:

- Removal of parking required.
- Increased maintenance.
- May divert traffic to other streets.

Special Considerations:

- Reduces vehicle speeds near intersection.
- May change STOP sign configuration and affect emergency response times.
- Careful attention needs to be made to drainage issues.

Cost:

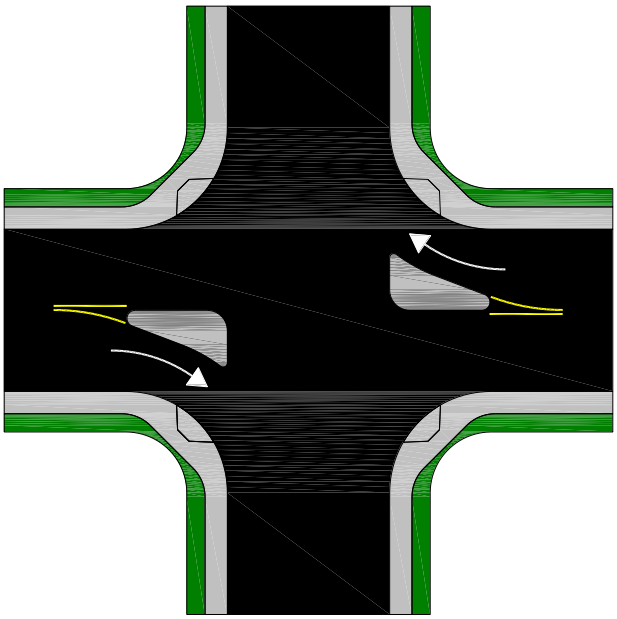
- $14,000 to $28,000 each intersection.

Phase III

Forced Turn Channelization

Description:

Forced turn channelization are raised median islands that restrict specific movements at an intersection.



Application:

Forced turn channelization reduces traffic volumes/cut-through traffic.

Advantages:

- Reduces cut-through traffic.
- More self-enforcing than signs.
- Shorter pedestrian crossing distances.

Disadvantages:

- May divert traffic to other streets.
- Can increase trip lengths.

Special Considerations:

- Has little or no effect on speeds for through vehicles.
- In emergency situations, emergency vehicles can gain access.
- May increase emergency response times.

Cost:

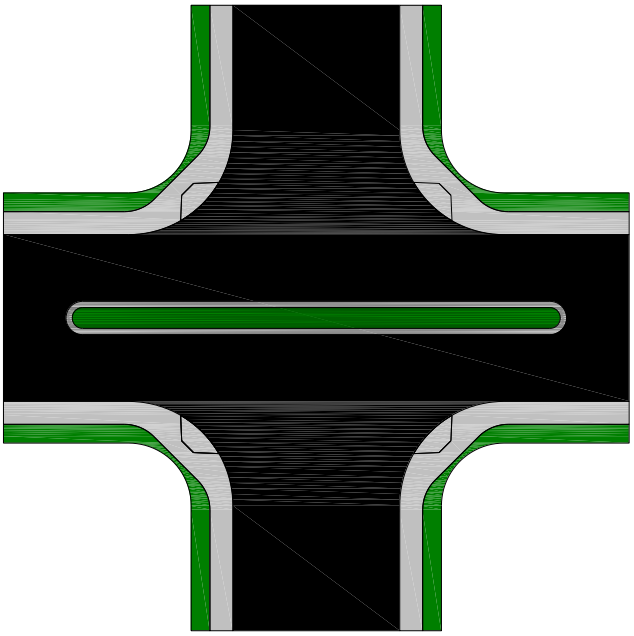
- $7,000 to $14,000 per approach.

Phase III

Median Barrier

Description:

Median barriers are raised islands constructed through intersections that prevent left turns and side street through movements.



Application:

Median barriers reduce cut-through traffic.

Advantages:

- Redirects traffic to other streets.
- Reduces cut-through traffic.
- Provides pedestrian refuge area.
- Opportunity for landscaping.

Disadvantages:

- Redirects traffic to other streets.
- Increases trip lengths.
- May impact emergency response.
- Creates physical obstruction.

Special Considerations:

- Should not be used on critical emergency response routes.
- Landscaping needs to be carefully designed to not restrict visibility for motorists, bicyclists and pedestrians.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

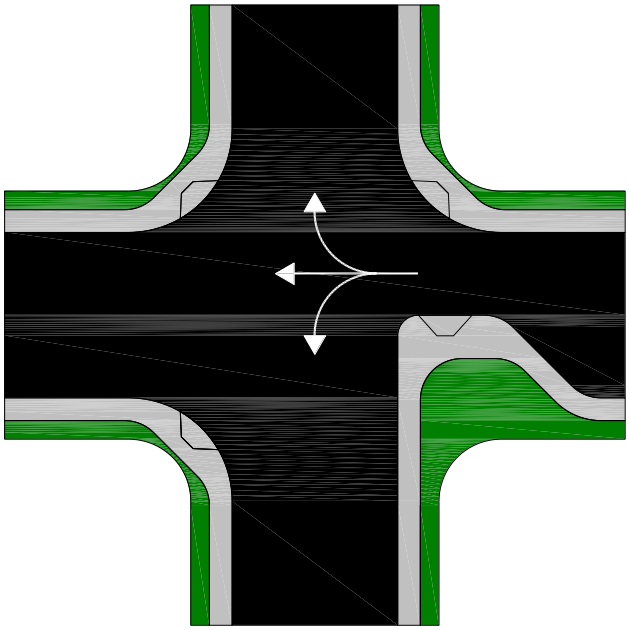
- $14,000 to $28,000 each.

Phase III

Semi-Diverter

Description:

Semi-diverters are curb extensions that restrict movements into a street. They are constructed to approximately the center of the street, obstructing one direction of traffic. A one-way segment is created at the intersection, while two-way traffic is maintained for the rest of the block.



Application:

Semi-diverters reduce traffic volume.

Advantages:

- Reduces cut-through traffic.
- More self-enforcing than signs.
- Reduces pedestrian crossing widths.
- Opportunity for landscaping.

Disadvantages:

- May divert traffic to other streets.
- May increase trip lengths.
- May require the removal of parking.
- Increased maintenance.

Special Considerations:

- Restricts access into street while allowing residents access within block.
- Potential use must consider how residents will gain access.
- In emergency situations, emergency vehicles can gain access.
- May increase emergency response times.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

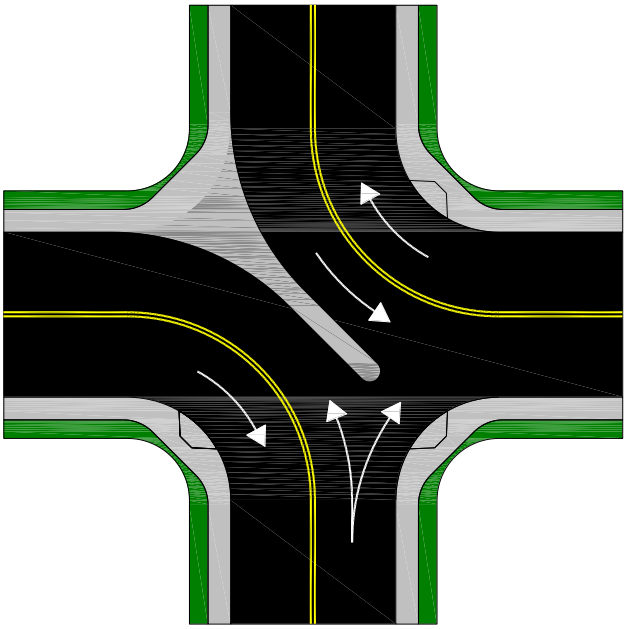
- $20,000 to $28,000 each.

Phase III

Partial Diverter

Description:

Partial diverters are raised areas placed diagonally across a four-legged intersection (3/4 closure). They prohibit through movements by creating two "L" shaped intersections, with one leg having a right turn.



Application:

Partial diverters help reduce cut-through traffic. They also minimally decrease speeds near the intersection.

Advantages:

- Reduces cut-through traffic.
- Minimal impact to emergency access.
- Reduces collision potential.
- Opportunity for landscaping.

Disadvantages:

- Redirects traffic to other streets.
- May increase trip lengths.

Special Considerations:

- Problem(s) may be shifted to other streets unless a comprehensive area plan is developed.
- Less impact to circulation than a full street closure.
- Can be attractively landscaped.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

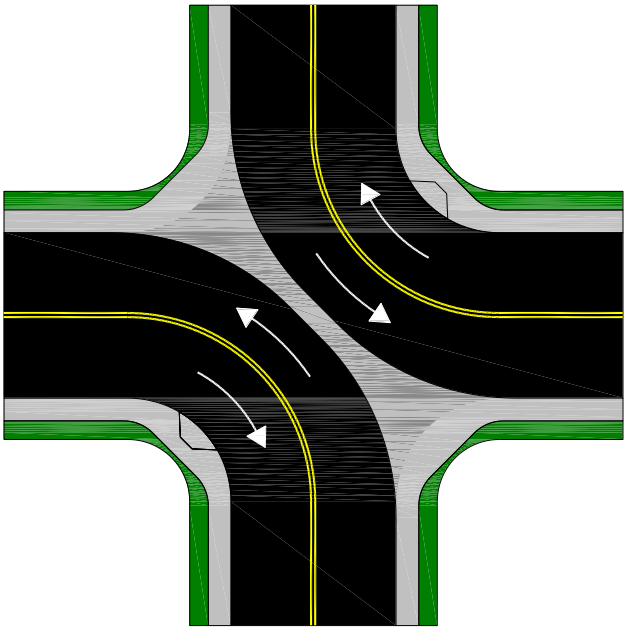
- $20,000 to $48,000 each.

Phase III

Diagonal Diverter

Description:

Diagonal diverters are raised areas placed diagonally across a four-legged intersection. They prohibit through movements by creating two "L" shaped intersections.



Application:

Diagonal diverters reduce traffic volumes. They also minimally decrease speeds near the intersection.

Advantages:

- Reduces cut-through traffic.
- Self-enforcing.
- Reduces vehicle conflicts.
- Opportunity for landscaping.

Disadvantages:

- Increases out of direction travel.
- Increases trip lengths.
- Impedes emergency vehicles.

Special Considerations:

- Can be designed to allow emergency vehicle access.
- Can be designed to allow pedestrian and bicycle access.
- Problem(s) may be shifted to other streets unless a comprehensive area plan is developed.
- Less impact to circulation than a full street closure.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

- $25,000 to $52,000 each.

TRAFFIC AND MOBILITY COMMISSION

Staff Report

Meeting Date: Dec. 6, 2021

To: Traffic and Mobility Commission

Staff Contact: Miriam Jim, Senior Engineer
Miriam.Jim@carlsbadca.gov, 760-268-4796

John Kim, City Traffic Engineer
John.Kim@carlsbadca.gov, 760-602-2757

Subject: Carlsbad Residential Traffic Management Program Updates

Recommended Action

Receive an informational presentation on the Carlsbad Residential Traffic Management Program and provide feedback on proposed changes to the program.

Background

The Carlsbad Residential Traffic Management Program, or CRTMP, was adopted by the City Council in 2001 and revised in 2011. This program was developed to define a traffic management process and established procedures to improve the quality of life in neighborhoods by implementing features that reduce speeding and discourage cut-through traffic on residential streets.

Discussion

The CRTMP was developed as a three-phase program, consisting of the following:

Phase I: Enforcement and Education
Phase II: Traffic Management
Phase III: Traffic Calming

The purpose of these three phases is to provide a best value, cost-effective approach by incrementally increasing the magnitude of applied solutions as needed to achieve the program's goals.

Phase I of the CRTMP focuses on the human element of driver behavior and leverages strategies such as education of the public through signage and striping measures, police presence and police enforcement to help reduce and resolve non-compliance traffic concerns. The engineering tools available in Phase I include installation of speed limit signs, warning signs, pavement legends and temporary speed feedback signs. The temporary speed feedback signs serve a dual purpose: collection of speed data and as an educational tool to educate drivers of

their travel speed. This phase is initiated when a resident gets in contact with the city to express a concern regarding speeding or cut-through traffic on their residential street. Phase I solutions are usually implemented at the staff level and may include work orders for installation of signs and pavement legends.

If the Phase I solutions do not adequately address the reported issues, Phase II of the CRTMP can be considered. The threshold for Phase II eligibility is a minimum critical speed of 32 miles per hour (MPH), as determined by using the data collected during Phase I. The critical speed, otherwise known as the 85th percentile speed, is the speed at which 85% of the drivers drive at or below.

Phase II utilizes cost-effective physical traffic management devices such as speed cushions and tables, narrowing travel lanes with striping, and neighborhood signs. Although they are included in the 2011 edition of the CRTMP, stop signs are no longer considered by staff as a viable recommendation for traffic calming based on the California Manual on Uniform Traffic Control Devices, or CA MUTCD, guidance that stop signs should not be used for speed control. In situations where a traffic calming feature is desired at an intersection, staff will consider a traffic circle or speed cushion instead of a stop sign.

Per the CRTMP, consensus support of the community is required before Phase II measures can be implemented. The first step toward establishing consensus is a neighborhood meeting. Residents and property owners within the project study area are invited to attend a neighborhood meeting organized by staff. At the meeting, staff presents traffic calming strategies and options tailored to their individual street. Input provided by the meeting attendees is used to develop a preferred concept plan for traffic calming.

A mail survey is used to quantify neighborhood support for the traffic calming plan developed by the residents at the neighborhood meeting. The surveys are sent to all residents and property owners in the project study area. The CRTMP requires that at least 50% of the mailed surveys be returned to constitute a valid survey and that a support rate of 67% or more is required to indicate positive community support for the proposed plan. If these support requirements are satisfied, the proposed traffic calming plan is brought before the Traffic & Mobility Commission for their recommendation and then to City Council for project approval. If City Council approves the traffic calming plan, the project enters the design phase, which will result in a set of construction plans for implementation. Traffic speeds are measured after Phase II implementation to verify the effectiveness of the implemented solutions.

If the Phase II solutions do not adequately address the reported issues, residents can request moving to Phase III of the CRTMP. Eligibility for Phase III is determined using a Phase III Qualification Criteria to be conducted by staff. The criteria consider factors such as travel speeds, traffic volumes, collision history, absence of sidewalks, proximity to schools and presence of marked crosswalks, and utilizes a points assignment system. A minimum score of 51 points is required for candidate streets to be considered for Phase III.

Phase III utilizes more traditional traffic calming features to change the character of an intersection or roadway. Traditional traffic calming features include center island narrowing, curb radius reductions, raised intersections, mid-block chokers, lateral shift in lanes, chicanes, intersection bulb-outs, realigned intersections, forced turn channelization, median barriers and traffic diverters.

Since the CRTMP was adopted, Phase II traffic calming measures have been implemented on eighteen streets; Donna Drive, Corintia Street, Daisy Avenue, Sierra Morena Avenue, Esfera Street, Levante Street, Magnolia Avenue, Pontiac Drive, Chestnut Avenue, Victoria Avenue, Cadencia Street, Harbor Drive, Avenida Diestro, Estrella De Mar Road, Hillside Drive, Amargosa Drive, Oriole Court and Mimosa Drive. Segovia Way and Harwich Drive have also gone through the Phase II process and construction is anticipated to begin in the first quarter of 2022.

Because of the success of Phase II measures, Phase III of the CRTMP has not yet been implemented on any street in the City of Carlsbad.

Proposed Key Changes to the CRTMP

Traffic calming measures, techniques and methodologies continue to evolve. What was once in favor and popular to implement may be subsequently found to be ineffective or undesirable to the neighborhood. For this reason, the CRTMP is intended to be a dynamic program where staff will re-evaluate the procedure and traffic calming toolbox in the program from time to time to determine if adjustments are needed. As part of this effort, staff has conducted research on traffic calming practices, methods, and features utilized in 17 other cities in San Diego County and reported these findings to the Traffic and Mobility Commission in December of 2019. 10 out of the 17 cities have formalized a traffic calming program similar to the City of Carlsbad. Three of these cities actually utilize the Carlsbad's program as the basis for their own programs. Based on staff's analysis of traffic calming in the region, the CRTMP can be considered a complete and efficient program that features a full range of traffic calming measures that compare favorably with what other agencies are using.

The CRTMP was last revised in 2011. Since then, Phase I and Phase II of the program have been implemented on various streets in the City. Based on past experiences, regional practices, and the latest recommendations from the CA MUTCD, staff is recommending the following key changes to the CRTMP:

1. Remove STOP Signs from Phase II Toolbox. Per the CA MUTCD, STOP signs should not be used for speed control as they are intended to assign right-of-way at an intersection. Installation of STOP signs are evaluated based on traffic volume, crash records and sight distance as described in the CA MUTCD. When unwarranted STOP signs are installed, it often leads to unintended consequences such as non-compliances, increase in speed between stop signs, noise and air pollutions.

2. Remove High Visibility Crosswalks from Phase II Toolbox. Staff is currently implementing high visibility crosswalks to increase awareness for pedestrian crossings and to indicate a preferred pedestrian crossing location. Marked crosswalks alone have not been found to be

effective in slowing traffic. Additionally, high visibility crosswalks are being implemented as part of the Annual Overlay and Slurry project, Capital Improvement Program, CIP No. 3667.

3. Include traffic circles as a Phase II tool. Traffic circles are found to be effective at reducing vehicle speeds at the intersection as drivers are forced to slow down to maneuver around the raised center island. Although traffic circles are currently included in Phase III Toolbox, staff has implemented traffic circles as part of the Phase II measures on Amargosa Drive and Hillside Drive. They are found to be desirable by residents and a cost-effective traffic calming feature.

4. Limit deployment of temporary speed feedback signs for speed data collection on a residential street to once every two years. The CRTMP as currently written does not indicate how often a residential street should be evaluated for traffic calming. This often leads to repeated evaluations on the same street within a short period of time due to subsequent requests made by residents on that street. Based on staff experience and speed data collected in the past, vehicle speeds on a roadway remain fairly constant without any changes to roadway characteristics or surrounding roadway network and land uses. Therefore, if a residential street does not qualify for Phase II of the CRTMP based on speed data collected from Phase I of the program, repeated speed measurements within a short period of time would likely yield the same result. In order to allow staff to prioritize resources for streets that have not been evaluated as part of the CRTMP, staff recommends limiting deployment of the temporary speed feedback signs for speed data collection to occur a maximum of once every two years on the same street unless nearby land uses or roadway networks have changed and resulted in traffic pattern changes in the area.

Traffic Calming on Non-Residential Streets

Traffic calming features may be considered on non-residential streets but would require Traffic and Mobility Commission review and approval as it is written in the CRTMP. Since most non-residential streets lack single-family homes with direct frontage upon them, it would be difficult to obtain consensus using the survey methodology outlined in the CRTMP. In addition, most of the traffic calming features included in the CRTMP have been designed for relatively low speeds and may not be appropriate for higher speed/higher volume roadways. In the past, staff has implemented traffic calming on non-residential streets only on a case-by-case basis using guidance found in the Mobility Element. Examples of these include installation of speed feedback signs on Jefferson Street, State Street, Tamarack Avenue, Alicante Road, El Fuerte Street and College Boulevard and the road diets on La Costa Avenue and Avenida Encinas. No changes are proposed as part of this update to the CRTMP for considering traffic calming on non-residential streets; such requests would be reviewed on a case-by-case basis and would be presented to Traffic and Mobility Commission for review and approval.

Recommendations

Receive an informational presentation on the Carlsbad Residential Traffic Management Program and provide feedback on proposed changes to the program.

Next Steps

Upon receiving Traffic and Mobility Commission's input on the Carlsbad Residential Traffic Management Program, staff will work on updating the CRTMP and will present the draft CRTMP Update to the Traffic and Mobility Commission at a future meeting.

Exhibits

1. Carlsbad Residential Traffic Management Program, 2011

Exhibit 1

Carlsbad Residential Traffic Management Program

CITY OF CARLSBAD

May 2011

Exhibit 1

Carlsbad Residential Traffic Management Program

May 2011 Revision

Traffic Division

Transportation Department

Acknowledgments

May 2011 Program Update

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EXECUTIVE SUMMARY

In all areas of Carlsbad, daily commuter traffic or other types of traffic drive on neighborhood streets. Speeding and/or excessive volumes may cause residents to become alarmed about safety and quality of life. When the tranquility and ambiance of the neighborhood is disrupted by drivers speeding or trying to find short-cuts, concerned citizens contact City officials.

This scenario, repeated each day in some areas of the City, alerted the City Council to the need for a comprehensive citywide program to minimize excessive speeds and high volumes in neighborhoods. Similar problems in California and throughout the country have inspired engineering solutions called traffic calming, which is a method of slowing cars and discouraging cut-through traffic. With traffic calming in mind, the City Council elected to use a citizen-based approach to develop such a program, appointing a committee of seven citizens to work with staff in developing solutions for any Carlsbad neighborhoods seriously affected by traffic problems.

The citizen's committee developed a three-phase approach to addressing traffic problems in Carlsbad neighborhoods. After reviewing and evaluating programs from many cities, the committee recommended a program it suitable for Carlsbad and which would achieve the three goals that must be met if traffic calming is to be successful. The first requirement is support of the residents in any neighborhood where such calming is needed. Second, the traffic calming measures must meet with the approval of emergency agencies concerned about response times, as well as the needs of other utilities whose large vehicles could be adversely affected or damaged by the traffic calming measures. Finally, the residents must be willing to live with the actual traffic calming measures designed to slow traffic and cut-through traffic volumes in their neighborhood.

This document represents the first revision to the initial program developed by the Carlsbad Residential Traffic Management Program Committee. The primary reasons for revising the program were to add lower cost traffic management tools such as residential stop signs and speed cushions and to establish benchmark criteria for the funding of future traffic calming projects. The revised program is divided into the following three phases:

Phase I: application of enforcement and education to resolve non-compliance issues.

Phase II: utilizing engineering-based measures to increase compliance with posted speed limits and discourage cut through traffic.

Phase III: development and implementation of a comprehensive plan comprised of traditional traffic calming measures to address traffic issues while enhancing the residential character of the street.

Ultimately leading to improvement in the quality of life of affected neighborhoods, the Carlsbad Residential Traffic Management Program is still another way in which the City provides for the health, safety and welfare of its citizens.

CARLSBAD
RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM

INTRODUCTION

Virtually every day, on many residential streets, Carlsbad residents are faced with the potentially dangerous intrusion of speeding vehicles and/or cut-through traffic. Carlsbad streets have experienced escalating traffic impacts due to population and employment growth. As a result, an increasing number of citizens have expressed concerns to City officials, the Police Department and Engineering staff about these traffic problems.

Carlsbad residents are not unique in voicing such concerns. Cities throughout the United States have struggled with the issue of escalating traffic speeds and volumes on residential streets. As a result, citizens have asked that their neighborhood quality of life be improved through a reduction of vehicle speeds and volume. Many desire the simple pleasure of being able to walk or ride bicycles through their neighborhoods without fear of vehicular traffic, a key factor in neighborhood livability.

"Livable" cannot be precisely defined as it relates to community or neighborhood. However, the residents' expectation that fewer vehicles should be speeding down neighborhood streets is an indication of their desire to reside in a livable neighborhood. Characteristics of such a desirable neighborhood include:

- a sense of community
- a safe place to walk or bicycle
- interaction among neighbors
- a general feeling of security and safety
- the opportunity for residents to enjoy their homes and property
- streets that do not penalize drivers traveling at the posted speed limit

"Traffic calming" is a term that has, in recent years, become synonymous with providing the means to slow vehicles, reduce cut-through traffic volumes and help achieve a livable community. Through the use of a variety of measures, physical or otherwise, traffic calming helps reduce the undesirable effects of the motor vehicle in residential neighborhoods.

In response to the concerns of Carlsbad residents, the City Council has established the Carlsbad Residential Traffic Management Program, referred to as the CRTMP, to address neighborhood concerns about unwanted traffic. The Institute of Transportation Engineers (ITE), an international organization of transportation professionals, has defined traffic calming as:

> *"The combination of mainly physical measures that reduces the negative effects of motor vehicle use, alters driver behavior and improves conditions for non-motorized street users."*

Carlsbad's Residential Traffic Management Program is designed to have significant neighborhood involvement. Staff plans to work closely with residents to identify problems and their solutions and to gather the support necessary to ensure the success of any traffic calming plan that may merit adoption. Communication with the residents at each step is critical and the urgency of plan development will not

be allowed to override the need for thorough understanding, commitment and approval by the neighborhood.

Since neighborhood involvement is the key, the program is designed to solicit and encourage residents' active participation in identifying concerns, developing reasonable solutions and supporting the final outcome. In the traffic engineering field, the manner in which this occurs is a process that contains the elements of the “4E's":

Education
Engineering
Enforcement
Enhancement

By utilizing the "4E" process, which incorporates a comprehensive, integrated involvement of concerned residents, the challenge of identifying and resolving problems can successfully take place.

The basic elements of the 4E process include:

- Education: Providing resource materials and information to residents to inform them about all aspects of traffic calming.

- Engineering: Physical measures and other techniques utilized in the traffic calming program that are based upon input and concurrence by residents, engineering principles, financial and environmental considerations.

- Enforcement: Police presence and selective enforcement of vehicle code violations.

- Enhancement: Using special treatments in the physical measures through design and/or landscaping features to improve livability, aesthetics, community pride.

This program has been established with and conforms to authority and responsibility given to local authorities by the California Vehicle Code to protect the health and welfare of its citizens. Additionally, it meets one of the goals in the Circulation Element of the General Plan that states Carlsbad is a "City with an integrated transportation network, serving local and regional needs, which accommodates a balance of different travel modes based upon safety, convenience, attractiveness, costs, environmental and social impacts".

It is the policy of the State of California that all persons have an equal right to use public streets and that no agency may restrict the use of streets to only certain individuals. With certain exceptions provided for in the California Vehicle Code, the specific authority to regulate travel upon streets can only occur in specific instances related to:

- implementation of the Circulation Element of the General Plan
- criminal activity
- regulating or prohibiting processions or assemblages
- streets dividing school grounds to protect students attending such schools or school grounds

Requests to implement the CRTMP will ultimately be considered through the process outlined in this program. Careful consideration will be given to each request to ensure that it meets State law and the criteria contained in the program.

GOALS

The City Council established the CRTMP as a countermeasure to intrusion by excessive traffic and/or higher than normal vehicle speeds in the neighborhood and thus, to help improve the quality of life. With a defined traffic management process and established procedures contained in this document, Carlsbad residents will have the measures and techniques ("tools") at their disposal to avert many negative impacts associated with vehicular traffic on residential streets.

The goals of a traffic management program include:

- improving the quality of life in the neighborhood
- creating safe streets by reducing the collision frequency and severity
- reducing negative effects of motorized vehicles
- design of features that encourage self-enforcement

PROGRAM STRATEGIES

The City of Carlsbad strives to achieve neighborhood livability through implementation of current standards and policies. Managing traffic is a key component in this endeavor and one that is vital for promoting characteristics of livable neighborhoods. Therefore, strategies are needed to identify and address issues revolving around speeding, excessive volumes and safety concerns on residential streets when it occurs. These strategies include:

- developing recommendations that adhere to State law
- satisfactorily addressing legal and liability issues
- preserving reasonable emergency vehicle access and response time consistent with response standards
- maintaining reasonable vehicular access
- promoting neighborhood safety for pedestrians, bicyclists, motorists and residents
- encouraging and incorporating citizen participation in identifying traffic calming measures and techniques
- utilizing City resources and funds efficiently and effectively
- utilizing a combination of education, engineering, enforcement and enhancement (4E's)
- maintaining, encouraging and enhancing pedestrian, bicycle, transit and alternative modes of travel
- balancing on-street needs (such as parking) with the reasonable and safe function of the street
- considering achievable options for funding

According to the ITE resource, “Transportation and Land Development, 2nd Edition”, residential streets should ideally be designed and constructed to a “residential neighborhood scale” to achieve vehicle speeds and traffic volumes consistent with typical neighborhood uses. Residential neighborhood scale is

typically accomplished by restricting roadway length so that a driver slows, stops, or makes a significant turning movement every 300-700 feet. Drivers tend to comply with speed limits in residential neighborhoods when the effective, uninterrupted street length is less than 700 feet.

Complaints related to excessive vehicle speeds often originate on residential streets that have not been designed to this residential neighborhood scale. The CRTMP attempts to resolve these types of speeding issues by installing a series of traffic management measures to reduce the effective street length so that a driver slows, stops, or makes a significant turning movement every 300 to 700 feet. Traffic management measures are recommended to be spaced, on average, at approximately 500 foot intervals. The traffic management strategies included in the CRTMP toolbox are designed to work in concert with one another to limit the effective, uninterrupted length of an existing street to approximately 500 feet, which should result in a reduction in vehicle speeds and render the route less attractive to cut-through traffic.

PROCEDURES

The procedures to implement traffic management measures and techniques are described on the following pages and are referred to as phases. In general, the established procedures are consistent with the methodology currently used in Carlsbad to address any traffic-related concerns. The procedures require, and are designed to encourage, substantial neighborhood participation, following the process used by staff to formulate solutions to problem locations and the methods for proposing those solutions to the Traffic Safety Commission and City Council for final resolution.

Carlsbad's Residential Traffic Management Program has been developed as a three-phase program, consisting of the following structure approach:

Phase I : Enforcement and Education
Phase II : Traffic Management
Phase III : Traffic Calming

The program is designed in such a way that residents of each street with identified problems, and with neighborhood support and commitment, can play a part in the program. The cost, complexity, effectiveness and impact to residents increase with each phase. Phase I features are generally considered simple improvements that can be initiated internally and provided by city staff. Phase II consists of cost-effective traffic management features that may reduce vehicle speeds but may also penalize those who drive at the legal speed limit. Phase III features are the most effective at traffic calming but are expensive and may negatively impact parking.

PROGRAM ELIGIBILITY

Participation in the Carlsbad Residential Traffic Management Program requires the following:

1. The subject street must meet the legal definition of residence district (as defined by the California Vehicle Code) or designated school zone (as defined by the California Manual on Uniform Traffic Control Devices).
2. The subject street must have a curb-to-curb width of 40 feet or less.
3. A letter sent by a resident or residents requesting that staff consider a subject street for inclusion into the CRTMP process.

Any street that does not meet the program eligibility criteria but is nevertheless considered by city staff to be a candidate for traffic calming will be scheduled for review and possible approval by the Traffic Safety Commission. If the Commission's review leads to the conclusion that the street merits an exception, it will be processed through the CRTMP as if program eligibility criteria were met. Any street recommended by the Traffic Safety Commission as not qualifying for an exception may be requested by a citizen to be reviewed by the City Council for a final determination. The exception process may be used for consideration for inclusion into each phase of the program.

PHASE I: EDUCATION AND ENFORCEMENT

When a resident, or group of residents, from a neighborhood has a traffic-related concern that they believe should be addressed by the Carlsbad Residential Traffic Management Program and have sent a letter to the Traffic Division of the Transportation Department, the process will be initiated in the following manner.

Step 1 Initiate Traffic Request (TR) Procedure

Upon receipt of the correspondence and verification that the subject street satisfies program eligibility requirements, staff will initiate a Traffic Request (TR) that includes the information contained in the letter. The TR is an internal logging and tracking system in the Transportation Division used to initiate action and file correspondence. An engineer will be assigned to investigate and conduct an engineering study of the street(s).

Step 2 Investigation/Studies

Staff will gather preliminary data about the expressed concern. Field reviews and appropriate traffic studies will be conducted. They may include:

- geometric conditions of the road
- parking availability/restrictions
- location of existing traffic control devices
- speed surveys
- volume counts
- pedestrian counts
- collision analysis
- other studies as determined appropriate

Phase I strategy will be formulated after the data is collected.

Step 3 Coordination with the Police and Fire Departments

Staff will discuss with the Police Department solutions that can be addressed through enforcement. An enforcement strategy will be prepared and implemented by the officer in charge of the Traffic Division of the Police Department. Concurrently, staff will discuss with the Fire Marshal emergency response route issues and other fire safety issues.

Step 4 Issue Work Order

Implementation of Phase I can be accomplished by city forces. Staff can usually issue work orders for the installation of signs or striping or implementation of speed feedback signs.

Step 5 Communication with Residents

Information on appropriate traffic calming strategies and techniques proposed to address the identified concern is shared with the person or group that initiated the request, including information about the issuance of work orders. Staff also outlines the engineering and enforcement approach that will be utilized to mitigate neighborhood concerns.

Step 6 Monitor

Effectiveness of the implemented measures and/or strategies is monitored by Engineering Department staff and, as appropriate, by the Police Department. The resident or group originating the request is then informed of the monitoring results.

PHASE II: TRAFFIC MANAGEMENT

If all applicable Phase I options have been completed and do not appear to adequately address the problem after being in place for an appropriate amount of time as determined by the city staff, Phase II of the CRTMP may be considered.

Step 1 Written Request

Phase II will be initiated when an affected resident that resides on the street where the concern exists sends a letter to the Traffic Division of the Transportation Department requesting Phase II consideration. The letter will be generated by a resident, following discussions with city staff to review what might be accomplished through Phase II of the program.

Step 2 Phase II Eligibility Determination

Not all residential streets and/or residential areas will qualify to participate in Phase II of the Carlsbad Residential Traffic Management Program based upon the established process. Eligibility criteria for Phase II are as follows:

1. Completion of Phase I of the CRTMP; and
2. The 85th percentile speed (critical speed) must be 32 miles per hour or greater as determined by a speed survey(s).

Both of the eligibility criteria must be met for a street to be considered for further processing through the CRTMP. However, on a case-by-case basis, city staff may determine exceptions. A street considered as an exception must be approved by the Traffic Safety Commission.

Step 3 Determine Project Area of Influence (PAOI)

The street or streets significantly impacted by neighborhood concerns or potential solutions, including all dwelling units or other land uses bordering the subject street or streets, comprise the Project Area of Influence (PAOI). The PAOI will be established by city staff, with input from the neighborhood representatives. The establishment of the PAOI by staff shall consider the implementation of measures on a roadway system as opposed to singular, isolated installations.

Step 4 Phase II Concept Plan

All residents from the PAOI will be invited to a neighborhood meeting hosted by the city. At the meeting, staff will explain the Phase II process that may lead to installation of the traffic management measures proposed for their neighborhoods. Discussion will include:

- neighborhood concerns
- traffic data gathered
- results from Phase I
- potential Phase II solutions
- advantages/disadvantages of specific Phase II features
- Phase II approval process

A Fire Department representative will be invited to attend the meeting to explain response needs of the emergency service providers and any concerns with potential traffic management on the candidate

street. Also, a Police Department representative will be invited to attend the meeting to respond to questions about enforcement issues.

Staff, using the data collected in Phase I, and working with affected residents, will draft a plan of proposed Phase II measures within the boundaries of the PAOI. Since Phase II measures are limited in application, they may not be appropriate for a given situation. For example, if a subject street does not feature intersections, residential STOP signs would not be appropriate. Staff will work with residents to prepare the Phase II concept plan which will be presented to the neighborhood via mail survey for support.

The concept plan will be presented to the Traffic Safety Coordinating Committee to allow city staff such as Fire Department and Police Department representatives to review and comment.

Step 5 Mail Support Survey for Phase II Concept Plan

A mail support survey will be conducted by City staff upon completion of the Phase II concept plan developed by staff. The purpose of the survey will be to determine if the neighborhood (as defined by the PAOI) is in favor of the proposed plan.

Residents and non-resident owners within the PAOI are eligible to participate in the mail support survey. Distribution of the support survey will be conducted by the City through the mail. The survey will be considered valid if a minimum of 50% of the residents contacted fill out and return the completed survey. Staff will then analyze the returns to determine if 67% or more of the PAOI community responding supports the Phase II plan.

If the Phase II concept plan includes measures with vertical deflection such as speed cushions or speed tables, support for these measures from residents directly affected will be highly desirable. Staff will work with these residents and will strive to balance the concerns of individual residents with the overall success of the concept plan as a system of interdependent features. Since the success of Phase II will be dependent on the spacing of proposed features, the removal of any measure from the concept plan due to lack of support may have a detrimental effect on the concept as a whole.

If 50% of the surveys are not returned, an outreach program may be initiated by the resident(s). Re-survey will occur after all steps established in the outreach program are completed. A re-survey will be valid if 50% or more of the surveys are returned to staff. If the plan is not approved by 67% or more of the returned surveys, the resident(s) may request that staff develop an alternative plan or abandon their efforts. A revised Phase II plan will be tested by the support survey process in this step. If the revised plan fails to garner support of the residents in the PAOI after the second survey, no further surveys will be conducted by City staff for a minimum of one year.

Step 6 Final Approval by the City Council

The approved Phase II concept plan will be brought forward to the Traffic Safety Commission for recommendation and to hear public testimony on the matter. A duly noticed public meeting will be held by the City Council to receive the recommendations of the Traffic Safety Commission for Phase II implementation. If Council decides that Phase II is acceptable as presented, it will so indicate by adopting an ordinance authorizing installation of residential STOP signs and/or other proposed measures and authorizing the appropriation of any necessary funds. The Council may consider other

options such as returning to the neighborhood for refinement of the Phase II concept plan or proceeding to Phase III of the CRTMP.

Step 7 Phase II Implementation

Implementation of Phase II, in most cases, will be performed by city forces via work orders issued by staff.

Step 8 Phase II Monitoring

Phase II measures that have been installed will be monitored for effectiveness during the first year following completion of the installation. Staff will analyze traffic data results, accident history, observed deficiencies and/or impacts of the Phase II measures, comments, and suggestions or complaints received.

If some residents of the neighborhood believe that the impacts and results of Phase II do not meet their expectations, they may request removal of the permanent measures. The request for removal must follow the Traffic Calming Measures Removal Process and be submitted at least one year from date of Phase II installation.

PHASE III: TRAFFIC CALMING

If applicable Phase II options have been evaluated and do not appear to adequately address the problem as described previously, Phase III of the CRTMP may be considered. Phase III of the CRTMP is designed to allow traditional traffic calming measures to be used in areas where Phase II options have not adequately resolved the traffic issues. Due to the potential fiscal impacts of Phase III and probable impacts to parking capacity and limit access to properties, residents will be required to first utilize Phase II measures before requesting to proceed to Phase III. Phase III measures will be limited to locations where re-routed traffic will only impact higher classified roadways. Residents have the option to bypass Phase II only if funding is privately secured and all Phase III criteria are satisfied.

Step 1 Written Request

Phase III will be initiated when the affected residents send a letter to the Traffic Division of the Transportation Department requesting Phase III consideration. The letter will be generated by the residents following discussions with city staff, study of Police Department results of Phase II, and anticipation of what might be accomplished through further utilization of the CRTMP process. The Phase III process will require an evaluation of a qualification criteria as well a neighborhood-initiated support petition.

Step 2 Project Scoring and Qualification Criteria

Candidate streets will be evaluated on the following factors and associated points for the purpose of establishing a project score for funding considerations. Streets with a score exceeding 50 points will be eligible for Phase III.

Criteria and points assigned are as follows:

1. Travel Speed (maximum 40 points):
   6 points for each mile per hour the 85th percentile speed is over 32 miles per hour.

2. Traffic Volumes (maximum 30 points):
   Typical weekday ADT divided by 100 and rounded to the nearest whole number or the weekday peak hour volume divided by 10 and rounded to the nearest whole number.

3. Collision History (maximum 15 points):
   Five points will be assigned for each correctable collision on a street, including intersections, within the past five years. A correctable collision is one that might have been prevented by the installation of a traffic control device or traffic calming measure.

4. Sidewalks (maximum 5 points):
   5 points if no sidewalk or pedestrian pathway exists on either side of the street.
   5 points if no sidewalk or pedestrian pathway exists along at least one side of the street.

5. School Proximity (5 points maximum):
   5 points if school grounds abut the candidate street.
   3 points if the PAOI is within 500 feet of school grounds.
   1 point if the PAOI is located within 1,000 feet of school grounds.

6. Pedestrian Crossings (5 points maximum):
   5 points if a school crosswalk (yellow crosswalk) is located on a street in the PAOI.
   5 points if a major or midblock crosswalk is located on a street in the PAOI. A major crosswalk is defined as having 10 or more pedestrians crossing per hour during any eight hours of a typical weekday.

A maximum total of 100 points may be given for the street under consideration, using the Traffic Management Program Priority Scoring Worksheet. **A minimum score of 51 points is required for the subject street to qualify for Phase III.**

Carlsbad Residential Traffic Management Program
Phase III Qualification Criteria
Scoring Worksheet

This worksheet will be completed by City of Carlsbad staff. It will be used to assign points to a street for Phase III qualification and prioritization of a potential specific neighborhood traffic calming project.

Name of neighborhood (street location): _____

Points

1. **Travel Speed (40 pts. max.)** _____
   For each mile per hour the 85th percentile speed is over 32 miles per hour, 6 points will be assigned.
   Critical Speed: _____

2. **Traffic Volumes (30 pts. max.)** _____
   Total weekday ADT divided by 100, rounded to nearest whole number
   or weekday peak hour volume divided by 10, rounded to nearest whole number (use higher number)
   Volume: _____ Date Counted: _____

3. **Collision History (15 pts. max.)** _____
   Five points for each correctable collision during the past 5 years
   Number of collisions: _____

4. **Sidewalks (5 pts. max.)** _____
   No sidewalk or pedestrian pathways exists on either side of the street = 5 points
   No sidewalk or pedestrian pathway exists along at least one side of the street = 5 points

5. **School Proximity (5 pts. max.)** _____
   School grounds abut candidate street = 5 points
   PAOI is located within 500 feet of school grounds = 3 points
   PAOI is located within 1,000 feet of school grounds = 1 point

6. **Pedestrian Crossings (5 pts. max.)** _____
   School crosswalk (yellow crosswalk) is located on a street in the
   PAOI = 5 points
   Major or midblock crosswalk is located on a street in the PAOI = 5 points

Total Score: _____

_____

Evaluator Date

A MINIMUM SCORE OF 51 POINTS IS REQUIRED TO QUALIFY FOR PHASE III.

Step 3 Neighborhood Support Petition

If the subject street meets the Phase III Qualification Criteria, concerned residents will need to establish resident support for continuation of the Phase III process. The support petition is initiated by the neighborhood representative and serves as the mechanism to establish that residents' support the City's consideration of a Phase III traffic calming project. Documentation of support for consideration of a future project is indicated by a simple majority (50% plus one signature) of those eligible individuals located within the PAOI that sign the petition. The petition form will be developed by staff but it will be the responsibility of residents to circulate the petition and submit the results.

Step 4 Project Funding

Upon satisfaction of Steps 2 and 3 of the Phase III process, the subject street may be considered for funding as a future project through the Capital Improvement Program (CIP) process. If more than one CRTMP project is submitted in a given fiscal cycle, priority will be established by the Phase III Qualification Criteria scoring. Many different fiscal factors must be considered to establish if and to what level funds will be allocated for projects on the priority list. Staff will recommend a funding level and the City Council will consider and adopt the annual budget before the fiscal year ending on June 30.

As an alternative to the City funding the design and construction of Phase III improvements, residents may choose to collect funds themselves in any manner they choose, including the formation of an assessment district. This private funding must be for 100% of the project cost including design, construction, inspection, administration and contingency costs associated with the project. Private funds must be deposited with the city prior to proceeding to Step 4.

Phase III will not proceed until funding source is identified and funds are secured.

Step 5 Kick-off Meeting with the Neighborhood

All individuals from the PAOI will be invited to a neighborhood kick-off meeting hosted by the City. At the meeting, staff will explain to those in attendance the Phase III process that may lead to installation of the traffic calming measures proposed for their neighborhoods. Discussion will include:

- neighborhood concerns
- traffic data gathered
- results from Phase I and II
- potential solutions
- traffic calming plan development process
- before and after traffic study process

A Fire Department representative will attend the meeting to explain response needs of the emergency service providers and any concerns the Fire Department has with potential traffic calming on the candidate street. Also, a Police Department representative will attend the meeting to respond to questions about enforcement issues.

Step 6 Develop the Conceptual Neighborhood Traffic Calming Plan

By meeting and working closely with the residents, staff will be able to assist in:

- assessing neighborhood needs
- identifying alternatives
- developing initial plans or solutions
- finalizing the comprehensive plan based upon
    - sound engineering principles
    - neighborhood input
    - state-of-the-art traffic calming practices

Throughout design development of the conceptual plan, all residents within the PAOI will be provided updates and will be encouraged to offer input. The residents will be actively involved in all aspects of developing the comprehensive neighborhood traffic calming plan and will be expected to commit the time and effort needed to develop a successful plan. Directly affected residents and property owners will be notified and involved with the development of the conceptual plan.

The length of time needed to develop the conceptual plan is dependent upon the complexity of the issues, the level of neighborhood involvement and support, project cost and the willingness of the residents to aggressively pursue plan development. The series of meetings leading to completion of a final conceptual plan for presentation to the neighborhood could take six months or longer.

Step 7 Mail Support Survey for Final Conceptual Plan

A mail support survey will be conducted by city staff upon completion of the conceptual plan developed by residents and staff and evidence of a generally favorable consensus on the plan by interested residents. The purpose of the survey will be to determine if the neighborhood (PAOI) is in favor of the proposed plan by a super majority (67% or more).

Residents and non-resident owners within the PAOI will be included in the survey, essentially following the eligibility procedures addressed in Phase II. If necessary, and as determined by city staff based upon the proposed conceptual traffic calming plan, additional properties may be included or excluded by expanding or reducing the boundaries of the PAOI. The revised PAOI will become the new PAOI for purposes of the survey and other communications with residents affected by the proposed traffic calming project.

Distribution of the support survey will be conducted by the City through the mail. The survey will be considered valid if a minimum of 50% of those contacted fill out and return the survey. Staff will then analyze the returns to determine if 67% or more of the PAOI community responding supports proceeding to the final plans, specifications and estimates (PS&E) stage and for the installation of temporary features. Staff will notify by mail all individuals within the PAOI of the survey results and the next steps in the process.

If 50% of the surveys are not returned, an outreach program must be developed by the residents with the assistance of staff. Re-survey will occur after all steps established in the outreach program are completed.

A re-survey will be valid if 50% or more of the surveys are returned to staff. If the plan is not approved by 67% or more of the returned surveys, the residents may choose to develop an alternative plan or abandon their efforts. A revised conceptual plan, after an appropriate outreach program, will be tested by the support survey process in this step. If a conceptual plan fails to garner support of the residents in

the PAOI after the second survey, no further surveys will be conducted by city staff for a minimum of one year.
If neighborhood support for the Phase III traffic calming concept plan is established, staff can proceed to Step 8.

Step 8 Environmental Review

Upon confirming the neighborhood support for the Phase III concept plan and funds have been identified, allocated and approved, staff will initiate environmental review of the proposed project through the City of Carlsbad Planning Department. Generally, traffic calming improvements proposed within the existing street right-of-way are found to be exempt from detailed environmental review.

Step 9 Complete Final Design

Final design of the traffic calming plan can be started by staff concurrent with processing the environmental document. However, the final plan cannot be completed beyond the 30% stage until environmental certification is received and funding for the project is secured. Depending upon the complexity of the final plan, a consultant may be hired by the city. After completion of the final design, staff will initiate installation of temporary measures to simulate the effect of the proposed permanent traffic calming measures. The Police and Fire Departments will have considerable input during the final design.

Step 10 Final Approval by the City Council

The approved Phase III design plan will be brought forward to the Traffic Safety Commission for recommendation and to hear public testimony on the matter. A duly noticed public meeting will be held by the City Council to receive the recommendations of the Traffic Safety Commission for the final traffic calming project and to hear public testimony on the matter. If Council decides the project is acceptable, it will so indicate by adopting a resolution authorizing advertising for construction bids, thus taking the first step toward installation of the project. If, on the other hand, the Council does not support the proposal, staff may be directed to abandon the plan, or to return to the neighborhood for refinement of the plan, or to take no further action.

Step 11 Project Construction

Construction of the approved project, in most cases, will be performed by a licensed contractor selected through the city's formal construction bidding process. After a contractor is selected by the city, individuals within the PAOI will be notified of the construction schedule.

Step 12 Project Monitoring

Traffic calming projects that have been constructed will be monitored for effectiveness during the first year following completion of the installation and also during the second year after the installation.

If residents of the neighborhood believe that the traffic calming measures, impacts and results do not meet their expectations, they may request removal of the permanent measures. The request for removal must follow the Traffic Calming Measures Removal Process and be submitted at least one year from date of Phase III installation.

Traffic Calming Measures Removal Process (Phase II and III)

Individuals within a neighborhood may determine that one or more traffic calming measures should be removed. If so, a petition favoring removal and signed by 80% of the eligible individuals within the PAOI or expanded PAOI, if applicable, must be sent to staff. Eligibility criteria for signing the petition will be the same as for previously indicated voting procedures (one signature per household or property). A sample petition is provided on the next page for use by the neighborhood contact person to collect signatures.

Staff will review the petition, determine if the 80% threshold is met and notify all residents and non-resident owners within the PAOI of the results. No removal petition will be accepted by staff during the test period when temporary measures are being reviewed.

If the petition has 80% or more valid signatures, it will be submitted to the Traffic Safety Commission for consideration. All individuals within the PAOI will be notified in writing of the meeting and will have the opportunity to address the Commission with their concerns. The Traffic Safety Commission recommendation, whether to deny or sustain the removal petition, will be forwarded to the City Council.

All residents and non-resident owners within the neighborhood PAOI will be notified by mail of the date when the City Council will consider their request for removal of the traffic calming measure(s). Each interested resident will have the opportunity to address the City Council. A final decision will be made by the City Council based upon staff input, Traffic Safety Commission recommendations and citizen comments. As appropriate, staff will initiate action on the City Council's decision. All residents and non-resident owners within the PAOI will be notified of the City Council decision by mail.

PETITION

REQUEST TO REMOVE TRAFFIC CALMING MEASURE(S)
CARLSBAD RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM

CONTACT PERSON: _____ DATE: _____

CONTACT PERSON ADDRESS: _____

_____

CONTACT PERSON TELEPHONE: _____

The undersigned state they that they are requesting that the City of Carlsbad consider removing the traffic calming measure(s) installed on _____*(street name).*

The measure or measures to be removed are: _____

_____

_____.

The undersigned further state they have read the Travel Calming Removal Process section contained in the Carlsbad Residential Traffic Management Program.

Name *(please print)*	**Address *(please print)***	**Telephone**	Signature
1.			
2.			
3.			
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(attach additional sheets as necessary)

PROGRAM UPDATE PROCEDURES

It is intended that the Carlsbad Residential Traffic Management Program be dynamic and subject to change. Traffic calming measures, techniques and/or methodologies continue to evolve. What was once in favor and popular to implement may have been subsequently found by agencies to be undesirable, unworkable or unacceptable to the neighborhood.

Revisions to the Carlsbad Residential Traffic Management Program (CRTMP) are expected. When revisions are suggested, a formal review and approval process of the revision(s) will be followed.

Steps in the revision/update process are as follows:

Step 1 Initiation of Revision

A change or revision may be initiated by the City Council, staff or a citizen. It is suggested that the requested revision be made in writing, with the reasons for or intent of the revision clearly stated. A compelling reason to initiate the update process or to change the process must be offered to be favorably received.

Step 2 Review by Staff

Suggested revisions will be thoroughly researched and reviewed by staff to determine if they are appropriate for inclusion in the Carlsbad Residential Traffic Management Program. Other City departments will also be consulted and, as necessary, comments from stakeholders will be solicited. Changes to traffic calming measures, procedures or methodologies will only be considered by the Traffic Safety Commission once a year, unless such measures, procedures or methodologies are determined to be illegal.

Step 3 Response to Initiator

Staff will respond in writing to the individual proposing the revisions, commenting on their suitability or requesting additional information as needed. Revisions deemed unacceptable by staff will not be processed further. Revisions recommended by staff for further consideration will be scheduled for discussion at a Traffic Safety Commission meeting. Only those suggested revisions that significantly enhance the overall Carlsbad Residential Traffic Management Program will be considered for acceptance and submitted to the Traffic Safety Commission.

Step 4 Review by the Traffic Safety Commission

All revisions proposed during any 12-month period will be reviewed by the Traffic Safety Commission at the end of such period. The recommendations of the TSC on all such proposed revisions will be forwarded to the City Council. The TSC review meetings will be duly noticed and open to the public for their input on revisions or changes.

Step 5 Review and Approval by the City Council

In a public meeting, the City Council will consider the recommendations of the Traffic Safety Commission. Staff may be directed by the Council either to implement the revisions to the program and the supporting documents or to take no action on the requested revision. Noticing procedures for the Council meeting will be the same as for the Traffic Safety Commission meeting and all interested residents will be encouraged to attend the Council meeting to make their opinions known.

Proposed revisions will not interfere with or delay the processing of a neighborhood traffic calming program in progress. A neighborhood that has started development of its traffic calming program will continue the process without change.

Measures Not Recommended for Use

Several traffic management measures were evaluated and determined to be unsuitable for use in Carlsbad. Listed following are measures not recommended for installation on public streets and, therefore, not proposed for consideration as part of a neighborhood traffic calming project.

Rumble Strip

A rumble strip is an alteration to the paved street surface by various techniques to draw the driver's attention to a roadway condition. This measure is not acceptable in a residential neighborhood due to the noise and vibration created when a vehicle is driven over the rumble strip.

One-Way Street

A one-way street may encourage increased speeds and may result in additional traffic volumes on a nearby street due to diverted traffic. On a residential street, confusion and wrong-way travel may result as a one-way street is an atypical encounter for drivers when leaving a single-family residence.

Miscellaneous Non-Standard Devices

Signs and/or striping not recognized by the State of California Department of Transportation (Caltrans) as an official traffic control device shall not be used in the public right-of-way. These signs typically include CHILDREN AT PLAY, SLOW and others. Non-official signs are of the novelty type, many have messages that are misinterpreted by drivers, have no legal meaning and their use can expose the City to tort liability. These types of signs do not command the attention or respect of drivers that are repeat users of the street. Using signs that are not officially approved may give a false sense of security to residents. Additionally, the signs raise expectations that some degree of protection is provided through their use when, in reality, this is not the case.

Cul-de-Sacs and Road Closures

Streets have been designed and constructed to facilitate multiple points of egress for the residents and multiple ways for an emergency vehicle to respond to an incident. Basic circulation patterns are intended to remain. Streets will not be truncated through the construction of a barrier to cause a road closure or by converting the end of the street into a cul-de-sac through construction of a turnaround.

ACRONYMS AND GLOSSARY

California Vehicle Code	A document published by the Department of Motor Vehicles containing laws relating to the use of streets and the operation of vehicles thereon.
Circulation Element	Comprehensive plan in Carlsbad for the safe and efficient movement of people and goods.
Critical Speed (85th percentile)	The speed at which 85% of the vehicles are traveling at or below.
General Plan	A document required by law that contains the overall goals, objectives and policies for development of the City.
ITE	Institute of Transportation Engineers
Midblock	Any point located between two successive intersections.
NTCC	Neighborhood Traffic Calming Committee
PAOI	Project Area of Influence
PS&E	Plans, specifications and estimates used to construct projects.
Traffic Calming	The combination of mainly physical measures that reduces the negative effects of motor vehicle use, alters driver behavior and improves conditions for non-motorized street users—ITE definition.
CRTMP	Carlsbad Residential Traffic Management Program
Toolbox	Traffic calming measures ("tools") used to reduce vehicle speeds and/or minimize volumes on residential streets.
TR	Traffic Request. Used by transportation staff to log, file and track project requests.
TSC	Traffic Safety Commission
Warrants	Established, objective criteria used to evaluate traffic conditions.

Exhibit 1

RESOLUTION NO. 2011-115

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CARLSBAD, CALIFORNIA, APPROVING THE REVISED CARLSBAD RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM THAT ESTABLISHES THE POLICY FOR TRAFFIC CALMING ON RESIDENTIAL STREETS.

WHEREAS, the City of Carlsbad is committed to recognizing the residential character of its residential public streets; and

WHEREAS, the City has responded to concerns regarding traffic issues in neighborhoods; and

WHEREAS, the City has determined that speeding and excessive traffic volumes on residential streets are to be discouraged; and

WHEREAS, through the traffic management process, the City desires to have a logical, consistent, and viable methodology for managing traffic issues in residential neighborhoods; and

WHEREAS, the policies, procedures and methodology for traffic management on residential public streets are specified in the Carlsbad Residential Traffic Management Program, as revised May 2011.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Carlsbad, California, as follows:

1. That the above recitations are true and correct.

2. That City Council hereby establishes that the policy, standards and methodology to be considered for managing traffic on residential public streets is set forth in the Carlsbad Residential Traffic Management Program, as revised May 2011, and any subsequent revisions thereof.

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PASSED, APPROVED AND ADOPTED at a Regular Meeting of the City Council of the City of Carlsbad on the 24th day of May , 2011, by the following vote to wit:

AYES: Council Members Hall, Kulchin, Blackburn, Douglas, Packard.

NOES: None.

ABSENT: None.

MATT HALL, Mayor

ATTEST:

LORRAINE M. WOOD, City Clerk
(SEAL)

TRAFFIC CALMING TOOLBOX

Traffic control devices are those official signs and striping placed in the public right-of-way and recognized by the public such as STOP signs, curve warning signs, centerline striping, etc. These devices have been officially approved by the State of California Department of Transportation (Caltrans) pursuant to legislative authority provide for in the California Vehicle Code.

Traffic calming measures, however, have evolved to include features that may not be officially approved through legislative action by the State of California. Commonly referred to as "tools", the traffic calming measures or features available for use in Carlsbad are available in this program's "toolbox".

Each tool listed is unique and has a specific purpose for addressing residential street traffic concerns that require some form of traffic calming. Each tool has its own set of advantages and disadvantages and a range of costs. More than just a structural feature on a street, traffic calming tools also encompass education, enforcement, engineering and enhancement.

The following pages identify tools that have been endorsed and available for use in Carlsbad. They were chosen for:

- Appropriateness to address traffic concerns in Carlsbad.
- Acceptability to stakeholders including the Fire and Police Departments.
- Suitability for use in residential neighborhoods.

Each traffic calming measure is briefly described, application for usage listed, and possible advantages and disadvantages outlined. Estimated costs have been provided when the cost of the measure was able to be determined.

Phase I

Education

Description:

Conversations, meetings, e-mails, letters and handouts to residents regarding neighborhood traffic and pedestrian safety issues.

Application:

Traffic education is intended to make residents aware of local residential speed limits and other neighborhood traffic and safety concerns.

Advantages:

- Allows residents to express views and obtain answers.
- Identifies issues of concern and solutions.

Disadvantages:

- Effectiveness may be limited.
- Potentially time consuming.
- Limited audience.

Special Considerations:

- Meetings need to stay focused on specific traffic issues.

Cost:

- Varies (staff time and published materials).

Phase I

Police Presence

Description:

Police vehicles drive through or stop for a few minutes on residential streets to observe driver behavior.

Application:

Police presence is used to make a visual showing in residential neighborhoods to help discourage speeding.

Advantages:

- Shows an enforcement presence.
- May help slow vehicle speeds.

Disadvantages:

- Presence without enforcement has limited effectiveness.
- Limited police resources.

Special Considerations:

- Typically only effective when officer is present.
- Used on residential streets with complaints of speeding.

Cost:

- N/A

Phase I

Police Enforcement

Description:

The Police Department deploys motorcycle or automobile officers to perform targeted enforcement on residential streets.

Application:

Targeted police enforcement used to make drivers aware of local speed limits and to reduce speeds by issuing citations.

Advantages:

- Effective, visible enforcement.
- Driver awareness increased.
- Can be used on short notice.
- Can reduce speeds temporarily.

Disadvantages:

- Temporary measure.
- Requires long-term use to be effective.
- Limited police resources.

Special Considerations:

- Typically only used on residential streets with documented speeding problems.
- Typically only effective while officer is actually monitoring speeds.
- Benefits are short-term without regular periodic enforcement.
- Expensive.

Cost:

- N/A

Phase I

Speed Feedback Signs

Description:

A portable device equipped with a radar unit that detects, displays and records the speed of passing vehicles. The sign can be set to display the speed on its screen or show a blank screen for data collection only.

Application:

May help discourage speeding on neighborhood streets through education (when set on display mode) by showing drivers their current speed.

Advantages:

- Effective educational tool.
- Good public relations tool.
- Encourages speed compliance.
- Can reduce speeds temporarily.

Disadvantages:

- Not an enforcement tool.
- Ineffective on multi-lane roadways.
- Less effective on high volume streets.
- Limited Police Department resources to install

Special Considerations:

- Can be installed on a street light standard where a resident indicates there is a speeding problem.
- Typically only effective in reducing speeds when the sign is present and set on display mode.
- Some motorists may speed up to try to register a high speed (when on display mode).
- Recommend for temporary use only.

Cost:

- $5,000 each unit

Phase I

Speed Limit Signs

Description:

25 mile per hour speed limit signs are installed on neighborhood residential streets that meet the legal definition of a RESIDENCE DISTRICT.

Application: Speed limit signing encourages slower vehicle speeds along residential streets. Signs are only installed along streets where speeding is a problem.

Advantages:

- Clearly indicates prima facie speed limit.
- Usually popular with residents.
- Low cost of installation.

Disadvantages:

- Not effective by themselves.
- May add to sign clutter.
- Increased cost of sign maintenance.

Special Considerations:

- Typically only installed on streets where speeding is a documented problem.
- Requires police enforcement to be effective.

Cost:

- $200 per sign.

Phase I

Speed Limit Pavement Legends

Description:

Painting of speed limit legends on the roadway adjacent to speed limit signs.

Application:

Speed limit pavement legends increase driver awareness of the speed limit to help reduce speeding.

Advantages:

- Supplement to speed limit signs.
- May help reduce speeds.
- Usually popular with residents.

Disadvantages:

- Not effective or legal by themselves.
- Increase in maintenance cost.

Special Considerations:

- Should only be installed on streets where speeding is a documented problem.

Cost:

- $350 per legend.

Phase I

Warning Signs

Description:

Standard warning signs give drivers advanced notice of roadway conditions.

Application:

Warning signs advise motorists to reduce their speed.

Advantages:

- Informs motorists of roadway conditions.
- Low cost of installation.

Disadvantages:

- May add to sign clutter.
- Increased cost of sign maintenance.
- Not a regulatory sign.

Special Considerations:

- Advisory only, cannot be enforced.

Cost:

- $200 per sign.

Phase I

Neighborhood Speed Monitoring Program

Description:

Resident writes down the license plate number of vehicle(s) observed to be speeding noting date, time & location. Information is called in to the Traffic Division of the Police Department. The Police Department sends a letter to the registered vehicle owner informing them their vehicle was observed to be speeding on the stated street on the specified date, time & location. The vehicle owner is informed that residents are very concerned about speeding & are requested to observe the 25 mph residential speed limit.

Application:

The Neighborhood Speed Monitoring Program helps to discourage speeding through neighborhood & Police Department involvement, awareness & neighborhood peer pressure.

Advantages:

- Encourages speed compliance.
- Creates neighborhood involvement and awareness.

Disadvantages:

- Not an enforcement tool.
- Requires Police Department resources to send letters.

Cost:

- police Department staff time to send out letters.

Phase II

Residential STOP Signs

Description:

Residential stop signs may be considered for installation under special circumstances for speed reduction at intersections on residence district streets.

Application:

The installation of residential stop signs at intersections reduces the uncontrolled length of a street, which may help to reduce vehicle speeds on the street.

Advantages:

- May help reduce vehicle speeds within 150-200 feet of intersection.
- Favored by many residents.
- Low cost of installation.

Disadvantages:

- Non-enforcement may lead to a general non-compliance of stop signs.
- May divert traffic to other streets.
- Emergency response times slightly impacted.
- Increased maintenance costs
- May lead to increased noise/air pollution
- Not as effective as horizontal deflective measures such as traffic circles.

Special Considerations:

- To control vehicle speeds, the recommended spacing of this traffic calming measure on a residential street is typically between 300 to 700 feet.
- Requires stop limit line and stop legend to be painted on the street which may lead to sign clutter.
- Requires stop limit line and stop legend to be painted on the street.

Cost:

- $2,000 (two approaches) - $4,000 (four approaches).

Phase II

Speed Table

Description:

Speed tables are constructed 3 to 4 inches above the elevation of the street. They feature ramps on the approaches and a flat top, typically about the length of a passenger car.

Application:

Speed tables help reduce vehicle speeds at mid-block locations.

Advantages:

- Reduces vehicle speeds.
- Access not affected.
- Generally results in a gentler ride as compared to speed lumps.

Disadvantages:

- May increase noise.
- Emergency response times affected.
- Increased maintenance costs.
- Perception of reducing property values.
- May not be as aesthetically pleasing as chicanes.

Special Considerations:

- Requires special signing and markings which may lead to sign clutter.
- Careful attention required for drainage issues and other design issues.
- Works well in combination with curb extensions and curb radius reductions.
- At existing crosswalk locations, a crosswalk may be painted on the proposed speed table.

Fire Department and Police Department Evaluation:

Fire Department and Police Department shall have final approval of speed table locations and spacing.

Cost:

- $8,000 - $14,000 each (prefabricated).

Phase II

Speed Cushions

Description:

Prefabricated rubber or field formed asphalt approximately 3 inches in height and 7-12 feet in length installed in a series across a roadway. Transverse cuts across the cushion allow some emergency vehicles to pass without vertical deflection.

Application:

Reduce vehicle speeds without significantly impacting some emergency vehicle response time.

Advantages:

- Reduces vehicle speeds.
- May reduce vehicle volumes.

Disadvantages:

- May increase noise.
- Aesthetics.
- May divert traffic to other streets.
- Perception of reducing property values.
- Increased maintenance costs.
- Some emergency vehicles impacted by slowing response times.

Special Considerations:

- Requires special signing and markings.
- To control vehicle speeds, the spacing must be carefully evaluated.

Fire Department and Police Department Evaluation:

Fire Department and Police Department shall have final approval of speed lump locations and spacing.

Cost:

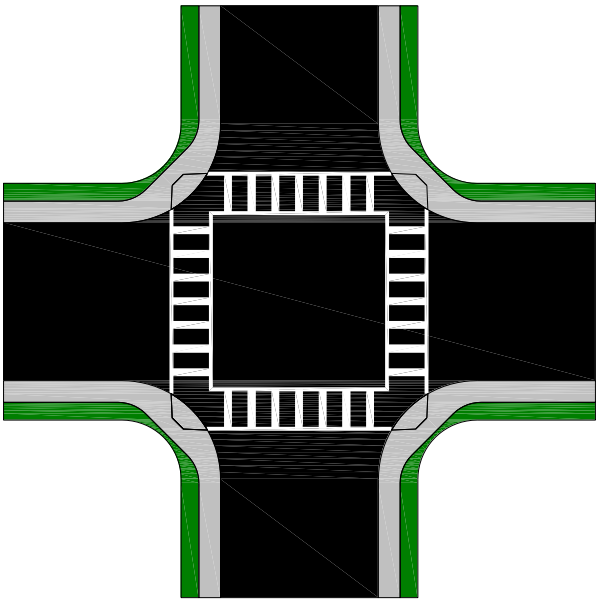
- $4,000 - $6,000 each (prefabricated).

Phase II

High Visibility Crosswalks

Description:

High visibility crosswalks established by painting stripes between the crosswalk's outer boundary stripes.



Application:

High visibility crosswalks increase crosswalk visibility to drivers.

Advantages:

- More visible to the driver than traditional crosswalks.

Disadvantages:

- May give false sense of security to pedestrians.
- Higher maintenance costs.

Special Considerations:

- Should only considered at controlled intersections where painted crosswalks already exist.
- Pedestrians may place too high a reliance on its ability to control driver behavior.
- Can be used at high pedestrian volume crossing locations.

Cost:

- $1500 to $7,000 each.

Phase II

Narrowing Lanes (Striping)

Description:

Striping used to narrow traffic lanes. The "extra" pavement width can be used to create or add to bicycle and/or parking lanes. Lane striping can also be used to visually simulate the hardscape features that define the horizontal traffic calming measures found in Phase III.

Application:

Narrowing lanes with striping used to help slow vehicle speeds. Horizontal measures can be simulated with striping but are not as effective as Phase III traffic calming measures that use hardscape to deflect traffic.

Advantages:

- Can be quickly implemented in some circumstances.
- May reduce travel speeds.
- May improve safety.

Disadvantages:

- Not effective as stand-alone measure.
- May lead to loss of parking.
- Increases regular maintenance.
- Some residents may oppose striping on neighborhood streets.
- Increases resurfacing costs.

Special Considerations:

- Narrowed travel lanes create "friction" to help slow vehicle speeds.
- Can be installed quickly.
- Designated bicycle lanes and/or parking lanes can be created.
- Adds centerline and edgeline striping to neighborhood streets.

Cost:

- $0.75 per linear foot.

Phase II

Neighborhood Signs

Description:

Neighborhood signs involve the use of special signs such as "ENTERING A TRAFFIC CALMED NEIGHBORHOOD" to increase motorist awareness.

Application:

Neighborhood signs help reduce speeding on residential streets.

Advantages:

- May increase driver awareness.
- May cause drivers to slow down.
- Low cost of installation.

Disadvantages:

- May have no lasting effect.
- Can create false sense of security.
- Adds to sign clutter.
- Increased cost of sign maintenance.
- Not a standard MUTCD sign.

Special Considerations:

- Installed at entry points to a neighborhood.

Cost:

- $$200 per sign.

Phase III

Turn Restrictions via Signs

Description:

Standard "No Left Turn", "No Right Turn", or "Do Not Enter" signs used to prevent undesired turning movements onto residential streets.

Application:

Turn restriction signing used to reduce cut-through traffic on residential streets.

Advantages:

- Redirects traffic to main streets.
- Reduces cut-through traffic.
- Low cost.

Disadvantages:

- May divert traffic to other streets.
- Inconvenient to residents.
- Enforcement required.
- Adds to sign clutter.
- Violation rates can be high without enforcement.

Special Considerations:

- Installed at entry points of a neighborhood to prevent traffic from entering.
- Has little or no effect on speeds for through vehicles.
- With active enforcement, violation rates can be reduced.

Cost:

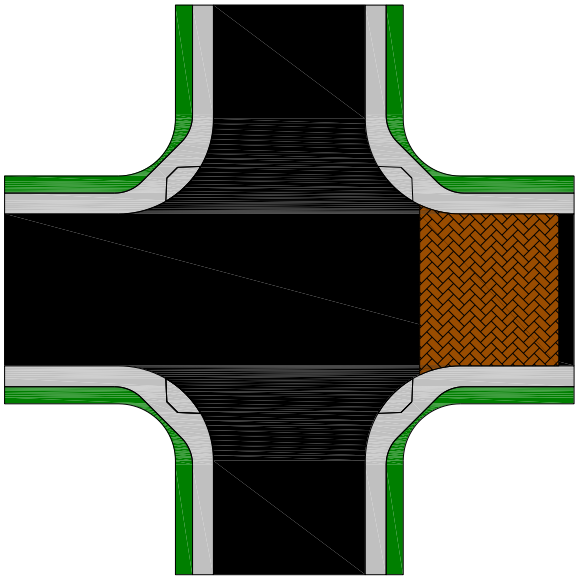
- $200 per sign.

Phase III

Textured Pavement

Description:

Textured pavement is installed in the roadway typically to provide an entry statement to the neighborhood.



Application:

Used as a visual cue for drivers to slow down.

Advantages:

- Aesthetic/visual enhancement.
- Provides entry statement to traffic calmed area.

Disadvantages:

- Increase in maintenance.
- Increase in noise.
- Expensive.

Special Considerations:

- Textured pavement has minimal influence on drivers routine behavior.
- Overall speeds and volumes are usually only minimally influenced.

Cost:

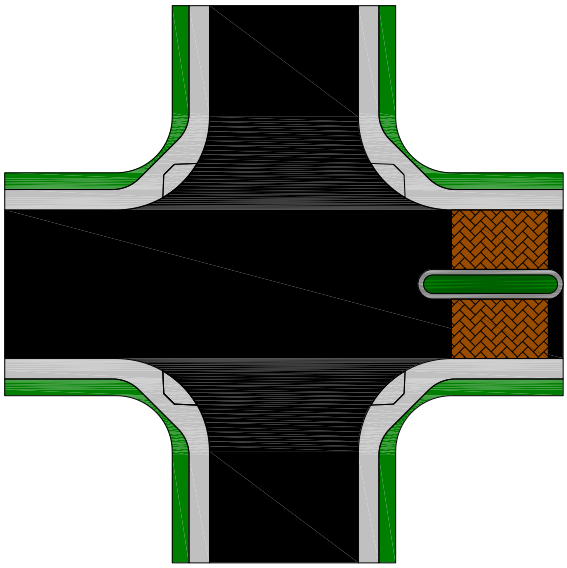
- $10 per square foot.

Phase III

Entry Treatment

Description:

Entry treatments consist of raised landscaped median islands and textured pavement features and are located at entries to neighborhoods.



Application:

Entry treatments help reduce speed. They provide visual cues to drivers they are entering a residential area or that surrounding land uses are changing.

Advantages:

- May reduce vehicle speeds.
- Creates an identify for the neighborhood.
- May reduce cut-through traffic.
- Opportunity for landscaping.

Disadvantages:

- Increase in noise.
- May require removal of parking.
- Can impede truck movements.
- Creates physical obstruction.
- Increase in maintenance.

Special Considerations:

- Entry treatments have minimal influence on drivers routine behavior.
- Overall speeds and volumes are usually only minimally affected.
- Entry treatments make drivers more aware of the neighborhood environment.
- Care should be taken not to restrict pedestrian visibility at adjacent crosswalk.

Cost:

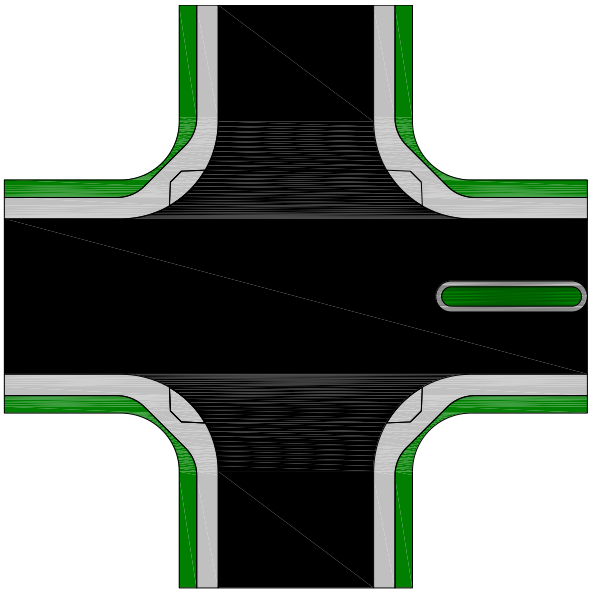
- $21,000 to $35,000 per approach.

Phase III

Center Island Narrowing

Description:

Center island narrowing is the construction of a raised island in the center of a wide street.



Application:

Center islands are installed on wide streets to help lower speeds and/or to prohibit left-turning movements. They also provide a mid-point refuge area for pedestrians.

Advantages:

- Reduces vehicle speeds.
- Can reduce vehicle conflicts.
- Reduces pedestrian crossing width.
- Landscaping opportunity.

Disadvantages:

- May require parking removal.
- May reduce driveway access.
- May impact emergency vehicles.
- May divert traffic to other streets.

Special Considerations:

- When used to block side street access, may divert traffic.
- May visually enhance the street with landscaping.
- Bicyclists prefer not to have travel way narrowed.

Cost:

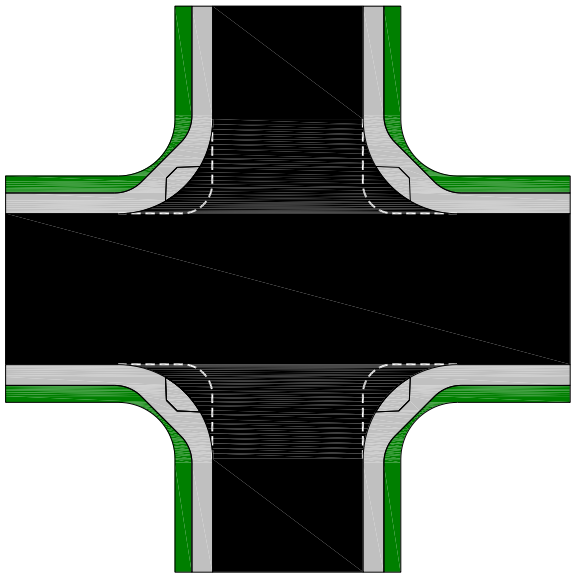
- $14,000 to $28,000 each.

Phase III

Curb Radius Reduction

Description:

Removal of existing larger radius curb returns at an intersection and construction of smaller radius curb returns.



Application:

Curb radius reductions slow vehicle turning speeds and shorten pedestrian crossing distance.

Advantages:

- Shorter pedestrian crossing width.
- Slower vehicle turning speeds.
- Opportunity for landscaping.

Disadvantages:

- Impacts large vehicle turns.

Special Considerations:

- Careful attention needs to be given to drainage issues and turning radii.

Cost:

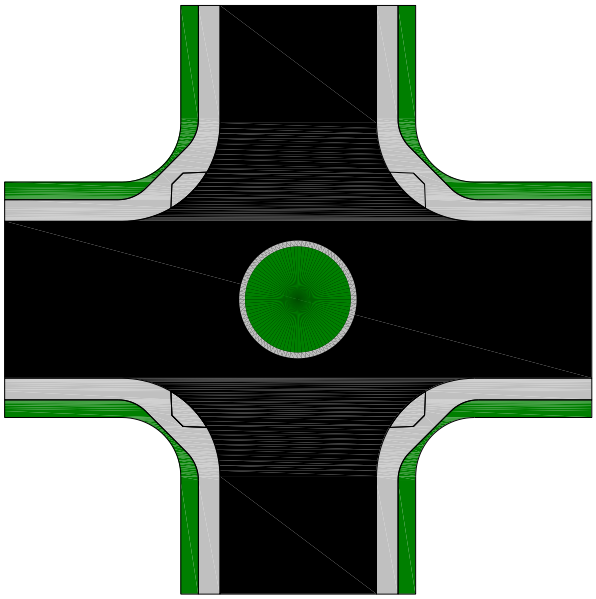
- $12,000 to $18,000 (four-leg intersection)

Phase III

Traffic Circle

Description:

Traffic circles are raised circular islands installed in an existing intersection. Traffic circles require drivers to slow down to maneuver around the circle.



Application:

Traffic circles provide speed control.

Advantages:

- Effectively reduces vehicle speeds.
- Reduces collision potential.
- Better side-street access.
- Opportunity for landscaping.

Disadvantages:

- May increase bicycle/automobile conflicts.
- Can increase emergency vehicle response time.
- Can restrict large vehicle access.
- Expensive.
- Some left-turning vehicles must negotiate circle clockwise.

Special Considerations:

- Traffic circles are best used in a series or with other devices.
- About 30 feet of curbside parking must be prohibited in advance of circle.
- Requires the installation of signs and pavement markings.
- Traffic circles are less effective at T-intersections.

Fire Department and Police Department Evaluation:

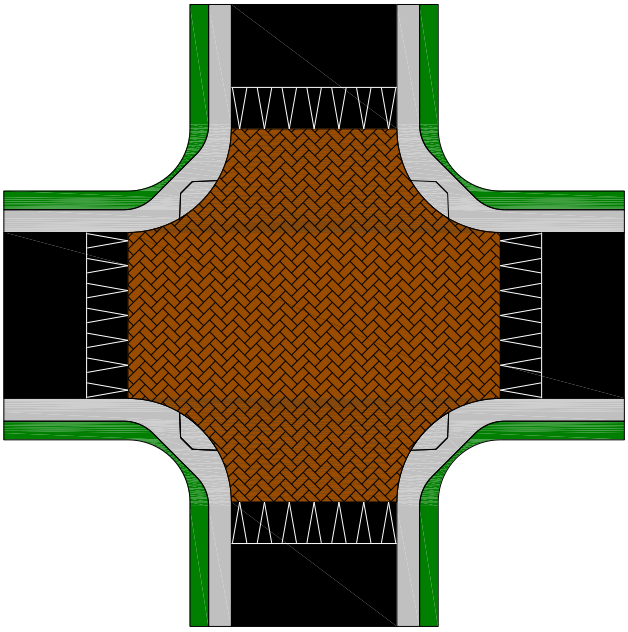
Fire Department and Police Department shall have final approval of traffic circle locations.

Cost:

- $20,000 to $35,000 per intersection.

Phase III

Raised Intersection



Description:

A raised intersection is a flat, raised area covering an entire intersection. There are ramps on all approaches. The plateau is generally about 4" high. Typically, the raised intersection is finished with textured pavement.

Application:

Raised intersections reduce vehicle speeds and provide for safer pedestrian crossings.

Advantages:

- Effectively reduces vehicle speeds.
- Enhances pedestrian safety.
- Can be aesthetically pleasing.

Disadvantages:

- Expensive to construct and maintain.
- Requires drainage modifications.
- Affects emergency vehicle response time.
- May require bollards around corners.

Special Considerations:

- Makes intersections more pedestrian-friendly.
- Special signing is required.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and the Police Department and its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

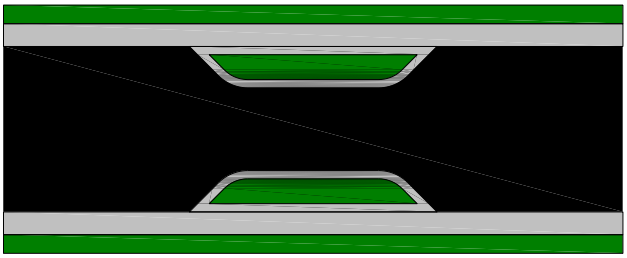
- $48,000 to $110,000 per intersection.

Phase III

Mid-Block Choker

Description:

Mid-block chokers are curb extensions that narrow a street by extending the curbs towards the center of the roadway. The remaining street cross-section consists of two narrow lanes.



Application:

Reduces speeds by narrowing the roadway so two vehicles can pass slowly in opposite directions.

Advantages:

- Effectively reduces vehicle speeds.
- Shorter pedestrian crossing width.
- Improves sight distance.
- Opportunity for landscaping.

Disadvantages:

- May require parking removal.
- May create hazard for bicyclists.
- May create drainage issues.
- May impede truck movements.
- May impact driveway access.

Special Considerations:

- Preferred by many emergency response agencies to other measures.
- Provide excellent opportunities for landscaping.

Cost:

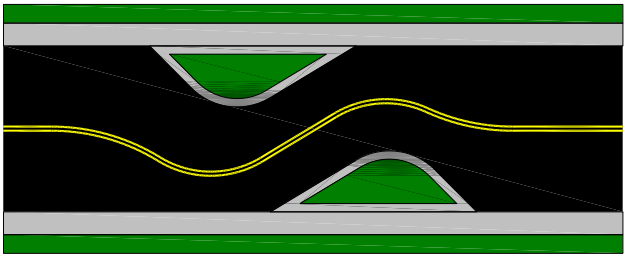
- $14,000 per location

Phase III

Lateral Shift

Description:

A lateral shift is the construction of curb extensions into the roadway that creates a horizontal deflection drivers must negotiate.



Application:

A lateral shift helps reduce vehicle speeds.

Advantages:

- Effectively reduces vehicle speeds.
- Low impact on emergency vehicles.
- Opportunity for landscaping.

Disadvantages:

- Loss of parking.
- Increased maintenance.
- May impact driveways.
- May be expensive.

Special Considerations:

- Most effective when traffic volumes are approximately equal in both directions.
- May increase conflicts with pedestrians and bicyclists.

Cost:

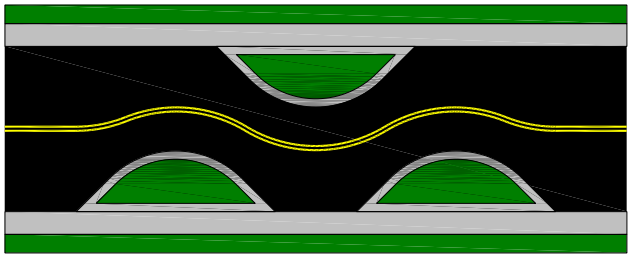
- $14,000 to $28,000 per location.

Phase III

Chicane

Description:

A chicane is a series of two or more staggered curb extensions on alternating sides of a roadway. The horizontal deflection causes motorists to reduce speed.



Application:

Chicanes help reduce vehicle speeds.

Advantages:

- Effectively reduces vehicle speeds.
- Low impact on emergency vehicles.
- Opportunity for landscaping.

Disadvantages:

- Loss of parking.
- Increased maintenance.
- May impact driveways.
- May be expensive.

Special Considerations:

- May require removal of substantial amounts of on-street parking.
- Most effective when traffic volumes are approximately equal in both directions.
- May increase conflicts with pedestrians and bicyclists.
- Provide landscaping opportunities.
- Most residents would have their driveways affected.

Cost:

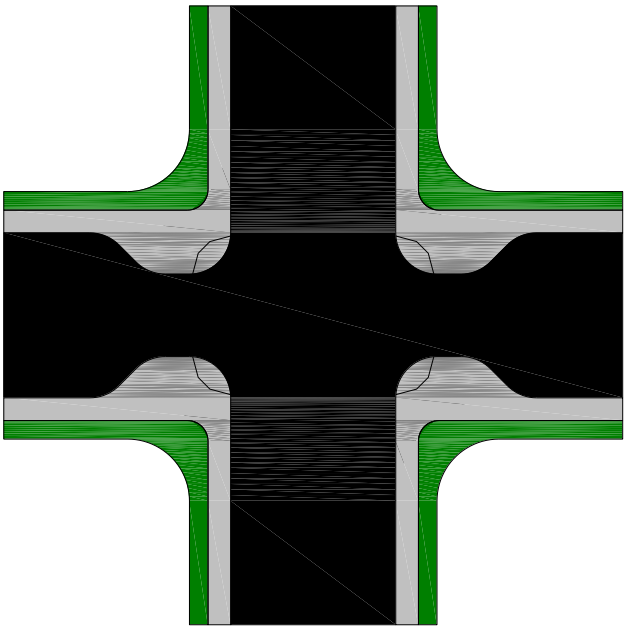
- $40,000 to $80,000 per location.

Phase III

Intersection Bulb-Out

Description:

Intersection bulb-outs narrow the street by extending the curbs toward the center of the roadway.



Application:

Used to narrow the roadway and to create shorter pedestrian crossings. They also influence driver behavior by changing the appearance of the street.

Advantages:

- Improve pedestrian visibility.
- Shorter pedestrian crossing width.
- May reduce vehicle speeds.
- Opportunity for landscaping.

Disadvantages:

- May require parking removal.
- May create hazard for bicyclists.
- May create drainage issues.
- Impacts large vehicle turns.

Special Considerations:

- Intersection bulb-outs at transit stops enhance service.
- May require landscape maintenance to preserve sight distances.

Fire Department Evaluation:

- Intersection Bulb-Outs shall be restricted to only one of the two intersecting streets.

Cost:

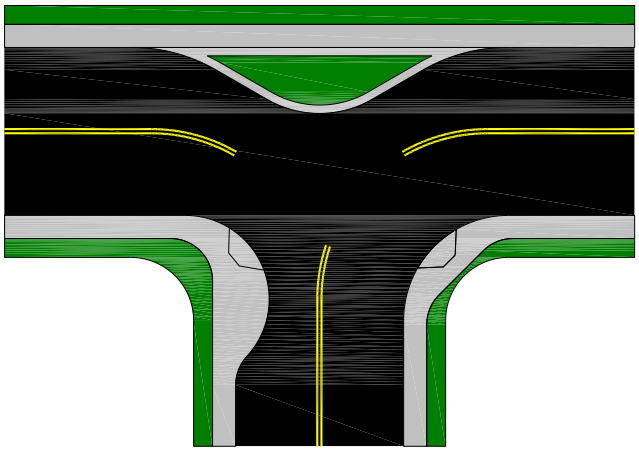
- $14,000 to $28,000 (four-leg intersection).

Phase III

Realigned Intersection

Description:

"T" intersections are realigned/modified by constructing horizontal deflection which forces previous straight-through movements to make slower turning movements.



Application:

Realigned intersections help reduce vehicle speeds.

Advantages:

- Reduces vehicle speeds.
- No significant impact on emergency and transit service.
- May discourage through traffic.
- Opportunity for landscaping.

Disadvantages:

- Removal of parking required.
- Increased maintenance.
- May divert traffic to other streets.

Special Considerations:

- Reduces vehicle speeds near intersection.
- May change STOP sign configuration and affect emergency response times.
- Careful attention needs to be made to drainage issues.

Cost:

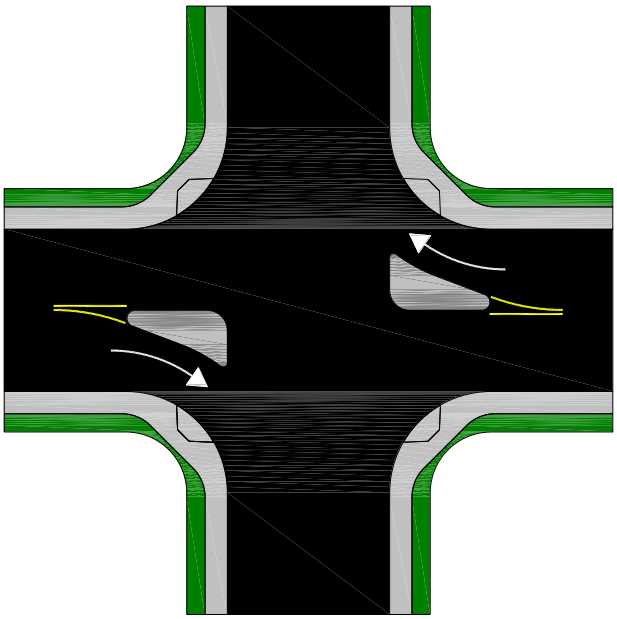
- $14,000 to $28,000 each intersection.

Phase III

Forced Turn Channelization

Description:

Forced turn channelization are raised median islands that restrict specific movements at an intersection.



Application:

Forced turn channelization reduces traffic volumes/cut-through traffic.

Advantages:

- Reduces cut-through traffic.
- More self-enforcing than signs.
- Shorter pedestrian crossing distances.

Disadvantages:

- May divert traffic to other streets.
- Can increase trip lengths.

Special Considerations:

- Has little or no effect on speeds for through vehicles.
- In emergency situations, emergency vehicles can gain access.
- May increase emergency response times.

Cost:

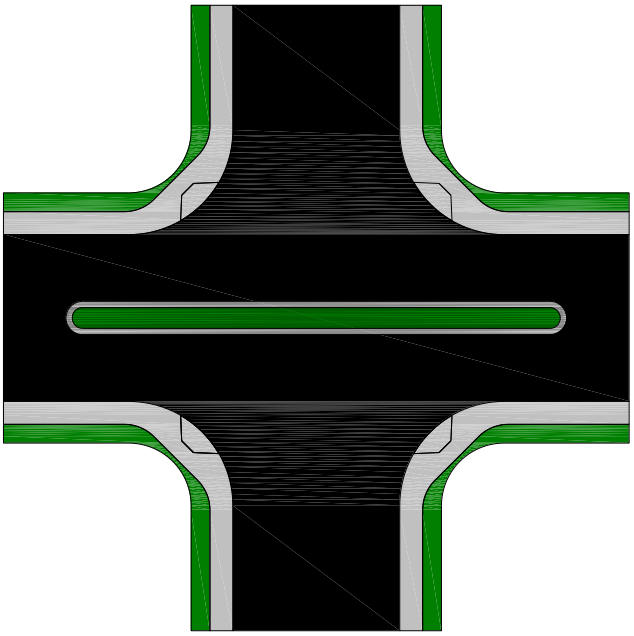
- $7,000 to $14,000 per approach.

Phase III

Median Barrier

Description:

Median barriers are raised islands constructed through intersections that prevent left turns and side street through movements.



Application:

Median barriers reduce cut-through traffic.

Advantages:

- Redirects traffic to other streets.
- Reduces cut-through traffic.
- Provides pedestrian refuge area.
- Opportunity for landscaping.

Disadvantages:

- Redirects traffic to other streets.
- Increases trip lengths.
- May impact emergency response.
- Creates physical obstruction.

Special Considerations:

- Should not be used on critical emergency response routes.
- Landscaping needs to be carefully designed to not restrict visibility for motorists, bicyclists and pedestrians.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

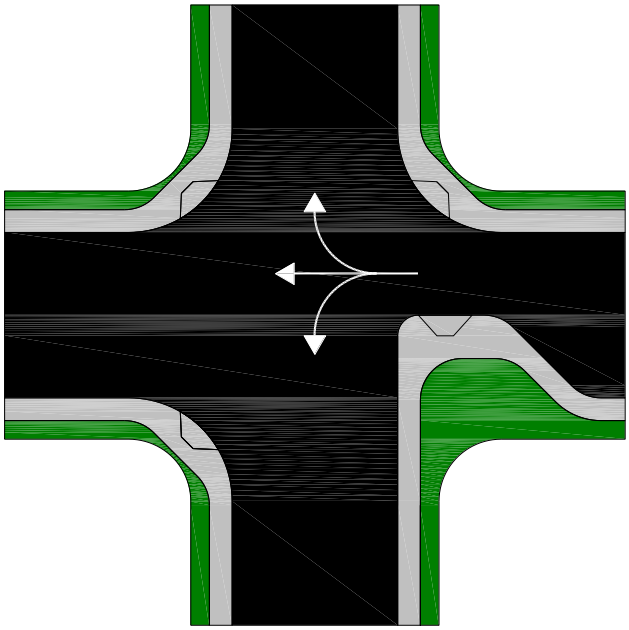
- $14,000 to $28,000 each.

Phase III

Semi-Diverter

Description:

Semi-diverters are curb extensions that restrict movements into a street. They are constructed to approximately the center of the street, obstructing one direction of traffic. A one-way segment is created at the intersection, while two-way traffic is maintained for the rest of the block.



Application:

Semi-diverters reduce traffic volume.

Advantages:

- Reduces cut-through traffic.
- More self-enforcing than signs.
- Reduces pedestrian crossing widths.
- Opportunity for landscaping.

Disadvantages:

- May divert traffic to other streets.
- May increase trip lengths.
- May require the removal of parking.
- Increased maintenance.

Special Considerations:

- Restricts access into street while allowing residents access within block.
- Potential use must consider how residents will gain access.
- In emergency situations, emergency vehicles can gain access.
- May increase emergency response times.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

- $20,000 to $28,000 each.

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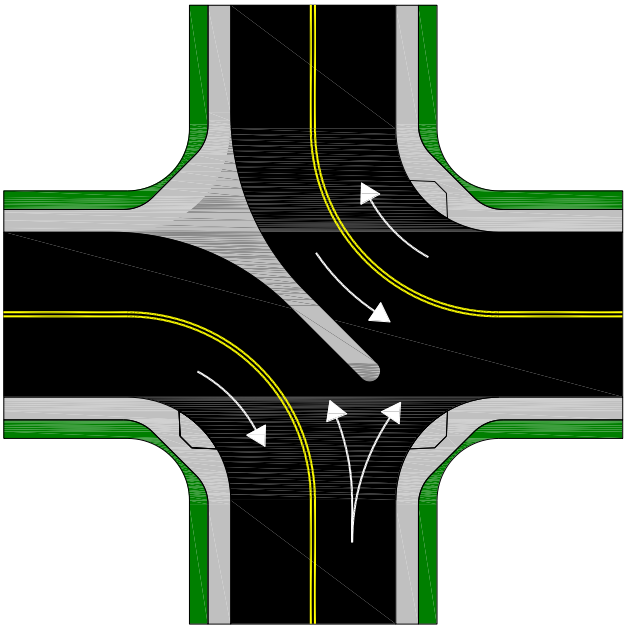
Phase III

Partial Diverter

Description:

Partial diverters are raised areas placed diagonally across a four-legged intersection (3/4 closure). They prohibit through movements by creating two "L" shaped intersections, with one leg having a right turn.



Application:

Partial diverters help reduce cut-through traffic. They also minimally decrease speeds near the intersection.

Advantages:

- Reduces cut-through traffic.
- Minimal impact to emergency access.
- Reduces collision potential.
- Opportunity for landscaping.

Disadvantages:

- Redirects traffic to other streets.
- May increase trip lengths.

Special Considerations:

- Problem(s) may be shifted to other streets unless a comprehensive area plan is developed.
- Less impact to circulation than a full street closure.
- Can be attractively landscaped.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

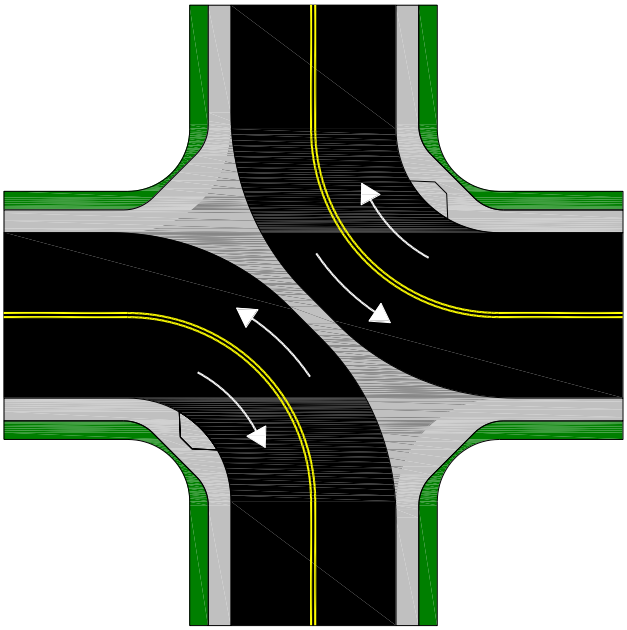
- $20,000 to $48,000 each.

Phase III

Diagonal Diverter

Description:

Diagonal diverters are raised areas placed diagonally across a four-legged intersection. They prohibit through movements by creating two "L" shaped intersections.



Application:

Diagonal diverters reduce traffic volumes. They also minimally decrease speeds near the intersection.

Advantages:

- Reduces cut-through traffic.
- Self-enforcing.
- Reduces vehicle conflicts.
- Opportunity for landscaping.

Disadvantages:

- Increases out of direction travel.
- Increases trip lengths.
- Impedes emergency vehicles.

Special Considerations:

- Can be designed to allow emergency vehicle access.
- Can be designed to allow pedestrian and bicycle access.
- Problem(s) may be shifted to other streets unless a comprehensive area plan is developed.
- Less impact to circulation than a full street closure.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

- $25,000 to $52,000 each.

TRAFFIC AND MOBILITY COMMISSION

Staff Report

Exhibit 3

Meeting Date: Sept. 6, 2022

To: Traffic and Mobility Commission

Staff Contact: Miriam Jim, Senior Engineer
Miriam.Jim@carlsbadca.gov, 442-339-4796

John Kim, City Traffic Engineer
John.Kim@carlsbadca.gov, 442-339-2757

Subject: Carlsbad Residential Traffic Management Program Update

Recommended Action

Provide input on proposed changes to the Carlsbad Residential Traffic Management Program 2022 Revision.

Background

The Carlsbad Residential Traffic Management Program, or CRTMP, was adopted by the City Council in 2001 and revised in 2011. The CRTMP is provided in Exhibit 1. This program was developed to outline a traffic management process and established procedure to improve the quality of life in neighborhoods by implementing features that reduce speeding and discourage cut-through traffic on residential streets.

Traffic calming measures, techniques and methodologies continue to evolve. What was once favored and popular to implement may later be seen as ineffective or undesirable to a neighborhood. For this reason, the CRTMP is intended to be a dynamic program where staff will re-evaluate the procedure and traffic calming toolbox in the program periodically to determine if adjustments are needed.

On Dec. 6, 2021, staff presented to the Traffic & Mobility Commission major changes proposed to the CRTMP 2022 revision. Staff received comments from the Commission.

Discussion

The CRTMP was originally developed as a three-phase program, consisting of the following:

Phase I: Enforcement and Education
Phase II: Traffic Management
Phase III: Traffic Calming

The purpose of these three phases is to provide a best value, cost-effective approach by incrementally increasing the magnitude of applied solutions as needed to achieve the program's goals. A description of the three phases is provided below.

Phase I of the CRTMP focuses on the human element of driver behavior and leverages strategies such as education of the public through signage and striping measures, police presence and police enforcement to help reduce and resolve non-compliance traffic concerns. The engineering tools available in Phase I include installation of speed limit signs, warning signs, pavement legends and temporary speed feedback signs. The temporary speed feedback signs serve a dual purpose: collection of speed data and as an educational tool to educate drivers of their travel speed. This phase is initiated when a resident contacts the city to express a concern regarding speeding or cut-through traffic on their residential street.

If the Phase I solutions do not adequately address the reported issues, Phase II of the CRTMP can be considered. The threshold for Phase II eligibility is a minimum critical speed of 32 miles per hour (MPH), as determined by using the data collected during Phase I. The critical speed, otherwise known as the 85th percentile speed, is the speed at which 85% of the drivers drive at or below. The approved program allows exception of non-qualifying streets into Phase II if approved by the Traffic & Mobility Commission.

Phase II utilizes cost-effective physical traffic management devices, such as speed cushions, to manage vehicle speeds on residential streets. In situations where a traffic calming feature is desired at an intersection, staff will consider a traffic circle or speed cushion instead of a stop sign.

Per the CRTMP, consensus support of the community is required before Phase II measures can be implemented. The first step toward establishing consensus is a neighborhood meeting. Residents and property owners within the project study area are invited to attend a neighborhood meeting organized by staff. At the meeting, staff present traffic calming strategies and options tailored to their individual street. Input provided by the meeting attendees is used to develop a preferred concept plan for traffic calming.

A mail survey is used to quantify neighborhood support for the preferred traffic calming plan developed by the residents at the neighborhood meeting. The surveys are sent to all residents and property owners in the project area of influence, or PAOI. CRTMP requires that at least 50% of the mailed surveys be returned to constitute a valid survey and that a support rate of 67% or more is required to indicate positive community support for the proposed plan. If these support requirements are satisfied, the proposed traffic calming plan is brought before the Traffic & Mobility Commission for their recommendation and then to City Council for project approval. If City Council approves the traffic calming plan, the project enters the design phase, which will result in a set of construction plans for implementation. Traffic speeds are measured after Phase II implementation to verify the effectiveness of the implemented solutions.

Phase III utilizes more traditional traffic calming features to change the character of an intersection or roadway. Traditional traffic calming features include center island narrowing,

curb radius reductions, raised intersections, mid-block chokers, chicanes, intersection bulb-outs, realigned intersections, forced turn channelization, median barriers and traffic diverters.

This phase is initiated if Phase II solutions do not adequately address the reported issues or concerns. A set of Phase III Qualification Criteria will need to be met before a street will be considered for Phase III.

Because of the effectiveness of Phase II measures, Phase III of the CRTMP has not yet been implemented on any street in the City of Carlsbad.

Key changes to the CRTMP 2022 Revision previously presented to Traffic and Mobility Commission

The four major changes presented to and supported by the Traffic & Mobility Commission in December 2021 include the following:

1. Remove STOP Signs from Phase II Toolbox. Per the CA MUTCD, STOP signs should not be used for speed control as they are intended to assign right-of-way at an intersection. Installation of STOP signs should be evaluated based on traffic volume, crash records and sight distance. When unwarranted STOP signs are installed, it often leads to unintended consequences such as non-compliances, increase in speed between stop signs and noise and air pollutions.

2. Remove High Visibility Crosswalks from Phase II Toolbox. Marked crosswalks alone have not been found to be effective in slowing traffic. High visibility crosswalks can be included in a proposed traffic calming plan in combination with other features, if appropriate.

3. Include traffic circles as a Phase II tool. Staff have implemented simple traffic circles as part of the Phase II measures on Amargosa Drive and Hillside Drive and they are found to be desirable by residents and a cost-effective traffic calming feature.

4. Limit deployment of temporary speed feedback signs for speed data collection on a residential street to once every two years. Based on staff experience and speed data collected in the past, vehicle speeds on a roadway remain fairly constant without significant changes to roadway characteristics or surrounding roadway network and land uses. If a residential street does not qualify for Phase II of the CRTMP, repeated speed measurements within a short period of time would likely yield the same result and becomes an unnecessary drain on staff resources. The proposed change would allow staff to prioritize resources on streets that have not yet been evaluated for traffic calming in the past.

Additional changes proposed to the CRTMP 2022 Revision

1. Removal of CRTMP Phase III
   At its December 2021 meeting, the Traffic & Mobility Commission commented that the current Phase III qualification criteria may be too stringent and a street given Phase II treatment may not meet those criteria. The Commission requested staff to re-evaluate the Phase III qualification criteria. Upon receiving comments from the Commission, staff reviewed past program efforts and re-considered the current Phase III qualification criteria.

Staff recommends the removal of Phase III from the program and the incorporation of Phase III tools into Phase II. Removal of CRTMP Phase III would yield a two-phase program that is straight forward, proven to be effective and one that closely reflects past effort involved in implementing traffic calming measures on residential streets in the city.

Staff recommended that the current Phase II criteria and procedures remain unchanged. In order to provide an avenue for residents to request modifications to the already implemented Phase II traffic calming treatments, staff recommend the current "Traffic Calming Measures Removal Process" be revised to "Traffic Calming Measures Modification/Removal Process". Since the CRTMP focuses on community involvement and consensus, request for modifications would follow the request for removal process as currently described in the program, requiring a petition from the community with signatures from 80% of the eligible individuals within the PAOI. Such request would be considered by staff after the one-year monitoring period following completion of traffic calming treatment installation.

2. Revisions to CRTMP Toolbox

   Staff recommend that most of the Phase III measures would remain in the toolbox but would be included as part of Phase II measures. This would provide a variety of traffic calming tools to be available for staff and residents to consider during Phase II conceptual plan development.

   Removal of some Phase III measures, however, are recommended. These include textured Pavement, realigned intersection, forced turn channelization, semi-diverter, partial diverter and diagonal diverter. Most of these treatments are designed for grid networks that Carlsbad does not have and would alter traffic patterns in the neighborhood and as a result could impact traffic and residents on other streets in the nearby area. To minimize effects of traffic calming treatment in area other than the subject street, staff recommend removing these six measures from the CRTMP toolbox.

Update on past and on-going CRTMP projects

Past Projects

Since the program was adopted, seventeen residential streets have gone through the CRTMP Phase II process and twelve of them have received traffic calming treatments with community consensus. The streets that have gone through the Phase II process are listed in Table 1 below with before and after speed measurements presented for streets with traffic calming treatments. Based on past project results, speed cushions are the most common and cost-effective traffic calming treatment being implemented in the city.

Table 1: Streets that have completed CRTMP Phase II Process

Street	Limits	Before (mph)	After (mph)	Traffic Calming Treatment(s)
Estrella De Mar	Alga Rd to Arenal Rd	32	N/A	Did not reach community consensus
Trieste Dr	Chestnut Ave to Milano Dr	35		
Basswood Ave	Valley St to Monroe St	33		
La Golondrina St	Chiriqui Ln to Westerly Terminus	34		
Avenida Pantera	Paseo Esmerado to Calle Acervo	33		
Cadencia St	650' west of Perdiz St to Calle Conifera	34	30	3 speed cushions
Corintia St	Alga Rd to El Fuerte St	35	29	4 speed cushions
Daisy Ave	Rose Dr to Batiquitos Dr	34	29	2 speed cushions
Harbor Dr	Chinquapin Ave to End of St	23*	22	2 speed cushions
Amargosa Dr	Los Pinos to Olivenhain Rd	33	24	4 speed cushions, a marked crosswalk and one traffic circle
Hillside Dr	Kelly Dr to Neblina Dr	32	25	5 speed cushions and one traffic circle
Estrella De Mar Rd	Poinsettia Ln to 600' s/o Olive Ct	30*	25	5 speed cushions
Avenida Diestro	Circulo Sequoia to Sitio Baya	33	25	4 speed cushions
Segovia Way	Levante St to Quebrada Circle	32	29	7 speed cushions
Cadencia St	La Costa Ave to Del Rey Ave	37	27	2 speed cushions
Harwich Dr	Tamarack Ave to 400' n/o Edgeware Way	33	25	4 speed cushions
Oriole Ct/ Mimosa/Moorhen Pl	Poinsettia Ln to Dove Ln	25*	25	7 speed cushions and curb extensions at two intersections
Note: **Traffic and Safety Commission or Traffic and Mobility Commission granted exception to the CRTMP*				

Current Projects

In-person neighborhood meetings have been on hold since the start of the COVID-19 pandemic in March 2020. However, Staff have begun planning in-person neighborhood meetings for nine streets that qualify for CRTMP Phase II. These streets are listed in Table 2. Residents from the PAOI of each of these streets will be invited to a neighborhood meeting, during which traffic calming conceptual plans will be presented and residents will have the opportunity to ask questions and provide input on the conceptual plans. Neighborhood meetings for the nine streets were originally scheduled to start in October 2022 but this is subject to change with the recent emergency declaration.

Table 2: Streets that qualify for CRTMP Phase II

Street	From	To	Critical Speed (mph)
Victoria Avenue	Pontiac Dr	Haverhill St	32
Monroe St	Basswood Ave	Carlsbad Village Dr	33
Highland Ave	Carlsbad Village Dr	Buena Vista Way	32
Nueva Castilla	La Costa Ave	Levane St	38
Circulo Sequoia	La Costa Ave	Avenida Diestro	33
Celinda Dr	Carlsbad Village Dr	Chestnut Ave	33
Park Dr	Tamarack Ave	Monroe St	33
Hummingbird Rd	Sanderling Ct	Rock Dove St	34
Black Rail Rd	Poinsettia Ln	Northern Terminus	33

Recommendations

Provide input on the proposed changes to the CRTMP 2022 Revision.

Next Steps

Upon receiving input from the Traffic & Mobility Commission, staff will finalize the draft document of the CRTMP 2022 Revision. Staff will present the CRTMP 2022 Revision to the Traffic & Mobility Commission for review at a future meeting. Thereafter, staff will present the final CRTMP 2022 Revision for City Council adoption.

Exhibits

1. Current Carlsbad Residential Traffic Management Program

Exhibit 1

Carlsbad Residential Traffic Management Program

CITY OF CARLSBAD

May 2011

Exhibit 1

Carlsbad Residential Traffic Management Program

May 2011 Revision

Traffic Division

Transportation Department

Acknowledgments

May 2011 Program Update

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May 2001 Program Development

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Michele Masterson – Management Assistant
Jim Murray – Associate Engineer
Jannae DeSiena – Senior Office Specialist

CITY OF CARLSBAD POLICE DEPARTMENT
Sgt. Kelly Cain – Traffic Supervisor

MEETING MINUTES
Dianna Scott – Minutes Clerk

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EXECUTIVE SUMMARY

In all areas of Carlsbad, daily commuter traffic or other types of traffic drive on neighborhood streets. Speeding and/or excessive volumes may cause residents to become alarmed about safety and quality of life. When the tranquility and ambiance of the neighborhood is disrupted by drivers speeding or trying to find short-cuts, concerned citizens contact City officials.

This scenario, repeated each day in some areas of the City, alerted the City Council to the need for a comprehensive citywide program to minimize excessive speeds and high volumes in neighborhoods. Similar problems in California and throughout the country have inspired engineering solutions called traffic calming, which is a method of slowing cars and discouraging cut-through traffic. With traffic calming in mind, the City Council elected to use a citizen-based approach to develop such a program, appointing a committee of seven citizens to work with staff in developing solutions for any Carlsbad neighborhoods seriously affected by traffic problems.

The citizen's committee developed a three-phase approach to addressing traffic problems in Carlsbad neighborhoods. After reviewing and evaluating programs from many cities, the committee recommended a program it suitable for Carlsbad and which would achieve the three goals that must be met if traffic calming is to be successful. The first requirement is support of the residents in any neighborhood where such calming is needed. Second, the traffic calming measures must meet with the approval of emergency agencies concerned about response times, as well as the needs of other utilities whose large vehicles could be adversely affected or damaged by the traffic calming measures. Finally, the residents must be willing to live with the actual traffic calming measures designed to slow traffic and cut-through traffic volumes in their neighborhood.

This document represents the first revision to the initial program developed by the Carlsbad Residential Traffic Management Program Committee. The primary reasons for revising the program were to add lower cost traffic management tools such as residential stop signs and speed cushions and to establish benchmark criteria for the funding of future traffic calming projects. The revised program is divided into the following three phases:

Phase I: application of enforcement and education to resolve non-compliance issues.

Phase II: utilizing engineering-based measures to increase compliance with posted speed limits and discourage cut through traffic.

Phase III: development and implementation of a comprehensive plan comprised of traditional traffic calming measures to address traffic issues while enhancing the residential character of the street.

Ultimately leading to improvement in the quality of life of affected neighborhoods, the Carlsbad Residential Traffic Management Program is still another way in which the City provides for the health, safety and welfare of its citizens.

CARLSBAD
RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM

INTRODUCTION

Virtually every day, on many residential streets, Carlsbad residents are faced with the potentially dangerous intrusion of speeding vehicles and/or cut-through traffic. Carlsbad streets have experienced escalating traffic impacts due to population and employment growth. As a result, an increasing number of citizens have expressed concerns to City officials, the Police Department and Engineering staff about these traffic problems.

Carlsbad residents are not unique in voicing such concerns. Cities throughout the United States have struggled with the issue of escalating traffic speeds and volumes on residential streets. As a result, citizens have asked that their neighborhood quality of life be improved through a reduction of vehicle speeds and volume. Many desire the simple pleasure of being able to walk or ride bicycles through their neighborhoods without fear of vehicular traffic, a key factor in neighborhood livability.

"Livable" cannot be precisely defined as it relates to community or neighborhood. However, the residents' expectation that fewer vehicles should be speeding down neighborhood streets is an indication of their desire to reside in a livable neighborhood. Characteristics of such a desirable neighborhood include:

- a sense of community
- a safe place to walk or bicycle
- interaction among neighbors
- a general feeling of security and safety
- the opportunity for residents to enjoy their homes and property
- streets that do not penalize drivers traveling at the posted speed limit

"Traffic calming" is a term that has, in recent years, become synonymous with providing the means to slow vehicles, reduce cut-through traffic volumes and help achieve a livable community. Through the use of a variety of measures, physical or otherwise, traffic calming helps reduce the undesirable effects of the motor vehicle in residential neighborhoods.

In response to the concerns of Carlsbad residents, the City Council has established the Carlsbad Residential Traffic Management Program, referred to as the CRTMP, to address neighborhood concerns about unwanted traffic. The Institute of Transportation Engineers (ITE), an international organization of transportation professionals, has defined traffic calming as:

> *"The combination of mainly physical measures that reduces the negative effects of motor vehicle use, alters driver behavior and improves conditions for non-motorized street users."*

Carlsbad's Residential Traffic Management Program is designed to have significant neighborhood involvement. Staff plans to work closely with residents to identify problems and their solutions and to gather the support necessary to ensure the success of any traffic calming plan that may merit adoption. Communication with the residents at each step is critical and the urgency of plan development will not

be allowed to override the need for thorough understanding, commitment and approval by the neighborhood.

Since neighborhood involvement is the key, the program is designed to solicit and encourage residents' active participation in identifying concerns, developing reasonable solutions and supporting the final outcome. In the traffic engineering field, the manner in which this occurs is a process that contains the elements of the “4E's":

Education
Engineering
Enforcement
Enhancement

By utilizing the "4E" process, which incorporates a comprehensive, integrated involvement of concerned residents, the challenge of identifying and resolving problems can successfully take place.

The basic elements of the 4E process include:

- Education: Providing resource materials and information to residents to inform them about all aspects of traffic calming.

- Engineering: Physical measures and other techniques utilized in the traffic calming program that are based upon input and concurrence by residents, engineering principles, financial and environmental considerations.

- Enforcement: Police presence and selective enforcement of vehicle code violations.

- Enhancement: Using special treatments in the physical measures through design and/or landscaping features to improve livability, aesthetics, community pride.

This program has been established with and conforms to authority and responsibility given to local authorities by the California Vehicle Code to protect the health and welfare of its citizens. Additionally, it meets one of the goals in the Circulation Element of the General Plan that states Carlsbad is a "City with an integrated transportation network, serving local and regional needs, which accommodates a balance of different travel modes based upon safety, convenience, attractiveness, costs, environmental and social impacts".

It is the policy of the State of California that all persons have an equal right to use public streets and that no agency may restrict the use of streets to only certain individuals. With certain exceptions provided for in the California Vehicle Code, the specific authority to regulate travel upon streets can only occur in specific instances related to:

- implementation of the Circulation Element of the General Plan
- criminal activity
- regulating or prohibiting processions or assemblages
- streets dividing school grounds to protect students attending such schools or school grounds

Requests to implement the CRTMP will ultimately be considered through the process outlined in this program. Careful consideration will be given to each request to ensure that it meets State law and the criteria contained in the program.

GOALS

The City Council established the CRTMP as a countermeasure to intrusion by excessive traffic and/or higher than normal vehicle speeds in the neighborhood and thus, to help improve the quality of life. With a defined traffic management process and established procedures contained in this document, Carlsbad residents will have the measures and techniques ("tools") at their disposal to avert many negative impacts associated with vehicular traffic on residential streets.

The goals of a traffic management program include:

- improving the quality of life in the neighborhood
- creating safe streets by reducing the collision frequency and severity
- reducing negative effects of motorized vehicles
- design of features that encourage self-enforcement

PROGRAM STRATEGIES

The City of Carlsbad strives to achieve neighborhood livability through implementation of current standards and policies. Managing traffic is a key component in this endeavor and one that is vital for promoting characteristics of livable neighborhoods. Therefore, strategies are needed to identify and address issues revolving around speeding, excessive volumes and safety concerns on residential streets when it occurs. These strategies include:

- developing recommendations that adhere to State law
- satisfactorily addressing legal and liability issues
- preserving reasonable emergency vehicle access and response time consistent with response standards
- maintaining reasonable vehicular access
- promoting neighborhood safety for pedestrians, bicyclists, motorists and residents
- encouraging and incorporating citizen participation in identifying traffic calming measures and techniques
- utilizing City resources and funds efficiently and effectively
- utilizing a combination of education, engineering, enforcement and enhancement (4E's)
- maintaining, encouraging and enhancing pedestrian, bicycle, transit and alternative modes of travel
- balancing on-street needs (such as parking) with the reasonable and safe function of the street
- considering achievable options for funding

According to the ITE resource, “Transportation and Land Development, 2nd Edition”, residential streets should ideally be designed and constructed to a “residential neighborhood scale” to achieve vehicle speeds and traffic volumes consistent with typical neighborhood uses. Residential neighborhood scale is

typically accomplished by restricting roadway length so that a driver slows, stops, or makes a significant turning movement every 300-700 feet. Drivers tend to comply with speed limits in residential neighborhoods when the effective, uninterrupted street length is less than 700 feet.

Complaints related to excessive vehicle speeds often originate on residential streets that have not been designed to this residential neighborhood scale. The CRTMP attempts to resolve these types of speeding issues by installing a series of traffic management measures to reduce the effective street length so that a driver slows, stops, or makes a significant turning movement every 300 to 700 feet. Traffic management measures are recommended to be spaced, on average, at approximately 500 foot intervals. The traffic management strategies included in the CRTMP toolbox are designed to work in concert with one another to limit the effective, uninterrupted length of an existing street to approximately 500 feet, which should result in a reduction in vehicle speeds and render the route less attractive to cut-through traffic.

PROCEDURES

The procedures to implement traffic management measures and techniques are described on the following pages and are referred to as phases. In general, the established procedures are consistent with the methodology currently used in Carlsbad to address any traffic-related concerns. The procedures require, and are designed to encourage, substantial neighborhood participation, following the process used by staff to formulate solutions to problem locations and the methods for proposing those solutions to the Traffic Safety Commission and City Council for final resolution.

Carlsbad's Residential Traffic Management Program has been developed as a three-phase program, consisting of the following structure approach:

Phase I : Enforcement and Education
Phase II : Traffic Management
Phase III : Traffic Calming

The program is designed in such a way that residents of each street with identified problems, and with neighborhood support and commitment, can play a part in the program. The cost, complexity, effectiveness and impact to residents increase with each phase. Phase I features are generally considered simple improvements that can be initiated internally and provided by city staff. Phase II consists of cost-effective traffic management features that may reduce vehicle speeds but may also penalize those who drive at the legal speed limit. Phase III features are the most effective at traffic calming but are expensive and may negatively impact parking.

PROGRAM ELIGIBILITY

Participation in the Carlsbad Residential Traffic Management Program requires the following:

1. The subject street must meet the legal definition of residence district (as defined by the California Vehicle Code) or designated school zone (as defined by the California Manual on Uniform Traffic Control Devices).
2. The subject street must have a curb-to-curb width of 40 feet or less.
3. A letter sent by a resident or residents requesting that staff consider a subject street for inclusion into the CRTMP process.

Any street that does not meet the program eligibility criteria but is nevertheless considered by city staff to be a candidate for traffic calming will be scheduled for review and possible approval by the Traffic Safety Commission. If the Commission's review leads to the conclusion that the street merits an exception, it will be processed through the CRTMP as if program eligibility criteria were met. Any street recommended by the Traffic Safety Commission as not qualifying for an exception may be requested by a citizen to be reviewed by the City Council for a final determination. The exception process may be used for consideration for inclusion into each phase of the program.

PHASE I: EDUCATION AND ENFORCEMENT

When a resident, or group of residents, from a neighborhood has a traffic-related concern that they believe should be addressed by the Carlsbad Residential Traffic Management Program and have sent a letter to the Traffic Division of the Transportation Department, the process will be initiated in the following manner.

Step 1 Initiate Traffic Request (TR) Procedure

Upon receipt of the correspondence and verification that the subject street satisfies program eligibility requirements, staff will initiate a Traffic Request (TR) that includes the information contained in the letter. The TR is an internal logging and tracking system in the Transportation Division used to initiate action and file correspondence. An engineer will be assigned to investigate and conduct an engineering study of the street(s).

Step 2 Investigation/Studies

Staff will gather preliminary data about the expressed concern. Field reviews and appropriate traffic studies will be conducted. They may include:

- geometric conditions of the road
- parking availability/restrictions
- location of existing traffic control devices
- speed surveys
- volume counts
- pedestrian counts
- collision analysis
- other studies as determined appropriate

Phase I strategy will be formulated after the data is collected.

Step 3 Coordination with the Police and Fire Departments

Staff will discuss with the Police Department solutions that can be addressed through enforcement. An enforcement strategy will be prepared and implemented by the officer in charge of the Traffic Division of the Police Department. Concurrently, staff will discuss with the Fire Marshal emergency response route issues and other fire safety issues.

Step 4 Issue Work Order

Implementation of Phase I can be accomplished by city forces. Staff can usually issue work orders for the installation of signs or striping or implementation of speed feedback signs.

Step 5 Communication with Residents

Information on appropriate traffic calming strategies and techniques proposed to address the identified concern is shared with the person or group that initiated the request, including information about the issuance of work orders. Staff also outlines the engineering and enforcement approach that will be utilized to mitigate neighborhood concerns.

Step 6 Monitor

Effectiveness of the implemented measures and/or strategies is monitored by Engineering Department staff and, as appropriate, by the Police Department. The resident or group originating the request is then informed of the monitoring results.

PHASE II: TRAFFIC MANAGEMENT

If all applicable Phase I options have been completed and do not appear to adequately address the problem after being in place for an appropriate amount of time as determined by the city staff, Phase II of the CRTMP may be considered.

Step 1 Written Request

Phase II will be initiated when an affected resident that resides on the street where the concern exists sends a letter to the Traffic Division of the Transportation Department requesting Phase II consideration. The letter will be generated by a resident, following discussions with city staff to review what might be accomplished through Phase II of the program.

Step 2 Phase II Eligibility Determination

Not all residential streets and/or residential areas will qualify to participate in Phase II of the Carlsbad Residential Traffic Management Program based upon the established process. Eligibility criteria for Phase II are as follows:

1. Completion of Phase I of the CRTMP; and
2. The 85th percentile speed (critical speed) must be 32 miles per hour or greater as determined by a speed survey(s).

Both of the eligibility criteria must be met for a street to be considered for further processing through the CRTMP. However, on a case-by-case basis, city staff may determine exceptions. A street considered as an exception must be approved by the Traffic Safety Commission.

Step 3 Determine Project Area of Influence (PAOI)

The street or streets significantly impacted by neighborhood concerns or potential solutions, including all dwelling units or other land uses bordering the subject street or streets, comprise the Project Area of Influence (PAOI). The PAOI will be established by city staff, with input from the neighborhood representatives. The establishment of the PAOI by staff shall consider the implementation of measures on a roadway system as opposed to singular, isolated installations.

Step 4 Phase II Concept Plan

All residents from the PAOI will be invited to a neighborhood meeting hosted by the city. At the meeting, staff will explain the Phase II process that may lead to installation of the traffic management measures proposed for their neighborhoods. Discussion will include:

- neighborhood concerns
- traffic data gathered
- results from Phase I
- potential Phase II solutions
- advantages/disadvantages of specific Phase II features
- Phase II approval process

A Fire Department representative will be invited to attend the meeting to explain response needs of the emergency service providers and any concerns with potential traffic management on the candidate

street. Also, a Police Department representative will be invited to attend the meeting to respond to questions about enforcement issues.

Staff, using the data collected in Phase I, and working with affected residents, will draft a plan of proposed Phase II measures within the boundaries of the PAOI. Since Phase II measures are limited in application, they may not be appropriate for a given situation. For example, if a subject street does not feature intersections, residential STOP signs would not be appropriate. Staff will work with residents to prepare the Phase II concept plan which will be presented to the neighborhood via mail survey for support.

The concept plan will be presented to the Traffic Safety Coordinating Committee to allow city staff such as Fire Department and Police Department representatives to review and comment.

Step 5 Mail Support Survey for Phase II Concept Plan

A mail support survey will be conducted by City staff upon completion of the Phase II concept plan developed by staff. The purpose of the survey will be to determine if the neighborhood (as defined by the PAOI) is in favor of the proposed plan.

Residents and non-resident owners within the PAOI are eligible to participate in the mail support survey. Distribution of the support survey will be conducted by the City through the mail. The survey will be considered valid if a minimum of 50% of the residents contacted fill out and return the completed survey. Staff will then analyze the returns to determine if 67% or more of the PAOI community responding supports the Phase II plan.

If the Phase II concept plan includes measures with vertical deflection such as speed cushions or speed tables, support for these measures from residents directly affected will be highly desirable. Staff will work with these residents and will strive to balance the concerns of individual residents with the overall success of the concept plan as a system of interdependent features. Since the success of Phase II will be dependent on the spacing of proposed features, the removal of any measure from the concept plan due to lack of support may have a detrimental effect on the concept as a whole.

If 50% of the surveys are not returned, an outreach program may be initiated by the resident(s). Re-survey will occur after all steps established in the outreach program are completed. A re-survey will be valid if 50% or more of the surveys are returned to staff. If the plan is not approved by 67% or more of the returned surveys, the resident(s) may request that staff develop an alternative plan or abandon their efforts. A revised Phase II plan will be tested by the support survey process in this step. If the revised plan fails to garner support of the residents in the PAOI after the second survey, no further surveys will be conducted by City staff for a minimum of one year.

Step 6 Final Approval by the City Council

The approved Phase II concept plan will be brought forward to the Traffic Safety Commission for recommendation and to hear public testimony on the matter. A duly noticed public meeting will be held by the City Council to receive the recommendations of the Traffic Safety Commission for Phase II implementation. If Council decides that Phase II is acceptable as presented, it will so indicate by adopting an ordinance authorizing installation of residential STOP signs and/or other proposed measures and authorizing the appropriation of any necessary funds. The Council may consider other

options such as returning to the neighborhood for refinement of the Phase II concept plan or proceeding to Phase III of the CRTMP.

Step 7 Phase II Implementation

Implementation of Phase II, in most cases, will be performed by city forces via work orders issued by staff.

Step 8 Phase II Monitoring

Phase II measures that have been installed will be monitored for effectiveness during the first year following completion of the installation. Staff will analyze traffic data results, accident history, observed deficiencies and/or impacts of the Phase II measures, comments, and suggestions or complaints received.

If some residents of the neighborhood believe that the impacts and results of Phase II do not meet their expectations, they may request removal of the permanent measures. The request for removal must follow the Traffic Calming Measures Removal Process and be submitted at least one year from date of Phase II installation.

PHASE III: TRAFFIC CALMING

If applicable Phase II options have been evaluated and do not appear to adequately address the problem as described previously, Phase III of the CRTMP may be considered. Phase III of the CRTMP is designed to allow traditional traffic calming measures to be used in areas where Phase II options have not adequately resolved the traffic issues. Due to the potential fiscal impacts of Phase III and probable impacts to parking capacity and limit access to properties, residents will be required to first utilize Phase II measures before requesting to proceed to Phase III. Phase III measures will be limited to locations where re-routed traffic will only impact higher classified roadways. Residents have the option to bypass Phase II only if funding is privately secured and all Phase III criteria are satisfied.

Step 1 Written Request

Phase III will be initiated when the affected residents send a letter to the Traffic Division of the Transportation Department requesting Phase III consideration. The letter will be generated by the residents following discussions with city staff, study of Police Department results of Phase II, and anticipation of what might be accomplished through further utilization of the CRTMP process. The Phase III process will require an evaluation of a qualification criteria as well a neighborhood-initiated support petition.

Step 2 Project Scoring and Qualification Criteria

Candidate streets will be evaluated on the following factors and associated points for the purpose of establishing a project score for funding considerations. Streets with a score exceeding 50 points will be eligible for Phase III.

Criteria and points assigned are as follows:

1. Travel Speed (maximum 40 points):
   6 points for each mile per hour the 85th percentile speed is over 32 miles per hour.

2. Traffic Volumes (maximum 30 points):
   Typical weekday ADT divided by 100 and rounded to the nearest whole number or the weekday peak hour volume divided by 10 and rounded to the nearest whole number.

3. Collision History (maximum 15 points):
   Five points will be assigned for each correctable collision on a street, including intersections, within the past five years. A correctable collision is one that might have been prevented by the installation of a traffic control device or traffic calming measure.

4. Sidewalks (maximum 5 points):
   5 points if no sidewalk or pedestrian pathway exists on either side of the street.
   5 points if no sidewalk or pedestrian pathway exists along at least one side of the street.

5. School Proximity (5 points maximum):
   5 points if school grounds abut the candidate street.
   3 points if the PAOI is within 500 feet of school grounds.
   1 point if the PAOI is located within 1,000 feet of school grounds.

6. Pedestrian Crossings (5 points maximum):
   5 points if a school crosswalk (yellow crosswalk) is located on a street in the PAOI.
   5 points if a major or midblock crosswalk is located on a street in the PAOI. A major crosswalk is defined as having 10 or more pedestrians crossing per hour during any eight hours of a typical weekday.

A maximum total of 100 points may be given for the street under consideration, using the Traffic Management Program Priority Scoring Worksheet. **A minimum score of 51 points is required for the subject street to qualify for Phase III.**

Carlsbad Residential Traffic Management Program
Phase III Qualification Criteria
Scoring Worksheet

This worksheet will be completed by City of Carlsbad staff. It will be used to assign points to a street for Phase III qualification and prioritization of a potential specific neighborhood traffic calming project.

Name of neighborhood (street location): _____

Points

1. **Travel Speed (40 pts. max.)** _____
   For each mile per hour the 85th percentile speed is over 32 miles per hour, 6 points will be assigned.
   Critical Speed: _____

2. **Traffic Volumes (30 pts. max.)** _____
   Total weekday ADT divided by 100, rounded to nearest whole number
   or weekday peak hour volume divided by 10, rounded to nearest whole number (use higher number)
   Volume: _____ Date Counted: _____

3. **Collision History (15 pts. max.)** _____
   Five points for each correctable collision during the past 5 years
   Number of collisions: _____

4. **Sidewalks (5 pts. max.)** _____
   No sidewalk or pedestrian pathways exists on either side of the street = 5 points
   No sidewalk or pedestrian pathway exists along at least one side of the street = 5 points

5. **School Proximity (5 pts. max.)** _____
   School grounds abut candidate street = 5 points
   PAOI is located within 500 feet of school grounds = 3 points
   PAOI is located within 1,000 feet of school grounds = 1 point

6. **Pedestrian Crossings (5 pts. max.)** _____
   School crosswalk (yellow crosswalk) is located on a street in the
   PAOI = 5 points
   Major or midblock crosswalk is located on a street in the PAOI = 5 points

Total Score: _____

_____

Evaluator Date

A MINIMUM SCORE OF 51 POINTS IS REQUIRED TO QUALIFY FOR PHASE III.

Step 3 Neighborhood Support Petition

If the subject street meets the Phase III Qualification Criteria, concerned residents will need to establish resident support for continuation of the Phase III process. The support petition is initiated by the neighborhood representative and serves as the mechanism to establish that residents' support the City's consideration of a Phase III traffic calming project. Documentation of support for consideration of a future project is indicated by a simple majority (50% plus one signature) of those eligible individuals located within the PAOI that sign the petition. The petition form will be developed by staff but it will be the responsibility of residents to circulate the petition and submit the results.

Step 4 Project Funding

Upon satisfaction of Steps 2 and 3 of the Phase III process, the subject street may be considered for funding as a future project through the Capital Improvement Program (CIP) process. If more than one CRTMP project is submitted in a given fiscal cycle, priority will be established by the Phase III Qualification Criteria scoring. Many different fiscal factors must be considered to establish if and to what level funds will be allocated for projects on the priority list. Staff will recommend a funding level and the City Council will consider and adopt the annual budget before the fiscal year ending on June 30.

As an alternative to the City funding the design and construction of Phase III improvements, residents may choose to collect funds themselves in any manner they choose, including the formation of an assessment district. This private funding must be for 100% of the project cost including design, construction, inspection, administration and contingency costs associated with the project. Private funds must be deposited with the city prior to proceeding to Step 4.

Phase III will not proceed until funding source is identified and funds are secured.

Step 5 Kick-off Meeting with the Neighborhood

All individuals from the PAOI will be invited to a neighborhood kick-off meeting hosted by the City. At the meeting, staff will explain to those in attendance the Phase III process that may lead to installation of the traffic calming measures proposed for their neighborhoods. Discussion will include:

- neighborhood concerns
- traffic data gathered
- results from Phase I and II
- potential solutions
- traffic calming plan development process
- before and after traffic study process

A Fire Department representative will attend the meeting to explain response needs of the emergency service providers and any concerns the Fire Department has with potential traffic calming on the candidate street. Also, a Police Department representative will attend the meeting to respond to questions about enforcement issues.

Step 6 Develop the Conceptual Neighborhood Traffic Calming Plan

By meeting and working closely with the residents, staff will be able to assist in:

- assessing neighborhood needs
- identifying alternatives
- developing initial plans or solutions
- finalizing the comprehensive plan based upon
    - sound engineering principles
    - neighborhood input
    - state-of-the-art traffic calming practices

Throughout design development of the conceptual plan, all residents within the PAOI will be provided updates and will be encouraged to offer input. The residents will be actively involved in all aspects of developing the comprehensive neighborhood traffic calming plan and will be expected to commit the time and effort needed to develop a successful plan. Directly affected residents and property owners will be notified and involved with the development of the conceptual plan.

The length of time needed to develop the conceptual plan is dependent upon the complexity of the issues, the level of neighborhood involvement and support, project cost and the willingness of the residents to aggressively pursue plan development. The series of meetings leading to completion of a final conceptual plan for presentation to the neighborhood could take six months or longer.

Step 7 Mail Support Survey for Final Conceptual Plan

A mail support survey will be conducted by city staff upon completion of the conceptual plan developed by residents and staff and evidence of a generally favorable consensus on the plan by interested residents. The purpose of the survey will be to determine if the neighborhood (PAOI) is in favor of the proposed plan by a super majority (67% or more).

Residents and non-resident owners within the PAOI will be included in the survey, essentially following the eligibility procedures addressed in Phase II. If necessary, and as determined by city staff based upon the proposed conceptual traffic calming plan, additional properties may be included or excluded by expanding or reducing the boundaries of the PAOI. The revised PAOI will become the new PAOI for purposes of the survey and other communications with residents affected by the proposed traffic calming project.

Distribution of the support survey will be conducted by the City through the mail. The survey will be considered valid if a minimum of 50% of those contacted fill out and return the survey. Staff will then analyze the returns to determine if 67% or more of the PAOI community responding supports proceeding to the final plans, specifications and estimates (PS&E) stage and for the installation of temporary features. Staff will notify by mail all individuals within the PAOI of the survey results and the next steps in the process.

If 50% of the surveys are not returned, an outreach program must be developed by the residents with the assistance of staff. Re-survey will occur after all steps established in the outreach program are completed.

A re-survey will be valid if 50% or more of the surveys are returned to staff. If the plan is not approved by 67% or more of the returned surveys, the residents may choose to develop an alternative plan or abandon their efforts. A revised conceptual plan, after an appropriate outreach program, will be tested by the support survey process in this step. If a conceptual plan fails to garner support of the residents in

the PAOI after the second survey, no further surveys will be conducted by city staff for a minimum of one year.
If neighborhood support for the Phase III traffic calming concept plan is established, staff can proceed to Step 8.

Step 8 Environmental Review

Upon confirming the neighborhood support for the Phase III concept plan and funds have been identified, allocated and approved, staff will initiate environmental review of the proposed project through the City of Carlsbad Planning Department. Generally, traffic calming improvements proposed within the existing street right-of-way are found to be exempt from detailed environmental review.

Step 9 Complete Final Design

Final design of the traffic calming plan can be started by staff concurrent with processing the environmental document. However, the final plan cannot be completed beyond the 30% stage until environmental certification is received and funding for the project is secured. Depending upon the complexity of the final plan, a consultant may be hired by the city. After completion of the final design, staff will initiate installation of temporary measures to simulate the effect of the proposed permanent traffic calming measures. The Police and Fire Departments will have considerable input during the final design.

Step 10 Final Approval by the City Council

The approved Phase III design plan will be brought forward to the Traffic Safety Commission for recommendation and to hear public testimony on the matter. A duly noticed public meeting will be held by the City Council to receive the recommendations of the Traffic Safety Commission for the final traffic calming project and to hear public testimony on the matter. If Council decides the project is acceptable, it will so indicate by adopting a resolution authorizing advertising for construction bids, thus taking the first step toward installation of the project. If, on the other hand, the Council does not support the proposal, staff may be directed to abandon the plan, or to return to the neighborhood for refinement of the plan, or to take no further action.

Step 11 Project Construction

Construction of the approved project, in most cases, will be performed by a licensed contractor selected through the city's formal construction bidding process. After a contractor is selected by the city, individuals within the PAOI will be notified of the construction schedule.

Step 12 Project Monitoring

Traffic calming projects that have been constructed will be monitored for effectiveness during the first year following completion of the installation and also during the second year after the installation.

If residents of the neighborhood believe that the traffic calming measures, impacts and results do not meet their expectations, they may request removal of the permanent measures. The request for removal must follow the Traffic Calming Measures Removal Process and be submitted at least one year from date of Phase III installation.

Traffic Calming Measures Removal Process (Phase II and III)

Individuals within a neighborhood may determine that one or more traffic calming measures should be removed. If so, a petition favoring removal and signed by 80% of the eligible individuals within the PAOI or expanded PAOI, if applicable, must be sent to staff. Eligibility criteria for signing the petition will be the same as for previously indicated voting procedures (one signature per household or property). A sample petition is provided on the next page for use by the neighborhood contact person to collect signatures.

Staff will review the petition, determine if the 80% threshold is met and notify all residents and non-resident owners within the PAOI of the results. No removal petition will be accepted by staff during the test period when temporary measures are being reviewed.

If the petition has 80% or more valid signatures, it will be submitted to the Traffic Safety Commission for consideration. All individuals within the PAOI will be notified in writing of the meeting and will have the opportunity to address the Commission with their concerns. The Traffic Safety Commission recommendation, whether to deny or sustain the removal petition, will be forwarded to the City Council.

All residents and non-resident owners within the neighborhood PAOI will be notified by mail of the date when the City Council will consider their request for removal of the traffic calming measure(s). Each interested resident will have the opportunity to address the City Council. A final decision will be made by the City Council based upon staff input, Traffic Safety Commission recommendations and citizen comments. As appropriate, staff will initiate action on the City Council's decision. All residents and non-resident owners within the PAOI will be notified of the City Council decision by mail.

PETITION

REQUEST TO REMOVE TRAFFIC CALMING MEASURE(S)
CARLSBAD RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM

CONTACT PERSON: _____ DATE: _____

CONTACT PERSON ADDRESS: _____

_____

CONTACT PERSON TELEPHONE: _____

The undersigned state they that they are requesting that the City of Carlsbad consider removing the traffic calming measure(s) installed on _____*(street name).*

The measure or measures to be removed are: _____

_____

_____.

The undersigned further state they have read the Travel Calming Removal Process section contained in the Carlsbad Residential Traffic Management Program.

Name *(please print)*	**Address *(please print)***	**Telephone**	Signature
1.			
2.			
3.			
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9.			
10.			
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20.			

(attach additional sheets as necessary)

PROGRAM UPDATE PROCEDURES

It is intended that the Carlsbad Residential Traffic Management Program be dynamic and subject to change. Traffic calming measures, techniques and/or methodologies continue to evolve. What was once in favor and popular to implement may have been subsequently found by agencies to be undesirable, unworkable or unacceptable to the neighborhood.

Revisions to the Carlsbad Residential Traffic Management Program (CRTMP) are expected. When revisions are suggested, a formal review and approval process of the revision(s) will be followed.

Steps in the revision/update process are as follows:

Step 1 Initiation of Revision

A change or revision may be initiated by the City Council, staff or a citizen. It is suggested that the requested revision be made in writing, with the reasons for or intent of the revision clearly stated. A compelling reason to initiate the update process or to change the process must be offered to be favorably received.

Step 2 Review by Staff

Suggested revisions will be thoroughly researched and reviewed by staff to determine if they are appropriate for inclusion in the Carlsbad Residential Traffic Management Program. Other City departments will also be consulted and, as necessary, comments from stakeholders will be solicited. Changes to traffic calming measures, procedures or methodologies will only be considered by the Traffic Safety Commission once a year, unless such measures, procedures or methodologies are determined to be illegal.

Step 3 Response to Initiator

Staff will respond in writing to the individual proposing the revisions, commenting on their suitability or requesting additional information as needed. Revisions deemed unacceptable by staff will not be processed further. Revisions recommended by staff for further consideration will be scheduled for discussion at a Traffic Safety Commission meeting. Only those suggested revisions that significantly enhance the overall Carlsbad Residential Traffic Management Program will be considered for acceptance and submitted to the Traffic Safety Commission.

Step 4 Review by the Traffic Safety Commission

All revisions proposed during any 12-month period will be reviewed by the Traffic Safety Commission at the end of such period. The recommendations of the TSC on all such proposed revisions will be forwarded to the City Council. The TSC review meetings will be duly noticed and open to the public for their input on revisions or changes.

Step 5 Review and Approval by the City Council

In a public meeting, the City Council will consider the recommendations of the Traffic Safety Commission. Staff may be directed by the Council either to implement the revisions to the program and the supporting documents or to take no action on the requested revision. Noticing procedures for the Council meeting will be the same as for the Traffic Safety Commission meeting and all interested residents will be encouraged to attend the Council meeting to make their opinions known.

Proposed revisions will not interfere with or delay the processing of a neighborhood traffic calming program in progress. A neighborhood that has started development of its traffic calming program will continue the process without change.

Measures Not Recommended for Use

Several traffic management measures were evaluated and determined to be unsuitable for use in Carlsbad. Listed following are measures not recommended for installation on public streets and, therefore, not proposed for consideration as part of a neighborhood traffic calming project.

Rumble Strip

A rumble strip is an alteration to the paved street surface by various techniques to draw the driver's attention to a roadway condition. This measure is not acceptable in a residential neighborhood due to the noise and vibration created when a vehicle is driven over the rumble strip.

One-Way Street

A one-way street may encourage increased speeds and may result in additional traffic volumes on a nearby street due to diverted traffic. On a residential street, confusion and wrong-way travel may result as a one-way street is an atypical encounter for drivers when leaving a single-family residence.

Miscellaneous Non-Standard Devices

Signs and/or striping not recognized by the State of California Department of Transportation (Caltrans) as an official traffic control device shall not be used in the public right-of-way. These signs typically include CHILDREN AT PLAY, SLOW and others. Non-official signs are of the novelty type, many have messages that are misinterpreted by drivers, have no legal meaning and their use can expose the City to tort liability. These types of signs do not command the attention or respect of drivers that are repeat users of the street. Using signs that are not officially approved may give a false sense of security to residents. Additionally, the signs raise expectations that some degree of protection is provided through their use when, in reality, this is not the case.

Cul-de-Sacs and Road Closures

Streets have been designed and constructed to facilitate multiple points of egress for the residents and multiple ways for an emergency vehicle to respond to an incident. Basic circulation patterns are intended to remain. Streets will not be truncated through the construction of a barrier to cause a road closure or by converting the end of the street into a cul-de-sac through construction of a turnaround.

ACRONYMS AND GLOSSARY

California Vehicle Code	A document published by the Department of Motor Vehicles containing laws relating to the use of streets and the operation of vehicles thereon.
Circulation Element	Comprehensive plan in Carlsbad for the safe and efficient movement of people and goods.
Critical Speed (85th percentile)	The speed at which 85% of the vehicles are traveling at or below.
General Plan	A document required by law that contains the overall goals, objectives and policies for development of the City.
ITE	Institute of Transportation Engineers
Midblock	Any point located between two successive intersections.
NTCC	Neighborhood Traffic Calming Committee
PAOI	Project Area of Influence
PS&E	Plans, specifications and estimates used to construct projects.
Traffic Calming	The combination of mainly physical measures that reduces the negative effects of motor vehicle use, alters driver behavior and improves conditions for non-motorized street users—ITE definition.
CRTMP	Carlsbad Residential Traffic Management Program
Toolbox	Traffic calming measures ("tools") used to reduce vehicle speeds and/or minimize volumes on residential streets.
TR	Traffic Request. Used by transportation staff to log, file and track project requests.
TSC	Traffic Safety Commission
Warrants	Established, objective criteria used to evaluate traffic conditions.

Exhibit 1

RESOLUTION NO. 2011-115

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CARLSBAD, CALIFORNIA, APPROVING THE REVISED CARLSBAD RESIDENTIAL TRAFFIC MANAGEMENT PROGRAM THAT ESTABLISHES THE POLICY FOR TRAFFIC CALMING ON RESIDENTIAL STREETS.

WHEREAS, the City of Carlsbad is committed to recognizing the residential character of its residential public streets; and

WHEREAS, the City has responded to concerns regarding traffic issues in neighborhoods; and

WHEREAS, the City has determined that speeding and excessive traffic volumes on residential streets are to be discouraged; and

WHEREAS, through the traffic management process, the City desires to have a logical, consistent, and viable methodology for managing traffic issues in residential neighborhoods; and

WHEREAS, the policies, procedures and methodology for traffic management on residential public streets are specified in the Carlsbad Residential Traffic Management Program, as revised May 2011.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Carlsbad, California, as follows:

1. That the above recitations are true and correct.

2. That City Council hereby establishes that the policy, standards and methodology to be considered for managing traffic on residential public streets is set forth in the Carlsbad Residential Traffic Management Program, as revised May 2011, and any subsequent revisions thereof.

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PASSED, APPROVED AND ADOPTED at a Regular Meeting of the City Council of the City of Carlsbad on the 24th day of May , 2011, by the following vote to wit:

AYES: Council Members Hall, Kulchin, Blackburn, Douglas, Packard.

NOES: None.

ABSENT: None.

MATT HALL, Mayor

ATTEST:

LORRAINE M. WOOD, City Clerk
(SEAL)

TRAFFIC CALMING TOOLBOX

Traffic control devices are those official signs and striping placed in the public right-of-way and recognized by the public such as STOP signs, curve warning signs, centerline striping, etc. These devices have been officially approved by the State of California Department of Transportation (Caltrans) pursuant to legislative authority provide for in the California Vehicle Code.

Traffic calming measures, however, have evolved to include features that may not be officially approved through legislative action by the State of California. Commonly referred to as "tools", the traffic calming measures or features available for use in Carlsbad are available in this program's "toolbox".

Each tool listed is unique and has a specific purpose for addressing residential street traffic concerns that require some form of traffic calming. Each tool has its own set of advantages and disadvantages and a range of costs. More than just a structural feature on a street, traffic calming tools also encompass education, enforcement, engineering and enhancement.

The following pages identify tools that have been endorsed and available for use in Carlsbad. They were chosen for:

- Appropriateness to address traffic concerns in Carlsbad.
- Acceptability to stakeholders including the Fire and Police Departments.
- Suitability for use in residential neighborhoods.

Each traffic calming measure is briefly described, application for usage listed, and possible advantages and disadvantages outlined. Estimated costs have been provided when the cost of the measure was able to be determined.

Phase I

Education

Description:

Conversations, meetings, e-mails, letters and handouts to residents regarding neighborhood traffic and pedestrian safety issues.

Application:

Traffic education is intended to make residents aware of local residential speed limits and other neighborhood traffic and safety concerns.

Advantages:

- Allows residents to express views and obtain answers.
- Identifies issues of concern and solutions.

Disadvantages:

- Effectiveness may be limited.
- Potentially time consuming.
- Limited audience.

Special Considerations:

- Meetings need to stay focused on specific traffic issues.

Cost:

- Varies (staff time and published materials).

Phase I

Police Presence

Description:

Police vehicles drive through or stop for a few minutes on residential streets to observe driver behavior.

Application:

Police presence is used to make a visual showing in residential neighborhoods to help discourage speeding.

Advantages:

- Shows an enforcement presence.
- May help slow vehicle speeds.

Disadvantages:

- Presence without enforcement has limited effectiveness.
- Limited police resources.

Special Considerations:

- Typically only effective when officer is present.
- Used on residential streets with complaints of speeding.

Cost:

- N/A

Phase I

Police Enforcement

Description:

The Police Department deploys motorcycle or automobile officers to perform targeted enforcement on residential streets.

Application:

Targeted police enforcement used to make drivers aware of local speed limits and to reduce speeds by issuing citations.

Advantages:

- Effective, visible enforcement.
- Driver awareness increased.
- Can be used on short notice.
- Can reduce speeds temporarily.

Disadvantages:

- Temporary measure.
- Requires long-term use to be effective.
- Limited police resources.

Special Considerations:

- Typically only used on residential streets with documented speeding problems.
- Typically only effective while officer is actually monitoring speeds.
- Benefits are short-term without regular periodic enforcement.
- Expensive.

Cost:

- N/A

Phase I

Speed Feedback Signs

Description:

A portable device equipped with a radar unit that detects, displays and records the speed of passing vehicles. The sign can be set to display the speed on its screen or show a blank screen for data collection only.

Application:

May help discourage speeding on neighborhood streets through education (when set on display mode) by showing drivers their current speed.

Advantages:

- Effective educational tool.
- Good public relations tool.
- Encourages speed compliance.
- Can reduce speeds temporarily.

Disadvantages:

- Not an enforcement tool.
- Ineffective on multi-lane roadways.
- Less effective on high volume streets.
- Limited Police Department resources to install

Special Considerations:

- Can be installed on a street light standard where a resident indicates there is a speeding problem.
- Typically only effective in reducing speeds when the sign is present and set on display mode.
- Some motorists may speed up to try to register a high speed (when on display mode).
- Recommend for temporary use only.

Cost:

- $5,000 each unit

Phase I

Speed Limit Signs

Description:

25 mile per hour speed limit signs are installed on neighborhood residential streets that meet the legal definition of a RESIDENCE DISTRICT.

Application: Speed limit signing encourages slower vehicle speeds along residential streets. Signs are only installed along streets where speeding is a problem.

Advantages:

- Clearly indicates prima facie speed limit.
- Usually popular with residents.
- Low cost of installation.

Disadvantages:

- Not effective by themselves.
- May add to sign clutter.
- Increased cost of sign maintenance.

Special Considerations:

- Typically only installed on streets where speeding is a documented problem.
- Requires police enforcement to be effective.

Cost:

- $200 per sign.

Phase I

Speed Limit Pavement Legends

Description:

Painting of speed limit legends on the roadway adjacent to speed limit signs.

Application:

Speed limit pavement legends increase driver awareness of the speed limit to help reduce speeding.

Advantages:

- Supplement to speed limit signs.
- May help reduce speeds.
- Usually popular with residents.

Disadvantages:

- Not effective or legal by themselves.
- Increase in maintenance cost.

Special Considerations:

- Should only be installed on streets where speeding is a documented problem.

Cost:

- $350 per legend.

Phase I

Warning Signs

Description:

Standard warning signs give drivers advanced notice of roadway conditions.

Application:

Warning signs advise motorists to reduce their speed.

Advantages:

- Informs motorists of roadway conditions.
- Low cost of installation.

Disadvantages:

- May add to sign clutter.
- Increased cost of sign maintenance.
- Not a regulatory sign.

Special Considerations:

- Advisory only, cannot be enforced.

Cost:

- $200 per sign.

Phase I

Neighborhood Speed Monitoring Program

Description:

Resident writes down the license plate number of vehicle(s) observed to be speeding noting date, time & location. Information is called in to the Traffic Division of the Police Department. The Police Department sends a letter to the registered vehicle owner informing them their vehicle was observed to be speeding on the stated street on the specified date, time & location. The vehicle owner is informed that residents are very concerned about speeding & are requested to observe the 25 mph residential speed limit.

Application:

The Neighborhood Speed Monitoring Program helps to discourage speeding through neighborhood & Police Department involvement, awareness & neighborhood peer pressure.

Advantages:

- Encourages speed compliance.
- Creates neighborhood involvement and awareness.

Disadvantages:

- Not an enforcement tool.
- Requires Police Department resources to send letters.

Cost:

- police Department staff time to send out letters.

Phase II

Residential STOP Signs

Description:

Residential stop signs may be considered for installation under special circumstances for speed reduction at intersections on residence district streets.

Application:

The installation of residential stop signs at intersections reduces the uncontrolled length of a street, which may help to reduce vehicle speeds on the street.

Advantages:

- May help reduce vehicle speeds within 150-200 feet of intersection.
- Favored by many residents.
- Low cost of installation.

Disadvantages:

- Non-enforcement may lead to a general non-compliance of stop signs.
- May divert traffic to other streets.
- Emergency response times slightly impacted.
- Increased maintenance costs
- May lead to increased noise/air pollution
- Not as effective as horizontal deflective measures such as traffic circles.

Special Considerations:

- To control vehicle speeds, the recommended spacing of this traffic calming measure on a residential street is typically between 300 to 700 feet.
- Requires stop limit line and stop legend to be painted on the street which may lead to sign clutter.
- Requires stop limit line and stop legend to be painted on the street.

Cost:

- $2,000 (two approaches) - $4,000 (four approaches).

Phase II

Speed Table

Description:

Speed tables are constructed 3 to 4 inches above the elevation of the street. They feature ramps on the approaches and a flat top, typically about the length of a passenger car.

Application:

Speed tables help reduce vehicle speeds at mid-block locations.

Advantages:

- Reduces vehicle speeds.
- Access not affected.
- Generally results in a gentler ride as compared to speed lumps.

Disadvantages:

- May increase noise.
- Emergency response times affected.
- Increased maintenance costs.
- Perception of reducing property values.
- May not be as aesthetically pleasing as chicanes.

Special Considerations:

- Requires special signing and markings which may lead to sign clutter.
- Careful attention required for drainage issues and other design issues.
- Works well in combination with curb extensions and curb radius reductions.
- At existing crosswalk locations, a crosswalk may be painted on the proposed speed table.

Fire Department and Police Department Evaluation:

Fire Department and Police Department shall have final approval of speed table locations and spacing.

Cost:

- $8,000 - $14,000 each (prefabricated).

Phase II

Speed Cushions

Description:

Prefabricated rubber or field formed asphalt approximately 3 inches in height and 7-12 feet in length installed in a series across a roadway. Transverse cuts across the cushion allow some emergency vehicles to pass without vertical deflection.

Application:

Reduce vehicle speeds without significantly impacting some emergency vehicle response time.

Advantages:

- Reduces vehicle speeds.
- May reduce vehicle volumes.

Disadvantages:

- May increase noise.
- Aesthetics.
- May divert traffic to other streets.
- Perception of reducing property values.
- Increased maintenance costs.
- Some emergency vehicles impacted by slowing response times.

Special Considerations:

- Requires special signing and markings.
- To control vehicle speeds, the spacing must be carefully evaluated.

Fire Department and Police Department Evaluation:

Fire Department and Police Department shall have final approval of speed lump locations and spacing.

Cost:

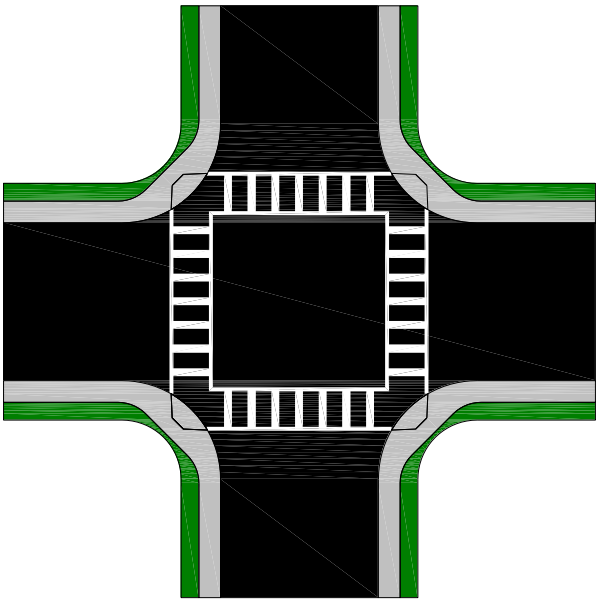
- $4,000 - $6,000 each (prefabricated).

Phase II

High Visibility Crosswalks

Description:

High visibility crosswalks established by painting stripes between the crosswalk's outer boundary stripes.



Application:

High visibility crosswalks increase crosswalk visibility to drivers.

Advantages:

- More visible to the driver than traditional crosswalks.

Disadvantages:

- May give false sense of security to pedestrians.
- Higher maintenance costs.

Special Considerations:

- Should only considered at controlled intersections where painted crosswalks already exist.
- Pedestrians may place too high a reliance on its ability to control driver behavior.
- Can be used at high pedestrian volume crossing locations.

Cost:

- $1500 to $7,000 each.

Phase II

Narrowing Lanes (Striping)

Description:

Striping used to narrow traffic lanes. The "extra" pavement width can be used to create or add to bicycle and/or parking lanes. Lane striping can also be used to visually simulate the hardscape features that define the horizontal traffic calming measures found in Phase III.

Application:

Narrowing lanes with striping used to help slow vehicle speeds. Horizontal measures can be simulated with striping but are not as effective as Phase III traffic calming measures that use hardscape to deflect traffic.

Advantages:

- Can be quickly implemented in some circumstances.
- May reduce travel speeds.
- May improve safety.

Disadvantages:

- Not effective as stand-alone measure.
- May lead to loss of parking.
- Increases regular maintenance.
- Some residents may oppose striping on neighborhood streets.
- Increases resurfacing costs.

Special Considerations:

- Narrowed travel lanes create "friction" to help slow vehicle speeds.
- Can be installed quickly.
- Designated bicycle lanes and/or parking lanes can be created.
- Adds centerline and edgeline striping to neighborhood streets.

Cost:

- $0.75 per linear foot.

Phase II

Neighborhood Signs

Description:

Neighborhood signs involve the use of special signs such as "ENTERING A TRAFFIC CALMED NEIGHBORHOOD" to increase motorist awareness.

Application:

Neighborhood signs help reduce speeding on residential streets.

Advantages:

- May increase driver awareness.
- May cause drivers to slow down.
- Low cost of installation.

Disadvantages:

- May have no lasting effect.
- Can create false sense of security.
- Adds to sign clutter.
- Increased cost of sign maintenance.
- Not a standard MUTCD sign.

Special Considerations:

- Installed at entry points to a neighborhood.

Cost:

- $$200 per sign.

Phase III

Turn Restrictions via Signs

Description:

Standard "No Left Turn", "No Right Turn", or "Do Not Enter" signs used to prevent undesired turning movements onto residential streets.

Application:

Turn restriction signing used to reduce cut-through traffic on residential streets.

Advantages:

- Redirects traffic to main streets.
- Reduces cut-through traffic.
- Low cost.

Disadvantages:

- May divert traffic to other streets.
- Inconvenient to residents.
- Enforcement required.
- Adds to sign clutter.
- Violation rates can be high without enforcement.

Special Considerations:

- Installed at entry points of a neighborhood to prevent traffic from entering.
- Has little or no effect on speeds for through vehicles.
- With active enforcement, violation rates can be reduced.

Cost:

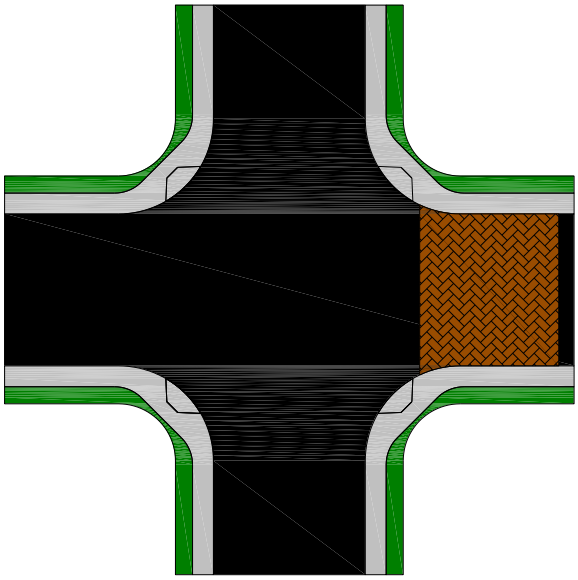
- $200 per sign.

Phase III

Textured Pavement

Description:

Textured pavement is installed in the roadway typically to provide an entry statement to the neighborhood.



Application:

Used as a visual cue for drivers to slow down.

Advantages:

- Aesthetic/visual enhancement.
- Provides entry statement to traffic calmed area.

Disadvantages:

- Increase in maintenance.
- Increase in noise.
- Expensive.

Special Considerations:

- Textured pavement has minimal influence on drivers routine behavior.
- Overall speeds and volumes are usually only minimally influenced.

Cost:

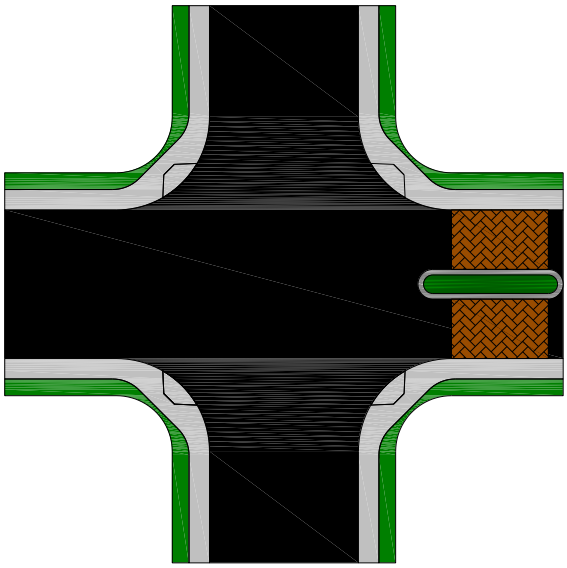
- $10 per square foot.

Phase III

Entry Treatment

Description:

Entry treatments consist of raised landscaped median islands and textured pavement features and are located at entries to neighborhoods.



Application:

Entry treatments help reduce speed. They provide visual cues to drivers they are entering a residential area or that surrounding land uses are changing.

Advantages:

- May reduce vehicle speeds.
- Creates an identify for the neighborhood.
- May reduce cut-through traffic.
- Opportunity for landscaping.

Disadvantages:

- Increase in noise.
- May require removal of parking.
- Can impede truck movements.
- Creates physical obstruction.
- Increase in maintenance.

Special Considerations:

- Entry treatments have minimal influence on drivers routine behavior.
- Overall speeds and volumes are usually only minimally affected.
- Entry treatments make drivers more aware of the neighborhood environment.
- Care should be taken not to restrict pedestrian visibility at adjacent crosswalk.

Cost:

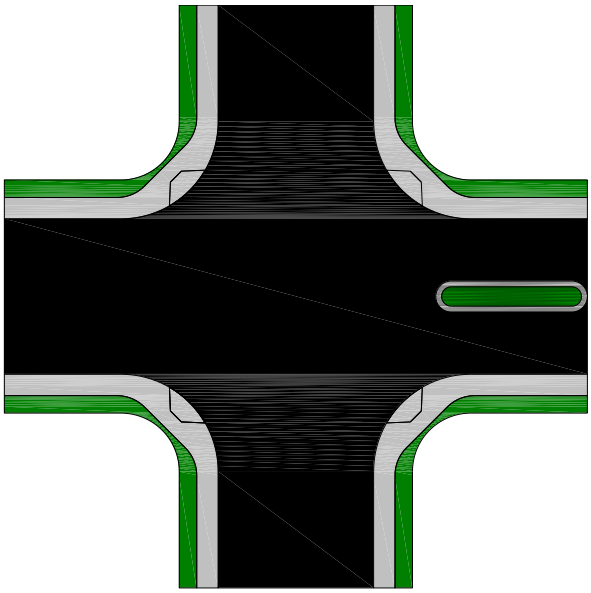
- $21,000 to $35,000 per approach.

Phase III

Center Island Narrowing

Description:

Center island narrowing is the construction of a raised island in the center of a wide street.



Application:

Center islands are installed on wide streets to help lower speeds and/or to prohibit left-turning movements. They also provide a mid-point refuge area for pedestrians.

Advantages:

- Reduces vehicle speeds.
- Can reduce vehicle conflicts.
- Reduces pedestrian crossing width.
- Landscaping opportunity.

Disadvantages:

- May require parking removal.
- May reduce driveway access.
- May impact emergency vehicles.
- May divert traffic to other streets.

Special Considerations:

- When used to block side street access, may divert traffic.
- May visually enhance the street with landscaping.
- Bicyclists prefer not to have travel way narrowed.

Cost:

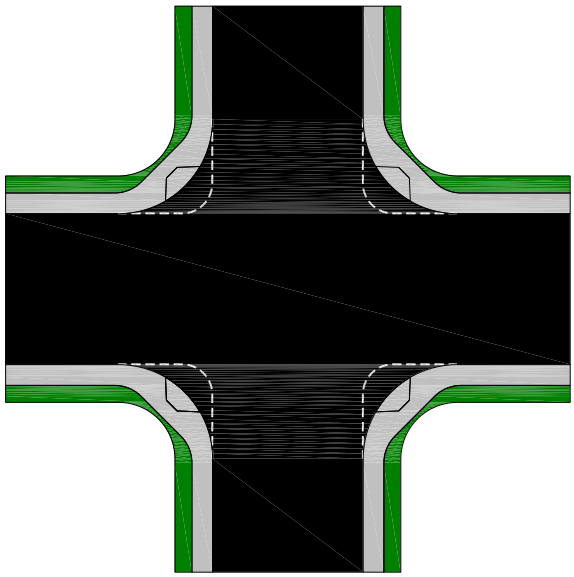
- $14,000 to $28,000 each.

Phase III

Curb Radius Reduction

Description:

Removal of existing larger radius curb returns at an intersection and construction of smaller radius curb returns.



Application:

Curb radius reductions slow vehicle turning speeds and shorten pedestrian crossing distance.

Advantages:

- Shorter pedestrian crossing width.
- Slower vehicle turning speeds.
- Opportunity for landscaping.

Disadvantages:

- Impacts large vehicle turns.

Special Considerations:

- Careful attention needs to be given to drainage issues and turning radii.

Cost:

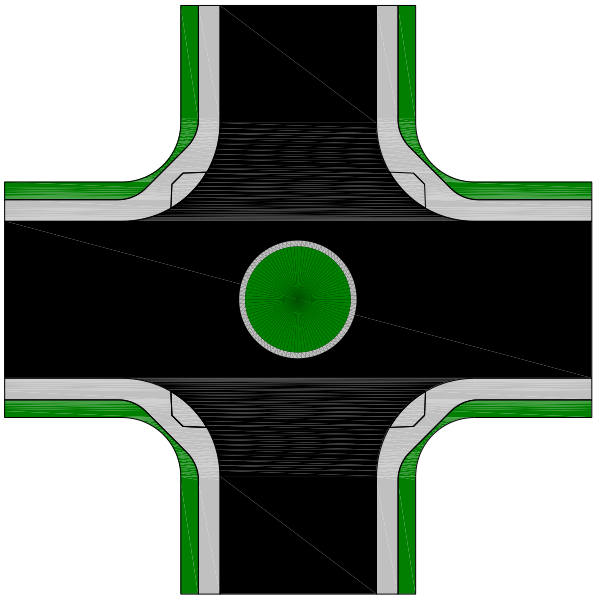
- $12,000 to $18,000 (four-leg intersection)

Phase III

Traffic Circle

Description:

Traffic circles are raised circular islands installed in an existing intersection. Traffic circles require drivers to slow down to maneuver around the circle.



Application:

Traffic circles provide speed control.

Advantages:

- Effectively reduces vehicle speeds.
- Reduces collision potential.
- Better side-street access.
- Opportunity for landscaping.

Disadvantages:

- May increase bicycle/automobile conflicts.
- Can increase emergency vehicle response time.
- Can restrict large vehicle access.
- Expensive.
- Some left-turning vehicles must negotiate circle clockwise.

Special Considerations:

- Traffic circles are best used in a series or with other devices.
- About 30 feet of curbside parking must be prohibited in advance of circle.
- Requires the installation of signs and pavement markings.
- Traffic circles are less effective at T-intersections.

Fire Department and Police Department Evaluation:

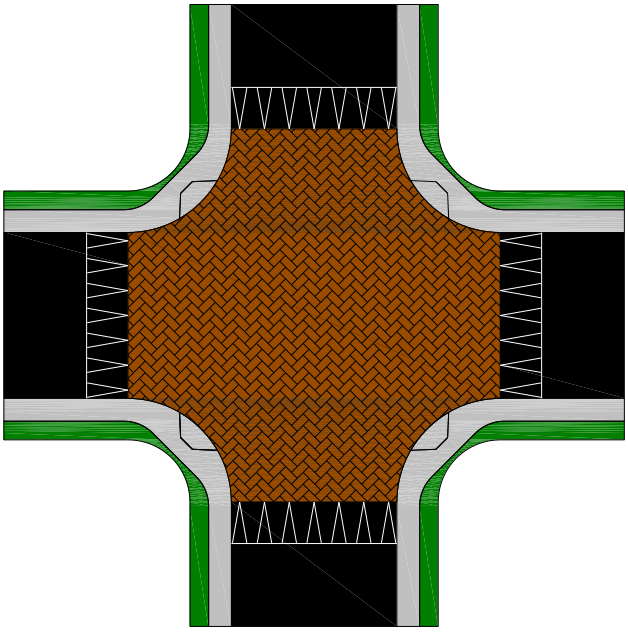
Fire Department and Police Department shall have final approval of traffic circle locations.

Cost:

- $20,000 to $35,000 per intersection.

Phase III

Raised Intersection



Description:

A raised intersection is a flat, raised area covering an entire intersection. There are ramps on all approaches. The plateau is generally about 4" high. Typically, the raised intersection is finished with textured pavement.

Application:

Raised intersections reduce vehicle speeds and provide for safer pedestrian crossings.

Advantages:

- Effectively reduces vehicle speeds.
- Enhances pedestrian safety.
- Can be aesthetically pleasing.

Disadvantages:

- Expensive to construct and maintain.
- Requires drainage modifications.
- Affects emergency vehicle response time.
- May require bollards around corners.

Special Considerations:

- Makes intersections more pedestrian-friendly.
- Special signing is required.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and the Police Department and its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

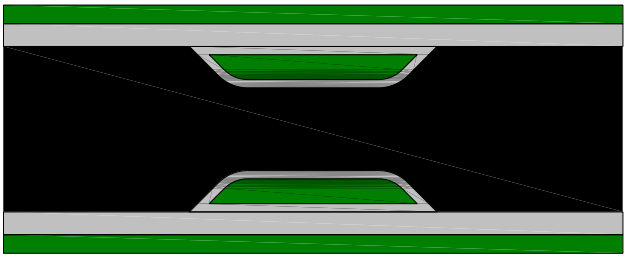
- $48,000 to $110,000 per intersection.

Phase III

Mid-Block Choker

Description:

Mid-block chokers are curb extensions that narrow a street by extending the curbs towards the center of the roadway. The remaining street cross-section consists of two narrow lanes.



Application:

Reduces speeds by narrowing the roadway so two vehicles can pass slowly in opposite directions.

Advantages:

- Effectively reduces vehicle speeds.
- Shorter pedestrian crossing width.
- Improves sight distance.
- Opportunity for landscaping.

Disadvantages:

- May require parking removal.
- May create hazard for bicyclists.
- May create drainage issues.
- May impede truck movements.
- May impact driveway access.

Special Considerations:

- Preferred by many emergency response agencies to other measures.
- Provide excellent opportunities for landscaping.

Cost:

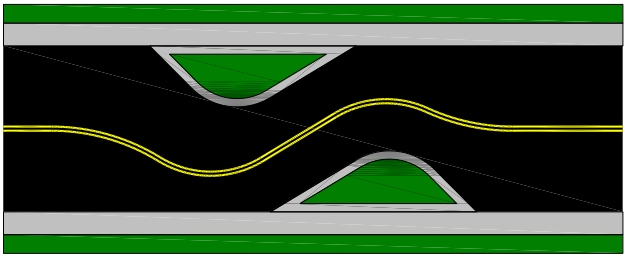
- $14,000 per location

Phase III

Lateral Shift

Description:

A lateral shift is the construction of curb extensions into the roadway that creates a horizontal deflection drivers must negotiate.



Application:

A lateral shift helps reduce vehicle speeds.

Advantages:

- Effectively reduces vehicle speeds.
- Low impact on emergency vehicles.
- Opportunity for landscaping.

Disadvantages:

- Loss of parking.
- Increased maintenance.
- May impact driveways.
- May be expensive.

Special Considerations:

- Most effective when traffic volumes are approximately equal in both directions.
- May increase conflicts with pedestrians and bicyclists.

Cost:

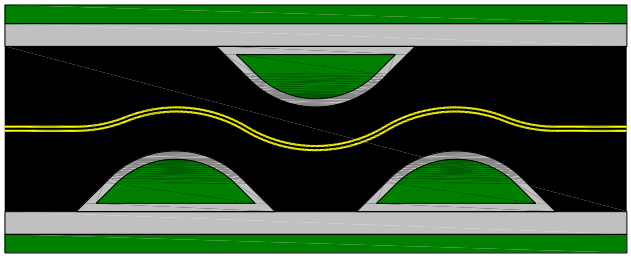
- $14,000 to $28,000 per location.

Phase III

Chicane

Description:

A chicane is a series of two or more staggered curb extensions on alternating sides of a roadway. The horizontal deflection causes motorists to reduce speed.



Application:

Chicanes help reduce vehicle speeds.

Advantages:

- Effectively reduces vehicle speeds.
- Low impact on emergency vehicles.
- Opportunity for landscaping.

Disadvantages:

- Loss of parking.
- Increased maintenance.
- May impact driveways.
- May be expensive.

Special Considerations:

- May require removal of substantial amounts of on-street parking.
- Most effective when traffic volumes are approximately equal in both directions.
- May increase conflicts with pedestrians and bicyclists.
- Provide landscaping opportunities.
- Most residents would have their driveways affected.

Cost:

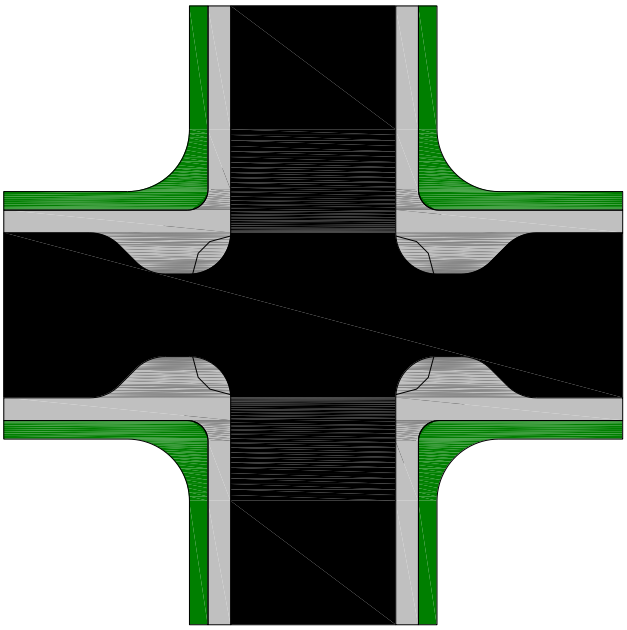
- $40,000 to $80,000 per location.

Phase III

Intersection Bulb-Out

Description:

Intersection bulb-outs narrow the street by extending the curbs toward the center of the roadway.



Application:

Used to narrow the roadway and to create shorter pedestrian crossings. They also influence driver behavior by changing the appearance of the street.

Advantages:

- Improve pedestrian visibility.
- Shorter pedestrian crossing width.
- May reduce vehicle speeds.
- Opportunity for landscaping.

Disadvantages:

- May require parking removal.
- May create hazard for bicyclists.
- May create drainage issues.
- Impacts large vehicle turns.

Special Considerations:

- Intersection bulb-outs at transit stops enhance service.
- May require landscape maintenance to preserve sight distances.

Fire Department Evaluation:

- Intersection Bulb-Outs shall be restricted to only one of the two intersecting streets.

Cost:

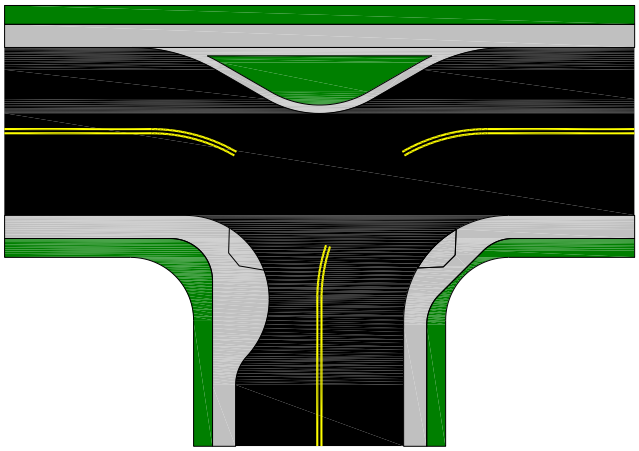
- $14,000 to $28,000 (four-leg intersection).

Phase III

Realigned Intersection

Description:

"T" intersections are realigned/modified by constructing horizontal deflection which forces previous straight-through movements to make slower turning movements.



Application:

Realigned intersections help reduce vehicle speeds.

Advantages:

- Reduces vehicle speeds.
- No significant impact on emergency and transit service.
- May discourage through traffic.
- Opportunity for landscaping.

Disadvantages:

- Removal of parking required.
- Increased maintenance.
- May divert traffic to other streets.

Special Considerations:

- Reduces vehicle speeds near intersection.
- May change STOP sign configuration and affect emergency response times.
- Careful attention needs to be made to drainage issues.

Cost:

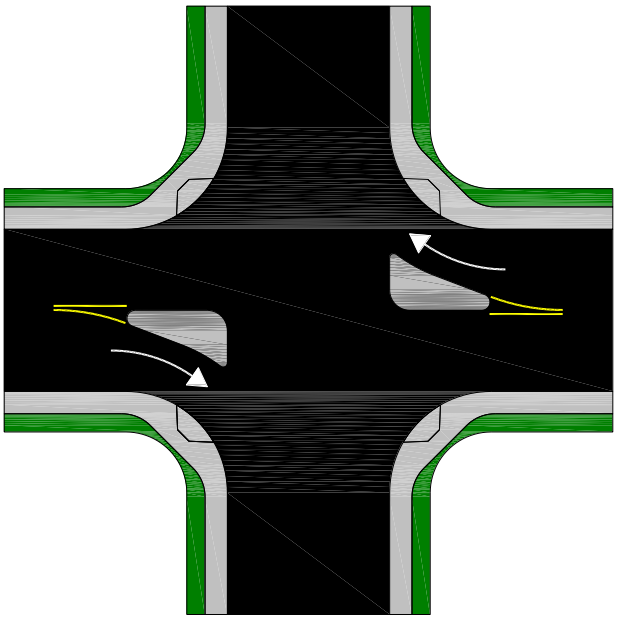
- $14,000 to $28,000 each intersection.

Phase III

Forced Turn Channelization

Description:

Forced turn channelization are raised median islands that restrict specific movements at an intersection.



Application:

Forced turn channelization reduces traffic volumes/cut-through traffic.

Advantages:

- Reduces cut-through traffic.
- More self-enforcing than signs.
- Shorter pedestrian crossing distances.

Disadvantages:

- May divert traffic to other streets.
- Can increase trip lengths.

Special Considerations:

- Has little or no effect on speeds for through vehicles.
- In emergency situations, emergency vehicles can gain access.
- May increase emergency response times.

Cost:

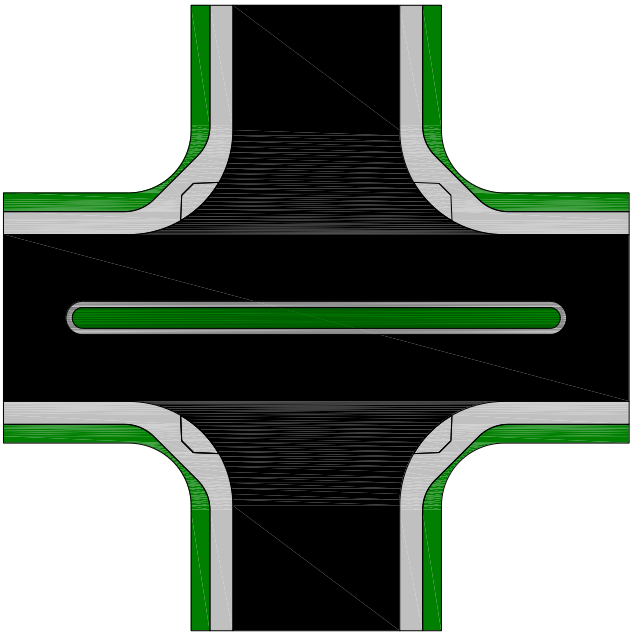
- $7,000 to $14,000 per approach.

Phase III

Median Barrier

Description:

Median barriers are raised islands constructed through intersections that prevent left turns and side street through movements.



Application:

Median barriers reduce cut-through traffic.

Advantages:

- Redirects traffic to other streets.
- Reduces cut-through traffic.
- Provides pedestrian refuge area.
- Opportunity for landscaping.

Disadvantages:

- Redirects traffic to other streets.
- Increases trip lengths.
- May impact emergency response.
- Creates physical obstruction.

Special Considerations:

- Should not be used on critical emergency response routes.
- Landscaping needs to be carefully designed to not restrict visibility for motorists, bicyclists and pedestrians.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

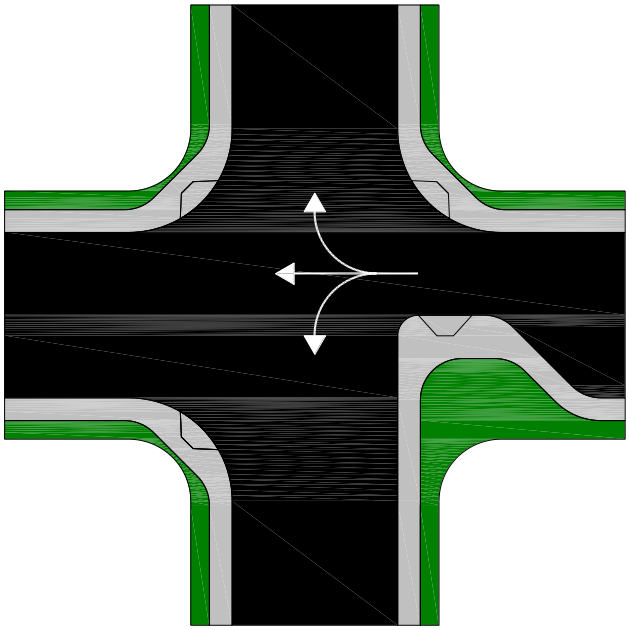
- $14,000 to $28,000 each.

Phase III

Semi-Diverter

Description:

Semi-diverters are curb extensions that restrict movements into a street. They are constructed to approximately the center of the street, obstructing one direction of traffic. A one-way segment is created at the intersection, while two-way traffic is maintained for the rest of the block.



Application:

Semi-diverters reduce traffic volume.

Advantages:

- Reduces cut-through traffic.
- More self-enforcing than signs.
- Reduces pedestrian crossing widths.
- Opportunity for landscaping.

Disadvantages:

- May divert traffic to other streets.
- May increase trip lengths.
- May require the removal of parking.
- Increased maintenance.

Special Considerations:

- Restricts access into street while allowing residents access within block.
- Potential use must consider how residents will gain access.
- In emergency situations, emergency vehicles can gain access.
- May increase emergency response times.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

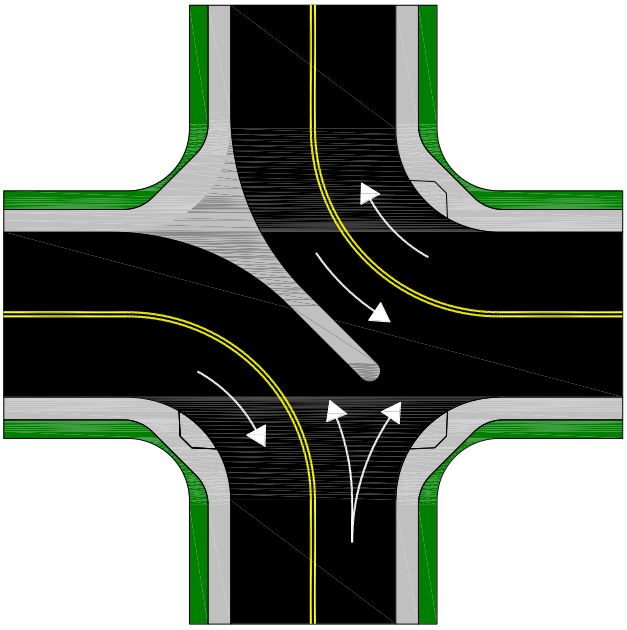
- $20,000 to $28,000 each.

Phase III

Partial Diverter

Description:

Partial diverters are raised areas placed diagonally across a four-legged intersection (3/4 closure). They prohibit through movements by creating two "L" shaped intersections, with one leg having a right turn.



Application:

Partial diverters help reduce cut-through traffic. They also minimally decrease speeds near the intersection.

Advantages:

- Reduces cut-through traffic.
- Minimal impact to emergency access.
- Reduces collision potential.
- Opportunity for landscaping.

Disadvantages:

- Redirects traffic to other streets.
- May increase trip lengths.

Special Considerations:

- Problem(s) may be shifted to other streets unless a comprehensive area plan is developed.
- Less impact to circulation than a full street closure.
- Can be attractively landscaped.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

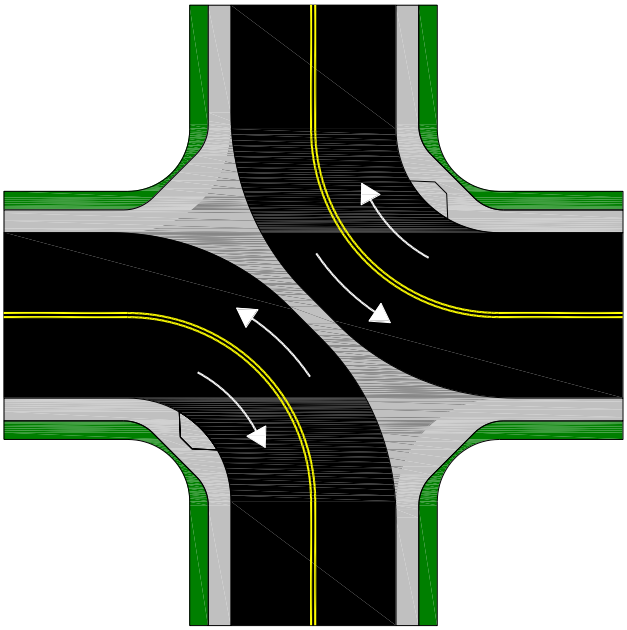
- $20,000 to $48,000 each.

Phase III

Diagonal Diverter

Description:

Diagonal diverters are raised areas placed diagonally across a four-legged intersection. They prohibit through movements by creating two "L" shaped intersections.



Application:

Diagonal diverters reduce traffic volumes. They also minimally decrease speeds near the intersection.

Advantages:

- Reduces cut-through traffic.
- Self-enforcing.
- Reduces vehicle conflicts.
- Opportunity for landscaping.

Disadvantages:

- Increases out of direction travel.
- Increases trip lengths.
- Impedes emergency vehicles.

Special Considerations:

- Can be designed to allow emergency vehicle access.
- Can be designed to allow pedestrian and bicycle access.
- Problem(s) may be shifted to other streets unless a comprehensive area plan is developed.
- Less impact to circulation than a full street closure.

Fire Department and Police Department Evaluation:

This measure is one of the least acceptable to the Fire Department and Police Department; its use requires extensive evaluation of the specific location and impacts to emergency response times.

Cost:

- $25,000 to $52,000 each.

From: Amie Boring
To: Traffic
Subject: Traffic & Mobility Meeting Sep 6 Agenda Item 9
Date: Monday, September 5, 2022 11:37:53 AM

To Whom it May Concern,

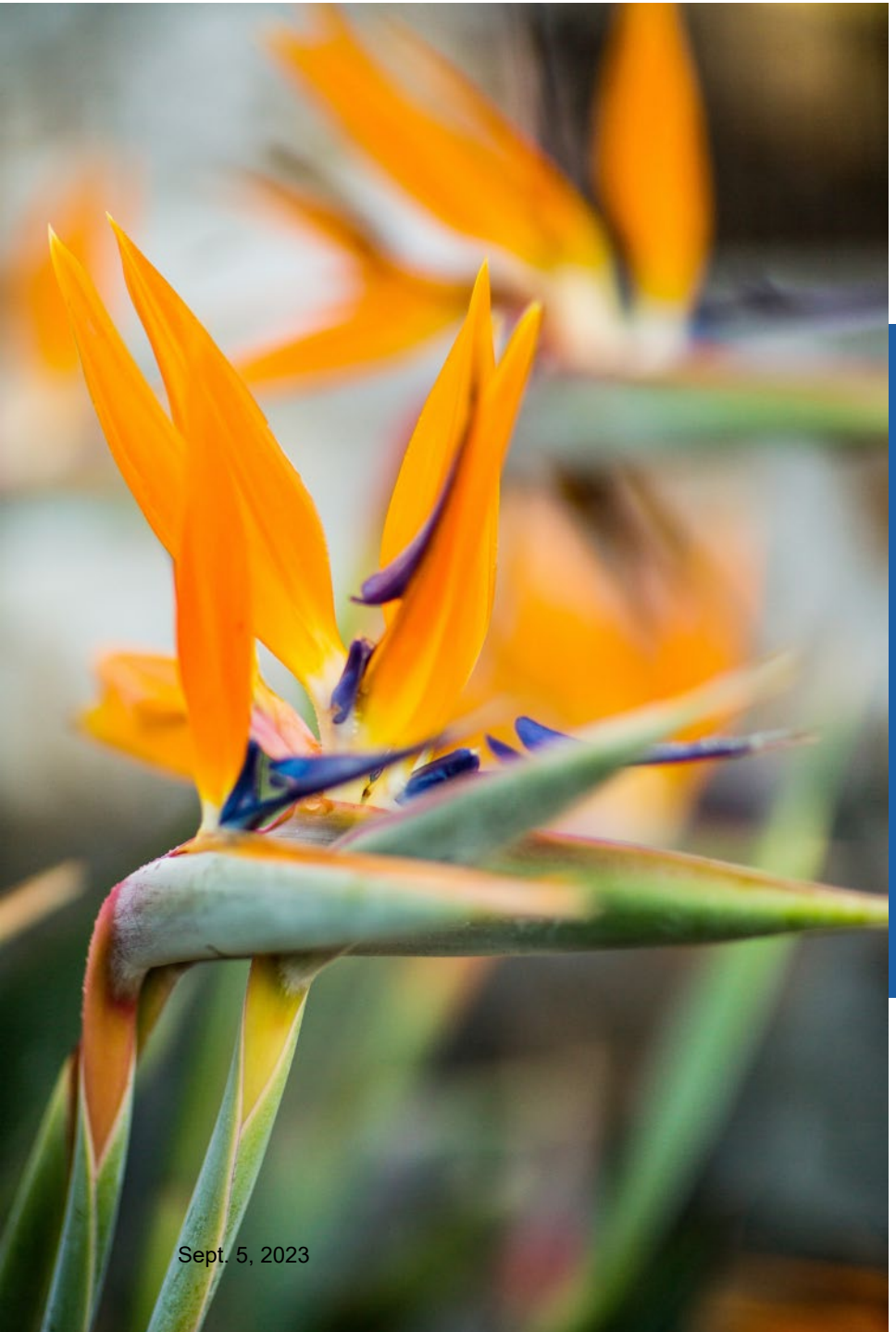
As part of the bike safety improvements, I suggest an education campaign for drivers. First, on bridges especially, or any road that shows the bike symbol and the bike may take the full road, autos routinely cross the double yellow line to pass a cyclist. When an oncoming auto approaches, the auto tries to come back into the lane with the cyclist. The car will win every time.

Second, the new green striping on coast highway is a terrific visual indicator, but auto drivers do not know exactly what the rules of the road are, especially as it regards turning when a cyclist is in the bike lane.

I think the eclectic signs posted about speeding could be used to help educate drivers.

Thank you.

--
Amie Boring



Carlsbad Residential Traffic Management Program Update

Miriam Jim, Senior Engineer
John Kim, City Traffic Engineer

September 6, 2022

RECOMMENDED ACTION

- Provide feedback on the proposed changes to the CRTMP

City of Carlsbad

BACKGROUND

- Carlsbad Residential Traffic Management Program (CRTMP) was developed in 2001 and revised in 2011
- Program outlines the process and procedure for implementing traffic calming measures on residential streets
- Program is currently designed for residential streets with low volume and low speed

CURRENT CRTMP

- Phase I – Education and Enforcement
- Phase II – Cost Effective Traffic Calming Measures
- Phase III – Traditional Traffic Calming Measures

City of Carlsbad

PHASE I
EDUCATION AND ENFORCEMENT

- Initiated when a resident contacts the City to express concerns regarding speeding and cut-through traffic
- Phase I focus on education and enforcement through signage & striping measures and police presence and police enforcement
- Deployment of temporary speed feedback signs

City of Carlsbad

PHASE I
EDUCATION AND ENFORCEMENT

Regulatory Sign

Temporary Speed Feedback Sign

Enforcement

PHASE II
TRAFFIC CALMING MEASURES

- Critical speed of 32 mph or higher to be eligible
- Cost-effective traffic calming measures such as speed cushions and traffic circles
- Neighborhood meeting and support survey

City of Carlsbad

NEIGHBORHOOD MEETING

- Community consensus and support is key to success
- City hosts neighborhood meetings
- Staff develops concept plans for Phase II Traffic Calming
- Neighborhood meeting attendees select a preferred concept plan to proceed with support survey

City of Carlsbad

MAIL SURVEY

- Residents and non-resident owners within the project area of influence are eligible to participate in the mail survey
- A minimum of 50% of the surveys must be returned to be considered as a valid survey
- A minimum of 67% of the returned surveys supporting the concept plan is required to proceed with design and implementation

City of Carlsbad

EXAMPLES OF PHASE II MEASURES

Curb Extensions

Speed Cushions

Traffic Circles

PHASE III
TRADITIONAL TRAFFIC CALMING

- If Phase II solutions do not adequately address the reported issues, residents can request Phase III
- A list of eligibility criteria need to be met, including consideration of travel speeds, traffic volumes, collision history, absence of sidewalks, proximity to schools and presence of marked crosswalks
- Phase III has not yet been implemented on any residential streets in the city

City of Carlsbad

PREVIOUSLY PROPOSED CHANGES

- On December 6, 2021, Traffic and Mobility Commission supported the following proposed changes to the CRTMP
  1. Remove STOP signs from Phase II Toolbox
  2. Remove High Visibility Crosswalks from Phase II Toolbox
  3. Include Traffic Circles as Phase II Tool
  4. Limit deployment of temporary speed feedback signs on the same street to once every 2 years

City of Carlsbad

ADDITIONAL CHANGES PROPOSED

- Staff Recommends:
  - Simplify program by removing Phase III and moving Phase III measures to Phase II
    - Two-Phase Program
  - Revise CRTMP Toolbox

City of Carlsbad

REMOVE PHASE III OF CRTMP

- Phase II measures have been successful in the past
- Phase III has never been implemented on any street in the city
- A Two-Phase Program would be straight forward, proven to be successful and reflect past effort on implementing traffic calming on residential streets in the city
- “Request for Removal” will be modified to “Request for Modifications/Removal” to provide a way for residents to request changes to the already implemented Phase II measures

REVISE CRMTP TOOLBOX

- Incorporating Phase III tools to Phase II
- Simplify toolbox by removing the following measures:
  - Textured Pavement
  - Realigned Intersection
  - Forced Turn Channelization
  - Semi-Diverter
  - Partial Diverter
  - Diagonal Diverter
- These features could still be considered on an as-needed basis

PAST CRTMP PROJECTS

Street	Limits	Before (mph)	After (mph)	Traffic Calming Treatment(s)
Estrella De Mar	Alga Rd to Arenal Rd	32	N/A	Did not reach community consensus
Trieste Dr	Chestnut Ave to Milano Dr	35		
Basswood Ave	Valley St to Monroe St	33		
La Golondrina St	Chiriqui Ln to Westerly Terminus	34		
Avenida Pantera	Paseo Esmerado to Calle Acervo	33		
Cadencia St	650' west of Perdiz St to Calle Conifera	34	30	3 speed cushions
Corintia St	Alga Rd to El Fuerte St	35	29	4 speed cushions
Daisy Ave	Rose Dr to Batiquitos Dr	34	29	2 speed cushions
Harbor Dr	Chinquapin Ave to End of St	23*	22	2 speed cushions
Amargosa Dr	Los Pinos to Olivenhain Rd	33	24	4 speed cushions, a marked crosswalk and one traffic circle
Hillside Dr	Kelly Dr to Neblina Dr	32	25	5 speed cushions and one traffic circle
Estrella De Mar Rd	Poinsettia Ln to 600' s/o Olive Ct	30*	25	5 speed cushions
Avenida Diestro	Circulo Sequoia to Sitio Baya	33	25	4 speed cushions
Segovia Way	Levante St to Quebrada Circle	32	29	7 speed cushions
Cadencia St	La Costa Ave to Del Rey Ave	37	27	2 speed cushions
Harwich Dr	Tamarack Ave to 400' n/o Edgeware Way	33	25	4 speed cushions
Oriole Ct/ Mimosa/Moorhen Pl	Poinsettia Ln to Dove Ln	25*	25	7 speed cushions and curb extensions at two intersections

Note:
*Traffic and Safety Commission or Traffic and Mobility Commission granted exception to the CRTMP

- Seventeen residential streets have gone through CRTMP Phase II
- Twelve have received traffic calming treatments with community consensus

City of Carlsbad

CURRENT CRTMP PROJECTS

- Staff begun planning in-person neighborhood meetings for nine streets that qualify for CRTMP Phase II

Street	From	To	Critical Speed (mph)
Victoria Avenue	Pontiac Dr	Haverhill St	32
Monroe St	Basswood Ave	Carlsbad Village Dr	33
Highland Ave	Carlsbad Village Dr	Buena Vista Way	32
Nueva Castilla	La Costa Ave	Levane St	38
Circulo Sequoia	La Costa Ave	Avenida Diestro	33
Celinda Dr	Carlsbad Village Dr	Chestnut Ave	33
Park Dr	Tamarack Ave	Monroe St	33
Hummingbird Rd	Sanderling Ct	Rock Dove St	34
Black Rail Rd	Poinsettia Ln	Northern Terminus	33

City of Carlsbad

RECOMMENDED ACTION

- Provide feedback on the proposed changes to the CRTMP

City of Carlsbad

3 Mobility

The Mobility Element seeks to enhance vehicle, walking, bicycling, and public transportation systems options within Carlsbad, and improve mobility through increased connectivity and intelligent transportation management. Increasing transportation options and improving connectivity within the city are core values of the Carlsbad Community Vision and also support other core values of the vision, including sustainability, access to recreation and active, healthy lifestyles, and neighborhood revitalization.

This element provides a short context for Carlsbad's existing mobility system, identifies how that system was developed, and communicates the current vision for the future of mobility within the city. Topics addressed include:

- *Livable Streets*
  - *Multi-Modal Levels of Service*
  - *Walking*
  - *Bicycling*
  - *Transit*
- *Connectivity to Support Mobility*
- *Parking*
- *Transportation Demand Management*
- *Traffic Signal Management*
- *Freight and Goods Movement and*
- *Innovation in Transportation Mobility*

3.1 Introduction

Background and Purpose

Much of Carlsbad's transportation system has developed within the last 30 years, concurrent with the city's physical expansion. The transportation emphasis during this period has been on improving travel by the automobile, within the framework provided by Proposition E (commonly referred to as the Growth Management Plan) passed by Carlsbad voters in 1986. The 1994 General Plan and the Growth Management Plan helped assure that infrastructure was provided in a systematic fashion as the city grew and developed.

The transportation system envisioned in the 1994 General Plan has largely been realized, with the majority of the street infrastructure constructed to its ultimate configuration. As the city looks increasingly to infill development rather than outward expansion, the primary transportation issues relate to protecting and enhancing the community's quality of life, as reflected in the core values of the Carlsbad Community Vision. The community's vision includes better pedestrian and bicycle connections between neighborhoods, destinations, and different parts of the community, and a balanced transportation system rather than a singular focus on automobile movement.

In recent years, the city has been taking steps to support complete and livable streets. In January 2012, the City Council identified complete and livable streets as a top strategic focus area for the city. In February 2013, the city completed a Livable Streets Assessment report that reframes potential challenges into opportunities, based on best practices in other jurisdictions wrestling with similar challenges. In 2011-2013 the city implemented a traffic signal program to better serve and manage motorists and connect traffic signals throughout the city. This element focuses on providing livable streets that improve mobility and connectivity for all users of the transportation system.

Relationship to State Law

California state law (Government Code Section 65032(b)) requires that a general plan include a circulation element that consists of "the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals… and other local public utilities and facilities, all correlated with the land use element of the [general] plan." This Mobility Element includes all information required of circulation elements, except that the location and extent of "other local public utilities and facilities" is addressed in the Public Safety Element.

Additionally, in 2008, the State of California passed Assembly Bill 1358, the California Complete Streets Act. This bill requires that all circulation elements developed after January 1, 2011 include a complete streets approach that balances the needs of all users of the street, including motorists, pedestrians, bicycles,

children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation. This Mobility Element uses the term "livable streets" in place of "complete streets"; providing livable streets throughout the community is the core focus of this element.

Relationship to Community Vision

While the Mobility Element responds to many of the core values of the Carlsbad Community Vision, it most closely furthers:

Core Value 5: Walking, Biking, Public Transportation and Connectivity. Increase travel options through enhanced walking, bicycling and public transportation systems. Enhance mobility through increased connectivity and intelligent transportation management.

Relationship to Other General Plan Elements

The Mobility Element generally focuses on mobility and connectivity of the city's transportation system and is complementary to other elements within the General Plan. This element was developed to support and enhance the Land Use and Community Design Element, which has the strongest relationship to this element.

In addition, the Mobility Element will inform future updates to the city's Bicycle Master Plan, Pedestrian Master Plan, and Americans with Disabilities Act (ADA) Transition Plan, and Trails Master Plan efforts; all of which provide a greater level of detail related to those planning efforts compared to this element. Furthermore, future noise contours in the Noise Element and air quality policies in the Open Space, Conservation and Recreation Element reflect considerations of future traffic generation, as outlined in this element.

3.2 Context: Existing Transportation System

Currently, Carlsbad's transportation system includes streets (travel lanes, bicycle lanes, sidewalks, etc.), trails, transit (bus and train), truck routes, and the McClellan-Palomar airport. The existing transportation system is described below.

Streets

The city accommodates motorists via its system of freeways, regional streets and local streets. North/south facilities include Interstate-5, El Camino Real, Carlsbad Boulevard, College Boulevard, Paseo del Norte, Avenida Encinas, Rancho Santa Fe Road and Melrose Drive. East/west facilities include Carlsbad Village Drive, Chestnut Avenue, Tamarack Avenue, Cannon Road, Faraday Avenue, Palomar Airport Road, Poinsettia Lane, Aviara Parkway, and La Costa Avenue. Many of these streets not only serve Carlsbad, but also provide regional connectivity to the north county area. Although there are numerous east/west streets through the city, major barriers interrupt connectivity – the north/south railroad that parallels Interstate-5 and Carlsbad Boulevard, the Interstate-5 freeway, three lagoons, and the general rolling hill topography of the city. While State Route 78 does not run within the city limits of Carlsbad, it provides a regional east-west freeway just north of Carlsbad that connects with Interstate 15 in Escondido.

Many city-maintained streets provide for pedestrian and bicycle travel on such facilities as parallel bike lanes, trails, and/or sidewalks. Walking and bicycling environments are critical to Carlsbad's high quality of life, especially in areas that have a high demand for those services (such as the Village area, along the coast and near the lagoons).

Trails

Trails typically serve pedestrians and, where allowed, bicycles. Automobiles are prohibited on trails. While the city's rolling topography can be challenging, its open space areas, three lagoons, coastline and Mediterranean climate make it an ideal location to provide an extensive trail system.

In April 2013, the city initiated a Trails Master Plan update. This update will include identification of existing and proposed trails within the city that will integrate with other transportation system elements. Additionally, the Trails Master Plan will ensure consistency with the city's recently completed and accepted ADA Transition Plan. The Trails Master Plan will be completed in coordination with the Carlsbad Active Transportation Strategy, also initiated by the city in April 2013. The Comprehensive Active Transportation Strategy will result in a set of strategies to identify and construct livable streets solutions for the city's street system.

Pedestrian-attracting land uses include lagoons (top) and the coastline (bottom).

Transit

Transit in Carlsbad includes bus service, ADA paratransit service, the COASTER commuter rail, and Amtrak rail service; indirectly, transit service is also provided by the Sprinter light rail system and Metrolink commuter rail. These services are described below:

- Bus Service – Bus service is provided by the North County Transit District (NCTD) and is referred to the BREEZE. BREEZE currently operates approximately ten bus routes within the city.
- Paratransit Service – NCTD also offers LIFT, a curb-to-curb service for eligible disabled persons who are unable to utilize the BREEZE.
- COASTER Commuter Rail – This is a north-south commuter rail transit service connecting north San Diego County to the City of San Diego. Carlsbad is served by two COASTER stations, one located north of Poinsettia Lane (just west of Interstate-5) and the other is located in the Carlsbad Village area.
- Sprinter – This is an east-west light rail transit service connecting Oceanside to Escondido and many educational destinations such as Mira Costa College and California State University San Marcos. Although the Sprinter does not run within the city limits, it is just north of Carlsbad and connections to Carlsbad are provided via the COASTER and BREEZE services in addition to bicycle accessibility.
- Amtrak – Amtrak is a national passenger rail service connecting San Diego to San Luis Obispo. There are currently six Amtrak trains per day at associated Amtrak stations in Carlsbad.
- Metrolink – Metrolink is a commuter rail service serving Los Angeles, Orange, Riverside, and San Bernardino counties. The Orange County line connects to the COASTER line in Oceanside.

This Mobility Element also recognizes the unique opportunity the city has with its two COASTER stations and Amtrak stations. The city has the ability to service regional commuting in the area via transit without requiring the use of an automobile on north-south corridors in the city. In addition to the special treatment of streets and connectivity in and around the transit stations, this Mobility Element also seeks to connect people with businesses and other destinations by improving the quality of bus service through coordination with NCTD, evaluating transit quality along routes that connect to employment areas, important destinations and transit stations, encouraging the provision of shuttle services, and in other new innovative ways.

Although the basic regional transit backbone infrastructure has been implemented within the city (discussed above), one of the biggest deterrents to transit use is the "first mile/last mile" portion of the transit trip, which refers to the method and ability for transit users to actually connect to their ultimate destination once they get off of the primary transit mode. This concept is also referred to as "door-to-door" transit service, which addresses transit in a more comprehensive manner than "stop-to-stop." This Mobility Element further promotes the improvement of the "first mile/last mile"/"door-to-door" transit service through development incentives that incorporate and encourage shuttles and other connectivity to and from the transit infrastructure system.

Goods Movement

The movement of goods in Carlsbad typically occurs on the rail line, freeway and via designated truck routes within the city. This connectivity assures that goods can be moved safely and efficiently in the city. Many of Carlsbad's businesses and residents rely on goods movement whether for deliveries or importing/exporting product.

Carlsbad Municipal Code Section 10.32.091 enumerates the designated and established truck routes in Carlsbad. The designated truck routes provide access from Interstate-5 and State Route 78 to commercial areas, the Village, business park areas, McClellan-Palomar Airport, and points beyond the city limits. Carlsbad streets that are designated truck routes are designed to accommodate large vehicles.

McClellan-Palomar Airport

McClellan-Palomar Airport is a class 1 commercial service airport (pursuant to its operating certificate issued by the Federal Aviation Administration). The airport serves all types of scheduled operations of large air carrier aircraft (31 or more passenger seats), as well as small air carrier aircraft (more than nine but less than 31 passenger seats). The airport currently serves smaller general aviation aircraft up to larger corporate jet aircraft, and is the only airport with an instrument landing system between Lindbergh Field (San Diego) and John Wayne (Santa Ana) airports that can accommodate the majority of instrument rated aircraft.

Medevac and transient helicopters also operate at the heliport/helipad located east of the runway. The Carlsbad Municipal Code prohibits the City Council from approving any legislative act (such as a zone change or general plan amendment) authorizing the expansion of McClellan-Palomar Airport without voter approval.

3.3 Livable Streets Vision and Strategies

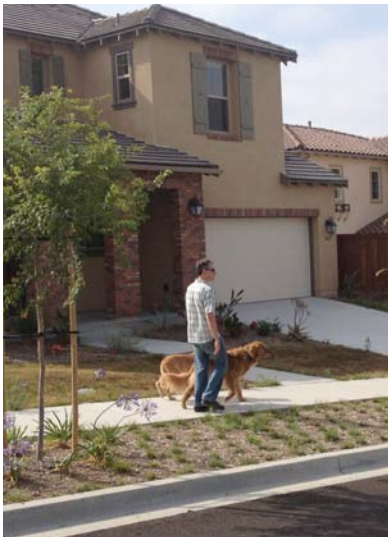
Livable Streets

A livable streets vision is more than implementation of a state-mandated approach during a general plan update process. It is a fundamental shift in how the city will plan and design the street system – recognizing the street as a public space and ensuring that the public space serves all users of the system (elderly, children, bicycles, pedestrians, etc.) within the urban context of that system (e.g. accounting for the adjacent land uses).

The Mobility Element is consistent with and further enhances the state and federal requirements for complete streets by implementing a "livable streets" strategy. Livable streets recognize that each street within the city is unique given its geographic setting, adjacent land uses, and the desired use of that facility. As such, this element identifies a street typology appropriate for the uniqueness of the street and surrounding land uses and identifies which modes of travel (pedestrian, bicycle, vehicles, etc.) should be accommodated on that street.

The following are notable examples of how Carlsbad streets have been, or are planned to be, developed or retrofitted to better accommodate all users of the street system and interface appropriately with adjacent land uses:

- Streets within Bressi Ranch, the Village area, Robertson Ranch, and the Pine Park area;
- The "road diet" along La Costa Avenue to improve safety. A road diet is a process whereby streets are modified from (traditionally) a four-lane facility with no turn lanes or bicycle lanes to a two-lane facility with a two-way left-turn lane and bicycle facilities;
- Installation of the Kelly Drive crosswalk and pedestrian median island at Kelly Elementary School;
- Pedestrian crosswalks and median improvements and rectangular rapid flashing beacons along Carlsbad Boulevard;
- Enhancing, buffering and widening bike lanes during routine street maintenance;
- Repurposing of Carlsbad Boulevard across Buena Vista Lagoon – reduce the number of vehicle lanes with enhanced pedestrian and bicycle facilities (trail, bike lanes, sidewalk);
- Installation of a roundabout at the Carlsbad Boulevard and State Street intersection; and
- Installation of sharrows on State Street connecting to the Coastal Rail Trail Reach 2 through the Village. Sharrows are special pavement stencils denoting that bicycles may use the lane with motorists.
- Planned traffic calming improvements, such as traffic circles, roundabouts, and median islands, in the Barrio and Village areas.



The City of Carlsbad Livable Streets Assessment (February 2013) is a document that benchmarks the city's position on implementing livable streets. It documents best practices of other jurisdictions and recommends actions the city can take to continue to implement livable streets concepts. The Carlsbad Active Transportation Strategies study will serve as the livable streets implementation plan for the city.

While many transportation projects have historically been vehicle capacity enhancing and traffic control focused, this Mobility Element supports a new paradigm to evaluate each project and explore all potential solutions to enhance the mobility for all users of the street, including vehicles, pedestrians, bikes, and transit. Many of these projects will involve repurposing existing right-of-way rather than acquiring and constructing new right-of-way.

The city's approach to provide livable streets recognizes that optimum service levels cannot be provided for all travel modes on all streets within the city. This is due to competing interests that arise when different travel modes mix. For example, pedestrian friendly streets typically have slow vehicle travel speeds, short-distance pedestrian crossings, and include some type of buffer between the vehicle travel way and the pedestrian walkway. However, automobile friendly streets typically have wide travel lanes, multiple turn lanes (increasing the pedestrian crossing distance), and high automobile speeds. Therefore, this Mobility Element utilizes a livable streets approach to provide a balanced mobility system that identifies, based on the location and type of street (street typology), the travel modes for which service levels should be enhanced and maintained per the multi-modal level of service (MMLOS) standard specified in the city's Citywide Facilities and Improvements Plan.

Table 3-1 describes the city's livable street typologies and Figure 3-1 depicts the city's livable street system. Table 3-1 identifies which modes of travel are accommodated on each street typology and specifies, depending on the type of street, which modes are subject to the MMLOS standard and which modes are not. While Table 3-1 does not require a minimum level of service for some travel modes on some types of streets, the intent is not to degrade levels of service for any travel mode. Rather, Table 3-1 provides the city with the flexibility to provide a balanced mobility system that meets the mobility needs of all modes and persons of all ages and abilities; and recognizes that to do so it may not always be possible to provide an optimum level of service for all travel modes on all streets.

The Environmental Impact Report (EIR) evaluated the transportation impacts of the General Plan, including this Mobility Element. At the time the EIR was prepared, the draft Mobility Element used the terms "prioritized" and "non-prioritized" travel modes to indicate whether or not a travel mode is subject to the MMLOS standard ("prioritized") or not subject to the standard ("non-prioritized"). In order to clarify the meaning and intent of those terms, this Mobility Element was revised to indicate which modes of travel are subject to the MMLOS standard and which modes are not, without the use of the terms "prioritized" and "non-prioritized." Where Table 3-1 identifies that a travel mode is subject to the MMLOS standard, the EIR evaluated such modes as "prioritized" travel modes; and where Table 3-1 identifies that a travel mode is not subject to the MMLOS standard, the EIR evaluated such modes as "non-prioritized" travel modes.

TABLE 3–1: CARLSBAD LIVABLE STREETS GUIDE

STREET TYPOLOGY AND ACCOMMODATED MODES		
ACCOMMODATED MODES	**SUBJECT TO MMLOS STANDARD (Y/N)**	**STREET TYPOLOGY DESCRIPTION AND PREFERRED ATTRIBUTES**
Freeways		
	Y	• High-speed facilities designed to accommodate vehicles and buses moving through the city and region • Bicycles and pedestrians are prohibited
	Y	
Arterial Streets		
	Y	• These are the primary vehicle routes through the city for both local and regional vehicle trips. • Designed to safely move all modes of travel while efficiently moving vehicles and buses throughout the city. • Traffic signals shall be coordinated to optimize vehicle movements • Bicycle lanes shall be provided and can be further enhanced or complemented by other facilities or off-street pathways • Pedestrian facilities to be provided consistent with ADA requirements • Mid-block crossings should not be provided • On-street parking should be prohibited along these corridors • Vertical traffic calming techniques (such as speed tables, humps, etc.) should not be considered • Special considerations can be considered on arterials within proximity to schools to enhance Safe Routes to Schools for pedestrians and bicyclists.
	N	
	N	
	Y	
Identity Streets		
	N	• These streets provide the primary access to and from the heart of the city - the Village • Designed to safely move all modes of travel while enhancing mobility for pedestrians and bicyclists • Vehicle speeds should be managed to promote safe pedestrian and bicycle movement • No pedestrian shall cross more than five vehicular travel and/or turn lanes • In addition to ADA compliant ramps and sidewalks, sidewalks should support the adjacent land uses as follows: – Adjacent to retail uses, modified/new sidewalks should generally be a minimum of 10 feet (12 feet preferred) in width where feasible and taking into consideration the traffic volumes of the adjacent roadway, and allow for the land use to utilize the sidewalk with outdoor seating and other activities – Adjacent to residential uses, modified/new sidewalks should be a minimum of six feet in width Elsewhere, modified/new sidewalks should be a minimum of eight feet in width
	Y	
	Y	• Where feasible, bicycle lanes should be provided • Vehicle speeds should complement the adjacent land uses • Bicycle parking should be provided in retail areas • Bike racks should be readily provided within the public right-of-way and encouraged on private property • Traffic calming devices, such as curb extensions (bulbouts) or enhanced pedestrian crossings should be considered and evaluated for implementation
	N	• Street furniture shall be oriented toward the businesses • Mid-block pedestrian crossings could be provided at appropriate locations (e.g. where sight distance is adequate and speeds are appropriate) • On-street vehicle parking should be provided. In areas with high parking demand, innovative parking management techniques should be implemented / considered • Pedestrians should typically be "buffered" from vehicle traffic using landscaping or parked vehicles

TABLE 3–1: CARLSBAD LIVABLE STREETS GUIDE

STREET TYPOLOGY AND ACCOMMODATED MODES		
ACCOMMODATED MODES	**SUBJECT TO MMLOS STANDARD (Y/N)**	**STREET TYPOLOGY DESCRIPTION AND PREFERRED ATTRIBUTES**
Village Streets		
	N	• Primary purpose is to move people throughout the Village; providing access to businesses, residences, transit and recreation within the Village area. • Designed to safely move all modes of travel while enhancing mobility for pedestrians and bicyclists. • Vehicle speeds should be managed to promote safe pedestrian and bicycle movement • Promote pedestrian and bicycle connectivity through short block lengths • Bicycle lanes should be provided • Bicycle boulevards can be considered • Pedestrians should be accommodated on sidewalks adjacent to the travel way (minimum 5’ wide sidewalk) • Mid-block pedestrian crossings and traffic calming devices should be considered, but only at locations with high pedestrian activity levels or major destinations/attractions • On-street parking may be provided
	Y	
	Y	
	N	
Arterial Connector Streets		
	Y	• Primary purpose is to connect people to different areas and land uses of the city by connecting to/from arterial streets • Designed to safely move all modes of travel while enhancing mobility for pedestrians and bicyclists and efficiently moving vehicles between arterial streets. • Bicyle lanes should be provided • Pedestrians should be accommodated on sidewalks adjacent to the travel way (minimum 5’ wide sidewalk) • Mid-block pedestrian crossings and traffic calming devices should be considered, but only at locations with high pedestrian activity levels or major destinations/attractions • On-street parking may be provided
	Y	
	Y	
	N	
Neighborhood Connector Street		
	N	• Primary purpose is to connect people to different neighborhoods and land uses of the city • Designed to safely move all modes of travel while enhancing mobility for pedestrians and bicyclists. • Vehicle speeds should be managed to promote safe pedestrian and bicycle movement • Bicycle lanes should be provided • Bicycle boulevards can be considered • Pedestrians should be accommodated on sidewalks adjacent to the travel way (minimum 5’ wide sidewalk) • Mid-block pedestrian crossings and traffic calming devices should be considered, but only at locations with high pedestrian activity levels or major destinations/attractions • On-street parking may be provided
	Y	
	Y	
	N	

TABLE 3–1: CARLSBAD LIVABLE STREETS GUIDE

STREET TYPOLOGY AND ACCOMMODATED MODES		
ACCOMMODATED MODES	**SUBJECT TO MMLOS STANDARD (Y/N)**	**STREET TYPOLOGY DESCRIPTION AND PREFERRED ATTRIBUTES**
Employment/Transit Connector Streets		
	N	• Primary purpose is to connect people to and from the employment areas of the city, as well as important destinations and major transit facilities. • Designed to safely move all modes of travel while enhancing mobility for pedestrians and bicyclists and efficiently moving buses to employment, transit stations and major destinations. • Vehicle speeds should be managed to promote safe pedestrian and bicycle movement • Direct connections to bus stops should be provided • Enhanced bus stops should be considered that include shelters, benches, and lighting • Bicycle lanes and sidewalks should be provided • Pedestrian crossing distances should be minimized • On-street parking may be provided
	Y	
	Y	
	Y	
Coastal Streets		
	N	• Primary purpose is to move people along the city's ocean waterfront and connect people to the beach, recreation, businesses and residences in close proximity to the waterfront. The street serves as a destination for people who seek to drive, walk and bicycle along the ocean waterfront. • Designed to safely move all modes of travel while enhancing mobility for pedestrians and bicyclists. • Vehicle speeds shall be managed to support uses along the coast • Enhanced bicycle and pedestrian crossings should be provided, including: – High visibility crosswalks – Enhanced pedestrian notifications (e.g. responsive push-button devices) – Enhanced bicycle detection – Bicycle lanes shall be provided and can be further enhanced or complemented by other facilities (such as bicycle lane buffers or off-street pathways) • Pedestrian facilities should be a minimum of five feet and shall strive for six to eight feet in width and shall conform to ADA requirements • Pedestrian crossing distances should be minimized • Trail facilities should be encouraged • Opportunities for mid-block pedestrian crossings should be investigated • On-street parking should be provided • Transit facility and operation improvements should be encouraged
	Y	
	Y	
	N	

TABLE 3–1: CARLSBAD LIVABLE STREETS GUIDE

STREET TYPOLOGY AND ACCOMMODATED MODES		
ACCOMMODATED MODES	**SUBJECT TO MMLOS STANDARD (Y/N)**	**STREET TYPOLOGY DESCRIPTION AND PREFERRED ATTRIBUTES**
School Streets		
	N	• Primary purpose is to connect people to schools from nearby residential neighborhoods. • Designed to safely move all modes of travel with an emphasis on providing safe pedestrian and bicycle access for students traveling to and from nearby schools. • Vehicle speeds shall be managed to support school uses (typically 25 MPH) • Enhanced bicycle and pedestrian crossings should be provided, including: – High visibility crosswalks – Enhanced pedestrian notifications (e.g. responsive push-button devices) – Enhanced bicycle detection – Bicycle lanes shall be provided and can be further enhanced or complemented by other facilities or off-street pathways • Pedestrian facilities should be a minimum of six feet and shall strive for eight feet in width and shall conform to ADA requirements • Pedestrian crossing distances should be minimized • Opportunities for mid-block pedestrian crossings should be investigated • Traffic calming devices that improve service levels and safety for pedestrians and bicyclists should be considered
	Y	
	Y	
	N	
Industrial Streets		
	Y	• Primary purpose is to connect people to businesses within the city's industrial parks. • Designed to safely move all modes of travel while efficiently moving vehicles and buses from arterial streets and employment/transit connector streets to businesses. • Traffic calming devices are generally discouraged given the propensity for larger trucks and heavy vehicles in this area • On-street parking may be provided as long as it does not interfere with the turning radii of heavy vehicles.
	N	
	N	
	Y	
Local/Neighborhood Street		
	N	• Primary purpose is to connect people to and through residential neighborhoods and local areas of the city. • Designed to safely move all modes of travel while enhancing mobility for pedestrians and bicyclists. • Vehicle speeds should be managed to promote safe pedestrian and bicycle movement • Pedestrians should be accommodated on a sidewalk or soft surface trail (such as decomposed granite) unless those facilities are inconsistent with the existing desirable neighborhood character • Bicycles can be accommodated with a bicycle lane or route if vehicle volumes and/or speeds necessitate; otherwise bicycles can share the street • Bicycle boulevards can be considered • Traffic calming measures should be considered when supported by the neighborhood or when warranted for safety reasons • On-street parking should be considered
	Y	
	Y	
	N	

TABLE 3–1: CARLSBAD LIVABLE STREETS GUIDE

STREET TYPOLOGY AND ACCOMMODATED MODES		
ACCOMMODATED MODES	**SUBJECT TO MMLOS STANDARD (Y/N)**	**STREET TYPOLOGY DESCRIPTION AND PREFERRED ATTRIBUTES**
Bicycle/Pedestrian Pathway		
	Y	• Primary purpose is to provide safe bicycle and pedestrian access throughout the community by connecting people to residences, businesses and recreation uses. • For bicycles and pedestrians only – no vehicular access is permitted • Serves commuters and recreational users
	Y	
Streets within ½ Mile of a Transit Center		
	N	• Primary purpose is to connect people to/from the city's transit centers. • Designed to safely move all modes of travel while enhancing mobility for pedestrians and bicyclists and efficiently moving vehicles and buses to/from transit centers. • Vehicle speeds should be managed to promote safe pedestrian and bicycle movement • Provides access to the Breeze/COASTER system via enhanced bicycle/pedestrian connectivity or via shuttle service from the stations to the ultimate destination • Could include enhanced transit systems, such as signal priority for transit, dedicated ROW for transit, or queue bypass lanes. • Mid-block pedestrian crossings and traffic calming devices should be considered in these areas • Parking should be provided and managed using innovative parking techniques
	Y	
	Y	
	Y	

Multi-Modal Levels of Service

Traditionally, transportation systems have been designed to achieve a level of service from the perspective of the driver, not pedestrians or bicyclists. However, cities throughout the country are now designing their transportation systems to achieve levels of service for all travel modes. Some cities, such as Fort Collins, CO, San Francisco, CA, Gainesville, FL, Charlotte, NC, and others, have been doing this for more than a decade; and in 2010, national guidelines were developed by the Transportation Research Board to encourage other cities to establish levels of service for all travel modes.

The California Complete Streets Act (2008) requires cities in California to plan for a balanced, multi-modal transportation system that meets the needs of all travel modes. This Mobility Element establishes a multi-modal level of service (MMLOS) methodology for Carlsbad that determines the vehicle level of service by the Highway Capacity Manual and evaluates the service levels for pedestrians, bicyclists and transit users.

The city's MMLOS methodology will provide a qualitative "grade" assigned to specified travel modes (see Table 3-1), ranging from a level of service (LOS) A to LOS F. LOS A reflects a high service standard for a travel mode (e.g. outstanding characteristics and experience for that mode) and LOS F would reflect a poor service standard for a travel mode (e.g. congestion for vehicles, no bicycle, pedestrian, or transit facilities, etc.). Thresholds are identified to balance supply and demand to create a sustainable system of public right-of-way, keeping in mind

on-going maintenance of the infrastructure and implementation of livable streets. The level of service of the various travel modes are evaluated according to the following factors:

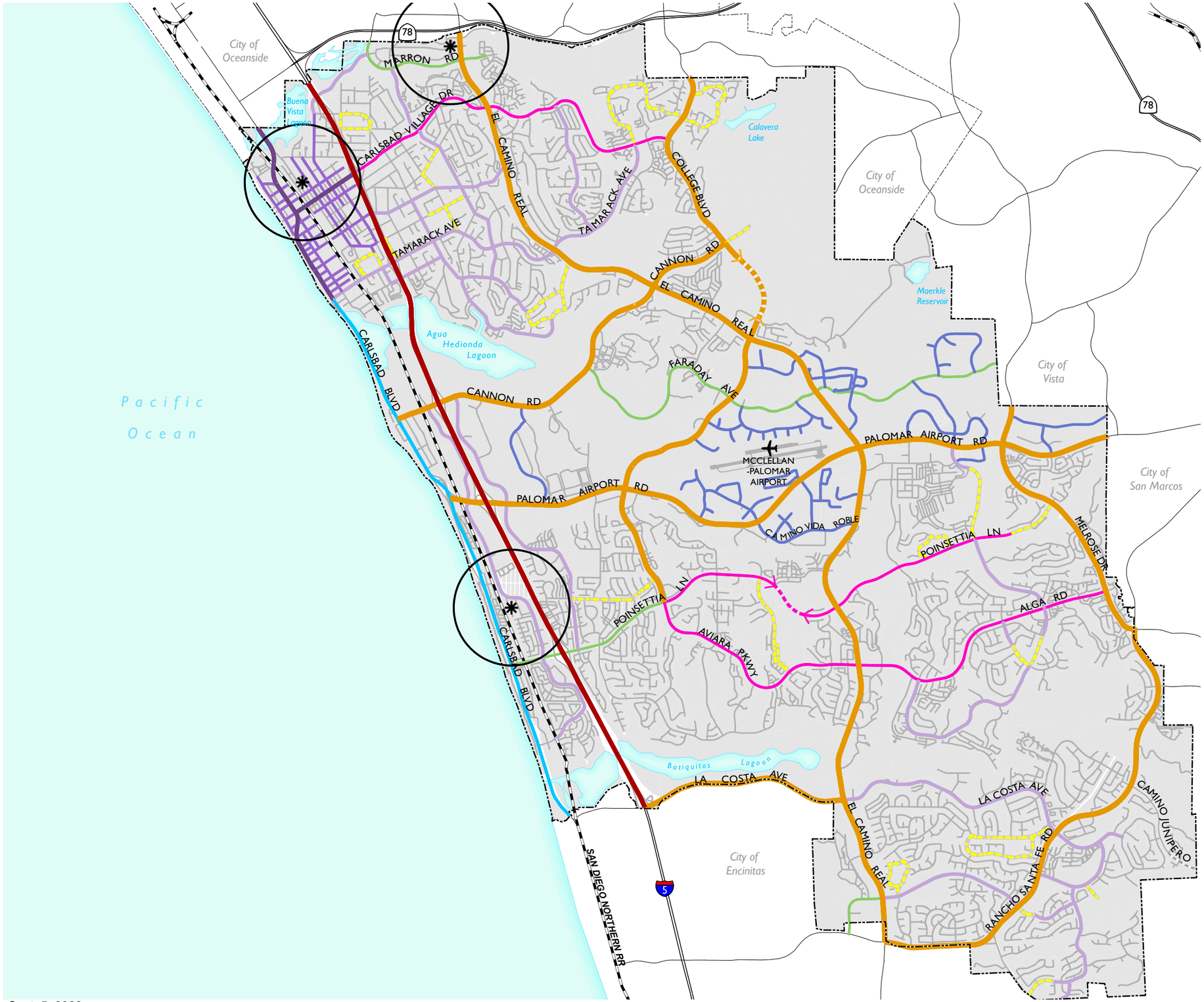
- **Vehicular Level of Service**. Level of service will be determined by the most recent version of the Highway Capacity Manual. This methodology evaluates vehicles based on their freedom to maneuver and overall delay experienced at intersections.
- **Pedestrian Level of Service.** Level of service to be evaluated using the Carlsbad MMLOS method. This method evaluates the *quality* of the pedestrian system (e.g. number of vehicle lanes that need to be crossed and the speed of adjacent traffic) and the *friendliness* of the infrastructure at intersections (e.g. pedestrian countdown heads, dedicated pedestrian phases (e.g. a scramble phase), curb extensions, refuge median).
- **Bicycle Levels of Service**. Level of service to be evaluated using the Carlsbad MMLOS method. This method evaluates the *quality* of the bicycle system (e.g. bicycle route, bicycle lanes, or bicycle pathway; presence of bicycle buffers from the vehicle travel way), the *amenities* of the system (e.g. presence of bicycle parking), and the *friendliness* of the infrastructure (e.g. bicycle detection at intersections, pavement conditions, presence of vehicle parking).
- **Transit Levels of Service.** Level of service to be evaluated using the Carlsbad MMLOS method. This method evaluates the *transit vehicle right-of-way* (e.g. dedicated or shared, signal priority), *hours and frequency of service* (e.g. weekday/weekend hours, peak period headway); *performance* (e.g. on-time or late); *amenities and safety* (e.g. lighting, covered stop, bench, on-board bike/surfboard storage); and *connectivity* (e.g. to other transit routes, employment areas, schools, visitor attractions, and other major destinations).

Future Operations and Street Improvements

Most of the envisioned Carlsbad street system is built out. The remaining planned street improvements are summarized in Table 3-2; these facilities serve the needs of land uses identified in the Land Use and Community Design Element. The planned streets are identified on the Street Network map, Figure 3-1.

In addition to the new street connectivity and capacity expansion described in Table 3-2, the city is also implementing a citywide traffic signal system upgrade effort. This effort includes retiming of traffic signals, upgrading the controller and detection technology, and integration of the traffic control system to a single point traffic management center. This enables the city to monitor, manage, and adjust traffic signal timing along major corridors to improve mobility and manage vehicle flow within the city. Improved traffic signal timing also enhances the safety for drivers, improves air quality by reducing emissions and brake dust, and improves commute times.

Figure 3-1: Street System



- Freeway
- Arterial Streets
- Identity Streets
- Village Streets
- Arterial Connector Streets
- Neighborhood Connector Streets
- Coastal Streets
- School Streets
- Employment/Transit Connector Streets
- Industrial Streets
- Local/Neighborhood Street
- Planned Arterial Streets
- Planned Arterial Connector Streets
- Planned Local/Neighborhood Streets
- Highways
- Railroad
- Transit Centers
- Half Mile Radius
- City Limits

500 ACRES

100 ACRES

0 0.5 1 2

Miles

Source: City of Carlsbad, 2013; SANDAG, 2013; Fehr & Peers, 2013; Dyett & Bhatia, 2013.

TABLE 3–2: PLANNED CITY OF CARLSBAD STREET CAPACITY IMPROVEMENTS

IMPROVEMENT NAME	IMPROVEMENT DESCRIPTION
College Boulevard	Complete improvements between Cannon Road and El Camino Real to arterial street typology standards
Poinsettia Lane	Complete improvements between Cassia Road and El Camino Real to connector street typology standards
Camino Junipero Extension	Extend to the eastern city limit as a local street
Interstate-5 North Coast Project	Includes the widening of Interstate-5 to include high-occupancy vehicle (HOV) (carpool) managed lanes and auxiliary lanes connecting adjacent interchange off-ramps and on-ramps as needed
Interstate-5/State Route-78 Interchange Improvement	While in preliminary design, identifying transportation options will relieve congestion on the freeway as it is a bottleneck that impacts adjacent interchanges, regional streets, and the movement of goods and people. This interchange is not located within the City of Carlsbad but is part of the Caltrans Public Works Plan for the Interstate-5 North Coast Corridor Project.

Future Traffic Operations

With build-out of the Land Use and Community Design Element, the completed street network presented in Table 3-1 and on Figure 3-1 will have capacity constraints on arterial streets and on freeways within and adjacent to the city. The analysis of the Land Use and Community Design Element indicated that the following freeways and arterial street facilities will operate at LOS E or LOS F in the city at build-out:

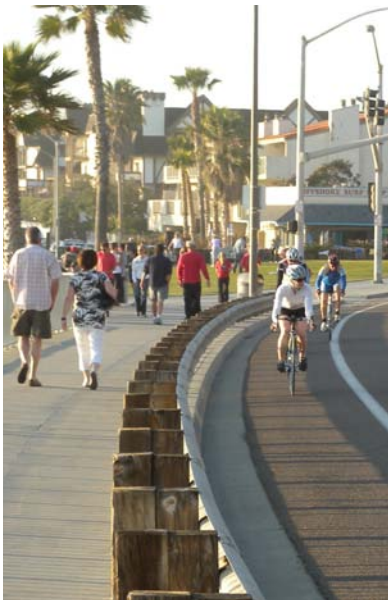
- Interstate-5
- State Route-78
- La Costa Avenue between Interstate-5 and El Camino Real
- El Camino Real between Palomar Airport Road and La Costa Avenue
- Palomar Airport Road between Interstate-5 and College Boulevard
- Palomar Airport Road between El Camino Real and Melrose Drive

These facilities would generally be congested during peak periods; however, during most hours of the day, these facilities would have sufficient capacity to serve the vehicle demand. The city does not have regulatory authority over Interstate-5 or State Route-78 and has no control over managing traffic on those

facilities. When these freeways are beyond capacity, some motorists will use City of Carlsbad arterials rather than the freeways to bypass congestion. Adjacent communities outside of Carlsbad also utilize Carlsbad's regional infrastructure to bypass congestion on freeways.

The four Carlsbad arterial street segments listed above would need to be widened beyond their six-lane cross-section to operate at the city's standard for vehicle level of service on those facilities (LOS D or better); however, creating streets wider than six lanes is inconsistent with the goals of this Mobility Element. In addition, widening these streets beyond six lanes creates new challenges for intersection operations, maintenance, and storm water management. Therefore, rather than widening these arterial streets beyond six lanes, the city shall implement transportation demand management (e.g. promote travel by modes other than the single-occupant vehicle), transportation system management (e.g. signal timing coordination and improved transit service) and livable streets techniques to better manage the transportation system as a whole.

Concurrent with City Council adoption of this Mobility Element, the city's Growth Management standard for circulation identified in the Citywide Facilities and Improvement Plan will be amended to reflect the livable streets approach to mobility described in this element.



Bicycling, Walking, and Transit

A balanced transportation system in Carlsbad will provide adequate facilities for people to bicycle, walk, or take transit to their destinations. To achieve this balanced transportation system, service levels for bicycle, pedestrian and transit modes will be maintained/enhanced on a variety of streets, as shown in Table 3-1 and Figure 3-1.

In addition to maintaining and enhancing bicycling, walking and transit service levels on streets, the city has a series of off-street trails and pathways that also serve the mobility needs of bicyclists and pedestrians (these facilities are described in more detail in the Open Space, Conservation and Recreation Element). Additionally, transit is provided on dedicated right-of-way within the city, consisting of the COASTER commuter rail line. This Mobility Element integrates and enhances the service levels of travel modes that complement utilization of transit facilities near the COASTER stations.

Bicycle Facility Classification System

Caltrans has defined three bikeway facility types in Chapter 1000 of the Highway Design Manual. These facility types are described below as well as in the City of Carlsbad Bicycle Master Plan.

Class I Bikeway (bike path) – provides a separated corridor that is not served by streets and highways and is away from the influence of parallel streets. Class I bikeways are for non-vehicle use only with opportunities for direct access and recreational benefits, right-of-way for the exclusive use of bicycles and pedestrians, and cross flow conflicts are minimized.

Class II Bikeway (bike lane) – provides a delineated right-of-way assigned to bicyclists to enable more predictable movements, accommodating bicyclists through corridors where insufficient room exists for side-by-side sharing of existing streets by motorists and bicyclists.

Class III Bikeway (bike route) – shared facility that serves either continuity to other bicycle facilities or designates preferred routes through high demand corridors.

In addition to the three facility types described above, a number of local streets help complete the bicycle network. These streets typically do not have a bikeway designation; however, the entire street system may be fully adequate for safe and efficient bicycle travel, where signing and pavement marking for bicycle use may be unnecessary. These are most commonly found along local streets where vehicle speeds are relatively low, which enables bicycle travel to be accommodated with vehicle travel.

Proposed Bikeway System

As of 2010, there was an estimated 98 miles of bicycle facilities in Carlsbad. Of these facilities, approximately 92 miles were Class II bicycle lanes located throughout the city on streets such as Carlsbad Boulevard, Carlsbad Village Drive, Tamarack Avenue, Chestnut Avenue, El Camino Real, Palomar Airport Road, Rancho Santa Fe Road, Melrose Drive, College Boulevard, Cannon Road, and La Costa Avenue. These on-street bikeways provide direct routes for experienced cyclists comfortable with riding on relatively high vehicle volume and speed streets. New cyclists may be encouraged to use these on-street bikeways by designing the bikeways to increase the comfort and safety of less experienced riders, narrowing travel lanes to manage vehicle travel speeds, implementing traffic calming measures, and by promoting land use patterns that decrease distances between destinations. In addition to incorporating additional routes into the bikeway network, clear directional/way-finding signage and secure bicycle parking at schools, shopping centers, beaches, employment centers and transit stops will encourage more people to ride bicycles and enhance the level of comfort for all.

While the majority of the Mobility Element streets within the city currently include a bicycle facility of some type within the right-of-way, there are several gaps at critical locations. In particular, bicycle lanes are discontinuous along Palomar Airport Road, just east of Carlsbad Boulevard, and within many

of the Interstate-5 interchanges and crossings. These gaps and other barriers, such as the railroad and freeway, greatly diminish connectivity to the coastline for cyclists. Caltrans' Interstate-5 North Coast Corridor Public Works Plan – a proposed 40-year program to create a multi-modal system of rail, highway, transit, bicycle and pedestrian improvements that span from La Jolla to Oceanside – proposes additional trail connections across lagoons and along the freeway, and to enhance all interchanges and crossings to better integrate and accommodate bicyclists and pedestrians.

The Carlsbad Bicycle Master Plan identifies the location of bikeways and recommends the enhancement of the existing bicycle network with the implementation of approximately 6.5 miles of new Class I bike paths, 2.8 miles of new Class II bike lanes, and 4.2 miles of new Class III bike routes. The planned bikeways include the Coastal Rail Trail, a Class I bike path on Carlsbad Boulevard at Ponto, two Class II bike lanes – one on Hillside Drive and another on Avenida Encinas, and five Class III bike route projects in the northwest quadrant of the city.

In addition to the planned bikeways and bicycle facilities, the Carlsbad Bicycle Master Plan outlines new educational and promotional programs aimed at bicyclists and motorists. These programs include bicycle parking improvements, multi-modal (transit) support facilities, bicycle safety and education programs for cyclists and motorists, safe routes to schools programs, community and employer outreach programs, continued development of bikeway network maps, and bike-to-work and school day events, among others.

The Carlsbad Bicycle Master Plan is a comprehensive document that provides detailed information on the city's bicycle network and a bicycle network map depicting existing and planned bikeways and facilities.

Pedestrian Facilities

Pedestrian facilities (i.e., sidewalks, crosswalks, trails) are a key component of a multi-modal transportation system, which should enable people of all age groups and abilities to safely walk to their destinations. Pedestrian facilities connect various land uses, like neighborhoods, schools, shopping, employment, transit stations, community services, and recreation. Areas that are particularly attractive to pedestrians include the coastline, lagoon areas and the Carlsbad Village, which offers a pedestrian friendly environment and concentration of shopping, dining and entertainment uses. In general, pedestrian-attracting land uses are fairly evenly distributed across the city.

Proposed Pedestrian System

Carlsbad has adopted several programs and plans related to improving the walking environment. The city's Pedestrian Master Plan identifies the location of pedestrian facilities and guides the future development and enhancement of

pedestrian facilities to ensure that walking becomes an integral mode of transportation in Carlsbad. The Carlsbad Residential Traffic Management Program provides a mechanism for community members to report issues relating to speeding and traffic volumes on residential streets, which assists the city in "calming" traffic in these areas to make them more comfortable for vehicles, pedestrians and bicyclists.

Physical barriers to pedestrian access include gaps in sidewalks, topography, lagoons, high-volume high-speed streets, incomplete or missing road segments, and regional infrastructure such as freeways and railways. There are four significant concentrations of high pedestrian needs across the city, including the following locations:

- The entire northwest quadrant, especially the Carlsbad Village area, Barrio area and along the coast
- The entire coastal area along Carlsbad Boulevard
- Several locations along El Camino Real, near Camino Vida Roble, Aviara Parkway/Alga Road and La Costa Avenue
- The southeastern portion of the city, stemming from the intersection of La Costa Avenue and Rancho Santa Fe Road

A range of potential improvement projects exist to enhance pedestrian mobility, local connectivity, usage, safety and accessibility. These improvements include missing sidewalk connectivity, upgrading substandard sidewalks, new connections to pedestrian attracting designations (such as access across the railroad track to the beach at Chestnut Avenue, for example), safe routes to school, enhanced crosswalks, pedestrian countdown signals, improved signage and markings and provision of ADA improvements.

Proposed Transit System

Future transit service in the city will primarily be coordinated by NCTD. However, there are several transit improvements, which are part of San Diego Association of Governments (SANDAG) regional planning efforts, which are reflected in this Mobility Element:

- Coastal rail improvements are proposed for the tracks serving the COASTER and Surfliner trains in San Diego County along the Los Angeles to San Diego rail corridor. These proposed improvements include double tracking, bridge replacements, grade separated pedestrian crossings, safety improvements for at-grade crossings, and station improvements. Improvements to the COASTER service (2020 and 2030) are also proposed and would increase service and reduce headways.
- Route 653 (2035) is a proposed bus rapid transit (BRT) route which would operate in the peak period between Kearny Mesa and Palomar Airport Road.

The future transit improvements described above will continue to advance transit service in the city. Other potential improvements to the rail corridor that the city is currently pursuing through discussions with NCTD include the creation of quiet zones and construction of a grade separated corridor that could include grade separated crossings at Carlsbad Village Drive, Grand Avenue, Tamarack Avenue and Cannon Road, as well as new pedestrian and bicycle crossings at Chestnut Avenue, Chinquapin Avenue and the Village and Poinsettia COASTER stations, and other locations.

One key component to improving transit use is improving the "first mile/last mile" experience for transit users. This typically includes end of trip facilities (bike lockers and racks, showers, changing rooms, etc.) and better connectivity from the transit stop to the ultimate destination via bicycle facilities, pedestrian facilities, local transit circulators, shuttles, etc.

Carlsbad's future transit effectiveness will be dependent on major employers assisting with providing some of these "first mile/last mile" facilities through transportation demand management (TDM) measures. TDM is envisioned to include shuttle circulators from transit stations to major employers and destinations, showers and changing rooms at those locations, and a host of other typical TDM techniques that would support transit usage and the connection to the ultimate destination. This Mobility Element also supports TDM through potential incentives (such as reduced parking standards for TDM implementation) to further support transit access to these destinations.

The final component to improving transit use in the city is working with NCTD to improve the transit experience; particularly along the bus routes. This includes improving bus stops in the city to ensure that they are well lit, have seating, and are covered to protect users from weather.

Connectivity to Support Mobility

Connectivity in the city is critical to achieving the Carlsbad Community Vision. As previously described, there are a number of street improvements that are planned that will complete connections within the city. This Mobility Element also recommends additional connectivity for bicycles and pedestrians, as noted below:

- **Cannon Road connection.** Provide a bicycle/pedestrian facility that would begin at the current eastern terminus of Cannon Road and continue eastward to the city's eastern boundary.
- **Marron Road connection.** Provide a bicycle/pedestrian facility that would begin at the current eastern terminus of Marron Road and extend eastward to the city's eastern boundary.
- **Additional crossings of Interstate-5 and the railroad.** Continue to look for opportunities to add crossings of these two barriers and improve

east-west connectivity to and from the coast. Key connections will include: improvements (bicycle, pedestrian, and vehicular) to the crossings at Chestnut Avenue (under the freeway) and at Chinquapin Avenue (over the freeway); and new connections (bicycle and pedestrian) across the railroad at Chestnut Avenue and Chinquapin Avenue. Additionally, Caltrans is designing a number of new pedestrian and bicyclist connections along and across Interstate-5 and near the lagoons as part of the Interstate-5 North Coast Corridor Public Works Plan. The city will continue to coordinate with Caltrans on these improvements.

- Improved accessibility to the lagoons and to the coast are envisioned to improve connectivity to those areas.

Parking

Parking is critical to ensuring the success of any area. Inadequate parking means that businesses and residents suffer. Too much parking underutilizes valuable land; promotes lower density development; discourages using other forms of transportation (such as public transit); spreads out land uses; and creates gaps in store fronts, thereby requiring the use of the automobile. Additionally, too much parking also requires more driveways for accessibility, introducing conflicts between pedestrians and vehicles. Restrictive parking requirements impact the ability to rejuvenate/repurpose older buildings and revitalize activity centers that can be better served and connected by enhancing facilities and amenities for bicyclists and pedestrians. Therefore, it is important to manage parking such that there is enough to support the needs generated by the use, but not so much that it wastes land and impairs other ways of getting around.

The city's Zoning Ordinance and adopted master and specific plans provide standards for parking facilities based on development types within the city. To promote efficient parking supply, the city will develop flexible parking requirements that may include the following techniques:

- **Shared parking.** Continue to allow uses that have different parking demands at different times of the day to share the same parking facilities. This is an effective way to minimize pavement, allow denser land use, provide for more landscaping, and provide improved walkability within a mixed use area. The best example of shared parking is an office building and an apartment building as office's peak parking demand occurs at 10:00 a.m. and apartment's peak parking demand occurs at 11:00 p.m.
- **Collective parking.** Allow uses in mixed use projects/areas to reduce the standard parking rate to account for shared mixed use on-site parking.
- **Unbundled parking.** Rather than provide free guaranteed parking, "unbundle" the parking from the development and require residents and/or employees to pay for use of a parking space.

- **Park once.** A strategy in destination districts to enable visitors to "park once" and visit a series of destinations. Park once strategies work well in areas like the Village and areas that are well connected by pedestrian and bicycle facilities. The creation of centralized parking areas supports this strategy.
- **In-lieu parking fees.** Continue strategies in appropriate areas that allow developers to contribute fees toward the development of a common parking facility in lieu of providing on-site parking. This works best in concentrated commercial areas, and assists in paying for unified structured parking and provides developers an opportunity to increase density on their parcels.
- **Parking management strategies.** A business district or businesses manage high demand parking locations and destinations through a number of different strategies including demand pricing, time restrictions, valet parking, and other techniques.
- **Public-private partnerships.** The city, business owners, and developers collaborate to provide both private and public parking opportunities. Instances where this works well include parcels owned by the city, where a private entity develops, manages, and enforces parking in these public lots.
- **Parking locater signs**. Electronic monitoring devices that identify the available parking in a given facility and utilize changeable message signs to assist travelers in identifying available parking locations. This may require modifications to the city's Zoning Ordinance to be implemented in some areas of the city.
- **Parking way-finding signs.** Signs identifying where public parking is available, which supports the "park once" concept.
- **Reduced parking standards.** Reduce parking standards in areas that are well served by transit, provide shuttle accessibility to the COASTER station, provide parking cash out programs (employers pay employees to not drive a single occupancy vehicle to work), or provide other programs that will reduce parking demand.
- **Biking equals business program.** Businesses provide bicycle parking or corrals and provide incentives to encourage their patrons and employees to ride rather than drive.
- **Transit equals business program.** Businesses provide their customers and employees incentives to encourage them to use transit rather than drive.
- **Bicycle corrals in-lieu of vehicle parking.** For certain businesses, reduce required onsite parking for vehicles if they provide a bicycle corral that accommodates more people.

Although there are additional parking strategies that are available and may become available in the future, most of the strategies work best in smart growth/mixed use development areas and will be necessary to accomplish the goals and visions identified in the General Plan and this Mobility Element.

Transportation Demand Management and Traffic Signal Management

This Mobility Element also supports and promotes TDM and traffic signal management (TSM) techniques.

TDM consists of programs and policies to reduce the demand for the single occupant automobile. Common techniques include carpool programs, car-sharing and bike-sharing programs, flexible work hours, telecommute provisions, shuttle services to nearby transit stations, employee transit subsidies (e.g. employers will subsidize bus or rail tickets), installation of bicycle facilities (lockers, racks, lanes, showers at employment areas, etc.), or other measures that would reduce the demand to drive, particularly during the peak commute hours. TDM is critical for the city to build-out without expanding the transportation infrastructure beyond what is envisioned in this Mobility Element. Additionally, as previously described, TDM is a major component in improving the effectiveness of transit as it can assist in serving the "first mile/last mile" component of a transit trip.

The city has also implemented a state-of-the-practice TSM system. This system integrates traffic signals in the city to a single access point, allowing city staff to monitor and update signal timings to improve safety and mobility for all users in the city. This Mobility Element supports further implementation of this program and use of other technologies that become available, which have the ability to improve mobility for all users of the city's transportation system.

3.4 Goals and Policies

Goals

3-G.1 Keep Carlsbad moving with livable streets that provide a safe, balanced, cost-effective, multi-modal transportation system (vehicles, pedestrians, bikes, transit), accommodating the mobility needs of all community members, including children, the elderly and the disabled.

3-G.2 Improve connectivity for residents, visitors and businesses.

3-G.3 Provide inviting streetscapes that encourage walking and promote livable streets.

3-G.4 Manage parking to support all modes of transportation and ensure efficient use of land.

3-G.5 Implement transportation demand and traffic signal management techniques to improve mobility.

3-G.6 Protect and enhance the visual, environmental and historical characteristics of Carlsbad through sensitive planning and design of scenic transportation corridors.

3-G.7 Provide for the safe and efficient movement of goods throughout the city.

Implementing Policies

Street Typology and Multimodal Levels of Service

3-P.1 Implement a comprehensive livable streets network. This network, as outlined in Table 3-1 and shown on Figure 3-1, identifies the transportation modes that shall be accommodated, based on street typology, to ensure accessibility of the city's street system to persons of all ages and abilities.

3-P.2 Integrate livable streets in all capital improvement projects, where applicable, as well as new development projects.

3-P.3 Apply and update the city's multi-modal level of service (MMLOS) methodology and guidelines that reflect the core values of the Carlsbad Community Vision related to transportation and connectivity. Utilize the MMLOS methodology to evaluate impacts of individual development projects and amendments to the General Plan on the city's transportation system.

3-P.4 Implement the city's MMLOS methodology and maintain LOS D or better for each mode of travel for which the MMLOS standard is applicable, as identified in Table 3-1 and Figure 3-1.

3-P.5 Require developers to construct or pay their fair share toward improvements for all travel modes consistent with this Mobility Element, the Growth Management Plan, and specific impacts associated with their development.

3-P.6 Require future development projects, which are determined during site-specific environmental review to have a significant impact on freeway facilities (I-5 and SR-78), to implement a freeway traffic mitigation program approved by the city that will avoid, reduce or offset the increase in freeway traffic directly attributable to the proposed project. The mitigation program may include, but is not limited to, payment of a fair share fee to Caltrans for necessary improvements to affected freeway facilities or to NCTD or such other transit agency for improvement of public transit on affected freeways, or such other activities as will avoid, reduce or offset the project's significant impacts on freeway facilities.

3-P.7 Encourage Caltrans to identify and construct necessary improvements to improve service levels on Interstate-5 and State Route 78.

3-P.8 Utilize transportation demand management strategies, non-automotive enhancements (bicycle, pedestrian, transit, train, trails, and connectivity), and traffic signal management techniques as long-term transportation solutions and traffic mitigation measures to carry out the Carlsbad Community Vision.

3-P.9 Develop and maintain a list of street facilities where specified modes of travel are exempt from the LOS standard (LOS exempt street facilities), as approved by the City Council. For LOS exempt street facilities, the city will not implement improvements to maintain the LOS standard outlined in Policy 3-P.4 if such improvements are beyond what is identified as appropriate at build out of the General Plan. In the case of street facilities where the vehicle mode of travel is exempt from the LOS standard, other non-vehicle capacity-building improvements will be required to improve mobility through implementation of transportation demand and transportation system management measures as outlined in Policy 3-P.11, to the extent feasible, and/or to implement the livable streets goals and policies of this Mobility Element. Evaluate the list of exempt street facilities, as part of the Growth Management monitoring program, to determine if such exemptions are still warranted.

To exempt the vehicle mode of travel from the LOS standard at a particular street intersection or segment, the intersection or street segment must be identified as built-out by the City Council because:

a. acquiring the rights of way is not feasible; or

b. the proposed improvements would significantly impact the environment in an unacceptable way and mitigation would not contribute to the nine core values of the Carlsbad Community Vision; or

c. the proposed improvements would result in unacceptable impacts to other community values or General Plan policies; or

d. the proposed improvements would require more than three through travel lanes in each direction.

3-P.10 Allow the following street facilities to be exempt from the vehicle LOS standard identified in Policy 3-P.4, subject to the requirements described in Policy 3-P.9.

- La Costa Avenue between Interstate-5 and El Camino Real
- El Camino Real between Palomar Airport Road and La Costa Avenue
- Palomar Airport Road between Interstate-5 and College Boulevard
- Palomar Airport Road between El Camino Real and Melrose Drive

3-P.11 Require new development that adds vehicle traffic to street facilities that are exempt from the vehicle LOS standard (consistent with 3-P.9) to implement:

a. Transportation demand management strategies that reduce the reliance on single-occupant automobile and assist in achieving the city's livable streets vision.

b. Transportation system management strategies that improve traffic signal coordination and improve transit service.

3-P.12 Update the Citywide Facilities and Improvements Plan to ensure consistency with the General Plan. This includes updating the circulation LOS standards methodologies to reflect a more balanced/multi-modal approach.

3-P.13 Use public outreach to educate and encourage alternative modes of travel and inform the community about the benefits of participation in new programs, approaches and strategies that support Mobility Element goals and policies.

3-P.14 Require performance measures tied to transportation facilities and services to comply with the Climate Action Plan and other state regulations and policies.

Street Design and Connectivity

3-P.15 Evaluate methods and transportation facility improvements to promote biking, walking, safer street crossings, and attractive streetscapes. The City Council shall have the sole discretion to approve any such road diet or vehicle traffic calming improvements that would reduce vehicle capacity to or below a LOS D; this also applies to streets where the vehicle is not subject to the MMLOS standard as specified in Table 3-1.

3-P.16 Design new streets, and explore funding opportunities for existing streets, to minimize traffic volumes and/or speed, as appropriate, within residential neighborhoods without compromising connectivity for emergency first responders, bicycles, and pedestrians consistent with the city's Carlsbad Active Transportation Strategies. This should be accomplished through management and

implementation of livable streets strategies and such programs like the Carlsbad Residential Traffic Management Plan.

3-P.17 Consider innovative design and program solutions to improve the mobility, efficiency, connectivity, and safety of the transportation system. Innovative design solutions include, but are not limited to, traffic calming devices, roundabouts, traffic circles, curb extensions, separated bicycle infrastructure, pedestrian scramble intersections, high visibility pedestrian treatments and infrastructure, and traffic signal coordination. Innovative program solutions include, but are not limited to, webpages with travel demand and traffic signal management information, car and bike share programs, active transportation campaigns, and intergenerational programs around schools to enhance safe routes to schools. Other innovative solutions include bicycle friendly business districts, electric and solar power energy transportation systems, intelligent transportation systems, semi- or full autonomous vehicles, trams, and shuttles.

3-P.18 Encourage and seek partnerships to foster innovations in emerging technology for transportation mobility to support the city's workforce, residents, and tourists. Integration between communication technology, energy, and transportation mobility should be encouraged.

3-P.19 Encourage Caltrans, SANDAG, NCTD, and adjacent cities to improve regional connectivity and service consistent with regional planning efforts. This includes expansion of Interstate-5 with two HOV lanes in each direction, auxiliary lanes, and associated enhancements, a Bus Rapid Transit (BRT) route along Palomar Airport Road, shuttle bus services from COASTER stations, and other enhancements to improve services in the area.

3-P.20 Engage Caltrans, the Public Utilities Commission, transit agencies, the Coastal Commission, and railroad agency(s) regarding opportunities for improved connections within the city, including:

- Improved connections across the railroad tracks at Chestnut Avenue and other locations
- A grade separated rail corridor that includes grade separated street crossings at Grand Avenue, Carlsbad Village Drive, Tamarack Avenue and Cannon Road, as well as new pedestrian and bicycle crossings
- Completion and enhancements to the Coastal Rail Trail and/or equivalent trail along the coastline
- Improved connectivity along Carlsbad Boulevard for pedestrians and bicyclists, such as a trail
- Improved access to the beach and coastal recreational opportunities
- Improved crossings for pedestrians across and along Carlsbad Boulevard

3-P.21 Implement connections and improvements identified in this Mobility Element, including those identified in policy 3-P.19, as well as:

- Extension of College Boulevard from Cannon Road to El Camino Real
- Completion of the Poinsettia Lane connection near El Camino Real (Reach E)
- Extension of Camino Junipero to the eastern city boundary
- A bicycle/pedestrian trail/pathway connecting the eastern terminus of Marron Road to the east
- A bicycle/pedestrian trail/pathway connecting the eastern terminus of Cannon Road to the east, and coordination with adjacent agencies to appropriately link to their facilities

3-P.22 Support pedestrian and bicycle facilities at all Interstate-5 and State Route 78 interchanges.

3-P.23 Maintain the city's scenic transportation corridors as identified in the Carlsbad Scenic Corridor Guidelines.

Pedestrian and Bicycle Movement

3-P.24 Update the pedestrian, trails and bicycle master plans, as necessary, to reflect changes in needs, opportunities and priorities.

3-P.25 Implement the projects recommended in the pedestrian, trails and bicycle master plans through the city's capital improvement program, private development conditions and other appropriate mechanisms.

3-P.26 Identify and implement necessary pedestrian improvements on streets where pedestrians are to be accommodated per Table 3-1, with special emphasis on providing safer access to schools, parks, community and recreation centers, shopping districts, and other appropriate facilities.

3-P.27 Implement the Safe Routes to School and Safe Routes to Transit programs that focus on pedestrian and bicycle safety improvements near local schools and transit stations. Prioritize schools with access from arterial streets for receiving Safe Routes to School projects.

3-P.28 Improve and enhance parking, connectivity, access, and utilization for pedestrians and bicycles to COASTER stations, utility corridors, and open spaces consistent with city planning documents.

3-P.29 Evaluate incorporating pedestrian and bicycle infrastructure within the city as part of any planning or engineering study, private development, or capital project.

3-P.30 Complete the Carlsbad Active Transportation Strategies to assist in identifying livable street implementation parameters within the city.

3-P.31 Engage the community in the policy setting and planning of street, bicycle, pedestrian, transit, and connectivity studies, plans and programs.

3-P.32 Require developers to improve pedestrian and bicycle connectivity consistent with the city's bicycle and pedestrian master plans and trails master planning efforts. In addition, new residential developments should demonstrate that a safe route to school and transit is provided to nearby schools and transit stations within a half mile walking distance.

3-P.33 Work with existing neighborhoods and businesses to improve pedestrian and bicycle connectivity and safety consistent with the city's pedestrian and bicycle master plans and trails master planning efforts.

3-P.34 Actively pursue grant programs such as SANDAG's Active Transportation Grant Program and Smart Growth Incentive Program to improve non-automotive connectivity throughout the city. The emphasis of grant-funded projects shall be on implementation, which includes planning documents that guide and prioritize implementation, programs that encourage the use of active transportation modes, education for the use of active transportation modes, or physical improvements themselves.

Transit

3-P.35 Partner with other agencies and/or developers to improve transit connectivity within Carlsbad. As part of a comprehensive transportation demand management (TDM) strategy and/or with transit oriented development (TOD), a shuttle system could be established that connects destinations and employment centers like LEGOLAND, hotels, the Village, McClellan-Palomar Airport, business parks, the COASTER and Breeze transit stations, public activity centers (such as senior centers, city hall, libraries, etc.) and key destinations along the coast. The system could incorporate shuttle service in adjacent cities to maximize connectivity.

3-P.36 Encourage NCTD, SANDAG and other transit providers to provide accessibility for all modes of travel to the McClellan-Palomar Airport area.

3-P.37 Coordinate with NCTD to improve the quality of bus stop facilities in the city.

Parking and Demand Management

3-P.38 Develop flexible on-site vehicle parking requirements. Such requirements will include implementation of innovative parking techniques, implementing effective TDM programs to reduce parking demand, and consideration of other means to efficiently manage parking supply and demand.

3-P.39 Require new employment development to provide secure bicycle parking on-site. Major employers should provide shower and changing rooms for employees as appropriate.

3-P.40 Assist Village businesses to manage parking in the Village area to maximize parking efficiency. Any potential parking-related revenues generated in this area should be reinvested into the Village area for implementing livable streets and other parking, pedestrian, and bicycle enhancements, including way-finding signage and maintenance of associated infrastructure.

3-P.41 Consider supporting new development and existing businesses with various incentives (such as parking standards modifications) for implementing TDM programs that minimize the reliance on single-occupant automotive travel during peak commute hours.

Rail and Truck Movement

3-P.42 Identify and update truck routes within the city that provide sufficient turning radii and other design attributes to support large vehicles on those facilities.

3-P.43 Coordinate with other agencies and private entities to investigate methods of improving service, implementing a quiet zone, and enhancing connectivity and safety along the rail corridor; such as through development of a grade separated rail corridor that includes grade separated street crossings at Grand Avenue, Carlsbad Village Drive, Tamarack Avenue and Cannon Road, as well as new pedestrian and bicycle crossings at Chestnut Avenue, Chinquapin Avenue and the Village and Poinsettia COASTER stations, and other locations.

Air Movement

3-P.44 Work with the County of San Diego and other agencies to ensure continued safe and efficient operation of the McClellan-Palomar Airport, consistent with the Carlsbad Community Vision and existing city policy.