

CITY OF CARLSBAD

COUNCIL POLICY STATEMENT

General Subject: Traffic Engineering

Specific Subject: Traffic Safety Policies
and Warrants

Policy No. 15

Date Issued January 16, 1973

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January 16, 1973

Cancellation Date

Supersedes No.

Copies to: City Council, City Manager, City Attorney, Department and
Division Heads, Employee Bulletin Boards, Press, File

PURPOSE:

To standardize traffic safety installations within the City of Carlsbad, bring Carlsbad installations into line with prevailing traffic engineering practice in San Diego County, and provide guidelines for handling citizen requests.

STATEMENT OF POLICY:

The following policies are adopted as the Traffic Safety Policies of the City of Carlsbad:

1. Through Highway Routes
2. Pedestrian Crosswalks
3. Speed Limit Regulations
4. 2-Way Stop Control
5. 4-Way Stop Control
6. Centerline Striping
7. Temporary Road Closures

PROPOSED
TRAFFIC SAFETY POLICIES
AND WARRANTS

CITY OF CARLSBAD

MAY 1972

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POLICY NO. 1

THROUGH HIGHWAY ROUTES

Through Highways, as defined by Section 600 of the California Vehicle Code, shall be established on arterial and major roads carrying predominantly through-traffic, as evidenced by minimum average daily traffic volumes of 500 to 1000 vehicles, or on collector roads and streets carrying in excess of 1000 vehicles per day, particularly where an analysis of reported accidents indicates a need for route control of crossing conflicts.

Upon establishment and signing of an arterial Through Highway, all intersecting traffic is required by law to stop before entering or crossing.

POLICY NO. 2

PEDESTRIAN CROSSWALKS2.10 Purpose

The purpose of a marked crosswalk is to inform drivers of a high pedestrian flow or an unusual crossing location, and to guide pedestrians by providing a marked area in which to cross. The purpose of these warrants is to establish minimum criteria for the installation of marked crosswalks so that they may provide the greatest possible benefit to both drivers and pedestrians.

2.11 Legal Definitions and Right of Way Control

The following excerpts from the California Vehicle Code and the San Diego Municipal Code are pertinent to these warrants:

C.V.C. 275. "Crosswalk" is either:

- (a) That portion of a roadway included within the prolongation or connection of the boundary lines of sidewalks at intersections where the intersecting roadways meet at approximately right angles, except the prolongation of such lines from an alley across a street.
- (b) Any portion of a roadway distinctly indicated for pedestrians crossing by lines or other markings on the surface.

C.V.C. 21950. Right of way at crosswalks:

- (a) The Driver of a vehicle shall yield the right-of-way to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at an intersection, except as otherwise provided in this chapter.
- (b) No pedestrian shall suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close as to constitute an immediate hazard.

C.V.C. 21954. Pedestrians outside crosswalks:

- (a) Every pedestrian upon a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway.

C.V.C. 21955. Crossing between controlled intersections:

Between adjacent intersections controlled by traffic control signal devices or by police officers, pedestrians shall not cross the roadway at any place except in a crosswalk.

S. D. M. C. 83.03 Interfering with traffic:

It shall be unlawful for any person to stand in any roadway, other than in a safety zone or in a crosswalk, if such action interferes with the lawful movement of traffic.

2.12 General

When justified and properly located, a marked pedestrian crosswalk may achieve the following results:

- A. Call the driver's attention to a high pedestrian flow or an unusual crossing location.
- B. Point out to the pedestrian the safest crossing path.
- C. Limit pedestrian crossings to specific locations.

Unjustified or poorly located marked crosswalks may:

- A. Increase accident frequency by lulling both pedestrians and drivers into a false sense of security.
- B. Create general disrespect for all traffic control devices.
- C. Result in unnecessarily high painting and maintenance costs to the City.

2.13 General Policy

By legal definition there are three or more unmarked crosswalks at every intersection. The City does not normally install a marked crosswalk across an intersection approach where more restrictive traffic control devices, other than traffic signals, are in use. Such devices include stop signs, and yield signs. However, a crosswalk may be marked at a controlled intersection if an unmarked crosswalk would not be clearly discernable due to peculiar geometrics or other unusual physical conditions.

A marked midblock crosswalk may be installed when warranted on the basis of sound engineering judgment. The length of the block between intersections should be no less than 1,000 feet. There must be a reasonable demand by pedestrians to cross within a concentrated area no less than 400 feet from the nearest intersection. There must be a high pedestrian volume generator nearby.

2.14 Warrants

The following warrants are based on a point system evaluation incorporating gap time, pedestrian volumes, vehicle approach speed, and general conditions. Accident history and the investigating engineer's opinion have been subordinated to afford maximum objectivity in determining crosswalk needs.

2.15 Point System

Gap Time Warrant	Maximum 10 points
Pedestrian Volume Warrant	" 5 "
Approach Speed Warrant	" 5 "
General Conditions Warrant	" <u>5</u> "
Total points	25

2.16 Point Evaluation

The minimum warrant for the installation of a marked crosswalk is satisfied when a location rates 16 or more points, one of which must be for pedestrian volumes.

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Warrants

PEDESTRIAN CROSSWALKS

Gap Time Warrant

Criterion	Point Assignment	
	Average number of gaps per 5 minute period	Points
The number of unimpeded vehicle time gaps equal to or exceeding the required pedestrian crossing time in an average five minute period during the peak vehicle hour.	0 - 0.99	10
	1 - 1.99	8
	2 - 2.99	6
	3 - 3.99	4
	4 - 4.99	2
	5 or over	0
	Maximum	10

Computations

(1) Pedestrian Crossing Time = $\frac{\text{Street width curb to curb}}{4.0 \text{ feet per second}}$

(2) Average Number of Gaps per Five Minute Period

= $\frac{\text{Total usable gap time in seconds}}{\text{Pedestrian Crossing Time} \times 12}$

Provisions

- (A) The above criterion is based on a one-hour field survey consisting of 12 five-minute samples.
- (B) All roadways having a raised median or a painted median (4 foot minimum width) will be considered as two separate roadways.
- (C) See Appendix One for survey methods and warrant field form.

Pedestrian Volume Warrant

Criterion

The total number of pedestrians crossing the street under study during the peak vehicle hour. This includes pedestrians in both crosswalks at an intersection.

<u>Point Assignment</u>	
<u>Pedestrian Total</u>	<u>Points</u>
0-10	0
11-30	1
31-60	2
61-90	3
91-120	4
Over 100	<u>5</u>
Maximum	5

Approach Speed Warrant

Criterion

The vehicular approach speed from both directions of travel as determined by the investigating engineer through speed study techniques.

<u>Approach Speed</u>	<u>Points</u>
Under 20 MPH	0
20 or 25 "	3
30 or 35 "	5
40 or 45 "	3
50 or 55 "	1
60 or over	<u>0</u>
Maximum	5

General Conditions Warrant

Criterion

Those conditions affecting the movement of pedestrian traffic other than gap time, pedestrian volumes, and vehicular approach speed. Consideration should be given to intersection layout, pedestrian accident history, vehicle turning movements, adjacent grounds and buildings, and pedestrian generators.

<u>General Conditions</u>	<u>Points</u>
Values assigned according to engineering judgment.	0-5
Maximum	5

APPENDIX ONE

Survey Methods and Field Form

I. Survey Methods

- A. Personnel requirements: One man.
- B. Duration of survey: One hour during the morning or evening peak period of vehicle travel.
- C. Equipment: Stop watch (in seconds) and warrant field forms.
- D. Type of Survey:
 1. 100% pedestrian count within the crosswalk area under study during the 60 minute period.
 2. 100% recording of unimpeded vehicle gaps during the same 60 minute period.
 - a. Each gap that is equal to or exceeds the calculated pedestrian crossing time is defined as a "Usable Gap Time", and is entered on the warrant field form as such.
 3. Speed study using the floating car technique, or radar speed study.

II. Use of the Crosswalk Warrant Field Form

- A. Compute the Pedestrian Crossing Time and enter the figure (in seconds) in the appropriate space.
- B. Begin the gap time recording by entering on the field sheet the length (in seconds) of those gap times equal to or exceeding the calculated pedestrian crossing time.
- C. Total the Usable Gap Time in seconds, and compute the average number of gaps per five minute period.
- D. Record the one hour pedestrian volume, the approach speed, and existing general conditions, including the three year pedestrian accident history.
- E. Based on each warrant, assign the number of points allowable.

CROSSWALK WARRANT EVALUATION

SUMMARY

Pedestrian Crossing Time:

Width of street _____ = _____ 4 _____ = _____
 4 ft. per second

Average Number Gaps Per Five Minute Period:

Total Usable Gap Time in Sec. = _____ = _____
 Ped. Crossing Time x 12

One Hour Pedestrian Volume: _____

Legal Approach Speed: _____

General Conditions: _____

SKETCH:

WARRANTS	POINTS	MAXIMUM POINTS
1. Gap Time		10
2. Pedestrian Volumes		5
3. Approach Speed		5
4. General Conditions		5
Total		25

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POLICY NO. 3

SPEED LIMIT REGULATIONS

The Traffic Engineer may post prima-facie 25 mph speed limits as specified under California Vehicle Code Section 22352 (b) in valid Business and Residence Districts on identification of speed related problems, except on established through highways carrying in excess of 2000 vehicles per day. On such through highways, including arterial roads, major roads, and collector streets, realistic speed limits shall be established by action of the City Council on the basis of an Engineering and Traffic Survey as provided for in Section 22357 of the California Vehicle Code.

On City roads and highways carrying in excess of 2000 vehicles per day, and which do not qualify as valid residence or business districts, the City Council shall establish realistic prima-facie limits. Such limits shall be determined by the Traffic Engineer on the basis of an Engineering and Traffic Survey as provided in Sections 22358 and 22358.5 of the California Vehicle Code. Where such prima-facie limits are established, "Reduce Speed Ahead" and/or "End Speed Zone" signs may be used to identify the posted limit.

The Engineering and Traffic Survey shall follow a method established by the State of California, Department of Public Works and shall be subject to the provisions of the California Vehicle Code. The Survey includes a review of roadway characteristics such as alignment, grade, and roadside development; an inventory of existing

(traffic controls; a review of prevailing vehicle speeds, pedestrian movements, and traffic volumes; and an analysis of the roadway's accident history.

POLICY NO. 4

2-WAY STOP CONTROL4.1 Purpose

The purpose of stop signs is to control the right-of-way assignment at an intersection. Stop signs are placed at entrances to designated through highways or at any intersection designated by resolution as a stop intersection. In the latter case, these locations are commonly referred to as Intersection Stops. If such a location meets the following warrants, the signs are located on the street carrying the minor volume of entering traffic.

Properly installed stop signs facilitate traffic movement and promote traffic safety.

4.2 General

In order for an intersection to receive consideration for two-way stop control, certain factual data must be obtained. These include accident records, visibility conditions, traffic and pedestrian volumes, and unusual conditions such as proximity of schools, fire stations, etc. Points are assigned to each of these warrants. The total possible points is 30. The installation of a two-way stop control is justified with a total of 18 points.

4.3 Accident Warrant

Three points are assigned for each accident susceptible to correction by stop signs during one full year prior to the investigation. Maximum 9 points.

4.4 Visibility Warrant

Where the critical approach speed to the intersection is less than 17 MPH, 1 point shall be assigned for each MPH under 17 MPH. Maximum 9 points.

4.5 Volume Warrant

a. Major Street: 1 point for every 100 vehicles per day in excess of 500. Maximum 5 points.

b. Minor Street: 1 point for every 25 vehicles and pedestrians* on minor street during the peak hour. Maximum 4 points.

* Pedestrians crossing the minor street.

4.6 Unusual Condition Warrant

Where unusual conditions exist, such as a school, fire station, playground, steep hill, etc., points are assigned on the basis of engineering judgment: Maximum 3 points.

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POLICY NO. 5

4-WAY STOP CONTROL

5.1 Purpose

A fully-justified, properly installed four-way stop can effectively assign right-of-way, reduce vehicle delay and decrease accidents. Generally, a four-way stop is reserved for use at the intersection of two through-highways, and only as an interim traffic control measure prior to signalization.

5.2 General

The posting of an intersection for four-way stop control should be based on factual data. Included are: Through street conditions, accident records, traffic and pedestrian volumes, and unusual conditions such as proximity of schools, fire stations, etc. Points are assigned to each of these criteria. The total possible points is 50. The installation of four-way stop control is justified with a total of 28 points.

5.3 Primary Warrant

One of the streets at an intersection must be a through highway before the intersection can be considered for four-way stop control.

A. If street is a through highway - 0 points.

B. If both streets are through highways - 5 points.

5.4 Accident Warrant

Two points are assigned for each accident susceptible to correction by four-way stop control during one full year prior to the investigation. Maximum 20 points.

5.5 Unusual Condition Warrant

Where unusual conditions exist, such as a school, fire station, playground, steep hill, etc., points are assigned on the basis of engineering judgment. A school location in itself, is not sufficient justification for a four-way stop installation. Maximum 5 points.

5.6 Volume Warrant

- A. Total entering vehicle volume must equal 2,000 vehicles for four highest hours in average day.
- B. Minimum side street volume must equal 600 vehicles during same four-hour period.

Points shall be assigned in accordance with the following tables:

<u>Major Approach</u>		<u>Minor Approach</u>	
<u>4-Hour Volume</u>	<u>Points</u>	<u>4-Hour Volume</u>	<u>Points</u>
0 - 1400	0	600 - 800	1
1401 - 1700	1	801 - 1000	2
1701 - 2000	2	1001 - 1200	3
2001 - 2300	3	1201 - 1400	4
2301 - 2600	4	1401 - 1600	5
2601 - 2900	5	1601 - 1800	6
2901 - 3200	4	1801 - 2000	7
3201 - 3500	3	2001 - 2200	8
3501 - 3800	2	2201 - 2400	9
3801 - 4100	1	2401 - over	10
4101 - over	0		

5.7 Volume Split Warrant

Four-way stops operate best where the minor approach volume and the major approach volume are nearly equal. Points shall be assigned in accordance with the following table:

<u>Major Less Minor Approach Leg</u>	
<u>Volume Difference</u>	<u>Points</u>
0 - 300	5
301 - 600	4
601 - 900	3
901 - 1200	2
1201 - 1500	1
1501 - over	0

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POLICY NO. 6

CENTERLINE STRIPING

Centerline striping will be installed and maintained at City expense on the following categories of streets and roads in the City maintained system, subject to the availability of manpower and funds:

1. All streets having four or more driving lanes.
2. All 2-lane collector roads with pavements narrower than 20 feet but wider than 16 feet carrying an average daily traffic volume of 500 vehicles.
3. All principal recreational access routes.
4. All other locations where the reported accident records indicate an unmistakable problem susceptible to correction or alleviation by centerline striping.
5. All other locations subject to sporadic severe visibility reductions from fog and:
 - a. The alignment of the roadway is winding.
 - b. There is little or no roadway shoulder area.
 - c. The area which the road traverses can generally be classified as hilly or mountainous.
6. All other locations subject to sporadic severe visibility reductions from fog, and having an average daily traffic in excess of 500 vehicles per day.

7. All specific spot locations such as approaches to intersections, extreme vertical and horizontal curvature, and crosswalks where it is necessary to alert the motorists of an unusual condition not readily apparent.
8. All other locations where the reported accident records indicate a problem susceptible to correction or alleviation by centerline striping.

Centerline striping shall not be installed and maintained at county expense on streets failing to qualify under one or more of the above warrants; provided, however, the City will provide such striping at local expense, based on fifty dollars (\$50.00) per mile of broken yellow centerline, when a responsible agency or association guarantees the payment for the installation, maintenance and periodic replacement of such striping.

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POLICY NO. 7

TEMPORARY ROAD CLOSURES

1. Public Events.

A written request shall be submitted by the applicant to the Public Works Department for review and recommendation to the Traffic Safety Commission and to the City Council,

Department and Commission recommendation for approval by the City Council shall be made provided that closure does not seriously disrupt through traffic, adequate signing for detours is provided and the duration is within a reasonable time limit, not generally to exceed 8 hours.

2. For Convenience of a Contractor.

A written request shall be submitted to the City Engineer by the contractor doing work within a road traveled way, stating reasons why it would be impossible or impractical for him to proceed without closing the road, the length of time of such proposed closure and his agreement to place and adequately maintain all necessary barricades and warning signs and lights for the designated detour.

The City Engineer shall review and approve or disapprove of such a request or modify the same so that public interest, convenience and safety will be the paramount consideration.

Amey/Dme.
Policy
#18

APPLICATION FOR TEMPORARY ROAD CLOSURE
(construction, parade or special event)

DATE _____

TO: HUNTER T. COOK, Public Works Director
1200 Elm Avenue
Carlsbad, CA 92008

FROM: (group, etc.) _____

Address: _____

Agent's or Applicant's Name _____

Telephone No. _____

It is requested that a permit be granted to close the following street or road:

STREET: _____

FROM _____ TO _____

Reason for closure _____

Date/Time of Closure: From _____ am _____ Date
To _____ pm _____ Date

DETOUR: _____

STREET _____

FROM _____ TO _____

I(We) certify that this (parade)(special event) is not being held for the sole purpose of advertising any product, goods, wares, merchandise or event designed purely for private profit.

Agent's or Applicant's Signature _____

This request (is)(is not) approved.

HUNTER T. COOK, Public Works Dir.
By: _____

Application shall be submitted not less than ten (10) days before the date on which it is proposed to conduct such parade or special event

cc: Police Dept.
Fire Dept.