

EXHIBIT 1

*CALIFORNIA MANUAL ON UNIFORM TRAFFIC
CONTROL DEVICES,
SECTION 2B.13*

04 If used, the Overhead Pedestrian Crossing sign shall be placed over the roadway at the crosswalk location.

05 An In-Street or Overhead Pedestrian Crossing sign shall not be placed in advance of the crosswalk to educate road users about the State law prior to reaching the crosswalk, nor shall it be installed as an educational display that is not near any crosswalk.

Guidance:

06 If an island (see Chapter 3I) is available, the In-Street Pedestrian Crossing sign, if used, should be placed on the island.

Option:

07 If a Pedestrian Crossing (W11-2) warning sign is used in combination with an In-Street or an Overhead Pedestrian Crossing sign, the W11-2 sign with a diagonal downward pointing arrow (W16-7P) plaque may be post-mounted on the right-hand side of the roadway at the crosswalk location.

Standard:

08 The In-Street Pedestrian Crossing sign and the Overhead Pedestrian Crossing sign shall not be used at signalized locations.

09 The STOP FOR legend shall only be used in States where the State law specifically requires that a driver must stop for a pedestrian in a crosswalk.

10 The In-Street Pedestrian Crossing sign shall have a black legend (except for the red-STOP or YIELD sign symbols) and border on a white background, surrounded by an outer yellow or fluorescent yellow-green background area (see Figure 2B-2). The Overhead Pedestrian Crossing sign shall have a black legend and border on a yellow or fluorescent yellow-green background at the top of the sign and a black legend and border on a white background at the bottom of the sign (see Figure 2B-2).

11 Unless the In-Street Pedestrian Crossing sign is placed on a physical island, the sign support shall be designed to bend over and then bounce back to its normal vertical position when struck by a vehicle.

Support:

12 The Provisions of Section 2A.18 concerning mounting height are not applicable for the In-Street Pedestrian Crossing sign.

Standard:

13 The top of an In-Street Pedestrian Crossing sign shall be a maximum of 4 feet above the pavement surface. The top of an In-Street Pedestrian Crossing sign placed in an island shall be a maximum of 4 feet above the island surface.

Option:

14 The In-Street Pedestrian Crossing sign may be used seasonably seasonally to prevent damage in winter because of plowing operations, and may be removed at night if the pedestrian activity at night is minimal.

15 In-Street Pedestrian Crossing signs, Overhead Pedestrian Crossing signs, and Yield Here To (Stop Here For) Pedestrians signs may be used together at the same crosswalk.

Section 2B.13 Speed Limit Sign (R2-1)

Support:

00 The setting of speed limits can be controversial and requires a rational and defensible determination to maintain public confidence. Speed limits are normally set near the 85th-percentile speed that statistically represents one standard deviation above the average speed and establishes the upper limit of what is considered reasonable and prudent. As with most laws, speed limits need to depend on the voluntary compliance of the greater majority of motorists. Speed limits cannot be set arbitrarily low, as this would create violators of the majority of drivers and would not command the respect of the public.

Standard:

01 Speed zones (other than statutory speed limits) shall only be established on the basis of an engineering and traffic survey (E&TS) study that has been performed in accordance with traffic engineering practices. The engineering study shall include an analysis of the current speed distribution of free-flowing vehicles.

02 The Speed Limit (R2-1) sign (see Figure 2B-3) shall display the limit established by law, ordinance, regulation, or as adopted by the authorized agency based on the engineering study. The speed limits displayed shall be in multiples of 5 mph.

03 Speed Limit (R2-1) signs, indicating speed limits for which posting is required by law, shall be located at the points of change from one speed limit to another.

04 At the downstream end of the section to which a speed limit applies, a Speed Limit sign showing the next speed limit shall be installed. Additional Speed Limit signs shall be installed beyond major intersections and at other locations where it is necessary to remind road users of the speed limit that is applicable.

05 Speed Limit signs indicating the statutory speed limits shall be installed at entrances to the State and, where appropriate, at jurisdictional boundaries in urban areas.

Support:

06 In general, the maximum speed limits applicable to rural and urban roads are established:

- A. Statutorily – a maximum speed limit applicable to a particular class of road, such as freeways or city streets, that is established by State law; or**
- B. As altered speed zones – based on engineering studies.**

07 State statutory limits might restrict the maximum speed limit that can be established on a particular road, notwithstanding what an engineering study might indicate.

Option:

08 ~~If a jurisdiction has a policy of installing Speed Limit signs in accordance with statutory requirements only on the streets that enter a city, neighborhood, or residential area to indicate the speed limit that is applicable to the entire city, neighborhood, or residential area unless otherwise posted, a CITYWIDE (R2-5aP), NEIGHBORHOOD (R2-5bP), or RESIDENTIAL (R2-5cP) plaque may be mounted above the Speed Limit sign and an UNLESS OTHERWISE POSTED (R2-5P) plaque may be mounted below the Speed Limit sign (see Figure 2B-3).~~

Guidance:

09 *A Reduced Speed Limit Ahead (W3-5 or W3-5a) sign (see Section 2C.38) should be used to inform road users of a reduced speed zone where the speed limit is being reduced by more than 10 mph, or where engineering judgment indicates the need for advance notice to comply with the posted speed limit ahead.*

10 *States and local agencies should conduct engineering studies at least once every 5, 7 or 10 years, in compliance with CVC Section 40802 to reevaluate non-statutory speed limits on segments of their roadways that have undergone significant changes since the last review, such as the addition or elimination of parking or driveways, changes in the number of travel lanes, changes in the configuration of bicycle lanes, changes in traffic control signal coordination, or significant changes in traffic volumes.*

11 *No more than three speed limits should be displayed on any one Speed Limit sign or assembly.*

12 ~~When a speed limit within a speed zone is posted, it should be within 5 mph of the 85th percentile speed of free-flowing traffic.~~

Standard:

12a *When a speed limit is to be posted, it shall be established at the nearest 5 mph increment of the 85th-percentile speed of free-flowing traffic, except as shown in the two Options below.*

Option:

- 1. *The posted speed may be reduced by 5 mph from the nearest 5 mph increment of the 85th-percentile speed, in compliance with CVC Sections 627 and 22358.5. See Standard below for documentation requirements.***
- 2. *For cases in which the nearest 5 mph increment of the 85th-percentile speed would require a rounding up, then the speed limit may be rounded down to the nearest 5 mph increment below the 85th percentile speed, if no further reduction is used. Refer to CVC Section 21400(b).***

Standard:

12b *If the speed limit to be posted has had the 5 mph reduction applied, then an E&TS shall document in writing the conditions and justification for the lower speed limit and be approved by a registered Civil or Traffic Engineer. The reasons for the lower speed limit shall be in compliance with CVC Sections 627 and 22358.5.*

Support:

12c *The following examples are provided to explain the application of these speed limit criteria:*

Example 1. *Using Option 1 above and first step is to round down: If the 85th percentile speed in a speed survey for a location was 37 mph, then the speed limit would be established at 35 mph since it is the closest 5 mph increment to the 37 mph speed. As indicated by the option, this 35 mph established speed limit could be reduced by 5 mph to 30 mph if*

the conditions and justification for using this lower speed limit are documented in the E&TS and approved by a registered Civil or Traffic Engineer.

Example 2. Using Option 1 above and first step is to round up: If the 85th percentile speed in a speed survey for a location was 33 mph, then the speed limit would be established at 35 mph since it is the closest 5 mph increment to the 33 mph speed. As indicated by the option, this 35 mph speed limit could be reduced by 5 mph to 30 mph if the conditions and justification for using this lower speed limit are documented in the E&TS and approved by a registered Civil or Traffic Engineer.

Example 3. Using Option 2 above and first step is to round up: If the 85th percentile speed in a speed survey for a location was 33 mph, instead of rounding up to 35 mph, the speed limit can be established at 30 mph, but no further reductions can be applied (which is allowed in the two examples above).

Standard:

^{12d} Examples 1 and 2 for establishing posted speed limits shall apply to engineering and traffic surveys (E&TS) performed on or after July 1, 2009 in accordance with Caltrans' Traffic Operations Policy Directive Number 09-04 dated June 29, 2009.

Option:

^{12e} After January 1, 2012, Example 3 may be used to establish speed limits. Refer to CVC 21400(b).

Support:

^{12f} Any existing E&TS that was performed before July 1, 2009 in accordance with previous traffic control device standards is not required to comply with the new criteria until it is due for reevaluation per the 5, 7 or 10 year criteria.

¹³ *Speed studies for signalized intersection approaches should be taken outside the influence area of the traffic control signal, which is generally considered to be approximately 1/2 mile, to avoid obtaining skewed results for the 85th-percentile speed.*

Support:

¹⁴ Advance warning signs and other traffic control devices to attract the motorist's attention to a signalized intersection are usually more effective than a reduced speed limit zone.

Guidance:

¹⁵ *An advisory speed plaque (see Section 2C.08) mounted below a warning sign should be used to warn road users of an advisory speed for a roadway condition. A Speed Limit sign should not be used for this situation.*

Option:

¹⁶ Other factors that may be considered when establishing or reevaluating speed limits are the following:

- A. Road characteristics, shoulder condition, grade, alignment, and sight distance;
- B. The pace;
- C. Roadside development and environment;
- D. Parking practices and pedestrian activity; and
- E. Reported crash experience for at least a 12-month period.

¹⁷ Two types of Speed Limit signs may be used: one to designate passenger car speeds, including any nighttime information or minimum speed limit that might apply; and the other to show any special speed limits for trucks and other vehicles.

¹⁸ A changeable message sign that changes the speed limit for traffic and ambient conditions may be installed provided that the appropriate speed limit is displayed at the proper times.

¹⁹ A changeable message sign that displays to approaching drivers the speed at which they are traveling may be installed in conjunction with a Speed Limit sign.

Guidance:

²⁰ *If a changeable message sign displaying approach speeds is installed, the legend YOUR SPEED XX MPH or such similar legend should be displayed. The color of the changeable message legend should be a yellow legend on a black background or the reverse of these colors.*

Support:

²¹ Advisory Speed signs and plaques are discussed in Sections 2C.08 and 2C.14. Temporary Traffic Control Zone Speed signs are discussed in Part 6. The WORK ZONE (G20-5aP) plaque intended for installation above a Speed Limit sign is discussed in Section 6F.12. School Speed Limit signs are discussed in Section 7B.15.

²² Speed limits in California are governed by the California Vehicle Code (CVC), Sections 22348 through 22413; also, pertinent sections are found in Sections 627 and 40802 and others referenced in this section. See Section 1A.11 for information regarding this publication.

²³ Refer to Part 6, Section 6C.01 for speed limit signs in temporary traffic control zones. Refer to Part 7 for speed limit signs in school areas.

Engineering and Traffic Survey (E&TS)

Support:

²⁴ CVC Section 627 defines the term "Engineering and traffic survey" and lists its requirements.

Standard:

²⁵ **An engineering and traffic survey (E&TS) shall include, among other requirements deemed necessary by Caltrans, consideration of all of the following:**

- A. Prevailing speeds as determined by traffic engineering measurements.**
- B. Collision records.**
- C. Highway, traffic, and roadside conditions not readily apparent to the driver.**

Guidance:

²⁶ *The E&TS should contain sufficient information to document that the required three items of CVC Section 627 are provided and that other conditions not readily apparent to a driver are properly identified.*

²⁷ *Prevailing speeds are determined by a speed zone survey. A speed zone survey should include:*

- A. The intent of the speed measurements is to determine the actual speed of unimpeded traffic. The speed of traffic should not be altered by concentrated law enforcement, or other means, just prior to, or while taking the speed measurements.*
- B. Only one person is required for the field work. Speeds should be read directly from a radar or other electronic speed measuring devices; or,*
- C. Devices, other than radar, capable of accurately distinguishing and measuring the unimpeded speed of free flowing vehicles may be used.*
- D. A location should be selected where prevailing speeds are representative of the entire speed zone section. If speeds vary on a given route, more than one speed zone section may be required, with separate measurements for each section. Locations for measurements should be chosen so as to minimize the effects of traffic signals or stop signs.*
- E. Speed measurements should be taken during off-peak hours between peak traffic periods on weekdays. If there is difficulty in obtaining the desired quantity, speed measurements may be taken during any period with free flowing traffic.*
- F. The weather should be fair (dry pavement) with no unusual conditions prevailing.*
- G. The surveyor and equipment should not affect the traffic speeds. For this reason, an unmarked car is recommended, and the radar speed meter located as inconspicuously as possible.*
- H. In order for the sample to be representative of the actual traffic flow, the minimum sample should be 100 vehicles in each survey. In no case should the sample contain less than 50 vehicles.*
- I. Short speed zones of less than 0.5 miles should be avoided, except in transition areas.*
- J. Speed zone changes should be coordinated with changes in roadway conditions or roadside development.*
- K. Speed zoning should be in 10 mph increments except in urban areas where 5 mph increments are preferable.*
- L. Speed zoning should be coordinated with adjacent jurisdictions.*

Support:

²⁸ Physical conditions such as width, curvature, grade and surface conditions, or any other condition readily apparent to the driver, in the absence of other factors, would not require special downward speed zoning. Refer to CVC 22358.5.

Option:

²⁹ When qualifying an appropriate speed limit, local authorities may also consider all of the following findings:

- A. Residential density, if any of the following conditions exist on the particular portion of highway and the property contiguous thereto, other than a business district:
 - 1. Upon one side of the highway, within 0.25 miles, the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses or business structures.
 - 2. Upon both sides of the highway, collectively, within a distance of 0.25 miles the contiguous property fronting thereon is occupied by 16 or more separate dwelling houses or business structures.

3. The portion of highway is larger than 0.25 miles but has the ratio of separate dwelling houses or business structures to the length of the highway described in either subparagraph 1 or 2 above.
 - B. Pedestrian and bicyclist safety.
- ³⁰ The following two methods of conducting E&TS may be used to establish speed limits:
1. State Highways - The E&TS for State highways is made under the direction of the Caltrans District Traffic Engineer. The data includes:
 - a. One copy of the Example of Speed Zone Survey Sheet (See Figure 2B-101(CA)) showing:
 - A north arrow
 - Engineer's station or post mileage
 - Limits of the proposed zones
 - Appropriate notations showing type of roadside development, such as "scattered business," "solid residential," etc. Schools adjacent to the highway are shown, but other buildings need not be plotted unless they are a factor in the speed recommendation or the point of termination of a speed zone.
 - Collision rates for the zones involved
 - Average daily traffic volume
 - Location of traffic signals, signs and markings
 - If the highway is divided, the limits of zones for each direction of travel
 - Plotted 85th percentile and pace speeds at location taken showing speed profile
 - b. A report to the District Director that includes:
 - The reason for the initiation of speed zone survey.
 - Recommendations and supporting reasons.
 - The enforcement jurisdictions involved and the recommendations and opinions of those officials.
 - The stationing or reference post in mileage at the beginning and ending of each proposed zone and any intermediate equations. Location ties must be given to readily identifiable physical features.
 2. City and County Through Highways, Arterials, Collector Roads and Local Streets.
 - a. The short method of speed zoning is based on the premise that a reasonable speed limit is one that conforms to the actual behavior of the majority of motorists, and that by measuring motorists' speeds, one will be able to select a speed limit that is both reasonable and effective. Other factors that need to be considered include but are not limited to: the most recent two-year collision record, roadway design speed, safe stopping sight distance, superelevation, shoulder conditions, profile conditions, intersection spacing and offsets, commercial driveway characteristics, and pedestrian traffic in the roadway without sidewalks.
 - b. Determination of Existing Speed Limits - Figures 2B-103(CA) & 2B-104(CA) show examples of data sheets which may be used to record speed observations. Specific types of vehicles may be tallied by use of letter symbols in appropriate squares.

³¹ In most situations, the short form for local streets and roads will be adequate; however, the procedure used on State highways may be used at the option of the local agency.

Guidance:

³² *The factors justifying a reduction below the 85th percentile speed for the posted speed limit are the same factors mentioned above. Whenever such factors are considered to establish the speed limit, they should be documented on the speed zone survey or the accompanying engineering report.*

³³ *The establishment of a speed limit of more than 5 mph below the 85th percentile speed should be done with great care as studies have shown that establishing a speed limit at less than the 85th percentile generally results in an increase in collision rates; in addition, this may make violators of a disproportionate number of the reasonable majority of drivers.*

Support:

³⁴ Generally, the most decisive evidence of conditions not readily apparent to the driver surfaces in collision histories.

³⁵ Speed limits are established at or near the 85th percentile speed, which is defined as that speed at or below which 85th percent of the traffic is moving. The 85th percentile speed is often referred to as the critical speed. Pace speed is defined as the 10 mph increment of speed containing the largest number of vehicles (See Figure 2B-102(CA)). The lower limit of the pace is plotted on the Speed Zone Survey Sheets as an aid in determining the proper zone limits. Speed limits higher than the 85th

percentile are not generally considered reasonable and prudent. Speed limits below the 85th percentile do not ordinarily facilitate the orderly movement of traffic and require constant enforcement to maintain compliance. Speed limits established on the basis of the 85th percentile conform to the consensus of those who drive highways as to what speed is reasonable and prudent, and are not dependent on the judgment of one or a few individuals.

³⁶ The majority of drivers comply with the basic speed law. Speed limits set at or near the 85th percentile speed provide law enforcement officers with a limit to cite drivers who will not conform to what the majority considers reasonable and prudent. Further studies show that establishing a speed limit at less than the 85th percentile (Critical Speed) generally results in an increase in collision rates.

Option:

³⁷ When roadside development results in traffic conflicts and unusual conditions which are not readily apparent to drivers, as indicated in collision records, speed limits somewhat below the 85th percentile may be justified. Concurrence and support of enforcement officials are necessary for the successful operation of a restricted speed zone.

Guidance:

³⁸ *Speed zones of less than 0.5 miles and short transition zones should be avoided.*

Signs

Standard:

³⁹ **The Speed Limit (R2-1) sign shall be used to give notice of a prima facie or maximum speed limit except as provided under Prima Facie Speed Limits in CVC 22352.**

⁴⁰ **When used, the TRUCKS, 3 AXLES OR MORE 55 MAXIMUM (R6-3(CA)) sign shall be installed approximately 750 feet following each R2-1 sign.**

⁴¹ **The ALL VEHICLES WHEN TOWING 55 MAXIMUM (R6-4(CA)) sign shall be installed approximately 750 feet following the R6-3(CA) sign.**

Guidance:

⁴² *The R6-3(CA) and R6-4(CA) signs should be placed on highway segments where speeds in excess of 55 mph are permitted.*

Option:

⁴³ The existing AUTOS WITH TRAILERS, TRUCKS 55 MAXIMUM (R6-1(CA)) sign may remain in place until it is knocked down, damaged, stolen, vandalized, or otherwise reaches the end of its useful life.

⁴⁴ The local California Highway Patrol office may be consulted to identify highway segments where enforcement is an issue. On these segments early replacement of existing R6-1(CA) signs may be necessary.

Support:

⁴⁵ Refer to CVC Section 22406 for types of vehicles subject to the 55 mph maximum speed limit.

Option:

⁴⁶ The Speed Zone Ahead (R2-4(CA)) sign (see Figure 2B-3(CA)) may be used to inform the motorist of a reduced speed zone.

Standard:

⁴⁷ **The R2-4(CA) sign shall always be followed by a Speed Limit (R2-1) sign installed at the beginning of the zone where the reduced speed limit applies.**

⁴⁸ **The End Speed Limit (R3(CA)) sign shall only be used to mark the end of a speed zone.**

⁴⁹ **The R3(CA) sign shall not be used at a transition into a change in speed limits within a reduced zone.**

Option:

⁵⁰ The R3(CA) sign (see Figure 2B-3(CA)) may be used with the TRUCK (M4-4) plaque to mark the end of truck speed zones on descending grades.

Standard:

⁵¹ **Speed limit signs shall be placed at the beginning of all restricted speed zones.**

Option:

⁵² Where speed zones are longer than 1 mile, intermediate signs may be placed at approximate 1 mile intervals. For three or more lanes in each direction, dual installation may be used.

Standard:

⁵³ The Speed Limit (R2-1) and End Speed Limit (R3(CA)) signs, as appropriate shall be placed at the end of all restricted speed zones.

⁵⁴ Freeways with 65 mph and those segments where a speed limit of 70 mph has been approved by Caltrans, with approval by the California Highway Patrol, shall be posted as follows:

- At the segment entrance, R2-1 signs shall be installed right of traffic off of the right shoulder.
- R2-1 signs shall also be installed off of the right shoulder only, throughout the segment, at a maximum of 25 mile intervals.

Option:

- The 25 mile interval may be modified to include locations following entrance ramps.

Standard:

- The R6-3(CA) sign (see Figure 2B-3(CA)) shall be installed approximately 750 feet following each R2-1 sign, both at the beginning and throughout each 60, 65 or 70 mph segment.
- The R6-4(CA) sign (see Figure 2B-3(CA)) shall be installed approximately 750 feet following each R6-3(CA) sign.

Option:

- The SLOWER TRAFFIC KEEP RIGHT (R4-3) signs may be installed at locations where there is a tendency of the motorists to drive in the left-hand lane(s) below the normal speed of traffic.

Standard:

- Signs shall be placed in protected locations.
- At the end of the 70/65 mph segment, R2-1 signs shall be installed off of the right shoulder.

⁵⁵ Freeway segments where a 55 mph speed limit has been approved by Caltrans, with the approval of the California Highway Patrol, shall be posted as follows:

- The beginning of the segment shall be posted with an R2-1 sign installed on the right shoulder and left shoulder where the median is of sufficient width to permit sign maintenance without lane closures.

Guidance:

- Subsequent signs should then be posted on the right shoulder, on approximate 3 mile intervals, with no more than 3 interchanges between signs.
- At the end of the segment, an R2-1 sign with the appropriate number for the next speed limit should be posted on the right shoulder.

⁵⁶ Conventional highways with 55 mph speed limits should be posted as follows:

Standard:

- The beginning of the segment shall be posted with an R2-1 sign installed on the right shoulder.

Guidance:

- Subsequent signs should then be posted on approximate 5 to 10 mile intervals and immediately after locations where significant volumes of traffic enter the segment.
- At the end of the segment, an R2-1 sign with the appropriate number for the next speed limit should be posted on the right shoulder.

Conventional highways with 65 mph speed limits should be posted as follows:

- The beginning of the segment should be posted with an R2-1 sign installed on the right shoulder.
- Subsequent signs should then be posted at 5 to 10 mile intervals and after locations where significant volumes of traffic enter the segment.
- At the end of the segment, an R2-1 sign with the appropriate number for the next speed limit should be posted on the right shoulder.

Option:

⁵⁷ Pavement markings with appropriate numerals (see Section 3B.21) may be used to supplement speed limit signs.

Standard:

⁵⁸ The R2-1 and R6-3(CA) and R6-4(CA) signs giving maximum statewide speed limits for various types of vehicles shall be installed on all State highways near the points of entrance into California.

Guidance:

⁵⁹ *The R2-1 and R6-3(CA) and R6-4(CA) signs should be placed in a location to be most effectively viewed by the approaching motorists.*

Standard:

⁶⁰ **Speed Limit (R2-1) signs shall be installed throughout segments of freeway with posted speed limits of 65 mph or 70 mph at a maximum of 25 mile intervals.**

Option:

⁶¹ The 25 mile interval may be modified to include locations following entrance ramps.

Standard:

⁶² **Speed Limit (R2-1) signs shall be installed throughout segments of conventional highways with a posted speed limit of 65 mph at 5 mile to 10 mile intervals.**

⁶³ **Speed Limit (R2-1) signs shall be installed throughout segments of freeway with a posted speed limit of 55 mph at approximately 3 mile intervals with no more than 3 interchanges between signs.**

⁶⁴ **Speed Limit (R2-1) signs shall be installed throughout segments of conventional highways with a posted speed limit of 55 mph at 5 mile to 10 mile intervals.**

Speed Enforced Signs

Option:

⁶⁵ The SPEED ENFORCED BY RADAR (R48(CA)) sign (see Figure 2B-3(CA)) may be used where the California Highway Patrol has received authority to use radar and requests such signs.

Guidance:

⁶⁶ *One sign should be used in each direction at the beginning of the segment of roadway, and at intervening major route intersections, where radar enforcement is in effect.*

Support:

⁶⁷ The R48(CA) sign is a stand-alone sign intended to alert motorists that speed is enforced by radar on a particular segment of roadway.

Option:

⁶⁸ The RADAR ENFORCED (R48-1(CA)) sign (see Figure 2B-3(CA)) may be used in combination with the Speed Limit (R2-1) sign on any roadway where law enforcement has the authority to use radar.

Guidance:

⁶⁹ *When used, the R48-1(CA) sign should be placed below the R2-1 sign, at the beginning of the segment of roadway and at intervening major intersections, where radar enforcement is in effect.*

Option:

⁷⁰ The SPEED ENFORCED BY AIRCRAFT (R48-2(CA)) sign (see Figure 2B-3(CA)) may be placed, when requested by the California Highway Patrol, on sections of highway regularly patrolled by aircraft.

Standard:

⁷¹ **The R48-2(CA) sign shall be used for both directions of travel.**

Guidance:

⁷² *The R48-2(CA) sign should be placed at the beginning of the section and spaced at 25 mile intervals. See Figure 3B-105(CA).*

Vehicle Speed Feedback Signs

Option:

⁷³ A Vehicle Speed Feedback sign that displays to approaching drivers the speed at which they are traveling may be installed in conjunction with a Speed Limit (R2-1) sign.

Standard:

⁷⁴ **If a Vehicle Speed Feedback sign displaying approach speeds is installed, the legend shall be YOUR SPEED XX. The numerals displaying the speed shall be white, yellow, yellow-green or amber color on black background. When activated, lights shall be steady-burn conforming to the provisions of CVC Sections 21466 and 21466.5. Vehicle Speed Feedback signs shall not alternatively be operated as variable speed limit signs.**

Guidance:

⁷⁵ To the degree practical, numerals for displaying approach speeds should be similar font and size as numerals on the corresponding Speed Limit (R2-1) sign.

Option:

⁷⁶ When used, the Vehicle Speed Feedback sign may be mounted on either a separate support or on the same support as the Speed Limit (R2-1) sign.

⁷⁷ In lieu of lights, legend may be retroreflective film for flip-disk systems.

⁷⁸ The legend YOUR SPEED may be white on black plaque located above the changeable speed display.

Support:

⁷⁹ Driver comprehension may improve when the Vehicle Speed Feedback Sign is mounted on the same support below the Speed Limit (R2-1) sign.

⁸⁰ Vehicle Speed Feedback Signs are appropriate for use with advisory speed signs and with temporary signs in temporary traffic control zones.

Basic Speed Law and Prima Facie Speed Limits – See CVC 22350 & 22352

Support:

⁸¹ The basic speed law states "No person shall drive a vehicle upon a highway at a speed greater than is reasonable or prudent having due regard for weather, visibility, the traffic on, and the surface and width of, the highway, and in no event at a speed which endangers the safety of persons or property."

Standard:

⁸² Prima facie speed limits are specific limits and shall apply unless changed based upon an engineering and traffic survey (E&TS) and signs are posted that display the new speed limit.

Option:

⁸³ Prima facie speed limits may be preempted by the basic speed law, when roadway, traffic or weather conditions warrant a lower speed.

Use of Metric System Designations – See CVC 21351.3

Option:

⁸⁴ Dual units for speed limits on signs may be placed on local streets and roads in both Metric and English units.

Guidance:

⁸⁵ If used, dual unit speed limits should be rounded to the nearest 10 km/h for Metric and 5 mph for English units for posting on signs on local streets and roads.

Support:

⁸⁶ Refer to AASHTO's Traffic Engineering Metric Conversion Factors. See Section 1A.11 for information regarding this publication.

Standard:

⁸⁷ Metric speed limits shall not be placed on State highways. For use in this California MUTCD, 70 mph shall be shown as a metric equivalent of 110 km/h, neither of which shall be used on any local street or road.

Legal Authority for Establishing Speed Limits

Support:

⁸⁸ Delegation of legal authority to set speed limits on State highways is given to Caltrans District Directors. The District Director of each transportation district is authorized to issue orders regulating the speed of traffic, up to 65 mph on State highways. The Director of Caltrans retains the authority to approve variable, minimum, and maximum speeds up to 70 mph on State freeways.

Standard:

⁸⁹ The speed limits shown in Table 2B-101(CA) shall apply, unless changed upon the basis of an engineering and traffic survey (E&TS).

Option:

⁹⁰ The speed limits shown in Table 2B-102(CA) may apply, unless changed upon E&TS.

Variable Speed Limits on Freeways - See CVC 22355

Option:

⁹¹ The following speed limits may apply:

- Whenever Caltrans determines based upon an engineering and traffic survey (E&TS) that the safe and orderly movement of traffic upon any freeway segment will be facilitated by the establishment of variable speed limits.
- Caltrans may erect, regulate, and control signs upon the state highway which is a freeway, or any portion thereof, which, if used, signs shall be designed to permit display of different speeds at various times of the day or night.
- Such signs need not conform to the standards & specifications per CVC 21400, but if used, shall be of sufficient size and clarity to give adequate notice of the applicable speed limit.

Minimum Speed Limits on State Highways - See CVC 22400

Option:

⁹² The following speed limits may apply:

- Whenever Caltrans determines based upon an engineering and traffic survey (E&TS) that slow speeds on any part of a state highway consistently impede the normal and reasonable movement of traffic, Caltrans may determine and declare a minimum speed limit. Appropriate signs giving notice shall then be installed on that segment.
- A motorist can be cited for stopping or impeding the normal and reasonable movement of traffic unless the stop is necessary for safe operation and in compliance with the law.

Speed Traps

Support:

⁹³ Refer to CVC 40802 for Speed Traps.

Standard:

⁹⁴ **A speed trap shall not apply to a local street, road, or school zone.**

⁹⁵ **A section of highway shall be defined as a speed trap if the prima facie speed limit is not justified by an engineering and traffic survey (E&TS) within five years, and the enforcement of the speed limit involves the use of radar or any other electronic device that measures the speed of moving objects.**

⁹⁶ **This time provision shall be extended to seven years when using radar and all of the following criteria are met:**

- The arresting officer has successfully completed a minimum of 24 hours of certified radar operator course training.
- The radar used to measure the speed meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration, and has been calibrated within three years of the alleged violation.

⁹⁷ **This time provision shall be extended to seven years when using laser or other electronic device (other than radar) and all of the following criteria are met:**

- The arresting officer has successfully completed a minimum of 24 hours of certified radar operator course training.
- The arresting officer has successfully completed a minimum of 2 hours of additional approved certified training.
- The radar used to measure the speed meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration, and has been calibrated within three years of the alleged violation.

Option:

⁹⁸ This time provision for an E&TS may be extended to ten years when all of the above conditions are met and no significant changes in roadway or traffic conditions have occurred, including changes in adjoining property or land use, roadway width, or traffic volume as determined by a registered engineer.

Truck Speed Zone on Descending Grades

Guidance:

⁹⁹ *Highway descending grades, if used for posting TRUCK Speed Limit signs (R2-1 and M4-4) for trucks travelling downhill, should have recorded incident history of runaway commercial vehicles. Descending grades shorter than 1 mile should be avoided for posting signs because deceleration of vehicles due to braking action can generally provide sufficient control on descending grades of less than 1 mile.*

Support:

¹⁰⁰ To establish a downhill truck speed limit, a physical profile showing length and gradient and a downhill speed profile for three or more axle commercial vehicles with a gross rating of 10,000 lbs. or more will be provided.

Standard:

¹⁰¹ **Speed profiles for truck speed limits shall be prepared on the same form as other speed surveys. An analysis of collisions involving trucks shall be prepared.**

Guidance:

¹⁰² *Posted speeds should be on the low side of the scale, generally within the pace of loaded commercial vehicles.*

Standard:

¹⁰³ **If warranted, the Caltrans District Director shall issue a standard speed zone order.**

Support:

¹⁰⁴ Posting of the regulation will be by placement of a standard 36 x 45 inch Speed Limit (R2-1) sign with a TRUCK (M4-4) plate above.

Standard:

¹⁰⁵ **A standard End Speed Limit (R3(CA)) sign with TRUCK (M4-4) plate shall be posted at the end of the truck zone when appropriate.**

Speed Zones in Temporary Traffic Control Areas

Support:

¹⁰⁶ For signing and establishing speed zones in temporary traffic control areas, refer to Section 6C.01 in Part 6.

Section 2B.14 Truck Speed Limit Plaque (R2-2P)

Standard:

⁰¹ **Where a special speed limit applies to trucks or other vehicles, the legend TRUCKS XX or such similar legend shall be displayed below the legend Speed Limit XX on the same sign ~~or on a separate R2-2P plaque (see Figure 2B-3) below the standard legend.~~**

⁰² **The Truck Speed Limit (R2-2) sign shall not be used in California. The TRUCK (M4-4) plaque placed above the Speed Limit (R2-1) sign shall be used instead.**

⁰³ **The TRUCK (M4-4) plaque shall be placed above the Speed Limit (R2-1) sign to indicate the truck speed limit. It shall also be placed above the End Speed Limit (R3(CA)) sign to mark the end of truck speed limits.**

Support:

⁰⁴ Refer to Section 2B.13 for more details.

Section 2B.15 Night Speed Limit Plaque (R2-3P)

Standard:

⁰¹ **Where different speed limits are prescribed for day and night, both limits shall be posted.**

Guidance:

⁰² *A Night Speed Limit (R2-3P) plaque (see Figure 2B-3) should be reversed using a white retroreflectorized legend and border on a black background.*

Option:

⁰³ **A Night Speed Limit plaque may be combined with or installed below the standard Speed Limit (R2-1) sign.**

Support:

⁰⁴ Refer to CVC 22355.

Section 2B.16 Minimum Speed Limit Plaque (R2-4P)

Standard:

⁰¹ **A Minimum Speed Limit (R2-4P) plaque (see Figure 2B-3) shall be displayed only in combination with a Speed Limit sign.**

Option:

⁰² **Where engineering judgment determines that slow speeds on a highway might impede the normal and reasonable movement of traffic, the Minimum Speed Limit plaque may be installed below a Speed Limit (R2-1)**