PART 2
SIGNS

CHAPTER 2A. GENERAL

Section 2A.01 Function and Purpose of Signs

Support:

01 This Manual contains Standards, Guidance, and Options for the signing of all types of highways, and private roads open to public travel (see definition in Section 1A.13). The functions of signs are to provide regulations, warnings, and guidance information for road users. Words, symbols, and arrows are used to convey the messages. Signs are not typically used to confirm rules of the road.

Detailed sign requirements are located in the following Chapters of Part 2:

Chapter 2B — Regulatory Signs, Barricades, and Gates
Chapter 2C — Warning Signs and Object Markers
Chapter 2D — Guide Signs for Conventional Roads
Chapter 2E — Guide Signs for Freeways and Expressways
Chapter 2F — Toll Road Signs
Chapter 2G — Preferential and Managed Lane Signs
Chapter 2H — General Information Signs
Chapter 2I — General Service Signs
Chapter 2J — Specific Service (Logo) Signs
Chapter 2K — Tourist-Oriented Directional Signs
Chapter 2L — Changeable Message Signs
Chapter 2M — Recreational and Cultural Interest Area Signs
Chapter 2N — Emergency Management Signs

Standard:

02 **Because the requirements and standards for signs depend on the particular type of highway upon which they are to be used, the definitions for freeway, expressway, conventional road, and special purpose road given in Section 1A.13 shall apply in Part 2.**

Section 2A.02 Definitions

Support:

01 Definitions and acronyms that are applicable to signs are given in Sections 1A.13 and 1A.14.

Section 2A.03 Standardization of Application

Support:

01 It is recognized that urban traffic conditions differ from those in rural environments, and in many instances signs are applied and located differently. Where pertinent and practical, this Manual sets forth separate recommendations for urban and rural conditions.

Guidance:

02 *Signs should be used only where justified by engineering judgment or studies, as provided in Section 1A.09.*

03 *Results from traffic engineering studies of physical and traffic factors should indicate the locations where signs are deemed necessary or desirable.*

04 *Roadway geometric design and sign application should be coordinated so that signing can be effectively placed to give the road user any necessary regulatory, warning, guidance, and other information.*

04a *After a sign has been erected, observations should be made to determine if the desired effect on traffic has been achieved.*

Standard:

05 **Each standard sign shall be displayed only for the specific purpose as prescribed in this Manual. Determination of the particular signs to be applied to a specific condition shall be made in accordance with the provisions set forth in Part 2. Before any new highway, private road open to public travel (see definition in Section 1A.13), detour, or temporary route is opened to public travel, all necessary signs shall be in place. Signs required by road conditions or restrictions shall be removed when those conditions cease to exist or the restrictions are withdrawn.**

Section 2A.04 Excessive Use of Signs

Guidance:

01 *Regulatory and warning signs should be used conservatively because these signs, if used to excess, tend to lose their effectiveness. If used, route signs and directional guide signs should be used frequently because their use promotes efficient operations by keeping road users informed of their location.*

Support:

02 Sign information overload occurs when the frequency of signing, complexity of messages or diversity of messages is so great that they cannot be readily assimilated by motorists in time to respond properly and safely to roadway situations. Sign information overload can be avoided by:

A. Increasing the spacing between signs so that they can be understood before encountering new messages.
B. Minimizing content and using accepted symbols so as to simplify messages.
C. Spreading the information so that each element of stand-alone information is presented in a separate sign.
D. Using standard sign formats applied in a consistent fashion to enhance motorist recognition.
E. Using redundant signing or a combination of signing and pavement messages to offer multiple opportunities for motorists to recognize and respond to the situation.
F. Reducing or eliminating less-essential signs.

03 See ITE's Traffic Control Devices Handbook, Chapter 2 for more information on this topic. See Section 1A.11 for information regarding this publication.

Section 2A.05 Classification of Signs

Standard:

01 **Signs shall be defined by their function as follows:**

A. Regulatory signs give notice of traffic laws or regulations.
B. Warning signs give notice of a situation that might not be readily apparent.
C. Guide signs show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information.

Support:

01a In California, prior to the adoption of Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) on May 20, 2004, signs were classified into four categories, the fourth category being Construction signs. In general, Construction signs are Warning, Regulatory or Guide signs. Hence, this categorical classification is deleted for Construction signs in California and as per the MUTCD only the three basic categories are recognized. Construction signs are now included in Part 6.

02 Object markers are defined in Section 2C.63.

Section 2A.06 Design of Signs

Support:

01 This Manual shows many typical standard signs and object markers approved for use on streets, highways, bikeways, and pedestrian crossings.

02 In the specifications for individual signs and object markers, the general appearance of the legend, color, and size are shown in the accompanying tables and illustrations, and are not always detailed in the text.

03 Detailed drawings of standard signs, object markers, alphabets, symbols, and arrows (see Figure 2D-2) are shown in the "Standard Highway Signs and Markings" book. Section 1A.11 contains information regarding how to obtain this publication.

04 The basic requirements of a sign are that it be legible to those for whom it is intended and that it be understandable in time to permit a proper response. Desirable attributes include:

A. High visibility by day and night; and
B. High legibility (adequately sized letters, symbols, or arrows, and a short legend for quick comprehension by a road user approaching a sign).

05 Standardized colors and shapes are specified so that the several classes of traffic signs can be promptly recognized. Simplicity and uniformity in design, position, and application are important.

Standard:

06 **The term legend shall include all word messages and symbol and arrow designs that are intended to convey specific meanings.**

07 **Uniformity in design shall include shape, color, dimensions, legends, borders, and illumination or retroreflectivity.**

08 **Standardization of these designs does not preclude further improvement by minor changes in the proportion or orientation of symbols, width of borders, or layout of word messages, but all shapes and colors shall be as indicated.**

09 **All symbols shall be unmistakably similar to, or mirror images of, the adopted symbol signs, all of which are shown in the "Standard Highway Signs and Markings" book (see Section 1A.11). Symbols and colors shall not be modified unless otherwise provided in this Manual. All symbols and colors for signs not shown in the "Standard Highway Signs and Markings" book shall follow the procedures for experimentation and change described in Section 1A.10.**

Option:

10 Although the standard design of symbol signs cannot be modified, the orientation of the symbol may be changed to better reflect the direction of travel, if appropriate.

Standard:

11 **Where a standard word message is applicable, the wording shall be as provided in this Manual.**

12 **In situations where word messages are required other than those provided in this Manual, the signs shall be of the same shape and color as standard signs of the same functional type.**

Option:

13 ~~State and local highway agencies~~ Caltrans may develop special word message signs in situations where roadway conditions make it necessary to provide road users with additional regulatory, warning, or guidance information, such as when road users need to be notified of special regulations or warned about a situation that might not be readily apparent. Unlike colors that have not been assigned or symbols that have not been approved for signs, new word message signs may be used without the need for experimentation.

Standard:

13a **Except as noted in the Option below, highway agencies shall not develop word message signs. In accordance with CVC Section 21401, only word message signs conforming to Caltrans standards and specifications shall be placed on streets and highways.**

Option:

13b Local agencies may develop place/facility name or day, date, time portion of the word message on signs to notify road users of special events/circumstances or to warn road users of a situation that might not be readily apparent. Unlike symbol signs and colors, these place/facility name or day, date, time modified word message signs may be used without the need for experimentation.

Support:

13c Sign design details are contained in FHWA's "Standard Highway Signs and Markings" book and Caltrans' California Sign Specifications. Signs other than those shown in these publications, the MUTCD or this California MUTCD may be required under special conditions. See Section 1A.11 for information regarding these publications.

Standard:

14 **Except as provided in Paragraph 16 and except for the Carpool Information (D12-2) sign (see Section 2I.11), Internet addresses and e-mail addresses, including domain names and uniform resource locators (URL), shall not be displayed on any sign, supplemental plaque, sign panel (including logo sign panels on Specific Service signs), or changeable message sign.**

Guidance:

15 *Unless otherwise provided in this Manual for a specific sign, and except as provided in Paragraph 16, telephone numbers of more than four characters should not be displayed on any sign, supplemental plaque, sign panel (including logo sign panels on specific service signs), or changeable message sign.*

Option:

16 Internet addresses, e-mail addresses, or telephone numbers with more than four characters may be displayed on signs, supplemental plaques, sign panels, and changeable message signs that are intended for viewing only by pedestrians, bicyclists, occupants of parked vehicles, or drivers of vehicles on low-speed roadways where engineering judgment indicates that an area is available for drivers to stop out of the traffic flow to read the message.

Standard:

17 **Pictographs (see definition in Section 1A.13) shall not be displayed on signs except as specifically provided in this Manual. Pictographs shall be simple, dignified, and devoid of any advertising. When used to represent a political jurisdiction (such as a State, county, or municipal corporation) the pictograph shall be the official designation adopted by the jurisdiction. When used to represent a college or university, the pictograph shall be the official seal adopted by the institution. Pictorial representations of university or college programs shall not be permitted to be displayed on a sign.**

Section 2A.07 Retroreflectivity and Illumination

Support:

01 There are many materials currently available for retroreflection and various methods currently available for the illumination of signs and object markers. New materials and methods continue to emerge. New materials and methods can be used as long as the signs and object markers meet the standard requirements for color, both by day and by night.

Standard:

02 **Regulatory, warning, and guide signs and object markers shall be retroreflective (see Section 2A.08) or illuminated to show the same shape and similar color by both day and night, unless otherwise provided in the text discussion in this Manual for a particular sign or group of signs.**

03 **The requirements for sign illumination shall not be considered to be satisfied by street or highway lighting.**

Option:

04 Sign elements may be illuminated by the means shown in Table 2A-1.

05 Retroreflection of sign elements may be accomplished by the means shown in Table 2A-2.

06 ~~Light Emitting Diode (LED) units may be used individually within the legend or symbol of a sign and in the border of a sign, except for changeable message signs, to improve the conspicuity, increase the legibility of sign legends and borders, or provide a changeable message.~~

06a Light Emitting Diode (LED) units may be used in the border of regulatory or warning signs, except for Changeable Message Signs, to improve the conspicuity of signs.

Standard:

07 **Except as provided in Paragraphs 11 and 12, neither individual LEDs nor groups of LEDs shall be placed within the background area of a sign.**

08 **If used, the LEDs shall have a maximum diameter of 1/4 inch and shall be the following colors based on the type of sign:**

A. ~~White or~~ Red, if used with STOP, DO NOT ENTER, or WRONG WAY signs. ~~or YIELD signs~~.

B. White, if used with regulatory signs including ~~other than STOP or~~ YIELD signs.

C. ~~White or~~ Yellow, if used with warning signs.

~~D. White, if used with guide signs.~~

E. ~~White, yellow, or~~ Amber, if used with temporary traffic control signs of warning type.

~~F. White or yellow, if used with school area signs.~~

09 **If flashed, all LED units shall flash simultaneously at a rate of more than 50 and less than 60 times per minute.**

10 **The uniformity of the sign design shall be maintained without any decrease in visibility, legibility, or driver comprehension during either daytime or nighttime conditions.**

Option:

11 For STOP and YIELD signs, LEDs may be placed within the border or within one border width within the background of the sign.

12 For STOP/SLOW paddles (see Section 6E.03) used by flaggers and the STOP paddles (see Section 7D.05) used by adult crossing guards, individual LEDs or groups of LEDs may be used.

Support:

13 Other methods of enhancing the conspicuity of standard signs are described in Section 2A.15.

14 Information regarding the use of retroreflective material on the sign support is contained in Section 2A.21.

Section 2A.08 Maintaining Minimum Retroreflectivity

Support:

01 Retroreflectivity is one of several factors associated with maintaining nighttime sign visibility (see Section 2A.22).

Standard:

02 **Public agencies or officials having jurisdiction shall use an assessment or management method that is designed to maintain sign retroreflectivity at or above the minimum levels in Table 2A-3.**

Support:

03 Compliance with the Standard in Paragraph 2 is achieved by having a method in place and using the method to maintain the minimum levels established in Table 2A-3. Provided that an assessment or management method is being used, an agency or official having jurisdiction would be in compliance with the Standard in Paragraph 2 even if there are some individual signs that do not meet the minimum retroreflectivity levels at a particular point in time.

Guidance:

04 *Except for those signs specifically identified in Paragraph 6, one or more of the following assessment or management methods should be used to maintain sign retroreflectivity:*

A. *Visual Nighttime Inspection—The retroreflectivity of an existing sign is assessed by a trained sign inspector conducting a visual inspection from a moving vehicle during nighttime conditions. Signs that are visually identified by the inspector to have retroreflectivity below the minimum levels should be replaced.*
B. *Measured Sign Retroreflectivity—Sign retroreflectivity is measured using a retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.*
C. *Expected Sign Life—When signs are installed, the installation date is labeled or recorded so that the age of a sign is known. The age of the sign is compared to the expected sign life. The expected sign life is based on the experience of sign retroreflectivity degradation in a geographic area compared to the minimum levels. Signs older than the expected life should be replaced.*
D. *Blanket Replacement—All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest-life material used on the affected signs.*
E. *Control Signs—Replacement of signs in the field is based on the performance of a sample of control signs. The control signs might be a small sample located in a maintenance yard or a sample of signs in the field. The control signs are monitored to determine the end of retroreflective life for the associated signs. All field signs represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach the minimum levels.*
F. *Other Methods—Other methods developed based on engineering studies can be used.*

Support:

05 Additional information about these methods is contained in the 2007 Edition of FHWA's "Maintaining Traffic Sign Retroreflectivity" (see Section 1A.11).

Option:

06 Highway agencies may exclude the following signs from the retroreflectivity maintenance guidelines described in this Section:

A. Parking, Standing, and Stopping signs (R7 and R8 series)
B. Walking/Hitchhiking/Crossing signs (R9 series, R10-1 through R10-4b)
C. Acknowledgment signs
D. All signs with blue or brown backgrounds
E. Bikeway signs that are intended for exclusive use by bicyclists or pedestrians

Section 2A.09 Shapes

Standard:

01 **Particular shapes, as shown in Table 2A-4, shall be used exclusively for specific signs or series of signs, unless otherwise provided in the text discussion in this Manual for a particular sign or class of signs.**

Section 2A.10 Sign Colors

Standard:

01 **The colors to be used on standard signs and their specific use on these signs shall be as provided in the applicable Sections of this Manual. The color coordinates and values shall be as described in 23 CFR, Part 655, Subpart F, Appendix.**

Support:

02 As a quick reference, common uses of sign colors are shown in Table ~~2A-5~~ 2A-5(CA). Color schemes on specific signs are shown in the illustrations located in each appropriate Chapter.

03 Whenever white is specified in this Manual or in the "Standard Highway Signs and Markings" book (see Section 1A.11) as a color, it is understood to include silver-colored retroreflective coatings or elements that reflect white light.

04 The colors coral and light blue are being reserved for uses that will be determined in the future by the Federal Highway Administration.

05 Information regarding color coding of destinations on guide signs, including community wayfinding signs, is contained in Chapter 2D.

05a The fluorescent version of red, yellow, green or orange colors provide higher conspicuity than the standard colors, especially during twilight.

Option:

06 The approved fluorescent version of the standard red, yellow, green, or orange color may be used as an alternative to the corresponding standard color.

Section 2A.11 Dimensions

Support:

01 The "Standard Highway Signs and Markings" book (see Section 1A.11) prescribes design details for up to five different sizes depending on the type of traffic facility, including bikeways. Smaller sizes are designed to be used on bikeways and some other off-road applications. Larger sizes are designed for use on freeways and expressways, and can also be used to enhance road user safety and convenience on other facilities, especially on multi-lane divided highways and on undivided highways having five or more lanes of traffic and/or high speeds. The intermediate sizes are designed to be used on other highway types.

Standard:

02 **The sign dimensions prescribed in the sign size tables in the various Parts and Chapters in this Manual and in the "Standard Highway Signs and Markings" book (see Section 1A.11) shall be used unless engineering judgment determines that other sizes are appropriate. Except as provided in Paragraph 3, where engineering judgment determines that sizes smaller than the prescribed dimensions are appropriate for use, the sign dimensions shall not be less than the minimum dimensions specified in this Manual. The sizes shown in the Minimum columns that are smaller than the sizes shown in the Conventional Road columns in the various sign size tables in this Manual shall only be used on low-speed roadways, and alleys,**

and private roads open to public travel (see definition in Section 1A.13) where the reduced legend size would be adequate for the regulation or warning or where physical conditions preclude the use of larger sizes.

02a **The standard sign dimensions prescribed in this California MUTCD, FHWA's "Standard Highway Signs and Markings" book and Caltrans' California Sign Specifications shall be used unless engineering judgment determines that other sizes are appropriate. Where engineering judgment determines that sizes smaller than the standard dimensions are appropriate for use, the sign dimensions shall not be less than the minimum dimensions specified in this California MUTCD, "Standard Highway Signs and Markings" book or the California Sign Specifications. See Section 1A.11 for information regarding these publications.**

Option:

03 For alleys with restrictive physical conditions and vehicle usage that limits installation of the minimum size sign (or the Conventional Road size sign if no Minimum size is shown), both the sign height and the sign width may be decreased by up to 6 inches.

Guidance:

04 *The sizes shown in the Freeway and Expressway columns in the various sign size tables in this Manual should be used on freeways and expressways, and for other higher-speed applications based upon engineering judgment, to provide larger signs for increased visibility and recognition.*

05 *The sizes shown in the Oversized columns in the various sign size tables in this Manual size should be used for those special applications where speed, volume, or other factors result in conditions where increased emphasis, improved recognition, or increased legibility is needed, as determined by engineering judgment or study.*

06 *Increases above the prescribed sizes should be used where greater legibility or emphasis is needed. If signs larger than the prescribed sizes are used, the overall sign dimensions should be increased in 6-inch increments.*

Standard:

07 **Where engineering judgment determines that sizes that are different than the prescribed dimensions are appropriate for use, standard shapes and colors shall be used and standard proportions shall be retained as much as practical.**

Guidance:

08 *When supplemental plaques are installed with larger sized signs, a corresponding increase in the size of the plaque and its legend should also be made. The resulting plaque size should be approximately in the same relative proportion to the larger sized sign as the conventional sized plaque is to the conventional sized sign.*

Section 2A.12 Symbols

Standard:

01 **Symbol designs shall in all cases be unmistakably similar to those shown in this Manual, California MUTCD, California Sign Specifications and in the "Standard Highway Signs and Markings" book (see Section 1A.11).**

Support:

02 New symbol designs are adopted by the Federal Highway Administration based on research evaluations to determine road user comprehension, sign conspicuity, and sign legibility.

02a Use of symbols to word messages is preferred. However, care needs to be taken so as not to mix the individual symbols.

03 Sometimes a change from word messages to symbols requires significant time for public education and transition. Therefore, this Manual sometimes includes the practice of using educational plaques to accompany new symbol signs.

Guidance:

04 *New warning or regulatory symbol signs not readily recognizable by the public should be accompanied by an educational plaque.*

Option:

05 Educational plaques may be left in place as long as they are in serviceable condition.

06 State and/or local highway agencies may conduct research studies to determine road user comprehension, sign conspicuity, and sign legibility.

Guidance:

07 *Although most standard symbols are oriented facing left, mirror images of these symbols should be used where the reverse orientation might better convey to road users a direction of movement.*

Standard:

08 **A symbol used for a given category of signs (regulatory, warning, or guide) shall not be used for a different category of signs, except as specifically authorized in this Manual.**

09 **Except as provided in Paragraph 11, a recreational and cultural interest area symbol (see Chapter 2M) shall not be used on streets or highways outside of recreational and cultural interest areas.**

10 **A recreational and cultural interest area guide sign symbol (see Chapter 2M) shall not be used on any regulatory or warning sign on any street, road, or highway.**

Option:

11 A recreational and cultural interest area guide sign symbol (see Section 2M.04) may be used on a highway guide sign outside of a recreational and cultural interest area to supplement a comparable word message for which there is no approved symbol for that message in Chapters 2B through 2I or 2N.

Support:

12 Section 2M.07 contains provisions for the use of recreational and cultural interest area symbols to indicate prohibited activities or items in non-road applications.

Section 2A.13 Word Messages

Standard:

01 **Except as provided in Section 2A.06, all word messages shall use standard wording and letters as shown in this Manual and in the "Standard Highway Signs and Markings" book (see Section 1A.11).**

Guidance:

02 *Word messages should be as brief as possible and the lettering should be large enough to provide the necessary legibility distance. A minimum specific ratio of 1 inch of letter height per 30 feet of legibility distance should be used.*

03 *Abbreviations (see Section 1A.15) should be kept to a minimum.*

04 *Word messages should not contain periods, apostrophes, question marks, ampersands, or other punctuation or characters that are not letters, numerals, or hyphens unless necessary to avoid confusion.*

05 *The solidus (slanted line or forward slash) is intended to be used for fractions only and should not be used to separate words on the same line of legend. Instead, a hyphen should be used for this purpose, such as "TRUCKS - BUSES."*

Standard:

06 **Fractions shall be displayed with the numerator and denominator diagonally arranged about the solidus (slanted line or forward slash). The overall height of the fraction is measured from the top of the numerator to the bottom of the denominator, each of which is vertically aligned with the upper and lower ends of the solidus. The overall height of the fraction shall be determined by the height of the numerals within the fraction, and shall be 1.5 times the height of an individual numeral within the fraction.**

Support:

07 The "Standard Highway Signs and Markings" book (see Section 1A.11) contains details regarding the layouts of fractions on signs.

Guidance:

08 *When initials are used to represent an abbreviation for separate words (such as "U S" for a United States route), the initials should be separated by a space of between 1/2 and 3/4 of the letter height of the initials.*

09 *When an Interstate route is displayed in text form instead of using the route shield, a hyphen should be used for clarity, such as "I-50."*

Standard:

10 **All sign lettering shall be in upper-case letters as provided in the "Standard Highway Signs and Markings" book (see Section 1A.11), unless otherwise provided in this Manual for a particular sign or type of message.**

11 **The sign lettering for names of places, streets, and highways shall be composed of a combination of lower-case letters with initial upper-case letters.**

Support:

12 Letter height is expressed in terms of the height of an upper-case letter. For mixed-case legends (those composed of an initial upper-case letter followed by lower-case letters), the height of the lower-case letters is derived from the specified height of the initial upper-case letter based on a prescribed ratio. Letter heights for mixed-case legends might be expressed in terms of both the upper- and lower-case letters, or in terms of the initial upper-case letter alone. When the height of a lower-case letter is specified or determined from the prescribed ratio, the reference is to the nominal loop height of the letter. The term loop height refers to the portion of a lower-case letter that excludes any ascending or descending stems or tails of the letter, such as with the letters "d" or "q." The nominal loop height is equal to the actual height of a non-rounded lower-case letter whose form does not include ascending or descending stems or tails, such as the letter "x." The rounded portions of a lower-case letter extend slightly above and below the baselines projected from the top and bottom of such a non-rounded letter so that the appearance of a uniform letter height within a word is achieved. The actual loop height of a rounded lower-case letter is slightly greater than the nominal loop height and this additional height is excluded from the expression of the lower-case letter height.

Standard:

13 **When a mixed-case legend is used, the height of the lower-case letters shall be 3/4 of the height of the initial upper-case letter.**

14 **The unique letter forms for each of the Standard Alphabet series shall not be stretched, compressed, warped, or otherwise manipulated.**

Support:

15 Section 2D.04 contains information regarding the acceptable methods of modifying the length of a word for a given letter height and series.

Section 2A.14 Sign Borders

Standard:

01 **Unless otherwise provided, each sign illustrated in this Manual shall have a border of the same color as the legend, at or just inside the edge.**

02 **The corners of all sign borders shall be rounded, except for STOP signs.**

Guidance:

03 *A dark border on a light background should be set in from the edge, while a light border on a dark background should extend to the edge of the sign. A border for 30-inch signs with a light background should be from 1/2 to 3/4 inch in width, 1/2 inch from the edge. For similar signs with a light border, a width of 1 inch should be used. For other sizes, the border width should be of similar proportions, but should not exceed the stroke-width of the major lettering of the sign. On signs exceeding 72 x 120 inches in size, the border should be 2 inches wide, or on larger signs, 3 inches wide. Except for STOP signs and as otherwise provided in Section 2E.16, the corners of the sign should be rounded to a radius that is concentric with that of the border.*

Section 2A.15 Enhanced Conspicuity for Standard Signs

Option:

01 Based upon engineering judgment, where the improvement of the conspicuity of a standard regulatory, warning, or guide sign is desired, any of the following methods may be used, as appropriate, to enhance the sign's conspicuity (see Figure 2A-1):

A. Increasing the size of a standard regulatory, warning, or guide sign.
B. Doubling-up of a standard regulatory, warning, or guide sign by adding a second identical sign on the left-hand side of the roadway.
C. Adding a solid yellow or fluorescent yellow rectangular "header panel" above a standard regulatory sign, with the width of the panel corresponding to the width of the standard regulatory sign. A legend of "NOTICE," "STATE LAW," or other appropriate text may be added in black letters within the header panel for a period of time determined by engineering judgment.
D. Adding a NEW plaque (see Section 2C.62) above a new standard regulatory or warning sign, for a period of time determined by engineering judgment, to call attention to the new sign.

E. Adding one or more red or orange flags (cloth or retroreflective sheeting) above a standard regulatory or warning sign, with the flags oriented so as to be at 45 degrees to the vertical.
F. Adding a solid yellow, a solid fluorescent yellow, or a diagonally striped black and yellow (or black and fluorescent yellow) strip of retroreflective sheeting at least 3 inches wide around the perimeter of a standard warning sign. This may be accomplished by affixing the standard warning sign on a background that is 6 inches larger than the size of the standard warning sign.
G. Adding a warning beacon (see Section 4L.03) to a standard regulatory (other than a STOP or a Speed Limit sign), warning, or guide sign.
H. Adding a speed limit sign beacon (see Section 4L.04) to a standard Speed Limit sign.
I. Adding a stop beacon (see Section 4L.05) to a STOP sign.
J. Adding light emitting diode (LED) units within the symbol or legend of a sign or border of a standard regulatory, warning, or guide sign, as provided in Section 2A.07.
K. Adding a strip of retroreflective material to the sign support in compliance with the provisions of Section 2A.21.
L. Using other methods that are specifically allowed for certain signs as described elsewhere in this Manual.
M. For applicable sign types and colors, using a sign with its color in a fluorescent version. See Section 2A.10.

Support:

02 Sign conspicuity improvements can also be achieved by removing non-essential and illegal signs from the right-of-way (see Section 1A.08), and by relocating signs to provide better spacing.

Standard:

03 **The NEW plaque (see Section 2C.62) shall not be used alone.**

04 **Strobe lights shall not be used to enhance the conspicuity of highway signs.**

Section 2A.16 Standardization of Location

Support:

01 Standardization of position cannot always be attained in practice. Examples of heights and lateral locations of signs for typical installations are illustrated in Figure 2A-2, and examples of locations for some typical signs at intersections are illustrated in Figures 2A-3 and 2A-4.

02 Examples of advance signing on an intersection approach are illustrated in Figure 2A-4. Chapters 2B, 2C, and 2D contain provisions regarding the application of regulatory, warning, and guide signs, respectively.

Guidance:

03 *Signs requiring separate decisions by the road user ~~shall~~ should be spaced sufficiently far apart for the appropriate decisions to be made.*

Standard:

03 **One of the factors considered when determining the appropriate spacing shall be the posted or 85th-percentile speed.**

Guidance:

04 *Signs should be located on the right-hand side of the roadway where they are easily recognized and understood by road users. Signs in other locations should be considered only as supplementary to signs in the normal locations, except as otherwise provided in this Manual.*

05 *Signs should be individually installed on separate posts or mountings except where:*

A. One sign supplements another;
B. Route or directional signs are grouped to clarify information to motorists;
C. ~~Regulatory~~ Signs that do not conflict with each other are grouped, such as turn prohibition signs posted with one way signs or a parking regulation sign posted with ~~a speed limit~~ another sign; or
D. Street name signs are posted with a stop or yield sign.

06 *Signs should be located so that they:*

A. Are outside the clear zone unless placed on a breakaway or yielding support (see Section 2A.19),
B. Optimize nighttime visibility,
C. Minimize the effects of mud splatter and debris,
D. Do not obscure each other,

E. Do not obscure the sight distance to approaching vehicles on the major street for drivers who are stopped on minor-street approaches, and

F. Are not hidden from view.

Support:

07 The clear zone is the total roadside border area, starting at the edge of the traveled way, available for use by errant vehicles. The width of the clear zone is dependent upon traffic volumes, speeds, and roadside geometry. Additional information can be found in AASHTO's "Roadside Design Guide" (see Section 1A.11).

Guidance:

08 *With the increase in traffic volumes and the desire to provide road users regulatory, warning, and guidance information, an order of priority for sign installation should be established.*

Support:

09 An order of priority is especially critical where space is limited for sign installation and there is a demand for several different types of signs. Overloading road users with too much information is not desirable.

Guidance:

10 *Because regulatory and warning information is more critical to the road user than guidance information, regulatory and warning signing whose location is critical should be displayed rather than guide signing in cases where conflicts occur. Community wayfinding and acknowledgment guide signs should have a lower priority as to placement than other guide signs. Information of a less critical nature should be moved to less critical locations or omitted.*

Option:

11 Under some circumstances, such as on curves to the right, signs may be placed on median islands or on the left-hand side of the road. A supplementary sign located on the left-hand side of the roadway may be used on a multi-lane road where traffic in a lane to the right might obstruct the view to the right.

Guidance:

12 ~~*In urban areas where crosswalks exist, signs should not be placed within 4 feet in advance of the crosswalk (see Drawing D in Figure 2A-3).*~~

13 *The installation of signs, including route shields, on signal standards should be avoided unless they directly affect traffic movements in the intersection.*

14 *A minimum spacing of 200 feet between guide signs should be maintained on conventional highways.*

15 *A minimum spacing of 800 feet between guide signs should be maintained on freeways and expressways.*

Support:

16 Figure 2A-2(CA) shows height and lateral location of signs for typical installations.

Section 2A.17 Overhead Sign Installations

Guidance:

01 *Overhead signs should be used on freeways and expressways, at locations where some degree of lane-use control is desirable, and at locations where space is not available at the roadside.*

Support:

02 The operational requirements of the present highway system are such that overhead signs have value at many locations. The factors to be considered for the installation of overhead sign displays are not definable in specific numerical terms.

Option:

03 The following conditions (not in priority order) may be considered in an engineering study to determine if overhead signs would be beneficial:

A. Traffic volume at or near capacity,
B. Complex interchange design,
C. Three or more lanes in each direction,
D. Restricted sight distance,
E. Closely-spaced interchanges,
F. Multi-lane exits,
G. Large percentage of trucks,
H. Street lighting background,

I. High-speed traffic,
J. Consistency of sign message location through a series of interchanges,
K. Insufficient space for post-mounted signs,
L. Junction of two freeways, and
M. Left exit ramps.
N. "Exit Only" lanes and lane drops.
O. Necessity to have a sign message directly over the lane to which it refers.

04 Over-crossing structures may be used to support overhead signs.

Support:

05 Under some circumstances, the use of over-crossing structures as sign supports might be the only practical solution that will provide adequate viewing distance. The use of such structures as sign supports might eliminate the need for the foundations and sign supports along the roadside.

06 Refer to Caltrans' Standard Plans publication for standard application of overhead signs. See Section 1A.11 for information regarding this publication.

Guidance:

07 *Whenever there is a deviation from the standards, a structural analysis should be considered. On State highways, all signs of this type should be referred to Caltrans' Division of Engineering Services, Office of Structure Design Services.*

08 *Signs mounted on overcrossing structures should not project above the bridge rail by more than 1 foot.*

Option:

09 Structure mounted signs may be placed parallel with the structures for skews up to 10°. At greater angles of skew, position the sign as close to 10° from the normal as possible.

Standard:

10 **If the skew is so great that this is not practical, separate sign structures shall be used.**

Section 2A.18 Mounting Height

Standard:

01 **The provisions of this Section shall apply unless specifically stated otherwise for a particular sign or object marker elsewhere in this Manual.**

Support:

02 The mounting height requirements for object markers are provided in Chapter 2C.

03 In addition to the provisions of this Section, information affecting the minimum mounting height of signs as a function of crash performance can be found in AASHTO's "Roadside Design Guide" (see Section 1A.11).

Standard:

04 **The minimum height, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement, of signs installed at the side of the road in rural areas shall be 5 feet (see Figure 2A-2).**

05 **The minimum height, measured vertically from the bottom of the sign to the top of the curb, or in the absence of curb, measured vertically from the bottom of the sign to the elevation of the near edge of the traveled way, of signs installed at the side of the road in business, commercial, or residential areas where parking or pedestrian movements are likely to occur, or where the view of the sign might be obstructed, shall be 7 feet (see Figure 2A-2).**

Option:

06 The height to the bottom of a secondary sign mounted below another sign may be 1 foot less than the height specified in Paragraphs 4 and 5.

Standard:

07 **The minimum height, measured vertically from the bottom of the sign to the sidewalk, of signs installed above sidewalks shall be 7 feet.**

08 **If the bottom of a secondary sign that is mounted below another sign is mounted lower than 7 feet above a pedestrian sidewalk or pathway (see Section 6D.02), the secondary sign shall not project more than 4 inches into the pedestrian facility.**

Option:

09 Signs that are placed 30 feet or more from the edge of the traveled way may be installed with a minimum height of 5 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.

Standard:

10 **Directional signs on freeways and expressways shall be installed with a minimum height of 7 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement. All route signs, warning signs, and regulatory signs on freeways and expressways shall be installed with a minimum height of 7 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement. If a secondary sign is mounted below another sign on a freeway or expressway, the major sign shall be installed with a minimum height of 8 feet and the secondary sign shall be installed with a minimum height of 5 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.**

11 **Where large signs having an area exceeding 50 square feet are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.**

Option:

12 A route sign assembly consisting of a route sign and auxiliary signs (see Section ~~2D.31~~ 2D.12) may be treated as a single sign for the purposes of this Section.

13 The mounting height may be adjusted when supports are located near the edge of the right-of-way on a steep backslope in order to avoid the sometimes less desirable alternative of placing the sign closer to the roadway.

Standard:

14 **Overhead signs shall provide a vertical clearance of not less than 17 feet to the sign, light fixture, or sign bridge over the entire width of the pavement and shoulders except where the structure on which the overhead signs are to be mounted or other structures along the roadway near the sign structure have a lesser vertical clearance.**

14a **The bottom of the overhead sign truss frame located over a roadway shall be at least 18 feet and 6 inches on State highways. Refer to Caltrans' Standard Plans publication. See Section 1A.11 for information regarding this publication.**

Option:

15 If the vertical clearance of other structures along the roadway near the sign structure is less than 16 feet, the vertical clearance to an overhead sign structure or support may be as low as 1 foot higher than the vertical clearance of the other structures in order to improve the visibility of the overhead signs.

16 In special cases it may be necessary to reduce the clearance to overhead signs because of substandard dimensions in tunnels and other major structures such as double-deck bridges.

Support:

17 Figure 2A-2 illustrates some examples of the mounting height requirements contained in this Section.

18 Exceptions to the mounting heights are the FREEWAY ENTRANCE (D13-3) and DO NOT ENTER (R5-1) sign packages which are mounted lower to avoid sight restrictions and be most responsive to headlights.

Guidance:

19 *The FREEWAY ENTRANCE (D13-3) and DO NOT ENTER (R5-1) sign packages should be mounted with the bottom of the lower sign 2 feet above the edge of the pavement. The ONE WAY (R6-1) signs should be mounted 1.5 foot above the edge of the pavement.*

20 *Overhead signs should provide a vertical clearance of not less than 18 feet over the entire width of the pavement and shoulders, except where a lesser vertical clearance is used for the design of other structures. The vertical clearance to overhead sign structures or supports need not be greater than 1 foot in excess of the minimum design clearance of other structures.*

Option:

21 In special cases it may be necessary to reduce the clearance still further because of substandard dimensions in tunnels and other major structures such as double-deck bridges.

Support:

22 Figure 2A-2(CA) shows height and lateral location of signs for typical installations.

Section 2A.19 Lateral Offset

Standard:

01 **For overhead sign supports, the minimum lateral offset from the edge of the shoulder (or if no shoulder exists, from the edge of the pavement) to the near edge of overhead sign supports (cantilever or sign bridges) shall be 6 feet. Overhead sign supports shall have a barrier or crash cushion to shield them if they are within the clear zone.**

02 **Post-mounted sign and object marker supports shall be crashworthy (breakaway, yielding, or shielded with a longitudinal barrier or crash cushion) if within the clear zone.**

Guidance:

03 *For post-mounted signs, the minimum lateral offset should be 12 feet from the edge of the traveled way. If a shoulder wider than 6 feet exists, the minimum lateral offset for post-mounted signs should be 6 feet from the edge of the shoulder.*

Support:

04 The minimum lateral offset requirements for object markers are provided in Chapter 2C.

05 The minimum lateral offset is intended to keep trucks and cars that use the shoulders from striking the signs or supports.

Guidance:

06 *All supports should be located as far as practical from the edge of the shoulder. Advantage should be taken to place signs behind existing roadside barriers, on over-crossing structures, or other locations that minimize the exposure of the traffic to sign supports.*

Option:

07 Where permitted, signs may be placed on existing supports used for other purposes, such as highway traffic signal supports, highway lighting supports, and utility poles.

Standard:

08 **If signs are placed on existing supports, they shall meet other placement criteria contained in this Manual.**

Option:

09 Lesser lateral offsets may be used on connecting roadways or ramps at interchanges, but not less than 6 feet from the edge of the traveled way.

10 On conventional roads in areas where it is impractical to locate a sign with the lateral offset prescribed by this Section, a lateral offset of at least 2 feet may be used.

11 A lateral offset of at least 1 foot from the face of the curb may be used in business, commercial or residential areas where sidewalk width is limited or where existing poles are close to the curb.

Guidance:

12 *Overhead sign supports and post-mounted sign and object marker supports should not intrude into the usable width of a sidewalk or other pedestrian facility.*

Support:

13 Figures 2A-2 and 2A-3 illustrate some examples of the lateral offset requirements contained in this Section.

14 Refer to Caltrans' Highway Design Manual Section 309.1 for horizontal clearances. See Section 1A.11 for information regarding this publication.

Guidance:

15 *On freeways, expressways, and in interchange areas, and on rural highways where practicable, warning and regulatory signs should be placed a minimum of 12 feet and a maximum of 30 feet from the edge of traveled way.*

Standard:

16 **When clear roadside recovery areas are provided, guide signs on overhead sign supports shall be placed as far from the edge of traveled way as is practical, up to a maximum of 30 feet.**

Guidance:

17 *When possible, they should be located in protected areas or placed behind guardrails, crash cushions, barriers, etc.*

Standard:

18 **Overhead signs placed in unprotected locations shall be placed on cantilever structures to provide the maximum possible horizontal clearance to the sign support.**

Support:

19 Overcrossing structures can often serve for the support for overhead signs, and may be the only practical location that will provide adequate viewing distance. Use of these structures, as sign supports will minimize the need for sign supports along the roadway. Where overhead crossings are closely spaced and the proximity of other structures does not limit visibility, it is desirable to place signs on the bridges for economy, to reduce fixed objects and to enhance safety.

Guidance:

20 *Where a freeway or an expressway median is 12 feet or less in width, consideration should be given to spanning both roadways without a center support. Butterfly-type signs or other overhead sign supports should not be erected in neutral areas (gores) or other exposed locations.*

Standard:

21 **Guardrail protection shall be provided for overhead sign supports if they are located within the clear recovery area.**

22 **In cuts steeper than 4:1, where there are no recovery areas, the sign supports shall be placed on the slopes a minimum of 4 feet vertically from the hinge point. In fill sections, sign supports shall be protected by a minimum of 50 feet of guardrail plus the breakaway end anchor. The supports shall be placed over the hinge point approximately 4 feet from the face of the guard rail.**

23 **The median support on overhead sign bridges shall be centered in medians 60 feet or less in width and shall be placed 30 feet from the edge of the traveled way in wider medians. Unless there are protected locations, sign bridge supports shall not be placed in medians 22 feet or less in width.**

Guidance:

24 *Overhead signs should be placed at least 30 feet from light standards.*

Section 2A.20 Orientation

Guidance:

01 *Unless otherwise provided in this Manual, signs should be vertically mounted at right angles to the direction of, and facing, the traffic that they are intended to serve.*

02 *Where mirror reflection from the sign face is encountered to such a degree as to reduce legibility, the sign should be turned slightly away from the road. Signs that are placed 30 feet or more from the pavement edge should be turned toward the road. On curved alignments, the angle of placement should be determined by the direction of approaching traffic rather than by the roadway edge at the point where the sign is located.*

Option:

03 On grades, sign faces may be tilted forward or back from the vertical position to improve the viewing angle.

Section 2A.21 Posts and Mountings

Standard:

01 **Sign posts, foundations, and mountings shall be so constructed as to hold signs in a proper and permanent position, and to resist swaying in the wind or displacement by vandalism.**

Support:

02 The latest edition of AASHTO's "Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" contains additional information regarding posts and mounting (see Page i for AASHTO's address).

Option:

03 Where engineering judgment indicates a need to draw attention to the sign during nighttime conditions, a strip of retroreflective material may be used on regulatory and warning sign supports.

Standard:

04 **If a strip of retroreflective material is used on the sign support, it shall be at least 2 inches in width, it shall be placed for the full length of the support from the sign to within 2 feet above the edge of the roadway, and its color shall match the background color of the sign, except that the color of the strip for the YIELD and DO NOT ENTER signs shall be red.**

Support:

05 Refer to Caltrans' Highway Design Manual Section 309.1 for horizontal clearances. See Section 1A.11 for information regarding this publication.

Guidance:

06 *In areas where ground mounted sign supports cannot be sufficiently offset from the pavement edge, sign supports of a suitable breakaway or yielding design should be considered.*

Standard:

07 **Breakaway or yielding supports shall be used on freeways and expressways unless the sign supports are adequately shielded by guardrail, crash cushions, or similar devices.**

Support:

08 In some cases, especially in urban areas, essential signs can be placed on existing supports used for other purposes, such as traffic signals or street lights, thereby saving expense and minimizing sidewalk obstruction.

Option:

09 When needed for emphasis to facilitate traffic safety on streets with speed limits of 35 mph or less, small plastic signs not exceeding 12 inch in width may be mounted on channelizers, cones or portable delineators to be placed on lane lines and/or centerlines.

Standard:

10 **When installed, they shall supplement permanently mounted standard signs and shall use standard legends, sign colors and retroreflectivity, but in a smaller, proportional format. If the device is used on lane lines, there shall be an engineering study, which documents the limited potential of the device to be struck due to lane changing.**

Section 2A.22 Maintenance

Guidance:

01 *Maintenance activities should consider proper position, cleanliness, legibility, and daytime and nighttime visibility (see Section ~~2A.09~~ 2A.08). Damaged or deteriorated signs, gates, or object markers should be replaced.*

02 *To assure adequate maintenance, a schedule for inspecting (both day and night), cleaning, and replacing signs, gates, and object markers should be established. Employees of highway, law enforcement, and other public agencies whose duties require that they travel on the roadways should be encouraged to report any damaged, deteriorated, missing or obscured signs, gates, or object markers at the first opportunity.*

03 *Steps should be taken to see that weeds, trees, shrubbery, and construction, maintenance, and utility materials and equipment do not obscure the face of any sign or object marker.*

04 *A regular schedule of replacement of lighting elements for illuminated signs should be maintained.*

Section 2A.23 Median Opening Treatments for Divided Highways with Wide Medians

Guidance:

01 *Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings should be signed as two separate intersections.*

Option:

02 Additional signs may be placed where the median width is 30 feet or more.

03 Standard directional or wrong way arrow pavement markings may be placed in each approach lane of each roadway in advance of a grade intersection and at other selected locations to indicate the direction of traffic flow.

04 At locations which are determined to have special need, other standard warning or prohibitive methods and devices may be used as a deterrent to the wrong way movement.

Support:

05 See Section 2E.53, Wrong-Way Traffic Control at Interchange Ramps.

Section 2A.101(CA) Signs Off the State Right-of-Way

Support:

01 CVC 21350 permits Caltrans, with the consent of the local authorities, to place and maintain along city streets and county roads appropriate signs as may be necessary or desirable to direct traffic to State highways.

Guidance:

02 *Where a sign beyond the right-of-way line is required for the proper operation of a State highway, such sign should be placed and maintained at State expense.*

Figure 2A-1. Examples of Enhanced Conspicuity for Signs

A – W16-15P plaque above a regulatory or warning sign if the regulation or condition is new

B – Red or orange flags above a regulatory, warning, or guide sign

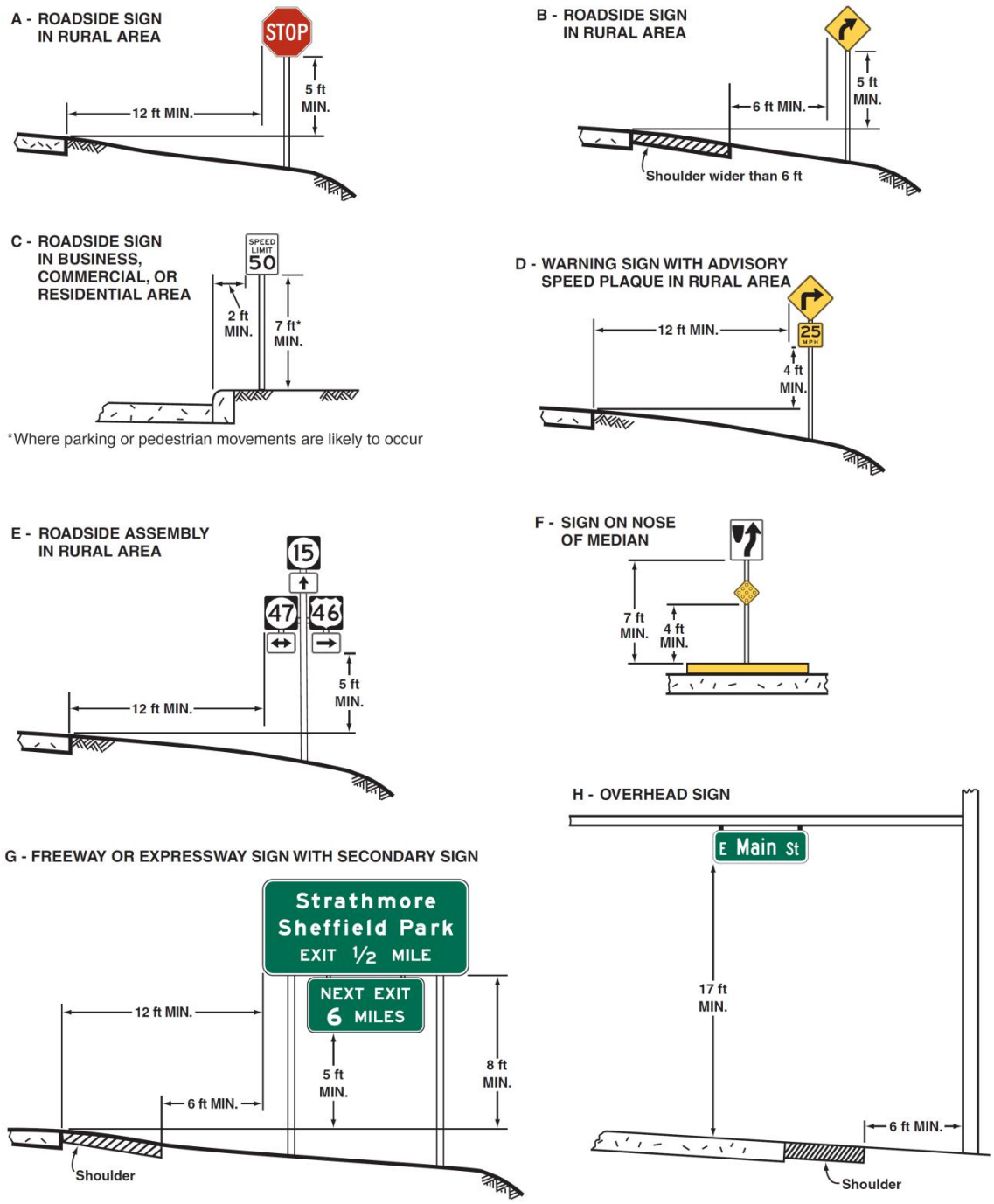
C – W16-18P plaque above a regulatory sign

D – Solid yellow, solid fluorescent yellow, or diagonally striped black and yellow (or black and fluorescent yellow) strip of retroreflective sheeting around a warning sign

E – Vertical retroreflective strip on sign support

F – Supplemental beacon

Figure 2A-2. Examples of Heights and Lateral Locations of Sign Installations



Note:
See Section 2A.19 for reduced lateral offset distances that may be used in areas where lateral offsets are limited, and in business, commercial, or residential areas where sidewalk width is limited or where existing poles are close to the curb.

Figure 2A-2 (CA). Examples of Heights and Lateral Locations of Sign Installations

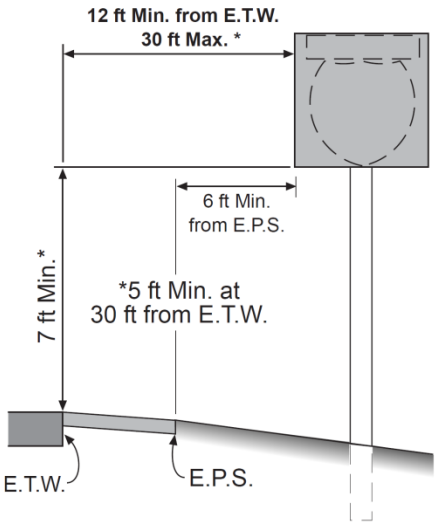
NOTES:

These sign positions are typical and should be considered a standard. When physical conditions require deviation from these typicals, they should be documented. When clear roadside recovery areas are provided, signs shall be placed as far from the traveled way as possible, up to 30 ft. When possible, they should be placed in protected locations.

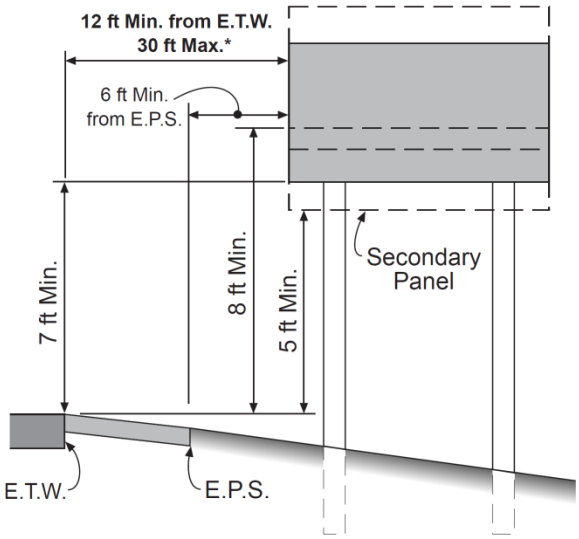
Signs in medians shall be placed at midpoint of median, and should not be closer than 6 ft from the edge of a paved shoulder, or if none, 12 ft from the edge of the traveled way. When appropriate, signs for opposing directions shall be placed back to back.

E.T.W. = Edge of Traveled Way
E.P.S. = Edge of Paved Shoulder

FREEWAY AND EXPRESSWAY LOCATIONS

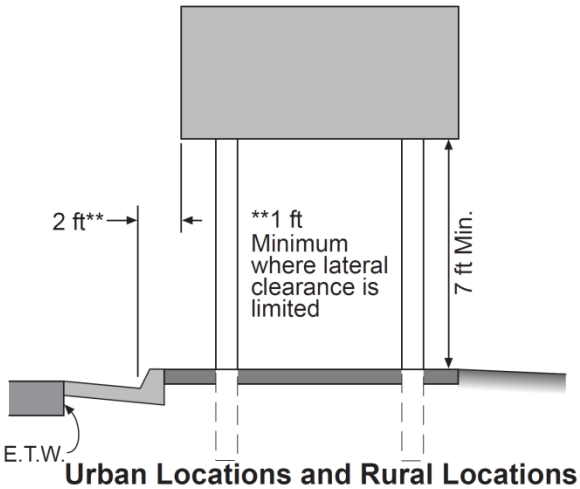


ROUTE SHIELDS
REGULATORY AND WARNING SIGNS

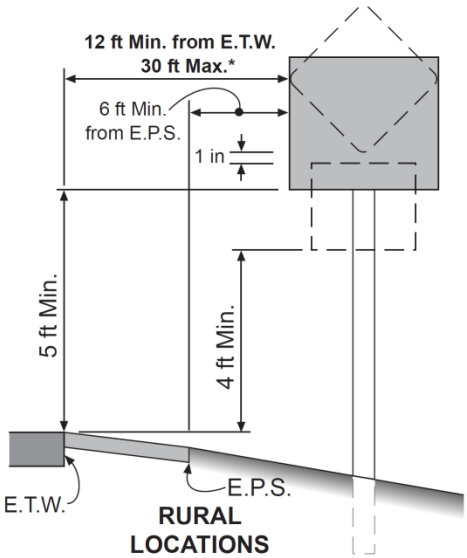


GUIDE SIGNS

CONVENTIONAL HIGHWAYS AND INTERCHANGE AREAS

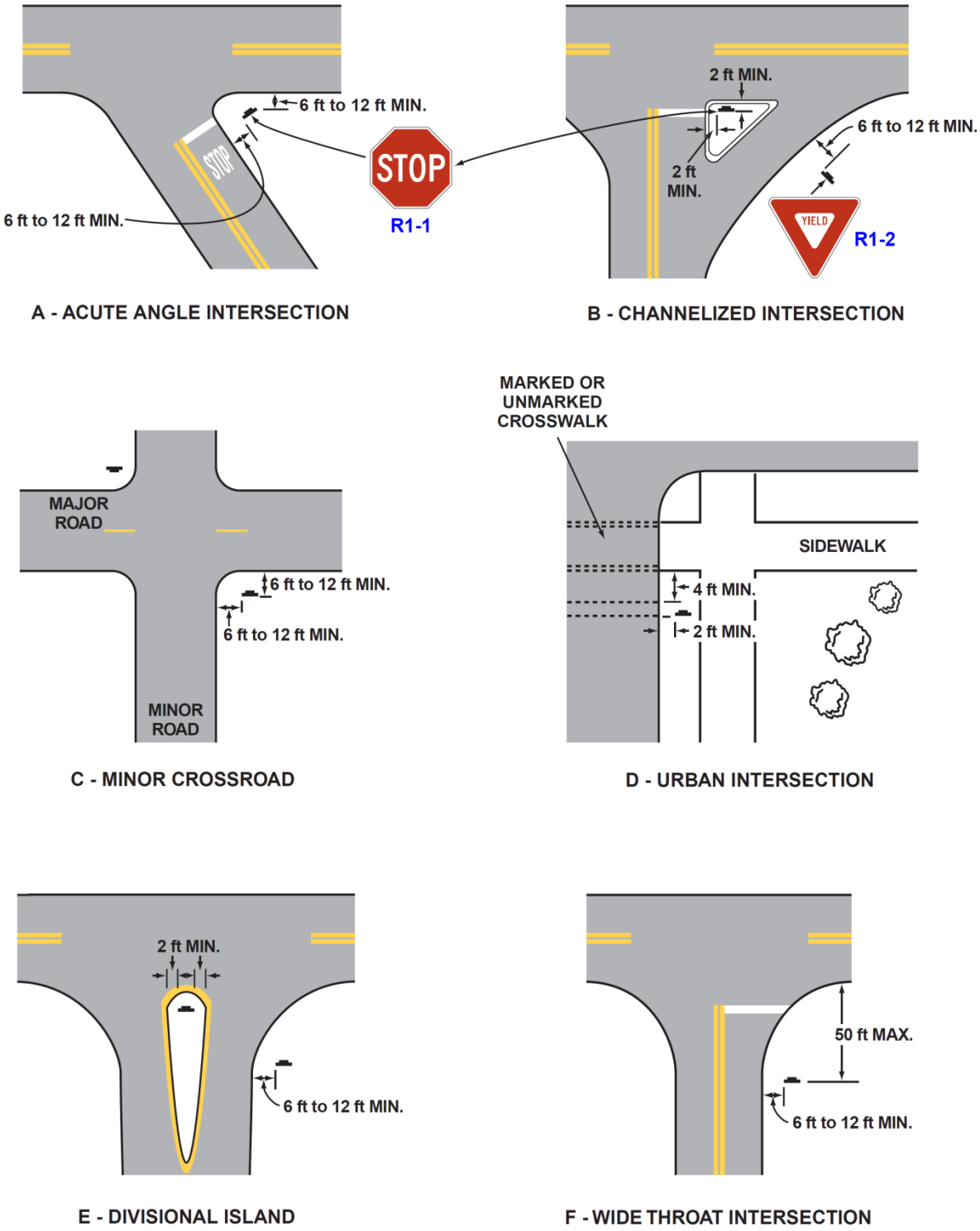


Urban Locations and Rural Locations with Sidewalk



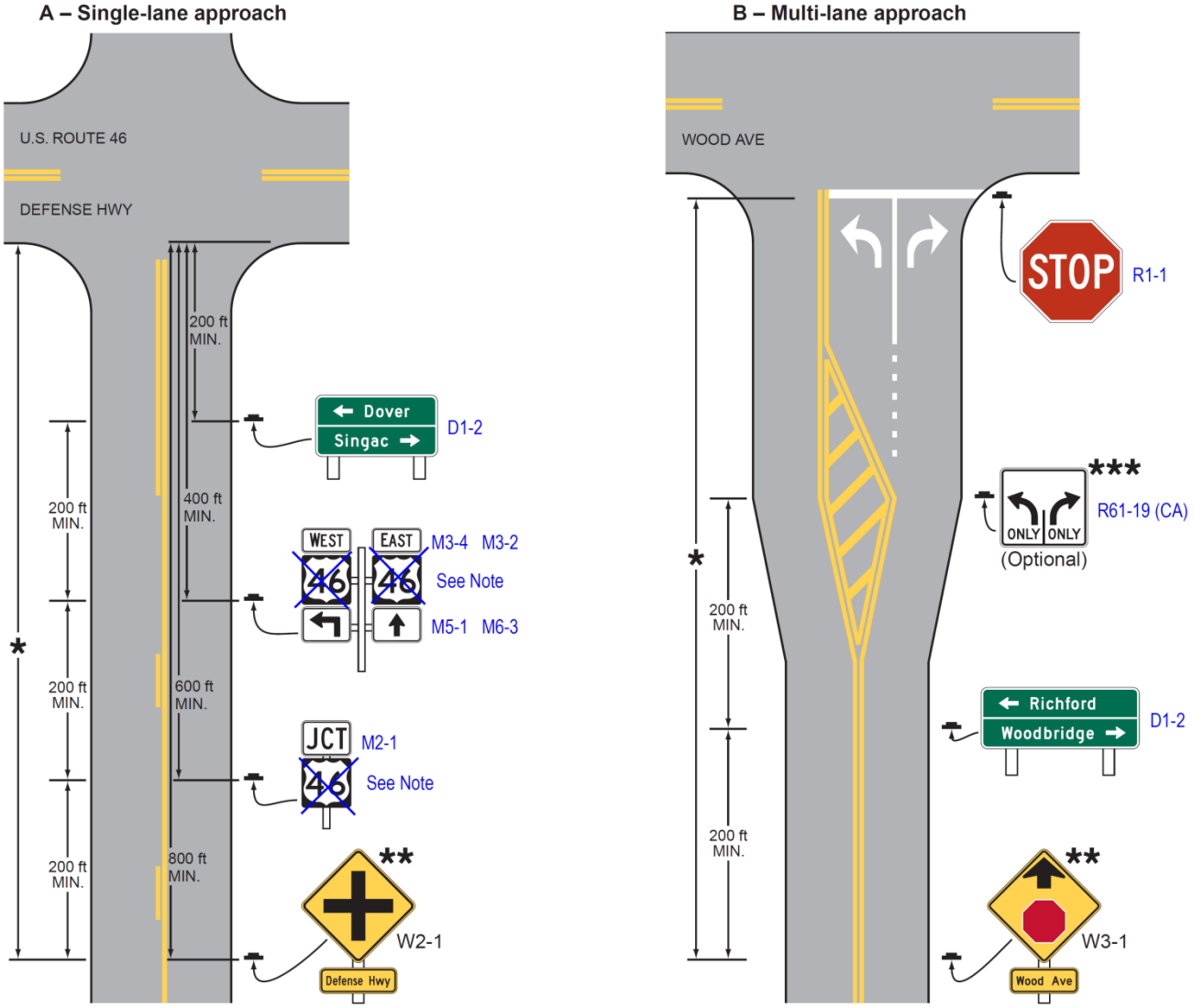
RURAL LOCATIONS

Figure 2A-3. Examples of Locations for Some Typical Signs at Intersections



Note: Lateral offset is a minimum of 6 feet measured from the edge of the shoulder, or 12 feet measured from the edge of the traveled way. See Section 2A.19 for lower minimums that may be used in urban areas, or where lateral offset space is limited.

Figure 2A-4. Relative Locations of Regulatory, Warning, and Guide Signs on an Intersection Approach



Note: See Chapter 2D for information on guide signs and Part 3 for information on pavement markings

Use G26-2(CA) in lieu of M1-4 signs.

G26-2(CA) M1-4 (Not used in CA)

* See Table 2C-4 for the recommended minimum distance

** See Section 2C.46 for the application of the W2-1 sign and Section 2C.36 for the application of the W3-1 sign

*** See Section 2B.22 for the application of Intersection Lane Control signs

Table 2A-1. Illumination of Sign Elements

Means of Illumination	Sign Element to be Illuminated
Light behind the sign face	• Symbol or word message • Background • Symbol, word message, and background (through a translucent material)
Attached or independently mounted light source designed to direct essentially uniform illumination onto the sign face	• Entire sign face
Light emitting diodes (LEDs)	• Border of regulatory or warning signs • ~~Symbol or word message~~ • ~~Portions of the sign border~~
Other devices, or treatments that highlight the sign shape, color, or message: Luminous tubing Fiber optics Incandescent light bulbs Luminescent panels	• Symbol or word message • Entire sign face

Table 2A-2. Retroreflection of Sign Elements

Means of Retroreflection	Sign Element
Reflector "buttons" or similar units	Symbol Word message Border
A material that has a smooth, sealed outer surface over a microstructure that reflects light	Symbol Word message Border Background

Table 2A-3. Minimum Maintained Retroreflectivity Levels[1]

Sign Color	Sheeting Type (ASTM D4956-04)				Additional Criteria
	Beaded Sheeting			Prismatic Sheeting	
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*; G ≥ 7	W*; G ≥ 15	W*; G ≥ 25	W ≥ 250; G ≥ 25	Overhead
	W*; G ≥ 7	W ≥ 120; G ≥ 15			Post-mounted
Black on Yellow or Black on Orange	Y*; O*	Y ≥ 50; O ≥ 50			[2]
	Y*; O*	Y ≥ 75; O ≥ 75			[3]
White on Red	W ≥ 35; R ≥ 7				[4]
Black on White	W ≥ 50				–

[1] The minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m² measured at an observation angle of 0.2° and an entrance angle of -4.0°.
[2] For text and fine symbol signs measuring at least 48 inches and for all sizes of bold symbol signs
[3] For text and fine symbol signs measuring less than 48 inches
[4] Minimum sign contrast ratio ≥ 3:1 (white retroreflectivity ÷ red retroreflectivity)
* This sheeting type shall not be used for this color for this application.

Bold Symbol Signs

- W1-1,2 – Turn and Curve
- W1-3,4 – Reverse Turn and Curve
- W1-5 – Winding Road
- W1-6,7 – Large Arrow
- W1-8 – Chevron
- W1-10 – Intersection in Curve
- W1-11 – Hairpin Curve
- W1-15 – 270 Degree Loop
- W2-1 – Cross Road
- W2-2,3 – Side Road
- W2-4,5 – T and Y Intersection
- W2-6 – Circular Intersection
- W2-7,8 – Double Side Roads
- W3-1 – Stop Ahead
- W3-2 – Yield Ahead
- W3-3 – Signal Ahead
- W4-1 – Merge
- W4-2 – Lane Ends
- W4-3 – Added Lane
- W4-5 – Entering Roadway Merge
- W4-6 – Entering Roadway Added Lane
- W6-1,2 – Divided Highway Begins and Ends
- W6-3 – Two-Way Traffic
- W10-1,2,3,4,11,12 – Grade Crossing Advance Warning
- W11-2 – Pedestrian Crossing
- W11-3,4,16-22 – Large Animals
- W11-5 – Farm Equipment
- W11-6 – Snowmobile Crossing
- W11-7 – Equestrian Crossing
- W11-8 – Fire Station
- W11-10 – Truck Crossing
- W12-1 – Double Arrow
- W16-5P,6P,7P – Pointing Arrow Plaques
- W20-7 – Flagger
- W21-1 – Worker

Fine Symbol Signs (symbol signs not listed as bold symbol signs)

Special Cases

- W3-1 – Stop Ahead: Red retroreflectivity ≥ 7
- W3-2 – Yield Ahead: Red retroreflectivity ≥ 7; White retroreflectivity ≥ 35
- W3-3 – Signal Ahead: Red retroreflectivity ≥ 7; Green retroreflectivity ≥ 7
- W3-5 – Speed Reduction: White retroreflectivity ≥ 50
- For non-diamond shaped signs, such as W14-3 (No Passing Zone), W4-4P (Cross Traffic Does Not Stop), or W13-1P,2,3,6,7 (Speed Advisory Plaques), use the largest sign dimension to determine the proper minimum retroreflectivity level.

Table 2A-4. Use of Sign Shapes

Shape	Signs
Octagon	Stop*
Equilateral Triangle (1 point down)	Yield*
Circle	Grade Crossing Advance Warning*
Pennant Shape/Isosceles Triangle (longer axis horizontal)	No Passing*
Pentagon (pointed up)	School Advance Warning Sign (squared bottom corners)* County Route Sign (tapered bottom corners)*
Crossbuck (two rectangles in an "X" configuration)	Grade Crossing*
Diamond	Warning Series
Rectangle (including square)	Regulatory Series Guide Series** Warning Series
Trapezoid	Recreational and Cultural Interest Area Series National Forest Route Sign

* This sign shall be exclusively the shape shown.

** Guide series includes general service, specific service, tourist-oriented directional, general information, recreational and cultural interest area, and emergency management signs.

Table 2A-5. Common Uses of Sign Colors

Type of Sign	Legend								Background										
	Black	Green	Red	White	Yellow	Orange	Fluorescent Yellow-Green	Fluorescent Pink	Black	Blue	Brown	Green	Orange*	Red*	White	Yellow*	Purple	Fluorescent Yellow-Green	Fluorescent Pink
Regulatory	X		X	X					X					X	X				
Prohibitive			X	X										X	X				
Permissive		X													X				
Warning	X															X			
Pedestrian	X															X		X	
Bicycle	X															X		X	
Guide				X								X							
Interstate Route				X						X				X					
State Route	X														X				
U.S. Route	X														X				
County Route					X					X									
Forest Route				X							X								
Street Name				X								X							
Destination				X								X							
Reference Location				X								X							
Information				X						X		X							
Evacuation Route				X						X									
Road User Service				X						X									
Recreational				X							X	X							
Temporary Traffic Control	X												X						
Incident Management	X												X						X
School	X																	X	
ETC-Account Only	X																X****		
Changeable Message Signs																			
Regulatory			X***	X					X										
Warning					X				X										
Temporary Traffic Control					X	X			X										
Guide				X					X			X**							
Motorist Services				X					X	X**									
Incident Management					X			X	X										
School, Pedestrian, Bicycle					X		X		X										

* Fluorescent versions of these background colors may also be used.

** These alternative background colors would be provided by blue or green lighted pixels such that the entire CMS would be lighted, not just the legend.

*** Red is used only for the circle and slash or other red elements of a similar static regulatory sign.

**** The use of the color purple on signs is restricted per the provisions of Paragraph 1 of Section 2F.03.

Table 2A-5 (CA). Common Uses of Sign Colors

Items shown in gray are unique to California standards. All other items are adopted per FHWA 2009 MUTCD.

Type of Sign	Legend									Background													
	Black	Green	Red	White	Yellow	Brown	Orange	Fluorescent Yellow-Green	Fluorescent Pink	Black	Blue	Brown	Green	Orange	Red	White	Yellow	Fluorescent Yellow-Green	Fluorescent Pink	Cream	Teal	Light Blue	Purple
Regulatory	x		x	x						x					x	x							
Prohibitive			x	x											x	x							
Permissive		x		x							x					x							
Warning	x																x						
Pedestrian	x																x	x					
Bicycle	x																x	x					
Playground	x																x	x					
School	x																	x					
Guide				x									x										
Interstate Route				x							x				x								
Interstate Business Route				x									x										
State Route				x									x										
US Route	x															x							
County Route					x						x												
Forest Route				x								x											
Scenic Route				x																		x	
Bicycle route				x									x										
Historic Route	x											x				x							
Reference Location				x									x										
Information				x							x	x	x										
Milepost				x									x										
Evacuation route				x							x												
Road User Service				x							x												
Recreational				x								x											
Street Name				x									x										
Destination				x									x										
Boundary				x									x										
State Boundary	x				x																	x	
Place Name				x									x										
Structure Identification	x															x							
Historical Landmark						x														x			
Memorial				x									x										
Call Box				x							x												
Victims Memorial				x							x												
Adopt-A-Highway				x																	x		
Temporary Traffic Control	x													xx									
Incident Management	x																		x				
ETC-Account Only	x																						x
Changeable Message Signs*					x	x				x													

*** Reverse colors or fluorescent yellow-green pixels may also be used on changeable message signs.**