

Part II. SIGNS

A. INTRODUCTION AND GENERAL SPECIFICATIONS

2A-1 Function of Signs

Signs should be used only where warranted by facts and field studies. Signs are essential where special regulations apply at specific places or at specific times only, or where hazards are not self-evident. They also give information as to highway routes, directions, destinations and points of interest. Signs ordinarily are not needed to confirm rules of the road.

2A-2 Scope of Sign Standards

This Manual prescribes standards for the signing within the right-of-way of all classes of public highways. Detailed standards for Regulatory signs are given in Part II-B and for Warning signs in Part II-C.

The requirements and standards for Guide signs will depend on the particular highway class on which they are to be used. For this purpose the following meanings apply:

1. Conventional Road—A road or street other than a freeway or expressway.
2. Expressway—A divided highway with partial control of access.
3. Freeway—An expressway with full control of access.

Guide sign requirements for conventional roads are given in Part II-D, for expressways in Part II-E and for freeways in Part II-F. Expressways are characterized by three distinctive features—divided roadways, controlled access, and some grade separated intersections. Where any of these features are lacking, prescribed expressway signs may not be fully applicable and standard signs for conventional roads should be used, with such enlargement or other modification as is required to adapt them to existing conditions.

Standard guide signing for the National System of Interstate and Defense Highways shall be in accordance with Part II-F, Freeways. These standards were developed and approved by the American Association of State Highway Officials and incorporated herein to be applicable to all freeways of comparable design.¹ As many pro-

¹ Formerly available as *Manual for Signing and Pavement Marking of the National System of Interstate and Defense Highways*.

visions for expressway signing have application on freeways, references are made to Part II-E to minimize duplication.

Signing for Civil Defense emergencies is contained in Part II-G.

Roadway geometric design and signing should be coordinated so that signing can be effectively placed to give the motorist necessary directional and warning information.

This Manual also includes two special parts dealing separately with construction and maintenance signing (Part VI), and signing for school areas (Part VII). Signing for the protection of the public and the workmen at highway construction and maintenance sites is a specialized operation which, though it uses standard signs, calls for numerous special designs and applications. It is separately treated primarily so that its specifications will be conveniently available to contractors and highway employees who are not concerned with other parts of this Manual.

Signs for school area traffic control are specified in Part VII. This special section of this Manual was developed to achieve uniformity of traffic control in school areas. Each traffic control sign and control method described in this part fulfills a specific function related to a specific traffic condition.

2A-3 Legal Authority

Traffic signs shall be placed only by the authority of a public body or official having jurisdiction, for the purpose of regulating, warning, or guiding traffic. No traffic sign or its support shall bear any message that is not essential to traffic control. Specific reference is made to Section 11-205 of the Uniform Vehicle Code, Revised 1968.

Any unauthorized sign placed on the highway right-of-way without authority by a private organization or individual constitutes a public nuisance. All unofficial and nonessential signs should be removed.

With proper authority being given, construction contractors and public utility companies are permitted to erect temporary construction and maintenance signs at work sites to protect the public, equipment, and workmen, provided that such signs conform to the standards of this Manual.

Effective traffic control depends not only on appropriate application of devices, but on reasonable enforcement of regulations as well. Standards in this Manual are based on that concept.

2A-4 Standardization of Application

Each standard sign shall be displayed only for the specific purpose prescribed for it in this Manual. Before any new highway or any

detour or temporary route is opened to traffic all necessary signs shall be in place.

Signs required by road conditions or restrictions shall be removed immediately when those conditions cease to exist or the restrictions are withdrawn.

Uniformity of application is as important as standardization with respect to design and placement. Identical conditions should always be marked with the same type of sign, irrespective of where those particular conditions occur.

Determination of the particular sign or signs to be applied to a specific condition shall ordinarily be made in accordance with the criteria set forth in the following pages. However, engineering judgment is essential to the proper use of signs, the same as with other traffic control devices. Traffic engineering studies may indicate that signs would be unnecessary at certain locations. The judgment resulting from traffic engineering studies of physical and traffic factors should be depended upon to determine locations where signs are deemed necessary.

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

2A-5 Variable Message Signs

Variable message signs are designed to have one or more messages that may be displayed or deleted as required. Such a sign may be changed manually, by remote control, or by automatic controls that can "sense" the conditions that require special sign messages.

Variable signs should conform with the same shapes and colors and be of the same dimensions as standard signs provided in this Manual.

2A-6 Excessive Use of Signs

Care should be taken not to install too many signs. A conservative use of regulatory and warning signs is recommended as these signs, if used to excess, tend to lose their effectiveness. On the other hand, a frequent display of route markers and directional signs to keep the driver informed of his location and his course will not lessen their value.

2A-7 Classification of Signs

Functionally, signs are classified as follows:

Regulatory signs give notice of traffic laws or regulations.

Warning signs call attention to conditions on, or adjacent to, a highway or street that are potentially hazardous to traffic operations.

Guide signs show route designations, destinations, directions, distances, services, points of interest, and other geographical or cultural information.

2A-8 Standardization of Signs

In situations where messages are required other than those herein provided for, the signs shall be of the same shape and color as standard signs of the same functional type.

The term "legend" as used in this Manual includes all word messages and symbol designs that are intended to convey specific meanings.

The basic requirements of a highway sign are that it be legible to those using it and that it be understood in time to permit a proper response. This means high visibility, lettering or symbols of adequate size, and a short legend for quick comprehension by a driver approaching a sign at high speed. 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.

2A-9 Design

Uniformity in design includes shape, color, dimensions, legends, and illumination or reflectorization. Detailed drawings of the standard signs illustrated in this Manual are available to State and local highway and traffic authorities, sign manufacturers, and similarly interested agencies.² All symbols shall be unmistakably similar to those shown, and where a word message is applicable, the wording shall be as herein provided. Standardization of these designs does not preclude further improvement by minor changes in the proportion of symbols, stroke-width, height of letters, width of borders, or layout of word messages, but all shapes and colors shall be as indicated.

In the specifications for individual signs, the legend, color, and size are shown in the accompanying illustrations, and are not always detailed in the text.

2A-10 Shapes

Standard sign shapes are:

The octagon shall be reserved exclusively for the STOP sign.

² Available from the Federal Highway Administration, Washington, D.C. 20591.

The equilateral triangle, with one point downward, shall be reserved exclusively for the YIELD sign.

The round shape shall be used for the advance warning of a railroad crossing and for the civil defense evacuation route marker.

The pennant shape, an isosceles triangle, with its longest axis horizontal, shall be used to warn of no passing zones.

The diamond shape shall be used only to warn of existing or possible hazards either on the roadway or adjacent thereto.

The rectangle, ordinarily with the longer dimension vertical, shall be used for regulatory signs, with the exception of STOP signs and YIELD signs.

The rectangle, ordinarily with the longer dimension horizontal, shall be used for guide signs, with the exception of certain route markers and recreational area guide signs.

The trapezoid shape, as shown in section 2D-44, may be used for recreational area guide signs.

The pentagon, point up, shall be used for School Advance and School Crossing signs (Part VII).

Other shapes are reserved for special purposes; for example, the shield or other characteristic design for route markers and crossbuck for railroad crossings.

2A-11 Sign Colors

The colors to be used on standard signs shall be as follows:

Red is used only as a background color for STOP signs, multi-way supplemental plates, DO-NOT-ENTER messages, WRONG WAY signs and on Interstate route markers; as a legend color for YIELD signs, parking prohibition signs, the circular outline and diagonal bar prohibitory symbol.

Black is used as a background on ONE WAY signs, certain weigh station signs and night speed limit signs as specified herein. Black is used as a message on white, yellow and orange signs.

White is used as the background for route markers, guide signs, the Fallout Shelter Directional sign, and regulatory signs, except STOP signs, and for the legend on brown, green, blue, black and red signs.

Orange is used as a background color for construction and maintenance signs and shall not be used for any other purpose.

Yellow is used as a background color for warning signs, except where orange is specified herein, and for school signs (Part VII).

Brown is used as a background color for guide and information signs related to points of recreational or cultural interest.

Green is used as a background color for guide signs (other than those using brown or white), mileposts, and as a legend color with a white background for permissive parking regulations.

Blue is used as a background color for information signs related to motorist services (including police services and rest areas) and the Evacuation Route Marker.

Four other colors—purple, light blue, coral, and strong yellow-green—have been identified as suitable for highway use and are being reserved for future needs.

Wherever white is specified herein as a sign color, it is understood to include silver-colored reflecting coatings or elements that reflect white light.

2A-12 Dimensions

The sign dimensions prescribed in this Manual shall be standard for application on public highways. Increases above these standard sizes are desirable where greater legibility or emphasis is needed. For expressways, special designs or large signs are prescribed. In the enlargement of signs, standard shapes and colors shall be used and standard proportions shall be retained insofar as practicable. Wherever practical the overall dimensions of the sign plates should be increased in 6-inch increments. The use of smaller than "standard" size signs may sometimes be justified.

2A-13 Symbols

Symbol designs shall in all cases be essentially like those shown in this Manual.

A wider adoption of symbols in preference to word message is a desirable and important step toward the greater safety and facilitation of traffic.

A change from word messages to symbols, particularly in the regulatory series, will require significant time for public education and transition. Consequently, this Manual includes educational plaques to accompany new symbol signs and continues, as an alternate, the previous standard word message signs in many cases. This inclusion is a recognition of the practicalities of a change of this magnitude and does not diminish the intent that an orderly transition to a consistent symbol system is desirable and should proceed as rapidly as public acceptance and other considerations permit.

2A-14 Word Messages

Where applicable, standard wordings as shown in this Manual shall be used for sign legends. Word messages should be as brief as possible and the lettering should be large enough to provide the necessary legibility distance.

Abbreviations should be kept to a minimum, and should include only those that are commonly recognized and understood, such as

Ave., Blvd., N. (for north), R. R., or Jct. Since long names can often be partially recognized by their length, it is sometimes permissible to put them in slightly smaller lettering than would otherwise be required.

2A-15 Lettering

Sign lettering shall be in upper-case letters of the type approved by the National Joint Committee on Uniform Traffic Control Devices, except that destination names may be in lower-case lettering, with initial upper-case. Standard upper-case and lower-case alphabets have been prepared.³

Use of the Series A and B alphabets is restricted to street-name and parking signs because of the limited breadth and stroke width.

As a guide to choice of alphabets, tests have shown that, for any given legend, better legibility can be obtained by using a relatively wide spacing between letters than by using wider and taller letters with a cramped space.

2A-16 Illumination and Reflectorization

Regulatory and warning signs, unless excepted in the standards covering a particular sign or group of signs, shall be reflectorized or illuminated to show the same shape and color both by day and night. All overhead sign installations should be illuminated where an engineering study shows that reflectorization will not perform effectively. Reflectorization, non-reflectorization, or illumination of guide signs shall be as provided in subsequent sections.

2A-17 Means of Illumination

Illumination may be by means of :

1. A light behind the sign face, illuminating the main message or symbol, or the sign background, or both, through a translucent material; or
2. An attached or independently mounted light source designed to direct essential uniform illumination over the entire face of the sign; or
3. Some other effective device, such as luminous tubing shaped to the lettering or symbol, patterns of incandescent light bulbs, or luminescent panels that will make the sign clearly visible at night.

Street or highway lighting is not regarded as meeting the requirements for sign illumination.

³ Available from the Federal Highway Administration, Washington, D.C. 20591.

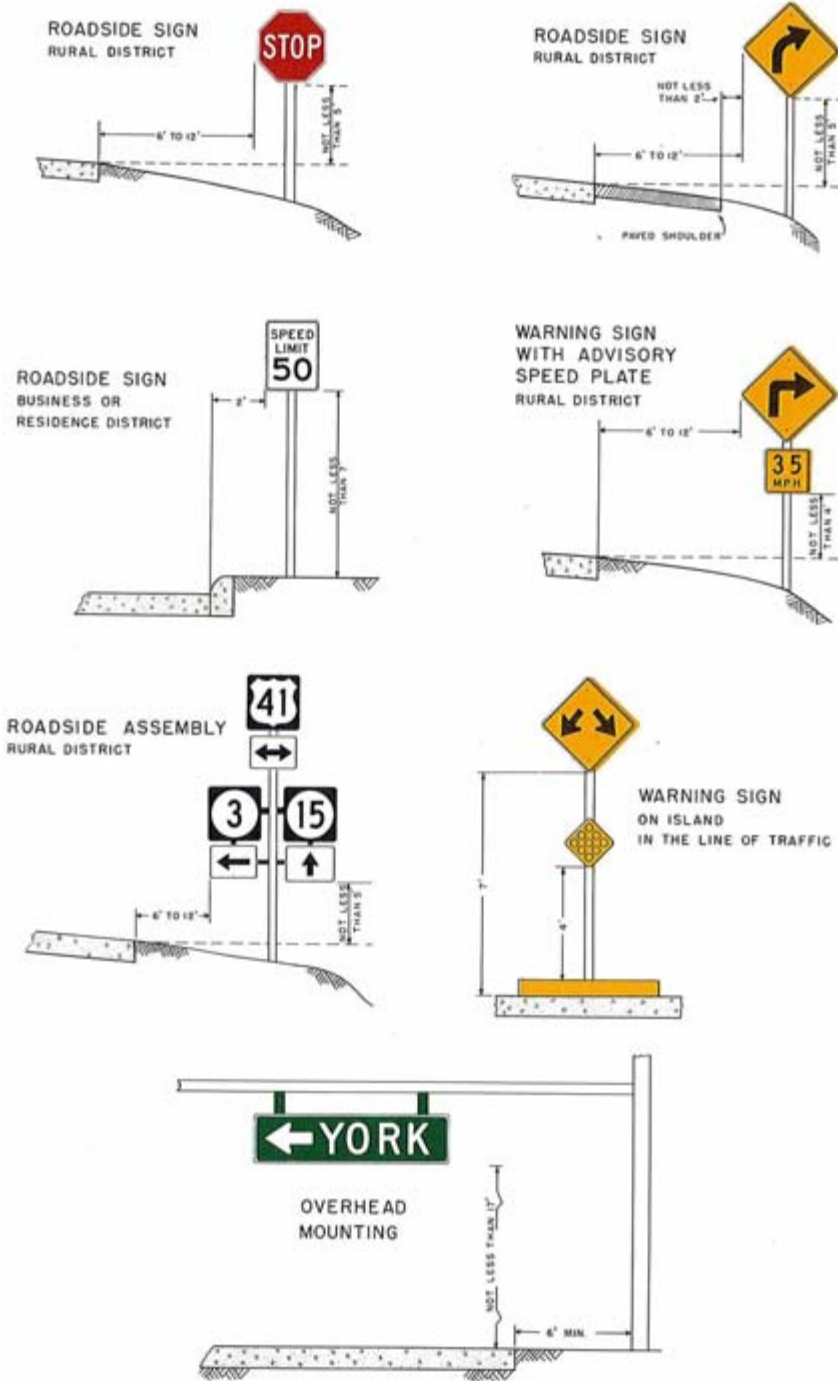


Figure 2-1. Height and lateral location of signs—typical installations.

2A-18 Means of Reflectorization

Reflectorization may be by means of:

1. Reflector "buttons" or similar units set into the symbol or message; or
2. Reflecting coatings, either on the sign background or where a white legend is used on a black or colored background in the symbol or message and border.

2A-19 Sign Borders

With few exceptions, all signs illustrated herein shall have a border of the same color as the legend, at or just inside the edge. A dark border should be set in from the edge, while a white border should extend to the edge of the panel. A suitable border for 30-inch signs with a light background is from one-half to three-quarters of an inch in width, one-half inch from the edge. For similar signs with a white border, a width of an inch is appropriate. For other sizes the border widths should be of similar proportions, but not to exceed the stroke-width of the major lettering of the sign. On signs exceeding 6 feet by 10 feet in size, the border should be approximately 2 inches wide, or on unusually large signs, 3 inches.

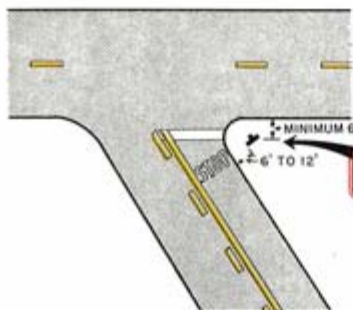
The corners of the sign border shall be rounded. Where practicable, the corners of the sign panels should also be rounded to fit the border.

2A-20 Supplemental Beacons

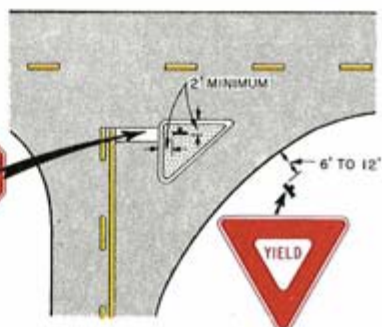
A hazard identification beacon (sec. 4E-1) may be used only to supplement an appropriate warning or regulatory sign. The beacon shall not be used within the border of the sign.

2A-21 Standardization of Location

Standardization of position cannot always be attained in practice; however, the general rule is to locate signs on the right-hand side of the roadway, where the driver is looking for them. On wide expressways, or where some degree of lane-use control is desirable, or where space is not available at the roadside, overhead signs are often necessary. Signs in any other locations ordinarily should be considered only as supplementary to signs in the normal locations. Under some circumstances signs may be placed on channelizing islands or (as on sharp curves to the right) on the left-hand shoulder of the road, directly in front of approaching vehicles. A supplementary sign located on the left of the roadway is often helpful on a multi-lane road where traffic in the right-hand lane may obstruct the view to the right.



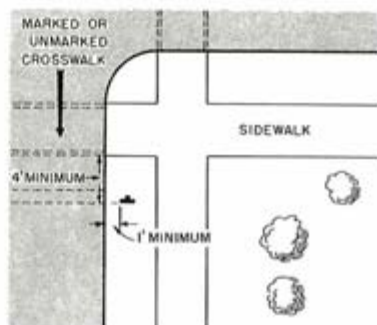
ACUTE ANGLE INTERSECTION



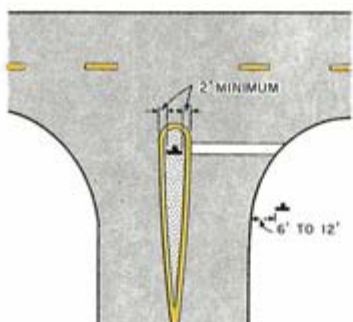
CHANNELIZED INTERSECTION



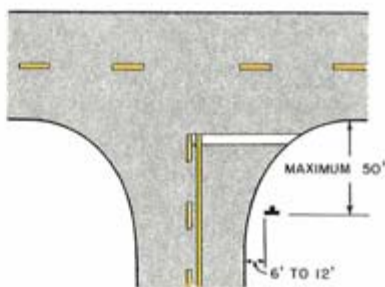
MINOR CROSSROAD



URBAN INTERSECTION



DIVISIONAL ISLAND



WIDE THROAT INTERSECTION

Figure 2-2. Typical locations for stop signs and yield signs.

Normally, signs should be individually erected on separate posts or mountings except where one sign supplements another or where route or directional signs must be grouped. In general, signs should be located to optimize nighttime visibility and minimize the effects of mud spatter and in conformance with safety factors related to fixed obstacles near the roadway. Signs should be located so that they do not obscure each other or are hidden from view by other roadside objects. Signs requiring different decisions by the motorist must be spaced sufficiently far apart for him to make the required decisions. The spacing shall be determined in units of time as determined by the expected vehicle approach speed.

Standard positions for a number of typical signs are illustrated in figures 2-1 to 2-4.

2A-22 Overhead Sign Installations

The operational requirements of our present highway system are such that overhead signs will have value at many locations. The factors justifying the erection of overhead sign displays are not definable in specific numerical terms, but the following conditions deserve consideration:

1. Traffic volume at or near capacity
2. Complex interchange design
3. Three or more lanes in each direction
4. Restricted sight distance
5. Closely spaced interchanges
6. Multi-lane exits
7. Large percentage of trucks
8. Background of street lighting
9. High speed of traffic
10. Consistency of sign message location through a series of interchanges
11. Insufficient space for ground signs
12. Junction of an Interstate route with another freeway

The existence of any one or more of the conditions listed does not automatically justify the use of signs overhead. Rather, overhead signs have application in lieu of or as an adjunct to ground signs when engineering study indicates that they are needed. Some of the elements listed above can be made less critical by close coordination between design and operation.

2A-23 Height

Signs erected at the side of the road in rural districts shall be mounted at a height of at least 5 feet, measured from the bottom of the sign to the near edge of the pavement. In business, commer-

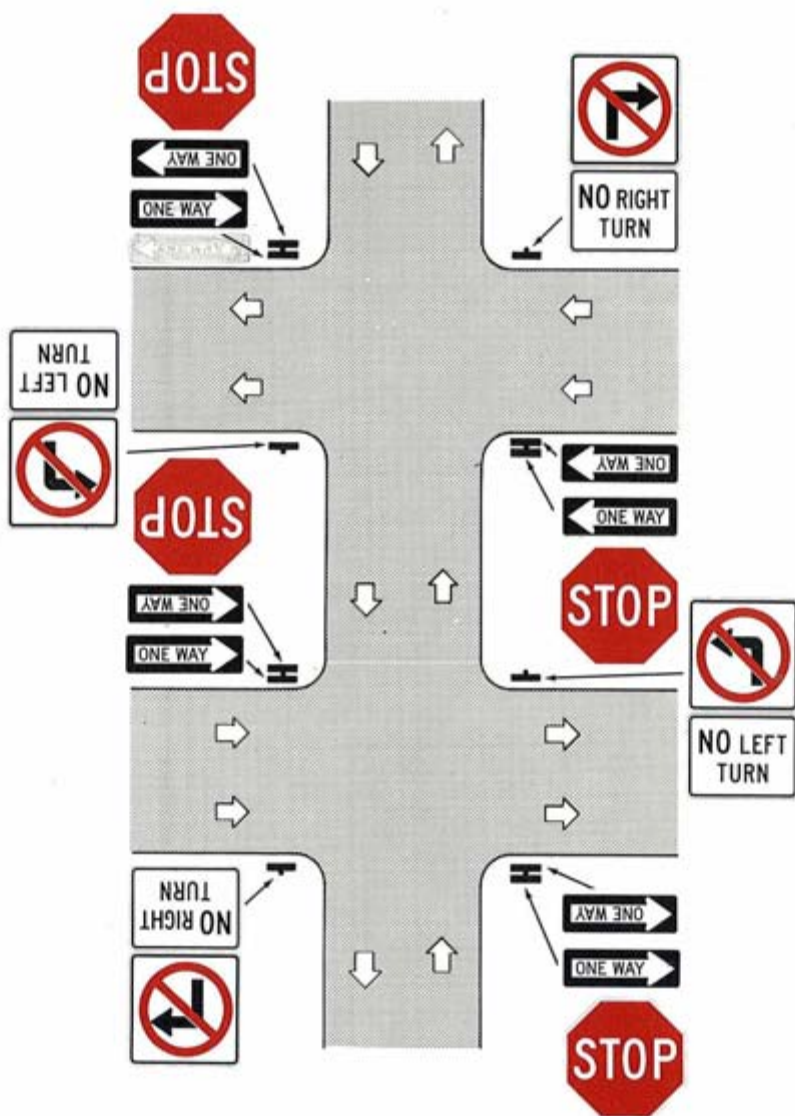


Figure 2-3. Location of one-way and turn prohibition signs.

cial and residential districts where parking and/or pedestrian movement is likely to occur or where there are other obstructions to view, the clearance to the bottom of the sign shall be at least 7 feet. The height to the bottom of a secondary sign mounted below another sign may be 1 foot less than the appropriate height specified above.

The height requirements for ground installations on expressways vary somewhat from those on conventional streets and highways. Directional signs on expressways shall be erected with a minimum height of 7 feet (from the level of the near edge of the pavement to

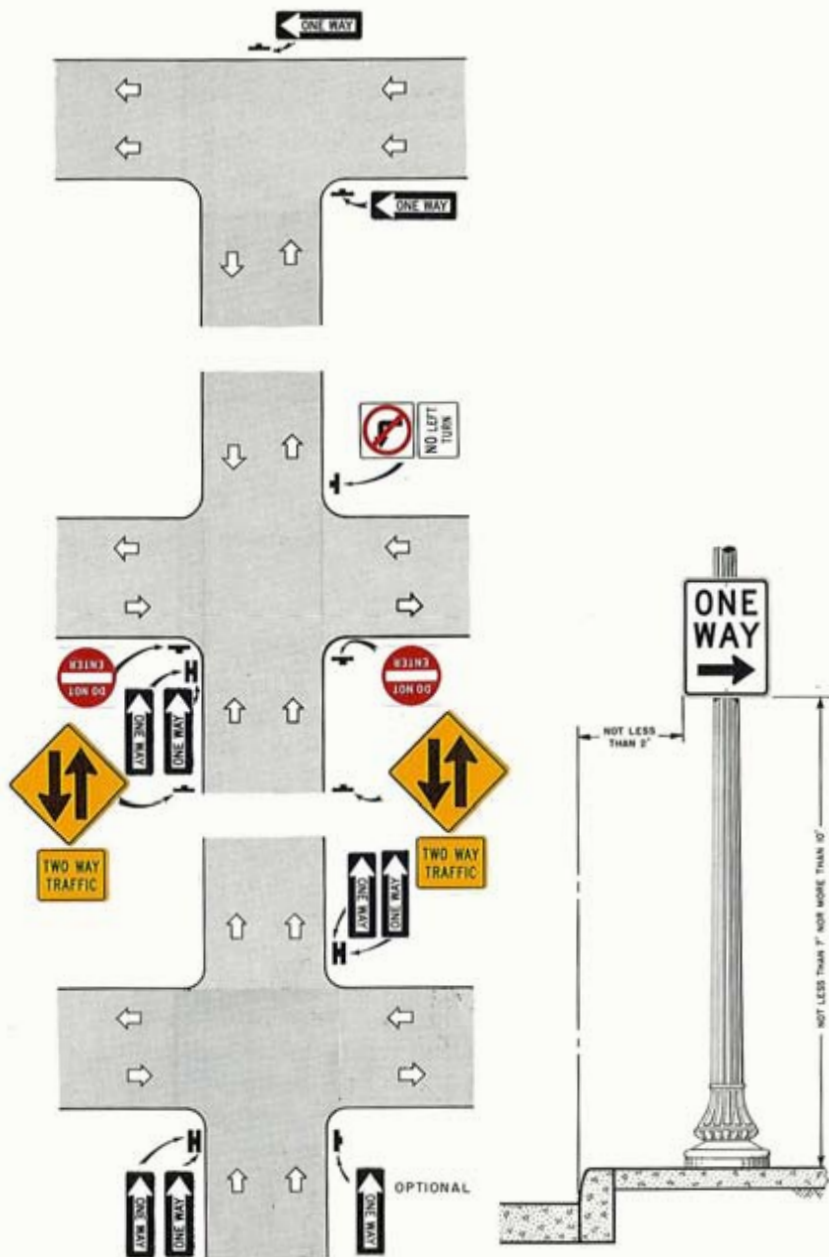


Figure 2-4. Location of one-way signs.

the bottom of the sign). If, however, a secondary sign is mounted below another sign, the major sign shall be at least 8 feet and the secondary sign at least 5 feet above the level of the pavement edge.

All route markers and warning and regulatory signs on expressways shall be at least 6 feet above the level of the pavement edge. However, where signs are placed 30 feet or more from the edge of the nearest traffic lane for increased roadside safety, the height to the bottom of such signs may be 5 feet above the level of the pavement edge.

A route marking assembly consisting of a route marker with an auxiliary plate (sec. 2D-10) is treated as a single sign for the purposes of this section.

Overhead signs shall provide a vertical clearance of not less than 17 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. 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.

2A-24 Lateral Clearance

Signs should have the maximum practical lateral clearance from the edge of the traveled way for the safety of motorists who may leave the roadway and strike the sign supports. Advantage should be taken of existing guardrail, overcrossing structures and other conditions to minimize the exposure of sign supports to traffic. Otherwise, breakaway or yielding supports should be used.

Normally, signs should not be closer than 6 feet from the edge of the shoulder, or if none, 12 feet from the edge of the traveled way. In urban areas a lesser clearance may be used where necessary. A clearance of 1 foot from the curb face is permissible where sidewalk width is limited or where existing poles are close to the curb.

The minimum clearance outside the usable roadway shoulder for expressway signs mounted at the roadside or for overhead sign supports, either to the right or left side of the roadway, shall be 2 feet. This minimum clearance of 2 feet shall also apply outside of an unmountable curb. Where practicable, a sign should not be less than 10 feet from the edge of the nearest traffic lane. Large guide signs especially should be farther removed, preferably 30 feet or more from the nearest traffic lane. Lesser clearances, but not generally less than 6 feet, may be used on connecting roadways or ramps at interchanges.

Where 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 and other overhead sign supports



Figure 2-5. Typical applications of warning signs.

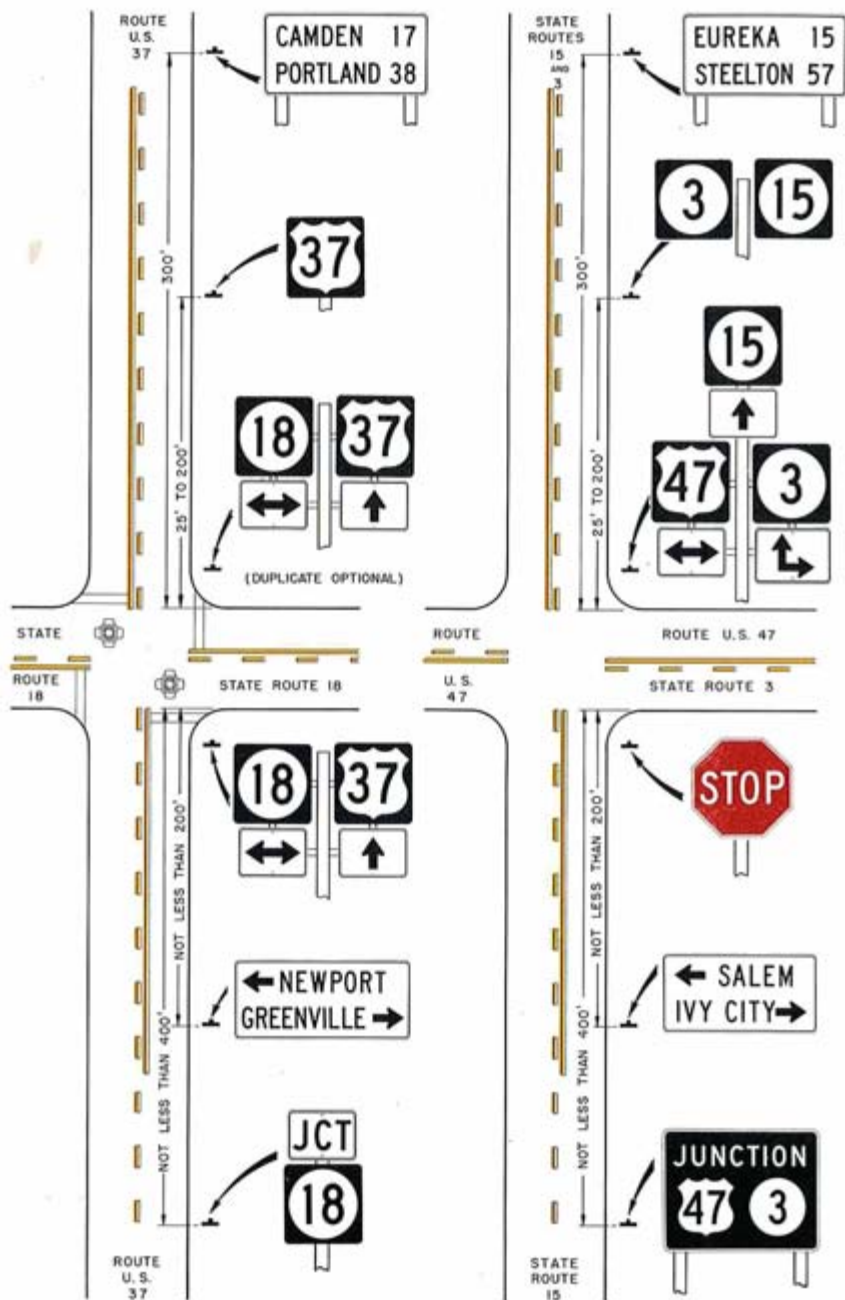


Figure 2-6a. Typical route markings at rural intersections (for one direction of travel only).

should not be erected in gores or other exposed locations. Where overhead sign supports cannot be placed a safe distance away from the line of traffic, or in an otherwise protected site, they should either be so designed as to minimize the impact forces, or otherwise protect motorists adequately by a physical barrier or guardrail of suitable design.

2A-25 Position of Signs

A warning sign is placed in advance of the condition to which it calls attention (fig. 2-5). A regulatory sign normally is placed where its mandate or prohibition applies or begins. Guide signs are placed, where needed, to keep drivers well informed as to the route to their destination. Figures 2-6a, 6b, 6c show the placement of intersection guide signs on other than expressways. Detailed specifications for sign locations are given in the sections of the Manual dealing with an individual sign or classes of signs.

2A-26 Erection

Normally, signs should be mounted approximately at right angles to the direction of, and facing, the traffic that they are intended to serve.

Where mirror reflection from the sign face is encountered in such degree as to reduce legibility, the sign should be turned slightly away from the road. At curved alignments, the angle of placement should be determined by the course of approaching traffic rather than by the roadway edge at the point where the sign is located. Sign faces normally are vertical, but on grades it may be desirable to tilt a sign forward or back from the vertical to improve the viewing angle.

2A-27 Posts and Mountings

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

Especially in rural areas, if roadside sign supports cannot be sufficiently distant (sec. 2A-24) from the pavement edge, sign supports should be of a suitable breakaway or yielding design. Concrete bases for sign supports should be flush with the ground level.

In some cases, especially in urban districts, signs can be correctly placed on existing supports used for other purposes, such as traffic signals, street lights, and public utility poles where permitted, thereby saving expense and minimizing sidewalk obstruction.

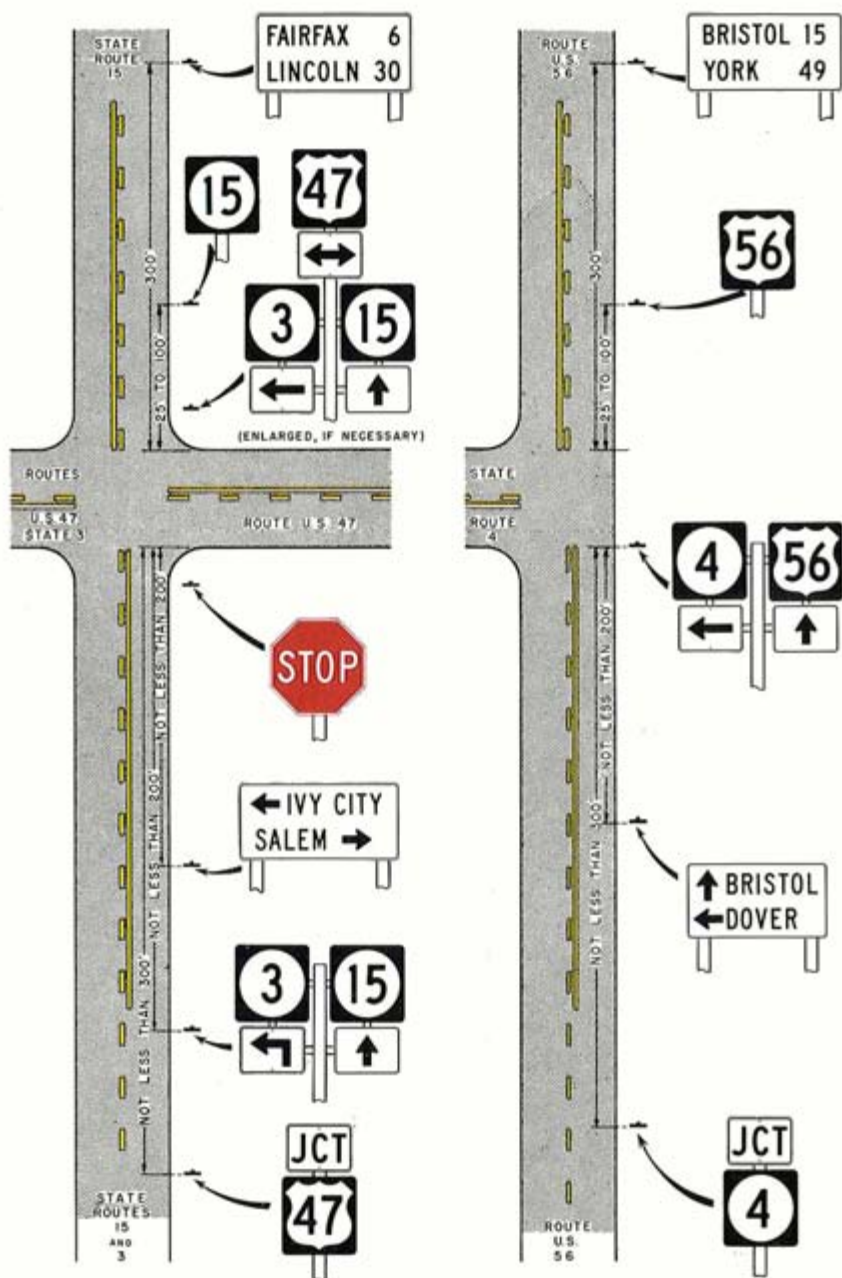


Figure 2-6b. Typical route markings at rural intersections (for one direction of travel only).

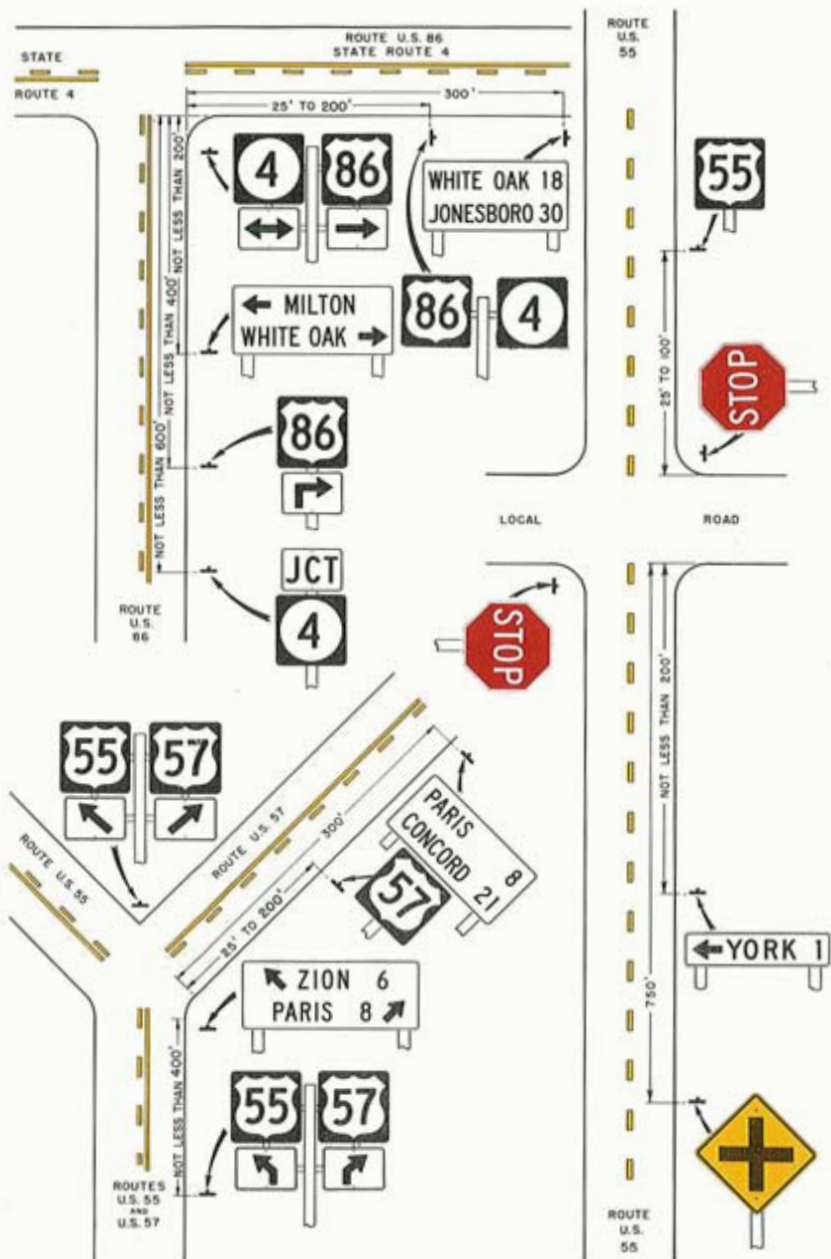


Figure 2-6c. Typical route markings at rural intersections (for one direction of travel only).

2A-28 Bridges for Sign Supports

An overcrossing structure will sometimes serve for the support of overhead signs, and under some circumstances, may be the only practical solution that will provide adequate viewing distance. Such use of a structure as a sign support will eliminate the need for the foundations and sign supports along the roadside. On an urban freeway where overhead crossings are closely spaced, for example, it may be feasible to place some signs on the bridges.

2A-29 Sign Materials

A variety of materials can be used effectively. However, it is recognized that technological progress may develop new and satisfactory or superior materials for highway signs, particularly in the fields of illumination and reflectorization. Nothing in this Manual should be interpreted to exclude any new material that meets the standard requirements for color and visibility.

2A-30 Maintenance

All traffic signs should be kept in proper position, clean and legible at all times. Damaged signs should be replaced without undue delay.

To insure adequate maintenance, a suitable schedule for inspection, cleaning and replacement of signs should be established. Employees of the highway department, police and other governmental employees whose duties require that they travel on the highways should be encouraged to report any damaged or obscured signs at the first opportunity.

Special attention and necessary action should be taken to see that weeds, trees, shrubbery and construction materials do not obscure the face of any sign.

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

B. REGULATORY SIGNS

2B-1 Application of Regulatory Signs

Regulatory signs inform highway users of traffic laws or regulations and indicate the applicability of legal requirements that would not otherwise be apparent. These signs shall be erected wherever needed to fulfill this purpose, but unnecessary mandates should be avoided. The laws of many States specify that certain regulations are enforceable only when made known by official signs.