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Forest Service

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A background photograph of a river with white water rapids flowing over dark, moss-covered rocks. A large fallen log is visible in the upper left. The image is semi-transparent to allow text to be overlaid.

Sign and Poster Guidelines for the Forest Service

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1.1 Policy

Standard signs shall not be modified unless there is a demonstrated need.

Forest Service (FSM) policy regarding signs and posters is contained in Forest Service Manual 7100, chapter 7160—Signs and Posters.

Standard signs shown in the Management of Uniform Traffic Control Devices (MUTCD) and the Engineering Management (EM) series 7100-15 “Sign and Poster Guidelines for the Forest Service” shall not be modified unless there is a demonstrated need. Refer to sections 1.4 and 1.6.

The use of new shapes and colors for regulatory and warning signs; new regulatory, recreational and cultural interest area symbols; and new traffic control devices not referenced in the MUTCD, the EM 7100-15, or approved addendums require Washington Office Director of Engineering approval. Refer to FSM 7160.41b.

The use of new symbol warning and regulatory signs for National Forest System roads (NFS roads) and bicycle trails not referenced in the MUTCD, these Guidelines, or approved addendums require a recommendation from the Washington Office Director of Engineering and approval by the FHWA. New symbol warning and regulatory signs for all other uses shall be approved by the Washington Office Director of Engineering.

All deviations from the standards in the MUTCD and the EM 7100-15 applicable to acquisition, design, and installation of signs and posters not reserved to the Washington Office Director of Engineering require Regional Office approval through the regional sign coordinator. Refer to FSM 7160.42a.

The use of new word messages for regulatory and warning signs is not considered a deviation from the standards in the MUTCD and the EM 7100-15, but shall be approved by the regional sign coordinator for consistency and to ensure the basic requirements are met.

1.2 Objectives

The objectives of the sign and poster program are to:

- Support accomplishment of direction contained in land and resource management plans for the administration, protection, management, and use of National Forest System lands.
- Provide information for the safety, enjoyment, and convenience of national forest and grassland visitors, users, cooperators, and employees.
- Provide information about geographic and historical features and the use and management of resource activities on National Forest System lands.
- Identify facilities and lands within the National Forest System.

1.3 Principles

Signs and posters shall be designed, installed, positioned, and maintained to:

- Fulfill a legal requirement or an important need.
- Command attention.
- Convey a clear, simple meaning.
- Command respect.
- Give adequate time for proper response.

Signs and posters should be used conservatively. Signs and posters used to excess tend to lose their effectiveness.

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Signs and posters that need to be seen both day and night shall be retroreflective or illuminated.

Signs should be installed on the right-hand side of the travelway except where engineering judgment or engineering study determine topography or other considerations, such as on curves to the right dictate a sign be placed on the left-hand side.

Signage should consider the needs of persons with disabilities or non-English-speaking users when and where appropriate. Use of languages other than English on signs is not appropriate.

In addition, Forest Service signs and posters should match visitor and travel information found in current Forest Service paper and electronic media maps or other sources of visitor information.

The cost and need to maintain an effective sign program including planning, fabricating, installing, maintaining, and replacing is an ongoing commitment and must be factored into the short-term and long-term budget cycles.

1.4 MUTCD—Standard for Traffic Control Devices

The Manual on Uniform Traffic Control Devices (MUTCD) is the national standard for all traffic control devices (TCD). TCD are signs, markings, pavement markings, and other devices used to control traffic on all roads open to public travel. TCD shall be constructed, located, installed, and maintained according to the standards contained in the MUTCD.

The MUTCD has been adopted by the Forest Service and has been supplemented with the direction in the EM 7100-15 "Sign and Poster Guidelines for the Forest Service."

The Forest Service is required by 23 CFR 655.603(b)(3) to revise the EM 7100-15 to be in substantial conformance with changes to the National MUTCD within 2 years of the effective date of the Final Rule for the changes.

Some devices in previous editions of the MUTCD have been changed, deleted, and/or added. Refer to the current edition of the MUTCD for specific guidance and target dates for compliance for these devices.

1.5 Sign Coordinators

The Washington Office, regional offices, and national forests and grasslands are each required to assign the duties of sign coordinator to an individual qualified by education, training, and experience to make decisions about the design and installation of signs and TCD (FSM 7160). The MUTCD states that engineering judgment and engineering studies required for deciding upon the applicability, design, operation, or installation of a traffic control device shall be exercised by an engineer or someone under the direct supervision of an engineer. A designated sign coordinator meets this requirement and is considered a qualified engineer based on the specific duties of sign coordinators outlined in FSM 7160. Forest Service employees should contact their respective unit sign coordinator when they have questions and need advice on unique signing problems. In addition to providing engineering judgment and preparing engineering studies when necessary, a forest sign coordinator should review and approve sign orders and sign packages contained in contracts, as well as verify compliance of ordered signs with specifications.

1.6 EM 7100-15 Sign and Poster Guidelines for the Forest Service

1.6.1 Purpose and Use

The purpose of the EM 7100-15 is to provide national guidance for the effective management of the Forest Service signing program. The EM 7100-15 identifies the basic signing principles for planning, designing, procuring, installing, and maintaining signs and posters. The EM 7100-15 provides standards and guidance for uses and situations that are specific to the Forest Service. Following these principles, standards, and guidelines will result in a consistent, effective, and economic signing program that meets Forest Service objectives and conveys a professional and positive image of the Forest Service to the public. Information from the MUTCD typically is not repeated in this EM unless it is needed for emphasis or clarification. Detailed signing situations, sizes, and messages unique to the Forest Service and not covered in the MUTCD, as well as amplifications or explanations necessary for clarification, are contained in the EM 7100-15. Only English equivalent units of measure, such as feet, inches, or miles per hour are used in the EM 7100-15.

When used in this Engineering Management series, “Guidelines” refers to EM 7100-15, “Sign and Poster Guidelines for the Forest Service.”

1.6.2 Abbreviations

The following abbreviations are used in these Guidelines:

- **AADT** or **ADT**—Average annual daily traffic or average daily traffic.
- **AASHTO**—American Association of State Highway and Transportation Officials.
- **CFR**—Code of Federal Regulations
- **DOT**—Department of Transportation.

These Guidelines identify the basic signing principles for planning, designing, procuring, installing, and maintaining signs and posters.

- **FHWA**—Federal Highway Administration.
- **FSH**—Forest Service Handbook.
- **FSM**—Forest Service Manual.
- **HDO**—High Density Overlay plywood with hard smooth surface(s) to which retroreflective sheeting will adhere.
- **MDO**—Medium Density Overlay plywood with surface(s) similar to kraft paper that will accept routing and paint.
- **ML**—Road maintenance level, usually followed by a number (1 through 5).
- **MUTCD**—Manual on Uniform Traffic Control Devices, a manual published by the United States Department of Transportation Federal Highway Administration containing national signing standards used by all public road agencies.
- **NFS**—National Forest System.
- **OHV**—Off-Highway Vehicle(s).
- **RMO**—Road Management Objective(s).
- **SADT**—Seasonal Annual Daily Traffic.
- **TCD**—Traffic Control Device(s). Signs, markings, pavement markings, and other devices used to give information to route users.
- **TMO**—Trail Management Objective(s).
- **USC**—United States Code.
- **VIS**—Visitor Information Services.

In addition, many chapters contain abbreviations that are defined in those chapters.

1.6.3 Definitions of Headings, Words, and Phrases in Guidelines

Words and phrases used in these Guidelines shall have the following meanings:

Administrative unit—A national forest, a national grassland, a purchase unit, a land utilization project, Columbia River Gorge National Scenic Area, Land Between the Lakes, Lake Tahoe Basin Management Unit, Midewin National Tallgrass Prairie, or other comparable unit of the National Forest System (36 CFR 212.1, 36 CFR 261.2, FSH 7705).

Advisory speed—A recommended speed for all vehicles operating on a section of highway and based on the highway design, operating characteristics, and conditions.

Average daily traffic—The total number of vehicles passing a given point during a given time period divided by the number of days in that time period (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets).

Average speed—The summation of the instantaneous or spot-measured speeds at a specific location of vehicles divided by the number of vehicles observed.

Basic rule—No person shall drive a vehicle at a speed greater than is reasonable and prudent under the conditions and having regard to the actual and potential hazards.

Breakaway—A design feature which allows a device, such as a sign support, to yield or separate upon impact. Also referred to as crashworthy.

Clear zone—The total roadside border area, starting at the edge of the traveled way that is available for an errant driver to stop or regain control of a vehicle. This area might consist of a shoulder, a recoverable slope, and/or a nonrecoverable, traversable slope with a clear run-out area at its toe.

Closure—When referring to access and travel management restrictions, the term “closure” means the route or area is closed to ALL types of traffic, including foot traffic. This option is seldom used except in emergencies, such as fire or weather closures or special management situations, such as protection of an eagle-nesting site. The term “closed” should not be used to refer to routes that have been decommissioned or converted, or on routes where only some uses have been restricted.

Coincident routes—A single route that is managed as part of two different inventoried routes in the Forest Transportation Atlas. An example is a road that is also managed as a trail. There are two types of coincident routes:

1. Concurrent: A coincident route on which the uses are simultaneous and must be managed for mixed traffic.
2. Separate: A coincident route on which the uses are not simultaneous but separate, so the route is not managed for mixed traffic. Separate use periods may occur by:
 - Specific times, such as weekday and weekend.
 - Seasons, such as a summer road and a winter snow trail.

Commercial enterprises—Private commercial developments or commercial public service establishments on National Forest System lands or on private lands inside or adjacent to the national forest, such as resorts, marinas, campgrounds, and ski areas.

Conventional road—A street or highway with over 400 seasonal average daily traffic (SADT) and speeds of 35 miles per hour or more.

Crashworthy—Breakaway, yielding, or shielded with a longitudinal barrier or crash cushion. A characteristic of a roadside appurtenance that has been successfully crash tested in accordance with a national standard such as the National Cooperative Highway Research Program Report 350, “Recommended Procedures for the Safety Performance Evaluation of Highway Features.”

Designated road, trail, or area—A National Forest System road, a National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on a motor vehicle use map (36 CFR 212.1).

Design speed—A selected speed used to determine the various geometric design features of a roadway.

85th-Percentile speed—The speed at or below which 85 percent of the motor vehicles travel. It is determined by speed studies and generally is used in engineering studies to determine the prevailing speed.

Engineering analysis—An analysis and evaluation conducted by a qualified engineer, or under the supervision of a qualified engineer, of an NFS roads, road segment, or road system being considered for motorized mixed use. The analysis and evaluation may include recommended mitigation measures. The analysis may be simply documentation of engineering judgment or may be a more complex engineering report that includes many factors related to motorized mixed use (FSM 7705).

Engineering judgment—The evaluation of available pertinent information, and the application of appropriate principles, standards, guidance, and practices as contained in the MUTCD, EM7100-15, and other sources, for the purpose of deciding upon the applicability, design, operation, or installation of a traffic control device. It is less technical than an engineering study. Engineering judgment shall be exercised by a qualified engineer, or by an individual working under the supervision of a qualified engineer, through the application of procedures and criteria established by the qualified engineer. Engineering judgment SHALL be documented.

Engineering study—A formal, analytical, and comprehensive analysis and evaluation of available pertinent information, and the application of appropriate principles, standards, guidance, and practices as contained in the MUTCD, EM7100-15, and other sources, for the purpose of deciding upon the applicability, design, operation, or installation of a traffic control device. An engineering study shall be performed by a qualified engineer, or by an individual working under the supervision of a qualified engineer, through the application of procedures and criteria established by the qualified engineer. An engineering study SHALL be documented.

Font—An assortment or set of type of characters all of one style; typeface.

Highway-legal vehicle—Any motor vehicle that is licensed or certified under State law for general operation on all public roads within the State. Operators of highway-legal vehicles are subject to State traffic law, including requirements for operator licensing (FSM 7705).

Highway Safety Act of 1966 (23 U.S.C. 402, Pub. L. 89-564)—

Authorizes State and local governments and participating Federal agencies to identify and survey accident locations; to design, construct, and maintain roads in accordance with safety standards; to apply sound traffic control principles and standards; and to promote pedestrian safety

Human factors—The process of designing and operating systems for human use. It is the branch of expertise relating to the study of various interactions between traffic control devices and the road user.

Low-volume road—A low-volume road is a facility lying outside of built-up areas of cities, towns, and communities, and it shall have a traffic volume of less than 400 AADT. A low-volume road is not a freeway, expressway, interchange ramp, freeway service road, or a road on a designated State highway system. In terms of highway classification, it shall be a variation of a conventional road or a special purpose road as defined in the MUTCD, section 2A.01.C. A low-volume road may be paved or unpaved.

Maintenance levels (ML)—The Forest Service classifies maintenance of NFS roads by five levels: 1, 2, 3, 4, and 5. Maintenance level 1 roads are roads that have been placed in storage between intermittent uses. Maintenance level 2 roads are maintained for high clearance vehicles. Maintenance levels 3, 4, and 5 roads are maintained for passage by standard passenger cars during the normal season of use. See FSH 7709.59, section 62.3

Managed use—A mode of travel that is actively managed and appropriate on a trail, based on its design and management (FSH 2309.18).

May—Denotes a practice that is permissive and carries no requirement or recommendation. In the MUCTD, “may” is equal to “option.”

Motorized mixed use—Designation of an National Forest System road for use by both highway-legal and non-highway-legal motor vehicles (FSM 7705).

National Forest System road (NFS roads)—A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county or other local public road authority (36 CFR 212.1, 36 CFR 251.51, 36 CFR 261.2).

National Forest System trail (NFST)—A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a State, county or other local public road authority (36 CFR 212.1).

Noncommercial enterprises—Privately built and owned camps and residences on National Forest System lands, such as recreation residences, organization camps, private clubs, lodges, and shelters.

Non-highway-legal vehicle—Any motor vehicle that is not licensed or certified under State law for general operation on all public roads within the State. Operators of non-highway-legal vehicles are subject to State requirements, if any, for licensing and operation of the vehicle in question (FSM 7705).

Off-highway vehicle—Any motor vehicle designed for or capable of cross county travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1, FSM 2353.05, FSH 2309.18.05, FSM 7705).

Onsite signing—Comprises all signs within the site necessary to adequately guide or inform the user. It includes all regulatory, warning, and guide signs needed for road users, identification of buildings and other facilities, campsite markers, bulletin boards, and posters.

Operating speed—The speed at which drivers are observed operating their vehicles during free-flow conditions (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets).

Operating speed—A speed at which a typical vehicle or the overall traffic operates. Operating speed might be defined with speed values such as the average, pace, or 85th-percentile speeds.

Pace speed—The highest speed within a specific range of speeds that represents more vehicles than in any other like range of speed. The range of speeds typically used is 10 km/h or 10 mph.

Posted speed—The speed limit set by law, ordinance, or order, and shown on Speed Limit signs.

Prevailing speed—The speed that drivers desire to travel on the segment of road and should be used to set speed limits barring some other overriding condition.

Professional Judgement—A decision made by an individual who by experience, certification, education, or license, is a technically trained and experienced professional in a specific area of expertise with the ability to conduct a principled and reasoned analysis considering all of the appropriate information and the best available science and expertise that complies with FSM/FSH direction and other applicable established requirements, guidelines and procedures.

Prudent driver—A prudent driver is a person operating within their physical and mental limitation; with a properly equipped and maintained vehicle; and who always exercises due care for the road, traffic, lighting, and weather conditions (AASHTO's "Guidelines for Geometric Design of Very Low-Volume Local Roads" (ADTL400).

Public road—Any road or street under the jurisdiction of and maintained by a public agency and open to public travel.

Qualified engineer—An engineer who by experience, certification, education, or license, is technically trained and experienced in the proper application of principles, standards, guidance, and practices for traffic control devices, such as forest, regional, and national sign coordinators.

Reasonable and prudent—In defining negligence, practically synonymous with "cautious driver." (Black's Law Dictionary) One who drives with care and due caution at a speed and in a manner which is safe. The care a driver must use considering factors such as traffic, weather, and road or trail conditions.

Recreation opportunity spectrum (ROS)—A framework for understanding the relationships of signing and other management actions in various settings to the visitors' experiences. For example, hiking in a wilderness with few signs enhances the hiker's feelings of self reliance, self-discovery, challenge, and solitude. In contrast, walking easy interpretive trails outside a visitor center with numerous signs and information offers the visitor more comfort, security, opportunities for learning, and social opportunities.

Restriction—A restriction precludes the use of the route or area during a specified time period by:

- Type of vehicle or mode of travel, such as motorized vehicles, passenger cars, log trucks, all-terrain vehicles (ATV), motorcycles, or snowmobiles.
- Type of traffic, such as nonmotorized, public, or commercial traffic. Other types of nonrestricted traffic or vehicles are accepted.

Retroreflective sheeting—Flexible sheets consisting of countless micro cube-corners or spheres enclosed in a weather-resistant transparent plastic film. To reflect color, pigment or dye is inserted into the film or onto the reflecting surface.

Retroreflectivity—The nighttime visibility of signs and pavement markings. The scientific term that describes the ability of a surface to return light back to its original source. Retroreflective signs and pavement markings bounce light from vehicle headlights back toward the vehicle and the driver's eyes, making signs and pavement markings visible to the driver. Signs and markings that efficiently return the light appear brighter and easier to see and read.

Road Management Objectives (RMO)—Road management objectives document the intended purpose, design criteria (FSM 7720), and operation and maintenance criteria (FSM 7730.3) for each NFS road. RMO require written approval by responsible official and are included in the applicable forest transportation atlas (FSM 7711.2. para. 2a). Use the process enumerated in FSH 7709.59, chapter 10, for documenting RMO. An RMO is required for each NFS road.

Scenic integrity objectives—A measure of the degree to which a landscape is visually perceived to be whole, intact, or complete. Scenic integrity is measured as a continuum over five levels: very high (unaltered), high (appears unaltered), moderate (slightly altered), low (moderately altered), and very low (heavily altered).

Seasonal average daily traffic (SADT)—The total volume of traffic passing a point or segment of a road in both directions for a particular season divided by the number of days in the season. Normally, periodic daily traffic volumes are adjusted for hours of the day counted, days of the week, and seasons of use to arrive at the seasonal average daily traffic.

Shall—Used for a statement of required, mandatory, or specifically prohibited practice. For traffic control devices, this requires compliance with the MUTCD and any additional guidance provided by these Guidelines. In the MUTCD, "shall" is equal to "standard."

Should—Used as guidance for a recommended but not mandatory practice with deviations allowed where engineering judgment or engineering study indicate a deviation is appropriate. In the MUTCD, “should” is equal to “guidance.”

Speed limit—The maximum or minimum speed applicable to a section of highway as established by law.

Statutory speed—A speed limit established by legislative action that typically is applicable for highways with specified design, functional, jurisdictional and/or location characteristic and is not necessarily shown on Speed Limit signs. This may also be referred to as the “Basic Rule.”

Temporary traffic control (TTC)—The control of traffic when road construction, utility work, maintenance operations, planned major events, and the management of incidents, such as traffic accidents, wildfires, floods, and hazardous material spills, take place on or adjacent to the road and the normal use of the road is temporarily interrupted.

Temporary traffic control zone—An area of a highway where road user conditions are changed because of a work zone or incident by the use of temporary traffic control devices, flaggers, uniformed law enforcement officers, or other authorized personnel.

Traffic—Pedestrians, bicyclists, ridden or herded animals, vehicles, streetcars, and other conveyances either singularly or together while using for purposes of travel any highway or private road open to public travel.

Traffic control device (TCD)—A sign, signal, marking, or other device used to regulate, warn, or guide traffic placed on, over, or adjacent to a street, road (or trail), or highway, public facility, private property open to public travel, pedestrian facility, or shared use path, by authority of a public agency or official having jurisdiction.

Traffic engineering—The study of the interaction between the road user, the vehicle, and the roadway. A systematic investigation of traffic engineering and safety issues must understand the communication process between traffic control devices and the road user. It includes the optimum legibility, visibility, interpretation, and reaction for colors, size, legibility, shapes, and placement of signs that best meet the needs of conveying the appropriate message to the driver at the proper time.

Traffic management strategies—Options for managing traffic on NFS roads where appropriate to control traffic. Use one or a combination of the following strategies for different modes of travel (FSM 7731.11):

- **Encourage use.** Encourage use consistent with the condition of the road and its Road Management Objectives.
- **Accept use.** Accept, but do not encourage, use by vehicles that are suitable for the road.
- **Discourage use.** Discourage some or all types of motor vehicle use.
- **Prohibit use.** Prohibit motor vehicle use.

Trail Management Objectives—Trail management objectives (TMO) document the intended purpose, design criteria (FSM 2353.26), and operation and maintenance criteria (FSM 2353.25) for each NFS trail. TMO require written approval by the responsible official and are included in the applicable forest transportation atlas (FSM 7711.2, para. 2a). See FSM 2353.12 for direction on documenting TMO. A TMO is required for each NFS trail.

Traveled way—The portion of the roadway used for the movement of vehicles, exclusive of shoulders and auxiliary lanes (AASHTO, 2001, A Policy on Geometric Design of Highways and Streets).

Unauthorized road or trail—A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR 212.1, FSM 2353.05, FSM 7705).

Vehicle—Any device in, upon, or by which any person or property is or may be transported, including any frame, chassis, or body of any motor vehicle, except devices used exclusively upon stationary rails or tracks (36 CFR 261.2).

Viewing distance—The distance an object is viewed. For viewing text, the industry standard calculation is visibility at 50 feet per 1 inch of character height. For viewing graphic and video images, both minimum and maximum viewing distances should be considered.

- **Minimum viewing distance** is the closest a viewer can be located to the display and see a uniform image. Text based displays are more forgiving and can be legible from a few feet away.
- **Maximum viewing distance** is the farthest distance from the display the viewer can be located and recognize the displayed content. The more detailed the content the closer a viewer will need to be to adequately read it.

Warrant—A warrant describes threshold conditions to the engineer in evaluating the potential safety and operational benefits of traffic control devices and is based upon average or normal conditions. Warrants are not a substitute for engineering judgment. The fact that a warrant for a particular traffic control device is met is not conclusive justification for the installation of the device.

Wheelchair or mobility device—A device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion; that is suitable for use in an indoor pedestrian area; and that may be used by a person whose disability requires its use anywhere that foot travel is permitted (Title V, sec. 507c, of the Americans With Disabilities Act and 36 CFR 212.1) (FSM 2352.05, FSH 2309.18.05).

1.6.4 Sign Identification

Signs are usually identified by a unique series of letters and numbers. The letters are abbreviations that refer to the type of sign. The numbers refer to the size of the sign or the sequence of the sign within a specific sign series. The most common sign abbreviations are shown below.

Common Sign Abbreviations	
Abbreviation	Term
A	Administrative Site—Urban
AS	Administrative Site—Rural
BM	Barricade Marker
D10	Reference location sign (formerly mile post)
FA	Forest Service Fee Area
FE	Forest Entrance—Major Boundary
FL	Forest Leaving—Major Boundary
FM	Forest Route Marker
FR	Forest Service regulatory sign having a different size or design than listed in MUTCD
FW	Forest Service warning sign having a different size or design than listed in MUTCD
FP	Fire Prevention
FRD	Forest Road Destination
IC	Incident Command
JC	Job Corps
M	Route Markers
MFE	Minor Forest Entrance
MFL	Minor Forest Leaving
NFL	National Forest Land Boundary
NHT	National Historic Trail Marker
NRA	National Recreation Area
NRT	National Recreation Trail Marker
NST	National Scenic Trail Marker
OM	Object Marker

Common Sign Abbreviations (continued)	
Abbreviation	Term
P	USDA Plaque
PXX*	Poster
R	Regulatory (MUTCD signs for roads)
RA	Recreation Area
RS-XXX*	Recreational and Cultural Interest Area Symbol
RD	Road
RS	Recreation Site Identification
RSE	Recreation Site Entrance
S	Forest Service Shield
SA	Site Approach
SBL	Scenic Byway Logo
SBR	Smokey Bear Fire Rating
SDS	Sanitary Dump Site
SW	Solid Waste Disposal
TB	Trail Blazer
TD	Trail Destination
TDW	Trail Destination—Wilderness
TM	Travel Management
VIS	Visitor Information Service
W	Warning (MUTCD signs for roads)
WP	Wilderness/Primitive Area
WSR	Wild and Scenic River
YCC	Youth Conservation Corps

* X's stand for numbers in the specific sign or poster number

Figure 1-1 gives examples of how these abbreviations are used to identify specific signs.

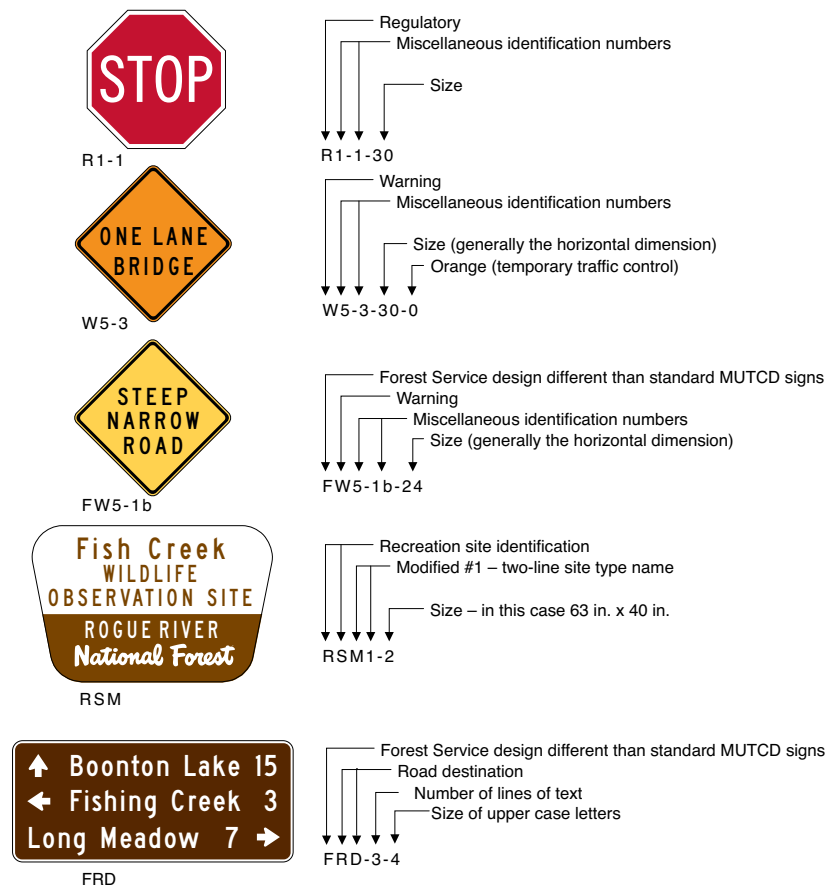


Figure 1-1—How to read sign numbers.

1.7 Sign and Poster Standards

1.7.1 Design

Designs—Standard designs have been developed for signs and posters and should be used as required. Design of signs should ensure that features, such as size, contrast, color, shape, composition and lighting, or retroreflectivity, are combined to draw attention to a simple sign with a clear meaning. Legibility and size combined with placement should permit adequate time for user viewing and response to the sign message.

Colors—Standard colors have been established for specific purposes and types of signs. It is critical to use the colors specified consistently and only for these purposes to facilitate sign recognition and user response. TCD shall use the specified colors with no deviations.

Word messages—Standard (approved) word messages shall be used for most applications. Other word legends should be brief while clearly conveying the intended message. Lettering shall be large enough to provide for adequate legibility at required distances.

Standard designs have been developed for signs and posters and should be used as required.

Symbols—Standard symbols may be used in situations where they are more effective than conventional word messages. They are particularly effective for non-English users. Standard symbols shall be used without modification. Use of other symbols and logos must be approved by the Washington Office Director of Engineering. Symbols for warning signs shall be approved by FHWA.

Sign materials—Signs are manufactured using a variety of different materials including high density overlay (HDO) plywood with hard smooth surface(s) to which retroreflective sheeting will adhere; medium density overlay (MDO) plywood with surface(s) similar to kraft paper that will accept routing and paint; oak, cedar, and other wood materials; aluminum; fiberglass; plastics; and composite materials. Other materials commonly used in the manufacturing process include retroreflective sheeting, paint, stain, clear vinyl edge tape, clear protective (graffiti-resistant) overlay sheeting, and installation hardware.

Sign manufacturing specifications—Sign manufacturing specifications are contained in chapters 14 and 14A. These specifications are for service-wide application. Regardless of the procurement source, all signs shall be manufactured in full compliance with these specifications.

1.7.2 Standard Abbreviations for Signs

Use complete words or symbols in sign messages whenever possible. Abbreviated words may be used where the length of named destinations or features would cause excessive sign length and where the abbreviated form has clear meaning to the public. Abbreviations shall not be used on boundary and site identification signs.

The MUTCD, section 1A.15 identifies universally accepted abbreviations. In addition, approved Forest Service abbreviations are given below for use on road and trail guide signs. Only the abbreviations in the MUTCD or shown here shall be used on signs. Periods are not a part of abbreviations on road signs but may be used on trail signs.

Lettering style for abbreviations shall follow the same lettering style as unabbreviated names and words. Refer to chapter 3C, section 3C.4.2 for lettering style description.

Approved Forest Service Abbreviations

	Upper Case	Title Case
Boundary	BDY	Bdy
Branch	BR	Br
Brook	BRK	Brk
Campground	CG	CG*
Canyon	CAN	Can
Creek	CR	Cr
Divide	DIV	Div
Elevation	ELEV	Elev
Equipment	EQUIP	Equip
Fork	FK	Fk
Gulch	GUL	Gul
Headquarters	HDQS	Hdqs
Lake or Lakes	L or LKS	L or Lks
Little	LIT	Lit
Lookout	LO	Lo
Lower	LOW	Low
Meadow	MDW	Mdw
Middle	MID	Mid
National Forest	NF	NF
Number	NO	No
Off-Highway Vehicle	OHV	OHV
Peak	PK	Pk
Point	PT	Pt
Railroad	RR	Rr
Ranger Station	RS	RS
Reservation	RES	Res
Reservoir	RESVR	Resvr
River	R or RIV	R or Riv
Road	RD	Rd
Spring or Springs	SPG or SPGS	Spg or Spgs
Station	STA	Sta
Stream	STRM	Strm
Trail	TR	Tr
Trailhead	TRHD	Trhd

* This is an exception to the title case lettering style requirement.

1.7.3 Forest Service Shield, USDA Identification, and Logotypes

1.7.3a Forest Service Shield and USDA Credit Line

The standard Forest Service shield is the only symbol used to identify the Forest Service.

The standard Forest Service shield is the only symbol used to identify the Forest Service and shall be used without modification.

The Forest Service shield shall be displayed either on the sign base or face as detailed in the drawings.

Emphasize identification of the Forest Service as an agency of the Department of Agriculture. In addition to the shield, the words “United States Department of Agriculture” or “U.S. Department of Agriculture” shall be displayed on all forest entrance, administrative, and other major signs as identified in other chapters of this guidebook. Interior boundary signs do not require the USDA credit line.

The color of the shield and USDA credit line should be compatible with the primary identification sign color.

For FS shield artwork use the image shown in chapter 8C, section 8C.7.

1.7.3b Logotypes

The national standard logotypes shown in figure 1-2, shall be used without modification for the following:

- National forests.
- National grasslands.
- National recreation areas.
- National monuments.
- National Volcanic Monuments.
- Wilderness areas.

Logotypes are drawings and have not been created from a standard font.

The title of the unit type, such as “National Forest” or “National Grassland” shall appear in the standard logotype preceded by the proclaimed name of the unit in standard text.

The national standard logotypes shall be used without modification.

In instances where more than one unit name is in the combined unit title or all the forests in a State, the plural form of the unit, such as “National Forests,” is used in the logotype.

The national distinctive logotypes may be used sparingly for identification on cooperative plaques, visitor information boards, interpretive signs, special posters, pamphlets, and so forth, providing that priority and adequate identity are given to the use of the national forest and U.S. Department of Agriculture.

Do not use logotypes on administrative signs or any other signs or posters that deal with regulations, authority, or administration.

Use of national standard logotypes for other purposes or if other logotypes are developed requires approval by the Washington Office Director of Engineering. Submit these requests through the regional sign coordinator.

**National
Grassland**

**National
Monument**

**National
Forest**

**National
Volcanic
Monument**

**National
Forests**

**National
Recreation Area**

WILDERNESS

Figure 1-2—National standard logotypes.

1.7.4 Accessibility Signing

Signs provide key information concerning the accessibility of programs and facilities.

For Federal accessibility standards, refer to the “Architectural Barriers Act Accessibility Standards” (ABAAS) and the “Forest Service Outdoor Recreation Accessibility Guidelines” (FSORAG) or “Forest Service Trail Accessibility Guidelines” (FSTAG). The current direction for accessible signage is available in the “Forest Service Accessibility Guidebook on Outdoor Recreation and Trails” available on the Forest Service recreation/accessibility Web site.

Contact the regional accessibility coordinator (RAC) for more information or if you need assistance.

Refer to chapter 6, section 6.8 for additional information on accessibility signing.

International Symbol of Accessibility

The International Symbol of Accessibility (ISA) indicates the facility or area is in full compliance with the applicable accessibility standards. No words are required to be used with the symbol. If words are used with the ISA, use “accessible” rather than “handicapped.”



The International Symbol of Accessibility (ISA) is required in the ABAAS, chapter 2, provision F 216, to be posted at the following six sites:

- Accessible parking spaces when five or more parking spaces are provided.
- Accessible restrooms.
- Accessible loading zones.
- If the main entrance is not accessible, the ISA and an arrow are to be posted to direct to the closest accessible entrance.
- Accessible area of refuge inside multistory buildings.
- Accessible means of exit out of a building.

Do not post the ISA at:

- The entrance of a building if that entrance is accessible.
- Individual camping units.
- Recreation site entrances unless ALL of that facility meets the Federal accessibility standards

There is no legal requirement for the ISA to be posted in blue and white on federally managed lands, however the ISA must be posted in high contrast colors. Yellow on brown or cream on brown colors blend well into the forest setting, while providing the required high contrast. These alternate colors are appropriate at restrooms and other required locations listed above.

At designated accessible parking spaces at facilities on National Forest System lands, where the State or local law enforcement would not be ticketing vehicles; these alternate colors also may be used. Forest Service Law Enforcement Officers may ticket those vehicles as necessary.

ISA signs shall comply with the Manual on Uniform Traffic Control Devices (MUTCD), section 2B.47, with the accessibility symbol displayed blue and white, to be enforceable by State or local law enforcement at accessible parking spaces. Signs identifying accessible parking spaces shall be no less than 5 feet to the bottom of the sign.

The only approved color for pavement markings to designate accessible parking spaces is blue per the MUTCD, sections 3A.054 and 3B.19 and 20.

1.7.5 Other International Symbols

Post the appropriate International Symbols where required to promote and publicize accessibility of places, programs and other activities for people with various disabilities.



Audio Description for TV, Video, and Film. This service makes television, video, and film more accessible for persons who are blind or have low vision.



Telephone Typewriter (TTY)

TTY indicates a telephone device used with the telephone (and the phone number) for communication between deaf, hard of hearing, speech-impaired and/or hearing persons.



Volume Control Telephone

Use this symbol to indicate the location of telephones that have handsets with amplified sound and/or adjustable volume controls.



Sign Language Interpretation

Sign language interpretation is provided for a lecture, tour, performance, conference, or other program.



Assistive Listening Systems

These systems transmit sound via hearing aids or head sets. They include infrared, loop, and FM systems.



Accessible Print

Use this symbol for large print that is printed in 18 point or larger text.



The Information Symbol

Use this symbol to indicate the location where there is more specific information or materials concerning access accommodations and services, such as “LARGE PRINT” materials, audio cassette recordings of materials, or sign-interpreted tours.



Closed Captioning (CC)

Use this symbol to indicate that a television program or videotape is closed captioned for deaf or hard of hearing persons (and others).



Open Captioning (OC)

Use this symbol to indicate that a television program or videotape is captioned on the screen for deaf or hard of hearing persons (and others).



Braille Symbol

Use this symbol to indicate that printed matter is available in Braille, including exhibition labeling, publications, and signage.

1.8 Removing/Covering Signs

It may be necessary to have signs and posters that are for seasonal use only or which pertain to a particular activity or event. Examples include such activities as construction and maintenance of the roadway or adjacent area, timber sales, and fires as well as recreation or firewood posters and other notifications about forest uses. Some of these activities may be of short duration. Others may continue for weeks, months, or even years. Some signs are needed continually during a project, while others are needed off and on over a long period of time.

It is important to remove signs and posters when the project or the need is past.

Unnecessary signs or posters should be removed or covered. It is important to remove signs and posters when the project is completed or the need is past. Failure to remove these signs and posters leads to a credibility problem, and needed signs and posters become ineffective. Users may be confused by a sign or poster for an activity or project that is not active. Examples include fire danger ratings during nonfire seasons, snowmobile notifications in off-seasons, and signs left over from previously completed activities.

Cover, hinge, or remove signs when not needed or where signs are needed intermittently over a long period of time. The advantage of a hinged sign is that it is already in place and can be made usable easily when needed, but its message is covered when not needed. Refer to the hinged warning sign drawing in chapter 14A. Hinged signs require active management to ensure that the proper message is visible at the proper times.

If signs must remain in place for further use in the near future, such as for construction that will continue in another season, they may be covered with well-taped black plastic or commercial products specifically developed to cover signs. It is not usually necessary to cover signs for short-term shutdowns like weekends or holidays unless the presence of the signs would cause driver confusion. Evaluate on a case-by-case basis.

1.9 Temporary Signs and Posters

Posters and other approved temporary notifications made of paper or other lightweight materials should be removed when the season or need for them is over. The display method should be professional and in harmony with the surroundings. Posters and temporary signs shall not be placed or installed on traffic-control devices, on the posts supporting TCD, or any other permanent sign.

1.10 Overview of Chapters

The material in these Guidelines is arranged to facilitate its use by field personnel on all national forests and national grasslands. A separate chapter has been devoted to each type of signing, and each contains the basic policy, description, standard signs, and detailed drawings for those signs. Placement criteria, manufacturing specifications, and procurement for all signs are contained in separate chapters.

The chapters are described below:

Chapter 1: Introduction and Principles. This chapter provides a general overview of basic principles, guidelines, and standards that govern the application of all types of signs and posters.

Chapter 2: Plans and Documentation. This chapter provides guidelines for developing, documenting, and maintaining a comprehensive sign plan.

Chapter 3: Traffic Control Devices. The MUTCD is the national standard for all TCD, which are defined as all signs, markings, and other devices used to regulate, warn, or guide traffic on roads or highways by authority of the public agency having jurisdiction.

This chapter provides guidelines for signing on NFS roads, which includes roads leading to and within administrative sites and developed recreation sites. The MUTCD must be consulted for other specifics not included in the following subchapters:

- **Subchapter 3A: Traffic Control Devices—Regulatory Signs.** Contains guidelines specific to regulatory signs on NFS roads. Only Forest Service signs or specific applications of MUTCD signs on NFS roads are included.
- **Subchapter 3B: Traffic Control Devices—Warning Signs.** Contains guidelines specific to warning signs, roadway structures, pavement markings, and other warning devices on NFS roads. Only Forest Service signs or specific applications of MUTCD signs on NFS roads are included.
- **Subchapter 3C: Traffic Control Devices—Guide Signs.** Contains guidelines specific to guide signs on NFS roads including scenic byways.
- **Subchapter 3D: Traffic Control Devices—Placement and Installation.** Placement and installation standards and guidelines for all traffic control devices.
- **Subchapter 3E: Traffic Control Devices—Sign Drawings.** Sign drawings for traffic control devices specific to the Forest Service. The MUTCD and the “Standard Highway Signs” book must be consulted for other signs.

Typical examples of traffic control devices in chapter 3 are:



R1-1



SBL



FW5-1a



FRD

Chapter 4: Temporary Traffic Control. This chapter provides guidelines for temporary traffic control for construction, maintenance, and utility operations on roads as well as signs for incident management operations for fires, law enforcement, and other incidents. Consult the MUTCD for those specifics not included here.

- **Subchapter 4A: Temporary Traffic Control—Placement and Installation.** Placement and installation standards and guidelines for all temporary traffic control devices.
- **Subchapter 4B: Temporary Traffic Control—Sign Drawings.** Sign drawings for traffic control devices specific to the Forest Service. The MUTCD and the “Standard Highway Signs” book must be consulted for other signs.

Typical examples of the signs in chapter 4 are:



FW21-4a

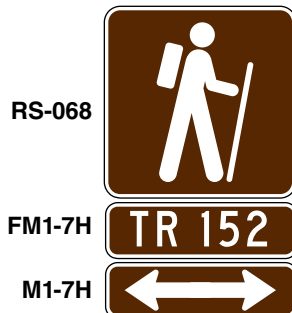


FW21-8

Chapter 5: Trail Signing. This chapter contains the guidelines for all trails.

- **Subchapter 5A: Trail Signing—Placement and Installation.** Placement and installation instructions for all trail signs.
- **Subchapter 5B: Trail Signing—Sign Drawings.** Drawings for signs used on trails.

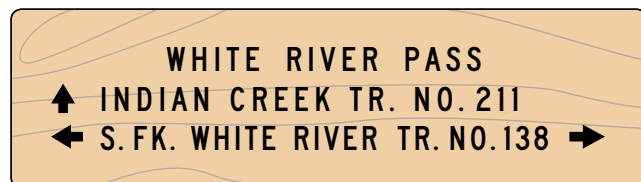
Typical examples of the trail signs are:



RS-068

FM1-7H

M1-7H



TD-3

Chapter 6: Travel Management Signing. This chapter contains the guidelines for signing travel management activities, including motorized and non-motorized uses. The objective of this chapter is to achieve agency-wide consistency in the use of signs to reinforce travel management decisions so that visitors traveling across the country can expect to encounter similar signing on all national forests and grasslands. Lack of consistency leads to confusion and undermines public support. Public acceptance of travel management decisions is essential to successful implementation of those decisions.

- **Subchapter 6A: Travel Management Sign Drawings.** Includes sign drawings for travel management signs.

A typical example is:



TM-1

Chapter 7: Developed Recreation Site Signing. This chapter identifies and provides information for signing related to developed recreation sites. It includes Forest Service managed developed recreation sites and privately provided recreation sites.

- **Subchapter 7A: Developed Recreation Site Signing—Placement and Installation.** Contains guidelines for placement and installation of recreation signs. Guidance for signs on roads leading to and within recreation sites are contained in chapters 3 through 3E.
- **Subchapter 7B: Developed Recreation Site Signing—Sign Drawings.** Includes sign drawings for recreation signs.

A typical example is:



RS

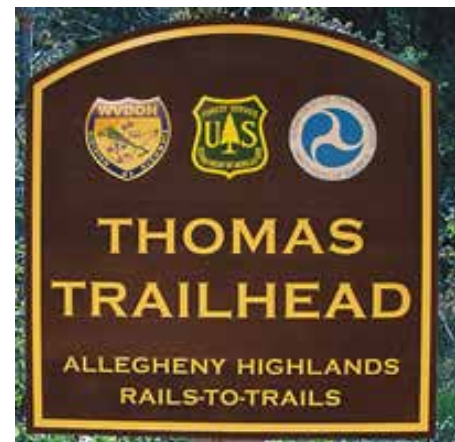
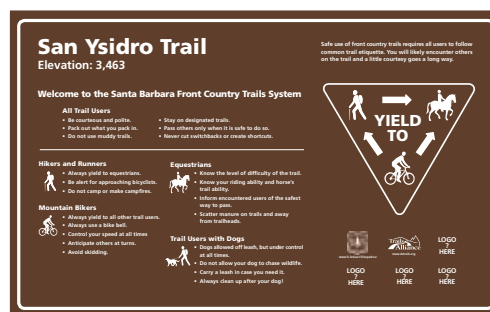
Chapter 8: Forest Identification Signing. This chapter provides guidelines for signs used to identify national forest, national grassland, national recreation area, wilderness area, primitive area boundaries, scenic rivers, and administrative facilities.

Typical examples include:



- **Subchapter 8A: Forest Identification Signing—Administrative Sites.** Contains guidelines on signing administrative sites.
- **Subchapter 8B: Forest Identification Signing—National Forest, Grassland, and Other Administrative Boundaries.** Contains guidelines for signing the boundaries of national forests and all the special areas including wilderness and primitive areas and scenic rivers.
- **Subchapter 8C: Forest Identification Signing—Sign Drawings.** Includes drawings of the different forest identification signs.

Chapter 9: Cooperator Signs and Posters. This chapter contains guidelines for signs associated with cooperative activities with Federal, State, municipal, or other public agencies and with private and civic organizations. Typical examples include:



Chapter 10: Visitor Information Signing. This chapter provides guidelines for visitor information signing and interpretative signing including bulletin boards to assist the forest and grassland visitor in understanding natural, cultural, and historic features and management practices. The Smokey Bear fire danger signs and installations are included.

- **Subchapter 10A: Visitor Information Signing—Interpretive.** Contains examples and guidelines on interpretive signing in various circumstances.
- **Subchapter 10B: Visitor Information Signing—Bulletin Boards, Posters, Fees, Registration.** Guidelines for visitor information signing; including bulletin boards, posters, registration and payment, and wilderness trailhead signs.
- **Subchapter 10C: Visitor Information Signing—Fire Rating.** Contains fire rating and safety signs and drawings.

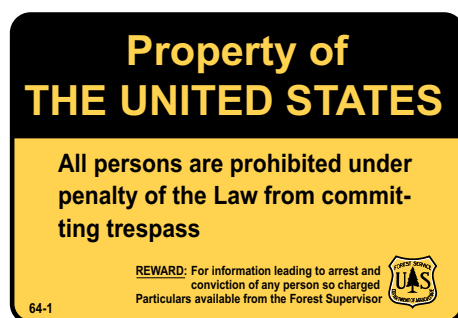
An example is:



Chapter 11: RESERVED. This chapter is reserved for guidelines on signing historic sites.

Chapter 12: Program Area Signs. This chapter contains guidelines for the use of program area signs that support program activities.

Typical examples are:



64-1



27-7

Chapter 13: Accident Prevention and Safety Signing. This chapter provides guidelines for signs associated with accident prevention and safety programs at facilities.

Examples are:



Chapter 14: Manufacturing Specifications. This chapter contains detailed drawings and material and manufacturing specifications for all types of signs. Use of these specifications is mandatory for all Forest Service signs.

- **Subchapter 14A. Manufacturing Specifications—Sign Blank Standards.** Includes sign blank standards to illustrate detailed dimensions for the various signs used by the Forest Service.

Chapter 15: Procurement. This chapter provides information on how to procure signs and posters.

Chapter 16: Sign Maintenance, Repairs, Recycling, and Disposal. This chapter provides guidelines for the maintenance of signs and how to recycle and dispose of them when they are no longer needed for their intended purposes.

Chapter 17: Reserved. This chapter is reserved for forms used for documenting engineering studies, engineering judgement, and other sign decisions.

1.11 References

The following references contain signing information that typically is not repeated in these Guidelines. The most recent edition of each of these references shall be used. The edition available at this revision and the agency publishing the documents are listed below as well as Internet locations to view or purchase the publication.

- The (BEIG) Built Environment Image Guide (BEIG). 2001. FS-710. U.S. Department of Agriculture, Forest Service.
- Forest Service Outdoor Recreation Accessibility Guidelines. U.S. Department of Agriculture, Forest Service. <<http://www.fs.fed.us/recreation/programs/accessibility>>.

- Forest Service Trail Accessibility Guidelines. U.S. Department of Agriculture, Forest Service. <<http://www.fs.fed.us/recreation/programs/accessibility>>.
- A Guide to Small Sign Support Hardware. 1998. GSSH-1. AASHTO.
- Guidelines for Geometric Design of Very Low-Volume Roads (ADT < 400). 2001 edition. American Association of State Highway and Transportation Officials. <<https://www.transportation.org/publications/bookstore>> (purchase only, not available to view online).
- <<http://www.halecolorcharts.com>> (Source for U.S. Government and industrial color tolerance charts.)
- Maintenance of Signs and Sign Supports, a guide for local Highway and Street Maintenance Personnel. 2010. U.S. Department of Transportation, Federal Highway Administration.
- Manual on Uniform Traffic Control Devices. 2009 edition. Department of Transportation, Federal Highway Administration. <<http://mutcd.fhwa.dot.gov>> (can be viewed and downloaded online).
- Recreation Opportunity Spectrum, Users Guide. 1982. U.S. Department of Agriculture, Forest Service.
- Roadside Design Guide. 2002. Third edition. American Association of State Highway and Transportation Engineers, <<https://www.transportation.org>> (purchase only, not available to view online).
- Sign Installation Guide. 2010. (½-page sized booklet) U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. <<http://fsweb.mtdc.wo.fs.fed.us>>. Available on Forest Service Internal Web site only.
- Standard Highway Signs. 2011. Department of Transportation, Federal Highway Administration. <<http://mutcd.fhwa.dot.gov>> (can be viewed and downloaded online).
- Traffic Control Devices Handbook. 2001 edition. Institute of Traffic Engineers. <<http://www.ite.org/bookstore>> (purchase only, not available to view online).

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Chapter 2 Sign Plans

2.1 Introduction

Sign plans are absolutely critical for accomplishing Forest Service signing objectives in a professional, orderly, consistent, and cost-effective manner.

Sign plans are absolutely critical for accomplishing Forest Service signing objectives in a professional, orderly, consistent, and cost-effective manner. A sign plan provides the framework for managing an effective and consistent sign and poster program; helps determine future budget needs; and aids in resolving litigation and other problems involving signage. It helps identify signs that are needed so unnecessary ones are not installed or can be removed if installed prior to the plan. It also provides information for and commitment to a specific course of action. It documents all decisions and actions regarding signs. A sign plan helps avoid sign overload at certain locations and insures proper sign spreading if multiple signs are needed in the same proximity.

A unit sign plan shall be developed that meets the requirements of FSM 7160, this chapter, and the specific needs of the administrative unit. The minimum administrative or planning unit for the unit sign plan is the ranger district.

Unit sign plans may be kept separately by each administrative unit or combined with adjoining units to form plans for a zone, a national forest or a national grassland.

Experimental forests, research stations, and other regional facilities should have administrative unit sign plans developed and maintained at the appropriate organizational level.

Site-specific sign plans also may be developed for individual sites or situations, such as the following:

- Administrative sites.
- Boundary Identification.
- Developed recreation sites and other recreation opportunities.
- Interpretive programs and other points of interest.
- Traffic control devices for individual or groups of roads and trails.
- Access routes to national forests and other administrative units.
- Construction, maintenance, and incident management activities.
- Travel management implementation of motor vehicle use maps.

These site-specific sign plans become addendums to the unit sign plan.

Interdisciplinary involvement is often needed and valuable in development of administrative unit and site-specific sign plans. For example, developing a site-specific sign plan for a recreation site may include the following information from other disciplines:

- Safety (records of accidents or information on near misses).
- User information needs.
- Resource protection needs.
- Liability considerations.
- Law enforcement concerns and needs.

Chapter 2 Sign Plans

The initial sign plan may be done from a map, but the final sign plan must be verified in the field.

Revise and update sign plans on an ongoing basis as signs are replaced, new signs are added, signs that are no longer needed are removed, or as physical or administrative changes occur, such as:

- Increase or decrease in traffic volume.
- A change in motor vehicle designation.
- Implementation of a speed limit.
- Change in surface type, such as pavement to gravel.
- Lowering the maintenance standard of a road, such as maintenance level 3-5 to a maintenance level 2 or maintenance level 2-5 to a maintenance level 1.
- Raising the standard of a road, such as moving it from maintenance level 1 to a maintenance level 2-5 or maintenance level 2 to a maintenance level 3-5.
- Changes made in a recreation site, such as changing the traffic flow or adding or reducing facilities.
- Road reconstruction, such as changing traffic flows or adding ingress/egress points.
- Change in road use, such as long term commercial haul.
- When road management objectives or transportation management objectives are revised.

2.2 Plan Contents

Sign plans should contain relevant physical, technical, and management information that is used to assist making decisions that involve the following:

A sign plan should be comprehensive even if all signs are not currently funded.

- New installations.
- Replacements.
- Sign removals.
- Maintenance activities.
- Budget preparation.
- Annual work plans.

Chapter 2 Sign Plans

2.2.1 Inventories

The inventory should be all inclusive with a description of existing and planned signs, posters, and other traffic control devices; their supports, locations, and conditions; any relevant vandalism history; maintenance and inspection dates and results; and documented engineering studies and application of engineering judgment. The description should contain sufficient detail to allow reordering of a sign if it is damaged or missing. Bulletin board assemblies, groups of delineators, boundary line markings, and other similar groupings can be inventoried as a unit. The inventory information should be recorded by a method that adequately stores the inventory information for the unit. Some examples include Infra Travel Routes, an Access database, other electronic formats, hard copy forms, maps or other methods developed by the unit, or any combination of these.

The inventory should be all inclusive with a description of existing and planned signs, posters, and other traffic control devices.

The following specific information should be documented in the inventory:

- ID Number: a unique identification number assigned to each sign.
- Catalog Number: the “Manual on Uniform Traffic Control Devices” or Forest Service number of the sign.
- Panel Size: the overall size and thickness of the sign panel.
- Panel Substrate: the type of substrate, such as high density overlay, medium density overlay, polyplate, or aluminum.
- Sign Legend: the sign message exactly as it appears on the sign, line by line.
- Legend Technique: the type of legend, such as routed, silk screened, or pressure-sensitive sheeting.
- Legend Size: the letter heights of all legends.
- Surface Type: the type of the sign surface, such as retroreflective sheeting, painted, stained, baked enamel, or natural.
- Basic information on the engineering study or application of engineering judgment that was completed for the sign installation, removal, or replacement, including the date completed and the name of the qualified engineer who conducted it.

Consider including the following information for more complete documentation:

- Post or Base Type: the type of post or base, such as wood, u-channel, flexible fiberglass, stone, or log.
- Post or Base Size: the nominal dimensions of the existing post or base size; note if breakaway is required.
- Viewing Distance: the approach distance at which the sign is to be read.
- Clear zone determinations.
- Mounting Locations: the distance from the road grade to the bottom of the sign panel and the distance from the edge of the traveled way to the nearest edge of the sign panel.
- Photographic Record: a photographic record of each sign with the date it was taken.

Chapter 2 Sign Plans

- Notes: information on environmental or site conditions that may be useful during development of the sign plan, including unusual road conditions, speed of approach, impaired lines of sight, and topographical and geologic constraints, such as surface bedrock, high water table, or other conditions, that may affect sign location.
- Permit Requirements: a copy of the permit from the public road authority where applicable.

2.2.2 Historical records

Include any historical records, such as field notes taken during a road review recommending the need for a sign or the need to remove a sign, past accidents at a site, documented problems, or photographs that document the existence of a sign that is no longer in place.

2.2.3 Sign procurement, installation, and removal

Document the procurement information for signs including costs, vendor information, and the inspection records when accepting the order. Document any pertinent installation information, such as contractor or force account information, any installation difficulties that were encountered, or other factors that could affect future installations at that location. Document dates when signs were removed and reasons for removal.

2.2.4 Accomplishment documentation

Document the accomplishment of the annual work plan and include any work planned, but not accomplished. Include the reasons why the planned work was not accomplished.

2.2.5 Inspection and maintenance records

Documentation indicating when sign inspections and maintenance were accomplished should be included in the sign plan. This documentation should include the results of the inspections and any maintenance that is required and any maintenance that was accomplished.

2.2.6 Engineering study, Engineering judgment and Professional judgement documentation

The removal and installation of all signs require an engineering study or application of engineering judgment, or application of professional judgement as advised for individual signs in the current MUTCD and/or these Guidelines.

A record of all engineering studies, application of engineering judgments, and application of professional judgements shall be included with the unit sign plan.

2.2.7 Problems

Document any problems with signs. Problems may be observed by the unit or reported by the public. Signs that are repeatedly vandalized or damaged may require more frequent inspections and maintenance than other signs on the unit. Recurrent problems with a sign may require a reevaluation as to whether the sign should be permanently removed.

Chapter 2 Sign Plans

2.3 Evaluation

An annual evaluation is suggested to compare existing and planned signs against applicable standards and guidelines to include any sign needs with the annual maintenance plans or to develop individual sign contracts. The sign needs should include ordering and installing new or replacement signs, removing obsolete signs, remounting or moving signs to be in compliance with placement standards, and maintaining existing signs. Clearly describe planned actions, schedule, responsibility, funding source, and estimated costs.

Consider the following questions in the annual evaluation:

An annual evaluation is suggested to compare existing and planned signs.

- Are signs visible?
- Are signs missing?
- Are the existing signs in good condition?
- Do retroreflective signs meet the minimum retroreflectivity requirements? When are they scheduled for replacement?
- Are existing signs in compliance with the current standards?
- Should existing signs be replaced or removed?
- Are existing signs necessary and appropriate?
- Are messages appropriate and/or accurate?
- Are signs in their proper locations?
- Have signs been installed correctly?
- Are new signs compatible with existing installations?
- Are existing signs compatible with changes in road maintenance levels or use types?
- Are there too many signs resulting in confusing or conflicting messages creating “sign pollution?”
- Based on accident reports or “near misses” are engineering studies or application of engineering judgments required to determine if additional signage is needed to alleviate safety concerns?
- Have signs been evaluated at night to determine their overall effectiveness and retroreflectivity?

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Chapter 3 Traffic Control Devices

3.1 Introduction

Traffic control devices are all signs, signals, markings, and other devices used to regulate, warn, or guide traffic, that are placed on, over, or adjacent to a street, road, highway, pedestrian facility or bikeway, by authority of the agency having jurisdiction.

The purpose of traffic control devices is to promote road safety and efficiency by providing for the orderly and predictable movement of all road users.

The purpose of traffic control devices is to promote road safety and efficiency by providing for the orderly and predictable movement of all road users. The proper use of traffic control devices should provide the prudent driver with the information necessary to travel the road efficiently and lawfully.

Traffic control devices notify road users of regulations and provide warning and guidance needed for the uniform and efficient operation of all elements of the traffic stream in a manner intended to minimize the occurrences of crashes.

Traffic control devices guide road users safely to, from, and within developed recreation sites and administrative sites, such as campgrounds, trailheads, visitor centers, work centers, and ranger district compounds.

Consider traffic patterns, road design, and use of traffic control devices when planning and designing administrative and developed recreation sites. Site plans that are completed without careful consideration of both vehicular and pedestrian circulation patterns often result in site layouts that are overly complicated to sign and confusing for users.

Engineering and recreation specialists should collaborate to determine how best to sign roads and parking areas within developed recreation sites.

Use the standards and guidance contained in the “Manual on Uniform Traffic Control Devices” (MUTCD) for all signs and traffic markings intended to control or regulate use on National Forest System roads. An exception is permitted where there is an approved State supplement applicable to similar public roads. In that situation, conform to the State supplement to avoid confusing motorists. Refer to FSM 7731.16–Signing and Traffic Control Devices.

The MUTCD and these guidelines provide standards, guidance, and options for design and application of traffic control devices, but shall not be a legal requirement for their installation, nor a substitute for engineering judgment.

The intent of this chapter is to provide Forest Service Guidelines that supplement or complement the MUTCD for the most common signing and marking situations on conventional and low-volume National Forest System roads. Refer to chapter 1, section 1.6.3.

The MUTCD and these Guidelines provide standards, guidance, and options for design and application of traffic control devices, but shall not be a legal requirement for their installation, nor a substitute for engineering judgment.

The decision to use a particular traffic control device at a specific location should be made on the basis of either an engineering study or the application of engineering judgment. Refer to section 3.10. Decisions may vary from site-to-site even with similar conditions. Site-specific conditions may result in a determination that it is impossible or impractical to comply with a requirement, and that the decision is to deviate from that requirement. In such cases, the deviation may be allowed, provided that the engineering reasons for the deviation are fully documented.

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The MUTCD applies to all National Forest System roads that are open to public travel.

Traffic engineering assistance may be obtained through the forest, regional, or Washington Office sign coordinator, State Departments of Transportation, Federal Highway Administration (FHWA), States-Local Technology Assistance Program (LTAP), a traffic engineering consultant if there are any questions about the applicability of the MUTCD or these Guidelines to a particular situation.

As defined in chapter 1, section 1.6.3:

- **Shall** (Standard) means a required, mandatory, or prohibitive practice.
- **Should** (Guidance) is a recommended but not mandatory requirement.
- **May** (Option) carries no requirement or recommendation.

The MUTCD applies to all National Forest System roads that are open to public travel. Open to public travel means that the road section is available, except during scheduled periods, extreme weather or emergency conditions, passable by four-wheel standard passenger cars, and open to the general public for use without restrictive gates, prohibitive signs, or regulation other than restrictions based on size, weight, or class of registration (23 USC 460.2).

All traffic control devices needed on ML 2 roads shall be consistent with the MUTCD and these Guidelines

Maintenance level 2 (ML 2) roads are neither intended nor maintained for four-wheel standard passenger car use, but many of them are passable by four-wheel standard passenger cars. User safety is a consideration on these roads as it is on all roads. All traffic control devices needed on ML 2 roads shall be consistent with the MUTCD and these Guidelines.

The use of new shapes and colors for regulatory and warning signs; new regulatory, recreational, and cultural interest area symbols; and new traffic control devices not referenced in the MUTCD, these Guidelines, or approved addendums, require Washington Office Director of Engineering approval. Refer to FSM 7160.41b.

The use of new symbol warning and regulatory signs for NFS roads not referenced in the MUTCD, these Guidelines or approved addendums require a recommendation from the Washington Office Director of Engineering and approval by the FHWA.

All deviations from the standards in the MUTCD and these Guidelines applicable to the acquisition, design, and installation of signs and posters not reserved to the Washington Office Director of Engineering require regional office approval through the regional sign coordinator. Refer to FSM 7160.42a.

The use of new word messages for regulatory and warning signs is not considered a deviation from the standards in the MUTCD and these Guidelines, but shall be approved by the regional sign coordinator for consistency and to ensure the basic requirements are met.

3.1.1 Manual on Uniform Traffic Control Devices Compliance Dates and Mandated Changes for Devices

The MUTCD contains compliance dates and upgrades/changes to existing signs and devices that are mandated. Federal agencies are to have their own manuals in substantial conformance with the MUTCD and the changes contained therein within 2 years. These Guidelines complete that mandate.

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When traffic control devices are no longer serviceable, they shall be replaced with devices conforming to the MUTCD, except as provided in paragraph 24 on page I-3 of the MUTCD. All nonconforming devices shall be brought into conformance as part of systematic upgrades by the dates indicated in the MUTCD, table I-2.

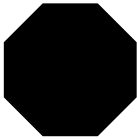

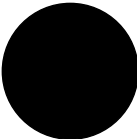
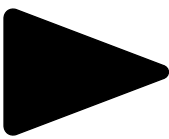

New construction or reconstruction of roads shall have traffic control devices conforming to the latest edition of the MUTCD installed before that road is opened to the public for unrestricted travel. Include all necessary traffic control devices in the construction or reconstruction contract.

3.2 Traffic Control Device Shapes

Table 3-1 shows typical traffic control sign shapes.

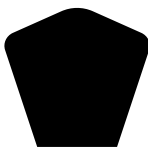



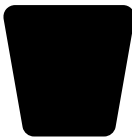
New construction or reconstruction of roads shall have traffic control devices conforming to the latest edition of the MUTCD installed before that road is opened to the public for unrestricted travel.

Table 3-1—Traffic control sign shapes

Image	Shape	Signs
	Octagon	STOP
	Equilateral triangle (1 point down)	YIELD
	Circle	Highway-Rail Grade Crossing (Advance Warning)
	Pennant shape/isosceles triangle (longer axis horizontal)	NO PASSING
	Pentagon (pointed up)	School Advance Warning

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Table 3-1—Traffic control sign shapes (continued)

Image	Shape	Signs
	Pentagon (shape rounded)	County Route
	Crossbuck (two rectangles in an “X” configuration)	Highway-Rail Grade Crossing
	Diamond	Warning Series
	Rectangle (including square)	Regulatory Series Guide Series Warning Series Recreation Symbols
	Trapezoid	Recreational and Cultural Interest Area Series National Forest Route

3.3 Traffic Control Device Sign Materials

3.3.1 Substrates (Signboards)

Permanent retroreflective traffic control device signs may be manufactured on a variety of substrates, such as those shown below. Refer to chapter 14 for more details.

- High density overlay (HDO) plywood.
- Fiberglass-reinforced plastic (polyplate).
- Aluminum.
- Aluminum composite.
- Wood plastic composites (WPC).
- Plastics (solid and corrugated), vinyl rollup, and other synthetic materials.

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Other existing substrate materials are available, and additional substrate materials are being developed. The use of these other substrate materials is allowed with the approval of the regional sign coordinator. Some tracking of product effectiveness and longevity may be required.

3.3.2 Retroreflective Sheeting and Retroreflectivity

Regulatory, warning, and guide signs and object markers intended to be seen at night shall be retroreflective or illuminated to show the same shape and similar color by day and night.

The MUTCD, section 2A.08, requires that public agencies or officials having jurisdiction for maintaining roadways open to the public travel use an assessment or management method that is designed to maintain sign retroreflectivity at or above the minimum levels shown in the MUTCD, section 2A.08, table 2A-3. Compliance is achieved by having one of the methods provided in the MUTCD, section 2A.08 in place and documented as officially accepted.

Table 2A-Method D—blanket Replacement has been adopted by the Forest Service as the national default method of compliance. This method requires all traffic signs subject to the retroreflectivity standards be replaced within 12 years of original installation, as measured by the installation date marker on the back of the sign. Refer to chapter 3D, section 3D.8.

Regulatory, warning,
and guide signs
and object markers
intended to be seen
at night shall be
retroreflective or
illuminated.

If a Forest Service unit chooses not to follow the default national standard for compliance, it must select one of the other methods provided in the MUTCD, section 2A.08. The selection must be made in writing and kept as a permanent record in the files.

The method selected to meet the minimum retroreflectivity requirement is an important factor to consider when specifying the type of retroreflective sign sheeting to use for a sign. Higher-grade retroreflective sheeting produces better nighttime visibility, retains minimum retroreflectivity levels longer, and usually is more cost effective in the long run.

The relative merits of some readily available retroreflective sheeting types are shown in table 3-2. Other types of retroreflective sheeting not shown in table 3-2 may be used as long as they meet the minimum retroreflectivity requirements.

Adding glass beads to paint is not an acceptable method of providing retroreflectivity.

3.3.2a Replacing Signs Not Meeting the Minimum Retroreflective Requirements

Regulatory and warning signs not meeting the minimums provided in the MUTCD, section 2A.08 should be replaced with signs that meet the requirements by the target date for compliance shown in the 2009 Edition of the MUTCD, table I-2, Revision 2 or the most current revision.

Guide signs not currently using a sheeting type that meets the minimums provided in the MUTCD, section 2A.08 should be replaced with signs that meet these requirements as soon as resources and priorities allow.

Certain signs including parking signs and signs intended exclusively for bicyclists are exempted from the requirements for maintenance of retroreflectivity by footnote 6 in the MUTCD, section 2A.08.

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Decisions about priorities for replacing multiple nonretroreflective signs, when faced with limited resources for sign replacement, should be advised by engineering judgement. The following suggested priorities are provided as a guide for judgement:

1. Location-critical regulatory signs, such as STOP and YIELD; object markers; and location-critical warning signs, such as TURN and INTERSECTION, on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.
2. Nonlocation-critical regulatory signs, such as SPEED LIMIT, and nonlocation-critical warning signs, such as LIVESTOCK, on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.
3. Route markers on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.
4. Destination and other guide signs on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.
5. Informational and Motorist Services signs on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.

Consideration also should be given to the physical attributes of the road when determining priorities for sign replacement, especially when the attributes do not currently match the maintenance level standards. For example, a road that was maintenance level 4 but which has recently been lowered to maintenance level 2 or 3 may still function like a maintenance level road and consequently should receive more consideration for sign replacement than a road which has long been maintained at maintenance level 2 or 3.

Other factors to consider when determining sign replacement priorities include RMO, traffic volume and composition, crash history, and Motor Vehicle Use Map (MVUM) designations.

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Table 3-2—Retroreflective sheeting comparisons. Refer to Table 2A.3, MUTCD (2009 edition)

Name of sheeting	ASTM D4956-09 Type	Expected life (manufacturer warranty) ¹	Remarks
Engineer Grade and Engineer Grade Prismatic	Type I	NA	<p>This sheeting material does not meet the minimum AASHTO classification criteria for white, yellow, and orange and is not acceptable for most traffic control devices. For those colors where it does meet the minimum criteria it may not maintain this minimum level for the expected life of the sign.</p> <p>Exceptions for certain series and colors of traffic control devices are provided in the MUTCD, section 2A.08.</p>
Super Engineer Grade	Type II	<p>Orange—3 years All other colors—10-12 years (Nikkalite)</p>	<p>This sheeting type meets or exceeds the minimum levels of retroreflectivity for all colors except for white on green overhead signs.</p> <p>This sheeting is used by some States to tone down the retroreflective brilliance for background colors on some signs.</p> <p>This sheeting may cost less and be less prone to separation of layers than prismatics. Warranty is similar to high intensity prismatics, but may not maintain the same level of brilliance for as long as prismatics. This material may not be as readily available as the high intensity prismatics.</p>

Chapter 3 Traffic Control Devices

Table 3-2—Retroreflective sheeting comparisons. Refer to Table 2A.3, MUTCD (2009 edition) (continued)

Name of sheeting	ASTM D4956-09 Type	Expected life (manufacturer warranty) ¹	Remarks
High Intensity (beaded)	Type III	Orange—3 years All other colors—10 years (Avery Dennison)	<p>This sheeting type meets or exceeds the minimum levels of retroreflectivity for all colors except for white on green overhead signs.</p> <p>This type of sheeting is rarely used and may be difficult to find. It offers no appreciable cost advantage over prismatic or super engineering grade and has less retroreflective brilliance.</p>
High Intensity Prismatic	Types III and IV	Orange—3 years All other colors—10 years (3M)	<p>This sheeting type meets or exceeds the minimum levels of retroreflectivity for all colors. It is the primary sheeting used by most States and by many sign manufacturers. These factors help keep the cost down and the availability up. Good warranty. This sheeting may be prone to separation from the substrate especially in locations where the sign is covered with snow for periods of time. For these conditions it is recommended that a clear overlay film and edge tape is applied. This sheeting also is more brittle than engineering grade sheeting and may crack and peel off if the substrate is impacted by a flying object. It is recommended that clear overlay film is applied if this is a concern.</p>

Chapter 3 Traffic Control Devices

Table 3-2—Retroreflective sheeting comparisons. Refer to Table 2A.3, MUTCD (2009 edition) (continued)

Name of sheeting	ASTM D4956-09 Type	Expected life (manufacturer warranty) ¹	Remarks
High Intensity Prismatic	Types >IV	Up to 12 years (3M and Nikkalite)	Generally not cost effective for Forest Service applications. Generally more brilliant retroreflectivity than High Intensity Prismatic III and IV but at a higher cost. Generally have the best warranty. Fluorescent colors available are in the high grade sheeting such as Diamond Grade (3M) and Crystal Grade (Nikkalite).

¹ These warranty figures are from manufacturers' literature and cannot be easily compared. For example, the retroreflective brilliance of the prismatic is much higher at the end of their warranty period than that of the Super Engineer Grade and the prismatic may retain minimum retroreflectivity for a longer period. There are many other factors that affect sheeting longevity and the warranty information should be used as general guidance only. Warranty information may also be dependent on the sign manufacturer.

Sheeting types are based on nighttime performance. Daytime performance is comparable for all types of ordinary colored sheeting. Fluorescent colored sheeting offers improved daytime visibility especially in rainy and foggy locations.

Besides cost and past experience, some practical considerations influence decisions on which type of retroreflective sheeting to order:

- Anticipated vandalism may dictate choosing the least expensive sheeting.
- Fabrication and stockpiling signs of different sheeting types may not be efficient or practical.
- The sheeting selected should complement the method chosen to maintain the minimum sign retroreflectivity at or above the minimum levels shown in the current edition of the MUTCD. Refer to chapter 14, section 14.3.3.

Installing retroreflective signs is only the beginning. Proper maintenance ensures that signs continue to provide intended function and display sufficient retroreflectivity to guide traffic at night.

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3.4 Colors for Traffic Control Devices

Colors for all traffic control devices are mandatory for consistent application in the MUTCD. These colors shall be used regardless of which jurisdictional authority installs signs to control traffic. The colors more commonly used on National Forest System roads are listed below for convenience. See table 2A-5 in the MUTCD for a complete color use listing.

RED shall be used only as a background color for STOP signs, DO NOT ENTER messages, and WRONG WAY signs. Red shall be used as a legend color for YIELD signs, parking prohibition signs, and the circular outline and diagonal bar prohibitory symbol. Red also shall be used on closure barricade panels for other than construction and maintenance purposes. The fluorescent version of this background color also may be used.

BLACK shall be used as a background on ONE WAY signs and certain weigh station signs. Black shall be used for the legend on white, yellow, orange, fluorescent yellow green, fluorescent pink, fluorescent yellow orange, and fluorescent red orange signs.

WHITE shall be used as the background color for most regulatory signs, except STOP signs. White also shall be used for the legend and border on brown, green, blue, black, and red signs.

ORANGE shall be used as a background color for temporary traffic control signs and incident management signs. The fluorescent version of this background color also may be used.

FLUORESCENT ORANGE also may be used for temporary traffic control signs and incident management signs. Fluorescent colors provide increased visibility, especially in the low-light conditions of dawn and dusk.

YELLOW shall be used as a background color for warning signs, except where orange is specified. The fluorescent version of this background color also may be used.

BROWN shall be used as a background color for guide and information signs on National Forest System roads and for recreational or cultural interest signs on conventional highways. Brown also should be used for motorist services on National Forest System roads.

GREEN shall be used as a background color for conventional highway guide signs and reference location signs (mileposts) on both conventional and low-volume roads and as a legend color with a white background for permissive parking regulation signs.

BLUE is used as a background color for Interstate and county route numbers, information signs related to motorist services and evacuation route markers, and general service signs and plaques including the "Handicapped" plaque D9-6.

FLUORESCENT YELLOW GREEN may be used as the background color only for school, playground, pedestrian, and bicycle warning signs.

FLUORESCENT PINK shall be used only as the background color for incident management signs.

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3.5 Sign and Legend Size

Conventional road sign sizes are listed in the MUTCD, table 2B-1 for regulatory signs and table 2C-2 for warning signs. Regulatory and warning sign sizes for low-volume roads are listed in the MUTCD, table 5A-1. Sign sizes by road type for regulatory and warning signs that are more commonly used on National Forest System roads are shown in chapter 3A, table 3A-1 and chapter 3B, table 3B-1. The legend size requirements for these signs are contained in the “Standard Highway Signs” book.

Refer to chapter 3C, section 3C.4.3 for guide sign legend and symbol size.

3.6 Letter Font Series

Traffic control signs shall use the Highway Gothic font in the following American Standards Association (ASA) series as defined in “Standard Highway Signs” book unless otherwise shown on the sign drawings.

Uppercase Letter size	ASA Series
3- and 4-inch	C
5- and 6-inch	D
7 inches and above	E

3.7 Enhanced Conspicuity for Standard Signs

Some signs made need additional emphasis for a variety of reasons.

- Road users may continue to miss signs in certain locations.
- A sign is new and unexpected.
- Conditions have changed.

Use any of the following methods, based on engineering judgment, to enhance the conspicuity of a sign. Some methods are temporary and may be more appropriate for temporary traffic control devices while others are more suitable for permanent sign installations.

- Remove nonessential signs and conflicting signs from the right-of-way.
- Use fluorescent retroreflective sheeting, if allowed.
- Add one or more red or orange flags above the regulatory or warning sign, with the flags oriented at 45 degrees to the vertical.
- Relocate the sign to provide better spacing, if possible.
- Increase the size of the sign.

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- Add a vertical strip of retroreflective material to the sign support for regulatory and warning signs. It shall be at least 2 inches in width and placed for the full length of the support to within 2 feet above the edge of the road. The color shall match the background color of the sign.
- Other methods are documented in MUTCD, section 2A.15.

Signing priorities for traffic control devices on National Forest System roads should be established for each administrative unit as part of a unit sign plan.

3.8 Signing Priority

Signing priorities for traffic control devices on National Forest System roads should be established for each administrative unit as part of a unit sign plan. Priorities are appropriate for both first time installation and for sign replacement. Program implementation should consider the current level of signing and available funding and personnel. The top priority for signing should address public health and safety issues and concerns. Other priorities will vary by road depending on other factors, such as, traffic volumes and types, traffic management strategies, road management objectives, motor vehicle designations, and functional classification.

3.9 Driver Expectancy and Behavior

Drivers of different standards of roads are expected to drive with different levels of caution, based on what the driver expects to encounter ahead. The physical characteristics of National Forest System roads are usually readily apparent to the driver. After viewing the start of a road and driving a short distance, the alignment, surface type, road width, and ride quality usually suggest an appropriate safe speed to a prudent driver.

Driver expectancy and behavior on National Forest System roads are influenced by what was experienced on the previous section of road. Studies have shown that what a driver has just encountered is what the driver expects on the next portion of the road. This includes the road surface, width, alignment, traffic volume and mix, and overall maintenance condition of the road as well as the presence or absence of signs and other traffic control devices.

Past experiences with traffic control devices on other similar roads also contribute to driver expectancy. If the road is inconsistent from what a prudent driver would normally expect, the use of traffic control devices could be considered to reduce the “surprise element” created by an unexpected change in the road. Use of traffic control devices may reduce the uncertainty and allow the driver to proceed ahead with greater confidence. Examples of inconsistencies that may require traffic control devices are:

- Paved road changing to a gravel road.
- Sharp curve on the end of a straight section of road.
- Double-lane road or wide road narrowing to a single-lane road or bridge.
- Changing the designation of a road from highway legal vehicles to all motor vehicles (motorized mixed use).
- A maintenance level 3-5 road that has been lowered to a maintenance level 2, but is still accessible by passenger cars.

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Generally,
maintenance level
2 roads require few
if any traffic control
devices. Refer to FSH
7709.59 section 62.33.

Generally, maintenance level 2 roads require few if any traffic control devices. Refer to FSH 7709.59, section 62.33. The requirement for traffic control devices is influenced more by the physical attributes of the road and the user expectations rather than the maintenance level or the fact that these roads may not be subject to all of the requirements of Forest Service guidance on highway safety.

The road user typically is not aware of the relationship between a maintenance level 2 road and the highway safety program and that the road is not maintained for passenger cars. Safety issues should still be evaluated and traffic control devices may be required. The need for warning and regulatory signs on a maintenance level 2 road should still be determined by engineering judgment or an engineering study, and any necessary traffic control devices shall follow the requirements of MUTCD and EM7100-15.

Engineering studies
and engineering
judgments shall
be exercised by a
qualified engineer
or by an individual
working under the
supervision of a
qualified engineer.

3.10 Engineering Studies and Engineering Judgments

The use of engineering studies and engineering judgments is a fundamental principle of the application of traffic control devices. The selection of a particular traffic control device is not required in most cases, but is determined by engineering studies and engineering judgment.

Engineering study and engineering judgment are specific terms defined in the MUTCD and used throughout the highway industry to denote evaluations that are performed by qualified individuals for certain tasks involving traffic control devices. Care needs to be taken to comply with the requirements denoted for these evaluations. Unless otherwise indicated in these Guidelines engineering judgment is assumed to be the minimum evaluation required.

Engineering studies and engineering judgments shall be exercised by a qualified engineer or by an individual working under the supervision of a qualified engineer. A qualified engineer is an engineer that is knowledgeable in the proper application of principles, standards, guidance, and practices for traffic control devices, such as forest, regional, and national sign coordinators. Refer to chapter 1, section 1.5.

Engineering judgment can be exercised by an individual working under the supervision of a qualified engineer or through policies and procedures established by a qualified engineer.

3.10.1 Engineering Study and Engineering Judgment -Defined

Most signing needs on National Forest System roads may be determined based on engineering judgment. This consists of the evaluation of available pertinent information for the situation and the application of appropriate principles, provisions, and practices as contained in these Guidelines, the MUTCD, and other sources. Engineering judgments and studies are performed by a qualified engineer as defined above and in chapter 1, section 1.5.

It is sometimes necessary or required to determine signing needs on National Forest System roads based on an engineering study. This is a more formal, analytical, and comprehensive evaluation of available pertinent information

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Most signing needs on National Forest System roads may be determined based on engineering judgment.

for the situation and the application of appropriate principles, provisions, and practices as contained in these Guidelines, the MUTCD, and other sources. The study may include information such as:

- Accident history and analysis.
- Spot speed studies.
- Curve speed studies.
- Traffic counts and classification.
- Existing and anticipated road conditions.

Engineering studies normally are limited to roads maintained for passenger car traffic. An engineering study also may be necessary for a particular sign or situation that is identified in these Guidelines or the MUTCD as requiring an engineering study. One example is the requirement for an engineering study before posting a speed limit.

Studies are more likely to be used for roads with the following characteristics:

- Higher speeds.
- Higher traffic volumes.
- Mixtures of commercial and recreation traffic.
- High accident frequencies.
- Severe accident consequences.
- Mixture of highway vehicles and off-highway vehicles.

3.10.2 Documentation of Engineering Studies and Engineering Judgment

Documentation is required for both an engineering study and engineering judgment. The documentation for an engineering judgment should at a minimum have the date the judgment was made, what the judgment was, the name and signature of the person making the judgment and the name and signature of the qualified engineer if different from the person making the judgment. This will document that an engineering judgment was made and help provide future reference for sign maintenance and replacement, and will aid in any possible tort claims. Documentation of engineering judgment may be recorded on a sign plan inventory for the road.

Documentation is required for both an engineering study and engineering judgment.

The documentation for an engineering study is more comprehensive and in addition to the basic information included with an engineering judgment it should include a discussion of all of the factors considered, individual studies conducted, references, conclusions, and any other factors. It should be signed by the person conducting the study and the qualified engineer, if different from the person conducting the study. It is equally important to document engineering judgment and engineering studies that conclude a traffic control device is not necessary or an existing traffic control device needs to be removed as it is to document a determination that a new traffic control device is needed. Place documentation for engineering studies and engineering judgments in a permanent file for the road.

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3.10.3 Specific MUTCD Engineering Study and Judgment Requirements

Requirements for performing engineering studies and engineering judgments for many traffic control devices and situations are scattered throughout the MUTCD. Four specific requirements are repeated here for emphasis:

1. "Signs should be used only where justified by engineering judgment or studies, as provided in Section 1A.09." MUTCD, section 2A.03.
2. "The use of warning signs shall be based on an engineering study or on engineering judgment." MUTCD, section 2C.02
3. "Speed zones shall only be established on the basis of an engineering study that has been performed in accordance with traffic engineering practices. The engineering study shall include an analysis of the current speed distribution of free-flowing vehicles." MUTCD, section 2B.13.
4. "The advisory speed shall be determined by an engineering study that follows established engineering practices." MUTCD, section 2C.08.

It is critical that the qualified engineer consult these Guidelines and the MUTCD to determine the specific requirements for performing engineering judgment or an engineering study for a particular sign.

3.11 Elements in Engineering Studies

There are many elements that may be included in an engineering study. Some elements that are relevant to National Forest System roads are discussed below.

3.11.1 Spot Speed Studies

The intent of spot speed studies are to record speed characteristics under prevailing traffic conditions at a specific location along a roadway.

The many applications of spot speed studies include, but are not limited to, the following:

- Determine existing roadway speeds, for potential use in posting speed limits.
- Evaluate the effectiveness of speed enforcement programs.
- Identify the speed impact of roadway geometry, including horizontal and vertical alignment and general roadway features.
- Determine impact on speed of traffic control devices (traffic signs, pavement markings, signals).
- Provide evidence to support/refute complaints of excessive speed.
- Analyze accident sites.

Chapter 3 Traffic Control Devices

Step 1: Organize the Study Plan

Identify the reason for conducting the study and the nature of the problem to be evaluated. Other considerations include the date(s) and time(s) during which the study should be completed, and the number of vehicles that should be observed as part of the study.

The timing of the study should be consistent with the reason for conducting the study. For example, if the study is being completed to determine the speed limit to post due to excessive speeds during weekends, then the study should be completed during the weekend.

Literature suggests that speed data be collected for a minimum of 1 hour and observe at least 30 vehicles; however depending upon the type of technology used to complete the study, and the complexity of the study, sample sizes and durations can often include thousands of vehicles over multiple days. For low-volume National Forest System roads, speed checks may be needed on more than 1 day to obtain the necessary minimum sample size.

Once the plan is completed, the study can be carried out and the data can be evaluated as outlined in the steps below.

Step 2: Location Selection and Collect Field Data

The specific location of a study should be chosen carefully so that recorded speeds reflect how vehicles typically travel along unimpeded sections of the road under free-flow conditions. Spot speed studies should be made during daylight hours, good weather conditions, and typical road conditions. Newly constructed or recently bladed roads may allow traffic to travel at higher speeds than road surfaces that are worn, potholed, rutted, wash boarded, or covered with loose material. The best and worst road surface conditions expected should be considered when doing speed studies.

Things to consider:

- Select roadway section with typical travel speed.
- Make an attempt to avoid the following, primarily to avoid accelerating/decelerating vehicles:
 - o Intersections.
 - o Work zones.
 - o Curves.
 - o Parking zones.
 - o Active crosswalks.
- Consider free-flow vehicles only (those not impacted by speed of preceding vehicle).
- Consider date and time (consistent with step 1).

Chapter 3 Traffic Control Devices

- Avoid unusual conditions, including:
 - o Unique events.
 - o Inclement weather.
 - o Holidays.
- Determining speeds on unpaved roads may be difficult.
- When using a radar, consider:
 - o The angle of measurement to assure accurate speeds.
 - o Remain inconspicuous so as not to influence speeds (not from Forest Service vehicle or in uniform).
 - o Ensure that you record the speeds and vehicle types (passenger car, off highway vehicle, dump truck, etc.).

Step 3: Speed Data Reduction and Analysis

After the study is completed, tabulate the data to determine the 85th percentile speed.

- 85th Percentile Speed: The speed at or below which 85 percent of a sample of free flowing vehicles is traveling; this typically is used as a baseline for establishing the speed (based on a spot speed study).

Step 4: Interpret and Report Findings

Using the descriptive speed characteristics determined in step 3, it is likely that there is now sufficient data to answer the primary questions for which the spot speed study was originally initiated. Such as:

- How do observed speeds compare with the proposed speed limit for the observed roadway?
- How does the distribution of speeds before compare with speeds during or after an enforcement campaign?
- If the desire to post a speed limit is due to excessive speeds, does your data support this claim?
- Are speeds on the approach to a high crash location higher than the roadway design speed?
- How do 85th percentile speeds compare with other roadways in the area?

Chapter 3 Traffic Control Devices

Spot speed studies may be conducted by several methods:

- Timing vehicles over a known distance.
- Following vehicles (staying far enough back to not affect their driving speed).
- Driving the road several times to determine a prudent, comfortable speed for the average driver, without skidding the rear tires around the curve.
- Using radar.

Refer to traffic engineering textbooks, such as the “Traffic Control Devices Handbook” (ITE 2001), for information on speed studies. Information also is available on various Web sites. Traffic engineering assistance also may be obtained through the forest, regional, or Washington Office sign coordinator, State Departments of Transportation, States Local Technology Assistance Program (LTAP), Federal Highway Administration (FHWA), or a traffic engineering consultant.

3.11.2 Surface Changes

Drivers are generally accustomed to asphalt or concrete pavements. Driving aggregate- or native-surfaced National Forest System roads provides a different experience that may need to be called to their attention. These roads usually require longer stopping distances. They generally have poorer visibility because of dust in the air and can have a rough driving surface because of wash boarding, ruts, bumps, or potholes. In addition, loose gravel or other surface conditions can cause skidding around curves or even on straight sections of the road.

3.11.3 Vertical Curves

Sight distance may be critical on crest vertical curves located on single-lane roads, or on any road where vertical and horizontal curves are combined.

3.11.4 Grades

Grades often exceed those normally experienced by drivers so additional stopping distance may be required. Drivers may not be aware of the effect of steep grades and various types of surfaces on the control and stopping distance of their vehicles.

3.11.5 Traveled Way Width

Most National Forest System roads are single lane, which creates a unique driving experience for drivers unfamiliar with this type of traveled way. Drivers may need to stop and back into a turnout to allow another vehicle to pass. National Forest System roads often change from a double-lane road to a single-lane road with two-way traffic. Bridges may be narrower than the roadway.

Traffic control devices alert drivers to road inconsistencies so they can travel at speeds they deem prudent based on current road conditions.

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3.11.6 Traffic Composition (including motorized mixed use)

Traffic on National Forest System roads may include heavy logging trucks, large construction, mining, or logging equipment, vehicles towing trailers, motor homes, passenger cars, and nonhighway legal vehicles, such as off highway vehicles and trail cycles. Drivers may not be accustomed to these types of mixed traffic, and drivers for some of these vehicles, such as off highway vehicles and trail cycles may not be licensed. Ideally, motorized mixed use (highway legal and nonhighway legal vehicles) should not be allowed on the same road. In some situations, however, it may be necessary to allow a mix of highway legal vehicles with nonhighway legal vehicles, such as passenger cars with off highway vehicles or snowmobiles.

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3A.1 Introduction

Regulatory signs inform road users of traffic laws or regulations and indicate the applicability of legal requirements that are not apparent.

All regulatory traffic control devices shall be supported by laws, ordinances, or regulations, such as weight and size limits, road closures, and speed limits. National Forest System road regulations shall be supported by a signed order. See FSH 7709.59, section 23 and 36 CFR 261.54.

Regulatory signs should be used conservatively because these signs, if used to excess, tend to lose their effectiveness. Regulatory signs shall not be used unless enforcement is feasible and planned. If there is no enforcement of regulatory signs, there is no consequence to drivers who ignore signs they consider unnecessary. If enforcement is not planned or feasible, do not install signs that contribute to the sign credibility problem. Unnecessary signs create a climate of disrespect for all signs and result in the possibility of accidents caused by drivers ignoring signs that are necessary.

Regulatory signs

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conservatively because

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excess, tend to lose

their effectiveness.

Chapters 2B and 5B of the “Manual on Uniform Traffic Control Devices” (MUTCD) contain guidelines for regulatory signs. This chapter contains Forest Service Guidelines that supplement the MUTCD, provide additional emphasis as needed for NFS road, and signs that are specific to the Forest Service only.

For regulatory sign sizes refer to the MUTCD, table 2B-1 for conventional roads and table 5A-1 for low-volume roads.

Low-volume NFS road with speed limits or 85th percentile speeds of 30 miles per hour (mph) or less would allow the minimum sizes. Larger signs may be used when needed for higher speeds or other situations requiring greater sign visibility. Table 3A-1 shows the sign sizes by road type for regulatory signs that are more commonly used on NFS road.

The minimum sizes shown in table 3A-1 for low-volume roads with speeds 30 mph and below were derived from the minimum size columns in the MUTCD, tables 2B and 5A, depending on which one contained the smallest size. The judgment was made that these roads are considered low-speed roadways where the reduced legend size would be adequate for the regulation or warning or where physical conditions preclude the use of larger sizes as described in the MUTCD, section 2A.11, paragraph 2.

Table 3A-1—Regulatory sign sizes by road type

Regulatory signs	Sign code or series	Conventional road (inches)	Low-volume road	
			Typical sizes (inches) = or >35 mph	Minimum sizes (inches) 30 mph & below
STOP	R1-1	30 x 30	30 x 30	30 x 30
YIELD	R1-2	36 x 36 x 36	30 x 30 x 30	30 x 30 x 30
SPEED LIMIT	R2-1	24 x 30	24 x 30	18 x 24
Keep Right Symbol	R4-7	24 X 30	24 X 30	18 X 24
KEEP RIGHT	R4-7a	24 x 30	24 x 30	18 x 24
NO MOTOR VEHICLES	R5-3	24 X 24	24 X 24	24 x 24
AUTHORIZED TRAFFIC ONLY	FR5-11a	30 x 24	30 x 24	30 x 24
HIGHWAY LEGAL VEHICLES ONLY	FR5-11b	24 x 30	24 x 30	24 x 30
Variable Road Restrictions	FR5-11c	NA ³	NA ³	NA ³
ENTERING MOTOR VEHICLE RESTRICTION AREA STAY ON ROUTES DESIGNATED ON MOTOR VEHICLE USE MAP	FR5-12a	96 x 42	96 x 42	60 x 24
ENTERING MOTOR VEHICLE RESTRICTION AREA STAY ON DESIGNATED ROUTES	FR-12b	96 x 30	96 x 30	60 x 18
ROAD CLOSED ²	R11-2	48 x 30	48 x 30	48 x 30
ROAD CLOSED TO PUBLIC USE	FR11-4a	60 x 30	60 x 30	60 x 30
ROAD CLOSED TO PUBLIC USE (hours and days) ²	FR11-4b	60 x 30	60 x 30	60 x 30
COMMERCIAL USE PROHIBITED WITHOUT PERMIT	FR11-4c	60 x 30	60 x 30	36 x 18
WEIGHT LIMIT XX TONS	R12-1	24 x 30	24 x 30	24 x 30
AXLE WEIGHT LIMIT XX TONS	R12-2	24 x 30	24 x 30	24 x 30
WEIGHT LIMIT w/ symbols	R12-5	24 x 36	24 x 36	24 x 36
VEHICLES WITH WATERCRAFT MUST ENTER CHECK STATION	FR13-1a	60 x 48	60 x 48	42 x 30
CERTIFIED WEED-FREE STRAW AND FEED REQUIRED ON FEDERAL LANDS ¹	FR17-1	84 x 30	84 x 30	48 x 18

¹ This regulatory sign is not used to inform road users of selected traffic laws or regulations and therefore should not be funded with road-related funds.

² This regulatory sign may be smaller sized when placed on gates or other barriers and will not be viewed from a moving vehicle.

³ Size depends on message. Refer to section 3A.5.

3A.2 Intersection Controls—STOP/YIELD Signs

Most intersections on low-volume NFS roads do not need intersection control in the form of STOP or YIELD signs.

Intersections on NFS road may appear different from those on other roads that drivers are accustomed to driving for several reasons:

- Intersections may not be signed.
- Grades are often steeper.
- Intersecting angles may be sharper.
- Road surfaces and conditions change frequently.
- Roadside vegetation may inhibit sight distance.

Most intersections on low-volume NFS road do not need intersection control in the form of STOP or YIELD signs. Unwarranted installation of these signs causes unnecessary stops or delays. The enforcement of STOP and YIELD signs requires an order pursuant to 36 CFR 261.54(d).



R1-1



R1-2

Use a STOP sign only when traffic is ALWAYS required to stop. Consider using YIELD signs in lieu of STOP signs when appropriate. YIELD signs do not require drivers to come to a full stop. They still clearly establish right-of-way and do not require the level of enforcement needed for STOP signs.

When used, YIELD signs normally should be placed to control the traffic on the road with the lowest volume. They should not be placed on the approach to more than one of the intersecting roads at a “Y” or “T” intersection, nor placed on more than two approaches at an “X” intersection. They should not be used at any intersection where there are STOP signs.

3A.2.1 Where To Install STOP and YIELD Signs

For **conventional roads**, use the MUTCD, section 2B.04 to 2B.10 in performing an engineering study or applying engineering judgment evaluating the need for STOP or YIELD signs.

For **low-volume roads**, consider STOP (R1-1) and YIELD (R1-2) signs consistent with the provisions of the MUTCD, sections 2B.04 to 2B.10 where an engineering study or engineering judgment indicates that either of the following conditions applies:

- An intersection of a less important road with a main road where application of the normal right-of-way rule might not be readily apparent.
- An intersection that has restricted sight distance for the prevailing vehicle speeds.

Consider the following in performing an engineering study or engineering judgment about the need for STOP or YIELD control at intersections of low-volume roads.

- Engineering judgment may be sufficient for a single-stop situation. Perform an engineering study for multi-way stops at an intersection.
- Intersection control may not be needed when:
 - o Traffic volumes are less than 100 seasonal average daily traffic (SADT) on all approaches, unless a need has been determined by engineering study or engineering judgment or demonstrated by accident history.
 - o Approach speeds are equal to or less than 15 mph.
- Intersection control may be needed when:
 - o Adequate sight distance does not exist on all approaches to a low-volume road intersection and it is impracticable to remove sight distance obstructions. Refer to section 3A.2.2.
 - o Two low-volume roads with similar SADT intersect, and the application of the right-of-way rule could be unduly hazardous.
 - o Two or more vehicle accidents have occurred within the last 3 years, or an accident investigation indicates the need for intersection control.
 - o The intersection configuration is confusing, such as with “Y” intersections, and normal right-of-way expectations may be violated.

Reevaluate intersection-control needs when there is an increase or decrease in use patterns, such as an increase in commercial or logging vehicles, a new recreation development with increased traffic, a developed recreation site is closed with a decrease in traffic, or a revised motor vehicle designation that mixes motor vehicle traffic. An increase in traffic may result in the need for intersection control while a decrease in traffic may result in STOP signs being converted to YIELD signs, or removal of existing intersection control.

Also consider the need to control vehicle-pedestrian conflicts near locations that generate high pedestrian volumes; locations where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless conflicting cross traffic also is required to stop.

Refer to chapter 3D, figure 3D-1 for STOP and YIELD signs location examples.

3A.2.2 Intersection Sight Distance

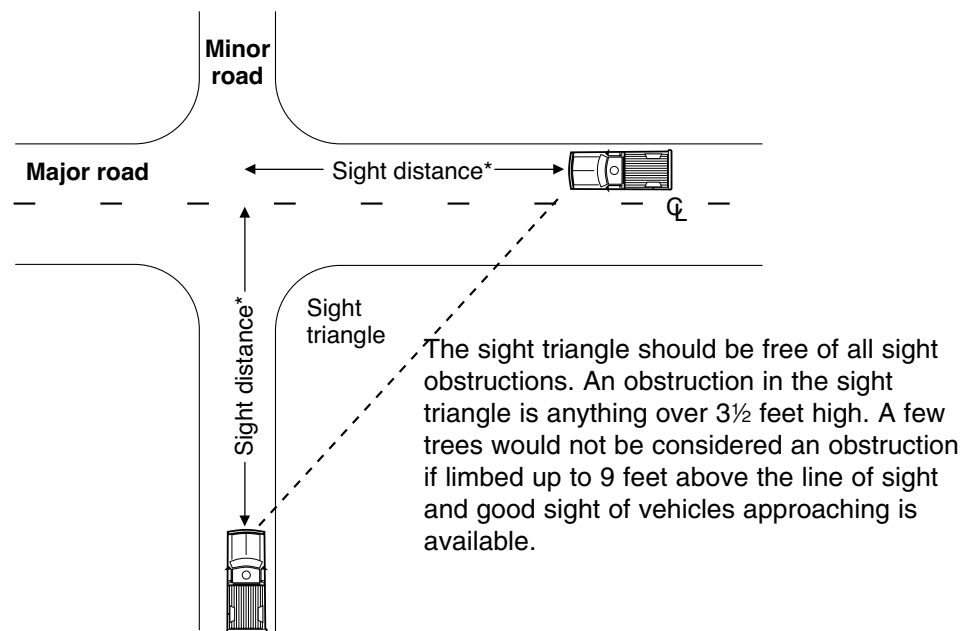
One of the primary considerations for determining the need for a STOP or YIELD sign, or choosing between the two, at an intersection on low-volume roads is the intersection sight distance. The intersection sight distance refers to the corner sight distance available at an intersection that allows the driver of a vehicle approaching the intersection to be able to see all potentially conflicting traffic on the other legs of the triangle in time to react appropriately and avoid a collision. The critical intersection sight distance depends on the

approach speeds of both roads, the type of traffic control at the intersection, and the presence of any roadside obstructions that could block or hinder the view in either direction. Evaluate sight distance triangles for all approaches to an intersection in an engineering study or engineering judgment using figure 3A-1 and table 3A-2.

Evaluate the intersection as follows:

Evaluate sight
distance triangles
for all approaches to
an intersection in an
engineering study or
engineering judgment

- Determine the approach speed for each approach to the intersection by using the 85th percentile speed or a spot speed study. Refer to chapter 3, section 3.11.1. Where these methods are not readily available, use the common sense method of driving the road at various speeds to determine a prudent speed for each approach.
- Use the approach speeds to determine the sight distance requirements for each approach in accordance with the “no control” figures in table 3A-2.
- On each approach, from the approach distance for its speed, measure the distance from the intersection to where a vehicle on other approaches would no longer be visible.
- Where those measured distances are longer than those in the “no control” columns in table 3A-2, no control is needed.
- Where those distances are less than “no control” distances but more than “stop control” distances on both left and right approaches, consider using a YIELD sign.
- Where those distances are less than “stop control” distances on either approach, consider using a STOP sign.



*Obtain sight distances from table 3A-2.

Figure 3A-1—Sight triangle.

Table 3A-2—Sight distance requirements at various speeds

Column A Operating speed (miles per hour)	Sight distance requirements (feet)		
	Column B Major road with stop control ¹	Column C Minor road with stop control ¹	Column D Major or minor road with no control ²
10	45	50	—
20	90	50	125
30	130	50	200
40	180	50	325
50	220	50	475
60	260	50	650

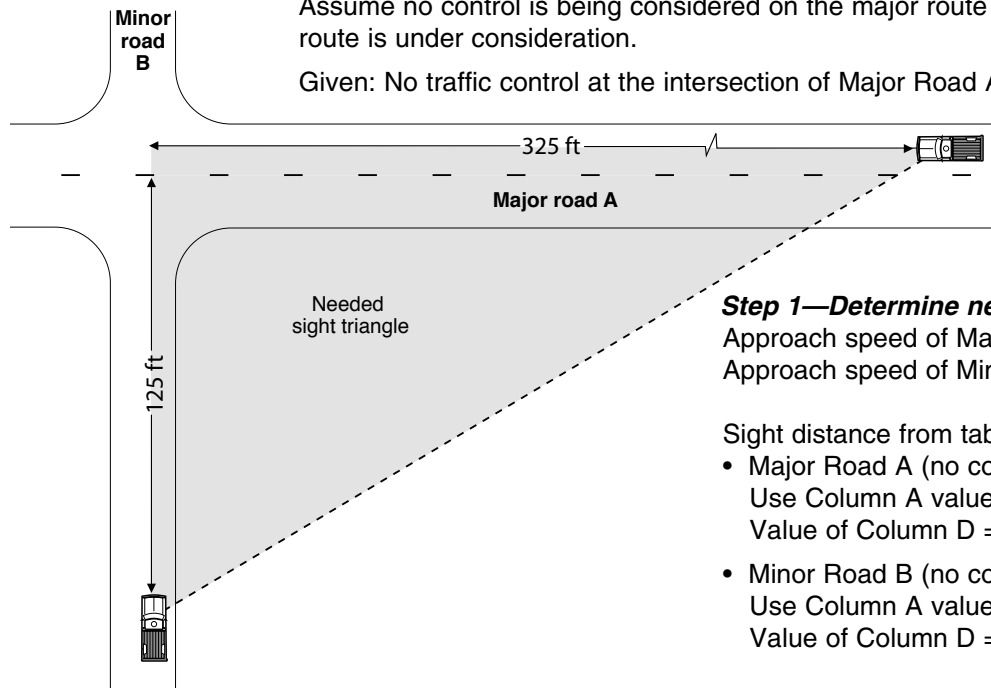
¹ Stop control means a stop sign is at the intersection on the approach under consideration.

² No control means there are no stop or yield signs at the intersection.

Case A – Intersections With No Control.

Assume no control is being considered on the major route and only the minor route is under consideration.

Given: No traffic control at the intersection of Major Road A and Minor Road B.

**Step 1—Determine needed site triangle.**

Approach speed of Major Road A is 40 mph

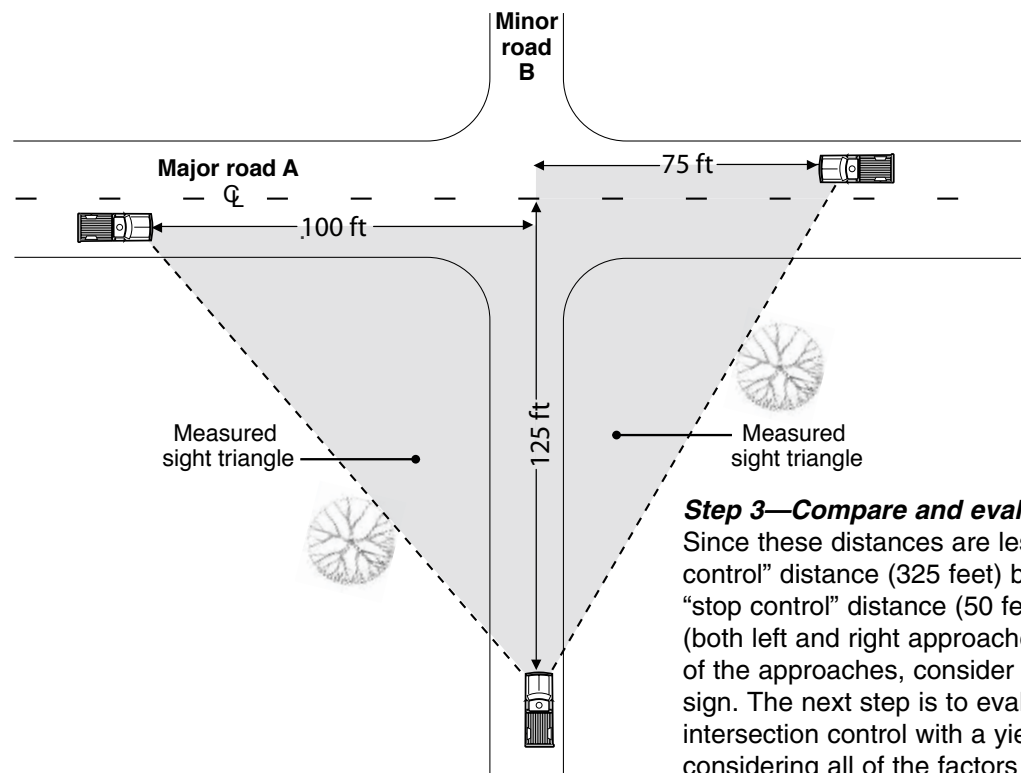
Approach speed of Minor Road B is 20 mph

Sight distance from table 3A-2:

- Major Road A (no control):
Use Column A value of 40 mph
Value of Column D = 325 feet
- Minor Road B (no control)
Use Column A value of 20 mph
Value of Column D = 125 feet

Step 2—Determine measured sight triangle.

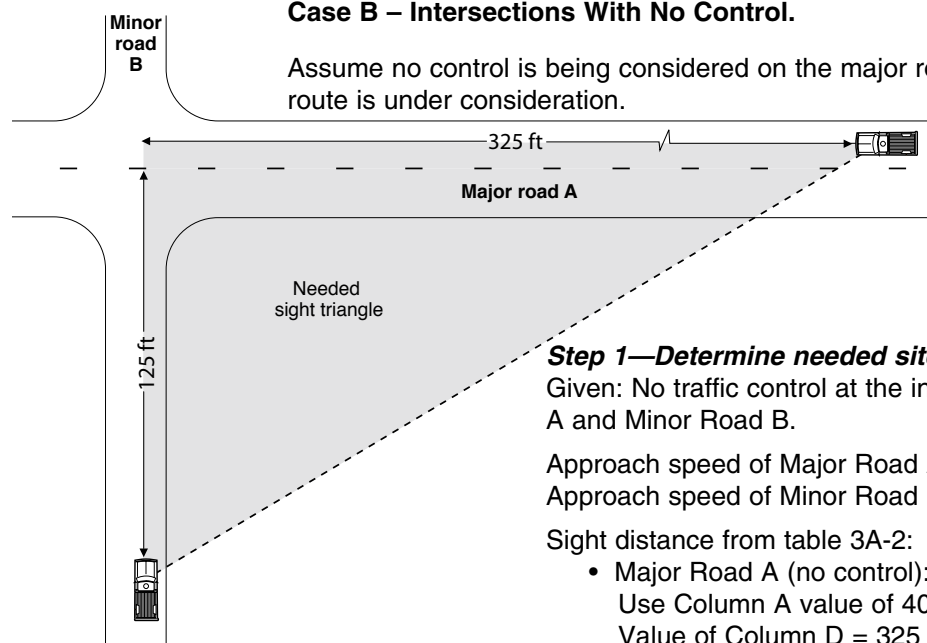
From the 125-foot sight distance on Road B, the distance from the intersection to where a vehicle on Road A was no longer visible was measured at 75 feet to the right and 100 feet to the left. The minimum required sight distance of 325 feet cannot be provided in either direction due to obstructions in the sight triangles.

**Step 3—Compare and evaluate.**

Since these distances are less than the “no control” distance (325 feet) but more than the “stop control” distance (50 feet) on at least one (both left and right approaches in this case) of the approaches, consider using a YIELD sign. The next step is to evaluate the need for intersection control with a yield sign on Road B considering all of the factors for the site.

Case B – Intersections With No Control.

Assume no control is being considered on the major route and only the minor route is under consideration.

**Step 1—Determine needed site triangle.**

Given: No traffic control at the intersection of Major Road A and Minor Road B.

Approach speed of Major Road A is 40 mph

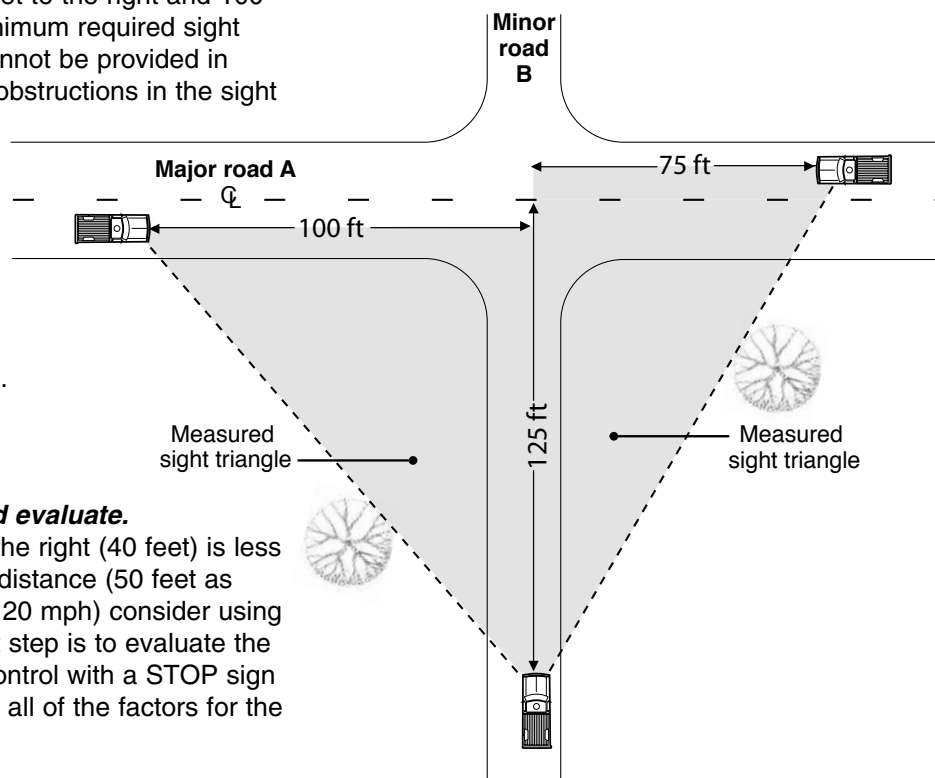
Approach speed of Minor Road B is 20 mph

Sight distance from table 3A-2:

- Major Road A (no control):
Use Column A value of 40 mph
Value of Column D = 325 feet
- Minor Road B (no control)
Use Column A value of 20 mph
Value of Column D = 125 feet

Step 2—Determine measured sight triangle.

From the 125-foot sight distance on Road B, the distance from the intersection to where a vehicle on Road A was no longer visible was measured at 40 feet to the right and 100 feet to the left. The minimum required sight distance of 325 feet cannot be provided in either direction due to obstructions in the sight triangles.

**Step 3—Compare and evaluate.**

Since the distance on the right (40 feet) is less than the “stop control” distance (50 feet as shown in column C for 20 mph) consider using a STOP sign. The next step is to evaluate the need for intersection control with a STOP sign on Road B considering all of the factors for the site.

Refer to AASHTO A Policy on Geometric Design of Highways and Streets, 2004 or current edition.

3A.3 Speed Limit Signs

Speed limits shall only be established on the basis of an engineering study that has been performed in accordance with traffic engineering practices.



R2-1

Speed limits are generally not needed nor recommended on most NFS road. Impose speed limits only where and when necessary. Application of the “basic rule” found in State motor vehicle codes requiring that drivers travel at speeds “reasonable and prudent for conditions” is usually sufficient. Also, sight distance and physical characteristics of NFS road often influence safe operating speeds.

Experience has shown that drivers’ speeds are usually governed more by road conditions than by posted speed limits. This is particularly true when enforcement is lacking.

Speed limits (other than statutory speed limits) shall only be established on the basis of an engineering study that has been performed in accordance with traffic engineering practices. The posting and enforcement of established speed limits including statutory speed limits requires an order pursuant to 36 CFR 261.54(d). New speed limits should not be established without a plan to enforce them, and existing speed limits should be removed should enforcement lapse.

Speed limits less than 15 miles per hour shall not be posted on NFS road including roads in recreation areas unless recommended by an engineering study. If unreasonably low speeds are posted, the limit will be violated by a large number of drivers. This creates a credibility problem with drivers and breeds disrespect for all signs.

It is often advantageous to develop an agreement for enforcement with local law enforcement agencies such that they can enforce speed limits on NFS road.

At least every 5 years, nonstatutory speed limits should be reevaluated where significant roadway characteristics or surrounding land use has changed.

3A.3.1 Encouraging Safe Speeds Without Speed Limits

Encouraging safe speeds without setting speed limits is a method of positive guidance that works well on unpaved roads but also is applicable to low-volume, low-speed paved roads. It is appropriate for almost any low-volume road where establishing speed limits is deemed inappropriate or where speed limits cannot or will not be enforced. For example, most NFS road are unpaved, and surface conditions are susceptible to changes throughout the year with or without surface maintenance. Where this is the case, posted speed limits could be inappropriate at times for some road conditions.

An alternative to posting speed limits is the common sense approach of installing warning devices giving positive guidance at locations where a driver’s expectancy could be exceeded as determined through engineering judgments or engineering studies. Thus, drivers can travel at speeds they deem prudent, based on existing road conditions, but are warned when road geometry or conditions change abruptly.

Consider the following when encouraging safe speeds without posted speed limits:

- Warning signs or devices including advisory speed plaques on sharp curves after long tangents or other unexpected road geometry changes where a speed reduction approaching the curve or other unexpected road geometry is 10 mph or greater.
- Where tangents lead to visible flat curves and then to increasingly sharper curves that automatically slow traffic and the curves are expected, signing might not be needed.
- Roads with long tangents and visible curves without major inconsistencies may not need any signs. Road users will choose their own prudent speed.
- Warning signs with or without advisory speed plaques in areas of high pedestrian or other non-motorized traffic, such as campgrounds and visitor centers.

Using this “common sense” method of encouraging safe speeds without speed limits negates the need and expense of speed limit signs, orders, and enforcement costs. In addition, the traffic control devices alert drivers to road inconsistencies so they can travel at speeds they deem prudent based on current road conditions.

Speed limits in recreation areas often provide poor traffic control and are ineffective without consistent enforcement. Warning signs, such as a Pedestrian symbol (W11-2) with Advisory Speed plaque (W13-1P), may provide better control.

Pavement markings may be used in place of or in support of regulatory signs as determined by an engineering study or engineering judgment. Some examples include Speed Hump Markings, Crosswalk Markings, and Edge Line Pavement Markings.



R4-7



R4-7a

3A.4 Keep Right/Left Signs

The Keep Right symbol (R4-7) or Keep Left symbol (R4-8) sign should be used at locations where it is necessary for traffic to pass only to the right-hand or left-hand side of a roadway feature or obstruction and where it is not readily apparent that traffic is required to keep to the right or left.

The Keep Right symbol sign shall not be installed on the right-hand side of the roadway in a position where traffic must pass to the left-hand side of the sign.

The Keep Right symbol sign shall not be used to supplement standard traffic rules which require operators to drive on the right side of the road.

Word message KEEP RIGHT (R4-7a) or KEEP LEFT (R4-8a) with an arrow signs may be used instead of the R4-7 or R4-8 symbol signs.

3A.5 Selective Exclusion Signs

Travel by various types of traffic or vehicles on NFS road may be restricted seasonally or yearlong to accomplish a variety of management strategies.

Selective exclusion signs give notice to road users that CFR orders exclude designated types of traffic from using a road. Selective exclusion signs may be used to supplement travel management decisions or designations on the Motor Vehicle Use Map. Refer to chapter 6 for travel management signing.

Selective Exclusion signs shall clearly indicate the type of traffic that is excluded.



R5-3

The NO MOTOR VEHICLES (R5-3) sign may be used at locations where all public motor vehicle use is prohibited unless they are excluded from the prohibition, such as law enforcement vehicles or emergency vehicles; or are performing official business, such as administrative or permitted vehicles. Nonvehicular traffic is still allowed.



FR5-11a

The AUTHORIZED TRAFFIC ONLY (FR5-11a) sign, may be used at locations to prohibit all traffic from using the road unless they are excluded from the prohibition, such as law enforcement or emergency personnel, or others performing official business, such as administrative or permitted use.



FR5-11b

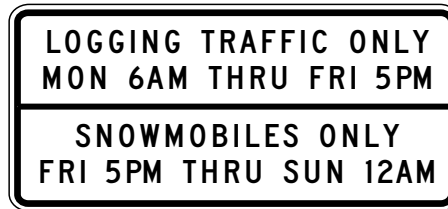
The HIGHWAY LEGAL VEHICLES ONLY (FR5-11b) sign may be used:

- At the beginning of a road where nonhighway legal vehicles are not allowed for the entire length.
- At intersections where nonhighway legal vehicles can access the road designated for highway-legal vehicles only from other motorized mixed use roads or motorized trail systems.
- On road segments where nonhighway legal vehicles are no longer allowed after road segments where they had been allowed.

Variable Road Restrictions (FR5-11c) signs indicate specific times and/or days of use and modes of travel that are restricted. The information on these signs should be clear and concise to avoid confusion for the user. Remove or cover any signs that are not appropriate to the use occurring at that time or may be confusing or distracting to the user.

Variable Road Restrictions signs may be used to sign coincident and noncoincident routes that are managed for separate seasons and/or times for different uses.

These signs should be designed on a case-by-case basis and shall be approved by the regional office sign coordinator.



FR5-11c (changeable message)



FR5-11c (changeable message)

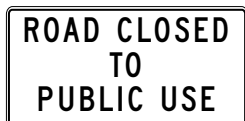
Roads that are physically restricted by a gate or other barrier may have travel management signs that are smaller than those required for open roads and are not meant to be read from a moving vehicle. Refer to chapter 6, Access and Travel Management, for more information on these signs.

3A.6 Road Closure Signs



R11-2

Use the ROAD CLOSED (R11-2) sign to mark roads that have been closed to **all traffic** except authorized vehicles. It is intended primarily for use where travel on the road has been impacted by situations, such as work zones, incident zones, floods, landslides, bridge washouts, and other areas where the general public is not allowed.



FR11-4a

Use the ROAD CLOSED TO PUBLIC USE (FR11-4a) sign when administrative traffic is allowed behind the closure and there may be some confusion with other public traffic when they see authorized vehicles entering the closed road. Dates and times may be added to the sign as applicable (FR11-4b).



FR11-4b

The ROAD CLOSED (R11-2) and ROAD CLOSED TO PUBLIC USE (FR11-4a) signs shall be preceded by the applicable Advance Road Closed warning sign with the secondary legend AHEAD or a distance. Refer to the MUTCD, section 6F.20.

Do not use ROAD CLOSED signs where nonvehicular traffic is allowed.

Do not use ROAD CLOSED signs at a gate or other restriction device for seasonal or long-term access and travel management road restrictions. ROAD CLOSED signs are not appropriate for ML1 roads that are placed in long-term storage and are not designated for motor vehicle use but non-motorized use is allowed. Road Restriction signs may be used if signing is necessary. Refer to section 3A.5 and chapter 6, for detailed information on displaying access and travel management decisions.

3A.7 Portal Signs

Portal signs may be used for notifying the public that certain prohibitions are in effect.

Appropriate locations for portal signs include:

- Principal or key access routes at national forest boundaries.
- At or as close as practical to the point of restriction.
- County, township, State, or Federal roads which pass through national forests.
- Arterial and collector NFS road.
- Installations which would minimize the number of signs.

Coordinate with:

- Other jurisdictions to install signs on non-Forest Service routes.
- The forest or regional sign coordinator when modifying messages.

If a unit elects to use portal signs, they should be used consistently over the entire area covered by the restriction.

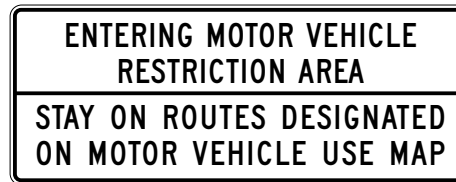
Portal signs that are used for information purposes and will not require enforcement may be brown and white. Refer to chapter 6, figure 6-8 for an example.

3A.7.1 Travel Management Portal Signs

Travel Management Portal Signs are:

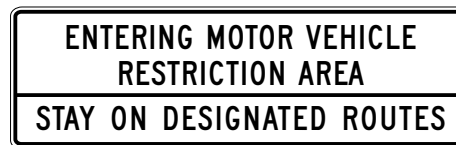
- Used to inform the public that they are entering an area with motor vehicle travel restrictions and that they should have a Motor Vehicle Use Map (MVUM).
- **Optional** – they are not required for enforcement. The MVUM is the enforcement tool.

FR5-12a may be used for areas with no motorized over-snow (snowmobile) designated routes. The sign only refers to motor vehicle use shown on the MVUM.



FR5-12a

FR5-12b may be used if there also is an Over-Snow Vehicle Use Map (OSVUM). The sign does not refer to a specific map product. Combine messages when possible such as areas that also have restrictions on snowmobiles.



FR5-12b

3A.7.2 COMMERCIAL USE PROHIBITED WITHOUT PERMIT Portal Sign (FR11-4c)

The COMMERCIAL USE PROHIBITED WITHOUT PERMIT (FR11-4c) sign may be used on any NFS road. A forest order shall be written under the authority of 36 CFR 261.54 before the sign is posted.



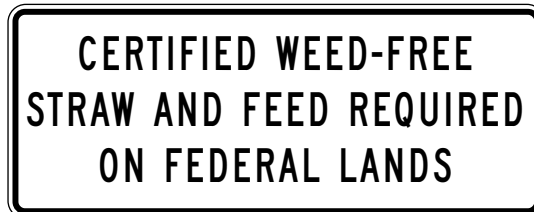
FR11-4c

Signs for other specific road use prohibitions, such as prohibiting snow plowing without a use permit or prohibitions with specific times and/or dates may also be made using a variation of the FR11-4c sign.

Permits allowing snow plowing, maintenance, and other road operations on NFS road shall contain all standard required TCD as a condition of the permit. Forest sign coordinators are responsible for reviewing permits containing signing requirements to assure compliance with the MUTCD and these Guidelines.

3A.7.3 CERTIFIED WEED-FREE STRAW AND FEED Portal Signs (FR17-1)

The CERTIFIED WEED-FREE STRAW AND FEED (FR17-1) portal sign may be used at the entrance to areas where a CFR order has been issued that requires only weed-free straw and feed be used. The last line of this sign may be modified to include the appropriate jurisdiction such as: ON NATIONAL FOREST LANDS, STATE AND FEDERAL LANDS, or ON PUBLIC LANDS.

**FR17-1**

This regulatory sign is not used to inform road users of selected traffic laws or regulations and therefore should not be funded with road-related funds.

3A.8 Check Station Signs

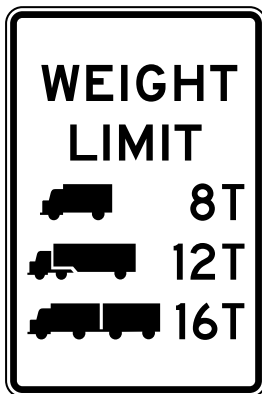
An FR13-1a sign with the legend VEHICLES WITH WATERCRAFT MUST ENTER CHECK STATION should be used to direct appropriate traffic that is required to enter the check station. The FR13-1a sign should be supplemented with guide signs as shown in chapter 3D, figure 3D-22. The sign may be modified to reflect appropriate vehicle type or product, such as GAME ANIMALS or FIREWOOD.

**FR13-1a**

3A.9 Weight Limit Signs



R12-1



R12-5

Use Weight Limit signs to notify road users of a legal load limit less than State legal limits. Post WEIGHT LIMIT signs immediately in advance of the structure or section of road to which it applies.

Posting and enforcing weight limits requires an order pursuant to 36 CFR 261.54(d).

The WEIGHT LIMIT XX TONS sign (R12-1) is used to indicate vehicle weight restrictions including load regardless of axle configuration.

The Weight Limit symbol sign (R12-5) is the preferred sign to depict weight limits on roads and bridges. It permits increased weights when more axles are used to distribute the load. A bottom line of legend stating GROSS WT may be included if needed for enforcement purposes.

An advance warning assembly consisting of a WEIGHT LIMIT sign and a supplemental distance plaque, such as the W16-2P or W16-3P, should be placed at road intersections or locations where the traffic can detour or conveniently turn around without significant backtracking for bridges posted at less than the legal or customary weight limit on the road. A supplemental warning plaque used with a regulatory sign shall have a black legend and border on a yellow background. Refer to chapter 3B, section 3B.2.23a, and chapter 3D, figure 3D-12 for additional information on supplemental plaques.

3A.10 Non-Road Related Signs Placed in Road Right of Way

Regulatory signs that are not road or traffic related generally are not placed within a road right-of-way, but under some circumstances this may be acceptable. One example is the weed-free portal sign shown in section 3A.7.3.

Signs that are not road or traffic related are rarely placed within a road right of way, but under some circumstances this may be acceptable. One example is an acknowledgment sign such as the ADOPT A HIGHWAY sign (MUTCD D14-3). Refer to chapter 3C, section 3C.11.4.

All non-road related signs not shown in the MUTCD or these Guidelines that will be placed in a NFS road right-of-way shall be approved by the regional sign coordinator.

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3B.1 Introduction

Warning signs call attention to unexpected conditions on or adjacent to a road open to public travel and to situations that might not be readily apparent to road users. Warning signs alert road users to conditions that might call for a reduction of speed or an action in the interest of safety and efficient traffic operations.

Warning signs should be used conservatively because these signs, if used to excess, tend to lose their effectiveness. Consider mitigating these situations through other available means before using a warning sign.

The use of warning signs shall be based on an engineering study or on engineering judgment.

The physical characteristics and low-traffic volumes on many National Forest System Roads (NFS road) preclude the need for many warning signs and their use should be kept to a minimum. When warning signs are used, sign all similar situations on the road. Typical situations that may require use of warning signs are:

- Turns and curves.
- Grades.
- Intersections.
- Crossings.
- Narrow roadways.
- Hazards.
- Advance warning of traffic control devices.

The shape, size, color, and message of warning signs shall follow the direction in the MUTCD and these Guidelines. Coordinate new message warning signs or warning signs for unique situations with the regional sign coordinator. New warning sign symbols shall be recommended by the Washington Office Director of Engineering and approved by the FHWA.

Chapters 2C and 5C of the MUTCD contain standards for warning signs. Sizes of typical MUTCD warning signs common to NFS road, Forest Service signs supplementary to the MUTCD, standard signs requiring further information or emphasis, and unique Forest Service warning signs are shown in table 3B-1.

When used, warning signs should be placed in advance of the beginning of the affected section. For advanced placement distances for warning signs on unpaved, low-volume roads, refer to chapter 3D, table 3D-2. For advanced placement distances for warning signs on conventional roads and paved low-volume roads, refer to the MUTCD, section 2C.05, table 2C-4.

Refer to chapter 3D for additional information on warning sign placement.

A supplemental warning plaque may be displayed with any warning sign when engineering judgment indicates that road users require additional warning information beyond that contained in the main message of the warning sign. Refer to section 3B.2.23a for standards and guidance on use of supplemental plaques.

Table 3B-1—Warning sign sizes by road type

Message or Symbol	Sign code or series	Conventional road sign sizes (inches)	Low-volume roads	
			Typical sign sizes (inches) = or >35 mph	Minimum sign sizes (inches) <35 mph
DIAMOND SHAPED SIGNS				
Horizontal Alignment symbols	W1-1, 2, 3, 4, 5, 10	30 x 30	30 x 30	30 x 30
Hairpin Curve symbol	W1-11	30 x 30	30 x 30	30 x 30
Intersection Warning symbol	W2-1, 2, 3, 4, 5	30 x 30	30 x 30	24 x 24
Stop Ahead symbol	W3-1	30 x 30	30 x 30	30 x 30
Yield Ahead symbol	W3-2	30 x 30	30 x 30	30 x 30
ROAD CLOSED XX FEET, XX MILES, or AHEAD	FW3-4a	36 x 36	30 x 30	30 x 30
GATE CLOSED XX FEET, XX MILES, or AHEAD	FW3-5a	36 x 36	30 x 30	30 x 30
CATTLE GUARD XX FEET, XX MILES, or AHEAD	FW3-6a	36 x 36	30 x 30	30 x 30
ROAD NARROWS	W5-1	36 x 36	36 x 36	30 x 30
ONE LANE ROAD	FW5-1a	—	36 x 36	30 x 30
ROUGH NARROW ROAD	FW5-1b	36 x 36	36 x 36	30 x 30
STEEP NARROW ROAD	FW5-1c	36 x 36	36 x 36	30 x 30
NARROW WINDING ROAD	FW5-1d	36 x 36	36 x 36	30 x 30
NARROW BRIDGE	W5-2	36 x 36	36 x 36	30 x 30
ONE LANE BRIDGE	W5-3	30 x 30	30 x 30	30 x 30
BUMP	W8-1	30 x 30	30 x 30	24 x 24
DIP	W8-2	30 x 30	30 x 30	24 x 24
PAVEMENT ENDS	W8-3	36 x 36	30 x 30	30 x 30
GRAVEL SECTIONS	FW8-3b	36 x 36	30 x 30	30 x 30
Slippery When Wet symbol	W8-5	30 x 30	30 x 30	24 x 24
TRUCK CROSSING	W8-6	36 x 36	30 x 30	24 x 24

Chapter 3B Traffic Control Devices

Warning Signs

Table 3B-1—Warning sign sizes by road type (*continued*)

Message or Symbol	Sign code or series	Conventional road sign sizes (inches)	Low-volume roads	
			Typical sign sizes (inches) = or >35 mph	Minimum sign sizes (inches) <35 mph
LOOSE GRAVEL	W8-7	36 x 36	30 x 30	24 x 24
ROUGH ROAD	W8-8	36 x 36	30 x 30	24 x 24
BROKEN PAVEMENT	FW8-8a	36 x 36	30 x 30	24 x 24
NO CENTER LINE	W8-12	36 x 36	36 x 36	36 x 36
FALLEN ROCKS	W8-14	30 x 30	30 x 30	24 x 24
FALLEN TREES	FW8-14a	30 x 30	30 x 30	24 x 24
FALLEN ROCK AND DEBRIS	FW8-14b	30 x 30	30 x 30	24 x 24
ROAD MAY FLOOD	W8-18	36 x 36	30 x 30	24 x 24
FLASH FLOOD AREA	FW8-18a	36 x 36	30 x 30	24 x 24
STREAM CROSSING	FW8-18c	36 x 36	30 x 30	24 x 24
FORD	FW8-18d	36 x 36	30 x 30	24 x 24
Bicycle symbol	W11-1	30 x 30	30 x 30	24 x 24
Pedestrian symbol	W11-2	30 x 30	30 x 30	24 x 24
Large Animals symbols	W11- 3, 4,	30 x 30	30 x 30	24 x 24
Farm Vehicle symbols	W11-, 5, 5a	30 x 30	30 x 30	24 x 24
Snowmobile symbol	W11-6	30 x 30	30 x 30	24 x 24
OHV symbol	FW11-6a	30 x 30	30 x 30	24 x 24
Equestrian symbol	W11-7	30 x 30	30 x 30	24 x 24
Emergency vehicle symbol	W11-8	30 x 30	30 x 30	24 x 24
Handicapped symbol	W11-9	30 x 30	30 x 30	24 x 24
Truck symbol	W11-10	30 x 30	30 x 30	24 x 24
TRAIL CROSSING	W11-15a	30 x 30	30 x 30	24 x 24

Table 3B-1—Warning sign sizes by road type (*continued*)

Message or Symbol	Sign code or series	Conventional road sign sizes (inches)	Low-volume roads	
			Typical sign sizes (inches) = or >35 mph	Minimum sign sizes (inches) <35 mph
NO TURNAROUND AHEAD	FW14-1a	30 x 30	30 x 30	24 x 24
SPEED HUMP (or SPEED BUMP)	W17-1	30 x 30	30 x 30	24 x 24
NO TRAFFIC SIGNS	W18-1	—	30 x 30	24 x 24
RECTANGULAR SHAPED SIGNS				
Large Arrows	W1-6, 7	48 x 24	36 x 18	36 x 18
Chevron	W1-8	18 x 24	12 x 18	12 x 18
NOT SUITABLE FOR PASSENGER CARS XX MILES AHEAD (variable messages)	FW5-1e	NA	60x30**	36x18**
NOT MAINTAINED FOR WINTER TRAVE	FW5-1f	NA	36 x 24	36 x 24
SHARE THE ROAD (2 symbols)	FW8-7	72 x 54	60 x 48	48 x 36
Depth Gauge	W8-19	12 x 72	12 x 72	12 x 72
FALLEN ROCK & DEBRIS FLASH FLOOD AREA NEXT XX MILES	FW8-14c	80 x 30	80 x 30	66 x 24
ENTERING BURNED AREA, STAY ON ROADS AND TRAILS	FW8-14d	60 x 42	60 x 42	48 x 30
IMPASSABLE DURING HIGH WATER	FW8-18b	NA	36 x 24	36 x 24
SUPPLEMENTAL PLAQUES				
NEXT XX MILES (plaque)	W7-3aP	24 x 18	24 x 18	24 x 18
WHEN WET	W8-5P	24 x 18	24 x 18	24 x 18
ICE	W8-5aP	24 x 18	24 x 18	24 x 18
EXCESS OIL	W8-5cP	24 x 18	24 x 18	24 x 18
TRAIL X-ING (plaque)	W11-15P	24 x 18	24 x 18	24 x 18

Table 3B-1—Warning sign sizes by road type (*continued*)

Message or Symbol	Sign code or series	Conventional road sign sizes (inches)	Low-volume roads	
			Typical sign sizes (inches) = or >35 mph	Minimum sign sizes (inches) <35 mph
Advisory Speed	W13-1P	24 x 24	18 x 18	18 x 18
SHARE THE ROAD (plaque)	W16-1P	18 x 24	18 x 24	18 x 24
XX FEET(plaque)	W16-2P	24 x 18	24 x 18	18 x 12
XX FT (plaque)	W16-2aP	24 x 12	24 x 12	18 x 12
XX MILES (2-line plaque)	W16-3P	30 x 24	30 x 24	30 x 24
XX MILES (1-line plaque)	W16-3aP	30 x 12	30 x 12	30 x 12
NEXT XX FEET (plaque)	W16-4P	30 x 24	30 x 24	30 x 24
Downward Diagonal Arrow (plaque)	W16-7P	24 x 12	24 x 12	24 x 12
AHEAD plaque	W16-9P	24 x 12	24 x 12	24 x 12
OBJECT MARKERS				
Type 2 Object Marker	OM2-2V OM2-2H	6 x 12	6 x 12	6 x 12
Modified Type 2 Object Marker	FOM2-2V	NA	NA	3 x 18
Type 3 Object Marker	OM3-L OM3-R OM3-C	12 x 36	12 x 36	12 x 36
Type 4 Object Markers	OM4-3	18 x 18	18 x 18	18 x 18 12 x 12*
Barricade Markers	FBM-L FBM-R	NA	NA	24 x 8
Barricade Markers	FBM1-L FBM1-R	NA	NA	12 x 6*

*Single-lane ML 2 roads not passable by a standard passenger car operated by a prudent driver.

**Sizes may vary depending on length of message.

3B.2 Warning Signs

3B.2.1 Horizontal Alignment Warning Signs

Changes in horizontal alignment, such as curves and turns that vary significantly from the driver's expectations, may need to be signed.

Consider the driver's expectations and behavior when evaluating curves and turns. The driver's expectations of a curve are based on a complex variety of conditions, such as speed, grade, sight distance, visibility (day versus night, inclement weather), and surface type. The greater the speed reduction required for a curve, the greater the probability of driver error at that curve.

Curves should be evaluated in both directions of travel. The differences in sight distance, prevailing speed, and grade may affect the driver's ability to transition to a safer speed for the curve and could result in different recommendations for each direction of travel.

Curves should
be driven in both
directions.

Warning signs usually are not needed when the speed reduction from tangent to curve is less than 10 miles per hour.

Consider the speed of vehicles at three locations.

Prevailing speed—The speed the driver is traveling on the road before the driver perceives a curve ahead.

Approach speed—The speed to which the driver transitions after perceiving the curve. This is the speed at which the driver enters the curve; it is affected by what the driver can determine beforehand regarding the severity of the curve. Natural features may be all that are needed for adequate guidance. A cut bank, trees, or brush on the outside of the curve make it easier for drivers to perceive the curve because there is a visual reference versus a fillslope on the outside. Consideration also must be given to the fact that roadside vegetation is less obvious during hours of darkness.

Speed profile—The speed of the vehicle as it traverses the curve. When drivers maintain a constant speed profile throughout the curve, it indicates the driver expected the curve and correctly selected an appropriate speed for the curve. Decreasing vehicle speeds while rounding the curve suggests the driver selected an approach speed that was too high.

The decision to sign a particular curve is primarily based on the relationship of a constant speed profile to the prevailing speed and shall be determined by an engineering study or engineering judgment. One or more of the following methods may be used to determine the relationship of a constant speed profile to the prevailing speed:

Curve sight distance—Safe speeds on single-lane roads are often dictated by sight distance. On these roads, and many roads without a center line, sight distance should be checked first to determine whether it is the dominant factor for safe curve speed. Stopping sight distance for two-way single-lane roads should be twice the stopping sight distance for a comparable two-lane road.

Values for stopping sight distances for low-volume roads can be found in FSH7709.56, chapter 40.

Trial runs by driving—This is a valid procedure for determining speeds on gravel and native-surfaced low-volume roads.

Speeds can be determined through experience by driving the section of road in a vehicle that is representative of the traffic on the road. Several trial runs should be made at various speeds along the center of the travel lane in the direction that the curve will be traveled.

Determine the speed that allows the driver to negotiate the curve in a comfortable manner. The constant speed profile through the curve would be this speed rounded down to the nearest 5-mph increment.

Trial runs with ball-bank indicator— A ball-bank indicator (also known as a manual inclinometer) is a device with a ball enclosed in a liquid filled tube. The ball moves in response to travelling around a curve. The goal is to determine the speed of travel where the ball stays below the maximum recommended reading. Trial runs are made around the curve at various speeds, increasing the speed 5 mph each time, until the maximum recommended speed is found. The next lowest 5-mph increment is then the constant speed profile for that curve in that direction.

Use the following criteria:

- 16 degrees of ball bank for speeds of 20 mph or less.
- 14 degrees of ball bank for speeds of 25 to 30 mph.
- 12 degrees of ball bank for speeds of 35 mph and higher.

Gravel and native surfaced low-volume roads could constitute an unusual circumstance where the skill of the engineer is needed before making a determination to use a ball-bank indicator.

It is important to follow correct procedures when using the ball-bank indicator, or incorrect readings may result. Mount the ball-bank indicator on the dashboard of a standard automobile. Sports cars, trucks, and SUVs with heavy duty suspensions are not recommended for use. They trend to over or underestimate the curve speeds. Level the ball-bank indicator on a level surface with two people in the stationary vehicle. The vehicle should be driven smoothly in the center of the lane without cutting corners.

Mathematical computation—Determine the radius of curvature from field measurements or design data. Look up the design speed for the radius of curvature and surface type in FSH 7709.56, chapter 40, Transportation System Preconstruction Handbook. Verify the results obtained by a trial run and adjust if necessary. The constant speed profile for the curve is the verified speed determined above, rounded down to the nearest 5-mph increment.

Some horizontal alignment changes also may need additional warning devices, such as delineators, chevron signs, advisory speed plaques or distance plaques to provide adequate curve identification, as determined in an engineering study or engineering judgment. Some factors to consider are:

- Accident history.
- Speed reduction of 15 mph or greater.
- Conditions, such as hours of darkness or lack of vegetation, make it difficult for drivers to perceive the change in alignment or its severity.
- Downhill grades that occur on the approach or around a curve. Downhill grades require more approach distance than uphill grades. For more information, see chapter 3D, table 3D-2.

The Advisory Speed (W13-1P) plaque may be used to supplement any warning sign including horizontal alignment signs to indicate the advisory speed for a condition. The advisory speed for curves should be the same as the constant speed profile throughout the curve as determined by one of the methods mentioned above, the 85th-percentile speed of free-flowing traffic through the curve, or as determined by any other method documented in an engineering study. Regardless of the method selected, the advisory speed shall be determined by an engineering study that follows established engineering practices.

Also, it is important to take into consideration the standards used to post advisory speeds for curves on adjacent county and State roads.

Additional information on Advisory Speed (W13-1P) plaques can be found in section 3B.2.23b and in the MUTCD, section 2C.08.

Refer to the MUTCD, table 2C-5, for general guidance on horizontal alignment sign usage. Use engineering judgment to determine whether the CURVE or TURN sign should be used. It may be more appropriate to consider road geometry than speed to better portray the curve or turn ahead.



W1-2

3B.2.1a Horizontal Alignment Signs (W1-1 through W1-5, W1-11)

If a horizontal alignment sign is determined to be needed the sign installed in advance of the curve shall be a Curve (W1-2) sign unless a different sign is recommended or allowed by the provisions of this section or by engineering judgment.



W1-1

A Turn (W1-1) sign shall be used instead of a Curve sign in advance of curves that have advisory speeds of 30 mph or less.



W1-4

Where there are two changes in roadway alignment in opposite directions that are separated by a tangent distance of less than 600 feet, the Reverse Turn (W1-3) sign should be used instead of multiple Turn (W1-1) signs and the Reverse Curve (W1-4) sign should be used instead of multiple Curve (W1-2) signs.



W1-3



W1-5

A Winding Road (W1-5) sign may be used instead of multiple Turn (W1-1) or Curve (W1-2) signs where there are three or more changes in roadway alignment each separated by a tangent distance of less than 600 feet.



W1-11

If the curve has a change in horizontal alignment of 135 degrees or more, the Hairpin Curve (W1-11) sign may be used instead of a Curve or Turn sign. When the Hairpin Curve sign is installed, either a One-Direction Large Arrow (W1-6) sign or Chevron Alignment (W1-8) signs should be installed on the outside of the turn or curve.



W1-10

Turn or Curve signs may be combined with intersection signs to create a combination Horizontal Alignment/Intersection (W1-10 series) where an intersection occurs within or immediately adjacent to a turn or a curve. Refer to the MUTCD, section 2C.11.



W1-8

3B.2.1b Chevron Alignment Sign (W1-8)

The Chevron Alignment (W1-8) sign is used to provide additional emphasis and guidance for a change in horizontal alignment and may be used instead of or in addition to standard delineators.

If used, Chevron Alignment signs should be visible for a sufficient distance to provide the road user with adequate time to react to the change in alignment.

Chevron Alignment signs shall not be placed on the far side of a T-intersection facing traffic on the stem approach to warn drivers that a through movement is not physically possible, as this is the function of a Two-Direction (or One-Direction) Large Arrow sign.

Chevron Alignment signs shall not be used to mark obstructions within or adjacent to the roadway, including the beginning of guardrails or barriers, as this is the function of an object marker.



W1-6

3B.2.1c One-Direction Large Arrow Sign (W1-6)

A One-Direction Large Arrow (W1-6) sign may be used either as a supplement or alternative to Chevron Alignment signs in order to delineate a change in horizontal alignment.

A One-Direction Large Arrow (W1-6) sign may be used to supplement a Turn or Reverse Turn sign to emphasize the abrupt curvature.

If used, the One-Direction Large Arrow sign should be visible for a sufficient distance to provide the road user with adequate time to react to the change in alignment.

3B.2.2 Intersection Warning Signs (W2-1 through W2-5)

Intersection warning signs may be used where engineering judgment indicates a need to inform the road user in advance of an intersection that is not clearly visible and to indicate the possibility of turning or entering traffic. Volume of traffic and speed are important factors to consider. Generally, if guide signs are used an intersection warning sign is not needed.



W2-1



W2-2



W2-3



W2-4



W2-5

3B.2.3 Stop Ahead and Yield Ahead Symbol Signs (W3-1, W3-2)

The W3-1 or W3-2 signs shall be installed on an approach to a STOP or YIELD sign that is not visible for a sufficient distance to permit the road user to respond to the device. The distance for posted or 85th percentile speeds of 35 mph or less is 100 feet. Refer to chapter 3D, table 3D-2 for unpaved, low-volume roads and the MUTCD, section 2C.05, table 2C-4 for conventional roads and paved, low-volume roads.



W3-1



W3-2



FW3-4a

3B.2.4 ROAD CLOSED, XX FT, XX MILES, or AHEAD (FW3-4a) Sign

A ROAD CLOSED, XX FT, XX MILES, or AHEAD (FW3-4a) sign may be used for long-term closures typically related to an incident, such as washouts and flood damage. Place the sign in advance of locations where the road is closed and the closure is not visible for a sufficient distance for a road user to respond to the closure and/or it is necessary to notify a road user of the closure at a location where there is adequate room for a vehicle to turn around.

Supplemental plaques, such as XX MILES AHEAD and/or NO TURNAROUND also may be used when necessary. Refer to section 3B.2.23a and to chapter 3D, figure 3D-12.

For short-term closures, such as maintenance, construction projects and incident management, such as a fire refer to chapter 4, Temporary Traffic Control.



FW3-5a



3B.2.5 GATE CLOSED, XX FT, XX MILES, or AHEAD (FW3-5a) Sign

A GATE CLOSED, XX FT, XX MILES, or AHEAD (FW3-5a) sign should be used in advance of locations where motor vehicle use of a road is restricted by a gate that is not visible for a sufficient distance for a road user to bring the vehicle to a stop before the gate. The sign should be installed at a location where a vehicle can safely turn around.



FW3-6a



3B.2.6 CATTLE GUARD, XX FT, XX MILES, or AHEAD (FW3-6a) Sign

Based on engineering judgment, a CATTLE GUARD XX FT, XX MILES, or AHEAD (FW3-6a) sign may be used in advance of a cattle guard that is not visible for a sufficient distance for a road user to respond appropriately. Cattle guard steel grates may present unique problems for motorcycles, snowmobiles, and bicycles. Evaluate the cattle guard approach from both directions. Depending on sight distance, the signs may be needed on one or both approach legs.



W5-1



W5-1a

3B.2.7 ROAD NARROWS (W5-1) and ONE LANE ROAD (FW5-1a) Signs

The ROAD NARROWS (W5-1) sign may be used in advance of a location on a two-lane road where the width is reduced abruptly such that vehicles traveling in opposite directions cannot simultaneously travel through the narrow portion without reducing speed. It also may be used on single-lane roads when the road width abruptly narrows significantly.

The ONE LANE ROAD (FW5-1a) sign may be used in advance of the point where a two-lane road narrows to one lane. The sign should be placed at the start of the one-lane section.

Do not use the ROAD NARROWS sign and the ONE LANE ROAD sign at the beginning of a road that starts as a single-lane road.



FW5-1b



FW5-1c



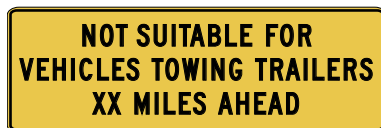
FW5-1d

3B.2.8 ROUGH NARROW ROAD (FW5-1b), STEEP NARROW ROAD (FW5-1c), NARROW WINDING ROAD (FW5-1d) signs

These signs may be used when a road abruptly changes to the conditions indicated on the signs. They are generally not intended to be used on a road that is maintained for high-clearance vehicles unless emphasis is needed to discourage passenger car traffic.

Use of supplemental plaques such as XX MILES AHEAD is recommended when necessary to avoid a situation where a vehicle cannot be turned around.

Use of a supplemental plaque such as NEXT XX MILES may be necessary to warn operators of the length of the condition so they can make an informed decision as to whether to continue on especially if it is unreasonably long.



FW5-1e

3B.2.9 NOT SUITABLE FOR PASSENGER CARS (FW5-1e) Sign

A NOT SUITABLE FOR PASSENGER CARS (FW5-1e) sign may be used to warn operators when it is not apparent at the intersection that a road is not suitable for passenger cars. This will allow the operator to make an informed decision as to whether to continue or seek an alternate route. The distance ahead message can be displayed in feet or miles.

Alternative vehicle types can be used, such as trailers, vehicles towing trailers, RVs, low clearance vehicles, etc.



FW5-1f

3B.2.9a NOT MAINTAINED FOR WINTER TRAVEL (FW5-1f) Sign

A NOT MAINTAINED FOR WINTER TRAVEL sign may be used when significant numbers of motorists may not be aware that winter conditions make a road impassable and when it is likely a prudent driver would expect the road to be maintained for winter travel. Examples include:

1. A road heavily used as a pass-through route for nonwinter travel that a prudent driver likely would expect to be maintained for winter travel.
2. A road where vehicles get stuck every winter or where there are documented injuries or fatalities resulting from a erroneous expectation that the road is maintained for winter travel.
3. A road identified as a scenic route for nonwinter travel that likely would be mistaken as a route maintained for winter travel by a prudent driver when global positioning system navigational devices are used.
4. A road that accesses a heavily used, dispersed snow play area that cannot be closed with a gate when snow levels or other winter hazards, such as downed trees make the road impassable.

This guidance is not a substitute for the exercise of engineering judgement or completion of an engineering study.

The NOT MAINTAINED FOR WINTER TRAVEL sign should be used sparingly, since most NFS roads are not maintained for winter travel, and widespread use may give the user an unreasonable expectation that roads not signed are maintained for winter travel.

When used, this sign should be placed in a location that is visible to the user early enough to avoid getting stuck on the road and where the critical vehicle can safely turn around. This sign may be hinged so that it can be folded down when not needed.



W5-2



W5-3

3B.2.10 NARROW BRIDGE (W5-2) and ONE LANE BRIDGE (W5-3) Signs

On low-volume roads the NARROW BRIDGE (W5-2) sign may be used on an approach to a bridge or culvert that has a clear width less than that of the approach roadway. Additional emphasis may be provided by the use of object markers and/or delineators.

A ONE LANE BRIDGE (W5-3) sign should be used on low-volume two-way roadways in advance of any bridge or culvert:

- Having a clear roadway width of less than 16 feet, or
- Having a clear roadway width of less than 18 feet when commercial vehicles constitute a high proportion of the traffic, or
- Having a clear roadway width of 18 feet or less where the sight distance is limited on the approach to the structure.

Do not use a ONE LANE BRIDGE sign on single lane roads.

Roadway alignment and additional warning may be provided on the approach to a bridge or culvert by the use of object markers and/or delineators. Refer to chapter 3D, figure 3D-7 for placement guidance and section 3B.3.1, Object Markers.

3B.2.11 BUMP (W8-1) and DIP (W8-2) Signs

BUMP (W8-1) and DIP (W8-2) signs may be used to give warning of a sharp rise or depression in the profile of the road.

These signs may be supplemented with an Advisory Speed plaque.



W8-1



W8-2

The DIP sign shall not be used at a short stretch of depressed alignment that might momentarily hide a vehicle.

The BUMP and DIP signs should not be used on unpaved roads.

3B.2.12 PAVEMENT ENDS (W8-3) Sign

A PAVEMENT ENDS (W8-3) word message sign should be used where a paved surface changes to either a gravel surface or a native surface by design.



W8-3

3B.2.13 Surface Condition Signs

A GRAVEL SECTIONS (FW8-3b) sign may be used on a single-lane road where the management decision is to continually replace deteriorated sections of a paved road with gravel with a long-term goal of converting the pavement entirely to gravel surface. The purpose of this sign is to consolidate signing of the multiple gravel sections into one installation and eliminate over-signing at each individual section of gravel some of which may only be a few hundred feet in length.



FW8-3b

The road must contain three or more sections of gravel and the maximum length of road section before the sign needs to be repeated is 5 miles.

Use of a supplemental plaque NEXT XX MILES (W7-3aP) is required to indicate the distance where gravel sections will be encountered.

Use of an Advisory Speed Plaque (W13-1P) is optional and should be considered on a case-by-case basis based on an engineering study.

This sign shall not be used to replace the PAVEMENT ENDS (W8-3) sign where the roadway surface changes from pavement to gravel by design.

This sign shall not be used if the deteriorated sections of pavement are not replaced with gravel. A ROUGH ROAD (W8-8) with a NEXT XX MILES (W7-3) or BROKEN PAVEMENT NEXT XX MILES (FW8-8a) sign may be considered for this situation.



W8-5

The Slippery When Wet symbol (W8-5) sign may be used to warn of unexpected slippery conditions. Supplemental plaques with legends, such as ICE, WHEN WET, STEEL DECK, or EXCESS OIL, may be used with the W8-5 sign to indicate the reason that the slippery conditions might be present.

The use of the Slippery When Wet symbol sign can be helpful to motorcyclists if those conditions exist.

The Slippery When Wet sign should not be used on unpaved roads.



W8-7

The LOOSE GRAVEL (W8-7) sign may be used to warn of loose gravel on a paved roadway surface.



W8-8

The ROUGH ROAD (W8-8) sign may be used to warn of a rough roadway surface.



FW8-8a

The BROKEN PAVEMENT (FW8-8a) sign may be used to warn of a paved road with areas of deteriorating and broken pavement. Use of a supplemental plaque, such as NEXT XX MILES (W7-3aP), may be used to indicate the distance where multiple broken pavement sections will be encountered and engineering judgment has determined that an individual sign is not needed at each section.



W8-14

The FALLEN ROCKS (W8-14) sign may be used in advance of an area that is adjacent to a hillside, mountain, or cliff where rocks frequently fall onto the roadway.



FW8-14a

The FALLEN TREES (FW8-14a) sign may be used in advance of an area where trees frequently fall onto the roadway. It shall not be used to warn of danger trees that may fall onto a vehicle.



FW8-14b

The FALLEN ROCK AND DEBRIS (FW8-14b) sign may be used in advance of a burned area where trees, limbs, rocks, and stumps may be coming off a side slope and frequently fall onto the road. Use of a supplemental plaque, such as NEXT XX MILES (W7-3aP), may be used to indicate the length of the condition. The sign should be removed when the area has been stabilized. Refer to the Burned Area Emergency Response (BAER) program for additional guidelines <<http://fsweb.sdtcd.wo.fs.fed.us/programs/wsa/baer/index.htm>>.



FW8-14c

The FALLEN ROCK AND DEBRIS, FLASH FLOOD AREA, NEXT XX MILES, (FW8-14c) sign may be used in advance of a burned area where trees, limbs, rocks, and stumps may be coming off a side slope and frequently fall onto the road and flash floods are possible. The sign should be removed when the area has been stabilized. Refer to the Burned Area Emergency Response (BAER) program for additional guidelines <<http://fsweb.sdtcd.wo.fs.fed.us/programs/wsa/baer/index.htm>>.



FW8-14d

The ENTERING BURNED AREA, STAY ON ROADS AND TRAILS (FW8- 14d) portal sign may be used in advance of a burned area where there are unexpected conditions related to recent fire activity. The sign should be removed when the area has been stabilized. The message may be modified as necessary, such as STAY ON DESIGNATED ROUTES. Refer to the Burned Area Emergency Response (BAER) program for additional guidelines <<http://fsweb.sdtcd.wo.fs.fed.us/programs/wsa/baer/index.htm>>. If there is a closure order, use appropriate regulatory sign colors of black and white.

When used, Surface Condition signs should be placed in advance of the beginning of the affected section and additional signs should be placed at appropriate intervals along the road where the condition exists. Refer to chapter 3D, table 3D-2.



W8-12

3B.2.14 NO CENTER LINE (W8-12) Sign

The NO CENTER LINE (W8-12) sign may be used to warn of a roadway without center line pavement markings. Consider using this sign on low-volume two-lane paved roads instead of striping when engineering judgment determines some form of guidance or warning is necessary. Refer to section 3B.4.2a.

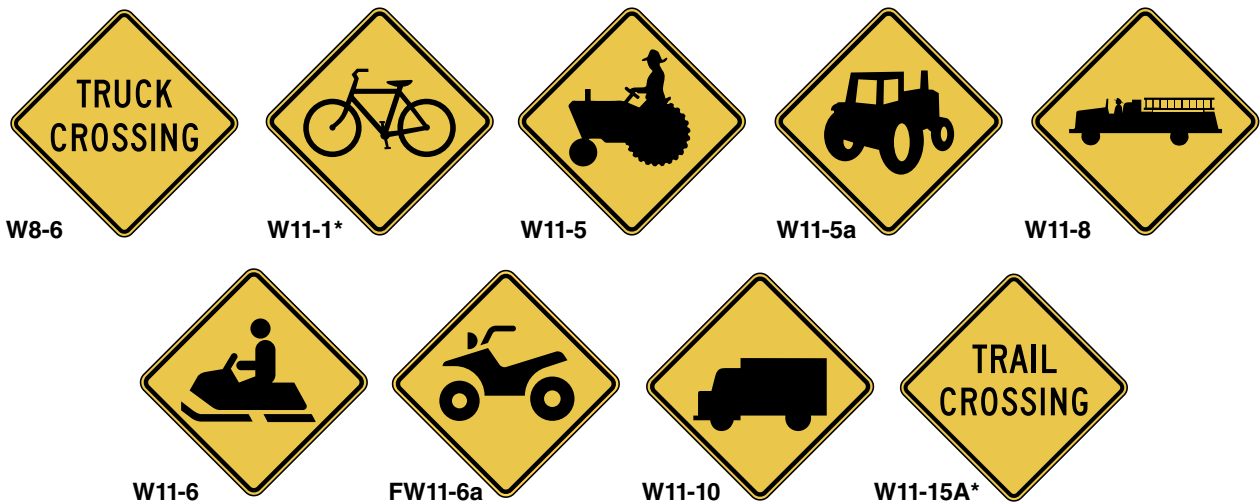
3B.2.15 Vehicular Traffic Warning Signs

Vehicular Traffic Warning signs may be used to alert road users to locations where unexpected entries into the roadway or where shared use of the roadway by trucks, bicyclists, OHV, snowmobiles farm vehicles, emergency vehicles, or other vehicles might occur.

Most standard symbols normally face to the left for mounting along the right shoulder of roadways. However, image symbols in reversed directions may be used if they portray the on-the-ground conditions more accurately.

These signs may be supplemented with plaques to indicate the distance to the condition or the length of the condition. For example, a supplemental plaque stating XX MILES may be used when signing coincident routes in lieu of or in conjunction with the SHARE THE ROAD supplemental plaque. Refer to section 3B.2.23a and chapter 3D, figure 3D-12.

The TRUCK CROSSING (W8-6) word message sign may be used as an alternate to the Truck Crossing (W11-10) symbol sign.



**A fluorescent yellow-green background color may be used for this sign or plaque.*

3B.2.15a Coincident Route Signs



FW8-7

When identified as the appropriate mitigation in a motorized mixed use study or other appropriate study for non-motorized uses, use the FW8-7 sign on concurrent coincident routes where both types of traffic are actively managed. Use symbols that best represent the primary or managed traffic types on each individual route. Limit the sign to two symbols—one for each route system. Use of the NEXT XX MILES message is optional. Refer to chapter 3D, figure 3D-11.

Coincident routes that are managed for separate seasons or times of use do not require SHARE THE ROAD signing. These separate coincident routes typically require a regulatory sign to notify the user of the restrictions and to assist in enforcement. Refer to section 3A.5.

3B.2.16 Non-Vehicular Warning Signs

Non-Vehicular Warning signs may be used to alert road users in advance of locations where unexpected entries into the roadway might occur or where shared use of the roadway by pedestrians, animals, or equestrians might occur.

Most standard symbols normally face to the left for mounting along the right shoulder of roadways. However, image symbols in reversed directions may be used if they portray the on-the-ground conditions more accurately.

Warning signs that advise road users about conditions that are not related to a specific location, such as animal crossings, may be installed in an appropriate location, such as known migratory paths and areas with high accident rates involving animal crossings. The specific locations for these signs should be based on engineering judgment. These signs should be used judiciously as they can be overused and ignored. Shown are those signs used more often on NFS roads. Additional non-vehicular warning signs can be found in the MUTCD, figure 2C-11.

These signs may be supplemented with plaques to indicate the distance to the condition or the length of the condition. Refer to 3B.1.23a, and chapter 3D, figure 3D-12.



**A fluorescent yellow-green background color may be used for this sign or plaque.*



FW8-18c

3B.2.17 STREAM CROSSING (FW8-18c) or FORD (FW8-18d) Signs

The STREAM CROSSING (FW8-18c) or FORD (FW8-18d) signs may be used in advance of a perennial or year-round, low-water stream crossing or ford. A Depth Gauge (W8-19) sign may also be installed at the deepest point of the stream crossing or ford.



FW8-18d

3B.2.18 ROAD MAY FLOOD (W8-18), FLASH FLOOD AREA (FW8-18a) and IMPASSABLE DURING HIGH WATER (FW8-18b) Signs

The ROAD MAY FLOOD (W8-18), FLASH FLOOD AREA (FW8-18a), and IMPASSABLE DURING HIGH WATER (FW8-18b) signs may be used to warn road users that a section of roadway is subject to frequent flooding and where unexpected or seasonal high water would prevent passage. One example is dry washes that drain a large area in desert country.



W8-18

The FLASH FLOOD AREA (FW8-18a) warning sign should be posted at appropriate locations along roads within and/or at the entrance to developed recreation sites that the Forest Service has determined are vulnerable to flash flooding. Hydrologists and recreation managers should advise on the need and locations for FLASH FLOOD AREA warning signs posted along roads or parking lots. This sign is intended to be read from a moving vehicle, and posting of this sign shall be based on application of engineering judgement. The FLASH FLOOD AREA warning sign may also be posted at appropriate locations along roads within long stream corridors outside of developed recreation sites when the Forest Service has determined these areas are vulnerable to flash flooding. Refer to chapter 7, section 7.7.1b.2.



FW8-18a

A supplemental warning plaque may be added to the ROAD MAY FLOOD, FLASH FLOOD AREA, and IMPASSABLE DURING HIGH WATER warning signs when a section of road is subject to flooding for a long distance, such as within a stream corridor. Refer to section 3B.2.23a.



FW8-18b

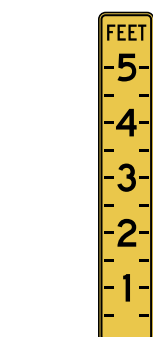
A Depth Gauge (W8-19) sign may also be installed within a roadway section that frequently floods.

3B.2.19 Depth Gauge (W8-19) Sign

Depth gauges may be installed on a roadway section that frequently floods based on an engineering study.

If used, the Depth Gauge sign shall be in addition to the ROAD MAY FLOOD (W8-18), IMPASSABLE DURING HIGH WATER (FW8-18b), STREAM CROSSING (FW5-1d) or FORD (FW5-1e) signs and shall indicate the depth of the water at the deepest point on the roadway. Refer to chapter 3D, figure 3D-8.

Maintain the depth gauges to ensure they are accurate since flooding could scour or wash out the crossing making the water deeper than indicated on the depth gauge. The crossing may also fill in over time and the depth may be less than that shown on the depth gauge.



W8-19



FW14-1a

3B.2.20 NO TURNAROUND AHEAD (FW14-1a) Sign

The NO TURNAROUND AHEAD (FW14-1a) sign may be used to warn road users at the last turnaround on a road without an outlet or that terminates in a dead end.

If used, this sign should be placed at a location that gives drivers of large commercial or recreational vehicles an opportunity to turn around.



W17-1

3B.2.21 SPEED HUMP (W17-1) Sign

The SPEED HUMP (W17-1) sign should be used to give warning of a vertical deflection in the roadway that is designed to limit the speed of traffic.

If used, the SPEED HUMP sign should be supplemented by an Advisory Speed plaque.

If a series of speed humps exists in close proximity, an Advisory Speed plaque may be eliminated on all but the first SPEED HUMP sign in the series.

The legend SPEED BUMP may be used instead of the legend SPEED HUMP on the W17-1 sign.



W18-1

3B.2.22 NO TRAFFIC SIGNS (W18-1) Signs

A NO TRAFFIC SIGNS (W18-1) warning sign may be used only on unpaved, low-volume roads to advise users that no traffic signs are installed along the distance of the road. If used, the sign may be installed at the point where road users would enter the low-volume road or where, based on engineering judgment, the road user might need this information.

Situations where these signs may be used:

- When a road has been transitioned to a lower maintenance level and existing signs have been removed, and advance warning of a change in traffic signs is necessary to warn users who have historically relied on these signs. When the changed signage is no longer considered to be new, or within 12 months this sign should be removed.
- When a signed road segment transitions to a nonsigned road segment.

Other than the situations above, this sign should not be used where it has been determined that signs are not needed. This sign is not normally used on ML 2 roads.

A W7-3aP, W16-2P, or W16-9P supplemental plaque with the legend NEXT XX MILES, XX FEET, or AHEAD may be installed below the W18-1 sign when appropriate. Refer to section 3B.2.23a and chapter 3D, figure 3D.12.

3B.2.23 Supplemental Plaques

A supplemental warning plaque may be displayed with any warning sign when engineering judgment indicates that road users require additional warning information beyond that contained in the main message of the warning sign. Supplemental distance plaques also may be used with some regulatory signs if necessary to provide advance warning of a regulation at locations where the traffic can detour or conveniently turn around.



Supplemental plaques with legends such as AHEAD, XX FEET, or NEXT XX MILES, may be mounted below Vehicular Traffic Warning signs to provide advance notice to road users of unexpected entries.

A TRAIL X-ING (W11-15P) supplemental plaque may be mounted below the W11-1, W11-2, W11-5, W11-6, FW11-6a, W11-7, and W11-15 signs to warn of shared-use path crossings where pedestrians, bicyclists, and other user groups might be crossing the roadway. Refer to chapter 3D, figure 3D-13.

The SHARE THE ROAD plaque (W16-1p) may be used to warn road users that mixed use is allowed on the road. The plaque is installed beneath a standard nonvehicular or Vehicular Traffic Warning sign that depicts the traffic which is allowed to use the road or the side of the road, such as bicycles, equestrian, snowmobiles, all terrain vehicles, and motorcycles. Refer to chapter 3D, figures 3D-9, 3D-10, and 3D-12.

If a post-mounted W11-2, W11-6, W11-6a, W11-7, or W11-9 sign is placed at the location of the crossing point where pedestrians, snowmobilers, all terrain vehicles, or equestrians might be crossing the roadway, a diagonal downward pointing arrow plaque (W16-7P) shall be mounted below the sign. Refer to chapter 3D, figure 3D-12.

Supplemental plaques with legends such as ICE, WHEN WET, or EXCESS OIL may be used with the SLIPPERY WHEN WET symbol sign (W8-5) sign to indicate the reason that the slippery conditions might be present.

Supplemental plaques shall not be used alone. Unless otherwise provided in MUTCD for a particular plaque, supplemental warning plaques shall be mounted below the sign they supplement.

A supplemental warning plaque used with a warning sign shall have the same legend, border, and background color as the warning sign with which it is displayed.

Supplemental plaque messages that are not in the MUTCD or these Guidelines shall be approved by the regional sign coordinator.

See chapter 3D, figure 3D-12 for correct sequence of supplemental plaques.



W13-1P

3B.2.24 Advisory Speed Plaques

The Advisory Speed plaque (W13-1P) is used to supplement any warning sign to indicate the advisory speed for a condition and shall not be installed as a separate sign installation.

Advisory Speed plaques suggest a reasonable and prudent speed to the motorist for specific conditions on a segment of road, but they are not regulatory and are not enforceable like speed limit signs.

Except in emergencies or when the condition is temporary, an Advisory Speed plaque shall not be installed until the advisory speed has been determined by an engineering study following established engineering practices.

Advisory Speed plaques may be used in conjunction with curve warning signs when the curve speed reduction from tangent to curve is so great that drivers have difficulty selecting a safe approach speed for the curve. On curves with approach speeds 35 mph and above, consider using an Advisory Speed plaque for speed reductions of 10 mph or greater.

Advisory speeds shall be determined by an engineering study.

On roads that have established speed limits the use of the Advisory Speed plaque for horizontal curves is recommended for a 5 mph difference between the speed limit and advisory speed, and required for all speed differences greater than 5 mph.

The Advisory Speed plaque may be used to advise road users of the advisory speed for other roadway conditions.

Use of Advisory Speed plaques is not always advisable on gravel or native surfaced roads because surfaces on these roads can vary significantly with traffic wear, washboards, inclement weather, or road maintenance.

The Advisory Speed plaque shall carry the message XX MPH and the speed displayed shall be a multiple of 5 mph.

Advisory speeds less than 15 mph are very rarely necessary or used unless advised by an engineering study for a special circumstance. Do not use advisory speeds less than 10 mph.

New warning symbols shall be approved by the FHWA.

3B.2.25 Additional Warning Signs

Additional warning signs are shown in the MUTCD that may be applicable on NFS roads. Other warning signs may be developed for specific uses and special situations not addressed in the MUTCD or these Guidelines. The shape, colors, and message shall conform with the direction in these Guidelines and the MUTCD. Submit development of any sign messages not shown in the MUTCD or these Guidelines to the regional sign coordinator for approval. New warning symbols shall be approved by the FHWA.

3B.3 Object Markers

The MUTCD, chapter 2C provides for four types of retroreflective object markers: Type 1 (OM1), Type 2 (OM2), Type 3 (OM3), and Type 4 (OM4). Type 1, 2, and 3 object markers are used to mark obstructions within or adjacent to the roadway. Type 4 object markers are used to mark the end of a roadway.

The Forest Service has approved standards for a modified Type 2 object marker (FOM2), which may be substituted for a Type 2 object marker on low-volume roads with travel speeds less than 35 mph.

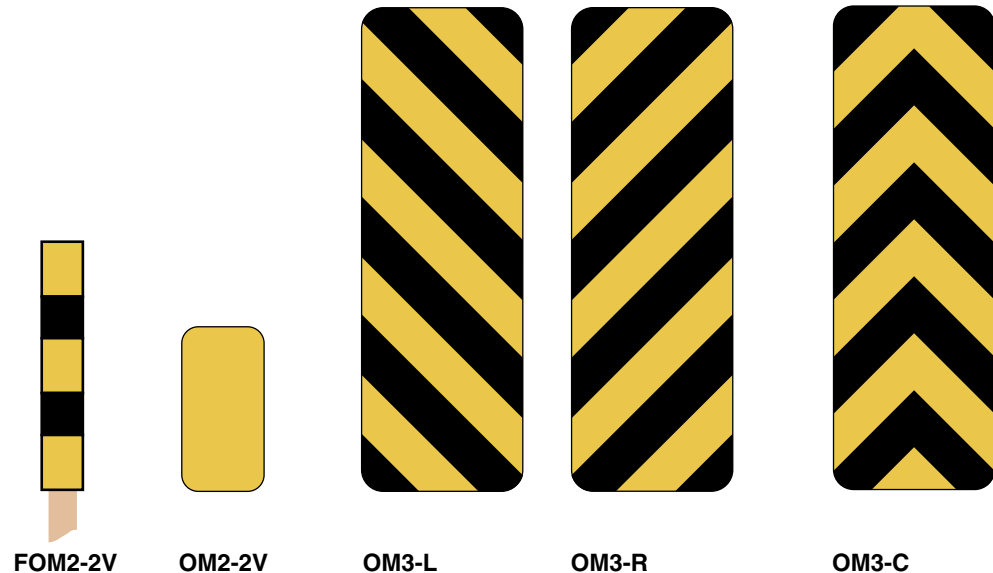
Types 2, 3, and 4, and Modified Type 2 are the ones typically used for Forest Service applications.

3B.3.1 Type 2, Type 3 and Modified Type 2 Object Markers

Obstructions not actually within the roadway are sometimes so close to the edge of the road that they need to be marked in order to warn the road user of their presence. These include underpass piers, bridge abutments, handrails, ends of traffic barriers, utility poles, cattleguards, and culvert headwalls. In other cases there might not be a physical object involved, but other roadside conditions exist, such as narrow shoulders, drop-offs, small islands, and abrupt changes in the roadway alignment, that might make it undesirable for a road user to leave the roadway.

Use a Type 2 or Type 3 object marker to mark an obstruction adjacent to the roadway. A Modified Type 2 object marker may be substituted for a Type 2 object marker on low-volume roads with travel speeds less than 35 mph. If an object marker is used, the edge of the marker that is closest to the road user shall be installed in line with the closest edge of the obstruction.

The alternating black and retroreflective yellow stripes (OM3-L, OM3-R) shall be sloped down at an angle of 45 degrees toward the side on which traffic is to pass the obstruction. Refer to chapter 3D, figure 3D-23.



3B.3.1a Cattleguards

Type 3 object markers shall be used to mark cattleguards in which the approach shoulders are narrowed or eliminated, or that have a clear width less than that of the approach roadway.

A Type 2 object marker may be used if the cattleguard wings are adjacent to the roadway. A Modified Type 2 object marker may be substituted for a Type 2 object marker on low-volume roads with travel speeds less than 35 mph. The Type 2 and modified Type 2 object markers may be mounted on both sides of a post or flexible stake.

Where the cattleguard is on a curve or has limited sight approach distances, advance warning signs such as CATTLEGUARD AHEAD (FW3-6a), should be installed where an engineering study or engineering judgment determines a sign is needed.

Cattleguards also may present a unique hazard to motorcycles, bicycles, and snowmobiles. Advance warning signs may be considered when such traffic routinely uses the road.

Refer to chapter 3D, figure 3D-24.

3B.3.1b Guardrail and Other Roadside Appurtenances

Where Type 3 object markers are applied to the approach ends of guardrail and other roadside appurtenances, sheeting without a substrate shall be directly affixed to the approach end of the guardrail in a rectangular shape conforming to the size of the approach end of the guardrail with alternating black and retroreflective yellow stripes sloping downward at a angle of 45 degrees toward the side of the obstruction on which traffic is to pass.

3B.3.1c Other Obstructions

Obstructions within the roadway, such as bridge supports, refuge islands, median islands, toll plaza islands, and raised channelization islands, shall be marked with a Type 3 object marker. In addition to markers on the face of the obstruction, warning of approach to the obstruction on a paved road shall be given by appropriate pavement markings. Refer to the MUTCD, section 3B-10. Obstructions within the roadway typically are not found on NFS roads.

3B.3.2 Type 4 Object Marker

The Type 4 object marker (OM4-3) is used to warn and alert road users of the end of a roadway in other than construction, maintenance, or incident management areas.

Type 4 object markers also may be used to mark devices, such as gates, barrier rails, or other devices across a road, that restricts access and blocks further travel including locked gates that seasonally close roads or facilities, such as campgrounds, and visitor centers. Do not use a Type 1, 2, or 3 object marker to mark the end of a roadway except as allowed in section 3B.3.3b.

Use a minimum of one marker for each lane of road. Where conditions warrant, more than one marker, or a larger marker with or without a Type 3 Barricade may be used.

Refer to 3B.1.25 for necessary advance warning signs.

Refer to chapter 3D, figures 3D-25 and 3D-26 for placement examples.

3B.3.3 Gate and Fixed Barricade Markers

The Forest Service uses a wide variety of gates and fixed barricades. It is important that these gates and fixed barricades are installed and marked appropriately. All gates and barricades on NFS roads require retroreflective markings to warn the motor vehicle user of their presence.

Cables, chains, or single-wire barriers shall never be used across any roadway as a gate or barricade because they are not readily visible to road users. Refer to FSM 7731.16.

The back side of a gate or fixed barricade may require barricade markers, Type 4 object markers, or retroreflective tape when an engineering study or engineering judgment indicates there is a potential for vehicle traffic including snowmobiles, all terrain vehicles, and bicycles to approach a closed gate from behind. When markers are required on the back side of a gate or fixed barricade they will be similar to the markers on the front side.

Refer to section 3B.25b for information on Type 4 object markers.



OM4-3

Cables, chains, or single-wire barriers shall never be used across any roadway.

3B.3.3a Gates

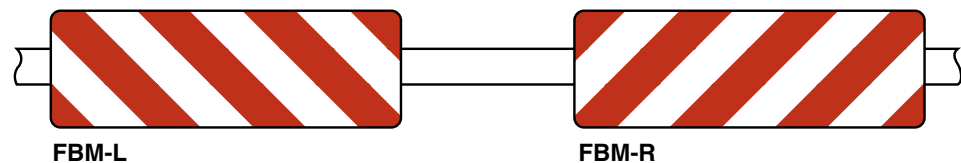
Gate arms, shall be fully retroreflective with vertical stripes alternately red and white at 16-inch intervals measured horizontally as shown in figure 3B-1.



Figure 3B-1—Retroreflective tape on gate arm.

When a style of gate is used that does not have a gate arm, such as a powder river gate, or it is not practical to apply vertical stripes, modified retroreflective red and white striped barricade markers (FBM-R or L) may be used on low-volume roads with travel speeds less than 35 mph based on engineering judgment. Use a minimum of two barricade markers per lane of traffic.

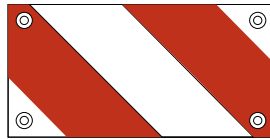
Refer to chapter 3D, figures 3D-25 and 3D-26 for installation and placement details.



Type 4 object markers may be used on locked gates that seasonally close roads or facilities, such as campgrounds, and visitor centers. Use a minimum of one Type 4 object marker per lane of traffic.

Standard signs are usually too heavy and may weigh a wire gate down. Small flexible barricade markers (FBM1-R and L) or retroreflective tape on PVC pipe may be used for marking wire gates on low speed (<35 mph), low-volume, single-lane ML 2 roads not passable by a standard passenger car. Use a minimum of two FBM1 barricade markers.

Refer to chapter 3D, figure 3D-27 for placement and installation details.



FBM1-L



FBM1-R

A 12-inch by 12-inch Type 4 object marker may be used on wire gates on low speed (<35 mph), low-volume, single-lane ML 2 roads not passable by a standard passenger car operated by a prudent driver.

All gates shall be able to be secured in the open position so as not to be a hazard to traffic.

A Type 2 or Type 3 object marker shall be used to mark gate posts that are adjacent to the roadway. A Modified Type 2 object marker may be substituted for a Type 2 object marker on low-volume roads with travel speeds less than 35 mph. The edge of the marker that is closest to the road user shall be installed in line with the closest edge of the obstruction.

Gates adjacent to cattleguards may not require barricade markers if traffic is not directed toward the gate. A properly designed edge ditch or natural features can keep the gate approach from being confused with the normal travel way.

Appropriate advanced warning signs should be used as determined by engineering judgement or on engineering study. Refer to section 3B.2.5.

Travel management signs may be used on gates to display access and travel management restrictions and closures. Refer to chapter 6.

If traffic is allowed beyond the gate, the program area sign, PLEASE CLOSE THE GATE may be used. Refer to chapter 12.

Barricade markers (FBM and FBM1) and Type 4 object markers may be removed during periods when the gate is locked in the open position and does not present a hazard.

3B.3.3b Fixed Barricades

If an object marker is used to mark fixed barricades such as jersey barriers and barrier rails that are being used to end a roadway a Type 4 object marker shall be used. Use a minimum of one Type 4 object marker per lane of traffic.

Modified retroreflective red and white striped barricade markers (FBM-R or L) may be substituted for Type 4 object markers on low volume roads with travel speeds less than 35 mph based on engineering judgement. Use a minimum of two barricade markers per lane of road. Retroreflective tape may be used as an alternative to the FBM barricade markers.

Appropriate advanced warning signs should be used as determined by engineering judgement or on engineering study. Refer to section 3B.2.4.

Refer to chapter 3D, figures 3D-25 and 3D-26 for placement and installation guidelines.

3B.4 Markings

Markings have important functions in providing guidance and information for the road user. In some cases, they are used to supplement the regulations or warnings of other traffic control devices. In other instances, they are used alone and produce results that cannot be obtained by the use of other devices. In such cases, they serve as a very effective means of conveying certain regulations, guidance and warnings that could not otherwise be made clearly understandable by using other traffic control devices. Markings typical for NFS roads are delineators and some pavement markings.

3B.4.1 Delineators

Delineators are considered guidance devices rather than warning devices

Road delineators are retroreflective devices mounted in a linear series at the side of a roadway to help indicate the roadway alignment at locations that might be confusing or unexpected. They are effective at night and during adverse weather. They remain visible when the road is wet or snow covered. Delineators are considered guidance devices rather than warning devices.

The purpose of delineators is to enhance driver safety where it is desirable to call attention to a changed or changing condition, such as abrupt roadway narrowing or curvature.

Delineators shall meet the requirements of the MUTCD, chapter 3F and chapter 5E, including size, color, and minimum retroreflectivity.

Delineators may be used on low-volume NFS roads based on engineering judgment, such as for curves, T-intersections, and abrupt changes in the roadway width. In addition, they may be used to mark the location of driveways or other minor roads entering the low-volume road.

The color of delineators shall comply with the color of edge line pavement markings. Refer to section 3B.4.2b and the MUTCD, section 3B.06. On single-lane and double-lane roads with two-way traffic, delineators should be white on both sides of the road. On roads with one-way traffic, delineators viewed to the driver's right side should be white and delineators viewed to the driver's left side should be yellow. Delineators shall consist of retroreflective devices and their retroreflective elements shall have a minimum dimension of 3 inches.

Refer to chapter 3D, figure 3D-28 for placement examples.

3B.4.2 Pavement Markings

Pavement markings shall be consistent with the MUTCD, chapters 3A, 3B, and 5E, including materials, colors, functions, widths, and patterns.

Decisions to use or not use pavement markings shall be determined by an engineering study or based on engineering judgment as described in the MUTCD and these Guidelines.

Pavement markings that must be visible at night shall be retroreflective. Pavement markings that are no longer applicable and may cause confusion for the road user shall be removed or obliterated as soon as practicable.

Retroreflective arrow markings may be used for directional guidance instead of signs where recommended by an engineering study or engineering judgment. Pavement arrows and alphabets can be found in the “Standard Highway Signs” book (FHWA).

Pavement markings have limitations. Visibility of the markings can be limited by snow, debris, and water on or adjacent to the markings. Marking durability is affected by material characteristics, traffic, weather, and location. Consider the initial cost and ongoing maintenance necessary. Pavement markings should be included in maintenance plans to maintain visibility. Many NFS roads are in areas where climate conditions such as rapid moss growth, leave and needle debris, and snow cover make it difficult to adequately maintain the visibility of pavement markings. These conditions combined with limited maintenance funding should be strongly considered before applying pavement markings.

Paved parking lot patterns should be marked by striping. Parking lot stripes are not required to be retroreflective.

3B.4.2a Center Line Pavement Markings

Center line pavement markings are used to delineate the separation of traffic lanes that have opposite directions of travel on a roadway and shall be yellow.

Center line pavement markings generally are not needed on NFS roads, but when used, they shall be consistent with the MUTCD, sections 3B.01 and 3B.02, local State/county practice on adjacent facilities, and these Guidelines.

The need for center line markings shall be determined basis of either by an engineering study or based on engineering judgment.

Some conditions to consider in the engineering study or engineering judgment:

- Type of terrain.
- Accident history.
- If road markings, or lack of markings, contributed to accidents.
- The mix and volume of traffic.
- Local, State, or county practices on adjacent roads.
- Traffic volumes. If a traffic count is not available, the seasonal daily average traffic may be estimates that are based on engineering judgment.

Where center line markings are installed, no-passing zone markings in compliance with the MUTCD, section 3B.02, also shall be installed.

Center line markings may be placed on highways with or without edge line markings.

On roadways without continuous center line pavement markings, short sections may be marked with centerline pavement markings to control the position of traffic at specific locations, such as around curves, over hills, on approaches to highway-railroad grade crossings, at highway-railroad grade crossings, and at bridges.

3B.4.2b Edge Line Pavement Markings

The purpose of edge line pavement markings is to delineate the left or right edges of a roadway and provide a visual reference to guide road users during adverse weather and visibility conditions.

Use of edge line pavement markings should be consistent with the direction in the MUTCD, sections 3B.06, 3B.07, 3B.08, and 5E.03, and these Guidelines.

Edge line pavement markings are rarely required on low-volume NFS roads. Use of edge line pavement markings shall be based on an engineering study or engineering judgment.

Edge line pavement markings are rarely required on low-volume NFS roads

Consider some of the following conditions in the engineering study or judgment:

- The road has narrow lanes and shoulders, particularly with vertical edge drops between pavement and shoulders.
- There is a need to delineate the edge of the road when the edge of the pavement does not provide adequate delineation.
- Pavement edges may need to be marked to highlight specific roadway features such as horizontal curves, narrow bridges, pavement width transitions and curvilinear alignment.
- The road has significant night traffic or is subjected to heavy fog or rain.
- When adequate guidance cannot be obtained from the pavement edge.

Edge line pavement markings should not be placed where an engineering study or engineering judgment indicates that providing them is likely to decrease safety.

White edge line pavement markings may be used on single-lane or double-lane paved roads. Edge line pavement markings may be placed on roads with or without center line markings.

Use white for both edges of the traveled way for edge line pavement markings on single-lane roads.

When applying edge line pavement markings on a single-lane road with turnouts, either:

- Mark an uninterrupted uniform lane width without identifying a turnout if the width of the pavement is less than the 20 feet required for the travel lane and the turnout.

- Mark the lane width and turnout if the width of the pavement plus the width of the turnout meets or exceeds 20 feet. A broken white lane line, with entry and departure breaks, may be used at turnouts to provide continuity of guidance and define the turnout lane. Refer to figure 3B-2.

Edge line pavement markings should not be placed closer than 6 inches from the edge of the pavement.

Lane width between edge line and center line pavement markings should be increased on sharp curves to accommodate the curve widening needed for the curve. Proportion the additional lane width to each lane.

At the intersection with ML 3-5 roads, the edge line should be cut off so that no edge line shows through the intersection. Similar treatment should be applied to intersections with ML 2 roads based on engineering judgment. Consider the volume and type of use on the road, the need to discourage passenger car traffic on ML 2 roads, and whether the ML 3-5 road user is alerted to the presence of an intersection by other methods such as signing or clear sight distance.

On ML 1 roads the edge line shall show through the intersection.

Do not use a broken line through an intersection.

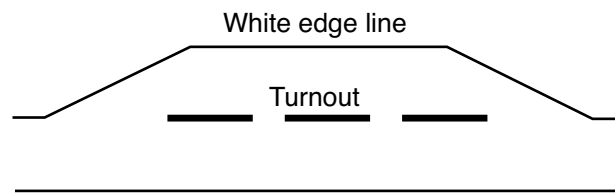


Figure 3B-2—Edge line pavement marking with turnout.

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3C.1 Introduction

Guide signs are essential to meet public needs and expectations for reliable guidance to forest destinations.

Guide signs are essential to meet public needs and expectations for reliable guidance to forest destinations, such as campgrounds, trailheads, visitor centers, lakes, historical sites, and other points of interest. Guide signs assist in way finding within forests; and just as important, to find the way back out of forests in the event of becoming lost. They also serve the important function of route identification.

Guide signs typically are rectangular in shape and retroreflective with a white message and border on a brown background. Guide signs consist of route markers, destination signs, recreation and cultural interest area symbol signs, site approach signs, other informational signs, and reference location signs (milepost markers).

Guide signing shall never interfere with regulatory or warning signs. Proper spread distances and sign priorities are given in chapter 3D, section 3D.2.1. Guide signs shall only be installed where adequate spacing is available between the guide sign and other higher priority signs.

Up-to-date recreation, visitor, and motor vehicle use maps are important companions to road users finding their way in the national forests. There is no substitute for consistency between maps and signs on the ground. Signing should match the most recent maps.

Coordinate with public road agencies when guide signs must be approved, installed, or maintained by State or local authorities when located on their rights-of-way. As possible, develop the basis for coordination and cooperative support through memorandums of understanding or cooperative agreements.

3C.2 Route Markers

Do not use Forest Service route number signs for roads that are not under Forest Service jurisdiction.

The Forest Service uses three shapes of route markers to identify National Forest System roads (NFS roads): distinctive, horizontal, and vertical. The shape and number on the route marker should correlate with the management of the road and its operational maintenance level.

Route numbers should be consistent when routes connect between adjacent forests. Forest routes that are continuations of county roads may have the same number. Dual designations using both a Forest Service and county route number are discouraged.

Do not use Forest Service route number signs for roads that are not under Forest Service jurisdiction, such as county roads. In a situation where roads are included in a Cooperative Forest Road Agreement with a county that does not post route markers and it is necessary to show route numbers on administrative maps, the Forest Service may post route number signs on county roads. In this case, use either the MUTCD standard M1-6, County Route sign, or a modified Forest Service horizontal route number sign in the yellow legend on blue color of the M1-6 sign.

Place route markers at each NFS road intersection regardless of whether or not the road is designated for motor vehicles and shown on a Motor Vehicle Use Map (MVUM). Priority should be given to those roads designated for motor vehicles on the MVUM. Ensure that route markers for these roads are clearly visible on maintenance level (ML) 2-5 roads. Route markers on ML 1 roads may be placed out of the line of sight to not draw attention to the road.

Consider using additional route markers for reassurance beyond road intersections on highly traveled roads where the road user might be in doubt as to the choice of route. Erect reassurance route markers periodically along a route or after junctions when it is not readily apparent which route the road user may be on. If using reassurance markers along a long route, there should be no more than 5 miles between reassurance markers.

Refer to chapter 3D, sections 3D.3 and 3D.4 for typical placement of route markers.

3C.2.1 Distinctive Route Markers (M1-7)



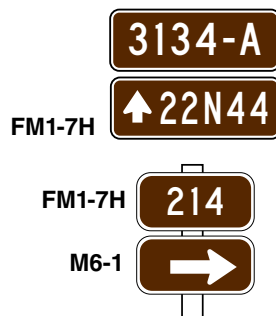
Use the Distinctive Route Marker (M1-7) to identify significant, highly traveled arterial or collector roads, such as roads that State or regional public road authorities also would likely show on maps they publish. These typically are operational ML 4 or 5 roads. Such routes usually are assigned forest route numbers of one or two digits for ease of road user recognition.

The Distinctive Route Markers also may be used on regionally significant operational ML 3 roads for which the traffic management strategy is to encourage passenger car travel and that receive adequate maintenance.

The National Forest Logotype on the Distinctive Route Marker provides agency identification for the road. Distinctive Route Markers shall be retroreflective. A Directional Arrow Auxillary Sign (M5-M6 series) may be mounted separately below the route marker to indicate direction. Refer to chapter 3E, section 3E.6b for Directional Arrow Auxillary Signs.

Legend sizes shall be based on the speed of travel as shown in chapter 3E, section 3E.3.

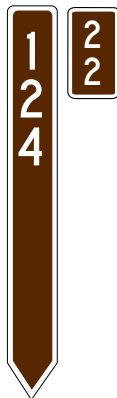
3C.2.2 Horizontal Route Markers (FM1-7H)



Use Horizontal Route Markers (FM1-7H) on local or minor collector roads that are operational ML 3, 4, or 5.

Marker sizes are based on the speed of travel and the number of characters as shown in chapter 3E, section 3E.3.

A Directional Arrow Auxillary Sign (M5-M6 series) may be mounted separately below the route marker or incorporated with the route number on the Horizontal Route Marker. Refer to chapter 3E, section 3E.6b for Directional Arrow Auxillary Signs.



FM1-7V

3C.2.3 Vertical Route Markers (FM1-7V)

Use the vertical route marker FM1-7V to identify ML 1 and 2 NFS roads.

Vertical route markers typically should be visible at road intersections. However, on ML 1 roads that have been placed in long-term storage and the intent is to disguise the intersection of the road, vertical route marker may be located far enough down a road so as not to be visible from the intersection. This prevents potential users from discovering a road by spotting a visible route marker.

Use 3-inch-minimum retroreflective characters stacked vertically on a brown flexible post or on a separate fully retroreflective sign panel for ML 2 roads. Route markers do not need to be retroreflective when placed on ML 1 roads.

When a long road number is displayed, a portion of the number may be in 1-inch characters across the top of the route marker. Refer to chapter 3E, section 3E.3.

3C.3 Recreation and Cultural Interest Area Signs



RS-068
Hiking Trail

Recreation or cultural interest areas are attractions or traffic generators that are open to the general public for the purpose of play, amusement, or relaxation. Recreational attractions include such facilities as parks, campgrounds, trailheads, and ski areas, while examples of cultural attractions include museums, visitor centers, and historical buildings or sites.

Recreation and cultural interest area symbol guide signs may be used to direct persons to facilities, structures, and places, and to identify various services available to the general public. These guide signs also may be used in recreation or cultural interest areas for signing nonvehicular events and amenities, such as trails, structures, and facilities.

Recreation and cultural interest area symbol guide signs shall only be used to guide the public to attractions when those activities are actively managed.

Recreation and cultural interest area symbol guide signs shall only be used to guide the public to attractions when those activities are actively managed for that use, the public is encouraged to use the site or participate in the activities, and facilities have been provided to accommodate that use. Symbols shall not be used when the use is allowed, but not managed or encouraged.

These symbols shall be used for guidance and information purposes and not as warning or regulatory signs on roads. Warning and regulatory signs and symbols require a specific color and guidance for their use.

Recreation and cultural interest area symbol guide signs consist of white symbols and borders on brown backgrounds. Signs are retroreflective when used on roads and on some trails. Refer to chapter 5 for trail sign guidance. Green or blue background colors may be used to better fit in some situations, such as the RS-200 Recycling and D9-6 Handicapped symbols.

Symbol sizes shall follow the guidelines in table 3C-1.

A complete listing of available recreation and cultural interest area symbols approved for use and their applications is contained in the MUTCD, part 2M.

The Forest Service has approved the use of additional symbols shown in chapter 3E, section 3E.12 for use on NFS roads and for nonroad applications.

These symbols are not approved for use on roads not under Forest Service jurisdiction.

Use of other recreation and cultural interest area symbols for use on NFS roads and for nonroad applications not shown in chapter 3E, section 3E.12 or the MUTCD, chapter 2M shall be approved by the Washington Office Director of Engineering.

Symbols are often preferable to word messages wherever their meanings are applicable to the recreational activity or facility. These symbols are intended to reduce the number of larger, more expensive signs by providing a simple set of easily recognizable graphic symbols that represent opportunities and facilities.

Symbols are often preferable to word messages wherever their meanings are applicable to the recreational activity or facility.

Symbols should be as generic as possible for signing along access roads leading to the destination. Use one symbol that represents a class of activities, such as the D9-3 Camping (tent) symbol, which represents all camping opportunities, or the RS-090 Winter Recreation Area symbol, which represents a variety of winter activities that may occur within an area. Symbols may be incorporated within the design of a destination sign. Using symbols within a sign design often will increase the size and cost of the signs.



FRD

Mounting separate symbol signs below the destination sign frequently is more cost efficient. It also allows the symbols to be kept current, changed to reflect seasonal recreational opportunities, and easily replaced when damaged.



FRD



D9-3



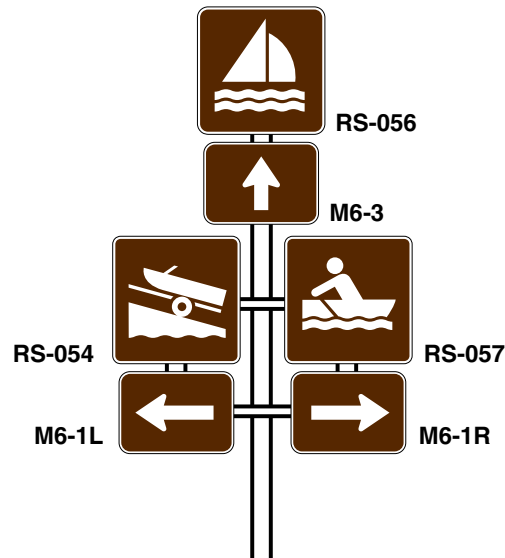
RS-007



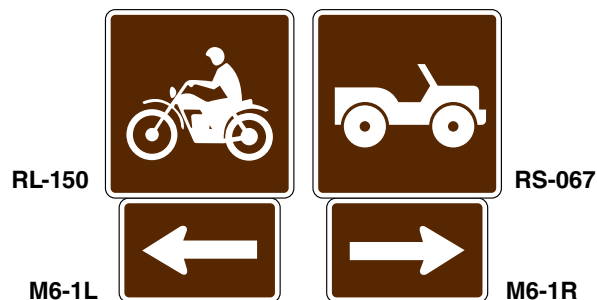
RS-040

Symbols may be used singly or in groups of two, three, or four on a single sign assembly. Use no more than four symbols on a single sign assembly.

Use no more than four
symbols on a single
sign assembly.



Recreation symbols generally face to the right. Use mirror images where the reversed image better portrays the message or direction. If Directional Arrow Auxillary Signs (M5-M6 series) are used, face symbols the same direction as the arrows.



Use of symbols should be consistent within an area. Do not mix older symbol styles from the 2003 MUTCD with newer symbols shown in the 2009 MUTCD. If replacing a few symbols within an area, use the same symbols, even if they are the older symbols. Implement the new symbols when replacing or installing signs for an entire site or area. Refer to chapter 3E, section 3E.12 for a comparison of the 2003 MUTCD symbols with the 2009 MUTCD symbols.

Refer to the MUTCD, chapter 2M for typical symbol assembly arrangements.

3C.4 Forest Road Destination (FRD) Signs

In addition to guidance by route markers, it may be desirable to supply the user with signs that provide information concerning prominent destinations, their distances, and directions.

Forest Road Destination signs (FRD) serve the important traffic control function of informing drivers of important sites and destinations ahead. Proper sign locations, as outlined in chapter 3D and table 3D-3, allow time for the driver to make decisions before reaching the intersection.



FRD signs may be placed after intersections and at reassurance locations along sections of roads to provide additional guidance.

Use FRD signs to encourage traffic on roads suitable for that type of traffic.

Where conditions permit, repetition of destination information on successive signs gives the road user more than one opportunity to obtain the information needed.

Use FRD signs to encourage traffic on NFS roads suitable for the type of traffic being encouraged. For example, do not place FRD signs on a ML 3, 4, or 5 road encouraging highway vehicles to turn onto a ML 2 road. If there is an important destination on the ML 2 road, place the FRD sign after the user has turned onto the ML 2 road.

FRD signs typically are not used on most ML 2 roads, where route markers and current maps provide sufficient guidance.

Do not use FRD signs on ML 1 roads.

The placement and installation of FRD signs should be based on engineering judgment recommendations. Refer to chapter 3D.

3C.4.1 Size of Forest Road Destination Signs

The legends on FRD signs are so variable that a standardized design or size is not appropriate. The size is determined by the length of the message, and the size of lettering and spacing necessary for proper legibility.

Reduced letter height, reduced interlines spacing, and reduced edge spacing may be used on FRD signs if sign size must be limited by factors such as vertical or lateral clearance. ***This should not be used as a means of reducing the overall size of a sign except where determined as necessary by engineering judgment to meet unusual lateral space requirements.*** In such cases, the legibility distance of the sign legend should be the primary consideration in determining whether to reduce the spacing between the words or between the words and the sign border, or to reduce the letter height. Letter height shall not be reduced below the minimum requirement.

Consider the visual needs of older drivers when considering reducing letter size. Larger size letters may be necessary for destinations with a larger percentage of older drivers.

3C.4.2 Lettering Style

The design of letters shall conform to the FHWA “Standard Alphabets for Traffic Control Devices” as found in the “Standard Highway Signs” book. The font is commonly referred to as Highway Gothic.

The lettering for proper names of places and roads shall be title case—a combination of lower-case letters with initial upper-case letters.

All other word legends shall be in upper-case letters, such as an action message—NEXT LEFT, EXIT; ENTERING, or LEAVING: a distance message—1 MILE: or a nonproper name, such as FEE STATION, RANGER STATION, or ACCESS.

3C.4.3 Size of Lettering

Sign legibility is a direct function of letter size and spacing. Legibility distance has to be sufficient to give road users enough time to read and comprehend the sign. Under optimum conditions, a guide sign message can be read and understood in a brief glance. The legibility distance takes into account factors, such as driver inattention, blocking of view by other vehicles, unfavorable weather, inferior eyesight, or other causes for delayed or slow reading.

Legend size on guide signs is a function of the viewing distance and the amount of time available for viewing. Table 3C-1 contains the minimum letter and symbol sizes that shall be used for guide signs unless otherwise shown on the drawings. The speed used should be the posted speed limit, or the speed that a vehicle could reasonably be expected to be traveling as the sign is viewed as determined by engineering judgment or an engineering study.

Table 3C-1—Legend and symbol size for guide signs on NFS roads

Upper Case Letters and Numbers* Minimum Size (inches)			Symbols Minimum Size (inches)	
Speed (mph)	Conventional Roads	Low-Volume Roads	Conventional Roads	Low-Volume Roads
50 and over	6	6	24	24
30-45	6	5	24	24
20-25	6	4	24	18
15 and under	6	3	24	12

*The size of lower case letters are $\frac{3}{4}$ the height of the upper case letters.

3C.4.4 Rules for Destination Signing

Consistency in the layout of destination signs is critical to the road user comprehending and understanding the information on the destination sign.

Limit legend to four lines of destinations on low-volume roads.

Amount of Legend:

The longer the legend on a guide sign, the longer it will take road users to comprehend it, regardless of the letter size.

- Limit legend to three lines of destinations on conventional roads.
- Limit legend to four lines of destinations on low-volume roads.
- Prioritize, group, or eliminate multiple destinations to avoid exceeding the number of lines of destinations.

Selection of Destinations:

- Assume a route user has done some pretrip planning or has a map. It is impossible to sign for someone without a map.
- Carefully select appropriate destinations. Do not encourage road users to travel to destinations where that vehicle physically cannot go or to travel on a road where uses have been restricted.
- Assure that road users know that they have arrived at a previously signed destination by installing a feature sign or site identification sign at the destination.
- Do not sign Forest Service administrative facilities where the public is not encouraged to visit, especially if personnel are not always on duty or visitor information is not available.
- Sign all junctions with roads designated on motor vehicle use maps between a first destination sign and the destination. It is important that each successive sign along the route continue to carry a starting destination until it is reached.
- When signing is provided to guide road users to a destination, exit signing should be provided at each decision point back to guide road users back to the starting point.
- Correlate signing with information provided on administrative maps. Only names and numbers that appear on the most current administrative maps should be used.
- Only use the road name if the name is also shown on current maps and is well known in the local community.

Mileages:

Show mileages to each destination over 1 mile.

Round distance to the nearest mile.

- Show mileages to each destination over 1 mile. Round distance to the nearest mile.
- If the distance is less than 1 mile, use the nearest fraction, $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ mile or if the site is visible from the sign, mileage may be omitted.
- Fractions shall be displayed with the numerator and denominator diagonally arranged about the 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 forward slash. 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.
- General direction or general access signs do not typically require mileages.

The "Standard Highway Signs" book, section 1A.11 contains details regarding the layouts of fractions on signs.

Arrows:

- Arrows are used to indicate the directions toward routes and destinations.
- Refer to chapter 3E, sections 3E.4 and 3E.10 for detailed information on arrow sizes.
- Arrows control the order of text on the sign, not the mileage. The proper arrow direction and the associated message sequence should be as follows:
 1. Straight-ahead arrow, the straight-ahead destination name, then the distance.
 2. Left arrow, the left destination name, then the distance.
 3. Right destination name, followed by the mileage, then the right arrow.



- To avoid sign clutter associated with multiple destinations in the same direction, individual arrows may be replaced with a single arrow one size larger than the height (H) indicated in chapter 3E, section 3E.10, centered on all legends to which it applies.



- If all destinations on the sign are straight ahead, the up arrow may be eliminated from the sign to reduce the overall size.



- Directional arrows are generally horizontal or vertical, but at irregular intersections, arrows may be pointed at the appropriate angle to convey a clearer indication of the direction to be taken.
- Arrows also may be placed below the principal sign legend to avoid oversized signs.



Legend:

- Destinations should be listed in the following order:
 1. Straight ahead destination(s), if any, first.
 2. Left destination(s), if any, next.
 3. Right destination(s), if any, last.
- If more than one destination is shown in any direction, the closest destination shall appear above those farther away in that direction.
- Text lines and arrows for route identities and destinations are to be left justified first and then right justified if possible.



Where clearer meaning will result, standard recreation and cultural interest area signs may be used in lieu of words.

- Keep messages brief, while effectively conveying necessary information.
- Where clearer meaning will result, standard recreation and cultural interest area signs may be used in lieu of words. See section 3C.3 for rules on use of recreation and cultural interest area symbol signs.



- Complete words are preferable, however if message length causes excessive sign length, use the standard abbreviations in chapter 1, section 1.7.2 and the MUTCD, table 1A-1. For example, the word CAMPGROUND may be abbreviated to CG.
- 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.

Horizontal Lines:

- A horizontal line may be added to destination signs to separate destinations in different directions and enhance readability.



- A horizontal line(s) shall be used on four-line destination signs unless all four destinations are in the same direction. Each separate direction shall be separated by a line.



General:

- A junction with another road should be shown on signs as follows: JCT LAKE RD NO 999 or JCT HWY 93, with the appropriate direction and distance.
- Consider the number of posts necessary for the proposed sign. Refer to chapter 3D, section 3D.7 for the number of posts based on the length of the sign. The larger the sign, the more posts it will require.

Figure 3C-1 contains various destination signs and shows examples of message layouts.

1-line sign

FRD-1 • 1 message

2-line signs

FRD-2 • 1 message



FRD-2 • 2 messages



FRD-2 • 2 messages



FRD-2 • 2 messages and line

3-line signs

FRD-3 • 1 message • large arrow



FRD-3 • 2 messages and line



FRD-3 • 3 messages



FRD-3 • 3 messages • large arrow



FRD-3 • 3 messages and line

4-line signs

FRD-4 • 4 messages and line



FRD-4 • 4 messages and 2 lines

Figure 3C-1—Typical destination sign layouts.

3C.5 Site Approach Signing

Site Approach (SA) signs serve the important traffic control function of preparing drivers for the slowing, braking, and turning maneuvers necessary for safe entry to destinations. Refer to chapter 3D, figures 3D-14 and 3D-15 for proper placement.

At a minimum, use one set of site approach signs at the intersection to the destination.

At a minimum, use one set of site approach signs at the intersection to the destination. Additional approach signs may be used a quarter to a half mile in advance of the intersection depending on factors, such as the importance of the site, highway speed, and sight distance.

Place signs a sufficient distance before the intersection based on an engineering study or application of engineering judgment considering factors, such as speed, sight distance, traffic volume, season of use, and intermediate or conflicting intersections. Refer to chapter 3D, table 3D-3 for placement distances.

Forest Road Destination (FRD) signs may be used for site approach guidance when there are single or multiple facilities or opportunities available at the destination. Mileages are not shown on these signs. Recreation and cultural interest area symbols may be incorporated within the design as shown in section 3C.3.

SA signs are used for site approach guidance when only one recreation symbol or message is displayed. Do not use the SA for destinations requiring multiple recreation symbols or messages. SA signs may use words or symbols. Refer to chapter 3E, section 3E.5 for message options.

The SA sign includes the national forest or national grassland logotype to provide immediate recognition for Forest Service destination. Do not modify the SA sign to include the name of the national forest above the national forest logotype. The important information on this sign is the name of the site. Forest identification is provided on the Site Identification sign. Refer to chapters 7 and 8.

Do not use the SA sign for destinations requiring multiple recreation symbols or messages.



A Directional Arrow Auxiliary Sign (M5-M6 series) may be mounted separately below the SA sign to indicate the direction. Refer to chapter 3E, section 3E.6b for Directional Arrow Auxiliary Signs.

Do not mount other guide signs onto the same post as the SA.



D9-3



M6-1R

A single recreation and cultural interest area symbol with a Directional Arrow Auxillary Sign also may be used as a site approach sign for minor sites.

Signs should be removed, covered, or marked “Closed” or “Closed Until (Date)” when recreation and administrative sites are seasonally or permanently closed. Refer to chapter 7.

3C.6 Check Station Signs

The general concept for check stations is similar to Weigh Station signing. Refer to the MUTCD, section 2D.49.

They are designed to assist in:

- Enforcing Federal and State fish, game, and trapping laws, rules, and regulations.
- Checking for invasive species.
- Ensuring compliance with miscellaneous permits, such as firewood, Christmas trees, mushroom picking, etc.
- Obtaining information, such as biological or recreation visitor use.
- Providing public education.

The safety of the public, law enforcement officers, and other personnel involved in a check station is of primary importance in selecting a site and establishing the check station. Check stations should only be established where there is sufficient room to stop the vehicle safely off the road or shoulder, perform the inspection or survey, operate the check station in a safe manner, allow traffic to enter and exit safely, and offer protection to the employees and the public.

Do not require vehicles to cross an oncoming lane of traffic to enter the check station. Traffic only may be stopped from one direction on the roadway. Check-station personnel shall wear high visibility safety apparel.

Use engineering judgment to determine if additional temporary traffic control is needed in addition to the typical applications shown in chapter 3D, figures 3D-21 and 3D-22. Placement of signs shall provide a safe distance for the vehicle to slow down and enter the check station considering road conditions, weather, road surface, and sight distance for the approaching traffic.

If stopping is required before a vehicle reenters the road, the STOP sign (R1-1) and other appropriate regulatory signs shall be used.

Consult with the forest or regional sign coordinator for assistance as necessary.

3C.7 Trailblazer Assemblies

Trailblazer assemblies are another method of providing guidance to destinations, activities, or other special interest areas. Locate trailblazers at strategic locations to indicate direction to the nearest or most convenient point of access to the destination. The trailblazer assembly consists of a TO marker, recreation and cultural area symbol or route marker, and a Directional Arrow Auxiliary Sign pointed along the route leading to the destination. The background color on each individual assembly should be the same.



3C.8 National Forest Access Signing

Signs may be used to guide visitors from major highways and other roads providing general access to National Forest System lands. Use white retroreflective legend on brown retroreflective background signs. Include Federal recreation symbols where appropriate. States may require signs placed on their highways to be fully retroreflective white on green to match their destination signage.

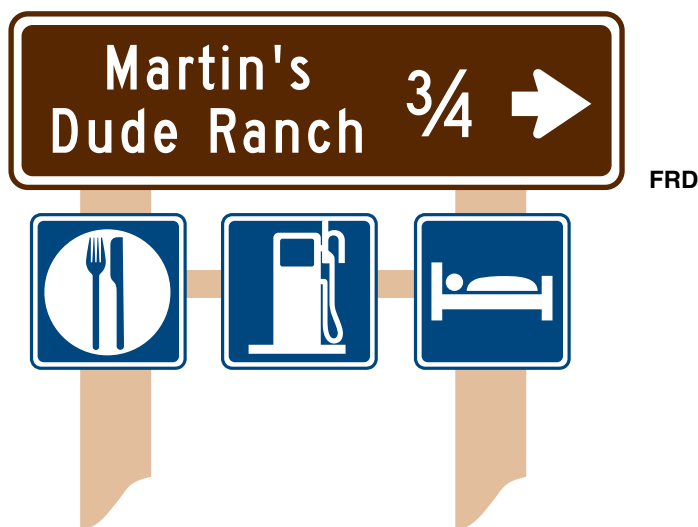


3C.9 General Service Signs

General Service signs may be used with destination signs where services, such as gas, food, and lodging are infrequent and are offered at privately provided recreation sites. Refer to chapter 7, section 7.1.1.

These signs may be used on any class of road, but are normally not installed on NFS roads unless they are of value to the forest visitor.

General Service signs shall conform to the guidelines established for these signs in chapter 3 and the MUTCD, section 2I.



3C.10 Tourist-Oriented Directional Signs

Tourist-oriented directional signs are guide signs that display the business identification and directional information for eligible businesses, services, and activity facilities at privately provided recreation sites. Refer to chapter 7, section 7.1.1.



These signs may be used on any class of road, but are normally not installed on NFS roads unless they are of value to the forest visitor.

Tourist-oriented directional signs shall conform to the guidelines established for these signs in the MUTCD, section 2K.

3C.11 Miscellaneous Information Signs

Miscellaneous information signs should not contain a regulatory or warning message and should not interfere with other signing.

Miscellaneous information signs are used to provide some type of information to the road user, such as road user, information, geographical features, rivers and summits, and other jurisdictional boundaries. They should be used only if there are specific reasons for orienting the road users or identifying control points for activities that are in the public interest.

Miscellaneous information signs should not contain a regulatory or warning message and should not interfere with other signing.

If miscellaneous information signs are to be of value to the road user, they should be consistent with other guide signs in design and legibility. On all such signs, the design should be simple and dignified, devoid of any tendency toward flamboyant advertising, and in general compliance with other signing.

Coordinate the message with the forest sign coordinator.

3C.11.1 Feature Signs

Mystic Spring

When features have been signed as a destination, they should be signed when reached. Other significant features not signed as destinations also may be identified with signs.

If feature signs are to be viewed by the passing motorists, they should be sized according to the speed the traffic is traveling on the road and placed perpendicular to the road. Refer to table 3C-1.

If feature signs are provided for general information, they may be placed parallel to the road. They are not required to be retroreflective. They may be routed on any appropriate substrate.

3C.11.2 Elevation Signs

**ELEVATION
3000 FT**

On important recreation roads, an elevation sign may be placed at the highest elevation point that the road reaches. In addition, when the road crosses even, 1,000-foot elevation contours, elevation signs may be installed.

Elevations should be to the nearest foot.

3C.11.3 Pass and Continental Divide Signs

Locations where roads cross significant or historical mountain passes and the Continental Divide may be identified. States may require these signs to be fully retroreflective white on green on roads under their jurisdiction.

**Tioga Pass
ELEV 8238 FT**

**Rogers Pass
Continental Divide
ELEV 9945**

3C.11.4 Acknowledgment Signs

Acknowledgment signs are a way of recognizing a company, business, or volunteer group that provides a road-related service, such as adopt-a-road litter removal programs, maintenance, and other road maintenance or beautification sponsorship programs. Acknowledgment signs should indicate clearly the type of highway services provided by the sponsor.

Acknowledgment signs shall only be installed where adequate spacing is available between the acknowledgment sign and other higher priority signs such as warning and regulatory signs. They shall not be installed in a position where they would obscure or distract the road users' view of other traffic control devices.

Do not install acknowledgement signs on any other traffic control devices (TCD), supports or structures, or bridge piers, or at key decision points where a road user's attention is more appropriately focused on other TCD, roadway geometry, or traffic conditions, intersections, grade crossings, temporary traffic control zones, and areas of limited sight distance.

Each Forest Service unit may develop their own acknowledgment sign designs with the Forest Service shield, and/or a brief jurisdiction-wide program slogan as part of any portion of the acknowledgment sign, provided that the signs comply with the provisions for shape, color, and lettering style in these Guidelines and the requirements in the MUTCD, section 2H.08.

Do not use trade logos, slogans, contact information, such as telephone numbers and Web sites, nonstandard letter styles, and similar forms of commercial promotion on acknowledgement signs.

Lettering shall be in upper-case letters as provided in the "Standard Highway Signs" book, see section 1A.11.

The sponsor acknowledgment logo shall not exceed one-third of the total area of the sign and shall not be located at the top of the sign. The sign shall not exceed 8 square feet.

The sign shall not contain any messages, lights, symbols, or trademarks that resemble any official traffic control devices.

3C.11.5 Private Land Signs

In addition to boundary signs, information signs may be needed on NFS roads that have easements through private land but it is confusing to the public as to whether they can drive on the NFS roads. It is not appropriate for the Forest Service to post NO TRESPASSING signs on the private land—that is the responsibility of the landowner. Reinforce this sign with the appropriate NFS roads route marker.



3C.11.6 Memorial or Dedication Signs

The Forest Service may approve requests for placement of memorial signage on NFS roads to honor private individuals on a case-by-case basis.

Memorial or dedication signs shall be rectangular in shape and should have a white legend and border on a brown background when located on NFS roads. These signs shall not interfere with the placement of any other necessary signing or compromise the safety or efficiency of traffic flow.

Limit the legend to the name of the person and a simple message such as:

“Captain Ted Hall and Engineer Arnie Quinones Memorial Interchange.”

“Patrol Agent Robert Rosas Memorial Highway.”

“Dedicated to Janie Ybarra.”

Do not allow any other information on the sign, such as biographical, dates, logos, etc. Limit signs to one sign in each route direction, each as an independent sign installation.

Approval is contingent on appropriate wording, sign standards, desired placement, and procurement, installation, and maintenance of the memorial signs by the requesting entity.

Signs shall follow all standards in chapter 3 and the MUTCD, section 2M.10. The forest sign coordinator shall assure that signs do not interfere with safe function of motorists, nor obscure existing traffic control devices.

Contact the regional sign coordinator for assistance.

3C.11.7 Tour Route Signs

Tour Route signs are informational signs, plaques, or shields designed to provide road users with route guidance in following a tour route of particular cultural, historical, recreational, or educational significance.

Tour Route signs may be used on nationally designated or other specially designated trails that are coincident with roads, such as National Historic, Scenic, and Recreation Trails. Refer to chapter 5 for National Historic, Scenic and Recreation trail logotypes and signing requirements.





Tour route signs also may be used for locally or specially designated trails or routes such as the C.M Russell Auto Tour on the Lewis and Clark National Forest and the Oregon Scenic Bikeway.

Congressionally designated trail signage must be consistent among administrative units. Coordinate area and trail management plans as appropriate. Standardize signing on routes that include more than one administrative unit. Coordinate with other road agencies to install tour route signs on roads under their jurisdiction.

Tour route signs should be retroreflective white legend on a brown background when placed on NFS roads unless otherwise approved through the regional sign coordinator.

Tour route signs should be reviewed by the forest and regional sign coordinator before they are placed on NFS roads to ensure they meet the required standards.

Refer to the MUTCD, section 2H.07 for specific information on tour route signs.

3C.12 Scenic Byway Signing

Install scenic byway signs in accordance with established highway signing principles and practices. Keep all signing along scenic byways to the minimum consistent with user needs. Avoid excessive clutter that may detract from the scenic qualities of the route or interfere with regulatory or warning signs. Coordinate signing activities with States, counties, or other local jurisdictions on those routes where they have jurisdiction. Scenic byway signs are not intended to replace existing Federal, State, or local scenic route identification signs.

Avoid excessive clutter that may detract from the scenic qualities of the route or interfere with regulatory or warning signs.

3C.12.1 Scenic Byway Logo

The National Forest Scenic Byway Logo is the approved symbol to identify a route officially designated by the Chief of the Forest Service as a National Forest Scenic Byway. The logo also may be used in conjunction with interpretive and other informational signs at locations along scenic byways routes.

The logo shall be fully retroreflective when incorporated into road guide signing.

The logo design should be incorporated into signing for dual-designated facilities. This includes routes previously designated and signed by States, counties, or local agencies. While the overall design for these facilities will be determined on a case-by-case basis in cooperation with the road management agency, the scenic byway logo design, when used, shall not be modified.



Use a single logo on routes designated through more than one scenic byway program, such as National Scenic Byways, All-American Roads, or National Forest Scenic Byways. Byways designated by the Department of Transportation prevail in priority over Forest Service byway designations and should be signed according to the MUTCD, section 2D.55. If a route has multiple byway designations, the various byway logos may be installed on a byway entrance sign.

3C.12.2 Scenic Byway Identification Sign (SB)



SB



SBa

The Scenic Byway Identification sign (SB) marks the route as a National Forest Scenic Byway and should be used at the beginning and end of the scenic byway and at major road intersections. It may also be used at selected locations along the route as a reassurance marker.

The use of the Scenic Byway Name plaque (SBa) is optional. When used, the name plaque shall be the same width as the Scenic Byway sign.

The minimum sign sizes shown in chapter 3E, section 3E.8 shall be used when designing or choosing Scenic Byway signs that will be viewed from a moving vehicle. The speed used should be the posted speed limit, or the speed that a vehicle could reasonably be expected to be traveling as the sign is viewed, as determined by engineering judgment.

3C.12.3 Scenic Byway Marker Sign (SBM)

Use the Scenic Byway Marker (SBM) sign as a reassurance marker to guide visitors along National Forest Scenic Byways.

Appropriate locations include the following:

- At the beginning and terminus of a designated route.
- At junctions with other routes.
- At intersections where the route turns and may confuse the visitor.
- At intersections just beyond and between intersections to reassure visitors that they are still on the scenic byway.



SBM

Scenic Byway Markers should be used in common assemblies with Federal, State, local jurisdiction, and Forest Service route markers. Refer to figure 3C-2 for typical assemblies.

Directional Arrow Auxillary Signs (M5-M6 series) and auxilliary route markers (FM2, 3, and 4) may be used with the Scenic Byway Marker signs. Refer to chapter 3E, section 3E.68.

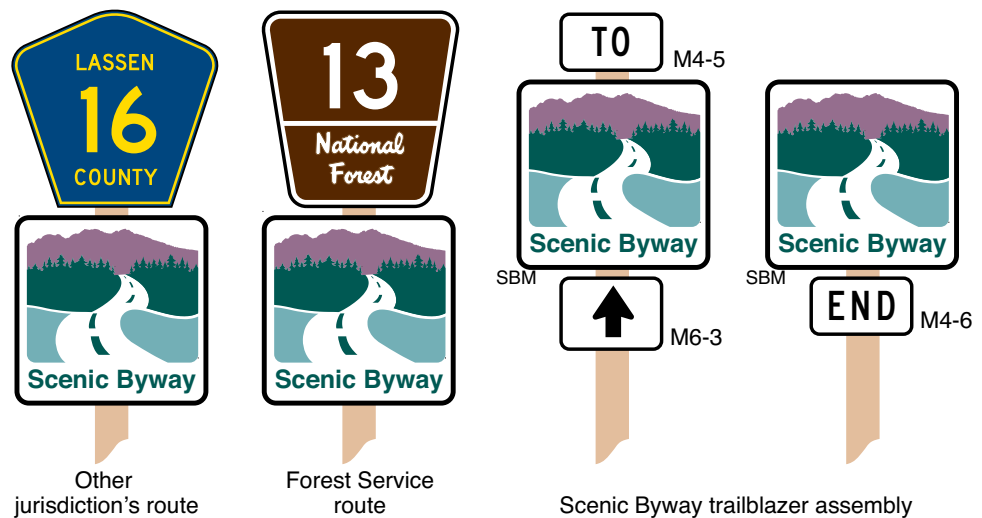


Figure 3C-2—Scenic Byway assemblies

3C.13 Reference Location Signs



D10-1



D10-2a

Reference location signs are intended to serve as mile point location guides for road users and as a means to identify road locations and road maintenance sections. Reference location signs may be erected on any NFS road but are typically used on higher-volume paved roads.

Reference location signs are fully retroreflective and have white legend and borders on green background when used on NFSR. When used on motorized trails, they may be brown and white.

Use of the heading MILE shall be used to distinguish the reference location sign from the vertical route marker.

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3D.1 Introduction

Uniform sign placement and installation assists drivers in observing signs and in determining where the directed action is to take place. The effectiveness of a sign can be compromised if it is used inappropriately or if it is installed incorrectly. A sign that is confusing, or one that cannot be seen in time, is useless.

Uniform sign placement and installation assists drivers in observing signs and in determining where the directed action is to take place.

Uniform installation of signs is highly desirable. However, because no two roads are exactly alike, unusual situations may be encountered related to topography, man-made objects, intermediate intersections, or other circumstances that may require some modifications to typical sign placement guidelines and standards. The most suitable placement of each sign must be determined at the site where all variables are visible. Any deviations or adjustments should be documented in the unit sign plan.

Select locations that maximize the opportunity for signs to be visible and to convey the intended message. It also is important that signs be installed correctly to ensure that errant vehicles are protected when they leave the roadway and collide with the sign post.

When placing Forest Service signs on roads under other jurisdictions, coordinate signing requirements with that agency. In those instances, follow the placement and installation guidelines and standards of the agency with jurisdiction of the road.

Installation of traffic control devices as recommended by engineering judgment or an engineering study should occur in a timely manner.

Installation of traffic control devices as recommended by engineering judgment or an engineering study should occur in a timely manner.

Removal of existing traffic control devices as recommended by engineering judgment or an engineering study should occur in a timely manner so the unneeded messages do not breed disrespect for traffic control devices that are needed. Existing devices, even though not appropriate or necessary, may have created a driving pattern by road users familiar with the road and may require that other actions be taken in conjunction with their removal. These actions if necessary should be evaluated and documented with engineering judgments and engineering studies.

Check with utility companies and other agencies that have underground cables and conduits along roads before installing new signs.

3D.2 Sign Placement

Sign placement involves the longitudinal location along the roadway, mounting height, and lateral offset.

With the exception of the “No Passing” pennant, place all signs on the right-hand side of the traveled way as close to the standard location as is practical.

Consider the following guidelines when selecting sign placement locations:

1. Place signs where they are clearly visible and provide adequate time for proper viewer response. Consider factors, such as speed, road conditions, intermediate intersections, sight distances, and road geometry.

Signs with unrelated messages should be erected individually on separate posts.

2. Select locations that minimize viewing obstructions. Some common placement locations to be avoided include:

- Dips in the road.
- Just beyond the crest of a hill.
- Where a sign could be obscured by other signs or objects.
- Where the sign may interfere with the normal use of the road.
- Where there is increased need for users to focus on the road.
- Too close to trees or other foliage that could grow to cover the sign face.
- Snow removal and disposal areas.

3. Erect signs individually on separate posts or mountings except where one sign supplements another, such as a warning sign with an advisory speed plaque, or where route markers and destination signs must be grouped. Signs with unrelated messages should be erected individually on separate posts.

3D.2.1 Sign Spreading

Several signs at the same location can overload road users with too much information, causing confusion and detracting from critical messages. Signs requiring different decisions by the road user shall be spaced sufficiently far apart for the required decisions to be made independently.

The following should be used as placement order:

1. Location-critical regulatory signs such as STOP and YIELD.
2. Location-critical warning signs such as TURN and INTERSECTION.
3. Other regulatory signs such as SPEED LIMIT.
4. Other warning signs such as LIVESTOCK.
5. Route markers.
6. Destination and other guide signs.
7. Informational and Motorist Services signs.

The posted or 85th-percentile speed should be considered when determining the appropriate spread distance between signs.

Table 3D-1 Minimum spread distance between signs

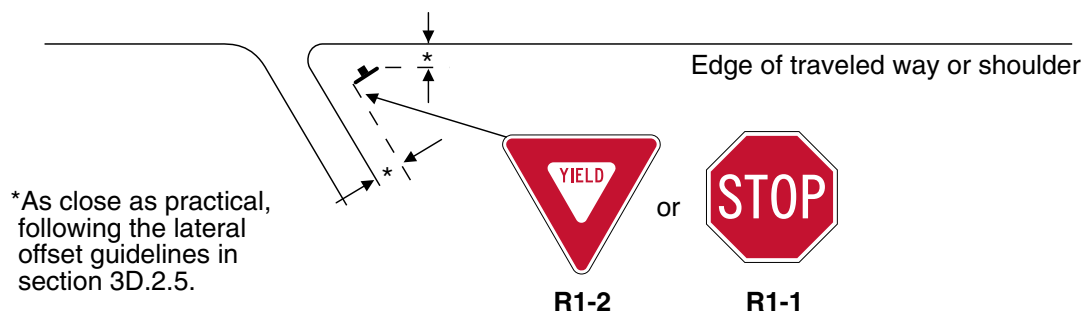
<i>Posted or 85th-percentile Speed</i>	<i>Minimum Spread Distance</i>
< 35 miles per hour	100 feet
≥ 40 miles per hour	5 times the speed = XXX feet

3D.2.2 Longitudinal Placement

All signs need to be visible to drivers in time for them to see the sign, perceive the message, react, and complete the necessary maneuver considering approach speeds and road conditions.

3D.2.2a Regulatory Signs

Place regulatory signs at or near where their mandate or prohibition applies or begins, as shown in figure 3D-1.

**Figure 3D-1—STOP and YIELD sign locations example.****3D.2.2b Warning Signs**

Warning signs are normally placed in advance of the situation to which they call attention to allow adequate time for proper driver response, as shown in figure 3D-2. Use table 3D-2 to determine the advance placement approach distances "X".

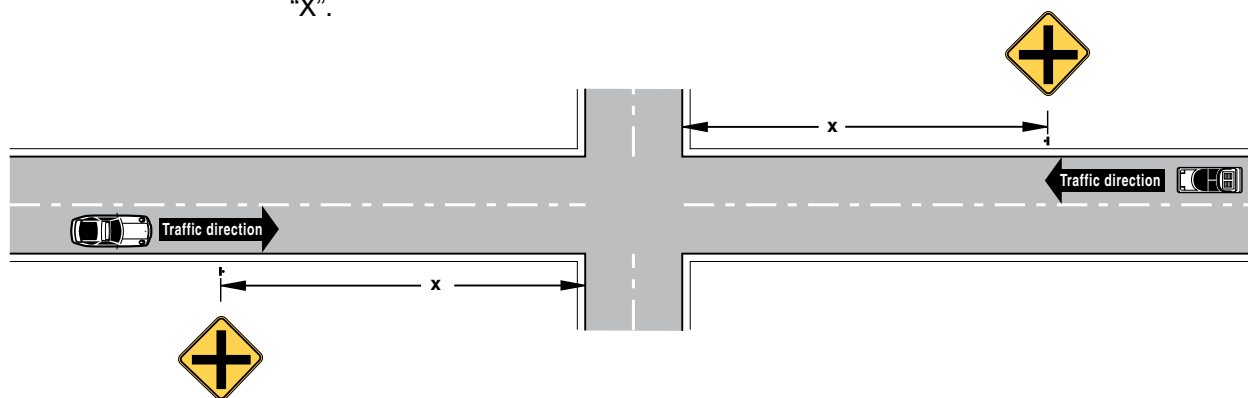
**Figure 3D-2—Advance placement distances for warning sign.**

Table 3D-2—Advance warning sign placement distances for unpaved low-volume roads

85 percent speed or posted speed (mph)	Distance for deceleration (feet) to advisory speed listed (mph)				Additional distance (feet) on downgrade (percent)			
	0-10	20	30	40	3	6	9	12
20	125	—	—	—	5	10	20	30
25	150	—	—	—	8	15	30	45
30	200	150	—	—	10	20	45	65
35	250	225	—	—	15	35	60	90
40	325	300	275	—	20	45	75	120
45	400	350	300	—	25	55	95	150
50	475	450	375	275	30	70	120	185
55	550	525	450	350	35	85	145	225

- These minimum distances may be exceeded when necessary.
- Distance for deceleration above, is the minimum distance a warning sign should be placed in advance of a condition. It covers situations where the driver probably will be required to decrease speed (for example, advisory speed for a curve or a road dip) or come to a stop (for example a STOP sign, pedestrian crossing, single-lane bridge, or a closed gate).
- Sign placement distances are based on sign legibility provided by 24-inch signs and 4-inch letters.
- If larger signs are used, evaluate the placement distances as part of the engineering study or engineering judgment to determine whether the placement distances may be reduced. Document calculations and rationale.
- Distances are for level roadways. Increase placement distance on downgrades of 3 percent or greater.
- Placement distance on upgrades may be reduced by one-half the distances listed for downgrades.

For advance placement distances for warning signs on conventional roads and paved low-volume roads, refer to the MUTCD, section 2C.05, table 2C-4.

3D.2.2c Guide Signs

Place guide signs in advance of the destination or intersection to allow adequate time for the vehicle to slow down and make the turn into the destination as shown in figure 3D-3. Use table 3D-3 to determine the advance placement distance “x” for guide signs.

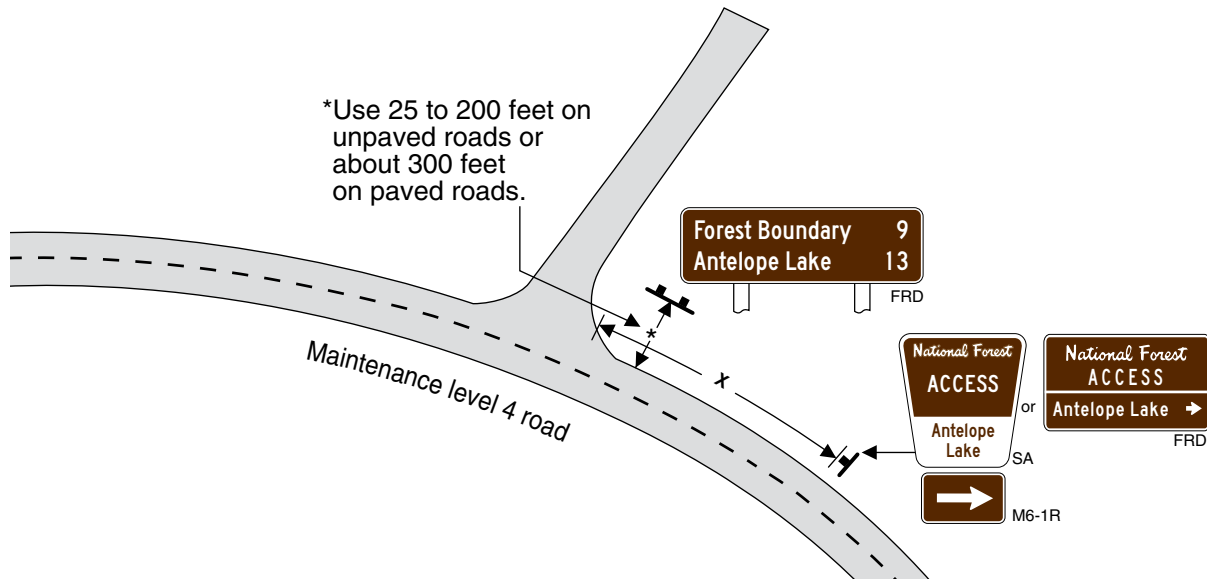


Figure 3D-3— Advance placement distances for guide signs.

Table 3D-3—Advance placement of guide signs at intersections

Speed limit or 85th-percentile speed (mph)	ML 3, 4, 5 roads (feet)	ML 2 roads and roads within administrative or recreation sites
Under 15	25	At or near intersection
15 to 25	100	25
30 to 40	100 to 200	NA
45 and higher	200 minimum	NA

3D.2.3 Clear Zones

Clear zones are the total roadside border area, starting at the edge of the traveled way, that is available for an errant driver to stop or regain control of a vehicle. This area might consist of a shoulder, a recoverable slope, and/or a nonrecoverable, traversable slope with a clear run-out area at its toe. Slopes steeper than 1V:3H are usually considered nonrecoverable.

High-speed, high-volume, paved highway clear zone guidelines are contained in AASHTO's "Roadside Design Guide," 2002 edition. Widths ranging from 7 feet to over 40 feet are discussed, depending on the speed and volume of traffic.

AASHTO's "Guidelines for Geometric Design of Very Low-Volume Roads (ADT ≤ 400)," 2001 edition, notes that it generally is not cost effective to provide clear zones on very low-volume roads, particularly unpaved roads. However, clear zones of any width contribute to safety and should be provided and used where practical.

Sign placement on National Forest Service Roads shall follow breakaway or crashworthy guidelines for signs within roadway clear zones as required. Breakaway and crashworthy sign posts are defined in section 3D.7.

3D.2.4 Mounting Height

Mounting height is measured from the road surface to the bottom of the sign.

Signs in rural areas shall be mounted at least 5 feet from the bottom of the primary sign from the elevation of the nearest edge of the road.

Where the view of the sign might be obstructed or where parking or pedestrian movements occur, such as urban, business, commercial, or residential areas, the clearance to the bottom of the primary sign shall be at least 7 feet.

Supplemental plaques or signs mounted below the primary sign may be 1-foot less than the specified heights. If the supplemental plaque or sign is greater than 1 foot in height, the primary sign must be mounted at a higher height to meet the minimum requirements for the supplemental sign. Allow a 1-inch gap between stacked signs so they can expand and contract.

Refer to figures 3D-4 and 3D-5 for mounting height requirements.

3D.2.5 Lateral Offset

Lateral offset for all sign placements is the distance from the edge of the traveled way to the nearest edge of the sign—not the distance to the sign post. All supports should be located as far as practicable from the edge of the shoulder to minimize the exposure of traffic to sign supports.

Lateral offset guidelines for post-mounted signs are:

- On conventional roads, 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 should be 6 feet from the edge of the shoulder.

- On all roads where signs are placed behind barriers, such as curbs or guardrails, a lateral offset of not less than 2 feet from the roadside edge of the barrier may be used.
- On low-volume roads, a minimum of 12 feet lateral offset should be used where roadway slopes and vegetation permit.
- On low-volume roads where roadside features, such as terrain, shrubbery, and/or trees, prevent standard lateral offset, a lateral offset of not less than 2 feet from the edge of the road to the roadside edge of the sign may be used.
- Major sign installations, such as forest boundary signs on solid bases, should be located behind existing roadside barriers or outside of the clear zone. If a sign installation is located within the clear zone, a breakaway structure shall be used.

Figures 3D-4 and 3D-5 show the lateral offsets for signs on rural roads.

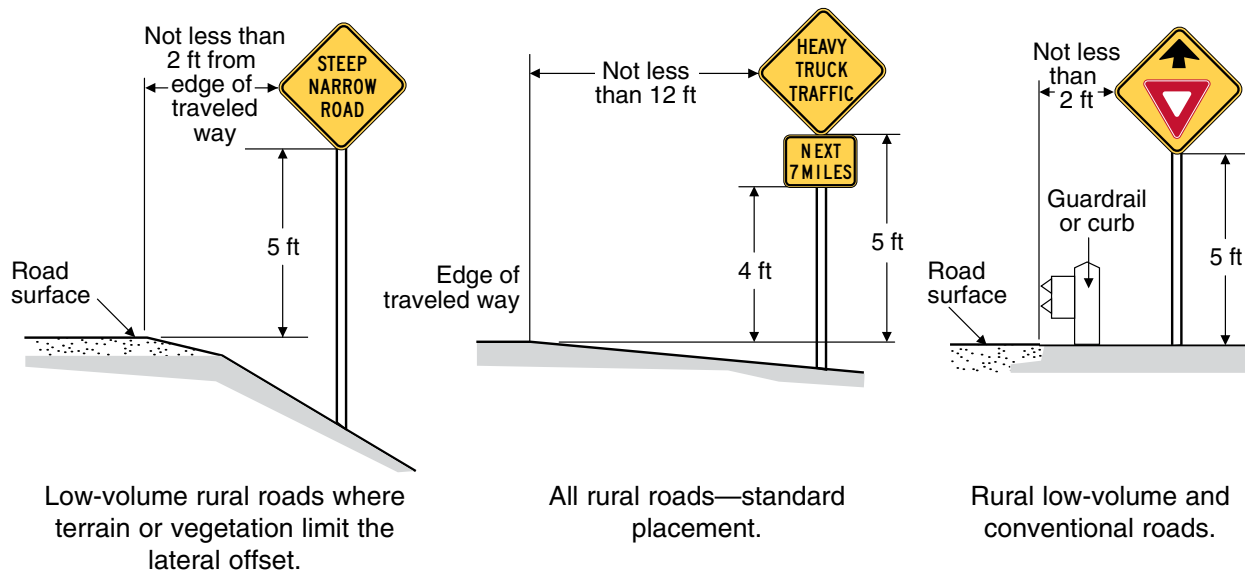
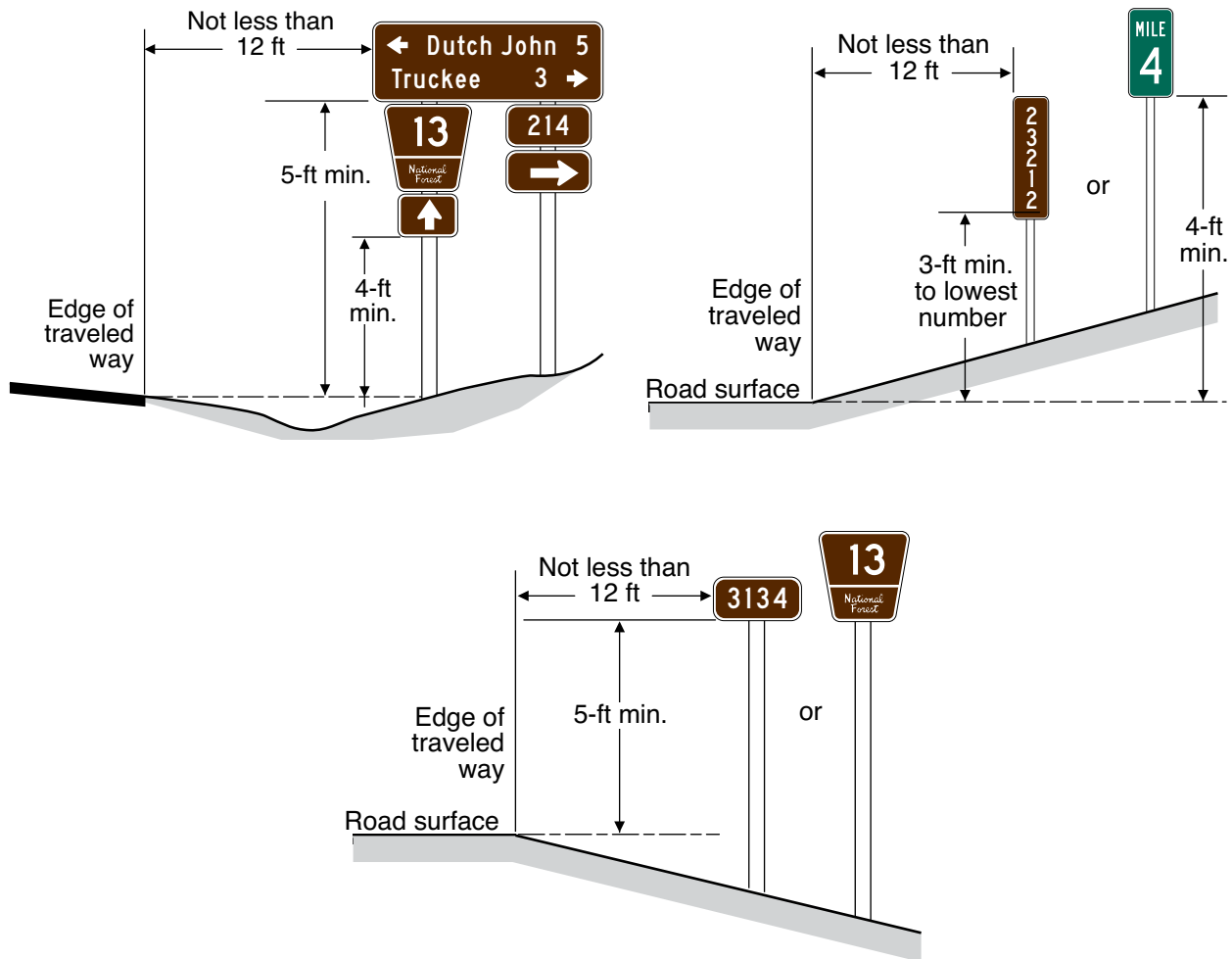


Figure 3D-4—Lateral offset and mounting height for warning signs on rural roads.



Note: Refer to figure 3D-4 for lateral offset guidelines that apply to roads with shoulders or where the 12-foot minimum is not practical.

Figure 3D-5—Standard lateral offset and mounting height for guide signs and route markers on rural roads.

3D.2.6 Sign Face Orientation Angle

Mount signs at approximately right angles to oncoming traffic so that the vehicle headlights will illuminate the sign face.

It may be necessary to rotate a sign slightly off 90 degrees to avoid glare reflecting off the sign face directly into the driver's eyes. An angle of about 93 degrees to the line of approaching traffic is recommended. On curves, orient the sign to face the oncoming traffic—not the road edge. Refer to figure 3D-6.

On steep grades, it may be necessary to tilt the sign from the vertical position to make it easier for motorists to read the sign. Tilt the sign forward for uphill grades. Tilt the sign back for downhill grades.

Signs placed more than 30 feet from the edge of the traveled way should be turned toward the road.

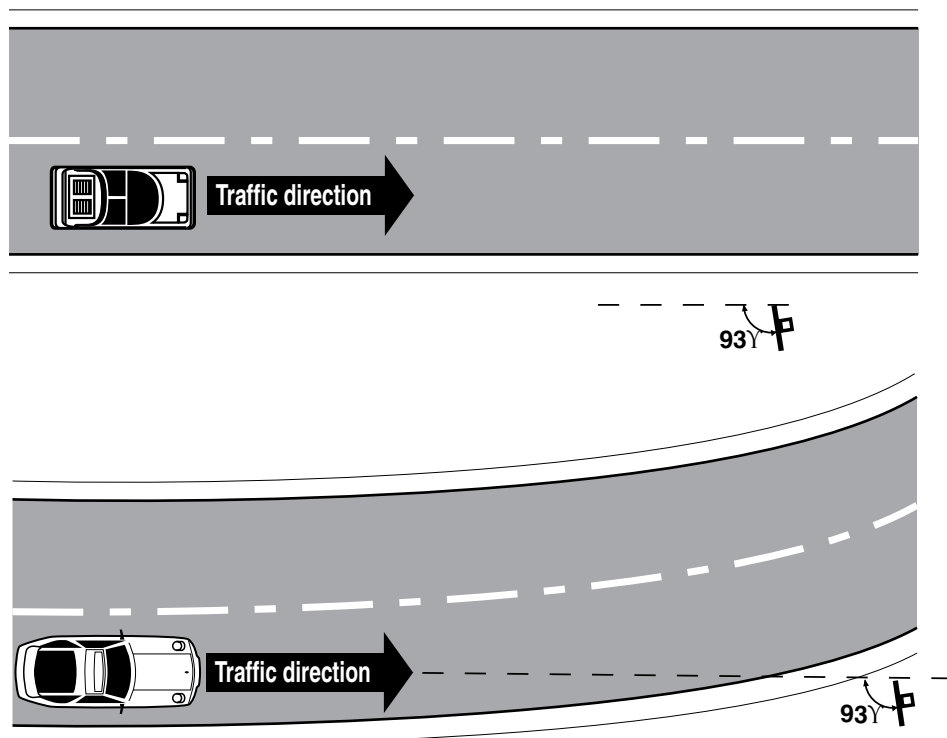
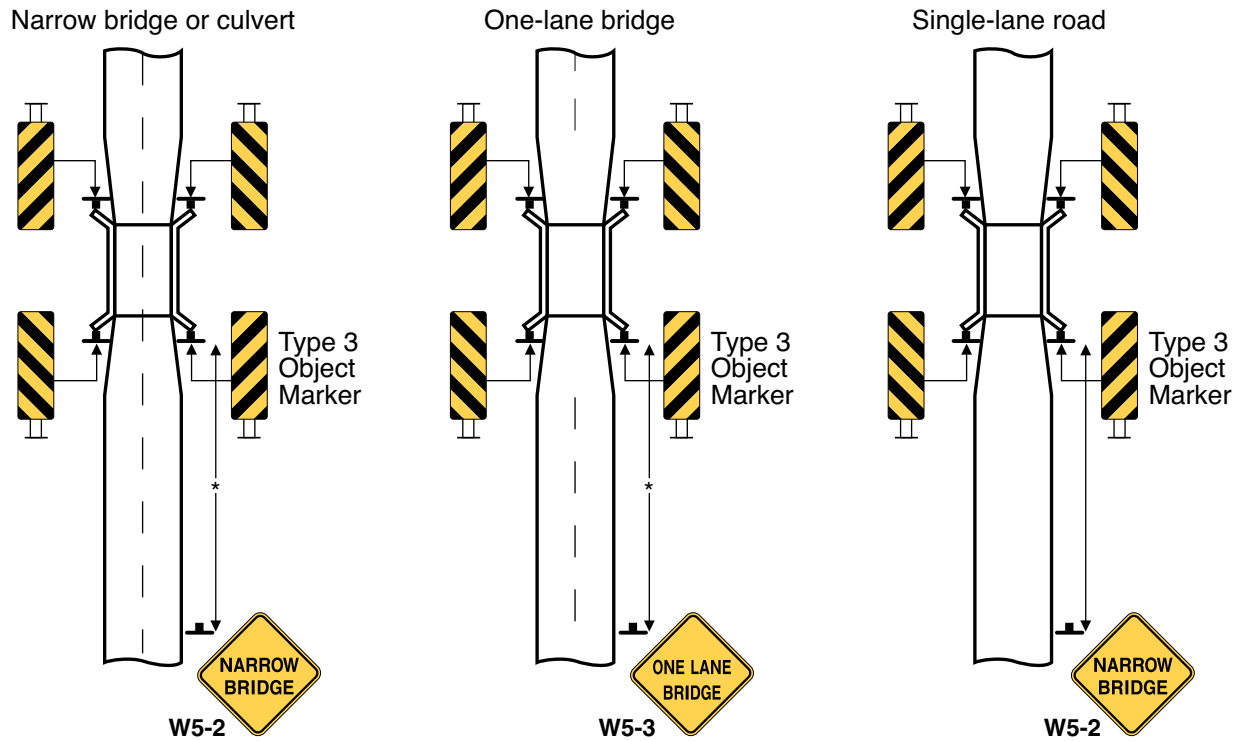


Figure 3D-6—Sign face orientation angle.

3D.3 Typical Warning Sign Placement Location

Examples of possible warning sign placements for conditions typically found on National Forest System roads are shown in figures 3D-7 through 3D-13.



*Distance from bridge can be determined from advance placement table 3D-2.

Note: Inside edge of object marker shall be flush with the inside edge of the hub guards or guard rail.

Place advance warning signs on both approaches to restricted bridge.

At a minimum, use Type 3 object markers. Consider using advance warning assemblies where traffic volumes are higher or the view of the bridge is obstructed.

Figure 3D-7—Typical narrow bridge and one-lane bridge locations.

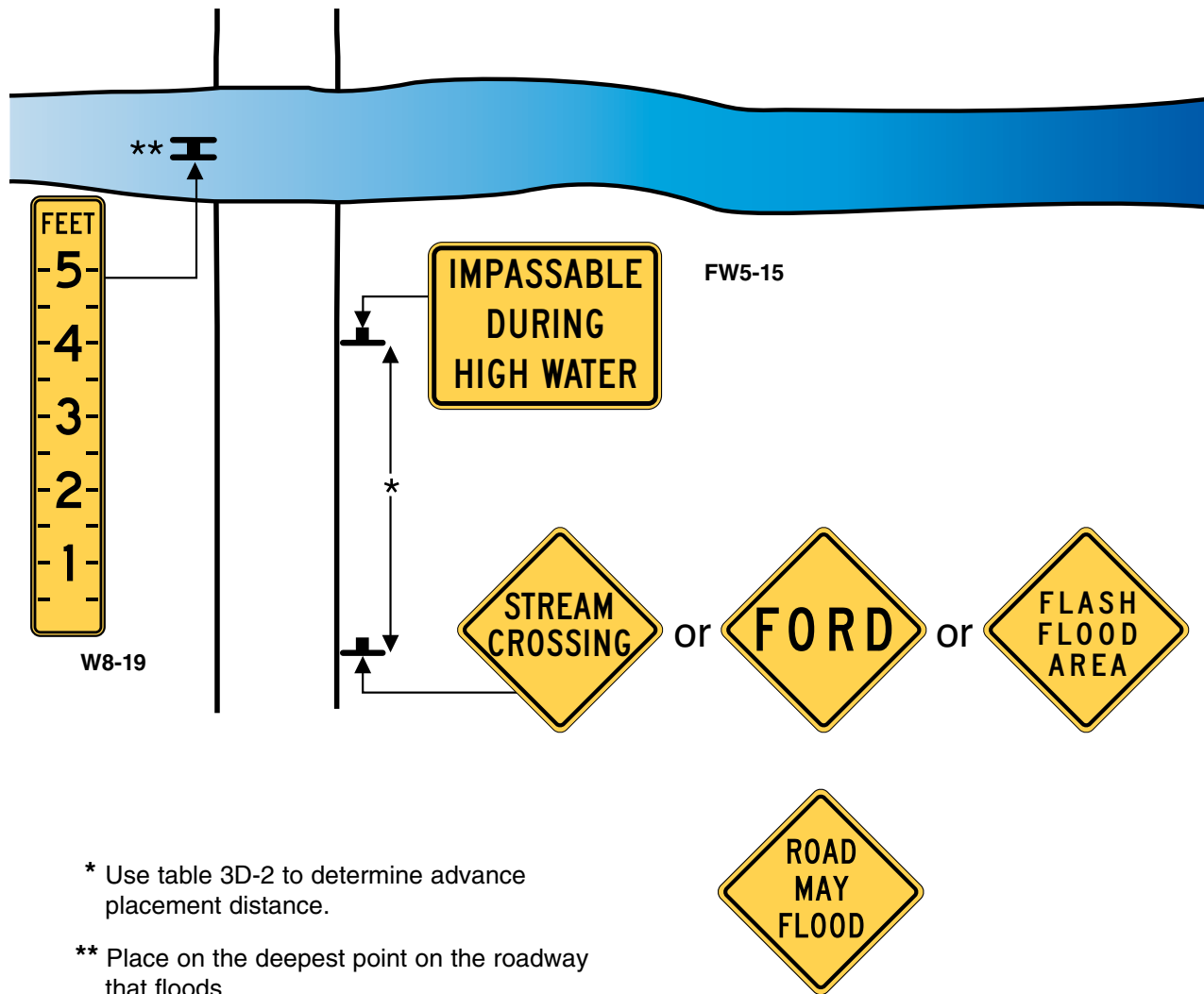


Figure 3D-8—Typical warning sign placement location for flood hazards.

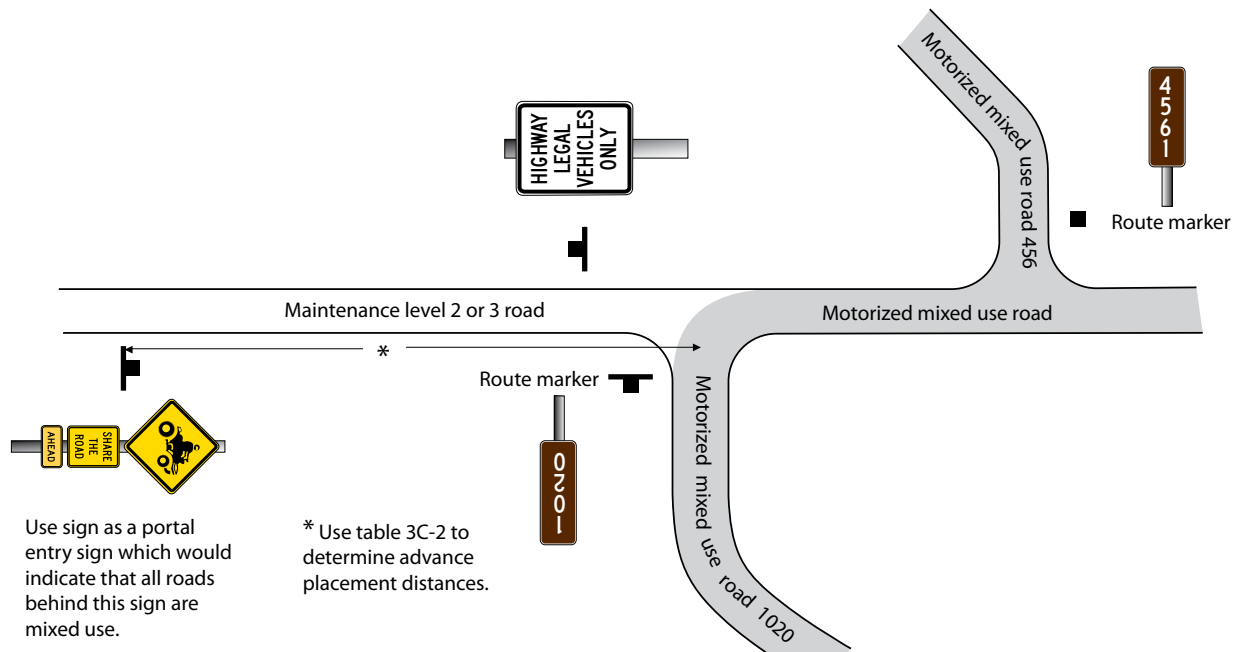


Figure 3D-9—Signing for motorized mixed use on National Forest System roads.

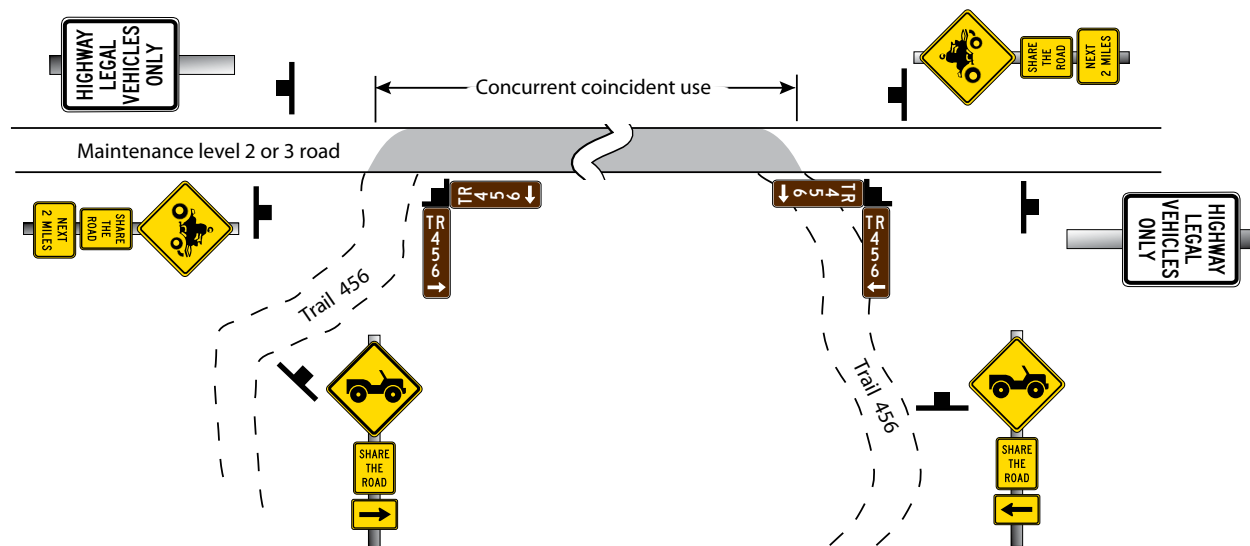


Figure 3D-10—Signing for a road and trail that have concurrent coincident use on a segment.

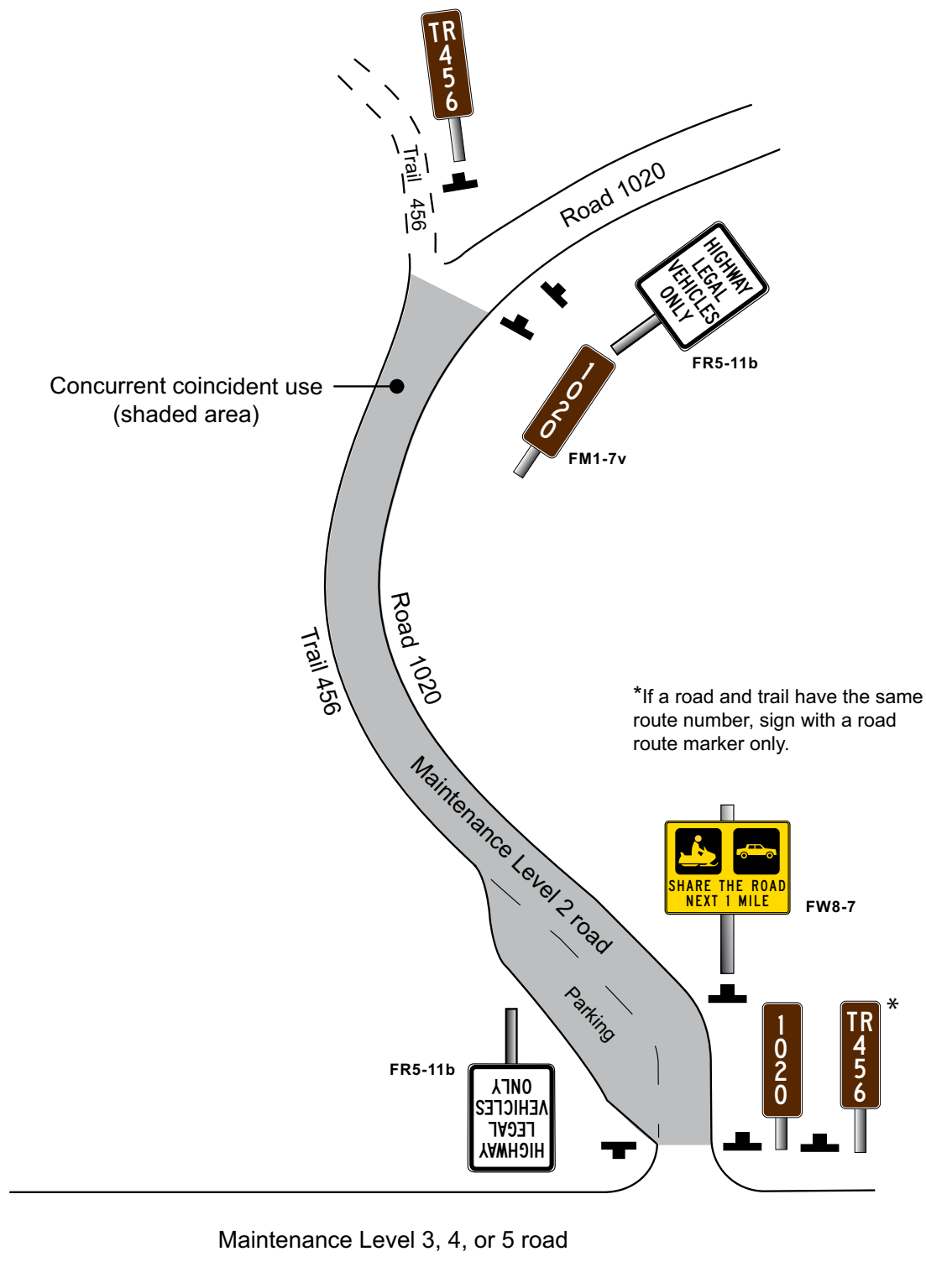


Figure 3D-11—Signing for a road and trail that have concurrent coincident use on a segment beginning at the intersection of two roads.

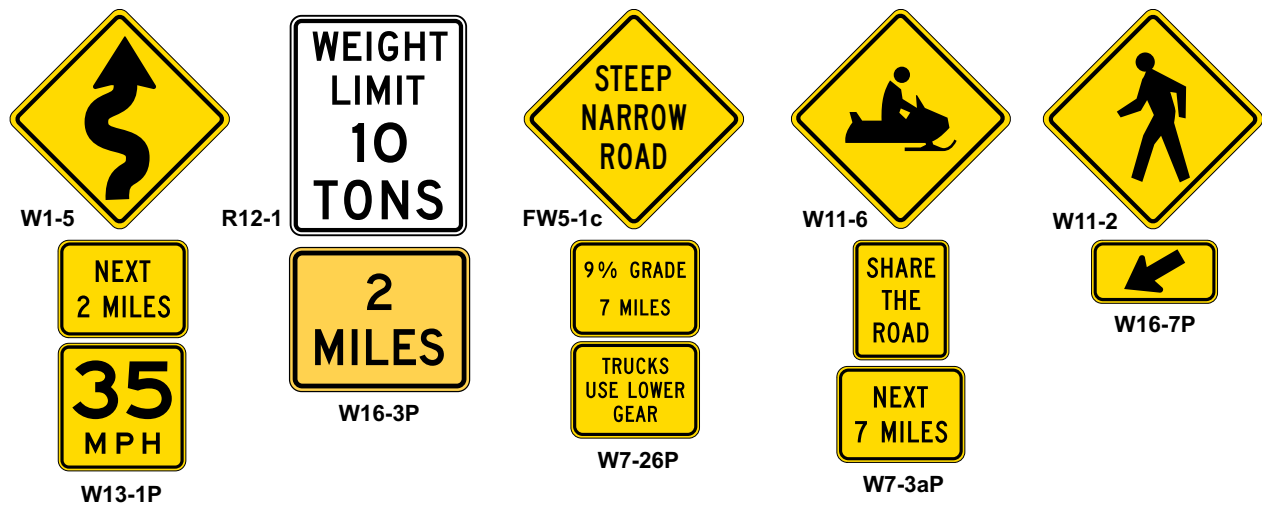


Figure 3D-12—Typical placement order for supplemental plaques.

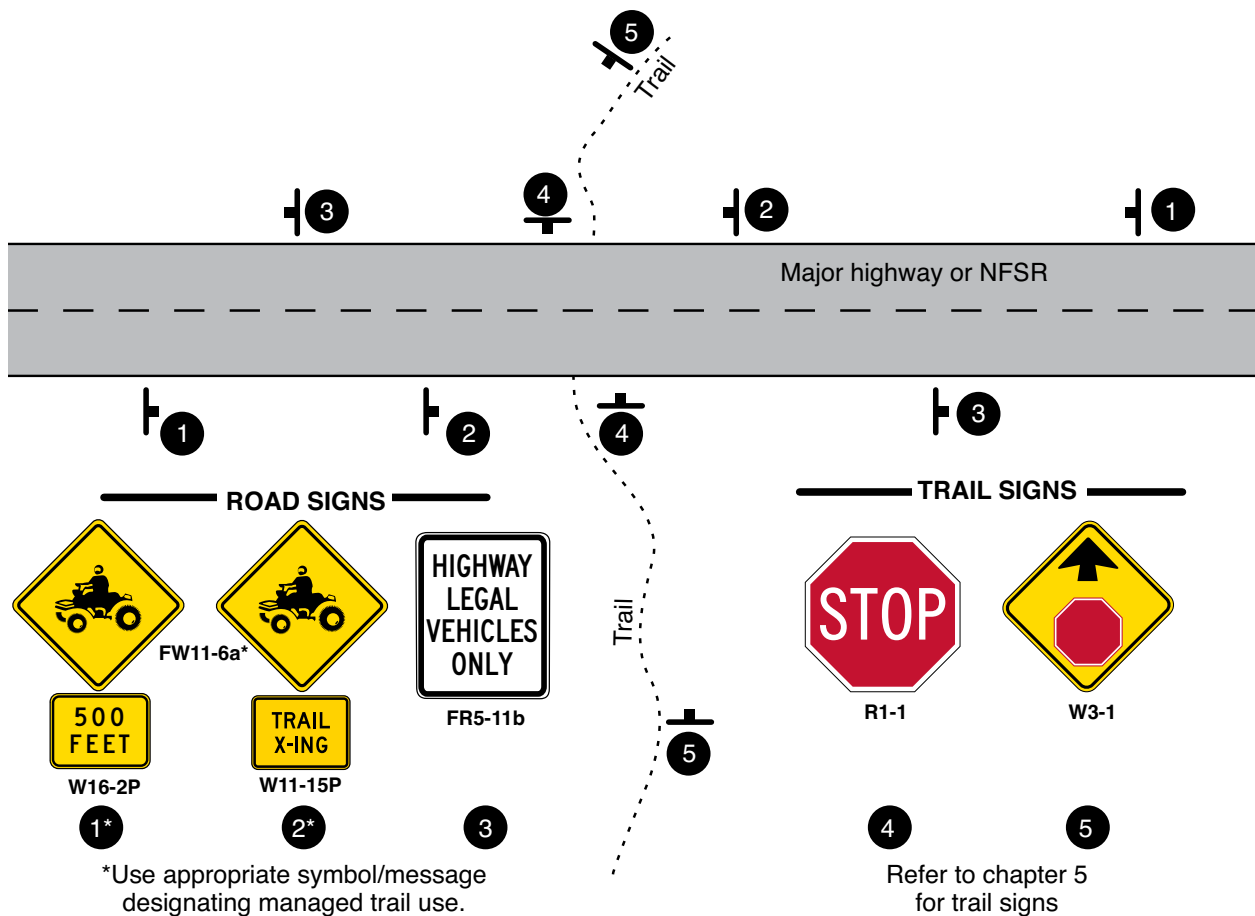


Figure 3D-13—Typical placement of regulatory and warning signs for motorized trail and road crossings.

Guide sign location examples are shown in figures 3D-14 through 3D-20.

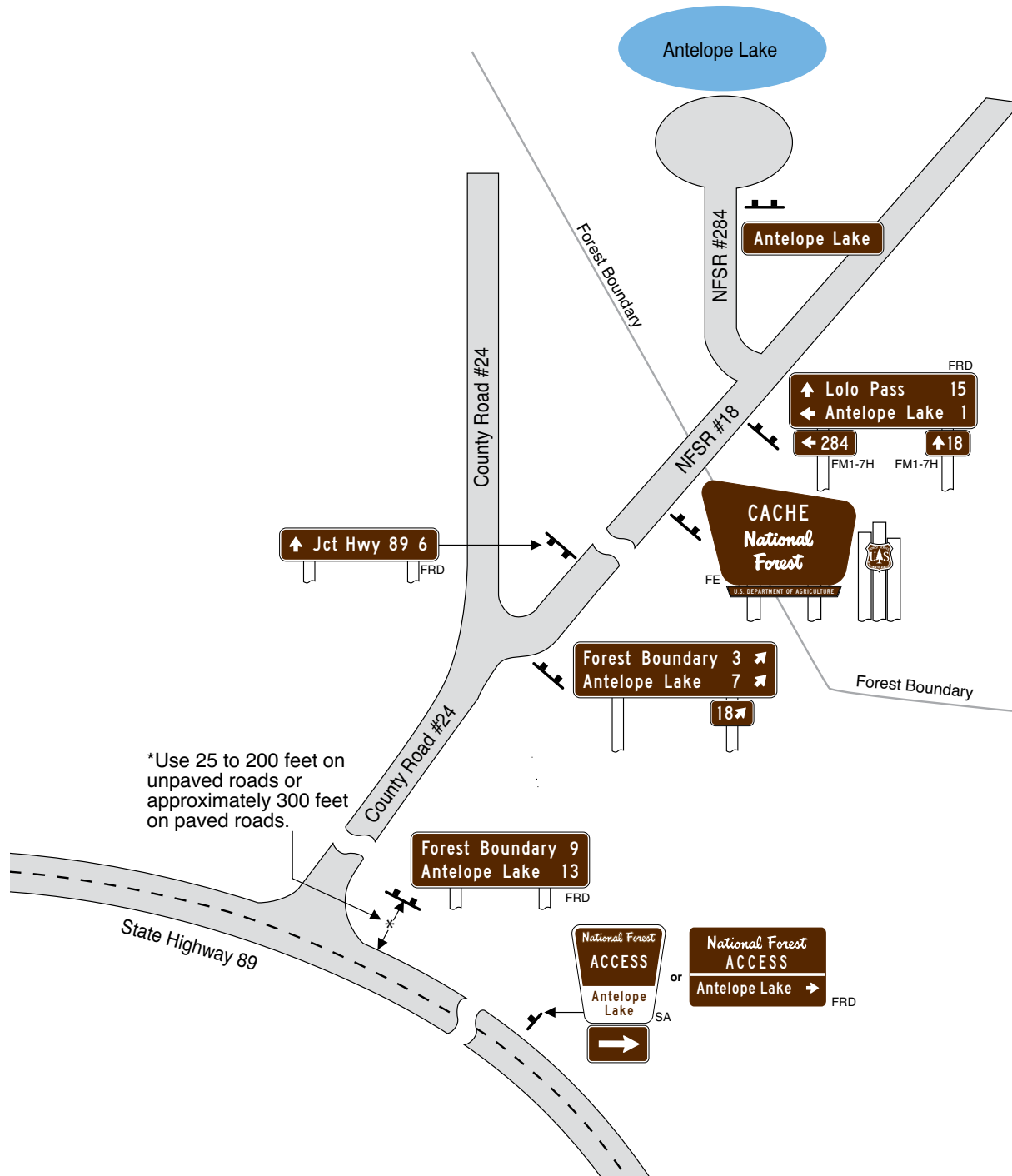


Figure 3D-14—Typical placement of guide, destination, and National Forest Access Signs.

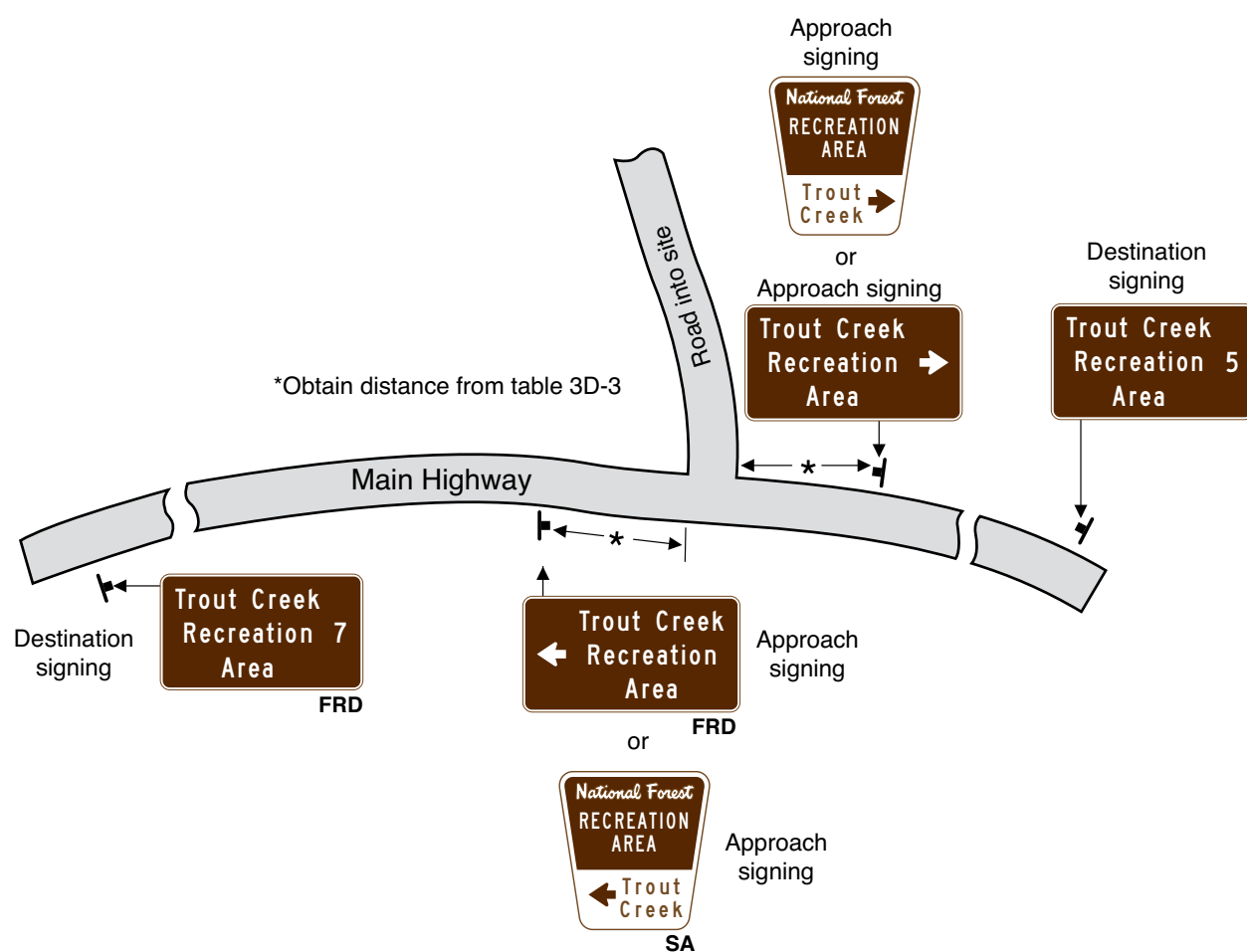


Figure 3D-15—Site destination and site approach signing examples.

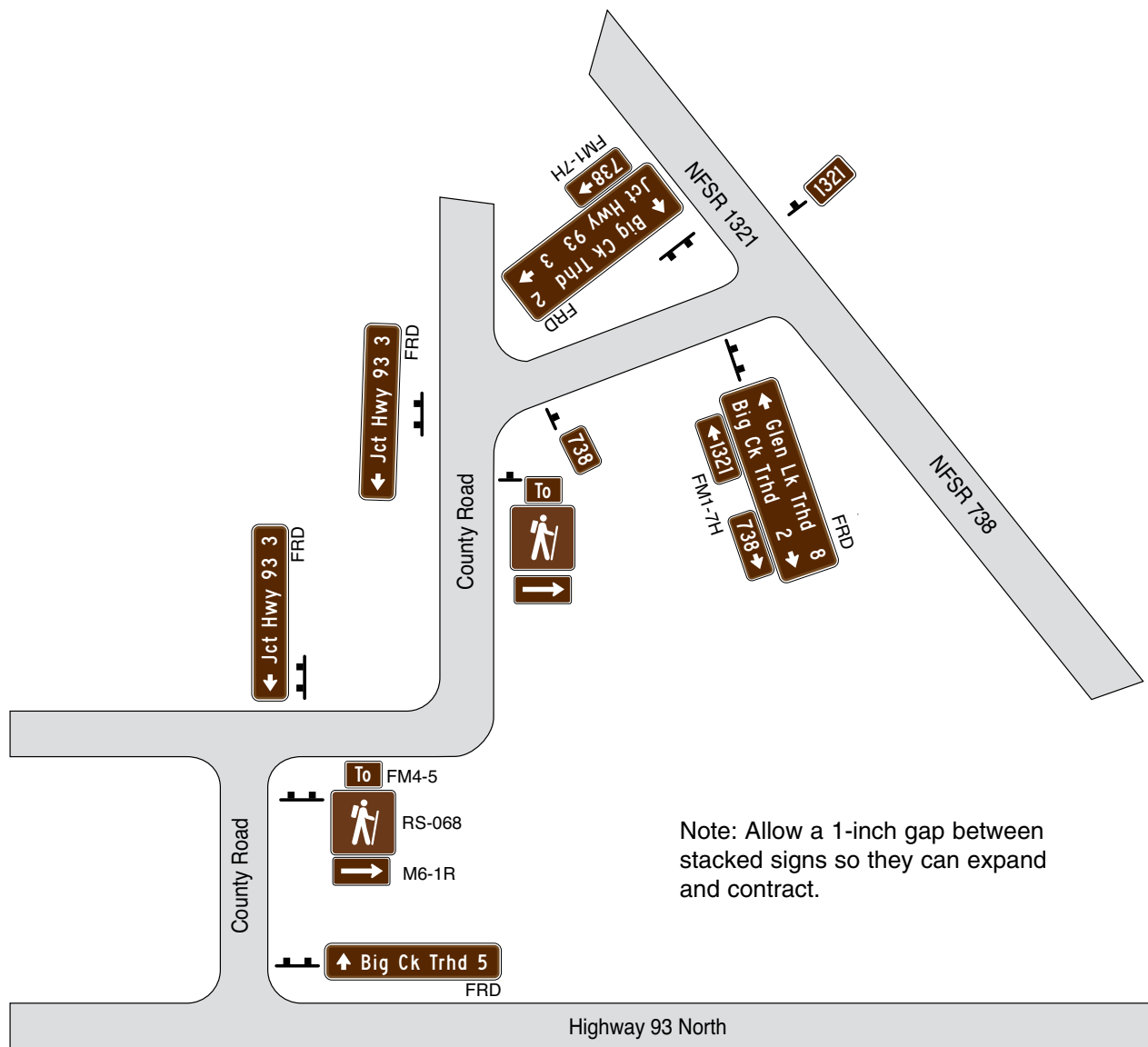


Figure 3D-16—Typical placement of destination signs, route markers, and trailblazer assemblies.

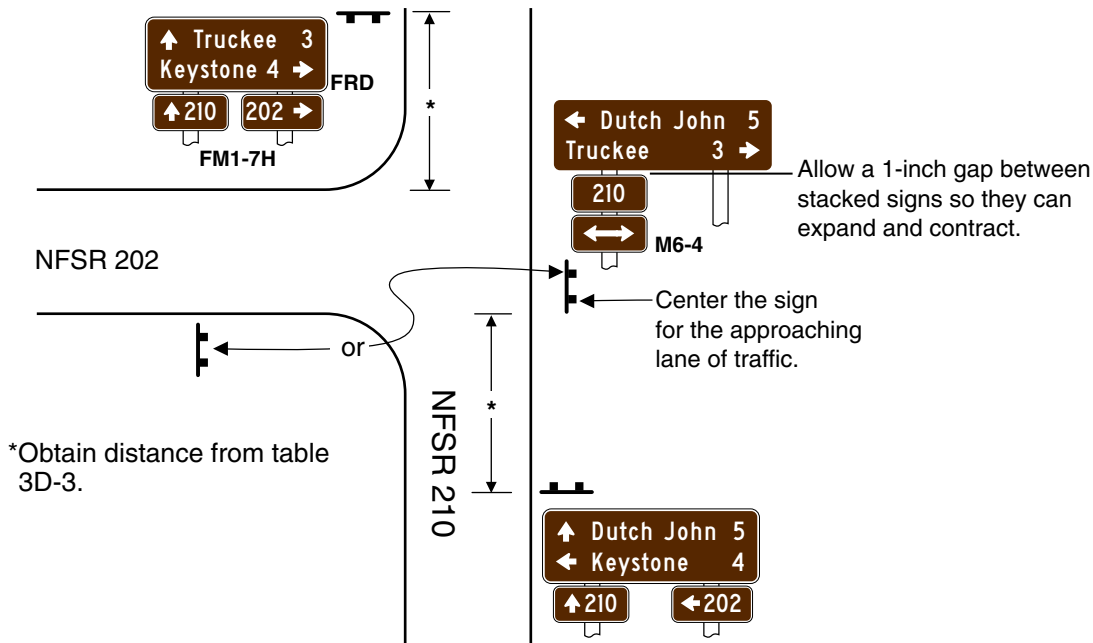


Figure 3D-17—Typical placement for destination signs with route markers.

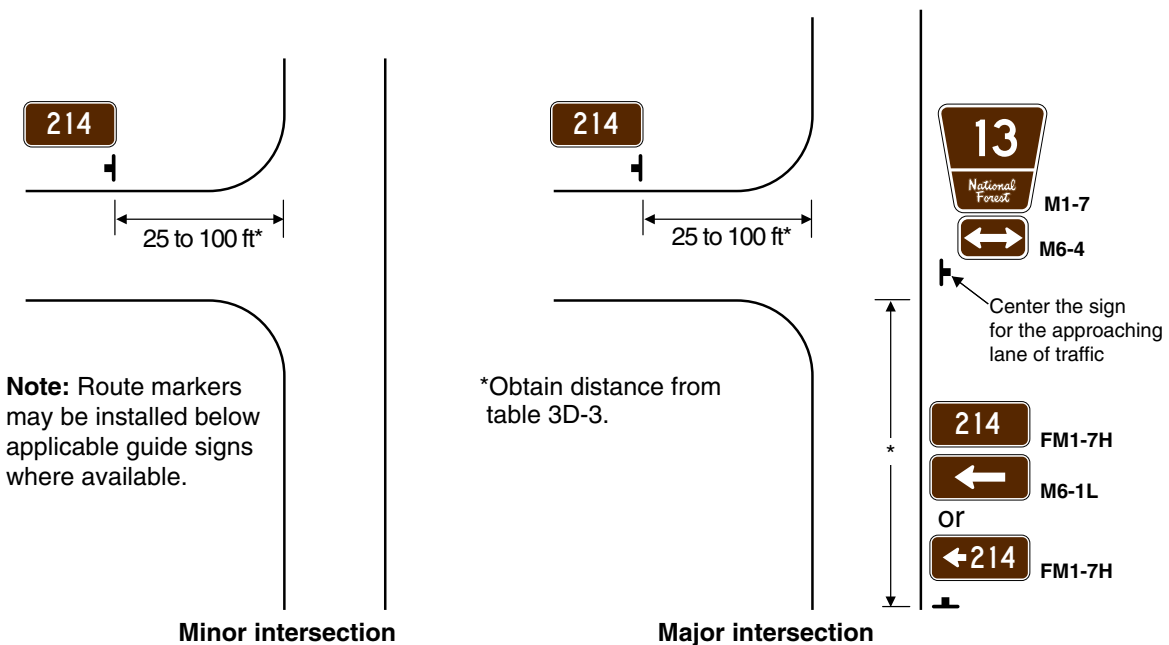


Figure 3D-18—Typical locations for distinctive and horizontal route markers, for use on Maintenance Level 3, 4, and 5 roads.

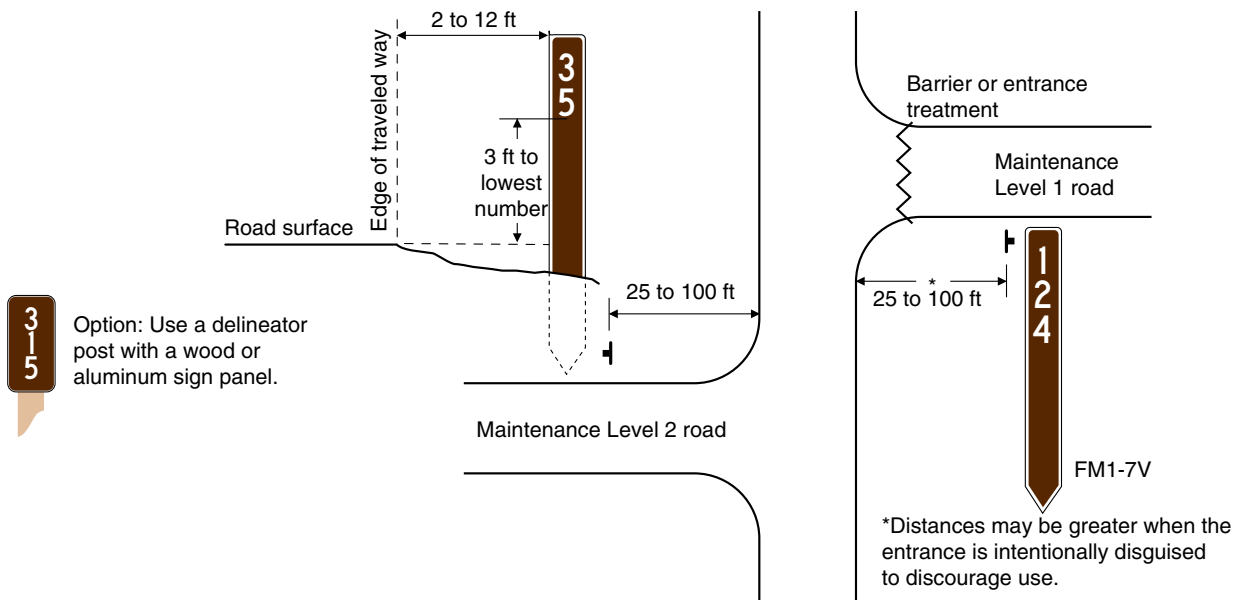
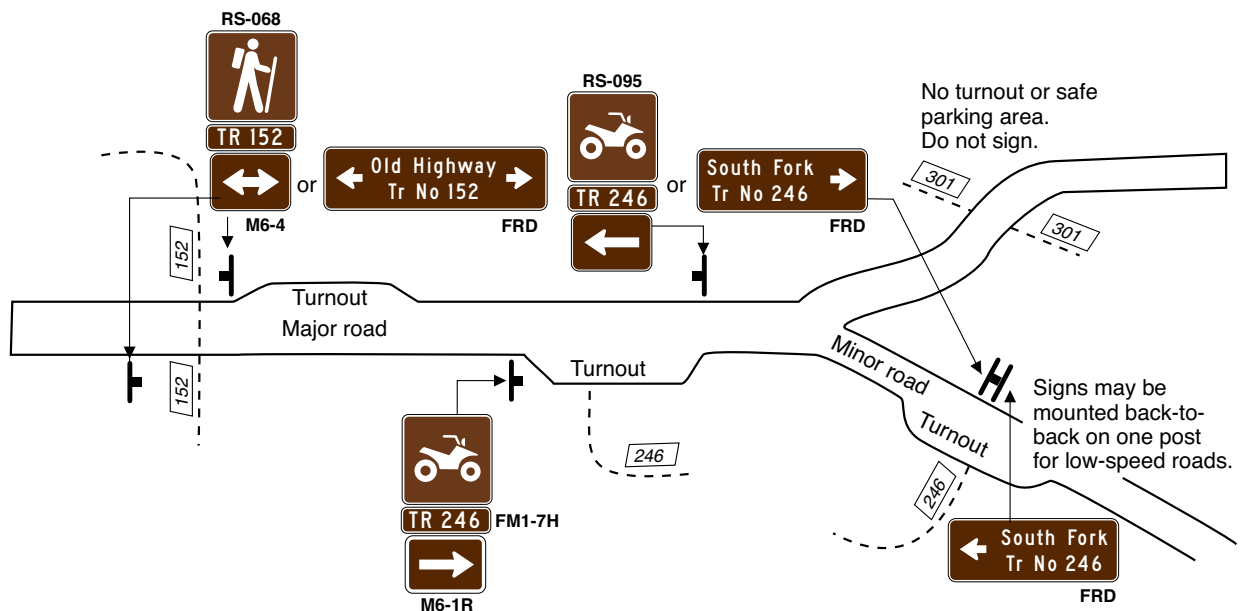
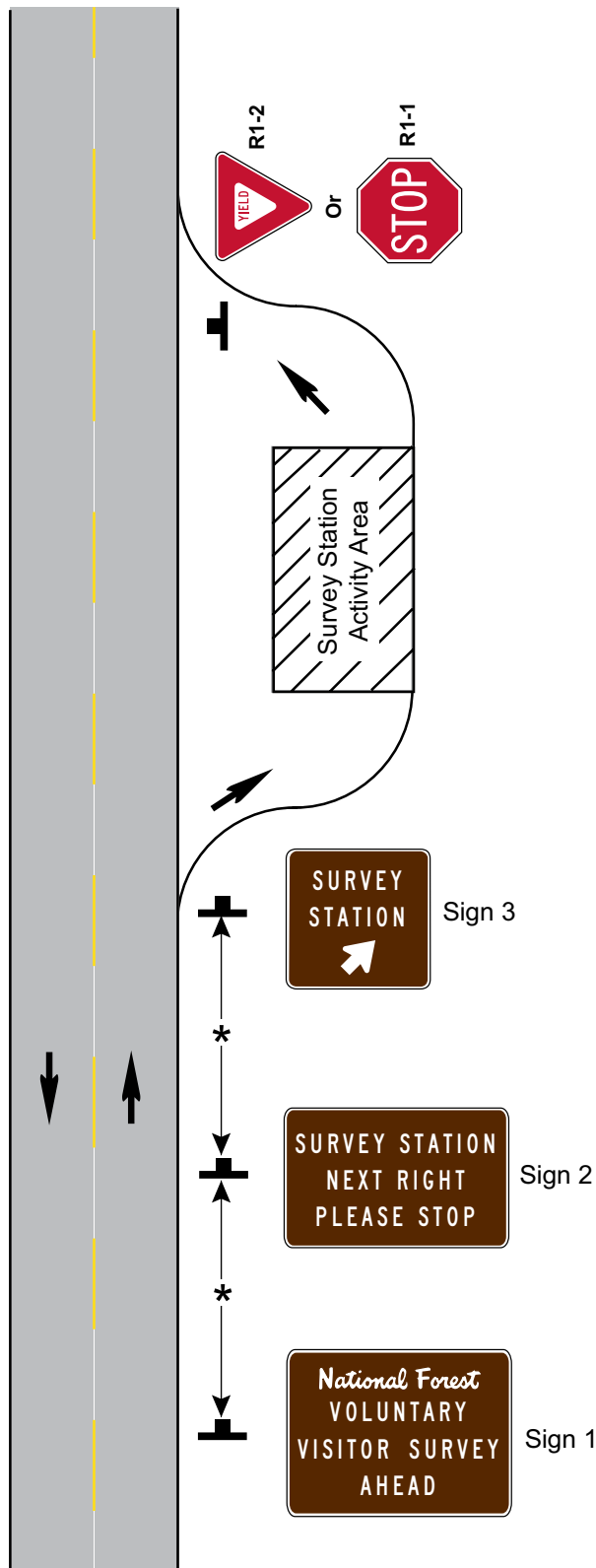


Figure 3D-19—Typical locations for vertical route markers, for use on Maintenance Level 1 and 2 roads.



Use appropriate Recreational and Cultural Interest Area symbols for trail use. Trail junctions should be signed with appropriate route markers, destination signs, and reassurance markers. Refer to chapter 3E, section 3E.6B for arrow details below recreation symbols.

Figure 3D-20—Typical placement of road guide signs for trail crossing or beginning at roads.



Application Notes

Use the National Forest VOLUNTARY VISITOR SURVEY AHEAD guide sign to inform road users that they are approaching a voluntary survey station. Distances may be expressed as AHEAD, XX FEET, or XX MILE. (Sign 1).

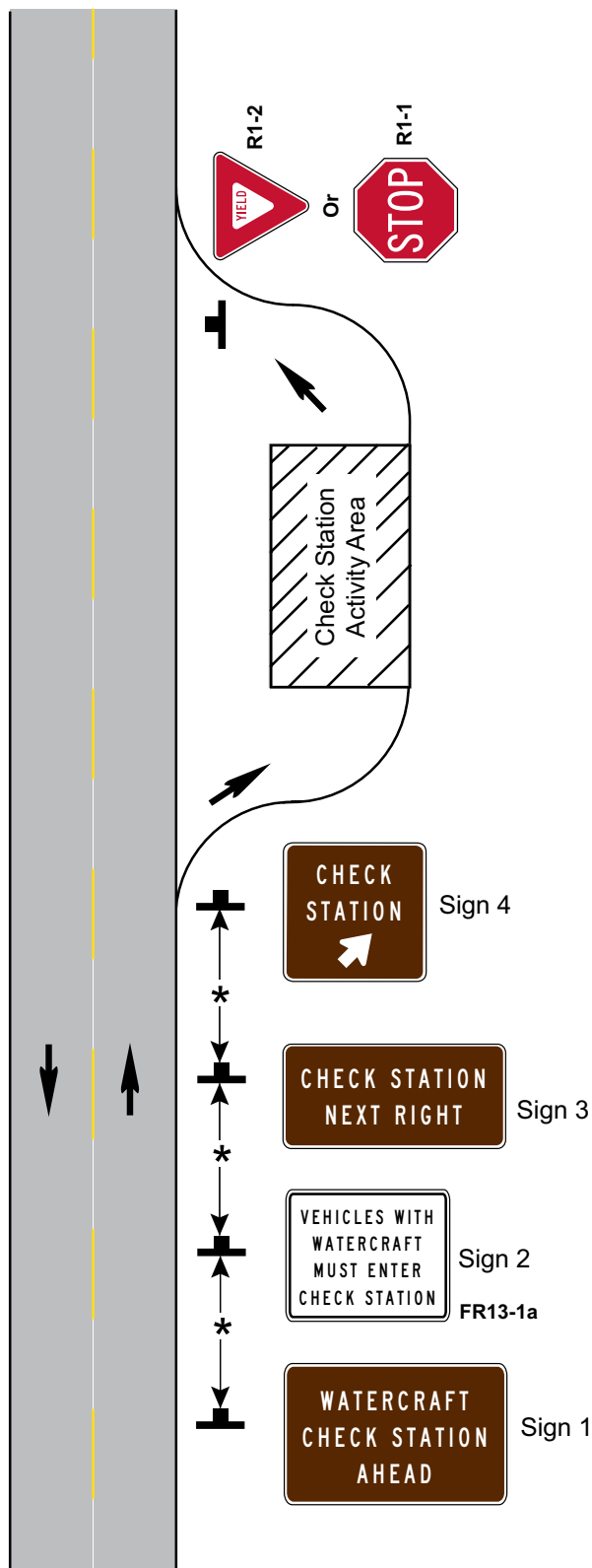
Use the SURVEY STATION NEXT RIGHT PLEASE STOP guide sign to inform the road users that they need to begin to slow down in order to exit the road and enter the survey station activity area (Sign 2).

Use the SURVEY STATION with directional arrow guide sign to indicate that the road user must exit at this location to participate in the survey (Sign 3).

A STOP or YIELD sign may be used to control traffic reentering the road from the check station activity area. Use is optional and based on engineering judgment.

* Obtain distances from table 3D-3.

Figure 3D-21—Survey station with optional compliance.



Application Notes

Use the appropriate guide sign, such as WATERCRAFT CHECK STATION AHEAD to inform road users that they are approaching a check station. Distances may be expressed as AHEAD, XX FEET, or XX MILE (Sign 1).

Signs may be modified depending on the type of check station, such as LOGGING, GAME ANIMAL, FIREWOOD, FOREST PRODUCTS, etc.

Use the regulatory sign FR13-1a to inform the targeted road users that the check station is mandatory. Use only if supported by law or CFR order (Sign 2).

Messages may include options, such as:
VEHICLES WITH WATERCRAFT
VEHICLES WITH GAME ANIMALS
VEHICLES WITH FIREWOOD, etc.

Use the CHECK STATION NEXT RIGHT guide sign to inform the affected users that they need to begin to slow down in order to exit the road and enter the check station activity area (Sign 3).

Use the CHECK STATION with directional arrow guide sign to indicate that the road user must exit at this location (Sign 4).

A STOP or YIELD sign may be used to control traffic reentering the road from the check station activity area. Use is optional and based on engineering judgment.

* Obtain distances from table 3D-3.

Figure 3D-22—Check station with mandatory compliance.

3D.5 Object Markers and Barricade Markers

Type 3 object markers are used to mark objects that intrude into or constrict the roadway. Figure 3D-23 shows correct mounting of Type 3 object markers.

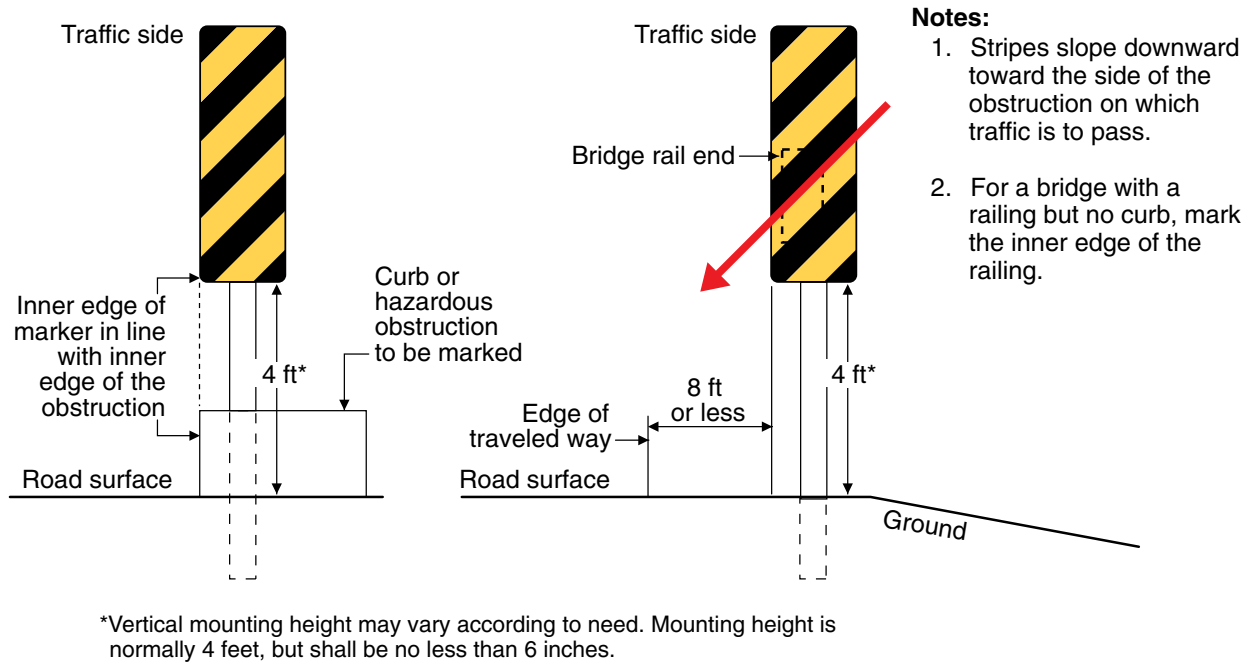


Figure 3D-23—Typical placement for Type 3 object markers on a narrow bridge.

When cattle guards are marked by object markers, a dual-faced object marker (a right face on the front side and a left face on the back side) may be mounted on a single post placed on the middle edge of each side of the cattle guard. Another option is to place dual-faced object markers on the opposite right corners of the cattle guard. (Both examples are shown in figure 3D-24.)

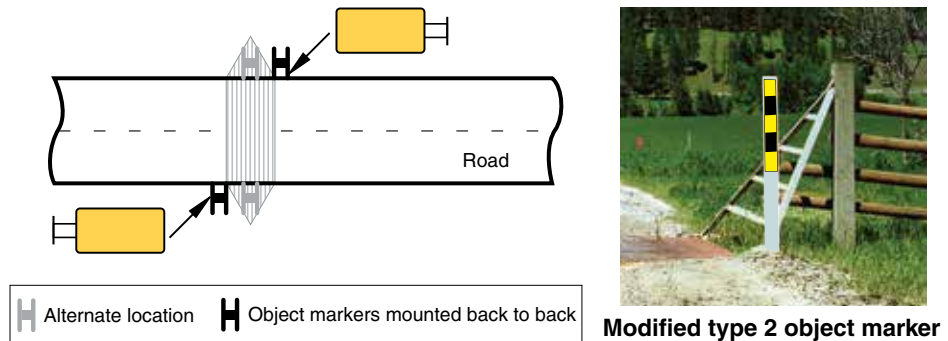
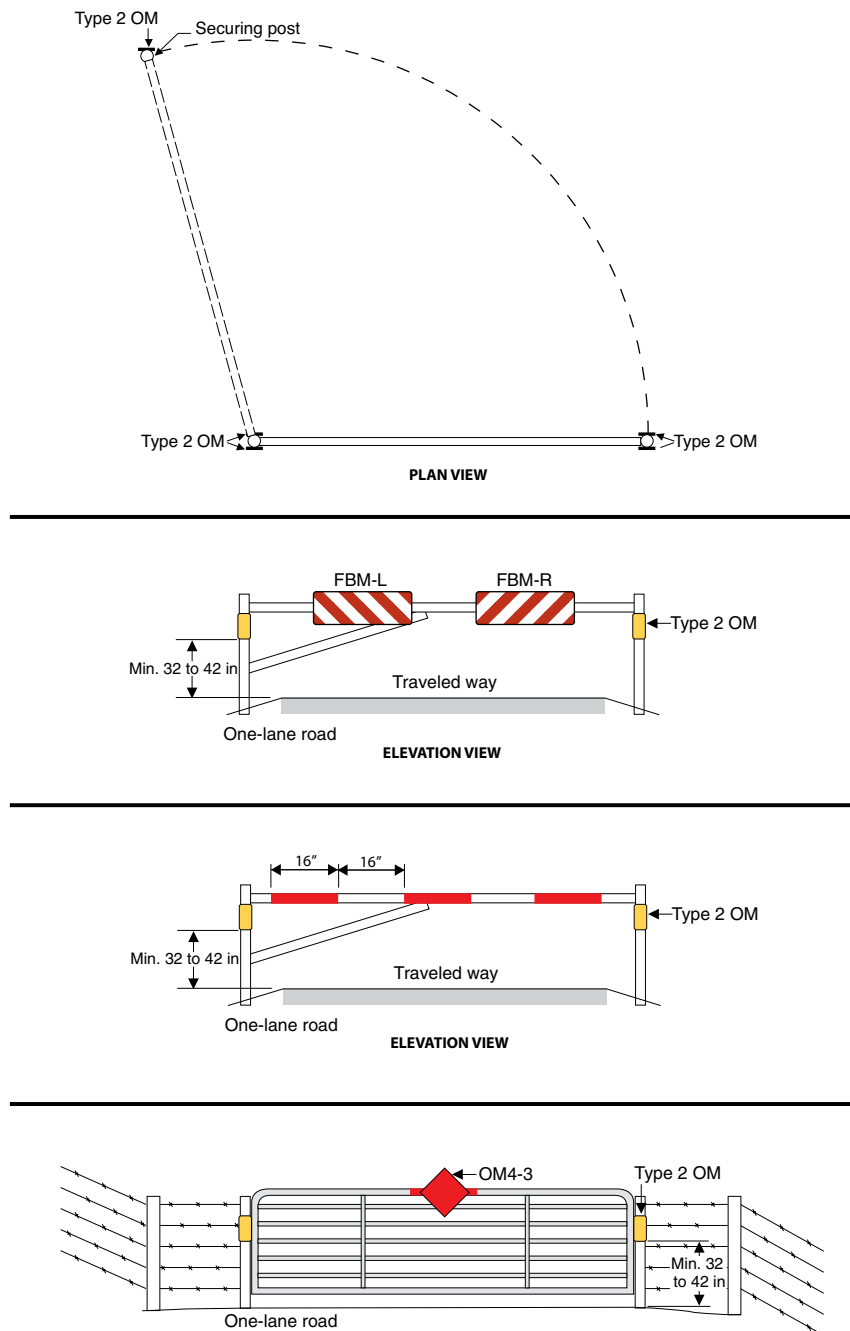


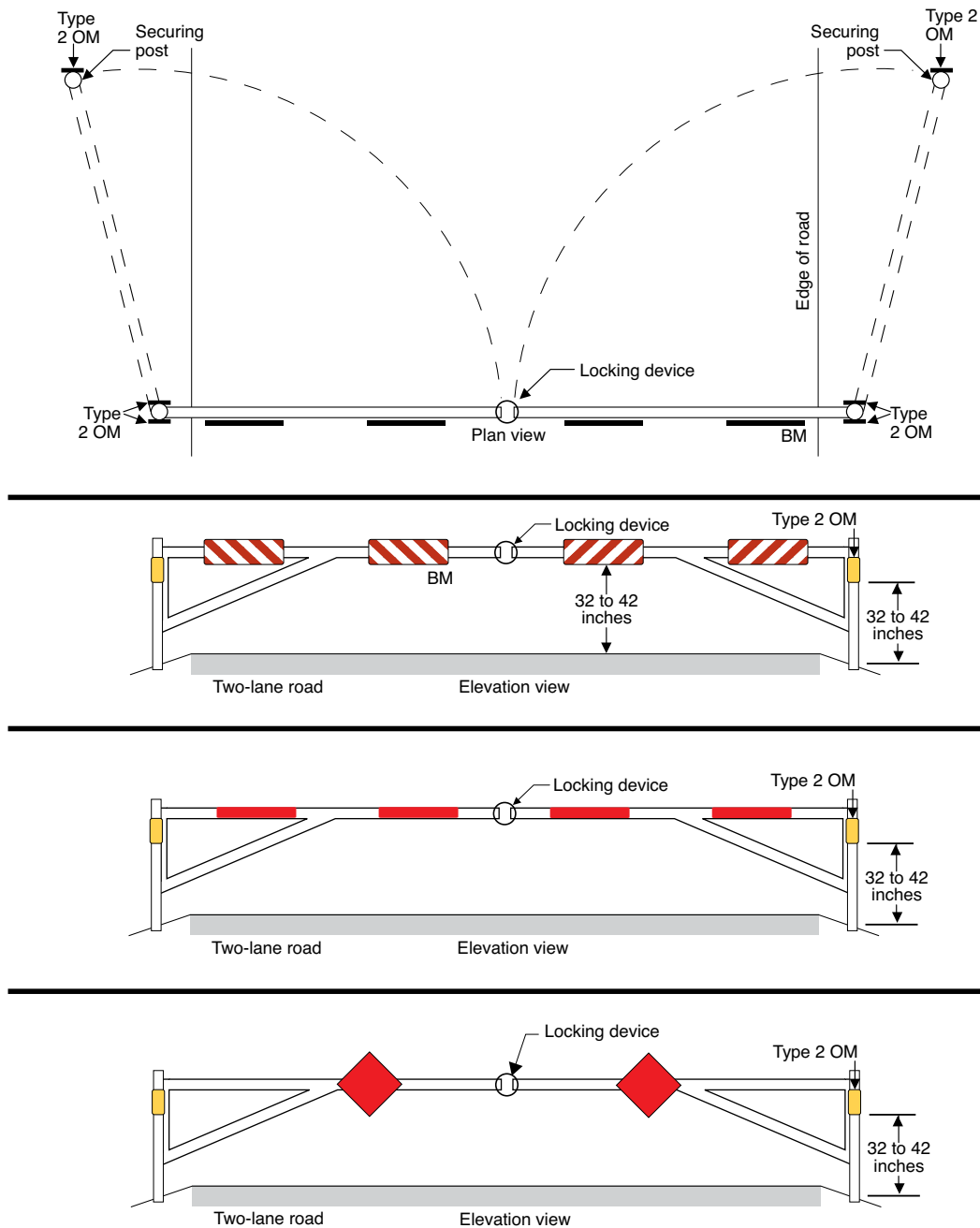
Figure 3D-24—Object marker locations on a cattle guard where the cattle guard is not constricting the roadway.



If motorized or mechanized use, such as bicycles, occurs behind a gate, the back sides of the barrier or gate may require signing also.

The tape shall be red and white striped and wrapped fully around the large members of closure gates. It should be overlapped at the bottom, and the seam should be protected from collecting moisture. This option makes it harder to vandalize the gate markings and also allows for visibility from both sides of the gate.

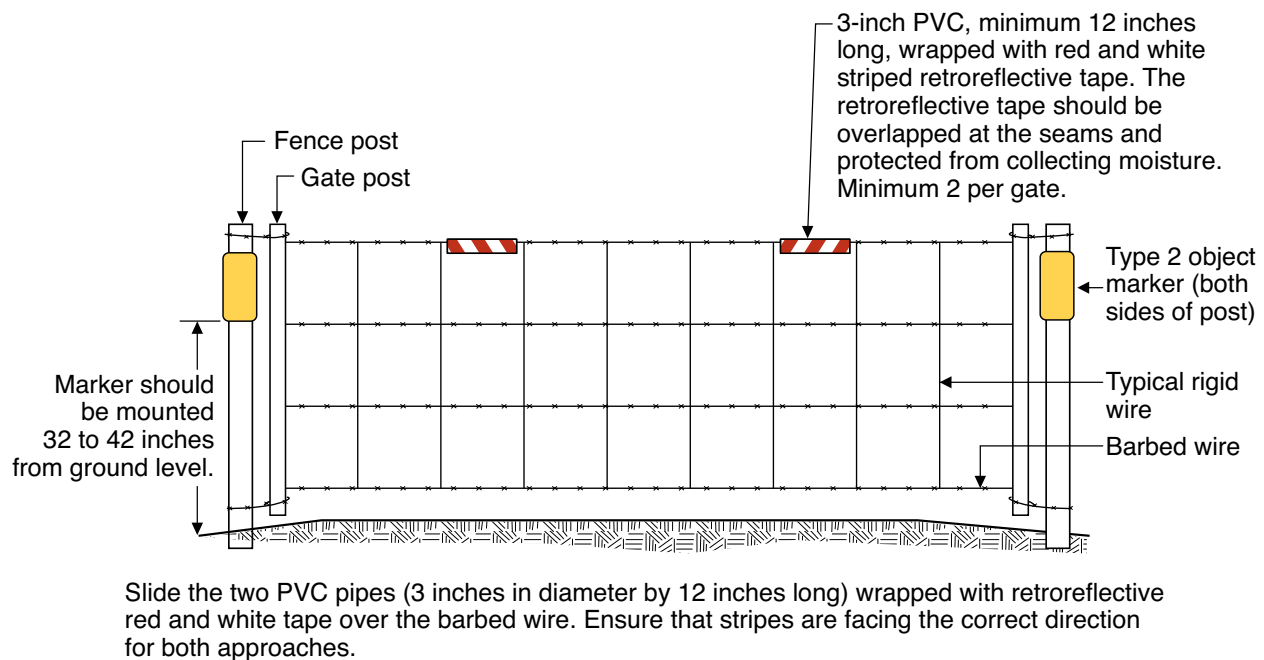
Figure 3D-25—Typical gate and barricade markers, including modified red and white barricade markers, end-of-roadway markers, and red and white retroreflective tape.



If motorized or mechanized use, such as bicycles, occurs behind a gate, the back sides of the barrier or gate may require signing also.

The tape shall be red and white striped and wrapped fully around the large members of closure gates. It should be overlapped at the bottom, and the seam should be protected from collecting moisture. This option makes it harder to vandalize the gate markings and also allows for visibility from both sides of the gate.

Figure 3D-26—Typical gate and barricade markers for double lane roads including modified red and white barricade markers, end of roadway markers, and red and white retroreflective tape.



Note: The retroreflective-taped PVC may be replaced with 2 FBM1's placed equidistant right and left from the top center of the gate with stripes slanted downward to the center of the gate or OM4-3 placed at the top center of the gate.

Figure 3D-27—Wire-fence gate marking. May be used on low-volume roads with speeds less than 35 mph.

3D.6 Delineator Positioning and Spacing

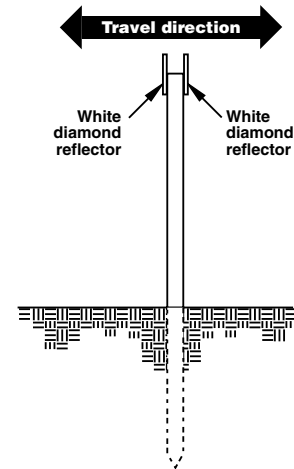
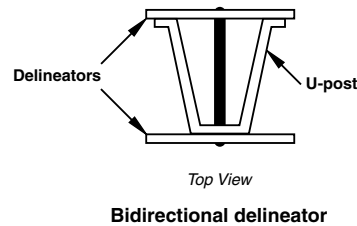
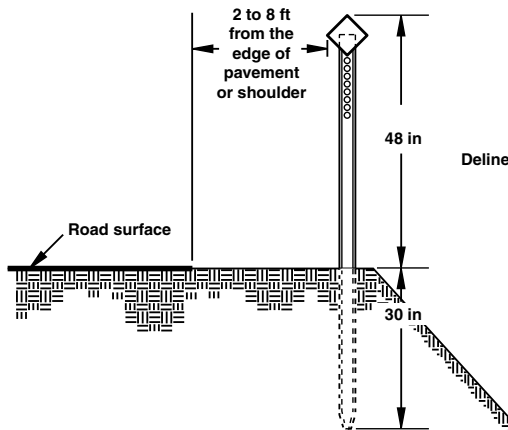
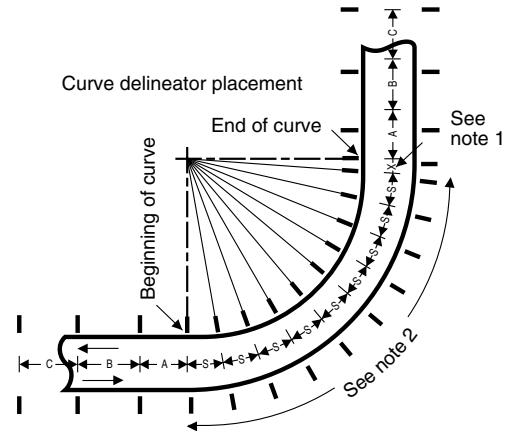
When engineering judgment indicates a need, figure 3D-28 shows the position and spacing of delineators for curves on low-volume roads.

Place delineators perpendicular to the oncoming traffic. At least three delineators should be visible throughout the curve. The color of delineators should be white for both directions of travel.

Operating speed (mph)	Approx. curve radius (ft)	On-curve spacing (ft) S	Spacing before and after curve (ft)		
			A	B	C
20	100	25	50	75	150
30	250	40	80	120	240
40	500	65	130	195	300
50	800	80	160	240	300
60	1,000	90	180	270	300

Notes:

1. Prorate distance "x" among all spacings so that the last delineator falls on the end of the curve.
2. Install delineators perpendicular to oncoming traffic.

**Notes:**

1. Colors (as viewed by driver) on two-way roads, including single-lane roads, are white on both sides of the road. On one-way roads, colors are white on the right and yellow on the left side of the road. (From the MUTCD, section 3F.03.)
2. Delineator posts may be galvanized steel U-posts. 1.12 pounds per linear foot, 6.5 feet long, or flexible fiberglass posts.
3. Reflectors may be fastened to posts using rivets or other suitable, nonremoveable fasteners.
4. The delineators shall be 4- by 4-inch (silver) crystal on both sides. Type 3 retroreflective sheeting. The delineator housing shall be the bidirectional type.

Figure 3D-28—Delineator placement and spacing on curves.

3D.7 Sign Posts

Posts are used to hold signs in a proper and permanent position and to resist swaying in the wind.

A sign support can become a deadly hazard when struck by a vehicle; therefore the MUTCD requires that all sign posts installed within clear zones shall be breakaway, yielding, or shielded by a barrier or crash cushion. Refer to section 3D.2.3.

Breakaway sign supports will break or bend upon impact. This includes sign posts that separate from the base and are knocked ahead of or up-and-over the vehicle. A “yielding” support will bend, allowing the vehicle to run over it. To avoid undercarriage snagging, no more than a 4-inch substantial stub should protrude from the ground after a vehicle has hit a sign post.

Do not add supports and braces to sign posts unless crash tested with supports and braces in place. Extra posts and braces could significantly affect the crash performance of an otherwise acceptable design

Do not add supports and braces to sign posts unless crash tested with supports and braces in place.

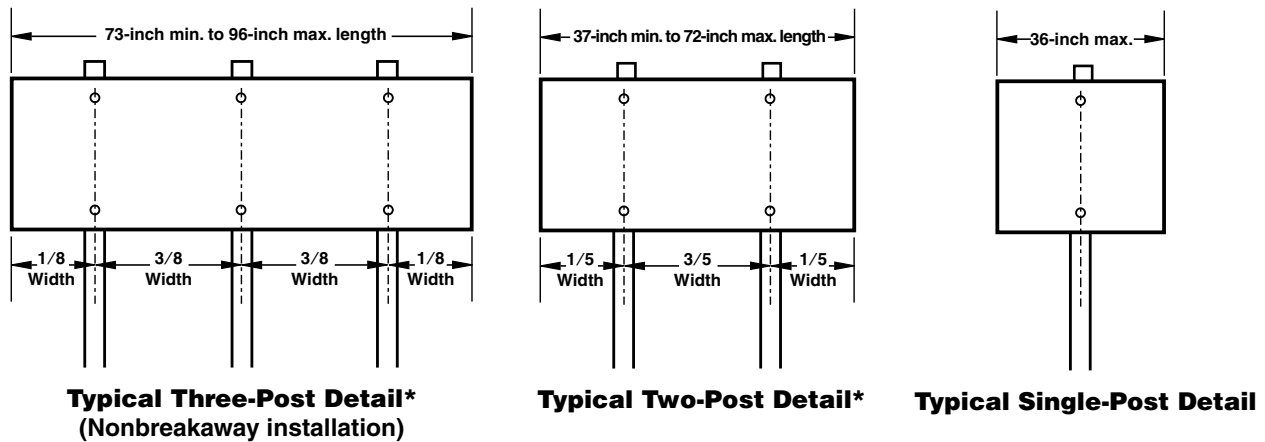
Posts should be installed vertical. Visibility of the sign will diminish if not vertically straight. Posts may need to be buried deeper than recommended to reduce vandalism and reduce dislodging by heavy winds or snow thrown by snow plows. The three most common post types for Forest Service applications are:

- Pressure-treated wood.
- Square or round tube steel.
- U-channel steel.

Use wood or steel posts for small signs less than 50 square feet. Small signs typically will need one or two posts.

Use specially designed steel or aluminum posts for large signs greater than 50 square feet.

Larger signs require multiple supports as shown in figure 3D-29. All supports within a 7-foot width are considered to be acting together. In these cases, install no more than the allowable number of posts in a 7-foot width so that the combined sign and support system will meet breakaway guidelines.



*Post spacing applies to both wood and steel posts.

**For sizes of steel posts, refer to section 3D.7.2.

***The maximum width is 36 inches for diamond-shaped signs.

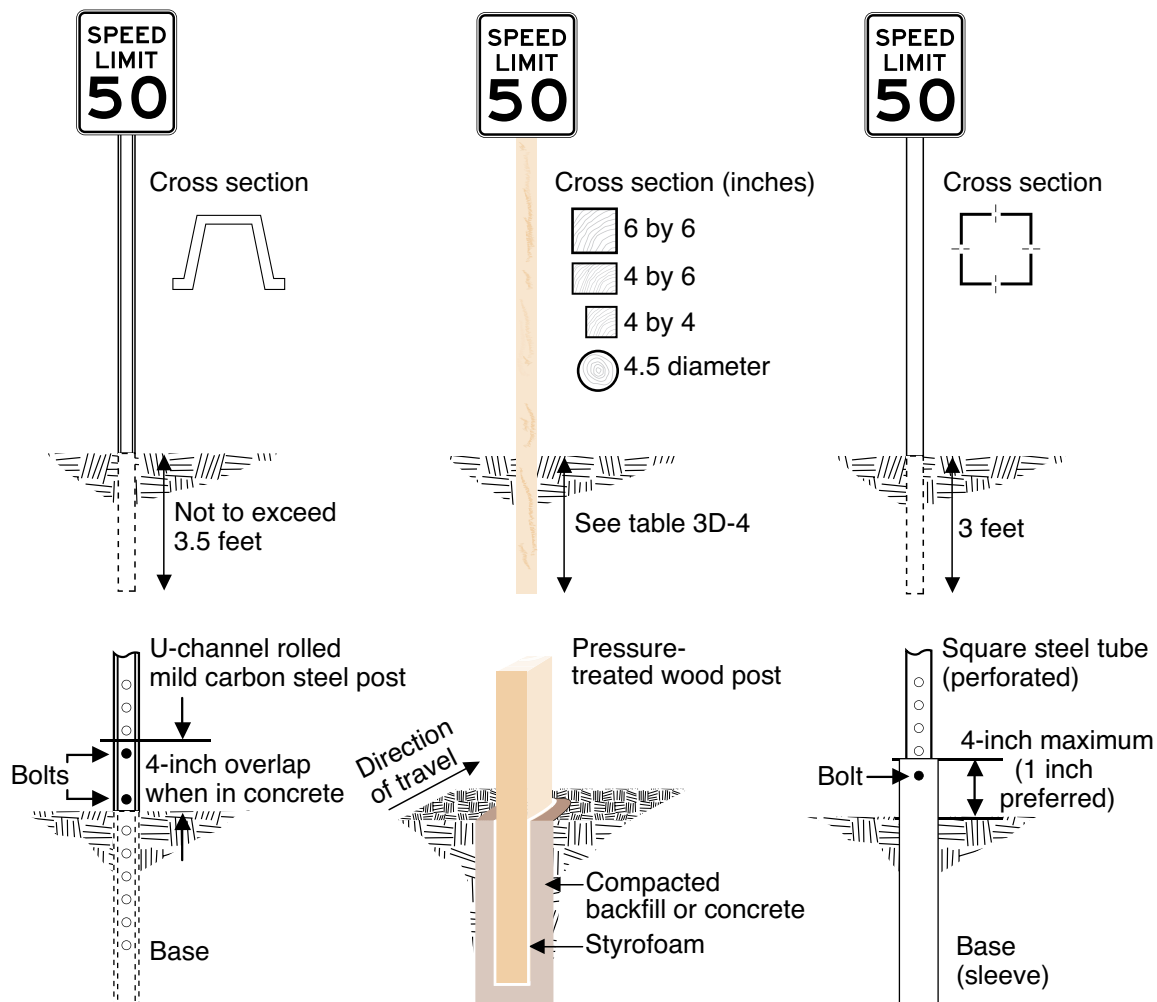
Nonbreakaway sign posts should be installed outside the clear zone, behind a guardrail, or behind a nontraversable ditch.

Wood Post Size** (in)	One post		Two posts		Three posts	
	Max. width (in)	Max. sign area (sq. ft)	Max. width (in)	Max. sign area (sq. ft)	Max. width (in)	Max. sign area (sq. ft)
4 by 4	48***	10	72	20	96	30
4 by 6	48	20	72	50	144	75
6 by 6	48	20	96	95	—	—

Figure 3D-29—Typical post spacing and size requirements.

Posts are installed by direct driving, drilling and backfilling, or setting in a concrete foundation. In soft soils, soil bearing plates, or concrete footings may be needed to hold the sign in a stable position.

Refer to figures 3D-30 and 3D-31 and tables 3D-4 through 3D-6 for detailed information, requirements, and breakaway/yielding guidelines for these posts. The total installation cost for these post types is not significantly different. Decisions to use post types should be based on site specific conditions, weather, soil, vandalism, local availability, and maintenance issues.



U-Channel Steel Post

The U-channel, rolled, milled, carbon steel post will bend, break, or pull out of the ground when it is hit.

The post should be driven into the ground and not encased in concrete. Drive posts into the ground no more than 3.5 feet to make it easier to pull out damaged posts.

Splices can be purchased commercially to install at ground level (see drawing). They allow the post to break off on impact. These devices improve safety when the post is hit and will make repair easier in concrete.

Pressure-Treated Wood Post

Pressure-treated wood posts of the proper size and installation will break off when hit by a vehicle. They should be pine, grade 2 or equivalent, and pressure treated.

Posts should be buried in firm ground. Minimum recommended direct burial depth is shown in table 3D-4.

Posts larger than 4 by 4 can be used if the cross section is weakened by drilling holes as shown in figure 3D-20 (drill perpendicular to roadway).

A 4.5-inch diameter round post is considered equal to a 4 by 4-inch post but it is difficult to keep signs oriented correctly.

Wrapping the post with a 0.5-inch sheet of styrofoam before encasing it in concrete will make replacement easier.

Square Steel Tube (Perforated)

The square steel tube design with pre-punched holes will break or pull out of the ground when hit.

Posts can be driven into the ground. Do not place concrete around the post. A broken or damaged post is easier to remove if it is not driven or set into the ground more than 3 feet.

Sleeve assemblies like the one shown in the drawing will increase the safety of a sign when it is hit and make it easier to repair. After the sign has been hit, the broken stub of the post can be removed from the base sleeve and a new sign post put back in place.

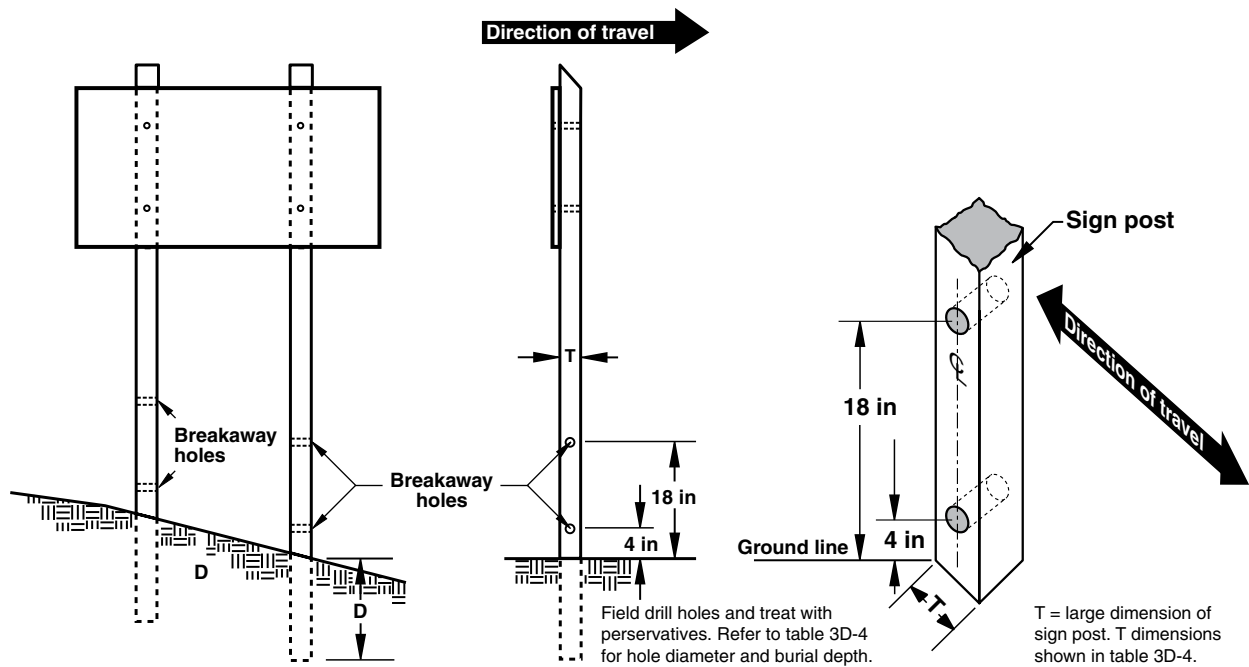
Figure 3D-30—Sign post installation details.

3D.7.1 Wood Posts

Follow guidelines in figures 3D-29 through 3D-31 and table 3D-4 for wood posts.

Wood posts that are 4 inches by 4 inches or have a cross-sectional area of 24 square inches or smaller are considered to meet breakaway standards when installed in normal soil conditions. 4 by 4 posts are susceptible to breakage in snowplow areas.

Wood posts larger than 4 inches by 4 inches or a cross-sectional area of 24 square inches or greater, require specific-sized holes be drilled perpendicular to traffic flow in exact locations and the post installed with the holes properly oriented to the traffic to meet breakaway standards as shown in figure 3D-31.



*All posts closer than 7 feet from each other act together. Install no more posts than allowed within 7 feet of each other so the combination of posts meets the breakaway guidelines.

Breakaway Design Requirements			
Post size (in)	Hole diameter (in)	D minimum burial depth (ft)	B minimum breakaway distance (ft)
4 by 4	—	3	—
4 by 6	1.5	4	—
6 by 6	2	4	7
6 by 8	3	4	7

Breakaway holes must be perpendicular to the direction of vehicle travel.

Dimension T is parallel to the direction of vehicle travel and is the larger of the dimensions.

After installing the sign post, drill the breakaway holes and treat holes with preservative.

Figure 3D-31—Wood sign post breakaway guidelines.

Table 3D-4—Pressure-treated wood post

Post specifics (inches)	Minimum burial depth (feet)	Diameter of holes* (inches)	Number of posts in 7-foot width*	Suggested maximum sign size (square feet)
4 by 4 – direct burial	3	N/A	1	10 (48-inch max. width) 36-inch width for diamond sign
	3	N/A	2	20 (72-inch max. width)
	3	N/A	3**	30 (96-inch max. width)
4 by 6 – direct burial Note: put 6-inch dimension parallel to traffic direction	4	1 ½	1	20 (40-inch max. width)
	4	1 ½	2	50 (72-inch max. width)
	4	NA	3**	75 (96-inch max. width)
6 by 6 – direct burial	4	2	1	20 (48-inch max. width)
	4	NA	2**	95 (96-inch max. width)
6 by 8 direct burial Note: put 8-inch dimension parallel to traffic direction	4	3	1	Larger signs in high wind area
	4	NA	2**	Larger signs in high wind area

* Breakaway details—See figure 3D-31 for breakaway hole placement information.

**Does NOT meet breakaway standards. Sign must be behind barriers or out of clear zone.

3D.7.2 Square or Round Tube Steel Posts

Follow guidelines in figures 3D-29 and 30, and table 3D-5 for square or round tube steel posts.

Square tube steel posts are considered breakaway if they are 2¼ inches or less in size. For larger posts, use sleeve assemblies or slip couplings for the base to make it breakaway or yielding. This also will make it easier to repair if the post is damaged. Refer to figure 3D-30. The post should be driven into the ground and not encased in concrete. A broken or damaged post is easier to remove if it is not driven or set into the ground more than 3 feet.

Table 3D-5—Square steel tubing (perforated)

Post specifications	Burial (feet depth)	Number of posts in 7-foot width*	Suggested maximum sign width (inches)
1.75–12 gauge with sleeve	3	1	30
		2	72
		3	96
2.0–12 or 14 gauge with sleeve	3	1	36
		2	72
2.25–12 or 14 gauge with sleeve	3	1	42
2.5–10 gauge with sleeve	3	1	48
		2	72
2.5–10 gauge with sleeve and triangular slip base	3	3	96

*See figure 3D-29.

Follow manufacturer's specific use, sleeve, anchor, hardware, and installation requirements.

3D.7.3 U-Channel Steel Post

Follow guidelines in figures 3D-29 and 30, and table 3D-6 for U-Channel steel posts.

U-channel posts of rerolled rail steel weighing 3 pounds-per-foot or less, and installed in normal soil, are considered to be breakaway since it will bend, break, or pull out of the ground when it is hit. For heavier posts, either purchase splices to install the post at ground level or set a stub post of the same material in a concrete base with a 4-inch length available to bolt to the sign post as a base connection. Refer to figure 3D-30.

Splicing of U-channel posts is not recommended unless tested because the impact performance of a spliced post cannot be accurately predicted.

The post should be driven into the ground and not encased in concrete. A broken or damaged post is easier to remove if it is not driven or set into the ground more than 3½ feet.

Table 3D-6—U-channel steel post (milled carbon steel)

Post specifications (pounds per foot)	Maximum burial depth (feet)	Number of posts in 7-foot width*	Suggested maximum sign size (sq ft)
2 – direct burial	3 ½	1	3 (18-inch max. width)
		2	9 (36-inch max. width)
2 – direct burial with splice	3 ½	3	14 (72-inch max. width)
3 – direct burial with splice	3 ½	1	4 (24-inch max. width)
		2	16 (72-inch max. width)
		3	24 (72-inch max. width)
4 – direct burial with splice	3 ½	1	6 (30-inch max. width)
		2	20 (72-inch max. width)

*See figure 3D-29.

Follow manufacturer's specific use, splice, hardware, and installation requirements.

3D.7.4 Hardware

Basic hardware used to erect signs consists of bolts, washers, clamps, fittings, and brackets. All hardware used to attach signs to wood or metal posts should be aluminum or galvanized metal.

Use brackets for multiple signs on the same post, large signs, or where wind conditions or the presence of animals necessitate stronger attachment to the post.

Signs should be attached to posts in a manner that the hardware does not interfere with the legibility of the message.

After a sign is installed, snip the ends of the bolts off and upset or fracture the threads to prevent removal of the nuts by vandals or thieves. Several manufacturers produce vandal-resistant hardware that helps protect sign installations from unauthorized removal.

3D.7.5 Graffiti Film

Consider applying clear overlay (graffiti film) on the entire surface. This protects the sign face and retroreflective sheeting from peeling and other weather damage, and makes it easier to clean graffiti, paint, and other materials from the sign face.

3D.8 Installation Date and Vandal Warning Labels

Attach installation-date labels (P64-10) to the back of all signs at the time of installation. If units are complying with Method D—Blanket Replacement method for periodic replacing signs on a 12-year cycle, it is critical that signs have the installation-date decals installed. Refer to chapter 3, section 3.3.2.

Vandal-warning labels may be used as needed (P64-11 black on clear, P64-11a white on clear). Place vandal warning labels on the back of STOP or YIELD signs, but on the front of all other signs. Route markers typically are too small to have vandal decals on the front of the sign.

Labels are attached to the corner of the sign closest to the road to make it easier to read.

These decals and the locations for applying them are shown in figure 3D-32 and 3D-33.

Both decals may be obtained from Unicor. Refer to chapter 15.

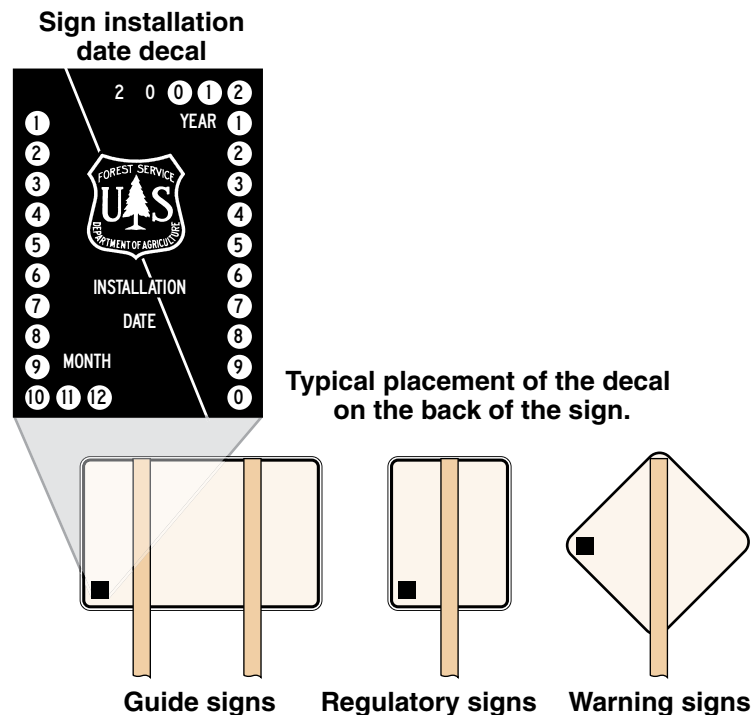


Figure 3D-32—Installation-date decal.

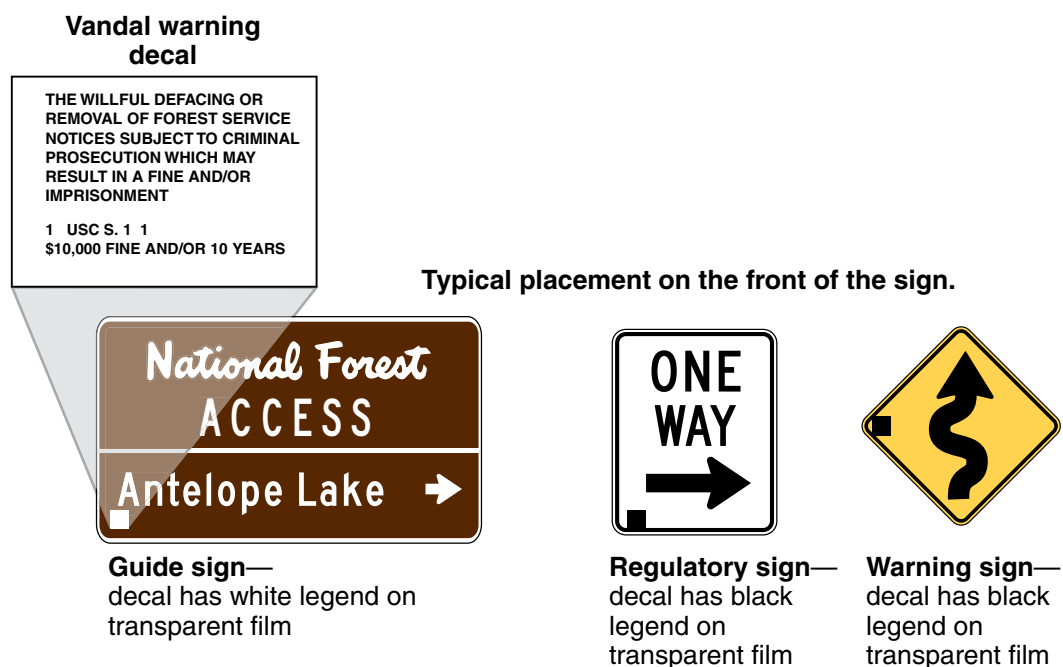


Figure 3D-33—Vandal-warning decal.

3D.9 Other References

Sign Installation Guide, 1071-2812D MTDC March 2010

A Guide to Small Sign Support Hardware, AASHTO GSSSH-1, 1998.

Sign Posts and Supports, C14.1, Center for Transportation Research Excellence, Iowa, 2001. <http://ctre.iastate.edu/pubs/itcd/signposts.pdf>

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3E.1 Regulatory Signs

Text layout—Selective exclusion sign (FR5-11a)



Dimensions (*inches*)

Sign number	L	H	A	B	C	Text (upper case)	Border	Border Inset
FR5-11a	30	24	3 ½	10	16 ½	4D	5/8	3/8

Notes

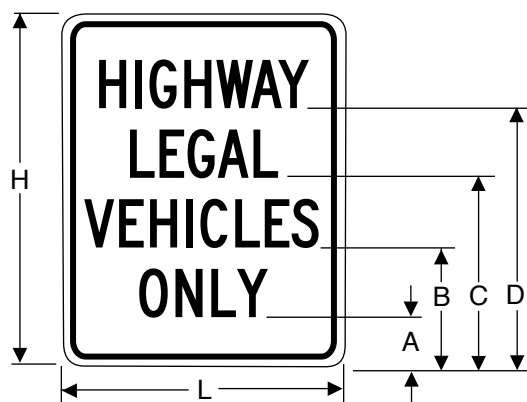
Center text on vertical centerline.
Text—ASA series as noted.

Colors

Legend and border are black.
Background is retroreflective white.

References

For sign guidelines, see chapter 3A.
For manufacturing specifications, see chapters 14 and 14A.

Text layout—Regulatory sign (FR5-11b)

FR5-11b

Dimensions (*inches*)

Sign number	L	H	A	B	C	D	Text (upper case)	Border	Border Inset
FR5-11b	18	24	3	8	13	18	3E	$\frac{5}{8}$	$\frac{3}{8}$
	24	30	4	10	16	22	4D	$\frac{5}{8}$	$\frac{3}{8}$

Notes

Center text and mounting holes on vertical centerline.

Text—ASA series as noted.

Colors

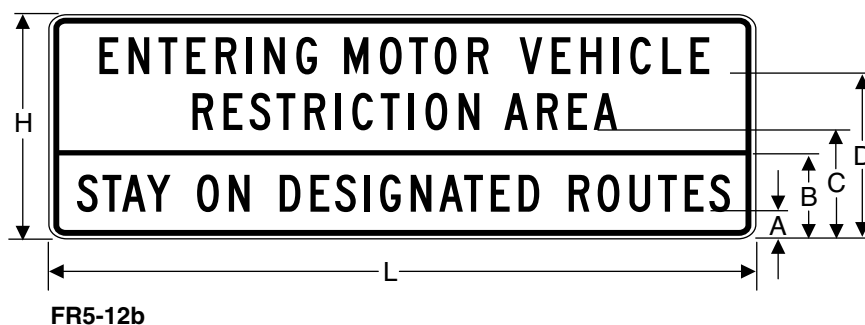
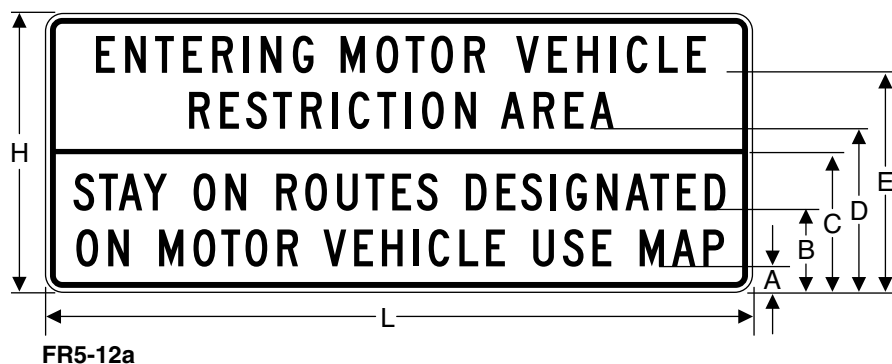
Legend and border are black

Background is retroreflective white.

References

For sign guidelines, see chapter 3A.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Travel management sign (FR5-12a and FR5-12b)

Dimensions (inches)

Sign number	L	H	A	B	C	D	E	Text (upper case)	Border and separation line	Border Inset
FR5-12a	60	24	2 ½	7 ½	12*	13 ½	18 ½	3D	¾	¾
	96	42	4	13	21*	24	33	5C	¾	½
FR5-12b	60	18	2	6 ½*	8	13	—	3D	¾	¾
	96	30	3	11*	14	22	—	5C	¾	½

Notes

Center text on vertical centerline.

* Center of horizontal line.

Text—ASA series as noted.

Colors

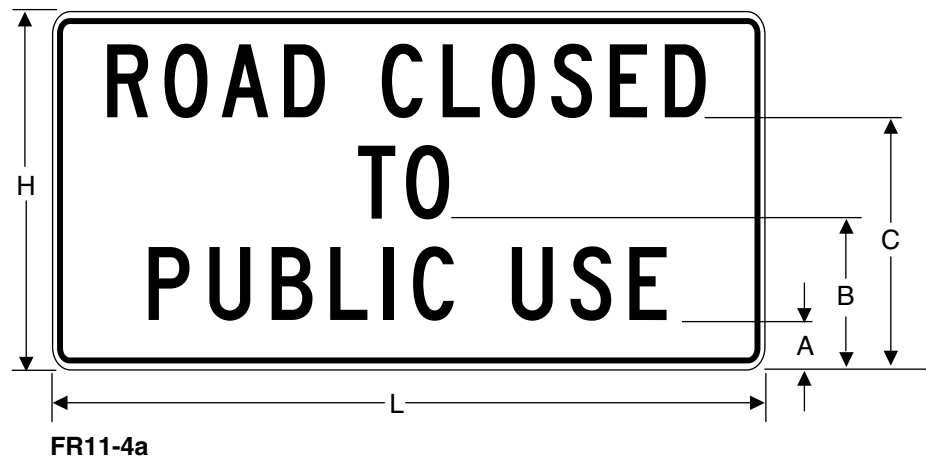
Legend and border are black

Background is retroreflective white.

References

For sign guidelines, see chapters 3A and 6.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Regulatory sign (FR11-4a)**Dimensions (inches)**

Sign number	L	H	A	B	C	Text (upper case)	Border	Border Inset
FR11-4a	60	30	4	12 ½	21	6C	¾	½

Notes

Center text on vertical centerline.

Text—ASA series as noted.

Colors

Legend and border are black.

Background is retroreflective white.

References

For sign guidelines, see chapters 3A and 6.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Regulatory sign (FR11-4b)

Dimensions (inches)

Sign number	L	H	A	B	C	Text (upper case)			Border	Border Inset
						D	E	F*		
FR11-4b	60	30	4 ¼	11 ½	19 ¾	6C	5C	4C	¾	½

* Text size may need to be reduced to accomodate message.

Notes

Center text on vertical centerline.

Text—ASA series as noted.

Colors

Legend and border are black.

Background is retroreflective white.

References

For sign guidelines, see chapters 3A and 6.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Regulatory signs (FR11-4c and FR17-1)

FR11-4c



FR17-1

Dimensions (inches)

Sign number	L	H	A	B	C	Text (upper case)	Border	Border inset
FR11-4c	36	18	3	9 ¾	16 ½	4C	½	¾
	60	30	4	12 ½	21	6C	¾	½
FR17-1	48	18	3	9 ¾	16 ½	3C	½	¾
	84	30	4	12 ½	21	6B	¾	½

Notes

Last line on FR17-1 may be modified to reflect appropriate jurisdiction such as:

ON NATIONAL FOREST LANDS or **ON PUBLIC LANDS**.

Center text on vertical centerline.

Text—ASA series as noted.

Colors

Legend and border are black.

Background is retroreflective white.

References

For sign guidelines, see chapter 3A.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Regulatory sign (FR13-1a)



FR13-1a

Dimensions (inches)

Sign number	L	H	A	B	C	D	Text (upper case)	Border	Border inset
FR13-1a	42	30	3	9 ¾	16 ½	23 ¼	4C	½	¾
	60	48	4	12 ½	21	29 ½	6C	¾	½

Notes

Second line on FR13-1a may be modified to reflect appropriate vehicle type or forest product such as: **GAME ANIMALS, FIREWOOD.**

Center text on vertical centerline.

Text—ASA series as noted.

Colors

Legend and border are black.

Background is retroreflective white.

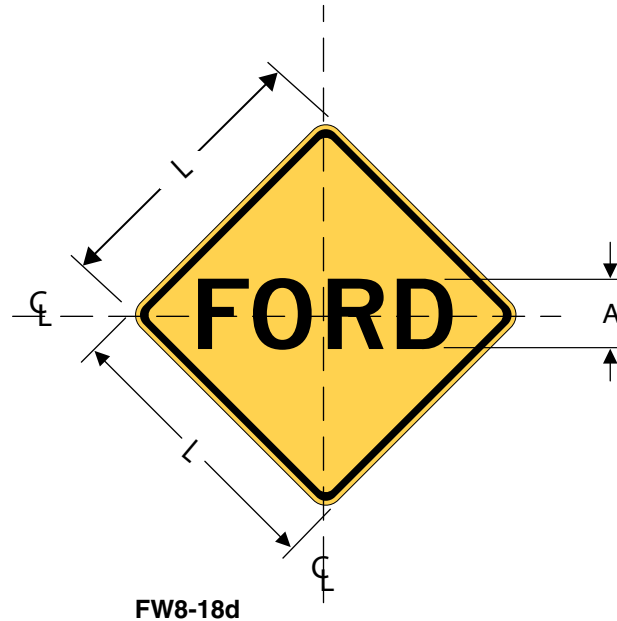
References

For sign guidelines, see chapters 3A and 3C.

For manufacturing specifications, see chapters 14 and 14A.

3E.2 Warning Signs

Text layout—Warning sign (FW8-18d) (one line)



 Dimensions (*inches*)

Sign number	L	Text (upper case) A	Border	Border Inset
FW8-18d	24	6D	$\frac{5}{8}$	$\frac{1}{2}$
	30	8D	$\frac{3}{4}$	$\frac{5}{8}$
	36	10D	$\frac{7}{8}$	$\frac{3}{4}$

Notes

Center text on panel.

Text—ASA series as noted.

Colors

Legend and border are black.

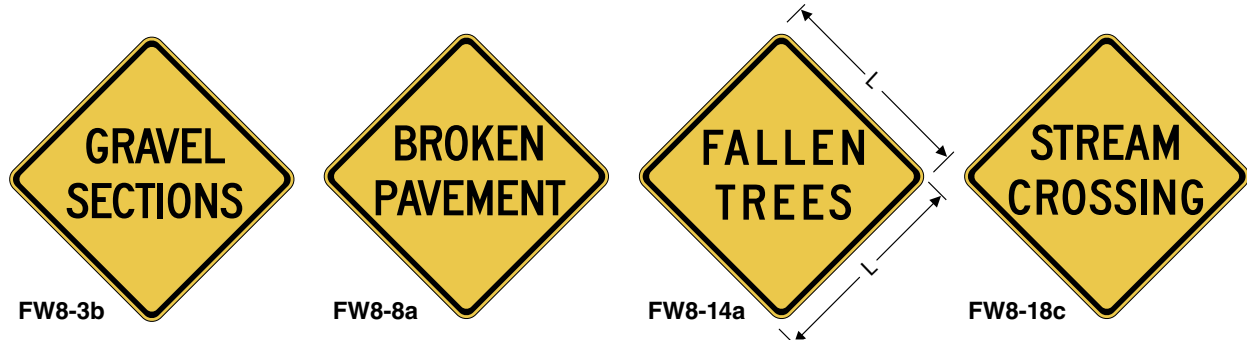
Background is retroreflective yellow.

References

For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Warning sign (FW8-3b, FW8-8a, FW8-14a, FW8-18c) (two line)



Dimensions (inches)

Sign number	Message	L	Text (upper case)	Spacing	Border	Border Inset
FW8-3b	GRAVEL SECTIONS	24	4C	2 ½	5/8	3/8
		30	5C	3	3/4	1/2
		36	6C	3 ½	7/8	5/8
FW8-8a	BROKEN PAVEMENT	24	4C	2 ½	5/8	3/8
		30	5C	3	3/4	1/2
		36	6C	3 ½	7/8	5/8
FW8-14a	FALLEN TREES	24	4D	3	5/8	3/8
		30	5D	3 5/8	3/4	1/2
FW8-18c	STREAM CROSSING	24	4C	2 ½	5/8	3/8
		30	5C	3	3/4	1/2
		36	6C	3 ½	7/8	5/8

Notes

Center text on vertical centerline.

Text—ASA series as noted.

Colors

Legend and border are black.

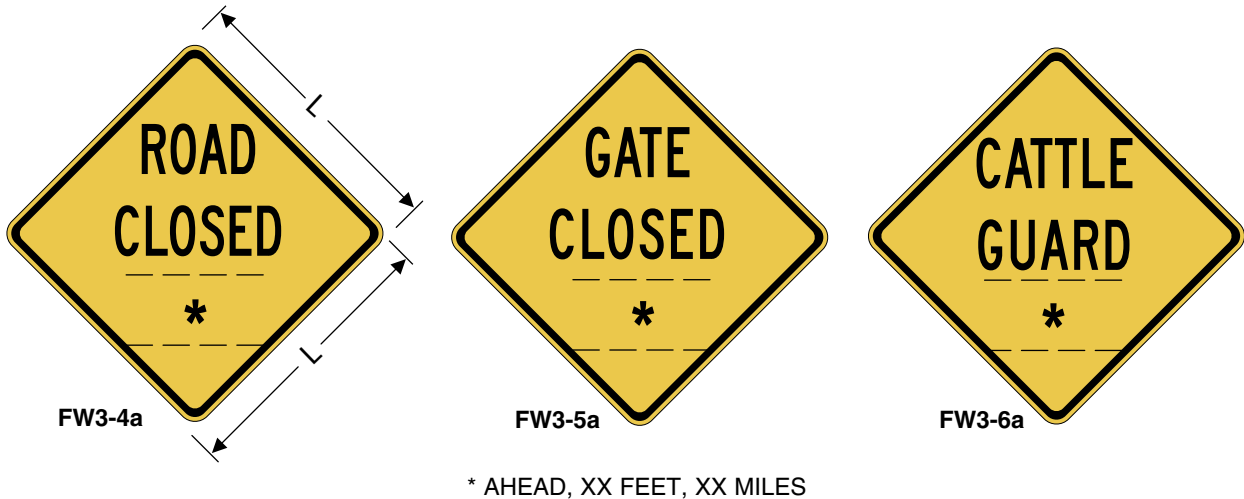
Background is retroreflective yellow.

References

For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Warning sign (FW3-4a, FW3-5a, FW3-6a) (three-line with distances)



Dimensions (inches)

Sign number	Message	L	Text (upper case)	Spacing	Border	Border Inset
FW3-4a	ROAD CLOSED AHEAD (XX FT or XX MILES)	30	4D	2 ½	¾	½
		36	5D	3 ¾	⅞	⅝
FW3-5a	GATE CLOSED AHEAD (XX FT or XX MILES)	30	4D	2 ½	¾	½
		36	5D	3 ¾	⅞	⅝
FW3-6a	CATTLE GUARD AHEAD (XX FT or XX MILES)	30	4C	2 ½	¾	½
		36	5C	3	⅞	⅝

Notes

Center text on vertical centerline.

Text—ASA series as noted.

Colors

Legend and border are black.

Background is retroreflective yellow.

References

For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Warning sign (FW5-1a, FW5-1b, FW5-1c, and FW5-1d) (three line)



Dimensions (*inches*)

Sign number	Message	L	Text (upper case)	Spacing	Border	Border Inset
FW5-1a	ONE LANE ROAD	30	5D	2 ½	¾	½
		36	6D	3	7/8	5/8
FW5-1b	ROUGH NARROW ROAD	30	4D	2 ½	¾	½
		36	5D	3	7/8	5/8
FW5-1c	STEEP NARROW ROAD	30	5D	3	¾	½
		36	6D	3 ½	7/8	5/8
FW5-1d	NARROW WINDING ROAD	30	4C	2 ½	¾	½
		36	5C	3	7/8	5/8

Notes

Center each line of text on vertical centerline.
Text—ASA series as noted.

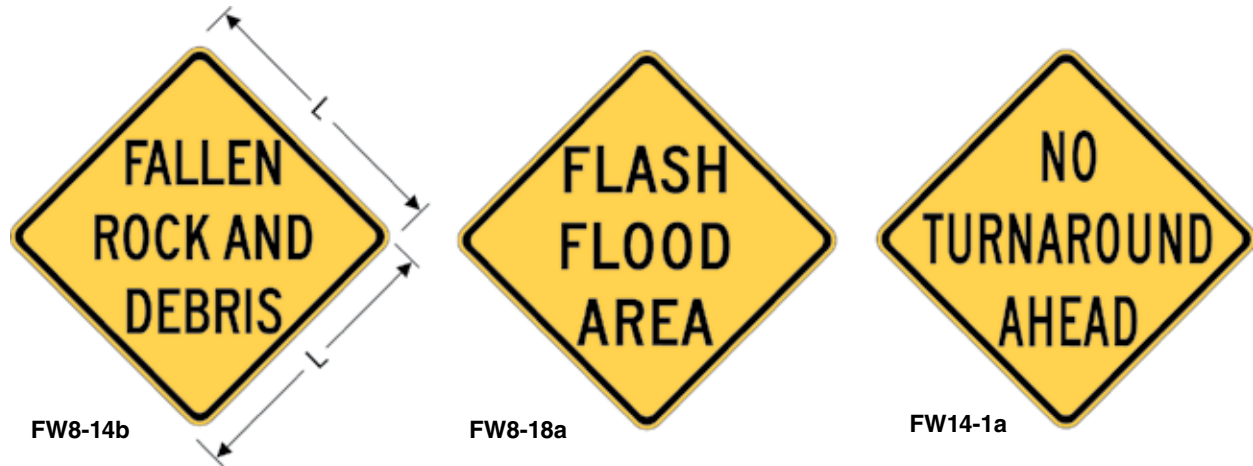
Colors

Legend and border are black.
Background is retroreflective yellow.

References

For sign guidelines, see chapter 3B.
For manufacturing specifications, see chapters 14 and 14A.

Text layout—Warning sign (FW8-14b, FW8-18a, FW14-1a) (three line)



Dimensions (inches)

Sign number	Message	L	Text (upper case)	Spacing	Border	Border Inset
FW8-14b	FALLEN ROCK AND DEBRIS	24	4D	2	$\frac{5}{8}$	$\frac{3}{8}$
		30	5D	2 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
		36	6D	3	$\frac{7}{8}$	$\frac{5}{8}$
FW8-18a	FLASH FLOOD AREA	24	4D	2	$\frac{5}{8}$	$\frac{3}{8}$
		30	5D	2 $\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
		36	6D	3	$\frac{7}{8}$	$\frac{5}{8}$
FW14-1a	NO TURNAROUND AHEAD	24	3D	2	$\frac{5}{8}$	$\frac{3}{8}$
		30	4C	3	$\frac{3}{4}$	$\frac{1}{2}$

Notes

Center text on vertical centerline.

Text—ASA series as noted.

Colors

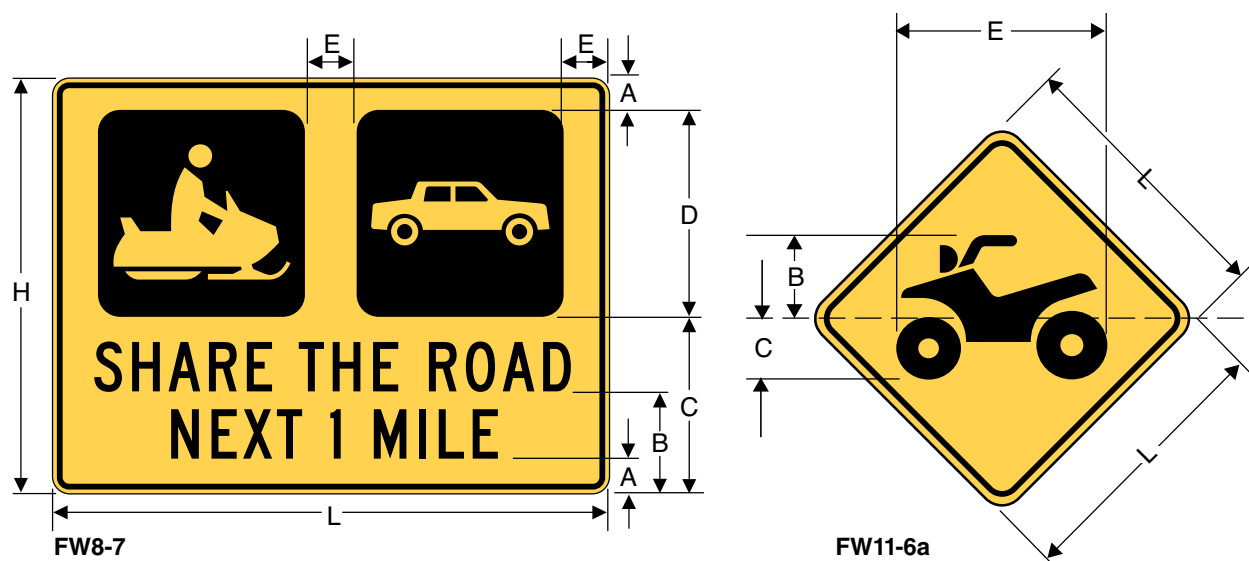
Legend and border are black.

Background is retroreflective yellow.

References

For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Warning sign (FW8-7 and FW11-6a)**Dimensions (inches)**

Sign number	L	H	A	B	C	D symbol size	E	Text (upper case)	Border	Border Inset
FW8-7	48	36	3	9	15	18	4	4D	$\frac{5}{8}$	$\frac{1}{2}$
	60	48	4	12	20	24	4	5D	$\frac{5}{8}$	$\frac{1}{2}$
	72	54	5	15	25	24	4	6D	$\frac{5}{8}$	$\frac{1}{2}$
FW11-6a*	24	NA	NA	$7 \frac{3}{8}$	$4 \frac{3}{4}$	NA	$17 \frac{3}{4}$	NA	$\frac{5}{8}$	$\frac{3}{8}$
	30	NA	NA	$9 \frac{1}{4}$	$5 \frac{7}{8}$	NA	$20 \frac{1}{8}$	NA	$\frac{3}{4}$	$\frac{1}{2}$

Notes

Center text on vertical centerline.

Text—ASA series as noted.

*Center symbol on vertical centerline.

Colors

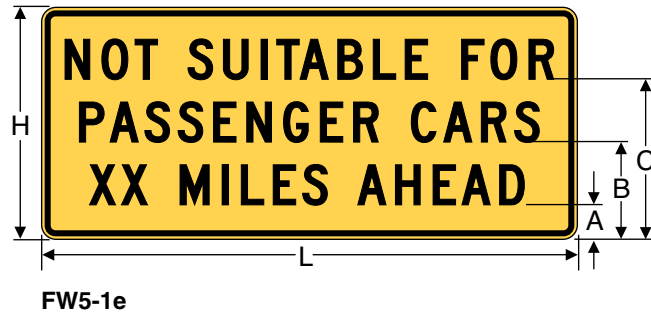
Legend and border are black.

Background is retroreflective yellow.

References

For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Warning sign (FW5-1e and FW8-18b)**Dimensions (inches)**

Sign number	L	H	A	B	C	Text (upper case)	Border	Border Inset
FW5-1e	36*	18	3	7 ¾	12 ½	3E	½	¾
	60*	30	4	12 ½	21	5D	⅝	½
FW5-1f	36	24	3 ½	10	16 ½	4C	¾	¼
FW8-18b	36	24	3 ½	10	16 ½	4D	⅝	½

Notes

Center text on vertical centerline.

Text—ASA series as noted.

* Length of FW5-1e may vary depending on message.

Colors

Legend and border are black.

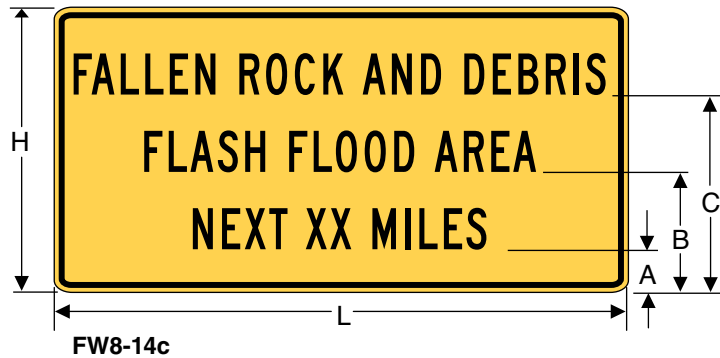
Background is retroreflective yellow.

References

For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—BAER Warning sign (FW8-14c)



Dimensions (inches)

Sign number	L	H	A	B	C	Text (upper case)	Border	Border Inset
FW8-14c	66	24	3 ½	10	16 ½	4C	5/8	½
	80	30	4	12 ½	21	5C	5/8	½

Notes

Center text on vertical centerline.

Text—ASA series as noted.

Colors

Legend and border are black.

Background is retroreflective yellow.

References

For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—BAER Warning sign (FW8-14d)



Dimensions (inches)

Sign number	L	H	A	B	C*	D	E	Text (upper case)	Border and separation line	Border Inset
FW8-14d	48	30	3	9 ½	15	12 ½	23	4C	5/8	½
	60	42	4	13	21	24	33	5C	5/8	½

Notes

Center text on vertical centerline.

* Center of horizontal line.

Text—ASA series as noted.

Colors

Legend and border are black.

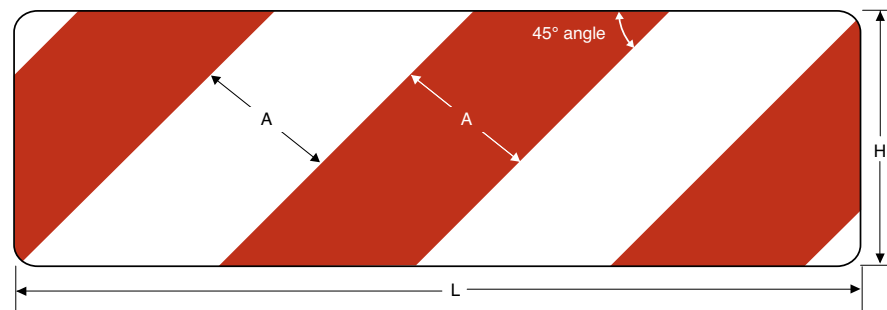
Background is retroreflective yellow.

References

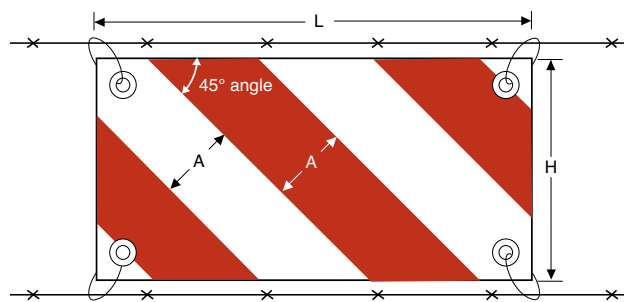
For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

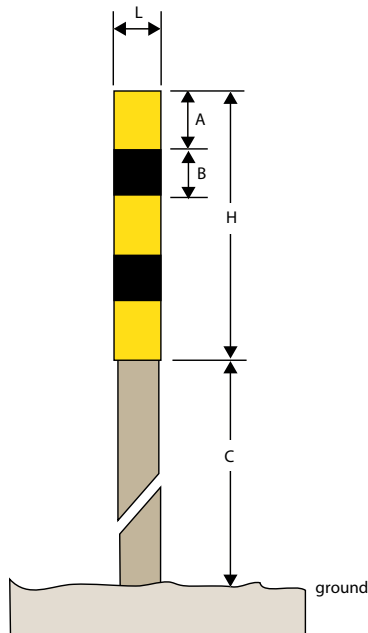
Text layout—Barricade markers (FBM, FBM1) and Object marker (FOM2-2V)



FBM-R



FBM1-L



FOM2-2V

Dimensions (inches)

Sign number	L	H	A	B	C
FBM (L and R)	36	12	6	NA	NA
	24	8	4	NA	NA
FBM1 (L and R)	12	6	3	NA	NA
FOM2-2V	3	18	4	3	40 to 54

Notes

*48 inches recommended

For FBM1 (L and R)—Flexible plastic polyethylene or polycarbonate.
See chapter 14, section 14.6.

Colors

FBM/FBM1—Alternating retroreflective red and white stripes.
FOM2-2V—Alternating retroreflective yellow and black stripes.

References

For sign guidelines, see chapter 3B.

For manufacturing specifications, see chapters 14 and 14A.

3E.3 Forest Route Markers

Text layout—Distinctive route marker (M1-7)



M1-7

Dimensions (inches)

Sign number	L	H	M series arrow plaque to use below sign	A	B	C	D	E	F	Border	Road speed (mph)
M1-7-18	18	18	*	12 ¾	2 ⅝	6D	1 ⅛	4	1 ⅝	½	Up to 45
M1-7-24	24	24	*	17	3 ½	8D	1 ¾	5	2 ¼	½	50+

Notes

Center text on vertical centerline.

Text—ASA series as noted.

*See section 3E.6B for arrow plaque.

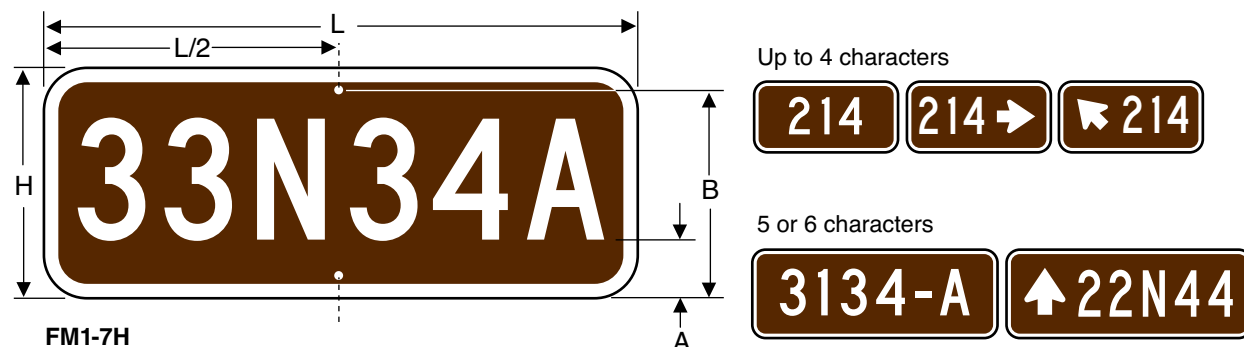
Colors

Fully retroreflective: White legend on brown background.

References

For sign guidelines, see chapter 3C.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Horizontal route marker (FM1-7H)**Dimensions (inches)**

Sign number	Number of characters	L	H	A	B	Border	Text (upper case)	Traffic speed (mph)
FM1-7H-16	Up to 4	16	8	2	6 ½	½	4D	0 to 25
FM1-7H-21	5 or 6	21	8	2	6 ½	½	4D	0 to 25
FM1-7H-20	Up to 4	20	10	2 ½	8 ½	½	5D	30 to 45
FM1-7H-28	5 or 6	28	10	2 ½	8 ½	½	5D	30 to 45
FM1-7H-26	Up to 4	26	12	3	10 ½	⅝	6D	50+
FM1-7H-36	5 or 6	36	12	3	10 ½	⅝	6D	50+

Notes

Center text and mounting holes on vertical centerline.

*Arrow on route marker is same size as text and counts as one character.

When separate plaques are used for arrows, see section 3E.6B.

Specify arrow direction.

Text—ASA series as noted.

Colors

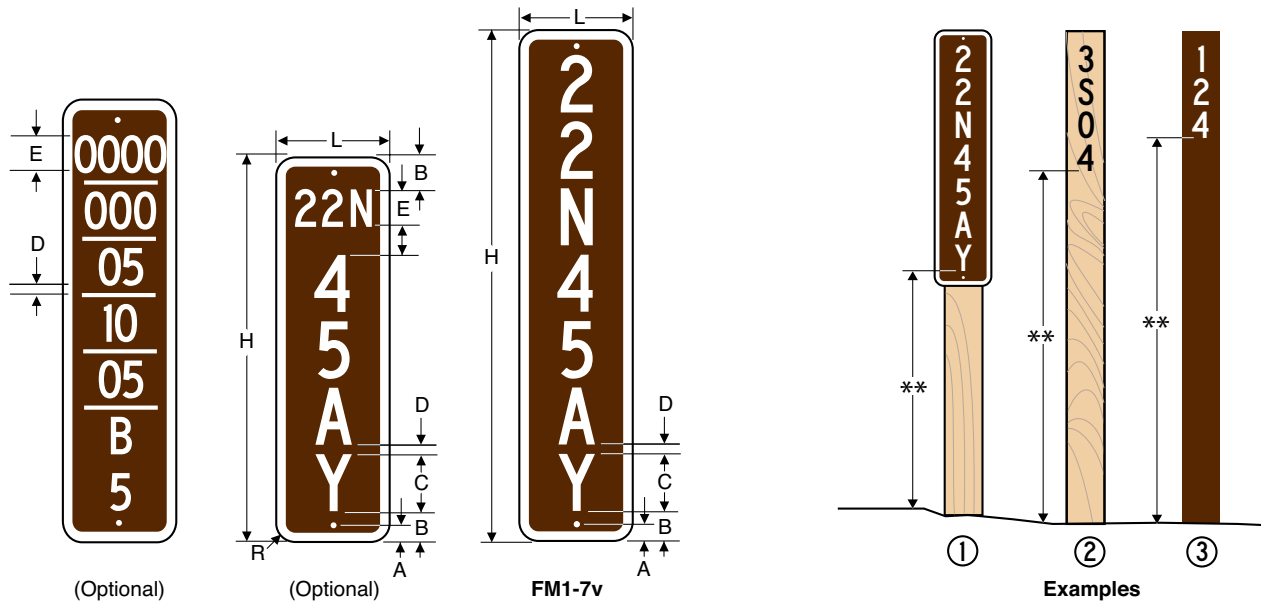
Fully retroreflective: White legend on brown background.

References

For sign guidelines, see chapter 3C.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Vertical route marker (FM1-7V) —to be used on ML1 and ML2 roads.



Dimensions (inches)

Sign number	L	H	A	B	C	D	E	R	Border
FM1-7V	6	*variable	1	1 ½	3E	½	2C	1 ½	½

Notes

Center text on vertical centerline.

All mounting holes are ⅜-inch diameter.

Text—ASA series as noted.

* Height is dependant on number of characters.

** 36-inch minimum to lowest number, letter or symbol.

Colors

Fully retroreflective white legend on brown background. See example 1 above.

Routed text on wood post. See example 2 above.

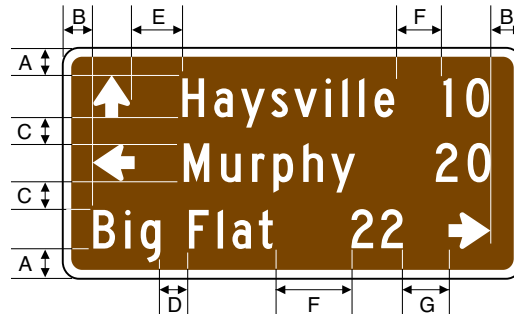
Retroreflective white text on brown flexible post. See example 3 above.

References

For sign guidelines, see chapter 3C.

3E.4 Forest Road Destination Sign (FRD)

Text layout—Forest road destination sign (FRD)



Design guidelines listed below shall be consistent on each individual sign or each group of signs manufactured from this guide.

- A Edge of panel to top and bottom of text— $\frac{3}{4}$ of the capital letter height.
- B Edge of panel to beginning and end of lines— $\frac{3}{4}$ of the capital letter height.
- C Between lines— $\frac{3}{4}$ of the capital letter height.
- D Between words— $\frac{3}{4}$ to the whole height of a capital letter.
- E Between words and arrows—1 to $1\frac{1}{2}$ the height of a capital letter.
- F Between words and mileage—minimum 1 to $1\frac{1}{2}$ the height of a capital letter.
- G Between mileage and arrows—1 to $1\frac{1}{2}$ the height of a capital letter.

Requirements for spacing between letters shall conform to the Standard Alphabets for Traffic Control Devices in the FHWA “Standard Highway Signs” book.

Note: Spacing may be reduced 25 percent on C and D Series text, 3 inches and smaller when necessary to fit the message on the sign. Increasing spacing to 125 percent makes signs easier to read.

Border standard

Borders should be of similar proportions but should not exceed the stroke width of the major lettering on the sign.

Dimensions (inches)

Upper case letters and numbers	Lower case letters	Minimum border and separation line
3C	2 $\frac{1}{4}$ C	$\frac{1}{2}$
4C	3C	$\frac{1}{2}$
5D	3 $\frac{3}{4}$ D	$\frac{5}{8}$
6D	4 $\frac{1}{2}$ D	$\frac{3}{4}$

Colors

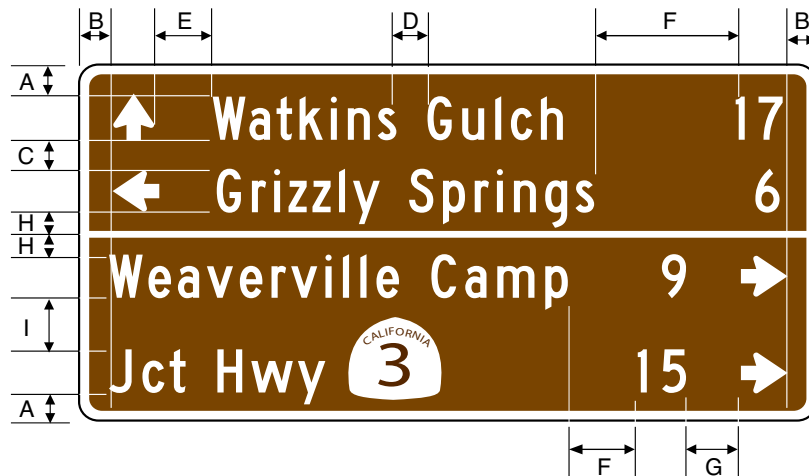
Fully retroreflective: White legend and border on brown background.
Text is ASA series as noted.

Numbering System

FRD-X-Y X = number of lines
 Y = size of upper case letters

References

For sign guidelines, see chapter 3C.
For arrow (typical), see section 3E.10.
For manufacturing specifications, see chapters 14 and 14A.

Text layout—Forest road destination sign with separation line (FRD)

Design guidelines listed below shall be consistent on each individual sign or each group of signs manufactured from this guide.

A-G See page 3E-21.

H Between text and center of separation line— $\frac{1}{2}$ to $\frac{3}{4}$ of the capital letter height.

I Between lines and route shields— $1\frac{1}{4}$ to $1\frac{1}{2}$ the capital letter height.

Requirements for spacing between letters shall conform to the Standard Alphabets for Traffic Control Devices in the FHWA “Standard Highway Signs” book.

Note: Spacing may be reduced 25 percent on C and D Series text, 3 inches and smaller when necessary to fit the message on the sign. Increasing spacing to 125 percent makes signs easier to read.

Border and separation-line standard

Borders and separation lines should be of similar proportions but should not exceed the stroke width of the major lettering on the sign. See dimensions on page 3E-21.

Route Symbol

Other agencies route signs may be incorporated as part of a directional sign. When possible, use the same shape and colors used by the agency. Examples of agency route signs are found in the MUTCD, section 2D-10. If colored route signs of appropriate size are not available, a brown on white version in the same shape may be used.

Colors

Fully retroreflective: White legend and border on brown background.

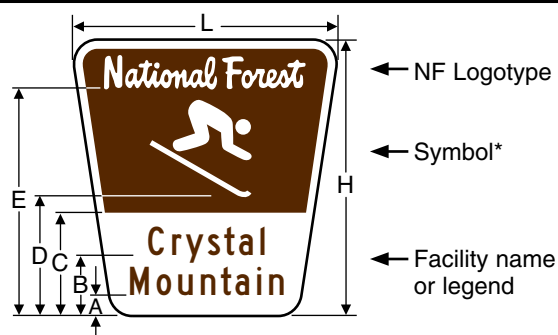
References

For sign guidelines, see chapter 3C.

For arrow (typical), see section 3E.10.

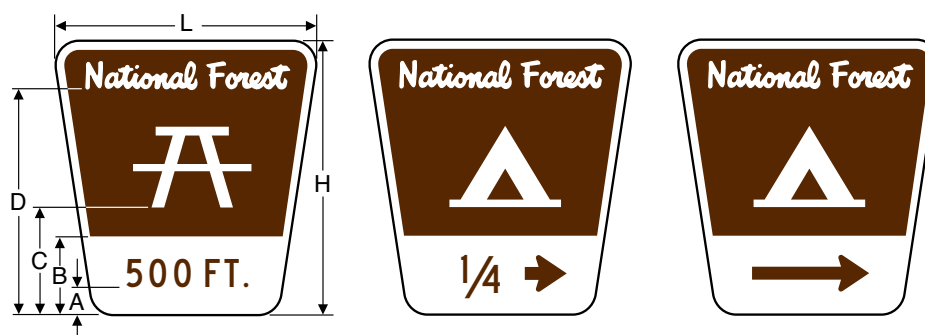
For manufacturing specifications, see chapters 14 and 14A.

3E.5 Site Approach Signs

Text layout—Site approach with symbol (SA)

Dimensions (inches) two-line facility name or legend

Sign number	L	H	A	B	C	D	E	Border	Facility name or legend (title case)	Symbol *	NF Logo type	Road speed (mph)
SA-1a	38	40	3	8 ¾	15	17 ½	33	¾	4C	12	4	0 to 45
SA-2b	48	52	4	11 ½	19 ½	24	43	1	5C	15	5	50+



Dimensions (inches) one-line facility name or legend

Sign number	L	H	A	B	C	D	Border	Facility name or legend (upper case)	Symbol *	NF Logo type	Road speed (mph)
SA-1c	38	40	4	11 ½	15 ¾	33	¾	4D	12	4	0 to 45
SA-2d	48	52	7	16 ½	22	43	1	5D	15	5	50+

Notes

Specify symbol, distance, message, or arrow direction (left or right only).

Text is ASA series as noted.

Arrows and arrow plaques: Arrows on the sign with the legend are one size larger than the text. Arrows alone on the sign are extended to within 1-letter height of sign edge. When separate plaques are used for arrows, see section 3E.6B.

* Symbol size specifications are average. Some symbols may need to be proportioned in size to fit sign. Use only one symbol per sign.

Fully Retroreflective Colors

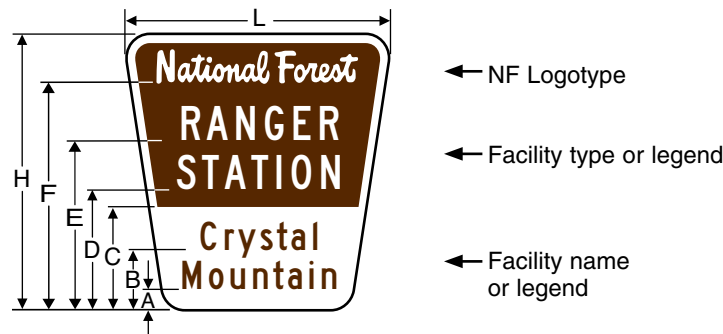
Top—White legend on brown background.
Bottom—Brown on white background.

References

For sign guidelines, see chapter 3C.

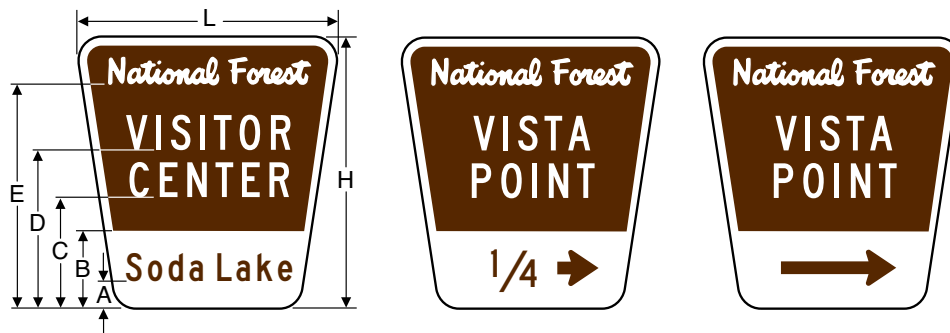
For manufacturing specifications, see chapters 14 and 14A.

For horizontal text placement, see section 3E.4.

Text layout—Site approach with two-line facility type (SA)

Dimensions (inches) Two-line facility name or legend

Sign number	L	H	A	B	C	D	E	F	Border	Facility type (upper case)	Facility name or legend (title case)	NF Logo type	Road speed (mph)
SA-1e	38	40	2 ½	8	14	17	24 ½	33	¾	5C	4C	4	0 to 45
SA-2f	48	52	3 ½	10 ½	18	22 ½	32	43	1	7C	5C	5	50+



Dimensions (inches) One-line facility name or legend

Sign number	L	H	A	B	C	D	E	Border	Facility type (upper case)	Facility name or legend (title case)	NF Logo type	Road speed (mph)
SA-1g	38	40	4	11 ½	16	23 ½	33	¾	5C	4C	4	0 to 45
SA-2h	48	52	7	16 ½	22	31 ½	43	1	7C	5C	5	50+

Notes

Specify symbol, distance, message, or arrow direction (left or right only).

Text is ASA series as noted.

Arrows and arrow plaques: Arrows on the sign with the legend are one size larger than the text. Arrows alone on the sign are extended to within 1-letter height of sign edge. When separate plaques are used for arrows, see section 3E.6B.

Fully Retroreflective Colors

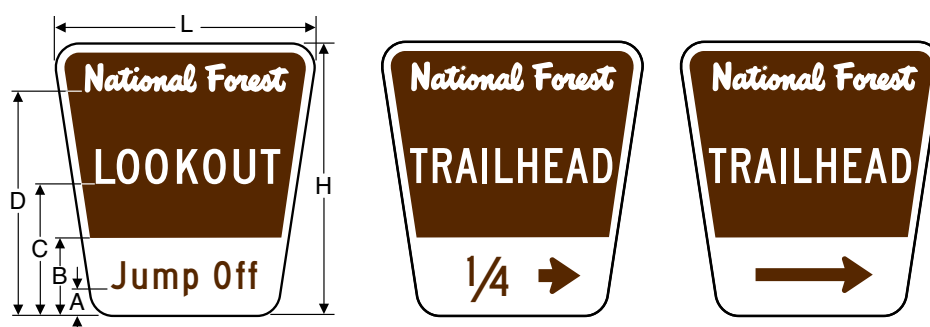
Top—White legend on brown background.
Bottom—Brown on white background.

References

For sign guidelines, see chapter 3C.
For manufacturing specifications, see chapters 14 and 14A.
For horizontal text placement, see section 3E.4.

Text layout—Site approach with one-line facility type (SA)**Dimensions (inches)** Two-line facility name or legend

Sign number	L	H	A	B	C	D	E	Border	Facility type (upper case)	Facility name or legend (upper case)	NF Logo type	Road speed (mph)
SA-1i	38	40	3	8 ¾	15	22 ½	33	¾	5D	4C	4	0 to 45
SA-2j	48	52	4	11 ½	19 ½	28	43	1	7C	5C	5	50+

**Dimensions (inches)** One-line facility name or legend

Sign number	L	H	A	B	C	D	Border	Facility type (upper case)	Facility name or legend (title case)	NF Logo type	Road speed (mph)
SA-1k	38	40	4	11 ½	19 ½	33	¾	5D	4C	4	0 to 45
SA-2l	48	52	7	18 ½	27	43	1	7C	5C	5	50+

Notes

Specify symbol, distance, message, or arrow direction (left or right only).

Text—ASA series as noted.

Arrows and arrow plaques: Arrows on the sign with the legend are one size larger than the text. Arrows alone on the sign are extended to within 1-letter height of sign edge. When separate plaques are used for arrows, see section 3E.6B.

Fully Retroreflective Colors

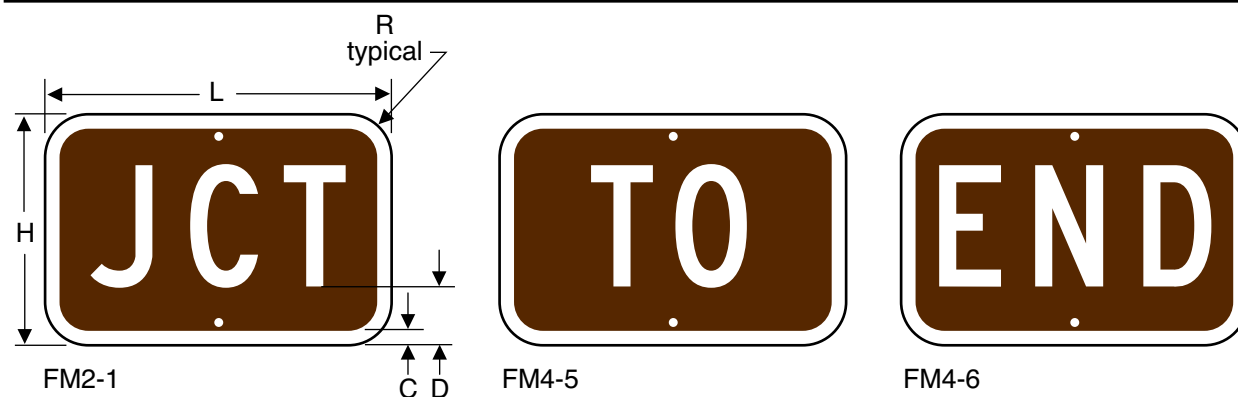
Top—White legend on brown background.
Bottom—Brown on white background.

References

For sign guidelines, see chapter 3C.
For manufacturing specifications, see chapters 14 and 14A.
For horizontal text placement, see section 3E.4.

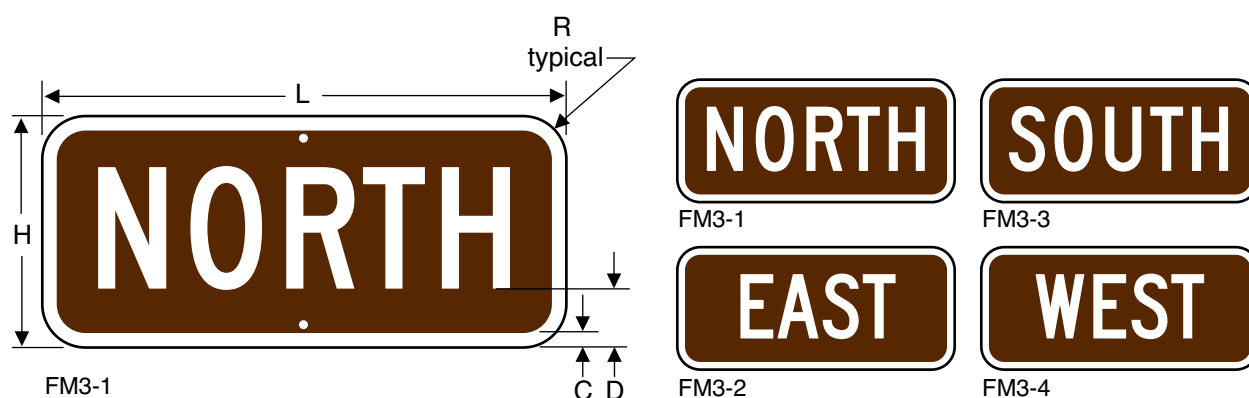
3E.6A Auxiliary Route Markers

Text layout—Auxiliary route markers (FM2, FM3, and FM4)



Dimensions (inches)

Sign number	L	H	Border C	D	R	Text (upper case)
FM2-1, FM4-5, FM4-6	12	8	1/2	2	1 1/2	4C



Dimensions (inches)

Sign number	L	H	Border C	D	R	Text (upper case)
FM3-1, FM3-2, FM3-3, FM3-4	18	8	1/2	2	1 1/2	4C

Notes

Center each line of text on vertical centerline.

All mounting holes are 3/8-inch diameter.

Text—ASA series upper case as noted.

Colors

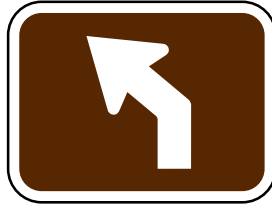
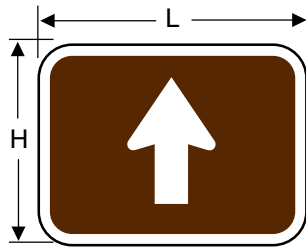
Fully retroreflective: White legend and border on brown background.

References

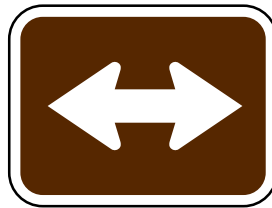
For sign guidelines, see chapter 3C.

3E.6B Directional Arrow Auxillary Signs

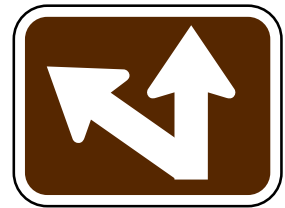
Directional arrow auxillary signs (M5 and M6)

M5-1L (shown)
M5-1RM5-2L (shown)
M5-2RM6-1L (shown)
M6-1RM6-2L (shown)
M6-2R

M6-3



M6-4

M6-6L (shown)
M6-6RM6-7L (shown)
M6-7RDimensions (*inches*)

Sign number	Directional arrow auxiliary sign		Recreation symbol	When separate plaques are used		
	L	H		Distinctive route marker	Horizontal route marker	Site approach sign
M5 & M6	12	9	12	NA	NA	NA
	16	12	18	M1-7-18	FM1-7H-16	NA
	21	15	24 and 36	M1-7-24	FM1-7H-21 through FM1-7H-36	SA1 and SA2

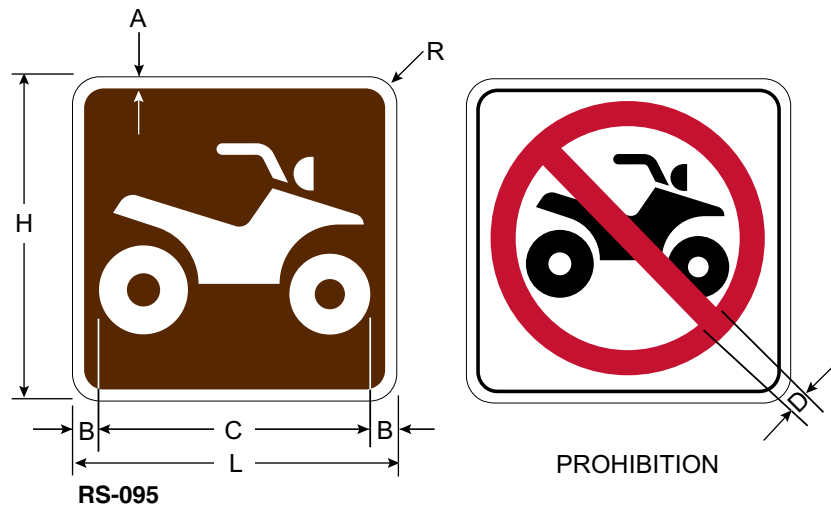
Colors

Fully retroreflective: White arrow and border on brown background.

References

See "Standard Highway Signs" book.

3E.7 Recreational and Cultural Interest Area Symbols

Layout—Recreational and cultural interest area symbols

Dimensions (inches)

L	H	A	B	C	R	D
24	24	½	2	20	1 ½	2
18	18	½	1 ½	15	1 ½	1 ½
12**	12**	¾	1	10	¾	1
9	9	¾	¾	7 ½	¾	¾
6	6	¼	½	5	¾	½

Non-road applications

Notes

Symbols may be reversed to show a mirror image if that better reflects direction of the activity or area. Match the direction of the symbol and arrow.

For prohibitive applications the symbol shall be scaled proportionately to fit completely within the circle and the diagonal slash shall be oriented from the upper left to the lower right portions of the circle.

Colors

Fully retroreflective*—White legend and border on brown background.

Green or blue background colors may be used to better fit in some situations, such as the RS-200 Recycling and D9-6 Handicapped symbols.

For prohibition applications—Black legend and border on retroreflective* white background with retroreflective* red prohibition symbol.

* Retroreflectivity is required for all road applications. Refer to chapter 5 for retroreflectivity requirements for trails.

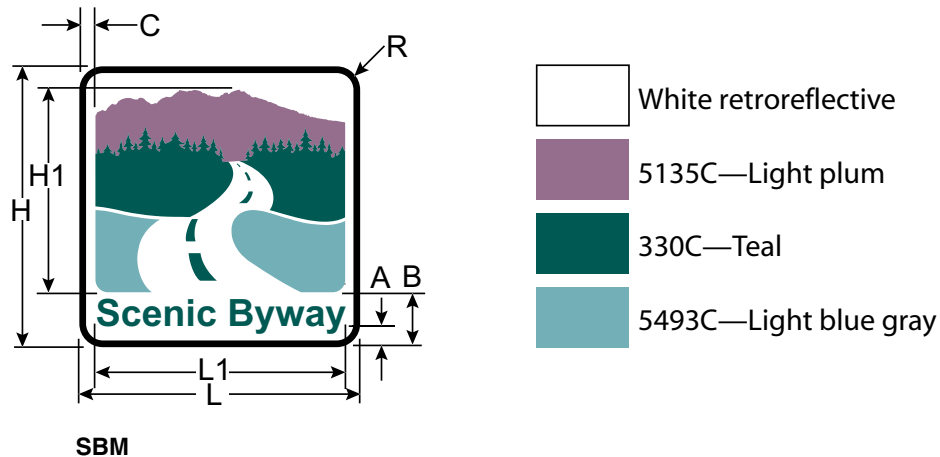
** A 12" symbol is allowed on a low volume road with prudent operator speeds ≤15 mph.

References

For sign guidelines, see chapters 3C and 7.

For manufacturing specifications, see chapters 14 and 14A.

3E.8 Scenic Byway Marker (SBM)

Text layout—Scenic Byway marker (SBM)

Dimensions (inches)

Sign Number	L	H	A	B	C	Border	R	Scenic Byway logo		Road Speed Text	(mph)
								L1	H1		
SBM-1	18	18	1 ¼	3 ½	1	½	1 ½	16	13	1 ⅝C	0-25
SBM-2	24	24	1 ¾	5	2	⅝	1 ½	20	16 ¼	2 ¼C	30-45
SBM-3	30	30	2	6	3	⅝	1 ⅞	24	19 ½	2 ¾C	50+

Notes**Colors**

All colors are solid Pantone Matching System (PMS) transparent ink.

Text, border, and road centerline are PMS-330C—Teal

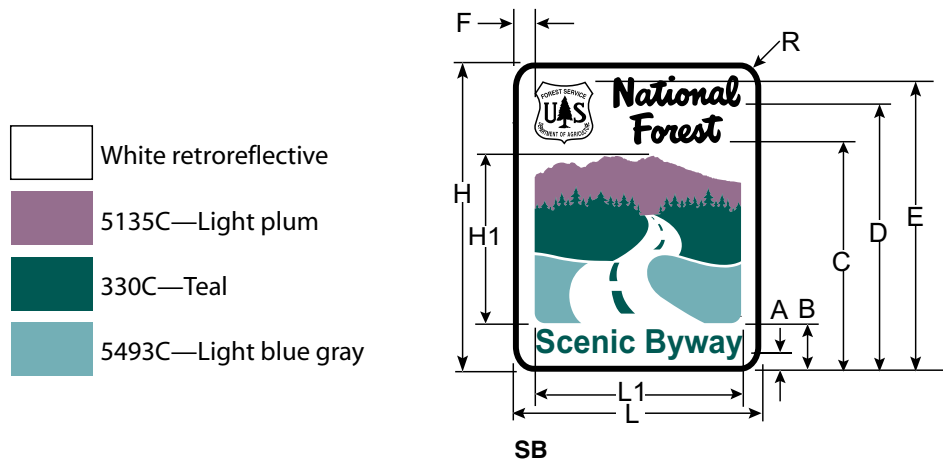
Text—ASA series as noted.

Background is white retroreflective.

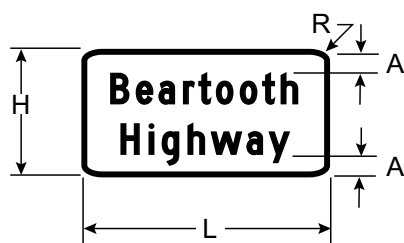
References

For sign guidelines, see chapter 3C.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Scenic Byway Identification sign (SB) and nameplate (SBa)**Dimensions (inches)**

Sign Number	L	H	A	B	C	D	E	F	Border	R	FS Shield	NF Logo type	Scenic Byway logo		Text	Road Speed (mph)
													L1	H1		
SB-1	24	30	1 ¾	4 ½	22 ¼	25 ¾	28	2	⅝	1 ½	6	2 ¼	20	16 ¼	2 ¼C	0-15
SB-2	30	36	2 ½	6	27 ¼	31 ¼	34	3	⅝	1 ⅞	8	2 ¾	24	19 ½	2 ¾C	20-25
SB-3	36	48	3 ½	9	36	41 ½	45	3	¾	1 ¼	10	3 ½	30	24 ¾	3 ½C	30-45
SB-4	48	60	4	10	45	51 ½	56	4	1	3	12	4 ½	40	32 ½	4 ½C	50+

**Dimensions (inches)**

Sign number	L (min)	H	A	Border	R	Text (title case)	Road speed (mph)
SBa-1	24	12	2	5/8	1 ½	3C	0-15
SBa-2	30	16	2 ½	5/8	1 7/8	4C	20-25
SBa-3	36	20	3	¾	2 ¼	5D	30-45
SBa-4	48	22	3 ½	1	3	6D	50+

Notes**Colors**

All colors are solid Pantone Matching System (PMS) transparent ink.

Text, border, shield, and road centerline are PMS-330C—Teal

Text—ASA series as noted.

Background is white retroreflective.

SBa length and height may be adjusted to accommodate longer names.

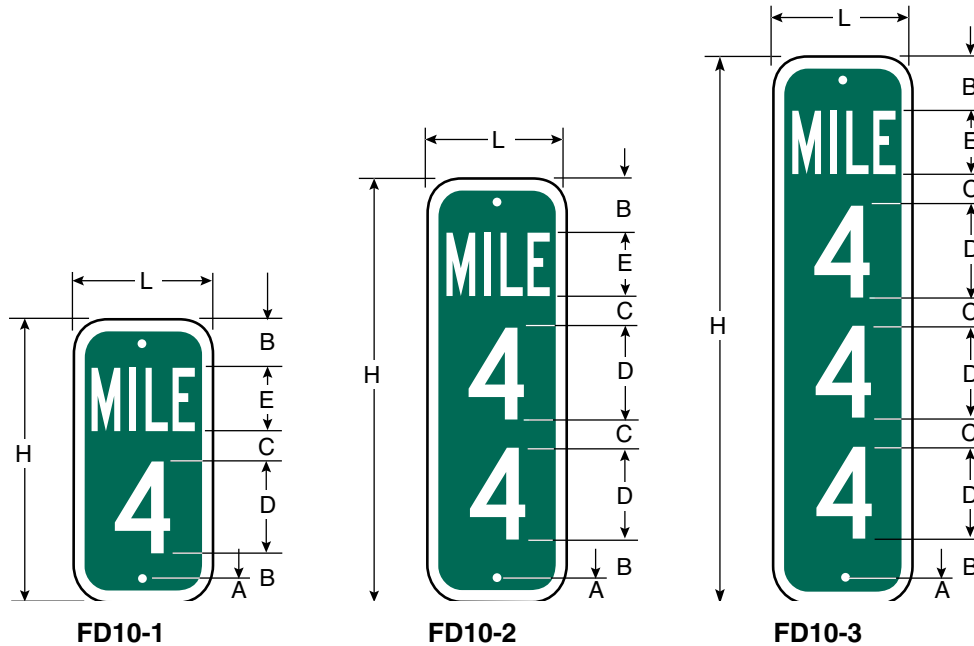
References

For sign guidelines, see chapter 3C.

For manufacturing specifications, see chapters 14 and 14A.

3E.9 Reference Location Signs

Text layout—Reference location signs (FD10) for low volume roads only



Dimensions (inches)

Sign number	L	H	A	B	C	Number D	Mile E	R	Border	Number of characters
FD10-1	6	12	1	2	1 ¼	4D	2 ¾B	1 ½	¾	1
FD10-2	6	18	1	2 ¼	1 ¼	4D	2 ¾B	1 ½	¾	2
FD10-3	6	24	1	2 ¾	1 ¼	4D	2 ¾B	1 ½	¾	3

Notes

Center text and mounting holes on vertical centerline.
All mounting holes are 3/8-inch diameter.
Text—ASA series as noted

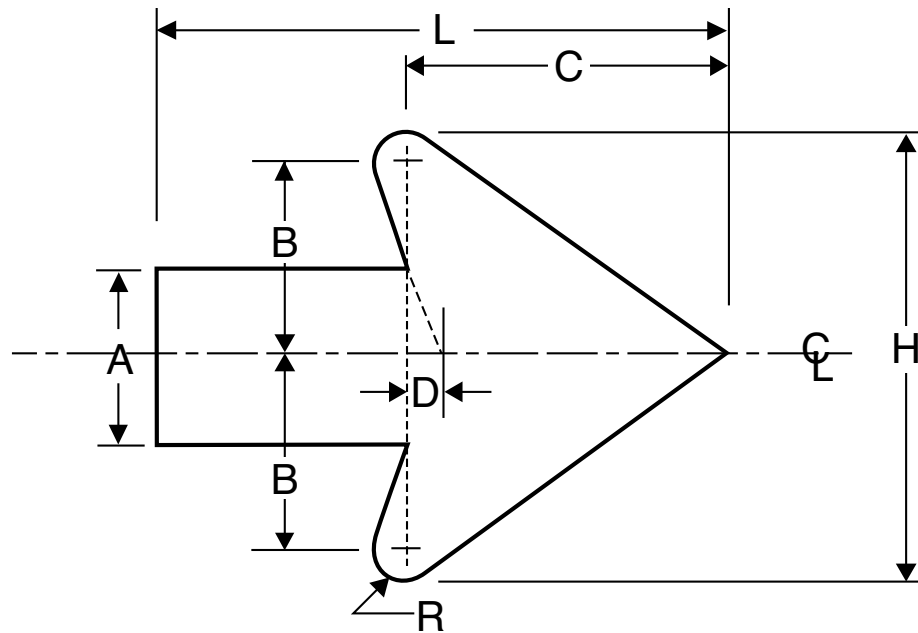
Colors

Fully retroreflective: White legend and border on green background for roads.
Fully retroreflective: White legend and border on brown background for trails.

References

For sign guidelines, see chapter 3C.
For intermediate distances, see MUTCD, section 2H.05.

3E.10 Type D Arrow Layout



Dimensions (inches)

Arrow number	L*	H	A	B	C	D	R	Upper case text size to use this arrow with
AR-3	4	3	1 $\frac{1}{8}$	1 $\frac{5}{16}$	2 $\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{16}$	3
AR-4	5	4	1 $\frac{1}{2}$	1 $\frac{1}{16}$	3	$\frac{5}{16}$	$\frac{5}{16}$	4
AR-5	6	5	1 $\frac{7}{8}$	2 $\frac{1}{8}$	3 $\frac{3}{4}$	$\frac{7}{16}$	$\frac{3}{8}$	5
AR-6	7	6	2 $\frac{1}{4}$	2 $\frac{9}{16}$	4 $\frac{1}{2}$	$\frac{1}{2}$	$\frac{7}{16}$	6

Notes

* L is the minimum functional length.

The arrow shaft can be lengthened for added emphasis on the direction of movement and/or for optical balance of the sign.

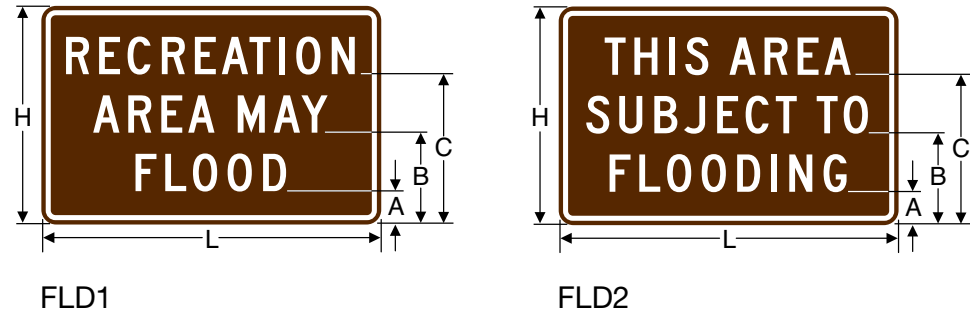
Do not extend the arrow shaft for the entire length of the legend.

Typically, the arrow shaft may be extended up to $\frac{1}{2}$ the length of the legend. In some cases, the arrow shaft may be extended up to $\frac{2}{3}$ the length. Refer to SA signs chapter 4B, FG 21 series signs for examples.

The arrow height (H) may be increased one size larger to avoid sign clutter associated with multiple destinations in the same direction. Refer to chapter 3C, section 3C.4.4.

3E.11 Miscellaneous Information Signs

Text layout—Slow rising flood awareness road signs (FLD1 and FLD2)



Dimensions (*inches*)

Sign number	L	H	A	B	C	Text (upper case)	Border	Border Inset
FLD1/FLD2	36	24	3 ½	10	16 ½	4D	5/8	½

Notes

Center text on vertical centerline.

Text—ASA series as noted

Colors

Fully retroreflective: White legend and border on brown background.




















References

For sign guidelines, see chapter 7, section 7.7.1c.2.

For manufacturing specifications, see chapter 14 and 14A.

3E.12 Recreational and Cultural Interest Area Symbol signs

General Applications

2009 MUTCD Symbols					
					
RS-002 No Smoking*	RS-005 Tunnel	RS-006 Lookout Tower	RS-007 Lighthouse	RS-009 Dam	RS-011 Deer Viewing Area
					
RS-012 Bear Viewing Area	RS-017 Pets on Leash	RS-031 Bus Stop	RS-036 Viewing Area	RS-042 No Campfires*	RS-090 Fire Extinguisher
					
RS-102 Snack Bar	RS-003 No Radios*	RS-115 Sea Plane	RS-140 Pick-up Trucks	RS-141 Nature Study Area	RS-142 Cultural Interest Area
					
RS-200 Recycling					

* Educational plaque optional

Notes

See section 3E.7 for typical symbol layout and colors.

Symbols with green or blue background colors may be changed to brown.



















Green or blue background colors may be used to better fit in some situations, such as RS-200 Recycling and D9-6 Handicapped symbols.

For prohibition applications use black legend and border on white background with red prohibition symbol.

Symbols shown are the most common for Forest Service applications, but additional symbols can be found in the MUTCD.

Older symbol styles (2003 and 2005) may be used until current supply is depleted. Refer to "Reference for 2003 and 2009 MUTCD Symbols comparison" on the EM7100-15 web site for a comparison of old and new symbols.

Accommodations

2009 MUTCD Symbols					
 RS-021 Men's Restroom	 RS-022 Restrooms	 RS-023 Women's Restroom	 RS-034 Parking	 RS-037 Sleeping Shelter	 RS-040 Trailer Site
 RS-104 Recreational Vehicle Site	 RS-137 Baby Changing Station (Men's Room)	 RS-138 Baby Changing Station (Women's Room)	 RS-148 Walk-In Camp	NA	NA
 D9-1 Telephone	 D9-3 Camping	 D9-6 Handicapped	 D9-7 Gas	 D9-8 Food	 D9-9 Lodging
 D9-10 Tourist Information	 D11-1a	NA	NA	NA	NA

Notes

See section 3E.7 for typical symbol layout and colors.

Symbols with green or blue background colors may be changed to brown.














Green or blue background colors may be used to better fit in some situations, such as RS-200 Recycling and D9-6 Handicapped symbols.

For prohibition applications use black legend and border on white background with red prohibition symbol.

Symbols shown are the most common for Forest Service applications, but additional symbols can be found in the MUTCD.

Older symbol styles (2003 and 2005) may be used until current supply is depleted. Refer to "Reference for 2003 and 2009 MUTCD Symbols comparison" on the EM7100-15 web site for a comparison of old and new symbols.

Services

2009 MUTCD Symbols					
 RS-013 Drinking Water	 RS-015 Ranger Station	 RS-024 First Aid	 RS-035 Showers	 RS-039 Picnic Shelter	 RS-041 Sanitary Station
 RS-044 Picnic Site	 RS-071 Tramway	 RS-073 Stable	 RS-086 Litter Receptacle	 RS-091 Trash Dumpster	 RS-109 Theater
 RS-150 Electrical Hook-Up	NA	NA	NA	NA	NA

Notes

See section 3E.7 for typical symbol layout and colors.

Symbols with green or blue background colors may be changed to brown.















Green or blue background colors may be used to better fit in some situations, such as RS-200 Recycling and D9-6 Handicapped symbols.

For prohibition applications use black legend and border on white background with red prohibition symbol.

Symbols shown are the most common for Forest Service applications, but additional symbols can be found in the MUTCD.

Older symbol styles (2003 and 2005) may be used until current supply is depleted. Refer to "Reference for 2003 and 2009 MUTCD Symbols comparison" on the EM7100-15 web site for a comparison of old and new symbols.

Land Recreation

2009 MUTCD Symbols					
 RS-064 Horse Trail	 RS-067 Off-Road Vehicle Trail	 RS-068 Hiking Trail	 RS-070 Amphitheater	 RS-076 Wildlife Viewing	 RS-081 Technical Rock Climbing
 RS-082 Climbing	 RS-084 Spelunking/Caves	 RS-095 All-Terrain Trail	 RS-113 Driving Tour	 RS-114 Interpretive Trail	 RS-116 Archery
 RS-126 Hang Gliding	 RS-149 Corral	NA	NA	NA	NA

Notes

See section 3E.7 for typical symbol layout and colors.

Symbols with green or blue background colors may be changed to brown.

Green or blue background colors may be used to better fit in some situations, such as RS-200 Recycling and D9-6 Handicapped symbols.

For prohibition applications use black legend and border on white background with red prohibition symbol.

Symbols shown are the most common for Forest Service applications, but additional symbols can be found in the MUTCD.

Older symbol styles (2003 and 2005) may be used until current supply is depleted. Refer to "Reference for 2003 and 2009 MUTCD Symbols comparison" on the EM7100-15 web site for a comparison of old and new symbols.

Water Recreation

2009 MUTCD Symbols					
 RS-010 Fish Hatchery	 RS-052 Marina	 RS-054 Boat Ramp	 RS-055 Motorboating	 RS-056 Sailing	 RS-057 Rowboating
 RS-058 Waterskiing	 RS-059 Surfing	 RS-060 Scuba Diving	 RS-061 Swimming	 RS-062 Diving	 RS-063 Fishing Area
 RS-079 Canoeing	 RS-087 Tour Boat	 RS-088 Wading	 RS-089 Fish Ladder	 RS-093 Fish Cleaning	 RS-106 Seal Viewing
 RS-107 Whale Viewing	 RS-108 Wind Surfing	 RS-117 Hand Launch/ Small Boat Launch	 RS-118 Kayaking	 RS-119 Fishing Pier	 RS-121 Jet Ski/Personal Watercraft
 RS-145 Beach	 RS-146 Rafting	 RS-147 No Boat Motor *	NA	NA	NA
 I-9 Vehicle Ferry Terminal	NA	NA	NA	NA	NA

* Educational plaque optional

Notes

See section 3E.7 for typical symbol layout and colors.

Symbols with green or blue background colors may be changed to brown.












Green or blue background colors may be used to better fit in some situations, such as RS-200 Recycling and D9-6 Handicapped symbols.

For prohibition applications use black legend and border on white background with red prohibition symbol.

Symbols shown are the most common for Forest Service applications, but additional symbols can be found in the MUTCD.

Older symbol styles (2003 and 2005) may be used until current supply is depleted. Refer to "Reference for 2003 and 2009 MUTCD Symbols comparison" on the EM7100-15 web site for a comparison of old and new symbols.

Winter Recreation

2009 MUTCD Symbols					
 RS-046 Cross Country Skiing	 RS-047 Downhill Skiing	 RS-049 Sledding	 RS-052 Snowmobiling	 RS-077 Winter Recreational Area	 RS-078 Snowshoeing
 RS-092 Ice Fishing *	 RS-105 Chair Lift/Ski Lift	 RS-127 Snowboarding	 RS-143 Dog Sledding	 RS-144 Snow Tubing	NA

* Educational plaque optional

Notes

See section 3E.7 for typical symbol layout and colors.

Symbols with green or blue background colors may be changed to brown.

Green or blue background colors may be used to better fit in some situations, such as RS-200 Recycling and D9-6 Handicapped symbols.











For prohibition applications use black legend and border on white background with red prohibition symbol.

Symbols shown are the most common for Forest Service applications, but additional symbols can be found in the MUTCD.





Older symbol styles (2003 and 2005) may be used until current supply is depleted. Refer to "Reference for 2003 and 2009 MUTCD Symbols comparison" on the EM7100-15 web site for a comparison of old and new symbols.

NFS Symbols

These symbols were in the 2003 MUTCD but are not in the 2009 MUTCD. Use is approved for NFS roads and facilities only.

2003 MUTCD Symbols				
				
RA-040 Elevator	RA-160 Helicopter	RG-010 Automobile	RG-080 No Firearms	RG-190 Truck
				
RG-240 No Dogs	RL-040 No Hunting	RL-150 Trail (Trail Bike)	RM-210 Group Camping	RM-220 Group Picnicking

These symbols are unique to the NFS and have been approved for NFS roads and facilities only.

The following are new symbols			
			
FS-RS-001	FS-RS-080 Whitewater Rafting	FS-RS-117 Shooting Range	FS-RS-139 Bus Access

* Educational plaque optional

Notes

See section 3E.7 for typical symbol layout and colors.

Symbols with green or blue background colors may be changed to brown.

Green or blue background colors may be used to better fit in some situations, such as RS-200 Recycling and D9-6 Handicapped symbols.

For prohibition applications use black legend and border on white background with red prohibition symbol.

Symbols shown are the most common for Forest Service applications, but additional symbols can be found in the MUTCD.

Older symbol styles (2003 and 2005) may be used until current supply is depleted. Refer to "Reference for 2003 and 2009 MUTCD Symbols comparison" on the EM7100-15 web site for a comparison of old and new symbols.

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4.1 Introduction

Temporary traffic control (TTC) is the control of all road users through a TTC zone where road construction, utility work, maintenance operations, planned major events, vehicle check stations, and the management of incidents, such as traffic accidents, wildfires, floods, hazardous material spills, and other unplanned events, take place on or adjacent to a road, temporarily interrupting or affecting the normal flow of traffic.

TTC zones present constantly changing conditions that are unexpected by the road user. This creates an even higher degree of vulnerability for the workers and incident management responders on or near the roadway. There are potential dangers and distractions, and road users may encounter unexpected or unusual situations, including reduced speed limits, road closures, travel delays, detours, heavy traffic, workers and incident responders on or adjacent to the road, and flagger stations.

TTC is the control of road users for road construction, utility work, maintenance operations, planned events, vehicle check stations, and incidents on or adjacent to a road.

The primary function of TTC is to provide for the reasonably safe and effective movement of road users through or around TTC zones while reasonably protecting road users, workers, incident responders, and equipment. At the same time, the TTC zone provides for the efficient completion of whatever activity interrupted the normal use of the roadway. TTC zones also may be established when necessary to conduct compliance checks and to restrict use of road systems to incident management personnel.

There are seven fundamental principles of TTC. Refer to the MUTCD, section 6B.01.

- Develop general plans to provide safety for all road users, workers, and equipment.
- Inhibit road user movement as little as practical.
- Guide road users in a clear and positive manner while approaching and traversing TTC zones and incident sites.
- Perform routine day and night inspections of TTC elements to provide acceptable levels of operations.
- Give attention to the maintenance of roadside safety during the life of the TTC zone.
- Each person whose actions affect TTC zone safety should receive appropriate training.
- Maintain good public relations.

For TTC on conventional roads, follow the standards and principles contained in the MUTCD, part 6, and these Guidelines. For TTC on low-volume roads refer to the MUTCD, chapter 5G and part 6, and these Guidelines.

Sizes of unique Forest Service TTC signs are shown in table 4-1.

Refer to chapter 4A for additional information on TTC sign placement and installation.

Chapter 4 Temporary Traffic Control

Construction, Maintenance, and Incident Management

A supplemental warning plaque may be displayed with any warning sign when engineering judgment indicates that road users require additional warning information beyond that contained in the main message of the warning sign. Refer to chapter 3B, section 3B.2.23a for standards and guidance on use of supplemental plaques.

Table 4-1—Temporary Traffic Control sign sizes by road type

Message or Symbol	Sign code or series	Conventional road sign sizes (inches)	Low-volume roads	
			Typical sign sizes (inches) = or >35 mph	Minimum sign sizes (inches) <35 mph
REGULATORY				
TRAFFIC CONTROL POINT	EM-3	30 x 24	30 x 24	30 x 24
WARNING				
LOGGING OPERATIONS	FW11-10a	36 x 36	36 x 36	30 x 30
LOG TRUCKS	FW11-10b	36 x 36	36 x 36	30 x 30
LOG TRUCKS ENTERING ROAD	FW11-10c	36 x 36	36 x 36	30 x 30
HEAVY TRUCK TRAFFIC	FW11-10d	36 x 36	36 x 36	30 x 30
FIRE TRAFFIC ENTERING ROAD	FW8-6a	36 x 36	36 x 36	36 x 36
FIRE ACTIVITY AHEAD	FW21-8	36 x 36	36 x 36	36 x 36
SMOKE LIMITED VISIBIITY	FW25-1	36 x 36	36 x 36	36 x 36
ROCK AND ROLLING DEBRIS	FW25-3	36 x 36	36 x 36	36 x 36
HELICOPTER OPERATIONS	FW25-4	36 x 36	36 x 36	36 x 36
GUIDE				
END FIRE ACTIVITY	FG20-5	36 x 18	36 x 18	36 x 18
INCIDENT BASE w/Arrow	FG21-1	36 x 36	36 x 36	36 x 36
INCIDENT BASE AHEAD	FG21-1a	36 x 36	36 x 36	36 x 36
SPIKE CAMP w/Arrow	FG21-1b	36 x 24	36 x 24	36 x 24
WASH AREA w/Arrow	FG21-3	36 x 24	36 x 24	36 x 24
STAGING AREA w/Arrow	FG21-4	36 x 24	36 x 24	36 x 24
HELIBASE w/Arrow	FG21-5	36 x 24	36 x 24	36 x 24
FUEL w/arrow	FG21-6	36 x 24	36 x 24	36 x 24
DIP SITE w/arrow	FG21-7	36 x 24	36 x 24	36 x 24
FILL SITE w/arrow	FG21-7a	36 x 24	36 x 24	36 x 24
FIRE INFORMATION AHEAD	FG21-8	54 x 36	54 x 36	54 x 36
FIRE INFORMATION w/arrow	FG21-8a	54 x 36	54 x 36	54 x 36
Name Plate	FG21-10	36 x 12	36 x 12	36 x 12
MANAGED BURN DO NOT REPORT	FG21-11	36 x 36	36 x 36	36 x 36
Drop Point Arrow	FG-35	12 x 12	12 x 12	12 x 12
Multiple Drop Point	FG-36	12 x 18	12 x 18	12 x 18
Single Drop Point	FG-36a	24 x 18	24 x 18	24 x 18

No one set of TTC devices can satisfy all conditions for a given project or incident. Typical applications are shown in the MUTCD, section 6H and these Guidelines. The TTC selected for each situation depends on the type of road, road user conditions, duration of operations, physical constraints, and the nearness of the work space or incident management activity to road users. In addition to signs, variable message signs, warning lights, flags, barricades, and cones may be used as available to enhance the visibility of TTC zones.

This chapter provides Forest Service specific information for TTC zones. Chapter 4A contains information on TTC device installation and placement for typical Forest Service applications. Chapter 4B provides drawing details of TTC devices that are not located in the “Standard Highway Signs” book.

The MUTCD and Forest Service requirements for TTC apply equally to all agency operations regardless if conducted by force account crews or contract employees. (Refer to FSM 7721.34 and FSM 7733.04c.)

4.2 Temporary Traffic Control Plans

A TTC plan provides continued effective user flow when a work zone, incident, or other event temporarily disrupts normal use. TTC planning should be completed for all planned projects and incidents regardless of size or scope prior to working within the TTC zone.

TTC plans should be completed before initiating planned incidents or projects on or adjacent to roads that could potentially impact traffic, such as construction and maintenance activities; commercial activities, such as timber sales, prescribed burns, vehicle and equipment auctions, vehicle inspection stations, or large gatherings.

TTC plans should be prepared by persons knowledgeable about the fundamental principles of TTC and work activities to be performed.

TTC plans should be prepared by persons knowledgeable about the fundamental principles of TTC and work activities to be performed. The design, selection, and placement of TTC devices for a TTC plan should be based on engineering judgment.

Each person whose actions affect TTC zone safety, from upper-level management to the field workers, should receive training appropriate to the job decisions each individual is required to make. Only those individuals who are trained in proper TTC practices and have a basic understanding of the principles should supervise the selection, placement, and maintenance of TTC devices used for TTC zones and for incident management.

User and worker safety in TTC zones should be an integral and high-priority element of every project from planning through design and construction. Other design elements to consider may include the type of work, duration of the work, proximity of work to traffic, traffic conditions, traffic volumes, speed limits, and roadway characteristics.

TTC plans range in scope from being very detailed to simply referencing typical drawings, approved agency drawings and manuals, or specific drawings contained in the contract requirements. For example:

- A bridge replacement project requiring the use of a temporary bridge to keep the road open to traffic should have site specific TTC construction drawings showing the signing for the temporary alignment change, barricades and signs for the existing bridge closure, and all safety signs needed to post the temporary bridge.
- Routine, recurrent work, such as road blading, brushing, or sign installation projects, should have a typical plan that is applicable for the work on any road. The plan should include the traffic control devices and procedures needed for safe traffic control. Worker safety requirements should be completed, discussed, and implemented before work begins. Modifications to the TTC plan should be made on a site-by-site basis.
- Minor or mobile work, such as small culvert replacement, blading, and brushing on low-volume roads where traffic can be sufficiently warned in advance, may require only minimum devices as shown in figures 4A-1 and 4A-2.
- A more detailed and extensive project, such as a campground reconstruction project should have a site-specific TTC plan developed for all phases of the project operations.

Refer to the MUTCD, section 6C for more detail on TTC plans. The MUTCD, chapter 6H provides examples of typical applications.

Another good reference for TTC planning is “The Traffic Control Devices Handbook” Institute of Transportation Engineers 2001 edition (www.ite.org), chapter 8.

In order to respond logically, and efficiently, proactive steps, such as coordination, ordering, and stocking of signs, needed training, such as flagger certification, and MOUs with other agencies should be completed before incidents occur.

TTC devices should be utilized, inspected, maintained, and modified as needed until the project has been finalized and accepted or the event is over.

Signs shall be removed, turned, or covered when work is not occurring.

4.2.1 Temporary Traffic Control Plans for Incident Management

Natural disasters, such as wildfires, floods, or earthquakes; emergency road user incidents, such as traffic accidents, hazardous material spills, law enforcement, or rescue operations; and other unplanned events can occur anytime or anywhere. While it is impossible to predict the exact location, size, or timing of natural disasters, they do occur. It is important to consider the need for TTC at these incident management areas. An incident management area is a type of TTC zone and should have a TTC plan.

In order to respond logically, efficiently, and swiftly when a natural disaster occurs, proactive steps outlined in a TTC plan, such as coordination, ordering and stocking of signs, training such as flagger certification, and memorandums of understanding (MOUs) with other agencies should be completed before incidents occur.

Incident-specific signs and other TTC devices, such as barricades, cones, flagging equipment, and personal protective equipment should be identified on a TTC plan and obtained as part of the incident planning process.

Procurement plans should be in place for quickly obtaining replacements and additional types and amounts of signs and TTC devices if the traffic control needs for the incident escalate or become more complex.

Initial incident responders, such as law enforcement, initial attack engines and others, should have a basic set of rollup signs and portable sign stands in their vehicles for immediate deployment.

Local, regional, and national incident caches or warehouses should have sign incident kits ready to dispatch for incident management traffic control needs, including a supply of signs, hardware, posts, and general placement and location instructions.

MOUs, State-to-State agreements, or other coordination documents should be developed mutually with the appropriate transportation agencies before incidents occur. Prior planning with these agencies will determine which signs are authorized by the agency; which agency will be responsible for installation, maintenance, and removal of incident signs; and who will coordinate other activities, such as emergency road closures. If no MOU, permits, or other documents exist, coordination with the appropriate road agency should occur as soon as possible.

Identify sites that have been used often in the past or have a high potential for recurrent use for incident management activities. Such sites could include likely incident base camps, fairgrounds, local staging areas, airports, mobilization sites, helibases and helispots, fire return warehouses, and ranger district facilities. A TTC plan for these sites should be completed prior to the incident season.

The TTC plan should identify needed signs, other traffic control devices, and installation locations. Placement locations should be checked for underground utilities. Post holders could be installed so that sign posts could be quickly attached or installed when needed. Signs should be purchased, packaged to prevent unauthorized use, and stored locally. All posts, hardware, and other needed materials or supplies, and a copy of the site sign plan should be included in sign kits stored onsite. Individuals should be assigned and trained to activate these plans as the incident is being organized.

TTC plans should be part of the JHA.

A JHA must accompany all project work plans.

4.2.2 Temporary Traffic Control Plans for Force Account Projects

For Forest Service force account projects, TTC plans should be a part of the Job Hazard Analysis (JHA) as required by Forest Service policy in FSH 6709.12, Safety and Health Program Handbook Chapter 10—Safety and Health Program Administration, Section 14—Job Hazard Analysis and FSH 6709.11 Health and Safety Code Handbook, chapter 20—Work Projects and Activities.

A JHA must accompany all project work plans. The analysis identifies hazards associated with the work project and should identify all TTC devices, protective equipment, or work procedures needed, such as flaggers, detours, and road closures.

Work supervisors shall discuss the TTC plans, procedures, devices, and personal protective equipment with crew members prior to beginning new projects or changing work sites during a work supervisor's tailgate safety meeting. Document these meetings and file documentation with other project work documents when the project is completed.

4.2.3 Temporary Traffic Control Plans for Contract Projects

TTC plans are required for all contract projects and should be based on:

- Requirements for TTC on all public works and timber sale road contracts as found in the latest version of "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects," FP-03 or as supplemented.
- Safety requirements as published in Federal Acquisition Regulations Clause 52.236.13 Accident Prevention, which apply to all public works contracts.

FSH 7709.57, Road Construction Handbook, Section 1.2 and FSH 6309.11 require that all TTC and flagger qualifications and certifications are to be discussed at the prework conference.

If contractor employees do not have appropriate safety apparel or equipment, such as standard signs, it is considered an imminent threat to their health and safety. Take the appropriate actions through the contract administrative authorities to mitigate this imminent health and safety threat. Document all events in the contract diary.

4.3 Temporary Traffic Control Zones

A TTC zone is an area of a road where road user conditions are changed because of a work zone, an incident zone, or a planned special event through the use of TTC devices, uniformed law enforcement officers, or other authorized personnel. Most TTC zones have four components shown in the MUTCD, figure 6C-1:

1. The **advance warning area** is where road users are informed about the upcoming work zone or incident area. The advance warning area may vary from a single sign to a series of signs in advance of the TTC zone activity area.
2. The **transition area** is where the road users are redirected out of their normal path.
3. The **activity area** is where the work activity takes place. It contains the work space, the traffic space, and the buffer space.
4. The **termination area** is where road users are returned to their normal driving path.

Each TTC zone is different and varies with conditions, such as road configuration, location of work, work activity, duration of work, user volume, vehicle type, and speed. The goal of TTC in work zones is safety with minimum disruption to the user. The key factor in promoting TTC zone safety is proper judgment.

4.4 Worker Safety

Worker safety within a TTC zone is of equal importance as the safety of the road users. TTC zone workers should keep in mind that, while they have an important job to do, they must ensure their own safety, the safety of the public, and the safety of their coworkers. Consider the following key elements to improve worker safety. Refer to the MUTCD, chapter 6D for complete details.

No job is so important that we cannot take the time to work safely.

- Training.
- Temporary traffic barriers.
- Speed reduction.
- Activity area planning.
- Worker safety planning.

4.4.1 High-Visibility Safety Apparel

Federal regulations require that all workers, including emergency responders, who are exposed to traffic or work vehicles and construction equipment within the road right-of-way, shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of ANSI/ISEA 107-2004 or current edition publication.

This includes:

All workers within the TTC zone shall wear high-visibility safety apparel.

- Construction and maintenance workers engaged in roadside activities
- Workers engaged in roadside activities, such as timber cruising or danger tree identification.
- Firefighters engaged in roadside firefighting activities, such as installing road signs, directing traffic, and conducting tactical/logistical operations.
- Uniformed law enforcement personnel directing traffic, investigating crashes, or handling lane closures, obstructed roadways, and disasters.
- Personnel conducting flagging operations for temporary traffic control.
- Personnel maintaining road closures.

A work supervisor should perform a documented Job Hazard Analysis (JHA) to determine the appropriate class of garment for use, either Class 2 or Class 3. The appropriate garment color should be selected which will provide the greatest contrast between the worker and the work environment. If there is any doubt as to the appropriate class, go with the higher level of protection.

Class 2 garments provide a moderate level of visibility. Select when:

- Greater visibility is desired during inclement weather conditions.
- Complex backgrounds are present.
- Speeds of traffic or moving equipment exceed 25 mph.
- Worker's activities take place in closer proximity to vehicle traffic.

Class 3 garments provide the highest level of visibility. Select when workers:

- Are exposed to significantly higher vehicle speeds and/or reduced sight distances.
- Face serious hazards and have high task loads that require attention away from their work.
- Are conducting flagging operations at night.
- Must be conspicuous through the full range of body motions at a minimum of 1,280 feet.

Refer to the Missoula Technology and Development Center (MTDC) publication "High Visibility Garments and Worker Safety on Roadways, 2012" 1151-2811 for more information on high visibility safety apparel.

4.4.2 Flagger Control

Flagging traffic is a critical and potentially hazardous part of providing a safe TTC zone. When workers are killed, it is often the construction traffic-control supervisor and the flagger who are the work zone casualties. Without question, flagging is one of the most dangerous TTC jobs.

Flaggers have the responsibility of protecting themselves and their fellow workers as well as the users traveling through the TTC zone.

Flaggers working on any Forest Service project, event, or incident shall be trained and certified.

Flaggers working on any Forest Service project, event, or incident shall be trained and certified by a State, local Department of Transportation, Local Transportation Assistance Program (LTAP), or other qualified training source. In most States, flaggers are required to be certified before being allowed to perform flagging operations on roads.

Flaggers should demonstrate the ability to:

- Receive and communicate specific instructions clearly, firmly, and courteously.
- Move quickly to avoid danger from errant vehicles.
- Control signaling devices to provide clear guidance to approaching drivers.
- Apply safe traffic control practices in stressful or emergency situations.
- Recognize dangerous traffic situations and warn workers quickly enough so they can avoid injury.

Memorandums of Understanding or other agreements with State Departments of Transportation may grant reciprocity to flaggers certified in other States to perform flagging duties when assigned to incident management activities.

Use flaggers when engineering judgment determines there is a need. Factors to be considered in the engineering judgment are work duration, work location, work type, and highway type.

A single flagger may be used for:

- Short-length and short-duration projects, such as culvert or cattle guard cleaning on a low-volume road and the flagger is visible to traffic approaching in all directions.
- At spot lane closures where adequate sight distance is available for safely handling traffic.

At a spot constriction, the flagger may have to take a position on the shoulder opposite the closed section to operate effectively.

Flaggers shall use a STOP/SLOW paddle, flag or an Automated Flagger Assistance Device.

Flaggers must be clearly visible to approaching traffic at all times. Flaggers shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 or current edition publication. For nighttime activity, flaggers should wear safety apparel meeting Class 3 risk exposure. Refer to section 4.4.1 and MTDC publication 1151-2811, "High Visibility Garments and Worker Safety on Roadways, 2012".

Flagger stations should be located in advance of the actual work area so that approaching road users will have enough visibility distance to stop safely. Guidelines for buffer space distances are shown in table 4-2 and are based on stopping sight distances. Distances may be increased for downgrades and other conditions that affect stopping distances.

Table 4-2—Buffer space distance for flagger stations.

Speed mph*	20	25	30	35	40	45	50	55	60	65	70	75
Distance feet	115	155	200	250	305	360	425	495	570	645	730	820

**Use posted speed, 85th-percentile speed prior to work area, or the anticipated operating speed.*

Vehicle activity or storage of equipment, vehicles, or materials should not occur in a buffer space.

Except in emergencies, flagger stations shall be preceded by advance warning signs to alert road users and shall be illuminated at night.

Flaggers shall use a STOP/SLOW paddle, flag or an Automated Flagger Assistance Device (AFAD) to control users approaching a TTC zone.

The STOP/SLOW paddle shall meet the following standards:

- Octagonal shape.
- Minimum 18 inches wide with 6-inch letters.
- The STOP face shall have white letters and border on a red background.
- The SLOW face shall have black letters and border on an orange background.
- Be retroreflective when used at night.
- Be fastened to a rigid staff that is tall enough that when the end of the staff is resting on the ground, the message is high enough to be seen by approaching or stopped traffic.

The use of hand movements alone is prohibited except for law enforcement personnel or emergency responders at incident scenes as described in the MUTCD, chapter 6I.

Refer to the MUTCD, chapters 6E, 6G, and 6H for specific information on flagger qualifications, advance warning signs, methods, and equipment.

4.5 Temporary Traffic Control Zone Devices

Traffic control devices are all signs, signals, markings, barricades, and other devices used to regulate, warn, or guide users, placed on, over, or adjacent to a road open to public travel.

All traffic control devices used for construction, maintenance, utility, planned events, or incident management operations on a road open to public travel shall comply with the MUTCD and these Guidelines.

4.5.1 Temporary Traffic Control Signs

TTC zone signs convey both general and specific messages by means of words, symbols, and/or arrows and have the same three categories as all traffic control devices: regulatory, warning, and guide. Signs shall be professional in design and appearance, and meet all size, appearance and retroreflectivity requirements. Homemade signs do not meet these requirements.

Regulatory signs, such as STOP, YIELD, and DO NOT ENTER, shall follow chapter 3A and the MUTCD, chapter 2B.

Warning and guide signs in TTC zones used for construction, maintenance, and utility projects, and planned events, shall have a black legend and border on an orange retroreflective background. Use fluorescent orange sheeting when maximum visibility is needed especially during twilight. Refer to the MUTCD, chapter 6F, section 6F.02 for exceptions.

Standard retroreflective orange and black construction warning and guide signs situations may be used in incident management zones if they are readily available.



Signs shall be professional in design and appearance, and meet all size, appearance and retroreflectivity requirements.



Fluorescent pink may also be used for incident management warning and guide signs. For approach roads to incident areas or operations, the preferred sign color for incident warning and guide signs is fluorescent pink for several reasons:

- The color commands attention and gives notice of something unusual ahead.
- There is no confusion with other yellow or orange signs that may be installed for standard road construction and maintenance activities.
- Incident personnel and supply vehicle drivers notice them immediately and are readily guided to incident locations.

If incident management signs are not available, use standard construction signs until appropriate incident-specific signs can be obtained and installed. Nonstandard signs shall not be used unless it is an emergency and no other timely or appropriate option is available. As soon as standard incident signs are available, all construction or nonstandard signs shall be replaced.

Table 6F-1 of the MUTCD provides a list of TTC signs and their sizes. The minimum size shown in table 6F-1 shall only be used on roadways where the 85th percentile or posted speed limit is less than 35 mph.

All TTC signs used at night shall be either retroreflective or illuminated to show the same shape and similar color both day and night.

4.5.2 Channelizing Devices

The function of channelizing devices is to warn road users of conditions created by work activities in or near the roadway and to guide road users. Channelizing devices provide for smooth and gradual vehicular traffic flow from one lane to another, onto a bypass or detour, or into a narrower traveled way. They also are used to channelize vehicular traffic away from the work space, pavement drop-offs, pedestrian or shared-use paths, or opposing directions of vehicular traffic.

A channelizing device can be a barricade, cone, drum, tubular marker, or vertical panel, and shall meet the requirements shown in the MUTCD, chapter 6F, section 6F.63

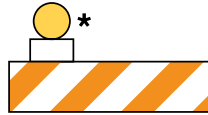
All channelizing devices shall be crashworthy.

Figure 6F-7 of the MUTCD shows standard channelizing devices. Included here are Forest Service guidelines that supplement the MUTCD.

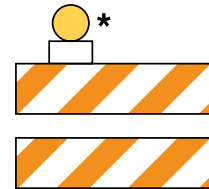
4.5.2a Barricades

Type 1 and Type 2 barricades are commonly misused for road closures. They shall only be used where traffic flow is maintained through the TTC zone and not for road closures.

Type 1 and Type 2 barricades shall only be used where traffic flow is maintained through the TTC zone and not for road closures.

**TYPE 1 BARRICADE**

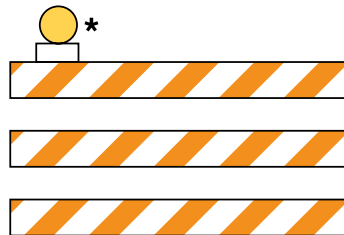
* Warning lights (optional)

**TYPE 2 BARRICADE**

* Warning lights (optional)

Use Type 3 barricades to close or partially close roads for TTC activities, such as project work; road closures due to fire, flood, or other danger; and incident management. Type 3 barricades are a minimum length of 48 inches with 6 stripes.

Use Type 3 barricades to close or partially close roads for TTC activities.

**TYPE 3 BARRICADE**

* Warning lights (optional)

Traffic control signs may be installed on Type 3 barricades. Refer to the MUTCD, section 6F.03. Typical signs installed on these barricades include:

- ROAD CLOSED, AREA CLOSED
- ROAD CLOSED TO THRU TRAFFIC
- LOCAL TRAFFIC ONLY
- DETOUR
- ONE WAY

Refer to the MUTCD, sections 6F.63 and 6F.68 for more comprehensive information on Type 1, 2, and 3 barricades. Refer to the MUTCD, figure 6F-7 for Type 1, 2, and 3 barricade dimensions.

Barricades shall

be crashworthy.

Homemade barriers,
such as sawhorses and
wood posts do not meet
required standards.

Signs shall not be less than 1-foot above the road when mounted on the barricade. In no case should more than 50 percent of the top two rails or 33 percent of the total area of all the rails be covered by standard signs.

Other signs, maps, or posters shall not be placed on barricades.

All sides of barricades facing traffic should have retroreflective rail faces showing and be visible from both directions.

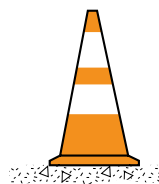
Barricades shall be crashworthy. Homemade barriers, such as sawhorses and wood posts do not meet the required standards. Anchor barricades with appropriate ballast, such as sandbags or water jugs. Do not place ballast on top of any striped rail. Do not use objects for ballast that will not deform in a collision, such as rocks and concrete blocks.

Stripes on the rails should point downward toward the direction that road users must turn or downward toward the barricade center when no turns are allowed. Correct positioning of the rail stripes on Type 3 barricades is shown in chapter 4A, figure 4A-3.

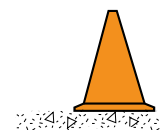
4.5.2b Traffic Cones and Flares

Cones shall be predominantly orange and shall be made of a material that can be struck without causing damage to the impacting vehicle. For daytime and low-speed roadways, cones shall be not less than 18 inches in height. When cones are used on freeways and other high-speed highways or at night on all highways, or when more conspicuous guidance is needed, cones shall be a minimum of 28 inches in height.

For nighttime use, cones shall be retroreflectorized or equipped with lighting devices for maximum visibility. Retroreflectorization of cones that are 28 to 36 inches in height shall be provided by a 6-inch wide white band located 3 to 4 inches from the top of the cone and an additional 4-inch wide white band located approximately 2 inches below the 6-inch band.



Night and/or freeway
High-speed roadway
(≥ 45 mph)



Day and low-speed
roadway (≤ 40 mph)

Follow procedures in the MUTCD, section 6C.08 for proper cone placement during planned activities, such as construction and maintenance operations.

For emergency cone deployment during incident operations, follow procedures shown in chapter 4A, figure 4A-11.

Refer to the MUTCD, sections 6F.64 for more comprehensive information on traffic cones. Refer to the MUTCD, figure 6F-7 for traffic cone dimensions.

4.6 Typical Work Zone Temporary Traffic Control Sign Applications



R11-2



R13-1b

4.6.1 Road Closures

When the exclusion of public traffic is necessary for the safety of road users, a regulatory ROAD CLOSED sign (R11-2) should be used. Refer to chapter 3A, section 3A.5.

If some uses are allowed, such as certain types of traffic (e.g., logging or construction) or during certain periods (e.g., nights or weekends), a clear and appropriate message shall be part of the sign. The sign may describe the type of traffic, the hours of the day, or the days of the week of the exclusion (R13-1b).

Such signing should be provided when restricting noncommercial use of roads during periods of commercial haul in accordance with direction in FSH 7709.59, chapter 60, section 64.41.

4.6.2 Logging Operations

Use the LOGGING OPERATIONS sign (FW11-10a), LOG TRUCKS (FW11-10b), or LOG TRUCKS ENTERING ROAD (FW11-10c) to warn users of hazards associated with logging activities, log hauling on or along a road, or log trucks entering intersections. Cover or remove signs when the message is not appropriate. Supplemental plaques, such as NEXT XX MILES, should be used as appropriate. Refer to chapter 3B, section 3B.2.23a for information on supplemental plaques.



FW11-10a



FW11-10b



FW11-10c



FW11-10d

4.6.3 Heavy Truck Traffic

Use the HEAVY TRUCK TRAFFIC sign (FW11-10d) to warn users of hazards associated with heavy truck traffic on or along a road. Cover or remove signs when the message is not appropriate. Supplemental plaques, such as NEXT XX MILES, should be used as appropriate. Refer to chapter 3B, section 3B.2.23a for information on supplemental plaques.

4.7 Typical Incident Management Temporary Traffic Control Sign Applications

4.7.1 General

The MUTCD, chapter 2N and chapter 6I provide guidance for incidents that impact roads and highways.

Initial responders to incidents involving highways/roads should have TTC set up within 15 minutes of on-scene arrival. Standard signs on hand may be used as long as these signs and sign placements do not create unnecessary or additional hazards.

The flashing lights on emergency vehicles are generally sufficient for minor or short-duration traffic incidents (30 minutes or less), such as a “fender bender” or a law enforcement pullover. Diversion of traffic into other road lanes often is not needed or needed only briefly.

More serious or intermediate-duration (30 minutes to 2 hours) incidents, such as a serious vehicle accident or vehicle rollover that blocks a road, may require TTC. If necessary, a trained and properly equipped flagger may be assigned to direct traffic.

Major, long-term (more than 2 hours) situations, such as hazardous material spills, prescribed burns, wildfires, or other widespread or catastrophic events could require a large number of traffic control devices, trained and properly equipped flaggers, and other methods in order to warn and direct traffic through the area impacted by the event. In addition, follow the TTC procedures and use the devices set forth in other chapters of part 6 of the MUTCD for major incidents.

Refer to chapter 4B, figures 4B-4 through 4B-11 for typical placement guidelines for incident management signing. These signs are appropriate for both wildfire incidents and managed burns.



R1-1



EM-3



FW8-6a

4.7.2 TRAFFIC CONTROL POINT (EM-3) Sign

The TRAFFIC CONTROL POINT (EM-3) sign shall be used to designate a location where an official traffic control point has been set up to impose such controls as are necessary to limit congestion, expedite emergency traffic, exclude unauthorized vehicles, or protect the public.

The sign shall be installed in the same manner as the AREA CLOSED sign and at the point where traffic must stop to be checked. Refer to the MUTCD, section 2N.04.

The standard STOP (R1-1) sign shall be used in conjunction with the TRAFFIC CONTROL POINT sign. The TRAFFIC CONTROL POINT sign should be mounted directly below the STOP sign. Refer to chapter 4A, figure 4A-10.

4.7.3 FIRE TRAFFIC ENTERING ROAD (FW8-6a) Sign

Use the FIRE TRAFFIC ENTERING ROAD (FW8-6a) sign to warn approaching road users that incident traffic is entering and exiting at the intersection. Use of an Advisory Speed plaque is optional. Its use requires approval by the State Department of Transportation if it is placed on State roads. Refer to chapter 4A, figure 4A-4.



FW21-8



W7-3aP

4.7.4 FIRE ACTIVITY AHEAD (FW21-8) Sign

Use the FIRE ACTIVITY AHEAD (FW-21-8) sign when incident operations are occurring adjacent to the road, such as initial attack engine, crew, or helicopter operations. Refer to chapter 4A, figures 4A-5 through 4A-8.

The FIRE ACTIVITY AHEAD sign may be omitted if the incident vehicle or activity is behind a barrier, more than 24 inches behind a curb, or more than 15 feet from the edge of any roadway.

For fire operations less than 30 minutes, signs are not required if the incident vehicle uses activated high-intensity rotating, flashing, oscillating, or strobe lights.

Incident management activities may occur throughout an incident zone over a long section of road. Use the FIRE ACTIVITY AHEAD (FW-21-8) sign with a Distance plaque indicating the length of the traffic control zone as the first sign in a series of incident management signs. Refer to chapter 4A, figure 4A-5.

Refer to chapter 3B, section 3B.2.23a for information on supplemental plaques.



FG20-5

4.7.5 END FIRE ACTIVITY (FG20-5) Sign

Use the END FIRE ACTIVITY (FG20-5) sign to let road users know that they may resume normal driving. Place the END FIRE ACTIVITY sign on the opposite side of the road from the FIRE ACTIVITY AHEAD sign warning road users coming from the other direction.

If the incident activity occurs over more than 5 miles of road, install additional FIRE ACTIVITY AHEAD signs with the distance plaque, W7-3aP, at least every 5 miles. Refer to chapter 4A, figure 4A-5.

Refer to chapter 3B, section 3B.2.23a for information on supplemental plaques.

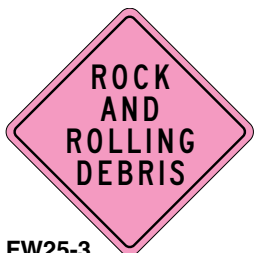


FW25-1

4.7.6 SMOKE LIMITED VISIBILITY (FW25-1) Sign

The SMOKE LIMITED VISIBILITY (FW25-1) sign may be used to warn road users that smoke is reducing visibility along a section of road. A NEXT XX MILES (W7-3aP) supplemental plaque may be mounted below the FW25-1 sign to inform road users of the length of road that is experiencing the smoke.

Refer to chapter 3B, section 3B.2.23a for information on supplemental plaques.



FW25-3

4.7.7 ROCK AND ROLLING DEBRIS (FW25-3) Sign

The ROCK AND ROLLING DEBRIS (FW25-3) sign may be used in advance of an area that is adjacent to a fire or other incident that is causing rocks and burning debris to fall onto the road.

A NEXT XX MILES (W7-3aP) supplemental plaque may be mounted below the FW25-3 sign to inform road users of the length of road that is experiencing the fallen rock and debris.

Refer to chapter 3B, section 3B.2.23a for information on supplemental plaques.

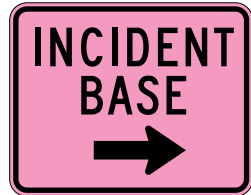


FW25-4

4.7.8 HELICOPTER OPERATIONS (FW25-4) Sign

The HELICOPTER OPERATIONS (FW25-4) sign may be used in advance to warn road users that helicopter operations are occurring over or adjacent to the road and may affect normal operation of the road. A NEXT XX MILES (W7-3aP) supplemental plaque may be mounted below the FW25-4 sign to inform road users of the length of road impacted by the helicopter operations.

Refer to chapter 3B, section 3B.2.23a for information on supplemental plaques.



FG21-1

4.7.9 Incident Management Guide Signs (FG21 series)

Use guide signs at critical intersections to direct incident management traffic to destinations such as:

- Incident bases.
- Incident command post (ICP).
- Helibases.
- Staging areas.
- Spike camps.
- Dip sites.
- Wash areas.
- Fire information stations



FG21-10

When several incidents are in the same area, a nameplate (FG21-10) may help incident responders locate the right incident. The name of the incident should be on a separate sign mounted on top of the guide sign.

Refer to chapter 4A, figure 4A-4.



FG21-11

4.7.10 MANAGED BURN—DO NOT REPORT (FG21-11) Sign

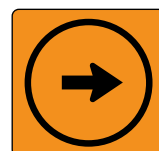
The MANAGED BURN—DO NOT REPORT (FG21-11) sign may be used to inform road users that a managed burn is in progress, and it does not need to be reported. The sign typically is used when smoke from the managed burn is visible to the road users.



FG36a

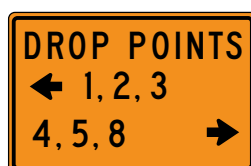
4.7.11 DROP POINT Sign

DROP POINT signs direct incident personnel to specific destinations where they can drop off or pick up supplies and crews. If drop points are accessed only from one direction, signs may be needed only on that side of the roadway.



FG35

Use the single DROP POINT (FG-36a) sign for individual drop points. Separate arrow plaques (FG-35) are used to direct traffic to the right, left, or straight ahead.



FG36

Use the multiple DROP POINT (FG-36) sign to direct traffic to several drop points from a single intersection.

Refer to chapter 4A, figure 3A-9.

4.7.12 Traffic Control Devices used within an Incident Base

Standard traffic control signs and devices should be used to direct traffic within an incident base, such as ONE WAY, STOP, and NO PARKING. In addition, signs may be used to assist in directing traffic to locations within incident bases, such as LOGISTICS, GROUND SUPPORT, ENGINE PARKING, and CREW PARKING. Refer to the “Incident Sign Ordering Catalog” (MTDC 1151-2811) for a list of signs available for in-camp signing.

4.7.13 Additional incident management signs

Refer to chapter 4C and the “Incident Sign Ordering Catalog” (MTDC 1151-2811, 2012) for a complete listing of signs available for incident management.

Additional signs may be developed as necessary for temporary conditions related to an incident. Consult with the regional sign coordinator if additional messages are needed.

4.8 Slow-Moving Vehicle Emblem

The slow-moving vehicle emblem consists of a fluorescent yellow-orange triangle with a dark red retroreflective border. The yellow-orange fluorescent color is highly visible in daylight. The retroreflective border defines the shape of the triangle in the daylight and creates a hollow red triangle in vehicle headlights at night.



**Slow Moving Vehicle
Emblem**

The emblem is intended as a unique identification for, and only should be used on, vehicles that by design move slowly (25 mph or less) on public roads. The emblem is not a clearance marker for wide machinery nor is it intended to replace the required lighting or marking of slow-moving vehicles.

Neither the triangle nor its backing shall be altered to permit use of advertising or other markings.

The material, location, dimensions, and mounting of the emblem must be in accord with the American Society of Agricultural Engineers emblem for identifying slow-moving vehicles, ASAE R276, 1967, or ASAE S276.2 9 (ANSI B114.1-1971). Refer to the U. S. Department of Labor Occupational Safety and Health Administration for more information (29 CFR 1910.145(d)(10)).

4A.1 Introduction.....	1
4A.2 Placement Distance for Advance Warning Signs	2
4A.3 Placement Distance for Incident Guide Signs.....	2

4A.1 Introduction

Proper placement is critical to ensure that signs and other traffic control devices are visible, do not present a safety hazard, to provide adequate perception and reaction time for the driver, and to provide safety for the workers.

Temporary Traffic Control (TTC) sign-placement considerations include proper supports, mounting height, lateral distance from the edge of the roadway, and advance placement distance along the roadway.

Locate signs on the right side of the road.

Crashworthy permanent or portable sign supports and barricades are required for all unshielded TTC signs located within the clear zone. Refer to chapter 3D, section 3D.7 for crashworthy requirements.

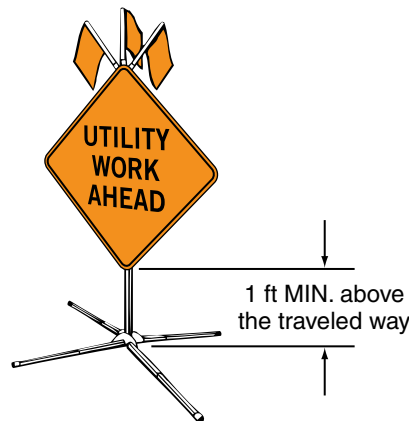
Typically, signs should be mounted on posts, portable sign supports, or other approved sign stands that meet the minimum height and lateral location requirements shown in chapter 3D and the MUTCD, figure 6F-1.

Signs mounted on portable sign supports that do not meet the minimum mounting heights should not be used for more than 3 days with the following exceptions:

- Pedestrian series signs (R9-8 through R9-11a).
- Road closed series signs (R-11).
- Chevron series warning signs (W1-6 through W1-8).
- Detour series signs M4-10, E5-1 or similar signs.
- Incident signs where the duration or scope of the incident is unknown and can change rapidly, (e.g., wildfires).

Sign supports shall be crashworthy.

These signs shall be mounted at least 1-foot above the traveled way.



Signs mounted on portable supports or barricades may be placed within the roadway.

Signs with different or nonrelated messages typically are mounted on separate posts. If necessary, an exception may be made to install an incident warning sign on the same post as a noncritical existing warning or regulatory sign if the message of the existing sign is not compromised and if no other option exists to mount the sign. Refer to chapter 3, section 3.8 for sign priorities.

Mounting an incident directional sign on the same post with existing directional or informational signs also may be allowed if the existing message will not be compromised. Do not cover existing regulatory and warning signs with TTC signs. However, if existing signage is conflicting or not applicable during the management of the project or incident, cover the signs to prevent confusion. Promptly remove all TTC signs when the project or incident is over or when the signs are no longer applicable or needed.

Where mobile or short-duration operations occur on the road shoulders of low-volume roads, such as weed spraying or sign maintenance, and the operation will occur along extended segments of road, it is impractical to place stationary TTC signs. The methods shown in figure 4A-1 may be used. For mobile operations a sign may be mounted on a vehicle.

Refer to the MUTCD, chapter 6C, 6G, and 6H for more detail on TTC zones.

4A.2 Placement Distance for Advance Warning Signs

Advance warning signs must precede the TTC location by a distance sufficient to warn traffic and allow for adequate perception and reaction time of the driver. The recommended advance warning sign minimum distances are listed in table 4A-1. These numbers are intended for guidance purposes only and should be applied with engineering judgment. Relocate signs if traffic congestion extends past the original locations of the signs.

Table 4A.1—Recommended spacing of advance warning signs

Speed limit or prevailing approach speed (mph)	Distance from the TTC activity area to the first sign and between subsequent signs in a series (feet)
25 or less	100
30 to 45	350
45 to 50	500

Refer to the MUTCD, chapter 6C for State and county highways and speeds greater than 50 mph.

4A.3 Placement Distance for Incident Guide Signs

Use table 4A-2 for advance placement distances along access roads for guide signs that direct traffic to incident locations, such as an incident base, helibases, or staging areas.

Use engineering judgment to determine placement of signs on internal camp roads.

Table 4A.2—Advanced placement of guide signs at intersections

Speed limit or prevailing approach speed (miles per hour)	Distance from intersection (feet)
Less than 15	25
15 to 25	100
30 to 40	100 to 200
Over 45	200 minimum

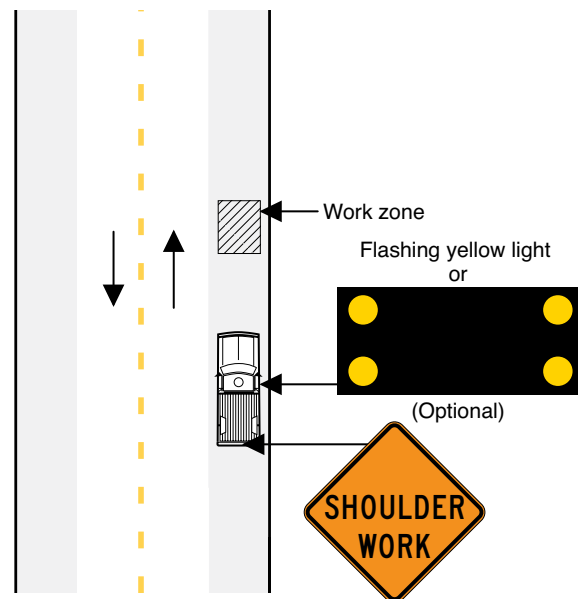
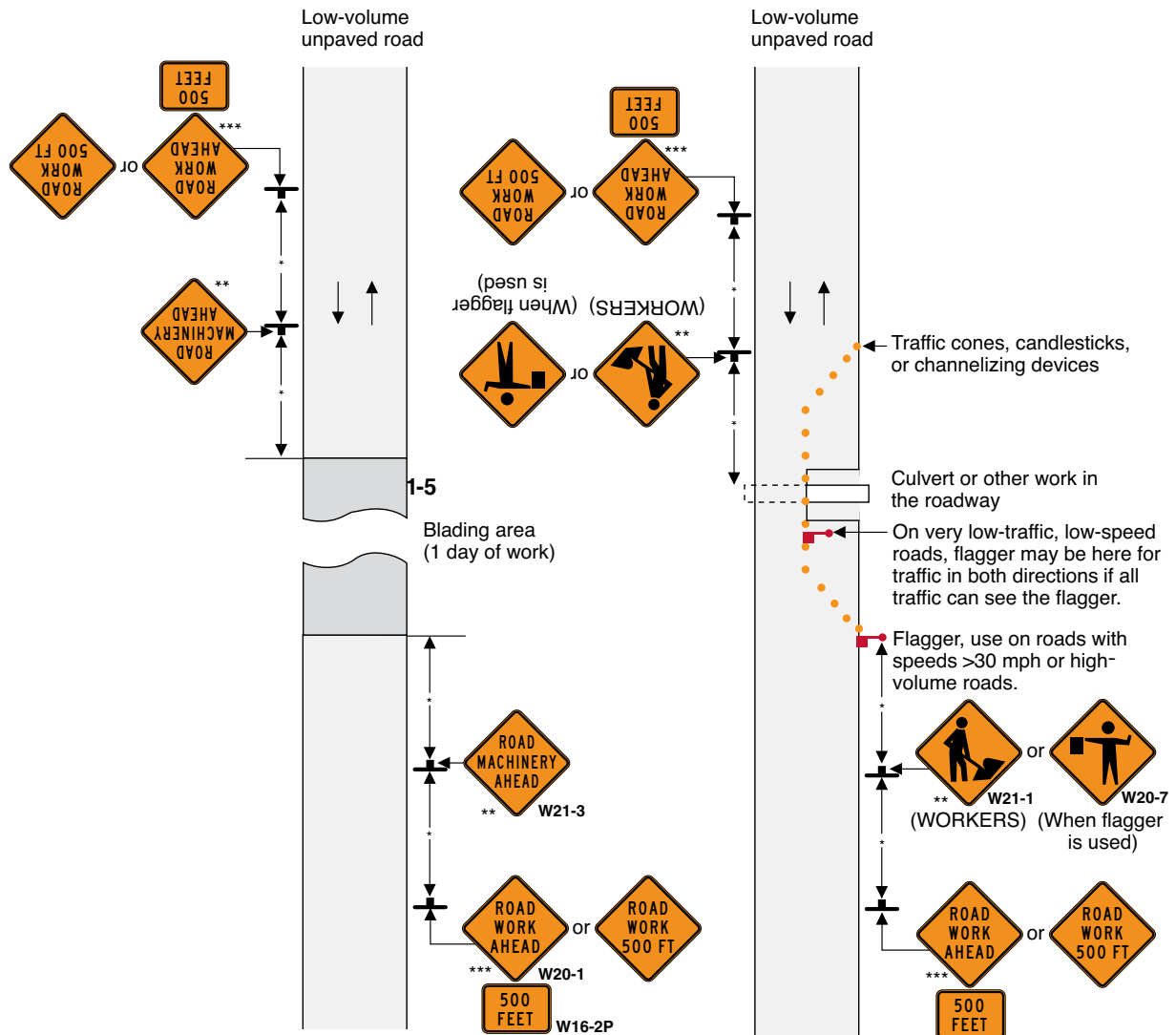


Figure 4A-1—Low-volume road with short-duration or mobile operation on shoulder.

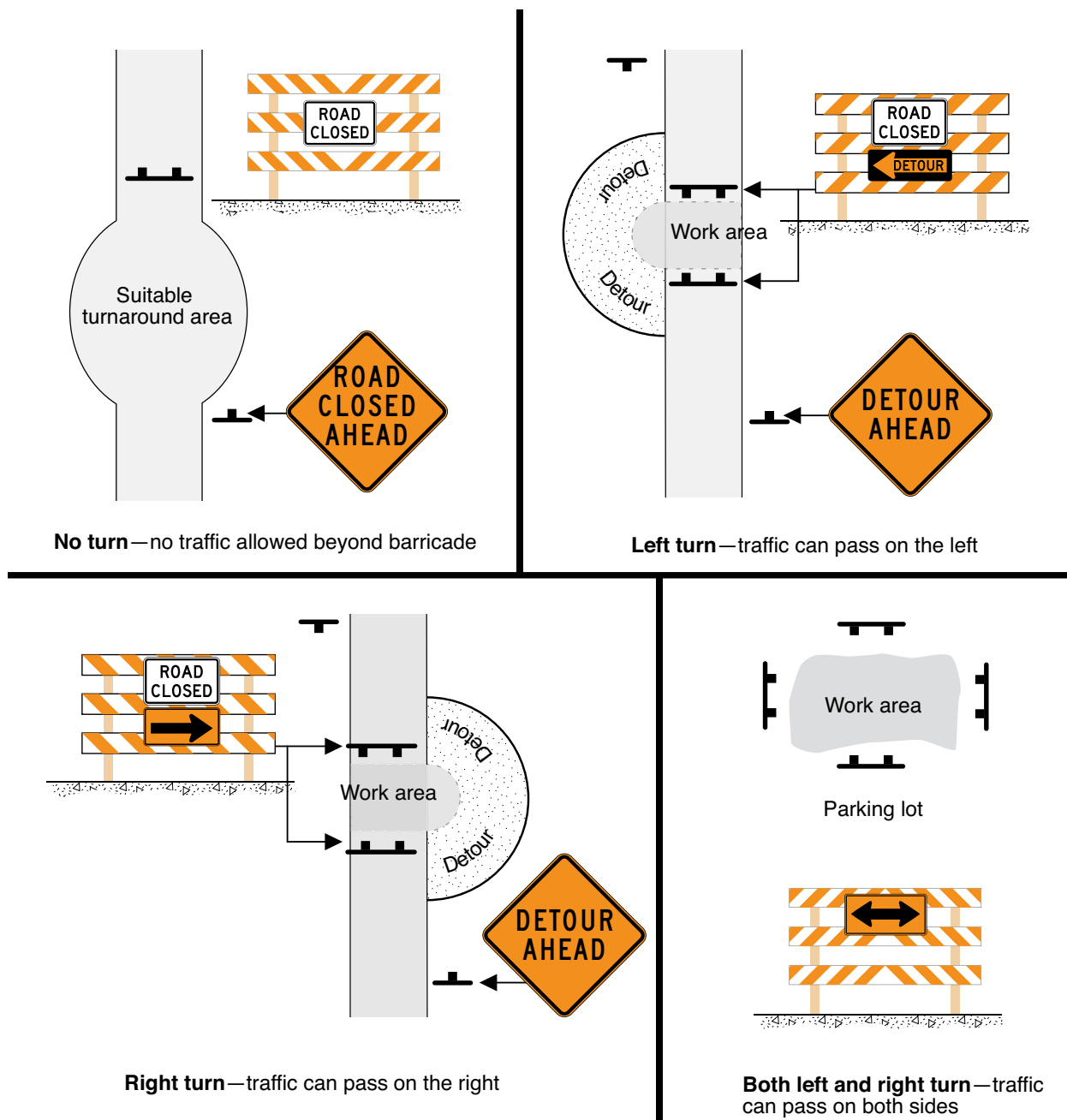


* Obtain distance from table 4A-1.

** These signs may be all that are required when traffic approach speeds are 25 mph or lower and the blading or construction operations are visible.

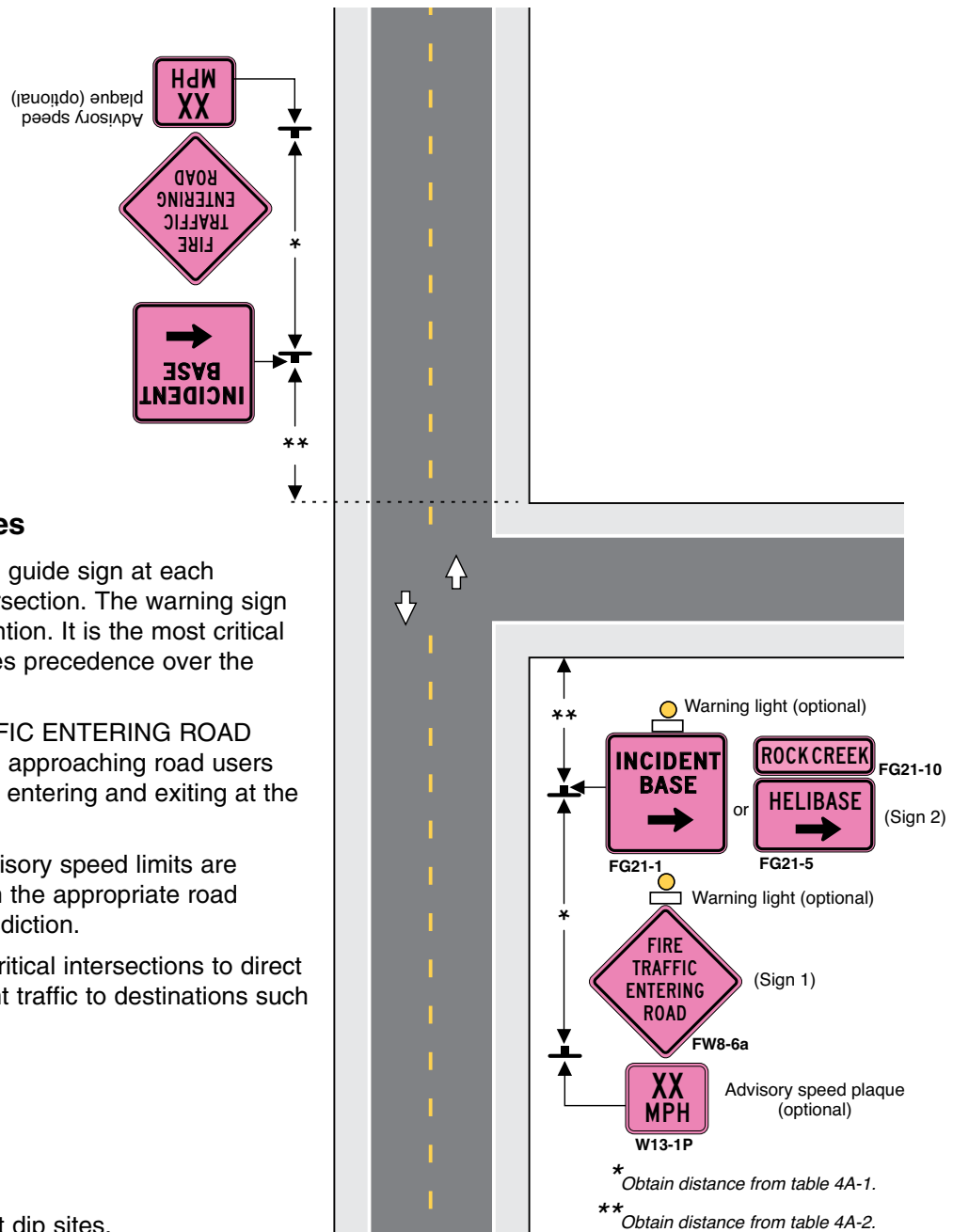
*** Add these signs when traffic approach speeds are above 25 mph or blading or construction operations are not visible. Specify correct distances on signs as needed.

Figure 4A-2—Temporary traffic control devices for minor work on low-volume roads.



Use appropriate advance warning sign(s) as determined by engineering judgement or engineering study.
Use appropriate advance warning sign(s) for return traffic.

Figure 4A-3—Type 3 barricade use.



Application Notes

Install a warning and guide sign at each approach to the intersection. The warning sign (sign 1) attracts attention. It is the most critical sign and always takes precedence over the guide sign (sign 2).

Use the FIRE TRAFFIC ENTERING ROAD warning sign to warn approaching road users that incident traffic is entering and exiting at the intersection.

If enforceable or advisory speed limits are necessary, work with the appropriate road agency that has jurisdiction.

Use guide signs at critical intersections to direct incident management traffic to destinations such as:

- Incident bases.
- Helibases.
- Staging areas.
- Helicopter bucket dip sites.
- Washing stations.

When several incidents are in the same area, a nameplate may help persons locate the right incident. The name of the incident should be on a separate sign mounted on top of the guide sign.

Use of the advisory speed plaque requires approval by the State Department of Transportation if it is placed on State roads.

Don't use advisory speed plaques by themselves.

Figure 4A-4—Temporary traffic control signage for incident management activities at intersections.

Application Notes

Incident management activities may occur throughout an incident zone over a long section of road.

Use the FIRE ACTIVITY AHEAD sign with a distance plaque indicating the length of the traffic control zone as the first sign in a series of incident management signs.

Use the END FIRE ACTIVITY sign to let road users know that they may resume normal driving. Place the END FIRE ACTIVITY sign on the opposite side of the road from the FIRE ACTIVITY AHEAD sign warning road users coming from the other direction.

If the incident activity occurs over more than 5 miles of road, install additional FIRE ACTIVITY AHEAD signs with the distance plaque at least every 5 miles.

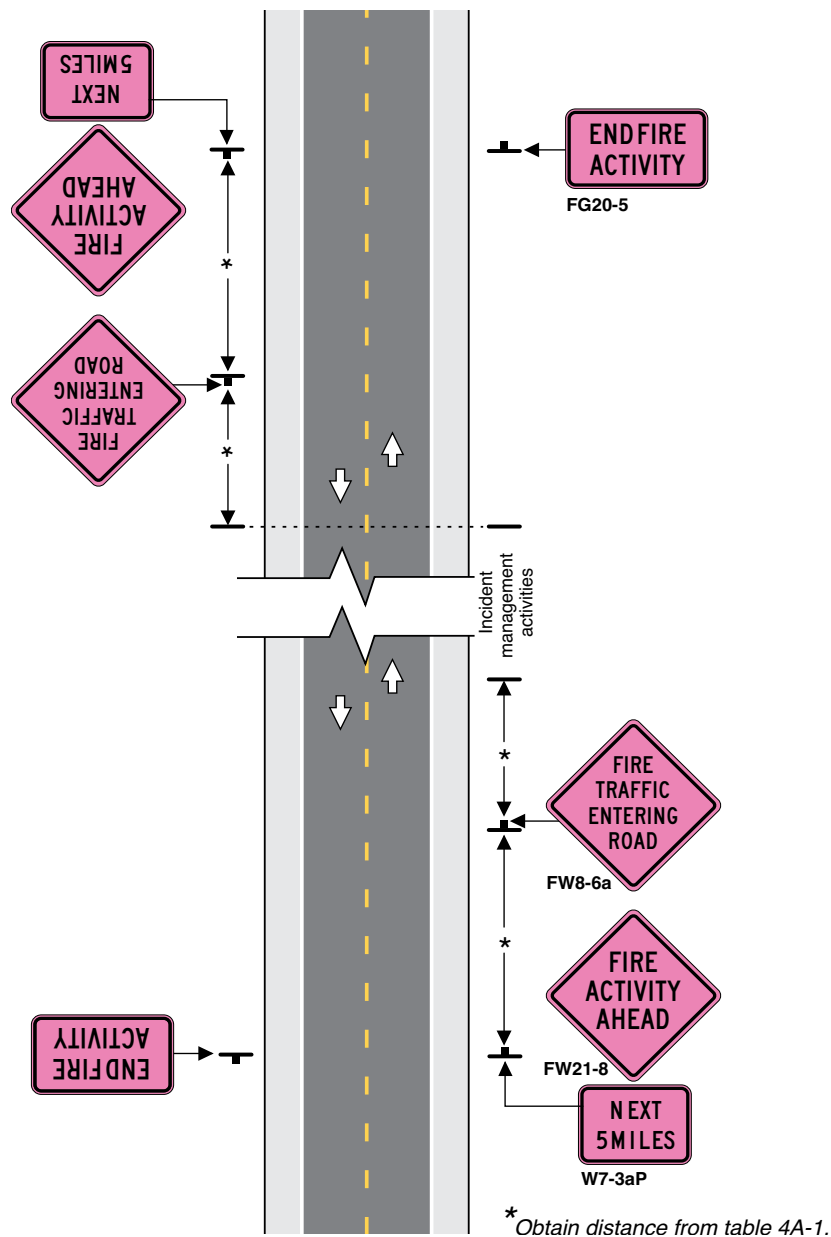


Figure 4A-5—Temporary traffic control signage for approaching and leaving fire activity zones.

Application Notes

The FIRE ACTIVITY AHEAD sign may be omitted if the incident vehicle or activity is behind a barrier, more than 24 inches behind a curb, or more than 15 feet from the edge of any roadway.

For operations lasting less than 30 minutes, signs are not required if the incident vehicle uses activated high-intensity rotating, flashing, oscillating, or strobe lights.

Hazard-warning signals on vehicles may be used to supplement—but not replace—high intensity rotating, flashing, oscillating, or strobe lights.

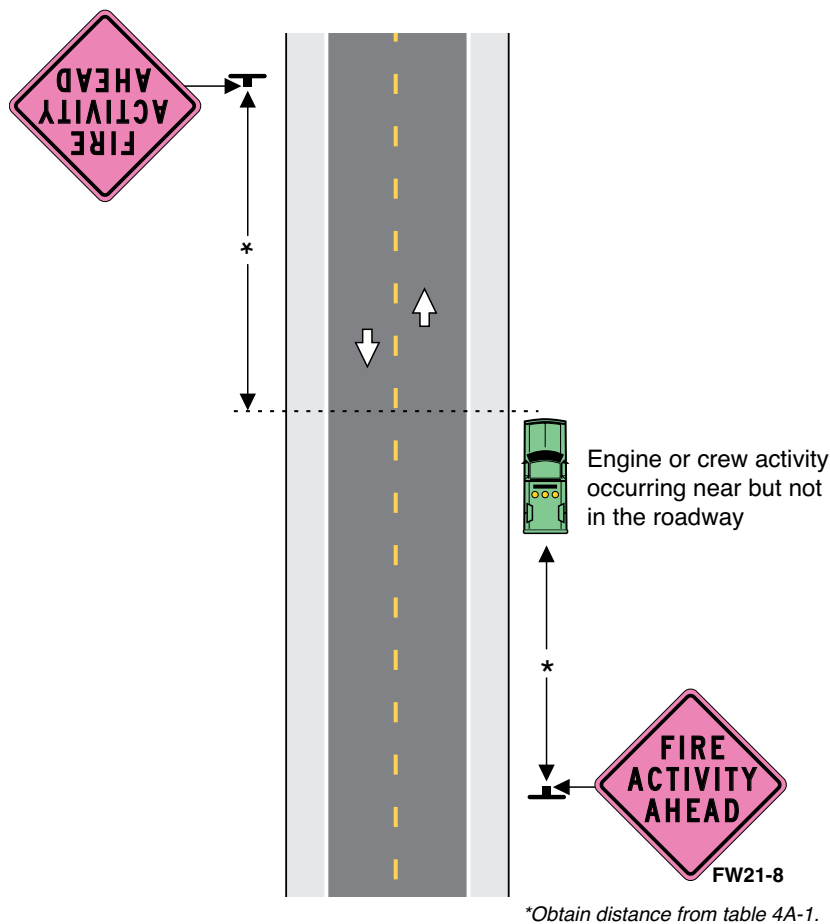


Figure 4A-6—Temporary traffic control signage for initial attack engine or crew operations along a roadway.

Application Notes

Intermittent flagging operations may be needed during shift changes or at other critical times of the incident operation.

Use the BE PREPARED TO STOP and the flagger symbol signs during all flagging operations. Remove, cover, or turn signs face down when traffic is not being flagged.

The advance warning sign FIRE ACTIVITY AHEAD should be visible at all times, even when flagging operations are suspended.

A flagger shall be trained and certified by a State- or Federal-approved training and certification agency in safe traffic control practices and public contact techniques. Flaggers shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of ANSI/ISEA 107-2004 (or current edition).

The flagger should:

- Never stand in a lane used by moving traffic.
- Stand either on the shoulder adjacent to the lane being controlled or in the closed lane before stopping road users.
- Only stand in the lane being used by moving traffic after road users have stopped.
- Only stand in the lane being used by moving traffic after road users have stopped.
- Be clearly visible to the first approaching road user at all times.
- Be visible to other road users.
- Be stationed sufficiently in advance of the flight path to allow vehicles time to stop. Refer to chapter 4, table 4-1.
- Stand alone, away from other workers, work vehicles, or equipment.

Where adequate sight distance is available for the reasonably safe handling of traffic, the use of one flagger may be sufficient.

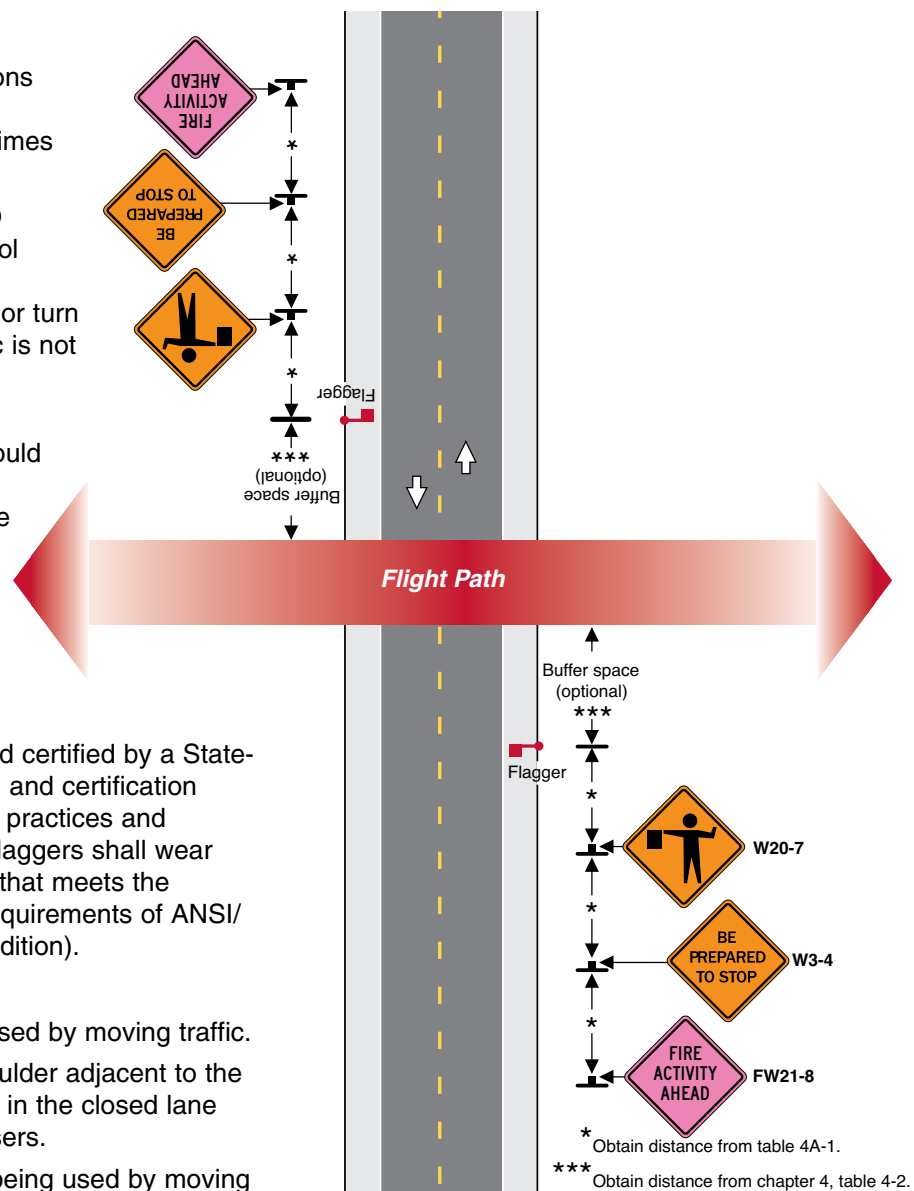


Figure 4A-7—Temporary traffic control signage for flagging operations to stop traffic for helicopter activities.

Application Notes

Intermittent flagging operations may be needed to stop traffic when helicopter operations affect road users.

Use the BE PREPARED TO STOP and the flagger symbol signs during all flagging operations. Remove, cover, or turn signs face down when traffic is not being flagged.

The advance warning sign FIRE ACTIVITY AHEAD should be visible

at all times, even when flagging operations are suspended.

A flagger shall be trained and certified by a State- or Federal-approved training and certification agency in safe traffic control practices and public contact techniques. Flaggers shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of ANSI/ISEA 107-2004 (or current edition).

The flagger should:

- Never stand in a lane used by moving traffic.
- Stand either on the shoulder adjacent to the lane being controlled or in the closed lane before stopping road users.
- Be clearly visible to the first approaching road user at all times.
- Be visible to other road users.
- Be stationed sufficiently in advance of the intersection to allow vehicles time to stop. Refer to chapter 4, table 4-2.
- Stand alone, away from other workers, work vehicles, or equipment.

At spot lane closures where adequate sight distance is available for the reasonably safe handling of traffic, the use of one flagger may be sufficient.

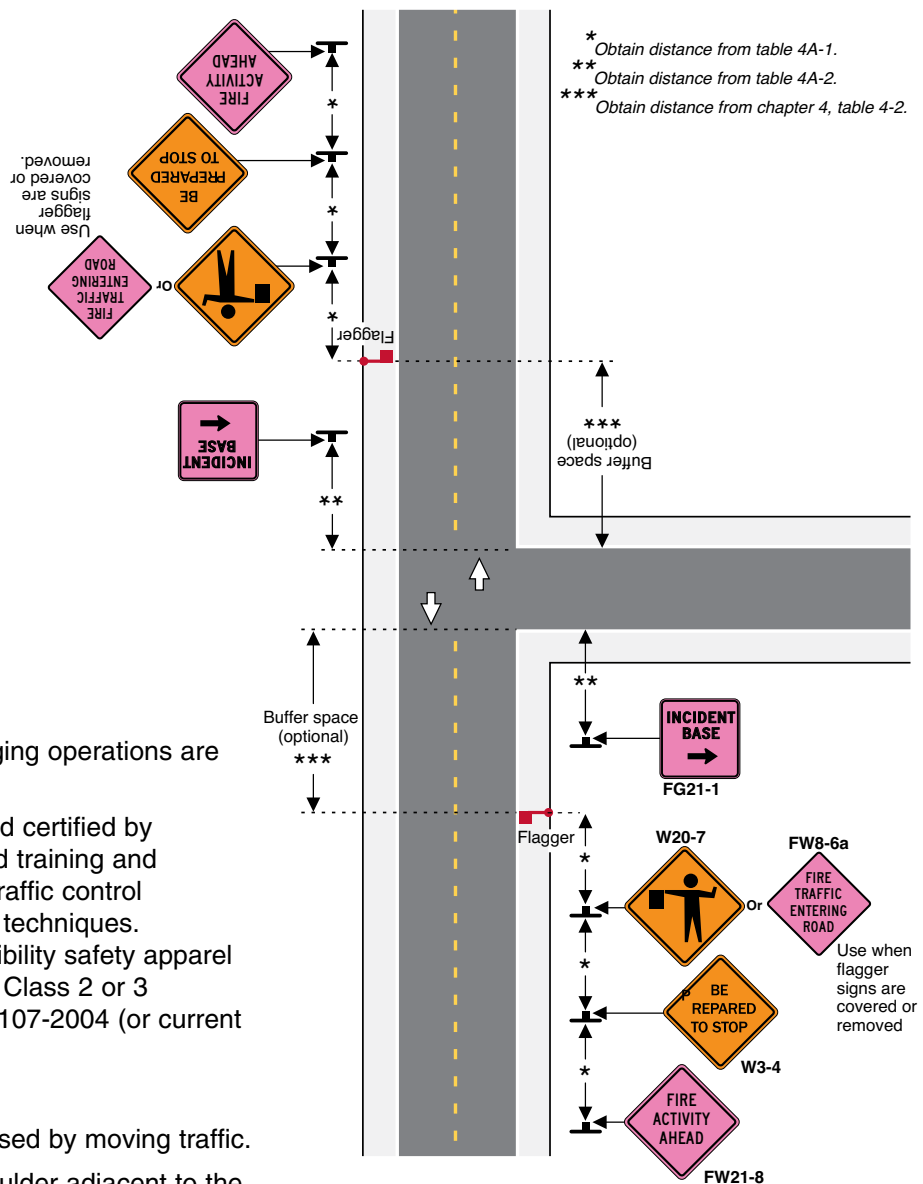


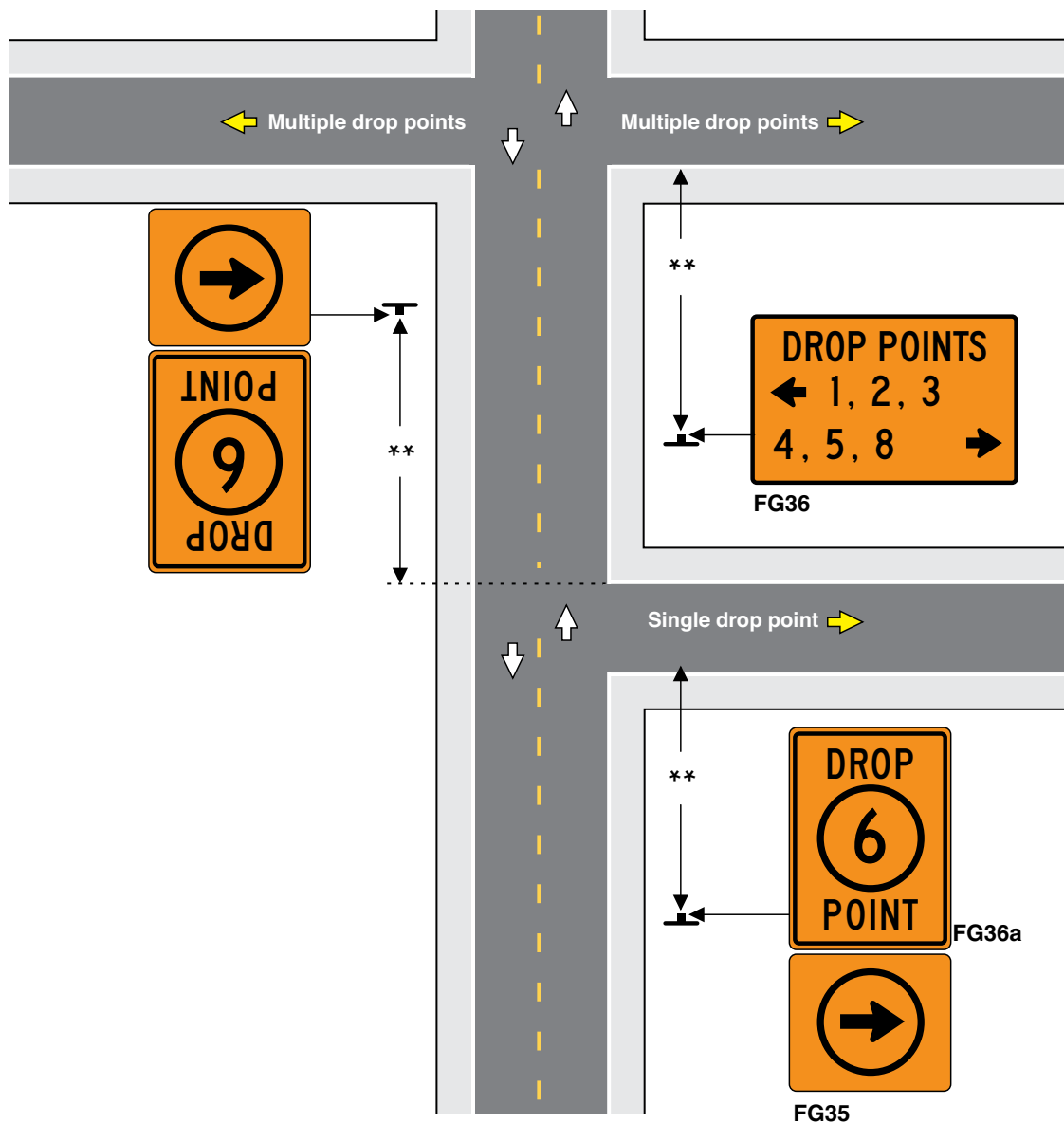
Figure 4A-8—Temporary traffic control signage for intermittent flagging operations at intersections.

Application Notes

DROP POINT signs are guide signs that direct incident personnel to specific destinations where they can drop off or pick up supplies and crews.

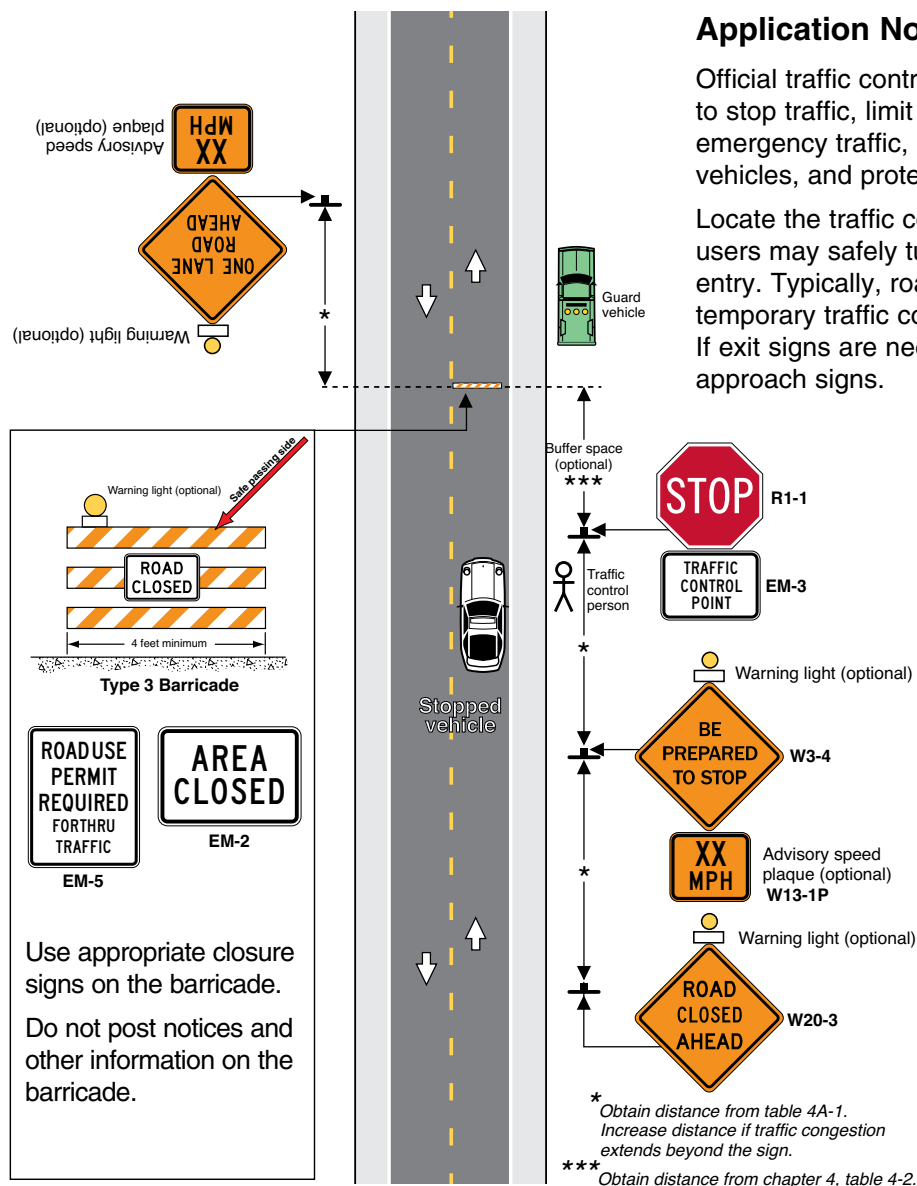
Use the single DROP POINT sign for individual drop points. Use the multiple DROP POINT sign to direct traffic to several drop points from a single intersection.

If drop points are accessed only from one direction, signs may be needed only on that side of the roadway.



** Obtain distance from table 4A-2.

Figure 4A-9—Temporary traffic control signage for incident drop points.



Application Notes

Official traffic control points are established to stop traffic, limit congestion, expedite emergency traffic, exclude unauthorized vehicles, and protect the public.

Locate the traffic control point so that road users may safely turn around if they are refused entry. Typically, road users coming out of the temporary traffic control zone are not stopped. If exit signs are needed, they should match the approach signs.

Place a Type 3 barricade in the lane where traffic is being stopped.

Barricade stripes point to the direction traffic is to pass.

Use the TRAFFIC CONTROL POINT sign, in conjunction with a standard STOP sign.

Install the signs at the point where traffic must stop to be checked. Mount the TRAFFIC CONTROL POINT sign directly below the STOP sign.

Traffic control personnel shall wear high-visibility safety apparel at all times. Refer to chapter 4, section 4.4.1.

Park the traffic control personnel vehicles out of traffic on the right side near the closure.

Traffic control personnel should not cross the open roadway to speak to approaching drivers.

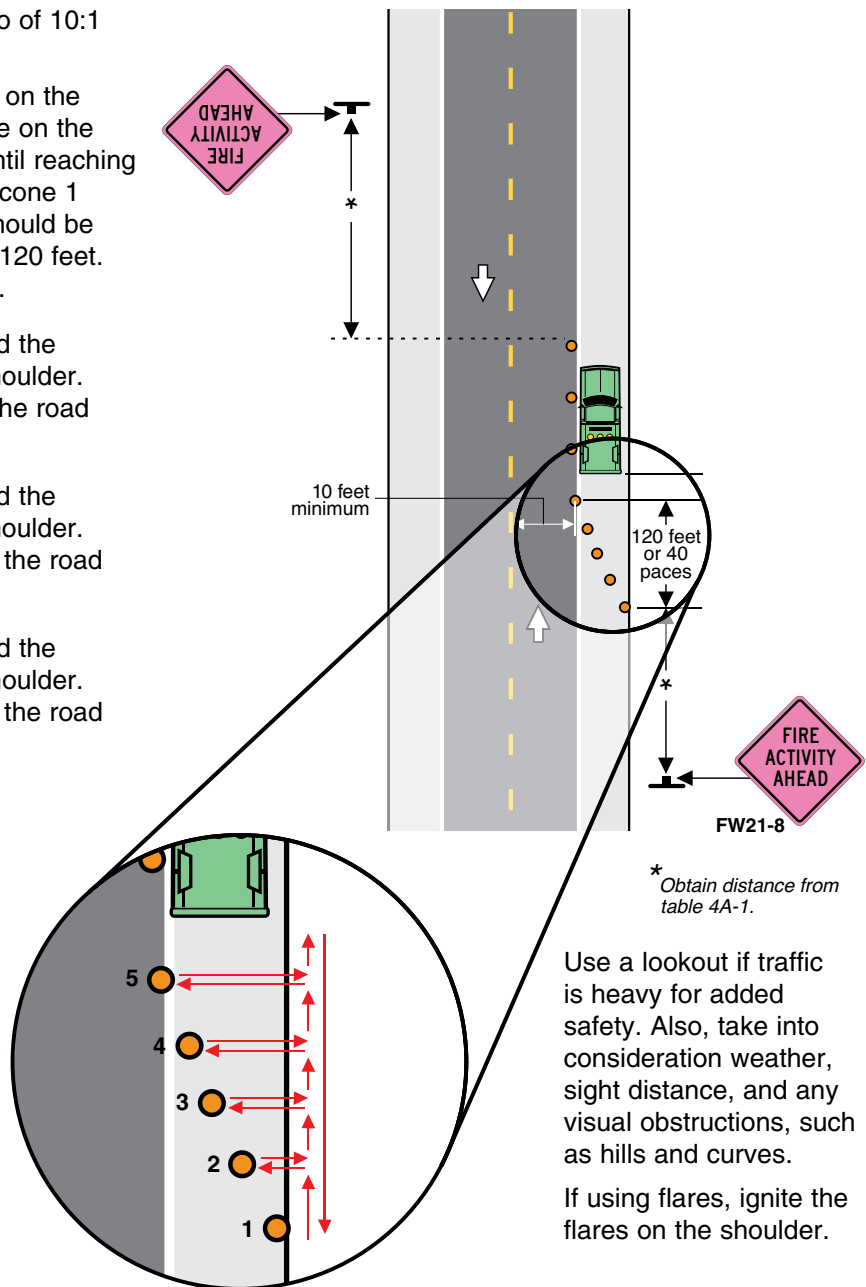
Do not stand or sit in front of or behind the barricade.

Refer to chapter 4, section 4.5.2a for barricades.

Figure 4A-10—Temporary traffic control signage for staffed emergency road closure.

To establish a taper using a ratio of 10:1 for cones (or flares):

- Walk along a safe pathway on the road shoulder. Place a cone on the shoulder every 10 paces until reaching the farthest location where cone 1 is to be placed. Distance should be approximately 40 paces or 120 feet. Set cone 1 on the shoulder.
- Move back 10 paces toward the incident scene along the shoulder. Take 1 pace or 3 feet into the road and place cone 2.
- Move back 10 paces toward the incident scene along the shoulder. Take 2 paces or 6 feet into the road and place cone 3.
- Move back 10 paces toward the incident scene along the shoulder. Take 3 paces or 9 feet into the road and place cone 4.
- Move back 10 paces toward the incident scene along the shoulder. Take 4 paces or 12 feet into the road and place cone 5 near the rear of the responder vehicle or the beginning of the buffer space.

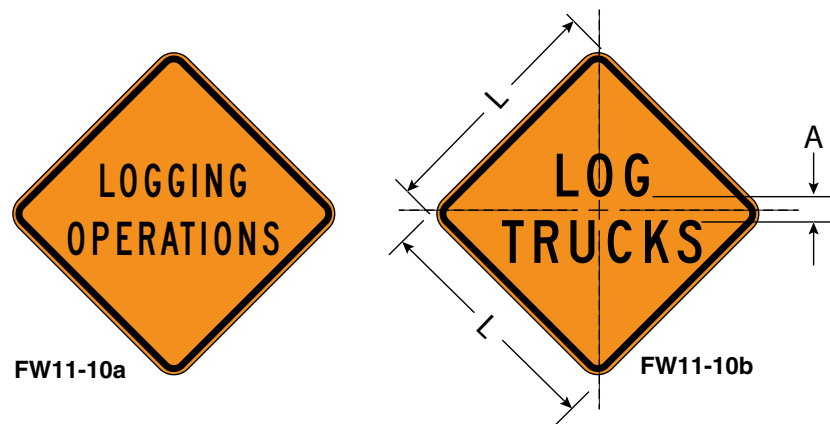


Cones and flares should be placed while facing oncoming traffic at all times. Do not enter the road to place cones until it is safe to do so and immediately return to the shoulder after each cone placement. The spacing between cones should not exceed a distance in feet equal to 1.0 times the speed limit in mph when used for the taper.

Additional cones or flares may be used to establish a tangent along the incident area. The spacing between tangent cones and flares should not exceed a distance in feet equal to two times the speed limit in mph.

Figure 4A-11—Typical placement of cones for an incident.

Warning sign (FW) (2-line).....	1
Warning sign (FW) (4-line).....	2
Warning sign (FW) (3-line).....	3
Incident management warning signs (FW) (2-line)	4
Incident management warning signs (FW) (3-line)	5
Incident management warning signs (FW) (4-line)	6
Incident management guide signs (FG) ENF FIRE ACTIVITY	7
Incident management guide signs (FG) Name Plate	7
Incident management guide signs (FG) (2-line).....	8
Incident management guide signs (FG) (3-line).....	9
Incident management guide signs (FG) DROP POINT	12

Text layout—Warning sign (FW) (2-line)**Dimensions** (inches)

Sign Number	Message	L	A Spacing	Text (upper case)	Border	Border Inset
FW11-10a	LOGGING OPERATIONS	30	2 ½	4C	7/8	5/8
		36	3	5C	7/8	5/8
FW11-10b	LOG TRUCKS	30	2 ½	6D	7/8	5/8
		36	3	7D	7/8	5/8

Notes

Center text on vertical and horizontal centerlines.

Text—ASA Series as noted.

For larger sizes, refer to the “Standard Highway Signs” book.

Colors

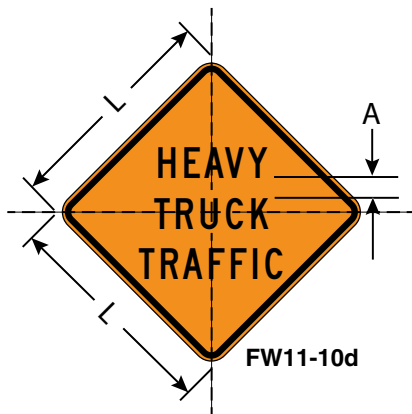
Black legend and border.

Retroreflective orange background.

References

For sign guidelines, see chapter 4, section 4.6.2.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Warning sign (FW) (3-line)**Dimensions** (*inches*)

Sign Number	Message	L	A Spacing	Text (upper case)	Border	Border Inset
FW11-10d	HEAVY TRUCK TRAFFIC	30	2 ½	4C	7/8	5/8
		36	3	5C	7/8	5/8

Notes

Center text on vertical and horizontal centerlines.

Text—ASA Series as noted.

For larger sizes, refer to the “Standard Highway Signs” book.

Colors

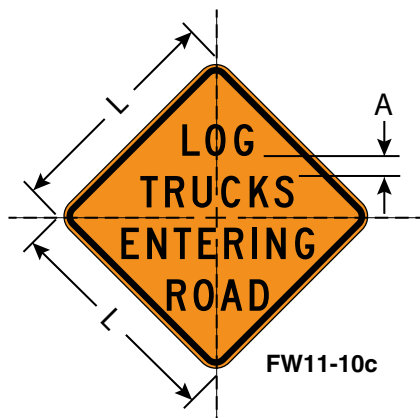
Black legend and border.

Retroreflective orange background.

References

For sign guidelines, see chapter 4, section 4.6.3.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Warning sign (FW) (4-line)**Dimensions** (*inches*)

Sign Number	Message	L	A Spacing	Text (upper case)	Border	Border Inset
FW11-10c	LOG TRUCKS ENTERING ROAD	30	2 ½	4C	7/8	5/8
		36	3	5C	7/8	5/8

Notes

Center text on vertical and horizontal centerline.

Text—ASA Series as noted.

For larger sizes, refer to the “Standard Highway Signs” book.

Colors

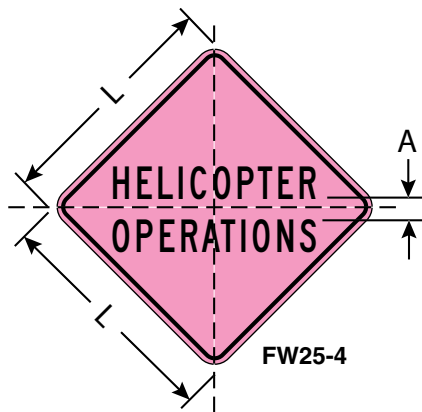
Black legend and border.

Retroreflective orange background.

References

For sign guidelines, see chapter 4, section 4.6.2.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management warning signs (FW) (2-line)**Dimensions** (inches)

Sign Number	Message	L	A Spacing	Text (upper case)	Border	Border Inset
FW25-4	HELICOPTER OPERATIONS	36	3	5C	$\frac{7}{8}$	$\frac{5}{8}$

Notes

Center text on vertical and horizontal centerline.

Text—ASA Series as noted.

For larger sizes, refer to the “Standard Highway Signs” book.

Colors

Black legend and border.

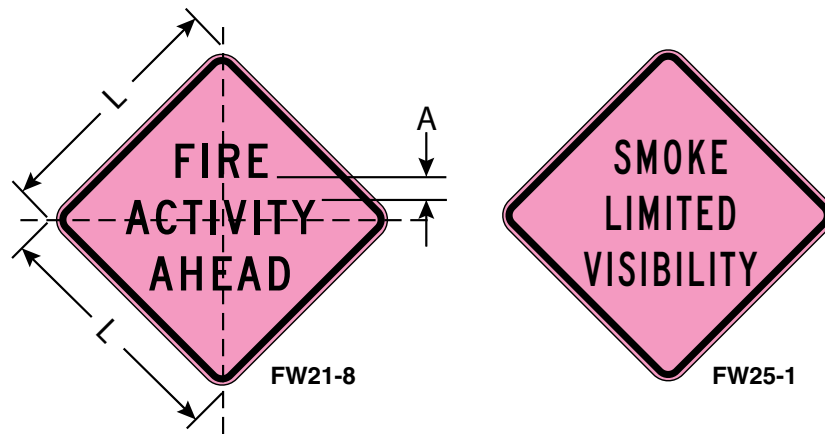
Retroreflective orange or pink background.

References

For sign guidelines, see chapter 4, section 4.7.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management warning signs (FW) (3-line)



Dimensions (inches)

Sign Number	Message	L	A Spacing	Text (upper case)	Border	Border Inset
FW21-8	FIRE ACTIVITY AHEAD	36	3	5C	$\frac{7}{8}$	$\frac{5}{8}$
FW25-1	SMOKE LIMITED VISIBILITY	36	3	5C	$\frac{7}{8}$	$\frac{5}{8}$

Notes

Center text on vertical and horizontal centerlines.

Text—ASA Series as noted.

For larger sizes, refer to the “Standard Highway Signs” book.

Colors

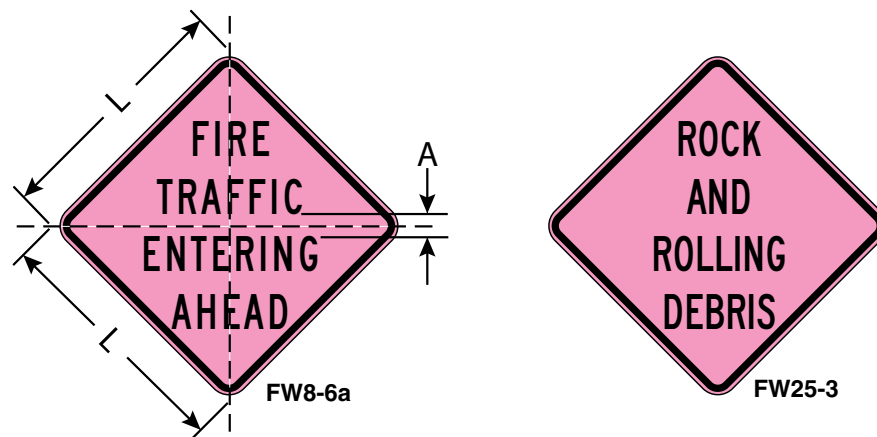
Black legend and border.

Retroreflective orange or pink background.

References

For sign guidelines, see chapter 4, section 4.7.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management warning signs (FW) (4-line)**Dimensions (inches)**

Sign Number	Message	L	A Spacing	Text (upper case)	Border	Border Inset
FW8-6a	FIRE TRAFFIC ENTERING ROAD	36	3	5C	$\frac{7}{8}$	$\frac{5}{8}$
FW25-3	ROCK AND ROLLING DEBRIS	36	3	5C	$\frac{7}{8}$	$\frac{5}{8}$

Notes

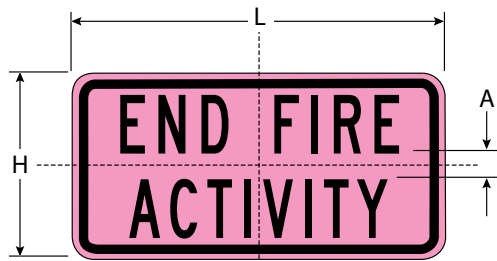
Center text on vertical and horizontal centerlines.
Text—ASA Series as noted.

Colors

Black legend and border.
Retroreflective orange or pink background.

References

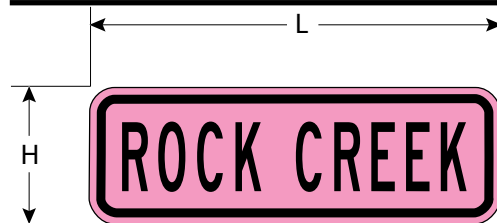
For sign guidelines, see chapter 4, section 4.7.
For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management guide signs (FG) ENF FIRE ACTIVITY

FG20-5

Dimensions (inches)

Sign Number	Message	L	H	A Spacing	Text (upper case)	Border	Border Inset
FG20-5	END FIRE ACTIVITY	36	18	2 ½	6C	7/8	5/8

Text layout—Incident management guide signs (FG) Name Plate

FG21-10

Dimensions (inches)

Sign Number	Message	L	H	Text (upper case)	Border	Border Inset
FG21-10	Specify incident name	36	12*	6C	7/8	5/8

Notes

Center text on vertical and horizontal centerlines.

Text—ASA Series as noted.

* Height may be larger to accommodate longer names.

Colors

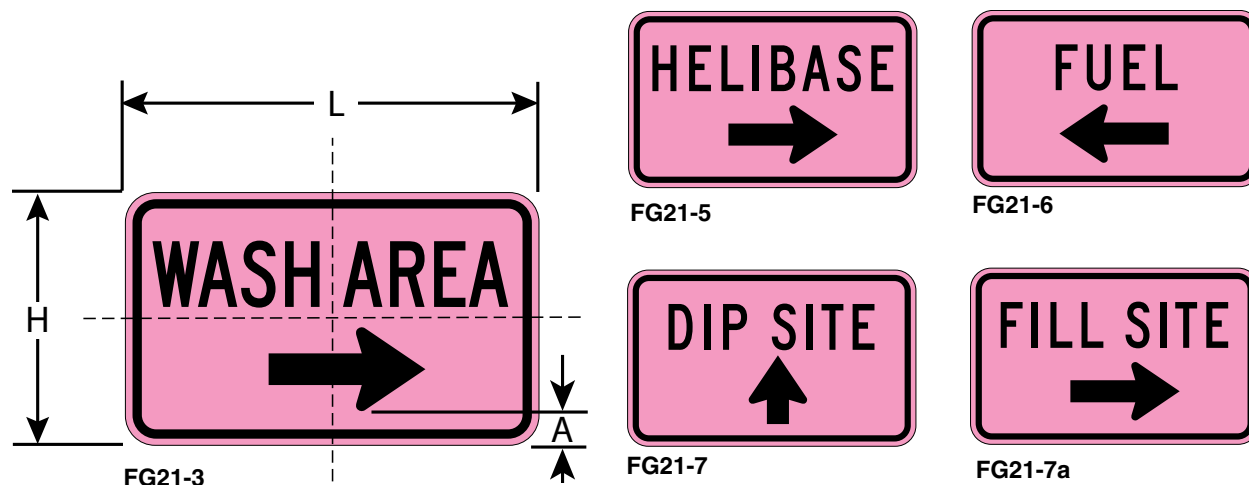
Black legend and border.

Retroreflective orange or pink background.

References

For sign guidelines, see chapter 4, section 4.7.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management guide signs (FG) (2-line)**Dimensions (inches)**

Sign Number	Message	L	H	A Spacing	Text (upper case)	Border	Border Inset
FG21-3	WASH AREA with arrow	36	24	3	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG21-5	HELIBASE with arrow	36	24	3	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG21-6	FUEL with arrow	36	24	3	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG21-7	DIP SITE with arrow	36	24	3	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG21-7a	FILL SITE with arrow	36	24	3	6C	$\frac{7}{8}$	$\frac{5}{8}$

Notes

Center text on vertical and horizontal centerlines.

Text—ASA Series as noted.

Specify arrow direction: left, right, up.

Colors

Black legend and border.

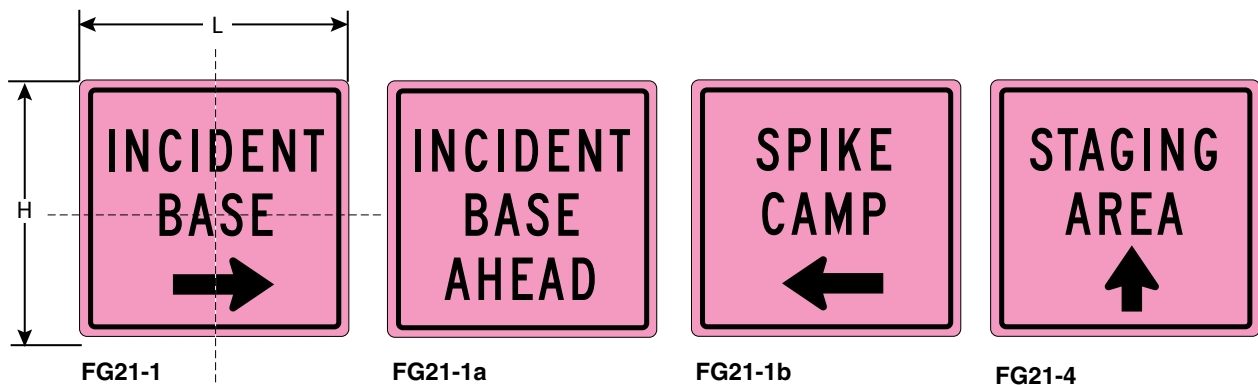
Retroreflective orange or pink background.

References

For sign guidelines, see chapter 4, section 4.7.

For arrow direction, see chapter 3E, section 3E.10.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management guide signs (FG) (3-line)**Dimensions** (inches)

Sign Number	Message	L	H	A Spacing	Text (upper case)	Border	Border Inset
FG21-1	INCIDENT BASE with arrow	36	36	3	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG21-1a	INCIDENT BASE AHEAD	36	36	3	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG21-1b	SPIKE CAMP with arrow	36	36	3	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG21-4	STAGING AREA with arrow	36	36	3	6C	$\frac{7}{8}$	$\frac{5}{8}$

Notes

Center text on vertical and horizontal centerline.

Text—ASA Series as noted.

Specify arrow direction: left, right, up.

Colors

Black legend and border.

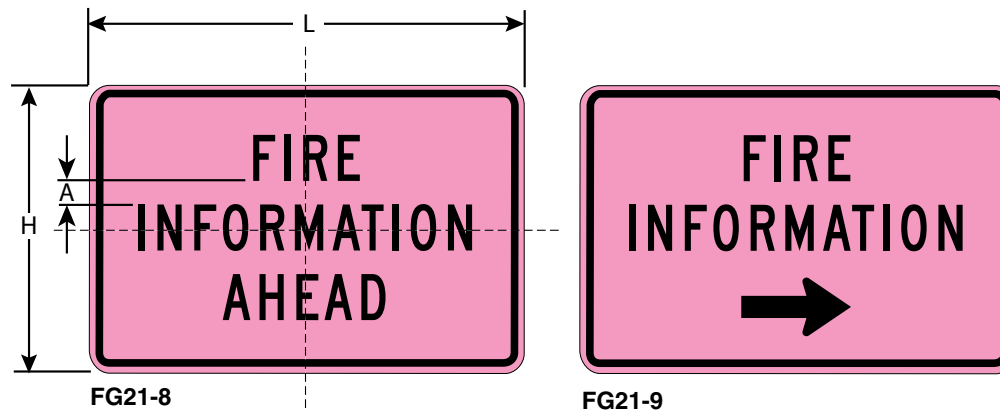
Retroreflective orange or pink background.

References

For sign guidelines, see chapter 4, section 4.7.

For arrow direction, see chapter 3E, section 3E.10.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management guide signs (FG) (3-line)**Dimensions** (inches)

Sign Number	Message	L	H	A Spacing	Text (upper case)	Border	Border Inset
FG21-8	FIRE INFORMATION AHEAD	54	36	3	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG21-9	FIRE INFORMATION with arrow	54	36	3	6C	$\frac{7}{8}$	$\frac{5}{8}$

Notes

Center text on vertical and horizontal centerline.

Text—ASA Series as noted.

Specify arrow direction: left, right, up.

Colors

Black legend and border.

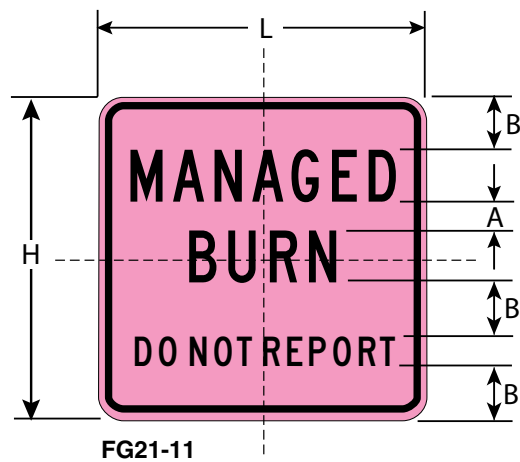
Retroreflective orange or pink background.

References

For sign guidelines, see chapter 4, section 4.7.

For arrow direction, see chapter 3E, section 3E.10.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management guide signs (FG) (3-line)**Dimensions** (inches)

Sign Number	Message	L	H	A Spacing	B Spacing	Text line 1 & 2 (upper case)	Text line 3 (upper case)	Border	Border Inset
FG21-11	MANAGED BURN DO NOT REPORT	36	36	3	6	6C	3C	$\frac{7}{8}$	$\frac{5}{8}$

Notes

Center text on vertical and horizontal centerlines.

Text—ASA Series as noted.

Colors

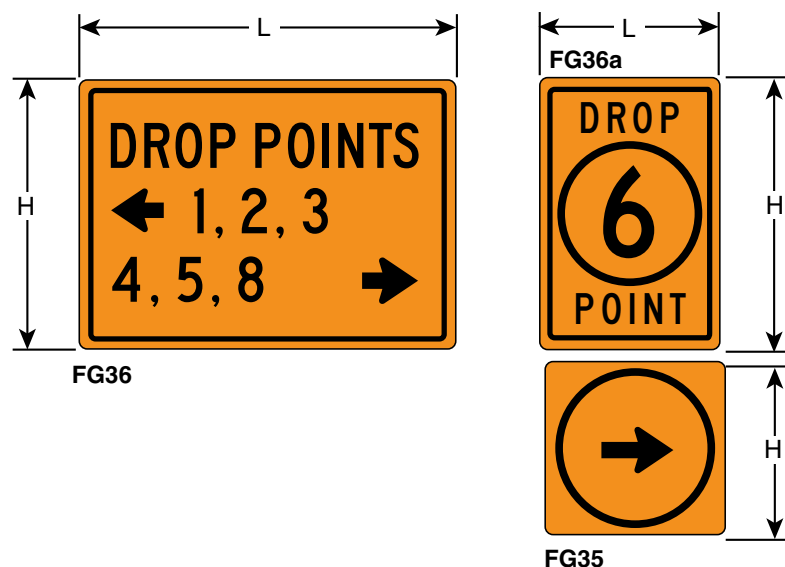
Black legend and border.

Retroreflective orange or pink background.

References

For sign guidelines, see chapter 4, section 4.7.

For manufacturing specifications, see chapters 14 and 14A.

Text layout—Incident management guide signs (FG) DROP POINT**Dimensions** (inches)

Sign Number	Message	L	H	Text (upper case)	Numbers	Border	Border Inset
FG36	DROP POINTS Specify numbers and direction or leave blank	24	18	3C	3C	$\frac{7}{8}$	$\frac{5}{8}$
FG36a	DROP POINT Specify number or leave blank	12	18	2C	6C	$\frac{7}{8}$	$\frac{5}{8}$
FG35	Arrow	12	12	NA	NA	$\frac{7}{8}$	NA

Notes

Center text on vertical and horizontal centerlines.

Text—ASA Series as noted.

Circle for FG36a is 9-inch diameter and $\frac{3}{4}$ -inch thick.

Circle for FG35 is 10-inch diameter and $\frac{3}{4}$ -inch thick.

Colors

Black legend and border.

Retroreflective orange or pink background.

References

For sign guidelines, see chapter 4, section 4.7.

For arrow direction, see chapter 3E, section 3E.10.

For manufacturing specifications, see chapters 14 and 14A.

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Chapter 5 Trail Signing

5.1 Introduction

This chapter provides standards and guidelines for the use of signs and posters on National Forest System trails.

Chapter 5A contains typical sign placement and installation information for common trail situations.

Chapter 5B contains standard drawings for common trail signs.

Use trail signage to provide opportunities for experiencing nature while engaging in outdoor recreation.

Use trail signage to provide opportunities for experiencing nature while engaging in outdoor recreation in an improved, aesthetic aTMOsphere that is consistent with policy (FSH 2309.18) and forest plan direction.

Select and use trail signs, posters, and markers to consistently provide the following:

- Route identification (number, name, or both).
- Guidance and distance to trail destinations and key points of interest.
- Safety features, such as snow shelters and resorts.
- Route reassurance and confirmation.
- User safety: warnings of known hazards.
- Notice of restrictions where use control is necessary.
- Protection of resources.

Additional locations and conditions for which signing may be needed include the following:

- Trail termini.
- Junctions with other trails and roads.
- Administrative boundaries.
- Special management areas.
- Lakes, streams, and other features identified on maps, trail guides, or at the trailhead.
- Interpretive opportunities.

Additional information on trail signage is located at:

Trail Matrix—<<http://www.fs.fed.us/r3/measures/Inventory/Trails.htm>>

5.1.1 ROS Guidelines

A key element for developing and managing a trail sign program is the Recreation Opportunity Spectrum (ROS). ROS classes or similar management guidelines have been adopted for each forest plan management area.

ROS offers a framework for understanding the relationships of signing and other management actions in various settings to the kinds of experiences visitors have. For example, hiking in a large, undeveloped area with difficult access and few signs that provide limited information enhances the hiker's feelings of self-reliance with respect to orienteering skills, self-discovery, challenge, and solitude. In contrast, walking easy interpretive trails outside a visitor center

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with numerous signs and information offers the visitor more comfort, security, opportunities for learning, and social opportunities.

ROS guidelines may be found at <<http://www.fs.fed.us/recreation/programs/beig/beig6c.htm>>.

Table 5-1 contains specific ROS information for trail signs.

In addition to the ROS, consider the following in determining the proper sign, size, material, placement, and mounting requirements for trail signage:

- Managed uses for the trail.
- Scenic integrity objectives.
- Travel speed.
- Viewing distance.
- Clear-zone requirements (chapter 3A).
- Nighttime visibility needs.

Table 5-1—Recreation Opportunity Spectrum selection guide for materials, colors, and finishes for trail signs, markers, and supports

Item	Primitive	Semiprimitive		Roaded, natural	Rural/urban
		Nonmotorized	Motorized		
1. Sign materials	Solid wood (or appearing so).	Solid wood (or appearing so).	Solid wood, plywood, limited use of synthetics and metal	Wood, metal, fiberglass, limited use of synthetics and metal.	Wood, metal, fiberglass, synthetics.
Color or finish	Natural or stained; preservative not evident.	Natural or stained; preservative not evident.	Natural, stained, or painted Retroreflective	Stained or painted. Retroreflective.	Painted, stained, etched or with applied decals. Retroreflective.
2. Sign support materials	Tree or rustic post.	Tree or rustic post.	Post or tree; limited use of synthetics	Wood, metal, or other synthetic post.	Wood, metal, or other synthetic post.
Color or finish	Natural or stained; preservative not evident.	Natural or stained; preservative not evident.	Natural, stained, or painted; preservative may be evident	Stained or painted.	Painted, stained, anodized, and so on.
3. Reassurance markers	Cut/painted blazes; routed.	Cut/painted blazes; routed and scorched, or branded solid wood (or appearing so); limited use of synthetics when a national standard; wood guide poles or rock cairns.	Cut/painted or synthetic blazes; and scorched, or branded solid wood (or appearing so); limited use of synthetics when a national standard; wood guide poles or rock cairns	Cut/painted or synthetic blazes; routed and scorched; or branded wood; wood guide poles or rock cairns. Retroreflective.	Painted metal or synthetic wood, metal, and synthetic markers. Retroreflective.

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5.1.2 Accessibility

Where trails managed for hikers have been evaluated for accessibility, post the following in addition to the standard message with the trail identity and destinations at the beginning of the trail:

- Typical and maximum trail grade.
- Typical and maximum tread cross slope.
- Minimum clear tread width.
- Tread surface type and firmness.
- Any major height obstacles (as appropriate).

Forest Service accessibility guidelines, including the Forest Service Trails Accessibility Guidelines and the Forest Service Outdoor Recreation Accessibility Guidelines, can be viewed at: <<http://www.fs.fed.us/recreation/programs/accessibility/>>.

5.1.3 Access and Travel Management

Consider the travel management direction for the trail system. Travel management is crucial to help guide and manage visitors from the time they first enter the forest, to the time they reach their destinations and then return to the point of entry. Use appropriate guide signs for the traffic that is encouraged (that is, the actively managed uses of the trail). To the extent possible, accomplish travel management regulation through trail atlas use maps and/or travel management signs at trail termini and junctions. Refer to chapter 6 for information on access and travel management signage.

5.1.4 Sign Planning

Follow the direction in chapter 2 for developing, monitoring, and maintaining a comprehensive sign plan for each trail or trail complex. Include all signing in trail design and/or rehabilitation planning. Monitor signing effectiveness through visitor contacts and observation of compliance. Provide the minimum signs necessary to adequately and properly guide the user.

5.1.4a Recreational Studies, Engineering Studies, and Engineering Judgment

Recreation plans or studies should be used to determine appropriate signing for nonmotorized and nonmechanized trail systems and for guide signs on all trails.

Recreation studies or reviews should be used to determine appropriate warning and regulatory signs and traffic control devices for motorized trails and bicycle/mountain bike trails **when use is entirely on NFS trail.**

Engineering studies or judgment should be used to determine appropriate warning and regulatory signs and traffic control devices for motorized trails and bicycle/mountain bike trails **when use is on National Forest System roads.**

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Coincident routes that involve NFS road and NFS trail shall follow the Manual on Uniform Traffic Control Devices (MUTCD) and Forest Service standards for roads.

Refer to section 3.8 for information on engineering judgments and engineering studies.

5.1.5 Coincident Routes

A coincident route is defined as a single route that is managed as part of two different inventoried routes in the forest transportation atlas. An example is a NFS road that is also a NFS trail. There are two types of coincident routes:

1. **Concurrent coincident route:** A coincident route on which the uses are simultaneous and must be managed for mixed traffic.
2. **Separate coincident route:** A coincident route on which the uses are not simultaneous but separate, so the route is not managed for mixed traffic. Separate use periods may occur by:
 - Specific times, such as weekday and weekend.
 - Seasons, such as a summer road and a winter snow trail.

Decisions to manage and sign coincident routes involving NFS road must be based on engineering judgment or an engineering study. Routes shall be signed before concurrent use occurs. Refer to section 3A.7.3 for information on proper signing of coincident routes involving NFS road.

Coordinate the signing of coincident routes (road and trail or trail and trail) to avoid confusion between types of users.

Where nonconcurrent seasonal or specific time use is allowed or designated on system roads closed to standard highway vehicles, follow the appropriate trail standards. Remove, fold up, or cover any road signs that are inappropriate or distracting to the trail user. When the roads are open to highway vehicular traffic and closed to the trail traffic, signing shall meet MUTCD and Forest Service standards for roads. Remove, fold up, or cover any trail signs that are inappropriate or distracting to the general driving public. Generally, trail reassurance markers may be left in place.

When use is concurrent (that is, the road is open to highway vehicular and trail traffic at the same time), signing shall meet MUTCD and Forest Service standards for roads. Signs should be appropriate for both user groups. If signed, destinations should be reachable by the road and trail traffic.

Where bicycle use occurs in conjunction with a road or where the bicycle trail is paved, follow the guidelines in the MUTCD, chapter 9.

For coincident nonmotorized terra trails and snow trails with nonconcurrent seasonal or specific time use, do not seasonally change the snow trail reassurance blazers to the gray/white summer blazers unless necessary for added visual contrast with dark summer backgrounds.

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5.1.6 Requirements for Retroreflection

Signs for roads, motorized trails, urban cross-country ski trails, paved bicycle trails, and mountain bike trails as well as other signs intended to be seen at night shall be retroreflective to show the same shape, color, and message both day and night.

5.1.7 Sign Sizes

Signs should be sized according to the viewing distance and the normal rate of travel or the desired speed of the trail vehicle.

For nonmotorized hiker/pedestrian and pack and saddle trails, 1-inch letters are adequate for most viewing situations.

For motorized and other trail systems such as bicycle trails, determine adequate sign sizes through appropriate studies or reviews. (See section 5.1.4a.)

For motorized, bicycle, and cross-country ski trails, see table 5-2 for recommended minimum sizes for signs.

Letter size for interpretative, safety, and other informational signs or posters is dependent upon the distance from which the message is to be viewed. See chapter 10A for additional information.

Table 5-2—Minimum sign sizes for motorized, bicycle, and cross-country ski trails

Minimum letter size (<i>inches</i>)	Minimum size recreation symbol (<i>inches</i>)	Minimum size warning sign (<i>inches</i>)
2	12	12 x 12



5.1.8 Adopt-a-Trail Signs

Adopt-a-Trail signs may be used as needed to recognize cooperators' help with trails.

5.2 Regulatory and Warning Signs

For on-trail signing needs, use standard regulatory and warning sign messages, shapes, and colors as found in the MUTCD and chapter 3A. Nonstandard message signs shall be approved by the Washington Office Director of Engineering. Table 5-3 gives specific trail regulatory and warning sign information for the different types of trails.

5.2.1 Regulatory Signs

Provide regulatory information at the trailhead if possible. Stress education approaches over restrictions. Compose regulatory sign messages that minimize prohibitory language. Use a courteous tone and explain restrictions in terms of easily understood resource or user benefits with which the public can relate.

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Table 5-3—Regulatory and warning sign requirements

Trail type	Sign face	Minimum size (inches)	Color	Shape or sign type
Hiker/pedestrian pack and saddle	Retroreflective not required; use for added emphasis	Warning: 12 x 12	If used, follow MUTCD colors	If used, follow MUTCD shapes
Wilderness	Never retroreflective	Regulatory: limited use at trailhead Warning: do not use	NA NA	NA NA
Cross-country ski, urban setting or night skiing	Shall be retroreflective	Warning: 12 x 12	Shall follow MUTCD colors	Shall follow MUTCD shapes
Cross-country ski, semi-primitive motorized and nonmotorized ROS	Retroreflective not required; use for added emphasis	Warning: 12 x 12	If used, follow MUTCD colors	If used, follow MUTCD shapes
Bicycle, paved or coincident with roads	Shall be retroreflective	Shall follow MUTCD table 9B-1	Shall follow MUTCD colors	Shall follow MUTCD shapes
Mountain bike	Shall be retroreflective	Warning: 12 x 12	Shall follow MUTCD colors	Shall follow MUTCD shapes
ATV/motorcycle	Shall be retroreflective	Warning: 12 x 12	Shall follow MUTCD colors	Shall follow MUTCD shapes
Snowmobile retroreflective	Shall be	Warning: 12 x 12 MUTCD colors	Shall follow MUTCD shapes	Shall follow
Water Shall follow MUTCD shapes		Shall be	Warning: 12 x 12 retroreflective	Shall follow MUTCD colors

Limit use of on-trail regulatory signs and posters to the minimum needed in order to:

- Ensure consistent protection of the trail and adjacent resources.
- Provide for the safety and enjoyment of the user.
- Provide for enforcement of regulations.

The traffic management strategies of “discourage” and “eliminate” may be preferable to the use of regulations in some cases.

Place regulatory signs at the point of regulation.

Larger signs may be used for increased visibility or strong emphasis when need has been determined.

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5.2.2 Warning Signs and Markers

Consistent with the management plan for the trail or area, use warning signs to alert users of known hazards that, relative to the ROS setting, are unusual, unexpected, or not readily apparent to the typical visitor under conditions when use normally occurs. Consider changing trail grade, alignment, or location or taking other measures to mitigate the hazard before using a warning sign. Do not use warning signs and markers in wilderness.

Use adequate advance placement distances for warning signs to allow time for safe user response.

When a need has been determined, use standard object markers according to the following direction and guidance in chapter 3 to identify obstructions within or adjacent to the trail:

- Type II object markers are used to mark collision hazards adjacent to the trail, such as dropoffs or culvert ends that coincide with abrupt alignment changes or that are obscured by vegetation.
- Type III object markers are used to mark collision hazards within the trailway, such as bridge railings or abutments narrower than the travel way.

5.3 Guide Signs

Use guide signs to identify the trail and its directions and for guidance to destinations.

Signs shall be located either at the junction or in advance of the junction such that trail junctions are evident.

Three types of guide signs are used on NFS trail (see figure 5-1).

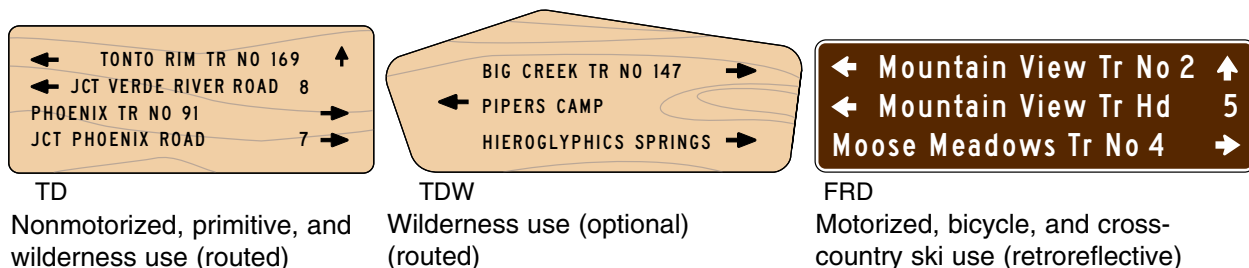


Figure 5-1—Trail directional signs.

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5.3.1 Signing Rules for Guide Signs

5.3.1a Nonwilderness Trails

1. Route identification (required)

- Route identification (trail name, number, or both) and the trail direction(s) are required for all system trail legs at all NFS trail junctions.
 - Example: Great Ridge Tr. No. 458 #.
 - Exception: Do not identify trail legs on which traffic is discouraged, prohibited, or against one-way traffic flow.
- Use only names and numbers that appear on the most current Forest Service trail maps.
- Include national trail designations as appropriate.
- The trail route identification and its direction(s) should always be signed first and then followed by the destinations associated with that trail.

2. Destinations

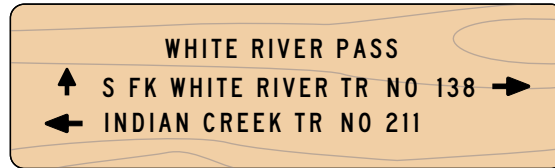
- Required trail destinations
 - Exit signing: At a minimum, show the direction and distance to the trailhead or trail access point at the first junction from the trailhead or access point.
- Optional trail destinations
 - Facilities, such as trailheads, campgrounds, picnic areas, winter shelters, rental cabins, and other key points of interest.
 - Major geographic or natural features such as lakes, major rivers and streams, passes, falls, and meadows.
 - Administrative structures such as guard stations.
- Sign only those destinations that can be readily accessed by the intended trail user.
- If a destination has been identified on a guide sign, identify it on all subsequent guide signs along the trail until the destination is reached.
- Identify destinations that previously appeared on guide signs so visitors will know they have reached their destinations. The name of the destination or feature, when reached, should be either (1) a single sign panel or (2) a top-centered line when included on a sign containing route and destination information, as shown in figure 5-2.
- Listing a trail or road as a destination is not desirable. A junction with another trail or road can be a destination and, if signed, should be signed with its appropriate directional arrow and distance (for example: JCT. WORMWOOD TR. NO. 222 5 #.)
- Where clearer meaning will result on nonwilderness trails, use standard Federal Recreation Symbols in lieu of words.
- When words are used, complete words are preferable. Abbreviate where message length causes excessive sign length and where the abbreviation cannot be misunderstood. For standard abbreviations, refer to chapter 1.

Distances shall be used when showing destinations.

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Feature or destination name only



Feature name and route and destination information

Figure 5-2—Feature identification.

3. Distances

- Distances shall be used when showing destinations.
- Show destination mileages for each destination as fractions to the nearest $\frac{1}{4}$ or $\frac{1}{2}$ mile for destinations up to 3 miles; after 3 miles, show to the nearest mile.
- Only cross-country ski trails are measured in kilometers. Use decimal kilometers up to 1 kilometer (0.1 to 0.9). Distances shall be rounded to the nearest kilometer with no decimal after 1 kilometer.

5.3.1b Wilderness Trails

Use signs within wilderness and primitive areas **only** when necessary to protect the resource or to provide for visitor safety.

1. Route Identification

- Identify trail legs at all system trail intersections where necessary. Route identification may include trail name, number, or both, or locally identifiable destination. Include appropriate directional arrow(s).
- When consistent with other trail markings, blazes or cairns may be used in lieu of guide signs to indicate trail direction.

2. Destinations

- Show direction arrows only.
- Required trail destinations.
 - Exit signing: show the direction to the trailhead or trail access at the first junction from the trailhead or access point.
- Prohibited destination signing.
 - Do not sign major destinations at the destination location.
 - Do not sign geographic or natural features.

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- Optional trail destinations
 - Guide signs may be used to identify appropriate trail destinations.
 - Administrative structures may have an identification sign.

3. Distances

- **Do not provide mileages.**

4. Prohibited signs

- Do not use standard Federal Recreation Symbol signs.
- Do not use interpretive information or locator signs.

5.3.2 Guide Sign Layout

Limit guide signs to four lines of text for best user comprehension, sign readability, and stability. If more lines are needed, use two sign panels. Do not use more than five lines of text on a sign.

5.3.2a Arrows

Arrow placement on signs is extremely critical to the functionality of the sign. As a general rule, directional arrows should be horizontal or vertical, but at irregular intersections, an oblique arrow may convey a clearer indication of the direction to be followed. In some cases, especially trail junctions, combinations of arrows may be needed.

5.3.2b Arrow and Mileage Sequence

Arrow placement controls the message sequence first, then mileages.

Standard arrow sequence with mileages is as follows:

1. Straight ahead (vertical) arrows, lowest mileage first.
2. Left arrows, lowest mileage first.
3. Right arrows, lowest mileage first.

Arrows pointing straight ahead and to the left shall be to the extreme left of the line of text, while arrows pointing to the right shall be to the extreme right of the text. These principles and guidelines are illustrated in figure 5-3.



Figure 5-3—Standard arrow placement.

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5.3.2c Message Sequence

1. If at a destination to be named, centered name or destination or geographic feature.
2. First trail (based on proper arrow sequence) identity and its direction(s).
3. Destinations and mileages for features on or accessed by first trail.
4. Second trail (based on proper arrow sequence) identity and its direction(s) (if applicable).
5. Destinations and mileages for features on or accessed by second trail.
6. Additional trails and destinations as needed.

Text lines and arrows for route identities and destinations are to be left-justified first and then right-justified if possible. (See figure 5-4.)

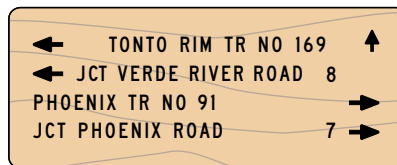


Figure 5-4—Typical sign layout.

5.3.2d Special Cases

Trail signs require that the trail route identification and its direction(s) be signed first; the destinations associated with that trail are then listed under the trail identification. L junctions require combinations of arrows that are an exception to the standard arrow placement rules.

The sign shown in figure 5-5 is for a trail that has a right L junction. In order to represent the trail and the destinations on that trail properly, the destination to the right must be signed before signing the next trail leg and any destination to the left.

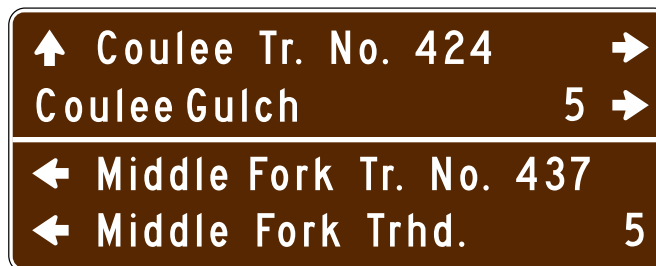


Figure 5-5—Trail sign with a right L junction.

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The sign shown in figure 5-6 is for a trail that has a left L junction. In order to represent the trail and the destinations on that trail properly, the vertical arrow must be placed on the right and, if signing a straight ahead destination, the up arrow will be next under the left arrow in its proper position on the left of the sign.

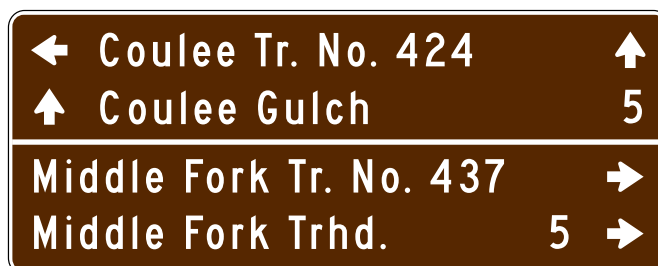
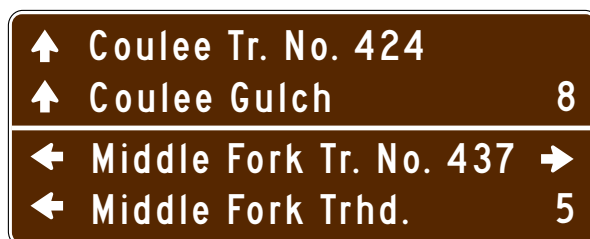


Figure 5-6—Trail sign with a left L junction.

5.3.2e Mileage Layout

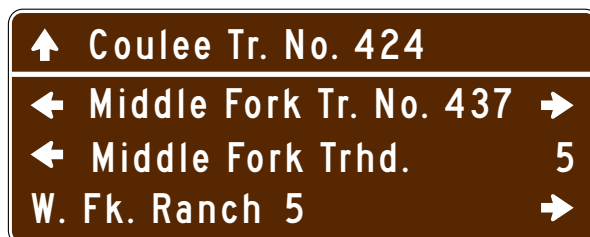
Mileage is not to be aligned in the same column as the trail numbers. There are three options for displaying mileage on signs (figure 5-7):



1. Mileage for up and left directions may be aligned in the same column with the right arrows (right justified).



2. All mileage may be placed in a single column before the arrows on the right.



3. Mileage may be entered with the text line.

Figure 5-7—Three options for mileage display.

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5.4 Sign Specifications

Select the sign material, color, size, and shape that best suit the trail purpose and the ROS class (see table 5-1) or management prescription for the area. Signs shall conform to the specifications in chapter 14.

Table 5-4 gives specific trail guide sign information for the different types of trails. Text requirements are consistent with series established by the American Standards Association (ASA).

Table 5-4—Guide sign requirements

Trail type	Sign face	Capital ASA Series C text	Color	Shape
Hiker/pedestrian pack and saddle	Typically routed	1 inch, routed	Unfinished wood with scorched or blackened legend or WPC material	TD
Wilderness	Routed only	1 inch, routed	May be unfinished wood with scorched or blackened legend	TD or TDW
Cross-country ski urban setting or night skiing	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD
Cross-country ski semi-primitive motorized and nonmotorized ROS	May be routed	1 inch, routed	May be unfinished wood with scorched or blackened legend or WPC material	TD
Bicycle paved or coincident with roads	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD
Mountain bike	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD
ATV/motorcycle	Shall be retroreflective	Capital ASA Series C, 2 inches, minimum	White legend on brown background	FRD
Snowmobile	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD
Water	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD

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5.5 Junction Identity Signs

In a trail system where junctions are designated with numbers or letters, a junction identity sign may be used. Signs should use “JCT” followed by the number or letter of the junction.

With junction-numbered or junction-lettered systems, it is especially important to ensure that trail maps or locator map signs are available either at the trailhead or along the trail.

Use junction signs in conjunction with trail guide signs at the trail junction. Mount above or below the guide sign on the same post (see figure 5-8). Table 5-5 gives specific trail junction identity sign information for the different types of trails.

Table 5-5—Junction identity sign requirements

Trail type	Sign face	Capital ASA Series C Text	Color	Shape
Hiker/pedestrian pack and saddle	Typically routed	1 inch, routed	Unfinished wood with scorched or blackened legend or WPC material	Rectangle
Wilderness	Routed only	1 inch, routed	May be unfinished wood, scorched or blackened legend, or WPC material	TD or TDW
Cross-country ski urban setting or night skiing	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD
Cross-country ski semi-primitive motorized and nonmotorized ROS	May be routed	1 inch, routed	May be unfinished wood with scorched or blackened legend, or WPC material	TD
Bicycle paved or coincident with roads	Shall be retroreflective	3 inches, minimum	White legend on brown background	FRD
Mountain bike	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD
ATV/motorcycle	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD
Snowmobile retroreflective	Shall be	2 inches, minimum background	Black legend on orange diamond	9 in x 12 in TB-2
			White legend on brown background	FRD
Water	Shall be retroreflective	2 inches, minimum	White legend on brown background	FRD

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5.6 Locator Map Signs

Use of self-locator map signs is often appropriate at a trail junction to provide an extra measure of orientation and security. At a minimum, the map should clearly display the trail system and the user's location, when at that particular map, with a "You Are Here" arrow.

Depending on the type of trail system, other information may be needed, such as groomed or ungroomed conditions. See figure 5-8.

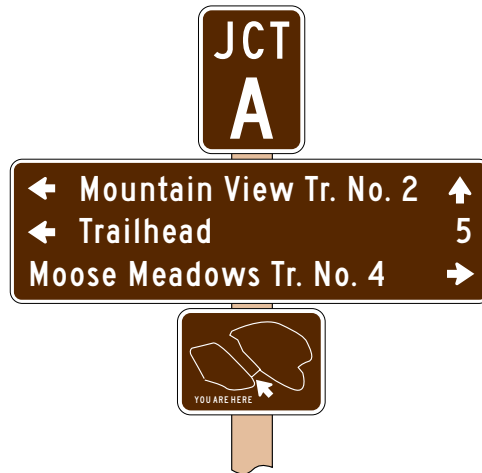


Figure 5-8—Typical trail guide sign installation.

5.7 Trail and Road Crossings

When trails cross each other or roads, there is a potential for accidents.

When roads and trails cross, MUTCD and Forest Service standards shall be followed. Determine the need for intersection control on the trail and/or the need for crossing signs on the road by engineering judgment or in an engineering study.

When trails cross each other, determine appropriate signing by a recreation study or review. Consider the road or trail characteristics, sight distance, stopping distance, traffic types, volumes, speeds, and applicable state traffic laws. Refer to chapter 3A.

Crossing signs shall be located at the best possible sight and stopping distance for both the road user and the trail user. Signs should be placed 10 to 15 feet from the road shoulder or far enough back to be outside of snow berms when roads or trails are plowed.

Road crossings and their related signing shall be coordinated with the governing road agency.

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5.7.1 Regulatory and Warning Signs

Advance crossing or crossing warning signs (MUTCD Vehicular Traffic and Nonvehicular Signs Series W11) may be used to warn the users driving on roads of trail traffic crossing the road.

Regulatory and warning signs may also be needed on the trail to regulate or control the trail users before they cross the road.

While STOP and YIELD signs are generally not needed where trails cross each other, evaluate each crossing on a site-by-site basis.

Refer to figure 5A-1 for typical placement of regulatory and warning signs on the road and on the trail.

5.7.2 Guide Signs

Retroreflective road guide signs may be used to identify trail access points where trails cross a road or terminate on a road and where trailhead parking facilities have not been developed. Use Federal recreation symbols as appropriate to mark crossings. Refer to figure 5A-2 for typical placement of road guide signs.

Install road guide signs only where traffic safety will not be compromised by slowing or stopping vehicles and where there are appropriate turnouts within sight distance for safe parking. Guide signs shall not be installed where there are no safe approaches and turnouts.

Refer to chapter 3C for sizing, placement, and mounting. As a general rule, road signs should be placed before the intersection at a sufficient distance as determined by engineering judgment or study that considers speed, sight distance, traffic volume and type, season of use, and the location of other possible conflicting intersections.

5.8 Reassurance Markers

Reassurance markers reconfirm the identity, location, or route of the trail. Use appropriate standard route markers, blazers, cairns, or guide poles where needed to reassure travelers that they are on the trail. Do not use where the trail is self-defining under conditions in which use normally occurs, or if excluded under the trail management plan.

Do not place access and travel management information on reassurance markers. Access and travel management information needs to be displayed separately with sufficient detail to show dates or reasons.

From the following markers, select those that are most appropriate for the trail type and ROS Class (see table 5-1):

1. Route markers

A route marker provides the minimum information necessary to reconfirm the trail identity. It should include the route number or letter, any specific logos such as National Trail markers, and the appropriate trail blazer. Do not place agency or cooperator logos on the route marker. See figure 5-9 for priority of placement of the different symbols on route markers.

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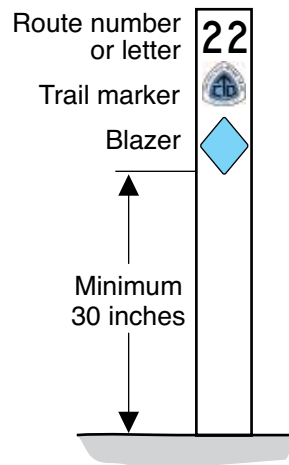


Figure 5-9—Priority and placement of reassurance markers.

Use the minimum number of route markers along the trail, at road crossings, past trail junctions, and at termini as needed to reconfirm the identity of the trail.

Where vandalism is a problem, it may be advisable to place the route marker a short distance along the trail, beyond and out of sight of trail beginnings and crossings of roads or other trails.

a) Route number or letter.

Place the route identification number or letter at the top of post. The following methods may be used:

- Number or letter routed and scorched, blackened, or branded into wood post or sign.
- Number or letter on wood, aluminum, plastic, or fiberglass substrate, screw mounted to wood post.
- Number or letter decal affixed to fiberglass post.

On metal markers, white numbers or letters on brown background are recommended.

b) Trail markers.

When the trail has a designated logo, such as a National Scenic Trail, National Recreation Trail, or National Historic Trail, place the appropriate marker beneath the route identification number or letter. Follow ROS guidelines and the management direction established for the trail. Table 5-6 gives specific trail marker information for the different types of trails.

c) Snow trail difficulty levels.

Snow trail difficulty levels are used to provide general user information for snow trails.

DO NOT use these difficulty levels for hiking/pedestrian trails to indicate degree of difficulty based on accessibility. (Refer to section 5.1.2.)

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Table 5-6—Reassurance marker requirements

Trail type	Sign face	Blazer	Color	Size (inches)
Hiker/pedestrian pack and saddle	NA	TB-1 Cut/painted/branded	Grey/white Natural	5 x 7
Wilderness	NA	Cut or branded Do not use plastic	Natural	
Cross-country ski urban setting or night skiing	Shall be retroreflective	TB-1	Blue	5 x 7
		TB-2 with arrow		9 x 12
Cross-country ski semi-primitive motorized and nonmotorized ROS	May be retroreflective	TB-1	Blue	5 x 7
		TB-2 with arrow		9 x 12
Bicycle paved or coincident with roads	Shall be retroreflective	Federal Recreational Symbol RL-090	White legend on brown background	Minimum 12 square inches
Mountain bike	Shall be retroreflective	Federal Recreational Symbol RL-090	White legend on brown background	Minimum 3 square inches
ATV/motorcycle	Shall be retroreflective	Federal Recreational Symbol RL-150 or RL-170	White legend on brown background	Minimum 3 square inches
Snowmobile	Shall be retroreflective	TB-1	Orange or Fluorescent orange	5 x 7
		TB-2 with arrow		9 x 12
Water	Shall be retroreflective	Federal Recreational Symbol RW-020	White legend on brown background	Minimum 3 square inches

Difficulty levels are based on a national set of characteristics and standards, not on a comparison of trails against one another. See FSH 2309.18 for policy concerning use and application of difficulty levels.

Use of signage or maps that indicate national trail difficulty standards is necessary to ensure consistency. Consider site-specific signage or map information that indicates the physical trail standards and maintenance and/or grooming schedules.

Simplified difficulty symbol: This symbol (figure 5-10) indicates a generic degree of difficulty. It is not site specific and often does not present the trail user with enough information.

Signing difficulty levels with simplified difficulty symbols is optional. If these symbols are used, they shall be used in accordance with the national trail standards found in the Forest Service Handbook exhibits for trail activities. When using a difficulty symbol, identify the difficulty level of the trail at the information board, beginning of the trail, and where significant changes occur in trail segments. Simplified difficulty symbols are shown in figure 5-10.

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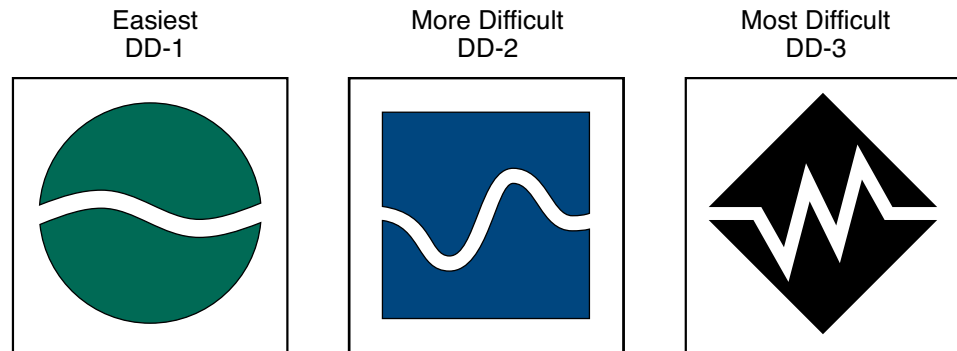


Figure 5-10—Simplified difficulty symbols.

2. Blazers

If the trail is well defined, very few blazer reassurance markers are needed except for openings and road or trail crossings. For trails that are not well defined, blazers may need to be intervisible during conditions under which use normally occurs.

When blazer reassurance markers are used, place them on posts or trees at least 5 feet above tread level or expected snow level for winter trails. Blazers generally are placed on the right side of the trail but should be placed on the side that provides the most visibility and clearest indication of direction.

Use only cut, painted, or branded/scorched blazes in wilderness. Limit painted blazes only to those wilderness trails identified in the National Trails System Act, and associated intersecting trails where determined necessary.

a) Colored diamonds

Use the small TB-1 (5 by 7 inches) metal or plastic diamond marker (see figure 5-11), retroreflective (for night use) or nonreflective when called for in the trail management plan. Do not use colored diamonds for wilderness trails.

Mount on trees or, where properly positioned trees are not available, on posts. When diamond markers are to be mounted on trees, aluminum nails should be used. Leave a portion of the shank exposed to allow for tree growth.

An arrow may be placed in the center of the TB-2 (9 by 12 inches; see figure 5-11) to indicate the trail direction for additional visibility in open areas or to indicate continuing direction or an unusual change in direction that does not present a hazard. Do not use these markers in lieu of curve, turn, or other warning signs where conditions require a standard warning sign as determined by recreational studies or review or engineering study or judgment. Use this method sparingly and not in place of a standard blazer.

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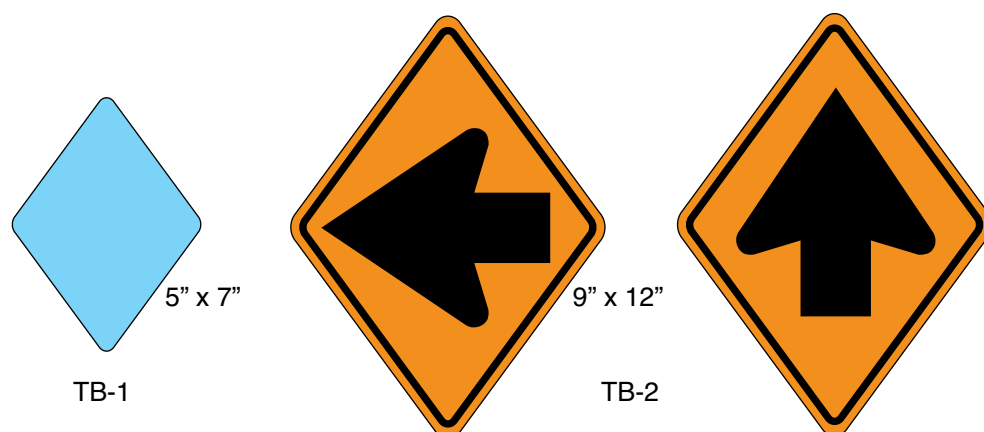


Figure 5-11—Colored diamond blazers.

b) Cut blazes

Use cut blazes when called for in the trail management plan. Cut blazing is the preferred reassurance marking system in wilderness areas where trees are available. Improper blazes cannot be corrected. Cut blazes carefully and cleanly to conform closely to the dimensions shown in figure 5-12.

c) Painted blazes

Use painted blazes on trees or rocks only where specified in the trail management plan. Do not paint without using a template and paint carefully to specified dimensions and color.

d) Branded or routed and scorched blazes

Either branded blazes or routed and scorched blazes may be used where specified in the trail management plan.

Field branding may be used on the face of the guide sign or on a flattened portion of the tree or post that supports the guide sign.

The blaze may also be branded or routed and scorched in a shop on the following:

- The face of the guide sign.
- A 6- by 10-inch piece of wood the same substrate as the guide sign.
- The support post for the guide sign.

Directional arrows may be branded or routed and scorched below the blaze, indicating the direction(s) of the trail.

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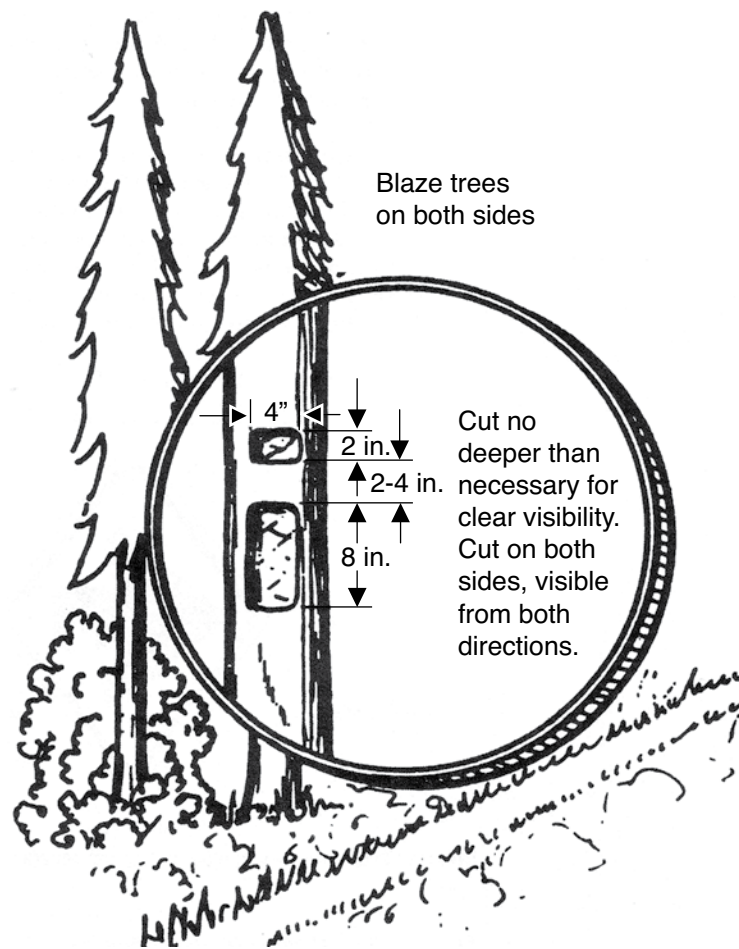


Figure 5-12—Cut blazes.

e) Federal recreational symbols

Minimum 3-inch Federal recreation symbols such as RL-170 or RL-090, may be used as reassurance blazers. Symbols shall be mounted to posts such as flexible fiberglass. National recreation trail symbols shall not be used as reassurance markers.

3. Cairns

Rock cairns may be used through rocky, treeless areas as necessary for guidance and safety. Base spacing on visibility conditions expected during adverse weather.

See figure 5-13 for typical details. Select and fit rocks for stability against displacement. Construct cairns so they are high enough to appear above vegetation. Where practicable, set guide poles or posts in cairns where needed for winter travel guidance.

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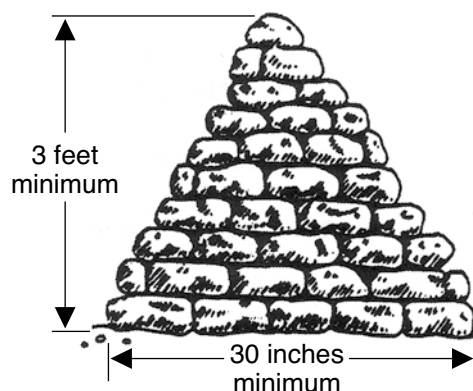


Figure 5-13—Rock cairn.

4. Guide poles

Guide poles may be used to delineate the trail when the location is not obvious. When used, set poles at the maximum intervisible distances required for guidance through treeless areas, such as meadows and muskeg areas. Select natural pole materials to harmonize with the environment except where the management plan requires increased visibility (for example, snowmobile and cross-country ski trails). To increase visibility, consider painting the poles (colored to match the plastic blazer), mounting plastic trail blazers on both sides of the poles, or wrapping retroreflective tape around the pole.

Wooden guide poles shall have a minimum diameter of 4 inches and a minimum height of 6 feet above ground or snow level. Where ground conditions make the setting of wood poles impractical, the use of metal or other materials is justified.

5.9 Congressionally Designated Trails

Congressionally designated trail signage must be consistent among administrative units. Coordinate area and trail management plans as appropriate. Standardize trail signing within areas that include more than one administrative unit.

5.9.1 National Trail Systems

National trails “provide for the ever-increasing outdoor recreation needs of an expanding population and in order to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas, and historic resources of the Nation...” (National Trails System Act of 1968).

5.9.1a National Recreation Trails

National recreation trails are designated under regional forester authority to provide for a variety of outdoor recreation uses in or reasonably accessible to urban areas.

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5.9.1b National Scenic Trails

National scenic trails are trails designated by Congress to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which they pass.

5.9.1c National Historic Trails

National historic trails are designated by Congress and follow as closely as possible and practicable the original trails or routes of travel of national historic significance. They identify and protect the historic route and its historic remnants and artifacts for public use and enjoyment.

5.9.2 National Trail System Signing

Signing of trails in the National Trail System requires special emphasis to denote their uniqueness and special qualities. Identify national scenic, historic, and recreation trails with the appropriate national marker, such as those shown in figure 5-14. Sign according to the management objective of each trail system. The policy and criteria for signing and posting national trails are the same as for other National Forest System lands, with the exceptions noted in the following sections.



Figure 5-14—Examples of national trail markers.

5.9.2a Trailheads

At trailheads or developed recreation sites associated with the trail, mount the 9-inch national trail marker on the base of the site identification sign or on a separate post in a prominent location.

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5.9.2b Road Crossings

To indicate the trail crossing a road, use the 9-inch marker along NFS road when speeds are 35 mph or lower. Use the 18-inch marker on roads when speeds are 40 mph and higher. Mount the markers 1-inch below the guide sign identifying the trail or its destinations. If no other identification sign exists, the marker should be mounted on a separate post to identify the trail. Its use is intended only as a symbol associated with the trail. The words are not intended to be read by motorists at highway speeds.

Larger signs may be produced and used for special situations on high speed highways. Maintain the same shape and colors when ordering special size signs.

5.9.2c Guide Signs

When the trail guide sign is located on the national trail, identify the national trail designation by use of reassurance markers mounted below the guide sign. Use the 3½-inch national trail marker to identify the trail. Do not mount the national trail marker directly on guide signs.

When the trail guide sign is not located on the national trail but is located at a trailhead or junction when the national trail is identified on a guide sign as a destination, use the directional arrow, the abbreviation JCT, the name of the trail, and the distance to the junction. Do not abbreviate the trail name. Refer to figure 5A-18.

5.9.2d Reassurance Markers

See section 5.12. Depending on the management plan for the national trail, reassurance markers for national trails will consist of one of the following:

- Paint mark.
- 3½-inch plastic or metal blazer with the official logo.
- Branded or routed official logo.

To keep travelers on course, use reassurance markers at all intersections and locations where the trail location could be uncertain. **Do not use the national logo marker off the national trail.**

Reassurance markers may be placed on a separate post or tree, or just below a guide sign on the same support if mounted below a guide sign. They shall be mounted or branded directly on the post or tree supporting the sign, or on a separate board (approximately 6 by 10 inches) that is fastened to the support. Directional arrows below the marker shall indicate the direction of the trail. When mounted on a post or tree, reassurance markers shall be about 5 feet above the level of the tread.

In wilderness, use the brand or routed marker; do not use the plastic or metal marker. Use the branded or routed logo to identify the trail at junctions and other decision points, and as needed to protect wilderness resources. Do not use it as a general reassurance marker along the remainder of the trail within the wilderness.

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5.10 Summary of Standards and Guidelines by Trail Type

Tables 5-7 through 5-13 contain summaries of the standards and guidelines for each type of trail. Each chart is for a specific trail type.

Table 5-7—Hiker/pedestrian and pack and saddle trails

Sign type	Sign face	Sign requirements		
		Minimum size (inches)	Color	Shape
Regulatory and warning	Retroreflective not required, consider using for added emphasis	Warning: 12 x 12	If used, follow MUTCD colors	If used, follow MUTCD shapes
Guide	Typically routed	Text: Capital ASA Series C, 1 inch, routed	Unfinished wood, scorched or blackened legend, or WPC material	TD
Junction identity	Typically routed	Text: Capital ASA Series C, 1 inch, routed	Unfinished wood, scorched or blackened legend	TD
Reassurance markers	Nonretroreflective cut, painted, branded blazers, logo brands, rock cairns, natural guide poles	5 x 7 NA	Gray or white NA	TB-1 plastic blazer NA
Sign support and placement requirements				
Sign supports		Posts or trees		
Minimum mounting height, trail tread to bottom of sign		5 feet		
Minimum lateral distance, edge of trail tread to nearest edge of sign		3-foot clearance for pack stock		
Remarks:				

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Table 5-8—Wilderness trails

Sign type	Sign face	Sign requirements		
		Text	Color	Shape
Regulatory	Nonretroreflective	NA	NA	NA
Warning	NA	NA	NA	NA
Guide	Routed only	Text: Capital ASA	Unfinished wood series C, 1 inch, routed	TD or TDW with scorched or blackened legend
Junction identity	Routed only	Text: Capital ASA series C, 1 inch, routed	Unfinished wood with scorched or blackened legend	TD
Reassurance markers	Cut, painted, or branded blazers, logo brands, rock cairns, natural guide poles	NA	NA	NA

Sign support and placement requirements

Sign supports	Posts or trees
Minimum mounting height trail tread to bottom of sign	5 feet
Minimum lateral distance edge of trail tread to nearest edge of sign	3-foot clearance for pack stock

Remarks:

- Specific onsite signs necessary for resource protection or visitor management may be used if no other means of protection or communication is suitable.
- Generally, do not use reassurance markers except in locations where the trail is difficult to locate.
- Use only cut, painted, or branded/scorched blazes in wilderness. Limit painted blazes only to those wilderness trails identified in the National Trails System Act, and associated intersecting trails where necessary.
- Do not use Federal recreation symbols or plastic and metal national trail markers.
- Guide poles should be left natural with no markers, blazers, or tape.
- Do not use warning signs.
- Limit use of regulatory signs at the trailhead.

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Table 5-9—Cross-country ski trails, urban or night skiing

Sign type	Sign face	Sign requirements		
		Minimum size (inches)	Color	Shape
Regulatory and warning	Shall be retroreflective	Warning: 12 x 12	Shall follow MUTCD colors	Shall follow MUTCD shapes
Guide	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Junction identity	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Reassurance markers	Shall be retroreflective	5 x 7 9 x 12	Blue Blue	TB-1 TB-2 with arrow
Sign support and placement requirements				
Sign supports		Posts or trees		
Minimum mounting height trail tread to bottom of sign		40 inches above average maximum snow level No more than 84 inches above current snow level		
Minimum lateral distance, edge of trail tread to bottom of sign		2 to 6 feet		
Remarks:				
<ul style="list-style-type: none">Destinations on guide signs should emphasize safety features such as shelters and warming huts.Distances are measured in kilometers (km). Use decimal kilometers up to 1 kilometer (0.1 to 0.9). Round to the nearest kilometer with no decimal after 1 kilometer.Use locator maps on systems with multiple loops or where the trail system is complicated and can be confusing.Guide poles may be painted blue or have a blue TB-1 blazer mounted on both sides.Use the blue TB-1 on ski trails that serve hikers during the off season. Do not change the blazers to gray/white unless needed for added visibility during the summer.Where wide variation in snow accumulations can be expected, periodic resetting may be necessary.In areas with heavy summer use, consider mounting the signs on removable posts on stationary bases. This will improve esthetics and reduce vandalism and sign maintenance.When trees are used for mounting signs, prune limbs well above the sign so limbs will not droop with the weight of snow and obscure the sign.				

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Table 5-10—Cross-country ski trails, semi-primitive motor or nonmotorized ROS

Sign type	Sign face	Sign requirements		
		Minimum size (inches)	Color	Shape
Regulatory and warning	Retroreflective not required, consider using for added emphasis	Warning: 12 x 12	If used, follow MUTCD colors	If used, follow MUTCD shapes
Guide	May be routed	Text: Capital ASA, series C, 1 inch, routed	May be unfinished wood with scorched or blackened legend or WPC material	TD
Junction identity	May be routed	Text: Capital ASA, series C, 1 inch, routed	May be unfinished wood with scorched or blackened legend or WPC material	TD
Reassurance markers	May be retroreflective	5 x 7 9 x 12	Blue Blue	TB-1 TB-2 with arrow

Sign support and placement requirements

Sign supports	Posts or trees
Minimum mounting height trail tread to bottom of sign	40 inches above average maximum snow level No more than 84 inches above current snow level
Minimum lateral distance edge of trail tread to bottom of sign	2 to 6 feet

Remarks:

- Destinations on guide signs should emphasize safety features such as shelters and warming huts.
- Distances are measured in kilometers (km). Use decimal kilometers up to 1 kilometer (0.1 to 0.9). Round to the nearest kilometer with no decimal after 1 kilometer.
- Use locator maps on systems with multiple loops or where the trail system is complicated and can be confusing.
- Guide poles may be painted blue or have a blue TB-1 blazer mounted on both sides.
- Use the blue TB-1 on ski trails that serve hikers during the off season. Do not change the blazers to gray/white unless needed for added visibility during the summer.
- Where wide variation in snow accumulations can be expected, periodic resetting may be necessary.
- In areas with heavy summer use, consider mounting the signs on removable posts on stationary bases. This will improve esthetics and reduce vandalism and sign maintenance.
- When trees are used for mounting signs, prune limbs well above the sign so limbs will not droop with the weight of snow and obscure the sign.

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Table 5-11—Bicycle trail, paved or coincident with roads

Sign type	Sign face	Sign requirements		
		Minimum size (inches)	Color	Shape
Regulatory and warning	Shall be retroreflective	Shall follow MUTCD table 9B-1 Warning: 18 x 18	Shall follow MUTCD colors	Shall follow MUTCD shapes
Guide	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Junction identity	Shall be retroreflective	Text: Capital ASA series C, 3 inches	White legend on brown background	FRD
Reassurance markers	Shall be retroreflective	12 inches	White legend on brown background	Federal recreation symbol RL-090
Sign support and placement requirements				
Sign supports		Posts		
Reassurance marker supports		Posts or trees		
Minimum mounting height trail tread to bottom of sign		4 feet with 5-foot maximum		
Minimum lateral distance edge of trail tread to nearest edge of sign		3 to 6 feet		
Remarks:				
• Standards shall be in accordance with the MUTCD, part 9, Traffic Controls for Bicycle Facilities.				

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Table 5-12—Mountain bike trails

Sign type	Sign face	Sign requirements		
		Minimum size (inches)	Color	Shape
Regulatory and warning	Shall be retroreflective	Warning: 12 x 12	Shall follow MUTCD colors	Shall follow MUTCD shapes
Guide	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Junction identity	Shall be retroreflective	Text: Capital ASA, series C, 2 inches	White legend on brown background	FRD
Reassurance markers		3 inches	White legend on brown background	Federal recreation symbol RL-090
Sign support and placement requirements				
Sign supports			Posts or trees	
Minimum mounting height trail tread to bottom of sign			5 feet	
Minimum lateral distance edge of trail tread to bottom of sign			2 to 6 feet	
Remarks:				

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Table 5-13—ATV/motorcycle trails

Sign type	Sign face	Sign requirements		
		Minimum size (inches)	Color	Shape
Regulatory and warning	Shall be retroreflective	Warning: 12 x 12	Shall follow MUTCD colors	Shall follow MUTCD shapes
Guide	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Junction identity	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Reassurance markers	Shall be retroreflective	3 inches	White legend on brown background	Federal recreation symbol RL-150 or RL-170
Sign support and placement requirements				
Sign supports		Posts or trees		
Minimum mounting height trail tread to bottom of sign		5 feet		
Minimum lateral distance edge of trail tread to nearest edge of sign		2 to 6 feet		
Remarks:				

Chapter 5 Trail Signing

Table 5-14—Snowmobile trails

Sign type	Sign face	Sign requirements		
		Minimum size (inches)	Color	Shape
Regulatory and warning	Shall be retroreflective	Warning: 12 x 12	Shall follow MUTCD colors	Shall follow MUTCD shapes
Guide	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Junction identity	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	9- x 12-inch diamond or rectangle (minimum 4 inch)
Reassurance markers	Shall be retroreflective	5 x 7 9 x 12	Orange or fluorescent orange	TB-1 plastic blazer TB-2 with arrow
Sign support and placement requirements				
Sign supports		Posts or trees		
Minimum mounting height trail tread to bottom of sign		40 inches above average maximum snow level No more than 84 inches above current snow level		
Minimum lateral distance edge of trail tread to bottom of sign		2 to 6 feet		
Remarks:				
<ul style="list-style-type: none">• Destinations on guide signs should emphasize safety features, such as shelters and warming huts.• Use a location map showing the trail system, groomed or ungroomed conditions, and a “YOU ARE HERE” arrow at each intersection for user orientation and security.• Guide poles may be painted orange, have an orange TB-1 blazer mounted on both sides, or be wrapped with retroreflective orange tape.• Where wide variation in snow accumulations can be expected, periodic resetting may be necessary.• In areas with heavy summer use, consider mounting the signs on removable posts on stationary bases. This will improve esthetics and reduce vandalism and sign maintenance.• When trees are used for mounting signs, prune limbs well above the sign so limbs will not droop with the weight of snow and obscure the sign.				

Chapter 5 Trail Signing

Table 5-15—Water trails

Sign type	Sign face	Sign requirements		
		Minimum size (inches)	Color	Shape
Regulatory and warning	Shall be retroreflective	Warning: 12 x 12	Shall follow MUTCD colors	Shall follow MUTCD shapes
Guide	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Junction identity	Shall be retroreflective	Text: Capital ASA series C, 2 inches	White legend on brown background	FRD
Reassurance markers	Shall be retroreflective	3 inches	White on brown	Federal recreation symbol RW-020
Sign support and placement requirements				
Sign supports		Posts or trees		
Minimum mounting height trail tread to bottom of sign		5 feet above high water level		
Minimum lateral distance edge of trail tread to nearest edge of sign		2 to 6 feet		
Remarks:				

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5A.1 Trail Sign Placement and Installation

This chapter illustrates typical placement and installation of trail signs.

5A.2 Placement

Signs typically are mounted 2 to 6 feet from the right edge of the trail tread to the nearest sign edge to provide adequate clearance for the trail traffic.

Place signs where they are clearly visible. Sign placement is especially critical for winter signing when visibility can be at its worst. Sign for the unfamiliar user in poor weather and light conditions and with no tracks to follow. To keep signs free from snow and ice, and to increase visibility, place signs where they will be protected from the prevailing wind if possible. Determine placement distances based on adverse conditions.

Maximize opportunities to limit signs to one panel. Limit signing to:

- One installation (single post or tree) per junction.
- Two signs per installation.

As a rule, place signs perpendicular or parallel to trail direction.

Signs placed more than 8½ feet above the trail tread may not be visible, especially at night.

5A.3 Supports and Mountings

Order signs with predrilled holes and mount them with zinc-plated lag screws or bolts. Use vandal-resistant hardware where sign theft is a problem. Reassurance blazers should be mounted with aluminum nails.

When wood posts are used, position the top of the sign 2 inches below the top of the post on the side in contact with the sign. Use unstained posts with tops that are rounded or sloped at 45 degrees away from the sign face. At a minimum, butt preservative treatment is recommended. When round wood posts are used, consider notching the post to facilitate flat mounting of the sign.

When trees are used, prune limbs well above the sign, so limbs will not droop with the weight of snow or ice and obscure the sign. When mounting on trees, allow space for tree growth. Select trees that:

- Are close to the trail.
- Are in a direct line of sight from the trail.
- Have the best light exposure to improve visibility.

On snow trails where wide variations in snow accumulations can be expected, consider special support extensions that allow for periodic resetting during the use season. In areas with heavy summer use, consider mounting the snow trail signs on removable posts on stationary bases or receptacles. This will improve esthetics and reduce vandalism and maintenance on the snow trail signs.

Table 5A-1—Trail sign support and placement requirements

Trail type	Sign supports	Reassurance marker supports	Minimum mounting height (Trail tread to bottom of sign)	Minimum lateral distance (Edge of trail tread to nearest edge of sign)
Hiker/pedestrian pack and saddle	Posts or trees	Posts or trees	5 feet	3 feet clearance pack and saddle for pack stock
Wilderness	Posts or trees	Posts or trees	5 feet	3 feet
Cross-country ski urban setting or night skiing	Posts or trees	Posts or trees	40 inches above average maximum snow level	2 to 6 feet
Cross-country ski semiprimitive motorized and nonmotorized ROS	Posts or trees	Posts or trees	40 inches above average maximum snow level	2 to 6 feet
Bicycle paved or coincident with roads	Posts	Posts or trees	5 feet	3 to 6 feet
Mountain bike	Posts or trees	Posts or trees	5 feet	2 to 6 feet
ATV/motorcycle	Posts or trees	Posts or trees	5 feet	2 to 6 feet
Snowmobile	Posts or trees	Posts or trees	40 inches above average maximum snow level	3 to 6 feet
Water	Posts or trees	Posts or trees	5 feet above high-water level	2 to 6 feet

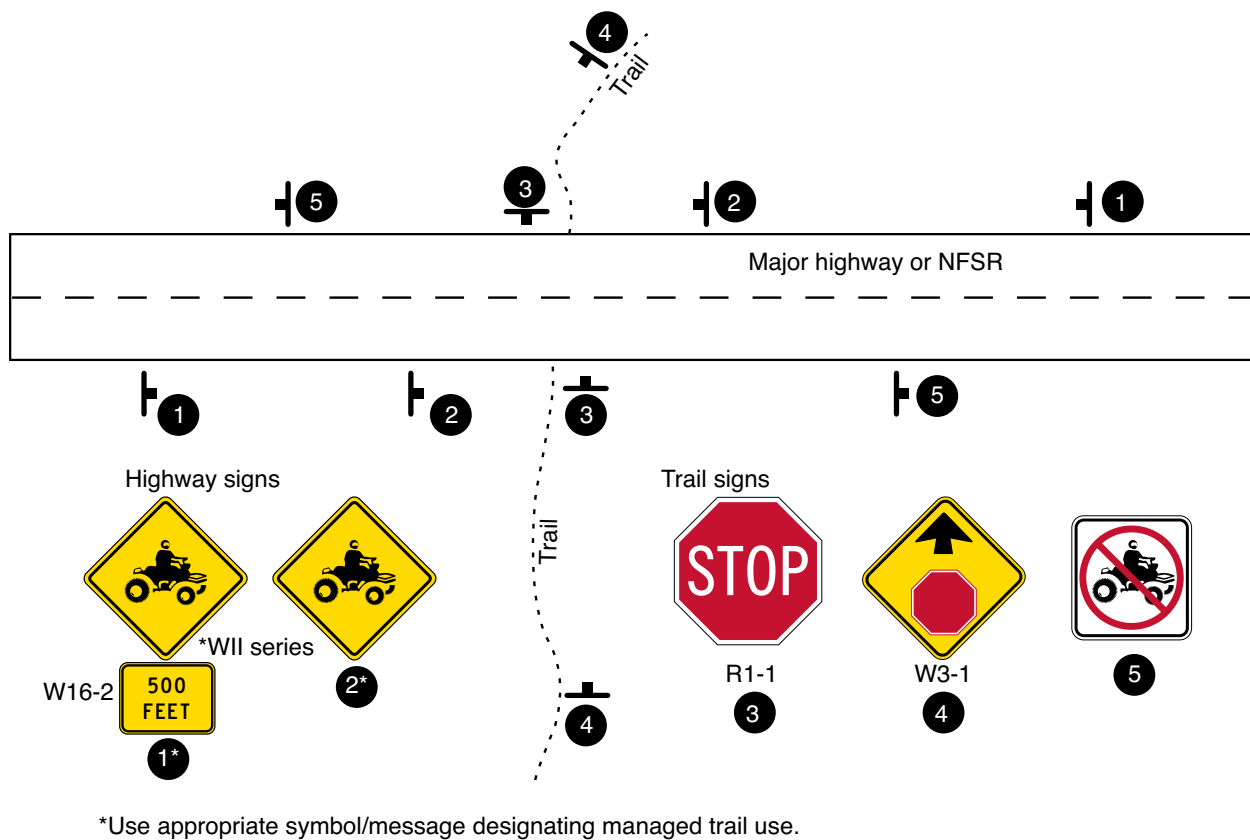
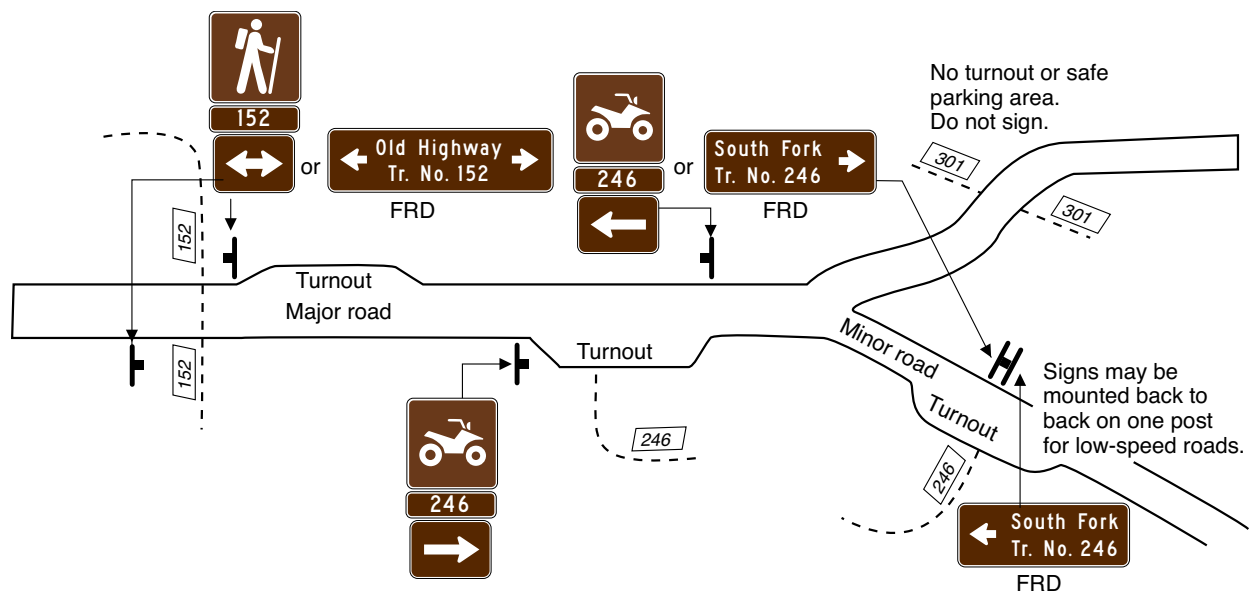


Figure 5A-1—Typical placement of regulatory and warning signs for motorized trail road crossings.



Use appropriate Federal Recreation Symbols for trail use.
 Trail junctions should be signed with appropriate guide signs,
 travel management signs, and reassurance markers.
 Refer to page 7B-11 for arrow details below recreation symbols.

Figure 5A-2—Typical placement of road guide signs for trails crossing or beginning at roads.

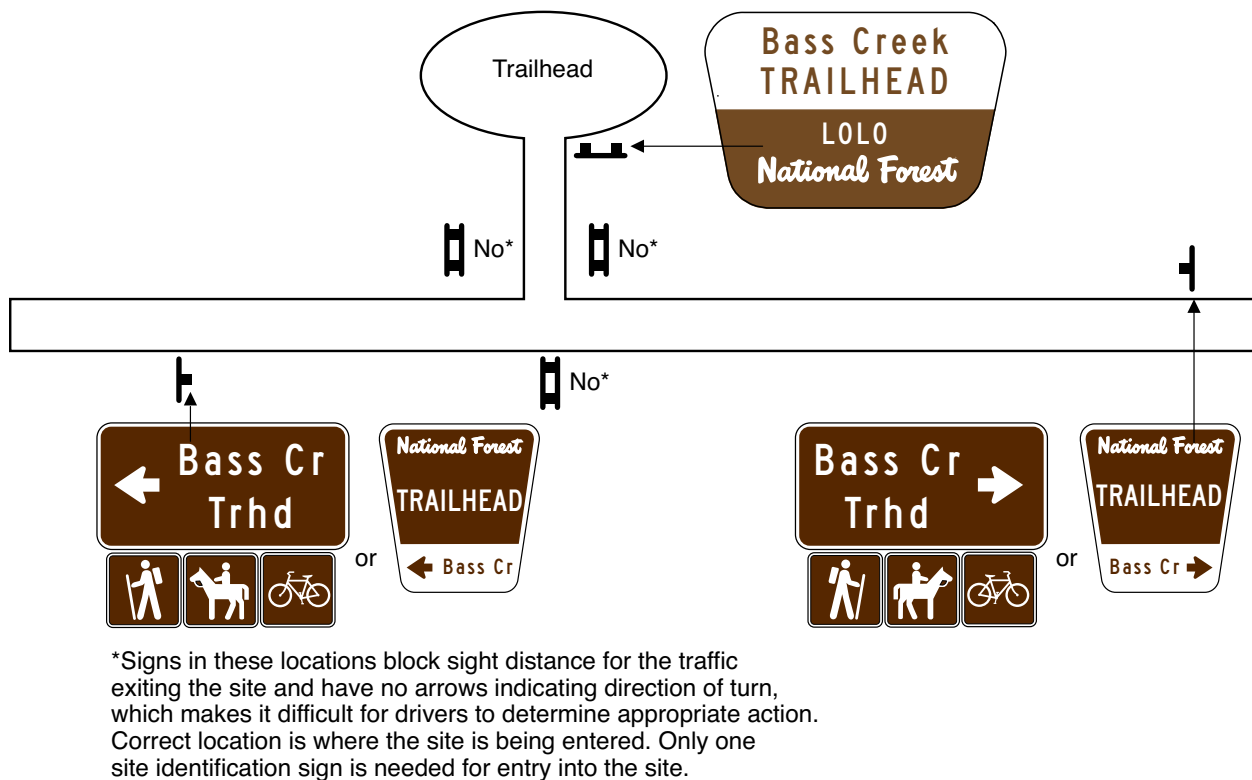


Figure 5A-3—Site identification and site approach signs.

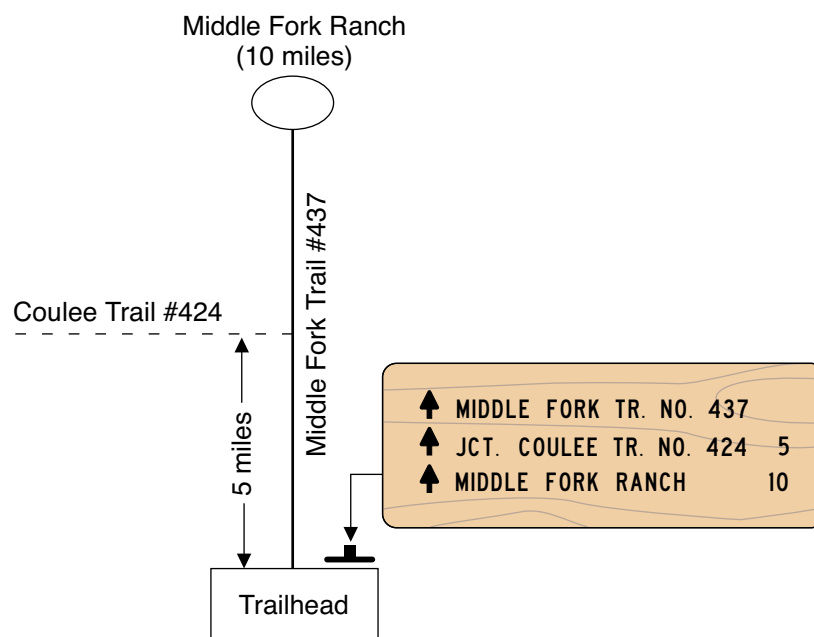


Figure 5A-4—Trail junction signing.

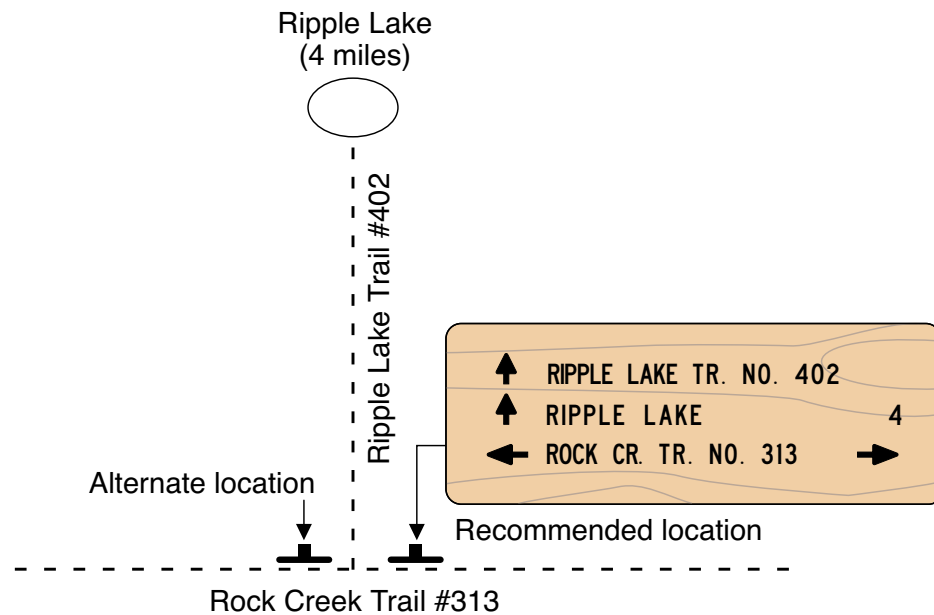


Figure 5A-5—Trail junction signing.

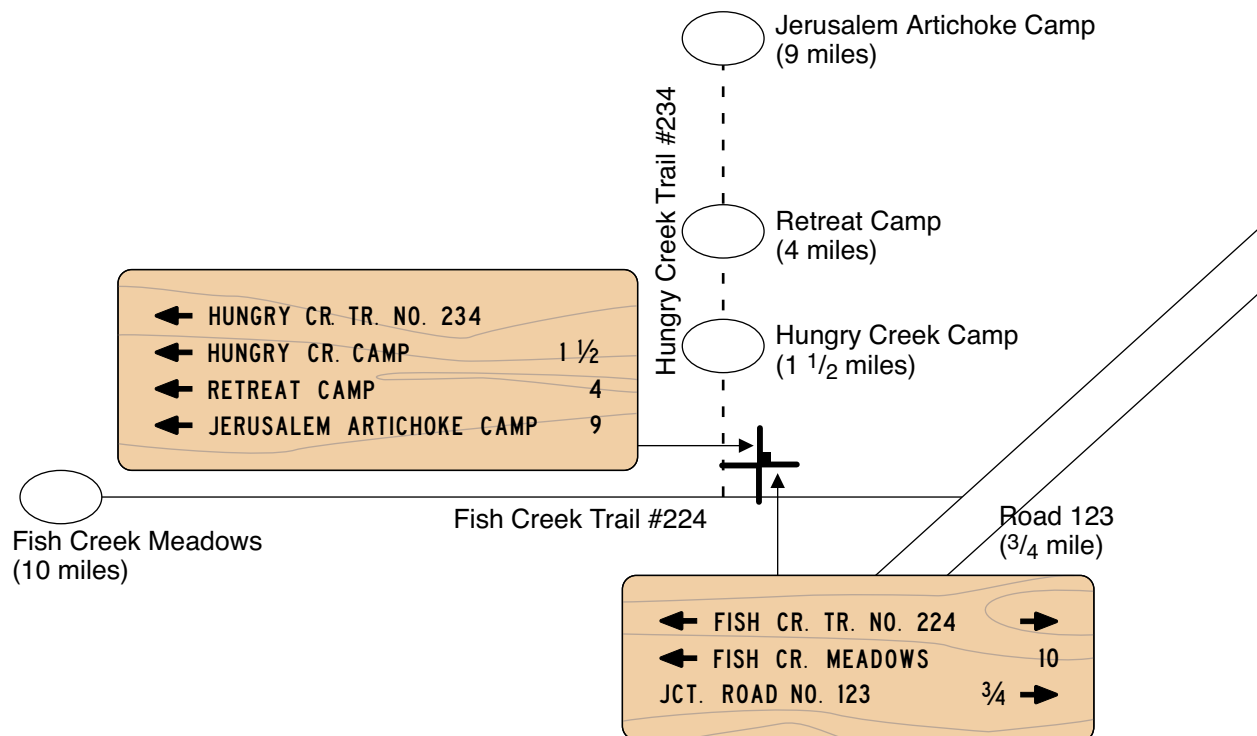


Figure 5A-6—T junction trail signing.

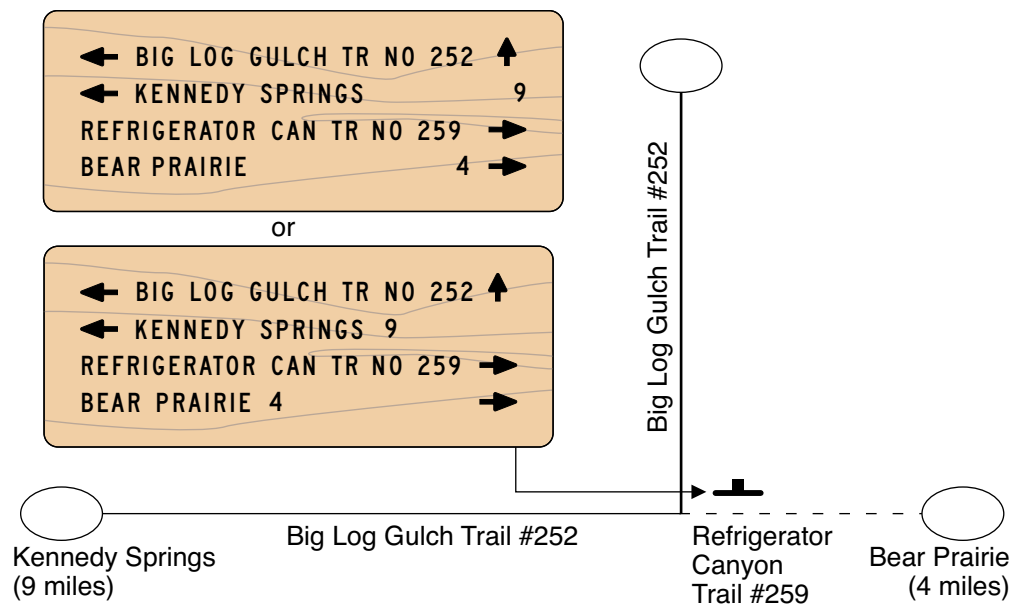


Figure 5A-7—Left L junction—trail signing.

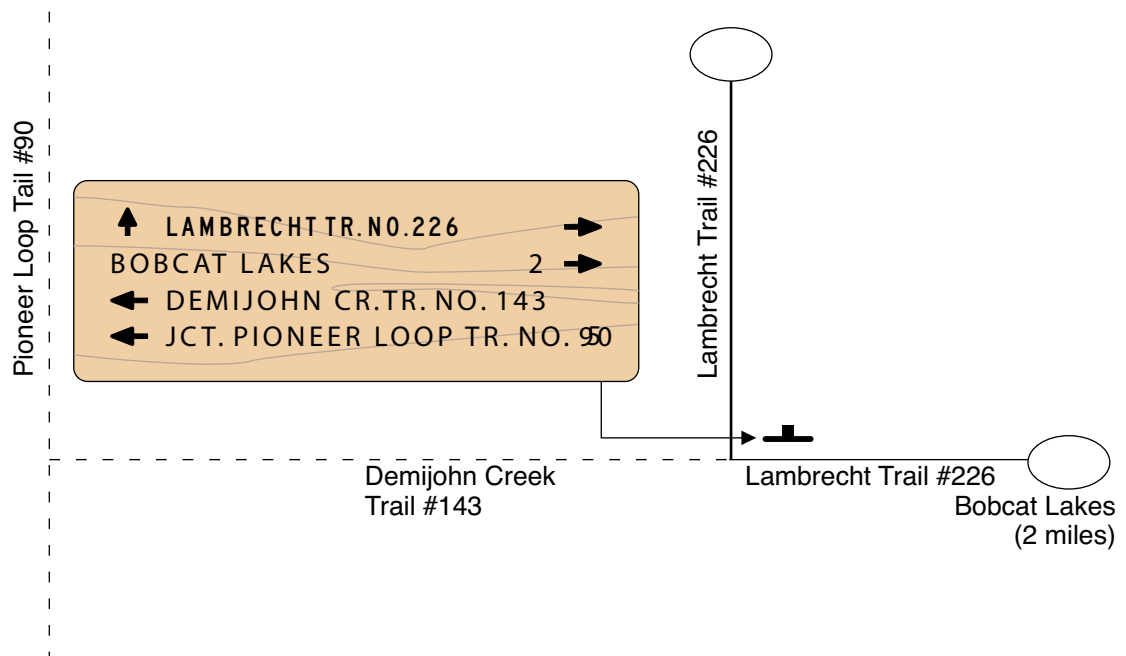


Figure 5A-8—Right L junction—trail signing.

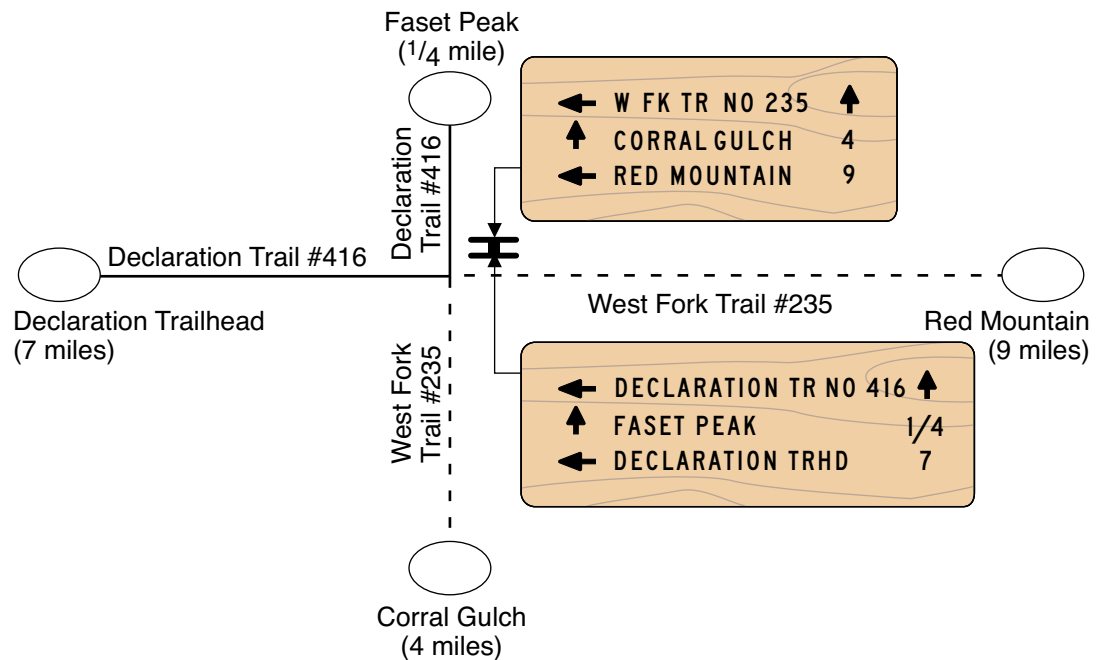


Figure 5A-9—L-L junction trail signing.

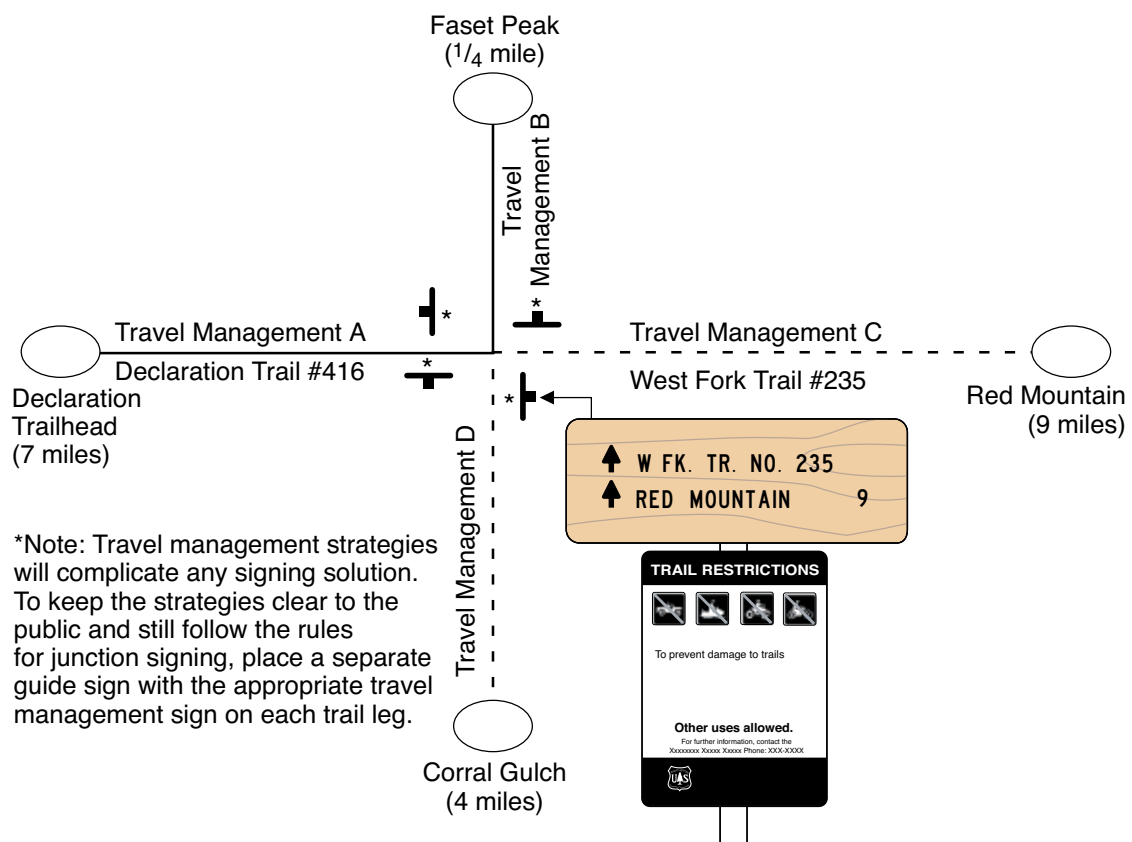


Figure 5A-10—L-L junction with different travel management strategies.

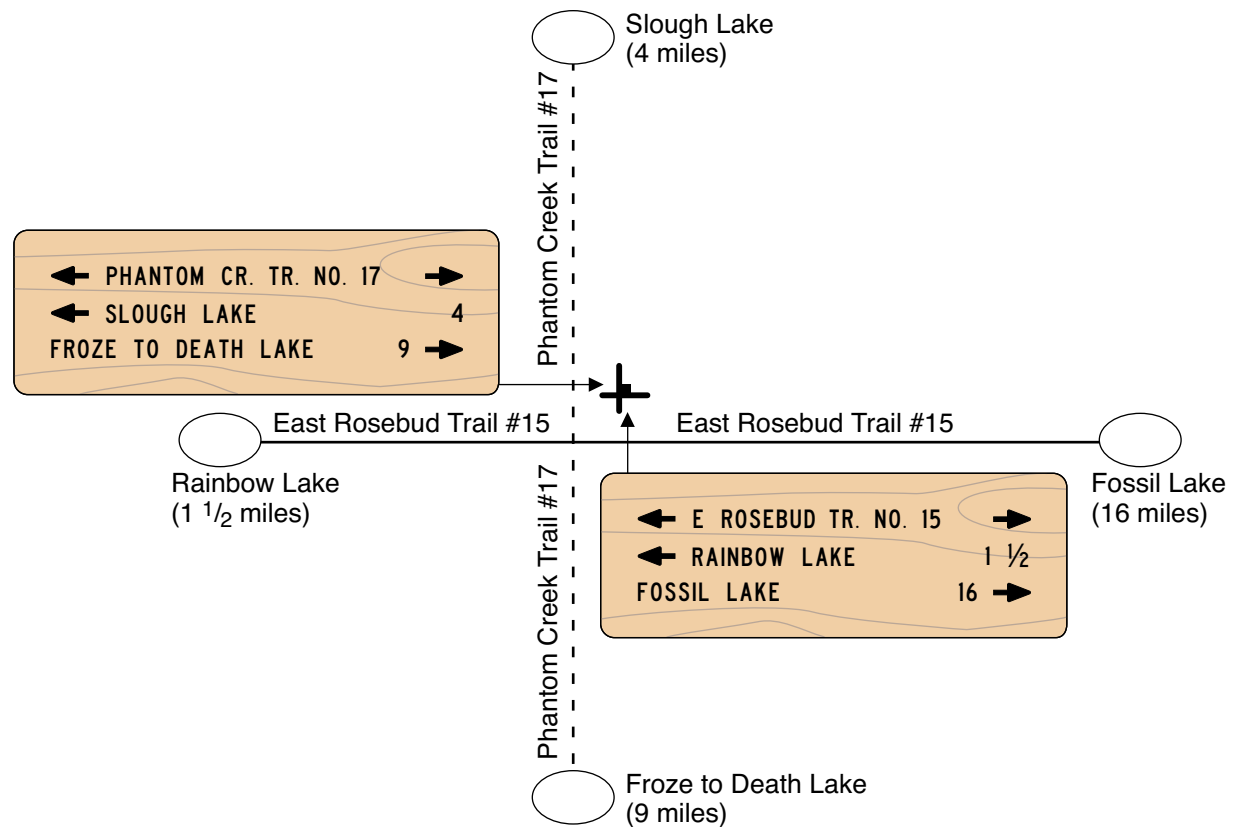


Figure 5A-11—X junction trail signing.

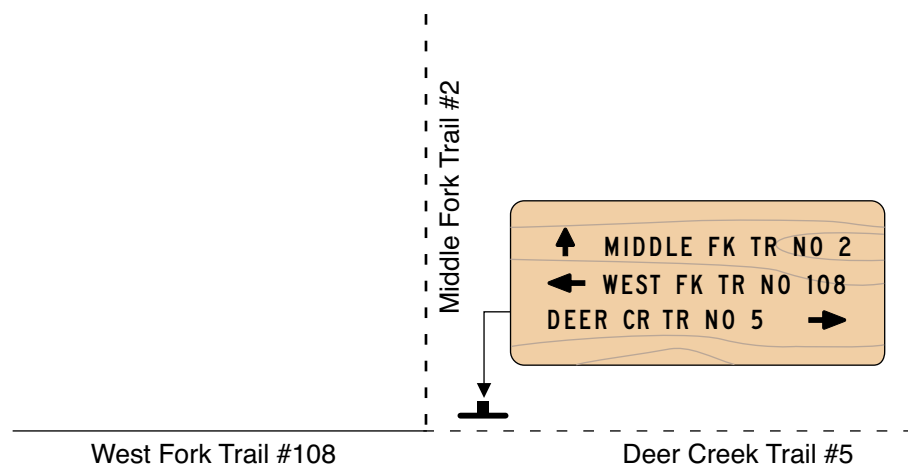


Figure 5A-12—Three-way junction trail signing.

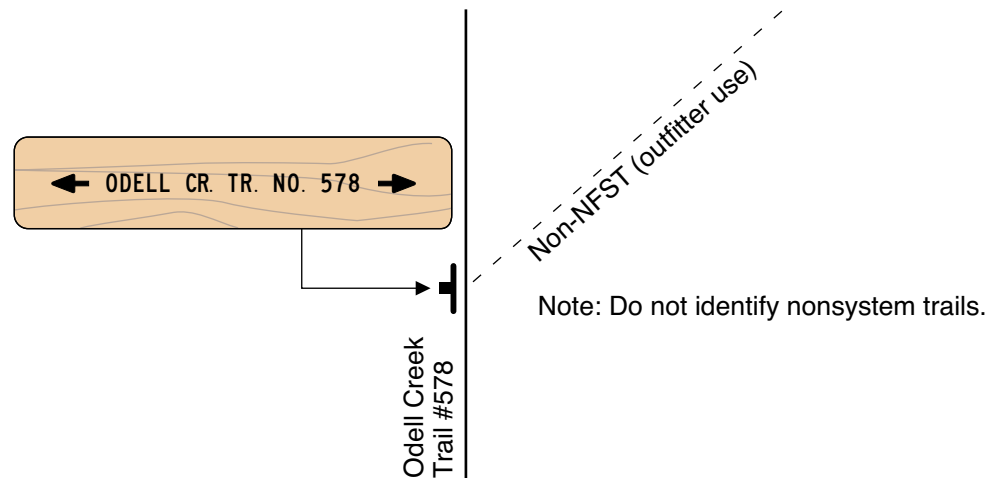


Figure 5A-13—Junction with nonsystem trail signing.

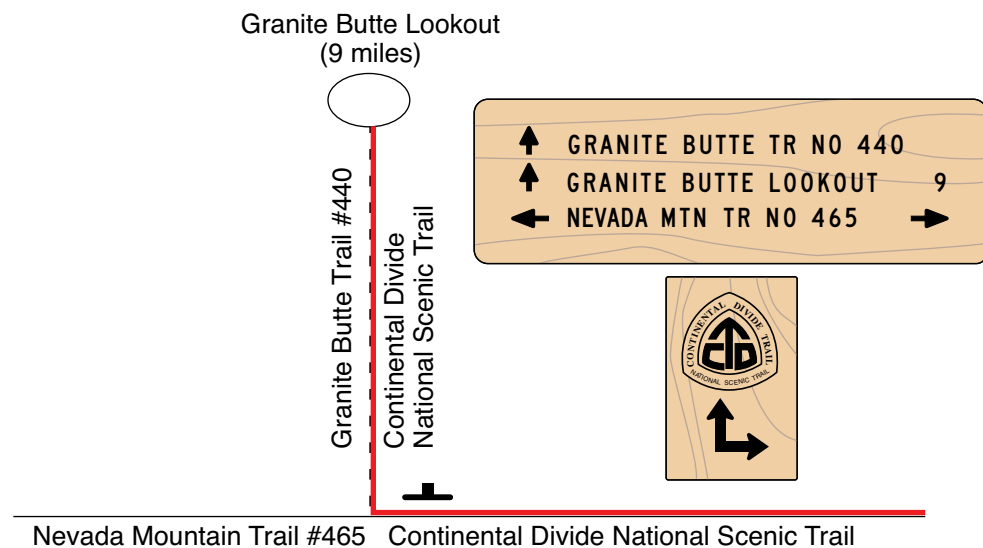


Figure 5A-14—Designated national trail signing.

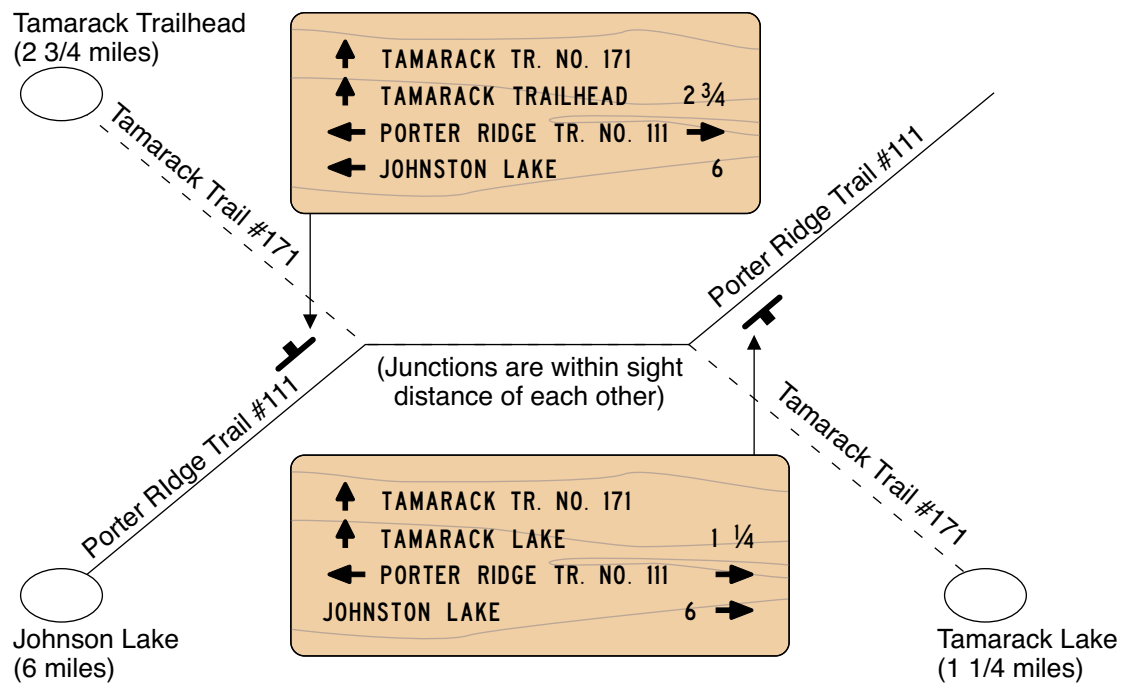


Figure 5A-15—Signage for coincident trail segment.

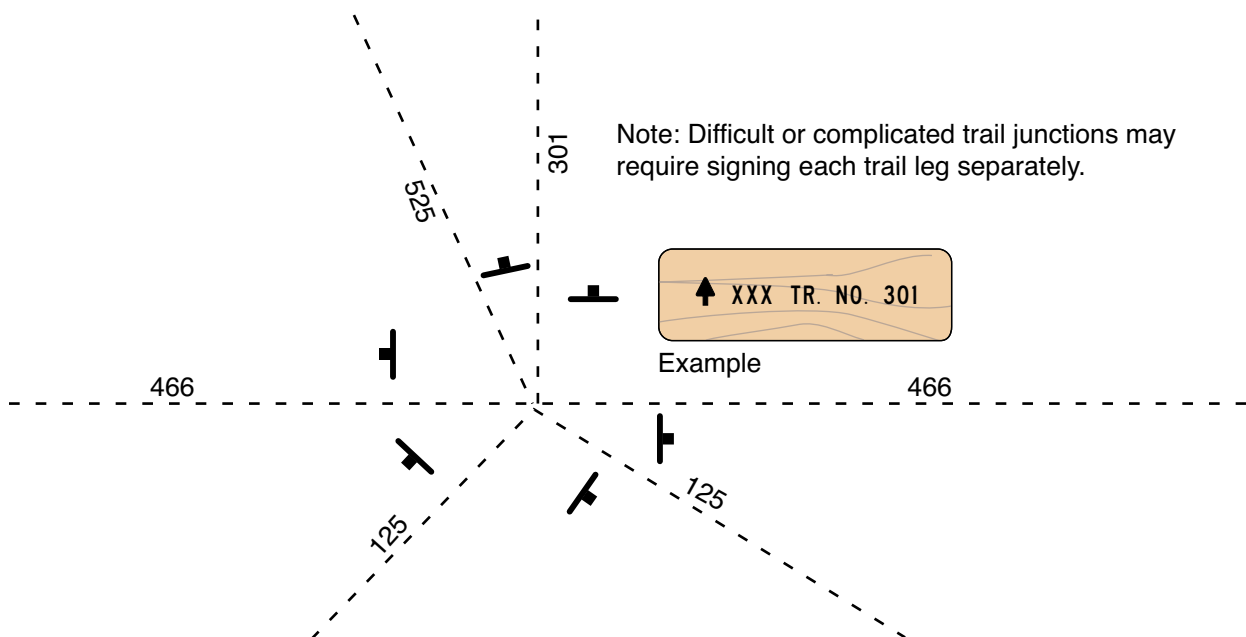


Figure 5A-16—Trail signing of multiple trail intersection.

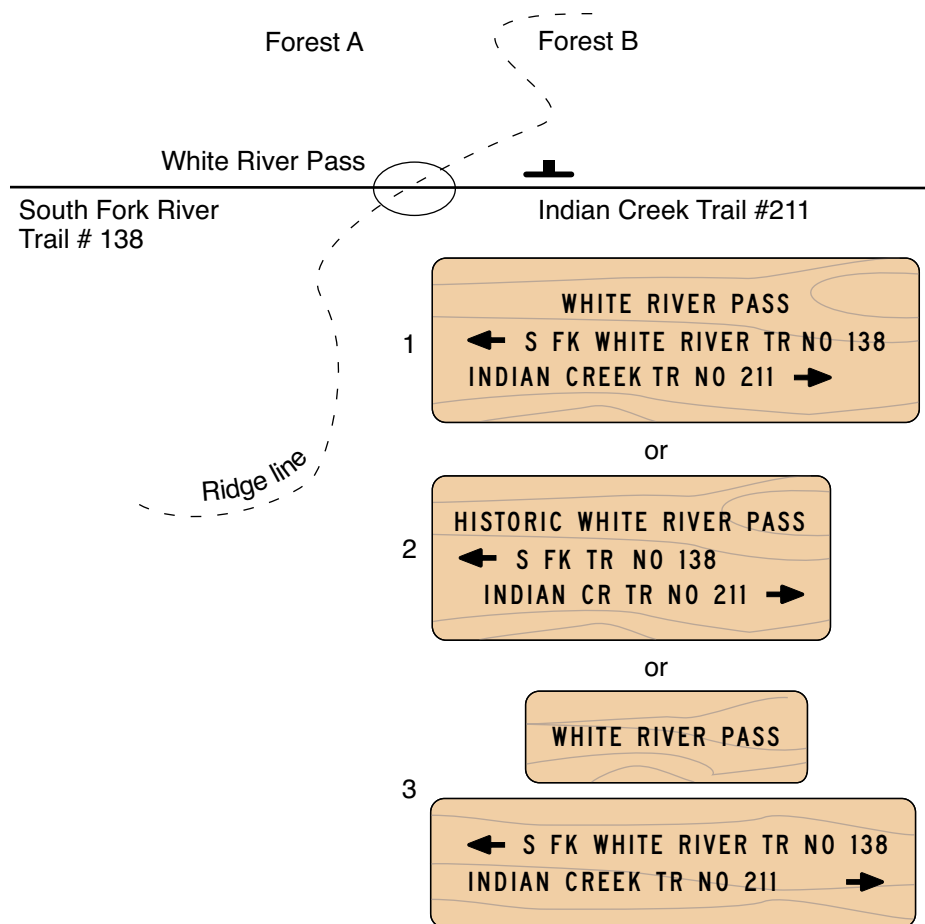


Figure 5A-17—Feature identification, three methods of signing.

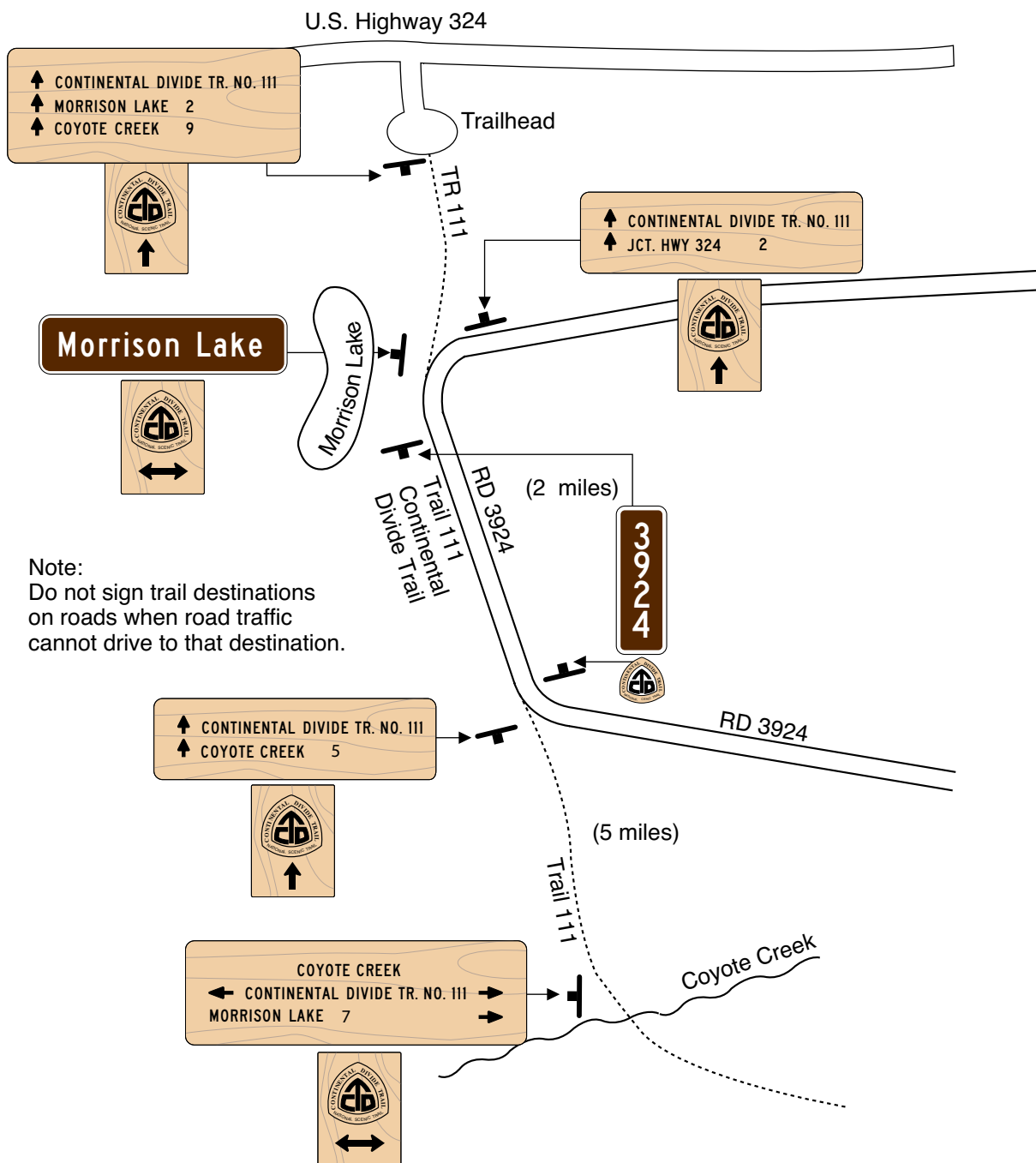


Figure 5A-18—Designated national trail with trail guide signs and national trail markers.

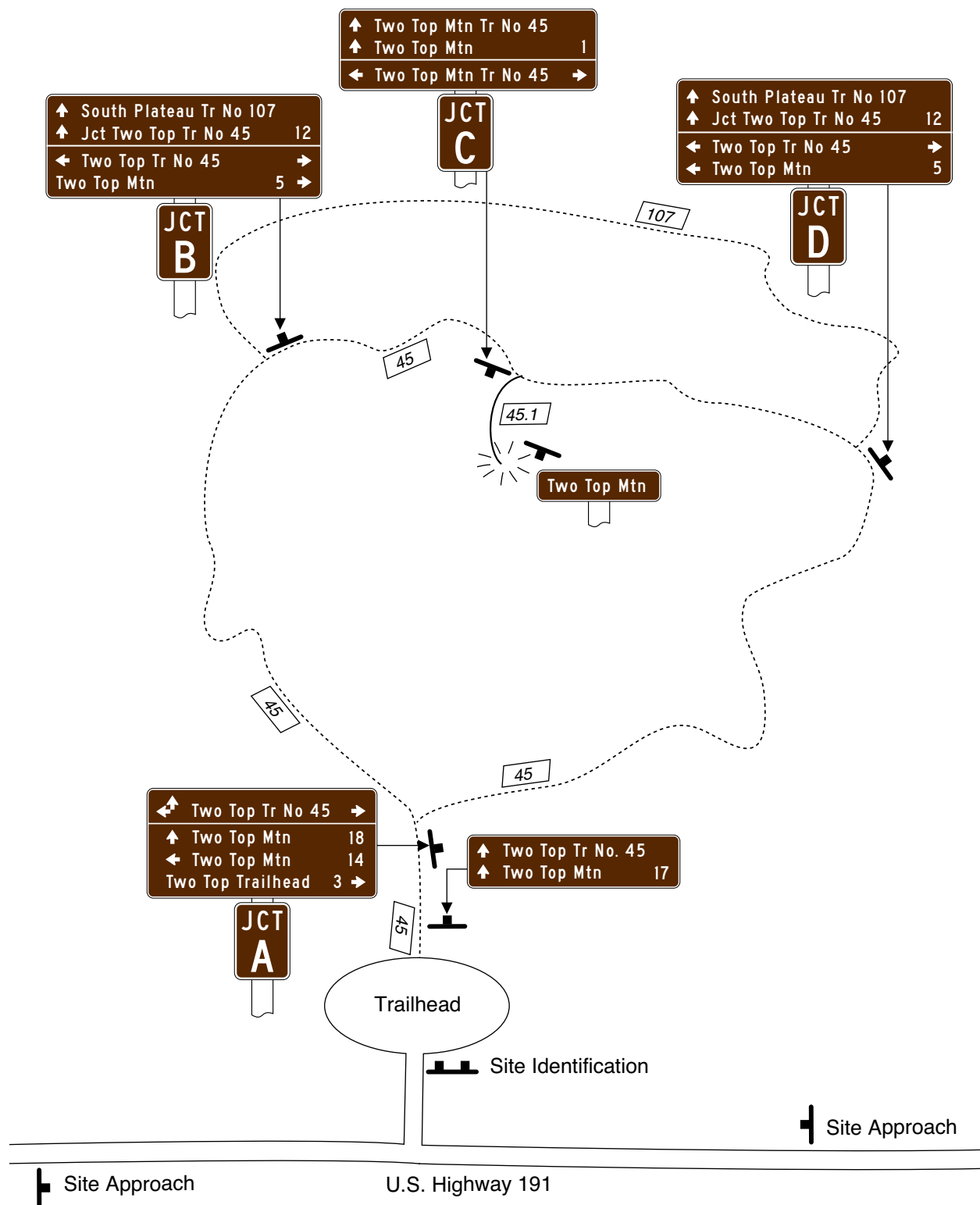


Figure 5A-19—Typical guide signing for motorized trails with signs at the junctions.

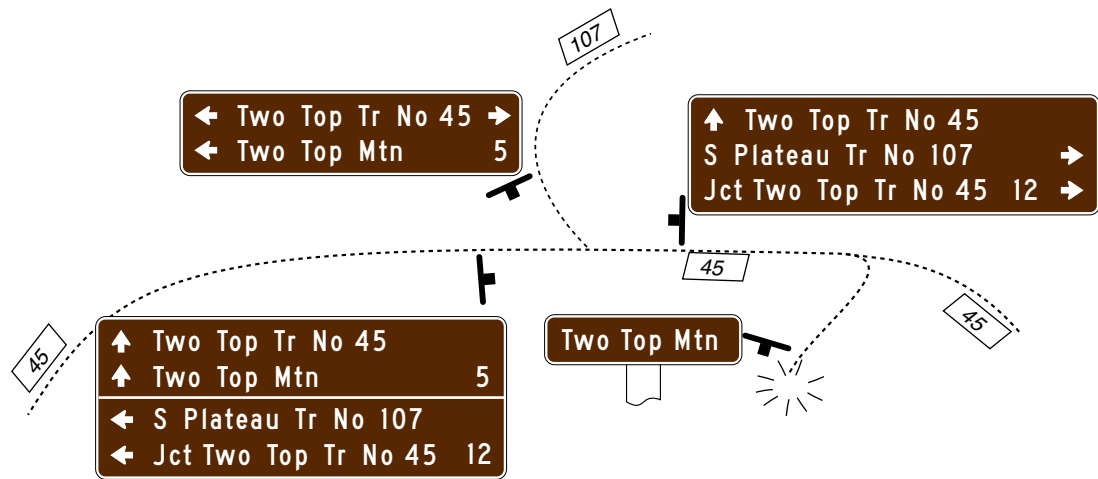


Figure 5A-20—Typical guide sign location when signs precede a junction on a motorized trail.

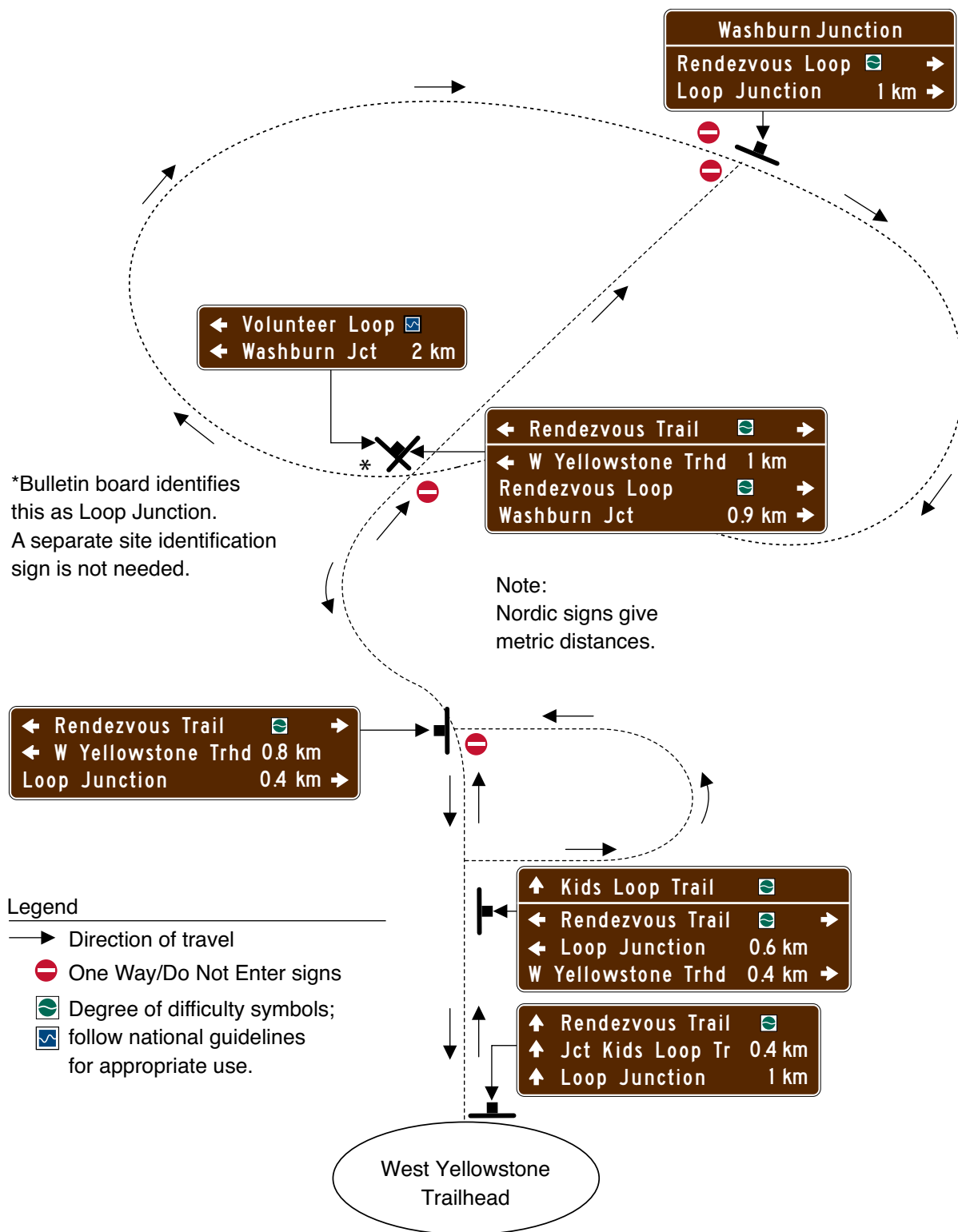
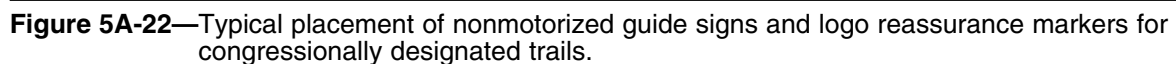


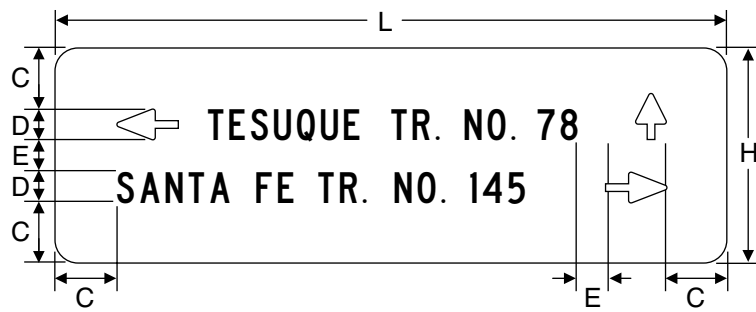
Figure 5A-21—Typical guide signing for a Nordic system with one-way loops.



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5B.1 Trail Destination Signs (TD)

Text layout—Trail destination signs (TD)
Nonwilderness and wilderness applications



Text layout dimensions (inches)

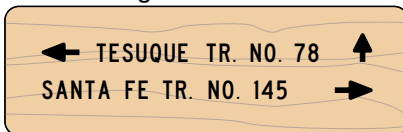
Sign number	H	L	C	D* text	E
TD-1	5	Varies	2	1	1
TD-2	7	Varies	2	1	1
TD-3	9	Varies	2	1	1
TD-4	11	Varies	2	1	1
TD-5	13	Varies	2	1	1

*Dimension D, text size, refers to ASA series C letters

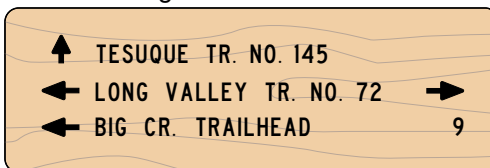
One-line sign TD-1



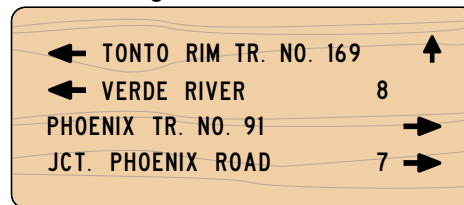
Two-line sign TD-2



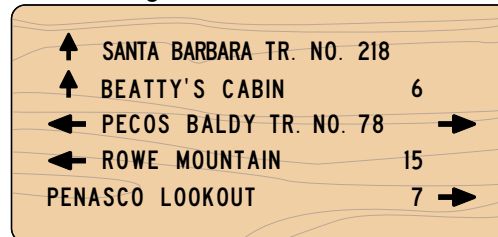
Three-line sign TD-3



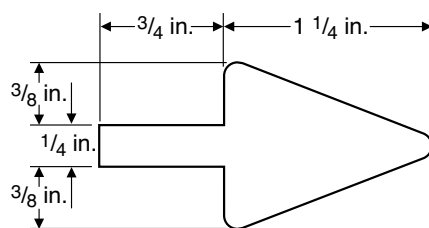
Four-line sign TD-4



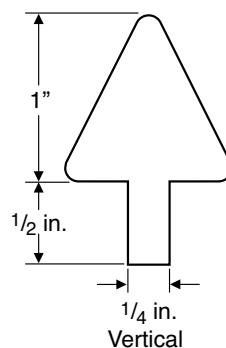
Five-line sign TD-5



Typical layout—Arrow details



Horizontal



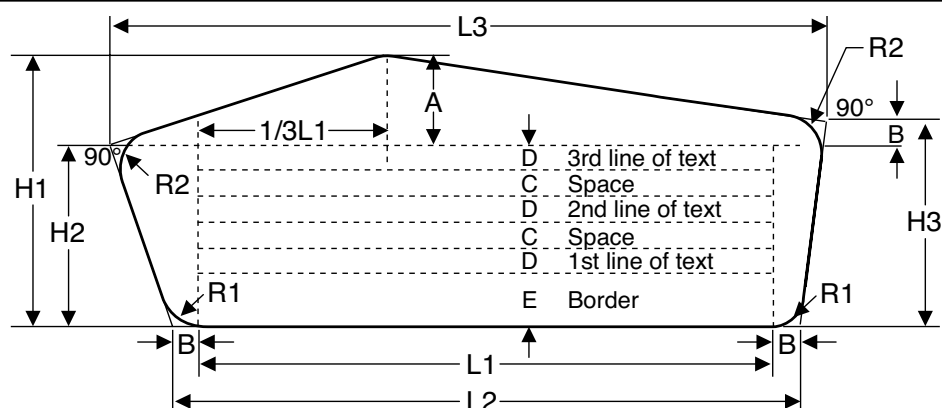
Vertical

References

For sign guidelines, see chapter 5.
For panel construction, see chapter 14.

5B.2 Trail Directional—Wilderness Shape

Text layout—Trail directional—wilderness shape (TDW-1 and 2) optional use



TDW-1 examples



Text layout dimensions (*inches*)

Sign number	H1	H2	H3	L1	L2	L3	A	B	C	D* text	E	R1	R2
TDW 1	10 ½	7	8	22	24	27 ½	3 ½	1	1	1	2	1	1 ½
TDW 2	14 ½	11	12	22	24	27 ½	3 ½	1	1	1	2	1	1 ½

Notes

TDW-1 = Up to 3 lines of text with up to 25 characters per line.

For 1- and 2-line signs, center text lines in message box vertically.

TDW-2 = 4 or 5 lines of text with up to 25 characters per line.

Center text lines horizontally as a group in the message box.

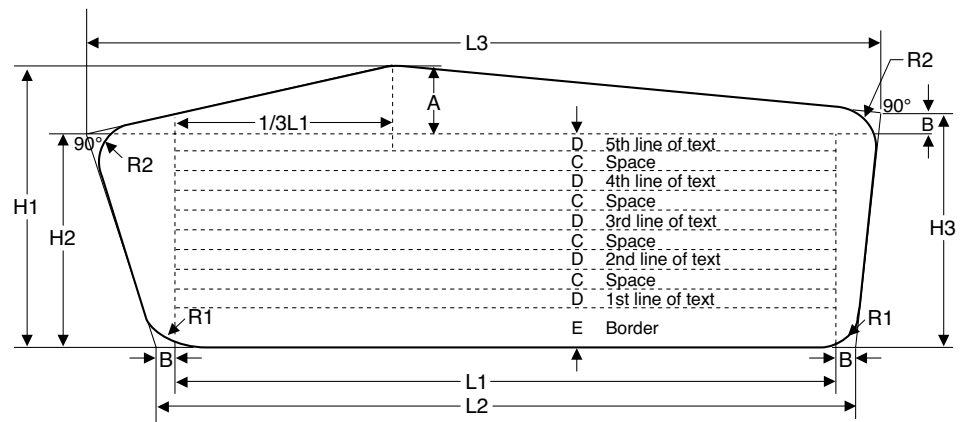
Specify message.

No mileage is shown on Wilderness signs.

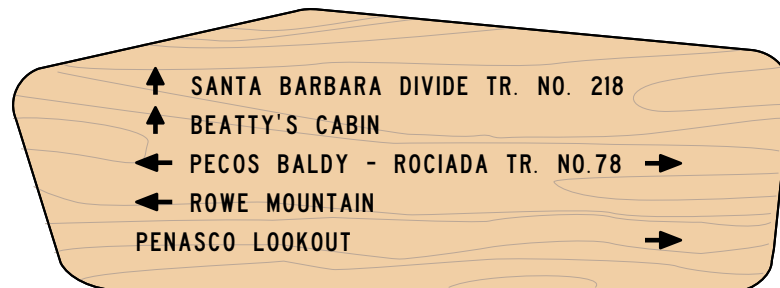
*Dimension D, text size, refers to ASA Series C letters.

Colors

Unfinished wood with scorched or blackened text.

Text layout—Trail directional—wilderness shape (TDW-3 and 4) optional use

TDW-4 examples



Text layout dimensions (inches)

Sign number	H1	H2	H3	L1	L2	L3	A	B	C	D* text	E	R1	R2
TDW 3	10 ½	7	8	34	36	40 ¾	3 ½	1	1	1	2	1	1 ½
TDW 4	14 ½	11	12	34	36	40 ¾	3 ½	1	1	1 (Series C)	2	1	1 ½

Notes

TDW-3 = Up to 3 lines of text with 25 to 40 characters per line.

For 1- and 2-line signs, center text lines vertically in message box.

TDW-4 = 4 or 5 lines of text with lines 25 to 40 characters per line.

For messages longer than 40 characters, use 2 lines.

Do not use for more than 5 lines of message.

Center text lines horizontally as a group in the message box.

Specify message.

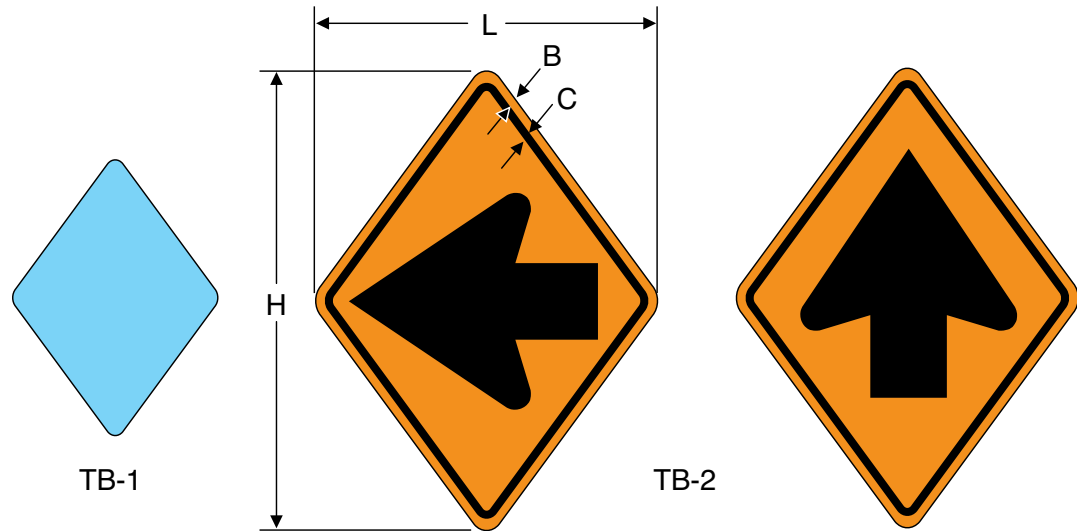
No mileage is shown on Wilderness signs.

*Dimension D, text size, refers to ASA Series C letters.

Colors

Unfinished wood with scorched or blackened text.

5B.3 Trail Blazer (TB)

Text layout—Trail blazer (TB)Text layout dimensions (*inches*)

Blazer number	H	L	B	C	Text arrows	Most often used on
TB-1	7	5	N/A	N/A	N/A	Hiker, pack and saddle trails; Nordic ski trails; snowmobile trails
TB-2	12	9	$\frac{3}{8}$	$\frac{3}{16}$	5 inch	snowmobile trails

Notes

Use standard arrow—same as route marker arrow. Center in diamond.

When ordering, specify size, color, arrow, and direction (if desired), and retroreflective (if desired).

Colors

Black border and arrow.

Trail type

TB-1 Hiker, pack, and saddle trails

TB-1 Nordic ski trails

TB-1 Snowmobile trails

TB-2 Snowmobile trails

Background Color

Gray/white (nonreflective) #27722

Blue (retroreflective/nonreflective) #15187

Orange or fluorescent orange (retroreflective) #12473

Orange or fluorescent orange (retroreflective) #12473

References

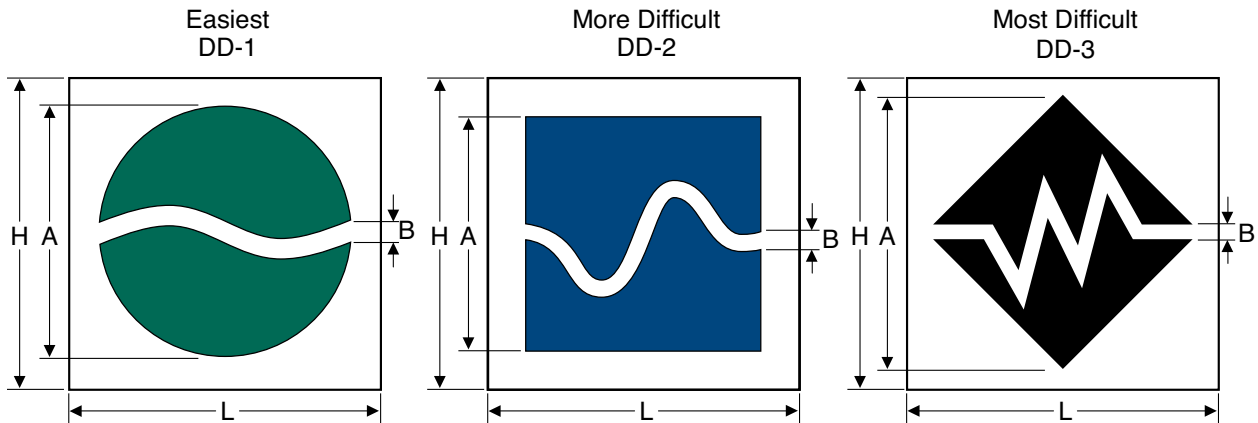
For sign guidelines, see chapter 5.

For panel construction, see chapter 14.

For arrow details and text arrows, see chapter 3D.

5B.4 Trail Degree-of-Difficulty Symbols

Layout—Trail degree-of-difficulty symbols



Text layout dimensions (inches)

Sign number	H & L	A	B	Federal color chip
DD-1	2	1 $\frac{5}{8}$	$\frac{1}{8}$	Green—#14109
	3	2 $\frac{1}{2}$	$\frac{13}{64}$	
	3 $\frac{1}{2}$	2 $\frac{7}{8}$	$\frac{15}{64}$	
DD-2	2	1 $\frac{1}{2}$	$\frac{1}{8}$	Blue—#15090
	3	2 $\frac{1}{2}$	$\frac{13}{64}$	
	3 $\frac{1}{2}$	2 $\frac{3}{4}$	$\frac{15}{64}$	
DD-3	2	1 $\frac{3}{4}$	$\frac{1}{8}$	Black—#35042
	3	2 $\frac{5}{8}$	$\frac{5}{32}$	
	3 $\frac{1}{2}$	3	$\frac{11}{64}$	

Notes

Place light black line around blue and green symbols for contrast.
Symbols shall be centered on square.

Colors

Use standard FHWA retroreflective sign colors.

References

For sign guidelines, see chapter 5.
For specifications, see chapter 14.
For colors, see MUTCD, page 1A-9.

5B.5 National Trail Markers

Layout—National Trail Markers

National Recreation Trail Marker—NRT



National Historic Trail Marker—NHT



National Scenic Trail Markers—NST

Text layout dimensions (*inches*)

Marker	Size	Hole size
NT-1	3 ½	⅛
NT-2	9	⅛
NT-3	18	⅜

Notes

These markers are for trails under Forest Service jurisdiction. For other trail markers, contact National Park Service or regional office trails specialist. Art work and Federal standard colors will be furnished by the regional trails specialist.

Specify trail symbol.

Chapter 6 Travel Management Signing

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Chapter 6

Travel Management Signing

Agency-wide consistency and uniformity in the use of signs to communicate travel management decisions will provide the foundation for implementation and enforcement of those decisions.

6.1 Travel Management—Introduction

The travel management rule requires that motor vehicle use on National Forest System roads, National Forest System trails, and areas on National Forest System lands be designated by vehicle class, and if appropriate, by time of year.

Ensuring that the public clearly understands any travel management decision is critical to successful implementation of that decision.

One of the most effective methods of communicating travel management information is through the use of appropriate signs and posters that are clear, uniform, and consistent on all national forests and grasslands. Visitors should expect to encounter similar signing on all national forests and grasslands. Agency-wide consistency and uniformity in the use of signs to communicate travel management decisions will provide the foundation for implementation and enforcement of those decisions. Lack of sign uniformity and consistency can lead to confusion, undermine public support, and make implementation and enforcement difficult.

6.1.1. Travel Management Sign Plans

Units should determine specific sign strategies to implement travel management decisions. Sign plans for designated routes and areas should be developed prior to issuing Motor Vehicle Use Maps (MVUM) and Over Snow Vehicle Use Maps (OSVUM). Refer to chapter 2 for specific information on developing sign plans.

Assess travel management sign needs at a large scale considering forest-wide objectives for implementation and resources available for sign installation, replacement, removal, and maintenance. Units also should consider current motor vehicle uses, mixed traffic designations, and areas of potential enforcement challenges of motor vehicle designations.

A sign plan will result in signs that are consistent in appearance and placement; help users better understand and follow the MVUM; and likely will result in improved user compliance. An MVUM combined with a carefully planned strategy to provide the minimum number of appropriate signs, will reduce the burden on agency resources for maintenance and improve the recreational experience for forest users through better understanding of travel management rules and designations.

When a unit develops a travel management sign plan, they should focus on the minimum signs needed to begin implementation, for example, the route marker. Additional signs, such as portal signs or travel management signs may always be installed at a later date, if the need arises. It is much easier to add new signs than to remove signs that the public has become dependent on. If a unit elects to use signs in addition to the route marker to help implement the MVUM, they should be used consistently and be coordinated with adjacent units as necessary. If a unit has existing travel management signs that do not meet current sign standards, a schedule to remove or transition to the current standards should be included in the sign plan.

Chapter 6 Travel Management Signing

6.1.2 Travel Management Definitions

6.1.2a Restriction

A restriction precludes the use of the route or area by a type of vehicle or traffic, or by a specified time period.

- Type of vehicle, such as motor vehicles, passenger cars, log trucks, all-terrain vehicles, motorcycles, or snowmobiles.
- Type of traffic, such as nonmotorized, public, or commercial.

Nonrestricted traffic or vehicles are accepted.

6.1.2b Closure

A closure means the route or area is closed to ALL types of traffic, including foot traffic. This option is seldom used except in emergencies, such as fire or weather closures; special management situations, such as protection of an eagle-nesting site; or public safety issues, such as active fire areas or hazard tree removal in beetle kill areas. The term closed should not be used to refer to routes that have been decommissioned or converted, or on routes where some but not all uses have been restricted.

The R11-2 ROAD CLOSED sign shall not be used for long-term travel management road restrictions. Refer to chapter 3A, section 3A.6 for direction on the appropriate use of the ROAD CLOSED sign.

6.1.2c Designated Road, Trail, or Area

A NFS road, a NFS trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on the Motor Vehicle Use Map (MVUM). Motorized use may only occur on routes and in areas that are displayed on the MVUM (36 CFR 212.1).

6.1.2d Motor Vehicle

For the purposes of the MVUM, a motor vehicle is defined as any vehicle which is self-propelled, other than a wheelchair or mobility device as defined in 36 CFR 261.2, including highway legal and off-highway vehicles (OHV). Aircraft, watercraft, and over-snow vehicles are exempted from designations under 36 CFR 212.51.

6.2 Signs for Traffic Management Strategies

Traffic management strategies are employed where it is necessary to manage or control any class or type of traffic. Refer to FSM 7731.11. These strategies also are used to guide visitors from the time they first enter National Forest System lands until they depart. Consistent and proper use of strategies should provide a positive experience while traveling on system roads and trails.

Combinations of strategies may be used on a single route, such as:

- Discouraging passenger car traffic but encouraging high-clearance traffic on an ML 2 road.
- Prohibiting snowmobile traffic on a groomed cross-country ski trail where skiers are encouraged.

Strategies will affect the type of signs used on a route.

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6.2.1 Encourage (Roads)/Manage (Trails)

Traffic should be encouraged/managed only on routes that are designed, managed, and maintained for the type of traffic desired.

Traffic should be encouraged/managed only on routes that are designed, managed, and maintained for the type of traffic desired (e.g., a snowmobile trail that is groomed is being actively managed for snowmobiles). Encourage/ manage strategies should be consistent with the condition of the route during the normal season of use.

Use guide signs to encourage certain types of traffic to routes designated for their use. Use site approach signs, recreational and cultural interest area symbols, and destination signs to provide the public with information about destinations, facilities, and opportunities located ahead. See figures 6-1 and 6-2 for examples. Install appropriate route markers at intersections that are consistent with the use on the route. Refer to chapter 3C, section 3C.2.

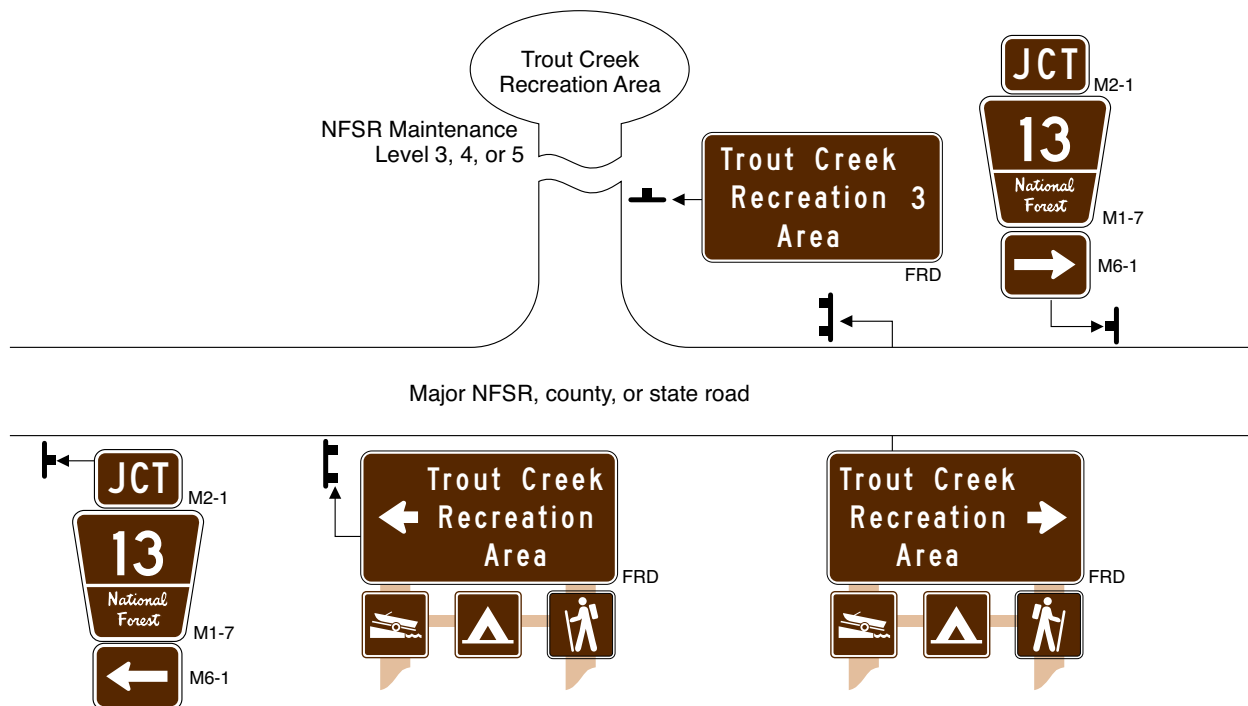


Figure 6-1—Implement an Encourage strategy for highway legal vehicles by using destination signs, recreational and cultural interest area symbols, and primary route markers.

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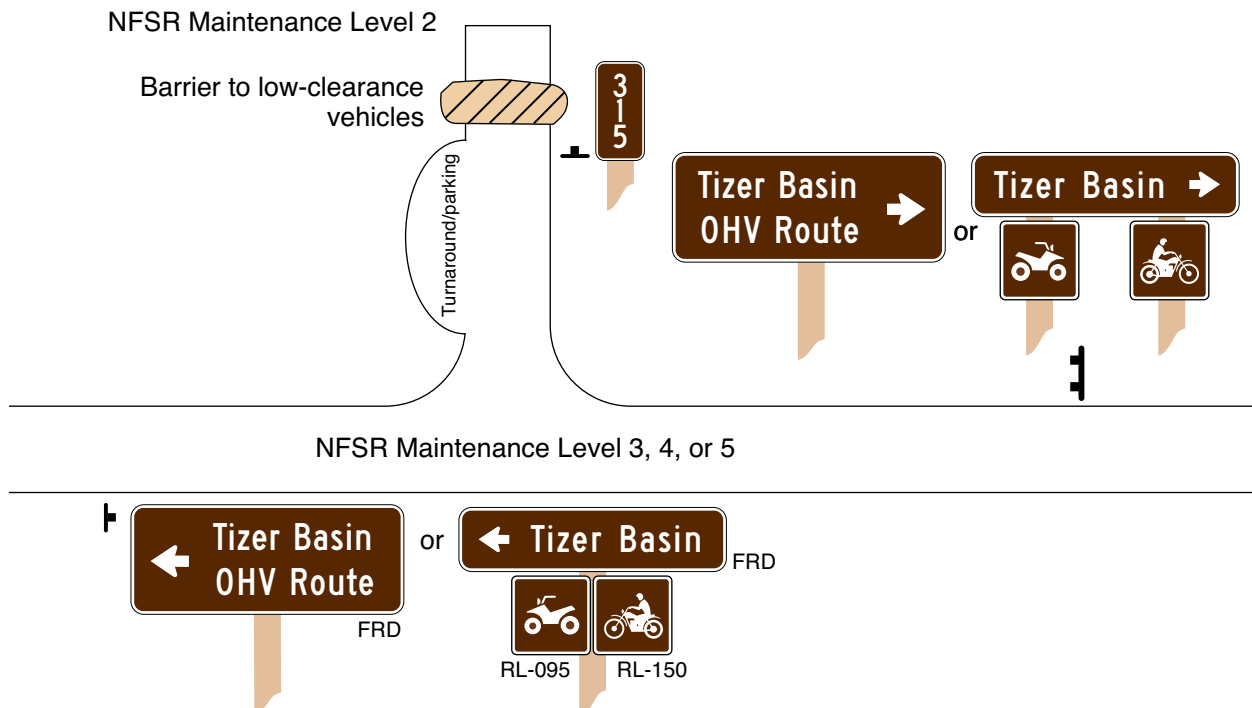


Figure 6-2—This example shows a combination strategy. Implement an Encourage strategy for OHV traffic by using guide signs with a specific message for OHV. It also is a Discourage strategy for passenger cars by using the vertical route marker and entrance treatment.

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6.2.2 Accept

On routes where particular types or classes of traffic are accepted but not encouraged, the route is signed only with the appropriate route marker. Refer to figure 6-3. Other guide signs typically are not used. Traffic should only be accepted on routes that are suitable for that type of traffic during the normal season of use.

Assume that nonmotorized use is always accepted on roads unless the use is specifically prohibited by a CFR order. Do not sign for accepted nonmotorized uses on a road. For example, a road that accepts bicycle traffic (not coincident with a managed bicycle trail) would not have any regulatory, warning, or guide signs for bicycles along the length of the road.

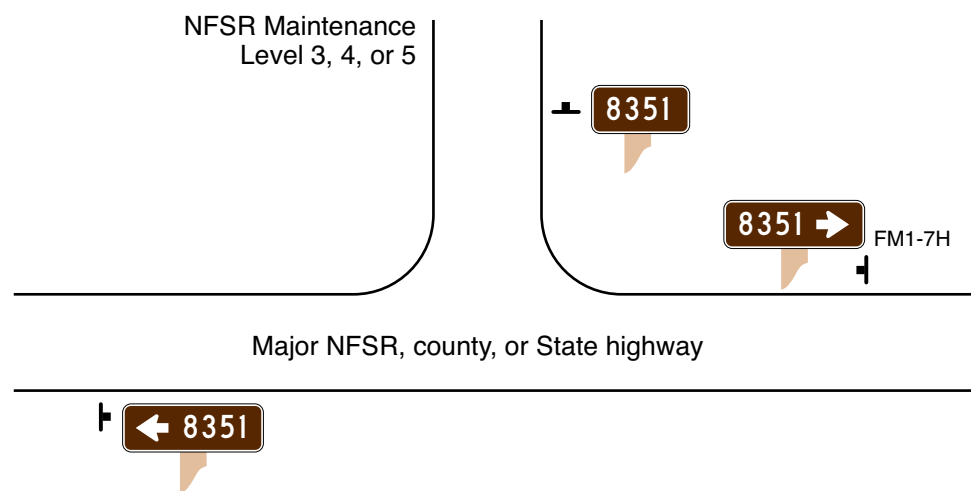


Figure 6-3—Implement an Accept strategy for ML 3, 4 or 5 roads designated for highway legal vehicles only by using route markers.

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6.2.3 Discourage

Traffic may be discouraged through entrance management techniques, such as carrying cross ditches through intersections, barriers, and using warning signs, maps, or other sources of information. Use appropriate route markers. For example, do not use a horizontal route marker intended for ML 3-5 roads on a ML 2 road. Do not place route markers on the approach road. Other guide signs are not used, see figure 6-4.

Standard warning signs may be used to implement a discourage traffic management strategy by informing the road or trail user of conditions that could affect or discourage the use of the route by certain types of traffic.

Warning signs also may be used to notify road and trail users of the suitability of the route for certain traffic types if the route conditions are a hazard to the user that may not be apparent at the intersection. Refer to chapter 3B, section 3B.2.9.

Warning signs should not be used to discourage low-clearance vehicles or passenger cars for every ML 2 road. Use engineering judgment to determine the need for such signs on a case by case determination.

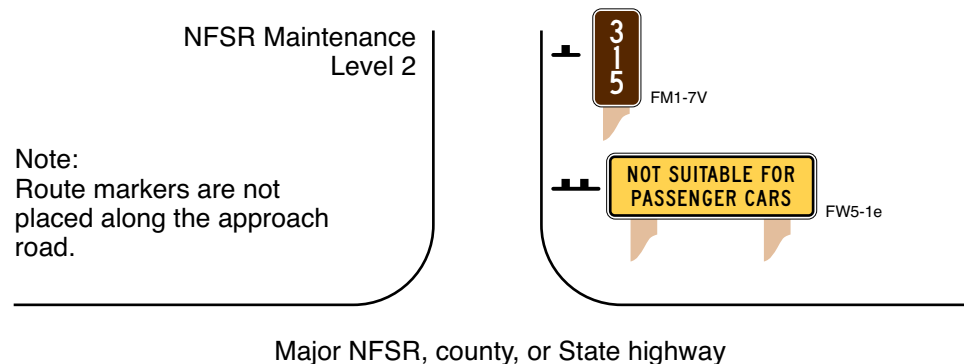


Figure 6-4—Implement a Discourage strategy for passenger cars by using a vertical route marker and a warning sign. This also is an Accept strategy for high-clearance vehicles by use of the vertical route marker.

6.2.4 Prohibit

The Code of Federal Regulations (CFR) establishes two types of enforceable prohibitions:

1. Travel Management Rule Designations

- 1a. Motor Vehicle Designations. Motor vehicles are automatically prohibited under 36 CFR 261.13, unless the route or area is designated for motor vehicles. Once motor vehicle designations are complete, an official MVUM shall be published. This map is mandatory and is the only requirement needed for enforcement.

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1b. Over-Snow Vehicle Restrictions and Prohibitions. Under 36 CFR 212.81 an administrative unit may establish restrictions and prohibitions on over-snow vehicles and produce an Over-Snow Vehicle Use Map (OSVUM). After publication of the OSVUM, over-snow vehicle use inconsistent with the OSVUM is prohibited. The OSVUM is the only requirement needed for enforcement.

The MVUM, in conjunction with route markers, should be sufficient to communicate clearly where motor vehicle use is allowed and not allowed.

Routes designated on either the MVUM or OSVUM should be marked clearly with appropriate route markers. The MVUM or OSVUM, in conjunction with route markers, should be sufficient to communicate clearly where motor vehicle use is allowed and not allowed. Travel management signs are not required for enforcement.

2. Orders under 36 CFR 261.50, subpart B. Other vehicle or traffic prohibitions not covered under 36 CFR 261.13, and 261.14, such as restrictions on over-snow vehicles (if not producing a OSVUM) or nonmotorized traffic, may be established under an order pursuant to 36 CFR 261.50, subpart B. Orders also may be issued to prohibit motor vehicles on designated routes for short-term emergencies or resource issues. An order should not be issued applying a prohibition to a road, trail, or area unless it is clearly needed and enforcement is feasible and intended. If enforcement is not planned and/or feasible, access should be managed by physical methods to eliminate the traffic.

Signing is required for the legal enforcement of an order issued under 36 CFR 261.50, subpart B. Place a copy of the order in the ranger district and the forest supervisor's offices. It is not necessary to post a copy of the order on the ground or cite the CFR on the sign.

Sign the prohibition at the point of restriction or closure with appropriate Travel Management (TM) signs. Refer to section 6.4.2b and figure 6-5. Remove signs when the order has been terminated.

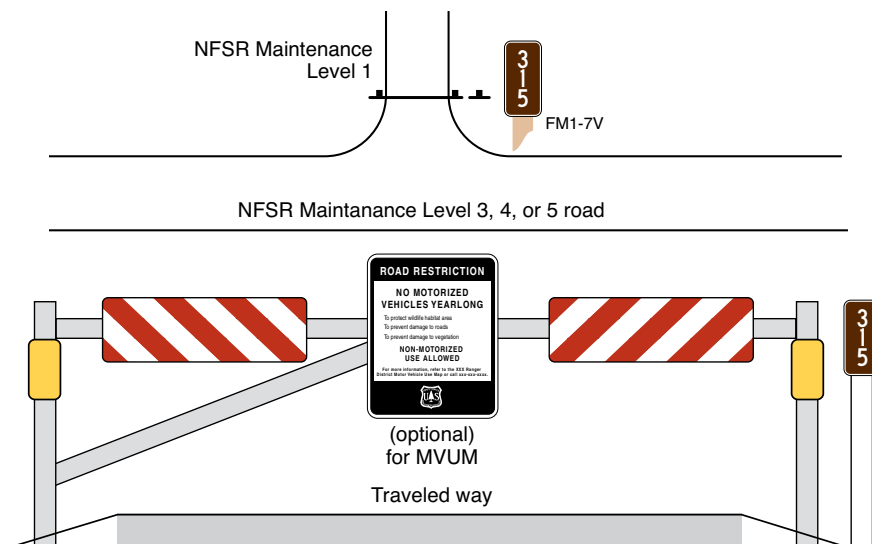


Figure 6-5—Implement a Prohibit strategy for all motorized vehicles using the Travel Management (TM) sign on a gate.

6.3 Restriction and Closure Methods

The extent and duration of restriction and closure methods vary and are a function of road and trail management objectives. Appropriate signs, restriction devices, barriers, or other methods should be installed as necessary to keep the prohibited traffic from traveling the route.

Long-term restrictions or closures of a year or more typically are implemented by installing or constructing physical barriers, such as gates, earth berms, and rocks or more permanent methods, such as disking and ripping the roadbed. The implementation method chosen for long-term restrictions or closures is based on many factors, such as maintenance level and the risks involved with not using a physical barrier.

Advance warning signs may be needed to advise the traveler of restrictions ahead, such as the GATE CLOSED AHEAD sign. When restricting traffic, turnarounds should be available at the point of restriction. Refer to chapter 3B, section 3B.2.5.

Signs and markings of physical closures or barriers on roads shall meet standards in chapter 3B, section 3B.3 and the MUTCD.

6.4 Regulatory Signs

There are several types of regulatory signs that are specific to implementing or reinforcing travel management decisions. Where signing is necessary on roads, it shall comply with the MUTCD and these guidelines. Refer to chapter 5 for trail signing requirements. Refer to chapter 3A, section 3A.5 for road signing requirements.

Regulatory signs may be used for notifying the public that travel restrictions are in effect. All regulatory signs shall be supported by laws, ordinances, or regulations. Signs should be used according to principles in chapter 3A and the MUTCD, section 2B-39. Examples of regulatory signs that may be used to support travel management decisions are shown in figure 6-6.

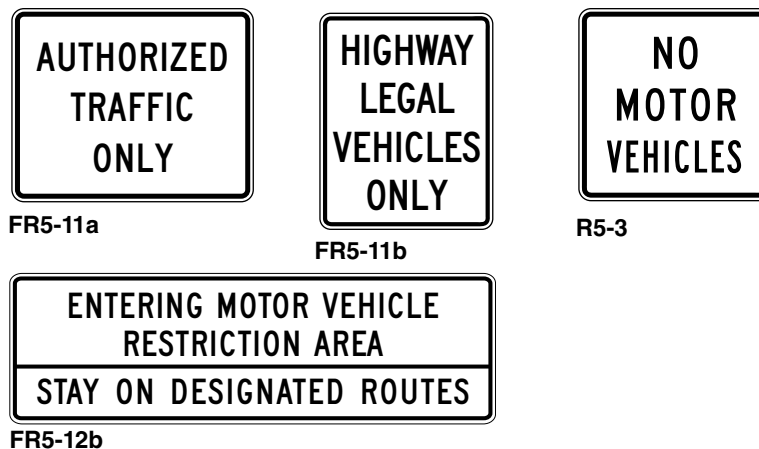


Figure 6-6—Typical regulatory signs used for travel management.

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6.4.1 Portal Signs

Portal signs are a generic regulatory sign that may be used to inform the public that they are entering an area with travel restrictions in effect. When used on National Forest System roads, the portal signs shall be black and white. Refer to figure 6-7.

Portal signs are optional and are not required for enforcement of the MVUM or OSVUM. If a unit elects to use portal signs, they should be used consistently over the entire area covered by the MVUM or OSVUM.

Portal signs should be used according to principles in chapter 3A, sections 3A.7 and 3A.7.1.

Messages may be modified, combined, or customized based on local designations after review and approval by the regional sign coordinator.

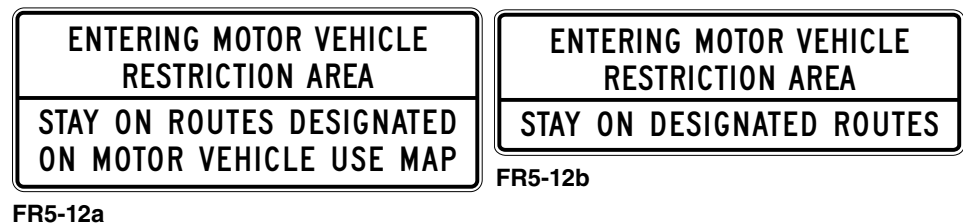


Figure 6-7—Regulatory portal signs used on NFS road.

If portal signs are used on roads under other jurisdiction such as State or county highways, the signs may be brown and white and considered to be informational. Refer to figure 6-8. Coordinate with other jurisdictions to install signs on non-Forest Service routes.



Figure 6-8—Information portal sign used on non-Forest Service roads.

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A standard appearance and sequence of the message allows for immediate recognition of the sign and promotes understanding and acceptance by the public.

6.4.2 Travel Management Signs (TM) and Decals (TM-D)

Travel management signs (TM) and decals (TM-D) inform the public of the types of travel prohibited on areas, roads, and trails as well as applicable dates and other important information. Refer to figures 6-9 and 6-10. A standard appearance and sequence of the message allows for immediate recognition of the sign and promotes understanding and acceptance by the public regardless of the administrative unit traveled. Sign messages should support travel management decisions displayed on the MVUM, OSVUM, or CFR order and should refer to the MVUM or OSVUM when appropriate. The more complex the travel management decisions, the more difficult the signing will be.

Refer to section 6.4.2b for proper use of travel management signs and decals.

Refer to chapter 6A for suggested messages and placement sequence.



Figure 6-9—Sample travel management signs (TM).



Figure 6-10—Sample travel management decals (TM-D) for use on flexible posts.

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The TM sign or decal clearly displays the prohibition, not the accepted traffic. Accepted traffic/vehicle symbols should not be displayed on TM signs or other guide signs for several reasons:

- It is not practical or efficient to sign for all possible combinations of accepted traffic types, including motorized and nonmotorized.
- It implies encouragement.

Use word messages instead of recreational and cultural interest area symbols for clearer understanding or if the symbol is not representative of the specific vehicle designation. There are no symbols for many of the MVUM standard designations or special vehicle designations. For instance, there are no symbols for designating vehicle width, tracked OHV, UTVs, or special conditions, such as snow depth or surface conditions.

Word messages can also be used to combine vehicle classes and simplify the sign message such as:

- Highway Legal Vehicles and Standard Terra OHV—use MOTOR VEHICLES.
- Highway Legal Vehicles, Standard Terra OHV and motorized Over-Snow Vehicles—use MOTOR VEHICLES and SNOWMOBILES.

The TM sign or decal clearly displays the prohibition, not the accepted traffic.

Consider combining messages for roads, trails, and areas on the same sign when possible to avoid sign clutter. Combining messages should be done carefully to avoid confusing and misleading the public. Confusing signs limit the ability of law enforcement to assist in the intended management of the route or area.

Travel management sign messages can be customized for site-specific prohibitions and situations or if unusual conditions or special vehicle designations exist. Consult with the forest or regional sign coordinator for assistance and approval as necessary.

The TM sign or decal shall be posted at the point the restriction takes effect. TM signs and decals shall only be posted where motorized traffic is stopped by a barrier or a gate or motorized access is not possible. The text size and number of text lines on a TM sign or decal makes it unreadable when viewed from a moving vehicle. Signs needed to be viewed by moving vehicles shall follow the standards in chapter 3.

The TM sign may be mounted on a closed gate or other restriction devices. A horizontal variation accommodates gate signing and helps avoid vandalism. Refer to section 6A for sign standards. Another variation for seasonal restrictions is to mount the TM sign or decal on a post next to the gate so it is visible when the gate is open.

TM decals typically are mounted on flexible posts than can be located as needed.

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Sign sizes may vary to accommodate needed symbols, special needs, or placement requirements other than gates.

Sign substrates will vary depending on the need, length of restrictions, and vandalism problems. TM signs may be printed or silk-screened on a durable, corrugated plastic substrate with interchangeable decals to relay the desired message, or they may be retroreflective on a more permanent substrate, such as fiberglass or high density overlay (HDO) plywood.

6.4.2a. Boundary Travel Management Signs and Decals

Boundary or restriction travel management signs (TM) and decals (TM-D) may be used to post the boundaries of restricted or closed areas and put the public on notice that they are entering or leaving a designated Motor Vehicle Use Area or Over Snow Vehicle Use Area. Boundary signs are optional and are not required for enforcement of the MVUM or OSVUM. Refer to figure 6-11.

If the boundaries for designated Motor Vehicle Use Areas or Over Snow Vehicle Use Areas are clearly delineated on the MVUM or OSVUM, then no signing is required. Clearly delineated boundaries include major ridgelines, streams, and roads and trails.

Area boundaries should be signed if boundaries are not clearly delineated by natural features, potential for confusion exists, or if there are problems with trespass or poor public compliance.

Signs should be spaced intervisibly to clearly delineate the boundary on the ground. Install Entering and Leaving signs back-to-back. The area name should correspond to the name on the MVUM, OSVUM, or other travel maps.

Use the area boundary TM sign or TM-D decal when entering the area and the area restriction TM sign or TM-D decal when leaving the area.



Figure 6-11—Sample boundary and restriction travel management signs and decals.

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6.4.2b Use of Travel Management Signs and Decals

Travel management signs or decals are required for enforcement of Forest CFR orders issued under subpart B

Travel management signs or decals are required for enforcement of Forest CFR orders issued under subpart B, such as:

- Short-term or emergency prohibitions on designated routes or areas.
- Prohibitions on nonmotorized, mechanized, or over-snow vehicle use.

Travel management signs or decals are not required for enforcement for:

- Motor vehicle designations shown on a MVUM.
- Motorized over-snow vehicle restrictions or prohibitions shown on an OSVUM.

Travel management signs or decals are not required for enforcement for motor vehicle designations shown on an MVUM.

Travel management signs or decals may be used to draw attention to certain motor vehicle or over-snow vehicle prohibitions:

- In trespass or other problem areas with poor compliance from the public when other restriction methods are ineffective.
- For educational purposes when the prohibition is new to the public.
- When a route or area historically has been open to motor vehicles.
- To avoid confusion with other prohibitions on nonmotorized, mechanized, or over-snow use.

Use of travel management signs and decals to supplement the MVUM or OSVUM is optional and should be well thought out in a sign plan that considers long-term maintenance costs and consistency within and across unit boundaries. While the use of travel management signs and decals may provide additional clarification in special situations, use of these signs and decals also may cause confusion for users since not all restricted routes and areas will be signed. Refer to section 6.1.1 and chapter 2.

A strategy of signing all routes as either open or restricted is not consistent with current sign policy or guidelines and is unnecessary to fulfill the requirements of the Travel Management Rule. Units are not to use this signing strategy. Although some units have used this signing strategy to manage access in the past, enforcing travel management decisions with this type of signing could be problematic. In most cases, experience has shown this practice to be ineffective in preventing the proliferation of unauthorized routes and results in additional sign procurement, installation, and maintenance costs.

Following are several examples of travel management signs and their uses for road, trail, or area restrictions or closures. The list is not all inclusive.

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6.4.2c Road Restrictions and Closures

Example 1: A ML 2-5 road is not designated for public motor vehicles and is not shown on the MVUM. Administrative motor vehicle use is allowed or permitted.

The sign may be used where the road allows administrative motor vehicle traffic and possible misunderstandings could occur when the public views motor vehicle use occurring behind the gate. Only administrative use and use authorized with a written authorization, such as a special use permit, wood cutting permit or grazing permit can use motor vehicles beyond this sign.



Example 2: A ML 2 road is seasonally designated for all motor vehicles.

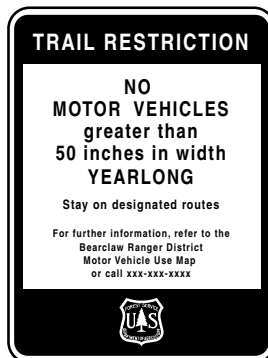
The sign may be used for reinforcement of the motor vehicle designation where the road is designated for seasonal motor vehicle use, violations are occurring outside the designated dates and posting the restriction would improve enforcement. These signs only can be posted where the traffic is stopped by a barrier or gate since the text size and number of text lines makes it unreasonable to be viewed from a moving vehicle.



6.4.2d Trail Restrictions and Closures

Example 1: A trail is designated for motor vehicles less than or equal to 50 inches.

The sign may be used where the trail width physically may allow wider vehicles or violations are occurring. The sign may be modified to display any width or designated on the MVUM. Seasonal dates may be used for seasonal prohibitions.



Example 2: Wilderness Trail—No forms of mechanical transport are allowed.

Place signs prior to the wilderness boundary and at suitable locations to allow mechanical transport vehicles to turn around. The sign may be used where violations are occurring and reinforcement of the wilderness restrictions is necessary.



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Example 3: A trail seasonally designated for motorcycles only.

The sign may be used where the trail width physically may allow wider vehicles but the motor vehicle designation is for motorcycles only.



Example 4: A trail not designated for motor vehicles on the MVUM and a CFR order prohibiting bicycles.

The prohibition to bicycles must be signed because it is under a CFR order. Consider signing the motor vehicle prohibition with the bicycle prohibitions to avoid confusing the public by signing only the prohibition to bicycles.



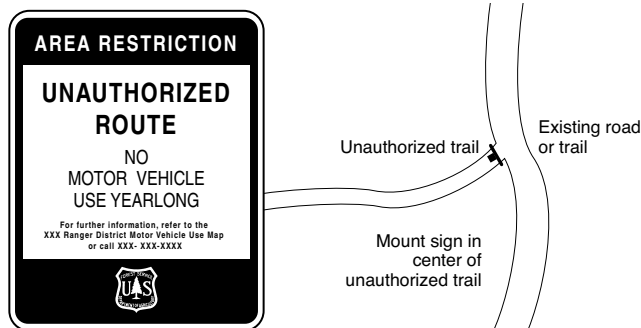
Example 5: A groomed cross-country ski trail not designated for motor vehicles or snowmobiles and a CFR order seasonally prohibiting pedestrians to protect the groomed trail surface.

The prohibition to pedestrians shall be signed because it is under a CFR order. Consider signing the motor vehicle prohibition with the pedestrian prohibitions to avoid confusing the public by signing only the prohibition to pedestrians.

6.4.2e Area Restriction and Closure Travel Management Signs

Example 1: Motor vehicle use is occurring on an unauthorized route.

Post the sign in the center of the unauthorized route. This is an AREA restriction as the route is not a system road or trail. This sign also can be used in conjunction with route decommissioning treatments.



Example 2: Motor vehicle use is occurring past a dispersed camping corridor distance designated on the MVUM or other trespass areas.

The sign is placed at the end of the designated dispersed camping distance to prevent further access beyond the designated corridor. This is an AREA restriction as the area past the dispersed camping corridor is not a system road or trail. The sign also may be used in areas that have repeated trespass problems off the designated routes.



Example 3: A short-term emergency is in effect and all use is prohibited for public safety.

The road, trail, or area is closed to ALL types of traffic, including foot traffic by a Forest Order. The title should state ROAD or TRAIL or AREA CLOSED as appropriate. The message should be specific as to the reason for the closure. The red text highlights the safety issue. The temporary sign is in place until the emergency is over and the order rescinded.

The sign is required for enforcement as it is under a CFR Order.



Example 4: A seasonal area closure is in effect and all use is prohibited for resource or habitat protection.

The road, trail, or area is closed to ALL types of traffic, including foot traffic by a Forest Order for a specified time period. The title should state ROAD or TRAIL or AREA CLOSED as appropriate. The message should be specific as to the reason for the closure. The sign is required for enforcement as it is under a CFR Order.

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Example 5: A CFR Order has been issued to prohibit motorized over-snow vehicles seasonally for resource or habitat protection.

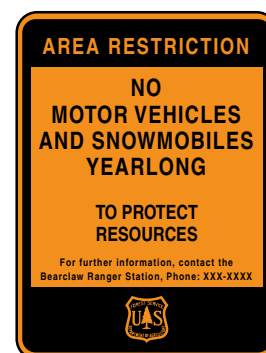
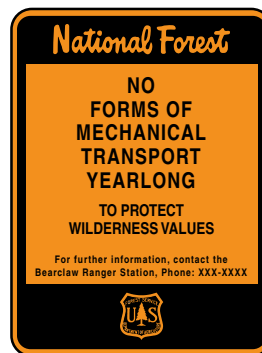
Motorized over-snow vehicles are prohibited by a Forest Order for a specified time period. The message should be specific as to the reason for the closure. The sign is required for enforcement as it is under a CFR Order. If covered by an OSVUM, this restriction does not need to be signed to be enforceable. It may be used to supplement the OSVUM if there are trespass problems.

6.4.2f Special Situations

Travel management signs may be modified to meet special situations with approval of the regional sign coordinator and appropriate regional office staff.

Example 1: Trespass is occurring into designated wilderness or other restricted areas by snowmobiles.

Standard black and white travel management signs may not be readily visible during the winter. In order to bring attention to the wilderness or special area prohibitions, the travel management signs are orange and black. For wilderness boundaries, obtain approval of the wilderness manager before posting any signs.



Signs may be hinged such that the orange is visible only during the winter season for winter use only.



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6.5. Route Markers

Every reasonable effort should be made to ensure that all designated motor vehicle routes have route markers that correspond with the MVUM upon release of the MVUM or as soon as practical and that these route markers are maintained.

Consistent use of appropriate route markers to identify the designated routes is an important key to helping the public understand the MVUM and OSVUM and know where they can legally use motor vehicles. Route numbers displayed on signs must match the route numbers displayed on the MVUM and OSVUM. Refer to chapter 3C, section 3C.2 for road route markers and chapter 5 for trail route markers.

Install route markers on all National Forest System roads and trails regardless of whether they are shown on the MVUM. There may be authorized routes that are open to administrative or permitted use that also require route markers even though they will not be displayed on the MVUM. Route markers also communicate the difference between closed system roads and unauthorized or decommissioned roads. Give first priority to identifying routes shown on the MVUM and OSVUM. Install route markers on other routes as resources and needs allow.

Units should not use any other marking system in conjunction with route markers or in addition to route markers to indicate MVUM or OSVUM designations, such as red, green, and yellow symbols, white arrows, colored posts, flagging, etc. These other marking systems are not enforceable, are inconsistent with policy, and could be confusing to the public.

Units should not use any other marking system in conjunction with route markers



D10-1

6.6 Reference Location Signs (Mile Post Markers)

Reference location signs (D10-1) are intended to serve as mile point location guides for motorists and as a means to identify road locations. Reference location signs may be erected on any NFS road or NFS trail. Reference location signs should be used to reinforce travel management designations when:

- Changes in seasonal designations occur along a route and are noted on the MVUM or other travel management maps by mile post tick marks.
- Dispersed camping is designated between certain mile posts.
- It is not obvious as to where the designation actually begins or changes on the ground.

Use the exact mile post number as shown on the MVUM or other travel management maps.

Refer to chapter 3C, section 3C.13.

6.7 Information Signs

6.7.1 Visitor Information Boards

Travel management information can be included on visitor information boards at trailheads and campgrounds or be displayed on a visitor information board located at a forest entrance or at administrative offices such as district and supervisor offices.

Visitor information boards provide important public information including:

- Recreation activities.
- Visitor registration provisions.
- Environmental awareness, safety, and emergency information.
- Travel management information, such as:
 - Travel management rule requirements and local designations
 - MVUM or OSVUM maps.
 - “You Are Here” locations.
 - Explanation of signing.
 - Equipment requirements.

Consider the following when selecting locations for visitor information boards:

- Safety.
- Available parking without blocking the road.
- Approach sight distance to allow vehicles to get off and on the road.

Consider using advance guide signs (refer to chapter 3C) to notify the public of travel management information locations as shown in figure 6-12.



Figure 6-12—Advance guide signs for travel management information.

Visitor information boards should be maintained to look professional and not appear cluttered and disorganized. Follow direction in chapter 10 and the “Built Environment Image Guide.”

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6.7.2 Posters

Posters may be used to display travel management information. All proposed posters should be submitted to the regional sign coordinator for review. Custom posters shall be ordered through the Government Printing Office. Refer to chapter 10B for poster requirements.

These posters do not meet the requirements of the MUTCD and these Guidelines for placement on roads.

Following are examples of posters that have been developed specific to the travel management rule and the MVUM.

Poster #1 – Hunting Notice

This type of poster should be coordinated with the local State fish and game office.



Poster #2 – Generic Notice

This poster can be used in any location. It can be used with cooperators who maintain OHV trails, OHV groups, or others. This type of poster might be very useful where compliance with travel management decisions is difficult to enforce.

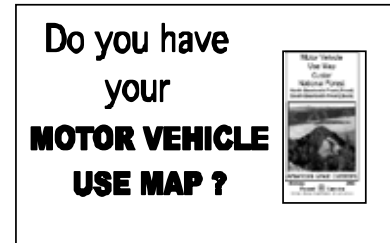
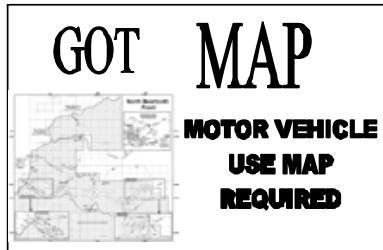


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Poster 3 - Educational Posters

These posters can be used to reinforce the Travel Management Rule and the MVUM or OSVUM requirements. Follow standards in chapter 10B for posters and information boards.



6.7.3 Public Notices

Supplemental notices should be used to advise the public that short-term administrative use or a private activity is ongoing or will occur by permit behind a gate or restriction device. Posters also may provide advance notice that a route is to be restricted at a future date. These types of notices are essential to maintaining credibility and establishing good working relationships with the public.

Posters may be made of cardboard, plastic laminated paper, or corrugated plastic. Suggested colors are black letters on a bright yellow or orange background. Notices should be no smaller than 12 by 18 inches.

6.7.3a Activities Behind Gate Notice

Notify the public when road or trail use prohibitions restrict public traffic but allow administrative, commercial, or other use by permit, and when short-term use is occurring behind a gate. The notice should include the type and specific times of the activity and the vehicles involved. This notice should be removed upon completion of the planned activity.

When long-term use is occurring, the restriction order should be revised to reflect the level of use for that time period. Long-term use should be indicated on the TM sign.

NOTICE

A permit has been issued for activities behind this gate. Road restrictions are still in effect.

Purpose: _____

Vehicle: _____

Dates: _____ to _____

Days: Sun Mon Tue Wed Thu Fri Sat

Times: _____ to _____

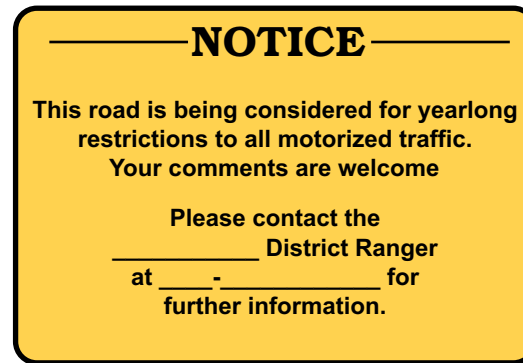
**Please do not block the roadway—
and thank you for your cooperation.**

For information, contact the _____ District Ranger
at _____

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6.7.3b Advance Restriction/Closure Notice

Many routes that historically have been open to the public may be restricted or closed in the future to meet management objectives. Place advance notices at the beginning of the route during NEPA planning efforts to solicit responses from the route users. The notice below is an example of the type of information to be included.



6.8 Accessibility

6.8.1 Clear Passage Around Gates/Berms and Other Restriction Devices When Pedestrian Travel Is Permitted or Encouraged Beyond Gate

The legal requirements of Section 504 of the Rehabilitation Act of 1973 impact roads and trails with restriction devices, such as gates and berms. Section 504 states that no person can “be excluded from participation” in a Federal agency opportunity solely because of a disability. Under these regulations, a wheelchair that meets the legal definition of a wheelchair as detailed in section 6.8.2, is permitted anywhere pedestrian traffic is permitted.

When pedestrian traffic is encouraged beyond a restriction device, a minimum of 36 inches of clear passage shall be available around that device.

The issue arises when gates, berms, or other barriers are placed on a route to prohibit vehicular traffic, but pedestrian traffic is encouraged beyond the restriction device. In these situations, the USDA Office of General Counsel has determined that 36 inches of clear passage shall be available around that device to ensure that a person who uses a wheelchair can also participate in the encouraged opportunity behind the restriction device. A space of 36 inches has been deemed sufficient because it is the minimum width required for a door under the current Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) accessibility guidelines.

When pedestrian traffic is encouraged beyond a restriction device, a minimum of 36 inches of clear passage shall be available around that device to ensure that a person who uses a wheelchair can also participate in the encouraged opportunity behind the restriction. The following constitute encouragement:

- Destination signing.
- A pedestrian recreation symbol without a slash.
- A Forest Service map that highlights an opportunity behind the restriction device.
- A TMO or RMO stating that pedestrian use is encouraged.

In areas where pedestrian traffic is not encouraged, but occasional pedestrian use is accepted before and after installation of the restriction device, individuals who use wheelchairs may raise a concern about access at those restriction devices to reach remote destinations, such as hunting areas. In these cases, the Forest Service unit must work with the individual to provide access around the restriction.

6.8.2 Wheelchair

According to Forest Service Manual 2353.05 and ADA Title V, section 508c, a wheelchair is “a device designed solely for use by a mobility-impaired person for locomotion that is suitable for use in an indoor pedestrian area.”

The phrase “designed solely for use by a mobility-impaired person for locomotion” means that the original design and manufacture of the wheelchair were solely for use for mobility by a person with a disability. Thus, this term does not include after-market retrofit of a motorized unit to make it useable by a person with a disability. “Suitable for use in an indoor pedestrian area” has been legally determined to mean useable inside a home, mall, courthouse, or other indoor pedestrian area.

A wheelchair or mobility device that meets this definition, including a battery powered wheelchair or mobility device, is not categorized as a motorized vehicle, or a mechanical device. A device that meets this definition is categorized as comparable to foot travel.

A person whose disability requires use of a wheelchair or mobility device may use a wheelchair that meets this definition anywhere foot travel is permitted, in accordance with 36 CFR 212.1, Forest Service Manual 2353.05, and Title V, section 508c of the ADA.

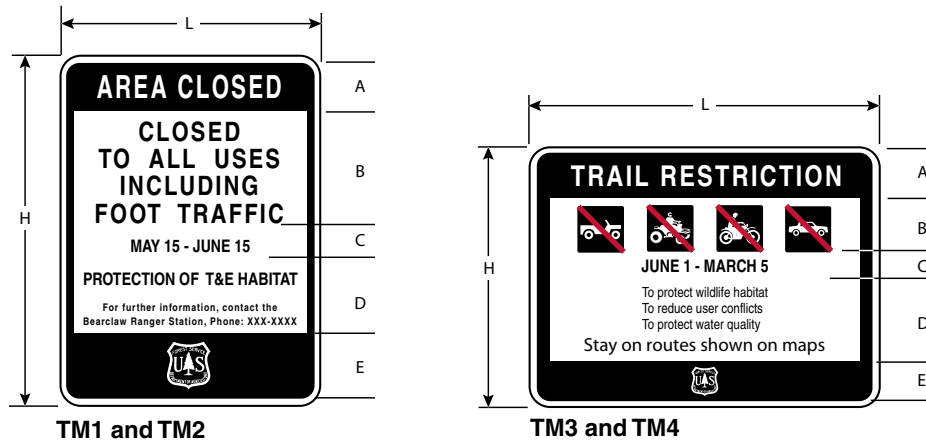
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Chapter 6A Travel Management Sign (TM)

Sign Drawings

6A.1 Travel Management Sign (TM)

Text layout—Travel Management sign (TM)



Text and symbol dimensions (inches)

			A Title	B Restrictions			C Dates or Conditions	D Reasons, Contacts and Optional Messages	E Shield and Logos
				B1 Word Messages (Prefered)	B2 Symbols (Optional)				
Sign number	L	H	Minimum text size (upper case)	Minimum text size (upper case)	Minimum symbol size	Maximum number of symbols	Minimum text size (upper case)	Minimum text size (sentence case)	Minimum size
TM-1	12	18	1	1	3	3	5⁄8	5⁄8	1 ½
TM-2	18	24	1 ½	1 ½	3	5	1	5⁄8	2
TM-3	18	12	1	1	3	4	5⁄8	5⁄8	1 ½
TM-4	24	18	2	2	3	6	1	1	2

Notes

Letter height may be larger depending on importance and length of message.

Word messages are preferred over symbols for the restriction message.

Restricted word messages should reflect the appropriate travel management decision.

For examples of message inserts, see section 6A-3.

Text layout for Area Boundary signs is similar to text layout for Area Closed signs. Refer to chapter 6, section 6.4.2a.

Colors

Black lettering, symbols, and borders on white background.

Red slash on symbols—from upper left to lower right.

Red letters may be used to highlight safety messages or other important messages, see chapter 6, section 6.4.2e, example 3.

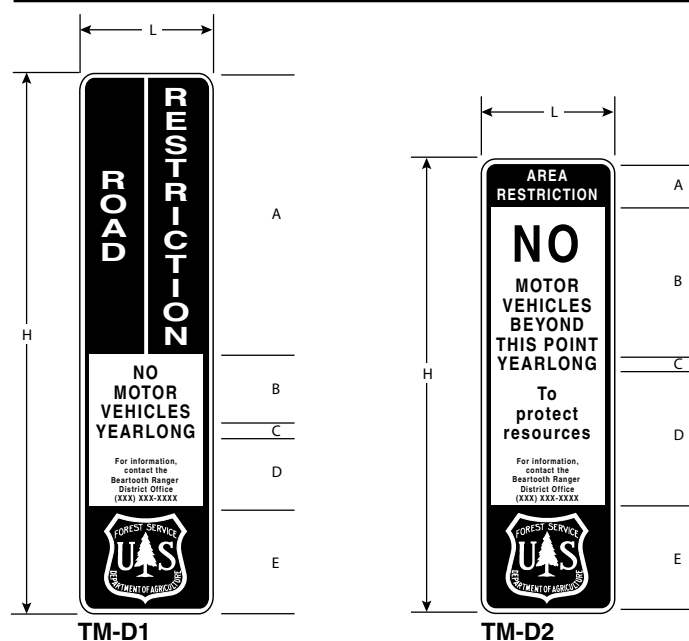
References

For sign guidelines, see chapter 6

For Forest Service shield, see chapter 8C, section 8C.7.

6A.2 Travel Management Decal (TM-D)

Text layout—Travel Management decal (TM-D)



Text and symbol dimensions (inches)

			A	B			C	D	E
			Title	Restrictions		Dates or Conditions	Reasons, Contacts and Optional Messages	Shield and Logos	
				B1 Word Messages (Prefered)	B2 Symbols (Optional)				
Sign number	L	H	Minimum text size (upper case)	Minimum text size (upper case)	Minimum symbol size	Maximum number of symbols	Minimum text size (upper case)	Minimum text size (sentence case)	Minimum size
TM-D1	3	V*	1	5⁄8	2	4	½	½	2
TM-D2	3	V*	½	5⁄8	2	4	½	½	2

*V = variable

Notes

Letter height may be larger depending on importance and length of message.

Word messages are preferred over symbols for the restriction message.

Restricted word messages should reflect the appropriate travel management decision.

For examples of message inserts, see section 6A.3.

Text layout for Area Boundary signs is similar to text layout for Area Closed signs. Refer to chapter 6, section 6.4.2a.

Colors

Black lettering, symbols, and borders on white background.

Red slash on symbols—from upper left to lower right.

Red letters may be used to highlight safety messages or other important messages (see section 6.4.2e, example 3).

References

For sign guidelines, see chapter 6.

6A.3 Travel Management Sign Messages

A—Title (upper case)

- ROAD RESTRICTION or ROAD CLOSED
- TRAIL RESTRICTION or TRAIL CLOSED
- AREA RESTRICTION or AREA CLOSED
- Combination (ROAD and TRAIL, ROAD and AREA)

The following lists are examples of possible messages that may be needed on Travel Management signs. The lists are not all inclusive and other messages may be used as appropriate.

B(1)—Restricted Traffic Word Message (upper case)

Use word messages instead of recreational and cultural interest area symbols for clearer understanding or if the symbol is not representative of the specific vehicle designation.

- NO MOTOR VEHICLES
- NO MOTOR VEHICLES AND SNOWMOBILES or NO MOTORIZED VEHICLES
- NO PUBLIC MOTOR VEHICLES
- NO MOTORIZED AND MECHANIZED VEHICLES
- NO MOTOR VEHICLES GREATER THAN XX INCHES WIDE
- CLOSED TO ALL TRAFFIC, INCLUDING FOOT TRAFFIC

B(2)—Restricted Traffic Symbols

For a complete list of recreational and cultural interest area symbols, refer to chapter 3E, section 3E.11 and the MUTCD, chapter 2M. When used, symbols should be placed in the following order from left to right for consistency.

- RG-010R—Automobiles
- RS-067—Off-Road Vehicle Trail (4-wheel drive)
- RS-095—All-Terrain Trail (ATV)
- RL-150R—Motorcycle
- RS-052—Snowmobiling
- RL-090R—Bicycle
- RS-064—Horse Trail
- RS-068—Hiker Trail
- RS-046—Cross Country Skiing

C—Dates or Conditions (upper case)

- The FROM and THRU dates of the restriction
- YEARLONG
- WHEN SNOW IS xx INCHES OR DEEPER
- UNTIL SURFACE DRIES

D—Optional Explanations for the Restriction/Closure (sentence case or upper case)

A brief explanation of why the restriction or closure is in effect often helps the public understand why the restriction is in effect.

- To protect wildlife habitat
- To protect calving habitat
- To protect nesting habitat
- To protect winter range
- To protect summer range
- To protect migration corridors
- To provide wildlife security
- To protect threatened or endangered wildlife habitat
- To protect grizzly bear habitat
- To protect caribou habitat
- To protect eagle habitat area
- To protect aquatic habitat
- To prevent sedimentation
- To prevent temperature increase
- To provide aquatic security
- To protect water quality
- To protect municipal water supply
- To reduce invasive species
- To reduce maintenance costs
- To reduce user conflicts
- To reduce sound levels
- To protect facilities

- To prevent damage to vegetation
- To prevent damage to (road/trail) surfaces
- To return (road/trail) to its original condition
- Due to unsafe conditions
- To protect special areas
- To protect special interest area
- To protect wild and scenic river area
- To protect the wilderness environment/values
- To protect research natural area
- To protect roadless areas
- To protect a natural meadow
- To provide a nonmotorized recreation experience
- To protect _____ habitat
- To protect _____ quality
- To protect _____ area
- For public safety

D—Optional Messages (sentence case or upper case)

- Open to all other uses
- Foot travel allowed yearlong
- Non-motorized use allowed yearlong
- Above uses allowed outside these dates
- Administrative use by permit
- Timber harvest activities allowed
- Please do not block gate
- Motor vehicles restricted to designated routes

E—MVUM and/or Contact Message for the responsible office (sentence case)

- For further information, refer to the XXX Motor Vehicle Use Map or call ____ Ranger District at (phone number).
- For further information, call ____ Ranger District at (phone number).
- For further information, contact the nearest Forest Service office.

F—Shields and Logos

The Forest Service shield shall be at the bottom of the sign. Insert logos from other cooperating agencies, organizations or programs as appropriate.

All cooperative agencies should be shown. The Forest Service shield and logos shall be the same size.

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Chapter 7 Developed Recreation Site Signing

7.1 Introduction

Signing direction in this chapter applies only to developed recreation sites. A developed recreation site is a recreation site that has a development scale of 3, 4, or 5. Refer to FSM 2330, section 2330.3.

Signs and posters are used to support effective management of developed recreation sites, such as campgrounds, trailheads, picnic areas, and visitor centers. Signs and posters are used to support recreation program objectives, minimize impacts on resources, and provide information regarding regulations, safety, environmental awareness, user etiquette, and local area services. Signs and other traffic control devices are used to regulate, warn, or guide traffic on roads within developed recreation sites and in parking areas.

Signs and posters
are used to support
effective management
of developed recreation
sites.

All developed recreation sites under the jurisdiction of the Forest Service and operated by the Forest Service shall follow the Guidelines of this chapter. Government-owned improvements operated by concessioners are subject to the Guidelines of this chapter and Forest Service Manual (FSM) 2340.

Cooperator signs may be used to acknowledge the concessioner's operation of a Forest Service developed recreation site, as shown in figure 7-1. Refer to chapter 9 for additional information on cooperator signs.



Figure 7-1—Example of a cooperator sign for a Forest Service campground operated by a concessioner.

7.1.1 Privately Provided Recreation Opportunities on National Forest System Lands

The Forest Service regulates the operation of privately built and owned commercial and nonprofit recreation services, facilities, and activities located on National Forest System lands and operated under a special use authorization. Refer to FSM 2340.

Commercial recreation opportunities include resorts, lodges, hotels, motels, group camps, trailer courts and camps, marinas, campgrounds, ski areas, tramways, target ranges, beaches, swimming sites, day use facilities, bathhouses, outfitter and guide services, caves, and caverns.

Nonprofit organizations, institutions, or other governmental agencies also may provide public recreational facilities and services, such as organizational camps, lodges, and shelters. Refer to FSM 2345.

Privately owned developed recreation sites and facilities located on NFS lands and operated under a special use authorization shall follow the signing guidelines of this chapter and FSM 2340.

Chapter 7 Developed Recreation Site Signing

7.1.2 Developed Recreation Site Sign Plans

All signs and posters needed to manage a developed recreation site and to guide and inform the user should be included in a comprehensive sign plan.

All signs and posters needed to manage a developed recreation site and to guide and inform the user should be included in a comprehensive sign plan. Follow direction in chapter 2 on developing, monitoring, and maintaining a sign plan for each developed recreation site. The primary uses for which a site is managed should determine the signing appropriate for the site. The sign plan for a developed recreation site can be a part of the operating plan or it may be incorporated by reference into that document.

Consider factors, such as site design, site development scale, recreation opportunity spectrum (chapter 5, section 5.1.1), environmental setting, architectural style, scenic integrity objectives, user safety, traffic patterns, road design, access routing, use of traffic control devices, travel speed, viewing distance, clear-zone requirements, and nighttime visibility needs when determining sign and poster needs.

Keep site signing to a minimum while still considering user needs and appropriate safety messages for visitor awareness. Place emphasis on the needs of the first-time visitor. Avoid providing more signing than users can read at the entrance to the developed recreation site without stopping. Set signing priorities based on direction in chapter 3, section 3.8. Lower priority messages, such as camping limits, should not be road signs and should be relocated to visitor information boards.

Sign plans should be developed when developed recreation sites are originally designed. Good-quality site design that considers users needs, the environmental setting and hazards, and how the facility fits the terrain will minimize the need to rely on signing for users to understand how to travel through and use the site. Collaboration between engineering and recreation specialists will facilitate development of a good sign plan and a properly signed site. Site plans and designs that are completed without careful consideration of vehicular and pedestrian traffic patterns often result in site layouts that are confusing for users and difficult to sign.

Revise or update sign plans for developed recreation sites that are scheduled for renovation or reconstruction. All signs should meet current standards.

New and existing signs not meeting current standards should be included in a replacement plan as part of the project.

Furnish Forest Service policy, general signing guidelines and requirements, and sign standards to the holder early in the planning process.

7.1.2a Sign Plans for Privately Provided Recreation Opportunities on National Forest System Lands

Develop a sign plan with the permit holder that is consistent with the direction in section 7.1.1 and incorporate it into the special use authorization as an appendix. Furnish Forest Service policy, general signing guidelines and requirements, and sign standards to the holder early in the planning process.

Ensure that exterior advertising signage conforms to FSM 2340 and is included in the sign plan for the facility.

Require that all signs be maintained in good condition.

Chapter 7 Developed Recreation Site Signing

Ensure that the special use authorization or operating plan requires the holder to be responsible for the sign plan and for all costs associated with purchasing, installing, and maintaining the signs.

The forest sign coordinator should review the sign plan to ensure that traffic control devices (TCD) meet all applicable standards and to determine if any additional traffic control devices are necessary. The sign plan shall be approved by the Forest Service before any signs are installed.

Authorize all signs and posters as a part of the special use authorization for the entire facility consistent with FSM 2340 and FSM 2720. Follow formal special use authorization procedures in establishing FSM standards and in approving sign designs, placement, and installation.

7.1.3 Accessibility

Refer to chapter 1, section 1.7.4 for accessible sign and marking requirements.

Use caution when posting the International Symbol of Accessibility (ISA) at the entrance to a developed recreation site. Posting this sign indicates that the entire site meets all applicable requirements in Federal and Forest Service accessibility guidelines. Do not post the ISA if any of the facilities or services at the site does not comply with applicable accessibility guidelines.

An accessible parking space posted with the ISA is required when five or more designated parking spaces are provided. The requirements for the number and size of those parking spaces and the width of access aisles between accessible parking spaces are specified in the “Architectural Barriers Act Accessibility Standards” (ABAAS) table 208.2 and section 502. If only one accessible parking space is required, it must comply with the van accessible technical requirements and must be signed “Van Accessible” in addition to being signed with the ISA. Do not use the word “handicapped” on any sign.

Signage at accessible parking spaces shall comply with the Manual on Uniform Traffic Control Devices” (MUTCD), section 2B.47. When the accessible parking space is paved, it is to be marked, as shown in the MUTCD, sections 2B.47, 3B.19, and 3B.20.

If not all camping units at a campground are accessible and the camping units are not assigned upon arrival or through a reservation system, the accessible camping units must be identified at an entrance kiosk, on a bulletin board, or on a sign at the registration area. The following type of statement is appropriate on the registration information sign: “Sites 2, 4, 6, and 10 are accessible. If no one in your group needs accessible facilities, please do not use these sites unless all other sites are filled.”

Individual camping units shall not be signed at the site as accessible, using the ISA or by any other means.

Chapter 7 Developed Recreation Site Signing

7.2 Traffic Control Devices for Roads and Parking Areas

Design, content, shape, size, color, retroreflectivity, and placement of all TCD needed to regulate, warn, or guide traffic on roads and parking areas within developed recreation sites shall meet the requirements of the MUTCD and these Guidelines. Refer to chapters 3 through 3E for TCD standards. Coordinate use of all TCD with the forest sign coordinator.

All TCD needed to regulate, warn, or guide traffic on roads and parking areas within developed recreation sites shall meet the requirements of the MUTCD and these Guidelines.

Exercise engineering judgment or conduct an engineering study to determine the TCD needed along roads and in parking areas within the developed recreation sites. Refer to chapter 3, section 3.10.

Placement of road signs takes precedence over placement of other signs and posters. Nonroad signs shall not interfere with road operations and safety.

7.2.1 Regulatory Signs

Regulatory signs inform road users of applicable traffic laws, regulations, and other legal requirements. Regulatory signs shall not be used unless enforcement is feasible and planned and a corresponding order has been issued under 36 CFR Part 261, Subpart B. Refer to chapter 3A, section 3A.1.

Do not use regulatory signs such as ONE-WAY and DO NOT ENTER within a developed recreation site unless there is a documented safety issue with vehicles going the opposite direction and the need has been determined by an engineering study or engineering judgment. If the signs are intended for general guidance, use a destination sign with an appropriate message and direction, such as CAMPING, EXIT. Refer to section 7.2.3a and figure 7-2, and chapter 3C, section 3C.4.

Regulatory signs shall not be used unless enforcement is feasible and planned.

7.2.1a Speed Limits

Speed limits typically provide poor traffic control at developed recreation sites. Speed limits shall be established at developed recreation sites only after an engineering study has been conducted in accordance with traffic engineering practices. The posting and enforcement of established speed limits, including statutory speed limits, requires issuance of an order under 36 CFR 261.54(d). A speed limit less than 15 mph shall not be posted except under special circumstances as determined by an engineering study. Refer to chapter 3A, section 3A.3 for more information on speed limits.

Warning signs, such as a sign displaying the pedestrian symbol with an advisory speed plaque, may provide better speed control than a speed limit sign at developed recreation sites. Refer to chapter 3B, section 3B.2.16.

7.2.2 Warning Signs

Use warning signs to alert road users to conditions not readily apparent or normally associated with typical use of the roads within developed recreation sites. Consider mitigating these situations through other available means before using a warning sign.

Chapter 7 Developed Recreation Site Signing

The decision to place warning signs for motor vehicle use shall be based on either engineering judgment or an engineering study. Follow the standards for warning signs in chapter 3B.

Evaluate the need for flood warning signs on approach roads to developed recreation sites and roads and parking areas within developed recreation sites. Refer to section 7.7.1 and chapter 3B, sections 3B.2.17 through 3B.2.19 for guidance.

Figure 7A-1 illustrates placement of typical regulatory and warning signs within developed recreation sites.

7.2.3 Guide Signs

Evaluate the need for guide signs within developed recreation sites. Guide signs provide direction to and identification of activities and physical facilities, such as camping units, toilets, amphitheaters, drinking water, and boat ramps. Guide signs typically are rectangular and include destination signs, recreational and cultural interest area signs, camping unit markers, and other information signs.

Provide guide signs only where facility location or function is not obvious. Follow the standards for guide signs in chapter 3C.

7.2.3a Destination Signs

Use Forest Road Destination (FRD) signs to provide information concerning destinations, destination distances as necessary to help orient the visitor, and directions within a developed recreation site. Refer to chapter 3C, section 3C.4.

Refer to figure 7-2 for examples of destination signs used within developed recreation sites. The lettering for proper names of places within developed recreation sites shall be title case, in which each word is capitalized.

All other word legends shall be in upper-case letters, such as an action message—NEXT LEFT, EXIT; ENTERING, or LEAVING; a distance message—1 MILE; or a generic activity message such as CAMPING, BOAT RAMP, or TRAILHEAD.

Refer to chapter 3D and table 3D-3 for guidance on proper placement of destination signs.

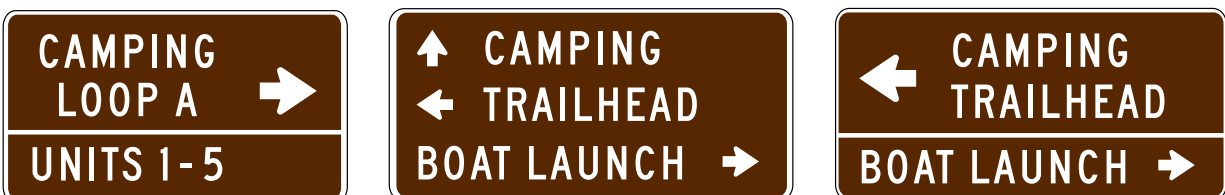
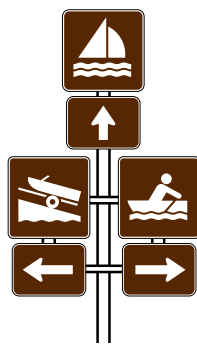


Figure 7-2—Examples of destination signs.

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Refer to figure 7A-2 for placement of typical destination signs within a developed recreation site.

Refer to chapter 3C, sections 3C.4 and 3C.5, for information on destination signs and site approach signs used on access roads to guide visitors to developed recreation sites. When developed recreation sites are seasonally or temporarily closed, destination and site approach signs for developed recreation sites along access roads should be removed, covered, or marked with appropriate site closure signs at important decision points to the site. Post a site closure sign at any gate or restriction device at the developed recreation site. Refer to section 7.8.1a for additional guidance on use of site closure signs.



Standard recreational and cultural interest area symbols are preferable to word messages

7.2.3b Recreation and Cultural Interest Area Symbols

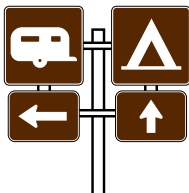
Recreational and cultural interest area symbols may be used on roads within developed recreation sites to direct visitors to facilities, structures, and places; and to identify services available to the public. Recreational and cultural interest area symbols may be used separately or in combination with destination signs.

Standard recreational and cultural interest area symbols are preferable to word messages wherever their meanings are applicable to a recreational activity or facility. Use of these symbols can reduce the number of larger, more expensive FRD signs. Figure 7A-3 illustrates placement of typical recreational and cultural area interest symbol signs within a developed recreation site.

Refer to chapter 3C, section 3C.3 for guidance on recreational and cultural interest area symbols. Symbol sizes shall conform to the Guidelines in chapter 3C, table 3C-1.

A complete listing of nationally approved symbols and typical arrangements of those symbols are contained in the MUTCD, section 2M. Chapter 3E, section 3E.11 shows symbols that are most common for Forest Service applications and additional symbols approved for Forest Service use on National Forest System roads and facilities only. Use of other recreation symbols shall be approved by the Washington Office Director of Engineering.

Use individual recreation symbols to differentiate between different types of the same activity within a developed recreation site. For example, both the tent and trailer camping symbols may be used to distinguish units that separate the two types of camping methods. However, if all types of camping are allowed, only use the tent symbol.



Use these symbols for signing nonvehicular amenities, such as restrooms, trails, and structures.

These symbols are used for guidance and informational purposes and not as warning or regulatory signs. Warning and regulatory signs and symbols require a specific color and guidance for their use.

Chapter 7

Developed Recreation Site Signing

For prohibition applications use black legend and border on white background with red prohibition symbol, as shown in figure 7-3.



* Educational plaques are optional

Figure 7-3—Recreational and cultural interest area symbols used for regulatory messages.

7.2.3c Camping Unit Markers

Use guide signs to mark individual camping units consistently within each developed recreation site. The camping unit marker for drive-in units shall be retroreflective for nighttime visibility when the site is not closed at night and users have access to the camping units at any time. Place markers so that they can be easily viewed from the road before turning into the unit. Numbers may be placed directly on pavement, but this method may be unsatisfactory where leaves, needles, dust, or snow could obscure the number. Figure 7-4 shows several acceptable examples of camping unit markers.

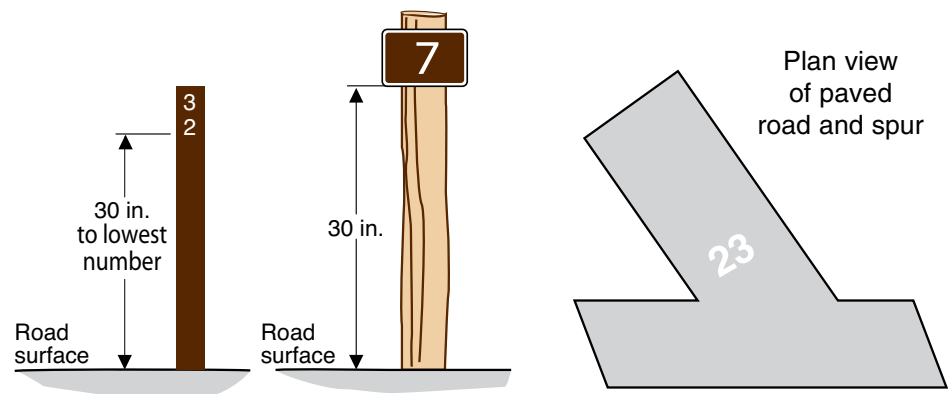


Figure 7-4—Examples of camping unit markers.

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7.2.3d Campground Host Units

Identify campground host units with a retroreflective guide sign to direct traffic to the host unit, as shown in figure 7-5. Remove or cover the sign when the host is not available, or use a sign that is hinged and can be opened when the host is occupying the site or closed when the host is not available.

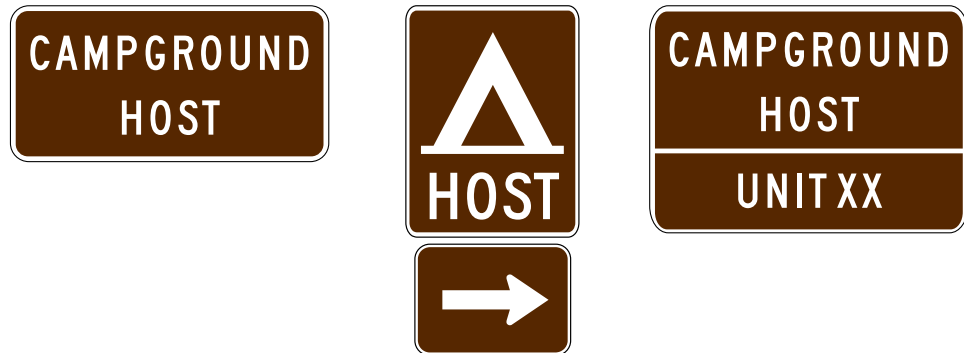


Figure 7-5—Examples of host site signs.

Posters or small signs may be used at the host unit if they are not intended to be visible by moving traffic, such as those shown in figure 7-6. Many hosts have their own name signs. These signs shall be approved by the Forest Service before use. Allow use only if the sign does not serve a traffic control function and does not interfere with other signs.



Figure 7-6—Examples of host site posters.

7.3 Pavement Marking

When determined by an engineering study or engineering judgment, pavement markings may be used instead of or in support of regulatory signs; and arrow markings may be used for directional guidance instead of guide signs.

Care should be taken in using pavement markings instead of signs when the markings might become hidden by leaves, needles, dust, or snow. Pavement arrows and alphabets can be found in Chapter 10, “Standard Highway Signs” book. Develop maintenance plans to maintain visibility of pavement markings.

Chapter 7 Developed Recreation Site Signing

Centerline and edge markings generally are not needed within developed recreation sites.

Paved parking lot patterns should be marked by striping. Parking area stripes are not required to be retroreflective.

7.4 Site Identification Signs

Use site identification signs to identify developed recreation sites. These signs invite or encourage visitors to enter a developed recreation site.

Site identification signs are not traffic control devices and are inappropriate for use in lieu of retroreflective destination and site approach signing. Refer to chapter 3C, sections 3C.4 and 3C.5.

Site names on site identification signs should match current recreation maps so visitors can locate and recognize sites.

Place site identification signs along and perpendicular to the site entry road as illustrated in figure 7A-4. Consider topography, safety, cost, environmental impacts, and visibility in determining the appropriate sign for the site.

Supports and bases for site identification signs vary according to specific needs, site location, the applicable visual management systems, BEIG, availability of materials, and local factors.

Crashworthy posts shall be used when signs are placed within the clear zone along roads as determined by an engineering study or engineering judgment. Placement of all solid base installations requires an engineering study. Solid bases shall be placed either outside the clear zone or behind crashworthy barriers if within the clear zone. Refer to chapter 3D, section 3D.2 for clear zone and chapter 3D, section 3D.7 for breakaway requirements. Consult with the forest sign coordinator to determine correct placement.

7.4.1 Site Identification Signs for Forest Service Sites

Standard site identification signs shall be used at Forest Service developed recreation sites, including those Government-owned facilities operated by concessioners. The sign design shall include nationally approved Forest Service logotypes without modification. Refer to chapter 1, section 1.7.3b for guidance on logotypes.

Use the Recreation Site (RS) sign for most developed recreation sites. The sign requires both the Forest Service shield and the USDA credit line as part of the installation.



Site identification signs are not traffic control devices.

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Use the optional Recreation Site Entrance (RSE) sign within a recreation corridor with multiple developed recreation sites where full Forest Service recognition has been previously identified by an RS sign or where other Forest Service recognition is in the area, such as a forest boundary sign. The Forest Service shield and USDA credit line are not required.



Use signs, such as the National Recreation Area-Recreation (NRA-REC) site entrance sign, for developed recreation sites within a congressionally designated special area. The sign requires both the Forest Service shield and the appropriate logotype and USDA credit line as part of the installation. Other than the criteria governing the shape of the sign, the congressionally designated area signing criteria in chapter 8B, section 8B.3 applies.

7.4.1a Size of Site Identification Signs

The size of site identification signs are determined by:

- The speed of travel on the approach road.
- The message to be displayed on the sign.
- Site characteristics, such as site capacity and amount of use.

Chapter 7B contains sign sizes for use on roads with various prevailing speeds. Sign designs come in standard sizes. Standard sizes shall be used unless the message requires that the standard be modified to accommodate longer or hyphenated names.

7.4.1b Materials for Site Identification Signs

Site identification signs may be routed or retroreflective. If the sign needs to be visible to the traveling public both day and night, use retroreflective materials or illuminate the routed sign. Adding glass beads to the paint on routed signs does not meet minimum retroreflectivity requirements and is not acceptable. Refer to chapter 3, section 3.3.2 for more information on retroreflective sheeting.

Refer to chapter 14 for guidance on materials for site identification signs and factors for determining the proper substrate. Sign support structures should be designed to be compatible with the site. Refer to the “Built Environment Image Guide” for more information on site compatibility.

Chapter 7

Developed Recreation Site Signing

7.4.1c Colors for Site Identification Signs

Colors for site identification signs shall be as shown in chapter 7B. Site identification signs for congressionally designated special areas may employ colors fitting the character of the area, provided they have prior written approval from the regional forester (refer to chapter 8B, section 8B.3).

7.4.1d Use of Proclaimed Names on Site Identification Signs

Use the proclaimed name of the administrative unit in which a developed recreation site is located when:

- Two or more units have been combined into one administrative unit without changing the proclaimed names.
- Portions of one unit are administered by another.

For example, the Bridger National Forest and the Teton National Forest have been combined into an administrative unit. A campground located on the Bridger National Forest will be signed “Spring Creek Campground, Bridger National Forest.” It will not be signed as “Spring Creek Campground, Bridger-Teton National Forests.” Only administrative sites, such as the forest headquarters, will use the hyphenated name Bridger-Teton National Forests.

7.4.1e Modification of Site Identification Signs

Modification of standard site identification signs, such as signs for congressionally designated special areas, requires prior written approval from the regional sign coordinator. After approval, submit a detailed drawing to the sign manufacturer when ordering modified signs. Specify shape; letter size, series, and spacing requirements; overall dimensions; and color scheme.

Modifications of standard designs should ensure that:

- Features, such as size, contrast, color, shape, composition, and lighting or retroreflectivity, are combined to draw attention to the sign.
- Shape, size, colors, and simplicity of message combine to produce a clear meaning.
- Legibility and size combine with placement to permit adequate time for viewing and response.

Modification of
standard site
identification signs
requires prior written
approval from
the regional sign
coordinator.

Chapter 7 Developed Recreation Site Signing

7.4.2 Site Identification Signs for Privately Owned Recreation Facilities on NFS Lands

Requirements for site identification signs for privately owned recreation facilities on NFS lands operated under a special use authorization are shown in table 7-1. Do not use Forest Service sign shapes for site identification signs for private facilities located off NFS lands.

Table 7-1—Site identification signs for privately owned recreation facilities on NFS lands

	Site Identification Signs for Privately Owned Recreation Facilities on NFS Lands
Color	Use colors compatible with the site and applicable ROS.
Shape	Use Forest Service sign shapes or a shape that is compatible with the site and applicable ROS.
Size	Use sign sizes appropriate for the situation and comparable to Forest Service site identification signs for developed recreation sites or administrative sites.
Wording	Limit wording to type of business and services and facilities available.
Lighting	Neon signs are prohibited except for “open,” “closed,” or “vacancy” signs. Flashing lights are prohibited under all circumstances. Signs may be retroreflective or illuminated for nighttime visibility.
Placement	The special use authorization holder must obtain prior written approval from the agency that has jurisdiction over the road to install a sign within the road right-of-way. Refer to chapter 3D, section 3D.1. Do not attach site identification signs to buildings.
Agency identification	“Under Permit From XXX National Forest or Grassland” or “In Cooperation With XXX National Forest or Grassland” shall be used on or with all site identification signs. The Forest Service shield shall be part of the design. The USDA credit line should not be used.
Private logos	Private logos may be incorporated into site identification signs.

Do not use Forest Service sign shapes for site identification signs for private facilities located off NFS lands.

Chapter 7 Developed Recreation Site Signing

Figure 7-7 shows an example of a site identification sign for a privately owned recreation site located on NFS land and administered under a special use authorization.



Figure 7-7—Example of a site identification sign for a privately owned recreation site.

7.5 Registration and Payment

Recreation fee signs shall be posted to inform visitors where recreation fees are charged, the amount of the fees, and how fees are spent to improve recreational opportunities. Information also is needed as to where to obtain passes and which passes are honored.

Post the U.S. Fee Area sign at all entrances to recreation fee areas to notify visitors that payment is required. The U.S. Fee Area sign may be used in combination with Forest Service fee signs.

Consider using centralized payment stations in an area with multiple recreation sites or complexes to minimize the number of signs. Do not locate registration and payment stations where visitors stopping to register will cause traffic congestion or other safety problems.

National Guidelines for recreation fee signs and posters are found at <http://fsweb.wo.fs.fed.us/rhwr/recfee/products-signs.shtml>.

Chapter 7**Developed Recreation Site Signing****7.6 Waste Disposal****7.6.1 Sanitary Dumping Station Signs**

Use signs as illustrated in figure 7-8 at appropriate points at sanitary dumping stations.



Figure 7-8—Sanitary dumping station signs.

Chapter 7 Developed Recreation Site Signing

7.6.2 Pack It In/Pack It Out

Pack it in/pack it out signs may be used at small nonfee sites to encourage visitors to carry their own solid waste to a central disposal point or to their homes. The basic component of the pack it in/pack it out system is a series of complementary signs and posters, see figure 7-9.

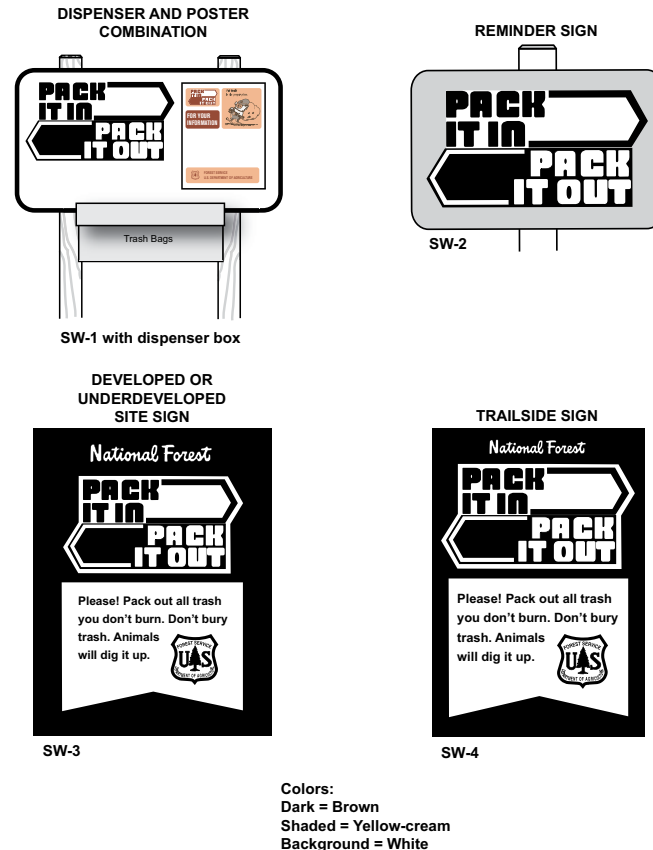


Figure 7-9—Pack it in/Pack it out signs.

Bag Dispenser Sign SW-1. This sign is equipped with a box (DB-1) that dispenses trash bags. The sign also has a small visitor information board for posting messages. These signs should be located at strategic points near the entrances to designated pack it in/pack it out sites. Other possible locations include trailheads and boat ramps.

Reminder Sign SW-2. This highly visible sign is placed at small campgrounds, occupancy spots, developed recreation sites on islands, and trailheads in a pack it in/pack it out area as a reminder that the system is in operation.

Developed or Undeveloped Site Sign SW-3. This sign is placed at developed or undeveloped sites in a pack it in/pack it out area as a reminder that the system is in operation.

Chapter 7 Developed Recreation Site Signing

7.7 Signing of Natural Hazards

When identified in the developed recreation site plan or if identified as an appropriate mitigation measure in a safety inspection or annual site inspection, use signs within developed recreation sites to warn or inform visitors of safety issues, such as floods, falling rocks, landslides, animal hazards, tree hazards, or other natural conditions.

Figure 7-10 is an example of a wildlife hazard sign developed for developed recreation sites located within grizzly bear habitat with documented problems.



Figure 7-10—Example of wildlife hazard sign.

Unless otherwise specified, the signs in this section shall not be placed on roads intended for motor vehicle use because they do not meet the requirements for road signs.

Use signs consistently across an administrative unit for similar situations or conditions. Refer to FSM 2330. Unless otherwise specified, the signs in this section shall not be placed on roads intended for motor vehicle use because they do not meet the requirements for road signs.

Coordinate with the regional sign coordinator and appropriate regional office recreation staff if new signs or posters need to be developed to mitigate specific hazards. Regional supplements may be developed as necessary to respond to specific situations or conditions or to insure consistency across a region.

7.7.1 Flood Signs

The following guidance applies to posting flood signs at developed recreation sites, i.e., recreation sites with a development scale of 3, 4, or 5. Refer to FSM 2330, section 2330.3. Do not post flood signs in recreation sites with lower development scales or undeveloped areas. While some redundancy in signing is acceptable and reinforces the message, avoid saturating the site with signing.

Chapter 7 Developed Recreation Site Signing

7.7.1a High Water Mark Sign

The High Water Mark sign shall be posted at a developed recreation site if:

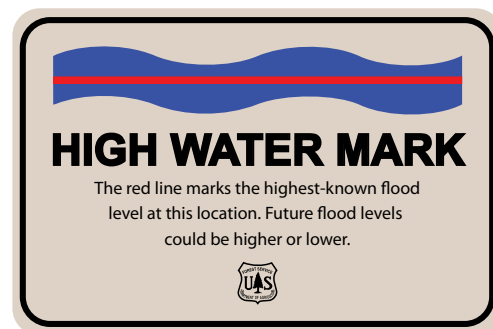
1. Agency hydrologists believe they have accurate documentation of the high water level.
2. There is a known, documented history of significant flood damage to facilities used by the public or the developed recreation site is located in an identified flood hazard area.

For purposes of this section, significant flood damage to facilities has occurred if the forest or grassland supervisor has requested regional or national funding to restore facilities affected by flooding at the developed recreation site. Posting of the high water mark sign is not warranted where flood damage has not significantly damaged infrastructure and only debris cleanup is needed.

For purposes of this section, a developed recreation site is in an identified flood hazard area if it is located in a Federal Emergency Management Agency Special Flood Hazard Area (SFHA) on a National Flood Insurance Program (NFIP) map. Relevant NFIP maps should be consulted during site selection and development of developed recreation sites that are located in the base floodplain (the floodplain for a flood that has a 1 percent or greater chance of occurring in any given year). Relevant NFIP maps should be consulted periodically to verify whether a developed recreation site is located in an SFHA.

Post the High Water Mark sign shown in figure 7-11 in at least one conspicuous place to indicate the maximum known flood level at the developed recreation site. Posting should occur as described above regardless of whether the high water was from a flash flood or a slow-rising flood. Posting of signs may occur at local discretion where slow-rising floods occur at reservoirs subject to controlled water levels.

The High Water Mark sign is not a road sign and shall not be posted where the intent is for it to be viewed from a moving vehicle.



Blue, black and red on light grey
(HWM-1) 18" x 12" (minimum)

Figure 7-11—High water mark sign.

Chapter 7 Developed Recreation Site Signing

7.7.1b Flash Flood Hazard Signing

A flash flood is a flood that occurs in a short interval (minutes to hours) and for which there may be insufficient time for persons on site to become aware of the flood and safely evacuate.

7.7.1b.1 Flash Flood Hazard Site Sign or Poster

The Flash Flood Hazard site sign or poster shown in figure 7-12 should be posted at all developed recreation sites that the Forest Service has determined are vulnerable to flash flooding. Hydrologists and recreation managers should advise on the need for Flash Flood Hazard site signs or posters. Flash flood hazard site signs or posters should be posted on information boards and/or at other prominent locations so that the signs are likely to be seen by all visitors.

The Flash Flood Hazard sign or poster is not a road sign and shall not be posted where the intent is for it to be viewed from a moving vehicle.



Black on yellow (FFH-1)
10" x 14" (minimum)

Figure 7-12—Flash Flood Hazard site sign or poster.

Chapter 7**Developed Recreation Site Signing***7.7.1b.2 FLASH FLOOD AREA Road Sign (FW8-18a)*

The FLASH FLOOD AREA (FW8-18a) warning sign should be posted at appropriate locations along roads within and/or at the entrance to developed recreation sites that the Forest Service has determined are vulnerable to flash flooding. Hydrologists and recreation managers should advise on the need and locations for FLASH FLOOD AREA warning signs posted along roads or parking lots. This sign is intended to be read from a moving vehicle, and posting of this sign shall be based on application of engineering judgement. Refer to chapter 3B, section 3B.2.18.

The FLASH FLOOD AREA warning sign may be used at the entrance to a developed recreation site when much of the site is vulnerable to flash flooding, at the entrance to a single loop in a campground when only that portion of the campground is vulnerable to flash flooding or in other locations within a developed recreation site vulnerable to flash flooding.

The FLASH FLOOD AREA warning sign may also be posted at appropriate locations along roads for areas within long stream corridors outside of developed recreation sites when the Forest Service has determined these areas are vulnerable to flash flooding. Hydrologists and recreation managers should advise on the need and locations for these signs and the posting of these signs shall be based on application of engineering judgement.

A supplemental distance plaque may be added to a FLASH FLOOD AREA warning sign when appropriate, such as when entering or within a long stream corridor subject to flash flooding. Refer to chapter 3B, section 3B.2.23a.



FW8-18a

Figure 7-13—FLASH FLOOD AREA warning sign for roads.

Chapter 7 Developed Recreation Site Signing

7.7.1b.3 Access Road Subject to Flooding Site Sign or Poster

The Access Road Subject To Flooding sign or poster shown in Figure 7-13a may be posted on information boards in developed recreation sites that are accessed by roads subject to flash flooding. This sign or poster should be posted on information boards in developed recreation sites that are accessed by low water crossings subject to flash flooding and/or there is a history of visitors being delayed in departing due to roads blocked by flash flooding. The need and locations for this poster should be based on professional judgment. This poster is not to be used in lieu of a road warning sign that was determined necessary based on application of engineering judgment. Refer to chapter 3B, section 3B.2.18.

Black on yellow (ARF-1)
10" x 14" (minimum)



Figure 7-13a—Access Road Subject To Flooding sign or poster

7.7.1c General Awareness Signing for Slow Rising Floods

Use of general awareness signs for developed recreation sites located in areas that are subject to slow rising floods is generally not warranted where there is a reasonable expectation that the public will be aware of and safely respond to slow-rising flood conditions, such as at most day use areas where visitors have ready access to their vehicles and areas vulnerable to major tropical storms or similar weather events that are publicized sufficiently in advance to allow public notification and safe evacuation.

7.7.1c.1 Slow Rising Flood Awareness Signs for Sites

General awareness signs for slow rising floods at developed recreation sites vulnerable to slow-rising floods may be posted where visitors may leave their property for extended periods such as parking lots, trailheads, or boat launches. Use the sign shown in figure 7-14 if one is necessary.

This sign is not a road sign and shall not be posted where the intent is for the sign to be viewed from a moving vehicle.

White on brown (AF-1)
18" x 12" (minimum)



Figure 7-14—Slow Rising Flood Awareness site sign.

7.7.1c.2 Slow Rising Flood Awareness Road Sign

General information signs with messages, such as THIS AREA SUBJECT TO FLOODING or RECREATION AREA MAY FLOOD as shown in figure 7-15 may be posted along roads accessing developed recreation sites that are prone to slow-rising floods. Posting of signs along roads shall be determined by engineering judgment. Refer to chapter 3C, section 3C.11 for guidelines on using information signs along roads. Messages on these signs should be approved by the regional sign coordinator on a case-by-case basis. Refer to chapter 3E, section 3E.11 for sign drawings.



FLD1



FLD2

Figure 7-15—Examples of a slow rising flood awareness road signs.

Chapter 7 Developed Recreation Site Signing

7.7.1d Flood Signs for Areas Below Dams

Signs may be posted at developed recreation sites located along streams that are subject to rapidly changing water levels due to scheduled or unexpected dam releases. Coordinate with the agency that has jurisdiction of the dam to determine appropriate signing. The flood awareness sign shown in figure 7-14 or signs developed in coordination with the local dam authority may be used for this purpose, such as the sign shown in figure 7-16. Coordinate with the regional sign coordinator for assistance in designing new signs. These signs should be approved by the regional sign coordinator on a case-by-case basis.

These are not road signs and they shall not be posted where the intent is for them to be viewed from a moving vehicle.



Figure 7-16—Example of a sign posted below a dam.

7.7.1e Other Flood Related Warning Signs for Access Roads

Standard warning signs may be posted along roads accessing developed recreation sites that are prone to slow-rising floods. Refer to figure 7-17 for examples of flood warning signs for roads. Refer to chapter 3B, section 3B.2.17 through 3B.2.19, for additional guidance on flood warning signs along roads.

Posting of signs along roads shall be determined by engineering judgment.

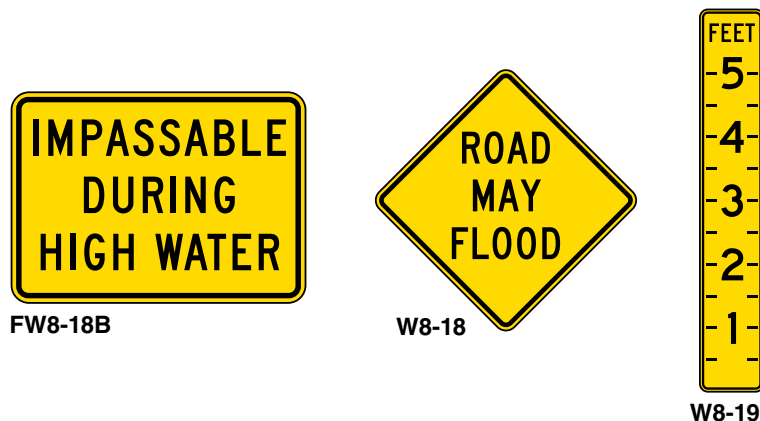


Figure 7-17—Flood warning signs for roads.

Chapter 7

Developed Recreation Site Signing

7.8 Miscellaneous Signs and Posters

Do not sign for uses that are not managed at the site.

Signs and posters can convey a variety of messages to the public. Follow guidance in chapters 10, 10A, and 10B for visitor information signing on bulletin boards and at kiosks and interpretative sites. Signing shall be appropriate for the managed uses of the site. Do not sign for uses that are not managed at the site. For example: sign for lifeguard availability if the site has a managed swimming facility. Do not sign for lifeguard availability if the site is located next to a body of water, but no swimming facilities are provided and swimming is not managed at the site.

If standard signs and posters are not available, consult with the forest or regional sign coordinator before procuring and installing new signs and posters not shown in the MUTCD or these Guidelines.

7.8.1 Forest Service Regulations

Developed recreation sites are subject to Forest Service regulations in 36 CFR part 261, subpart A, and may be subject to orders issued under 36 CFR part 261, subpart B, including restrictions on site availability, food storage, shooting, camping limits, and waste disposal. Where deemed necessary to assist in enforcement of these regulations and orders, black-and-white regulatory signs shall be used. Consult with the local law enforcement and investigations staff and the forest, or regional sign coordinator before procuring or installing any regulatory signs not shown in the MUTCD or these Guidelines. If regulatory signs are to be installed along roads, the signs must meet the standards in chapter 3A.

DAY USE AREA
OPEN
7 AM - 9 PM

If enforcement is not feasible or planned, do not use a black-and-white regulatory sign. Instead, use a brown-and-white miscellaneous information sign. Refer to chapter 3C, section 3C.11, for guidance on miscellaneous information signs.

7.8.1a Closure Signs

Use regulatory closure signs to inform the public of seasonal or time-related closures at developed recreation sites. Refer to figure 7-18 for examples of closure signs. Consult with the forest or regional sign coordinator for assistance in developing site-specific closure signs.

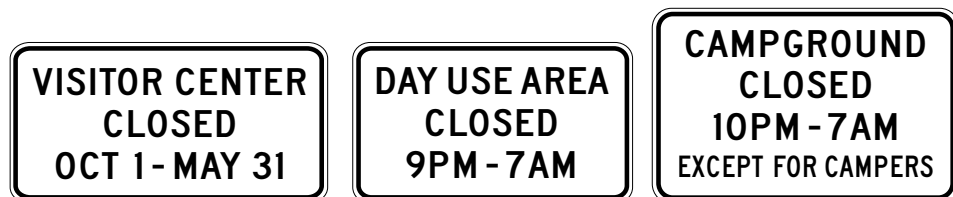


Figure 7-18—Closure signs.

Chapter 7 Developed Recreation Site Signing

Do not use standard ROAD CLOSED signs for site closures unless the site is closed to all use, including foot traffic. Refer to chapter 3A, section 3A.5.

Closure signs may be placed on gates, other restriction devices, kiosks, or buildings as necessary. If access to developed recreation sites is controlled by a gate or restriction device, ensure that all safety signs on gates are in conformance with chapter 3B, section 3B.3 and chapter 3D, figures 3D-25 through 3D-27.

7.9 Self-Locator Maps

At major or more complex developed recreation sites, use professionally designed and manufactured park-and-read self-locator signs with “You Are Here” messages or symbols. Refer to figure 7-19 for of a self-locator sign.

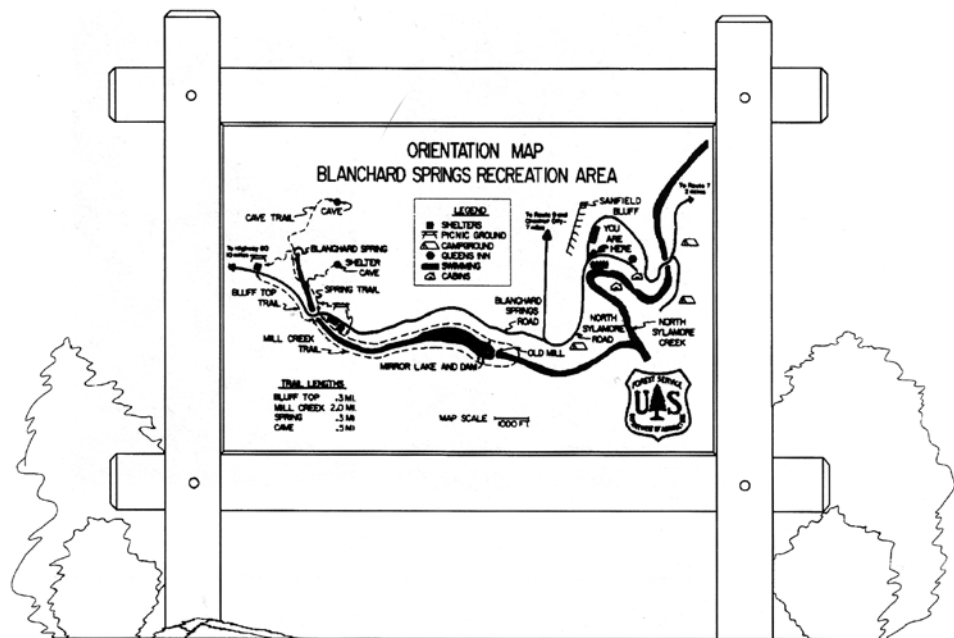
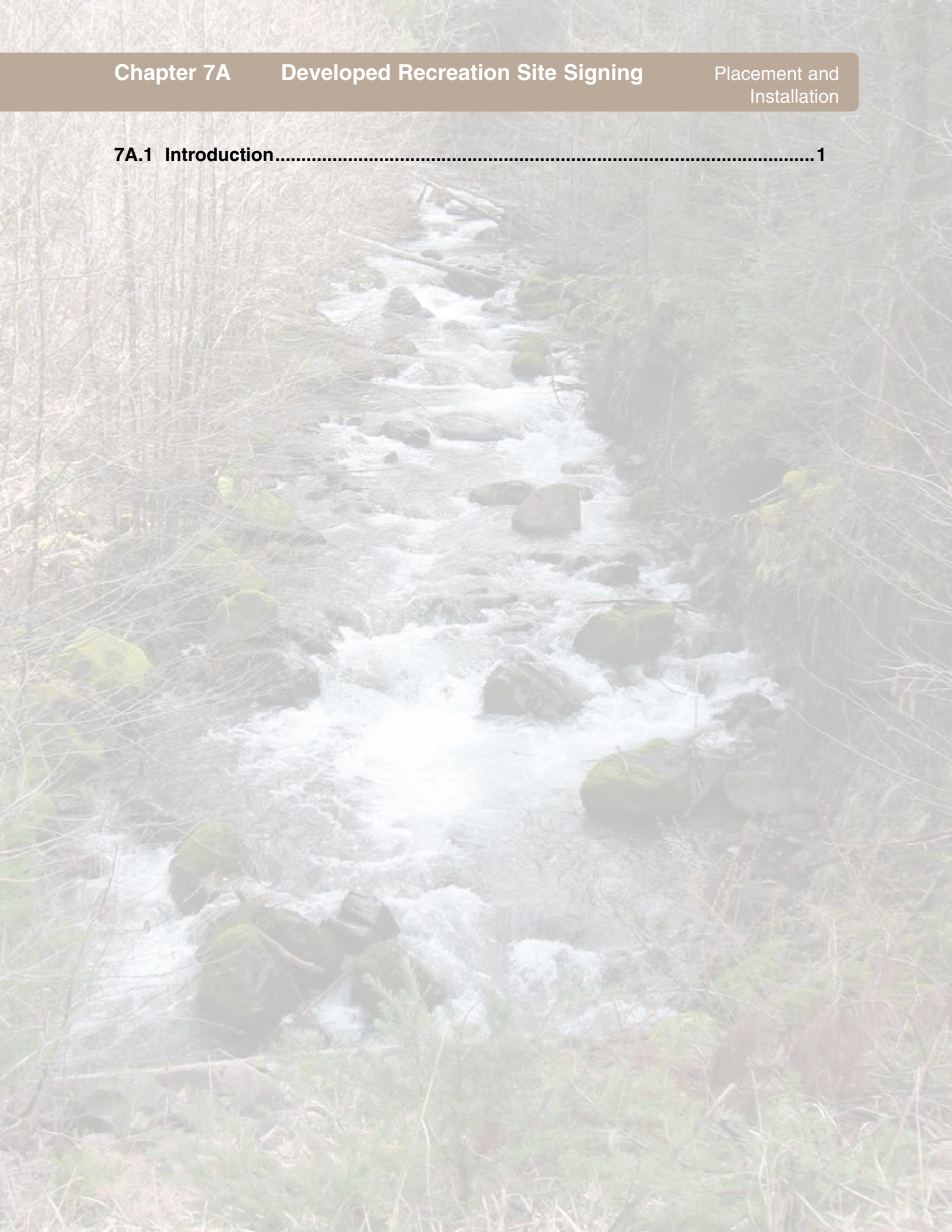


Figure 7-19—Self-locator map.

7A.1 Introduction.....1



7A.1 Introduction

This chapter illustrates typical placement and installation of signs within developed recreation sites. For additional placement and installation information on roads, follow the guidelines in chapter 3D. Obtain the advice of the forest sign coordinator for special situations.

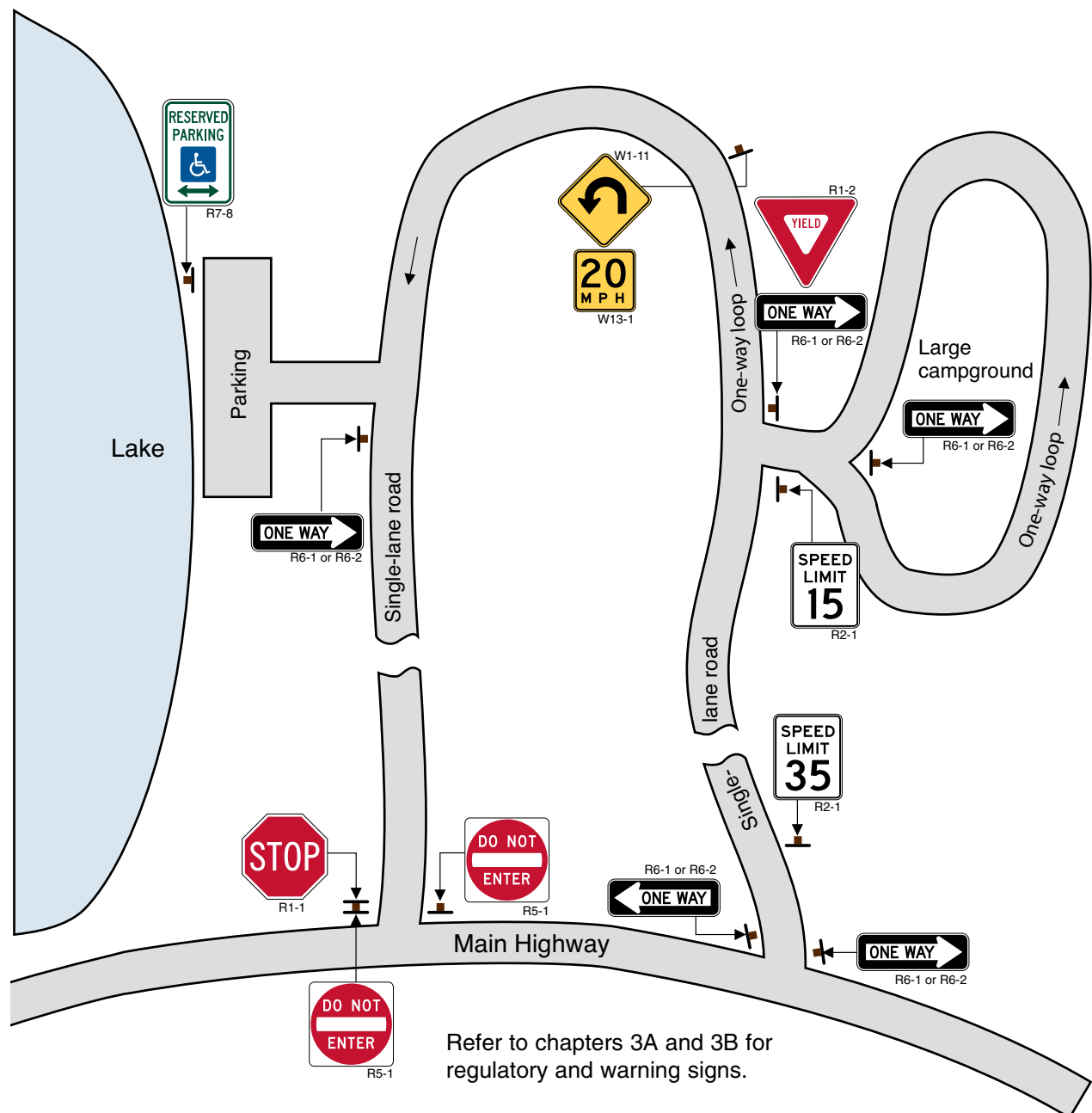


Figure 7A-1—Placement example for regulatory and warning signs in a recreation site with one-way traffic and speed control.

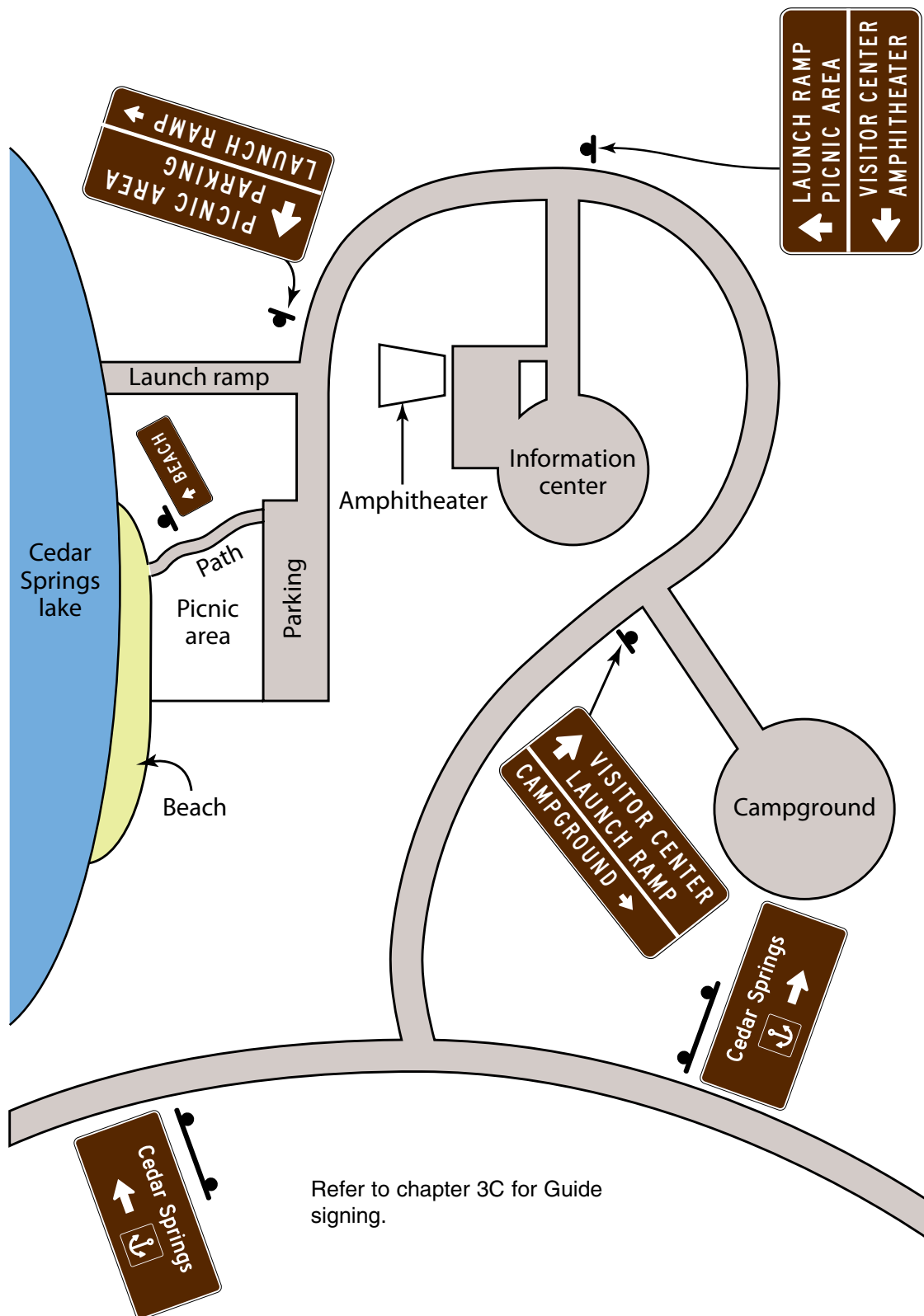


Figure 7A-2—Placement examples for destination signs within a recreation site.

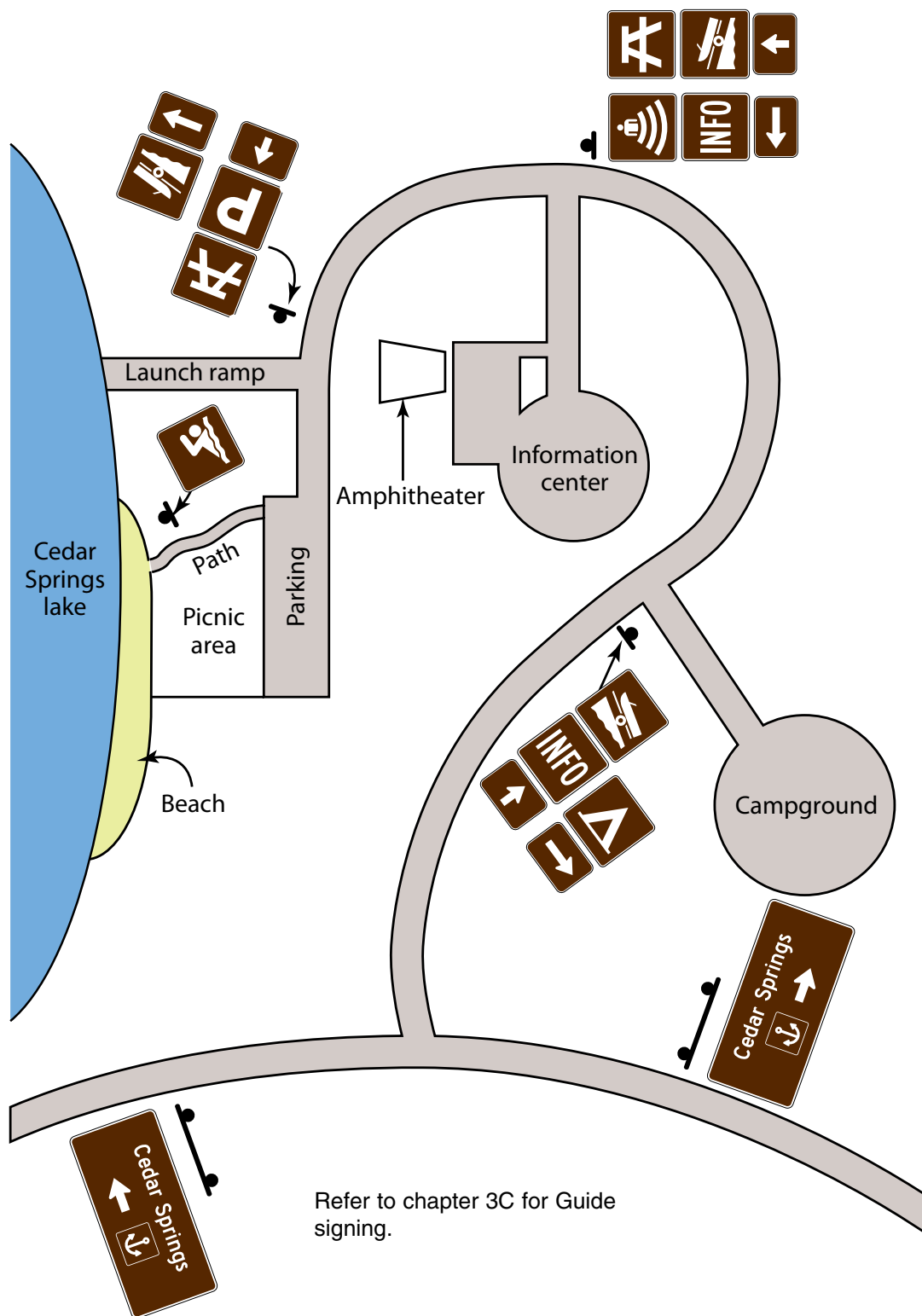


Figure 7A-3—Placement examples for recreational and cultural interest area symbols within a recreation site.

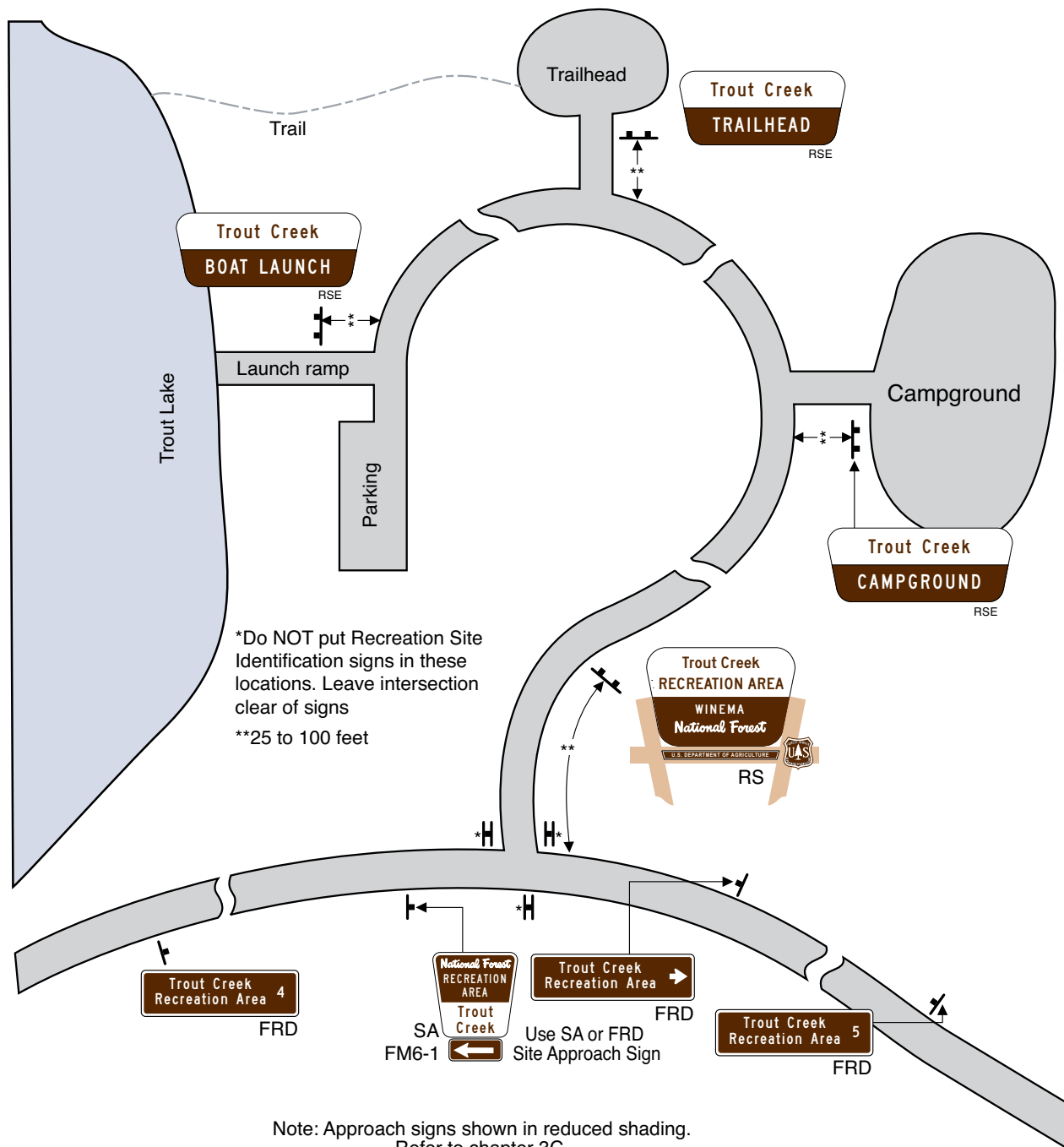


Figure 7A-4—Placement examples for site identification signs.

7B.1 General Layout	1
7B.2 Recreation Site Identification Signs	2
7B.3 National Recreation Area Signs	6
7B.4 Sanitary Dumping Site Signs	7
7B.5 Forest Service Fee Area Sign.....	8
7B.6 Solid Waste Disposal Signs	9

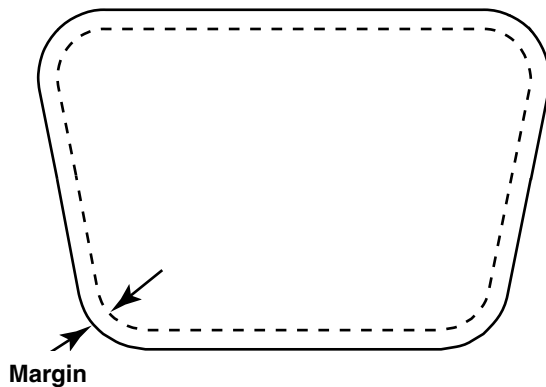
7B.1 General Layout



RS



RSE

**Notes**

Margin shown shall typically be one-half the capital letter height of the forest or unit name.

Each line of text shall be centered between the edges of the sign and shall not extend into the margin.

Use for facilities such as campgrounds, visitor centers, picnic grounds, and trailheads.

See chapter 1, section 1.7.3b for logotypes.

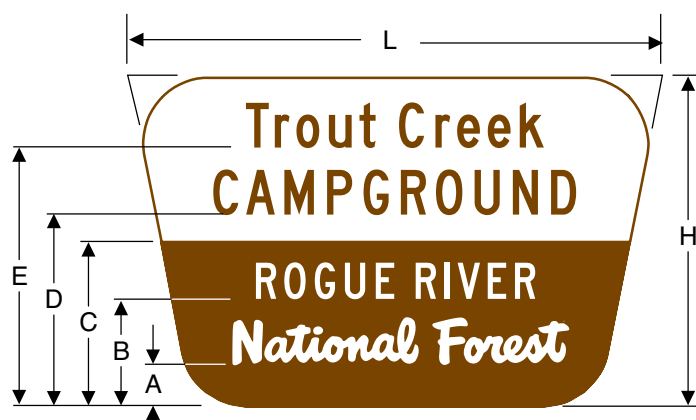
Text—ASA series as noted.

Specify names, site type, and sign number when ordering.

For manufacturing specifications, refer to chapters 14 and 14A.

7B.2 Recreation Site Identification signs

Text layout—Recreation Site Identification sign (RS)

Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	E	Facility name (title case)	Facility type (upper case)	Forest name (upper case)	NF Logotype
RS-1	48	30	4	10	15	17	23 ½	4D	4D	3D	4
RS-2	63	40	5	13	20	23	31 ½	5D	5D	4D	5
RS-3	78	50	6 ½	16	25	29	39 ½	6D	6D	5D	6
RS-4	93	60	7	19	30	35	47 ½	7D	7D	6D	7

Notes

Text – ASA series as noted.

Shield and credit line are required with this sign.

Painted, Routed Colors

Top – Brown (#20059) legend on yellow-cream (#23695) background.

Bottom – Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

Top – Brown legend on white background.

Bottom – White legend on brown background.

References

For sign guidelines, see chapters 7 and 7A.

For horizontal text placement, see section 7B.1.

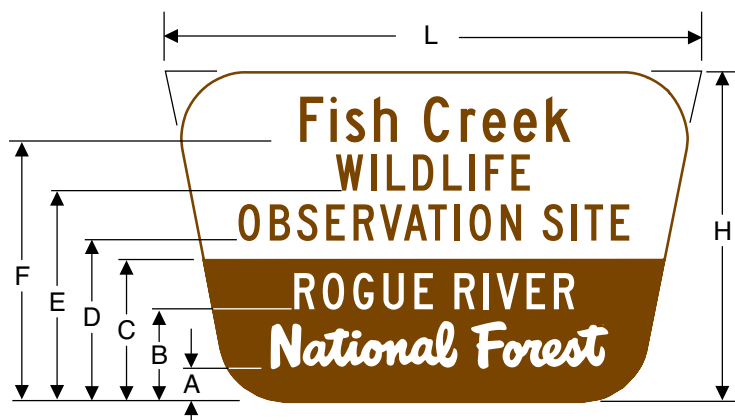
For Forest Service shield, see chapter 8C, section 8C.7.

For USDA credit line, see chapter 8C, section 8C.6.

For National Forest logotype, see chapter 1, section 1.7.3b.

Sign number	Shield	USDA credit line	Road speed (mph)
RS-1	S-10	P-37	0-15
RS-2	S-12	P-43	20-25
RS-3	S-12	P-52	30-45
RS-4	S-15	P-68	50+

Text layout—Recreation Site Identification sign (RS M1) modified layout, two-line site type



Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	E	F	Facility name (title case)	Facility type (upper case)	Forest name (upper case)	NF Logotype
RSM1-1	48	30	3	8 ½	13 ½	15 ½	20	24 ½	4D	3D	3D	4
RSM1-2	63	40	4	11 ½	18 ¼	21	27	33	5D	4D	4D	5
RSM1-3	78	50	5	14 ½	23	26 ½	34	41 ½	6D	5D	5D	6
RSM1-4	93	60	6	17 ½	27 ¾	32	41	50	7D	6D	6D	7

Notes

Text – ASA series as noted.

Shield and credit line are required with this sign.

Painted, Routed Colors

Top – Brown (#20059) legend on yellow-cream (#23695) background.

Bottom – Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

Top – Brown legend on white background.

Bottom – White legend on brown background.

References

For sign guidelines, see chapters 7 and 7A.

For horizontal text placement, see section 7B.1.

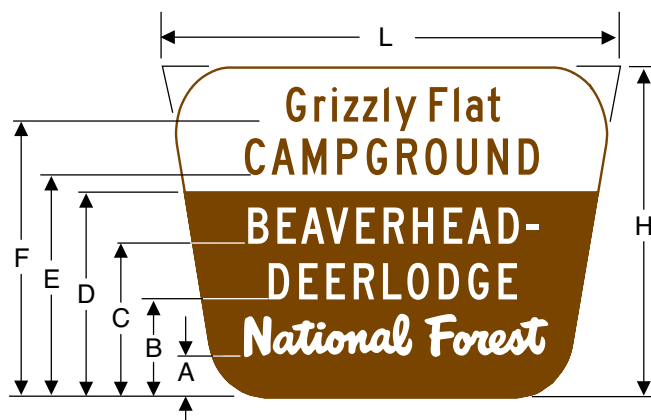
For Forest Service shield, see chapter 8C, section 8C.7.

For USDA credit line, see chapter 8C, section 8C.6.

For National Forest logotype, see chapter 1, section 1.7.3b.

Sign number	Shield	USDA credit line	Road speed (mph)
RSM1-1	S-10	P-37	0-15
RSM1-2	S-12	P-43	20-25
RSM1-3	S-12	P-52	30-45
RSM1-4	S-15	P-68	50+

Text layout—Recreation Site Identification sign (RS M2) modified layout, two-line forest name



Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	E	F	Facility name (title case)	Facility type (upper case)	Forest name (upper case)	NF Logotype
RSM2-1	48	36	4	10 ½	16 ½	21 ½	23 ½	29 ¾	4D	4D	3D	4
RSM2-2	63	48	5	13 ½	21 ½	28 ½	31 ½	39 ¾	5D	5D	4D	5
RSM2-3	78	60	6	16 ½	26 ½	35 ½	39 ½	49 ¾	6D	6D	5D	6
RSM2-4	93	72	8	19 ½	31 ½	42 ½	47 ½	59 ¾	7D	7D	6D	7

Notes

Text – ASA series as noted.

Shield and credit line are required with this sign.

Painted, Routed Colors

Top – Brown (#20059) legend on yellow-cream (#23695) background.

Bottom – Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

Top – Brown legend on white background.

Bottom – White legend on brown background.

Sign number	Shield	USDA credit line	Road speed (mph)
RSM2-1	S-10	P-37	0-15
RSM2-2	S-12	P-43	20-25
RSM2-3	S-12	P-52	30-45
RSM2-4	S-15	P-68	50+

References

For sign guidelines, see chapters 7 and 7A.

For horizontal text placement, see section 7B.1.

For Forest Service shield, see chapter 8C, section 8C.7.

For USDA credit line, see chapter 8C, section 8C.6.

For National Forest logotype, see chapter 1, section 1.7.3b.

Text layout—Optional Recreation Site Identification (RSE) signText layout dimensions (*inches*)

Sign number	L	H	A	B	C	Facility name (title case)	Facility type (upper case)	Road speed (mph)
RSE-1	30	14	3	7 5/8	9 1/8	3D	3D	0-15
RSE-2	48	20	3 3/4	10 3/4	13 1/2	4D	4D	20-25
RSE-3	60	24	5	13	16 1/4	5D	5D	30-45
RSE-4	72	28	5	15	18 1/2	6D	6D	50+

Notes

Text – ASA series as noted.

Shield and credit line are not required with this sign.

Painted, Routed Colors

Top – Brown (#20059) legend on yellow-cream (#23695) background.

Bottom – Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

Top – Brown legend on white background.

Bottom – White legend on brown background.

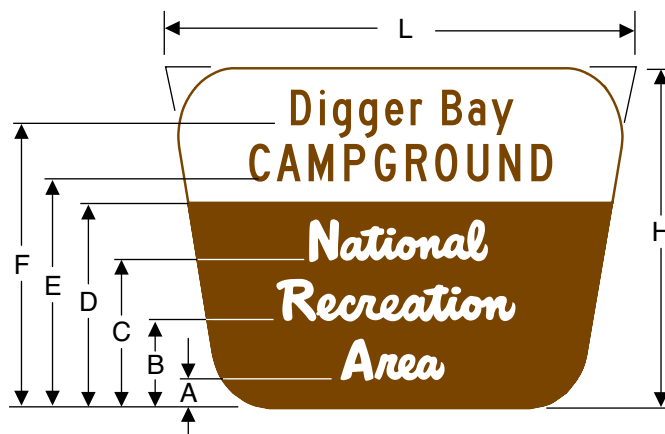
References

For sign guidelines, see chapters 7 and 7A.

For horizontal text placement, see section 7B.1.

7B.3 National Recreation Area Signs

Text layout—National Recreation Area (NRA-REC) sign



Text layout dimensions (inches)

Sign number	L	H	A	B	C	D	E	F	Facility name (title case)	Facility type (upper case)	NRA Logotype
NRA-Rec-1	48	36	3 ½	9 ½	15 ½	21 ½	23 ½	29 ¾	4D	4D	4
NRA-Rec-2	63	48	4 ½	12 ½	20 ½	28 ½	31 ½	39 ¾	5D	5D	5
NRA-Rec-3	78	60	5 ½	15 ½	25 ½	35 ½	39 ½	49 ¾	6D	6D	6
NRA-Rec-4	93	72	6 ½	18 ½	30 ½	42 ½	47 ½	59 ¾	7D	7D	7

Notes

Text – ASA series as noted.
 Shield and NRA credit line are required with this sign.
 Yellow-cream and white colors may be changed to colors fitting the character of the area when approved by the Regional Forester. Color of the credit line and shield must match color of the site identification sign.

Painted, Routed Colors

Top – Brown (#20059) legend on yellow-cream (#23695) background.
 Bottom – Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

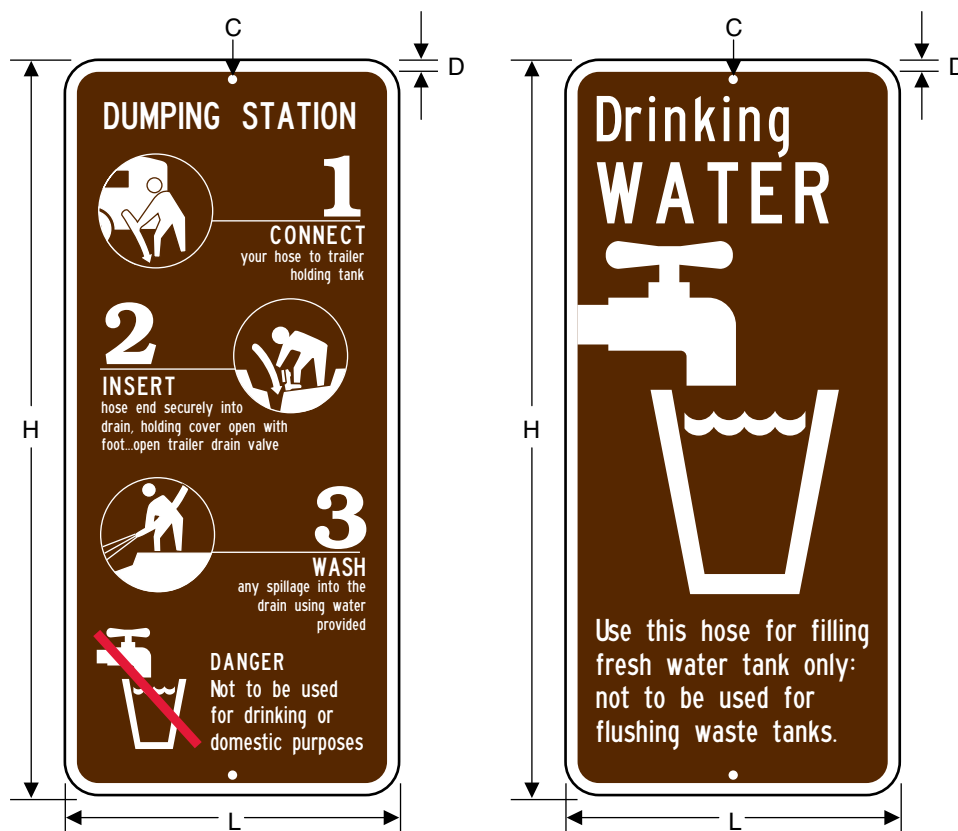
Top – Brown legend on white background.
 Bottom – White legend on brown background.

Sign number	Shield	NRA credit line #2	Road speed (mph)
NRA-Rec-1	S-10	NRA-P10	0-15
NRA-Rec-2	S-12	NRA-P12	20-25
NRA-Rec-3	S-12	NRA-P12	30-45
NRA-Rec-4	S-15	NRA-P12	50+

References

For sign guidelines, see chapters 7 and 7A.
 For horizontal text placement, see section 7B.1.
 For Forest Service shield, see chapter 8C, section 8C.7.
 For NRA USDA credit line, see chapter 8C, section 8C.9.
 For NRA logotype, see chapter 1, section 1.7.3b.

7B.4 Sanitary Dumping Site Signs

Text layout—Sanitary Dumping Site signs (SDS)**Dimensions (inches)**

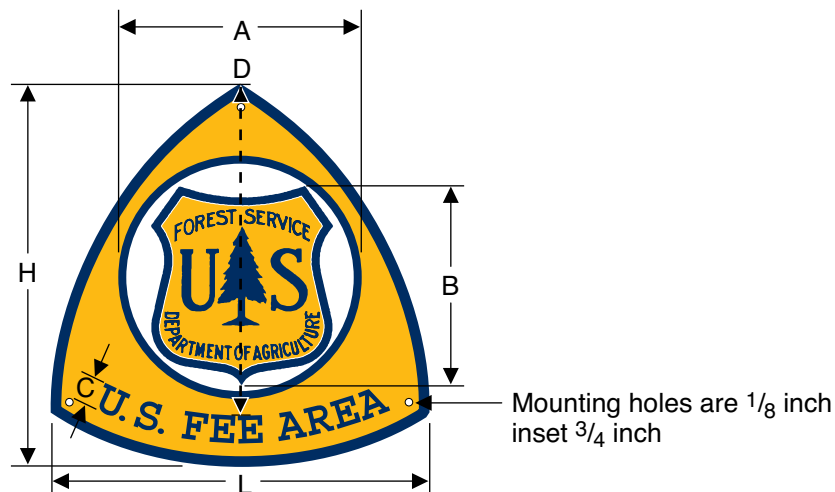
Sign number	L	H	C	D
SDS	10	22	$\frac{3}{8}$	1

Colors

Fully retroreflective white legend and border on brown background.

7B.5 Forest Service Fee Area Sign

Text layout—Forest Service Fee Area sign (FA)



Dimensions (inches)

Sign number	L	H	A	B	C	D	Hole size	Outside border	Circle border
FA-1	9	9	$5 \frac{5}{8}$	4	$\frac{3}{4}$	$7 \frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{8}$
FA-2	18	18	$11 \frac{1}{4}$	8	$1 \frac{1}{2}$	$15 \frac{3}{8}$	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{4}$

Colors

Background and shield background – gold transparent ink (PMS 130).

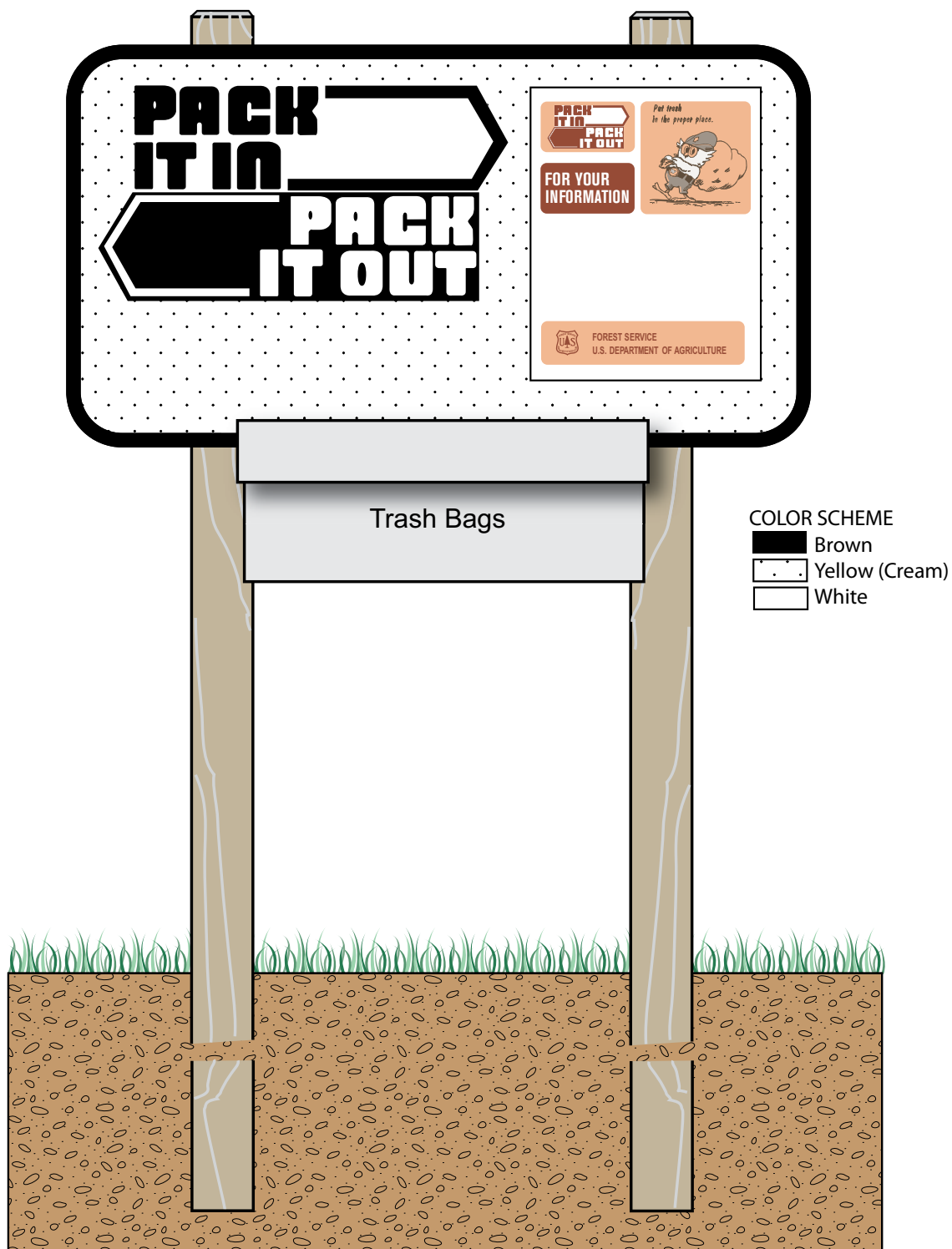
Background circle – white retroreflective sheeting (engineer grade).

Borders, figures, and type – midnight blue (PMS 282).

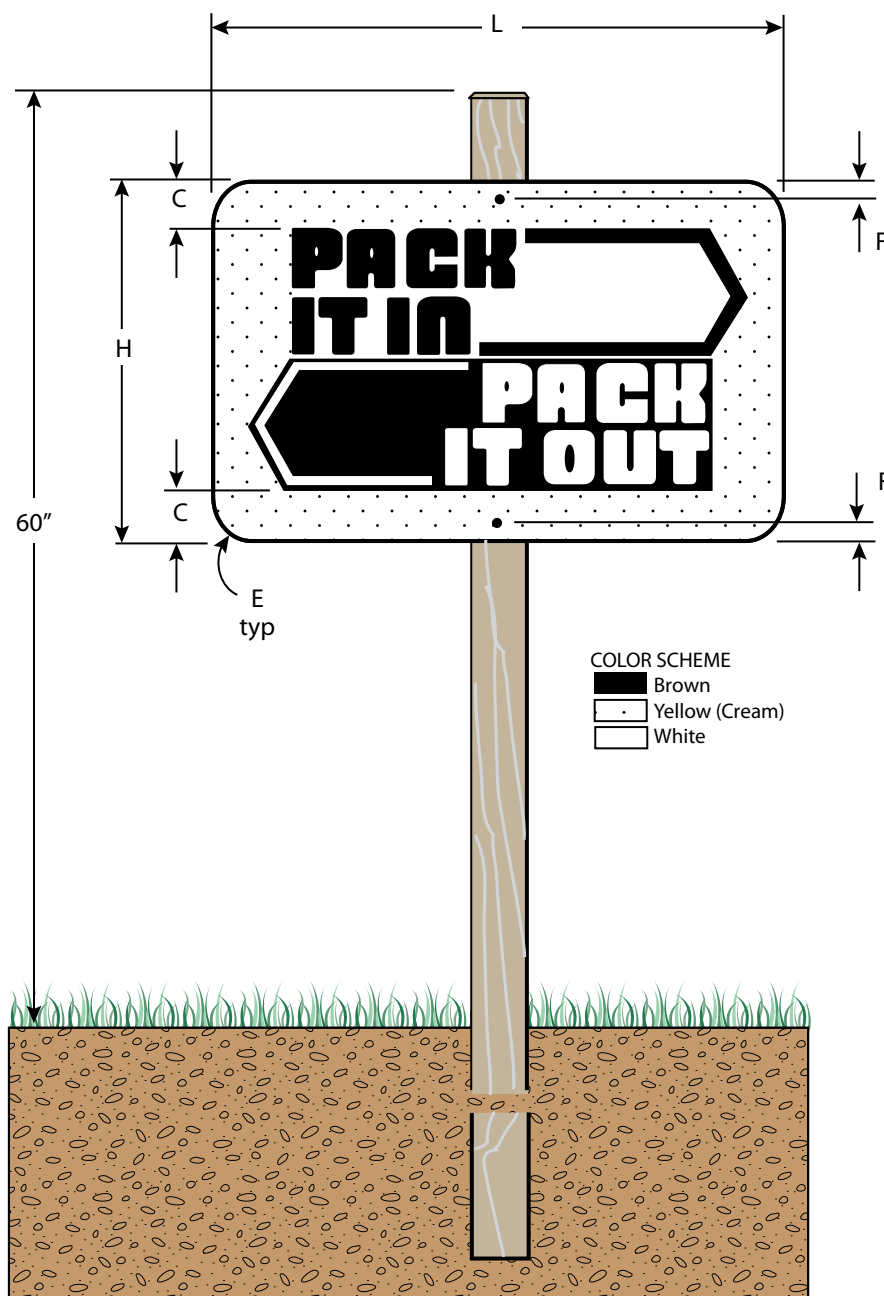
Colors are Pantone Matching System (PMS).

7B.6 Solid Waste Disposal Signs

Text layout—Solid Waste Disposal sign (SW-1) PACK IT IN/PACK IT OUT with bag dispenser

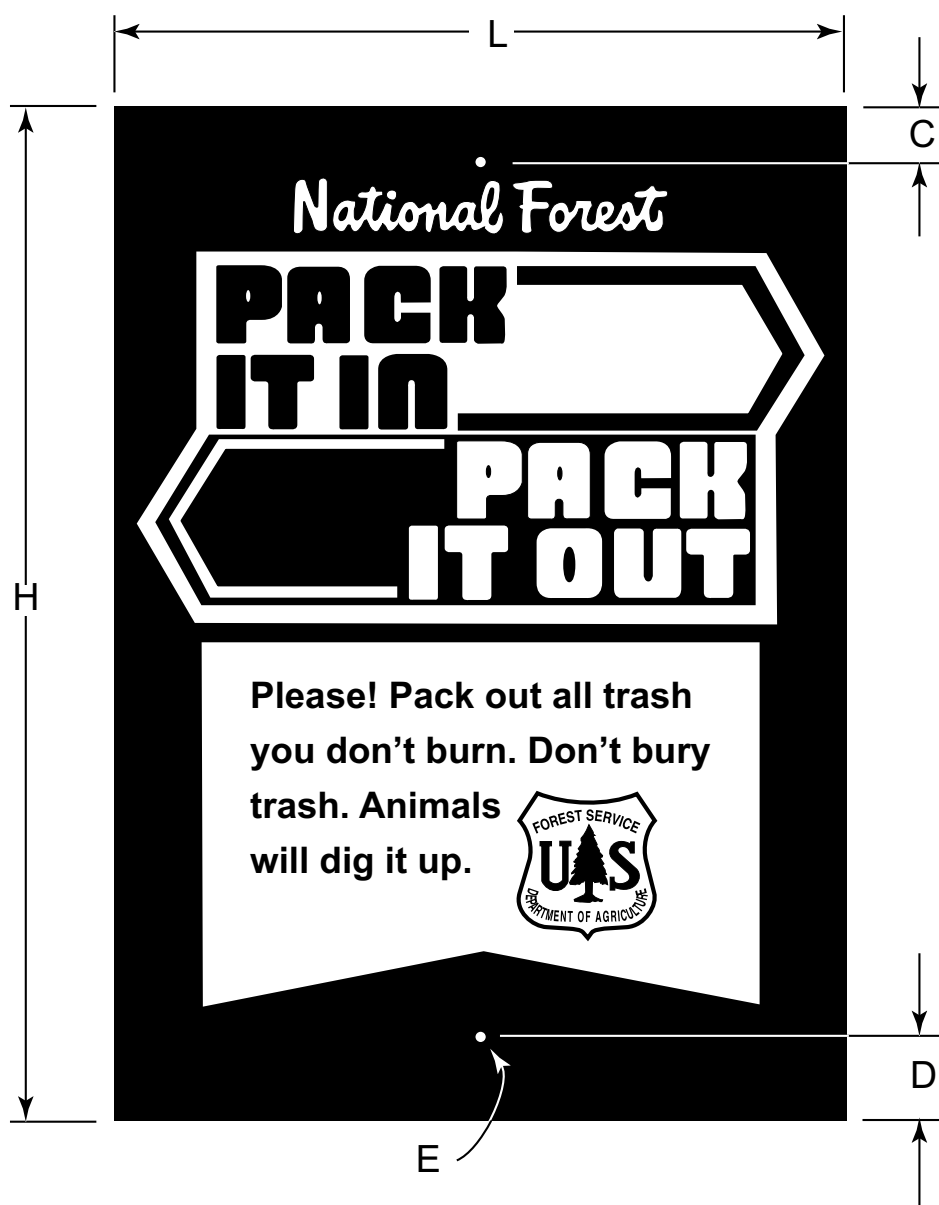


Text layout—Solid Waste Disposal sign (SW-2) PACK IT IN/PACK IT OUT reminder sign



Dimensions (inches)

Sign number	L	H	C	D	E	F
SW-2	30	18	2 ½	¾	1 ½	1



Dimensions (inches)

Sign number	L	H	C	D	E	Location
SW-3	13	18	1	1 ½	¾	Site sign
SW-4	8	11	1 ¾	¾	¾	Trailside sign

Colors

Black legend on white background.

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Chapter 8 Forest Identification Signs

8.1 Introduction

Place forest

Identification signs at the location that best identifies the facility or boundary.

Use forest identification signs to identify National Forest System administrative sites, such as district offices, forest and regional headquarters and other facilities, and administrative boundaries.

Place forest identification signs at the location that best identifies the facility or boundary, with consideration of topography, safety, cost, environmental impacts, and visibility.

Modification of standard signs requires approval from the regional sign coordinator. After approval, submit a detailed drawing or artwork to the sign manufacturer when ordering modified signs. Include shape detail, letter size, series and spacing requirements, overall dimensions, and color scheme.

8.2 Sign Design

Standard designs have been developed for forest identification signs and should be used whenever possible. The standard designs include national distinctive logotypes that shall be used without modification. Refer to chapter 1, section 1.7.3b for logotypes.

Modifications to standard designs, such as those approved for special congressionally designated areas, should ensure that:

- Features such as size, contrast, color, shape, composition, and lighting or retroreflectivity are combined to draw attention to the sign.
- Shape, size, colors, and simplicity of message combine to produce a clear meaning.
- Legibility and size combine with placement to permit adequate time for viewing and response.

Site names on signs should match current administrative maps so visitors can locate and recognize the site.

Chapter 8 Forest Identification Signs

8.2.1 Shape

Sign shapes for the different types of forest identification signs shall be in accordance with figure 8-1.

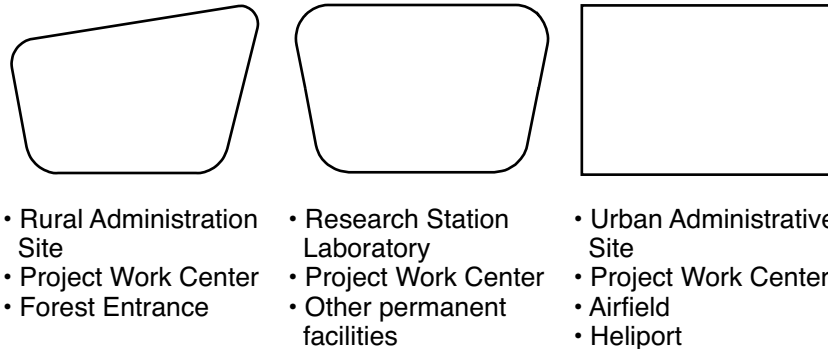


Figure 8-1—Typical shapes and associated types of forest identification signs.

8.2.2 Sizes

Sizes of forest identification signs are determined by the following factors:

- Speed of travel on approach road.
- The message that is to be displayed on the sign.
- Site characteristics such as site capacity and amount of use.

Chapter 8C shows sign sizes for use on roads with various prevailing speeds. Sign designs come in standard sizes. Standard sizes shall be used unless the message requires that the standard be modified to accommodate longer or hyphenated names.

If the sign is not along a road but is mounted on or in front of a building, it should be sized appropriately for exterior display to meet local conditions and the approved site plan.

8.2.3 Materials

Signs may be routed or retroreflective. If the sign needs to be visible to the traveling public in the day and night, use retroreflective signs or illuminate the routed signs. Adding glass beads to the paint on routed signs is not an acceptable alternative to provide retroreflectivity. Refer to chapter 3, section 3.3.2 for more information on retroreflectivity.

See chapter 14 for material options and factors that may help in determining what substrate to use. Sign support structures should be designed to be compatible with the site. Refer to chapter 7 and the “Built Environment Image Guide” for more information on site compatibility.

Chapter 8

Forest Identification Signs

8.2.4 Colors

Colors for forest identification signs shall be as shown in chapter 8C. Congressionally designated special areas may use colors fitting the character of the area when approved by the regional forester (see chapter 8B, section 8B.3).

8.2.5 Use of Proclaimed Names

Boundaries shall be signed with the proclaimed name of the unit.

When two or more national forests have been combined into one administrative unit without changing the proclaimed names or when portions of one forest are administered by another forest:

1. The headquarters of a combined unit shall be identified with the name of each forest. Use a hyphen or “and” between the names. Examples:
 - Bridger-Teton National Forests.
 - Arapaho and Roosevelt National Forests.
2. When all national forests in a State are administered by one headquarters, use a name such as “National Forests in Texas.” Place the State name last.
3. Where forest names are used on signs for ranger district offices, forest headquarters, or work centers the forest on which the site is located shall be used. Example: Afton Ranger District, Bridger National Forest (not Bridger-Teton National Forests).

Boundaries shall
be signed with the
proclaimed name of
the unit.

8.2.6 Sign Supports and Bases

Breakaway (crashworthy) posts shall be used when signs are placed within the clear zone as determined by an engineering study or application of engineering judgment. Placement of all solid base installations, such as the one shown in figure 8-2 require an engineering study and shall be placed either outside the clear zone or behind protective barriers if within the clear zone. Refer to chapter 3D for clear zone and breakaway requirements.



Figure 8-2—Solid bases outside of clear zone.

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8A.1 Introduction

A variety of signs are used to identify national forest facilities and to direct users to, from, and within those facilities. Signing to and within administrative sites should meet HOST program objectives. Refer to FSM 1521, Host Program.

Administrative sites include:

- District office, forest headquarters, and regional headquarters.
- Work centers and research facilities.
- Experimental forests.
- Human resource sites, such as Job Corps (JC) or Youth Conservation Corps (YCC).
- Airfields and heliports.
- Do not include phrases such as, “Land of Many Uses,” State boundaries, or words other than those shown in these Guidelines on forest identification signs.

All traffic control devices on roads needed to regulate, warn, or guide traffic leading to or within administrative sites shall meet the requirements of the MUTCD and these Guidelines.

8A.2 Traffic Control Devices

All traffic control devices on roads needed to regulate, warn, or guide traffic leading to or within administrative sites shall meet the requirements of the MUTCD and these Guidelines. This includes the design, shape, color, retroreflectivity, and installation. Refer to chapter 3 for traffic control device standards. Coordinate use of all traffic control devices, including those within the administrative site, with the forest sign coordinator.

8A.2.1 Site Approach Signing

Install retroreflective site approach signs where necessary, such as those shown in figure 8A-11, to direct visitors to the site. Refer to chapter 3C, section 3C.5 for detailed information.



Figure 8A-11—Example of site approach signs.

Site approach and other guide signs should be removed, covered, or marked “Closed” or “Closed Until (Date)” at important decision points to the site when administrative sites, project work centers, research stations, or labs are seasonal or temporarily closed. Site approach and other guide signs should be removed when the site is permanently closed.

8A.3 Forest or Regional Headquarters and Ranger Station Identification Signs

The type of sign used to identify the facility depends on whether the office or headquarters is located in an urban or rural area. In some cases, local ordinances or stipulations in lease or rental agreements may limit signing design for headquarters, and decisions must be made based on these requirements. Offices may be part of other commercial buildings, such as a strip mall or a combined Federal or governmental facility. In these situations, Forest Service standards may need to be modified. The sign requires both the Forest Service shield and the USDA credit line as a part of the installation.

Both the Forest Service shield and the USDA Credit line are a part of the installation.

Use the following terminology to identify the facility:

- District ranger office RANGER STATION
- Supervisor’s office FOREST HEADQUARTERS
- Regional office REGIONAL HEADQUARTERS

8A.3.1 Rural Locations

The sign illustrated in figure 8A-1 is the standard for identifying rural administrative sites such as forest headquarters and ranger stations.



Figure 8A-1-Basic design of rural sign for major administrative sites.

8A.3.2 Urban Locations

The rectangular sign shown in figure 8A-2 is the standard for identifying urban administrative sites, such as regional headquarters, forest headquarters, and ranger stations. A separate USDA Credit line plaque is not required with this sign.

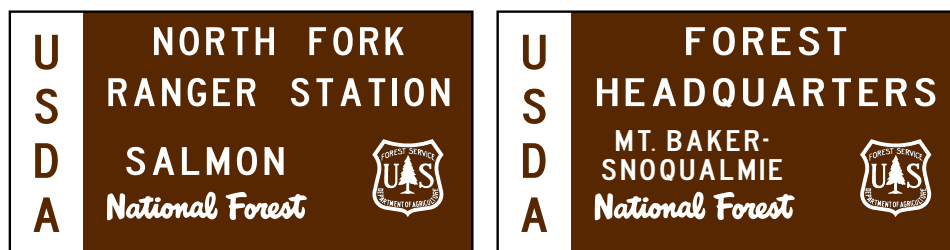


Figure 8A-2—Basic design of urban signs for administrative sites.

For collocations of ranger district(s) and forest headquarters, do not distinguish between the two administrative offices.

8A.3.3 Collocated Forest Service Offices

When Forest Service administrative offices are collocated, the administrative site sign should be as generic as possible to limit the amount of information on the sign and help avoid confusion. Specific office names can be individually posted on main doors or at separate entrances. Figures 8A-3, 8A-4, and 8A-5 show appropriate signing for several possible office combinations.

For collocations of ranger district(s) and forest headquarters, do not distinguish between the two administrative offices. This sign may be used for collocations of zone offices also.

Use the plural form (forests) for the administrative collocation of two or more forests. Sign sizes may need to be modified from the standard sizes to accommodate large name combinations.



Figure 8A-3—Combination of two or more ranger districts on same forest.



Figure 8A-4—Combination of ranger district(s) and forest headquarters on same forest.



Figure 8A-5—Administrative combination of two or more forests.

8A.4 Collocated Interagency Offices

8A.4.1 USDA Offices

Agency logos may be shown on the sign or mounted on the base.

Comply with the requirements of Department of Agriculture Regulation 5160-3, Identification Signs when collocating USDA offices. Agencies may be listed alphabetically or by other local factors. Agency logos may be shown on the sign or mounted on the base. The sign requires both the Forest Service shield and the USDA credit line as a part of the installation.

Figure 8A-6 shows the appropriate sign for collocated USDA offices.



Figure 8A-6—Administrative site sign for combination of USDA agencies.

8A.4.2 Collocated Forest Service and BLM Offices

An agreement has been made with the Bureau of Land Management (BLM) to use the sign shown in figure 8A-7 when the Forest Service and BLM have collocated offices. The sign will be retroreflective when purchased by the BLM and either retroreflective or routed and illuminated when purchased by the Forest Service.

Forest Service shield/BLM logo and USDA/USDI credit lines are required with this sign.

Use of the sign is required for new offices. Use of the sign at existing collocated offices is encouraged when existing signs become due for repair or replacement.

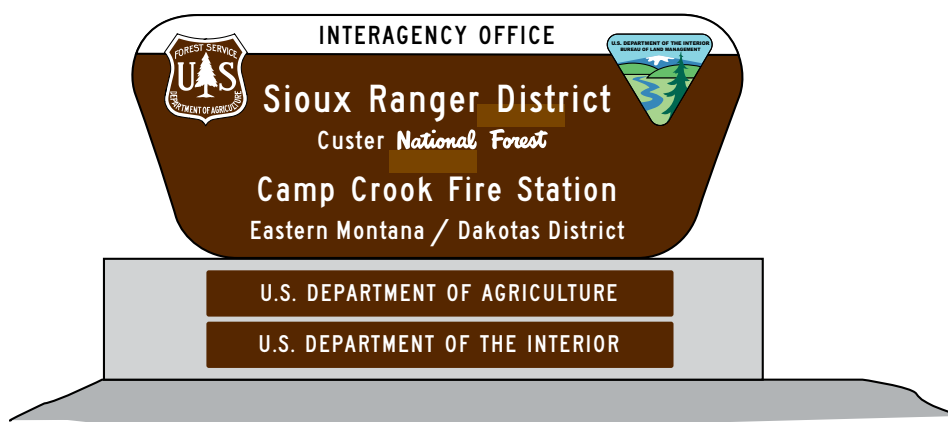


Figure 8A-7—Forest Service and BLM combined office sign.

8A.4.3 Collocated USDA and Other Federal or State Offices

Signs for USDA offices collocated with other Federal or State offices present unique challenges. These are not standard signs and their design needs to be coordinated with the regional sign coordinator. Figure 8A-8 shows examples of signs for multiagency collocations. These signs require the Forest Service shield as a part of the installation. The Forest Service shield and other agency shields or logos should be the same size.



Figure 8A-8—Administrative site signs for multiagency combinations.

8A.5 Work Center and Other Permanent Facility Signs

Sign size is dependent on the site's importance and accessibility. Minor facilities may be identified with a simple, small feature sign (refer to chapter 3C, section 3C.11.1, or a routed sign attached to the building if the facility is isolated. For important high public interest facilities, such as tree nurseries and major work centers a large sign may be appropriate (figure 8A-9). The sign requires both the Forest Service shield and the USDA credit line as a part of the installation.



Figure 8A-9—Major work center sign.

8A.6 Research Signs

These signs identify research stations and laboratories, technology and development centers, experimental stations, and supplemental study areas as part of the Forest Service and the U.S. Department of Agriculture. The sign requires both the Forest Service shield and the USDA credit line as a part of the installation.

To identify research facilities and sites, use the rectangular urban design (figure 8A-2) or the research sign design (figure 8A-10). Research signs are specialized signs and do not have a sign number because of the variety of sizes and messages that are required. Their design needs to be coordinated with the regional sign coordinator.

When marking experimental areas and boundaries, use the program area signs shown in chapter 12.

8A.6.1 Research Station Signs, Research Laboratory, and Technology and Development Center Signs

Research station, laboratory headquarters, and technology and development center signs should include the name of the station, laboratory, or center. The Forest Service shield and the USDA credit line are installed on the sign assembly as shown in figure 8A-10.



Figure 8A-10—Example of an administrative sign for forest laboratories and technology and development centers.

If the research station is a complex of several buildings, sign the principal building with the organizational identification. The remaining buildings may be signed with the name of the facility if needed. Garages, warehouses, greenhouses, and other auxiliary buildings are not ordinarily identified with signs.

8A.6.2. Experimental Forest Signs

Signing to differentiate between experimental forests and national forests requires careful planning and coordination of sign design and placement to avoid confusing the general public. Sign experimental forest headquarters and principal research facilities as appropriate. Erect major identification signs at locations where these facilities can be easily recognized by the public.

8A.6.2a Inside National Forest

Identify each experimental forest with a headquarters sign that includes the experimental forest name, experimental station name, and the standard Forest Service shield.

8A.6.2b Outside National Forests

Identify each experimental forest with a headquarters sign that includes the experimental forest name, experimental station name, the standard Forest Service shield, and the USDA credit line.

8A.7 Human Resource Signs

Job Corps and Youth Conservation Corps signs relate to the human resources program. Unique site identification signs have been developed for each of these facilities as shown in figure 8A-11.



Figure 8A-11—Examples of Job Corps and Youth Conservation Corps signs.

The standard Job Corps and Youth Conservation Corps symbols and logotypes shall be used on all interior signs that are not traffic control devices.

Job Corps and Youth Conservation Corps symbols shall be used without modification and shall be the prescribed mandatory colors. When the YCC symbol is used on signs, do not include the wording around the perimeter of the symbol.

Symbol artwork with color descriptions is available from the Washington Office, Human Resources.

Sign drawings are shown in chapter 8C.

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Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries

8B.1 Introduction

The following categories of entrance and leaving boundary signs are included in this chapter:

- National forests and grasslands.
- Congressionally designated special areas, including:
 - o National recreation areas.
 - o National monuments.
 - o Glacier viewing areas in Alaska.
 - o National scenic areas.
 - o National tallgrass prairies.
 - o Protection areas.
- National Landmarks designated by the Secretary of the Interior.
- Wilderness and primitive areas.
- Research natural areas and experimental forests.
- National Wild and Scenic River Systems.

8B.2 Forest, Grassland, and Other Administrative Units' Entrance and Leaving Signs

Identify entrances to national forests, grasslands, and other administrative units with appropriate signs along principal access routes. The high point of the sign always faces to the road.

Use a national forest boundary entrance (FE) and leaving (FL) sign (figure 8B-1) on Federal and State highways and major county roads. The sign installation shall include the Forest Service shield and the USDA credit line.

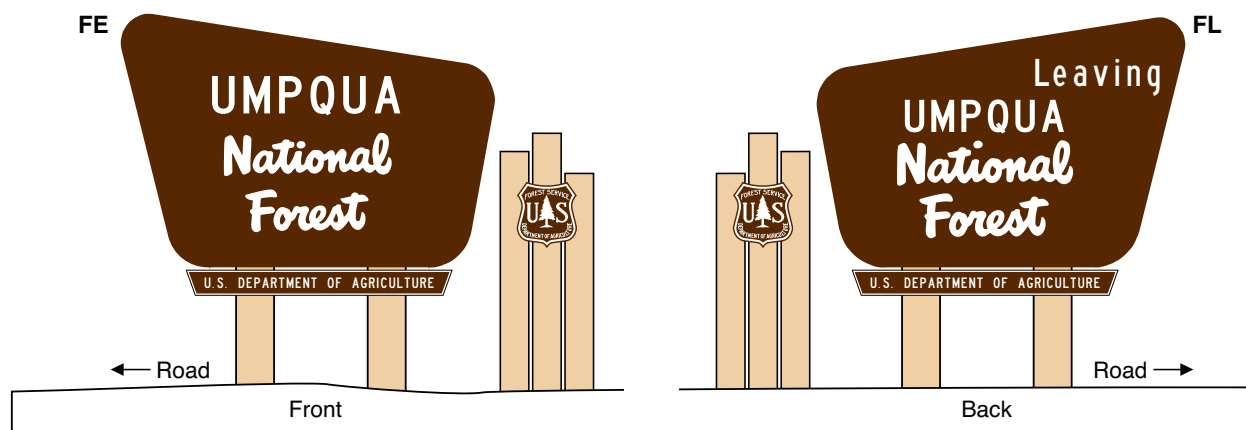


Figure 8B-1—Signs for entering and leaving National Forest entrances.

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries

Sign bases that do not meet breakaway requirements should be located out of the clear zone or shielded behind barriers. See chapter 3D.

Entrance and leaving signs should be retroreflective.

Use minor national forest boundary entrance (MFE) and leaving (MFL) signs (figure 8B-2) on trails, minor public highways, and National Forest System roads with low traffic volumes. The sign also may be used on major interior boundaries. Place the shield on the minor entrance and leaving sign assembly. A Forest Service shield is required with this sign. A separate USDA credit line plaque is not required.



Figure 8B-2—Signs for minor forest entrance and leaving and major interior boundary.

Use an entering (NFL-E) or leaving (NFL-L) land sign (figure 8B-3) when it is desirable to inform visitors that they are entering and leaving private lands within a national forest or grassland. There are two sizes: 27 by 27 inches and 18 by 18 inches. Use the smaller sign on low-volume, ML 2 roads with travel speeds less than 20 miles per hour or on trails. This smaller sign may be mounted on objects, such as fence lines, eliminating the need for additional posts. A Forest Service shield and USDA credit line is not required with these signs.



Figure 8B-3—Entering and Leaving Land signs.

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries

Consider safety first when determining placement of boundary signs.

Consider safety first when determining placement of boundary signs. Placing the sign at the actual boundary is a secondary consideration. Select the first acceptable site for the sign that is at or inside the property line of a national forest or other administrative unit. In the case of private tracts of land inside the unit boundary, place the minor entrance sign at or near the interior property line where identification is desirable.

If topography or other considerations require an installation on the left side of the road, signs must be ordered with the high point opposite that shown in figures 8B-1, 8B-2, and 8B-3.

8B.3 Designated Special Areas

This direction **ONLY** applies to areas that have been recognized by special designations as follows:

- National Monuments designated by the President under the authority of the Antiquities Act.
- National landmarks designated by the Secretary of the Interior.
- Areas within the National Forest System individually designated by special act of Congress including:
 - o National recreation areas.
 - o National scenic areas.
 - o National tallgrass prairies.
 - o Protection areas.
 - o Glacier viewing areas in Alaska.
 - o National Volcanic Monuments.

To be effective and to denote the prestige and unique attributes of these areas, signing may require special emphasis.

Signs may utilize specific designs and colors that portray the special characteristics of the designated area.

Signs may utilize specific designs and colors that portray the special characteristics of the designated area. While they may be distinctive in materials, colors, and design, these signs should achieve the same visitor utility objectives and clearly display the agency relationship as for standard identification signs, including the Forest Service shield and the USDA credit line as standard identification signs. Refer to chapter 8A, section 8A.3.

The sign colors may be changed to harmonious selections fitting the character and natural setting of the special area. The colors used for the sign background and message must be of high contrast so that the lettering and field can be distinguished by an ordinary driver as well as the visually impaired. The use of white on blue background is strongly discouraged. Those colors are designated for use on freeways, county route guide signs, evacuation routes, road-user service signs, and accessibility symbols.

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries

Any variations to standard size, shape, colors, or material must be submitted to the regional forester for approval as part of the unit management plan and must be strongly justified as to the need for a change from standard identification signs. Approval requests for nonstandard signs must be supported by the Built Environment Image Guide ((BEIG, Publication FS-710). Signs should be used consistently throughout the area. An approved sign example of specific design and colors is shown in figure 8B-4.



Figure 8B-4—Adapted sign for the Midewin National Tallgrass Prairie boundary.

The distinctive logotype and selected color scheme for the special area may be used sparingly for identification on items such as cooperative plaques, visitor information boards, interpretive signs, special posters, and pamphlets, providing that priority and adequate identity are given to the use of the national forest and U.S. Department of Agriculture. The features of the Forest Service and USDA may be strongly accentuated within the special area by a variety of other methods.

Do not use the special area logotype and color scheme on administrative site signs or on any other signs or posters that deal with regulations, authority, and administration.

The policy and criteria of signing and posting these areas are the same as for other National Forest System lands, except as shown below.

8B.3.1 Special Area Entrances on Unit Boundaries

When the boundary of the special area is common with the unit boundary of National Forest System land, use the appropriate boundary sign for the special area. The name of the special area and the logotype are the dominant messages. The National Forest System unit name and USDA credit line, and the Forest Service shield shall be placed on the base of the structure. Typical installations are shown in figures 8B-4 and 8B-5.

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries



Figure 8B-5—Typical signage for national recreation area entrances on forest boundaries.

8B.3.2 Special Area Entrances Not on Forest Boundaries

When the boundary of the special area is inside the forest or unit boundary, each is signed unless they are so close together that sign clutter will result. In such cases, sign only the special area as shown in figure 8B-6.



Figure 8B-6—National Recreation Area sign for entrances not on forest boundary.

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries

8B.3.3 Minor Special Area Entrances

Use minor special area entrance (MSA-E) and leaving (MSA-L) signs (figure 8B-7) on trails, minor public highways, and NFS road with low traffic volumes. The sign may also be used on major interior boundaries. Place the shield on the minor entrance and leaving sign. A separate USDA credit line plaque is not required.

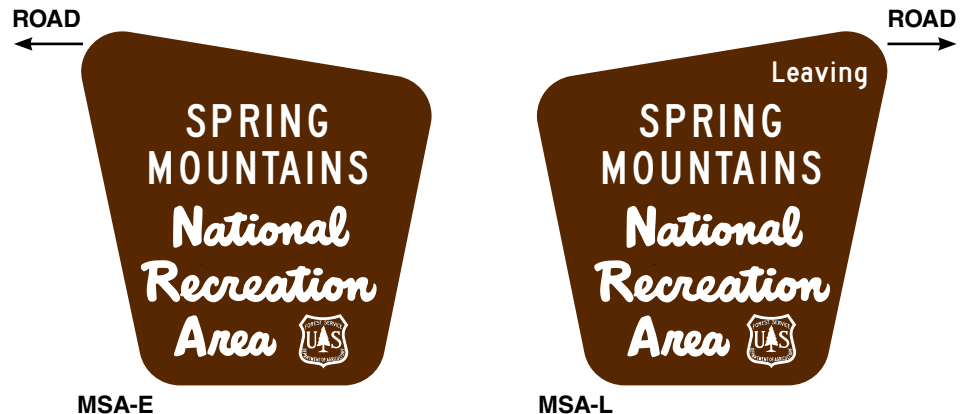


Figure 8B-7—Signs for minor special area entrance and leaving and major interior boundary.

8B.4 Wilderness and Primitive Areas

Sign wilderness and primitive areas in a manner appropriate to maintaining and perpetuating their unique primitive recreational opportunities and scientific, educational, historic, and natural values and features in accordance with policy (FSM 2320) and forest plan direction. Standardize signing within areas that include more than one administrative unit.

8B.4.1 Wilderness and Primitive Area Portal Signs

Along perimeter roads and trail or water access routes, install standard routed wood portal sign assemblies at boundaries, nearby trailheads, or other points nearest the boundary where a suitable site exists. The standard sign-assembly components are shown in figure 8B-8. (Note: the wilderness USDA credit line has a different shape than the one for nonwilderness.).

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries

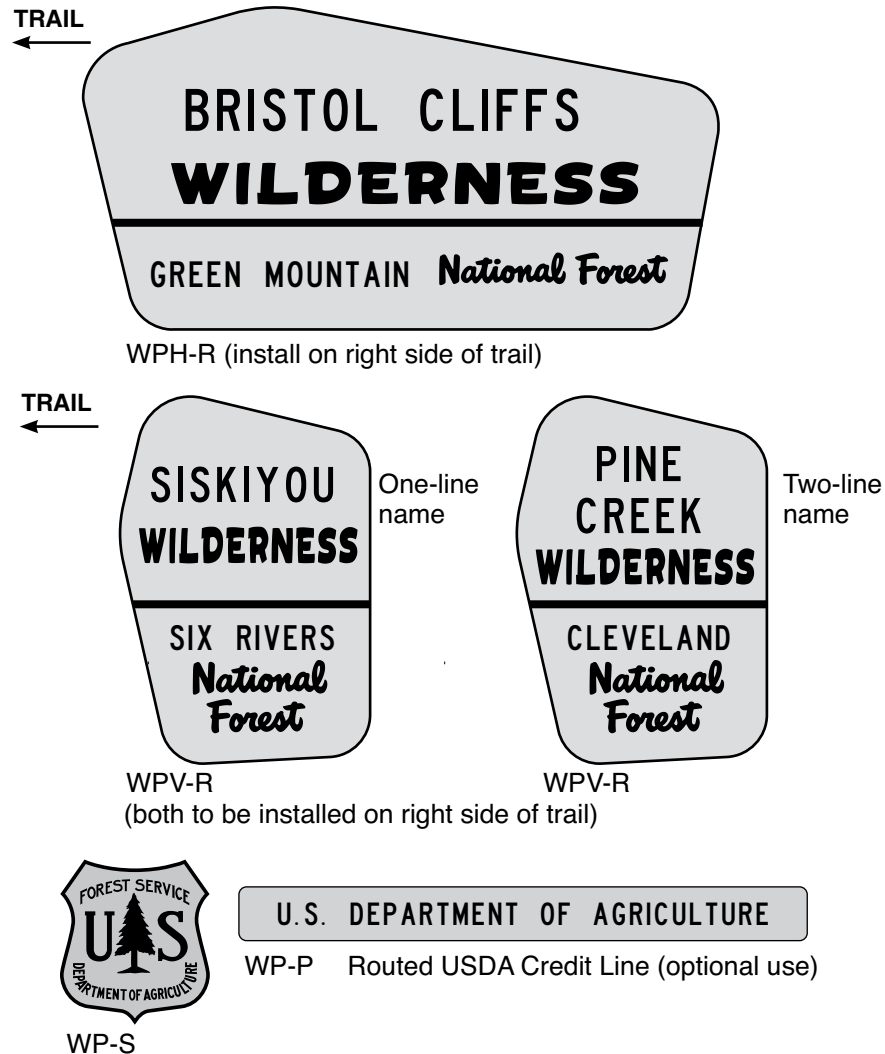


Figure 8B-8—Signs for wilderness and primitive areas.

The Forest Service shield is required in all portal sign installations.

Use either the horizontal or vertical panel style that is best suited to the character of the trail facility and the natural setting. Larger panels shall be used where major trails cross a wilderness boundary. Use the smaller panels where a minor trail crosses a wilderness boundary. The Forest Service shield is required in all portal sign installations. Use of the USDA credit line is optional.

Sign mountings should be designed to visually complement the natural surroundings. Figure 8B-9 shows examples of mounting concepts for different settings. Where available, use stable natural landscape features such as rock outcrops or boulders as support structures. The high point of the sign shall face the travelway.



Figure 8B-9—Examples of mountings for wilderness and primitive area entrance signs.

8B.4.2 Wilderness and Primitive Area Boundary Signs

Use the applicable program area signs shown in figure 8B-10 to mark boundaries of wilderness and primitive areas. Space signs only as close as necessary to inform the public and protect the resource.

Try not to locate boundary signs within sight of portal signs. Use a boundary sign at the portal if there is no other sign at that point.

Install boundary signs approximately 4 feet high unless snow depth dictates higher placement. Use stained or unstained wood posts, treated or untreated, or mount on appropriate trees.

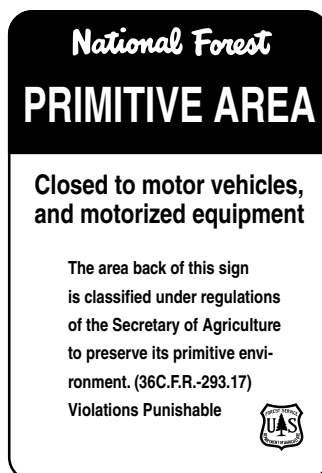
If wilderness area and forest boundaries coincide, use the current boundary line marking system with a wilderness or primitive area boundary sign installed above the standard boundary line location sign as shown in figure 8B-10.

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries



27-6A



27-6



54-2

Figure 8B-10—Wilderness and primitive area program area signs.

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries

8B.5 National Wild and Scenic Rivers System

Place the National Wild and Scenic River logo (WSR-L) on all guide, identification, and information signs within the river corridor. Use the WSR sign to mark entry points to the corridor, consistent with direction in the comprehensive river management plan. Sign installation shall meet the classification (wild, scenic, or recreational), objectives for the river or river segment, and the standards shown in figure 8B-11. Refer to chapter 3D for information on placement and installation. The use of all regulatory, warning, and guide signs shall follow the guidance in chapters 3 through 3E.

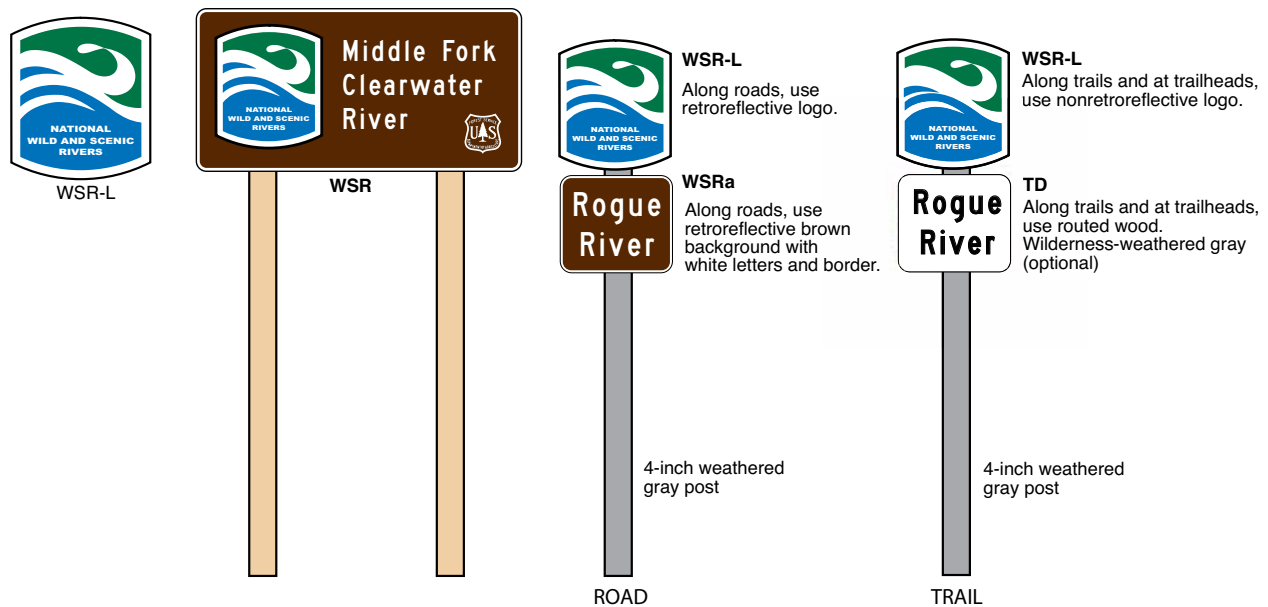


Figure 8B-11—Identification signs for wild and scenic rivers.

Chapter 8B Forest Identification Signing

National Forest, Grassland, and Other Administrative Boundaries

8B.6 Experimental Forests and Research Area Boundaries

The policy and criteria of signing and posting these areas are the same as for other National Forest System lands, except as shown below.

Boundaries of experimental forests and research areas may require marking with program area signs. Use Boundary Experimental Area (40-2), or Boundary Research Natural Area (40-4). Refer to chapter 12. Use of these signs should inform the public without detracting from the national forest identification signs. Perimeter signs should be intervisible if possible. Posters to identify other research activity boundaries as well as help control vandalism and trespass are found in chapter 10B, section 10B.4.1.

8B.7 Supplemental Study Areas

The policy and criteria of signing and posting these areas are the same as for other National Forest System lands, except as shown below.

Use program area signs (numbers 40-1 and 40-3, chapter 12) and standard posters (chapter 10B, section 10B.4.1) to identify plots and record data and other information that are of primary interest to research personnel. These areas may be more temporary than experimental forests; however, if a study area develops into an important research demonstration area, sign it accordingly.

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8C.1 General Layout

**Notes for AS, FE, FL, and MFE signs**

Completed signs shall be similar to typical sign layouts shown above, including shape, text, Logotype, line spacing, and letter and word spacing.

The margin shown typically shall be one half the capital letter height of the unit name. Each baseline of text shall be centered between the edges of the sign and shall not extend into the margin. The top line of text may be offset towards the high point of the panel and shall not extend into the margin.

The high point of the sign shall always face the road.

Entrance and Leaving sign points always match each other.

If sign is to be placed on left side of road, order “for left side of road placement.”

Use for administrative sites and boundaries, such as national forests, national grasslands, national recreation areas, and monuments.

General Notes

All text is ASA series Highway Gothic as noted.

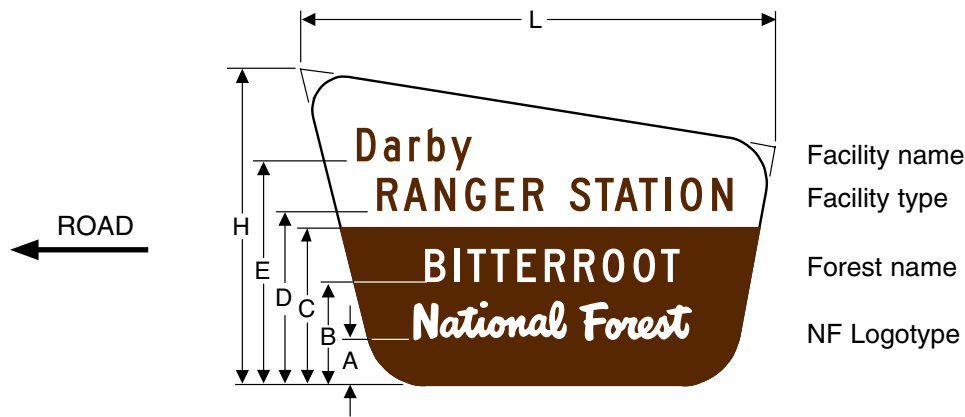
Specify names, site type, and sign number as applicable when ordering.

For manufacturing specifications, see chapters 14 and 14A.

For Logotypes, see chapter 1, section 1.7.3b.

8C.2 Administrative Site Signs

Text layout—Administrative Site Signs (AS)

Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	E	Facility name (title case)	Facility type (upper case)	Forest name (upper case)	NF Logotype
AS-1	54	36	5 ¼	12	18 ¼	20 ½	27	4D	4D	4D	5
AS-2	72	48	7 ¼	16 ¼	24 ½	27 ½	35 ¼	5D	5D	5D	6
AS-3	108	72	10 ½	24 ½	36 ½	40 ½	53 ½	8D	8D	8D	10
AS-4	144	96	11 ½	30	48	53 ½	70	11D	11D	12D	14

Notes

The high point of the sign shall always face the road.

Text – ASA series as noted.

FS shield and USDA credit line are required with this sign.

Painted, Routed Colors

Top – Brown (#20059) legend on yellow-cream (#23695) background.

Bottom – Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

Top – Brown legend on white background.

Bottom – White legend on brown background.

References

For sign guidelines, see chapters 8 and 8A.

For horizontal text placement, see section 8C.1.

For NF Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

For USDA credit line, see section 8C.6.

Sign number	FS Shield	USDA credit line	Road speed (mph)
AS-1	S-10	P-43	0-15
AS-2	S-12	P-52	20-25
AS-3	S-18	P-80	30-45
AS-4	S-24	P-110	50+

Text layout—Forest/District Administrative Site sign (A) for urban location
Layout for one-line facility name



Text layout dimensions for USDA area (*inches*)

Sign number	L	H	A	B	C	D	E	USDA (upper case)	Road speed (mph)
A1	34	18	1 ¾	5 ¾	9 ¾	13 ¾	5 ½	2 ½E	*
A2	54	30	2 ¾	9 ¼	15 ¾	22 ¼	9	5E	0-25
A3	94	46	4	14	24	34	16	8E	30+

Text layout dimensions for facility and unit area (*inches*)

Sign number	F	G	I	J	K	S	Facility type (upper case)	Forest name (upper case)	NF Logotype	FS Shield	Road speed (mph)
A1	2 ¾	6	8 ¾	11	14 ½	2	2E	2D	2	6	*
A2	3 ½	9 ½	13 ½	17	23	4	4D	4D	4	10	0-25
A3	6	13	21	26	35	6	6D	6D	6	15	30+

Notes

Text – ASA series as noted.

* A1 is for building placement only.

Painted, Routed Colors

Left side – Legend brown (#20059) on yellow-cream (#23695) background.

Right side – Legend yellow-cream (#23695) on brown (#20059) background.

Fully Retroreflective Colors

Left side – Legend brown on white background.

Right side – Legend white on brown background.

References

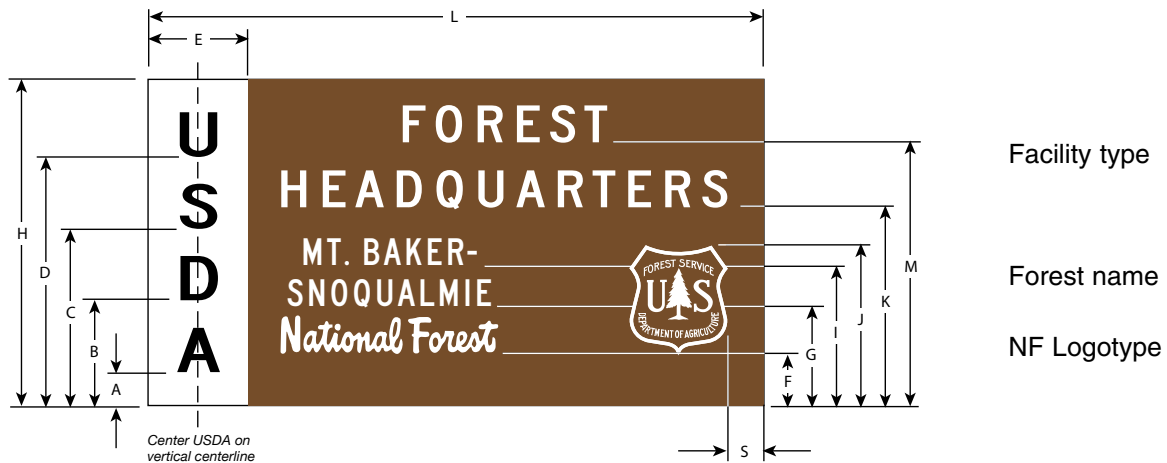
For sign guidelines, see chapters 8 and 8A.

For horizontal text placement, see section 8C.1.

For NF Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

Text layout—Forest/District Administrative Site sign (A) for urban location
Layout for two-line facility name



Text layout dimensions for USDA area (*inches*)

Sign number	L	H	A	B	C	D	E	USDA (upper case)	Road speed (mph)
A4	34	18	1 ¾	5 ¾	9 ¾	13 ¾	5 ½	2 ½E	*
A5	54	30	2 ¾	9 ¼	15 ¾	22 ¼	9	5E	0-25
A6	94	46	4	14	24	34	16	8E	30+

Text layout dimensions for facility and unit area (*inches*)

Sign number	F	G	I	J	K	M	S	Facility type (upper case)	Forest name (upper case)	NF Logotype	FS Shield	Road speed (mph)
A4	2 ¾	5 ½	7 ¾	8 ¾	11	14 ½	2	2E	1 ½D	2	6	*
A5	3 ½	8 ¾	12 ½	13 ½	17	23	4	4D	2 ½D	4	10	0-25
A6	6	13	19	21	26	35	6	6D	4D	6	15	30+

Notes

Text – ASA series as noted.

* A4 is for building placement only.

Painted, Routed Colors

Left side – Legend brown (#20059) on yellow-cream (#23695) background.

Right side – Legend yellow-cream (#23695) on brown (#20059) background.

Fully Retroreflective Colors

Left side – Legend brown on white background.

Right side – Legend white on brown background.

References

For sign guidelines, see chapters 8 and 8A.

For horizontal text placement, see section 8C.1.

For NF Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

8C.3 National Forest Boundary Signs

Text layout–National Forest Boundary Entrance sign (FE)Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	Forest name (upper case)	NF Logotype	FS Shield	USDA credit line	Road speed (mph)
FE-1	54	36	5	13 ¼	22	5D	6	S-10	P-43	0-15
FE-2	72	48	7 ½	18 ½	30	6D	8	S-12	P-52	20-25
FE-3	108	72	9 ¼	26 ½	44	10D	12	S-18	P-80	30-45
FE-4	144	96	11	34	59	12D	18	S-24	P-110	50+

Notes

Follow text layout on page 8C-14 for two-line unit names.

The high point of the sign shall always face the road.

Text – ASA series as noted.

FS Shield and USDA credit line are required with this sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NF Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

For USDA credit line, see page 8C.6.

Text layout—National Forest Boundary Leaving sign (FL)**Text layout dimensions (inches)**

Sign number	L	H	A	B	C	D	Forest name (upper case)	NF Logotype	Leaving (title case)	FS Shield	USDA credit line	Road speed (mph)
FL-1	54	36	3 ¾	11 ¾	20 ½	27	4D	6	3D	S-10	P-43	0-15
FL-2	72	48	5 ½	16	26	36	6F	8	5D	S-12	P-52	20-25
FL-3	108	72	7 ½	23	38 ½	54	10D	12	7D	S-18	P-80	30-45
FL-4	144	96	9	32	55	74	12F	18	10D	S-24	P-110	50+

Notes

Follow text layout on page 8C-16 for two-line unit names.

The high point of the sign shall always face the road.

Text—ASA series as noted.

FS Shield and USDA credit line are required with this sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

For sign guidelines, see chapters 8 and 8B.

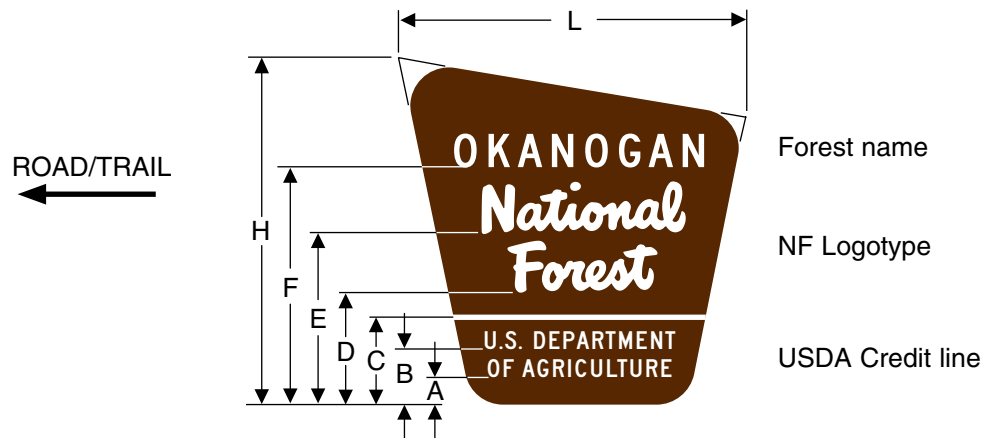
For horizontal text placement, see section 8C.1.

For NF Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

For USDA credit line, see page 8C.6.

8C.4 Minor Forest Boundary Signs

Text layout—Minor National Forest Boundary Entrance sign (MFE)Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	E	F	Forest name (upper case)	NF Logotype	USDA credit line (upper case)	FS shield
MFE-1 (Trails)	18	18	1 ½	3	4 ¾	6	9	12 ½	2D	2 ½	7/8	*
MFE-2 (Roads)	27	27	2 ¼	4 ½	7	9	14	19	2 ½D	4	1 ¼D	*

Notes

The high point of the sign shall always face the road.

Text – ASA series as noted.

FS Shield is required with this sign.

* Mount shield on post below sign. Minimum 4-inch size recommended.

On single post installation, decals may be used for the FS shield.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

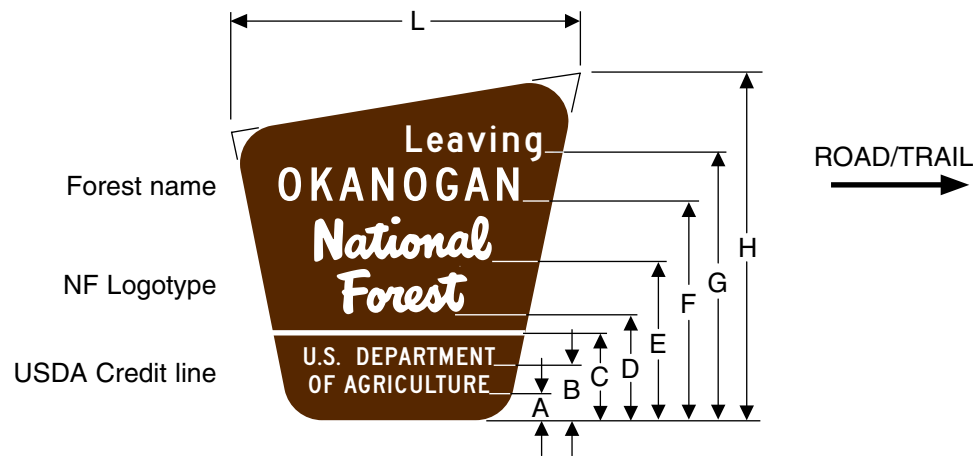
References

For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NF Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

Text layout—Minor National Forest Boundary Leaving sign (MFL)Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	E	F	G	Leaving (title case)	Forest name (upper case)	NF logotype	USDA Credit line (upper case)	FS shield
MFL-1 (Trails)	18	18	1 ½	3	4 ¾	5 ¾	8 ¾	11 ⅝	14 ½	1 ½C	2D	2 ½	⅞D	*
MFL-2 (Roads)	27	27	2 ¼	4 ½	7	8 ½	13	17 ½	21 ½	2C	2 ½D	3 ½	1 ¼D	*

Notes

The high point of the sign shall always face the road or trail.

Text – ASA series as noted.

FS shield is required with this sign.

* Mount shield on post below sign. Minimum 4-inch size recommended.

On single post installation, decals may be used for the FS shield.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

For sign guidelines, see chapters 8 and 8B.

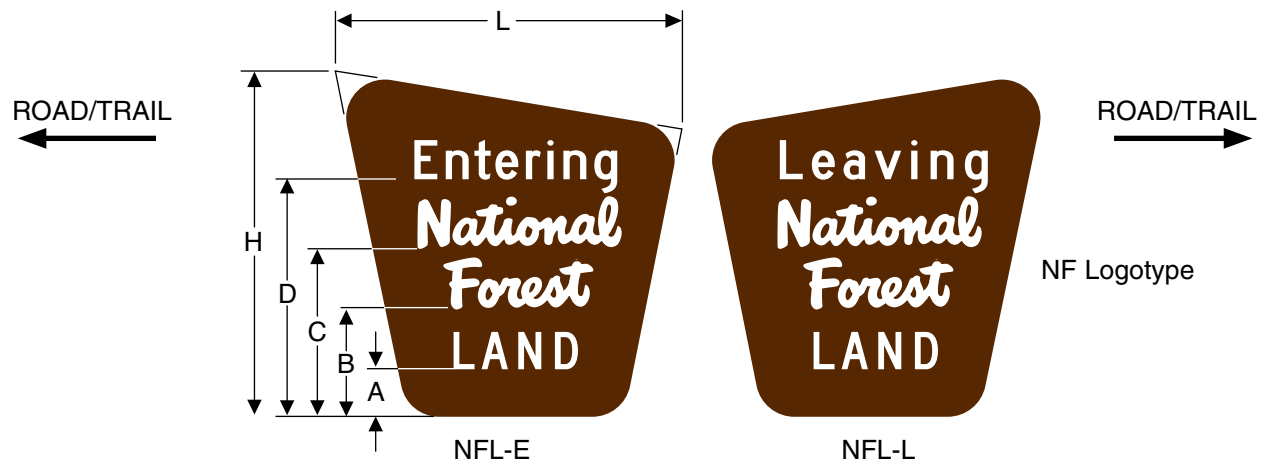
For horizontal text placement, see section 8C.1.

For NF Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

8C.5 National Forest Land Signs

Text layout—National Forest Land—Entering/Leaving sign (NFL-E and NFL-L)



Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	Entering/Leaving (title case)	NF Logotype	LAND (upper case)
NFL-E-1, NFL-L-1 (trails)	18	18	2 ½	5 ¾	8 ¾	12 ¼	2D	2 ½	2D
NFL-E-2, NFL-L-2 (roads)	27	27	3 ¾	8 ¾	13 ½	18 ⅞	3D	4	3D

Notes

The high point of the sign shall always face the road or trail.

Text – ASA series as noted.

FS shield and USDA credit line are not required with this sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

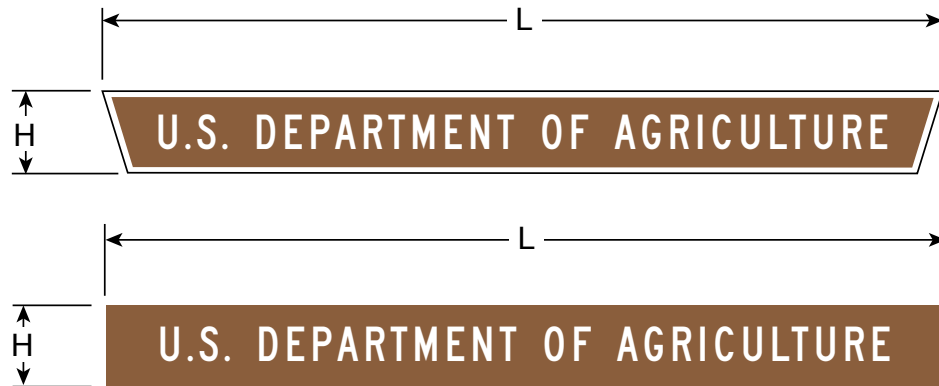
References

For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NF Logotype, see chapter 1, section 1.7.3b.

8C.6 USDA Credit Line

Text layout—USDA Credit Line (P)Text layout dimensions (*inches*)

Sign number	L	H	Text (upper case)	Border
P-37	37	3 ½	1 ½C	¼
P-43	43	5 ½	2C	⅜
P-52	52	5 ½	2C	⅜
P-68	68	6 ½	3C	½
P-80	80	6 ½	3D	½
P-110	110	7 ½	4D	⅝

Notes

Center text on panel.

Text – ASA series as noted.

Border is optional.

Color should match colors on FS shield and parent sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

For sign guidelines, see chapter 1, section 1.7.3a and chapters 8A and 8B.

For Wilderness/Primitive area USDA credit line, see section 8C.12.

For NRA USDA credit line, see section 8C.9, page 8C-20.

8C.7 Forest Service Shield

Text layout—Forest Service Shield (S)Dimensions (*inches*)

Sign number	H
S-8	8
S-10	10
S-12	12
S-15	15
S-18	18
S-24	24
S-28	28
S-32	32

Notes

Outer line depicts edge of shield. No outside border.

Also available in decals sizes 2, 2½, 3, 4, 5, 6, and 8 inches.

Color should match USDA credit line and parent sign.

Use colors to match the approved parent sign when different from yellow-cream and brown. For example, use black and white when used for regulatory signs.

For FS shield artwork use the image shown above.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend and border on brown background.

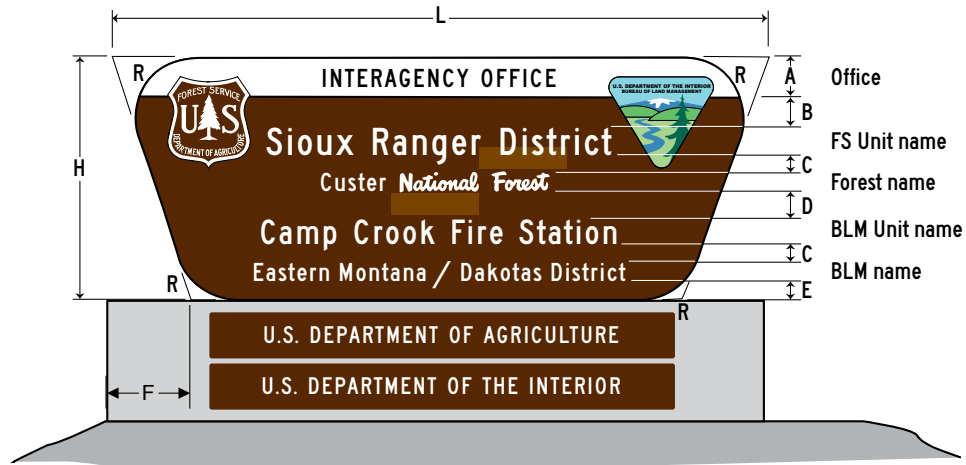
References

For wilderness shield, see page 8C-22.

For FS shield guidelines, see chapter 1, section 1.7.3a.

8C.8 BLM/FS Interagency Office Signs

Text layout—BLM/FS Interagency office sign (BLM/FS)



Text layout dimensions (inches)

Sign number	L	H	A	B	C	D	E	F	R	Interagency Office text (upper case)	FS and BLM unit name (title case)	Forest and BLM name (title case)
BLM/FS-1	72	27	5	2	2	2 5/8	3	9	7	2C	3C	2C
BLM/FS-2	96	36	7	2 1/2	2 1/2	3 1/2	3 3/4	12	7	3C	4D	3C
BLM/FS-3	120	45	8	3 3/8	2	4 3/8	4 3/4	15	7	4C	5D	4C
BLM/FS-4	144	54	10	4	3 1/4	5 1/4	5 3/4	18	7	5D	6D	5D

Notes

Text is ASA series as noted.

Center names and BLM modified triangle emblem on the vertical centerline of the sign and center "INTERAGENCY OFFICE" on the horizontal and vertical centerline of the white panel.

FS shields and USDA/USDI credit lines are required with this sign.

Place FS shield and BLM emblem in the top right and left corners, but do not extend into margins.

Painted, Routed Colors

Bottom—Yellow-cream (#23695) legend on brown (#20059) background.

Top—Brown (#20059) legend on yellow-cream (#23695) background.

Fully Retroreflective Colors

Bottom—White legend on brown background.

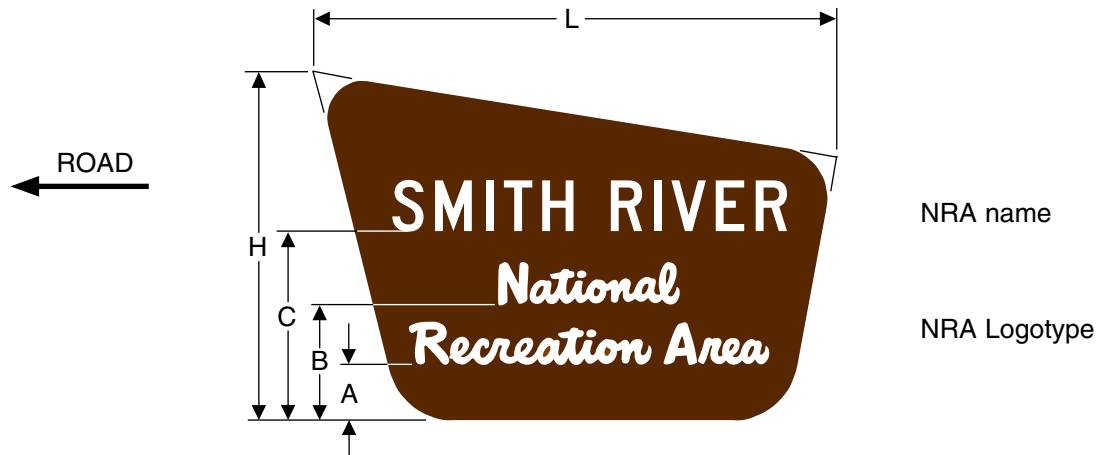
Top—Brown legend on white background.

Sign number	FS Shield and BLM Emblem	USDA and USDI credit line	Road speed (mph)
BLM/FS-1	10	P-43	0-15
BLM/FS-2	14	P-52	20-25
BLM/FS-3	16	P-80	30-45
BLM/FS-4	20	P-110	50+

References

For sign guidelines, see chapters 8 and 8A.
 For horizontal text placement, see section 8C.1.
 For NF Logotype, see chapter 1, section 1.7.3b.
 For FS shield, see section 8C.7.
 For USDA credit line, see section 8C.6.
 For BLM modified triangle emblem, contact the BLM National Sign Center.

8C.9 National Recreation Area Signs

Text layout–National Recreation Area Entrance sign (NRA-E), One-line**Text layout dimensions (inches)**

Sign number	L	H	A	B	C	NRA name (upper case)	NRA Logotype	FS shield	NRA,USDA credit line #2	Road speed (mph)
NRA-E-1	54	36	5	12	19 ¾	5D	4 ½	S-10	NRA-P10	0-15
NRA-E-2	72	48	6	15 ½	26	6D	6	S-12	NRA-P10	20-25
NRA-E-3	108	72	10	23 ¾	39 ½	10D	10	S-18	NRA-P12	30-45
NRA-E-4	144	96	12	31	52	12D	12	S-24	NRA-P12	50+

Notes

The high point of the sign shall always face the road.

Text – ASA series as noted.

Yellow-cream and white colors may be changed to colors fitting the character of the area when approved by the regional forester.

FS shield and NRA USDA credit line are required with this sign.

Color of the NRA, USDA credit line #2 and FS shield must match the color of the site identification sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

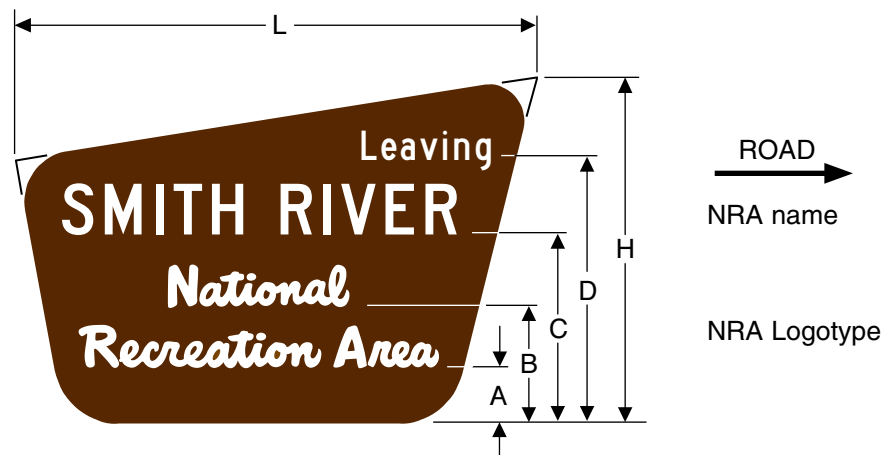
For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NRA Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

For NRA, USDA credit line #2, see page 8C-20.

Text layout–National Recreation Area Leaving sign (NRA-L), One-lineText layout dimensions (*inches*) One-line National Recreation Area (back)

Sign number	L	H	A	B	C	D	'Leaving' (title case)	NRA name	NRA Logotype	FS shield	NRA, USDA credit line #2	Road speed (mph)
NRA-L-1	54	36	4	11	18 ¾	26	3D	5D	4 ½	S-10	NRA-P10	0-15
NRA-L-2	72	48	5	14 ½	25	35	5D	6D	6	S-12	NRA-P10	20-25
NRA-L-3	108	72	8	21 ¾	37 ½	53	7D	10D	10	S-18	NRA-P12	30-45
NRA-L-4	144	96	10	29	50	73	10D	12D	12	S-24	NRA-P12	50+

Notes

The high point of the sign shall always face the road.

Text – ASA series as noted.

Yellow-cream and white colors may be changed to colors fitting the character of the area when approved by the regional forester. Color of the NRA, USDA credit line #2 and FS shield must match color of the site identification sign.

FS shield and NRA, USDA credit line #2 are required with this sign.

t

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NRA Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

For NRA, USDA credit line #2, see page 8C-20.

Text layout—National Recreation Area Entrance sign (NRA-E), Two-lineText layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	NRA name (upper case)	NRA Logotype	FS shield	NRA,USDA credit line #2	Road speed (mph)
NRA-E-5	54	36	3	9 ½	17 ¼	12 ¾	3D	5	S-10	NRA-P10	0-15
NRA-E-6	72	48	4	12	22	28	4D	6	S-12	NRA-P10	20-25
NRA-E-7	108	72	7	19 ½	33	42 ½	7D	8	S-18	NRA-P12	30-45
NRA-E-8	144	96	9	25	43	55	9D	11	S-24	NRA-P12	50+

Notes

The high point of the sign shall always face the road.

Yellow-cream and white colors may be changed to colors fitting the character of the area when approved by the regional forester. Color of the NRA, USDA credit line #2 and FS shield must match color of the site identification sign.

Text – ASA series as noted.

FS shield and NRA, USDA credit line #2 are required with this sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NRA Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

For NRA, USDA credit line #2, see page 8C-20.

Text layout–National Recreation Area Leaving sign (NRA-L), Two-lineText layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	E	Leaving (title case)	NRA name (upper case)	NRA Logotype	FS shield	NRA,USDA credit line #2	Road speed (mph)
NRA-L-5	54	36	3	9 ½	17 ¼	21 ¾	27	2D	3D	5	S-10	NRA-P10	0-15
NRA-L-6	72	48	4	12	22	28	37	3D	4D	6	S-12	NRA-P10	20-25
NRA-L-7	108	72	7	19 ½	33	42 ½	55	4D	7D	8	S-15	NRA-P12	30-45
NRA-L-8	144	96	9	25	43	55	75	7D	9D	11	S-24	NRA-P12	50+

Notes

The high point of the sign shall always face the road.

Yellow-cream and white colors may be changed to colors fitting the character of the area when approved by the regional forester. Color of the NRA, USDA credit line #2 and FS shield must match color of the site identification sign.

Text – ASA series as noted.

FS shield and NRA, USDA credit line #2 are required with this sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

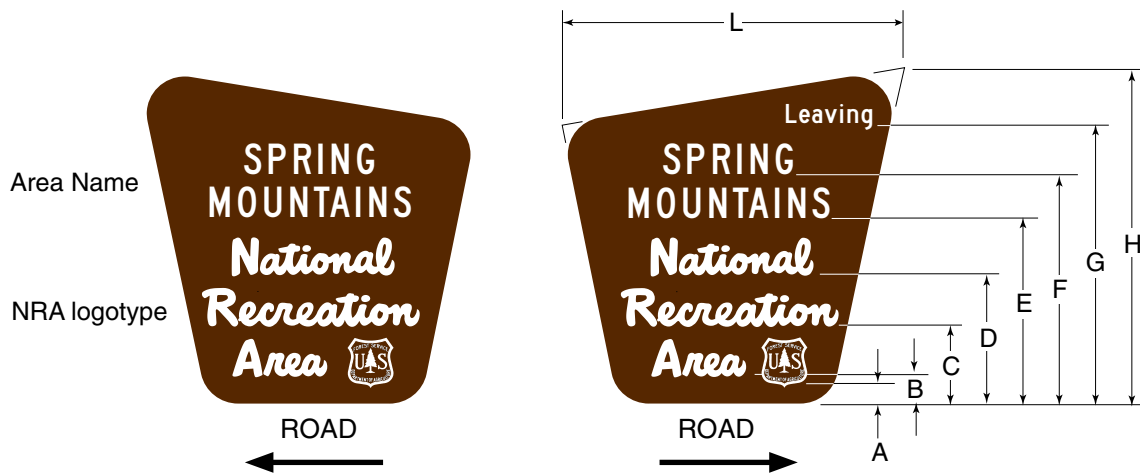
For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NRA Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

For NRA, USDA credit line #2, see page 8C-20.

Text layout—Minor Special Area Entering and Leaving sign (MSA-E and MSA-L)Text layout dimensions (*inches*)

Sign number	L	H	A	B	C	D	E	F	G	Leaving (title case)	Area name	NRA Logotype	FS shield
MSA-E	27	27	1 ½	2 ½	6 ½	10 ½	15	18 ½	—	—	2 ½C	3	4
MSA-L	27	27	1 ½	2 ½	6 ½	10 ½	15	18 ½	22 ½	1 ½	2 ½C	3	4

Notes

Increase Area name letter size for shorter one-line names.

The high point of the sign shall always face the road.

Text-ASA series as noted.

Standard colors may be changed to colors fitting the character of the area when approved by the regional forester.

NRA, USDA credit line #2 is not required with this sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NRA Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

Text layout—National Recreation Area Entering Boundary sign (NRA-BDY)

Text layout dimensions (inches)

Sign number	L	H	A	B	C	D	E	Area name (upper case)	NRA Logotype
NRA-BDY-2	63	48	3	6	16 ½	27	38	6D	8
NRA-BDY-3	78	60	3	7	20	33 ½	48	7D	10
NRA-BDY-4	93	72	4	8	23 ½	39	58 ½	8D	12
NRA-BDY-5	108	84	4 ½	9	27	45	68	9D	14

Notes

Yellow-cream and white colors may be changed to colors fitting the character of the area when approved by the regional forester.
 Color of the NRA, USDA credit line #2 must match color of the site identification sign.
 Text – ASA series as noted.
 NRA, USDA credit line #2 is required with this sign.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

References

For sign guidelines, see chapters 8 and 8B.
 For horizontal text placement, see section 8C.1.
 For NRA Logotype, see chapter 1, section 1.7.3b.
 For FS shield, see section 8C.7.
 For NRA, USDA credit line #2, see page 8C-20.

Sign number	S	FS Shield	NRA, USDA credit line #2	Road speed (mph)
NRA-BDY-2	14	S-10	NRA-P-10	0-15
NRA-BDY-3	17	S-12	NRA-P-12	20-25
NRA-BDY-4	20	S-15	NRA-P-12	30-45
NRA-BDY-5	23	S-18	NRA-P-12	50+

Text layout—National Recreation Area Leaving Boundary sign (NRA-BDY)

Text layout dimensions (inches)

Sign number	L	H	A	B	C	D	E	F	Leaving (title case)	Area name (upper case)	NRA Logotype
NRA-BDY-2L	63	48	3 ½	6	14 ½	23	33	42	4D	6D	6
NRA-BDY-3L	78	60	4	7	18	29	41 ½	52	4D	7D	8
NRA-BDY-4L	93	72	4 ½	8	21 ½	35	50	62	5D	8D	10
NRA-BDY-5L	108	84	5	9	25	41	58 ½	72	6D	9D	12

Notes

Yellow-cream and white colors may be changed to colors fitting the character of the area when approved by the regional forester.

Color of the NRA, USDA credit line #2 must match color of the site identification sign.

Text – ASA series as noted.

NRA, USDA credit line #2 is required with this sign.

Painted, routed colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective vinyl colors

White legend on brown background.

References

For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see section 8C.1.

For NRA Logotype, see chapter 1, section 1.7.3b.

For FS shield, see section 8C.7.

For NRA, USDA credit line #2, see page 8C-20.

Sign number	S	FS Shield	NRA, USDA credit line #2	Road speed (mph)
NRA-BDY-2L	14	S-10	NRA-P-10	0-15
NRA-BDY-3L	17	S-12	NRA-P-12	20-25
NRA-BDY-4L	20	S-15	NRA-P-12	30-45
NRA-BDY-5L	23	S-18	NRA-P-12	50+

Text layout—National Recreation Area – USDA Credit Line #2 (NRA-P)Text layout dimensions (*inches*)

Sign number	L	H	C	D	R	Border	Text (upper case)	Fits panel lengths
NRA-P10	Varies	10	2	6	1 ½	¾	2C	Up to 63
NRA-P12	Varies	12	2	7	1 ½	½	3C	78+

Notes

Center each line of text on vertical centerline.

Text – ASA series as noted.

Yellow-cream and white colors may be changed to colors fitting the character of the area approved by the regional forester. Color of the credit line and shield must match color of the site identification sign.

Actual sign length will be determined by the message.

Painted, Routed Colors

Yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend and border on brown background.

References

For sign guidelines, see chapter 7 and chapter 8.

8C.10 Wilderness/Primitive Area Signs

Text layout—Wilderness/Primitive Area Entrance sign (WPH) (Horizontal)



Text layout dimensions (*inches*)

Sign number	L	H	A	B*	C	D	Wilderness name (upper case)	Wilderness Logotype	Forest name	NF Logotype	FS shield
WPH-1	40	20	2 ½	5 ½	7 ½	12	2 ½D	3	1 ½D	2	WP-S-8
WPH-2	60	30	4 ¼	9 ¼	12 ¼	18 ½	3 ½D	4	2 ¼D	3	WP-S-10

Notes

*To center of separation line, which is ½-inch wide on WPH-1, and ¾-inch wide on WPH-2.
Install high point of sign nearest to trail.
Specify right panel (R) for installation on right side of trail, or left panel (L) for installation on left side of trail.

Text – ASA series as noted.

FS shield is required with this sign.

Colors

Painted, routed unfinished or black finish legend on unfinished or uniform gray transparent stain (matching Federal Standard Color 36357) background.

Unstained natural wood is preferred. Available options include a clear preservative such as a 50-50 mixture of linseed oil and turpentine or a gray stained finish.

References

For sign guidelines, see chapters 8 and 8B.
For horizontal text placement, see page 7B-1.
For NF and Wilderness Logotype, see chapter 1, section 1.7.3b.
For routing details, see chapter 14, section 14.7.
For FS shield, see section 8C.11.
For USDA credit line (optional) use WP-PH, see section 8C.12.

Text layout—Wilderness/Primitive (Vertical) Area Entrance sign (WPV)
 One-line wilderness name

Text layout dimensions (inches)

Sign number	L	H	A	B	C	D*	E	F	Wilderness name (upper case)	Wilderness Logotype	Forest name	NF Logotype	FS shield
WPV-1	13	18	1 ½	3 ½	5 ½	7 ¾	9 ¾	12 ¾	1 ¾D	1 ¾	1 ¼D	1 ¾	WP-S-8
WPV-2	24	36	3	7	11 ¼	15	19 ½	26	3D	3	2D	3	WP-S-10

Notes

*To center of separation line which is ½-inch wide on WPV-1, and ¾-inch wide on WPV-2.

Mount on right side of trail. Reverse shape for mounting on left.

Install point of sign pointing to the trail.

Specify right panel (R) for installation on right side of trail, or left panel (L) for installation on left side of trail.

Text – ASA series as noted.

FS shield is required with this sign.

Colors

Painted, routed unfinished or black finish legend on unfinished or uniform gray transparent stain background (matching Federal Standard Color 36357).

Unstained natural wood is preferred. Available options include a clear preservative such as a 50-50 mixture of linseed oil and turpentine or a gray stained finish.

References

For sign guidelines, see chapters 8 and 8B.

For horizontal text placement, see chapter 7B, section 7B.1.

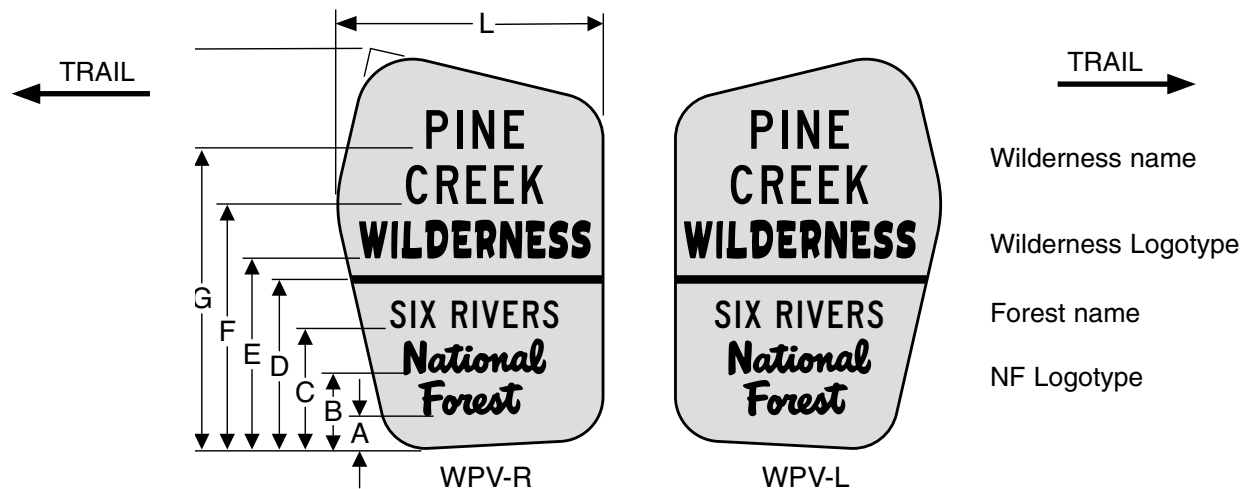
For NF and Wilderness Logotype, see chapter 1, section 1.7.3b.

For routing details, see chapter 14, section 14.7.

For FS shield, see section 8C.11.

For USDA credit line (optional) use WP-PV, see section 8C.12.

Text layout—Wilderness/Primitive (Vertical) Area Entrance sign (WPV)
Two-line wilderness name



Text layout dimensions (inches)

Sign number	L	H	A	B	C	D*	E	F	G	Wilderness name (upper case)	Wilderness Logotype	Forest name (upper case)	NF Logotype	FS shield
WPV-1	13	18	1 ½	3 ½	5 ½	7 ¾	8 ¾	11 ¼	13 ¾	1 ¾D	1 ¾	1 ¼D	1 ¾	WP-S-8
WPV-2	24	36	3	7	11 ¼	15	17 ½	23 ½	28	3D	3	2D	3	WP-S-10

Notes

*To center of separation line which is ½-inch wide on WPV-1, and ¾-inch wide on WPV-2.
Install point of sign pointing to the trail.
Specify right panel (R) for installation on right side of trail, or left panel (L) for installation on left side of trail.
Text – ASA series as noted.
FS shield is required with this sign.

Colors

Painted, routed unfinished or black finish legend on unfinished or uniform gray transparent stain (matching Federal Standard Color 36357) background.
Unstained natural wood is preferred. Available options include a clear preservative such as a 50-50 mixture of linseed oil and turpentine or a gray stained finish.

References

For sign guidelines, see chapter 8.
For horizontal text placement, see chapter 7B, section 7B.1.
For NF and Wilderness logo, see chapter 1, section 1.7.3b.
For routing details, see chapter 14, section 14.7.
For FS shield, see section 8C.11.
For USDA credit line (optional) use WP-PV, see section 8C.12.

8C.11 Wilderness/Primitive Area Shield

Text layout—Wilderness/Primitive Area shield (WP-S)**Text layout dimensions (inches)**

Sign number	To be used with	Shield
WP-S-8	WPV-1 and 2	8
WP-S-10	WPH-1 and 2	10

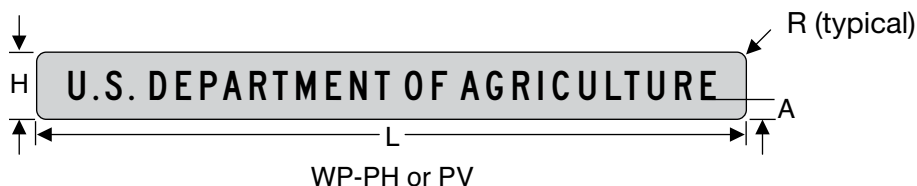
Note

For sign guidelines, see chapter 1, section 1.7.3a and chapter 8B.
 Use of shield is required at wilderness and primitive area entrance sign locations.
 For FS shield artwork, use the image shown in section 8C.7.

Colors

Painted, routed unfinished or black finish legend on unfinished or uniform gray transparent stain background (matching Federal Standard Color 36357).
 Unstained natural wood is preferred. Available options include a clear preservative such as a 50-50 mixture of linseed oil and turpentine or a gray stained finish.

8C.12 Wilderness/Primitive Area Credit Line

Text layout—Wilderness/Primitive Area USDA credit line (WP-PV and WP-PH)**Notes**

Use of USDA credit line is optional at wilderness and primitive area boundary sign locations.
 Text – ASA series as noted.

Colors

Painted, routed unfinished or black finish legend on unfinished or uniform gray transparent stain background (matching Federal Standard Color 36357).
 Unstained natural wood is preferred. Available options include a clear preservative such as a 50-50 mixture of linseed oil and turpentine or a gray stained finish.

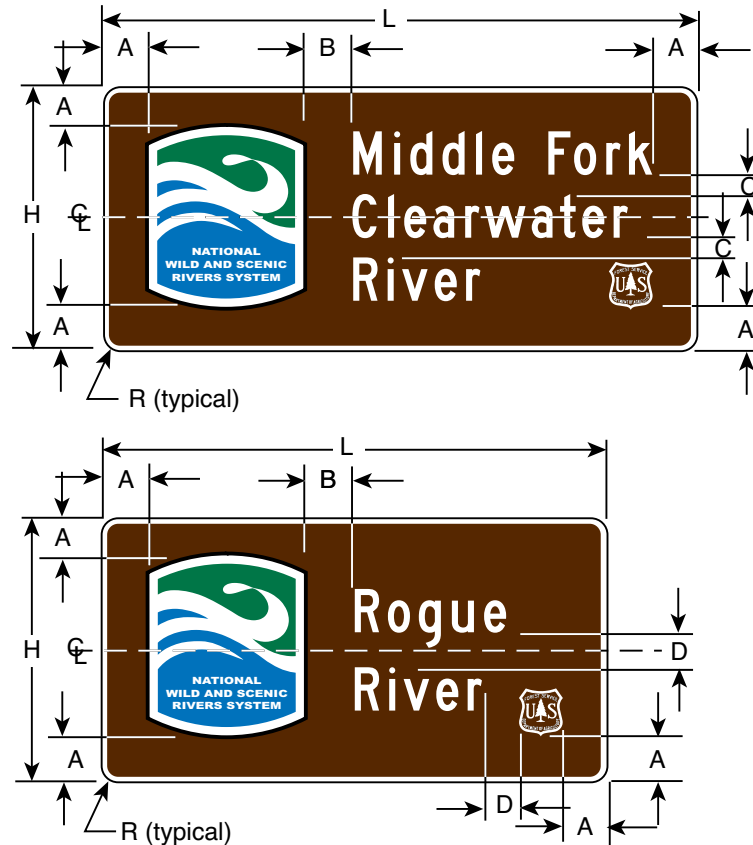
Text layout dimensions (inches)

Sign number	L	H	A	Text (uppercase)	R
WP-PV	22	3	1 1/8	3/4D	1/8 to 3/16
WP-PH	42	3 1/2	1	1 1/2D	1/8 to 3/16

References

For sign guidelines, see chapter 1, section 1.7.3a and chapter 8B.

8C.13 National Wild and Scenic River Signs

Text layout—National Wild and Scenic River sign (WSR)**Dimensions (inches)**

Sign number	L	H	A	B	C	** D	R	Border	River name (title case)	WSR Logo	FS Shield	Road speed (mph)
WSR-1	*	18	3	3	1 ½	2 ¼	1 ½	½	3C	WSR-L1	3	0-15
WSR-2	*	24	3	3	2	3	1 ½	⅝	4C	WSR-L2	5	20-25
WSR-3	*	30	3	3 ¾	3	3 ¾	1 ½	¾	5D	WSR-L3	6	30-45
WSR-4	*	36	3	4 ½	4	4 ½	1 ½	1	6D	WSR-L4	8	50+

Notes

*Variable length—determined by the river name.

**For 2-line signs only.

Center text on horizontal centerline.

Text—ASA series as noted.

Colors

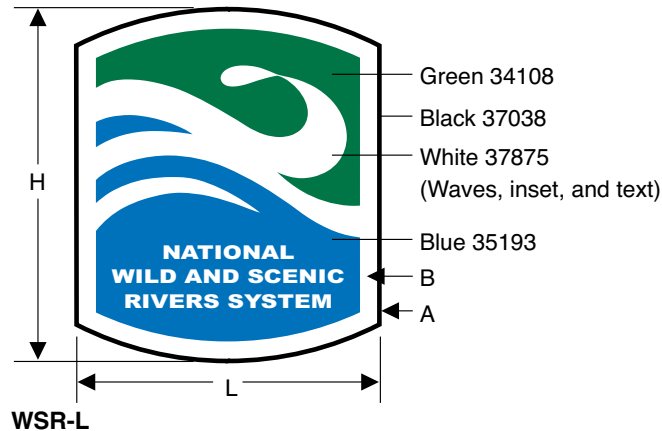
Fully retroreflective white legend, border, and FS shield on brown background.

See section 8C.14 for National Wild and Scenic River logo specifications and colors.

References

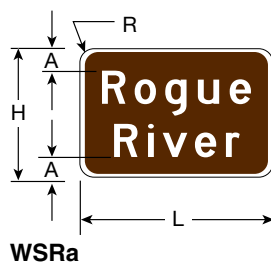
For sign guidelines, see chapter 8B, section 8B.5.

8C.14 National Wild and Scenic River Logo

Text layout—National Wild and Scenic River logo (WSR-L)

Dimensions (inches)

Sign number	L	H	Black border A	White inset B	Text (upper case)	* Road speed (mph)
WSR-L1	10 ¼	12	⅛	½	¾B	NA
WSR-L2	15 ½	18	¼	¾	⅝B	0-15
WSR-L3	20 ¾	24	⅜	1	⅞B	20-25
WSR-L4	25 ¾	30	½	1 ¼	1B	30-45
WSR-L5	31	36	⅝	1 ½	1 ¼B	50+



Dimensions (inches)

Sign number	L	H	A	Border	R	Text (title case)	Road speed (mph)
WSRa-1	18	12	2	⅝	1 ½	3C	0-15
WSRa-2	24	16	2 ½	⅝	1 ⅞	4C	20-25
WSRa-3	30	20	3	¾	2 ¼	5D	30-45
WSRa-4	36	22	3 ½	1	3	6D	50+

Notes

Text—ASA series as noted.

WSRa length and height may be adjusted to accommodate longer names.

*Road speed for stand alone WSR logo signs only.

Colors

WSR-L—Fully retroreflective colors are Federal Standard 595B.

WSAa—Fully retroreflective white text and border on brown background.

ReferencesFor sign guidelines, see chapter 8B, section 8B.5. WSR logo artwork may be downloaded from <http://www.rivers.gov/publications.html#reports>

8C.15 Job Corps Site Identification Sign

Text layout—Job Corps Site Identification sign (JC-1)



Text layout dimensions (*inches*)

Sign number	H	L	C	D	E	F	G	M	J	K	N*	FS Shield	Job Corp symbol
JC-1	60	80	6	6D	2	5	4	5D	3	4	2 ½C	S-12	12

Notes

Text—ASA series as noted.

Contact the Washington office for the Job Corps symbol specifics and Logotype.

Colors

Painted, routed yellow-cream (#23695) legend on brown (#20059) background.

Fully Retroreflective Colors

White legend on brown background.

8C.16 YCC Site Identification Sign

Text layout—YCC Site Identification sign (JC-1)



Text layout dimensions (inches)

Sign number	L	H	C	D	E	F	G	P	J	K	Q	M	N	T	S
YCC-1	48	32	1	18	27	5	3	2	1 ½	2	1	1	2	1	½
YCC-2	72	48	1 ½	27	32 ½	7	5	3	2	2	1 ½	1	2 ¼	1 ½	¾

Notes

Specify camp name when ordering.
Contact the Washington office for the YCC Emblem specifics.

Radius dimensions (inches)

Sign number	R1	R2	R3	R4
YCC-1	6	7	2	1
YCC-2	8 ½	11	3	1 ½

8C.17 YCC Emblem

Text layout–YCC Emblem

**Colors**

Background – white No. 17875

Blue – No. 15080

Green – No. 14187

Colors are Federal Standard 595.



Chapter 9 Cooperator Signs and Posters

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Chapter 9

Cooperator Signs and Posters

9.1 Introduction

Federal, State, municipal, or other public agencies and private, religious, and civic entities, and special use authorization holders often cooperate in activities or manage programs and facilities with the Forest Service.

The Forest Service may enter into agreements with these entities to erect and maintain appropriate cooperator signs and posters to acknowledge the cooperator's participation with the Forest Service.

9.1.1 Agreements

Signing activities with cooperators shall be documented. Documentation may be by an Interagency Agreement, Memorandum of Understanding (MOU), Challenge Cost Share Agreement, or Special Use Authorization. Documentation should include the planning, design, manufacture, installation, and maintenance requirements and responsibilities. Review FSM 1530 and FSM 2300 and any regional supplements for existing agreements. Develop supplemental or new agreements as appropriate.

9.1.2 Design and Location

Review designs and working drawings of cooperator signs and posters with the cooperating entity to ensure that the cooperator's interests are considered. Signs should be in accordance with a unit sign plan. Refer to chapter 2.

Cooperator signs should be appropriate to the environment and compatible with existing signing.

The size of the sign should be appropriate for the project or activity considering viewing distance, site importance, location, and other local factors.

Signs should include appropriate identification of all cooperators. The Forest Service shield shall be used for Forest Service identification. Use cooperators' logos as their identification symbol. The size of a cooperators' logo shall not exceed the size of the Forest Service shield.

Locate the sign to be consistent with the placement criteria listed in the chapter that relates to the specific type of sign to be erected.

Figures 9-1 and 9-2 show several examples of cooperator signs and posters.

For signs acknowledging cooperative work on roads, refer to chapter 3C, section 3C.11.4 for information on Acknowledgement Signs and Adopt-A-Road signs. For signs acknowledging cooperative work on trails, refer to chapter 5 for Adopt-a-Trail signs. For signs acknowledging concessionaire operations of a Forest Service developed recreation site, refer to chapter 7, section 7.1.

The Forest Service shield shall be used for Forest Service identification. The size of a cooperators' logo shall not exceed the size of the Forest Service shield.



Figure 9-1—Examples of Cooperator signs.

Chapter 9 Cooperator Signs and Posters



Figure 9-2—Examples of Cooperator posters.

Chapter 10 Visitor Information Signing

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Chapter 10 Visitor Information Signing

10.1 Introduction

Signs, especially in recreation areas, are the face of the Forest Service.

Reading a sign is the most common one-on-one interaction that occurs between the Forest Service and the visitor. In many ways, signs, especially in recreation areas, are the face of the Forest Service. Signing serves to orient, direct, educate, and answer questions, and can enhance or diminish the quality of a visitor's experience. Signing affords the Forest Service the opportunity to engage and communicate with the public in a very cost-effective manner.

Appropriate sign planning includes both information delivery requirements, such as what information needs to be delivered to whom, in what format (language, visual, or both), and where; and the physical setting before decisions about sign type, design, materials, quantity, quality, and placement are made. Legally, signs must also comply with the applicable accessibility guidelines. See the "Accessibility Guidebook on Outdoor Recreation and Trails."

Remember that a sign is a fabricated, necessary element placed into a natural environment. For this reason, base all sign planning decisions on good site planning and regard for the area's setting and character. For overall guidelines, consult the The "Built Environment Image Guide for the National Forests and Grasslands." Refer to chapter 2 for information on developing sign plans.

Interpretive, visitor information, and fire management signs and posters communicate specific educational, behavioral, emotional, and managerial objectives and messages to visitors. These signs and posters vary in content and design since they must relate to resource and management objectives and goals of the site.

Use resource inventory and audience research to help determine the key messages and how to communicate them effectively. Employ these fundamental principles to reach the intended audience:

- Provoke the attention or curiosity of the visitor.
- Relate the message to the everyday life of the visitor.
- Present information and interpretation thematically.
- Show the connection between the site's tangible resources and the intangible concepts these resources illustrate and embody.
- Define what you want the visitor to know, understand, think about, and remember after leaving the area.
- Answer questions visitors may have about the site, area, or management practice.
- Encourage resource understanding, respect, awareness, and ethical behavior.
- Aid in defining the site as primitive, rustic, or urban.

Chapter 10A provides information on interpretative signs. Chapter 10B provides information on visitor information signing, such as information boards, posters, fees, and registration. Chapter 10C contains information on specific signs for notifying the public about general wildfire danger.

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10A.1 Introduction

Interpretive signs are the single most popular form of interpretation in the Forest Service, and are commonly used on self-guided trails, scenic byways, and other points of interest, such as overlooks and resource management areas. See figures 10A-1 and 10A-2.



Figure 10A-1—Low profile sign at a national grassland. Middle Spring, Cimarron National Grassland. Great Plains BEIG Province.



Figure 10A-2—Digital laminate signs on a native stone base. Deschutes National Forest. North Pacific BEIG Province.

Interpretation is purposeful, and at the same time enjoyable, relevant, organized, and thematic (Ham 1992). Signs can inform, guide, and act as connectors, thereby giving meaning to the visitor's experience by creating an impression and setting a tone. Interpretive signs can encourage visitors to discover the resource or site by engaging the five senses—sight, smell, taste, hearing, and touch. Interpretive signs convey information about local cultural or natural resources by telling a story that holds emotional and intellectual meaning and interest for visitors. See figure 10A-3.



Figure 10A-3—Interpretation at the Camp Wildcat Civil War Battlefield. Daniel Boone National Forest. Southeast Mountain BEIG Province.

Effective interpretation inspires visitors to: (1) respect others and the natural landscape, (2) learn more about resource issues and become informed, participatory stewards, and (3) reduce their environmental footprint and implement sustainable operations at home and in their communities. Interpretation can save lives, reduce vandalism, decrease wildfires, protect wildlife and cultural artifacts, and enable visitors to become more appreciative of an area's natural and cultural resources. See figure 10A-4.



Figure 10A-4—The title “Wetland or Wasteland” and the frog drawing draw the reader in and begin to tell a story. Taylor Creek Visitor Center, Lake Tahoe Basin Management Unit. North Pacific BEIG Province.

10A.2 Guidelines

Interpretive signs are part of the Forest Service interpretive services program. Signs engage the visitor, appeal to different learning styles, and are accessible. Strive to use the best available science and current professional industry standards. Cultivate partnerships with interpretive associations and other community partners to assist with the development of interpretive and education materials, to build community support and engagement, and to reach under-represented populations.

Oversight and coordination of interpretive services takes place at three organizational levels within the agency. First, the interpretive services program manager, recreation and heritage resources, Washington office, sets national policy and guidance. Second, the interpretive specialist in each regional office serves as the regional liaison between the Washington office and the field units. Note that the regional interpretive specialist is the technical expert on matters pertaining to planning, designing, and implementing interpretive media products (signs being one form of media) and presentations. Topics include natural and cultural resources and land management issues. Third, the interpretive specialists located on some forests and districts develop local themes and designs.

Many, if not most, interpretive signs are approved by the district ranger or forest supervisor. Depending on the cost, plans for scenic byways and interpretive trails may require approval from the region and/or the Washington office. Dollar limits for the regional and Washington office approval processes are as follows:

- a. Permanent and temporary exhibits costing \$100,000 or more—factoring in inflationary costs—are reviewed by regional office interpretive services program manager or designee. The regional forester submits proposals for these permanent and temporary exhibits to the Deputy Chief, National Forest System for Washington office written approval through the Washington office interpretive services program manager.
- b. Permanent and temporary exhibits costing from \$25,000 to \$99,999 are reviewed and approved by the regional office recreation director, in consultation with the regional office interpretive services program manager or program designee.
- c. Permanent and temporary exhibits costing less than \$25,000 are approved by the forest supervisor in consultation with the regional office interpretive services program manager, forest interpretive specialist or program designee.

Additional information pertaining to interpretive services is contained in FSM 2300, chapter 2390, section 2390.1.

10A.2.1 General Sign Guidelines

Best practices for interpretive signing call for each sign to be based on one central theme (a message expressed in a complete sentence) that links the site's tangible resources to intangible, universal concepts. See figure 10A-5.



Figure 10A-5—This sign's theme is the origin of the area's water. Deschutes National Forest. North Pacific BEIG Province.

The recreation experience objectives for a site influence decisions on where to provide interpretive signs. For example, if a dimension of the experience is unassisted discovery of the natural history of an area, interpretation may be appropriate at the trailhead but not along the trail.

Do not use interpretive signs in designated wilderness.

Use the following to develop interpretive signs:

- Accurate information based on a solid theme and central message.
- Detailed information. Refine the level of detail until it has relevance to your audience.
- Stories or descriptive events to teach concepts. Stories are more effective than simply identifying and providing straight facts. Don't tell everything. Leave something for the visitors to discover. Avoid "encyclopedias on the walls." See figures 10A-6 and 10A-7.



Figure 10A-6—The theme or story is life after fire. Digital laminate sign made of phenolic resin. Payette National Forest.



Figure 10A-7—Perhaps there is one too many themes in this interpretive sign. It includes two themes or stories. The first story is “Case Number 1: The Nation’s First Timber Sale.” The second story is “Which Tree Is Older?” Black Hills National Forest. Rocky Mountain BEIG Province.

- The 3-30-3 rule. A person should be able to skim the bold titles on the sign and understand the key message in 3 seconds. He/she should be able to read the mid-sized text and get some details in 30 seconds, and be able to read the entire text and look at the graphics in 3 minutes. The overall appearance of the sign, as a result of the combination of graphics, colors, layout, and titles, contributes to a visitor’s decision to read the sign.
- Graphics, poetry, or other art forms to illustrate the central theme. A general rule is to make 1/3 graphics, 1/3 text, and 1/3 empty space. See figure 10A-8.



Figure 10A-8—Display of 3-30-3 rule and the balance of text and graphics. Headings are easily read. Natural Arch Scenic Area, Daniel Boone National Forest.

10A.2.2 Interpretive and Education Plan

An interpretive and education plan defines goals and interpretive media developed to convey core thematic messages of a Forest Service unit, area, or site that meet diverse audience needs. It focuses on the interpretive and educational components. It guides the development, production, and delivery of interpretive and educational products including the media, programs, and services. A plan may span any reasonable geographic area from a recreation complex to an entire forest or grassland, and includes architectural and site information. It helps guide the process and ensures complementary themes and messages for telling a story or describing the special qualities of the national forest or grassland. The plan also ensures that facilities and programming are accessible and free of barriers for both physical passage and communication, i.e., visual, hearing, and language. See figure 10A-9.



Figure 10A-9—Interpretive sign regarding porcupines on an accessible trail. San Juan National Forest. Southwest BEIG Province.

Read the forest or grassland's interpretive and education plan. Extract mission, purpose, and significance statements, as well as primary and secondary interpretive themes from a variety of planning documents and tools to ensure consistency of priorities, messages, and measureable outcomes. Use the following reference documents:

- "Forest Land and Resource Management Plan."
- "Accessibility Guidebook on Outdoor Recreation and Trails." See section 10A.3.1 Special Considerations
- "Scenery Management System" (SMS).
- "Recreation Opportunity Spectrum" (ROS).
- "Built Environment Image Guide" (BEIG).
- Specific forest or regional design guidelines, and/or any previous work that has established design themes.

Find out if the forest or grassland has a current (within 2 to 3 years) interpretive and education plan. If the plan is more than 5 years old, write a new plan before proceeding with a sign plan or creating any new interpretive signs.

10A.2.3 Exhibit Plan

Create exhibit plans specifically for scenic byways and interpretive trails. Use an exhibit plan to give precise direction to a contractor or fabricator for exhibit completion. Wayside exhibits fall within the scope of an exhibit plan. The plan includes goals and objectives for each exhibit and specific text outlines, recommendations for graphics and images, and cost estimates. Depending on the scope and complexity of the plan, it may include draft text and conceptual designs. Exhibit plans are tiered to a larger interpretive and education plan to ensure consistency of themes, objectives, and design guidelines.

Since wayside exhibits are located outdoors and close to the features they interpret, visitors receive information at the times and places they want information. Include explanatory signage near a point of interest, often along a trail, walk, parking area, or road. Do not include objects on wayside exhibits.

The next sections explain the four steps for producing interpretive signs. These steps include:

1. Planning.
2. Designing.
3. Fabricating.
4. Installing.

Whether the project is small or large, the process is the same. All steps are important and closely related; do not begin one step without full consideration of the others. In a large project, each step is a major phase within the process.

10A.3 Planning

Interpretive planning for signs occurs prior to exhibit design and addresses the theme, message, and goals of any interpretive sign. Interpretive sign planning is a problem-solving, decisionmaking process that blends management needs and site considerations with resource stories to enhance the visitors' experiences. It is an exacting process that requires an interdisciplinary approach. It also includes a site plan for the panel location.

Appoint a project leader early in the process. The project leader assembles a sign development team that includes subject matter experts, such as biologists or archeologists, and, if the leader is not one, an interpretive specialist, landscape architect, and recreation planner. The team evaluates the planning and designing processes at several stages. This is essential to avoid pitfalls.

Before designing the sign always determine the how, who, where, and when for a site. Do a brief analysis, and answer these questions:

- Is a sign the best medium to convey the interpretive message?
- Will there be enough visitors to make the sign worthwhile? (If the site is very sensitive, having even a few readers is valuable.)
- What is the expectation of the visitors? Why are they there? Has an audience analysis been done?

- Does this make one too many signs for the area?
- Who will maintain the sign? Are there funds or sources to maintain it?

Decide on the location of the interpretive sign during the planning stage of the project. Site interpretive signs in close proximity to the area or feature being interpreted so visitors can readily view and contemplate the importance of the natural or cultural resources or management practices being highlighted. See figure 10A-10.



Figure 10A-10—This low profile sign looks out over a meadow in a moose habitat; it displays a moose foot, and the sign frame is similar in color to the tree bark in the area. Gallatin National Forest. Rocky Mountain BEIG Province.

Interpretive sign development requires expertise in many areas including: site specific subject matter, interpretive message and text development, and graphic layout and design. Most units will need to contract for at least some of this expertise and/or service. Consider contracting with an interpretive sign design firm, an enterprise unit, or a regional design center, such as the Rocky Mountain Region (R2) Center for Design and Interpretation. When under contract, it remains the responsibility of the unit staff to oversee the planning and designing processes, as well as to provide the necessary reviews and approvals for the project to move forward.

Three critical components create an intellectual and emotional experience. They are:

1. **Message:** An interpretive theme statement forms the message. This is a single, succinct statement that summarizes, articulates, and distills what is significant about the resource and/or site. This statement also links the tangible resource to a learning concept or idea. For example, figure 10A-11 asks, “Can you imagine living here?” It puts the reader in the scene.



Figure 10A-11—Archaeological interpretation that explains what was found and asks the reader to think of what else might have been found. Scenic Byway 12, Dixie National Forest. Southwest BEIG Province.

2. **Audience:** Audience and market research are important for knowing who is visiting the site and how to communicate effectively with them. Find useful information on visitors in the National Visitor Use Monitoring (NVUM) database, the National Survey on Recreation and the Environment (Southern Research Station), as well as from State tourism offices or local convention and visitor bureaus, and from onsite observations.
3. **Resources:** The knowledge and expertise of personnel and the funding available for creating interpretive signs influence the kinds of media selected. See figure 10A-12.



Figure 10A-12—This panorama interpretive plaza is well defined, has low profile signs so one can see what is being interpreted, and a bench. The base is native stone. Molas Pass, San Juan Scenic Skyway, San Juan National Forest. Rocky Mountain BEIG Province.

Consider which locations best capture the visitors' attention and connects them with the sites or landscapes. In accordance with the interpretative and education plan, select few sign sites to optimize the effectiveness of the interpretation rather too many sign sites, which can have the effect of overwhelming visitors.

Consider the following for locating and installing an interpretive sign:

- Proximity of the sign to the resource or feature it addresses. Would a sign detract from the viewing experience or block the feature being interpreted? See figure 10A-13.



Figure 10A-13—Text, “This lake contains approximately 30 acres and has a maximum depth of 9 feet. The highway at this point is on an old Indian trail.” The highway is on one side of this sign and the lake on the other. The lake is visible just beyond the right edge of the sign support. Native stone base, timbers, and routed planks sign. Deschutes National Forest. North Pacific BEIG Province.

- Position of the reader. Will the sign be read by a person on foot, bicycle, horse, or in a vehicle; from a trail, overlook, or pullout? See figure 10A-14.



Figure 10A-14—Signs are legible from a vehicle in the pullout; one can park and read the low-profile signs as well. Hospital Hill, Cloud Peak Skyway, Big Horn National Forest. Rocky Mountain BEIG Province.

- Accessibility. Involve the proper professionals in the planning. See section 10A.7.
- Sun, wind, glare, shadows, traffic and visitor circulation, and safety.

10A.3.1 Special Considerations

To make signs accessible as possible, consult with the national, regional, or unit accessibility coordinator, and review plans to ensure compliance with accessibility guidelines. See the U.S. Department of Agriculture, Forest Service accessibility guidelines and the U.S. Department of the Interior, National Park Service, Wayside Exhibit Design. See figures 10A-15 and 10A-16.



Figure 10A-15—Interpretation on an accessible trail. While there is no required mounting height for signs, mounting the lower front edge at 32 to 36 inches above the travel surface works well for most people. Northeast BEIG Province.

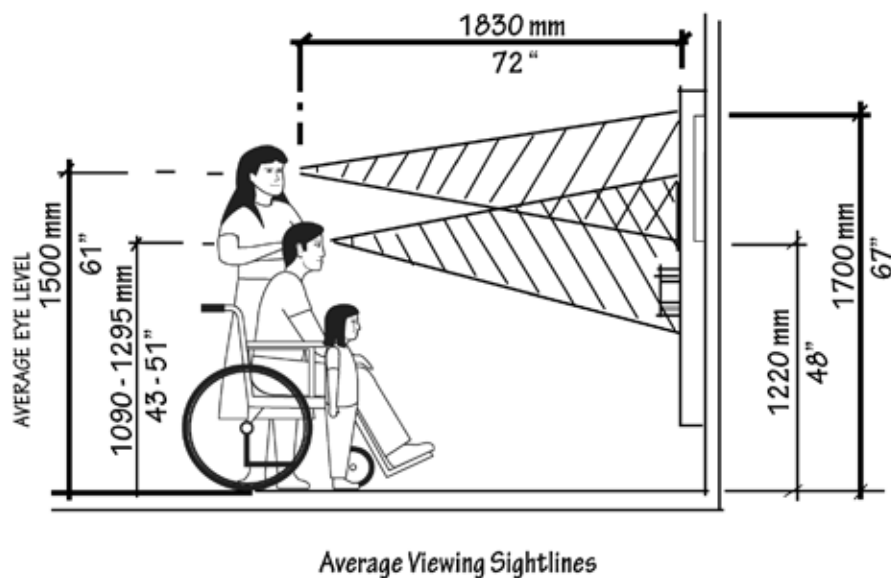


Figure 10A-16—This drawing illustrates the importance of considering viewing height differences, and shows where typical cones of viewing overlap.

Many visitors are non-English speakers. Serving a non-English speaking audience requires special expertise in translation, use of international symbols, and development of strong graphics that convey messages over text. In an area heavily used by a non-English speaking population(s), post bilingual or multilingual signs. Where translation is necessary, translate the primary language and dialect(s). Always have the English translated by a professional translator and have the translated text back translated. The back translation is important to show that the translated meaning is consistent with what was intended. (The Spanish Colonial Research Center of the National Park Service, in partnership with the University of New Mexico, provides a low-cost Spanish translation service.) See figure 10A-17.



Figure 10A-17—Bilingual sign made of a plastic embedment that has been in the tropical climate since 2004 (for 6 years). El Yunque National Forest. Southeast Coastal BEIG Province.

10A.4 Designing

It is important to keep in mind that interpretive panel design requires professional assistance. The pointers discussed below are intended to give an idea of the items to discuss with your contractor.

Like planning, designing is a problem-solving, decisionmaking process. The critical components of planning dictate the design elements and vice versa. Therefore, it is important to think of planning and designing as complementary processes that share equally in the quality and effectiveness of the interpretation. See figure 10A-18.



Figure 10A-18—The objects of interpretation, the meadow in the foreground, and the lake and mountain in the background, are immediately visible to the reader. Deschutes National Forest. North Pacific BEIG Province.

Several design aspects are considered during this stage. The layout of the interpretive sign needs to ensure a focal point, movement, balance, unity, and proportion. The selection of the sign material requires an understanding of the color and graphic needs, the long-term durability, permanence, maintenance, and vandalism risk of the sign. It is critical to retain professionals, such as graphic designer/illustrators, interpreters, and other experienced personnel for these purposes.

Good sign design includes these basic elements: text size and font, layout and graphics including colors, sign materials, and sign supports.

10A.4.1 Text

- Use a sans, slab, or simple serif typeface, upper and lower case, with a minimum of 24 point type size on signs.

Titles: 90 to 108 point.

Subtitles: 40 to 48 point.

Body Text: 30 to 36 point.

Captions: 24 point (DOI 2009).

- Break continuous blocks of text into sections with subtitles interspersed with graphics or images. Do not make entire blocks of text all capital letters.
- Make titles bold, with fonts and colors, to draw attention.
- Write text to convey a simple message.
- Focus on only one theme per sign with one to two related topics.
- Research the topic thoroughly. Check and recheck facts. Edit, edit, edit.
- Bring extra “eyes” in for review.
- Be concise. Use few words, and write as simply as possible. If possible limit text to 125 to 150 words or less. Make the sign face no more than one third text.
- Write directly to a wide range of visitors in terms they readily can understand. Avoid scientific facts, bureaucratic jargon, and acronyms.

10A.4.2 Layout and Graphics

- Use a single graphic to replace many words, focus the attention of the viewer, and lead eyes through a sequence. Graphics add beauty and interest to the sign face.
- Make the sign the right size. Avoid perfectly square panels; rectangular shapes are more appealing and cost effective.
- Use new materials and technology to create a variety of sign shapes. While varied shapes may cost more, they can enhance the appeal of the signs and the delivery of the message. See figures 10A-19 and 10A-20.



Figure 10A-19—This bilingual sign is cut to accentuate the shape of the white ginger flowers. El Yanque National Forest. Southeast BEIG Province.



Figure 10A-20—This sign is cut to reveal the shape/silhouette of the mountains at its top and to fit with the shape of its simulated-granite support. Taylor Creek Visitor Center, Lake Tahoe Basin Management Unit. North Pacific BEIG Province.

- Make signs no larger than necessary, avoid billboards.
- Allow the right amount of space around the text, graphics, and headings. Do not crowd the text; keep the sign face simple and uncluttered. Leave room for the frame and mount.
- Incorporate appropriate colors into the design that reflect the surrounding environment and theme. Use color to provide variety, emphasis, and unity. For sample colors, see the BEIG sign colors in the Wilderness.net signs and posters toolbox. Click on III. Examples. Do not use garish colors, awkward designs, or unusual symbols or words unless they are related directly to the theme of the message.
- Select artwork that is appropriate, professionally executed, and realistic. Be sure graphics are clear, easy to identify, and complement the text.
- Use high-contrast graphics that can be read easily by all populations.
- Do not use graphics to decorate the sign face.
- Be cautious when using illustrations and photographs on the same sign.
- Do not overdo the number and size of photographs. Make sure accurate credit captions are included for all proprietary images. See figure 10A-21.

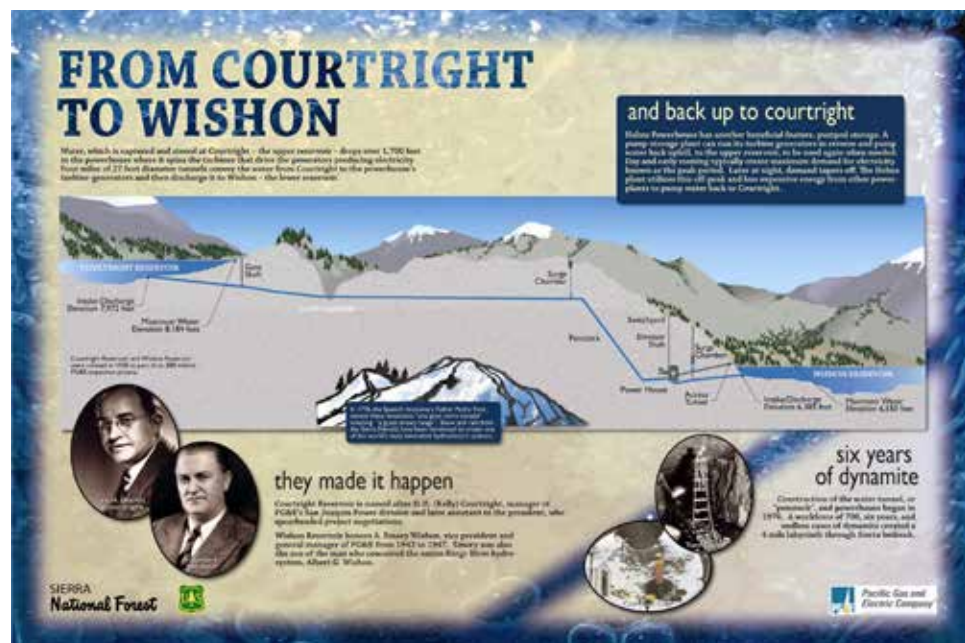


Figure 10A-21—The illustration explains the water system supported by a verbal explanation. Courtright reservoir, Sierra National Forest.

10A.5 Fabricating

Fabricating includes sign face and base material selection, and base construction. Base the final selection of the sign and sign base material on analysis and research. When choosing materials, consider such factors as their ability to convey the interpretive message, their durability and future maintenance needs, and their ability to reflect the BEIG and ROS of the area. Consider the type of use they will receive. Refer to chapter 10B, section 10B.5.5. See figure 10A-22.



Figure 10A-22—Interpretation mounted on a native stone base. Deschutes National Forest. North Pacific BEIG Province.

10A.5.1 Sign Face Materials

Sign face material choices continue to improve. Materials hold colors for many years and are more resistant to vandalism. Because material choices are constantly evolving, it is important to research current industry standards. Table 10A-1 compares the current (2010) interpretive sign materials.

Use digital technology. In digital printing, choices of earth tone blending colors are infinite, duplicates can be procured in the initial order, digital files can be saved for future use (always ask about the company's policy), and digital files can be changed easily for updates. Products are well suited for digital signs include:

1. Digital high-pressure laminate (DHPL). DHPL signs greater than 1/2-inch thick can stand alone without backing and bullets pass through without shattering the sign. See figure 10A-23.
2. Porcelain enamel. Use only indoors and in well-protected sites.

Table 10A-1—Comparison of popular interpretive sign materials

Sign materials performance factors (below)	Porcelain enamel	Anodized aluminum	Digital high pressure laminate	Digital embedded fiberglass	Sandblasted wood	Stone etching	Vinyl materials
Graphics and Color							
Graphics capability/resolution	Excellent	Good, line art only	Very good	Very good	Fair to Good	Good, line art	Fair, line art
Color retention over time	Excellent	N/A	10 yr. warranty	Unknown	Fair	N/A	Poor
Range of colors	Excellent	Poor to fair	Very good	Very good	Poor	N/A	Poor
Photo reproduction capability	Excellent halftones	Good,	Very good	Very good	N/A halftones	Good	Poor
Material durability							
Life expectancy in serviceable condition	Excellent 40 yrs+	Excellent 40 yrs+	Good 10 to 12 yrs	Good 8 to 10 yrs	Fair 5 to 7 yrs	Excellent 40 yrs +	Poor to fair 2 to 3 yrs
Scratch/abrasion resistance	Excellent	Poor	Very good	Very good	Poor	Poor	Poor
Cracking/peeling/warping resistance	Excellent	Excellent	Very good	Fair to good	Excellent	Excellent	Excellent
Maintenance	Annual wash/wax	Annual wash	Bi-annual wash	Bi-annual wash	Stain every 3 yrs	None	Replace
Impact resistance (Hard blows—gun shots)	Poor	Poor	Very good	Very good	Poor	Poor	Poor
Graffiti removal	Excellent	Poor	Very good	Very good	Poor	Poor	Fair to good
Replacement/duplication	Poor	Poor	Very good	Excellent	Poor	Poor	Excellent

Table 10A-1—Comparison of popular interpretive sign materials (continued)

Sign materials performance factors (below)	Porcelain enamel	Anodized aluminum	Digital high pressure laminate	Digital embedded fiberglass	Sandblasted wood	Stone etching	Vinyl materials
Typical applications							
Development niche-natural, rural, urban	All	Rural/urban	All	All	Natural/rural	Natural/rural	Rural/urban
Framing needed	Flats-yes, Return edge-no	No	$\frac{3}{8}$ -in, yes, $\frac{1}{2}$ -in +, no	Yes	No	No	Yes + backing
Trail waysides	Good to very good	Good	Very good	Very good	Poor	Good	Poor
Highway/scenic byway waysides	Excellent	Good	Very good	Very good	Poor	Good	Poor
Site and facility identification	Good	Excellent	Good	Good	Excellent	Poor	Poor
Information/bulletin boards	Poor	Poor	Poor	Poor	Poor	Poor	Very good
Memorials/plaques	Poor	Excellent	Poor	Poor	Fair	Very good	Poor
Vegetation/artifact labels	Good	Excellent	Very good	Good	Very good	Good to very good	Fair
Overall Assessment							
Advantages/benefits	Durability/resolution	Professional image	Durability/cost	Durability	Rustic look	Rustic/site blending	Economics
Drawbacks/disadvantages	Chipping/rusting	Scratching is permanent	New-years of service?	UV damage	Dents/fading	Graffiti is permanent	UV damage warping
Value for the money	Very good	Good to high	Excellent	Good	Fair/special application	Good/special application	Fair
Relative cost	Very high	Moderate	Low	low to moderate	Very high	High	Low

3. A variety of changing product materials including aluminum, glass, and other materials that are constructed using heat, pressure, and a mix of materials.

Certain sign types, such as vinyl sheets and wood routing, require Government Printing Office (GPO) approval or printing through a GPO-approved printer already under contract. Refer to chapter 15 for procurement information.



Figure 10A-23—This high density laminate sign illustrates a former use of the land. Cibola National Forest.

Consider these factors when choosing the sign material:

- The amount of presence or agency patrol at the site. Generally, remote sites have greater potential for vandalism than do high-investment or popular, highly visited sites, such as scenic byways and overlooks.
- Whether the sign is sheltered or not.
- Cost versus benefit. For example, how long is the sign expected to be in serviceable condition for the budget available? In certain locations, it is logical to invest in a higher cost material because the sign will not need to be maintained or replaced as often.
- The ease with which the sign can be replaced when it has been damaged, degraded by the weather, or there is a need to change the message.
- The capability of the sign medium for graphic resolution and color, such as crisply and clearly displaying text and graphics.

- Routed signs. Use recycled plastic or fiberglass routed signs to mimic wood routed signs; these materials are very durable with an extended service life, and are maintenance free. Fiberglass can be patched if damaged. Both products are fabricated in multiple colors from digital files.
- The ability of the material to reflect the interpretive and design themes of the site.
- The likelihood that the material will produce glare.

10A.5.2 Sign Support (Base)

Give as much consideration to sign support as to the sign face itself. Sign supports are aesthetically pleasing only when they relate to the sign's purpose and the surroundings. Sometimes the site application will suggest a specific sign support design of native materials. See figures 10A-24 and 10A-25. Pay attention to how supports blend the sign into the site's setting and natural features. Make sure that the support structure complements the interpretive message and theme. See figures 10A-26 and 10A-27. This also implies permanence and respect for the site, and can provide a link to the site's character based on ROS and the BEIG design themes. See figures 10A-24 through 10A-27.



Figure 10A-24—This kiosk uses colors reflected in the landscape and appropriately sized lumber for the area. Nebo Loop National Scenic Byway, Unita National Forest. Rocky Mountain BEIG Province.



Figure 10A-25—Local stone and timbers were used to build this kiosk and overlook. Logan Canyon Scenic Byway, Wasatch-Cache National Forest. Rocky Mountain BEIG Province.



Figure 10A-26—The sculptures support the Chief Joseph Scenic Byway theme and the subject matter. Native timber and stone are used for the support structure. Nez Perce Entry Portal, Chief Joseph Scenic Byway, Big Horn National Forest. Rocky Mountain BEIG Province.



Figure 10A-27—Native timber supports fit this sign interpreting the Lochsa Historic Ranger Station. Clearwater National Forest. Rocky Mountain BEIG Province.

In many situations, a standard commercial support base will suffice. Low-profile, diagonal-faced signs are appropriate for trails and overlooks. Signs may be more readable from a vehicle if vertical at a 90 degree angle. Do not place vertical signs between the reader and the interpreted subject matter. See figures 10A-28 through 10A-30.



Figure 10A-28—Stock low-profile base. San Juan National Forest. Southwest BEIG Province.



Figure 10A-29—Low-profile signs are attached to a railing. Santa Fe National Forest. Southwest BEIG Province.



Figure 10A-30—The base design reflects the mountainous terrain. Le Conte Divide, Sierra National Forest. North Pacific BEIG Province.

More examples of sign supports. See figures 10A-31 through 10A-36.



Figures 10A-31 and 32—The sign supports are designed to look like the reeds seen in the visitor center area. They continue from the sign face to the ground. Taylor Creek Visitor Center, Lake Tahoe Basin Management Unit, North Pacific BEIG Province.



Figure 10A-33—This kiosk commemorates the work of the Civilian Conservation Corp in the Soapstone Basin, Uinta-Wasatch-Cache National Forest. Rocky Mountain BEIG Province.



Figure 10A-34—This support uses local stone, and continues the design theme from the nearby building in size of wood and color at Hewlett Gulch. Arapaho-Roosevelt National Forest. Rocky Mountain BEIG Province.



Figure 10A-35—Use of this sized timber and the steel straps continue a forest theme. Falls Campground and Day Use Area, Shoshone National Forest. Rocky Mountain BEIG Province.



Figure 10A-36—Rustic sign supports match the environment. Chaco Great House and Pueblo Trail, San Juan National Forest. Southwest BEIG Province.

10A.6 Installing

Provide drawings and specifications for the sign and the sign supports to the installer. Involve the designer and interpreter in the installation to maintain overall design integrity. If environmental factors or other considerations prevent the sign from being installed in the chosen location, it's convenient to have the specialists on the ground to salvage the installation.

Install signs for permanence and take every precaution against vandalism. Use lock washers when mounting signs, set posts in concrete, and/or insert anchors or cross-pieces into buried portions of posts to make them harder to remove.

Leave 1/8- to 1/4-inch tolerance where edges abut and do not secure washer and screws or tighten firmly into laminate to allow for expansion and contraction of the materials. Tighten to snug only, to allow for expansion and contraction of the material.

10A.7 Evaluate and Monitor Effectiveness

Periodically, evaluate the effectiveness of a sign or major installation, such as a scenic byway installation. Through site observation, evaluate which signs are read and by whom. Notice if a sign is vandalized or has other problems. Over time, the sign may need to be updated or the audience may change suggesting the need for a foreign language.

Contract with Forest Service research station social scientists for formal surveys. A formal survey is quite technical, and survey questions must be approved by the Office of Management and Budget. The Lake Tahoe Basin Management Unit participated in a student study to survey the effectiveness and visitor satisfaction of the wayside exhibits at the Taylor Creek Visitor Center. This survey, done by the Pacific Southwest Research Station and California State University, Humboldt, found the visitor retention rate to be 40 percent of the subject material compared to the norm of 13 percent at most visitor center sites (King 2010). See figure 10A-37.



Figure 10A-37—The reed-theme is continued; the watershed as a puzzle. Taylor Creek Visitor Center, Lake Tahoe Basin Management Unit. North Pacific BEIG Province.

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10B.1 Introduction

Signs and bulletin boards typically are used at recreation sites to communicate important information that visitors need for a safe and enjoyable experience. Signs and bulletin boards are often the only “official” contact visitors have with the agency during their outings. Along with safety, orientation, and regulation information the bulletin board is often the location for fee collection or registration requirements and instructions. These messages may have information combined into one sign, with specific messages targeting various issues. It is also important to note that trailhead or visitor information signing (VIS) signage is different from interpretive signage. VIS signs address requirements, rules, and specific behaviors for visitors on a specific land area. These signs direct human behaviors for land management purposes.

To be effective, VIS needs to be attractive, well maintained, have relevant information, present a professional image, and be accessible to all visitors. Homemade materials, uncoordinated color schemes, and posting information in a clutter manner hinder the communication effort and present an unsatisfactory impression of the agency to the public. Refer to figures 10B-1 through 10B-5.



Figure 10B-1—Professional looking VIS bulletin board at Bear Lake Campground; posters are legible and neatly arranged, and the sign structure is well kept. Routt National Forest, Rocky Mountain BEIG Province.



Figure 10B-2—What's wrong with this picture?

- The site identification information is illegible and the shield is missing.
- Poor maintenance can send the wrong message. The motorized and wheeled vehicle symbols across the top had red slashes through them. These have mostly worn off, so the sign indicates that these vehicles are allowed at this site.
- The posters and brochures are arranged in a cluttered manner.
- Brochures do not belong on bulletin boards; put them in a dispenser designed to go with the bulletin board.
- Laminate maps before posting.
- Think about what information is important and where it should be posted.
- Do not post duplicate and/or conflicting messages.
- Posting a wilderness poster and a program area wilderness sign is confusing. Use one poster with the correct information on it.



Figure 10B-3—A rustic look is sometimes suitable, but this board is not appropriate. The large hand-lettered poster says that the area is provided by the Grand Mesa Nordic Council and the Forest Service. Be a good partner and share your expertise and the Forest Service posters.



Figure 10B-4—Homemade and illegible posters and ill maintained bulletin boards detract from a professional image—even at remote sites. There is no site or Forest Service identification. It is better to have nothing than VIS that looks like this.



Figure 10B-5—Example of homemade VIS. It appears that this sign is to be read from a moving vehicle; this is not appropriate for VIS. Do not post VIS information next to a road. On these signs, there is too much text, it is too small, and it cannot be read from a moving vehicle. Sign placement could cause safety problems; drivers must stop to read the information. Information needed to be read from a moving vehicle, such as the speed limit, shall meet all of the requirements and standards in Chapter 3—Traffic Control Devices.

Post bilingual or multilingual signs and posters in an area heavily used by a non-English speaking population(s), such as immigrants or tourists. Translate the primary language and dialect(s). Always have the English translated by a professional translator and have the translated text back translated. The back translation is important to show that the meaning is consistent with what was intended. (The Spanish Colonial Research Center of the National Park Service, in partnership with the University of New Mexico, provides a low-cost Spanish translation service.)

Check the Built Environment Image Guide (BEIG) theme for the area as indicated by the BEIG Province before installing a new bulletin board, sign structure, or changing an existing sign, always. Select a VIS structure that reflects the appropriate BEIG theme, fits the Recreation Opportunity Spectrum (ROS) class of the site, and harmonizes with the characteristic landscape. If a theme has not been adopted, refer to FS-710, BEIG, and chapter 4, as a general guide for considering site character, context, design themes, and materials.

10B.2 Traffic Control Devices

Use traffic control devices to direct visitors to onsite information, activities, and facilities locations. Follow standards in chapter 3C, section 3C.4 for design and placement requirements of destination signs. Refer to figure 10B-6.



Figures 10B-6—Destination signs.

10B.3 Registration and Fees

Clearly inform visitors of any site requirements for registration or payment. Post the requirements at all entrances to the site and strategically locate the VIS. Install the registration and/or payment structure in a central area immediate to the use. Place signs on the right-hand side of the road when entering the site for safety and to facilitate traffic flow. Locate registration/payment stations in turn outs or parking areas so that stopped vehicles will not obstruct the flow of traffic. Add a roof over the pay station if needed because of weather conditions. Refer to figure 10B-7.



Figure 10B-7—A roof is provided over this VIS pay station. Shawnee National Forest, Northeastern BEIG Province.

Use Forest Service guidelines for signs at fee sites managed by the forest. See the National Guidelines for Recreation Fee Signs at <http://fsweb.wo.fs.fed.us/rhwr/recfee/products-signs.shtml>. Refer to figure 10B-8.



Figure 10B-8—Example of a predesigned poster for a U.S. Fee Area. Posters describe how to make the payment.

10B.4 Bulletin Boards

Bulletin boards provide essential information on orientation, recreation opportunities, safety, ethical use, regulations, and visitor responsibilities. The style of bulletin boards can showcase a forest theme and support the BEIG; there is no one set style. Where appropriate, provide a space on bulletin boards for visitors to leave messages for one another. Refer to figures 10B-9 through 10B-13.



Figure 10B-9—Trailhead VIS is built to complement the adjacent building. Rock barriers prevent vehicles from encroaching into the space. Arapaho-Roosevelt National Forest, Rocky Mountain BEIG Province.



Figure 10B-10—The kiosk in front of Sewee Visitor and Environmental Education Center has a map of the area showing nature trails and so on. Francis Marion National Forest and Cape Romain National Wildlife Refuge, Southeast Coastal BEIG Province.



Figure 10B-11—This bulletin board includes regulations in English and Spanish, posters, and information on how to use the recreation site called Sliding Rock. Pisgah National Forest, Southeast Mountain BEIG Province.



Figure 10B-12—Neatly arranged posters on bulletin boards. Kisatchie National Forest, Southeast Coastal BEIG Province.



Figure 10B-13—OHV information, map, posters, and brochures at the trailhead for the Claiborne Multiple Use Trail. Kisatchie National Forest, Southeast Coastal BEIG Province.

10B.4.1 Posters

Post standard and local posters in an organized manner. Display only legible posters in good condition. Remove posters when no longer needed. When custom posters are created have them designed by graphics professionals, and always state the desired behavior. In certain cases, state how the desired behavior has improved the site. For example, "By packing out their own trash, backpackers have reduced trash removal costs by ___% in the last 6 months." Such statements encourage others to follow suit. Temporary or seasonal conditions and closures are most often displayed using standard posters.

Posters meet seasonal and temporary, nonpermanent needs.

When using symbols on posters, use only approved international symbols. Refer to chapter 3C, section 3C.3 for recreational and cultural interest area symbols and chapter 3E, section 3E.10 for a comparison of 2003 and 2009 symbols.

Standard posters approved for servicewide use typically are listed in numerical order for each category. Standard posters are at <http://fsweb.wo.fs.fed.us/eng/roads_trails/signs_05/posters/index.htm> or may be available from approved vendors. New posters or those for special applications should be submitted to the regional offices for approval. Such proposals may be forwarded to the Washington Office for consideration of servicewide use. Refer to figure 10B-14.



Figure 10B-14—Approved posters screened onto one board.

Chapter 10B

Visitor Information Signing

Bulletin Boards, Posters,
Fees, Registration**10B.4.1.1 Poster Series**

Posters are grouped into various management series.

**10B.4.1.2 Woodsy Says Poster (P19 Series)**

Use this poster for antipollution messages.

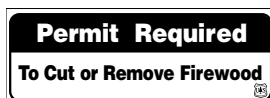
**10B.4.1.3 Environmental Management Posters (P21 Series)**

Use these posters for temporary identification. If pesticides are in storage longer than 3 months, use a permanent sign.

**10B.4.1.4 Recreation Management Posters (P23 Series)**

Use these posters in conjunction with visitor information board displays.

Change posters during the season to emphasize rules or guides that are most applicable. Some posters allow the message to be customized to correspond with local situations.

**10B.4.1.5 Timber Management Posters (P24 Series)**

Most posters in the P24 series are intended for use in timber operations areas, such as cutting boundaries and payment units. Like other functional activity posters, some posters are used only during a particular season, such as P24-23 Cutting Christmas Trees Prohibited. Use larger posters for greater visibility along roads with higher travel speeds.

**10B.4.1.6 Watershed Management Posters (P25 Series)**

Use these posters as constant seasonal reminder to "Keep Your Forests Green." Two sizes are available for posting along roads with different speeds.

**P26-6****10B.4.1.7 Wildlife Management Posters (P26 Series)**

Use wildlife management posters to indicate wildlife management areas or activities. Additional posters may be available through State fish and game departments. Posters from other series may be used as appropriate.



10B.4.1.8 Fire Management Posters (P51 Series)

Use the largest posters (54 by 44 inches) sparingly, only on high-speed highways and in situations where the scale of the country dwarfs their effect. Place them far enough apart to avoid appearing repetitious.

Use medium-sized posters (42 by 34 inches) on roads with speeds of 40 to 50 miles per hour. Limit their use to essential locations.

Use the 44- by 16-inch poster on most low-speed, low-volume National Forest System roads. When it's no longer fire season, use the mounts for other types of posters, such as Woodsy Owl - Give a Hoot Don't Pollute and noxious weeds and other invasive species.

Use smaller posters, such as 14 by 12 inches and 11 by 9 inches, for pedestrian traffic, trails, campgrounds, trailheads, visitor information boards, or roadside rests. When properly placed, the largest of these generally have adequate visibility and small message content to be suitable for low-speed, low-volume roads where such messages are needed (for example, P51-17.1, No Campfires).



10B.4.1.9 Law Enforcement Posters (P53 Series)

Regulatory posters are not required to cite CFR authority.



10B.4.1.10 Lands Posters (P54 Series)

Use these posters to identify national forest, national grassland, and wilderness boundaries.

Chapter 10B

Visitor Information Signing

Bulletin Boards, Posters,
Fees, Registration**10B.4.1.11 Safety Posters (P61 Series)**

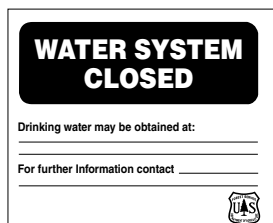
Use these posters to warn of health dangers associated with Forest Service activities. Additional posters containing general safety messages are available through the National Safety Council or other companies who stock OSHA and other safety posters.

**10B.4.1.12 Property Posters (P64 Series)**

Use these posters to identify government property.

**10B.4.1.13 Volunteer Program Posters (P65 Series)**

Only one poster in this series is available. It is adhesive backed.

**10B.4.1.14 Water System Posters (P74 Series)**

Use these posters to notify visitors about problems with water systems.

10B.4.1.15 Take Pride in America Posters (TPAS series)

Use these posters to notify visitors about Take Pride in America projects.

10B.4.2 Site identification

Forest Service developed recreation sites and administrative sites should be identified appropriately with site identification signs according to directions located in chapter 7, section 7.4 and chapter 8A. This typically includes the site name, site type (i.e., campground, trailhead), forest name, the Forest Service shield and the USDA credit line.

Site identification information may or may not appear on the VIS. At large or major sites where there are site identification signs, forest boundary signs, or other identification signs, the VIS does not need to restate the site identification information.

At minor sites, the site identification sign and the VIS may be combined into one sign. This reduces costs and prevents rustic or small scale sites from becoming overwhelmed or cluttered with signs. Basic information to accompany the VIS information includes the site name, site type, forest or administrative unit name, Forest Service shield, and USDA credit line. Refer to figure 10B-15.



Figure 10B-15—Forest identification and VIS are combined neatly for a professional look. Gallatin National Forest, Rocky Mountain BEIG Province.

The site identification information should not overwhelm the VIS. Incorporate all the identifying information into the sign via the items attached to the bulletin board or use the sign structure's header and footer. Do not increase the sign size or create a second sign just to accommodate site identification.

10B.4.3 VIS Content

VIS content varies according to the recreation site and the predominant activities. Provide helpful information specific to the site and the activities visitors are most likely to participate in. Take care not to overwhelm the visitor with too much information. Strike a careful balance considering how much one person can retain and what information is most helpful. The following list of topics is commonly found on VIS bulletin boards and signs.

1. Recreation activity information:

- Recreational opportunities.
- Points of interest.
- Area map with “You Are Here” label. Refer to figure 10B-16.
- Distances and average travel times for trails and roads.
- Explanation of symbol system.
- Special designation logos (National Recreation Trail, Scenic Byway, Wild and Scenic River).
- Wilderness message.
- Facilities information, such as a snow trail grooming schedule.
- Public gathering areas.

2. Visitor registration information:

- Fees.
- Permit requirements.

3. Environmental awareness:

- Tread Lightly!—outdoor ethics, stewardship.
- Leave-No-Trace (LNT).
- Overview of the LNT message.
- Appropriate one-liners “Minimize your impact on Wilderness: Take only pictures, Leave only footprints,” “Challenge yourself to Leave-No-Trace.”
- Illustrate correct or expected behaviors with LNT symbol sets. Refer to figure 10B-17.

4. Regulations and restrictions:

- A complete listing of regulations and their references is available at district offices.
- Post only the most important or likely violations at the site.
 - o Illustrate these with approved posters. Refer to figure 10B-18.

5. Travel management information:

- Trail difficulty levels.
- Motor Vehicle Use Map (MVUM), which includes any motorized mixed-use designation of an National Forest System (NFS) road for use by both highway legal and non-highway legal vehicles.
- Non-motorized mixed-use messages. Refer to figure 10B-19.
- Fire or weather closures.
- Activity restrictions.
- Equipment requirements.
- Geographic information and/or seasonal conditions.

**“You
Are
Here”
label**



Figure 10B-16—Area map with “You Are Here” label.



Figure 10B-17—Leave No Trace logo.

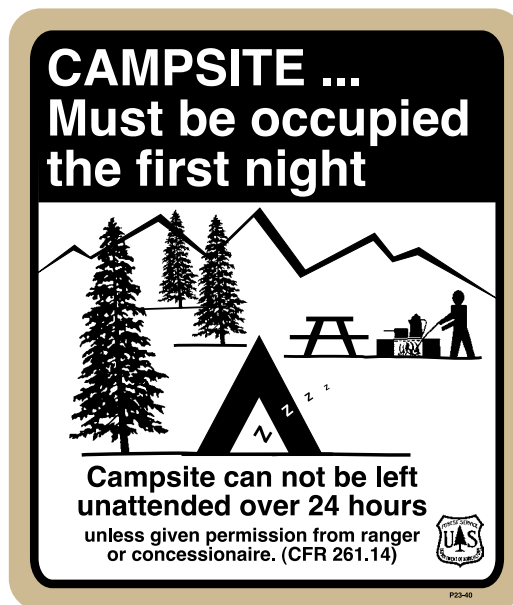


Figure 10B-18—Recreation poster with CFR cited.



Figure 10B-19—Non-motorized mixed use yield sign.

6. Safety and emergency information:

- Current recreation conditions.
- Nearest telephone.
- 911 or a State's equivalent emergency services number or other appropriate communications.
- Forest-operated traveler information radio station.
- Inherent risks, especially for wintertime activities, such as hypothermia and avalanche information.
- Recommended or required licenses or safety equipment.
- Patrol schedules.
- Motorist service information, such as gas stations, food, and lodging.

7. Assumptions of risk:

- **YOU ARE RESPONSIBLE FOR YOUR OWN SAFETY.** Travelers on national forests and grasslands may encounter a variety of dangerous conditions. It is your responsibility to inform yourself about these inherent risks and take precautions.
 - The use of this statement does not relieve the Forest Service of its normal responsibility to mitigate known hazards or to warn visitors about known hazards that are unusual, unexpected, or not readily identifiable by the average visitor during the normal use season.
- The Forest Service can not be knowledgeable about all possible hazards.
- It is the visitors' responsibility to assume the normal risks associated with use of the forest, inform themselves about potential hazards, and take appropriate actions to prevent injury or damage.

Refer to figures 10B-20 through 10B-22.



Figure 10B-20—Digital laminate VIS. This sign identifies two agencies, gives the site name, displays a map with the “You Are Here” label, and lists rules, responsibilities, and safety information including local telephone numbers. San Juan National Forest and BLM partnership, Rocky Mountain BEIG Province.



Figure 10B-21—Minor site sign with site name, visitor information, and Forest Service shield all on one board. San Juan National Forest, Rocky Mountain BEIG Province.

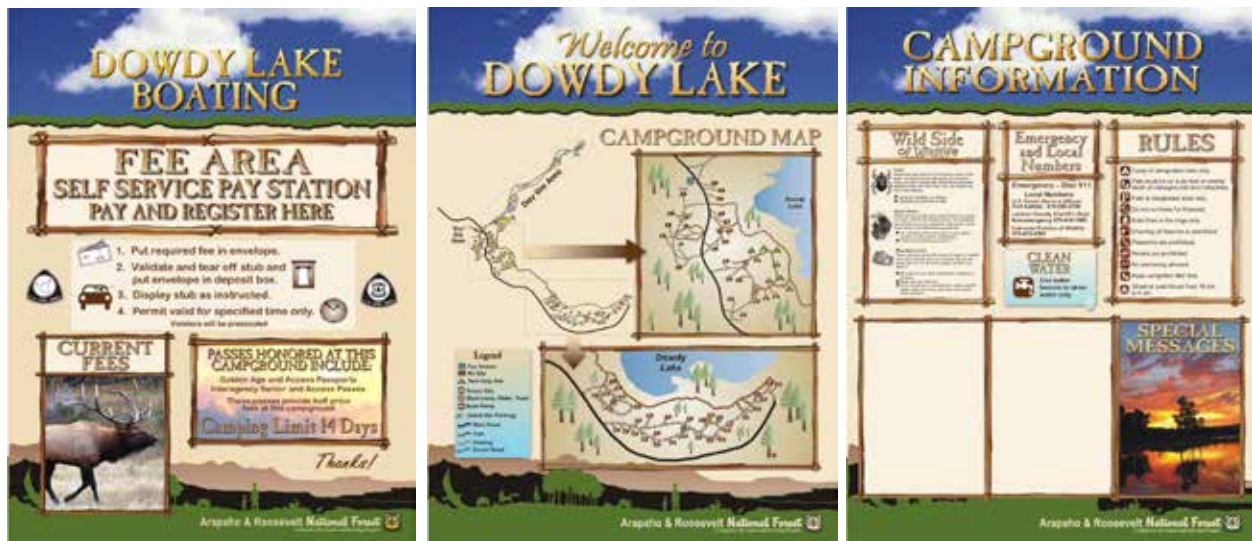


Figure 10B-22—VIS for a three-panel bulletin board includes site name, visitor information, payment information, and Forest Service identification. Dowdy Lake and Campground, Arapaho and Roosevelt National Forest, Rocky Mountain BEIG Province. This same theme is repeated throughout the recreation site, on trailheads, boat launches, and the day use site for VIS and interpretive signage. Note: use standard fee posters.

10B.5 Sign: Face Design, Materials, Mounting, Supports, and Installation

10B.5.1 Sign Face Design

Include the forest name and Forest Service shield on all signs. A well designed sign catches the attention of the reader and is easily and quickly understood. In a glance the visitor decides whether to read a sign based on the overall appearance and perceived effort it will take to understand it. Keep messages short and simple.

When developing text apply the 3-30-3 rule. A person should be able to skim the bold titles on the sign and understand the key message in 3 seconds, should be able to read the mid-sized text and grasp some details in 30 seconds, and should be able to read the entire text and look at the graphics in 3 minutes. Refer to chapter 10A.

Be sure that text is large enough for persons to read in an outdoor setting.

- Headers: use capital letters no less than 1-inch tall.
- Body text: use capital letters no less than 5/16-inch tall; lower case is smaller.

The capital letter size for VIS is dependent upon the distance from which the message is read. Important dates should be 1/2-inch larger than the text. Refer to table 10B-1.

Table 10B-1—Body text sizes for VIS

Distance from where viewed (ft)	Text size (in)
1	$\frac{15}{16}$
2 to 4 or less	$\frac{5}{8}$
5 to 7 or less	$\frac{3}{4}$
8 to 12 or less	1
13 to 20 or less	2
Over 20	3

10B.5.2 Sign Dimensions

Make signs rectangular, not square. Use a 5 to 3 or 5 to 4 ratio. It is a cost effective practice to use a standard 24- by 36-inch to 24- by 42-inch format. Refer to figure 10B-23. Where more information is necessary, larger proportionate signs are acceptable. Refer to figures 10B-24 and 10B-25.



Figure 10B-23—Three-panel display in a standard size format. Target Tree Campground, San Juan National Forest, Rocky Mountain BEIG Province.



Figure 10B-24—This sign's proportions are appropriate for its setting. Black Hills National Forest, Rocky Mountain BEIG Province.



Figure 10B-25—This sign's proportions and materials are appropriate for the mountain character on Guanella Pass, Silver Dollar Road and Trailhead. Arapahoe and Roosevelt National Forest, Rocky Mountain BEIG Province.

10B.5.3 Sign Face Materials

Refer to chapter 10A, table 10A-1, section 10A.5 for a comparison of sign materials.

Check with the forest printing specialist in the public affairs or public and governmental relations office for any printing requirements when creating signs. Certain sign types, such as vinyl sheets, require Government Printing Office (GPO) approval or printing through a GPO-approved printer already under contract. Refer to chapter 15 for procurement information.

10B.5.3a Digital Technology

Use digital technology, and consider including all information on a single surface or sign face. In digital printing, choices of earthtone blending colors are infinite, duplicates can be procured in the initial order, the digital files can be saved for future use (always ask about the company's policy), and the digital files can be changed easily for updates. These products are well suited for digital signs:

1. Digital laminate (phenolic resin).
2. Digital embedded fiberglass.
3. Vinyl sheets.

10B.5.3b Routed Signs

Use recycled plastic or fiberglass routed signs to mimic wood routed signs; they are very durable with an extended service life, and are maintenance free. Fiberglass can be patched if damaged. Both products are fabricated in multiple colors from digital files.

10B.5.4 Installation

Generally, digital laminate material thicker than 1/2 inch is self-supporting and attaches directly to the sign support using a metal "L-bracket" and nonreversible screws. Refer to figure 10B-26.

High-pressure laminate signs also can be ordered with predrilled threaded screw inserts that allow them to be mounted to a frame or kiosk post without a frame system. Fiberglass embedded signs require standard framing or drilled holes for mounting.

If the sign face is medium density overlay plywood (MDO) or Medex, order prepunched holes larger than the specified screw size for mounting to the backboard. Avoid tightening the mounting screws onto the setting washers to the point of binding to allow for the expansion and contraction of the materials. This will reduce the chance of warping the sign face. Refer to figures 10B-27 and 10B-28.



Figure 10B-26—Metal “L-bracket.”



Figure 10B-27—Noncorrosive metal screw and brass or stainless steel setting washer.



Figure 10B-28—The digital laminate sign is attached to MDO by adhesive and metal screws.

10B.5.5 Sign Structures

Sign structures, supports, stanchions, or bases are designed to compliment the sign design and site character, and in accordance with the BEIG Province and forest theme. Square or round, 6- by 6-inch or 8- by 8-inch treated timbers serve well. Metal tubing with a rusted or patina finish is appropriate for some settings. The following are examples of sign structures; many provide cover in inclement weather. Refer to figures 10B-29 through 10B-34.



Figure 10B-29—This bulletin board structure is made of steel pipes, which is appropriate in this off-highway vehicle (OHV) site. Shawnee National Forest, Northeastern BEIG Province.



Figure 10B-30—Trailhead VIS structure built with round timbers appropriate for its setting. Santa Fe National Forest, Southwest BEIG Province.



Figure 10B-31—Indian Gulch Trailhead VIS made with timber that matches the scale of the surrounding trees. Rocks match colors in the soil. Arapahoe and Roosevelt National Forest, Rocky Mountain BEIG Province.



Figure 10B-32—Side view of structure at Indian Gulch Trailhead. Arapahoe and Roosevelt National Forest, Rocky Mountain BEIG Province.



Figure 10B-33—This kiosk has heavy timbers that fit well in this forested environment; the rock anchors the structure. The kiosk is a combination of VIS and interpretive information. Byers Creek Campground, Arapaho and Roosevelt National Forest, Rocky Mountain BEIG Province.



Figure 10B-34—This VIS has information about the Bell Rock Pathway. The structure incorporates the surrounding rock to tie it to the setting. Coconino National Forest, Southwest BEIG Province.

The modular panel sign system, using two, three, or more panels, is a simple and universal design that works well and is adaptable to most VIS sites. Complex or major recreation sites warrant two or three panel combinations while secondary and remote sites or trailheads often will need only one panel. Refer to figures 10B-35 through 10B-37.



Figure 10B-35—Three-panel VIS structure for a campground with information on digital laminate. Posts have the same motif and can vary in height. San Juan National Forest, Rocky Mountain BEIG Province.



Figure 10B-36—Two-panel VIS structure uses the same motif as the three-panel structure in figure 10B-40. The center post is facing a different direction. San Juan National Forest, Rocky Mountain BEIG Province.



Figure 10B-37—This VIS structure easily can be made longer or shorter to hold more or fewer panels. There are two VIS and one interpretive fiberglass embedded panels all addressing wilderness values, use, and scenic views. Maroon Bells Recreation Area, Aspen Ranger District, White River National Forest, Rocky Mountain BEIG Province.

10B.6 Trailhead VIS

The preceding information also applies to trailhead VIS. In dispersed areas, such as trailheads, VIS is an important communication tool especially in the absence of official personal contact. Quality trailhead signs provide essential information about such topics as appropriate conduct and important safety concerns in a concise and easily understood manner.

Trailhead signs orient the visitor. Major trailhead signs include the forest or administrative unit name, Forest Service shield, USDA identification, trailhead name, a map of the trail, and mileage to destinations and other trails. Other important messages include LNT information, rules and regulations, and safety information. Minor trailhead signs are condensed versions of a major trailhead sign and may only state the trail name and miles to a destination. Refer to figures 10B-38 through 10B-40.



Figure 10B-38—This VIS displays information about trail ethics, user safety, two maps, and contact telephone numbers. It is located along the South Platte River corridor, a popular recreation area for urban Denverites. South Platte Ranger District, Pike and San Isabel National Forest, Rocky Mountain BEIG Province.



Figure 10B-39—Minor site trailhead sign. Wasatch-Cache National Forest, Rocky Mountain BEIG Province.



Figure 10B-40—Information overload!

These signs are posted at the entrance to an OHV trail. Visitors are required to stop and try to read all this information, which effectively blocks the access to and from the trail. There are a variety of signs and posters tacked here and there, which is distracting. The visitor doesn't know what is most important and could easily miss a sign. The signs have too much text, which discourages visitors from reading the signs, and in many cases the information is duplicated. Required safety signs for the gate and cattle-guard are missing and yet are more critical than most of the information posted.

Just to the right of the entrance (not shown in the photo) is a new VIS station with very little information posted. The posters and signs shown in this picture should be consolidated to eliminate duplicate and conflicting messages and relocated to the VIS station. Entrances to trails should be kept clear of clutter and unnecessary signs to allow critical safety signs to be installed and be seen.

10B.6.1 Introduction and Orientation

The same ideas apply to trailhead VIS in that the information provided is only useful to the reader if it can be retained. Place the trail name in a bold header at the top of a panel. Use a simple and uncluttered map in schematic form that includes only the major elements, such as trails, trail numbers, major land marks, elevations, land ownership boundary lines, and water bodies. For example, “hillshading” can give the viewer a feel for the topography without adding visual confusion to a map. Each site map needs to include what is most important for that site; certain sites may require complex maps. Refer to figures 10B-41 through 10B-45.

Incorporate the following in trailhead VIS:

- Use easily recognized symbols, such as dashes in a bright contrasting color.
- Display the map scale in a mile/kilometer bar.
- Make the map large enough to be easily read from a minimum of 18 inches.
- Make the map 30 to 60 percent of the sign face or place it on a single panel.
- Use a recognizable “You Are Here” symbol on each map.



Figure 10B-41—Planning a hike. This board shows a map of a Civil War battlefield including trails, and lists behaviors that are allowed and not allowed, and emergency telephone numbers. Daniel Boone National Forest, Southeast Mountains BEIG Province.



Figure 10B-42—Non-motorized mixed use trailhead includes cross-country skiing information. Post up-to-date seasonal posters. Remove seasonal posters as there is probably no need for a “no campfire” poster in winter. Black Hills National Forest, Rocky Mountain BEIG Province.



Figure 10B-43—This bulletin board is for a canoe/kayak run, and comes with a warning about alligators. Juniper Creek, Ocala National Forest, Southeast Coastal BEIG Province.



Figure 10B-44—Wilderness VIS. Hickory Creek Wilderness trailhead VIS in the Hearts Content scenic area. Allegheny National Forest, Northeast BEIG Province.



Figures 10B-45—These three panels show a variety of creative trailhead sign styles. Arapaho and Roosevelt, San Isabel, and Pike National Forests.

For motorized use areas, use the Motor Vehicle Use Map (MVUM) or other maps as appropriate on VIS bulletin boards. Refer to figure 10B-46.



Figure 10B-46—This interagency OHV trailhead sign includes a map, the expected behavior of the rider, Tread Lightly! information, an explanation of the multiagency program, and contact telephone numbers. Pike and San Isabel National Forest, Rocky Mountain BEIG Province.

10B.6.2 Leave No Trace (LNT)

Provide a brief overview of the Leave No Trace Principles.

Use logos and short statements, such as:

- Pack It In, Pack It Out
- Use of established camp sites
- Stay on established trail.

On wilderness trailhead signs include statements, such as:

- Minimize your impact on Wilderness
- Take only pictures—Leave only footprints
- Challenge yourself to Leave-No-Trace!

Refer to figures 10B-47 and 10B-48.



Figure 10B-47—Leave No Trace information chosen for a particular site.



Figure 10B-48—Another way to present Leave No Trace information.

10B.6.3 Rules and Regulations Subhead

- Note that a complete listing of regulations and their references is available at the unit or district office.
- Display only the highest priority rules and regulations using logos and short statements.

10B.6.4 Safety and Trip Planning

- Display appropriate messages pertaining to the climate and area. List constants of geographic information and/or seasonal conditions that may affect travel and safety.
- Use logos and short statements for appropriate trip planning and safety concerns.
- Post 911 or a State's equivalent emergency services number.

Refer to figure 10B-49.



Figure 10B-49—Digitally created safety sign for a wilderness trailhead.

10B.6.5 Special Messages

Display special messages key to resource concerns, behavioral goals, and seasonal or current restrictions, such as horse use, emergency or special restrictions, closures, and fire restrictions.

Where there is a need to offer a specific message, such as how to protect food from bears, provide a space on the sign face for posting notices. Use a separate panel at major trailheads if necessary. Refer to figures 10B-50 through 10B-54.

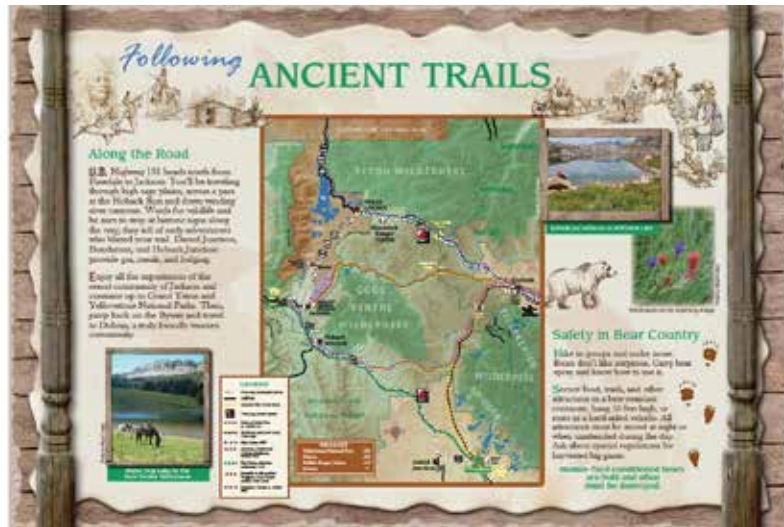


Figure 10B-50—A portal sign with route-finding, safety, and what-to-expect-along-the-drive information. Wyoming Centennial Scenic Byway; a Forest Service and multiple organization and community effort.



Figure 10B-51—Bear aware message.

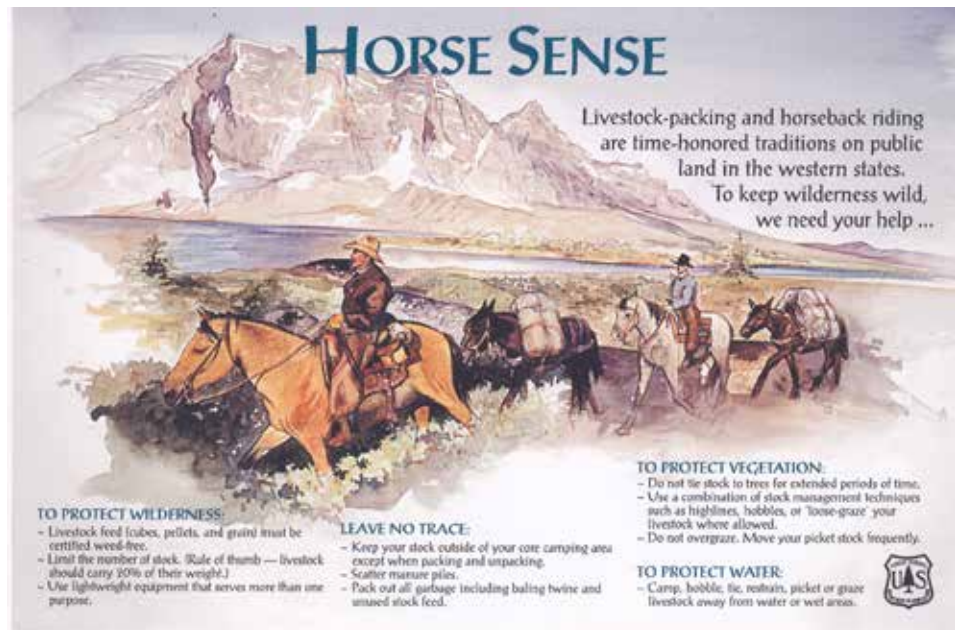


Figure 10B-52—Rules of the trail for packers and riders.



Figure 10B-53—An interagency message about packing in only weed-seed free forage and bedding. Rocky Mountain BEIG Province.



Figure 10B-54—A sign designed for changing information on short notice.

10B.7 Designated Wilderness Trailhead Messages

Most of the information in section 10B.6, Trailhead VIS, applies to designated wilderness trailhead VIS with some special considerations. To protect primitive and wilderness characteristics and values, signs within these boundaries are discouraged. There is no VIS in designated wilderness. Guide signs are used sparingly to provide basic route information for visitor safety.

VIS signs are posted at entry point trailheads and are the last visitor information point of contact with travelers before they enter the wilderness. VIS structures should meet the BEIG theme for the area and include important messages, such as it is the responsibility of all visitors to preserve and protect the wilderness experience. Include the following on all designated wilderness trailhead signs or kiosks:

- Name of the designated wilderness, its acreage, when this wilderness was created.
- Map.
- Leave No Trace (LNT) information.
- Rules and regulations.
- Safety and trip planning.
- Special messages and wilderness interpretation.

Refer to figures 10B-55 through 10B-57.



Figure 10B-55—Two-panel trailhead VIS. The panel to the left includes information on this wilderness’s history, the numbers of acres, a map with a “You Are Here” label, and Leave No Trace, safety, and regulations information. The panel to the right displays information on a dam and the State of Colorado’s and the Forest Service’s efforts to improve wildlife habitat. San Juan National Forest, Rocky Mountain BEIG Province.

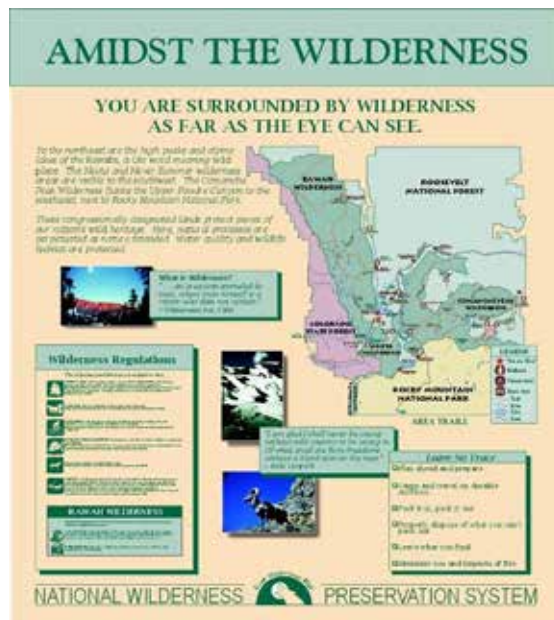


Figure 10B-56—Trailhead VIS about the Rawah Wilderness. Arapaho and Roosevelt and Routt National Forests.

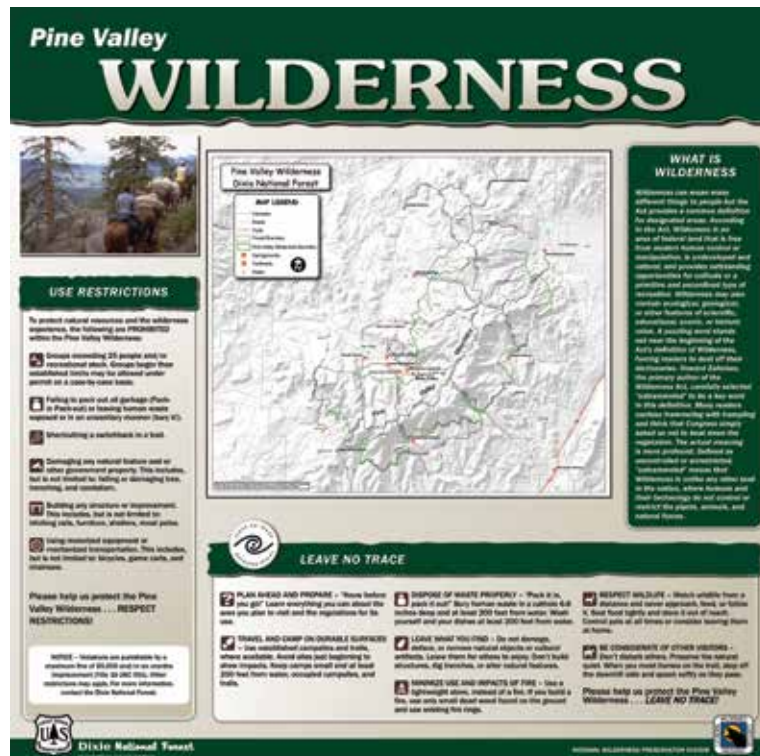


Figure 10B-57—This wilderness sign from the Dixie National Forest describes what wilderness is, lists use restrictions, and several Leave No Trace principles.

It is not necessary to show the entire designated wilderness area on the map; focus on the area that the majority of visitors travel from that trailhead. Use a small inset of the entire wilderness to orient the viewer to the extent of the wilderness.

Wilderness interpretation and education is a vital part of wilderness VIS. Share brief statements of the 1964 Wilderness Act (P.L.88-577), such as, The Wilderness Act of 1964 established the National Wilderness Preservation System to “secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” Wilderness is part of our history and legacy. It is land that is special; wild places where one can retreat from civilization, reconnect with the Earth; and find healing, meaning, and significance. Refer to <www.wilderness.net> for more information, instructions, and templates for creating wilderness signs. Navigate to Tools for Managers, Toolboxes, Signs and Posters, III. Examples, FS Sign Templates—San Dimas Technology and Development Center.

Refer to figures 10B-58 and 10B-59.

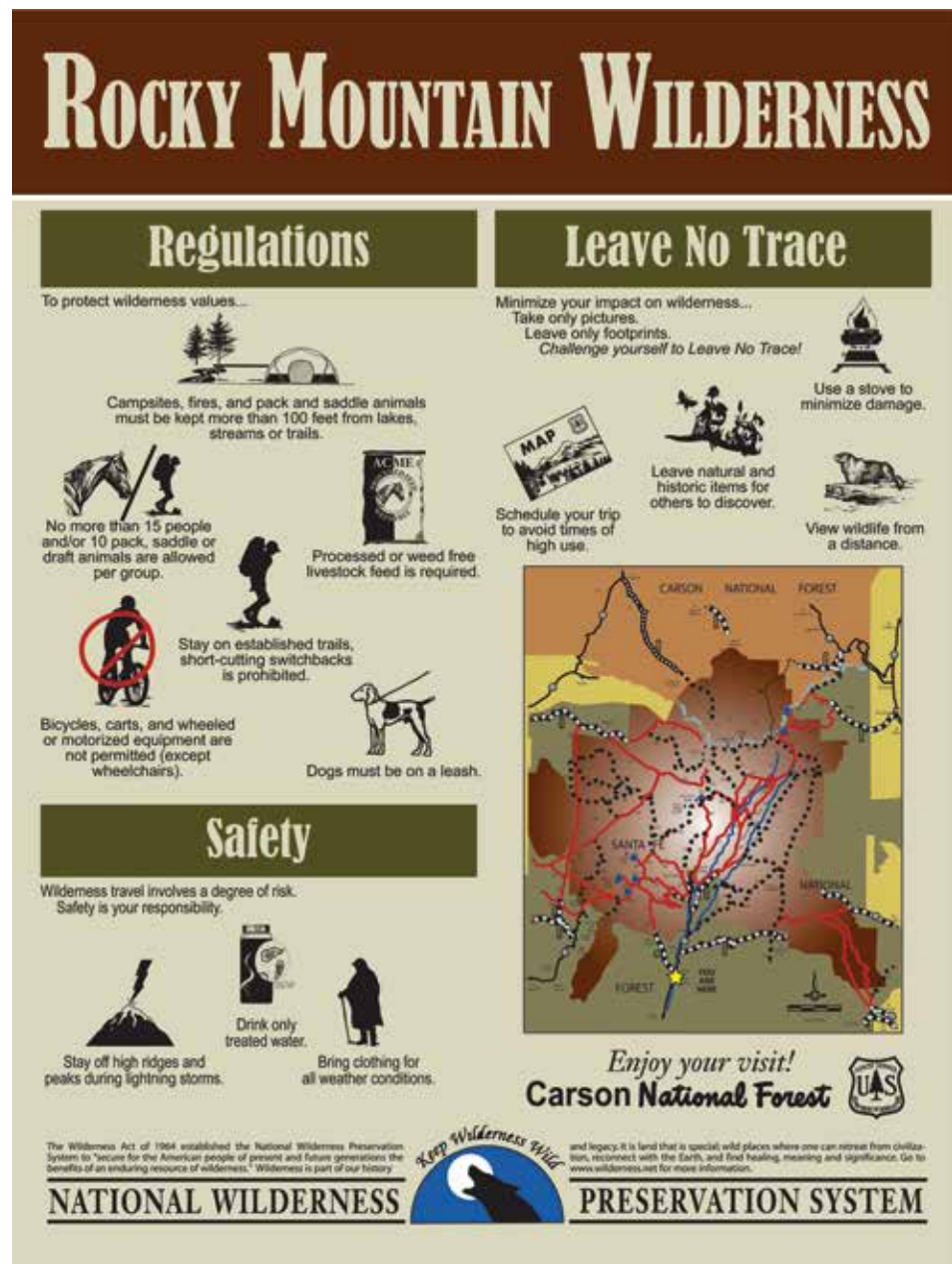


Figure 10B-58—This is an example of a 24- by 18-inch wilderness trailhead sign from the wilderness.net signs and posters toolbox <<http://www.wilderness.net/index.cfm?fuse=toolboxes&sec=signsPosters>>. Go to III. Examples. The sign colors are based on the Rocky Mountain BEIG Province.



Figure 10B-59—VIS wilderness and recreation outside a restroom on the Maroon Bells Recreation Area. Aspen Ranger District, White River National Forest. The VIS in figure 10B-58 is in the same recreation area and has the same theme in VIS style and sign structure. Rocky Mountain BEIG Province.

10B.7.1 Graphic Identity and Continuity

The National Preservation System Logo shown in figure 10B-60, is the multiagency logo. Use it on all wilderness VIS on the bottom of sign panels. On smaller signs write the wilderness theme statement on either side of the arched-portion of the logo instead of a written paragraph in the body of the sign. Refer to <<http://www.wilderness.net/index.cfm?fuse=NWPS&sec=logos>>.



Figure 10B-60—The National Preservation System logo.

10C.1 Introduction.....	1
10C.2 Smokey Bear Fire Rating Sign	1
10C.3 Fire Wheel Rating Sign	5

10C.1 Introduction

Use signs and posters to inform visitors of current fire hazard and use restrictions. Erect Smokey Bear or Fire Wheel Rating signs where the public needs to be informed of potentially dangerous fire conditions. The typical locations for the placement of these signs are at ranger stations, near forest boundaries and recreation complexes, and along roads in extreme fire hazard areas.

Remove or cover the signs when the restrictions or hazards are no longer in effect. Refer to chapter 3D for guidelines on placing signs along roads and highways. See chapter 10B, section 10B.4.1.8 for information on fire management posters.

10C.2 Smokey Bear Fire Rating Sign

The color decal reproduction of Smokey and the fire danger adjectives are available from:

- The Cooperative Fire Prevention (CFFP) Materials Catalog. Contact the Regional Fire Coordinator or State Forester for the CFFP catalog.
- The Smokey Item Cache, Symbols COE Cache, Grand Rapids, MN 55744 www.symbols.gov or 218-327-4282.
- UNICOR (Federal Prison Industries).

Sign manufacturers can make the FIRE DANGER TODAY and PREVENT WILDFIRES panels of the sign. Signs should be ordered as retroreflective white on retroreflective brown mounted on HDO plywood. Manufacturers can also cut the HDO plywood panels for the fire danger adjectives and the Smokey decal, which is cut to the Smokey shape, and mount the adhesive-backed Smokey and fire danger adjectives on these panels.

Figures 10C-1, 10C-2, and 10C-3 give construction and installation details for the Smokey Bear Rating sign.



SBR

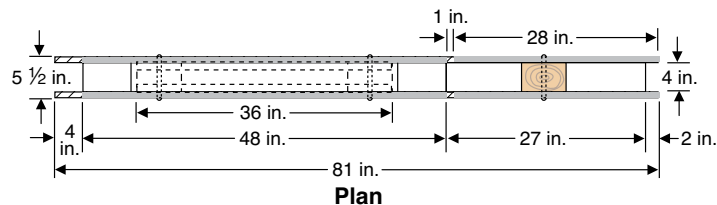
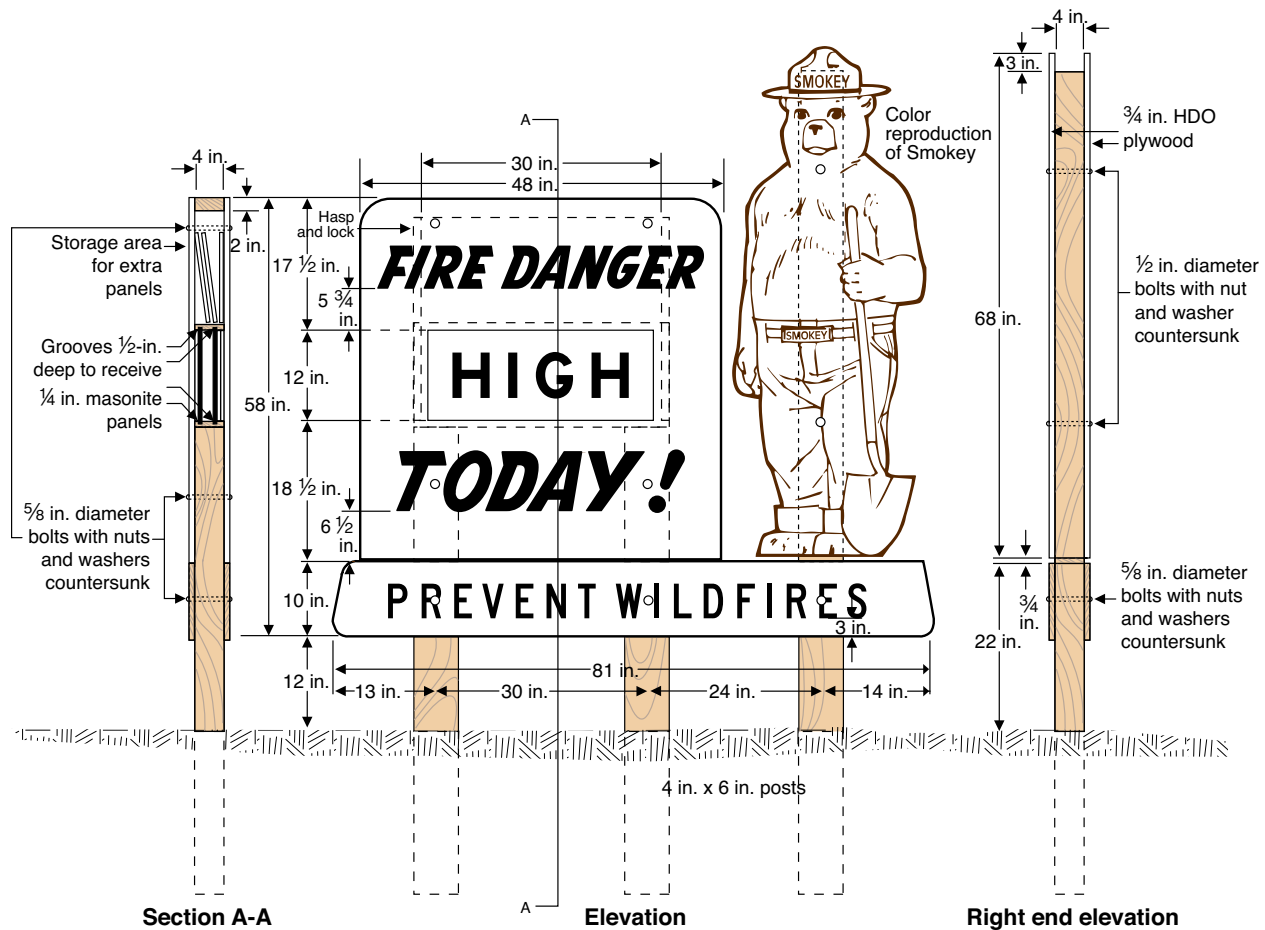


Figure 10C-1—Smokey Bear Fire Rating sign detail.

The Fire Danger and Prevent Wildfires panels can be HDO and retroreflective, MDO routed or dimension lumber. If other than HDO or MDO, increase width dimensions to match materials used.

Painted, Routed Colors

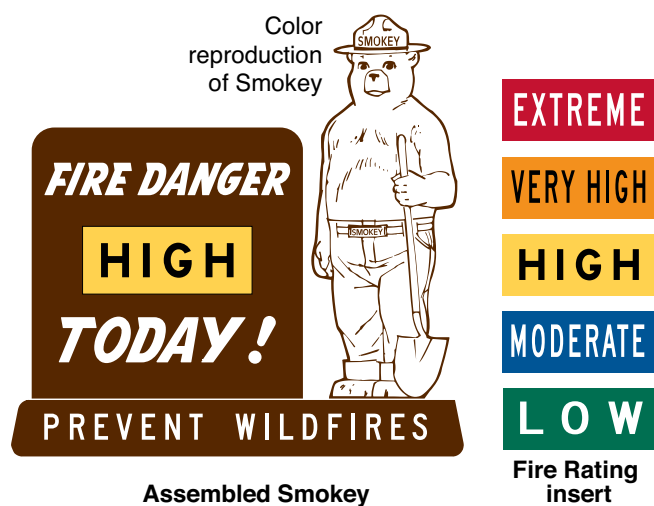
Legend – Yellow-cream (#23695)

Background – Brown (#20059)

Fully Retroreflective Colors

Legend – White

Background – Brown



Sign number/ side	Color		Legend size & series (inches)
	Background	Legend	
SBR-2 Front	Red	White	6C
SBR-2 Back	Orange	Black	6C
SBR-3 Front	Yellow	Black	6E
SBR-3 Back	Blue	White	6C
SBR-4 Front	Green	White	6E
SBR-4 Back	Blank	—	—

Center all text on panel

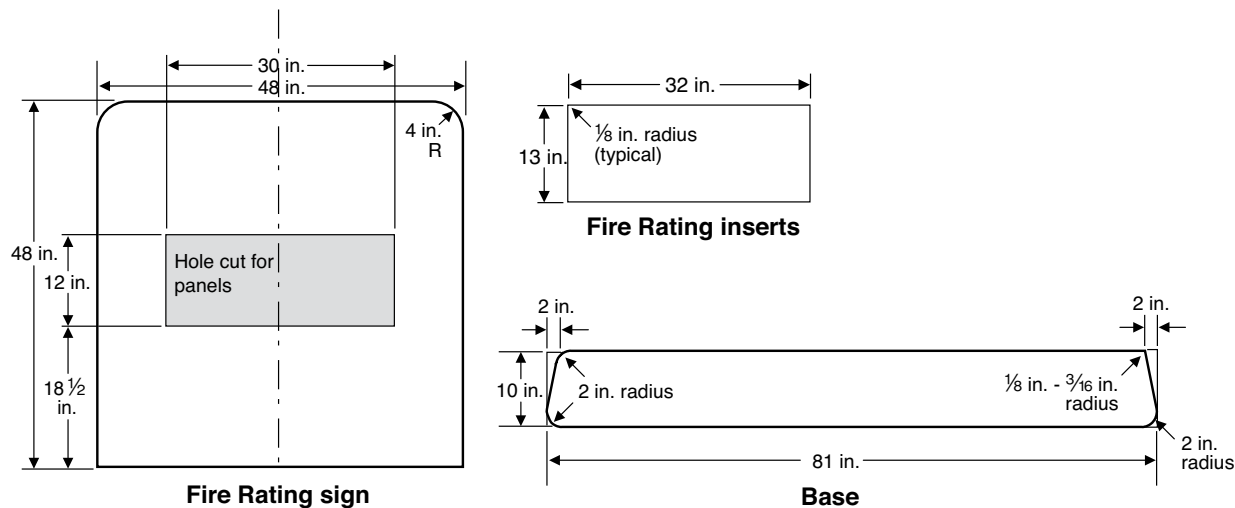
Colors

Panel colors are the standard highway colors given in the MUTCD for retroreflective sheeting.

Smokey

Sign manufacturer to mount Smokey reproductions on $\frac{3}{4}$ -inch HDO plywood cut to shape.

Put reproduction on the plywood as per requirements included with the reproduction.



Fabricate these pieces out of $\frac{3}{4}$ -inch HDO plywood. Cover face of fire rating signs and base with brown retroreflective sheeting and place white retroreflective legends as indicated in figure 10C-1.

Put retroreflective sheeting in the colors and with the legends as shown above on fire rating inserts.

Figure 10C-2—Smokey Bear Fire Rating sign detail.



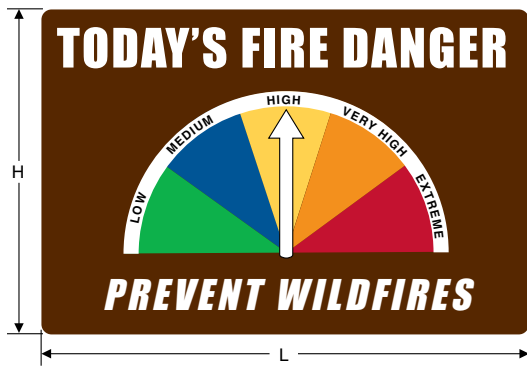
The diagram shows a fire rating sign with three lines of text. The first line is ***FIRE DANGER*** with a height dimension of 6". The second line is ***TODAY!*** with a height dimension of 8". The third line is **PREVENT WILDFIRES** with a height dimension of 4".

Figure 10C-3—Smokey Bear Fire Rating Sign detail.

10C.3 Fire Wheel Rating Sign

The Fire Wheel Rating sign is a less expensive sign that may be suitable for many locations. It gives a more visual representation of the ratings to the public.

Construction and installation plans are shown in figure 10C-4.



Notes

1. Arrow is slotted with a moveable bolt to secure in each rating segment.
2. Embed threaded nut in each segment for arrow bolt.
3. Use "hanging" version for double-sided sign with message and arrow on both sides.
4. It is suggested the sign board be $\frac{3}{4}$ -inch HDO plywood and sign face be retroreflective sheeting.
5. Use standard highway colors given in the MUTCD.

Sign size (inches)		Traffic speed	Post dimensions	Today's Fire Danger	Prevent Wildfires/Forest Fires	Wheel size radius	Letters in wheel segments
H	L	(mph)	(inches)	(inches)	(inches)	(inches)	(inches)
24	48	25 and less	4 x 4	4	3	12	$\frac{3}{4}$
36	60	30 to 45	4 x 4	5	4	18	1
48	72	50+	4 x 6 (6 parallel to road)	6	4	24	1 $\frac{1}{2}$

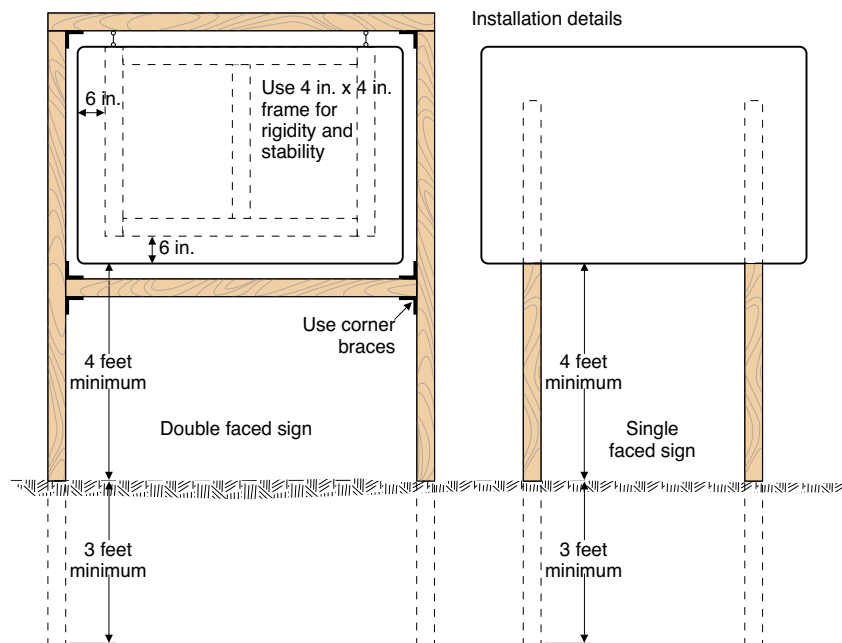


Figure 10C-4—Fire Wheel Rating sign.



Chapter 12 Program Area Signs

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Chapter 12 Program Area Signs

12.1 Introduction

Program area signs are used by specific management areas to provide information on a long-term basis to the public related to that specific program area. The use of program area signs shall conform to all appropriate Forest Service Manual and Forest Service Handbook program area direction.

When program area signs are used they should be installed correctly in accordance with standard procedures and maintained to look fresh and professional at all times.

Program area signs approved for servicewide use are shown in section 12.3 in numerical order for each category. Legend color, size, type, layout and spacing, and background color should match the examples shown in section 12.3. Dimensions for the program area signs shown in section 12.3 are the typical and minimum dimensions for these signs.

New program area signs or those for special applications shall be submitted to the regional office through the regional sign coordinator for approval. The regional sign coordinator may forward these proposals to the Washington Office for consideration of servicewide use.

Remove program area signs when no longer needed.

For short-term needs posters should be used instead of signs. Refer to chapter 10B, section 10B.4.1 for information on posters.

For interpretive signs refer to chapter 10A.

12.2 Sign Substrate

The most commonly used substrates are:

Aluminum—Minimum thickness should be 0.032 inch for signs that will be laid flat with adequate support for the sign surface. Signs mounted where their surface is not adequately supported, such as on posts and trees should have a minimum thickness of 0.063 inch to help prevent damage and bending at the sign edges. The typical thickness for 4 ½ x 5 inch signs is 0.032 inch and for 10 x 7 inch signs it is 0.04 inch.

Corrugated plastic (also known by the brand names coroplast, corex, corflute and plasticor)—Minimum thickness should be 0.157 inch (4 mm). These signs may bow or bend if not laid flat on a surface that adequately supports their surface area. This substrate is more suited for temporary signs.

Polyethylene or polycarbonate flexible plastic—Minimum thickness should be 0.023 inch. Typical thickness is 0.055 inch or greater. These signs may bow or bend if not laid flat on a surface that adequately supports their surface area. This substrate typically does not last as long as aluminum.

Aluminum is the recommended substrate for long-term mounting on posts where the sign will not be laid flat with support for the entire sign surface.

Silk screening the message on the substrate is the recommended method to maximize the life of the sign. When the message is applied using an adhesive backed film the addition of a protective overlay film is recommended. Refer to chapter 14, section 14.3.5.

Chapter 12 Program Area Signs

12.3 Program Area Signs Series

Program area signs that are approved for Forest Service use are grouped by management series and are shown as follows:

• Range—Series 22

Program area signs should be installed correctly and maintained to look fresh and professional at all times.



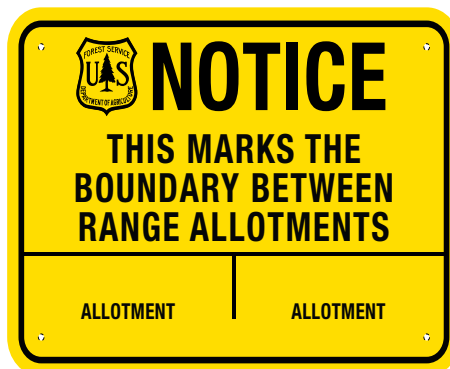
Black on yellow (22-1)

10" x 7"



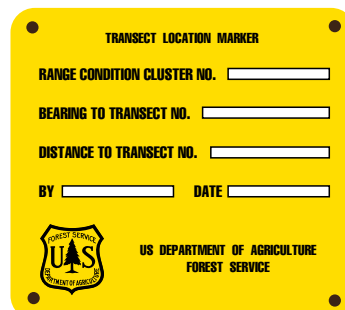
Black on yellow (22-2)

10" x 7"



Black on yellow (22-4)

10" x 7"



Black on yellow (22-7)

5" x 4 1/2"



Black on yellow (22-9)

10" x 7"



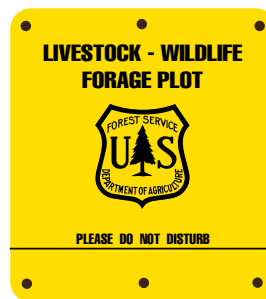
Black on yellow (22-9B)

10" x 7"

Chapter 12 Program Area Signs



Black on yellow (22-10) 10" x 7"



Black on yellow (22-11) 5" x 4½"

• Recreation—Series 23

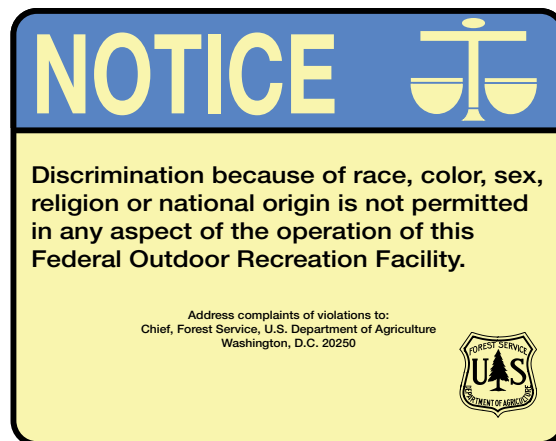
Developed Recreation Site Boundary Sign (23-2)

Developed recreation site boundary signs may be used where there is a need to inform visitors of the boundary of a developed recreation site. Developed recreation site boundary signs may be used to mark the entire boundary or segment of the boundary, such as where the boundary is not clearly defined by a constructed or natural feature. Boundary signs should inform the public without detracting from the natural environment or other administrative signs. If multiple signs are needed, they should be intervisible. Do not locate boundary signs within sight of portal signs or recreation site identification signs. Install developed recreation site boundary signs approximately 4 feet high unless snow depth necessitates higher placement. Face signs away from the developed recreation site, and ensure that they are clearly visible. Mount signs on wood posts or on appropriate trees.

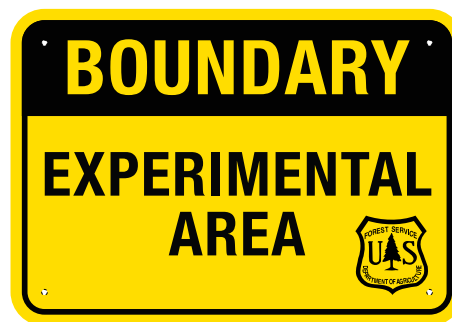


Black on yellow (23-2) 10" x 7"

Chapter 12 Program Area Signs



Blue on light yellow (23-4) 14" x 11"



Black on yellow (23-7) 10" x 7"

• Wildlife—Series 26



Tan on reddish brown (26-3) 5" x 4½"

Chapter 12 Program Area Signs

• Land Use—Series 27



Black on yellow (27-1) 10" x 7"



Black on yellow creme (27-4) 10" x 7"



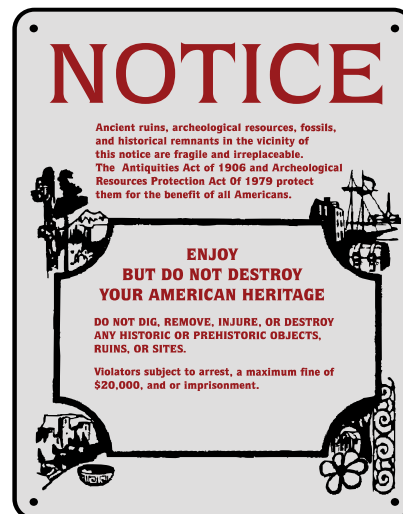
Black on yellow (27-5) 10" x 7"



Black on grey (27-6) 7" x 10"



Black on grey (27-6A) 10" x 7"



Reddish brown on light grey (27-7) 11" x 14"

Chapter 12 Program Area Signs



Black on yellow creme (27-9) 14" x 11"



Black on yellow (27-10) 12"x18"



Black on yellow (27-11) 7" x 10"

Shooting Notice Sign (27-11)

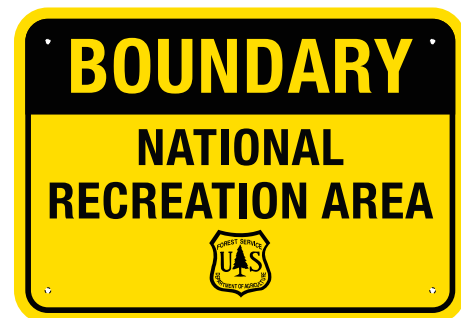
Shooting notice signs may be used to mark the limits of areas where the discharging of a firearm or any other implement capable of taking a human life, causing injury, or damaging property is prohibited. When used, shooting notice signs shall be placed 150 yards in advance of a residence, building, campsite, developed recreation site, or occupied area. If multiple shooting notice signs are needed, they should be intervisible. Install shooting notice signs approximately 4 feet high unless snow depth necessitates higher placement. Face signs away from the residence, building, campsite, developed recreation site, or occupied area, and ensure they are clearly visible. Mount signs on wood posts or on appropriate trees.

Chapter 12 Program Area Signs

• Research—Series 40



Black on yellow (40-1) 10" x 7"



Black on yellow (40-2) 10" x 7"



Black on yellow (40-3) 10" x 7"



Black on yellow (40-4) 10" x 7"

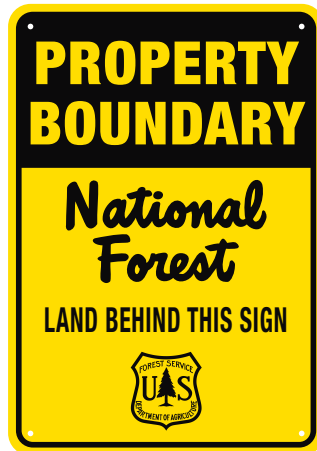
Fire – Series 51



Black on yellow (51-3) 14" x 11"

Chapter 12 Program Area Signs

• Boundary—Series 54



Black on yellow (54-2) 7" x 10"



Black on yellow (54-2A) 2½" x 15"

Black on yellow (54-3) 4½" x 5"

T.		R.	
6	5	4	3
7	8	9	10
18	17	16	15
19	20	21	22
30	29	28	27
31	32	33	34

Black on yellow (54-5) 4½" x 5"

Black on yellow (54-8) 4½" x 5"

Black on yellow (54-9) 7" x 10"

Chapter 12 Program Area Signs

Property—Series 64



Black on yellow (64-1) 10" x 7"



Black on yellow (64-1A) 10" x 7"



Black on yellow (62-2) 10" x 7"



Black on yellow (64-3) 10" x 7"



Black on yellow (64-3A) 10" x 7"

Chapter 13 Accident Prevention and Safety Signing

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Chapter 13

Accident Prevention and Safety Signing

13.1 Introduction

Accident prevention and safety signs are designed to help prevent accidents.

Accident prevention and safety signs, tags, decals, and banners are designed to help prevent accidents, to restrict access to dangerous areas, and to increase awareness of safe practices in places, such as offices, worksites, shops, warehouses, lookouts, and storage facilities. Signs, tags, decals, and banners draw attention to safety equipment and define specific hazards of a nature such that failure to designate them may lead to accidental injury to workers or the public, or both, or to property damage.

These signs, tags, decals, and banners must conform to Occupational Safety and Health Administration (OSHA) specifications (29 CFR 1910.145) and the FSH 6709.11, Health and Safety Code Handbook. While primarily designed for use at offices and work centers, these signs, tags, decals, and banners may be adapted to specific projects. Employees shall be trained in the identification of accident prevention signs and tags.

Several commercial sources publish catalogs with various signs, tags, decals, and banners that comply with OSHA requirements. Contact the Safety and Occupational Health or OSHA coordinator on your unit for assistance. The unit sign coordinator shall approve all signing.

13.1.1 Colors

Red. Use red as the basic color to identify:

- a. Fire protection equipment and apparatus, including fire alarm stations, hydrants, standpipe valves, fire extinguishers or boards on which they are mounted, hose boxes, pumps, firetool and ladder markings, buckets, pails, and water barrels.
- b. Safety cans and other portable containers of flammable liquids. Use additional visible identification in yellow, such as a yellow band around the can or the name of the contents clearly painted or stenciled on the can in yellow.
- c. Emergency stop bars, stop buttons, and electrical stop switches.

Yellow. Use yellow as the basic color to designate caution and for marking physical hazards. Parallel diagonal bars of yellow and black have strong attention-getting values. Examples include:

- a. Physical hazards, such as striking against, stumbling, falling, tripping, slipping, and caught between.
- b. Edges of unguarded platforms, wells, open pits, and aisle markings around hazards.
- c. Projections, protruding parts, low beams and pipes, low or impaired clearances, and coverings or guards for guy wires.

- d. Conveyor parts or other fixtures suspended at hazardous levels from the ceiling or walls and extending into normal operating areas.
- e. Elevation changes, such as stairway approaches, top and bottom steps, risers on nonstandard steps, raised doorsills, and curbs.
- f. Pillars, posts, columns, and aisle obstructions that may be hazards if located in or near passageways.
- g. Frames of elevator doors and gates; lips of horizontally closing doors.
- h. Handrails and guardrails in storage areas.

13.2 Safety Signs

There are several categories of safety signs, each of which is designed for a specific purpose. Select signs based on OSHA requirements for each work area. Choose colors from the opaque glossy samples as specified in OSHA 1910.145.

These do not include safety signs designed for roads, recreation sites, trails, railroads, and marine regulations, nor do they include safety signs applied to work area bulletin boards or safety and education posters.



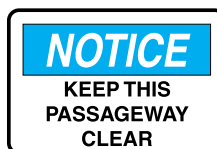
Danger signs. DANGER denotes a hazardous situation with a high probability of death or severe injury. Danger signs should not be considered for property damage accidents unless personal injury is possible. Danger signs indicate immediate danger and that special precautions are necessary.



Warning signs. WARNING denotes a hazardous situation with some probability of death or serious injury. Warning signs should not be considered for property damage accidents unless personal injury is possible.



Caution signs. CAUTION denotes a hazardous situation that may result in minor or moderate injury. Caution should not be used where there is a possibility of death or serious injury. Caution signs should not be considered for property damage accidents unless personal injury is possible.



Notice signs. NOTICE is used to state company policy directly or indirectly regarding personnel safety or property protection. Notice signs should not be associated directly with a hazard or hazardous situation and must not be used in place of danger, warning, or caution signs.



General safety signs. General safety signs (SAFETY FIRST, BE CAREFUL, THINK) should provide general instructions on safe work practices, provide reminders of proper safety procedures, or mark the location of safety equipment.

Chapter 13**Accident Prevention and Safety Signing****13.2.1 Sign Shapes**

Most accident prevention and safety signs are rectangular. Standard sizes are 10 inches by 7 inches, 14 inches by 10 inches, and 20 inches by 14 inches.

All signs shall have rounded or blunt corners and be free from sharp edges, burrs, splinters, or other sharp projections.

13.2.2 Wording

Messages on accident prevention and safety signs should be concise and easy to read. They should contain enough information to be understood easily. The wording should make a positive rather than negative suggestion and should be factually accurate.

Various commercial sources offer standard messages that cover most situations. Messages may also be custom designed to meet individual needs. Contact the Safety and Occupational Health or OSHA coordinator for assistance in selecting the required message.

13.2.3 Materials

Materials for signs may vary. Options include plastic; fiberglass; high-density overlay plywood with reflective or non-retroreflective sheeting; aluminum substrate with reflective or non-retroreflective sheeting; and ABS thermoplastic with silk-screened symbol, copy, and border. Posters of similar design may be used where permanent signs are not needed.

13.2.4 Sign Placement and Mounting

Post signs conspicuously. Avoid cluttering signs in one location or where objects may obscure them. Mount signs at the appropriate viewing height. Place the ends or heads of bolts or other fastening devices in such a way that they do not constitute a hazard.

13.3 Accident Prevention Tags

Accident prevention tags identify hazardous conditions and provide a message to employees with respect to hazardous conditions according to OSHA 1910.145. A “tag” means a device usually made of card, paper, pasteboard, plastic, or other material used to identify a hazardous condition.

Use tags to prevent accidental injury or illness to employees who are exposed to hazardous or potentially hazardous conditions, equipment or operations which are out of the ordinary, unexpected, or not readily apparent. Tags shall be used until such time as the identified hazard is eliminated or the hazardous operation is completed. Tags need not be used where signs, guards or other positive means of protection are being used. Affix tags as close as safely possible to their respective hazards by a positive means, such as string, wire, or adhesive that prevents their loss or unintentional removal.

Do not use tags for construction, maritime, or agriculture facilities or activities.

All employees shall be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.

13.3.1 Wording

Tags shall contain a signal word and a major message. The signal word and the major message shall be understandable to all employees who may be exposed to the identified hazard.

The signal word shall be either “Danger,” “Caution,” or “Biological Hazard,” “BIOHAZARD,” or the biological hazard symbol. The signal word shall be readable at a minimum distance of 5 feet or such greater distance as warranted by the hazard.

The major message shall indicate the specific hazardous condition or the instruction to be communicated to the employee. The tag’s major message shall be presented in either pictographs, written text, or both.

Chapter 13

Accident Prevention and Safety Signing

13.3.2 Tag Categories



Danger tags. Danger tags shall be used in major hazard situations where an immediate hazard presents a threat of death or serious injury to employees. Danger tags shall be used only in these situations.



Warning tags. Warning tags may be used to represent a hazard level between “Caution” and “Danger,” instead of the required “Caution” tag, provided that they have a signal word of “Warning,” and an appropriate major message.



Caution tags. Caution tags shall be used in minor hazard situations where a nonimmediate or potential hazard or unsafe practice presents a lesser threat of employee injury. Caution tags shall be used only in these situations.



Biological hazard tags. Biological hazard tags shall be used to identify the actual or potential presence of a biological hazard and to identify equipment, containers, rooms, experimental animals, or combinations thereof, containing or contaminated with hazardous biological agents.

Other tags may be used in other situations provided that they do not detract from the impact or visibility of the signal word and major message of any required tag.

13.4 Hazardous Materials Signs

Identification and warning signs must be posted on rooms, buildings, and fences in permanent and temporary facilities that are used to store hazardous materials including:

- Pesticides.
- Antifreeze.
- Paints.
- Bituminous materials.

Flammable materials including:

- Gasoline.
- Diesel fuel.
- Motor oil.

Vehicles used to transport hazardous materials must meet labeling and placarding requirements of the U.S. Department of Transportation and FSH 2109.11 and FSM 2150.

The lower portion of the signs shown in section 13.2 may be used to relate safety considerations for hazardous material storage.

13.4.1 Hazardous Material Storage Building

A 15- by 15-inch National Fire Protection Association (NFPA) Hazard Classification Guide placard (figure 13-1), numbered for the highest risk or most hazardous material for each hazard category, shall be placed on the outside front of the hazardous material storage building. Similar, smaller numbered labels or decals should be placed in each separate storage area within the building. The wording and numbering on the signs should comply with NFPA's standard system for identifying the fire hazards of materials (NFPA No. 704-1975). Refer to FSH 2109.12 and FSH 6709.11 for information relating to the NFPA standard system and labeling requirements for packages to be transported.

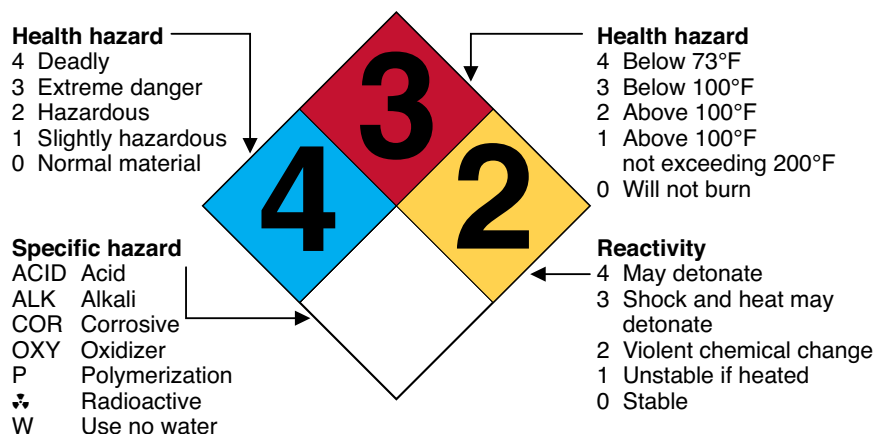


Figure 13-1—NFPA hazard classification guide.

13.4.2 Hazardous Materials Containers

Label each pesticide container with the names of the active ingredients and appropriate hazard warnings that clearly describe the primary health and physical hazard(s) of the material. List the name and address of the manufacturer or other responsible party. In a location where they can be easily read, post Material Safety Data Sheets that include the manufacturer's antidotes for the hazardous materials.

13.4.3 Radioactive Material Signing

Place signs according to OSHA regulations (29 CFR 1910.1096). Use warning signs to identify storage areas for radioactive equipment, such as nuclear gauges. Warning signs are essential because individuals might otherwise be unaware of the presence of a radiation field. Post rooms or areas where radioactive material is stored with a sign reading CAUTION—RADIOACTIVE MATERIAL. Radioactive material signs shall use the conventional radioactive caution colors of magenta or purple and yellow. The symbol shown in figure 13- 2 is the conventional three-bladed design. Radioactive material signs are available from commercial sources.

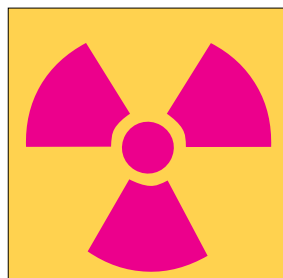


Figure 13-2—Conventional radiation symbol.

In addition to the signs listed in this chapter, provide any additional information that may aid in minimizing exposures to radiation or radioactive materials.

13.5 Biological Hazard Signing

The biological hazard warning symbol shown in figure 13-3 shall be used to signify the actual or potential presence of a biohazard and to identify equipment, containers, rooms, materials, experimental animals, or combinations thereof, which contain, or are contaminated with, viable hazardous agents. "Biological hazard," or "biohazard," includes only those infectious agents presenting a risk or potential risk to the well-being of man.



Figure 13-3—Biological hazard symbol.

13.6 Explosives Signs

Post red-on-white warning signs at sites where explosives are stored. If storing explosives temporarily for a small job or if storing fireline explosives in the field, post the explosives with red-on-white warning signs reading DANGER EXPLOSIVES in letters at least 4 inches high. Refer to figure 13-4. Post permanent storage sites (magazines) with signs reading EXPLOSIVES—KEEP OFF.



Figure 13-4—Explosives signs.

Do not erect signs on magazines in areas where bullets fired at the signs could strike the magazines. See "Guide for Using, Storing, and Transporting Explosives and Blasting Materials," Missoula Technology and Development Center, current version, for information on signing.

See the MUTCD, chapter 6F for information on blasting area signing.

13.7 Work Area Signing

13.7.1 Shops

- Post instructions for power tool and machinery operation at a location where they are readily available to the operator.
- Post OUT OF ORDER warning signs when tools or equipment are not operating, showing when, why, and whom to contact until repairs are completed.
- Incidental storage areas for flammables and combustibles in shop areas must be labeled FLAMMABLE-KEEP FIRE AWAY.
- Post DANGER—NO SMOKING signs inside and outside buildings and at locations where flammables are stored, and in rooms where spray guns are operated.

13.7.2 Gasoline and Automobile Service Stations

- Post NO SMOKING signs outside gasoline stations.
- Post signs that prohibit starting engines while refueling and smoking within 50 feet of the dispensing station.

13.7.3 Lookouts

- Post occupancy load limits at lookout structures.
- Post instructions for telephone and radio use during electrical storms in exposed structures.
- Post at least one scaled evacuation plan that shows escape routes and other information as required in the Health and Safety Code, FSH 6709.11.
- Where necessary, use directional arrows in conjunction with exit signs to point the way to the exit.
- Post instructions for proper safety measures when lightning hazard is imminent.
- When a liquefied petroleum gas system or equipment is used, document the servicing and post the documentation of certification of all tests, adjustments, repairs, or alterations near the appliance in plain view of users as required in the Health and Safety Code, FSH 6709.11, section 39.33c-7.

Chapter 13 Accident Prevention and Safety Signing

13.7.4 Laboratories

- Near each phone in laboratory work areas post the telephone numbers for emergency assistance and the names and numbers of those trained in first aid.
- Mark high-voltage equipment with warning signs indicating the approximate voltage.
- Post proper warnings near equipment that emits nonionizing radiation, such as atomic absorption spectrophotometers, ultraviolet lamps, and lasers.

13.7.5 Buildings and Administrative Sites

- Post at least one scaled evacuation plan that shows escape routes and other information as required in the Health and Safety Code, FSH 6709.11.
- Where necessary, use directional arrows in conjunction with exit signs to point the way to the building exit.

13.7.6 Rappel Towers and Communication Towers

- Post Danger sign for authorized personnel use only.
- Post instructions for proper safety measures when lightning hazard is imminent, such as the sign shown in figure 13.6.

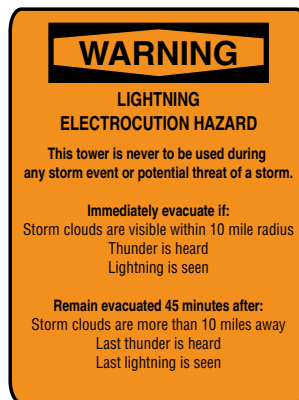


Figure 13-6—Warning sign for rappel tower.

13.7.7 Piping Systems

- Use proper pipe identification to inform employees of potential hazards in accordance with the latest edition of ANSI A13.1-1981.

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Chapter 14 Manufacturing Specifications

14.1 Introduction

These specifications apply to all Forest Service sign manufacturing, whether by Federal or State prison industries, commercial sign shops, or force account operations.

14.2 Applicable Documents and References

Unless otherwise specified, the following applicable documents and references contained in these documents are those in effect on the date of the sign requisition, invitation to bid, or request for proposal.

14.2.1 U.S. Government Documents

USDA Forest Service

- Engineering Management series, EM-7100-15 “Sign and Poster Guidelines for the Forest Service.”

U.S. Department of Transportation Federal Highway Administration (FHWA)

- “FP-03—Standard Specification for Construction of Roads and Bridges on Federal Highway Projects” (latest edition), Section 718 Traffic Signing and Marking Material, and Section 633 Permanent Traffic Control, ISBN No. 0-16-051430-4. FP-03 is available from the Superintendent of Documents, U.S. Government Printing Office, www.bookstore.gpo.gov or phone (866) 512-1800.
- MUTCD—“Manual on Uniform Traffic Control Devices for Streets and Highways” (latest edition). The MUTCD is available from the FHWA at <http://mutcd.fhwa.dot.gov/> and by sale from organizations, such as the American Traffic Safety Services Association (ATSSA). 1-800-272-8772 or <http://www.atssa.com>
- “Standard Highway Signs,” Stock No. 950-044-00000-4 or latest edition.

Federal Standards and Specifications

- MMM-A-181D—Adhesives, Phenol, Resorcinol, or Melamine Base (latest edition).
- TT-P-19D(1)—Paint, Latex (Acrylic Emulsion, Exterior) superseded by.
- A-A-3183—Paint, Latex, Exterior, (For Wood and Masonry), (latest edition).
- A-A-2336—Primer Coating (Alkyd, Exterior Wood, White and Tints), (latest edition).
- FED-STD-595—Colors Volume 1 (latest edition)
Color Numbers (all).
Color Number 20059 Brown Stain.
Color Number 36357 Gray Stain.

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- FED-STD 595B—Color Chips—Fan Deck, Stock Number 7690-01-162-2210.

The above documents and Federal color chips are available from the General Services Administration, Federal Supply Service FSS Acquisition Management Center, Environmental Programs and Engineering Policy Division (FCOE), Washington, DC 20406.

14.2.2 Nongovernment Publications

APA The Engineered Wood Association

- PS1-95—“Construction and Industrial Plywood” available from, APA U.S. Headquarters and International Marketing Division, 7011 South 19th Street, P.O. Box 11700, Tacoma, WA 98411-0700.

American Society for Testing and Materials (ASTM)

- D4956—“Standard Specification for Retroreflective Sheeting for Traffic Control,” (latest edition). This specification covers various types of retroreflective sheeting. Refer to the section on sheeting in this chapter.
- B209 “Standard Specification for Aluminum-Alloy Sheet and Plate,” (latest edition), 5052-H38 Aluminum Plate, 6061-T6 Aluminum Plate

Copies of these specifications are available for purchase from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

14.3 Retroreflective Signs

14.3.1 Description

All materials, labor, tools, equipment, and supplies used to manufacture retroreflective signs as well as their packaging and shipment to the designated destination shall comply with this specification, drawings, and other specifics of the requisition. Workmanship shall be high quality with no visible defects in the finished product.

14.3.2 Substrate

Dimensions for sign panels shall be as shown on the detail drawings, with a tolerance of $\pm\frac{1}{4}$ inch.

Aluminum—The aluminum substrate shall be alloy 5052-H38 or 6061-T6 from flat sheet stock conforming to the requirements of ASTM B209 and FP-03 section 718.05. Clean, degrease, and properly prepare the panels according to methods recommended by the sheeting manufacturer. Conversion coatings will conform to ASTM B-921 or ASTM B-449.

Minimum thickness shall be 0.08 inch for panels up to 30 inches in any dimension and 0.125 inch for panels 30 inches and larger in any dimension. It is not required to paint the back side of the sign.

Workmanship shall be high quality with no visible defects in the finished product.

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Aluminum panels should not come in direct contact with wood posts treated with alkaline copper quaternary (ACQ) preservatives. Allow ¼-inch minimum spacing between treated wood and aluminum sign panels or coat the back of the sign that will be in contact with the post.

Corrugated Plastic (also known by the brand names Coroplast, Corex, Corflute, and Plasticor)—An extruded polypropylene plastic sheet with fluted construction or corrugations that provide strength and minimizes weight. Use a minimum thickness of 0.157 inch (4 mm) for signs 36 inches and under in any dimension, and 0.394 inch (10 mm) for signs greater than 36 inches in any dimension.

Fiberglass-reinforced plastic (FRP)—Fiberglass reinforced plastic shall comply with the recommendations of the Fiberglass Reinforced Panel Council publication “Recommended Traffic Control Sign Panel Specification.” Unless otherwise specified in the contract, the color of the material shall be brown, matching Federal Standard 595a, color #20059, or an alternative brown color approved by the contracting officer. Refer to FP-03, section 718.06(b) for additional requirements.

Use a minimum thickness of 0.08 inch for signs 12 inches and under, 0.125 inch for signs with the largest dimension between 12 and 24 inches, and 0.135-inch-thick panels for signs exceeding 24 inches in any dimension.

High Density Overlay (HDO) plywood—Overlay color may be either black or buff unless otherwise specified. Minimum ½-inch plywood shall be used for signs less than 24 inches in longest dimension. Minimum ⅝-inch plywood shall be used for all other signs cut from a single sheet of plywood. Three-quarter-inch HDO plywood shall be used for all signs requiring joining.

Polyethylene or polycarbonate flexible plastic—Minimum thickness shall be 0.055 inch and maximum thickness shall be 0.125 inch.

Wood-plastic composite (WPC)—WPCs are a composite of wood fibers mixed with thermoplastic resins. Initial testing indicates WPC is a satisfactory substrate for retroreflective signs, although it is a somewhat heavier substrate than plywood. When specified as a substrate for signs, the WPC shall contain a minimum of 50 percent wood fibers. Wood flour or finer ground wood products are not to be used because they produce lower mechanical strengths in the composite substrate. The composite material shall be either tan or brown in color and may be manufactured using compression molding, extrusion, or injection molding. Thickness for the substrate shall be the same as for the applicable HDO plywood substrate signs.

14.3.3 Sheeting

All retroreflective materials (sheeting, legend, borders, and symbols) shall conform to FP-03 or the latest edition and ASTM D 4956. All retroreflective sheeting shall be ASTM Type III, high-intensity, unless another type of sheeting is specified. Refer to chapter 3, table 3-2. Regardless of the type of retroreflective sheeting selected it is important to ensure that the inks or ElectroCut (EC) films that are used are compatible and approved for use by the manufacturer of the sheeting. It also is important to ensure that a reputable sign

Chapter 14 Manufacturing Specifications

manufacturer is selected that will use compatible materials that will be covered under the material manufacturers warranties. With the proliferation of color printers it is easy for a nonreputable sign manufacturer to print color film for application on the retroreflective material that is inferior and will not last for the expected time period.

Refer to chapter 3, section 3.3.2 for additional information on the merits of the different types of reflective and retroreflective sheeting.

14.3.4 EC Film

ATSM EC Transparent Overlay Film is a durable, transparent, acrylic colored film coated with a transparent, pressure-sensitive adhesive that is protected by a removable liner.

Colored EC Film is often used instead of silk screened inks to provide transparent colored background copy for retroreflective signs.

14.3.5 Protective Overlay Film

When specified, cover the entire face of a sign with a clear high-performance, solvent-resistant, ultraviolet-stabilized, pressure-sensitive adhesive, protective overlay film. Use 3M Scotchlite Premium Protective Overlay Film Series 1160 or approved equivalent. This film is a durable overlay sheeting which significantly extends the durability and life of a sign manufactured with pressure-sensitive letters and characters, especially when installed in areas where the sign is subjected to snow burial. Sign defacement from graffiti or other vandalism can often be cleaned from this overlay film. Overlay films also reduce sign damage from paintball gun impacts.

14.3.6 Edge Film

When specified, edge film shall be vinyl that is pressure-sensitive, premium quality, clear, and ultraviolet-resistant. Top-edge tape extends the life of signs with HDO substrates and retards peeling or delamination of the pressure-sensitive background sheeting from the substrate of the sign. It normally should be specified for signs, regardless of the substrate, located at higher elevations subject to snow burial, and in wet, damp climates. Top-edge film is not needed when specifications call for clear overlay sheeting to be applied over the face and top of the sign.

14.3.7 Fonts

Fonts are as shown on the drawings in these guidelines unless otherwise specified.

14.3.8 Paint

Paint applied to any surface of the substrate shall be premium grade exterior, silicone alkyd enamel. For HDO plywood, colors should match the specified color of the substrate or sheeting, unless otherwise specified.

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14.3.9 Silk-Screen Inks

Refer to FP-03, section 718.11(a).

14.3.10 Manufacturing Requirements

14.3.10a Sign Panel Preparation

Sign panels shall be cut from the specified substrate material that is flat and free of warp or any defects that interrupt smooth continuity of the panel surface. All panels shall be prepared precisely as described in writing by the substrate and sheeting manufacturers. The sign manufacturer shall assure that the retroreflective sheeting is applied to the proper side of the substrate where applicable. Sign panels less than 4 by 8 feet shall be cut from a single sheet of substrate material without joints.

HDO sign panels larger than 4 by 8 feet shall be fabricated in sections using $\frac{3}{4}$ -inch thick HDO substrate material. Individual panel sections shall be prepared so they can be joined using doweled butt joints. Dowels shall be $\frac{3}{8}$ -inch threaded metal bolt stock, $4\frac{1}{2}$ inches in length, placed 2 inches from each side and every 12 to 15 inches along the joint. Refer to figure 14-2 for typical details. Actual joining of the individual panels shall occur during sign installation.

14.3.10b Beveling

All edges of sign plywood panels shall be slightly rounded or beveled (typically, 45 degrees by $\frac{1}{16}$ inch) to eliminate edge sharpness.

14.3.10c Corner Radius

Each corner radius shall be as specified in the drawings.

14.3.10d Drilling

Holes, when required, shall be drilled at the locations and to the sizes shown on the drawings. All holes shall be deburred such that all burrs and sharp edges are removed.

14.3.10e Preliminary Edge Finishing (HDO)

All core-gap holes on HDO plywood signs shall be filled with exterior wood filler. Sign edges shall be sanded with sandpaper (60 to 80 grit) to produce a smooth surface and shall receive one coat of paint before application of background sheeting.

14.3.10f Sheeting, Legend, Border, and Symbol Application

All sheeting, legend, borders, and symbols shall be applied precisely as prescribed in writing by the manufacturer of the material being used. The entire face of the sign panel shall be covered with one unspliced sheet, unless the substrate panel exceeds 48 inches in vertical dimension. In this case, only horizontal splicing shall be used. Materials shall be color matched by use of sheeting from the same factory lot number and manufacturing date, and the splice shall not coincide with any legend. The top piece shall overlap the bottom piece by a minimum of $\frac{1}{2}$ inch. Refer to figure 14-1.

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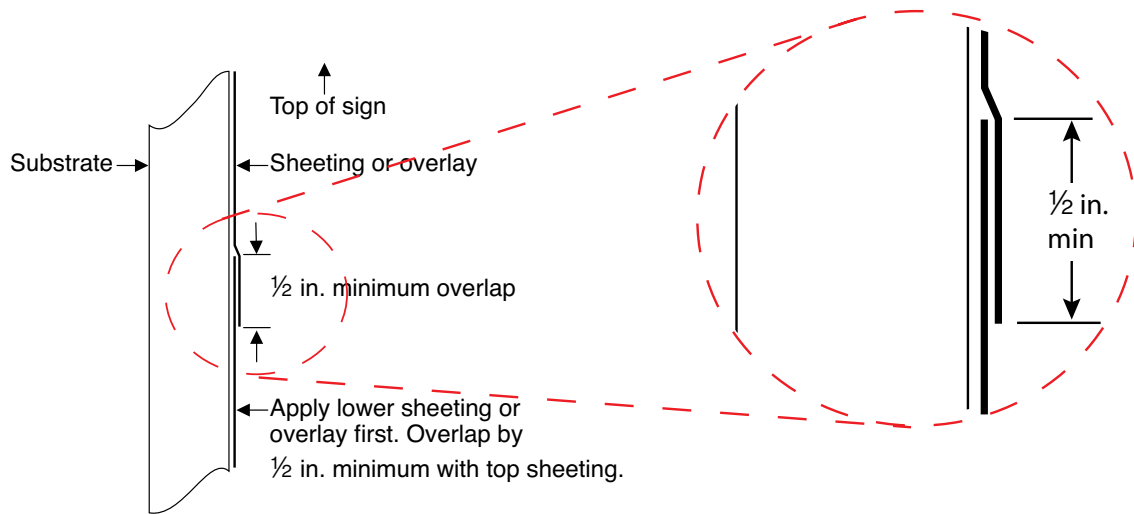


Figure 14-1—Sheeting or overlay overlap detail.

All letters, layout, and spacing requirements for guide and information signs shall conform to the “Standard Alphabets for Highway Signs,” FHWA, current edition, and as shown on drawings. The following tolerances shall apply:

- Legend, numerals, and symbols shall be horizontally aligned to a tolerance of $\pm\frac{1}{16}$ inch.
- Legend, numerals, and symbols shall be vertically aligned to a tolerance of $\pm\frac{1}{16}$ inch.
- Spacing between lines shall not exceed a tolerance of $\pm\frac{1}{16}$ inch.

Protective overlay film and borders shall be applied in the following order to create a shingling effect:

1. Apply bottom border strip and trim to outside edge of substrate.
2. Apply bottom corners (radius) and trim to outside edge of substrate.
3. Apply left and right border strips and trim to outside edge of substrate.
4. Apply top corners (radius) and trim to outside edge of substrate.
5. Apply top border strip and trim to outside edge of substrate.
6. If specified in the requisition, apply clear protective overlay film over the entire face of the sign.
7. Apply edge film, when specified on the requisition, over the top edge of the panel as follows:

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Edge film widths shall be selected as follows:

Sign panel thickness (inches)	Edge film minimum width (inches)
$\frac{1}{16} - \frac{3}{8}$	1
$\frac{1}{2} - \frac{5}{8}$	2
$\frac{3}{4} - 1$	3

Edge film shall be applied to extend a minimum of 1-inch below the top corner radius on each side of the panel.

14.3.10g Silk-Screening

Refer to FHWA FP-03, section 718.11.

14.3.10h Final Trimming and Edge Finishing

After all sheeting, legends, borders, and symbols have been applied to the substrate, all excess material shall be trimmed flush with the edge of the sign panel, except sheeting may overlap HDO plywood substrate edges by $\frac{1}{8}$ inch. After trimming, the edges of HDO plywood substrate signs shall be finished with a second coat of paint applied in accordance with the recommendations of the paint manufacturer.

14.4 Routed Signs

14.4.1 Description

All materials, labor, tools, equipment, and supplies used to manufacture routed signs as well as their packaging and shipment to the designated destination must comply with this specification, drawings, and other specifics of the requisition. Wood substrates shall meet all grading requirements with no visible defects, including unsound knots, checks, splits, or cracks. Routing shall be even across the sign face. The finished product shall be high quality.

14.4.2 Substrate

The manufacturer shall obtain approval from the contracting officer to use substrate materials other than those defined herein for sign manufacture. Cleats shall be of the same material and specifications as the material in the sign panel unless specified otherwise by the manufacturer.

Fiberglass Reinforced Plastic (polyethylene) (FRP)—FRP is an exceptionally strong composite made from fiberglass reinforced in a plastic (polymer) matrix. The extremely durable material requires little or no maintenance. Complex forms and shapes are easily molded, such as Forest Service shields. It will not crack, warp, oxidize, rust, break, or suffer ultraviolet deterioration. It has superior corrosion and chemical resistance and repels graffiti. Fiberglass may have a smooth surface or a wood grain surface. Follow manufacturer's recommendations for proper mounting, maintenance, and repair. Refer to section 14.5.

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High-Density Polyethylene (HDPE or recycled plastic)—This non-biodegradable plastic is extremely durable and requires little or no maintenance. It will not crack, warp, oxidize, rust, break, or suffer ultraviolet deterioration. It withstands temperatures as low as minus 40 degrees Fahrenheit and repels graffiti. It has some flexible characteristics and may require metal or wood reinforcement for proper support. Follow manufacturer's recommendations for proper mounting, maintenance, and repair.

Up to three layers of polyethylene are bonded through an extrusion process called "A/B/A" format. The surface "A" is one color with a contrasting core "B" underneath. The surface can be routed to expose the core color underneath or the surface material around the legend can be routed away leaving a raised surface in the "A" color. The HDPE sheets consist of a 1/8-inch top layer, a 1/2-inch middle core layer, and a 1/8-inch bottom layer. The combination of layers shall provide a unified 3/4-inch-thick panel free of any jointing, unless requested for oversized signs. When jointing is required, use plastic biscuits placed 2 inches from each panel end and 12-inch centers. The material is produced in a solid sheet that is 5 feet by 10 feet by 3/4-inch thick.

Medium Density Overlay (MDO) plywood—MDO plywood shall be all Douglas fir, grade B, plugged core or better, exterior type, and B-B (or better) face and shall otherwise conform to U.S. Product Standard, PS-1, current edition. Three-quarter-inch material shall be 7-ply, and 1-inch material shall be 9-ply. The resin-treated MDO facing shall be on both sides of the finished product and shall present a smooth, uniform surface intended for high-quality paint finishes. Each panel edge brand shall include the following: MDO B-B G1 EXT APA PS-1.

Western Red Cedar—Cedar shall be grade-marked Western Red Cedar (*Thuja plicata*), clear heart or A-clear grades, vertical grain, kiln dried with a maximum moisture content of 15 percent, nominal thickness of 2 inches, and in accordance with the "Grading Rules for West Coast Lumber," West Coast Lumber Inspection Bureau, current edition, including any supplements.

White Oak—White oak shall be FAS (First and Seconds) grade, relatively knot free, and in accordance with the "National Hardwood Lumber Association Grading Rules," current edition. White oak shall have a finished thickness of 3/4 to 13/16 inch.

Red oak may not be substituted because it has inferior resistance to decay in outdoor exposures.

Wood-Plastic Composite (WPC)—WPCs are a composite of wood fibers mixed with thermoplastic resins. WPC is somewhat heavier than plywood. When specified as a substrate for signs, the WPC shall contain a minimum of 50 percent wood fibers. Wood flour or finer ground wood products are not to be used because they produce lower mechanical strengths in the composite substrate. The composite material shall be either tan or brown in color, and may be manufactured using compression molding, extrusion, or injection molding. Thickness for the substrate shall be the same as for the applicable MDO plywood substrate signs.

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14.4.3 Adhesive

The adhesive (glue) shall be phenolic resorcinol, moisture resistant in accordance with Federal Specification MMM-A-181C.

14.4.4 Hardware

All hardware, such as screws, bolts, and washers shall be zinc plated.

14.4.5 Primer, Paint, and Stain

Primer—Primer shall be top quality and oil based conforming to Federal Specification TT-P-25.

Paint—Paint shall be top-quality exterior acrylic (high-acrylic) latex enamel conforming to Federal Specification TT-P-19. Unless shown otherwise in drawings, colors shall be Federal Standard 595, as shown in table 14-1.

Table 14-1 Federal Standard colors

Color	595 No.
Brown	20059
Yellow-cream	23695
Orange	12473
White	27875
Light Blue	15187
Black	17038
Green	14260
Tan	20260
Seminole Brown	20109
Gray White	27722

These lists are not all-inclusive; drawings may specify other colors. The five-digit numbering system used for the colors is based on the assignment of numerals, which indicate the following:

1. The first digit indicates the category of finish; 1-full gloss; 2-semigloss; 3-lusterless (flat).
2. The second digit indicates the selected color classification group.
3. The last three digits indicate the approximate order of increasing (diffuse) reflectance.

Stain—Stain shall be semitransparent, oil based. The final product shall match the following colors:

- Gray stain. Gray stain shall match Federal Standard 595, No. 36357.
- Brown stain. Brown stain shall match Federal Standard 595, No. 20059.

14.4.6 Manufacturing Requirements

14.4.6a Medium-Density Overlay (MDO) Plywood

Sign board panels less than 4 by 8 feet shall be cut from a single sheet (minimum $\frac{3}{4}$ -inch thick) substrate material (without joints) and shall be flat and free of warp or any defects that interrupt smooth continuity of the panel surface. Joining will be permitted only on those sign board panels exceeding 4 by 8 feet. One-inch-thick material shall be used for all MDO signs requiring joints.

Only doweled butt joints shall be used. Dowels shall be $\frac{3}{8}$ -inch threaded bolt stock, $4\frac{1}{2}$ inches in length, placed 2 inches from each side and every 12 to 15 inches along the joint. Refer to figure 14-2 for details. A doweling jig shall be used as a guide to drill dowel holes. All wood chips and sawdust shall be removed from the dowel holes and joint surfaces before joining. Dowels shall be dipped in glue before insertion.

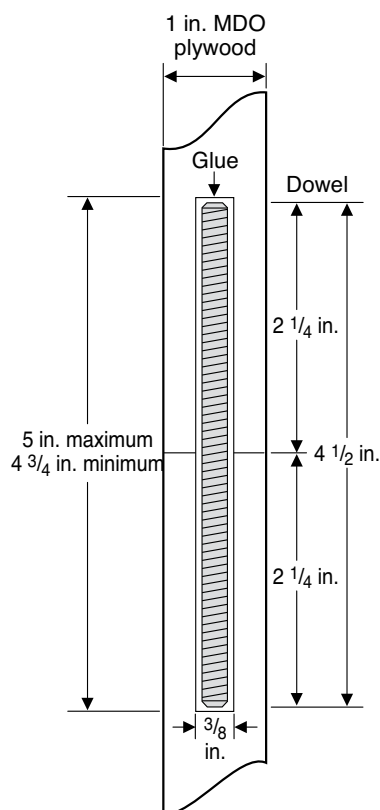


Figure 14-2—Butt joint with dowels, MDO plywood.

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All core-gap holes shall be filled with exterior wood dough. All panel edges shall be sanded to eliminate edge sharpness but not to exceed 1-ply in depth. Preparing, gluing, clamping, and finishing of the plywood panels shall be as described in other sections of this specification. Care shall be taken not to sand through the MDO overlay at the joint. Exposed surface wood is not acceptable on sign faces. Cleats should be attached as shown in figure 14-3.

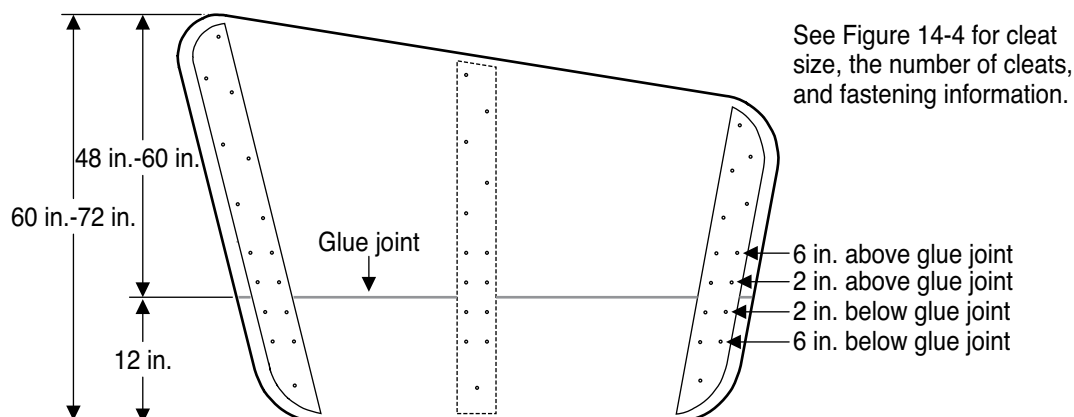


Figure 14-3—MDO plywood cleating details.

14.4.6b Lumber

Sign panels made of lumber shall be fabricated from boards not more than 8 inches nor less than 4 inches wide, except that Forest Service shields and trail signs up to 10 inches in height may be made from one board. Joined boards shall provide a smooth match on all surfaces. Joining of boards for sign panels shall be accomplished with butt joints, side grain to side grain. The surfaces to be joined shall be machined just before bonding. Only horizontal joints shall be permitted.

Preparation of surface joints—Surfaces to be glued shall be smooth, true, and free from machine-joining marks and chipped or loosened grain.

Temperatures—Air temperatures shall be not less than 70 degrees nor more than 90 degrees Fahrenheit, or as otherwise recommended by the adhesive manufacturer, during the glue application and curing process.

Glue application—The entire surface of each joint face shall be covered with the specified glue. The glue manufacturer's recommendations concerning the amount applied, drying time, and other application procedures shall be followed.

Clamping and curing—A minimum of four clamps shall be used on sign panels less than 48 inches long. An additional two clamps shall be used for each 12 inches of additional length. Clamps shall be alternated on the front and back of the sign panel and tightened in dual sequence starting in the middle of the sign panel. All clamps shall be tightened to apply sufficient pressure to ensure tight joints without warping the panel. The clamps shall remain in place for a minimum of 12 hours or as recommended by the adhesive manufacturer, whichever is longer.

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Surface and edge finishing—All surfaces shall be sanded to provide a smooth surface. Sawdust, wood chips, and so forth, shall be removed from all surfaces. All exposed edges of the sign panel and cleats, when applicable, shall be routed with a corner-rounding bit ($\frac{1}{8}$ - to $\frac{3}{16}$ -inch radius) to eliminate edge sharpness.

Cleating—Sign panels of more than one board shall have cleats attached on the back side (see figure 14-4). Cleats for lumber signs shall be of the same lumber type as the sign panel. Nominal 1- by 4-inch cleats shall be used for signs less than 16 inches high or 36 inches wide. Nominal 2- by 4-inch cleats shall be used for signs up to 30 inches high or 60 inches wide. Nominal 2- by 6-inch size material shall be used for all larger signs.

Cleats shall extend vertically to within 1 inch of the top and bottom of the sign panel and shall be located approximately 2 inches horizontally from the sides of the panel. Sign panels less than 4 feet long shall have one cleat on each side. Sign panels longer than 4 feet shall have additional cleats, equally spaced, so that the maximum distance between cleats does not exceed 3 feet. Cleats shall be predrilled with $\frac{1}{4}$ -inch holes and attached with No.12 or No.14 zinc-plated, hex-head screws. Fasteners shall be located at the center of each sign panel board and offset to prevent splitting. A single row of fasteners shall be used for 4-inch-wide cleats. A double row of fasteners shall be used for 6-inch-wide cleats. Do not place fasteners in glue joints.

14.5 Fiberglass Reinforced Plastic (FRP) Signs

This item consists of furnishing all materials, labor, tools, equipment, and supplies for the manufacture of fiberglass reinforced plastic (FRP) signs in accordance with this specification, drawings, and as specified on procurement documents. Workmanship shall be high quality with no visible defects in the finished product. Fiberglass reinforced plastic signs shall be fabricated by hand layup. FRP also may be referred to as glass fiber reinforced polyethylene.

14.5.1 Design Requirements

Fiberglass reinforced plastic design shall follow the procedures and methods, utilize the equations and formulas, and incorporate the factors of safety and allowable design stresses and strains as set forth in ASTM D 4097, ASTM D 3299 and ASME RTP-1. Where design conflicts arise between the various standards, the most stringent design shall be used.

The design shall allow for the most severe combination of conditions, which may include any or all of the following:

- Superimposed loads such as those due to wind and seismic forces.
- Loads applied during transportation and erection.
- Thermal expansion and contraction.

14.5.2 Materials

- Resin used to fabricate the FRP sign shall be polyester for the structural layer.

Chapter 14 Manufacturing Specifications

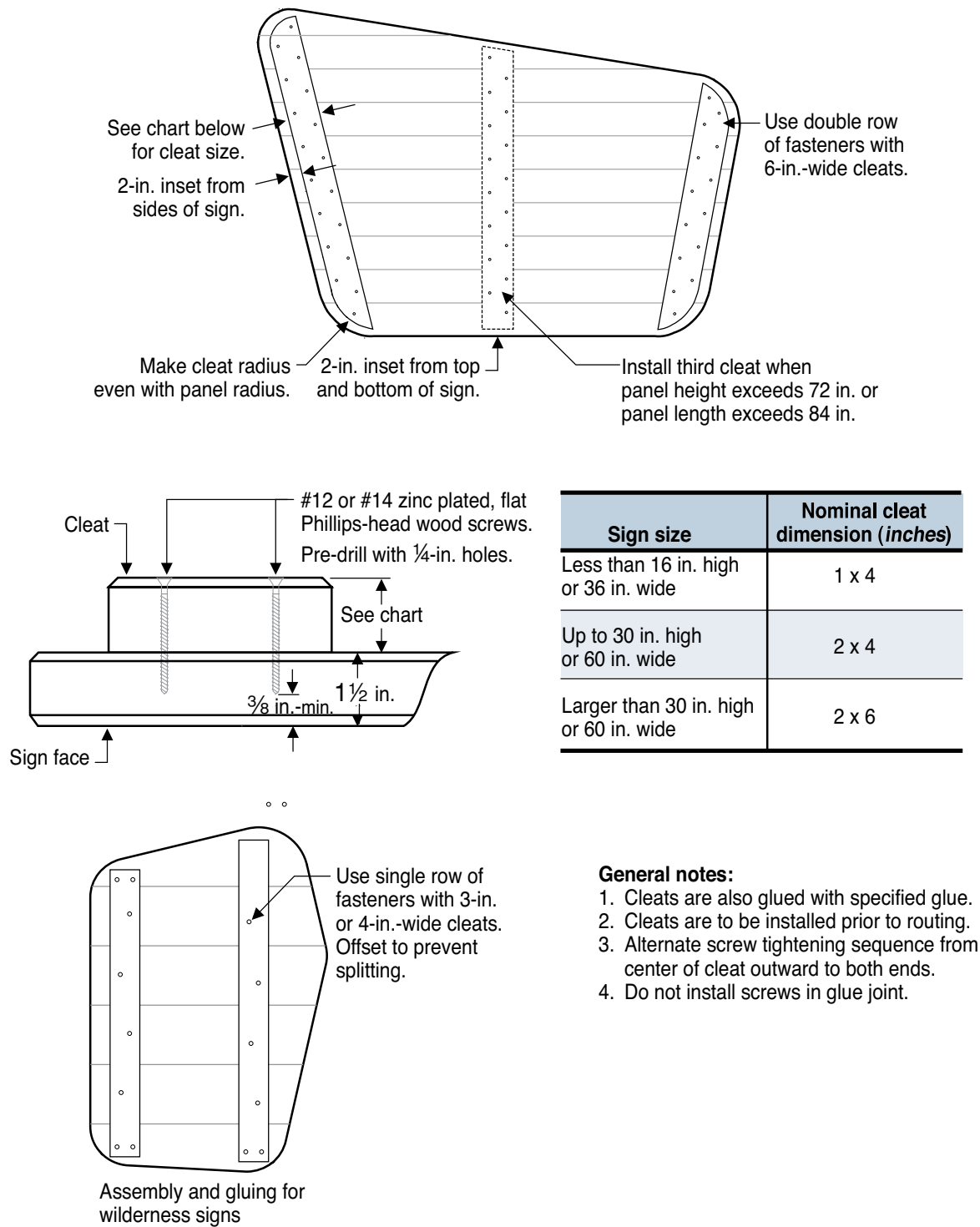


Figure 14-4—Dimensional lumber cleating detail.

Chapter 14 Manufacturing Specifications

- Catalysts and promoters shall be of the type and amount recommended by the resin manufacturer for use with their resin in the required service. Positive measurement control of catalysts, promoters, and resins shall be maintained at all times.
- All secondary laminates in contact with the stored chemical shall be made with using the same resin as used in the corrosion barrier.
- Glass fiber reinforcement used shall be a commercial grade 1½-ounce glass matte.
- Polyester gel coats shall be in standard colors, or as specified.
- Ten-pound density or higher polyurethane closed cell foam shall be used for the interior reinforcements of single-faced signs.

14.5.3 Manufacturing Requirements

Fiberglass signs are manufactured by producing either a smooth or a wood-grained appearance on the sign face, routing the face of the sign, backing it with a substrate material, and laminating the whole product in fiberglass and resin.

Sign colors shall be Federal Standard 595, Brown #20059 and yellow-cream #23695, or as specified.

14.5.3a Single-Faced Signs Construction

Sign faces shall receive a minimum of 11 mils of polyester gel coat, backed with a minimum of three layers of 1½ ounces of fiberglass matte and laminating resin. Substrate material shall be 10-pound foam. Finish fiberglass thickness shall be $\frac{5}{16}$ to $\frac{1}{2}$ inch of fiberglass. Signs will be subsequently routed to a depth of $\frac{1}{8}$ to $\frac{1}{4}$ inch using Highway Gothic letter sizes and series specified for the sign. Foam shall be beveled at a 45-degree angle. Backing shall be fiberglass with another layer of 1½-ounce fiberglass matte. The final layer of 1½-ounce fiberglass matte shall be applied with the backing color mixed in the final resin for permanent color. Sign backing shall be brown in color.

14.5.3 b Double-Faced Signs Frame Construction

Figure 14-5 shows typical construction details, which are as follows:

1. Interior channels in sign shall fit over 4- by 1½-inch channels, spaced with a center line-to-center line dimension specified for the particular sign. Channel height shall extend to within 2 inches of the top of the sign.
2. Frame size shall be appropriate for the sign. Substrate shall be 2- by 4-inch framing. Corners shall be manufactured from 4- by 4-inch or 4- by 6-inch treated material. Corners shall be curved. The frame shall be screwed together with 2½-inch galvanized deck screws. Prepare one side of the frame with liquid nail compound. Install $\frac{1}{8}$ -inch plywood sheeting on the frame and staple in place. Use a roller panel router bit to trim the $\frac{1}{8}$ -inch plywood sheeting to fit the sign frame. Turn the frame over and drill $\frac{1}{2}$ - to

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- $\frac{5}{8}$ -inch holes between each section so that the sign can breathe internally. At the bottom of the sign, drill a 1-inch hole and insert a metal vent cap.
3. Completely brush interior with a thick coat of fiberglass resin to seal all interior framing. Completely brush a layer of fiberglass resin on the interior side of another piece of $\frac{1}{8}$ -inch plywood sheeting large enough to cover the open side of the sign. Let both sides dry completely.
 4. Cut out the holes for the stanchion receptacle. Use liquid nails on the 2-by 4-inch section of the second side of the frame. Install $\frac{1}{8}$ -inch plywood sheeting and staple in place.
 5. Cover one side of the sign with 1½-ounce fiberglass mat and resin. Drape the material completely over the edges of the sign. Dry thoroughly. Once dry, turn sign over and trim excess. Repeat the fiberglass process on the reverse side, making sure that the edges are covered again. Two layers of 1½-ounce mat shall be on the edges. Trim and clean up as necessary.
 6. Sign faces shall receive 11 mils of polyester gel coat backed with a minimum of three layers of 1½-ounce fiberglass mat and laminating resin. Finish fiberglass thickness shall be $\frac{1}{4}$ - to $\frac{3}{8}$ -inch of fiberglass.

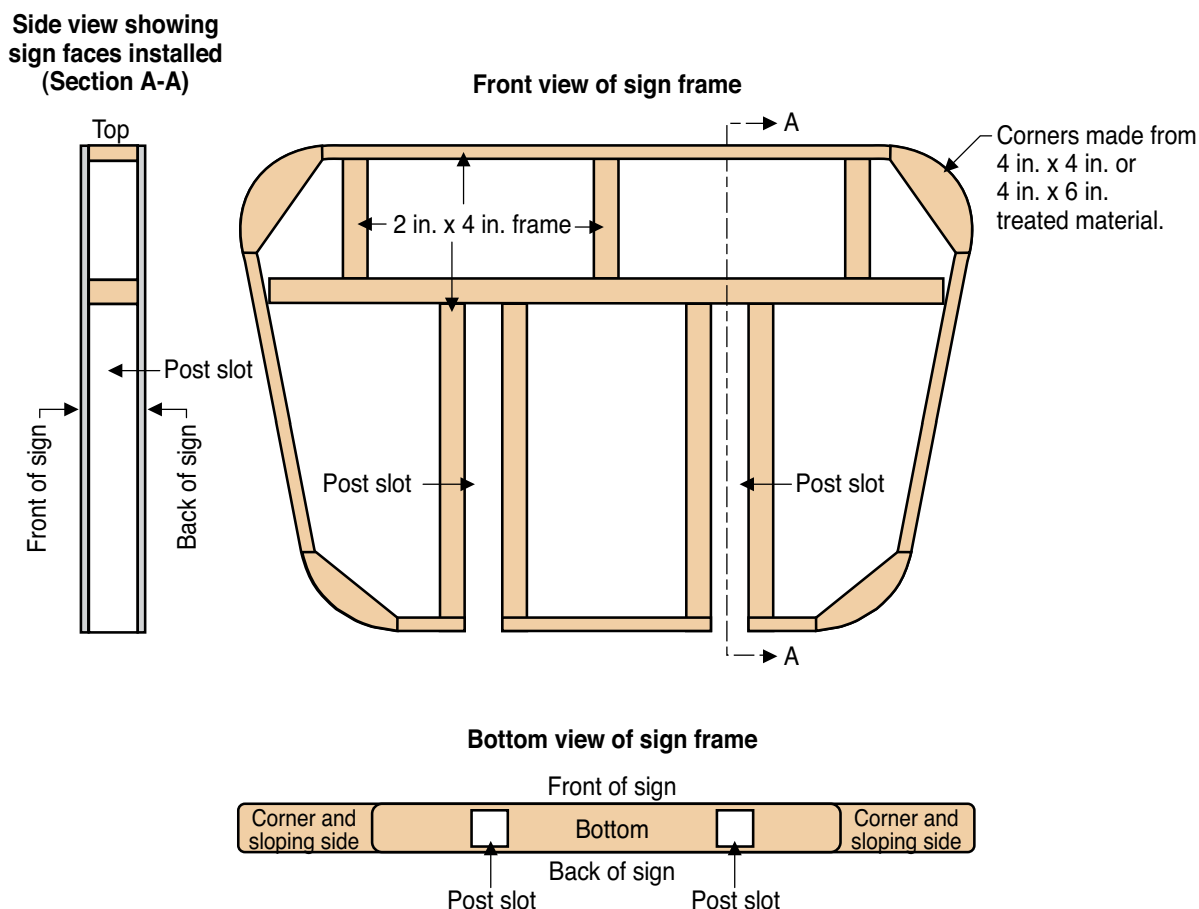


Figure 14-5—Typical construction details for fiberglass reinforced signs.

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14.5.3c Solid Sign Construction

Solid fiberglass signs are cast $\frac{3}{4}$ -inch thick. Signs will be subsequently routed to a depth of $\frac{1}{8}$ to $\frac{3}{16}$ inch using Highway Gothic letter sizes and series specified for the sign.

The back of the sign shall be drilled $\frac{1}{2}$ -inch deep in 4 to 6 places as specified either by the manufacturer or the contract to allow insertion of $\frac{3}{8}$ -inch thread t-nuts to provide for easy mounting and to prevent the drilling of the sign face during installation. T-nuts shall be set in place by casting in polyester resin.

14.5.4 Sign Message

The sign message shall be routed to a depth of $\frac{1}{8}$ to $\frac{3}{16}$ inch using Highway Gothic letters, sizes, and series specified for the sign. Do not route all the way through the fiberglass material. Fiberglass resin shall be puddled into the routed letters. Color shall be yellow-cream or as specified.

Install sign faces onto the substrate using a 1½-ounce mat to secure sign face to the substrate. Repeat procedure to install the second face.

14.5.5 Maintenance

The fabricator shall provide instructions on the upkeep and maintenance of the fiberglass signs. Turtle Wax Formula 2001 with ultraviolet protection is recommended for early sign maintenance and protection from ultraviolet damage. No painting is needed.

14.6 Flexible Banner Signs

Flexible plastic banners used to mark gates shall be manufactured from either polyethylene or polycarbonate materials having a minimum thickness of 0.055 inch and a maximum thickness of 0.125 inch. Retroreflective sheeting with red and white markings shall be applied to both sides of the banner. The stripes on the front shall slant downward to the right while the slants on the back shall slant downward to the left. The corners shall be square.

Three-spur grommets, with a minimum hole diameter of $\frac{1}{4}$ inch, shall be placed at the corners. The hole shall be centered $\frac{3}{5}$ inch from the edge with the corner grommets being centered $\frac{3}{4}$ inch from both the vertical and horizontal edge. Unless otherwise specified, banners exceeding 24 inches in any dimension, shall have additional grommets equally spaced around the perimeter of the sign. The distance between grommets shall not exceed 24 inches.

14.7 Legend, Layout, and Tolerances—All Signs

Dimensions of the sign panel shall be as shown in the drawings with a tolerance of $\pm\frac{1}{4}$ inch.

For information signs, all letters, layout, and spacing requirements shall conform to the "Standard Alphabets for Highway Signs," FHWA, current edition, and as shown on drawings. Use Highway Gothic, lettering as specified in the drawings unless otherwise indicated.

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The following tolerances shall apply:

- Legend, numerals, and symbols shall be horizontally aligned to a tolerance of $\pm\frac{1}{16}$ inch.
- Legend, numerals, and symbols shall be vertically aligned to a tolerance of $\pm\frac{1}{16}$ inch.
- Spacing between lines shall not exceed a tolerance of $\pm\frac{1}{16}$ inch.

14.7.1 Routing

All letters, symbols, arrows, borders, separation lines, logotype, and so forth, on all signs, shields, and plaques shall be machine routed with a vertical-sided flat-bottom bit, with the following exception:

Routed Trail Destination (TD) signs with 1-inch scorched letters shall be routed with a 45-degree “V”-bit or a flat bottom, angled side bit. Finished stroke width for 1-inch letters shall be $\frac{3}{16}$ -inch with a maximum width of $\frac{1}{4}$ -inch.

Use a $\frac{1}{4}$ -inch diameter bit for letters larger than 3 inches. Use a $\frac{1}{8}$ -inch diameter bit for letters less than 3 inches.

Routing depth shall be as shown below and uniform throughout the sign.

	Minimum depth (inches)	Maximum depth (inches)
Lumber	$\frac{1}{8}$	$\frac{1}{4}$
MDO plywood	$\frac{1}{8}$	$\frac{3}{16}$
Fiberglass	$\frac{1}{8}$	$\frac{3}{16}$

After routing, sand all surfaces with fine grit (100+) sandpaper. Wipe all surfaces and lettering clean.

14.8 Finishing Operations

The entire sign (face, back, edges, and routed areas) shall be finished as specified in procurement documents and as shown in drawings.

Medium-Density Overlay (MDO) plywood substrate signs—All MDO plywood signs shall be painted. Scuff-sand the MDO plywood with fine grit sandpaper to slightly roughen the surface. Apply one coat of primer and two coats of paint of the specified color precisely as prescribed in writing by the manufacturers of the primer and paint.

Lumber substrate signs—Lumber signs shall be stained or painted, as specified. Painting shall be as described for MDO plywood substrate signs above. Signs specified to be stained shall receive two coats of stain applied precisely as prescribed in writing by the manufacturer of the stain.

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Dipped-in-stain oak signs—When specified, solid oak routed-wood signs shall be dipped in or painted with a transparent stain with ultraviolet inhibitors and water repellent characteristics, such as Super Deck Brand DB 1910-Natural. If dipped, signs shall be left in the stain for a minimum of 3 hours to allow penetration into the wood. When removed from the dip, excess stain shall be wiped off. This stain protects the white oak from weathering and turning gray.

Artificial weathering (lumber)—When specified, trail signs shall be artificially weathered by wire-brushing with the grain or by sandblasting to a depth of approximately $\frac{1}{32}$ inch, followed by two coats of the specified stain applied precisely as specified in writing by the manufacturer of the stain.

Unfinished signs—When specified, lumber signs shall be left unfinished.

Painted or scorched routing—When specified, all routing shall be painted black or scorched black. Permanent black marker is not acceptable. Substrate surface shall be lightly sanded or planed to remove any paint or scorching outside the routed areas. Paint or scorching shall not extend outside the routed areas or into islands within the letters “A”, “B”, “D”, “O”, “P”, “Q”, and “R”.

14.9 Maker’s Mark

A decal showing the contractor’s identification or trademark and the date of manufacture shall be installed on the back of all signs. Locate the sticker on the lower corner of the sign closest to the road or trail. For lumber signs, this information shall be stamped on the back, lower left-hand corner or edge of the sign panel. Decals with this information may be applied to signs manufactured with fiberglass, aluminum, or HDO substrates. On plastic banner signs, the mark shall be applied to only one side in the upper left-hand corner of the sign.

Wood posts should be rough sawn standard and better, dry number 1 grade hemlock, spruce, Western Larch, Douglas fir, or Southern or Ponderosa pine conforming to AASHTO M168.

Treat posts with water-borne preservative ACA, ACZA, or CCA according to AWP Standard C14.

All lumber shall be pressure treated using the Empty Cell Process as required by the American Wood Preservers Association (AWPA), with copper naphthenate solution. The copper naphthenate shall contain not less than 6 percent or more than 8 percent copper in the form of copper naphthenate in petroleum oil, AWP P9, conforming to AWP P8 and C1 for oil-born preservatives.

14.10 Materials Certification

All materials used in the manufacture of signs shall comply with the requirements of these specifications. It is the responsibility of the sign manufacturer (contractor) to obtain and, if requested, furnish to the contracting officer, certification that all materials comply with the requirements as specified.

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14.11 Packaging and Shipping

14.11.1 Packaging

Signs shall be packaged so that sign surfaces and edges are protected from damage during shipping.

After packaging the sign, the contractor shall place a copy of the sign requisition and all other documents and certifications requested in a heavily constructed envelope and attach it securely to the package.

14.11.2 Shipping

Signs shall be shipped to the designated location and in conformance with procedures designated in the contract.

14.11.3 Receiving Inspection

Prior to acceptance by the ordering unit, and within 10 working days of receipt of finished signs, the ordering unit shall inspect the signs for compliance with the specifications.

14.12 Method of Measurement

Signs, completed and accepted, shall be measured either by the square foot of surface area (nearest one-half square foot), or on an individual unit basis as shown in procurement documents.

14.13 Basis of Payment

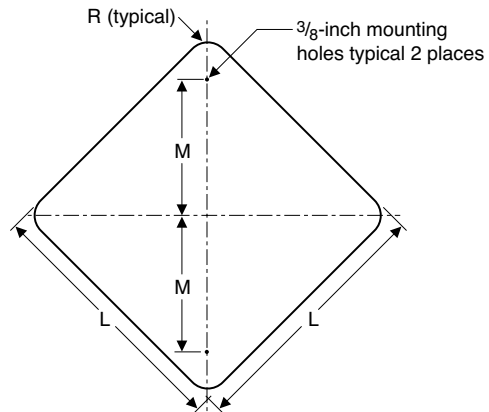
The quantities shall be paid for at the contract price per unit of measurement for each pay item listed. The payment shall be full compensation to the contractor for all materials and sign fabrication, including all labor, equipment, tools, and incidentals needed; payment includes shipping costs when so specified in the contract.

14A.1 Sign-Blank Standards	1
14A.2 Traffic Control Devices	2
14A.3 Trail Signs	10
14A.4 Site Identification and Boundary Signs	14

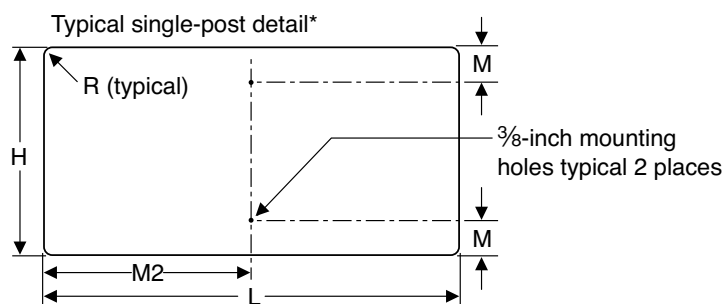
14A.1 Introduction

The following sign-blank standards illustrate detailed dimensions for the various signs used by the Forest Service.

14A.2 Traffic Control Devices

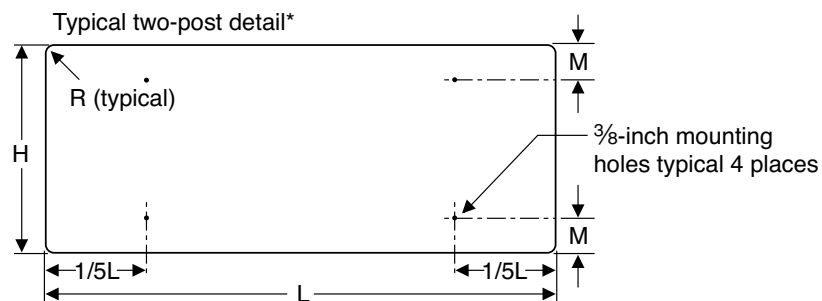
Blank standard—warning sign (FW)Dimensions (*inches*)

Sign number	L	M	R
FW-varies	24	12	1 ½
FW-varies	30	15	1 ⅞
FW-varies	36	18	2 ¼

Blank standard—All rectangular signs

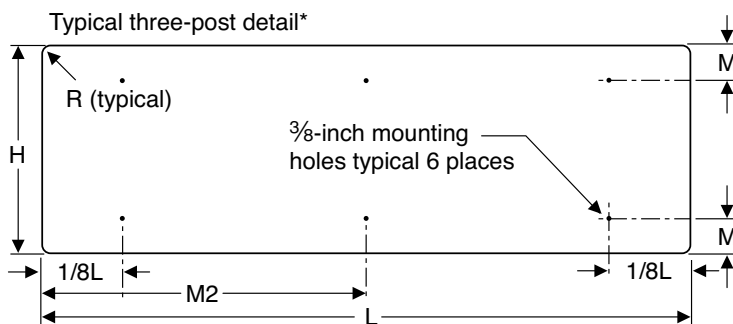
Dimensions (inches)

Sign number	L	H	M	M2	R
Varies	Varies	Varies	1 ½	½ L	1 ½



Dimensions (inches)

Sign number	L	H	M	R
Varies	Varies	Varies	1 ½ to 3	2 ½

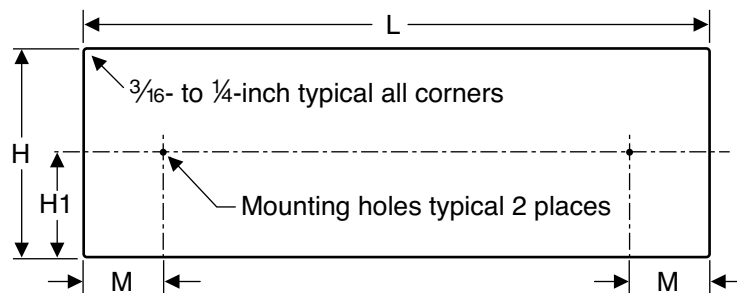


Dimensions (inches)

Sign number	L	H	M	M2	R
Varies	Varies	Varies	1 ½ to 3	½ L	3

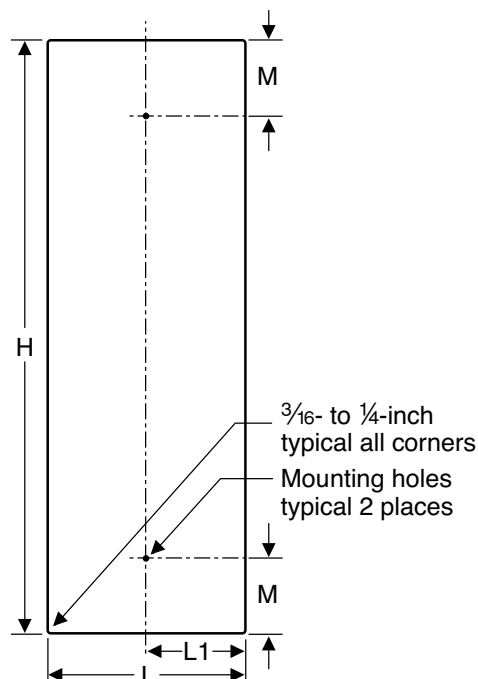
* Refer to chapter 3D, section 3D.7 for information on selecting size and number of posts.

Blank standard—barricade marker (FBM and FBM1)
object marker (FOM2-2V)



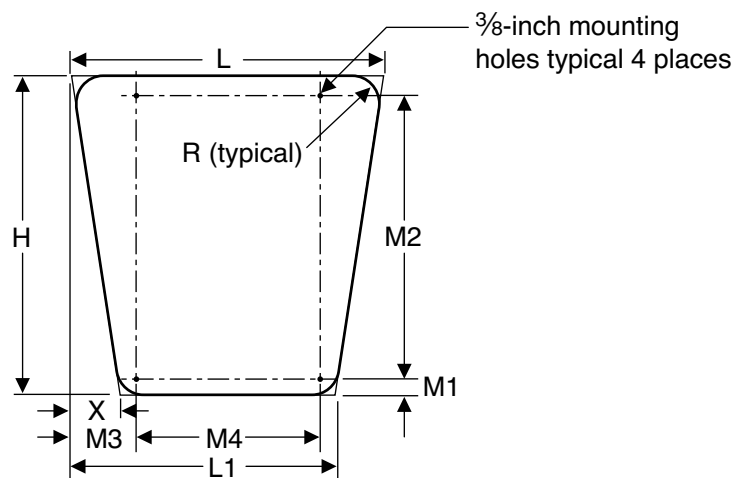
Dimensions (*inches*)

Sign number	L	H	H1	M
FBM1	12	6	6	2
FBM	24	8	12	3
FBM	36	12	18	3

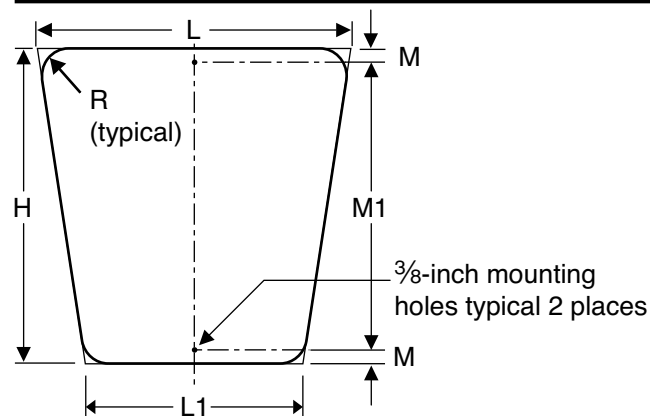


Dimensions (*inches*)

Sign number	L	H	L1	M
FOM2-2V	3	18	1 ½	1 ½

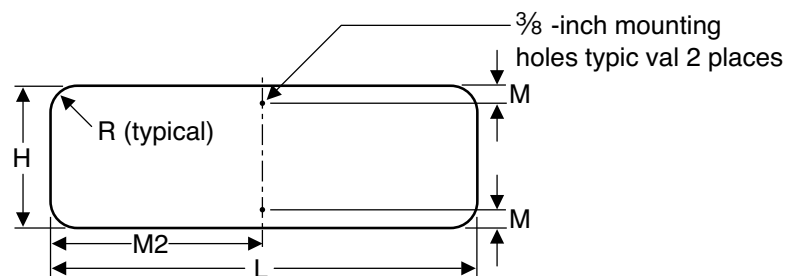
Blank standard—Site Approach sign (SA)Dimensions (*inches*)

Sign number	L	H	X	L1	M1	M2	M3	M4	R
SA-1	38	40	5	33	2	36	8	22	4
SA-2	48	52	6 ½	41 ½	3	46	10	28	5

Blank standard—Forest Route markers (M1-7 and FM1-7H)

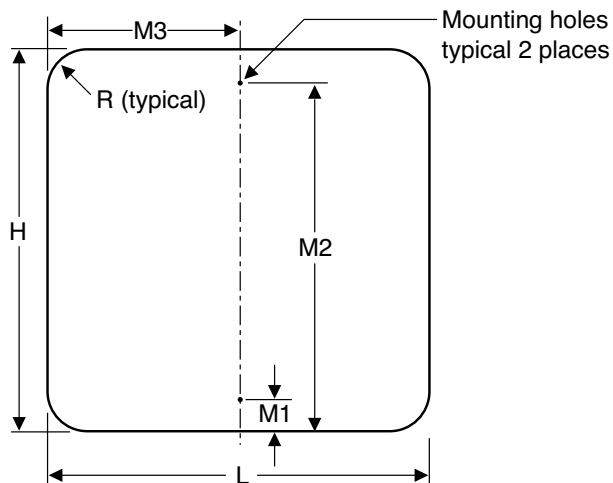
Dimensions (inches)

Sign number	L	H	L1	M	M1	R
M1-7-18	18	18	12 $\frac{3}{4}$	1 $\frac{1}{2}$	15	2
M1-7-24	24	24	17	1 $\frac{1}{2}$	21	2 $\frac{1}{2}$

Blank standard—Route markers (FM1-7H)

Dimensions (inches)

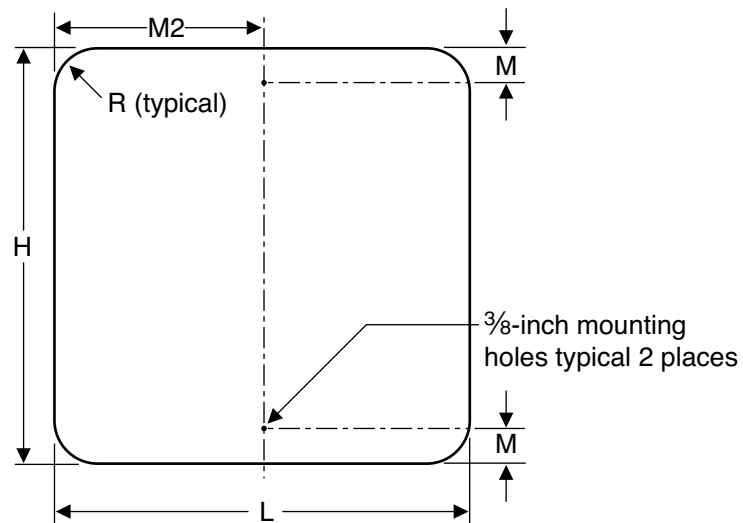
Sign number	L	H	M	M2	R
FM1-7H-16	16	8	1	8	1 $\frac{1}{2}$
FM1-7H-21	21	8	1	10 $\frac{1}{2}$	1 $\frac{1}{2}$
FM1-7H-20	20	10	1	10	1 $\frac{1}{2}$
FM1-7H-28	28	10	1	14	1 $\frac{1}{2}$
FM1-7H-26	26	12	1	13	1 $\frac{1}{2}$
FM1-7H-36	36	12	1	18	1 $\frac{1}{2}$

Blank standard—Recreational and cultural interest area symbol signsDimensions (*inches*)

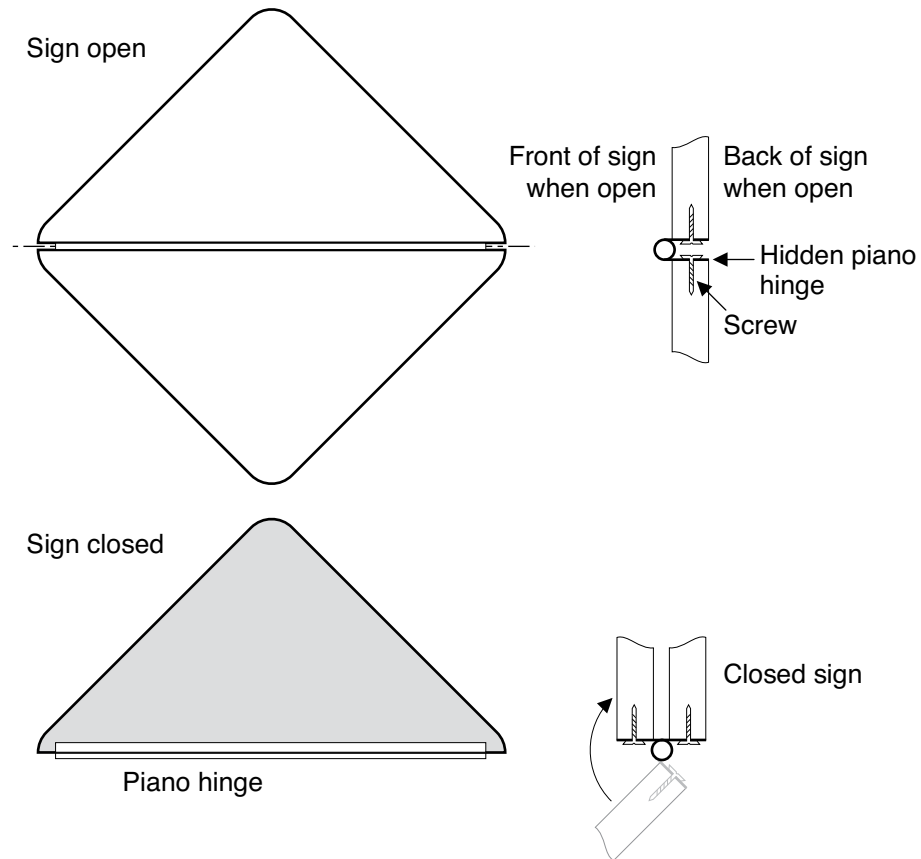
Sign number	L	H	M1	M2	M3	R	Mount hole diameter
XX-XXX-8	8	8	1	7	4	1 ¼	5/16
XX-XXX-12	12	12	1	11	6	1 ¼	3/8
XX-XXX-18	18	18	1 ½	16 ½	9	1 ½	3/8
XX-XXX-24	24	24	1 ½	22 ½	12	1 ½	3/8

Note:

(XX-XXX) specify sign number and series when ordering
(see chapter 3E, section 3E.11).

Blank standard—Scenic Byway Logo (SBM)**Dimensions (inches)**

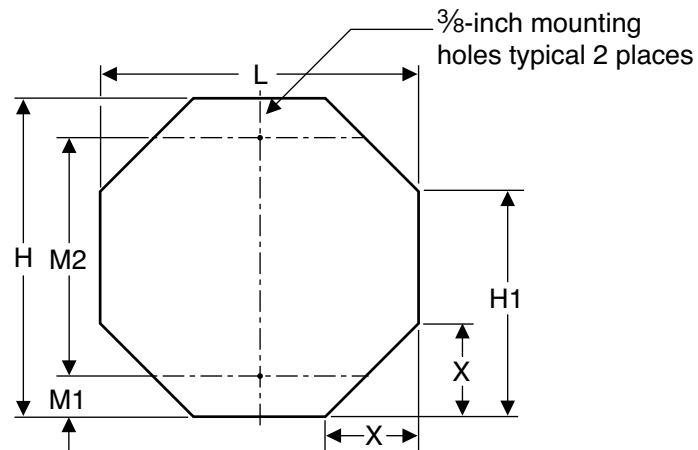
Sign number	L	H	M	M2	R
SBM-1	18	18	1 ½	9	1 ½
SBM-2	24	24	1 ½	12	1 ½
SBM-3	30	30	1 ½	15	1 ½

Blank standard—hinged sign**Hinged sign**

Note: provide device to hold sign closed/open.

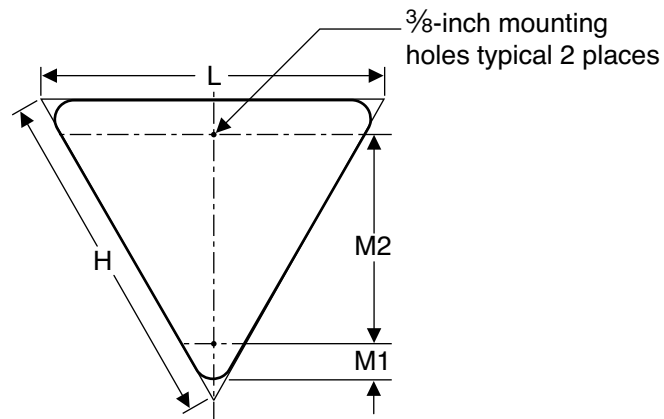
14A.3 Trail Signs

Blank standard—STOP (FRI-1) and YIELD (FRI-2) signs



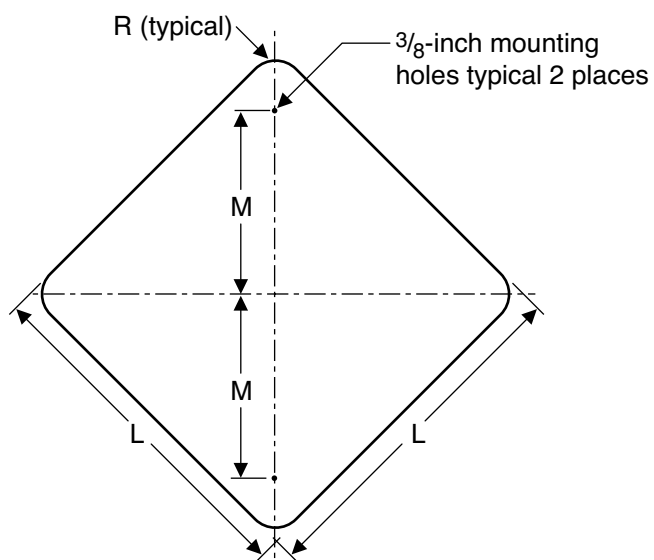
Dimensions (*inches*)

Sign number	L	H	H1	X	M1	M2
FR1-1-12	12	12	3 ½	1 ½	8 ½	9

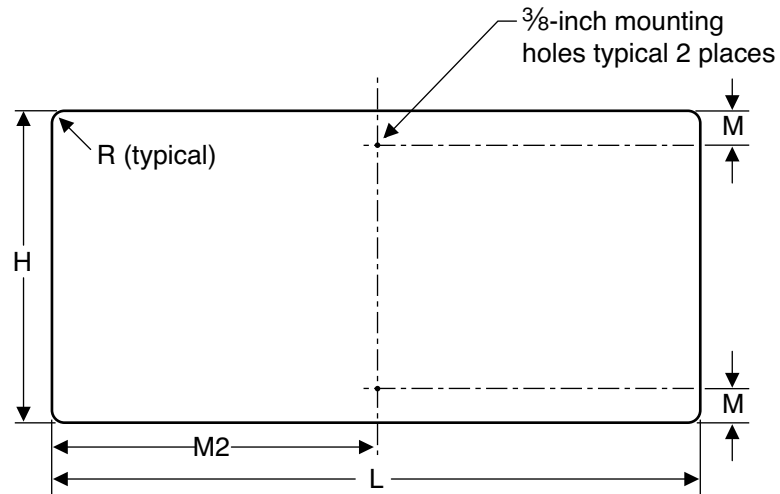


Dimensions (*inches*)

Sign number	L	H	M1	M2	R
FR1-2-18	18	18	2	10	1

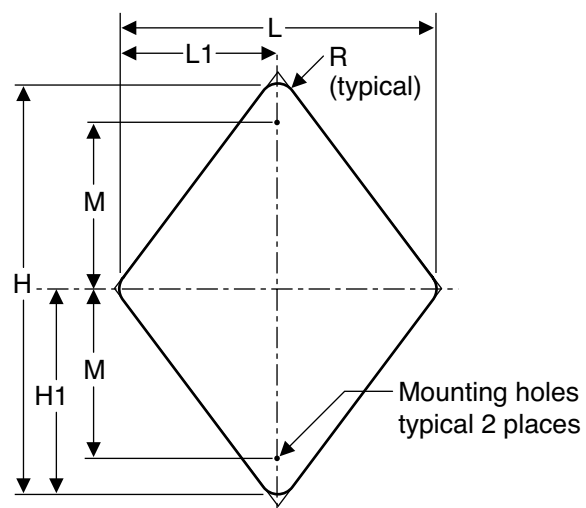
Blank standard—warning/construction sign (FW)Dimensions (*inches*)

Sign number	L	M	R
FW-Varies	12	5	1 ½
FW-Varies	18	8	1 ½
FW-Varies	24	12	1 ½
FW-Varies	30	15	1 7/8

Blank standard—Trail Destination sign (TD)

Dimensions (inches)

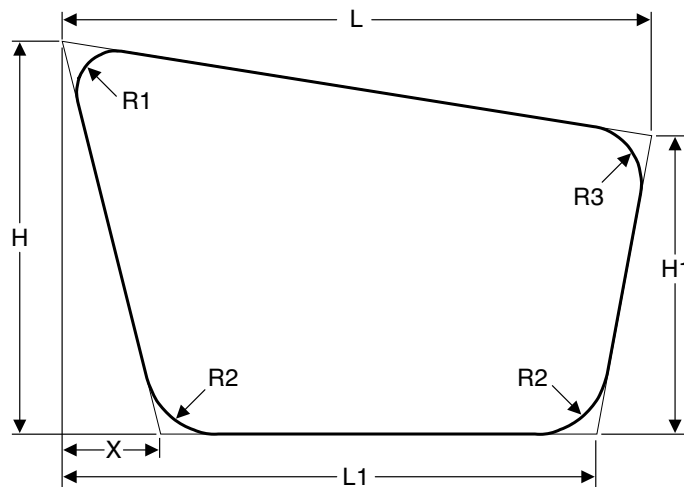
Sign number	L	H	M	M2	R
TD-1	Varies	5	1	$\frac{1}{2}$ L	$\frac{1}{2}$
TD-2	Varies	7	1	$\frac{1}{2}$ L	$\frac{1}{2}$
TD-3	Varies	9	1	$\frac{1}{2}$ L	$\frac{1}{2}$
TD-4	Varies	11	1	$\frac{1}{2}$ L	$\frac{1}{2}$
TD-5	Varies	13	1	$\frac{1}{2}$ L	$\frac{1}{2}$

Blank standard—Trail Blazer sign (TB)**Dimensions (inches)**

Sign number	L	H	L1	H1	M	Mounting hole diameter	R
TB-1	5	7	2 ½	3 ½	2 ½	⅛	⅜
TB-2	9	12	4 ½	6	4 ½	¼	½

14A.4 Site Identification and Boundary Signs

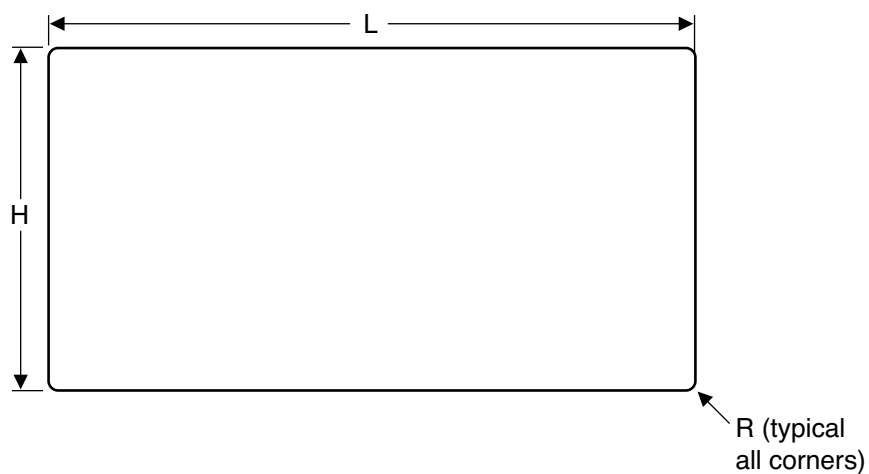
Blank standard—National Forest Entrance (FE and FL)
 Administrative Site Identification signs (AS)
 National Recreation Area Forest Boundary Entrance sign (NRA-E and L)



Dimensions (inches)

Sign number	L	H	X	L1	H1	R1	R2	R3
AS/FE/FL/NRA-E/NRA-L-1 NRA-E/NRA-L-5	54	36	9	49	27 ½	4	6	5
AS/FE/FL/NRA-E/NRA-L-2 NRA-E/NRA-L-6	72	48	12	65 ¼	36 ½	5	9	7
AS/FE/FL/NRA-E/NRA-L-3 NRA-E/NRA-L-7	108	72	18	97 ¾	54 ½	7	12	10
AS/FE/FL/NRA-E/NRA-L-4 NRA-E/NRA-L-8	144	96	24	130 ½	72 ½	10	16	14

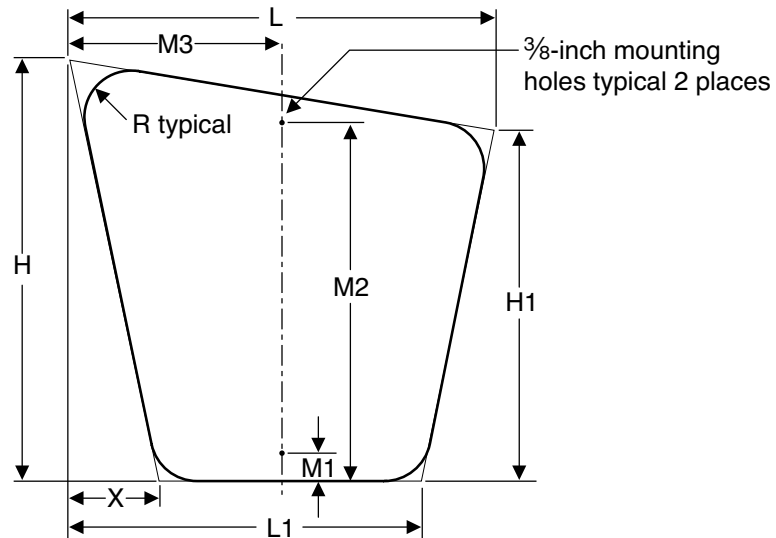
Blank standard—Forest/District Administrative Site sign (A) for urban location



Dimensions (*inches*)

Sign number	L	H	R
A1/A4	34	18	½
A2/A5	54	30	1 ½
A3/A6	94	46	2

Blank standard—Minor Forest Entrance (MFE), Minor Forest Leaving (MFL), National Forest Land (NFL) and Minor Special Area Entering (MSA-E) and Leaving (MSA-L) signs

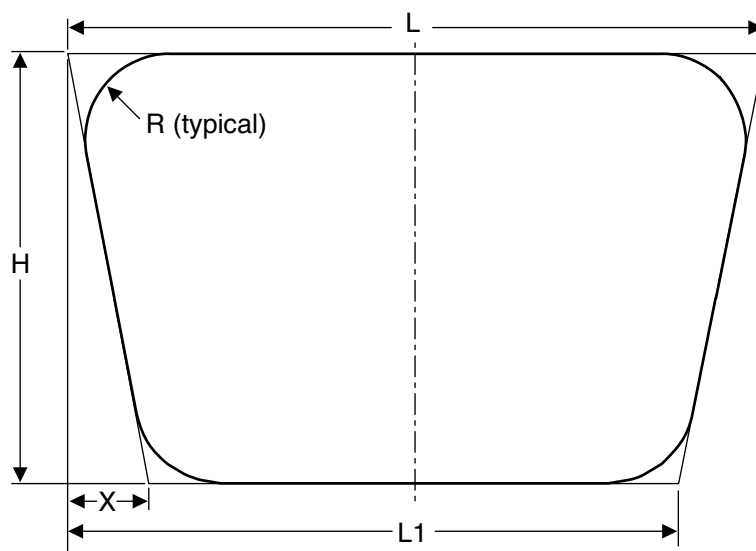


Dimensions (inches)

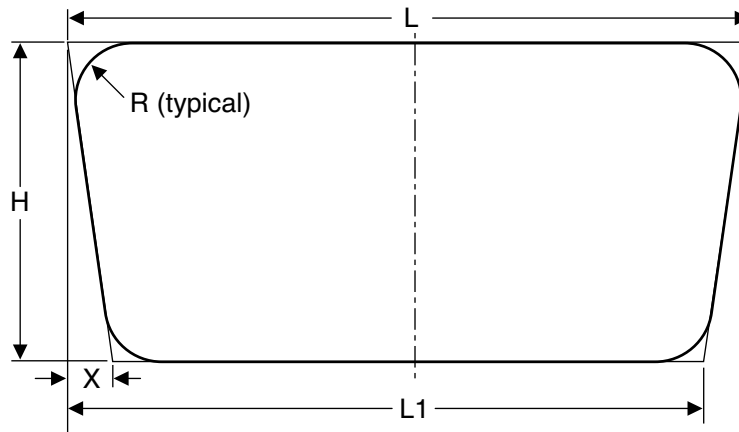
Sign number	L	H	X	L1	H1	M1	M2	M3	R
MFE-1 MFL-1 NFL-1	18	18	3 ¾	15	15	1	15	9	2
MFE-2 MFL-2 NFL-2 MSA-E MSA-L	27	27	5 ¾	22 ¼	22 ¼	1 ¾	2 ¾	13 ½	3

Note:

All mounting holes are 3/8-inch diameter.

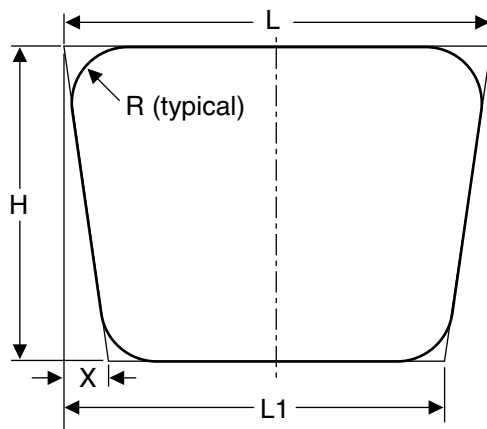
Blank standard—Recreation Site Identification signs (RS and RSM1)Dimensions (*inches*)

Sign number	L	H	X	L1	R
RS-1/RSM1-1	48	30	6	42	6
RS-2/RSM1-2	63	40	8	55	7
RS-3/RSM1-3	78	48	9 $\frac{1}{4}$	68 $\frac{3}{4}$	8
RS-4/RSM1-4	93	60	11 $\frac{1}{2}$	81 $\frac{1}{2}$	9

Blank standard—Optional Recreation Site Identification sign (RSE)Dimensions (*inches*)

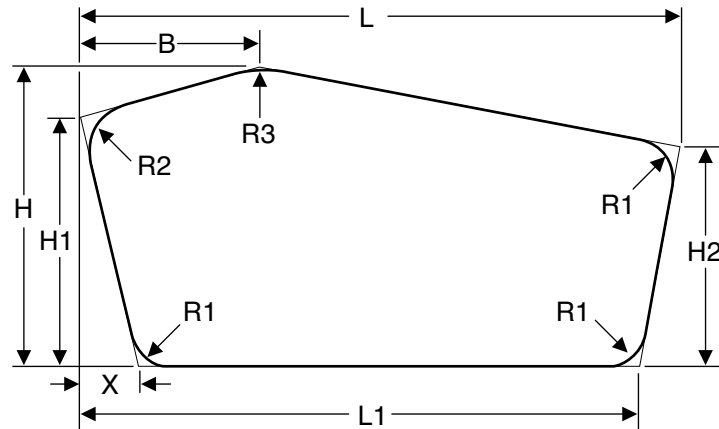
Sign number	L	H	X	L1	R
RSE-1	30	14	2	28	2 ½
RSE-2	48	20	4	44	3
RSE-3	60	24	4 ¾	55 ¼	4
RSE-4	72	28	5 ½	66 ½	5

Blank standard—National Recreation Area (NRA-REC), Recreation Site Identification sign (RSM2), National Recreation Area Entering and Leaving Boundary signs (NRA-BDY)

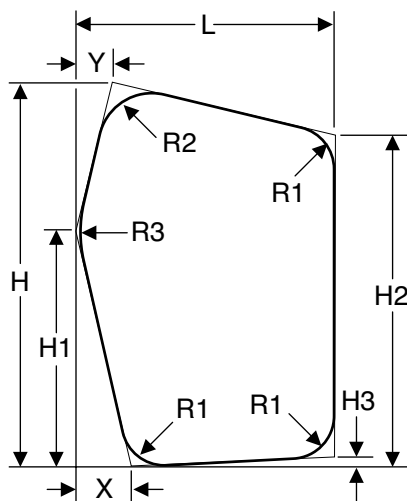


Dimensions (*inches*)

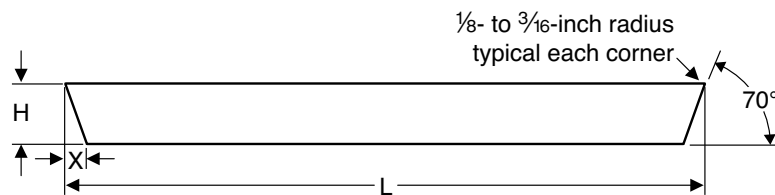
Sign number	L	H	X	L1	R
NRA-REC/RSM2-1	48	36	7	41	6
NRA-BDY/NRA-REC/RSM2-2	63	48	9 ½	53 ½	7
NRA-BDY/NRA-REC/RSM2-3	78	60	11 ½	66 ½	8
NRA-BDY/NRA-REC/RSM2-4	93	72	14	79	9
NRA-BDY-5	108	84	16 ½	91 ½	10

Blank standard—Wilderness/Primitive Area Entrance signs (WPH) (horizontal)Dimensions (*inches*)

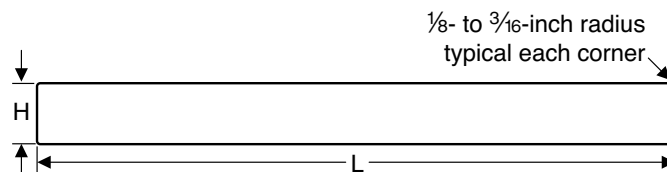
Sign number	L	H	L1	H1	H2	B	X	R1	R2	R3
WPH-1-L or R	40	20	37 ½	16	15	12	4	2	3	6
WPH-2-L or R	60	30	56	25	22	18	6	4	5	12

Blank standard—Wilderness/Primitive Area Entrance signs (vertical) (WPV)**Dimensions (inches)**

Sign number	L	H	H1	H2	H3	Y	X	R1	R2	R3
WPV-1-L or R	13	18	11	15 ½	½	1 ¾	2 ¾	2	2 ½	5
WPV-2-L or R	24	36	22	31	1	3 ½	5	4	5	10

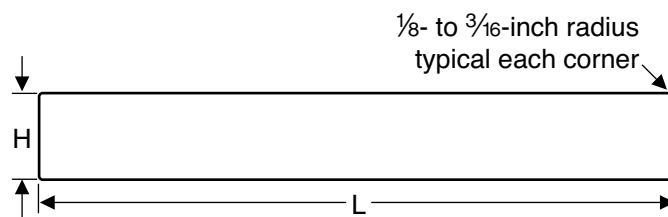
Blank standard—USDA Credit Line #1 (P)**Dimensions (inches)**

Sign number	L	H	X
P-37	37	3 ½	1 ¾
P-43	43	5 ½	2
P-52	52	5 ½	2
P-68	68	6 ½	2 ¾
P-80	80	6 ½	2 ¾
P-110	110	7 ½	2 ¾

Blank standard—USDA Optional Credit Line #1 (P)**Dimensions (inches)**

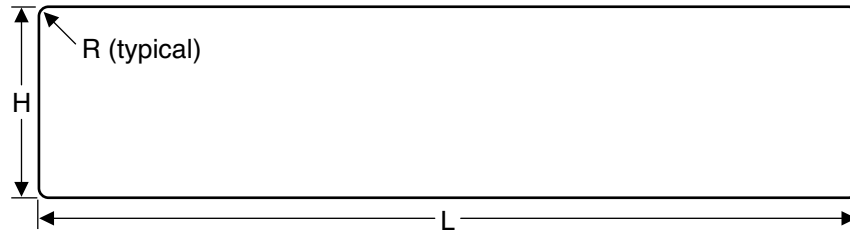
Sign number	L	H
P-37	37	3 ½
P-43	43	5 ½
P-52	52	5 ½
P-68	68	6 ½
P-80	80	6 ½
P-110	110	7 ½

Blank standard—Wilderness/Primitive Area USDA Credit Line (WP-PV and WP-PH)



Dimensions (*inches*)

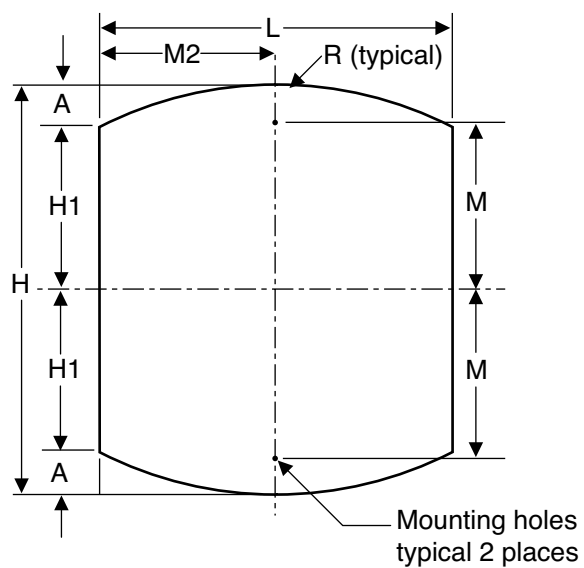
Sign number	L	H
WP-PV	22	3
WP-PH	42	3 $\frac{1}{2}$

Blank standard—National Recreation Area USDA Credit Line 2 (NRA-P)Dimensions (*inches*)

Sign number	L	H	R	Fits panel sizes
NRA-P10	Variable	10	1 ½	Up to 63
NRA-P12	Variable	12	1 ½	78 and larger

Note:

Mounting hole location is variable depending on type of mount.

Blank standard—National Wild and Scenic River logo (WSR)Dimensions (*inches*)

Sign number	L	H	H1	M	M2	R	A	Mount hole diameter
WSR-L1	15 ½	18	7	7 ½	7 ¾	17	2	⅜
WSR-L2	20 ¾	24	9 ½	10	10	23	2 ½	⅜
WSR-L3	25 ¾	30	11 ½	12 ½	12 ½	29	3 ½	½
WSR-L4	31	36	14	15 ¼	15 ½	35	4	¾

Chapter 15 Procurement

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Chapter 15 Procurement

15.1 Introduction

Procure signs and posters from the most efficient and cost-effective source (which includes shipping costs) in accordance with all government procurement requirements including FAR clauses.

Sources include commercial sign manufacturers, Government Services Administration (GSA) manufacturers, and UNICOR Federal Prison Industries. Regional sign coordinators may maintain updated lists containing sign manufacturers for use in determining potential suppliers.

Coordinate the ordering of custom posters or other silk-screened or digitally printed products, not commercially available, through the Government Printing Office (GPO). Contact the regional office for assistance.

Signs are to be procured from the most efficient and cost-effective source.

Signs shall be manufactured in full compliance with the specifications in chapter 14, the drawings in these Guidelines, the “Standard Highway Signs” book, or as modified in the purchase order. Ensure the materials specified on the requisition are appropriate for the specific type of sign ordered.

Use Forest Service Form, FS-7100-63, Sign Requisition, for ordering signs. Use Form FS-7100-63-1a (figure 15-1a) for retroreflective signs and Form FS-7100-63-1b (figure 15-1b) for routed signs.

Group requisitions by separate delivery destinations, different appropriations, type of substrate, and other factors that may affect the bid. For example, do not order routed trail signs and retroreflective signs as a combined order. Separate the procurement into two orders: one for the routed signs and one for the retroreflective signs.

Procurement documents should be legible, specific, and as complete as possible. They should include or make reference to the appropriate drawings, sign number, manufacturing specifications, and include any necessary modifications to the specifications or drawings. Document and file the reason for modifications.

When ordering destination signs, provide clear illustrations including arrow directions, names, mileages, correct message sequence (based on arrow direction and mileage), and any special instructions. Refer to “Standard Highway Signs” book, the “Manual for Uniform Traffic Control Devices” (MUTCD), and chapters 3C and 3E of these Guidelines for destination sign layout guidelines and standards.

Submit the completed requisition to the forest sign coordinator for approval before submitting to procurement authorities for processing.

Destination and other custom message signs often look different than intended after the technical designer lays out the sign according to specifications. Forest sign coordinators should request a final proof of Forest Road Destination (FRD) signs and other custom message signs to review elements, such as wording, size, spacing, font and layout before manufacturing. This avoids receiving signs that do not meet expectations and incurring costs of returning and remanufacturing the signs.

Chapter 15 Procurement

RETROREFLECTIVE SIGN REQUISITION				Form FS-7100-63-1a (10/2011)	
(Signs to be constructed in full compliance with Forest Service EM-7100-15 and MUTCD)				TO BE COMPLETED BY A.S.	
Office Location Guide				1. Purchase Order Number	6. Required Delivery Date
2. Region	3. Forest	4. District	5. Appropriation Code		
7. Name & Address of Ordering Unit (Include Zip Code)			8. Ship To (Include Zip Code)		
9. For Technical Assistance Contact			10. Telephone No.	11. Fax No.	
12. Sign Identification	13. Sign Message and Special Instructions		14. Materials		
Line Item			Substrate Sheeting & Misc.		
Sign No.			<input type="checkbox"/> HDO Plywood <input type="checkbox"/> Retroreflective Sheeting Grade (Specify)		
Est. Sq. Ft.			<input type="checkbox"/> Aluminum <input type="checkbox"/> Edge Finishing Film		
Quantity/Unit Price			<input type="checkbox"/> Aluminum composite <input type="checkbox"/> Graffiti Film		
\$ Line Item Total			<input type="checkbox"/> Fiberglass FRP <input type="checkbox"/> Other (Specify)		
			<input type="checkbox"/> Corex plastic <input type="checkbox"/> Other (Specify)		
			<input type="checkbox"/> Wood plastic composite <input type="checkbox"/> Other (Specify)		
			<input type="checkbox"/> Other (Specify)		
			<input type="checkbox"/> Pre-drill Holes, Standard spacing		
			<input type="checkbox"/> Layout drawing and size to be approved prior to manufacture		
Line Item			<input type="checkbox"/> HDO Plywood <input type="checkbox"/> Retroreflective Sheeting Grade (Specify)		
Sign No.			<input type="checkbox"/> Aluminum <input type="checkbox"/> Edge Finishing Film		
Est. Sq. Ft.			<input type="checkbox"/> Aluminum composite <input type="checkbox"/> Graffiti Film		
Quantity/Unit Price			<input type="checkbox"/> Fiberglass FRP <input type="checkbox"/> Other (Specify)		
\$ Line Item Total			<input type="checkbox"/> Corex plastic <input type="checkbox"/> Other (Specify)		
			<input type="checkbox"/> Wood plastic composite <input type="checkbox"/> Other (Specify)		
			<input type="checkbox"/> Other (Specify)		
			<input type="checkbox"/> Pre-drill Holes, Standard spacing		
			<input type="checkbox"/> Layout drawing and size to be approved prior to manufacture		
15. Submitted By (Signature)			16. Title		17. Date
18. Technical Approval By Sign Coordinator (Signature)				19. Date	

Figure 15-1a—Retroreflective sign requisition (form FS-7100-63-1a).

Chapter 15 Procurement

Form FS-7100-63-1b (10/2011)

ROUTED SIGN REQUISITION (Signs to be constructed in full compliance with Forest Service EM-7100-15)			TO BE COMPLETED BY A.S.																	
Office Location Guide			1. Purchase Order Number																	
2. Region	3. Forest	4. District	5. Appropriation Code	6. Required Delivery Date																
7. Name & Address of Ordering Unit (Include Zip Code)			8. Ship To (Include Zip Code)																	
9. For Technical Assistance Contact			10. Telephone No.	11. Fax No.																
12. Sign Identification	13. Sign Message and Special Instructions	14. Materials & Finishing																		
Line Item		<table border="0"> <tr> <th>Substrate</th> <th>Finish & Misc.</th> </tr> <tr> <td><input type="checkbox"/> MDO Plywood</td> <td><input type="checkbox"/> Paint (Specify Color) _____</td> </tr> <tr> <td><input type="checkbox"/> Western Red Cedar</td> <td><input type="checkbox"/> Stain _____</td> </tr> <tr> <td><input type="checkbox"/> White Oak</td> <td><input type="checkbox"/> Unfinished</td> </tr> <tr> <td><input type="checkbox"/> HDPE recycled Plastic</td> <td><input type="checkbox"/> Artificial Weather</td> </tr> <tr> <td><input type="checkbox"/> Wood Plastic Composite</td> <td><input type="checkbox"/> Pre-drill Holes</td> </tr> <tr> <td><input type="checkbox"/> Fiberglass</td> <td><input type="checkbox"/> Layout drawing and size to be approved prior to manufacture</td> </tr> <tr> <td><input type="checkbox"/> Other (Specify) _____</td> <td></td> </tr> </table>			Substrate	Finish & Misc.	<input type="checkbox"/> MDO Plywood	<input type="checkbox"/> Paint (Specify Color) _____	<input type="checkbox"/> Western Red Cedar	<input type="checkbox"/> Stain _____	<input type="checkbox"/> White Oak	<input type="checkbox"/> Unfinished	<input type="checkbox"/> HDPE recycled Plastic	<input type="checkbox"/> Artificial Weather	<input type="checkbox"/> Wood Plastic Composite	<input type="checkbox"/> Pre-drill Holes	<input type="checkbox"/> Fiberglass	<input type="checkbox"/> Layout drawing and size to be approved prior to manufacture	<input type="checkbox"/> Other (Specify) _____	
Substrate		Finish & Misc.																		
<input type="checkbox"/> MDO Plywood		<input type="checkbox"/> Paint (Specify Color) _____																		
<input type="checkbox"/> Western Red Cedar		<input type="checkbox"/> Stain _____																		
<input type="checkbox"/> White Oak		<input type="checkbox"/> Unfinished																		
<input type="checkbox"/> HDPE recycled Plastic	<input type="checkbox"/> Artificial Weather																			
<input type="checkbox"/> Wood Plastic Composite	<input type="checkbox"/> Pre-drill Holes																			
<input type="checkbox"/> Fiberglass	<input type="checkbox"/> Layout drawing and size to be approved prior to manufacture																			
<input type="checkbox"/> Other (Specify) _____																				
Sign No.		Legend Treatment <input type="checkbox"/> Natural <input type="checkbox"/> Painted black <input type="checkbox"/> Paint (Specify Color) _____ <input type="checkbox"/> Scorched black <input type="checkbox"/> Other (Specify) _____																		
Est. Sq. Ft.																				
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<input type="checkbox"/> MDO Plywood		<input type="checkbox"/> Paint (Specify Color) _____																		
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<input type="checkbox"/> White Oak		<input type="checkbox"/> Unfinished																		
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Est. Sq. Ft.																				
Quantity/Unit Price																				
\$ Line Item Total																				
15. Submitted By (Signature)			16. Title	17. Date																
18. Technical Approval By Sign Coordinator (Signature)			19. Date																	

Figure 15-1b—Routed sign requisition (form FS-7100-63-1b).

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Signs are often less expensive when ordered in bulk. Consider ordering larger quantities of priority signs that often need to be replaced such as STOP signs or object markers. Signs can then be quickly replaced from a stockpile without waiting for replacement orders.

Signs and posters not documented in the MUTCD or these Guidelines shall be coordinated with and approved by either the regional sign coordinator or Washington Office (WO) Engineering prior to being ordered. Refer to chapter 1, section 1.1. Complete the appropriate requisition (figure 15-1a or 1b) and attach detailed drawings of the desired sign, showing dimensions, colors, message, type of substrate, and any other pertinent information.

15.1.1 Determining Sign Size and Weight

Use the sizes of custom message signs depend on several factors including amount of text, size of letters, arrangement of message, and use of abbreviations. Sizes of signs will greatly affect the total sign order and the shipping costs. Use the following methods to help determine the correct layout, size, and weight of a sign:

1. The R1 Sign Sizing Program may be used to design and size destination signs. It is an easy-to-use computer program that guides the user through the design process and provides a printout of the sign with the approximate size and square footage for cost-estimating purposes. These printouts may be attached to the requisition form; it is not necessary to complete a form for each individual sign. The program and users guide are available at <<http://fsweb.r1.fs.fed.us/e/transportation.shtml>> under Information and Links or <<http://fsweb.wo.fs.fed.us/eng/programs/signs.htm>>.
2. The approximate sign size estimating process, shown in figure 15-2, may be used in determining the approximate size of destination signs.
3. Table 15-1 may be used to estimate the weight of the sign based on the type of substrate.

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Step One:

The first step in determining the approximate size, area, and weight of any given sign is to calculate the width based on the number of characters in your longest line.

Count each letter, each space between words, each space between arrows, and each arrow (horizontal arrows count as 2). Do not count the end margins. The example at right has 14 characters in the middle line, which is the longest line.

Using the chart below, find out how many inches that number of characters requires. *These figures are for a 4-inch ASA series C alphabet; Step 4 gives you multipliers to determine the square footage of signs using other size letters*

Number of characters	Approximate sign length (inches)
5	20
6-7	26
8-9	32
10-11	38
12-13	44
14-15	50
16-17	56
18-19	62
20-21	68
22-24	74
25-26	80
27-28	86
29-30	92
31-32	98

Step Two:

Sign height is determined by the number of lines used. The usual number of characters per line is shown in parentheses. Signs that use more or less than this range may be out of balance, and the sign message may need to be adjusted.

One line	(5 to 11 characters)	10 inches
Two lines	(6 to 17 characters)	17 inches
Three lines	(8 to 24 characters)	24 inches
Four lines	(12 to 28 characters)	31 inches
Five lines	(14 to 32 characters)	38 inches

**Five-line signs are for trail signs only.*

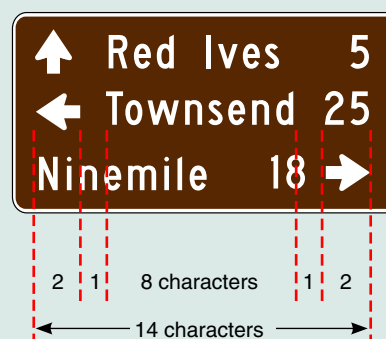
Step Three:

Multiply the width in inches, as determined in step one, by the height, as determined in step two. Divide the resulting square inches by 144 to obtain the area in square feet. See example.

Step Four:

If you are using letters larger or smaller than 4 inches or want to compare different area requirements, multiply your square footage by the numbers shown in the example.

Example



Step 1—Determine length of longest line: 14 characters equal approximately 50 inches.

Step 2—Determine height:
3 line signs equal 24 inches.

Step 3—Determine area in square inches:
Multiply length times height.

$$50 \times 24 = 1,200 \text{ square inches}$$

Convert to square feet

$$1,200 \div 144 = 8.3 \text{ square feet}$$

Round off to nearest $\frac{1}{2}$ square foot = 8.5.

Step 4—Use the following multipliers to determine square footage of signs using letters other than the 4-inch series C:

- 1-inch letters x 0.0625
- 2-inch letters x 0.2500
- 3-inch letters x 0.5625
- 4-inch letters x 1
- 5-inch letters x 1.5625
- 6-inch letters x 2.2500

Using the example above, if using 3-inch letters instead of 4 inch:

$$8.5 \text{ square feet} \times 0.5625 = 4.8$$

3-inch letter sign = 5.0 square feet

Figure 15-2—Determining approximate sign areas.

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Table 15-1—Weight estimating chart

Type of material	Thickness (inches)	Weight per square foot (pounds)	Sign type
HDO plywood	0.5	2.2	Retroreflective
	0.625	2.4	Retroreflective
	0.75	2.6	Retroreflective
MDO plywood	0.75	2.6	Routed
Oak	1	4.0	Routed
Cedar	2	6.8	Routed
Aluminum	.125	2.7	Retroreflective
	.080	1.7	Retroreflective
Fiberglass	0.1875	0.75	Retroreflective
ABS plastic	0.125	0.6	Screened
Recycled plastic	0.75	4.0	Routed
Wood plastic composite (WPC)	0.5	2.0	Retroreflective/routed
	0.625	2.5	Retroreflective/routed
	0.75	3.0	Retroreflective/routed

Add 10 percent to sign weight estimate over 65 pounds to cover cost of crating and packing material.

15.2 Inspection of Sign Order

After ordering signs, it is critical that the signs received are carefully inspected before processing payment to ensure compliance with the requisition and the specifications. Units cannot return noncompliant signs if payment for the order has been processed and signs are later determined to be noncompliant. Units may develop sign inspection checklists to assist in reviewing orders. The two primary inspection areas are accuracy and quality. Some examples are:

Accuracy: Overall sign dimensions.

Letter and border size.

Correct message and symbols.

Placement and spacing of letters and messages.

Placement of arrows and other symbols.

Colors.

Sign shape.

Font type.

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Quality: Correct type of sheeting.

Quality of ink used on sheeting (i.e., does it rub off on your finger?)

Sheeting firmly and appropriately applied.

Overlays and/or edge treatments correctly applied if required.

Correct substrate used including type and thickness.

Mounting holes accurately drilled and treated if necessary.

Correct depths and clean lines of routed letters.

Chapter 16 Sign Maintenance, Repairs, Recycling and Disposal

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16.1 Introduction

Timely detection of and response to maintenance needs are critical. Plan, schedule, and perform maintenance with the objective of keeping signs, posters, and other traffic control devices clean, legible, functional, and properly positioned. Effective sign maintenance will facilitate safe use and enjoyment of National Forest System lands and facilities, and provide a professional Forest Service image.

Timely detection
of and response to
maintenance needs
are critical.

Determine if a questionable sign should be repaired, replaced, or left as is. It may be cheaper to replace a badly damaged or unreadable sign than to attempt field repairs. Weigh the cost of repairs and remaining service life of the sign face after repairs, against replacing it with a new sign. Do not leave a sign down or take away a damaged sign without replacing it unless a determination has been made that the sign is no longer needed.

Signs should be replaced when:

- They are damaged beyond repair.
- Their poor condition has an effect on safety.
- Their appearance reflects poorly on the agency.
- They no longer meet applicable standards.

16.2 Condition Surveys

Condition surveys should be performed on a periodic basis to determine the condition and effectiveness of all traffic control devices, signs, and posters. Compare existing signs against current standards. Inspect retroreflective devices at night as well as during the day. As part of the condition survey, include evaluations of:

- Legibility and appearance.
- Message.
- Retroreflectivity.
- Overall condition of the sign and its supports.
- Damage or vandalism.
- Placement – lateral clearance, height above ground, longitudinal placement along road.
- Visibility – day and night.
- Encroachment of vegetation.
- Supports – clear zone, breakaway or yielding.
- Continued sign need.
- Other identified conditions.

Promote a high level of awareness among field personnel to encourage them to recognize missing, improper, incorrectly placed, damaged, or deteriorated signs, and to report these to the person responsible for signing.

Chapter 16 Sign Maintenance, Repairs, Recycling and Disposal

Develop and use field inspection checklists to guide the inspection process and document findings.

Develop and use field inspection checklists to guide the inspection process and document findings. Checklists also may be used to update the sign inventory (see chapter 2 and FSH 7709.11). As a minimum, the checklist shall document the following:

- Route number.
- Sign number.
- Sign location.
- Date and time of inspection.
- Inspection findings.
- Recommended actions and actions taken.
- Name of inspector.
- Overall condition rating.

Photos of the sign also are an excellent method of providing documentation and for ordering replacements for missing signs.

16.2.1 Retroreflectivity Inspections

Retroreflective signs lose their ability to reflect light as they age and when they are subjected to vandalism or other physical damage. The orientation of a sign also affects the rate of deterioration. Sign faces subject to direct sunlight for much of the day will deteriorate sooner than sign faces that rarely receive direct sunlight.

Replace signs that have lost their retroreflectivity based on the assessment or management method that was selected to maintain sign retroreflectivity at or above the minimum levels shown in the current edition of the “Manual of Uniform Traffic Control Devices” (MUTCD).

For signs that show an obvious unacceptable loss of retroreflectivity due to vandalism or other physical damage use one or more of the methods described at http://safety.fhwa.dot.gov/roadway_dept/night_visib/retrotoolkit/moreinfo/maint/ to perform retroreflective inspections as necessary to ensure minimum retroreflective levels required by Federal standards are being met. Refer to chapter 3, section 3.3.2. Information also is available in “Sign Retroreflectivity Guidebook for Small Agencies, Federal Land Management Agencies, and Tribal Governments,” FHWA-CFL/TD-09-005, September 2009.

16.3 Maintenance Plan Development

Develop maintenance plans based on:

- Results of condition surveys.
- Review and analysis of vehicle accident records in which signing or lack of signing was a factor.
- Review and analyze road users’ complaints, suggestions, or comments.

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Replace nonstandard signs based on safety, priorities, and available resources.

Determine whether the sign should be repaired or replaced. Often it is less expensive to replace a badly damaged or illegible sign than to attempt extensive repairs. Compare repair cost versus likely extended sign life with new sign cost and service life when making decisions.

Replace nonstandard signs based on safety, priorities, and available resources.

The sign maintenance plan may be implemented separately or as part of the annual road maintenance plan. Refer to the “Road System Operations and Maintenance Handbook” (FSH 7709.59).

16.4 Sign Maintenance

Perform maintenance on a regular and systematic basis as necessary and practical with the objective of keeping signs and other traffic control devices clean and functional. The highest priority for maintenance performance are signs that affect user safety, such as warning and regulatory signs. The following suggested priorities are provided as a guide:

1. Location-critical regulatory signs, such as STOP and YIELD; object markers; and location-critical warning signs, such as TURN and INTERSECTION, on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.
2. Non-location critical regulatory signs, such as SPEED LIMIT, and non-location critical warning signs, such as LIVESTOCK, on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.
3. Route markers on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.
4. Destination and other guide signs on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.
5. Informational and Motorist Services signs on:
 - a. Maintenance Level 4 and 5 roads.
 - b. Maintenance Level 3 roads.
 - c. Maintenance Level 2 roads.

Consideration also should be given to the physical attributes of the road when determining priorities for sign replacement, especially when the attributes do not currently match the maintenance level standards. For example, a road that was maintenance level 4 but which has recently been lowered to maintenance level 2 or 3 may still function like a maintenance level 4 road and consequently should receive more consideration for sign replacement than a road which has long been maintained at maintenance level of 2 or 3.

Other factors to consider when determining sign replacement priorities include RMO, traffic volume and composition, crash history, and Motor Vehicle Use Map (MVUM) designations.

Use only those materials (paints, stains, sheeting, overlay film, edge tape, and hardware) that comply with the applicable specifications for the sign or traffic control device being refurbished. Evaluate the maintained product against the standards for materials and quality established by the original manufacturing or construction specifications. Some often overlooked maintenance items include:

- Checking and replacing top edge tape on a routine basis.
- Clearing small trees, brush, and other vegetation that may obscure signs. Ensuring that fences or other objects do not obscure signs. Relocate signs if obstructions cannot be eliminated.
- Cleaning signs obscured by dust, bituminous materials, road film, mud, fungus, and vandalism to restore legibility and retroreflectivity.

16.4.1 Cleaning Signs

Use the following procedures for cleaning signs:

Avoid abrading the surface or damaging the interior structure of the high-intensity sheeting with unnecessary scrubbing.

Dust, road film, mud. Flush sign surface with clean water to remove loose dirt, or scrub sign face with a soft brush, rag, or sponge using a mild nonabrasive detergent or other suitable cleaner free of damaging solvents. Scrub from the top down. Avoid abrading the surface or damaging the interior structure of the high-intensity sheeting with unnecessary scrubbing. Keep a steady stream of water flowing on the sign face to wash away dirt. Rinse the entire sign face with clean water.

Tar, oil, diesel fuel, bituminous material. Use a mild solvent such as mineral spirits. Wash the surface with mild detergent and water and rinse with clean water.

Pollen and fungus. Wash the surface with a 3- to 5-percent sodium hypochlorite solution, such as a commercial brand of bleach, followed by detergent and water. Rinse with clean water.

Lipstick and crayon. Use a mild solvent such as mineral spirits to remove the material. Follow with detergent and water and clean water rinse.

Spray paint. It may be possible to remove paint sprayed onto a reflective sheeting sign face by using a commercial paint remover designed for this purpose. The type of paint, length of exposure, and type of remover may affect the life of the sheeting. Consider ordering a clear overlay sheeting on future signs in locations subjected to this type of vandalism. Do not use abrasive

compounds or tools such as steel wool that will scratch the sign face. Inspect the sign under night conditions to determine if sign is still legible at night.

Paintball gun damage. The impact damage from paintball guns often appears much less severe during daylight than at night. This is especially true on high-intensity and diamond-grade sheeting because the interior prism structure of the sheeting is easily damaged. The impacted area on damaged signs will appear as a “black blob” on the otherwise retroreflective sign when viewed at night with headlights. Inspect the sign under night conditions to determine if sign is still legible at night. If sheeting is damaged, it will need to be repaired or replaced.

Other severe contamination. Soiling that cannot be removed by traditional methods may be removed by scrubbing with a very fine steel wool or plastic kitchen scour. However, if this scrubbing is not done carefully, it may destroy all or part of the sign’s retroreflectivity. Heavy scrubbing also can damage the reflective geometry of high-intensity or diamond-grade sheeting.

If special cleaning procedures have been used, signs may need to be inspected at night to determine if the cleaned area has lost too much of its retroreflectivity. Replace those signs with insufficient retroreflectivity.

16.4.2 Retroreflective Sign Repairs

It may not be necessary to repair each bullet hole or puncture in a sign.

Minor damage may be repaired in the field without removing the sign from its support. Repair of major damage normally requires that the work be performed in a sign shop. Extensive repairs can easily cost more than a new sign and often do not increase sign life significantly. Some repairs may be made so the sign is operational until a replacement can be ordered and installed.

It may not be necessary to repair each bullet hole or puncture in a sign, especially if the sign was shot from the front side. Bullet damage is usually much more evident in the face of signs with an aluminum substrate than with signs constructed on a fiberglass or plywood substrates (sign board). When a bullet hole does not damage the message or symbol and does not, by itself, create a sloppy signing image for the Forest Service, maintenance may not be needed.

Where repairs are needed, follow the steps for the specific type of substrate.

16.4.2a Aluminum Substrate Signs

Bent signs. If possible, bend the sign back into place on the sign post with hand pressure. If it cannot be straightened on the post, remove the sign and place on a flat surface, such as a truck bed or fender dolly. Use cardboard or cloth to protect the sign face. Straighten bent aluminum sign substrates with a rubber mallet. If the reflective background or legend has been scraped or damaged, remove any additional sheeting damaged during straightening. Use the proper safety equipment, such as leather gloves and eye protection, when straightening bent signs.

Bullet holes or punctures. It is not necessary to repair all holes if the hole does not damage or interfere with the sign message and functionality. Remove all damaged background sheeting and legend from an area slightly larger than the damaged area. Straighten the sign with a hammer and flat dolly. Remove

any additional sheeting damaged during straightening. Clean the entire area with a mild detergent and rinse with clean water. Patch the bullet hole or puncture on both sides with a heavy aluminum foil tape using a squeegee to apply firm pressure. Do this on both sides of the sign. On large holes, start placing the foil at the bottom of the hole, overlapping each strip in a shingle fashion to the top of the hole.

If the back of the sign has been painted, use an aerosol can of enamel paint (color to match back of sign board), lightly spray the aluminum tape covering the holes on the sign back.

16.4.2b High-Density Overlay Plywood or Fiberglass Substrate Signs

The following procedures are recommended to repair bullet holes and other damage to high-density overlay (HDO) plywood or fiberglass substrates:

- Remove all loose substrate material on both sides of the sign and all damaged sheeting.
- Fill holes with wood filler or auto body filler such as Bondo®, smooth with a putty knife, and sand smooth.
- Wipe area with clean cloth or with denatured alcohol.
- On larger repairs it may be desirable to reinforce holes with fiberglass mesh or aluminum foil tape before applying the auto body filler.
- Use a squeegee to smooth the repair area. If the repair is still not flush with the sign, file or rasp the repair before it sets hard, then sand the repair smooth once it sets hard.

16.4.2c Retroreflective Background Sheeting Repairs

If the retroreflective background has been scraped or damaged, proceed as follows once the substrate for the sign has been repaired.

- Remove all background sheeting and legend from an area slightly larger than the area that has been damaged.
- Clean exposed surface with a mild detergent and rinse with clean water or with denatured alcohol and wipe with a clean cloth.
- Apply matching retroreflective background sheeting, extending it at least ½-inch beyond the damaged area.

16.4.2d Retroreflective Characters and Border Repairs

The message (legend, characters, and border) can be reapplied using die-cut, pressure-sensitive, prespaced letters, borders, and symbols. Replacing more than one or two letters and symbols on the original background sheeting of a sign is more difficult. Consider ordering an entire line of a sign's message and symbols preapplied to strip of matching pressure-sensitive sheeting from a sign company. Specify the exact letter height and length of the replacement message.

This technique also can be used to change a line of text that is no longer appropriate in an otherwise functional sign. Apply the replacement characters as follows:

- Properly position the entire replacement message on the sign and tape it to the sign with masking tape or top application tape across the entire top edge of the replacement message. The tape holds the replacement message in the proper alignment on the sign so the backing paper on the pressure-sensitive sheeting can be removed.
- Hinge the replacement message up using the tape to form a hinge so the backing paper can be removed.
- Once the backing paper is removed from the pressure-sensitive adhesive, slowly lower the replacement message with the pressure-sensitive adhesive and use a squeegee to iron out the repair and remove air bubbles.
- If air bubbles persist, use a pushpin to pierce the bubbles and then again squeegee out the air.

At best, sign life can be extended for a few years using these methods.

If the sign is subjected to snow burial and the replacement sheeting extends to the top edge of sign, place a 2-inch strip of clear-top application tape over the top edge. If the sign repair sheeting is at midpoint in the sign, it is still beneficial to apply a strip of clear-top application tape entirely across the top edge of the replacement characters. The clear tape protects the sheeting and provides protection to the characters from peeling if the sign is subject to snow burial. Clear overlay film also may be used.

At best, sign life can be extended for a few years using these methods. For heavily damaged signs, these methods can provide a usable sign until a replacement can be ordered and installed.

16.4.3 Routed Wood Sign Repairs

The following procedures are recommended for either natural woods or medium density overlay (MDO) plywood signs.

- Scrape off loose paint with a wire brush. Dress all bullet holes and damaged wood with a knife.
- Fill all cracks, holes, and imperfections with wood or auto body filler. Use a putty knife to smooth filler as much as possible.
- Sand sign edges, back, and face. Do not sand into the surface overlay on MDO substrate signs.
- Remove all loose paint, dust, and other foreign materials.
- Route the affected letters and symbols back into the sign using a template.

16.4.3a Maintenance of Routed Fiberglass Substrate Signs

The colors in wood-grained fiberglass signs are imbedded in a gelcoat and should not require repainting. Dirt, paint, or graffiti often can be removed using a pressure washer or a solvent such as acetone. Periodic cleaning by wiping of the sign will remove dust and pollens. If the face appears to be oxidizing, the sign can be waxed with automotive polish containing a ultra violet protection to restore the original appearance.

16.4.3b Repair of Routed Fiberglass Substrate Signs

Most damage to routed fiberglass signs can be repaired. Bullet holes can usually be repaired/filled on site. Contact the manufacturer for advice on major repairs and for color-matched putty repair kits. The repair putty requires a catalyst available from an automotive paint supply. Follow manufacturer directions for mixing the putty with the catalyst. Typically, 4 to 6 ounces of putty is poured into a small cup and is mixed with 4 to 5 drops of catalyst. (The higher the air temperature, the faster the catalyst will set-usually 5 to 15 minutes.

Most damage to
routed fiberglass signs
can be repaired.

It is best to fill holes from the back of the sign after covering the front of the hole with masking tape. Press the putty from the back of the sign with a stick or putty knife until the tape on the front of the sign starts to bulge. Smooth out the surfaces of the sign before the putty sets. The general area around the spot of repair can be cleaned up with solvents (acetone) if needed.

In the case of a name change or when damage to the sign is extensive, such as from a vehicle impact or shotgun damage, the sign can be sent to the manufacturer for repairs and, in most cases, can be repaired for about half the cost of a new sign.

16.4.3c Painting Routed Signs

If the repairs are extensive, make the following repairs with the sign removed from the mounting and laying flat.

- Apply a primer coat first and then apply two coats of paint to the sign message using a short-fiber roller. Hint: Instead of cleaning the roller, wrap the roller in tin foil between coats to prevent it from drying. For extended periods of storage, place the paint roller wrapped in tin foil in a deep freeze to preserve the roller between uses.
- Let paint dry thoroughly between coats.
- Apply two coats of paint to the background area.
- Work paint thoroughly into all corners of letters and numbers if the sign remains mounted. If the sign has been removed and is laying flat, paint for the letters can be flowed into the letters using a high-quality squeeze bottle, such as one used in a hair salon.
- Touch up letters if background paint contaminated the message.

16.4.3d Staining Natural Wood Signs

- Paint the message area, keeping paint off the sign face.
- Apply two coats of stain to the background area.

All painting and staining operations shall be in accordance with the specific requirements of the appropriate manufacturing specifications (chapter 14).

16.4.3e Other Sign Materials

For other sign substrate materials not covered above, consult with the material manufacturer or provider for specific maintenance procedures.

16.4.4 Supports and Hardware

As necessary, repair or replace damaged or deteriorated sign supports and associated mounting hardware.

16.5 Pavement Markings

Maintain pavement markings to preserve uniformity in design, position, and application.

Renew striping and other pavement markings when legibility has decreased and they are no longer effective.

Renew striping and other pavement markings when legibility has decreased and they are no longer effective. Follow the recommended application practice of the material manufacturer, the pavement marking machine manufacturer, and current Forest Service specifications.

Remove temporary traffic stripes or lane lines when they are no longer applicable. Also remove pavement stripes that are no longer appropriate for current traffic flow. Methods available for stripe removal include chemical paint removers, sand blasting, high-pressure water jet, grinding, and high temperature burning. Regardless of the method used, all evidence of existing striping must be removed and the pavement surface restored to a condition similar to the adjacent roadway surface.

Do not paint over pavement markings with black paint or bituminous materials as these smooth materials reflect light when wet and still appear to be a pavement marking. In addition, the cover paint will eventually wear away and the original lines will reappear.

16.6 Record Keeping

Record keeping is necessary to have an efficient and effective sign management program and as a risk management strategy. Accurate records showing the type and frequency of maintenance performed aid in determining service life and future budget needs. They also are extremely important as evidence in tort claim situations.

Record all maintenance accomplishments. Identify, by each individual sign, the date, specific work performed, and any additional work needed.

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Keeping good records will help the unit:

- Make good decisions about sign replacement.
- Respond more quickly to relocating or replacing frequently damaged signs.
- Determine which materials are best suited for certain areas.
- Assist law enforcement in reducing vandalism.
- Defend against lawsuits involving signage.

Maintenance activity records should be used to update the sign inventory in the sign plan to keep it current and accurate. Refer to chapter 2, section 2.2.5.

16.7 Recycling

Signs that are damaged, no longer serviceable, or do not meet current standards should either be recycled or disposed of. If the substrate of the sign is still in good condition or is repairable, it may be refaced and used in a new sign. Large signs may be made into several smaller signs. Aluminum signs also may be used for various small metal projects, such as mounting brackets.

16.7.1 Recycling Retroreflective Signs

Signs with retroreflective sheeting can be refaced with a new sheet of retroreflective material after the substrate has been repaired and the old sheeting stripped. Aluminum substrates that are not bent or shot can be planed to remove the sheeting and refaced with a new sheet of retroreflective sheeting. Bent signs may be straightened and resurfaced.

Consider the cost of shipping signs to a manufacturer for stripping and refacing. It may be more expensive to recycle an existing sign rather than to procure a new one. In addition, recycled aluminum signs may not carry the reflective sheeting manufacturer guarantee.

16.7.2 Recycling Routed Wood Signs

Routed wood signs with unneeded messages or holes and blemishes can often be repaired and reused for other signs. Large holes in MDO plywood and natural lumber can be filled with fiberglass epoxy material such as Bondo®. Split, warped, and unusable natural boards can be sawed out and reglued with new boards, or the face can be planed and sanded to remove the old message and a new message routed. A new message can sometimes be routed on an unused back face. Also it is possible to reface a sign with a new routed fiberglass sign glued or bolted over the old sign.

Routed wood signs with unneeded messages or holes and blemishes can often be repaired and reused for other signs.

16.8 Disposal

Follow the procedures in 41 CFR 101-45 references 102-102.38 to dispose of signs.

When signs have no use or sales value and cannot be donated, they should be destroyed provided:

- The sign has no commercial value either as an item or as scrap.
- The estimated cost of handling, care, and preparation of the signs would be greater than the expected sale proceeds.

When signs are to be disposed, destroy them so they are no longer usable as a sign and remove all government identification.

Aluminum signs should be cut, rolled, or bent and taken to a recycling center.

Large wood and fiberglass signs should be cut into smaller sizes to facilitate handling.

16.8.1 Documentation of Disposal

Disposal of individual signs with an original acquisition cost over \$500 should be documented on an AD-112 "Report of Unserviceable, Lost, Stolen, Damaged or Destroyed Property."

Individual signs with an original acquisition cost less than \$500 may be destroyed without an AD-112, although a signed statement of accomplishment action should be retained.

16.9 Maintenance References

Maintenance of Signs and Sign Supports, January 2010

A Guide for Local Highway and Street Maintenance Personnel

U.S. Department of Transportation, Federal Highway Administration