Traffic Manual

M 51-02

Washington State Department of Transportation
Operations and Maintenance Office

Traffic Manual

M 51-02

Washington State Department of Transportation
Environmental and Engineering Service Center
Traffic Office

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Foreword

The *Traffic Manual* is provided as a guide for department personnel in traffic operations and design. This manual does not establish absolute standards but, with the application of traffic engineering analyses, helps establish uniform guidelines and procedures for the use of traffic control devices.

This manual should be used in conjunction with the *Manual on Uniform Traffic Control Devices* (MUTCD) to assure uniform statewide application of traffic control devices. This document provides interpretive guidance but does not change the requirements of the MUTCD.

The *Traffic Manual* contains references to the *Design Manual*, *Standard Plans*, *Plans Preparation Manual*, *Construction Manual*, and the *Maintenance Manual*. Copies of these documents are available from the Washington State Department of Transportation (WSDOT) Engineering Publications Branch.

E. R. BURCH
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Subject: *Traffic Manual* Comment

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1.1 WSDOT Traffic Offices

Traffic functions within the Washington State Department of Transportation (WSDOT) are administered by (1) the WSDOT Olympia Service Center (OSC) Traffic Operations Office, (2) each of the six WSDOT regional offices, (3) the Office of Urban Mobility, (4) TransAid, and (5) the Transportation Data Office (TDO). The following sections explain how each of these help accomplish the goals of the traffic program required of the WSDOT.

A WSDOT organization chart showing the relationship of the six regions and the various service center divisions is available by contacting the WSDOT Administrative Services Office at 360-705-7730.

1.2 Traffic Operations Administration

The Traffic Operations Office is part of the Environmental and Engineering Service Center that includes the offices of Architecture, Bridge and Structures, Design, Consultant Services, Environmental Affairs, and Real Estate Services.

The State Traffic Engineer directs the Resource Assistance Office and is responsible for traffic engineering and related safety functions in three fundamental areas:

- ***Statewide Policy Development*** — To assure statewide consistency and uniformity, the OSC Traffic Office responds to issues and questions on traffic engineering ranging from technical design and specifications to operations and maintenance. This often requires efforts to research, coordinate, and summarize these issues for executive level decision making.

- ***Statewide Resource Development and Deployment*** — Traffic and safety needs constantly compete with other programs and deficiencies. The resources required to meet statewide needs are pursued through OSC decision packages and, when approved by the legislature are allocated to the regions for implementation.

- ***Statewide Traffic Expertise*** — The OSC Traffic Office provides expertise for general traffic operations and design activities for the regions and outside agencies. The Traffic Office provides technical training, coordinates statewide traffic activities (including consultation with Attorney General's Office on legal matters), and offers advice or guidance when requested by the regions and other divisions.

Expertise in the following areas is offered by the OSC Traffic Office: Signals, Illumination, and Delineation; Safety and Traffic Operations; Signing and Work Zone Traffic Control; Urban Systems Management; Local Agency Engineering Assistance; Traffic Engineering Training; and Traffic Regulations (see Appendix 1-1).

A. Signals, Illumination, and Delineation Systems

1. Provide statewide design report and contract plan review for traffic signal, illumination, and delineation projects.

2. Prepare signal system PS&E plans for the Northwest Region when necessary and the other regions always.

3. Maintain design standards, standard specifications, and standard plans for signals, illumination, and delineation.

4. Provide guidance and support for the Attorney General's Office on traffic related tort claim cases.

5. Assist the Materials Laboratory with approval of materials for electrical and delineation projects.

6. Provide technical information to General Administration personnel and WSDOT purchasing personnel who develop procurement contracts for traffic signal, illumination and delineation materials and equipment. Identify and correct shortcomings in procurement contracts.

7. Conduct statewide training on signal and illumination design, contract plan preparation, and signal operations including optimization of timing and coordination.

8. Support OSC offices by generating specialized (CADD) mapping.

9. Communicate with Materials Lab and manufacturers for current trends in materials and equipment used to construct signals, illumination systems, and delineation.

10. Develop and maintain Operations and Maintenance Time Standards used for budget planning, and for planning preventative maintenance activities for electrical systems and delineation.

B. Safety and Traffic Operations

1. Research and evaluate traffic operational improvements along existing state highways and arterials.

2. Act as technical consultants to the regions on the design and construction of traffic operations and safety improvements.

3. Develop and implement the Corridor Safety Improvement Program which is a multi-jurisdictional statewide safety program that will identify cost-effective means to increase safety on a corridor basis.

4. Implement a statewide safety management system, as required by the 1991 Intermodal Surface Transportation and Efficiency Act (ISTEA), to provide the state with a multi-jurisdictional management approach to traffic safety. The system will be used by decision-makers to allocate limited safety resources in the most cost-effective manner.

C. Signing and Work Zone Traffic Control

1. Develop statewide traffic sign management system, including an inventory database. Maintain the *Sign Fabrication Manual*.

2. Serve as technical consultants to the regions regarding sign fabrication. Conduct periodic inspections of sign fabrication shops and develop inspection criteria for sign fabrication inspectors. Evaluate new sign fabrication shops for approval as contract fabricators.

3. Review design reports, deviation requests, contract plans, and other WSDOT documents, for the proper application of traffic control devices. Assure conformance to the MUTCD and other state standards for permanent signing and temporary traffic control.

4. Conduct ongoing work zone traffic control reviews of regional PS&E plans. Document two on-site construction work zones per year in each region in order to evaluate the effectiveness of work zone traffic control. Determine elements that need improvement and revise statewide standards accordingly.

5. Provide training (required by federal standards) in the principles, standards, and procedures of proper work zone traffic control to engineering, maintenance, and local agency personnel.

6. Help the regions solve problems with permanent signing and work zone traffic control.

7. Develop specifications for new or revised items to incorporate into the *Standard Specifications* or *General Special Provisions*.

D. Urban Systems and Management

1. Provide expertise within WSDOT and to other agencies on urban traffic management strategies and systems. This includes expertise in HOV operations.

2. Manage the department's Intelligent Transportation Systems (ITS) effort by providing for the transfer of ITS and traffic management system technologies throughout WSDOT and to other agencies.

3. Serve as the department's technical contact on Transportation Research Center (TRAC) research projects. Evaluate and implement results of TRAC research when appropriate.

E. Traffic Regulations

1. Develop statewide policies for the implementation of MUTCD principles and guidelines. Maintain the policies in the *Traffic Manual*, the *Design Manual*, and departmental directives. (State law requires WSDOT to provide standards for all traffic control devices used on public roadways.)

2. Recommend approval or denial of traffic regulations for permanent speed limits, high occupancy vehicle (HOV) designations, bicycle prohibitions, truck restrictions, angle parking, and park and ride lots and other parking facilities operated by WSDOT. Traffic regulations submitted by the regions are evaluated to assure that the statutory requirements are met, and that the engineering support data is complete and accurate.

3. Interpret the provisions of state law and supporting departmental regulations for billboards and motorist information signs to resolve conflicts between sign owners and the regions. Process billboard permits and the annual permit renewals.

4. Provide sponsors of running or bicycling events with guidance about the traffic laws to safely conduct inter-regional events. Provide the regions with support and direction for responding to inquiries about intra-regional events.

5. Analyze traffic operations or safety oriented legislation and respond to legislative inquiries on traffic matters. This provides executive management with information necessary to determine appropriate departmental positions.

6. Conduct quadrennial reviews of traffic related WACs and make related changes to brochures and other items for outdoor advertising control, motorist information signs, and the MUTCD. Respond to AASHTO Ballots, Federal Register notices, and inquiries from the public.

F. Agency Traffic Services

The role of WSDOT's Traffic Services Engineer is to provide on-call traffic engineering and microcomputer services to all local agencies, especially to smaller agencies which lack professional staffs. The Traffic Services Engineer is a part of the WSDOT Olympia Service Center's Traffic Operations Office and works closely with WSDOT's TransAid Service Center.

G. Traffic Engineering Training

Determine traffic related training needs of the regions and establish training sessions to meet those needs. This involves designing and instructing new courses to meet specific needs, or facilitating courses that are conducted by consultants.

1.3 Regional Traffic Administration

Each of the six transportation regions is directed by a Regional Administrator who reports to the Deputy Secretary of Transportation for Operations. All regions have a Regional Traffic Engineer responsible for traffic related services who, depending on how the region is organized, reports to one of several senior region managers (e.g., Regional Operations Engineer, Regional Project Development Engineer, etc.).

The responsibilities for traffic engineering and safety services within the regions can be summarized into six basic areas:

A. Coordinate traffic studies, collect and analyze data.

1. Provide traffic data for upcoming projects or planning functions.

2. Conduct accident analyses and provide information to the Planning, Programming Design, Project, and Maintenance Offices.

3. Determine traffic regulations needed to assure safe, smooth operation of the transportation system within the region.

4. Maintain inventories of traffic control devices in the region.

B. Assure that the application of traffic control devices and outdoor advertising control are in compliance with the MUTCD and other applicable regulations.

1. The Regional Administrators have the authority to approve traffic regulations for stop control on state highways, signal permits, turn prohibitions on partial access controlled highways, roadside parking restrictions (except angle parking and park and ride restrictions), prohibitions on fishing from bridges, and reduced regulatory speeds in construction or maintenance areas.

2. Administer the Outdoor Advertising Control and Motorist Information Signing programs.

3. Review access permits required under State Access Management legislation.

4. Review development proposals for their potential impacts to the safety, capacity, and maintenance of the highway system.

5. Implement and maintain Safety and Congestion Management Systems in the region.

C. Provide traffic expertise as projects are planned, programmed, designed, constructed, maintained, and evaluated.

1. Assure that all traffic signal installations operate efficiently to meet traffic operation goals.

2. Provide design expertise on traffic related items in projects (signals, illumination, signing, and delineation).

3. Review traffic design elements performed by consultants.

4. Approve or deny requests to conduct special events or filming operations on state highways within the respective region boundary.

5. Conduct design and operational reviews for work zone traffic control plans.

6. Perform periodic operational reviews to verify that advisory speeds, intersection sight distances, and other roadside features are in compliance with acceptable standards.

D. Manage the following to maximize freeway and arterial operational efficiency, safety, and service life in urban areas.

1. Surveillance, Control, and Driver Information (SC&DI) systems including data stations, ramp meters, television cameras, signal systems, changeable message signs (CMS), Intelligent Transportation Systems (ITS), and highway advisory radio (HAR) systems.

2. HOV system.

3. Incident response.

4. Coordinate with local agencies, participating in a technical advisory capacity as appropriate.

5. Signing and Channelization Systems.

E. Coordinate with local agencies and respond to citizen concerns and news media about traffic related items. Represent WSDOT in city, county, and other public forums.

F. Upon request, provide guidance and support to the Attorney General's Office and to the Traffic Operations Office for employee suggestions.

1.4 Office of Urban Mobility

The Office of Urban Mobility (OUM) is a planning body that coordinates WSDOT activities within the same geographic area covered by the Puget Sound Regional Council (PSRC). PSRC is the Metropolitan Planning Organization (MPO) for King, Kitsap, Pierce, and Snohomish Counties. OUM recognizes the need to integrate all transportation modes and coordinate long-range regional growth management plans to create a balanced transportation system. OUM works with these regional and local officials to accomplish this goal.

The office is headed by a director who reports directly to the Deputy Secretary of Transportation and is responsible to:

• ***Transit Planning/HOV***— Represent WSDOT in establishing a Regional Transit Plan and to promote transportation alternatives through transportation demand management methods. Provide lead responsibility for planning and prioritizing HOV facilities.

• ***Regional Coordination*** — Work with the PSRC, sub regional groups, and other jurisdictions in the region to develop regional transportation plans that maintain accessibility, manage congestion, and are modally balanced and coordinated with land use objectives. Represent WSDOT's interests in regional forums, especially in programming and prioritization efforts under ISTEA.

• ***System/Corridor/Project Planning*** — Develop and undertake long-range areawide, corridor specific or project specific planning studies.

1.5 Transportation Data Office (TDO)

This office is part of the Planning and Programming Service Center.

TDO is responsible for:

1. Development and operation of departmental traffic data standards under FHWA guidelines which are incorporated into the TRIPS traffic database.

2. Development and operation of the ISTEA Traffic Monitoring System (TMS/H) as required by the new regulations.

3. Provide ISTEA/TMG quality data for all other ISTEA management systems as required.

4. Provide database support for: (a) traffic, roadway, and accident data for all state and federal systems and submittals (HPMS, ISTEA, NHS, PAS, PMS, CPMS, PAPS, SWIBS); (b) accident data including coding, coordination with WSP and the Traffic Safety Commission, analysis, and database for all region uses; (c) traffic counting in support of statewide system, projects, and planning studies; and (d) traffic forecasting expertise for planning and design projects statewide.

5. Provide statewide review of all traffic data and analysis in EIS, developer submittals, design projects, and prioritization projects.

6. Provide technical expertise for traffic forecast modeling in support of planning and design projects.

7. Provide technical support and review expertise for work zone working hours, penalties, and incentives costing analysis.

1.6 Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
CADD	Computer Aided Drafting and Design
CMS	Changeable Message Sign
FHWA	Federal Highway Administration
HAR	Highway Advisory Radio
HOV	High Occupancy Vehicle
ISTEA	Intermodal Surface and Transportation Efficiency Act of 1991
ITE	Institute of Traffic Engineers
ITS	Intelligent Transportation Systems
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices for Streets and Highways
OSC	Olympia Service Center
OUM	Office of Urban Mobility
PPSC	Planning and Programming Service Center
PSRC	Puget Sound Regional Council
RCW	Revised Code of Washington
SC&DI	Surveillance, Control and Driver Information
SMS	Safety Management System

TDO	Transportation Data Office
TRAC	Transportation Research Center (University of Washington)
TRIPS	Transportation Information and Planning Support
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
WSP	Washington State Patrol
WTSC	Washington Traffic Safety Commission

1.7 References

Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), M 24-01

RCW 47.36.030 directs WSDOT to adopt a uniform standard for the application and location of traffic control devices installed along public roadways in the state of Washington. The MUTCD, published by the Federal Highway Administration (FHWA), has been adopted into Chapter 468-95 of the Washington Administrative Code (WAC).

Certain modifications to the MUTCD, to comply with state laws, have also been adopted into the WAC. A booklet of these modifications is available from the WSDOT Engineering Publications.

Amendments to the MUTCD are developed by the FHWA through the Federal Register process. These FHWA amendments become effective when the department receives notification of the approved changes from the FHWA.

WSDOT Design Manual, M 22-01

The *Design Manual* provides guidance for the development of the traffic features included in design reports and contract plans. Numerous sections contain information on the traffic design features, with many of these features also applicable to traffic operations. The *Traffic Manual*, to the extent possible, avoids duplication of *Design Manual* materials, but provides cross-references where appropriate.

WSDOT Sign Fabrication Manual, M 55-05

The *Sign Fabrication Manual* provides sign fabricators and designers with the detailed layout information for official traffic signs used in Washington State.

WSDOT Standard Plans for Road, Bridge, and Municipal Construction, M 21-01

The *Standard Plans for Road and Bridge and Municipal Construction* provides standard plans for the following traffic items:

- Sign Bridges
- Signing
- Cantilever Sign Structures
- Striping (typical layouts)
- Guide Posts
- Lane Markers
- Illumination
- Signals
- Concrete Barrier
- Guardrail
- Earthberms

WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, M 41-10

The *Standard Specifications* provides detailed requirements and techniques for construction and installation of the following traffic related items:

- Guide Posts
- Plastic Traffic Buttons
- Lane Markers
- Signing (Materials and Fabrication)
- Illumination
- Signals (Electrical)
- Pavement Markings (temporary and permanent)
- Work zone traffic control items (flagging, signs, delineation devices, etc.)

Other Documents

The following reference documents may also be helpful in conducting traffic related designs and analyses:

WSDOT Manuals

- *Plans Preparation Manual*, M 22-31
- *Construction Manual*, M 41-01
- *Maintenance Manual*, M 51-01
- *Traffic Control Guidelines for Survey Operations*, M 55-02
- *Traffic Counting Guide for TMS* (due out in March 1994)
- *Traffic Forecasting Guide*
- Training Manual, *"Traffic Operations in WSDOT,"* (Class available through Traffic Operations Office)

FHWA (Federal Highway Administration)

- ISTEA Regulations
- *Traffic Control Devices Handbook* (TCDH)
- *Traffic Control Systems Handbook*
- *Traffic Monitoring Guide*

AASHTO (American Association of State Highway and Transportation Officials)

- *A Policy on Geometric Design of Highways and Streets*
- Guide for Selecting, Locating, and Designing Traffic Barriers
- Guidelines for Traffic Data Programs

TRB (Transportation Research Board)

- *Highway Capacity Manual*

ITE (Institute of Transportation Engineers)

- *Transportation and Traffic Engineering Handbook*
- Manual of Traffic Engineering Studies
- *Traffic Detector Handbook*

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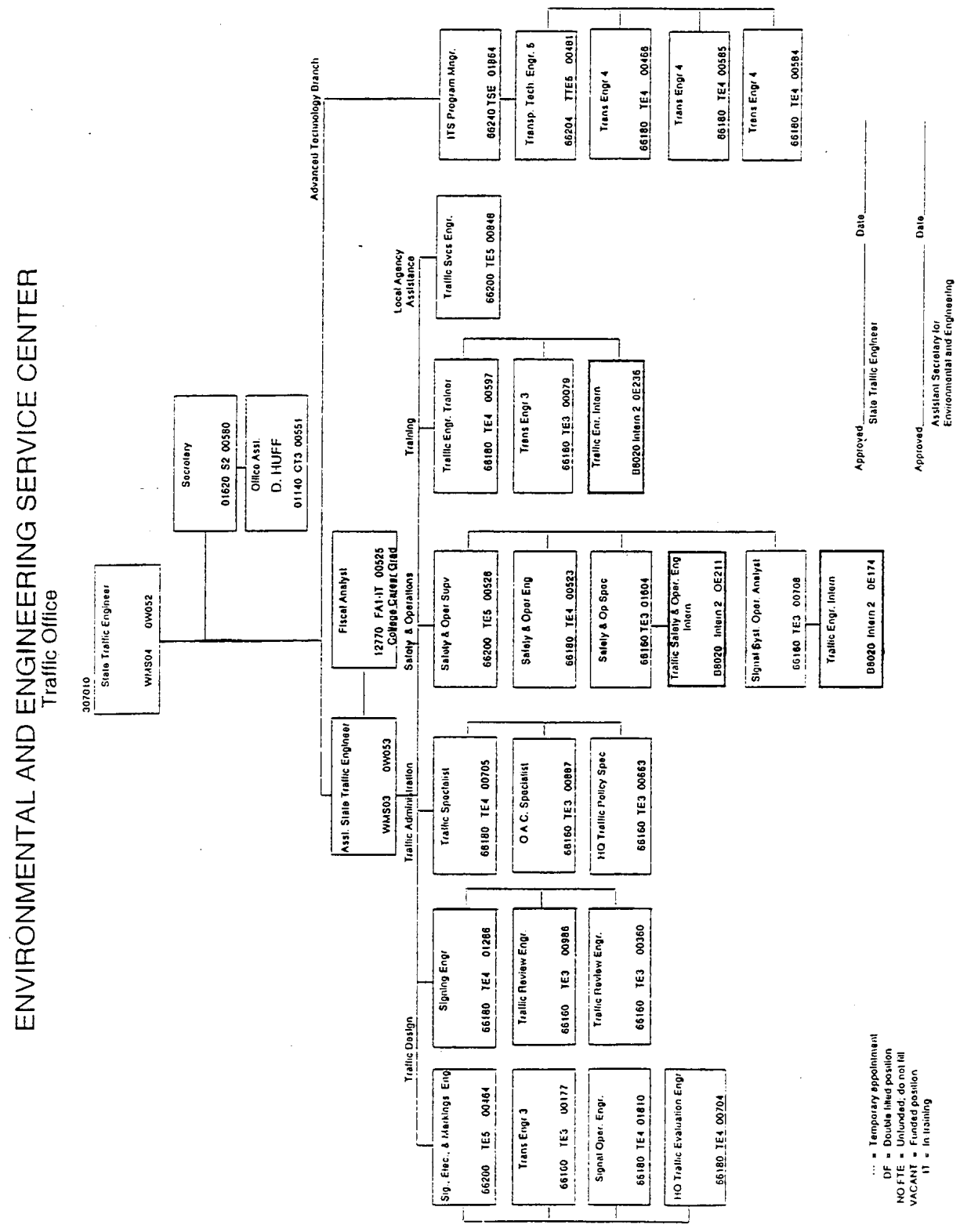
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66180 TE4 01810
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Approved_____ Date_____
State Traffic Engineer
Approved_____ Date_____
Assistant Secretary for Environmental and Engineering
... = Temporary appointment
DF = Double filled position
NO FTE = Unfunded, do not fill
VACANT = Funded position
IT = In training

2.1 General

Signs give motorists the information they need to safely and legally drive on public roadways. The MUTCD contains guidance on the intended use and placement of signs. It also contains information on the size of standard regulatory and warning signs, but has less definitive guidance on the size of letters to use on information or directional signs.

As stated in the MUTCD, existing symbol signs may not be modified in any way. The introduction of new symbol signs must follow the procedures for experimentation outlined in the MUTCD. Foreign language signs are not allowed on the state highway system.

Guidelines for the various classifications of official traffic control signs are discussed in the following MUTCD sections:

Regulatory Signs — Section II-B
Warning Signs — Section II-C
Guide Signs — Section II-D, II-E, and II-F
Work Zone Signs — Section VI-C

Design Manual Section 820 provides guidelines for the selection of posts for ground mounted signs. For overhead installations, Section 820 provides guidelines for, vertical clearance, horizontal location, and service walkways.

Criteria for sign usage is also provided in several RCWs and WACs. Many RCWs are not enforceable unless the appropriate signs are posted. RCW 46.61.050.

A. Overhead Sign Illumination

Multilane Highways

In urban areas, all overhead signs on multilane highways shall be illuminated. In rural areas, all overhead regulatory and warning signs including "Exit Only" panels shall be illuminated. All other overhead signs shall be illuminated when:

1. Sign visibility is less than 800 feet due to highway structures or roadside features.

2. An engineering study indicates that any outside light sources would interfere with seeing or reading the sign.

3. The sign is supplemented by a flashing beacon.

Conventional Highways

Overhead signs shall be illuminated when:

1. Sign visibility is less than 800 feet due to highway structures or roadside features.

2. An engineering study indicates that any outside light sources would interfere with seeing or reading the sign.

3. The sign is supplemented by a flashing beacon.

All adjacent signs on any single overhead installation will be illuminated if any one sign is illuminated.

The designer must consider the distance from the power source to the sign when illuminating overhead signs. Generally overhead signs in remote areas where the power source is more than one-half mile away will not be illuminated.

B. Reflective Sheeting Requirements

The following reflective sign sheeting types are to be used on signs in the areas shown:

Sign Type	Sheeting Area	Type*
All red background signs (Stop, Wrong Way, etc.)	All	III & IV
Regulatory Signs	Rural	II
	Urban	III & IV
Warning Signs	Rural	II
	Urban	III & IV
Route Markers (M Series Signs)	All	II
General Information (I series)	All	II
Milepost Markers	All	II
Guide Signs (Backgrounds)		
Ground Mounted	All	II
Overhead(Lighted)	All	I
Overhead(Not lighted)	All	III & IV
Letters, Border, Symbols	All	III & IV
Blue, Brown Background Signs	All	II
Orange (Construction Signs)	All	I & II

*Sheeting types as designated in ASTM Specification D 4956.

As previously noted, the basic reference for all signing is the MUTCD. The remainder of this chapter provides interpretive guidance for selected regulatory, warning, and guide signs.

2.2 Sign Placement

The physical environment of the roadway is a major consideration in signing.

Sight restrictions imposed by natural features, as well as bridges, columns, and other signs, must be considered when locating signs. Signs should be located as far from the edge of the traveled way as possible while remaining effective, and should be placed on the backslope of ditches rather than the inslope. Do not locate sign posts in the bottom of ditches. Only signs that are directly related to ramp traffic should be placed immediately adjacent to a ramp, because merging maneuvers require the drivers' full attention at these conflict areas. On multi-lane highways that exceed two lanes in one direction, warning and regulatory signs should be placed on both sides of the roadway.

A. Mounting Height

The MUTCD provides for variable mounting heights depending on the roadway characteristics (e.g.: rural, urban, freeways, etc.), and the number of signs on a sign assembly.

To maintain uniformity and to increase the target value of signs on our highway system, use the following criteria for sign mounting heights (the V distance shown in the Standard Plans), unless a different mounting height is required by state law (e.g., disabled parking signs).

All route markers, regulatory, and warning signs in rural or urban areas shall be mounted at a height of at least 2 meters (7 feet), measured from the bottom of the sign to the pavement edge line. The height to the bottom of a secondary sign mounted below another sign shall not be less than 4 feet except in urban areas where the minimum height shall be 2 meters (7 feet) to the secondary sign.

Directional signs and signs with multiple posts shall be erected with a minimum height of 2 meters (7 feet) above the pavement edge. Where signs are placed, outside the clearzone or behind protection, the minimum height may be 1.5 meters (5 feet) above the pavement edge line.

Within the clearzone, all signs shall have a minimum vertical clearance of 2 meters (7 feet) from the ground line to the bottom of the primary sign. Outside the clearzone, in a cut section, the bottom of the sign shall not be less than two feet from the ground.

Vertical clearance for overhead signs shall be as provided in the *Design Manual*.

B. Lateral Distances to Signs

The MUTCD contains minimum requirements for the lateral placement of signs. Sign posts placed outside the clear zone identified in the *Design Manual* do not require breakaway characteristics. However, all sign posts within the clear zone shall have either breakaway features or be protected with guardrail.

C. Clearing Distances to Signs

In order to provide sufficient visibility to signs, WSDOT maintenance crews shall clear away brush. Clearing shall occur at the following distances:

Area Description	*Distance*
Low Speed Urban	60 meters (200 feet)
Rural	150 meters (500 feet)
Freeways and All Guide Signs	240 meters (800 feet)

D. Wood Post Drilling

Timber sign posts shall be drilled and notched, as shown in the Standard Plans, to provide necessary breakaway characteristics.

E. Attention Devices

Attention devices such as flags are used only to draw the motorist's attention to newly installed warning or regulatory signs. The devices should remain in place for at least two weeks, or more at the discretion of the regional traffic engineer.

F. Sign Storage

To prevent premature sign face failure, store signs properly. Do not store signs where dirt and water may splash on sign face.

Never store signs laying flat. Water accumulation between signs will cause sheeting failure.

Store packaged signs indoors on edge. If packaged signs become wet, unpack immediately and separate the signs to dry. Provide ample space between signs to allow free air circulation and normal moisture evaporation from the face of each sign. Clothes pins work well to provide face separation.

If outdoor storage is required for short periods, remove all packing materials so nothing is against the sign face. Store signs upright on edge in a clean area off the ground.

2.3 Regulatory Signs

A. Bicycle Prohibition Signing

Bicycles may use any state highway except where restricted by regulation on limited access facilities within urban areas or other locations.

Install signs that indicate bicycles are not permitted in advance of prohibited sections of highways. On the mainline, in advance of the prohibited area, bicycle prohibition signs (R5-601) consist of the BICYCLES MUST EXIT 1/4 MILE sign and the BICYCLE MUST EXIT sign at the off-ramp. At on-ramp entrances to prohibited areas, install the PEDESTRIANS, HITCHHIKERS, BICYCLES PROHIBITED signs (R5-1002).

Design Manual Section 1020 discusses signing for bikeway facilities.

B. Climbing Lanes and Passing Lanes

Guidelines for the design of climbing lanes and passing lanes are contained in *Design Manual* Section 329.

For climbing lanes, a TRUCK LANE ____ FEET (R4-6) sign may be placed in advance of the climbing lane. The distance shown on the sign should approximate, to the nearest 30 meters (100 feet), the distance to the climbing lane. A TRUCKS USE RIGHT LANE (R4-5) sign or a SLOWER TRAFFIC KEEP RIGHT (R4-3) sign should be placed at the beginning of the climbing lane. Place the RIGHT LANE ENDS (W9-1) and PAVEMENT WIDTH TRANSITION (W4-2R) signs in advance of the end of the climbing lane. (See Appendix 2-1.)

For passing lanes, place the PASSING LANE ____ MILES (R4-601) sign 400 to 800 meters (one-fourth to one-half mile) in advance of the passing lane. These signs should show the approximate distance, to the nearest 30 meters (100 feet), from the signs to the passing lane. Place SLOWER TRAFFIC KEEP RIGHT (R4-3) sign at the beginning of the passing lane and

place RIGHT LANE ENDS (W9-1) and PAVEMENT WIDTH TRANSITION (W4-2R) signs in advance of the end of the passing lane. A NEXT PASSING LANE ____ MILES sign with the approximate distance to the next passing lane, may be used following the end of the passing lane. (See Appendix 2-2.)

C. RV Dump Prohibition Signing

Some rest areas provide RV dump stations for use by noncommercial vehicles. The COMMERCIAL VEHICLE USE PROHIBITED sign is to be installed only at these sites and has no application elsewhere.

Design Manual Section 1030 discusses RV Dump Stations.

D. Shoulder Driving

Signing is required where shoulder driving is permitted. Use a SLOW VEHICLES MAY USE SHOULDER (I8-501) sign at the beginning of a shoulder driving zone and supplement it with a NEXT ____ MILES (I7-702) advisory distance plaque. Repeat this signing at a maximum interval of 8 km (5 miles). Use a DAYLIGHT HOURS ONLY (I8-701) to supplement this signing. Place an END SHOULDER DRIVING (I8-601) sign at the end of the designated shoulder driving zone. (See Appendix 2-3.)

See Chapter 7 for the shoulder characteristics necessary to designate a shoulder driving zone.

E. Slow Vehicle Turnouts

Guidelines for the design of slow vehicle turnouts are contained in *Design Manual* Section 1010.

For highway sections that use slow vehicle turnouts for passing opportunities, locate a SLOW VEHICLES USE TURNOUTS NEXT ____ MILES (I8-101) sign in advance of the initial turnout to advise motorists of the turnouts. Use the DELAY OF 5 VEHICLES ILLEGAL (I8-201) sign as a reminder that turnouts must be used. Use the SLOW VEHICLE TURNOUT ____ FT/MILE (I8-401) sign in advance of each turnout, followed by a SLOW VEHICLE TURNOUT "arrow" (I8-301) sign at the beginning of the turnout. NO PARKING (R8-3) or NO PARKING SYMBOL (R8-3a) signs may be installed within the turnout when required. (See Appendix 2-4.)

F. Speed Limit Signs

The MUTCD provides that SPEED LIMIT (R2-1) signs shall display the limit established by law, or by regulation, after an engineering and traffic investigation has been made in accordance with established traffic engineering practices.

For two-lane highways, locate speed limit signs at the points of entry/exit from urban areas, at intersections of state highways, at major interchanges or intersections, and at other locations having a change in speed limit. Speed limit signs in rural areas need not be more closely spaced than 16 to 32 km (10 to 20 miles). They should not be located between curve/turn warning signs and the curve or turn.

For multi-lane highways, speed limit signs may be placed directionally on both sides of the highway at locations having a speed limit change. Such speed limit signs, in 60 mph zones of interstate highways, should also be placed beyond the ingress of ramps, with minimum spacing at closely spaced ramps determined through a traffic engineering analysis.

Place signs directly opposite each other for each direction of travel at speed zone changes on all highways wherever possible. If roadway conditions such as an intersection or driveways prohibit sign installation directly opposite, the signs may be offset a maximum of 90 meters (300 feet) or 45 meters (150 feet) in each direction from the speed zone change. If this distance cannot be met, the speed zone must be authorized by the State Traffic Engineer to allow for sign installation.

G. Speed Zone Ahead Signs

Use SPEED ZONE AHEAD signs (RC-5C) in advance of SPEED LIMIT signs where the speed limit is lowered. Install the supplemental advisory speed plaque (R2-501 with the lower speed limit.

Place the SPEED ZONE AHEAD signs at locations far enough in advance so that the motorist may slow to the new speed limit without braking. The SPEED ZONE AHEAD sign is not normally used in urban areas where speeds are lower.

H. Two-Way Left Turn Lane Signs

The MUTCD provides that TWO-WAY LEFT TURN ONLY signs should be used where a lane in the center of a highway is reserved for the use of left-turning vehicles in either direction and is not to be used for passing or overtaking. Either the post-mounted R3-9b or the overhead mounted R3-9a sign may be used to supplement pavement markings for the two-way left turn lanes. A plaque indicating BEGIN or END may be mounted above either sign to identify the limits of the two-way left turn area.

The following WSDOT criteria also applies to the use of two-way left turn lane signs:

Locate the initial sign near the beginning of the two-way left turn lane and repeat it as necessary based on an analysis of operational conditions. BEGIN or END plaques should not be installed where a two-way left turn lane is temporarily interrupted by left turn channelization on either one or both approaches to an intersection.

I. Yield Signs on Ramps

The MUTCD provides that YIELD (R1-2) signs may be used on ramps where acceleration lanes are not provided.

In *Design Manual* Section 940, acceleration lane length is determined based on main line and ramp design speeds. Where the acceleration lane length is equal to or greater than the *Design Manual* minimum, a yield sign is normally not necessary.

At locations where an acceleration lane is shorter than the *Design Manual* minimum, or where the operating speed is substantially lower than the design speed, a traffic engineering analysis may be conducted to determine if a yield sign installation is appropriate.

J. Range Area Signs

Install the RANGE AREA sign where a public road enters an open range area in accordance with RCW 16.24.060. Repeat signing at points designated by the governing county commissioners. Install the LEAVING RANGE AREA sign where a public road leaves an open range.

2.4 Warning Signs

Minimum sign sizes shall be as follows:

Freeways and Expressways: 1200 mm (48")
Multilane Streets: 900 mm (36")
Conventional Roadways: 750 mm (30")

A. Added Lane Sign

The MUTCD provides that an ADDED LANE (W4-3) sign may be used in advance of a point where two roadways converge and merging movements are not required. The sign should be used at all added lane conditions so that the main line driver can avoid unnecessary lane changes. Except if the on ramp and added lane are clearly visible from the mainline, the sign need not be installed.

B. Chevron Alignment Signs

The CHEVRON ALIGNMENT (W1-8) sign should be used for roadway curves which have a demonstrated operational deficiency such as run-off-the-road accidents, or for nonilluminated circular interchange ramps. In addition to the installation criteria in the MUTCD, it is preferred that not less than three of these signs be used at an installation.

C. Deer Crossing Sign

The MUTCD provides that an advance DEER CROSSING (W11-3) sign should be used to alert motorists where deer or elk may unexpectedly wander onto the roadway.

Consult the following sources to determine where deer crossing signs may be desirable:

1. The Environmental Affairs Office in the Olympia Service Center which records and compiles deer kill data reported by WSDOT personnel.

2. Records of accidents with wildlife which are maintained by the Transportation Data Office, Safety Data Branch of the Planning and Programming Service Center.

3. The Department of Fish and Wildlife's regional biologists who have additional information on concentrations and migratory routes of deer.

D. Exit Advisory Speed Sign

The EXIT ADVISORY SPEED (W13-2) sign should be used at freeway/expressway exit ramps to advise motorists of the maximum speed the exit ramp can be comfortably negotiated. This sign is placed along the deceleration lane, preferably in the area of the exit gore.

If an advisory speed indication is at a location well beyond the gore this sign is not required; a standard warning sign with an advisory speed plaque installed in accordance with Section 2C-3 of the MUTCD will suffice.

This sign is not required for an exit ramp with tangent alignment (such as a diamond interchange) to a stop condition. However, if the exit ramp merges with a surface street without stopping, consider placing a reduced speed sign indicating the safe speed at which this maneuver can be made.

E. Ramp Advisory Speed Sign

The RAMP ADVISORY SPEED (W13-3) sign should be used on freeway/expressway to freeway/expressway exit ramps and, when necessary, on the entrance ramps to these facilities to advise motorists of the speed the ramp can be comfortably negotiated. Place this sign along the ramp entrance as appropriate for the situation.

If additional advisory speed indication is needed well beyond the gore or ramp entrance from surface streets, use a standard warning sign with an advisory special plaque.

F. Fire Station Signs

FIRE STATION (W11-8) signs may be installed at locations where there is limited sight distance to the fire station road approach or where the approach is in an area where the appearance of a fire truck would surprise a motorist.

A traffic engineering evaluation should be conducted at each location to determine the need for signing.

Fire station warning signs are not generally used at intersections.

G. Grated Bridge Deck Sign

The GRATED BRIDGE DECK sign (W8-2101) should be used in advance of bridges with grated decks which may affect vehicle handling characteristics, particularly motorcycles.

H. Grooved Pavement Sign

The GROOVED PAVEMENT sign (W8-2001) should be used in advance of roadway sections of roadway having a series of closely spaced longitudinal cut pavement grooves which may affect vehicle handling characteristics, particularly motorcycles. This sign should not be used in areas of rutted pavement.

I. Hairpin Curve Sign

The MUTCD does not provide guidance for the use of the HAIRPIN CURVE (W1-901) sign. Thus, the following criteria is provided.

The hairpin curve sign should be used where (1) a curve produces a central angle of 135 degrees or more, (2) where an engineering investigation of roadway, geometric, and operating conditions show the recommended speed to be 30 mph or less, and (3) the recommended speed is equal to or less than the speed limit established by law or regulation for that section of highway.

When a hairpin curve sign is used, additional guidance may be provided by using the advisory speed plaque (W13-1). The large arrow sign (W1-6) or chevron alignment markers (W1-8) may also be used in conjunction with the hairpin curve sign.

J. Truck Tipping Signs

The special TRUCK TIPPING sign may be used where there is an unusual number of truck tipping accidents. An appropriate speed advisory sign shall be placed below the sign. Do not use the TRUCK TIPPING sign in place of any standard signs. Install it only after all other standard warning signs are in place.

K. Intersection Warning Signs

The MUTCD provides that INTERSECTION WARNING (W2 Series) should be used on through highways to indicate the presence of an obscured intersection. (Refer to the MUTCD installation criteria for railroad/intersection signs W10-2, W10-3, and W10-4).

An obscured intersection is defined as one where a vehicle entering from the side is not continuously visible to through traffic for the minimum advance distances shown in Table II-1 in Part II-C of the MUTCD. Intersection warning signs are not normally used at signalized and/or channelized and illuminated intersections.

Use black on yellow ROAD NAME (D3-201) signs in advance of intersections to supplement intersection warning signs (W2 Series). Where intersection warning signs are not used, the white on green ROAD NAME (D3-302) sign will be posted in advance of the intersection.

L. Low Clearance Signing

For clearances over legal height, install signs in accordance with the MUTCD. Where clearance is less than the legal height, install additional signs on the structure and the nearest intersecting road preceding the structure where a vehicle can detour around the low clearance. Also install an advisory distance sign (W13-501) with the distance to the low clearance.

In the case of an arch or other structure where the clearance varies, the designer must determine the number of signs required to provide adequate clearance information. If a legal height vehicle can pass under the structure at one point, but clearance is restricted at another point, such as at the edge stripe, the advance sign should include this information.

Vertical clearance for overhead signs shall be in accordance with the *Design Manual*.

M. Merge Sign

The MUTCD provides that MERGE (W4-1) signs may be used to warn motorists of upcoming merging movements in advance of a point where two roads converge and no turning conflict occurs. They should be installed where the minimum visibility distance is less than that suggested in Table II-1 in Part II-C of the MUTCD. For example, on 55 mph roadways, install merge signs when mainline traffic cannot see ramp traffic from at least 210 M (700 feet) from the point of fixed merge.

N. Overhead School Crosswalk Sign

An overhead SCHOOL CROSSWALK sign is not contained within the MUTCD and, thus, is a extraordinary traffic control device. They are only installed where school authorities request supplemental traffic control for marked school crosswalks, and only after a traffic engineering analysis finds more conventional traffic control measures inadequate.

This sign will not be used in lieu of standard school crosswalk signs.

Although their use is generally discouraged, the signs should include flashing lights which are on only when school children use the crosswalk. Because these signs are a extraordinary device, all associated costs for installing and maintaining them are the school authority's responsibility. The school district should also be responsible for ensuring that the flashing lights are on only when school children use the crosswalk.

O. Stop Ahead/Signal Ahead Signs

STOP AHEAD (W3-1a) and SIGNAL AHEAD (W3-3) signs are generally required only where the stop sign or the signal, respectively, are not visible from at least the minimum advance distances suggested on Table II-1 in Part II-C of the MUTCD.

P. Turn and Curve Signs and Advisory Speed Plaques

The MUTCD provides that the TURN (W1-1) sign should be used where engineering investigations of roadway, geometric, and operating conditions indicate an advisory speed of 30 mph or less and the recommended speed is equal to or less than the speed limit. Use the CURVE (W1-2) sign when the advisory speed is greater than 30 mph and equal to or less than the speed limit.

Use advisory speed plaques where engineering investigations of roadway, geometric, or operating conditions indicate the need to advise drivers of a recommended speed. The advisory speed plaque is used only to supplement other warning signs.

For turns and curves determine the recommended advisory speed with a Ball Bank Indicator evaluation in accordance with the following:

Advisory Speed (mph)	Maximum Ball Bank Reading
20 mph or less	14
25 and 30 mph	12
35 mph and greater	10

Use the warning signs where the recommended speed is at or below the legal speed limit, and add advisory speed plaques where the recommended speed is 5 mph or more below the legal speed limit.

Q. Pavement Ruts Sign

The PAVEMENT RUTS sign (W8-2201) may be used in areas where wheel track ruts may cause unexpected movements when vehicles cross them. The Regional Traffic Office should determine whether or not to post the signs. On multi-lane roadways post signs on both sides of the roadway.

R. Transit Stop Ahead Sign

In accordance with WAC 468-46, use the TRANSIT STOP AHEAD symbol sign in advance of zones where transit vehicles temporarily stop on the roadway to receive or discharge passengers. The sign should be installed in advance of every approved transit stop zone where the transit vehicle is not visible from 500 feet. Install the sign in accordance with Table II-1 in Part II-C of the MUTCD.

S. Snowmobile Signs

Install SNOWMOBILE Warning signs where motorists may encounter snowmobiles in accordance with RCW 46.10.110.

T. Business Routes

Business route signing, using business route shields, directs motorists to alternate routes passing through the business portion of a city or through districts of continuous business development.

Provide business route signing in accordance with the following:

1. Installed only after evaluating a request submitted by a local agency.

2. Permitted only if the business route passes adequately and logically through the business district.

3. The local agency having jurisdiction over the business route must agree, in writing, to install and maintain BUSINESS LOOP (M1-2 or 3) trailblazers along the route.

4. Business route signing is not permitted where motorist service signing is installed.

2.5 Route Marker Signs

The MUTCD provides that route markers be used to identify and mark all numbered highways. Markers for each system of highways (e.g., interstate, state route, US) are distinctive in shape and color, and are used only on that respective system and the approaches thereto.

Also apply the following criteria when using route markers:

1. Always place cardinal direction signs above all route marker signs.

2. Use junction signs where appropriate at all highway junctions.

Install route marker signs at entrances to the state, beyond interchanges or intersections with other numbered routes, or major local roads, and beyond city limits.

3. In urban and residential areas, install route markers frequently enough to guide a driver who is unfamiliar with the area.

2.6 Guide Signs

Guide signs assist the driver by showing route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information. The number and spacing of these signs should be limited to allow the driver adequate time to read and respond to the messages.

Guide signs should be placed with more than 240 meters (800 ft) between signs. Since signing saturates most of our urban areas, additional signing is not generally feasible unless existing signs are removed or relocated.

Signs requested which provide questionable information and/or are for recognition or advertising purposes shall not be allowed.

Guide Signs on Conventional Roads. Advance destination and destination signs should be used at the junctions of state highways and at the junctions of county roads or city streets that have significant destinations. The advance destination sign is generally installed one-half mile in advance of the intersection, and the destination sign is installed within 30 meters (100 feet) of the intersection or at the beginning of any deceleration taper.

Guide Signs on Freeways and Expressways. Install guide signs on freeways and expressways according to the criteria in the MUTCD. Generally, this consists of one or two advance guide signs, an exit directional sign, one supplemental guide sign, and other signs as shown.

Include numbered state route markers D1-501 on the destination signs.

Install only one supplemental guide sign, approximately halfway between the advance destination sign and the destination sign.

Use the same criteria to select destination messages for guide signs on conventional road as listed for freeways and expressways.

A. Sign Legend Design

1. Letter Sizing. The message must be large enough to provide the motorist adequate time to read, comprehend, and decide whether or not a driving task is required.

A prime consideration in guide or directional signing is to give clear information to drivers. Studies indicate the average driver comprehends three words per second after a perception time of up to two seconds (commonly used messages require less recognition time than unique messages). This, along with vehicle speed, can be used to determine the desirable letter height:

$$\text{LETTER HEIGHT} = (N/3 + 2) f$$

where: N = Number of words.

f = Legibility Factor. Found by dividing vehicle speed in feet per second by 50 (the legibility distance per inch of letter height)

The following are example calculations of desirable letter height:

Example 1. “SEVERE SIDE WIND AHEAD”

Speed = 55 mph
N = 4
f = 1.6
Height = (4/3 + 2) 1.6 = 5.3" - use 5 inch

Example 2. “SNOQUALMIE PASS RADIO TRAFFIC INFO 1 MILE”

Speed = 65 mph
N = 7
f = 1.9
Height = (7/3 + 2) 1.9 = 8.2" - use 8 inch

2. Message Layout and Spacing. Sign message layout and spacing requirements are specified in the *Sign Fabrication Manual*.

3. Abbreviations. Abbreviate only to avoid excessively long signs. Do not use abbreviations if the controlling message line is long enough to allow using the complete word. For example, if the top line is long and the second line contains a word like “Boulevard” then spell it out. However if it adds length to the sign then abbreviate.

Periods are not necessary in sign abbreviations except for British Columbia (B.C.) and United States (U.S. Customs).

Do not abbreviate names of places.

Abbreviations other than those listed below must be approved by the Regional Administrator or Assistant Secretary for Program Development.

AFB	Air Force Base
Alt	Alternate
Ave	Avenue
B.C.	British Columbia
Blvd	Boulevard
Ctr	Center
Co	County
Ct	Court
DNR(xxx)	Department of Natural Resources (Campground, etc)
E	East
Elev	Elevation
Ft	Fort
Fwy	Freeway
Fy	Ferry
Hist	Historic, as in "Nat'l Historic Districts"
HOV	High Occupancy Vehicles
Hts	Heights
Hwy	Highway
Info	Information
Int'l	International
Jct	Junction
km	Kilometers
Lab	Laboratory
Lt	Left
M	Meters
Max	Maximum
Mi	Mile(s)
Min	Minimum
MPH	Miles Per Hour
Mt	Mount (Rainier)
N	North
NE	North East
NW	North West
NAS	Naval Air Station
Nat'l	National
Ore	Oregon
ORV	Off Road Vehicle
Ped	Pedestrian
Pkwy	Parkway
Pl	Place
Pop	Population
Pt	Port or point
Rd	Road
Rec Area	Recreational Area
RR	Railroad
Rt	Right
RV	Recreational Vehicle
S	South
SE	South East
SW	South West
Sea - Tac Airport	Seattle Tacoma Airport
St	Street
Temp	Temporary
Thru	Through
Univ	University
USA	United States of America
USFS(xxx)	U. S. Forest Service
U.S. (xxx)	U.S. (Customs, Etc)
W	West
WSDOT	Washington State Department of Transportation
State Patrol	Washington State Patrol
Xing	Crossing

B. Destination Selection

The MUTCD is very restrictive concerning the required and allowable numbers of guide signs for an interchange. The location for an exit direction sign is specific and cannot be modified. All interchanges, except those classified as minor (MUTCD Sections 2E23 and 2F18), must have a minimum of two advance guide signs.

Motorist service signing (see Section 2.6D.10) is not considered supplemental guide signing and must also be considered in the demand for attention at interchanges. Along with the required interchange guide signs and motorist service signing, the MUTCD allows only one additional supplemental guide sign for each interchange approach. So, from the available options, choose the most important destinations for the supplemental guide sign.

1. Primary Guide Signs

A single primary guide sign may not have more than two destinations. A sign support having two or more signs may not have more than three destinations in the display.

Advance guide signs and the exit direction signs must carry the same message(s). Since these are the primary guidance for the interchange, use care in selecting the message. As provided in the MUTCD, Section 2F-7, use the control city legend on guide signs:

Control cities and terminal destinations are listed in Section 2.6C.1.

1. At interchanges between freeways,

2. At connection/separation points of overlapping freeways,

3. On intersecting routes to guide traffic entering the freeway,

4. On pull-through signs, and

5. On the bottom line of distance signs

If a terminal destination is not required or if space is available for a second destination, the most important destination should be selected from the following:

1. A city or town situated at or near a major highway junction; or the major highway junction if it is located prior to the city or town.

2. The name of the crossroad or street.

3. A second major city or town on the route.

4. Mountain passes on primary highways.

5. National parks.

6. Seattle-Tacoma and Spokane International Airports.

2. Distance Signs

The MUTCD provides that distance signs may carry the names of up to three destinations. The top line is to identify the next incorporated city or the next intersected route number. The second line, when used, identifies communities of general interest and may be varied on successive signs to give motorists maximum information. The bottom or third line shall contain the name of the next official terminal destination.

Distances displayed for communities should be the distance to the city center. For destinations, such as Mt. Rainier National Park, the distance is to the park boundary.

In addition, the following criteria should be used:

Signs can be located more than 16 km (10 miles) apart. They may be located beyond city limits or urban boundaries, beyond intersections and interchanges of numbered routes, and at entrances to the state. Where two or more of the preceding conditions are within 16 km (10 miles) of another, only one should be signed.

3. Supplemental Guide Sign

A supplemental guide sign may have no more than two lines. Because state statutes require signing to state parks located within 24 km (15 miles) of interstate highways, they have first priority as supplemental guide sign destinations on the interstate system. State law also requires signing to regional shopping centers, that have greater than 46,400 square meters (500,000 square feet) of leasable retail space, and are within 2 km (one mile) of a state highway.

In some cases, additional messages which could not be included on the primary guide signs should be placed on the supplemental guide sign. These messages should have priority over other supplemental sign messages.

The largest category of destinations to consider for supplemental guide signing is traffic generators. It is not possible to sign for all traffic generators that warrant signing (Section 2.6C.6 lists traffic generators that normally do not warrant signing. Evaluate the given interchange and select the destinations that provide the most benefit to the motorist. Guide signing provides guidance to the motorist; it is not advertising for the destination. Signing to significant traffic generators is provided to alleviate congestion resulting from possible driver misdirection and/or confusion, thereby enhancing traffic safety.

After considering motorists' needs, select the most important destinations from the following non-prioritized list of potential generators:

- State parks. (see additional criteria in Section 2.6.C.2)

- Regional shopping centers (see additional criteria in WAC 468-95).
- Other state highways and arterial streets.
- Airports (see additional criteria in Section 2.6C.3).
- Amtrak Stations (see additional criteria in Section 2.6C.4).
- Major military installations.
- Universities and colleges (see additional criteria in Section 2.6C.5).
- Major ports.
- Public stadiums (see additional criteria in Section 2.6C.6).
- Historical attractions (see additional criteria in Section 2.6D.11).
- Business routes (see additional criteria in Section 2.4T).
- Major recreation areas.

A supplemental sign on an interchange approach can only accommodate one or two destinations. Occasionally it may be necessary to replace less important destinations with more important ones as development occurs.

4. Follow-Through Signing

Follow-through signing provides motorists with directions to locations off the state highway system. They are installed and maintained by the local agency responsible for the roadway.

The regions shall coordinate with the local agency responsible for the follow-through signs and ensure all the follow-through signing is in place before any directional signs are installed on the state highway. The regions shall make periodic reviews of follow-through signing to check on the adequacy and the need for follow-through signing.

Use 150-mm (6-inch) D series letters on follow-through signs in areas of heavy traffic volumes. A minimum of 125-mm (5-inch) C series letters can be used on other follow-through signs. Directional arrows or direction information should be part of the legend.

Signs should be installed prior to the decision points where the motorist must make route changes. They should not be posted with other regulatory or warning signs. Other signs should be placed at a mandatory stop location, so that the motorist can read the message confirming the route while stopped, then continue driving in the proper direction. The far side of the intersection can be used only if the legend is presented at a stopped condition and not a signalized intersection.

C. Destination Selection Criteria

1. Terminal Destinations for Certain State Highways

Choose the primary destination (control city) of selected state routes from those given below:

SR 2

EB from Everett ..... Wenatchee
EB from Wenatchee ..... Spokane
EB from Spokane ..... Newport
WB from Idaho State Line ..... Spokane
WB from Spokane ..... Davenport
WB from Davenport ..... Wenatchee
WB from Wenatchee ..... Everett

SR 5

NB from Vancouver, WA ..... Seattle
NB from Seattle ..... Vancouver, B.C.
SB from Vancouver, B.C. ..... Seattle
SB from Seattle ..... Portland

SR 12

EB from Aberdeen ..... Olympia
EB from Elma ..... Centralia
EB from Interstate 5 ..... Yakima
EB from Yakima ..... Richland
EB from Pasco ..... Walla Walla
EB from Walla Walla ..... Lewiston
WB from Idaho State Line ..... Walla Walla
WB from Walla Walla ..... Pasco
WB from Richland ..... Yakima
WB from Yakima ..... Interstate 5
WB from Interstate 5 ..... Aberdeen

SR 14

EB from Vancouver I-82/Kennewick
WB from I-82 ..... Vancouver

SR 20

EB from Keystone ..... Anacortes
EB from Anacortes ..... Burlington
EB from Burlington ..... Okanogan
EB from Okanogan ..... Colville
EB from Colville ..... Newport
WB from Idaho State Line ..... Colville
WB from Colville ..... Okanogan
WB from Okanogan ..... Burlington
WB from Burlington ..... Anacortes
WB from Anacortes ..... Coupeville

SR 82

EB from Ellensburg ..... Yakima
EB from Yakima ..... Richland
EB from Richland ..... Pendleton
WB from Oregon State Line ..... Kennewick
WB from Kennewick ..... Yakima
WB from Yakima ..... Ellensburg

SR 90

EB from Seattle ..... Ellensburg
EB from Ellensburg ..... Spokane
EB from Spokane ..... Coeur d'Alene
WB from Idaho State Line ..... Spokane
WB from Spokane ..... Ellensburg
WB from Ellensburg ..... Seattle

SR 97

NB from Oregon State Line ..... Yakima
NB from Ellensburg ..... Wenatchee
NB from Wenatchee ..... Okanogan
NB from Okanogan ..... Penticton, B.C.
SB from Canadian Border ..... Wenatchee
SB from Wenatchee ..... Ellensburg
SB from Yakima ..... Goldendale

SR 101

NB from Oregon State Line ..... Aberdeen
NB from Aberdeen ..... Port Angeles
NB from Olympia ..... Port Angeles
SB from Port Angeles (East Leg) ..... Olympia
SB from Port Angeles (West Leg) ..... Aberdeen
SB from Aberdeen ..... Astoria

SR 182

EB from SR 82 ..... Richland
EB from Richland ..... Pasco
WB from Pasco ..... Richland
WB from Richland ..... SR 82/Yakima/Pendleton

SR 195

NB from Idaho State Line ..... Spokane
SB from Spokane ..... Lewiston

SR 205

NB from Oregon State Line ..... Seattle
SB from Jct. I-5 ..... Salem

SR 395

NB from Oregon State Line ..... Kennewick
NB from Pasco ..... Spokane
NB from Spokane ..... Colville
NB from Colville ..... Grand Forks, B.C.
SB from Canadian Border ..... Spokane
SB from Ritzville ..... Pasco

SR 405

NB from Jct. I-5 at Southcenter ..... Lynnwood
SB from Jct. I-5 at Lynnwood ..... Southcenter

2. State Parks

The state will provide signing to state parks from the nearest state highway. Parks within 15 miles of an interstate highway will be signed from the interstate including follow through signing on the state route between the interstate and the park. Coordination for any signing not on a state highway is the responsibility of the State Parks and Recreation Commission. Install, mainline signing only after all follow through signing is in place.

All signs will have white letters, symbols, and border on a brown background. The Olympia Service Center Traffic Office maintains a listing of the recreational symbols to be used at each state park.

Freeways

Install supplemental guide signs displaying the name of the state park and the message, such as NEXT RIGHT, in advance of the interchange off-ramp. If a park has restricted hours or days, add signs displaying the hours open or the days closed to the supplemental sign assembly.

Install directional signs with the message "STATE PARK" and a maximum of four symbols on the ramp with the mileage to the park from the ramp terminal. Show mileage in 1/4 mile increments if the distance is less than one

mile. If the park does not have camping facilities, display the message"NO CAMPING" in place of one of the symbols.

Conventional Roadways

Use signs displaying the name of the park, the NEXT RIGHT/LEFT message and a maximum of four recreational symbols to provide direction to state parks from conventional raodways. If the park does not have camping facilities, display the message"NO CAMPING" in place of one of the symbols. If a park has restricted hours or days, add signs displaying the hours open or days closed to the directional assembly.

At the first intersection of the state route, install a white on brown D1-101 with the message "STATE PARK" and the mileage from the intersection to the park. If the park is less than one mile from the intersection, show the mileage in 1/4 mile increments.

3. Airports

Airports eligible for signing are those included in the National Plan of Integrated Airport Systems and classified as air carrier, commuter, or reliever, and general aviation airports that meet the following criteria:

1. Associated with an area population of 10,000 or more.

2. Runway that is paved, lighted, and 760 meters (2,500 feet), or more, in length.

3. Municipally owned or privately owned that are substantially for commercial enterprise.

In addition:

4. Airports at remote locations serving a smaller population may be signed when their location is not obvious.

Upon request for signing by an airport authority, contact WSDOT's Aeronautics Division to determine if a specific airport meets these criteria. Airports that have scheduled flights can be signed with the airport name. All other airports will be signed with the airport symbol or with the word message "Airport."

Existing signs not meeting this criteria may remain in place.

4. Amtrak Stations

To direct traffic to Amtrak stations from state highways use the following guidelines:

1. Conventional Roadways — Use Amtrak symbols in the trailblazer format with the appropriate arrows.

2. Multilane Highways

   a. If there is enough space to install an individual sign, the Amtrak symbol may be placed alone on a green background sign panel with either of the messages "NEXT RIGHT" or "EXIT XX". (See Appendix 2-5a).

   b. When there is not enough space to install an individual sign, the Amtrak symbol may be installed on one of the sign posts for either the advance exit or the exit directional sign for the interchange. (See Appendix 2-5b).

   c. If the sign cannot be installed in accordance with the above, the sign may be installed on one of the supplemental sign posts for the interchange. (See Appendix 2-5c).

   d. If none of the above are possible, the sign shall not be installed.

Trailblazer signs are required on the on and off ramps or at the ramp terminals. As in any signing of this type, all trailblazer signs must be in place before any mainline signs are installed.

5. Colleges and Universities

Signing on interstate and state highways to colleges, universities, and public technical schools must be provided in accordance with the following:

1. Interstate Highways.

   a. Main campuses of state colleges and universities must be located within 11 km (7 miles) of an interstate highway. Where two interstate highways are within the 11 km (7 miles) limit, sign from the nearest one.

   b. Signing to state college and university satellite campuses, other public or private colleges and universities, and technical

schools is the same as above, but requires that the institution: (1) be at least regional, (2) have a full-time enrollment equivalent of at least 600 students, and, (3) be accredited. Enrollment and accreditation information can be obtained from the registrar's office at the facility.

2. State Highways. Provide signing as in paragraphs (1)a. and b. above, except, colleges and universities must be located within 5 km (3 miles) of the highway.

6. Stadiums

Facilities such as stadiums, racetracks, and private recreational ventures may be signed with white on green supplemental guide signs provided attendance requirements are met and sign space is available in accordance with the MUTCD. In the greater Seattle, Tacoma, and Everett areas, annual attendance at the facilities must be at least 300,000. For the remainder of the state, 200,000 annual attendance is required.

7. Post Offices

Post offices may be signed from state highways in unincorporated areas if the post office is not visible from the highway and there is a demonstrated need for the sign. The sign shall be a D1-101. Cities or towns may sign for post offices inside incorporated areas.

8. Unwarranted Traffic Generators

Undefinable areas, ventures operated by private entities for profit, and other areas or ventures not of general interest to the traveling public are not permitted on guide signs. Traffic generators that do not normally warrant guide signing are as follows:

Businesses
TV/Radio Stations
Theaters
Cemeteries
Local or State
Private/Public
Military
Communities
Civil Centers
Libraries
Churches
Subdivisions
Governmental
Research/Experimental
County Facilities
Courthouses
Vehicle Emissions Testing Facilities
Driver's and Vehicle License Centers
Highway Buildings
Jails/Prisons
Civil Defense Facilities
Maintenance Facilities
Power Plants
Schools
Grade/High
Seminaries
Medical
Mental Facilities
Research Facilities
Sanitariums
Infirmaries or Treatment Centers
County, Fraternal, or Nursing Homes
Retirement Facilities
Humane Facilities
Military
Sites or Detachments
Armories
Arsenals
Recreational/Conservational
Tree Nurseries/Arboretums
Points of Interest
Camps: Scout, Church, 4-H, Youth, and YMCA/YWCA

D. Other Guide Signing

1. Street Name Signs

Install street signs and advance street signs according to the criteria in the MUTCD. The use of a chevron on the street sign is acceptable.

Letter sizes shall be determined from the chart below:

Lane Type	Speed Limit (mph)	Street Sign Letter Size	Advance Sign Letter Size*
Single	25-30 mph	100 mm (4")	NA
Single	35-45 mph	150 mm (6")	NA
Multi-lane	35+ mph	150 mm (6")	150 mm (6")
Single/Multi-lane	50+ mph	150 mm (6")	200 mm (8")

*Place advance signs in accordance with Table II-1 in the MUTCD.

On city streets that are part of state highways, the city shall install and maintain street signs within their corporate limits .

Where county roads intersect state highways, the counties shall install street signs above state installed stop signs, then, by agreement, WSDOT will maintain them.

2. Private Road Signing

WSDOT does not furnish, install, or maintain stop signs or street name signs for private roadways. Citizens may install their own signs in accordance with the MUTCD, if they have approval from the Area Maintenance Superintendent.

Private road name signs (D3-104) shall be fabricated as shown in the *Sign Fabrication Manual*. If stop signs are necessary for private approaches, they shall be included in the approach permit.

Maintenance for private road signs is the responsibility of the citizens installing the sign. The citizen must coordinate with the area maintenance superintendent prior to working alongside the highway.

3. Canadian Customs

For Canadian Customs with limited hours of operation, advance signs shall state the hours they are open. Advance signing should be placed at or before the last exit where overnight lodging is available.

Canadian Customs at 24 hour crossings need no signing.

4. Fire District Boundary Signs

Signing for fire district boundaries may be placed along state highways subject to the conditions set forth in RCW 47.42 and WAC 468-66. The general guidelines are as follows:

Signs may be placed on state right of way as far away from the roadway as possible and shall not constitute a hazard by their physical location or by obstructing drivers vision;

Signs shall be installed and maintained by the jurisdiction requesting the sign;

Mounting posts shall be no larger than 4" x 4". Mounting height shall be 1.5 meters (5 feet);

The shape and color of the signs shall be as shown in Appendix 2-6. The sign color shall be white letters on blue background.

5. Highway and Freeway Entrance Signs

Use the HIGHWAY ENTRANCE sign (E12-1) on undivided two-lane two-way highways where the interchanges are provided at intersecting crossroads. The sign should be placed on both sides of the on-ramp and aimed at approaching traffic to show the entrance to the on-ramp.

Place the FREEWAY ENTRANCE sign (E12-2) on both sides of the freeway or expressway on-ramps, and aim the sign at approaching drivers to show the entrance to the ramp.

6. Milepost Signs

Install MILEPOST signs on all highways. The D10-1/2/3 are single faced signs used on multilane highways. They are placed on the right side of the travelled way. The D10-101/102/103 signs are double faced signs which are placed on the right side of the roadway in the direction of increasing milepost.

7. Fire Hydrant Marker Signs

FIRE HYDRANT MARKER (SYMBOL) signs may be installed on limited access highways to help local fire department personnel locate fire hydrants that are outside of the right of way. The sign shall be placed parallel to and facing the roadway. The sign shall be visible from the shoulder, mounted either on the right of way fence or on a post and shall state the distance from the right of way fence to the fire hydrant. An additional (24 inch) wide plaque may be added below the sign to indicate the nearest street or intersection if requested by the fire department.

The Regional Traffic Engineer shall contact local fire departments to determine signing needs for fire hydrants located near limited access highways. State forces will maintain the signs.

8. Indian Reservations

Region Administrators may provide signing of Indian Reservations under the following policy:

Upon request, ENTERING _____ INDIAN RESERVATION signs may be installed, if sign space is available, where a state highway crosses a reservation boundary. The boundary is the original treaty boundary. These signs have white letters on a green background.

Where there is an official tribal or community center, a directional sign may be installed from the nearest state highway if the center is within 8 km (5 miles) of the intersection. These signs have white letters on a brown background.

9. Litter Control Signs

Use litter control signs displaying various messages, such as PLEASE DO YOUR PART, BE A GOOD CITIZEN, PLEASE KEEP OUR STATE CLEAN, and UNLAWFUL TO LITTER in areas where littering is a common problem.

Use the THROWING AWAY BURNING MATERIAL PROHIBITED sign in those areas where fire hazards are known to be high.

Use the DEPOSIT LITTER ____ MILE sign in advance of litter barrels located adjacent to the highway. The LITTER symbol sign should be located at the litter barrel site and facing approaching traffic. The AUTOMOBILE LITTER ONLY sign should be located adjacent to the litter barrel and is designed to discourage the deposit of litter other than that normally accumulated by a motorist.

Note: The litter symbol is a registered trademark. All signs utilizing the symbol shall have a small ® located near the lower right corner of the symbol.

10. Motorist Services

Motorist service signs may be installed where the services are not readily apparent to the motorist.

Conduct periodic reviews to ensure that motorist service and recreational facility signs are provided only for services and facilities that meet eligibility criteria. These reviews should also ensure that signs are removed or covered when the service or facility is no longer in operation, or is closed for the season.

Do not combine motorist service (general service) signing and motorist information (logo) signing into one installation at an interchange or intersection. Services should be signed under the logo program rather than the general service program if possible.

The following motorist service signs may be installed on interstate and non-interstate highways:

- Gas
- Food
- Lodging
- Phone
- Hospital
- Emergency Medical Care Facility
- Police
- Visitor Information
- Camping/Recreational Vehicle Park

Up to four motorist service signs may be combined in one installation for services available from an interchange or intersection. Do not install more than one array per approach. Use applicable symbol signs rather than word messages.

Signs for motorist services are reflectorized and have white symbols or letters on a blue background. Intermixing of word messages, symbols, or logo signs on the same sign panel is not permitted. The sign legend for the recreational vehicle park panel is RV PARK and for a visitor information panel is VISITOR INFO.

Service signs (such as Police, Food, Gas, etc.) may be installed in conjunction with guide signs. On ground mount signs, the preferred location is below the guide sign on either post. If more than two signs are required, they may be placed on a bracket below the guide sign, as long as it does not interfere with the breakaway characteristics of the sign structure. On overhead signs, a service sign may be installed on top of the guide sign.

Include the message NEXT RIGHT or SECOND RIGHT, or exit numbers, as appropriate. The NEXT SERVICES ____ MILES sign may be placed below the motorist services sign if the services are 32 km (20 miles) or more away.

When services are not readily visible from an interchange, install directional follow-through signs at ramp terminals. These signs may be either word message or symbol but should be the same type used on the main line. For services located more than 2 km (1 mile) from the interchange, the follow-through signs should show the distance to the services.

The following criteria must be met prior to installing each type of sign. The State Traffic Engineer can approve minor deviations to these criteria on a case-by-case basis.

1. Gas, Diesel, and/or L-P Gas

   a. Vehicle services must including fuel, oil, tire repair, and water must be available.

   b. Rest room facilities and drinking water are provided.

   c. The facility operates for at least 12 uninterrupted hours per day, 7 days per week.

   d. Telephone service is available and visible from the facility.

   e. The facility is within 2 km (1 mile) of an interstate highway interchange or within 8 km (5 miles) and not readily visible from a non-interstate highway.

2. Food

   a. The facility is licensed or approved by the County Health Office.

   b. The facility operates for at least 12 uninterupted hours per day, 7 days per week, and serves breakfast, lunch, and dinner.

   c. Rest room facilities and telephone service are available to the public.

   d. Seating capacity for a minimum of 20 patrons or parking and drive-in service facilities for a minimum of ten vehicles is provided.

   e. The facility is within 2 km (1 mile) of an interstate highway interchange or within 8 km (5 miles) and not readily visible from a non-interstate highway.

3. Lodging

   a. The facility is licensed or approved by the Washington State Department of Social and Health Services. (Bed and Breakfast facilities exempt from DSHS licensing requirements must have a letter of approval from the county health authority.)

   b. There are at least 12 units for interstate or 6 units for non-interstate highway locations.

   c. Telephone service is available at the facility.

   d. The facility is within 2 km (1 mile) of an interstate highway interchange or within 8 km (5 miles) and not readily visible from a non-interstate highway.

4. Phone

   a. Phone service is available 24 hours per day, 7 days per week.

   b. The phone is located within 2 km (1 mile) of an interstate highway interchange.

   c. If signing to a motorist service, such as gas, food, or lodging is at an interchange, then signing for “phone” is not necessary, since phone availability is already required to sign for these other services.

5. Hospital

   a. Continuous emergency care service is provided with a doctor on duty or immediate call 24 hours per day, seven days per week.

   b. Availability of emergency care service must be certified to WSDOT by the Washington State Department of Health.

c. The hospital is within a reasonable distance from the highway but is not over 20 minutes driving time away when operating at legal speeds.

d. For an area with two or more qualifying hospitals, only provide signs in each approach direction for the first hospital within a reasonable travel time from the highway.

6. Emergency Medical Services Facility

a. The facility operates continuously 24 hours per day, 7 days per week.

b. Availability of emergency care services must be certified to WSDOT by the Washington State Department of Health.

c. At all times the facility must have at least a doctor, paramedic, or registered nurse on duty; or an emergency medical technician on duty with a doctor, paramedic, or registered nurse on call. Emergency transportation capabilities must also be available.

d. The emergency care facility is within a reasonable distance from the highway, but is not more than 20 minutes driving time away when operating at legal speeds.

e. For an area with two or more qualifying hospitals or emergency facilities, only provide signs in each approach direction for the first facility within a reasonable travel time from the highway.

f. This sign should not be used if a hospital sign is installed.

7. Local Police

a. The local agency has an officer on the premises at all times, or a dispatcher on duty with an officer within radio contact, or a telephone available for officer contact.

b. The agency is located within a reasonable distance from the highway.

8. Visitor Information Centers

a. A service facility whose sole function is to provide tourist information and operates a minimum of 8 hours per day, 7 days per week from Memorial Day through Labor Day, or during the months that visitors customarily visit the area. If the Visitor Center operators can document to the regional traffic engineer that a variance to these hours is both reasonable and justified, the regional traffic engineer may grant different operating hours.

b. The facility must be operated by a nonprofit organization, however, the center may be sponsored by a commercial enterprise. For example, the Visitor Information Center could be located within a commercial establishment such as a mall or shopping center so long as the visitor center is visibly separate from the commercial activity.

c. Literature and information on visitor attractions are free of charge to the public.

d. A full-time attendant, whose primary duty is to disseminate visitor information, is on duty during the hours of operation unless there is electronic means available to answer visitor questions.

e. There is adequate floor space to accommodate the anticipated number of visitors and provide necessary display space for material of local and statewide interest.

f. The visitor center operators must demonstrate, to the regional traffic engineer, that the number of parking accommodations, for both cars and travel trailer units, will accommodate the expected number of visitors.

g. The availability of a telephone for public use is encouraged. If no public phone is on site, the nearest public phone must be within a reasonable distance.

h. The facility must be within 2 km (1 mile) of an interstate highway interchange or within 8 km (5 miles) and not readily visible from a non interstate highway. Follow-thru signing is required if the visitor center is not directly adjacent to the roadway.

i. Rest room facilities are available to the public during hours of operation.

The facility must also be approved by the Department of Community, Trade and Economic Development's (DCTED) Tourism Division.

If the Visitor Information Center is operated only seasonally, the signs must be removed or covered with a "CLOSED" Plaque after the visitor season is over.

9. Camping

a. Camping facilities must be licensed or approved by the County Health Office.

b. There are at least 20 camping spaces in facilities served from the interstate or 12 camping spaces in facilities from non-interstate routes of which 50 percent can accommodate tents.

c. Rest room facilities and drinking water are available.

d. A full-time attendant is on duty during operating hours.

e. Camp area facilities are available 24 hours per day.

f. For seasonal operations signs should be removed or covered during the off season.

g. Campground facilities must be within 8 km (5 miles) of an interstate highway interchange or within 13 km (8 miles), and not readily visible from a non-interstate highway.

10. Recreational Vehicle Park

a. Recreational vehicle parks must be licensed or approved by the County Health Office.

b. Adequate parking is provided for not less than 10 recreational vehicles (camper truck, motor home, or recreational trailer).

c. Rest room facilities and drinking water are available.

d. All park facilities and use areas, including telephone, are available 24 hours per day.

e. The park is within 8 km (5 miles) of either an interstate highway interchange or a non-interstate highway.

11. Natural, Historic, and Cultural Attractions

The MUTCD provides that signing to natural, historic, and cultural attractions may be provided if it will not interfere with normal interchange or intersection signing. The attraction must have a regional or national significance and be of interest to a majority of the traveling public. Attractions primarily of interest to local traffic do not warrant signing.

Signing for natural, historic, and cultural attractions is encouraged as prescribed in WAC 468-70.

Conduct periodic reviews to ensure that only signing for facilities that meet eligibility criteria is provided. These reviews may identify new attractions that meet the criteria, or identify signing to be removed, because an attraction is no longer in operation or no longer meets the criteria.

Apply the following criteria to signing of natural, historic, and cultural attractions:

1. Do not provide signing if the attraction is readily visible and has direct access to the highway.

2. Signing may be provided along access controlled highways in urban areas or within city limits. On highways without access control and within incorporated cities or towns having populations over 22,500, such signing is under the local agency's jurisdiction.

3. The attraction must be within 16 km (10 miles) of the interchange or intersection being signed. Before signing is provided on a state highway, necessary follow-through signs on local roads and streets must be in place.

4. For attractions located more than 2 km (1 mile) from the interchange or intersection, mileage information is shown on the ramp terminal or direction signs. The hours of operation may also be shown on the ramp terminal or direction signs.

5. Provide signing only on the state highway nearest to the attraction. The signs shall be white letters on a brown background.

6. The attraction must be open without appointment to all segments of the motoring public.

7. Signs must be removed or covered for seasonal closures.

8. Attractions must be served by at least a two-lane, all-weather road.

9. The attraction may be operated by a private or public organization. If the activity is privately operated, the private business/organization must pay the fabrication, installation, and replacement costs for the signs. If the activity is by another governmental agency, the department will install the signs at no cost to that agency.

10. The attraction must be maintained in good repair and presented in a professional manner.

The following additional criteria also apply:

Natural Attractions

Consider natural attractions for signing if they are unique or few locations are accessible to the motoring public. Examples of natural attractions are the Palisades Rock Formation, Ice Caves west of Trout Lake, Hurricane Ridge, and the Snake River Canyon.

Watchable Wildlife

Consider Watchable Wildlife sites for signing if they are accessible to the motoring public and located within 16 km (10 miles) of the interchange or intersection being signed. Use the WILDLIFE VIEWING sign on the interstate highway exit nearest the viewing area. Post the WILDLIFE VIEWING AREA sign at the state highway intersection nearest the viewing site. Use the Binoculars logo sign for a trailblazer and for site identification if no other signing is posted. (The FHWA has adopted the binoculars logo as the international wildlife viewing symbol, and it will be added to the MUTCD.)

All lettering, arrows, borders and figures shall be in white; and all sign backgrounds in brown.

Interpretive signing at the site may explain the features and management practices at the site. It can be simple or elaborate, and is generally provided by the landowner or manager of the site.

Historic Attractions

Consider historic attractions for signing if (1) they are included in the Washington State Register of Historic Places as designated and maintained by the State Historic Preservation Officer and (2) they have been approved by the Heritage Resource Center of the Washington State Capital Museum. For application see Appendix 2-7. The attraction must also include one or more of the following features at the site:

1. An interpretive center and/or a guided tour.

2. Visible historic buildings, features, or ruins with an interpretive marker.

Examples of historic attractions are the Whitman Mission, Steptoe Battlefield, Jackson House, Fort Simcoe, and the Monticello Convention Site.

Cultural Attractions

Consider cultural attractions for signing if they are similar to or fall within, one of the following categories:

1. Museums: Approved by the Heritage Resource Center of the Washington State Capital Museum. For application see Appendix 2-7.

2. Religious: Sites, shrines, etc., that are of a unique religious nature and provide visitor facilities or tours.

3. Educational: Centers (other than public or private schools, vocational schools, or colleges and universities) that are of outstanding educational value and provide visitor facilities or tours.

4. Scientific: Places used for research or scientific advancement that provide visitor facilities or tours.

Examples of cultural attractions are the Maryhill Museum, St. Mary's Mission, and Northwest Trek.

12. Recreational Activities

Signing that direct motorists to recreational activities. Signs consist of a rectangular advance destination sign, with a white legend on a brown background, displaying the message "RECREATION AREA NEXT RIGHT" or "NEXT LEFT" on two message lines. Below the message the sign may display a maximum of four recreational activity symbols approved and referenced in the MUTCD, such as:

- Picnic Area
- Fishing
- Trailer Area
- Boat Launch
- Swimming
- Hiking*
- Skiing
- Snowmobile Area
- Public Golf Course
- Public Beach Area

*__Note:__ Signs may be provided only for local hiking trails and for the cross state or regional hiking trails listed in the Washington State Trail Plan administered by the Interagency Committee for Outdoor Recreation. The signs shall be a white on brown trail symbol with the trail name (white on brown) below. Provide additional arrows and/or distance information as necessary.

For public recreation areas, the sign may identify the name of the area in lieu of the "RECREATION AREA" message.

Identify multiple agency recreation areas by naming the area and displaying each agency's logo. Do not use recreational activity symbols. Requesting agencies must coordinate installation of follow-through signing with local road jurisdictions.

The following specific criteria also applies to signing of recreational activities:

1. Provide signing if the activity is not readily visible and has no direct access to the highway.

2. Recreational activity signing is not permitted along interstate highways or along access controlled highways in urban areas or within city limits. On highways without access control and within incorporated cities or towns having populations over 22,500, such signing is under the local agency's jurisdiction.

3. The activity must be located within 16 km (10 miles) of the interchange or intersection being signed. Before signing is installed on a state highway, necessary follow-through signs on local roads and streets must be in place.

4. For activities located more than 2 km (1 mile) from the interchange or intersection, distance information may be shown on the ramp terminal or direction signs.

5. Provide signing only on the state highway nearest to the activity.

6. The activity must be open to all segments of the motoring public, without appointment, at least eight hours a day, five days a week including a Saturday and/or a Sunday.

7. Signs must be removed or covered for seasonal closures.

8. Activities must be served by at least a two-lane all-weather road.

9. The activity may be operated by a private or public organization. If the activity is privately operated, the private business/organization must pay the fabrication, installation, and replacement costs for the signs. If the activity is by another governmental agency, the department will install the signs at no cost to that agency.

10. The facility must be maintained in good repair and presented in a professional manner.

13. Signing for Highway Advisory Radio

Highway Advisory Radio (HAR) provides traffic operating agencies the ability to communicate traffic and travel related information to motorists using the vehicle's AM radio receiver.

Messages may include construction warnings, such as construction zone locations, lane blockages, and route diversions, and traffic control or

roadway condition messages, such as airport or special event parking control and mountain pass inclement weather advisories.

HAR installations must comply with Federal Communications Commission's requirements and must be approved by and coordinated through the WSDOT State Radio Engineer.

For tourist information purposes, HAR signs may only be installed off the highway right of way. HAR may broadcast the types of messages which may be displayed on Types 1, 4, or 5 signs as defined in WAC 468-66 except that messages must be limited to those which are noncommercial in nature. Specific businesses may not be named.

References for HAR include:

Code of Federal Regulations, Title 47, Chapter 1.

FHWA Technical Report (FHWA/RD-82/059), "Highway Advisory Radio Message Development Guide," October 1982.

FHWA Technical Report (FHWA/RD-80/167), "Highway Advisory Radio Systems Design Guidelines," May 1981.

M 24-01, *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

WAC 468-66, "Highway Advertising Control Act."

14. Signing to Other Agencies

Install signing to other agencies' facilities in accordance with various sections of the MUTCD, this manual, and any Memorandum of Understanding or agreements between the Department and the agency. This signing is considered supplemental guide signing and is to be signed in accordance with that criteria.

When space is available, the Department may install signing to:

- State parks (per section 2.6.C.2)
- National parks.
- U.S. Forest Service facilities.
- Department of Natural Resources campgrounds.
- State Patrol.
- State public fishing areas.
- State and national fish hatcheries.
- Department of Corrections facilities.

15. City and County Entrance Signs

CITY and COUNTY ENTRANCE signs (I2-201/301) may be placed at city/county limits in accordance with RCW 47.36.120. If the city or county elects to provide a sign with a political jurisdiction logo per the MUTCD, the standard sign will not be installed. The state shall install all entrance signs on state highways.

16. Unincorporated Places

The MUTCD provides that unincorporated places may be signed along state highways.

Signs for unincorporated places are installed along the state highway system when the place has:

1. A U.S. Post Office, or

2. Availability of at least two motorist services — gas, food, or lodging (e.g.: two gas stations; a gas station and a motel, etc.).

Within the above criteria, the appropriate region installs a "Community Entrance" sign (I2-301) on each state highway approach to the unincorporated place.

2.7 Miscellaneous Signing

A. School Areas

School Zone Signing. The MUTCD makes provisions to use SCHOOL SPEED LIMIT signs (S4-1, S4-2, S4-3, S4-4) where a reduced speed zone has been established. Mark the end of the posted school zone with a standard SPEED LIMIT sign (R2-1) for the section of highway that follows. Provide signing as shown in Appendix 2-8.

In addition to the bottom panel legends given in section 7B-12 MUTCD, WAC 392-151-035 identifies the WHEN FLAGGED (S4-5) and

WHEN FLASHING (S4-4a) as acceptable alternates to those given in the MUTCD.

It is important to cover or remove school speed zone signs during extended periods when they do not apply, such as summer vacations.

Established school crossings not controlled by a stop sign shall be signed with a SCHOOL CROSSING sign (S2-1) and a SCHOOL ADVANCE sign (S1-1) in accordance with the MUTCD.

B. Closure Plaques for State Parks

For winter closures, of state parks, instead of removing or turning existing signs, "CLOSED" panels may be placed diagonally as shown below. The panel letter size shall be no less than the height of the upper case letters in the sign message.

C. Heritage Marker Signs

Use HERITAGE MARKER signs (I5-103/104) to direct motorists to Historical or Heritage Interpretive monuments, such as Willy Keil's Grave or the Bridge of the Gods, located along a highway. These signs replace existing historic markers and roadside attraction signs. They are not to be used to sign historical sites on National or State registers.

D. Responsibility for Stop and Stop Ahead Signs

Stop Signs

RCW 47.36.100 states that the state shall install and maintain all stop signs at county road intersections with state highways. According to RCW 47.24.020 (13), the state shall install and maintain all stop signs at city street intersections with state highways within the corporate limits of cities having populations less than 22,500.

Stop Ahead Signs

The county shall install and maintain all stop ahead signs at county road intersections with state highways. The city will install and maintain all stop ahead signs on city roadway intersections with state highway. (RCW 47.24.020(12&13)

E. City Entrance Plaques/Markers

1. Limited Access Highways. Communities may construct and maintain community entrance beautification areas on limited access right of way either by permit or agreement with WSDOT.

Interstate

The State Traffic Engineer must submit all Interstate community plaque/marker requests to the FHWA for approval. The plaque/marker must meet the following guidelines:

1. Be simple, dignified and devoid of any advertising.

2. Be placed in the terminal area of the interchange ramp with the connecting county road or city street, between the ramp and the right of way line.

3. Be positioned so that it is not a roadside safety hazard, not likely to be struck by an errant vehicle, and is not a sight obstruction.

4. Be oriented so it can be read by the motorist leaving the ramp and entering the community street system and not by the motorist on the limited access highway.

5. Shall not interfere with, nor distract from, any existing or future traffic control or safety device.

6. Its total area shall not exceed 100 square feet, and the message area shall not exceed approximately 60 square feet.

7. It must be sponsored by the community in which it is located.

8. A maximum of two plaques/markers will be allowed in each community.

9. The State Traffic Engineer must review and recommend, to the FHWA, the design and placement of the plaque

10. The local authority is responsible to relocate and/or remove any plaques/markers displaced as a result of highway improvement projects, such as roadway widening. Plaques/markers not relocated by the entity shall be removed by WSDOT and the entity billed accordingly.

11. Inadequate maintenance of the landscaping and/or plaque/marker, as determined by WSDOT, will be grounds for removal.

Non-Interstate

Community entrance identification plaques/markers may be allowed in accordance with the above guidelines, except for item 9. On non-interstate highways, the State Traffic Engineer shall approve the design and placement of the plaque/marker.

2. Non Limited Access Highways. Right of way boundaries vary within city limits. Communities may also be required to obtain city approval prior to entering into agreement with WSDOT to construct and maintain community entrance plaques/markers.

F. Limited Access Signs

Limited access highways operating with partial control are signed in accordance with RCW 47.52.110. Facilities operating with full access control need not be signed unless deemed necessary by the Regional Administrator.

G. Seatbelt Signs

Place seatbelt signs where leaving a city, major junction, ferry terminal, recreational area, or entering the United States at border crossings. Signs shall be sized as follows:

Type of Roadway	Sign Size
Multilane highway	(60" x 48")
Conventional roadway	(36" x 30")
Canadian border crossing	(60" x 48")

H. Carpool Information Signs

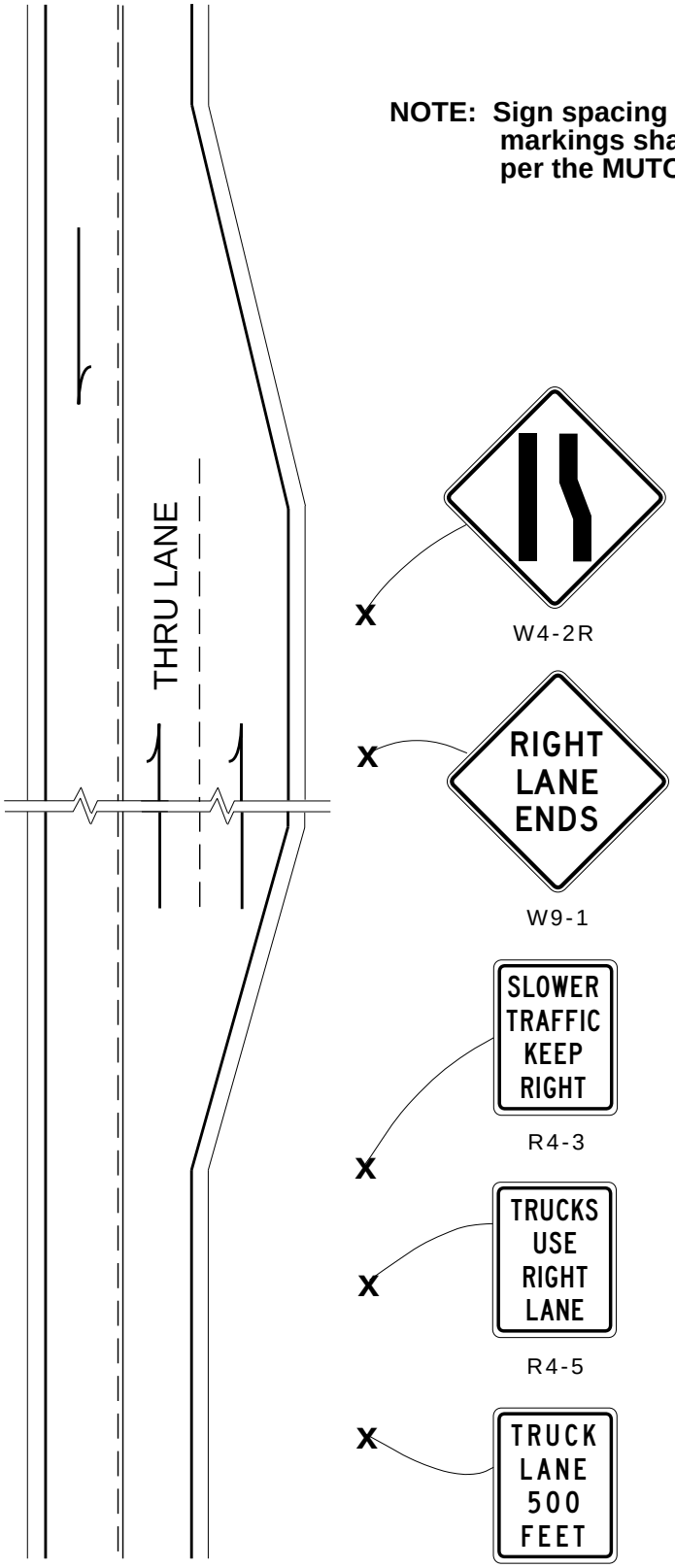
CARPOOL INFORMATION signs (D12-201/202) may be installed along conventional roads and on-ramps to multilane highways where appropriate. These signs should not be placed on the mainline of multilane facilities. Transit logos may be included in the sign design in accordance with MUTCD Section 2D-41.

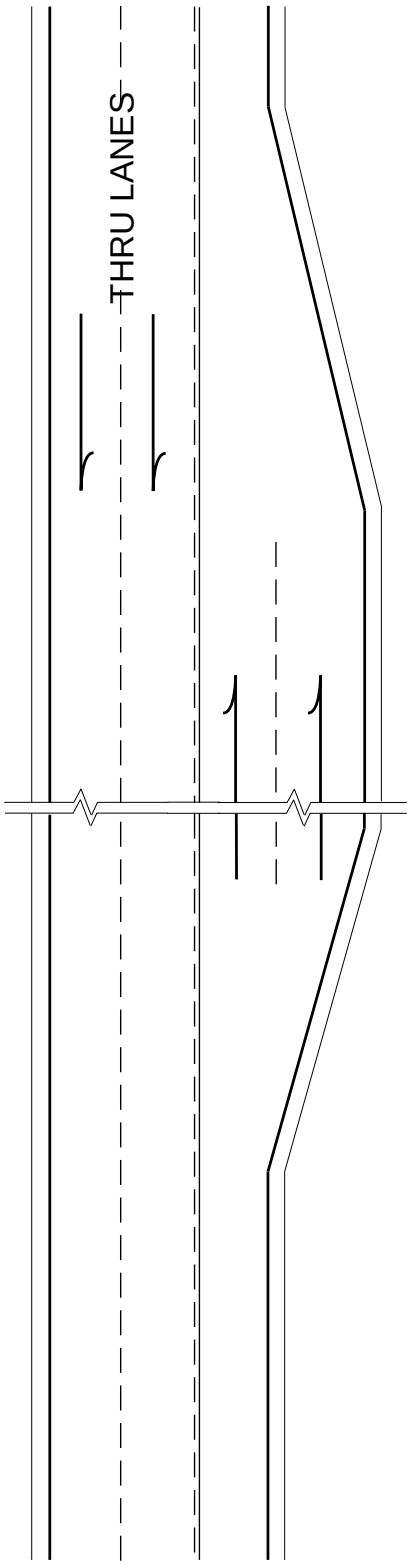
I. DNR Fire Danger Signs

DNR fire danger signs may be placed on non-Interstate right of way, outside the clear zone. When space does not allow, signs with appropriate breakaway features may be placed within the clear zone.

DNR shall be responsible for the installation, daily message changes, and maintainance of the signs.

2:P:TM1


THRU LANE
NOTE: Sign spacing and pavement markings shall be installed per the MUTCD.
X
W4-2R
X
RIGHT LANE ENDS
W9-1
SLOWER TRAFFIC KEEP RIGHT
X
R4-3
TRUCKS USE RIGHT LANE
X
R4-5
X
TRUCK LANE 500 FEET
R4-6



X

NEXT
PASSING
LANE
5 MILES

R4-602

NOTE: Sign spacing and pavement markings shall be installed per the MUTCD.

X

W4-2R

X

RIGHT
LANE
ENDS

W9-1

X

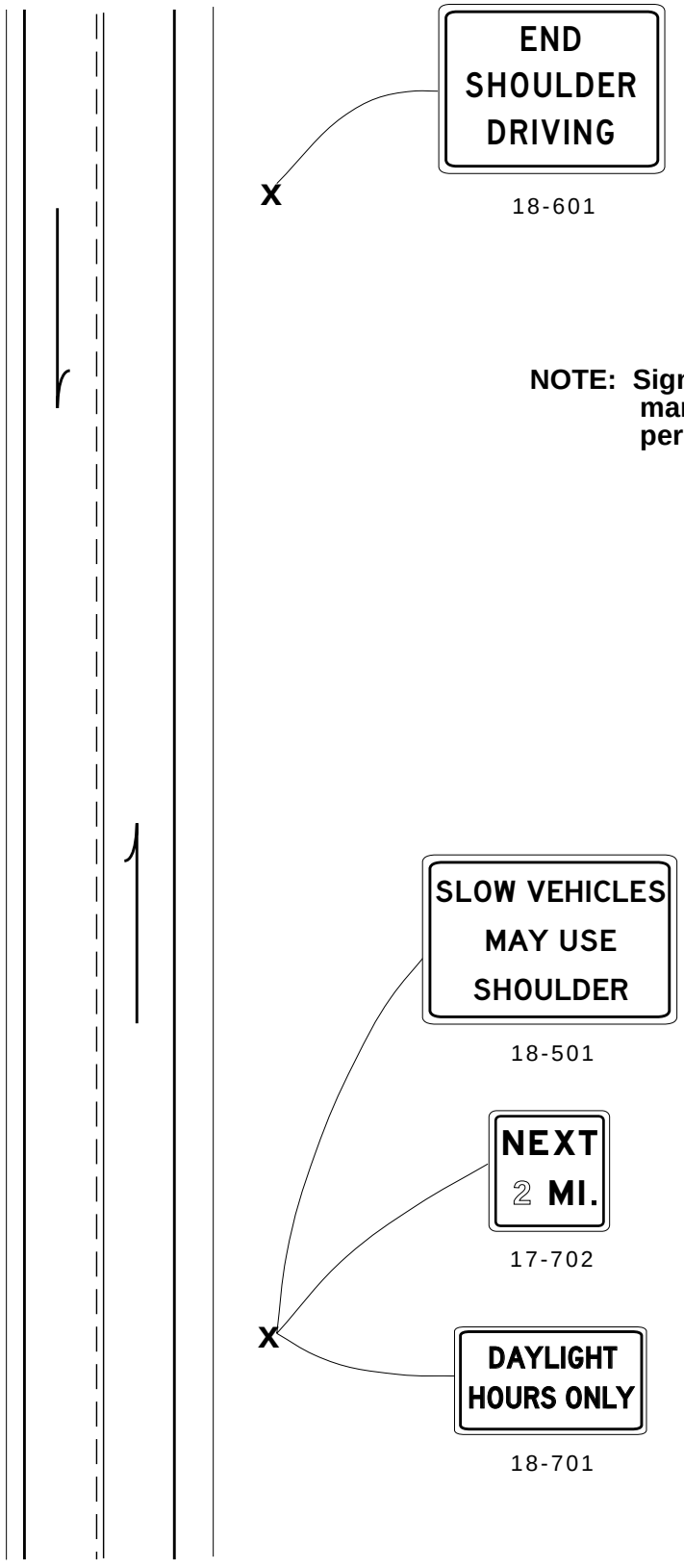
SLOWER
TRAFFIC
KEEP
RIGHT

R4-3

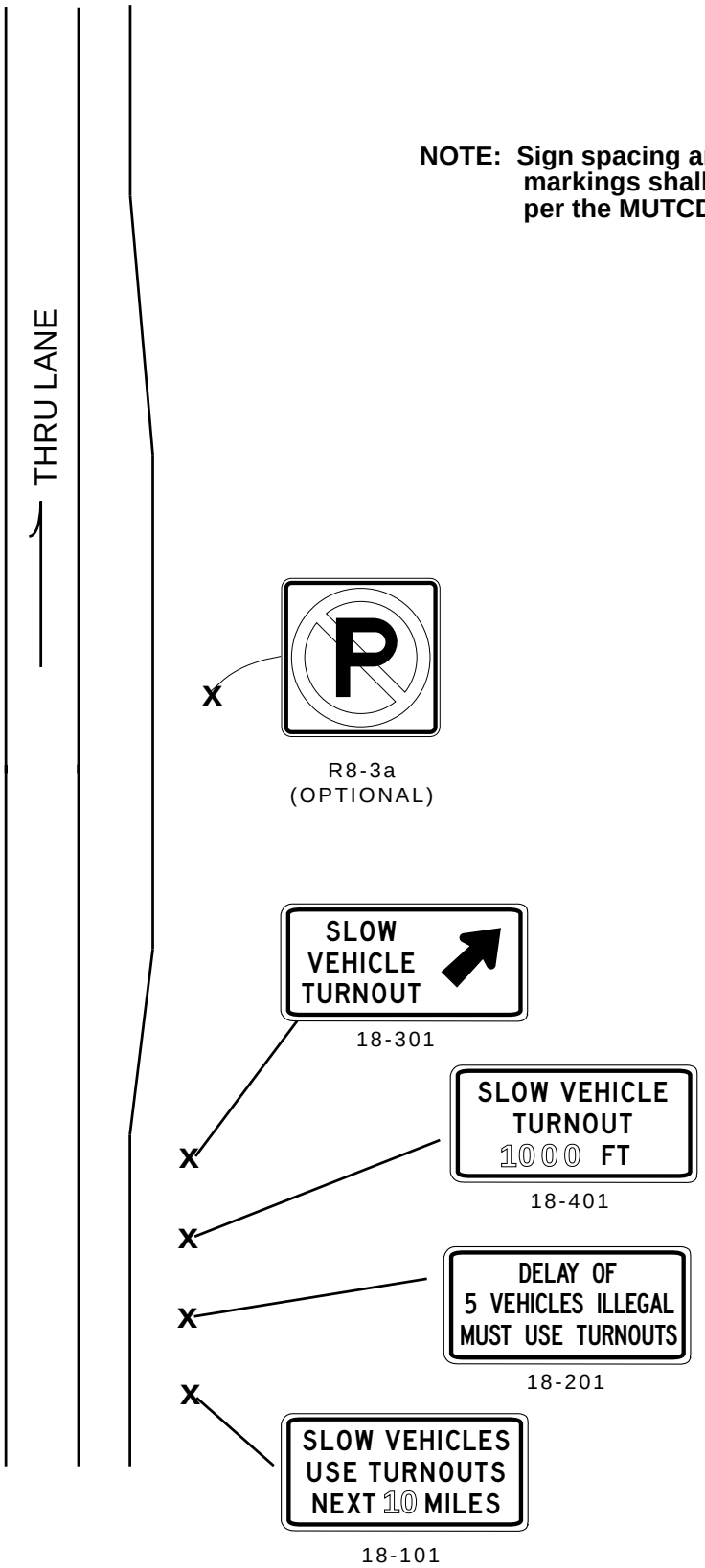
X

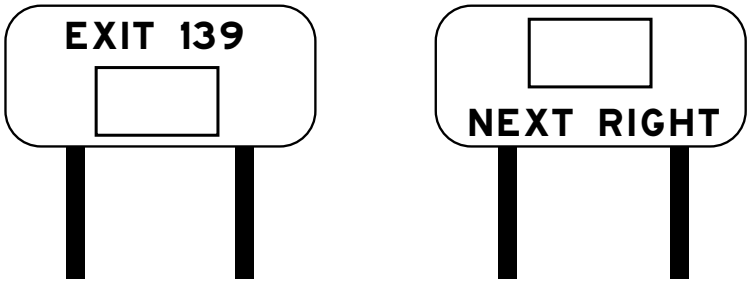
PASSING
LANE
2 MILES

R4-601

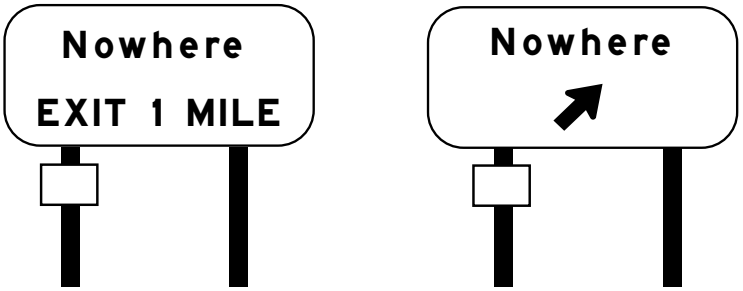


NOTE: Sign spacing and pavement markings shall be installed per the MUTCD.


THRU LANE
NOTE: Sign spacing and pavement markings shall be installed per the MUTCD.
P
R8-3a
(OPTIONAL)
SLOW VEHICLE TURNOUT
18-301
SLOW VEHICLE TURNOUT 1000 FT
18-401
DELAY OF 5 VEHICLES ILLEGAL MUST USE TURNOUTS
18-201
SLOW VEHICLES USE TURNOUTS NEXT 10 MILES
18-101


EXIT 139
NEXT RIGHT

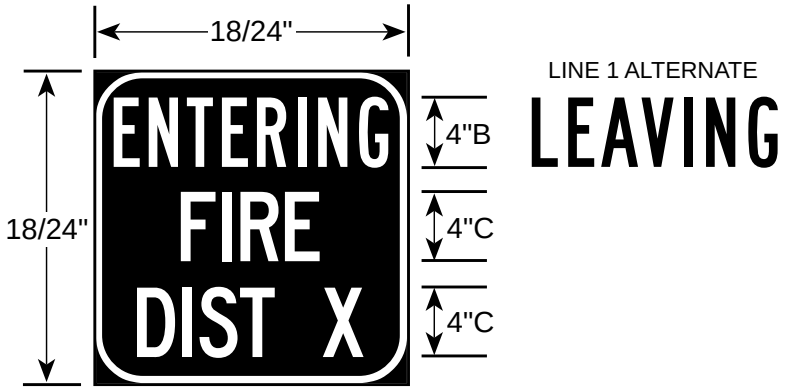
a

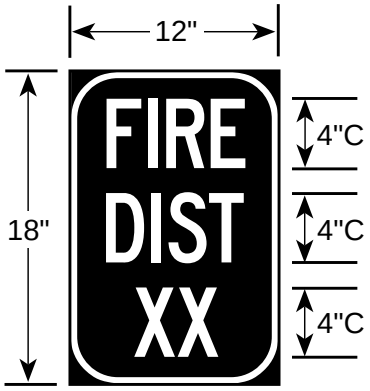

Nowhere
EXIT 1 MILE
Nowhere

b


Nowhere
NEXT RIGHT

c


18/24"
ENTERING
FIRE
DIST X
18/24"
4"B
4"C
4"C
LINE 1 ALTERNATE
LEAVING


12"
FIRE
DIST
XX
18"
4"C
4"C
4"C


24/30"
FIRE DIST X
12"
4"C


30"
ENTERING
FIRE DIST XX
12"
4"C
4"C

Appendix 2-7 Application for Highway Sign

For Historic and Cultural Attractions

Name of Organization _____

Address _____

_____

_____

Mailing Address (If Different)

_____

_____

Authorizing Official (Director, Board President, Trustee, etc.) _____
Address and Telephone of Authorizing Official

_____

_____

Are you a nonprofit organization [501(c)(3)] as determined by the Internal Revenue Service _____Y _____N
(If yes, please attach copy of determination letter)

Please provide the following information about your organization:

What are your visitation hours and when are you open to the general public? Please note if there are seasonal variations in visitation hours.

_____

_____

Is the facility readily accessible to all visitors? Does it have handicap ramps, elevators, etc.?

_____

_____

Is the site readily visible from the highway?

_____

_____

If Not, how far is the site located from the road or highway on which signage is being requested?

_____

_____

Is the road serving your site a two-lane, all weather road? Please indicate highway number (county , state, or street name).

_____

_____

Please describe where you would like the sign located. Be specific as to street name, highway number, proximity to an important intersection or junction.

_____

_____

Approved _____ **Disapproved _____**

Reason for Disapproval

_____

_____

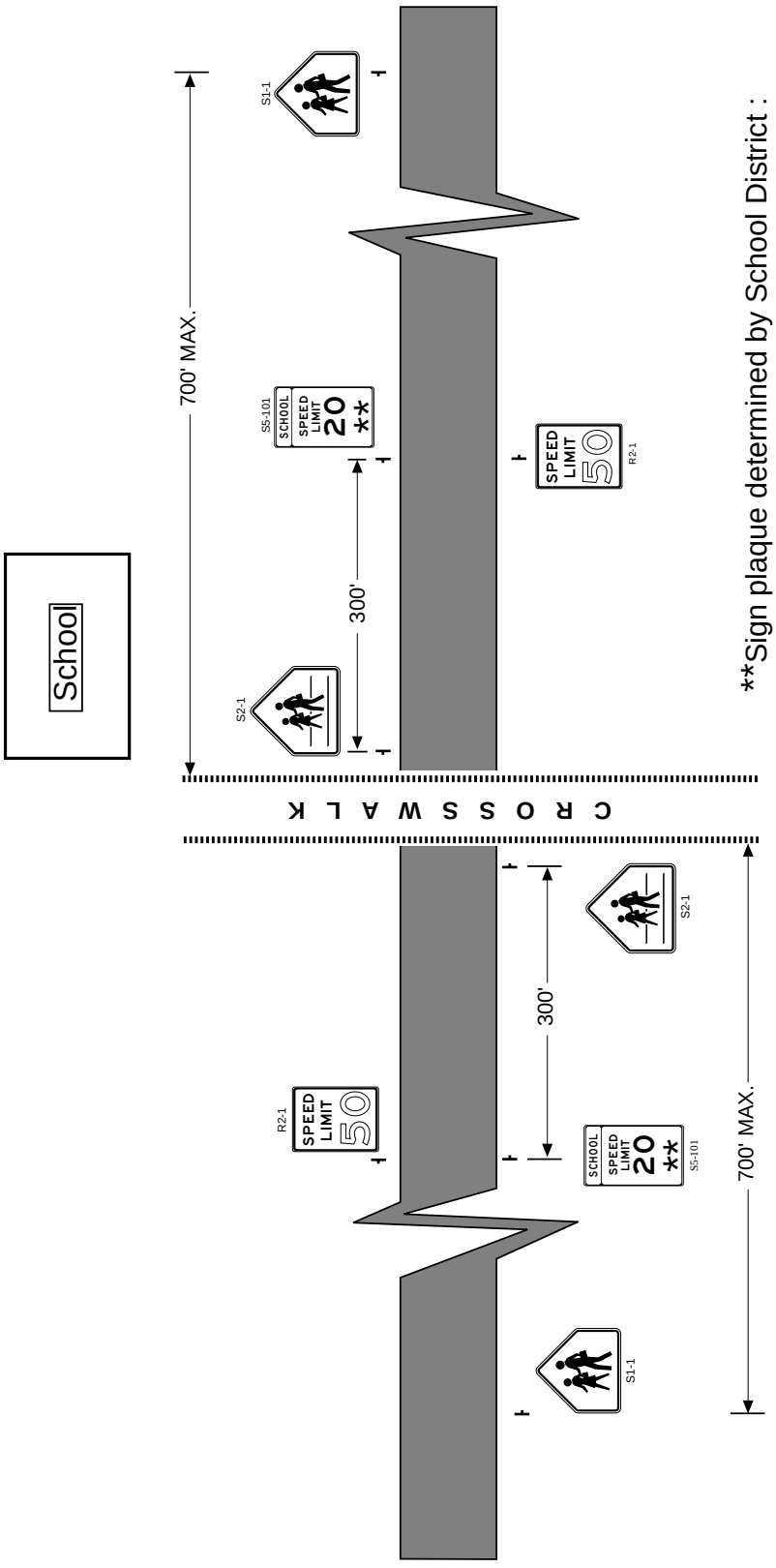
_____

_____

_____

_____ _____

Chair, Review Committee **Date**



**Sign plaque determined by School District :
1. WHEN FLAGGED
2. WHEN FLASHING
3. WHEN CHILDREN ARE PRESENT

See MUTCD Section "Traffic Control for School Areas" for sign spacing

3.1 General

Delineation is the pavement markings, guideposts, and raised pavement markers used on and adjacent to the roadway to define vehicular travel paths. The MUTCD, *Design Manual*, and *Standard Plans* provide delineation placement guidelines.

The *Roadway Delineation Practices Handbook*, published by FHWA, discusses specialized materials and delineation treatments for unique applications and situations. This handbook does not establish policies or standards but is only a reference document.

3.2 Pavement Markings

Pavement markings are classified as either longitudinal or transverse. Materials typically used for each are paint for longitudinal markings and thermoplastics for transverse markings. Approved sources for thermoplastic materials are listed in the General Special Provisions. A purchase contract is available for the purchase of paint. Other durable materials are continually being evaluated.

A. Intersection Channelization

The MUTCD has a provision that allows pavement markings to be extended through an intersection where design or visibility conditions make it desirable to provide control through the intersection. These markings are only installed as the result of a traffic engineering analysis that considers horizontal curvature and other visibility conditions. For statewide uniformity, the dotted line used for this extension is applied as a 2-foot stripe with a 4-foot gap between stripes.

Multilane approaches may provide exclusive or shared lanes for turning and through vehicles. At most intersections through traffic must share a lane with one direction of turning traffic. To minimize delay, through traffic should normally be combined with right-turning traffic unless opposite approach geometrics are unfavorable. An offset centerline and minor widening may help accomplish the proper lane assignments.

Stopbars are to be included at all signalized intersections with or without crosswalks. At nonsignalized intersections stopbars are necessary on the stop sign control approaches when crosswalks are not included. Including the stopbar at stop sign control locations having marked crosswalks is optional.

B. Interchange Off Ramps

At either a parallel or a tapered deceleration lane, the MUTCD allows the application of an optional dotted extension of the main line right edge line through the ramp opening. The dotted line is a 2-foot stripe with a 4-foot gap.

For statewide uniformity, these optional dotted extensions should only be installed where the exit ramp is located on a horizontal curve, except for locations with continuous illumination, and at locations with prevalent foggy periods. They are generally not needed at ramps exiting from tangent sections. These markings are only to be installed as a result of a traffic engineering analysis.

C. Crosswalks

Marked crosswalks serve to guide pedestrians in the proper paths. Crosswalks should only be marked at locations that are signalized (and have significant pedestrian volumes), where crossing guards are provided, or where pedestrian volumes meet the criteria for signal Warrant 3 in Section 4C-5 of the MUTCD.

Crosswalk markings should not be used at remote locations or where the speed limit exceeds 35 miles per hour unless protection is provided by a traffic signal or stop sign. Studies show that marked crosswalks have higher accident rates than unmarked crossings, thus crosswalks should not be considered safety devices.

Illumination of marked crosswalks is normally provided when pedestrian volumes meet the criteria in MUTCD Section 4C-5. When markings are requested by others and volumes do not meet those requirements, funding and power for crosswalk lighting is normally provided by the requestor.

D. No Passing Zone Marking

No passing zones are to be established and marked on horizontal and vertical curves in accordance with the MUTCD.

State law, in the Rules of the Road RCW 46.61.100 - RCW 46.61.165, identifies several situations with a statutory no passing zone distance such as ". . . when approaching within 100 feet of or transversing any intersection or railroad crossing . . ." or ". . . the view is obstructed upon approaching within 100 feet of any bridge, viaduct, or tunnel . . . ." However, state law does not imply a need to mark no passing zones for such situations.

3.3 Guideposts

Guideposts, discussed in the MUTCD as delineators, are light retroreflecting devices mounted at the side of the roadway to indicate roadway alignment. They are effective aids for night, wet, or other reduced visibility driving conditions and are intended to guide rather than warn motorists.

Guidepost installation and spacing requirements are included in the *Standard Plans* and the *Design Manual*. The field spacing for guideposts shall be determined from Figure 3-1. Approved sources for guideposts as well as reflective materials are listed in the General Special Provisions.

3.4 Barrier Delineation

Barrier delineation is the extension of guideposts through an area of guardrail or concrete barrier. Spacing is the same as for guideposts.

Guardrail is delineated by mounting guideposts on guardrail posts as shown in the *Standard Plans*.

Concrete barrier is delineated by placing reflective devices on the face of the barrier about 6 inches down from the top. When concrete barrier is placed immediately adjacent to the traveled lane, such as in construction zones, delineator spacing should be a maximum of 40 feet on tangents and 20 feet through curves.

3.5 Chevron Alignment Signs

Although the Chevron Alignment Sign is intended to provide additional emphasis and guidance for drivers through horizontal curves in the roadway, this sign is not a delineator. See the MUTCD and the warning sign section of this manual for use.

3.6 Raised Pavement Markers

As described in the *Design Manual*, raised pavement markers are extensively used in western Washington to simulate lane lines and to supplement painted pavement markings.

Maintenance of raised pavement markers is discussed in the *Maintenance Manual*.

A. Right Edge Lines

The general use of raised reflective pavement markers to supplement, or in lieu of, right edge lines is strongly discouraged. At night, such markers can be easily mistaken for lane lines.

The State Traffic Engineer has approved the use of reflective markers to supplement right edge lines in these locations:

- On the taper in lane reduction sections, such as from four lane to two lane.
- Through sections with reduced lane width, such as narrow structures.
- At the gore of exit ramps.

B. Recessed Markers

Recessed reflective markers and recessed lane lines appear to be an effective way to provide additional centerline and lane line delineation in areas requiring extensive snow plowing.

The details for installation of the recessed marker are contained in the *Standard Plans*.

Recessed markers and recessed lane lines are expensive and data is still being collected to determine effectiveness and expected life. As a result, the criteria for application and installation are still subject to change and the State Traffic Engineer's office should be contacted when recessed markers or recessed lane lines are being considered.

With prior approval of the State Traffic Engineer, recessed markers may also be installed on bridges. Currently several alternative methods are being considered for this application to minimize the impact on bridge decks.

3.7 Impact Attenuator Marking

The end of impact attenuators adjacent to the roadway and facing traffic are to be marked with a modified type 3 object marker. The design and use of the marker shall be the same as the MUTCD type 3 marker except that the attenuator marker shall be square. Attenuators in gore areas or where traffic may pass on either side shall have the stripes in a chevron pattern sloping down from the center of the marker. These designs are provided in the *Sign Fabrication Manual*.

3:P3:TM1

FIELD DETERMINED GUIDEPOST SPACING

(1) DETERMINE P.C. OR P.T. IN DIRECTION OF TRAVEL WITH CURVE TO THE LEFT AND INSTALL A GUIDEPOST.

(2) MOVE AHEAD ON THE CURVE. FROM THE EDGE LINE, SIGHT DOWN THE CENTER LINE (OR LANE LINE) AND DETERMINE APPROXIMATE POINT WHERE THE CENTER LINE (OR LANE LINE) WOULD INTERSECT THE EDGE LINE. INSTALL A GUIDE POST AT THIS POINT. THE DISTANCE BETWEEN THE TWO GUIDEPOST IS THE SPACING, "S".

(3) INSTALL A GUIDEPOST ONE SPACING IN ADVANCE OF THE P.C. OR P.T. GUIDEPOST.

(4) INSTALL GUIDEPOST ALONG THE CURVE USING THE SPACING DETERMINED IN 2.

(5) INSTALL ONE ADDITIONAL GUIDEPOST BEYOND THE P.C. OR P.T.

(6) IF THE SPACING RESULTS IN THE INSTALLATION OF THE ADDITIONAL GUIDEPOST LESS THAN 1/2 "S" BEYOND THE P.C. OR P.T. THEN INSTALL ONE EXTRA GUIDEPOST AT "S".

DESIGN MANUAL SPACING

VALUES FOR DESIGN USE

RADIUS	S	RADIUS	S
50	30	800	130
100	40	900	130
150	50	1000	140
200	60	1500	170
250	70	2000	200
300	80	2500	220
400	90	3000	240
500	100	3500	260
600	110	4000	280
700	120	4500	300

NOTES:

THE SPACING DISTANCE " S " IS MEASURED ALONG THE EDGE OF PAVEMENT. THE MINIMUM " S " VALUE SHALL BE 30'.

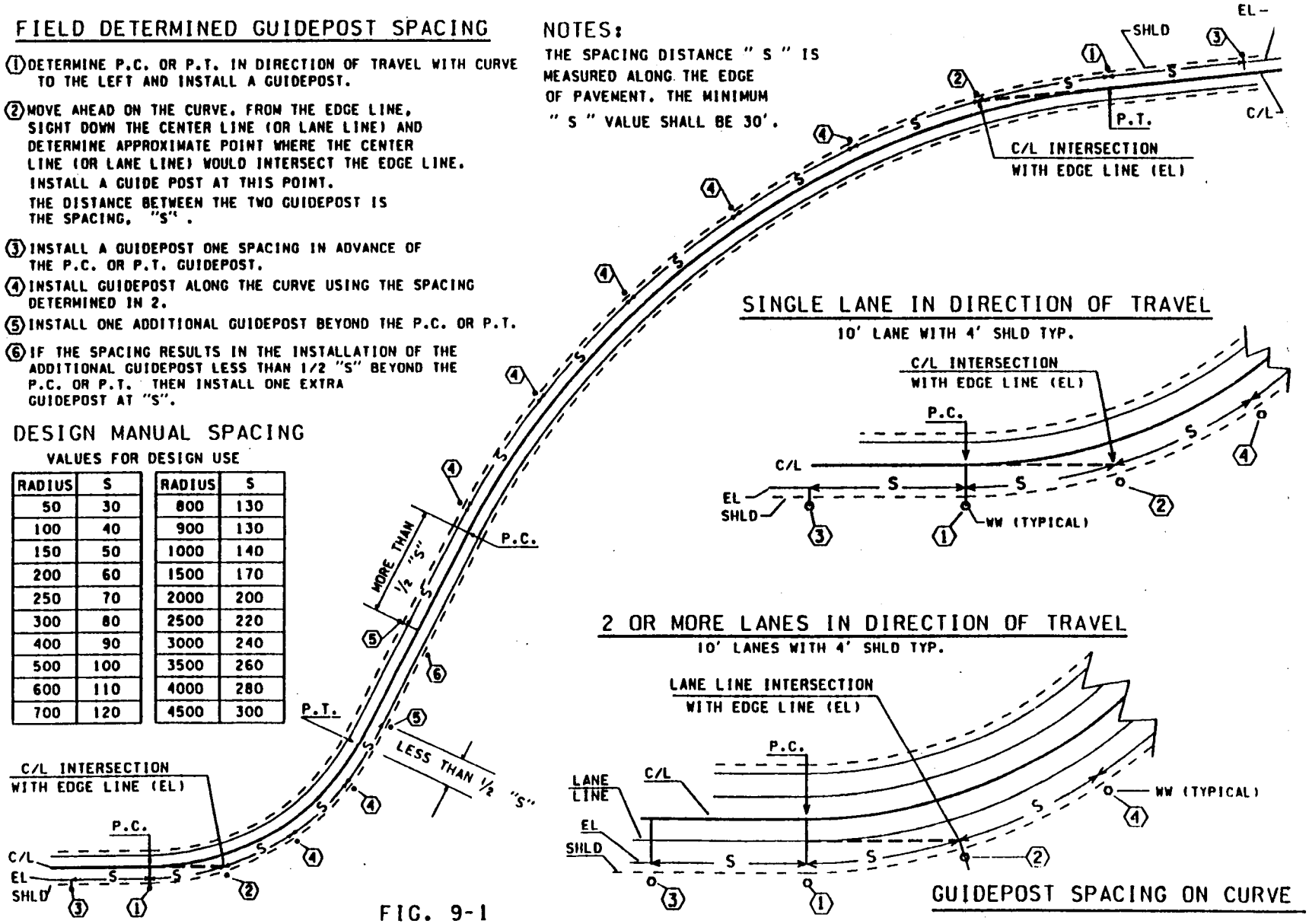


FIG. 9-1

Figure 3-1

4.1 MUTCD

The MUTCD, Section IV, discusses the types of signals and their application, and provides warrants and other guidelines used to justify signal installations.

4.2 *Design Manual*

Design Manual Section 335 provides the guidelines for signal installations with regard to state laws, department policies, permit approval procedures, design report requirements, preliminary signal plans, phase analysis (level of service/optimum cycle calculations), detection systems, pedestrian considerations, signal supports, and contract plan preparation.

Special attention should be given to signal permit applications submitted by local agencies or developers. The permit application should be submitted to the State Traffic Engineer at least two months prior to the time the approved permit is desired. The request can then be processed for approval in a timely manner.

See Chapter 6, Traffic Regulations, for the information required as support data which must accompany permit applications.

4.3 Flashing Operation

Occasionally traffic signals have been, or are, installed primarily to reduce intersection delay during the morning, noon, and evening peak hours. These signals may not be warranted during off-peak hours. At locations having fixed time signals, flashing operations may be considered for nonpeak hours where there is significantly larger traffic volumes on the major approaches than the minor approaches (i.e., intersections meeting primarily warrant No. 2).

If off-peak flashing operations are implemented, follow-up accident studies should be conducted.

4.4 Intersection Control Beacons

The MUTCD states that intersection control beacons are intended for use at intersections where traffic or physical conditions do not justify conventional traffic signals but where accident rates above the statewide average for like locations indicate a special hazard.

The most common application for these beacons is at intersections with minor approach stop control where some approaching vehicles on the controlled legs have failed to stop.

An intersection control beacon should be considered for a problem location only after other remedial measures have been tried and determined to be ineffective based on traffic engineering studies.

Twelve-inch lenses on the intersection control beacon may be desirable to enhance visibility at some locations.

4.5 Audio-Tone Signal Application

Pedestrian crosswalk signals with audio-tone application for the visually handicapped are available, although fairly new on the market. The audio-tone, if installed, should be activated from a push button control mounted on the signal post. This will provide audio-tone only when needed.

4.6 Illumination

A. General

Transportation facility illumination enhances visual perception of conditions or features that require additional driver or pedestrian alertness. This is accomplished through the use of materials and techniques that result in optimum energy efficient illumination designs.

B. References

Roadway Lighting Handbook, USDOT, Washington, D.C., December 1978.

AASHTO Pamphlet, *An Informational Guide for Roadway Lighting*.

WSDOT Directive D22-21 “Truck Weigh Stations and Vehicle Inspection Facilities on State Highways.”

National Electrical Code.

RCW 47.24.020.

Washington Administrative Code 468-18-040.

C. Definitions

Area Designations

Commercial Area. A district of continuous adjacent retail businesses at least 1,000 feet in length, with lighted store fronts, parking lots, etc.

Intermediate Area. A partially built-up area consisting of approximately 50 percent adjacent land use for retail businesses at least 600 feet in length, with lighted store fronts, parking lots, etc.

Residential Area. An area of continuous residences with occasional businesses where the local street grid has a continuous illumination system.

Rural Area. Areas not defined as commercial, intermediate, or residential.

Ballast. An electrical device which provides the necessary voltage, current, and wave form to start and operate an electrical discharge lamp.

Basic Illumination. The minimal amount of illumination to be provided at certain transportation facilities.

Basic Interchange Illumination. The minimum amount of illumination at interchanges which consists of two luminaires on each single or double-lane on ramp, two luminaires on each single-lane off ramp, three luminaires on each double-lane off ramp, and one luminaire at each ramp-crossroad intersection.

Candela. A unit of luminous intensity equal to one lumen per steridian.

Candlepower. Luminous intensity expressed in candelas.

Contrast Ratio (CR).

> **Brightness**. The ratio between the photometric brightness, measured in foot lamberts, of any two relatively large areas in the field of view.
>
> **Light**. The ratio between the maximum and minimum light levels of the design zone.

Coefficient of Utilization (CU). The percentage of the total light output that actually falls on the area to be illuminated.

Dirt Factor (DF). A factor used in illumination calculations to relate the initial illumination provided by a clean, new luminaire to the reduced illumination caused by dirt accumulation on the luminaire components. A dirt factor of 85 percent is normally used.

Footcandle (fc). The unit of illumination used when the foot is the unit of length; the illumination of a surface one square foot in area on which is uniformly distributed a flux of one lumen. A footcandle equals one lumen per square foot.

> **Design footcandles (Dfc)**. The average light level on the roadway at the end of rated life.
>
> **Initial footcandles (Ifc)**. The average light level on the roadway after the first 200 hours of operation.

Foot Lambert. A unit of luminance equal to 1/3.14 candela per square foot or to the uniform luminance of a perfectly diffusing surface emitting or reflecting light at the rate of one lumen per square foot.

Glare. The effect of brightness or brightness differences within the visual field sufficiently high to cause annoyance, discomfort, or loss of visual performance.

Hours of Darkness. The time from sunset to sunrise, inclusive of summer and winter conditions.

IES Distribution. Light patterns for luminaires consistent with the Illumination Engineering Society standards for various patterns and distributions.

Isolux Diagram. A graphical representation of points of equal illumination connected by a continuous line. These diagrams usually show footcandle values on a horizontal plane from a single unit having a definite mounting height.

Lamp Lumens (LL). The total light output from a lamp for the position in which the lamp is maintained. LL for a standard luminaire is 37,000 lumens.

Lamp Lumen Depreciation Factor (LF). The factor used in illumination calculations to relate initial rated output to the anticipated output at replacement time. This factor is 0.73 for high pressure sodium sources. Consult manufacturer's data for other sources.

Light. Radiant energy capable of producing a visual sensation.

Light Standard. A support provided with necessary attachments for wiring and luminaire mounting. See Standard Plan J-1.

Lumen. A unit of luminous flux; equal to the flux emitted through a unit solid angle (one steridian) from a uniform point light source of one candela.

Luminance. In roadway lighting luminance is the reflected light from the pavement surface that is visible to the motorist's eye.

Luminaire. The complete lighting unit inclusive of the lamp or light source; the optical system for the control of the light distribution; and the ballast for electrical regulation. The standard luminaire is a cobra head fixture with a Type III medium cutoff distribution, a 310 watt lamp and a flat glass refractor. Decorative cutoff fixtures may be considered for parking area applications.

Maintenance Factor (MF). The percentage of light degeneration through the life of the lamp equal to the product of the lamp lumen depreciation factor (LF) times the dirt factor (DF). The LF for high pressure sodium lamps is 62 percent.

Major Parking Lot. Major parking lots for park and ride, carpool, and ferry terminal facilities are those with nighttime usage exceeding 50 vehicles during the nighttime peak hour.

Mounting Height (MH). The vertical distance between the surface to be illuminated and the center of the light source of the luminaire. Standard mounting height is 40 feet. When nonstandard luminaires are approved, the mounting heights noted in Figure 4-5 are recommended.

Mounting Height Factor (MHF). A factor used in illumination uniformity calculations to correct light values when a different mounting height than the one on the isolux curve is used.

Nighttime. The period of time from one-half hour after sunset to one-half hour before sunrise and any other time when persons or objects may not be clearly discernible at a distance of 500 feet (RCW 46.04.200 Hours of Darkness).

Photometrics. The isolux diagram and coefficient of utilization plot for a particular luminaire and light source.

Spacing (S). The distance in feet measured on centerline between adjacent luminaires. Spacing (S) is equal to the lamp lumens (LL) times the coefficient of utilization (CU) times the maintenance factor (MF) divided by the width (W) and the design footcandle value (Dfc).

Security Lighting. The techniques of providing low level lighting for public safety or theft reduction. Security lighting is not subject to any lighting uniformity requirements.

Uniformity Ratio (UR). The ratio of the average light level on a section to the weak point light level of the same section for those applications when uniformity rates applies. The minimum uniformity rates are 4:1 approaching 1:1. Uniformity ratio requirements do not apply to security or single source applications.

Walkway. The connection between two areas over which the user is required to travel in order to utilize available services. Typical examples are as follows:

- Walkways between parking areas and rest room buildings at rest areas.
- Walkways between drop-off or pick-up points and bus loading areas at flyer stops.
- Walkways between parking areas and bus loading areas.

For the purpose of this section bicycle trails, walking trails, pet trails, etc., are not considered walkways.

Weak Point Light (WPL). The lowest light level within the area being illuminated. The minimum WPL is 0.2 footcandles for applications where uniformity criteria applies.

Width of the area to be illuminated. This measurement is from edge of traveled way to edge of traveled way for highway lighting applications.

D. Approval Requirements

1. **General**. WSDOT is responsible for illumination on state highways with access control regardless of location and for illumination of highways without access control located outside of the corporate limits of any city. Cities are responsible for illumination of state highways without access control located within their corporate limits. In cities with a population under 22,500 where the state is responsible for signalization, the state may assume responsibility for illumination installed on signal standards in the interest of reducing intersection clutter.

When the State Traffic Engineer's approval is required, it will be obtained through the design deviation approval process. See *Design Manual*, Chapter 330.

2. **Basic Illumination**. Basic illumination is required at the following facilities:

- Freeway ramp gore areas.
- Ramp terminals.
- Channelized intersections.
- Signalized intersections.
- Railroad crossings with gates or signals provided there is nighttime train traffic.
- Loading areas at flyer stops.
- Major parking lots.
- Rest areas.
- Scale platforms at weigh stations.

Any proposal that provides less than or more than basic illumination at these facilities requires approval of the State Traffic Engineer. Basic illumination applications are shown on Figures 4-1, 4-2, and 4-3.

3. **Illumination Beyond Basic Levels**. Illumination at the locations listed below is divided into two categories depending on whether approval by the State Traffic Engineer is required.

Approval by the State Traffic Engineer is required for illuminating the following facilities:

- All highways with or without access control.
- Unsignalized or unchannelized intersections.
- Tunnels, underpasses, and lids.
- Bridges.

Illumination of the following facilities will not require the State Traffic Engineer's approval.

- Construction zones.
- Detours.
- Railroad crossings without gates or signals.
- Walkways.
- Bicycle trails.
- Minor parking lots.
- Pavement transitions, including drop lanes.

4. **Nonstandard Features**. Approval by the State Traffic Engineer is required for any proposal that incorporates lighting equipment or features other than those identified as standard in the *Traffic Manual*.

E. Warrants

1. **General**. Proposals to install additional lighting at basic illumination locations and to illuminate other locations requires satisfying the warranting conditions listed below. When volumes are used to determine the level of service, the counts should be taken during the nighttime peak hour.

Peaking characteristics in urban areas are related to clock time. Traffic counts taken during daylight hours after 4:30 p.m. and before 7:30 a.m. may be used to satisfy nighttime volume warrants providing seasonal adjustment factors have been applied to demonstrate warrant satisfaction for the applicable portions of the months of November, December, and January.

When accidents are used to warrant illumination, the ratio of nighttime to daytime accidents should be at least 1.5 times higher than the

average for similar locations, and a study should indicate that illumination will result in a reduction in nighttime accidents. When comparing similar locations, volumes, speed, land use, and access control should be similar.

2. **Highways With Access Control**. All roadways within the limits of access control are covered in this category and include mainline, ramps, and crossroads.

a. **Mainline**. Illumination is warranted when the nighttime peak hour level of service is D or below and any two of the following conditions occur:

- Three or more successive interchanges are located within an average spacing of 1½ miles or less.
- The segment is in an urban area.
- The nighttime accident warrant is satisfied.

b. **Ramps.** Illumination is warranted when any of the following conditions occur:

- Nighttime peak hour level of service is D or worse.
- Complex ramp alignment and grade.
- There are routine queues of five or more vehicles per lane during darkness due to traffic control features at the ramp terminal.
- The exit advisory speed is more than 20 mph below the posted mainline speed.
- The nighttime accident warrant is satisfied.

c. **Crossroads**. Illumination is warranted if any of the following conditions occur:

- Nighttime peak hour level of service is D or below.
- The nighttime accident warrant is satisfied.

3. **Highways Without Access Control**. Illumination is warranted if the segment is classified as commercial and the nighttime level of service is D or the nighttime accident warrant is satisfied.

4. **Intersections**. Illumination of unsignalized and unchannelized intersections is warranted if channelization warrants are satisfied or the nighttime accident warrant is satisfied.

5. **Tunnels, Underpasses, and Lids**. Daytime illumination is warranted if portal conditions result in a condition where brightness reduction is greater than 15 times and the length to vertical clearance ratio is ten to one or greater.

6. **Construction Zones**. Illumination may be warranted if construction activities take place on the roadway at night.

7. **Detours**. Illumination is warranted if detour alignment and grade are unusual or result in unexpected maneuvers.

8. **Minor Parking Lots**. Security lighting is warranted if vandalism or security problems have developed or are anticipated.

9. **Bridges**. Warrants for illuminating bridges are the same as those for highways with or without access control, whichever is applicable.

10. **Railroad Crossing Without Gates or Signals**. Illumination of these facilities is warranted if there are potential nighttime accidents. The extent of nighttime train activity should be taken into consideration. Also, if there is the probability that railroad cars may be stopped on the crossing during the nighttime, lighting should be considered.

11. **Walkways and Trails**. Security lighting is warranted if security problems have developed or are anticipated.

F. Design Report

The design report shall note the following:

- The facilities where basic illumination is proposed.
- Justification for any proposal to install less than or more than the lighting required for basic illumination.
- Justification for any proposal to install illumination at other highway facilities.

• The status of existing illumination before, during, and after construction.

G. Design Criteria

1. **Roadway Light Levels**. Design light levels are indicated in Figure 4-4. These levels are the minimum average levels to be provided on the roadway at end of rated lamp life for applications requiring a spacing calculation. Light level requirements do not apply to single source or security level installations.

When illumination is proposed for a roadway with a radius of 450 feet or less, it may be necessary to reduce spacing, thereby increasing the average light level in order to achieve uniformity ratio requirements.

Light levels at railroad crossing shall be consistent with the area classification and highway functional classification.

2. **Nonhighway Light Levels**. Average, maintained end-of-rated-life light levels for various types of nonhighway facilities are indicated in Figure 4-4.

Security light levels are defined as follows:

• Park and ride lots, ferry terminal parking lots. Approximately one-fourth of the luminaires required for full illumination are left on.

• Rest area parking areas. Typically two luminaires per parking area.

• Walkways. Luminaires provided at angle points and shadow areas.

• Bus loading zone. One luminaire in the immediate vicinity of the loading zone.

• Weight stations. One luminaire at the public telephone, if any.

3. **Light Levels for Special Applications**.

a. Short tunnels and underpasses with length to vertical clearance ratios of 10:1 or less will normally not require daytime illumination. Short tunnels with length to vertical clearance ratios greater than 10:1 will be treated the same as an entrance zone on a long tunnel to establish daytime light levels. Nighttime light levels in short tunnels on continuously illuminated roadways should be approximately two times, but not exceeding three times, the light level required on the roadway outside the tunnel. Nighttime light levels in short tunnels on noncontinuously illuminated roadways should be consistent with Figure 4-4.

b. Long tunnels have a portal to portal length greater than the wet pavement stopping sight distance. Long tunnels are divided into zones for the determination of daytime light levels. Each zone is equal in length to the wet pavement stopping sight distance. The entrance zone beginning point is usually taken to be a point outside the portal where the motorist's view is confined to the predominance of the darkened tunnel structure.

The entrance zone light level is dependent upon the brightness of the features within the motorist's view on the portal approach. The brightness level is defined as the average brightness measured over a 20 degree cone at a point 500 feet in advance of the portal. The entrance zone light level produced within the tunnel must be sufficient to provide a brightness level of approximately 1/15 of the measured portal brightness, after adjustment for the reflectivity of the roadway, walls, and ceiling.

Successive zones should have a daytime light level of 1/15 of the previous zone light level until a minimum value of 5 foot candles is achieved.

Requirements for nighttime light levels for long tunnels are the same as those noted for short tunnels.

4. **Control Requirements**. The control requirements for various types of illumination systems will vary with the application as follows:

a. **Continuous Nighttime Operation**. Controls for continuous nighttime operation will normally consist of a photocell for sunset turn-on and sunrise turn-off. The following types of applications will have controls for continuous nighttime operations.

- All basic interchange illumination on access controlled highways.
- All illumination in excess of basic levels that was installed by special condition warrant on access controlled highways.
- Illumination at intersections.
- Illumination at railroad crossings.
- Security lighting at bus loading zones at park and ride lots, and at flyer stops.
- Security lighting in parking areas at park and ride lots, ferry terminals, and pool-it lots.
- Illumination for walkways at park and ride lots, flyer stops, ferry terminals, and rest areas.
- Illumination for parking areas and conflict points at rest areas.
- Detour illumination.
- Construction illumination.
- Illumination installed on nonaccess controlled highways by accident warrant.
- The single luminaire in the vicinity of the public telephone at truck weigh stations.

b. **Continuous Nighttime Operation With Reduction Capability**. Controls for these applications will normally consist of a photocell control for sunset turn-on and sunrise turn-off along with another mechanism capable of providing independent nighttime turn-off and turn-on. This mechanism will override photocell control only during periods of energy crisis. The following applications will require this type of control:

- Illumination in excess of basic levels on access controlled highways.
- Illumination in excess of basic levels installed on ramp segments because of nighttime backups that routinely occur due to ramp terminal intersection control.

c. **Noncontinuous Nighttime Operations**. Controls for these applications will normally consist of a photocell control for sunset turn-on and sunrise turn-off along with another mechanism capable of providing independent nighttime turn-on and turn-off. This mechanism will override photocell control on a regular basis, during periods of low use. If requested by the WSP, manual switching may be provided inside scale houses at truck weigh stations. The following applications will require this type of control:

- Illumination in excess of security levels in parking areas at park and ride lots, ferry terminals, and pool-it lots.
- Illumination in excess of security levels at bus loading areas at park and ride lots and flyer stops.
- Illumination in excess of security levels at truck weigh stations.

d. **Special Applications**. Some special applications, such as tunnels with daytime lighting, will require special controls. Circuits for fixtures providing nighttime light levels will be energized continuously throughout the day. Minimum daytime light levels, entrance zone light levels, and any subsequent zone light levels will be accomplished with fixtures in addition to continuously burning nighttime light level fixtures. In most cases, fixtures providing light levels in addition to minimum daytime light levels will be provided with controls so that reduced light levels can be achieved during periods when the portal brightness is less than the design value.

5. **Wiring Design**.

a. **Line Loss**. Line loss is the voltage drop between the electrical service and the electrical load. Line loss usually controls wire size determination rather than the allowable ampacities listed in Chapter 3 of the National Electric Code. For design purposes, allowable line loss is assumed to be a function of the stage of plan development and the ballast characteristics of the luminaire being utilized. See Figure 4-6 for allowable line loss and lamp load factor requirements.

Loads shall be determined by dividing the lamp wattage by the voltage and then multiplying by the appropriate lamp load factor.

Construction illumination circuits and other temporary circuits that are both installed and removed on the same contract may be designed for 10 percent line loss.

b. **Voltages**. Illumination systems should operate on 240 or 480 volts, single phase.

c. **Wire Size**. The minimum wire used by any illumination circuit is No. 8, except for the No. 10 pole and bracket cable included within the light standard. The ampacity of the wire, exclusive of pole and bracket cable which is protected by fusing, shall equal or exceed the branch breaker rating.

d. **Wire Type**. With the exception of temporary aerial installations where aluminum conductors are allowed, all wiring from the service on shall be copper.

6. **Conduit**. Conduits carrying illumination circuits are to be sized to provide 26 percent fill, maximum, with 1¼-inch minimum size under all roadways and 1 inch minimum size at other locations.

7. **Luminaire Support Locations**. Luminaire supports will normally be located 16 feet from the edge of the traveled lane pavement on the right of the roadway with respect to the driving direction.

8. **Base Types**. Luminaire supports are installed with either fixed base or slip base. The pole schedule in the plans should indicate the required base type. Fixed bases are installed at locations where it is either unwarranted or undesirable to install a slip base. Locations where fixed bases are normally installed are:

- Parking areas.
- Where the support location is outside the clear zone.
- Median lighting applications where the luminaire support is mounted on cast-in-place median barrier.
- Behind traffic barrier provided the traffic barrier is warranted for reasons other than the luminaire support installation.

Fixed based may be considered for roadways with speeds under 30 mph with considerable adjacent pedestrian activity.

9. **Overcurrent Devices**. Branch breakers are to be sized to carry 140 percent minimum of the computed illumination load. Loads should be computed in accordance with the lamp load factors noted in Figure 4-6.

Main breakers are to be sized to carry 140 percent minimum of the computed illumination load in addition to 125 percent minimum of all other loads on the service. The minimum size main breaker shall be 60 AMP.

Lighting contactors are used to switch the lighting circuits. Lighting contactors shall be rated to equal or exceed the branch breaker rating for the circuit it switches. Lighting contactors are available in 30, 60, and 100 AMP ratings.

H. Example Applications

1. **Spacing and Uniformity Ratio Calculation**. Determine the spacing and uniformity ratio for the intersection in Figure 4-7. Channelization is painted, highway class is other, and area classification is intermediate. Utilize standard luminaires, standard mounting height and standard base location.

Design values are:

- Approach Design Footcandles (Dfc) = 0.8 fc, Figures 4-3 and 4-4.
- Intersection Design Footcandles (Dfc) = 1.5 x 0.8 fc = 1.2 fc, Figure 4-4.
- Uniformity Ratio (UR) = 4:1.
- Weak Point Light (WPL) = 0.2 fc.
- Mounting Height (MH) = 40 feet.
- Luminaire = 310 watt high pressure sodium.
- Dirt Factor (DF) = 0.85.

• Lamp Lumen Depreciation Factor (LF) = 0.73.

• Maintenance Factor (MF) = DC x LF = 0.85 x 0.73 = 0.62.

• Roadway Width (W) = 39 feet, Figure 4-7.

• Initial Lamp Lumens (LL) = 37,000 lumen.

The formula for spacing is:

$$S = \frac{LL \times CU \times MF}{Dfc \times W}$$

S = Spacing
LL = Initial Lamp Lumens
CU = Coefficient of Utilization
MF = Maintenance Factor
Dfc = Design Footcandles
W = Roadway Width

The CU is determined from the utilization curve on Figure 4-8. The ratio of transverse width (TW) to mounting height (MH) is 39/40 or 0.97. From Figure 4-8 the CU is 0.26.

Spacing for the intersection can now be calculated.

$$S = \frac{37,000 \times 0.26 \times 0.62}{1.2 \times 39} = 127 \text{ feet}$$

Round odd spacing down to the nearest 10 foot increment, therefore, S = 120 feet. Reducing spacing increases Dfc. The adjusted Dfc is:

$$Dfc = 1.2 \times \frac{127}{120} = 1.27 \text{ fc}$$

Check uniformity at mid spacing in center of the roadway.

$$UR = \frac{Dfc}{WPL}$$

The weak point light is determined by entering the isocandle curves on Figure 4-8.

The ratio of transverse distance to mounting height at midpoint is 39/(2x40) = 0.48. The ratio of longitudinal distance to mounting height is 120/(2x40) = 1.5. From Figure 4-8 a value of 0.035 is determined. This value must be doubled since two luminaires are contributing light on the point. The value must also be adjusted for the lumen output of the lamp, the lamp maintenance (MF) and for mounting height correction (MHF).

$$WPL = \text{chart value} \times 2 \times \frac{37,000 \times MF \times MHF}{1,000}$$

The mounting height correction factor (MHF) is 0.56 from Figure 4-8.

$$WPL = 0.035 \times 2 \times 37 \times 0.62 \times 0.56 = 0.9 \text{ fc}$$

$$UR = \frac{Dfc}{WPL} = \frac{1.27}{0.9fc} = 1.4{:}1 \text{ OK}$$

Light standard A can now be located as indicated on Figure 4-7.

Check to see if 0.2 fc is provided at the left turn lane full width point.

135 ft/40 ft = 3.37 MH

Entering Figure 4-8 a chart value of 0.008fc is determined. WPL = 0.008 x 37 x 0.62 x 0.56 = 0.10 fc

Since 0.10 fc is less than 0.20 fc, additional light standards will be required to illuminate the approach. A new calculation is required since the design light level on the approach is 0.8 fc versus 1.2 fc for the intersection.

$$X = \frac{37,000 \times 0.26 \times 0.62}{39 \times 0.8} = 191 \text{ feet}$$

Round to 190 feet and adjust Dfc

$$Dfc = 0.8\frac{191}{190} = 0.80 \text{ fc}$$

Check WPL at half spacing in the center of the roadway.

Entering Figure 4-8 at 190 (2 x 40) or 2.37 longitudinal and 39 / (2 x 40) or 0.48 transverse yields a chart value of 0.017. WPL = 0.017 x 2 x 37 x 0.62 x 0.56 or 0.44 fc.

$$UR = \frac{0.80}{0.44} \text{ or } 1.8{:}1$$

Locate luminaires C & D at 190 feet spacing.

2. **Line Loss Calculation**. Determine the wiring requirements for the circuit in Figure 4-9. The wiring is installed in conduit and conductors are copper. Ultimate loads are known. Service voltage is 240. Luminaires are 310 watt high-pressure sodium vapor. From Figure 4-6 the lamp load factor is 1.2 and the maximum allowable line loss is 8 percent.

The load at each luminaire is:

$$\frac{310 \text{ watts}}{240 \text{ volts}} \times 1.2 = 1.55 \text{ amps}$$

The maximum voltage drop is:

240 volts x 0.08 = 19.2 volts

Line loss is computed in ampere-feet and is the current in the circuit times the distance to the load. Typically the circuit segments with the greatest length and load will control. On this basis the line loss table in Figure 4-11 can be computed. The circuit segment from Luminaire 1 to the service has the highest line loss.

First check No. 8 wiring. From Figure 4-12, the line loss is:

	10,000	amp-ft	=	15.0 volts
	4,000	amp-ft	=	6.0 volts
	800	amp-ft	=	1.2 volts
Total	14,800	amp-ft	=	22.2 volts > 19.2 volts. Not good.

Try changing the wiring from the service to Luminaire 5 to No. 6 wire with the remainder No. 8 wire.

Service to 5 (10,850 amp-ft) No. 6

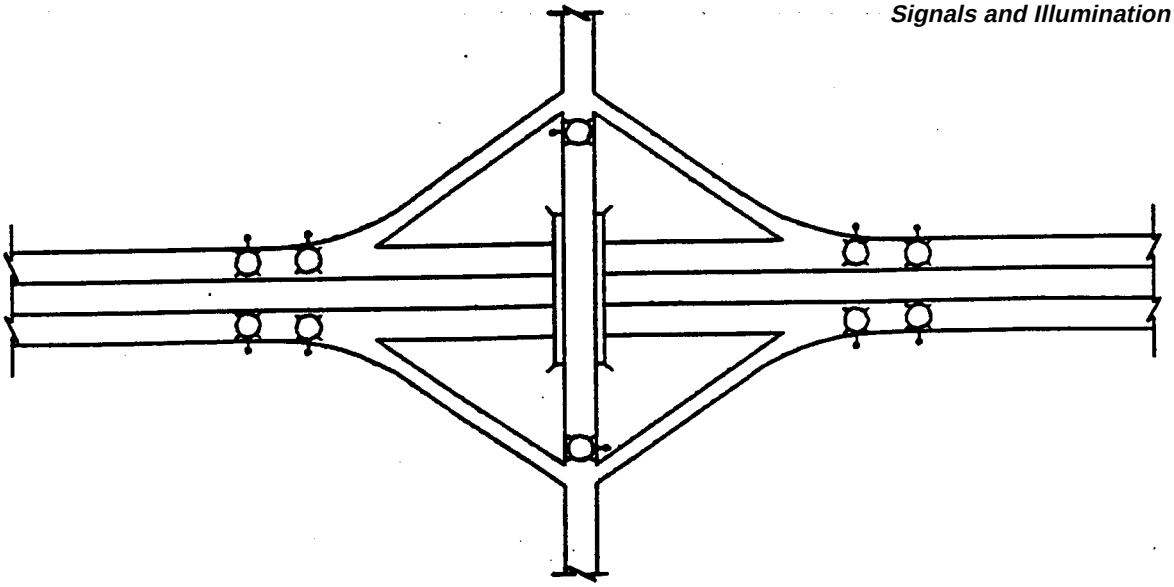
	10,000	amp-ft	=	9.7 volts
	900	amp-ft	=	0.9 volts
Total	10,900	amp-ft	=	10.6 volts
5 to 1	(14,800 - 10,900		=	3,900 amp-ft) No. 8
	3,000	amp-ft	=	4.5 volts
	900	amp-ft	=	1.4 volts
Total	3,900	amp-ft	=	5.9 volts

The line loss to Luminaire 1 is:

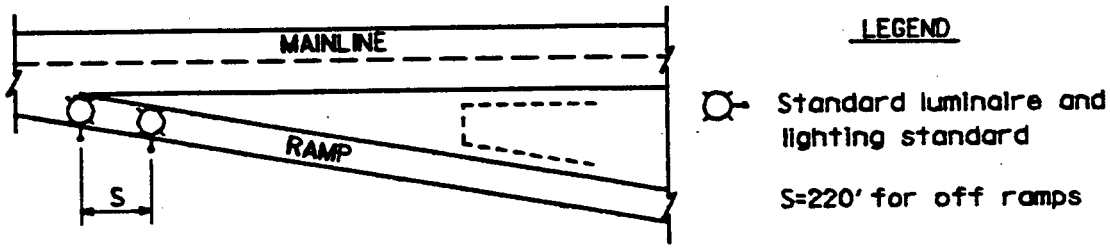
10.6 + 5.9 = 16.5 volts which is less than 19.2 volts maximum allowed.

Final wire sizes are shown in Figure 4-10.

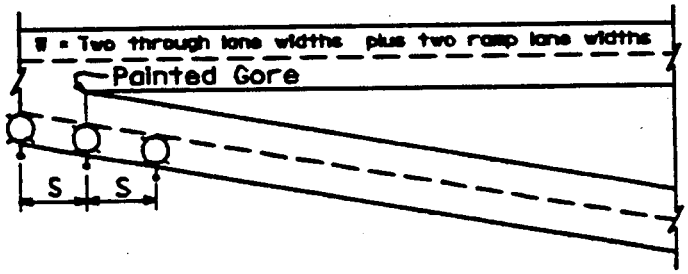
4:P3:TM1



TYPICAL DIAMOND INTERCHANGE PARTIAL ILLUMINATION
(Shown for single lane off connections and two lane crossroad without channelization)

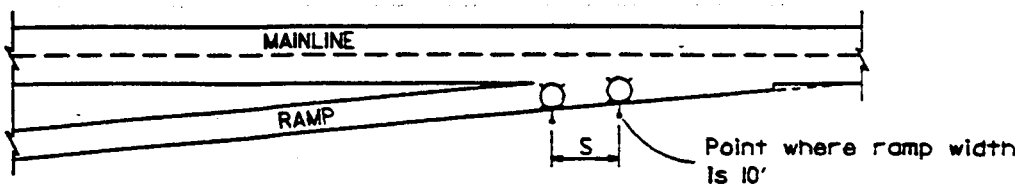


SINGLE LANE OFF CONNECTION
(Standards can be shifted up to 100' downstream from gore point)

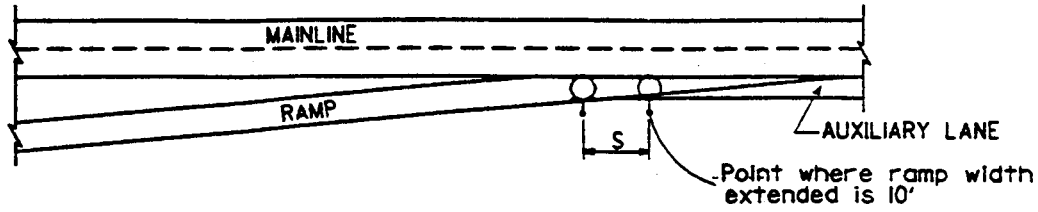


DOUBLE LANE OFF CONNECTION
(Basic applications)

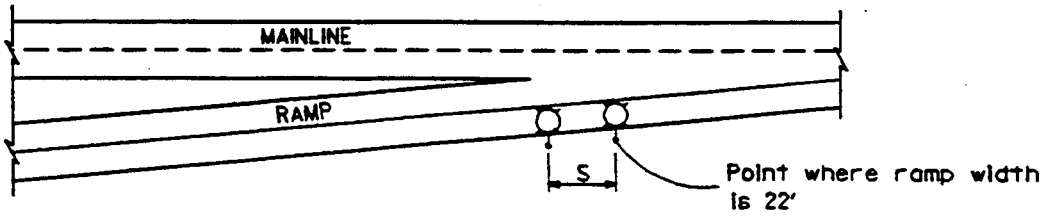
Figure 4-1



STANDARD ON CONNECTIONS



AUXILIARY LANE STARTING AT ON CONNECTION
(Required only if a significant weaving problem exists)

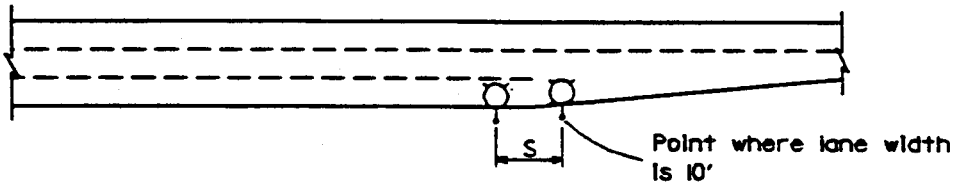


DOUBLE LANE ON CONNECTION

LEGEND

Standard luminaire and lighting standard

S-240' for on ramps



DROP LANE
(basic illumination applications)

Figure 4-2

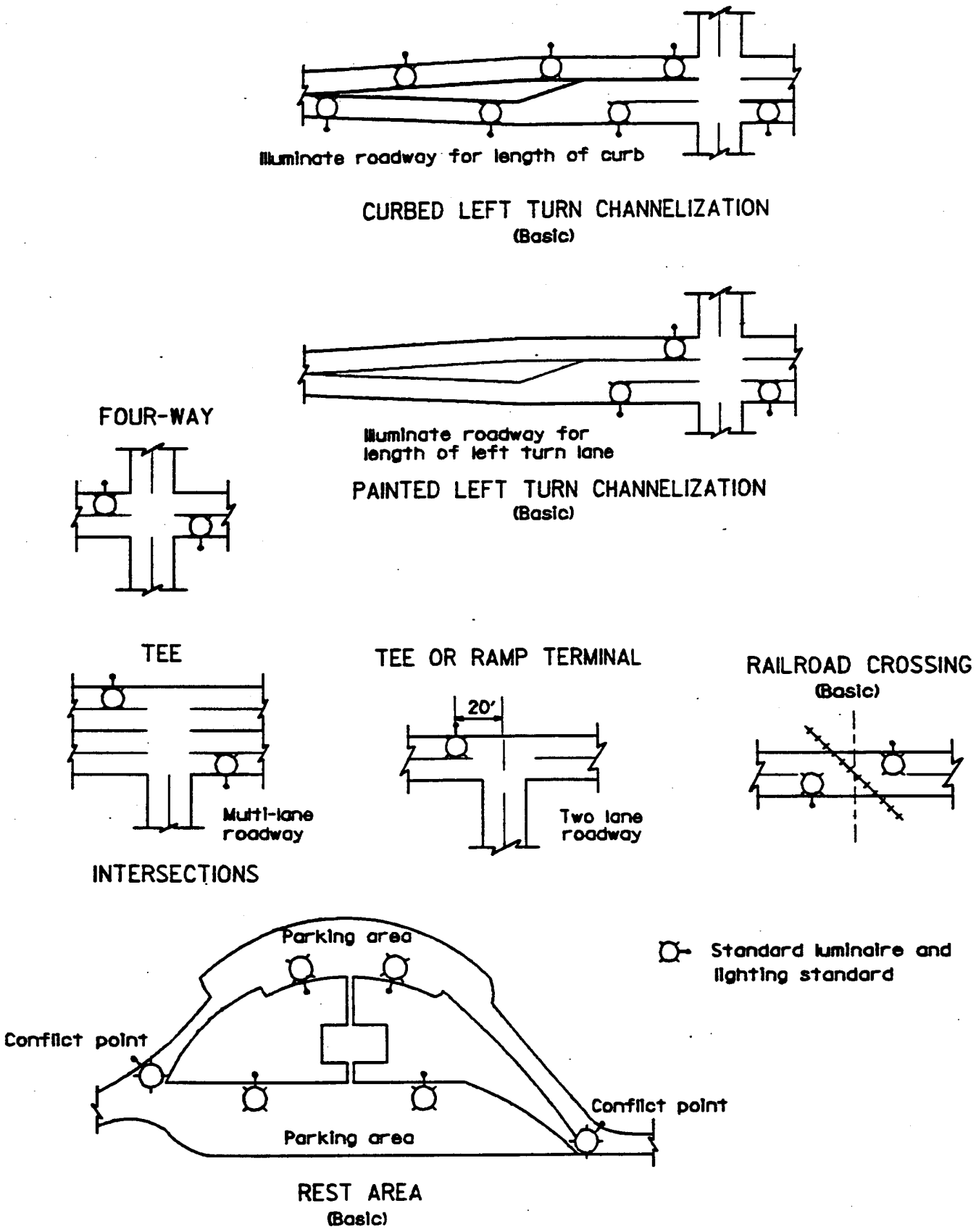

Illuminate roadway for length of curb
CURBED LEFT TURN CHANNELIZATION
(Basic)
Illuminate roadway for length of left turn lane
PAINTED LEFT TURN CHANNELIZATION
(Basic)
FOUR-WAY
TEE
Multi-lane roadway
TEE OR RAMP TERMINAL
20'
Two lane roadway
RAILROAD CROSSING
(Basic)
INTERSECTIONS
Parking area
Conflict point
Conflict point
Parking area
REST AREA
(Basic)
Standard luminaire and lighting standard

Figure 4-3

Average Maintained Horizontal Illumination Levels (Foot Candles)				
Highway Applications				
Highway Class	**Area Classification**			
	Commercial	***Intermediate***	***Residential***	***Rural***
Full Access Cont. - Divided	0.6*	0.6*	0.6*	0.6*
Arterials	1.6	1.2	0.8*	0.6*
Other	1.0	0.8*	0.6*	0.6*
Construction Lanes and Detours	1.0	1.0	1.0	1.0
Non-Highway Applications				
	Parking Areas	***Bus Loading Areas***	***Walkways***	***Weight Scales***
Park & Ride Lots	0.8	2.0	0.8	N.A.
Flyer Stops	N.A.	2.0	0.8	N.A.
Ferry Terminals	0.8	2.0	0.8	N.A.
Rest Areas	2 Luminaires	N.A.	Security Level	N.A.
Pool-It Lots	0.8	N.A.	N.A.	N.A.
Weigh Stations	None	N.A.	N.A.	2 Luminaires

*Increase light level by 50 percent at intersections where more than one light standard is installed.

Figure 4-4

Recommended Mounting Heights	
High Pressue Sodium	
Wattage	***Mounting Height (Ft)***
70	20
100	25
200	30
250	35
310	40
400	50
1000	100

Line Loss and Lamp Load Factor Requirements			
		Maximum Line Loss	
Lamp	Lamp Load Factor	Ultimate Loads Known	Ultimate Loads Unknown
High Pressure Sodium	1.2	8%	5%
Metal Halide	1.2	8%	5%
Mercury Vapor	1.1	10%	5%

Figures 4-5 and 4-6

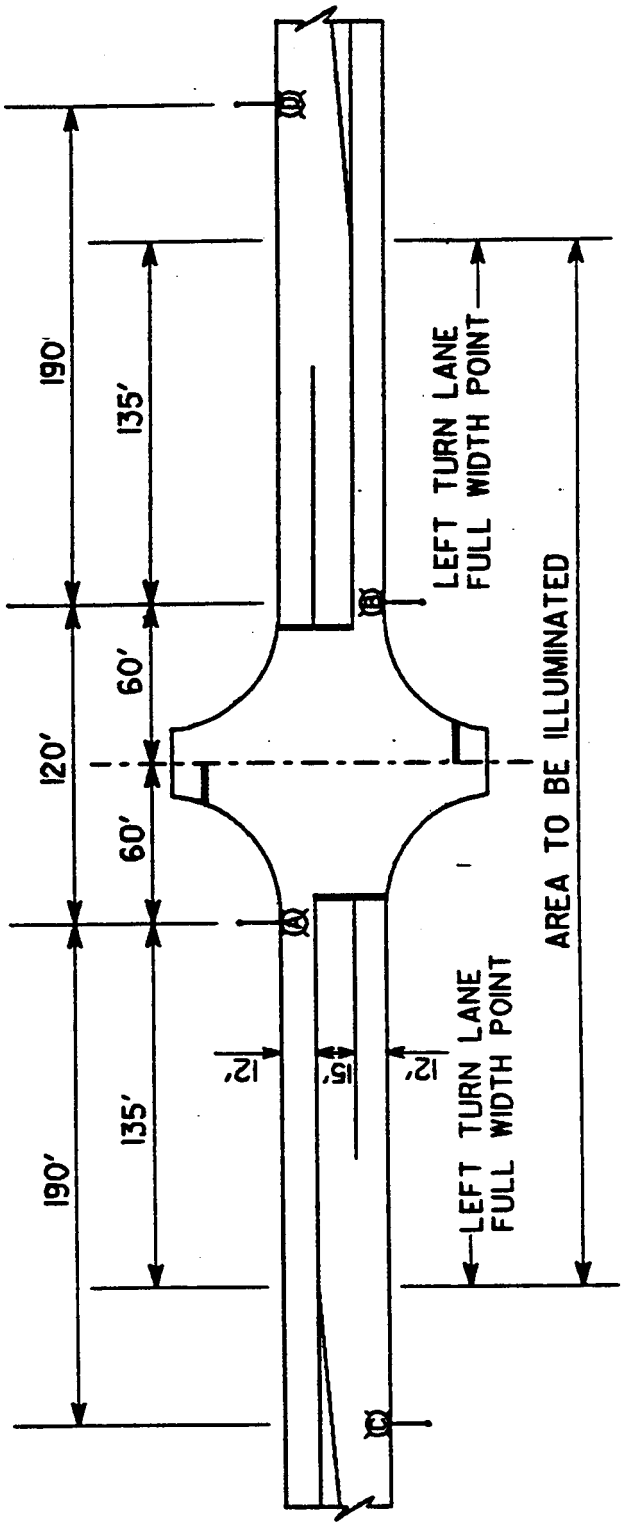
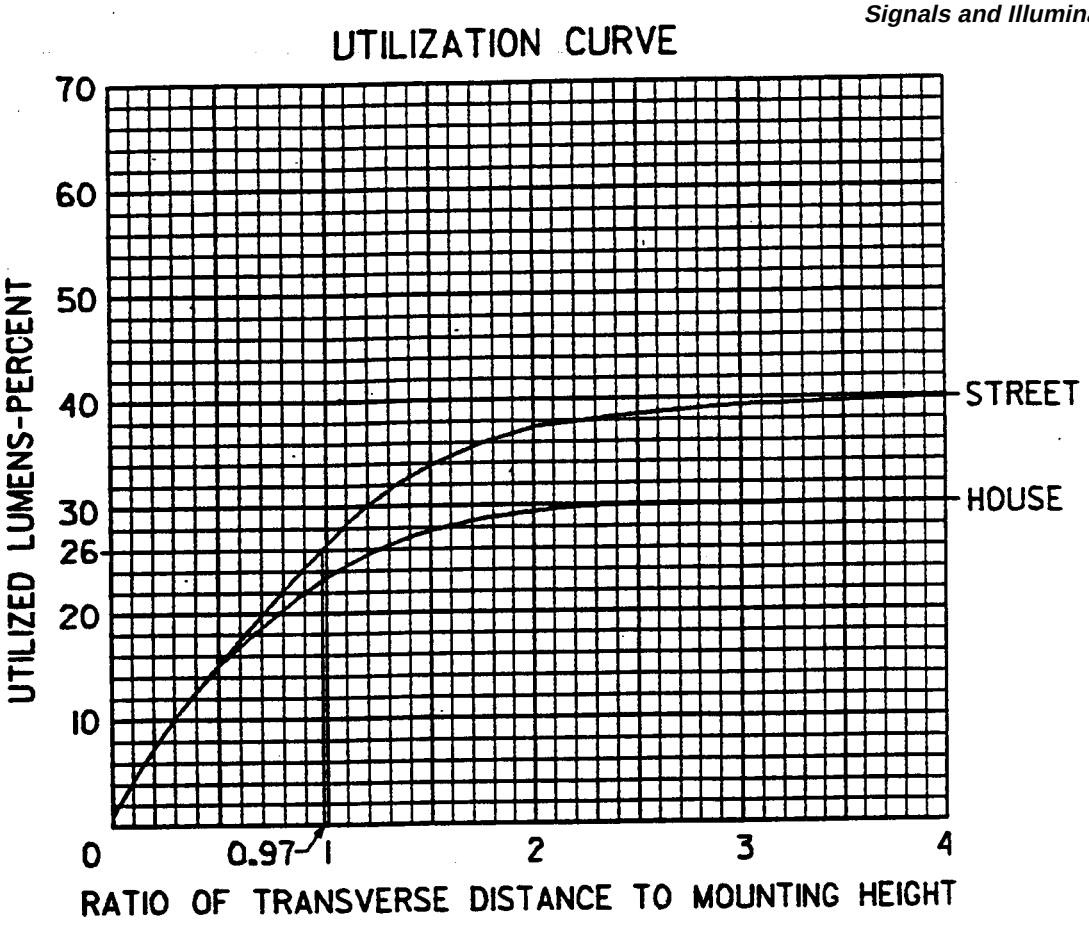
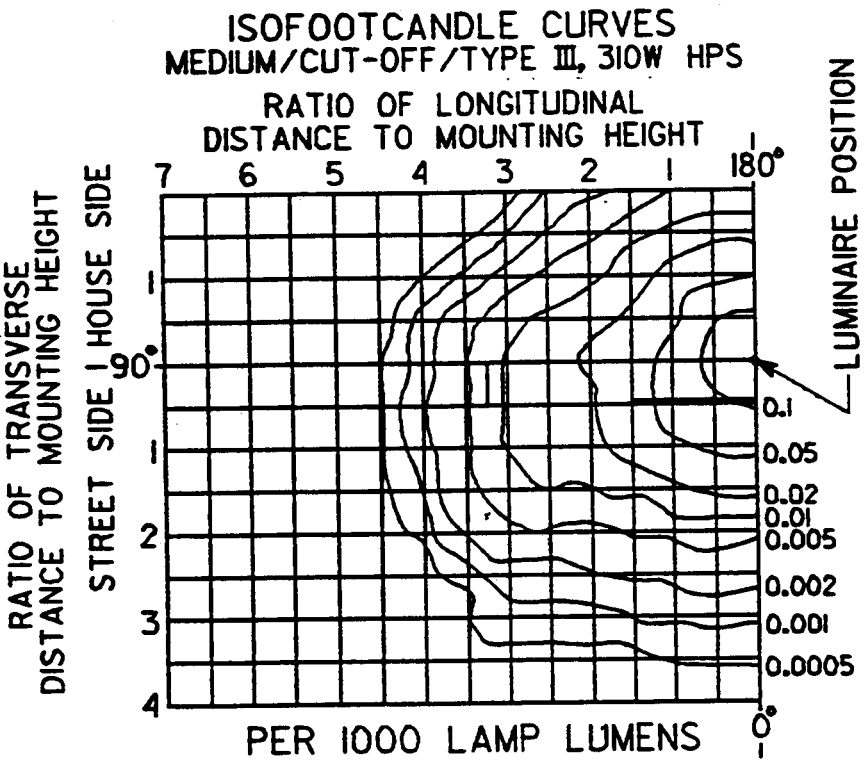

190'
135'
60'
120'
60'
135'
190'
12'
15'
12'
LEFT TURN LANE
FULL WIDTH POINT
AREA TO BE ILLUMINATED
LEFT TURN LANE
FULL WIDTH POINT

Figure 4-7





MOUNTING HEIGHT CORRECTION FACTORS (MHF)
30′ = 1.0
35′ = 0.73
40′ = 0.56
50′ = 0.36

Figure 4-8

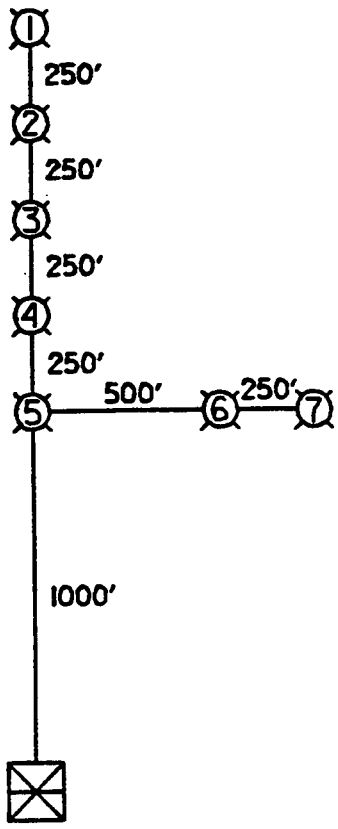


Figure 4-9

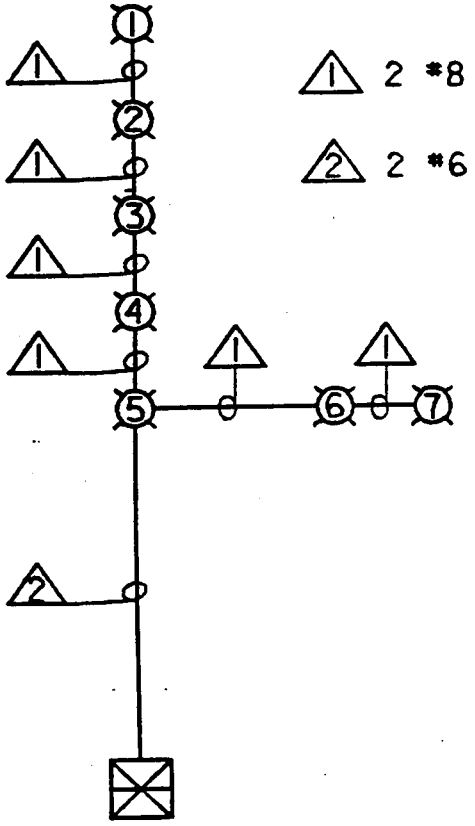


Figure 4-10

Figures 4-9 and 4-10

Line Loss Table					
Load No.	***Load (A) AMPS***	***∑ Loads (A) (AMPS)***	***Distance (D) (FT)***	***A x D (AMP-FT)***	***∑ AD (AMP-FT)***
1	1.55	1.55	250	390	390
2	1.55	3.10	250	780	1170
3	1.55	4.65	250	1,160	2,330
4	1.55	6.20	250	1,550	3,880
5-6-7	4.65	10.85	1,000	10,850	14,730
Service					Say 14, 800
7	1.55	1.55	250	390	390
6	1.55	3.10	500	1,550	1,940
5-4-3-2-1	7.75	10.85	1,000	10,850	12,790
Service					Say 12,800

Figure 4-11

Voltage Drop for Aluminum Conductors

(Aerial Installation only, underground installation prohibited)

Power Factor 100 Percent Single Phase ... 2 Wire

WIRE SIZE AWG	4 / 0	3 / 0	2 / 0	1 / 0	1	2	4	6	8
Amperes Feet	Volts Drop								
500,000	95.9	120.0	151.0	191.0	240.0	303.0	483.0	-	-
400,000	76.8	96.0	121.0	153.0	192.0	241.0	386.0	-	-
300,000	57.6	72.0	90.6	115.0	144.0	182.0	290.0	460.0	-
200,000	38.4	48.0	60.4	76.4	96.0	121.0	193.0	307.0	478.0
100,000	19.2	24.0	30.2	38.2	48.0	60.6	96.6	153.0	239.0
90,000	17.3	21.6	27.2	34.4	43.2	54.6	87.0	138.0	215.0
80,000	15.3	19.2	24.2	30.5	38.4	48.5	77.3	123.0	191.0
70,000	13.4	16.8	21.1	27.6	33.6	42.4	67.6	107.0	167.0
60,000	11.5	14.4	18.1	22.9	28.8	36.4	58.0	92.0	144.0
50,000	9.6	12.0	15.1	19.1	24.0	30.3	48.3	76.7	120.0
40,000	7.7	9.6	12.1	15.3	19.2	24.1	38.6	61.4	95.6
30,000	5.8	7.2	9.1	11.5	14.4	18.2	29.0	46.0	71.7
20,000	3.8	4.9	6.0	7.6	9.6	12.1	19.3	30.7	47.8
10,000	1.9	2.4	3.0	3.8	4.8	6.1	9.7	15.3	23.9
9,000	1.7	2.2	2.7	3.4	4.3	5.5	8.7	13.8	21.5
8,000	1.5	1.9	2.4	3.1	3.8	4.9	7.7	12.3	19.1
7,000	1.3	1.7	2.1	2.8	3.4	4.2	6.8	10.7	16.7
6,000	1.2	1.4	1.8	2.3	2.9	3.6	5.8	9.2	14.4
5,000	1.0	1.2	1.5	1.9	2.4	3.0	4.8	7.7	12.0
4,000	0.7	1.0	1.2	1.5	1.9	2.4	3.9	6.1	9.6
3,000	0.6	0.7	0.9	1.2	1.4	1.8	2.9	4.6	7.2
2,000	0.4	0.5	0.6	0.8	1.0	1.2	1.9	3.1	4.8
1,000	0.2	0.2	0.3	0.4	0.5	0.6	1.0	1.5	2.4
900	0.2	0.2	0.3	0.3	0.4	0.6	0.9	1.4	2.2
800	0.2	0.2	0.2	0.3	0.4	0.5	0.8	1.2	1.9
700	0.1	0.2	0.2	0.3	0.3	0.4	0.7	1.1	1.7
600	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.9	1.4
500	0.1	0.1	0.2	0.2	0.2	0.3	0.5	0.8	1.2
400	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.6	1.0
300	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.7
200	-	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5
100	-	-	-	-	0.1	0.1	0.1	0.2	0.2

Figure 4-12

Voltage Drop for Copper Conductors

(In Conduit or Aerial Installtion)

Power Factor 100 Percent Single Phase ... 2 Wire

WIRE SIZE AWG	4/0	3/0	2/0	1/0	1	2	4	6	8	10	12	14
Ampere Feet	Volts Drop											
500,000	62.4	78.6	98.5	123.0	153.0	194.0	306.0	483.0	-	-	-	-
400,000	50.0	62.9	78.8	98.4	122.0	155.0	244.0	386.0	-	-	-	-
300,000	37.4	47.2	59.1	73.9	91.8	116.0	184.0	290.0	450.0	-	-	-
200,000	25.0	31.4	39.4	49.2	61.2	77.6	122.0	193.0	300.0	480.0	-	-
100,000	12.5	15.7	19.7	24.6	30.6	38.8	61.2	96.6	150.0	240.0	384.0	-
90,000	11.2	14.2	17.7	22.2	27.5	34.9	55.1	87.0	135.0	216.0	345.0	-
80,000	10.0	12.6	15.8	19.7	24.5	31.0	49.0	77.3	120.0	192.0	307.0	487.0
70,000	8.7	11.0	13.8	17.2	21.4	27.2	42.8	67.6	105.0	168.0	269.0	426.0
60,000	7.5	9.4	11.8	14.8	18.4	23.3	36.7	58.0	90.0	144.0	230.0	365.0
50,000	6.2	7.9	9.9	12.3	15.3	19.4	30.6	48.3	74.9	120.0	192.0	304.4
40,000	5.0	6.3	7.9	9.8	12.2	15.5	24.4	38.6	60.0	96.0	154.0	243.0
30,000	3.7	4.7	5.9	7.4	9.2	11.6	18.4	29.0	45.0	72.0	115.0	182.0
20,000	2.5	3.1	3.9	4.9	6.1	7.8	12.2	19.3	30.0	48.0	76.8	122.0
10,000	1.3	1.6	1.9	2.5	3.1	3.9	6.1	9.7	15.0	24.0	38.4	60.8
9,000	1.1	1.4	1.8	2.2	2.8	3.5	5.5	8.7	13.5	21.6	34.5	54.7
8,000	1.0	1.3	1.6	1.9	2.5	3.1	4.9	7.7	12.0	19.2	30.7	48.7
7,000	0.9	1.1	1.4	1.7	2.1	2.7	4.3	6.8	10.5	16.8	26.9	42.6
6,000	0.8	0.9	1.2	1.5	1.8	2.3	3.7	5.8	9.0	14.4	23.0	36.5
5,000	0.6	0.8	1.0	1.2	1.5	1.9	3.1	4.8	7.5	12.0	19.2	30.4
4,000	0.5	0.6	0.8	1.0	1.2	1.5	2.4	3.8	6.0	9.6	15.4	24.3
3,000	0.4	0.5	0.6	0.7	0.9	1.2	1.8	2.9	4.5	7.2	11.5	18.2
2,000	0.3	0.3	0.4	0.5	0.6	0.8	1.2	1.9	3.0	4.8	7.7	12.2
1,000	0.1	0.2	0.2	0.3	0.3	0.4	0.6	1.0	1.5	2.4	3.8	6.1
900	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.9	1.4	2.2	3.5	5.5
800	0.1	0.1	0.2	0.2	0.3	0.3	0.5	0.8	1.2	1.9	3.1	4.9
700	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.7	1.1	1.7	2.7	4.3
600	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.6	0.9	1.4	2.3	3.7
500	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.8	1.2	1.9	3.0
400	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.6	1.0	1.5	2.4
300	-	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.7	1.2	1.8
200	-	-	-	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.8	1.2
100	-	-	-	-	-	-	0.1	0.1	0.2	0.2	0.4	0.6

Figure 4-13

5.1 General

Work zone traffic control is a major aspect of any roadway project. It must be designed from the motorists point of view to provide the motorists with the necessary information to proceed in a safe and orderly manner through a construction or maintenance work zone which may have unexpected roadway conditions, changes in alignment, and temporary roadside obstacles relating to the work activity. The sudden transition to tighter geometrics and the closer proximity of traffic control must be incorporated into the work area in a manner that will minimize driver uncertainty. Effective work zone traffic control is the result of strategy planning, plan development and preparation, and field applications. The goal of any work zone traffic control plan is to allow no reduction in the level of service for traffic.

TCP (Traffic Control Plans) must be included in the PS&E to provide for the orderly movement of vehicular and pedestrian traffic through construction and maintenance areas.

No single standard sequence of signs or other traffic control devices can be used as an inflexible arrangement for all situations due to the variety of roadway and traffic conditions that may be present in a roadway project. A TCP that adequately address the variables motorists will encounter on each specific project are generally preferred

5.2 Principles

Guidelines for TCPs are found in Section VI of the *Manual on Uniform Traffic Control Devices* (MUTCD). Section VI details the fundamental principles of temporary traffic control, including the design and erection of signing, traffic control layout, pavement markings, delineation, lighting, and flagging standards. This chapter sets forth specific principles for designing traffic control.

A. Traffic Control Features

1. **Lane Geometry**. The approach lane width should be equaled or exceeded throughout the connection. The minimum allowable lane width is 10 feet. Design the lane and the lane width reductions prior to any lane shifts within the transition area.

Every effort should be made to maintain an approach speed that matches the design speed of the facility. Where this is not possible, a 10 mph reduced speed advisory, posted with a warning sign which tells the driver of the hazard, is considered maximum per speed change. Design for the highest design speed allowed with respect to curve radii. Curve radii and lane width should not be reduced simultaneously.

The objective is to use lane geometrics that will be clear to the driver and keep the vehicle in the intended lane. Lane lines and construction joints must be treated to provide a smooth flow through the transition area. It may also be necessary to modify or remove other existing traffic control devices.

2. **Physical Barriers**. There are three types of barrier protection used in construction workzones: water-filled barriers, moveable barrier, and concrete barriers. Several items as summarized below must be considered when determining their use.

Water-filled Barriers:

- Short-term projects (zero to three days) for a minimum 100-foot length.

- Do not use in lane transitions until further testing has been done or unless the situation meets with manufacturer's specifications. In the case of an open construction work area, use in conjunction with TMAs.

- Evaluate risk and site conditions and if used, follow manufacturer's guidelines and specifications. Provide chart for Washington State Department of Transportation (WSDOT)

designers to use which shows deflection based on speed of vehicle.

Moveable Barriers:

• High volume traffic conditions with very short-term lane closures.

• Continuous operation over extended period of time, where there is a need to get the lane back in operation at some point in the day. (Could be used in lieu of reduced lane widths or lane reduction, i.e., HOV lane additions; wall next to roadway.)

Temporary Concrete Barriers:

• High speed roadways and areas where there is a high potential for injury to workers (i.e., internal lane work).

• Work zones in "no escape" areas such as tunnels, bridges, lane expansion work, etc.

• Long term, stationary jobs (work that occupies a location more than three days).

• Worker and traveling public exposure considerations such as high speed and volume of traffic, when workers are not protected by vehicle, and in proximity to traffic (concrete slab repair in freeways).

Temporary concrete barriers are normally installed for:

a. The operation of opposing traffic where two-way traffic must be maintained on one roadway of a normally divided highway for an extended period of time.

b. The separation of opposing traffic where a four-lane divided highway transitions to a two-lane, two-way roadway that is being upgraded to become a divided four-lane roadway.

c. Projects where existing safety features such as bridge rail or guardrail are removed.

A 2-foot minimum shy distance is normally provided between the lane edge and the near edge of the separation barrier.

It may be necessary to utilize a portion of the roadway shoulder to provide the roadway width needed for the barrier use.

In areas where temporary concrete barriers cannot be installed, drums, cones, barricades, or vertical panels can be used as an acceptable alternate. However, temporary concrete barriers must be used in the transition areas between multilane and two-lane, two-way roadways, and as described in (c) above.

Exposed ends of concrete barriers must be located outside the clear zone and adequately flared, or have a crashworthy end treatment.

Where drums, cones, etc., are used, consistent patterns of the devices are important to help alleviate driver confusion. Random mixing of these devices at any given location is undesirable.

Where positive barriers are not used throughout a two-way connection, warning lights may be used to mark opposing traffic separation devices.

3. **Illumination**. Full lighting is normally provided through traffic control areas where power is available. Illumination will be placed in accordance with Chapter 840 of the *Design Manual*.

4. **Delineation**. Removable temporary or painted lane lines and edge lines are normally used to delineate the roadway. These pavement markings are preferred for shifts in travelway alignment. Type 2 raised pavement markers and guideposts may be used to accentuate the lane and edge lines in illuminated areas.

In areas where power for illumination is not available, reflective devices must be used to delineate the traveled way for nighttime driving. Guideposts provide eye-level delineation, while Type 2 raised pavement markers provide lane line delineation. Reflective devices are also installed on temporary concrete barriers used in transition areas and/or to separate opposing traffic.

When concrete barrier is used, lateral clearance markers may be installed at the barrier's angle points and at other locations along the barrier where additional delineation may be needed.

Pavement marking arrows are placed in lanes to indicate direction of travel.

Delineation guidelines are shown in Chapter 830 of the *Design Manual*.

5. **Speed Limit or Speed Advisory Signing**. As part of the design process for construction and projects for maintenance, speed reductions are an option requiring a thorough traffic analysis conducted prior to making a change. For emergency and other necessary speed reductions, guidelines are outlined in RCW 47.38.020, WSDOT *Construction Manual*, and Directive D 55-20 "Reduced Speed in Maintenance and Construction Zones."

When a change of speed is necessary, a request for change of speed limit must be submitted to the regional Traffic Control Engineer. When regulatory speed limit reduction or advisory speed signing is necessary, use the letters "XX" to represent the speed limit on the TCP. The actual posted speed indicated on the signs is determined prior to opening the temporary connection.

Some items to consider when reducing speeds in work zones because of worker safety include:

- Post speed limit signs in the work zone. When speed limit is lowered and enforced (monitored by WSP/local law enforcement), ensure work zone is adequately signed.

- Post regulatory speed limit signs for work hours only (identify hours when the limit is in effect if condition for speed limit reduction is not present when work is not being conducted). Remove signs when reduced speed limit is not in affect.

- Use variable message signs more frequently (as a supplement to standard signs) to display either advisory speeds or regulatory speed limits and explain the activity requiring the reduction.

6. **Variable Message Signs**. Per the MUTCD, the primary purpose of VMS in temporary traffic control zones is to advise the driver of unexpected traffic and routing situations. Some typical situations can include the following:

- Where speed of traffic is expected to drop substantially.

- Where significant queuing and delays are expected.

- Where adverse environmental conditions are present.

- Where there are changes in alignment or surface conditions.

- To provide advance notice of ramp, lane, or roadway closures.

- For accident or incident management.

Operators must always be aware of what the arrow board is displaying. Keep displays appropriate and when not needed, turn them off. For instance, when the vehicle or arrow board is placed on the right shoulder, never display the "right arrow" because it would move people off the shoulder/road and be potentially hazardous to drivers/workers. This also applies to "left arrow" usage in the left lane/shoulder placement.

Make messages clear and brief. Keep messages to a maximum of two panels. If special messages are necessary, be consistent with conventional signs and standards normally used. Whenever possible, use the pre-programmed "canned" messages that the VMS is equipped with.

7. **Truck Mounted Attenuators (TMAs).** Items to consider for determining TMA use:

- Speed of Traffic: Higher operating speeds leave less time for response, and impacts at higher speeds generally result in more severe injuries and damage. Therefore, activities on facilities with high speed limits are likely to entail more frequent and more severe incidents than are activities on facilities with low speed limits.

- Type of activity: moving, intermittent, or stationary.

- Duration of project.

- Roadway environment: access controlled vs. non-access controlled, urban vs. rural; and geometrics of roadway. Access controlled facilities frequently give drivers a false sense of security resulting in a lower expectation of interruptions to free traffic flow. Therefore,

activities on freeways may be more likely to become involved in incidents than are activities on non-access controlled facilities where most drivers are operating at a higher state of alertness.

- Traffic volumes which relate directly to worker exposure.

- Exposure to special hazards: Operations involving personnel on foot or located in exposed positions on or within work vehicles (for example, on the platform of a cone pickup truck or in a lift-bucket performing overhead operations) are particularly susceptible to high severity incidents.

- Location of work area: Locations of primary concern are those within the traveled lanes and those within all-weather frequently used shoulders. Activities taking place within the traveled lanes are more likely to become involved in an incident than are shoulder activities.

Some suggested priorities for the application of truck-mounted attenuators are contained in Figure 5-2.

8. **Use of Flaggers.** Flaggers should be employed only when all other methods of traffic control are inadequate to warn and direct traffic. They should be used prudently when signing and other methods cannot work. The use of more innovative, restrictive, traffic control methods such as signs, signals, channelization, etc., should be considered.

Flaggers must be part of an approved Traffic Control Plan and included in the initial design.

On high speed locations, post speed advisory plaques with appropriate warning signs and other innovative traffic control methods, preceding flaggers, to slow the traffic down and to let drivers know there are people ahead.

Flaggers should not be used when there is no intention to control traffic.

Use of flaggers should be consistent between regions/offices/locations for like jobs. For instance, use flaggers for the following conditions:

- *Slow Traffic* – Do not rely solely on flaggers to slow the traffic; supplement with traffic control set up (i.e., simplify traffic flow, restrict traffic flow).

- *Direct Traffic* – The flagger is sometimes necessary to keep traffic from following work vehicles into the work zone. They are responsible for redirecting vehicles back into the flow of traffic safely.

- Stop Traffic.

9. **Use of Enhanced Enforcement.** For use of enforcement, the initial determination should be based on engineering judgment (between maintenance/construction office and district traffic office) considering the type of construction activity, complexity of the traffic control plan, possible speed reduction needs, traffic volumes, nighttime work activity, geometric conditions, associated cost for use of enforcement (cost benefit analysis), and actual traffic problems observed as the work progresses.

Enhanced enforcement in the work zone is recommended to:

- Provide single stationary patrol car for work zones where the work area is less than 1,000 feet in length. (This is the length of the actual work area and excludes the advance warning, taper, and buffer spaces before and after the actual work zone.)

- Provide two or more stationary patrol vehicles for work zones with a work area greater than 1,000 feet in length. (This is the length of the actual work area excluding the advance warning, taper, and buffer spaces before and after the actual work zone). The WSP stated that use of two troopers (one set up at the start of the project who would radio to the trooper at the end of the project) works best for enforcement. One trooper would be available to transport individuals as needed and one trooper would remain to cover the work zone.

B. Pedestrian and Bicycle Safety

Special consideration must be given to the safe accommodation of pedestrians when the work zone encroaches upon a sidewalk, crosswalk, or other areas used by the pedestrian.

Where walkways are closed by construction or maintenance, provide an alternate walkway when feasible. Where it is necessary to divert pedestrians into the parking lane of a street, provide barricades and delineation to separate the pedestrian walkway from the adjacent traffic lane. Pedestrians should not be diverted into a portion of the street used for vehicular traffic. At locations where adjacent alternate walkways cannot be provided, post appropriate signs at the limits of construction and in advance of the closure at the nearest crosswalk or intersection to divert pedestrians across the street.

When overhead work could endanger pedestrians, it may be necessary to install a fixed pedestrian walkway of the fence or canopy type to protect and control pedestrians. In such cases, wood and chain link fencing can be used with warning lights and illumination to warn and guide both pedestrians and motorists.

Fences around a construction area are often necessary. They are constructed in conjunction with a special pedestrian walkway around deep excavations, or when pedestrian access to the job site is not desirable. Installation of such fencing must consider relocation of existing control devices and facilities such as traffic signals, pedestrian signals, traffic signs, and parking meters. Open mesh or other suitable fencing may be needed at intersections to ensure adequate sight distance.

When the work zone encroaches upon a bicycle path, an alternate route should be considered and provided for cyclists where feasible. Bicycles should not normally be directed into the same path used by pedestrians. See Part IX of the MUTCD for details on bicycle traffic control.

Appropriate considerations should be made for traffic control operations that are conducted during the hours of darkness.

C. Types of Work Zones

Anticipated work zones are categorized as: (1) Short-Term Stationary, (2) Continuous Moving, and (3) Long-Term Stationary. Different criteria will apply to the design and planning of the necessary traffic control measures for each of these categories. The following is a generalized description of the characteristics for these three types of work zones.

1. **Short-Term Stationary**. In this type of work zone, situations exist where the work activity is of a very short time, such as, picking up obstacles or inspecting a culvert for debris. For these very short-time work periods, a flashing/rotating beacon in addition to the vehicle's four-way flashers may give drivers, approaching on sections of highway that have no restrictions to sight distance, adequate warning. When the driver's sight distance is obscured by roadside obstacles or the roadway geometry, appropriate advance warning signs, and/or other traffic control devices, are required.

Advance warning signs should be used if the short-term activity is repetitive after moving only a short distance. The signs selected should be appropriate for the operation and the signs should be moved ahead as required in order to maintain an appropriate spacing between the warning signs and the activity. The maximum advisable distance between the advance warning signs and the work activity is one mile.

2. **Continuous Moving**. Continuous moving work areas are activities where work is being done while the equipment is moving either beside or on the traveled lanes of the highway. Included in this category would be striping, roadside spraying, sweeping, and other similar tasks.

The advance warning signs used for moving operations can be mounted on the shoulder or on a shadow vehicle, or both. Shadow vehicles should carry a sign which describes the work ahead and warning lights. If the shadow vehicle must encroach on the traveled lane, a flashing arrow board should be used. Whether the advance warning signs are ground mounted on the roadside shoulder or mounted on shadow vehicles, the signs should be moved ahead as required in order to maintain an appropriate distance between the signs and the work activity. The maximum advisable distance between the advance warning signs and the continually moving work activity is one mile.

On Multi-Lane Highways

The requirements for traffic control during moving operations on multi-lane highways are similar to those for stationary operations. If work vehicles must encroach on the traveled way, a flashing arrow board should be used while working on multi-lane highways.

An advance warning sign which describes the operation should be mounted on a separate or shadow vehicle. The distance between the shadow vehicle and the work vehicle can vary but it should not be so great that traffic has the tendency to pull back into the lane behind the work vehicle where the work is being done.

On Two-Lane Highways

Moving operations on two-lane highways can basically be handled in the same manner as on multi-lane highways with the exception that a flashing arrow board should never be used in the arrow or directional mode. Advance warning signs should be placed on the roadway shoulder or on a shadow vehicle.

3. **Long-Term Stationary**. Traffic control plans developed for long-term stationary operations address each anticipated work situation that encroaches into the traveled lanes or shoulders. The considerations for those traffic control plans should include all traffic entering the work zone from driveways, intersections, ramps, and the main roadway. The plans should also consider how traffic will leave the work area and re-enter the main traffic stream or leave by the way of an intersection or off-ramp.

Detour routes should be given special consideration when directing traffic through urban areas. Local jurisdictions are to be consulted when detoured traffic must use local streets and roads. Also, advise local emergency services, transit and major traffic generators, such as airports and port facilities, about any detour routes.

If ramps, structures or intersections are to be temporarily closed, signs giving advance notice of the closure dates and times are necessary so commuting motorists have the option of selecting alternate routes. The advance notice should be placed a minimum of seven days in advance of the closure.

5.3 Strategy Planning

On construction projects, the design report establishes the parameters for the project's specific needs. At that time such items as lane restrictions and closures, working hours, ramp closures, detour options, and other possibilities should be considered. On low volume rural highways, traffic control procedures may be simple to develop; whereas, traffic control procedures on limited access, multi-lane, high volume routes can be complex and require extensive planning.

From this strategy the Work Zone Traffic Control Plan is developed to identify the type and location of devices (signs, pavement markings, delineation, and flaggers) required to adequately inform the motorists of the situation.

The keys to strategy planning for traffic control on any public roadway, whether rural roads, urban streets, or freeways are the traffic, with considerations for both volume and types of vehicles, and the roadway characteristics. Careful consideration should be given to the effect the traffic control will have on the traffic flow in the work area and on the adjacent roadways. Traffic volumes, along with the speed and classification of vehicles, express the character of the traffic to be encountered. Hourly volumes show the periods of heavy traffic which should be avoided or that will require special treatment. Any restrictions, such as lane closures, and the hours for those restrictions can then be established by the District Traffic Engineer. Special attention should be directed to bicycles and over-sized vehicles and the detouring of those vehicles which may be necessary. Figure 5-1 is a generalized checklist intended to assist in strategic planning and does not necessarily contain all the elements for consideration.

5.4 Plan Preparation

To aid in the preparation of traffic control plans, the Traffic Control Zone is divided into traffic control areas or elements. These individual traffic control areas or elements are used to develop the complete traffic control plan.

A. The Traffic Control Zone

The traffic control zone is the section of street or highway having traffic control devices warning motorists of upcoming conditions or to guide motorists through a construction or maintenance operation. Complex projects may have more than one traffic control zone, one for each operation which may be going on at any one time. The traffic control zone extends from the first advance warning sign to the last sign which indicates the end of the traffic control zone.

The traffic control zone typically consists of five areas (illustrated in Figure 5-2):

1. **Advance Warning Area**. The area of initial warning and communication with the driver.

2. **Transition Area**. The area where lane closure tapers and detours transition traffic to the paths required for travel through or around the work area.

3. **Buffer Area**. The area in advance of the work area which provides a margin of safety for both traffic and the workers.

4. **Work Area**. The area where the operation or activity is taking place.

5. **Termination Area**. The area which provides a short distance for traffic to clear the work area and to return to normal traffic lanes.

B. Plan Development

The work zone traffic control strategies are to be identified early in the design of a project in accordance with Section 8.10 of the *Design Manual*. Plan development begins with a review of the strategy contained in the design report. The supporting data should be checked and any changes in roadway or traffic characteristics should be taken into consideration while preparing the traffic control plan. Site specific traffic control is to be prepared for each work operation on the project unless the roadway and the work operation is repetitive and each location is similar in character.

There are a number of typical traffic control situations stored in a CADD file. These figures are not intended to be standard control plans for any given operation. They are shown only as examples for the situations depicted and are to be used as aids in the development of traffic control plans.

The traffic control devices shown in each area or element of the traffic control zone are available in a "CEL" library for CADD or PC Microstation and can be placed directly on the plan sheets drawn in either one of these systems.

Roadway plan sheets for the project should be used in preparing the traffic control plan. This provides the scale drawing of the roadway section needed to establish proper placement for the signs and devices. Signs and devices can then be placed on the plan sheet in their proper locations by using the CADD. An on-site review of the area is recommended, since many characteristics cannot be determined from a drawing. Give special attention to existing signs which are to be maintained during the work activity that could conflict with or obstruct the view of the traffic control signs. All features and characteristics which will have an effect on the movement of traffic within and adjacent to the traffic control zone should be included in the plan.

The drawings of sample situations included in the CADD file can be used as guidelines for the selection and placement of traffic control devices. The unique characteristics of the specific work area should be individually addressed. Those features may include side roads, driveways, ramps, commercial approaches, bus stops, bridges or areas which have no shoulders (which make temporary sign placement difficult), substandard roadway width, vertical or horizontal alignment which will affect the sight distance of approaching traffic, add-lanes, drop-lanes, railroad crossings, regulatory traffic controls, or any other characteristics which differ from the examples shown in the sample drawings or the standard plans.

The traffic control devices shown on traffic control plans should clearly and concisely give the motorists information needed to adjust their speed and travel direction through the work area. The prepared plans should include any special signs for situations in which standard signs do not give accurate information and should be supplied as an item in the contract. The use of special signs should be kept to a minimum and used only where necessary. The Headquarters Traffic Office should be consulted regarding the use of special signs. Signing should be as specific as possible and always relate to the immediate situation to be encountered.

1. **Work Area**. Although the work area is not the first area of a traffic control zone encountered by a motorist, it is the area that must be considered first when developing traffic control plans. Traffic control requirements for all the other traffic control zone areas are determined by the location of the work area and type of activity taking place within that area. The other areas of traffic control will then be designed to complement the activities and channelization requirements within the work area.

Identifying the work requirements in the work area, such as which lanes need to be closed, exposure to drop-offs, obstacles created, and equipment considerations will indicate what kind of traffic control or warning devices will be required in advance. With an understanding of the kind of work to be done, the designer then works back to the next element of traffic control which is the buffer area.

2. **Buffer Area**. The buffer area is a safety area but it can have other uses. Vehicles hauling material can be parked in the buffer area for short periods of time during the work day. This area should never be used as a material or equipment storage area unless the traffic is protected by a temporary barrier. The buffer area allows the driver to become accustomed to the channelization and to recognize the path of channelization they will follow through the work area.

After the desirable length of the buffer area is determined, by considering the number of vehicles which might be parked there and the channelization which the driver must follow, the next upstream element to be designed is the Transition Area.

3. **Transition Area**. This is the area where normal traffic flow is transitioned or shifted to the path it must follow around or through the work area. No parking of vehicles or storage should be permitted in the transition area. Lane closure and traffic shift taper lengths are established to recommended minimums depending on the speed limit of the highway and width of the traveled lane. Formulas for determining a taper length are found in Part VI of the MUTCD and a chart for determining taper lengths is available in the CADD file.

4. **Advance Warning Area**. Upstream from the transition area is the advance warning area that gives the oncoming driver information about the situation ahead. Messages used on the advance warning signs will depend on the type of transition ahead. Sign messages which give the driver clear and concise information are the most effective.

5. **Termination Area**. The final area of traffic control to be designed is the termination area. This is the area which gives the driver notification that the temporary traffic control situation is ended. Terminal notification is generally accomplished with a sign such as “END CONSTRUCTION” or may be indicated with channelizing devices which indicate the conclusion of the road work situation and a transition back to normal alignment.

6. **Other Considerations**. Planning temporary traffic control area by area has distinct advantages, especially for complex situations. For instance, if a flagger is needed in advance of the work area, the buffer space should be lengthened to provide space for a secondary warning area where warning signs for the flagging situation would be placed. Roadway features can affect the traffic control in many ways. For example, an on-ramp or side road which enters the highway within the proposed transition area will require special treatment. In such situations advance warning signs should be installed on the ramp or side road and the transition area might have to be

relocated to provide a well channelized path for all vehicles.

After locations for the work site traffic control have been established, project signing such as "Road Construction Ahead," "Road Construction Next XX Miles" (if required by the length of the project), and "End Construction" may be added to the plan.

The time of day when most drivers will encounter the traffic control should be considered while preparing the plans. If traffic control will be in effect during nighttime hours, the signs and devices might need to be supplemented with lights to increase perception and credibility. During a nighttime field review, give consideration to the area's background lighting from adjacent facilities and advertising signs which are competing for the driver's recognition.

Warning signs and channelization devices should be positioned in a sequence which can be recognized and respected by the driver. In order to assure proper application, conduct a visualization review of the signs and devices on the plans from a reasonable driver's point of view. Make sure that the messages and devices are appropriate for each situation the reasonable driver will face.

Temporary concrete barriers and barrier end protection are to be shown on the traffic control plans.

5.5 Work Zone Operations

After traffic control plans based on strategy from the design report are reviewed by the District Traffic Engineer, traffic control can be put into operation on the project.

A drive through inspection of the project to compare actual field conditions, prior to installing the traffic control, can identify characteristics which might require adjustments on the traffic control plan. Aspects of the plan that are not appropriate for the field conditions should be revised. Any modifications to the traffic control plan should be documented. Section 1 of the *Construction Manual* gives additional guidelines for effective traffic control.

Immediately after the traffic control is laid out on the roadway, a drive-through inspection should be conducted by the individual designated as the "responsible person" for the project's traffic control to check the installation and position of the signs and other devices; and, to determine if the overall configuration of the traffic control relays clear, concise information to the reasonable motorist. Special attention should be given to the traffic control for overlapping and potentially conflicting traffic control zones. If the traffic control plan is going to remain in effect during the hours of darkness, a drive-through inspection is to be made after sunset to ensure that all devices meet the requirements for reflectorization, proper position, and that the messages are clearly legible. The night review should also ensure work area flood lights and flashing arrow boards do not blind approaching motorists.

Periodic reviews (twice daily is recommended for long-term traffic control) of the traffic control devices should be made to verify the adequacy of the traffic control and to identify any needed revisions. Additional night reviews may be necessary to confirm that the devices are clean and that the reflectorized qualities of the signs and devices are being maintained. These reviews should be documented. Particular attention should be given to motorist's reaction through or around the work area and if there appears to be confusion, additional reviews should be initiated.

The documentation refers to both the location, appropriateness and condition of the signs or devices. Devices are to be replaced as necessary when their appearance and condition dictate. A form to document the traffic control reviews is useful and most districts or project offices have developed their own forms for this purpose. A photo or video inventory of the work zone traffic control may be used to supplement documentation. If photos or video are used, supplemental inventory information should be referenced in the project documentation.

Should an accident occur on the project or within the work area, a review of the traffic control plan and the devices should be made and documented as soon as possible. This review should be done not only to see if the devices are in place as shown on the plan, but also to determine if the

devices are adequate or if the plan should be revised in light of experience. Each field office should have a procedure for analyzing accidents which take place with the limits of the project. Formal communications with the Washington State Patrol must be established at the pre-construction stage and arrangements made to receive copies of accident reports in a timely manner. Occasional contact with WSP for their perception of the traffic flow through the construction area can be beneficial.

If any assistance is desired at any stage of traffic control plan development, consult the District Traffic Engineer's office. Each district traffic engineer's office should have a traffic control specialist to review and provide guidance in the preparation of the traffic control plans for the PS&E, to review traffic control in the field, and to have the authority to approve revisions to the traffic control plans.

Traffic Control Planning and Strategy Check List

Figure 5-1

The following is a list of things to consider when designing construction traffic control and writing traffic control specifications.

Effective traffic control is integrated into the project early in the design and planning process. Traffic control will often determine the staging of a project and will always effect the project cost.

Step 1 — To Close Or Not To Close

Closing the roadway or ramp is the most desirable option. This usually lowers construction costs, decreases contract time and increases worker safety.

Roadway closure can be considered if an alternate route is available. The alternate route must carry the additional traffic volumes and any weight or height restrictions must be considered.

For the traveling public, closing the road for a short time may be less inconvenient than having the road under construction for a long time.

Consider the following while determining if a road should be closed.

1. Is there an available detour route?

2. Can the proposed detour carry the additional traffic?

3. Will businesses or residences be isolated if the road is closed? If so, is there an alternate access point.

If a complete closure is possible, do the following:

- Get the approval of the governing agency to use the proposed detour route.

- Meet with the community and businesses to discuss the roadway closure. Find resolutions to the community's concerns. This may mean leaving the roadway open during construction.

- Determine the maximum number of allowable days of closure and incorporate this into the special provisions.

- Determine if liquidated damages or incentives for early completion should be included in the special provisions.

Step 2 — Strategy Or "How Can This Thing Be Built?"

If the roadway must remain open during construction, determine how to build the project with the least possible impact on traffic.

1. Read any District policy about lane closures or restrictions.

2. Determine the volumes of traffic on the facility and the hours of high volume.

3. Determine if long duration lane closures are needed. Some construction activities that require long closures are:

   Concrete panel replacement

   Bridge overlays

   Major excavations in the roadway

   Large continuous concrete pours

4. Determine the hours of restriction — the hours that lanes and shoulders must be open and clear for traffic.

For a quick analysis, assume the following volumes of vehicles per hour in urban construction areas:

   1400 Veh/hr/lane on controlled access highways

   600 Veh/hr/lane on undivided rural and suburban highways.

   (any signals will lower the capacity)

When determining the hours of restriction, check the local noise ordinances and determine what construction work can be done at night. Loud construction work, such as pile driving, is prohibited at night in many areas. For work that is prohibited from being done at night, provisions

must be made for daytime work. Avoid engine powered generators for VMS or arrow panels in residential areas during night-work, if possible.

Be sure to consider holiday weekends, special events, and regular weekend traffic when determining the hours of restriction.

Also, consider the impact on private or commercial driveways or road access.

5. Determine if there should be liquidated damages in excess of the standard specification amount. Determine if there should be contract incentives for early completion of the project. Determine the amounts of each of these.

6. Study the project and determine how it could be built. Is it possible to build the project within the restrictions stated? Is staging necessary?

Staging a project can be as simple as deciding one lane must be paved at a time. Staging is a suggested way of building the project, not the only way to build a project. By staging the project we determine:

- If our traffic control special provisions are realistic.
- The approximate duration of lane closures.
- If temporary structures and detours are needed.
- If existing utility systems can remain operational during construction, or will they have to be relocated/replaced. (Examples: signals, electrical, drainage)
- If the work areas are adequate. (Examples: storage space for equipment and materials, space to load/unload trucks.)

7. Incorporate into the project design ways of lessening the traffic impact. Some examples are:

A. Use precast concrete or steel girders instead of cast-in-place concrete for structures over main traffic lanes.

B. Specify materials that have faster cure times than conventional materials.

C. Building detours and improving alternate routes in order to carry the increased traffic volumes.

8. Study the project and determine if traffic control or lane closures are needed on adjoining roads. Adjoining roads include frontage roads, intersections, overcrossings, and undercrossings. Some examples are:

- Low clearance because of bridge falsework.
- Long-term lane closures for bridge falsework and substructure excavation.
- Short- and long-term lane closures on frontage roads because of retaining wall construction.
- Placement of "Road Construction Ahead" signs and other warning signs.
- Short-term access closures for paving intersections.

If traffic control is needed on facilities that are not state highways, get permission to use the facility from the governing agency.

9. Determine if there are any areas that construction vehicles cannot safely leave or enter the highway because of limited sight distance. Label these areas on the traffic control plans.

10. Work zone sites exhibiting one or more of the following characteristics should be reviewed for possible enhanced enforcement needs:

- **Sites where "excessive speeding" is observed or could be anticipated within the construction zone.** Based on a study conducted by the California Department of Transportation (Caltrans), "speeding" and speed-related measures were identified as the primary factor affecting work zone safety. While sufficient warning of desirable travel speeds through the work zone may be placed in compliance with the MUTCD, driver acceptance and compliance with the advisory speeds is, in many cases, poor. The use of increased enforcement to "command" adherence to the speed limit has been shown to be effective in maintaining these speeds, as evidenced by the findings in the literature review and interviews with the Caltrans and California Highway Patrol (CHP) personnel.
- **Sites where a reduced speed limit is recommended.** The purpose of a reduced regulatory speed limit within a construction zone

is based on a perceived need, such as reducing travel speeds prior to diverting or detouring traffic, reducing speeds adjacent to unprotected construction workers. For a complete discussion, refer to D 55-20. Based on the findings from the study sources, adherence to reduced speed limits is, in many cases, poor. To ensure adherence to the speed limit, enhanced enforcement may be necessary.

• **Sites having a complex traffic plan or multiple phases to the plan.** Sites with traffic control plans having a number of traffic diversions, lane closures, or traffic restrictions requiring a number of decisions by motorists, particularly in a short distance, are highly susceptible to increased accident activity. Much of this activity may be attributed to motorist's indecision through the area, to differentials in travel speeds through the site, and to the lack of adherence to speed controls in the area. Past efforts have shown that enhanced enforcement, through manual control/flagging or a visible presence, have resulted in smoother, more efficient traffic flow through the work zone. Typically, a lower level of accident activity has resulted.

In addition, construction projects requiring multiple traffic control phases are shown to exhibit greater accident activity than those containing a single phase. Much of this may be attributed to the driver indecision associated with "learning" a new traffic pattern each time a new traffic control phase occurs. As the requirements for the motorists' decision-making increases between subsequent phases, accident activity is also likely to increase. The use of enhanced enforcement to supplement the existing traffic controls has an "alerting" effect, helping motorists recognize field changes and the need for increased safety through the area. Use of enhanced enforcement for a specific time period following traffic control phase changes has been found to be effective.

• **Sites currently exhibiting a "high" accident rate.** Based on research, accident rates during the construction activity typically increase over the pre-construction accident rate. As such, sites exhibiting a "high" accident rate prior to construction (under normal field conditions) may require supplemental traffic control in the form of enhanced enforcement in order to minimize accidents during construction. Oftentimes, site characteristics (horizontal and vertical curvature, geometrics, access) prior to construction are a major factor in the level of pre-construction accident activity. The presence of construction activity may worsen the impact of these characteristics.

• **Sites having high volume conditions and/or limited roadway capacity.** Construction activity resulting in significant reductions in the available roadway capacity can have a dramatic impact on travel speeds and congestion in an area. To aid in maintaining an acceptable level of traffic operations, selective enforcement through the work zone may be desirable. The enforcement may take the form of traffic control/flagging or the visible presence of police officers and vehicles.

• **Sites planned for nighttime construction.** Research has identified safety problems associated with nighttime work in construction areas. Increased distraction to motorists, unique construction lighting needs, reduced perception levels by motorists, sub-optimal traffic controls, as well as excessive travel speeds for the conditions through the work zone contribute to the increased accident activity. The use of enhanced enforcement to "alert" motorists to the need for increased caution and to enforce excessive speeding in the area can be extremely valuable in maintaining safety during nighttime construction activities.

The safety impact associated with nighttime travel through work zones with no construction activity presents a similar problem. Faced with similar field situations as identified above (e.g., reduced perception levels by motorist, sub-optimal traffic controls, excessive speeding), accident activity through the work zone during nighttime conditions has exhibited major increases over nighttime conditions prior to construction, particularly where traffic movement through the area drastically differs from

the "normal" condition. Enhanced enforcement measures have been shown to aid safety in these situations.

• **Sites involving short-term activities.** Past studies have shown that the most critical safety period for work zones is the initial implementation period. Motorists accustomed to driving through an area with no restrictions are forced to adhere to restrictions and "unfamiliar" situations that did not exist previously. Driver indecision is at its peak and driver compliance to regulations varies sharply. As a result, increased accident activity typically results. As drivers become more familiar with the field conditions, the level of accident activity typically is reduced. For short-term project activities (less than one day), little or no adjustment period exists. The accident activity can be quite high, particularly for field situations requiring traffic diversions, detours or lane reductions. Enhanced enforcement for these conditions may be warranted.

• **Sites with restricted geometrics.** Where steep grades, sharp curves, narrow lanes, or other abnormal field conditions exist, enhanced enforcement to supplement the traffic controls per the MUTCD may be necessary. Sites with restricted geometrics can exhibit accident rates higher than normal. The use of enhanced enforcement can reduce the anticipated accident levels.

• **Sites in areas during periods of poor weather conditions.** In areas where weather conditions such as snow, fog, ice, and heavy rain are anticipated to occur during periods of construction activity, enhanced enforcement services during these conditions would be beneficial. The visible presence of enforcement personnel would serve to '"alert" motorists to the potential hazards and need for driver caution through the area. Most construction projects shut down during adverse weather conditions.

• **Sites extending for long distances (>1/2 mile).** Past studies show that in long construction zones, a location within the zone exists in where motorists become "comfortable" with field conditions and are likely to become lax in maintaining safe driving practices. Examples of such practices can include speeding or unsafe lane changes. At this location, there is a need to reinforce safe driving techniques and motorists' caution within the work zone. Proper placement of enhanced enforcement personnel are included in a later portion of this section.

• **Sites requiring incident management.** Where immediate response to freeway incidents (accidents, breakdowns) is desirable in order to reduce traffic delays and additional traffic accidents, the use of enhanced enforcement techniques is beneficial. Numerous studies have documented the benefits associated with improved response times to freeway incidents. These benefits have often led to the implementation of freeway surveillance techniques. On-site availability of enhanced enforcement personnel at areas where quick response is critical (high volume corridors, peak period conditions, limited off-road space) is desirable.

• **Sites where workers are not protected by barrier.** Situations falling under this heading generally include only those work areas where personnel must work within 10 feet of the traveled way. Having an officer on the site can, as stated before, keep the drivers more "alert" and attentive, increasing the safety margin for both the workers and the drivers.

11. Determine traffic control concerns that should be addressed in the special provisions. Examples are:

• Abrupt lane edges

• Installation of sign bridges

• Rolling slow-down operations for short time complete closures of a highway.

5:P3:TM1

Closure/Exposure Condition	Priority*			
		Non-Freeway with Speed Limit		
	Freeway	≥50 mph	40–45 mph	≤35 mph
No Formal Lane Closure				
Shadow Vehicle for Operation Involving Exposed Personnel	1	2	3	4
Shadow Vehicle for Operation Not Involving Exposed Personnel	1	2	3	4
No Formal Shoulder Closure				
Shadow Vehicle for Operation Involving Exposed Personnel	2	3	3	3
Shadow Vehicle for Operation Not Involving Exposed Personnel	2	3	4	5
Formal Lane Closure				
Barrier Vehicle for Operation Involving Exposed Personnel	1	3	4	5
Barrier Vehicle for Condition Involving Significant Hazard	1	3	4	5
Formal Shoulder Closure				
Barrier Vehicle for Operation Involving Exposed Personnel	3	4	5	5
Barrier Vehicle for Condition Involving Significant Hazard	3	4	5	5

*The numerical rank indicates the level of priority assigned to the use of a TMA on an assigned shadow/barrier vehicle. The use of a TMA under the defined conditions is:

1. Very highly recommended.
2. Highly recommended.
3. Recommended
4. Desirable.
5. May be justified on the basis of special conditions encountered on an individual project.

Figure 5-2

Suggested Priorities for the Application of Truck-Mounted Attenuators

CHAPTER 6

TRAFFIC REGULATIONS

6.1 GENERAL

Traffic regulations place specific operating restrictions on the use of the road. RCW 46.61 regulates basic traffic movements on public roadways with regard to maximum speeds, lane use, and assignment of right-of-way, and further requires an official action by the jurisdictional authority where additional regulations are necessary to enhance safety or operating efficiency on state highways, county roads, or city streets. Where city streets are part of state highways without access control, RCW 47.24 requires a concurrent city or town ordinance for speed limits, parking restrictions, stop control, and turn prohibitions within the corporate limits.

For state highways, the State Operations and Maintenance Engineer is delegated authority for approving the following traffic regulations:

- Signal permits for new signal installations.
- Speed limits below the statutory maximums.
- Stop control on state highway approaches to intersections.
- Bicycle prohibitions on limited access highways.
- HOV lane operations.

For state highways, the district administrators are delegated authority for approving the following regulations:

- Work zone speed limits.
- Parking restrictions.
- Turn prohibitions.
- Fishing from bridges prohibitions.
- Pedestrian prohibitions on highways with partial and modified access control.

The guidelines in this chapter identify the data to be compiled and analyzed in preparing traffic regulation submittals. This data helps achieve uniform statewide consideration and interpretation in obtaining approval of proposed regulations.

6.2 SIGNALS

Permits are required for the following types of signals:

- Conventional Traffic Signals
- Emergency Vehicle Signals
- Intersection Control Beacons
- School Signals
- Reversible Lane Control Signals
- Movable Bridge Signals
- Ramp Meter Signals
- Hazard Identification Beacons installed overhead at an intersection.
- Temporary or Portable Signals

Emergency vehicle signals require an annual permit renewal. The renewal is extended by a letter to the permit holder from the district administrator with a copy to the State Traffic Engineer.

See "Traffic Signal Approval Requirements," Section 335 of the *Design Manual*; and, submit the following information with the signal permit application:

A. A vicinity map showing SR/MP location of the intersection. Include traffic volume and lane distribution on a detailed sketch, showing other data relative to the request. If possible, include photos of the intersection and surrounding area.

B. A complete warrant analysis based on actual traffic volumes per MUTCD Section 4C or traffic volume estimate per *Design Manual*, Section 335 if new alignment. Submit a capacity analysis and other justification if volume warrants are not met but a signal appears necessary to resolve operational problems.

C. An accident data summary listing for the last three years. State whether or not the location is scheduled for improvement in the latest priority array. Provide a statement of funding and maintenance responsibilities of local agencies if appropriate.

D. All city/county fire districts and citizen requests along with copies of other pertinent documents and correspondence.

E. The history of previously tried corrective countermeasures.

F. Other supporting data such as proximity to schools, shopping centers, pedestrians traffic, etc., as appropriate.

For locations where signal removal may be considered, refer to FHWA publication titled *FHWA-IP-80-12 "For Removal of Not Needed Traffic Signals*," available through headquarters or district traffic engineering offices.

6.3 SPEED LIMITS

The following information on the existing and proposed speed changes are to be submitted:

A. A strip map showing 85th percentile speed locations with SR/MP. Show locations of pedestrian walkways, schools, etc., on the strip map.

B. If applicable, a brief description on the alignment based on *Design Manual* data. Include geometrics, sight distances, lane widths, shoulders, and other data, such as three year accident data which may affect the request.

C. A copy of any required local agency ordinance. Also include copies of any citizen petitions or other letters regarding the proposed speed zone.

D. State Patrol and/or local police agency concurrences.

Work zone speed limits are approved by the district administrator as prescribed in policy Directive 55-20.

6.4 STOP CONTROL

Requests for stop control on state highway approaches to intersections are supported with the following information:

A. A vicinity map showing SR/MP location of the intersection, together with the total traffic volume and approach distributions.

B. A description of the operational problems, such as limited sight distances, which identify the need for stop control. Include a history of previously tried corrective measures.

C. An accident summary listing for the last three years. State whether or not the location is scheduled for improvement in the latest priority array.

D. A city or town ordinance is required for city streets which are part of state highways. Also includes copies of city, county, and/or citizen requests along with other pertinent documents and correspondence.

E. Copies of State Patrol and/or local police agency correspondence.

6.5 BICYCLE RESTRICTIONS, LIMITED ACCESS HIGHWAYS

Provide the following information to support requests for approval of bicycle regulations:

A. A vicinity map and strip map showing SR/MP to highlight the area involved.

B. Descriptions of operational problems (e.g., restricted shoulder width, interchange configurations) which identify the need for the regulation.

C. Information and descriptions of alternate routes.

D. Copies of documents, correspondence, and citizen requests. Include the recommendation, if any, of WSDOT's Bicycling Advisory Committee.

E. State Patrol concurrence.

6.6 HIGH OCCUPANCY VEHICLE LANES

To support requests for high occupancy vehicle (HOV) lane regulations, provide the following information:

A. A vicinity map identifying the SR/MP limits and showing the locations of ramps within the proposed lane.

B. The proposed minimum number of occupants per vehicle, and engineering documentation to support that minimum. Also show projected lane occupancy rates for both the HOV lane and the adjacent general purpose lanes.

C. Identify the types of vehicles to be allowed in the HOV lane.

D. Copies of design report data if the lane is part of an upcoming construction project.

E. If a shoulder HOV lane is proposed, concurrence from Project Development that the shoulder has adequate structural strength must be included.

6.7 PARKING RESTRICTIONS

The following information is to be provided in support of requests for parking regulations:

A. A detailed strip map of the area showing SR/MP, intersecting streets and driveways, and other on-street or off-street parking alternatives. Photos are helpful.

B. Identify the type of restriction required (e.g., time of day, mid-block location to corner).

C. An analysis of operational problems such as narrow shoulders or limited distances that identify the need for the regulation.

   If the regulation is for approval of angle parking by the Secretary (see RCW 46.61.575), include a traffic engineering analysis regarding safety of operation.

D. When the request is in cooperation with another agency or includes a city street portion of a state highway, obtain copies of all related correspondence and required ordinances.

E. Correspondence or comments regarding adjacent property owners parking requirements and concurrence with the regulation.

F. Copies of State Patrol and/or local police agency concurrences.

Except for angle parking approval by the Secretary, parking restrictions are approved by the district administrator.

Within the Department's park and ride facilities, parking is limited to 48 hours maximum, when posted with signs. This restriction was established by official calendar action by the State Operations and Maintenance Engineer on January 8, 1982.

6.8 TURN PROHIBITIONS

Support requests for turn prohibitions with the following information:

A. A vicinity map and intersection sketch showing the SR/MP location. Also show the traffic volumes with approach lane distributions. Photos are helpful.

B. Descriptions of operational problems, such as lack of adequate gaps or pedestrian movements, that identify the need for the regulation.

C. An accident data summary for the last three years. Consider whether or not the location is scheduled for improvement in the latest priority array.

D. A copy of any required local agency ordinance. Also include copies of any citizen petitions or other correspondence regarding the request.

E. Copies of State Patrol and/or local police agency concurrences.

Turn prohibitions are approved by the district administrator.

6.9 FISHING FROM BRIDGES

The prohibition of fishing from bridges is needed for State Patrol enforcement. Support information is to include:

A. A vicinity map showing the SR/MP of the bridge.

B. Identification of the magnitude of the potentially hazardous condition requiring the prohibition.

C. Copies of State Patrol concurrence.

Prohibitions of fishing from bridges are approved by the district administrator. See WAC 468-30-030 for prohibitions adopted by the Highway Commission prior to transfer of traffic regulation authority to the department.

6.10 PEDESTRIAN PROHIBITIONS

Both RCW 46.61.160 and 47.52.025 authorize the Department to prohibit nonmotorized traffic (e.g., pedestrians) on limited access highways but do not differentiate between the levels of access control. WAC 468-58-050 prohibits pedestrians only on highways with full access control. Thus, traffic regulations are required on highways with partial and modified access control where it is desirable to prohibit pedestrian travel.

Prohibitions are appropriate for highways with partial and modified access control in areas having the appearance of full access control, areas where parallel pedestrian routes are available, and other areas where pedestrians on the shoulder create a potential hazard to themselves or motor vehicles. These types of considerations are documented to support requests for pedestrian prohibitions.

Pedestrian prohibitions on highways with partial and modified access control are approved by the district administrator.

6.11 DOCUMENTATION

Traffic regulation requests are submitted in writing from the district traffic engineer to the district administrator for regulations approved in the district or to the state traffic engineer for regulations requiring headquarters approval. To support the request, the submittal letter should provide a summary of the engineering data and other support data discussed in this chapter.

Traffic regulations, and their approval or denial, are recorded on a Calendar Agenda form (see Figures 6-1 and 6-2). Informational copies of completed agendas are exchanged between the headquarters and district traffic offices and are provided to the Secretary, Assistant Secretary for Highways, headquarters Location-Design Engineer, and State Patrol, and to appropriate local agencies for concurrent regulations required by RCW 47.24.020.

Traffic regulation records are to be permanently retained together with the supporting engineering data and analysis.

OPERATIONS & MAINTENANCE
CALENDAR AGENDA

_____
Date

TO: Operations & Maintenance Engineer

FROM: _____

ITEM: _____

_____

Attached herewith is (are) the above-referenced item(s) for inclusion on your Calendar for approval and/or execution at Calendar Meeting to be held _____
These have been checked by this office.

Figure 6-1

DISTRICT
CALENDAR AGENDA

_____
Date

TO: District Administrator

FROM: _____

ITEM: _____

_____

Attached herewith is (are) the above-referenced item(s) for inclusion on your Calendar for approval and/or execution at Calendar Meeting to be held _____
These have been checked by this office.

Figure 6-2

CHAPTER 7
SPECIAL HIGHWAY USE

7.1 BICYCLING, RUNNING, WALKING, FESTIVAL, AND PARADE EVENTS

RCW 46.61 prescribes the rights and duties for bicycle and pedestrian travel an highways, county roads, and city streets, With regard to bicycle or pedestrian events, traffic control considerations are essential to minimize potential traffic hazards.

Requests to use state highways for bicycle, running, and walking related events require written approval from the district to the event sponsor for events occurring within a district. Headquarters coordinates the required activities for multi-district events, responding to the involved districts and the State Patrol. Approvals may be granted after consideration and documentation of the following guidelines:

A. Event sponsors should be encouraged to use county roads or city streets if at all possible.

B. Where use of a highway without access control is necessary, there should be a detour route available. The detour should be satisfactory for through traffic and appropriately signed by the local jurisdiction(s). Request for state highway use within incorporated areas should receive concurrence from the affected city or town.

C. Sponsor developed traffic control plans must adequately and safely accommodate anticipated traffic conditions. Such plans must be approved by the district traffic engineer. All traffic control devices shall conform to the *Manual on Uniform Traffic Control Devices* (MUTCD).

D. The organizers, or sponsors, will prepay all extraordinary costs for labor and materials provided by the Department of Transportation.

E. The party requesting the state highway use shall notify, at least 48 hours (preferably seven days) in advance of the event, all local fire, ambulance, transit, law enforcement departments, and other service oriented activities that could be affected by the event.

F. The department must be included as an additional insured when highway authorities are not specifically named within event insurance policies.

Department regulations and policies do not allow bicycling, running, or walking related events on limited access highways except when prior approval is granted at locations where no alternate route exists. On an event basis, written approval by the State Operations and Maintenance Engineer is required.

Where a limited access highway has been approved for use, sufficient lane(s) are to be left open in each direction to allow expected volumes of traffic to operate without serious congestion. Appropriate traffic control plans and devices are to be used to enhance safety and to warn event participants and vehicle drivers of each others presence.

Public information efforts should be commensurate with the anticipated traffic impacts. The news media should be encouraged to publicize the event and possible congestion. This can be accomplished by imposing special requirements for public information on the sponsor, by news releases or media contacts by WSDOT personnel, or a combination.

Provide informational copies of correspondence related to such events to the State Traffic Engineer. When these events may affect ferry operations, contact the Marine Transportation Division.

7.2 BANNERS

In accordance with RCW 47.24, district administrators may grant written approval for suspending banners above state highways without access control provided that the organizers or sponsors comply with the following criteria:

A. A vertical clearance of 20 feet to the bottom of the banner must be maintained above the pavement surface.

B. The banner is located so as not to interfere with, or obstruct the view of, any traffic control device.

C. The banner must be removed within three days after the event is over.

D. Banner messages are limited to name, date, and event sponsor.

Failure to comply with these requirements may result in future request denials.

The content of the banner message must comply with the requirements of the Scenic Vistas Act, RCW 47.42. Banners to promote civic events are permitted only if the profits derived from the activity they promote go directly to the support of nonprofit organizations.

7.3 “MEMORIAL” HIGHWAYS/BRIDGES

The Transportation Commission names a highway or bridge by resolution. The Commission normally will only consider naming a facility upon receipt of a resolution by the Washington State Legislature. This practice assures the Commission that: (1) local and state officials jointly agree the facility should be named, (2) there is agreement on which name should be used, and (3) residents along the roadway agree.

Plaques or signs memorializing highways or bridges are typically installed in rest areas, scenic overlooks, recreational areas, or other

appropriate locations with parking, where the installations are not visible to mainline traffic.

For locations where there is no appropriate off-the-main-roadway site, the MUTCD provides that one memorial sign per direction may be erected along the mainline, independent of other guide and directional signing, if not adversely compromising the safety or efficiency of traffic flow.

7.4 ROUTES OF TRAVEL FOR SCHOOL BUSES LONGER THAN 36 FEET 6 INCHES

RCW 46.44.030 prescribes that the routes of school buses longer than 36 feet 6 inches upon or across state highways shall be limited as determined by the Department of Transportation.

Accordingly, all state highways are considered satisfactory as routes for such school buses except:

- Selected highways or segments determined as inappropriate for the operation of the buses, because of inadequate turning radius and/or related operational characteristics.
- Where crossing or left turns onto a multi-lane divided highway utilizes a median 50 feet wide or less and a reasonable alternative route exists.

Upon request by a school district, an exception to B. above may be granted by the district administrator for locations where no reasonable alternate route is available.

Restricted highway segments and intersections on multi-lane highways having a median width of 50 feet or less are shown in Figure 7-1.

7.5 OVERWIDE LOAD RESTRICTIONS

District administrators are authorized to require a pilot car for overwide loads on a location basis after the following criteria are met:

A. Notice of the restrictions are provided to the State Operations and Maintenance Engineer for dissemination to the permit offices.

B. Signs are installed giving notice of restriction, identification of corridor (milepost) limits and duration of restriction. The signs are to be installed at selected locations providing pilot car operators safe on/off access to the highway without conflicting with other traffic.

7.6 INTERPRETIVE SIGNS/MARKERS

Agreement GM 869 between WSDOT and the Washington State Parks and Recreation Commission provides the procedures and guidelines for developing and maintaining interpretive signs and markers which depict the states natural and manmade history.

RESTRICTED ROUTES FOR SCHOOL BUSES LONGER THAN 36 FEET 6 INCHES

DIST	COUNTY	SR	MP TO MP		DESCRIPTION	RESTR. CODE
1	Skagit	SR 20	47.89	54.51	Jct. SR 20 Spur east to Jct. SR 20 and Jct. SR 536	2
1	Skagit	SR 20 Spur	47.89	50.62	Jct. SR 20 Spur west to Jct. Commercial Avenue	2
2	Chelan	SR 97	185.02	199.83	Jct. SR 2 and SR 97 to Jct. SR 2 O'xing	2
3	Gr. Hrbr. Thurston	SR 8	0.00	20.63	Jct. SR 8 and SR 12 to Jct. SR 8 and SR 101	2
3	Gr. Hrbr.	SR 12	0.30	10.00	Jct. East Wishkah St. to Montesano	2
3	Gr. Hrbr. Thurston	SR 12	10.24	21.30	Jct. SR 8 and SR 12 to Jct. SR 8 and SR 101	2
3	Pierce	SR 16	7.28	28.28	East Pav't of Tacoma Narrows Bridge to Jct. SR 160	2
3	Clallam	SR 101	249.63	260.85	Jct. Golf Course Rd./Front St. to Joslin Rd. Vic.	2
3	Mason Thurston	SR 101	349.04	367.41	Jct. on-ramp SR 3 to Jct. SR 101 and SR 5	2
3	Clallam	SR 112	0.00	16.42	East Boundary Makah Indian Res. to Jct. Front St. and SR 112	2
4	Clark	SR 14	0.00	15.40	Jct. SR 5 and SR 14 to Jct. SR 14 and NW 6th Avenue Interchange	2
4	Klickitat	SR 142	13.64	23.61	ECL of Klickitat to Jct. SR 142 and Glenwood Rd.	1
4	Cowlitz	SR 432	3.32	5.15	Longview SCL to Jct. SR 5	2
5	Yakima	SR 12	197.52	199.54	Jct. Mitchell Rd. and SR 12 to Jct. SR 12 and on-ramp Fruitvale Interchange	2
5	Walla Walla	SR 12	335.30	342.38	Jct. SR 125 Spur (W Pine St) east to Weigh Station	2
5	Yakima	SR 97	61.44	74.22	Jct. SR 97 and SR 22 to S. Pav't of Wapato Canal Bridge	2
5	Garfield Columbia	SR 126	0.00	16.63	Jct. SR 12 and SR 126 to Jct. SR 126 and SR 12	1
5	Asotin	SR 129	0.00	17.35	SR 129 at Oregon State Line to SCL of Anatone	1
6	Spokane	SR 2	275.33	283.17	Jct. SR 2 at entrance to Fairchild AFB to Jct. SR 2 and SR 90	2
6	Lincoln	SR 21	68.57	82.27	Jct. SR 21 and SR 174 to Keller Ferry Landing	1
6	Spokane	SR 195	90.77	95.95	Jct. SR 195 and White Rd. to Jct. SR 195 and SR 90	2
6	Spokane	SR 206	7.58	15.39	Jct. SR 206 and Cooper Rd. to end of SR 206	1

CODE 1—TRAVEL PROHIBITED

CODE 2—PERMIT REQUIRED TO CROSS OR TURN LEFT ONTO HIGHWAY

Figure 7-1

7.7 ROAD CLOSURES/RESTRICTIONS

Within the provisions of RCW 47.48, WSDOT may close highways in part or in whole to any class of motor vehicles where such continued use will damage the roadway or would be dangerous to traffic.

Prior to closing or placing such restrictions, the districts must give notice of such action by:

A. Publishing a notice describing the restriction in at least one newspaper issue of general circulation in the county, city, or town where the restricted highway is located.

B. Posting notice describing the restriction in a conspicuous place at the ends of the highway.

The highway may be closed or restricted no sooner than three days after such notice and posting occurs.

The districts may implement emergency closures or restrictions immediately, without prior notice or posting, in accordance with the procedures in the *Maintenance Manual*, M 51-01, which also provides signing guidelines for both nonemergency and emergency closures and restrictions.

7.8 SPECIAL EVENT DIRECTION SIGNING

District administrators may execute agreements for special event directional signing. Special events are activities such as county fairs, conventions, major sports events, and other large scale spectator activities.

The department will fabricate, install, maintain, and remove signs to direct motorists to a special event only after:

A. The agency sponsoring the event submits a written request to the applicable district sufficiently in advance of the event to permit orderly sign fabrication and installation.

B. The event is determined by the district to generate sufficient traffic to create a hazard or congestion at one or more points along a state highway.

C. The agency sponsoring the event provides copies of agreements with local agencies for follow-through directional signing from the state highway to the event.

D. By written agreement, the cost for fabrication, installation, maintenance, and removal of the special event signs, is prepaid by the sponsoring agency.

When requests for special signing are denied, requestors will be provided with an explanatory letter from the district administrator. A copy is to be provided to the State Operations and Maintenance Engineer.

The installation and removal of special event signs on state highways, will be accomplished only by the department.

7.9 SHOULDER DRIVING FOR SLOW VEHICLES

As authorized by RCW 46.61, district administrators may designate segments of two-lane state highways on which drivers of slow-moving vehicles may safely drive onto improved shoulders for the purpose of allowing overtaking vehicles to pass.

The following highway characteristics are required for designating shoulder driving areas:

A. A minimum length of 600 feet of paved shoulder must be available.

B. The structural strength of the paved shoulder is adequate to support driving.

C. The shoulder width is 8 feet or more; except, shoulder widths of 6 to 8 feet may be utilized after review of the following considerations:

- Horizontal and vertical alignment.
- Shoulder slope from pavement edge.
- Absence of passing opportunities.
- Character of traffic (e.g., recreation, logging, or other significant volumes of slow-moving traffic).

Refer to Chapter 2, for signing requirements.

7.10 COMMERCIAL FILMING ON STATE HIGHWAYS

A memorandum of understanding between the department and the Washington State Patrol provides guidance for filming commercial advertisements on state highways. The department, the State Patrol, and the filming company enter into a written agreement (see Figure 7-2) that authorizes the filming and defines the terms and conditions applicable to the particular filming operation.

The agreement letter is to be adjusted considering the guidelines below for each specific filming project and must be completed 10 days prior to filming.

Notice of a proposed filming operation is provided to the department and the State Patrol by the Department of Trade and Economic Development (DTED) Motion Picture Bureau (MPB). The notice enables the department and the State Patrol to investigate operational requirements for the proposed filming.

SAMPLE LETTER AGREEMENT

(Place on DOT letterhead)

(Name and address of filming company)

RE: SR _____

_____
Filming Agreement

Dear:

We conditionally approve (brief description of type of filming operation, its locations and dates). These (type of filming operation) will be approved if you agree to the following terms and conditions:

1. You reimburse the Department of Transportation for all expenses incurred by the Department and by the State Patrol for this (commercial, movie, or other _____). These expenses include our direct labor and equipment charges necessary to provide traffic control and sign installation for your filming.

2. You obtain liability insurance in an amount no less than $1,000,000 and the state shall be specifically named as an insured in the policy with the same company which insures (fill in their name) or by an endorsement to an existing policy.

3. The state, the Department of Transportation, the State Patrol and all officers and employees of the state will not be responsible in any manner for any losses or damages in the performance of work or for inquiry to or death of any persons. You agree to indemnify and hold harmless the state, the Department of Transportation, the State Patrol and all other officers and employees of the state from any and all claims, suites, actions, costs, including reasonable attorney fees, resulting from or arising out of the filming operation.

4. In the event that any party deems it necessary to institute legal action or proceedings to enforce any right or obligation under this AGREEMENT, the parties hereto agree that any such action or proceeding shall be brought in a court of competent jurisdiction situated in Thurston County, Washington.

5. Representatives of your organization are to meet with us and the Washington State Patrol prior to the filming to work out details (time of day, traffic control procedures, and any other safety concerns) for the filming.

6. (Include other provisions as appropriate.)

Please indicate your agreement by countersigning and returning the enclosed copy of this letter agreement. If you have any questions or concerns, please contact (WSDOT contact) of my staff at (telephone number).

Sincerely,

(Name and title of WSDOT official)

(Name and title of WSP official)

_____
SIGNATURE DATE

_____
PRINTED NAME

_____
TITLE AS OFFICER WITH (NAME OF FILMING COMPANY)

cc: DTED/MPB
District or Headquarters
WSP Olympia

Figure 7-2

Initial contact may be by telephone or letter. However, a verbal request is to be followed with a letter identifying the type of filming operation to be undertaken, together with an indication of the state highway location, date, and time desired by the filming company for the filming operation.

Periods and/or locations of high traffic volume or peak traffic flow are to be excluded from any roadway filming because of the potential adverse impact to traffic.

Normally, interstate and other freeway mainline closures will not be permitted. Road or lane closures on other highways will be considered.

A rolling traffic break, which is the intentional slowing of traffic through a moving roadblock provided by the State Patrol, may not be slower than 35 mph on full-access controlled highways.

Operational decisions and/or emergency situations may require immediate reopening of closures or suspension of rolling traffic breaks.

In no event are any vehicles permitted to exceed the regulatory speed limit.

Traffic enforcement shall be provided by the State Patrol, in cooperation with local police agencies where appropriate.

Prior to any filming operation requiring a road or lane closure or the use of a rolling traffic break, an operational meeting scheduled by the DTED/MPB may be required with the department, the State Patrol, and the film company. When appropriate, local authorities and police agencies should attend this meeting.

The purpose of this meeting is to assure that all traffic control plans and related operational procedures are finalized, and that participants are aware of their individual responsibilities prior to filming. Minor filming operations, as determined by the department and the State Patrol, may not require this operational meeting.

Normally, the filming company’s base of operations is to be located outside state highway right of way. Authorization in the agreement is required for locations within the right of way.

Stunts, accidents, or pyrotechnics that may cause damage to state property or that potentially may disrupt or endanger traffic are not allowed. Use of pyrotechnics must meet all federal and state laws and regulations. No liquid or solid materials may be placed on the highway except as approved by the department and identified in the agreement.

All costs for labor, equipment, and supplies incurred by the department and the State Patrol for traffic control and related operational procedures must be prepaid by the filming company.

The filming company must obtain liability insurance of at least one million dollars to cover the state of Washington for any and all

liabilities, including all costs of defense, arising from state highway use for filming operations. A verification certificate must be provided to the department and the state patrol prior to filming.

The filming company must also agree to indemnify and hold the state of Washington harmless against any claims or actions by third parties for injuries or property damage, including all costs of defense, caused by or arising from the filming operation.

The department and the State Patrol may develop additional guidelines and operational procedures relative to individual filming operations on state highway rights of way. These are to be included in the agreement.

Detailed arrangements and development of letter agreements will be administered by each WSDOT district. The State Traffic Engineer's office participates only in requests for multi-district filming operations.

CHAPTER 8
OUTDOOR ADVERTISING CONTROL

8.1 GENERAL

RCW 47.42, the Scenic Vistas Act of 1971, authorizes and directs WSDOT to regulate advertising sign installations adjacent to interstate, federal-aid primary, and scenic highways, in accordance with federal regulations. Advertising sign installations are not regulated adjacent to federal-aid secondary highways. The intent of the Scenic Vistas Act is to enhance the roadside's scenic beauty while assuring that information of specific interest to travelers is presented safely and effectively.

The Department's regulations for on-premise and off-premise advertising sign (billboard) control and motorist information signs (logos) are provided in WAC Chapter 468-66 and 468-70, respectively. Billboards are regulated with regard to size, spacing, land zoning, and message content. Logos are installed where space is available on highway rights of way at interchange and intersection approaches and identify gas, food, lodging, camping and recreational, and tourist-oriented facilities available to travelers.

The Scenic Vistas Act Booklet, M 55-95, combines RCW 47.42, WAC 468-66 and WAC 468-70 under one cover, together with a map of the interstate, federal-aid primary, scenic, and federal-aid secondary highway systems. Because only regulations are contained within the booklet, this chapter provides operational guidelines and technical information to assist in the uniform application of these regulations.

8.2 OUTDOOR ADVERTISING SIGNS

The Scenic Vistas Act defines outdoor advertising signs as any outdoor sign, display, figure, painting, drawing, message, placard, poster, billboard, or other thing which is designed, intended, or used to advertise or inform, any part of the advertising or informative contents of which is visible from any place on the main traveled way of the interstate system or other state highway. The Scenic Vistas Act further provides that signs may be erected only as authorized by statute, departmental regulation, and local agency ordinance or resolution. Thus, advertising signs are lawful only as they meet the explicit requirements of the Scenic Vistas Act.

A. SIGN CLASSIFICATIONS

The eight classifications of outdoor advertising signs authorized and regulated by the Scenic vistas Act are:

Type 1 - Directional or other official signs or notices.

Type 2 - For sale or lease signs advertising the sale or lease of the property on which they are located.

Type 3 - On-premise signs advertising activities conducted on the property on which they are located. “Future site of” or similar wording will be allowed for up to one year as on-premise signing.

Type 4 - Advertising signs within twelve air miles of the advertised activity.

Type 5 - Advertising signs displaying messages of which are designed to give information in the specific interest of the traveling public.

Type 6 - Advertising signs lawfully in existence prior to the enactment of the Scenic Vistas Act.

Type 7 - Public service signs, located on school bus stop shelters.

Type 8 - Temporary agricultural directional signs.

B. SIGNS SUBJECT TO AUTHORIZING PERMITS

Types 4 through 8 require an authorizing permit and annual permit renewals (except type 8, which has a five-year permit renewal) issued by the Department for locations meeting the applicable requirements in Tables 8-1 and 8-2, and Figures 8-1 through 8-4.

C. PERMIT PROCESSING PROCEDURES

Applications (Figure 8-5) are received at headquarters or the districts for Type 4, 5, and 7 signs. Those received at the districts are submitted to headquarters for assignment of a sequential identification number and accounting of permit fees. The effective application date is the day it is received in Olympia.

All applications are then sent to the district with a letter of request for site investigation (Figure 8-6). Within thirty days, the district investigates the proposed sign site for compliance with the zoning and spacing requirements of WAC 468-66. (Figures 8-7 and 8-8 may be used for investigating proposed sign sites.)

For locations meeting the requirements of WAC 468-66, the district assigns an inventory number to each sign face indicated on the application. This number is selected sequentially from a block of inventory numbers provided by headquarters for a particular highway or highway section. Inventory numbers in the 800,000 and 900,000 series are not used for permits because these numbers are reserved for logging physical roadway characteristics, zoning changes, and boundary areas into the sign inventory.

The application package is then returned to headquarters with the district's recommendation for approval or denial noted on the application. When returning applications for approval, the districts are to include a computer update card, Form 224-024 (Figure 8-9), utilizing the applicable codes and symbols identified in Table 8-3.

Applications (Figure 8-10) for Temporary Agricultural Directional signs, Type 8, are to be completed and submitted to the appropriate district office in accordance with WAC 468-66-140.

Permits cannot be issued for any type of outdoor advertising sign by the Department of Transportation in areas where local laws and signing ordinances prohibit their installation. A sign permit issued by the state does not relieve the permit holder from the responsibility of compliance to local rules, regulations, and ordinances pertaining to signs and signing structures (WAC 468-66-140).

An inventory for all Type 4, 5, 6 and 7 signs is maintained in headquarters. Copies of this inventory are sent to the districts periodically or upon request.

D. INVENTORY UPDATING PROCEDURES

Inventory updating is required whenever revisions are made to existing signs. Such revisions include any changes in sign size, sign owner, or sign removal.

Inventory revisions are initiated by letter from the sign owner to the district. District offices are to submit to headquarters a copy of the completed computer update cards using the applicable codes and symbols given in Table 8-3.

E. BILLBOARD RELOCATION

Procedures for relocation of existing billboards will be treated in the same manner as a new billboard. Permit applications and applicable fees will be accompanied by a new signed lease agreement.

Prior to relocation, existing permits would be revoked upon receipt of the relocation application or upon the effective date of the existing lease termination, whichever occurs first.

F. POLITICAL CAMPAIGN SIGNING

Election campaign signs advertise political candidates or issues. These are Type 4 signs and are processed as in the normal manner for any Type 4 sign.

To help ensure that candidates are notified about the requirements of the Scenic Vistas Act, WSDOT and the Attorney General's Office have developed a notification procedure. Approximately one month

prior to the candidate filing period, headquarters furnishes the Secretary of State's office and the county auditors with informational packets to be provided to filing candidates and political issue proponents. An informational packet includes a reminder letter that political campaign signs are regulated by the Scenic Vistas Act, a district boundary map, transportation district addresses and phone numbers, and a map of the interstate, primary, scenic, and secondary state highway systems. The Public Affairs Office, District Administrators, Public Disclosure Commission, and the political parties county chairpersons also receive an informational packet.

For abatement of illegal political campaign signs, refer to Section I.

G. ANNUAL PERMIT RENEWAL

Prior to December 1 of each year, headquarters mails each sign permit holder or company a notification of permit renewal.

Renewal fees paid to the Department of Transportation are credited first to the payment of any annual permit or renewal fee due for any prior year. The Department will not accept payment for the current year renewal until all due and unpaid permit and renewal fees for prior years have been paid.

Renewal fees are due no later than February 1 of each year. For fees not received by the specified date, the Department of Transportation may request the Attorney General to institute legal proceedings for abatement as an illegal sign.

H. OTHER REQUIREMENTS

1. BILLBOARD VISIBILITY

WAC 468-66-010 defines visible as capable of being seen (whether or not legible) without visual aid by a person of normal visual acuity. RCW 47.42.030 prescribes that signs may only be erected as authorized by the Scenic Vistas Act that are visible from the main travelled way. Thus, signs visible only from ramps do not fall within the purview of the Scenic Vistas Act.

Along the primary system, RCW 47.42.062 stipulates that visibility applies only to those signs located within 660 feet of the nearest edge of the right of way. For the interstate system, WAC 468-66-010 stipulates that visibility applies to any sign visible regardless of offset from the edge of the right of way.

In addition, for the purpose of billboard regulation along the interstate system, signs are not considered visible if they are beyond the driver's normal cone of vision.

2. SIGN LIGHTING

For illuminated signs visible from the main-traveled way of the interstate system, primary system, or scenic system the following restrictions apply (WAC 468-66-030):

- No signs are permitted which contain, include, or are illuminated by any flashing, intermittent, or moving light or lights (except those signs giving public service information such as time, date, temperature, weather, or similar information).

- No signs are permitted which use any lighting in any way unless the lights are shielded to prevent beams or rays of light from being directed at any portion of the traveled way of the highway, are of such low intensity or brilliance as not to cause glare or impair the vision of the driver of any motor vehicle, or otherwise interfere with any driver's operation of a motor vehicle.

3. MOVING PARTS

Signs visible from the main-traveled way of the interstate system, primary system, or scenic system, which move or have any animated or moving parts (except signs giving public service information) are prohibited (WAC 468-66-030).

4. ELECTRONIC SIGNS

Electronic signs may be used only to advertise activities or goods and services available on the property on which the signs are located or to present public service information (WAC 468-66-030 and WAC 468-66-050).

Public service information is a message on an electronic sign giving the time, date, temperature, weather, or similar information (WAC 468-66-010). Similar information is an informational message for a nonprofit activity sponsored by a civic or charitable organization (e.g., Kiwanis or Girl Scouts).

For either type of organization, the message emphasis is to be oriented to the activity being sponsored rather than the sales transactions. Messages that include cost information, sales promotion, or bringing in rental income to the property owner are considered outdoor advertising oriented rather than informational and are not acceptable.

5. ADVERTISING ON COMMERCIAL TRAILERS

Advertising on commercial vehicles and trailers in normal business usage is not controlled by the Scenic Vistas Act. This includes times when they are intermittently parked at locations visible to state highways.

Should a commercial vehicle or trailer visible to the state highway remain stationary for an extended period of time, it must then be determined whether or not its intent is for off-premise advertising purposes. An expired vehicle registration is a primary indicator of its use for advertising purposes. Under these circumstances, commercial vehicles or trailers visible to state highways should be abated in the same manner as an illegal advertising sign.

6. Location of On-Premise Signs

Along the interstate system, Type 3 signs which exceed twenty feet in length, width, or height, or one hundred fifty square feet in area may not be located more than fifty feet from the advertised activity (WAC 468-66-030). Type 3 signs less than fifty feet from the advertised activity, or within a commercial or industrial zone adjacent to the primary system (WAC 468-66-110), do not have a size limitation. The fifty foot distance is measured from that building, storage, or other structure or processing area, which is most regularly used and essential to the conduct of the activity (WAC 468-66-070).

Some business activities, such as auto dealerships and recreational vehicle sales, have locations contiguous to the main building structure for persons to view vehicles. These locations are essential to the business activity (i.e., a processing area). Thus, an on-premise sign located within fifty feet of a contiguous vehicle display area complies with WAC 468-66-070. Customer parking lots are not considered part of the advertised activity, except for business combinations (WAC 468-66-070).

7. Real Estate Signs

The Code of Federal Regulations (CFR) for real estate signs (adopted in WAC 468-66-050) requires that the words “for sale” or “for lease” be displayed more conspicuously than the name of the property owner or the property owner’s agent. Discretion is suggested in enforcing this stipulation because of the real estate industry’s trend toward national conglomerates since the writing of the CFR.

“State-of-the-art” real estate signs typically do not include the words “for sale” or “for lease,” especially on signs provided to agencies and agents by national conglomerates. Accordingly, real estate signs may require case-by-case evaluation to determine if they are located on property for sale or lease.

It is appropriate for district outdoor advertising personnel to periodically discuss the Scenic Vistas Act requirements with real estate groups and request voluntary compliance.

I. ABATEMENT

Any sign constructed or maintained contrary to the Scenic Vistas Act is considered illegal. The following steps are utilized to abate illegal signs installed on private property.

1. Contact the sign owner personally. Explain the options available and actions necessary to resolve the problem, and ask for voluntary compliance within thirty days.

2. If there is no action after thirty days or the sign owner cannot be contacted, advise the sign owner and the property owner by certified mail (return receipt requested) concerning the illegal aspects and advise them of the necessary action to be taken within fifteen days for compliance with the law and/or WAC rule. (Refer to RCW 47.42.080.) Based on a case-by-case evaluation, attempt to secure a waiver from the owner allowing removal of the sign(s) by the Department.

3. When there is not abatement after fifteen days from delivering the certified letter, request assistance from the Attorney General's Office by letter from the District Traffic Engineer to the State Traffic Engineer. The State Traffic Engineer then works with the Attorney General for outdoor advertising to secure sign removal.

4. Maintain an inventory of illegal sign activities on the Illegal Sign Action Sheet (Figure 8-11).

   When WSDOT outdoor advertising personnel are contacted by anyone, public or private, regarding matters that have been referred to the Attorney General's Office, advise the caller that the matter has been referred and that information is only available from the Assistant Attorney General. Also provide the caller with the AAG's phone number and address. Notify the Assistant Attorney General immediately after receiving such inquiries.

   Illegal signs placed on highway right-of-way are declared a public nuisance by the Scenic Vistas Act (refer to RCW 47.42.080). The Department is authorized to remove such signs immediately without notice. For uniformity, illegal signs on the right-of-way are to be removed as quickly as practical.

   Signs removed from the right-of-way are to be stored for thirty days (seven days after elections for illegal political campaign signs) or until such time as they interfere with operations at the storage site. If contacted by a sign owner to recover a removed sign, advise the caller where the signs are stored and that they may be recovered if not yet destroyed. During sign destruction, dispose of usable materials in accordance with M 72-91, "Disposal of Personal Property."

Periodic surveillance of the highway right-of-way and adjacent area is maintained by the applicable district offices to assure compliance with the Scenic Vistas Act and accuracy of sign inventories.

J. DISCONTINUED SIGNS

A discontinued sign is defined as a sign absent of advertising content for a period of six months (WAC 468-66-010(6)).

Permits may be revoked for maintaining a discontinued sign, or for not erecting a sign structure with advertising content on a permitted site within six months of the date of permit issue (WAC 468-66-150(1)).

The sign owner, or permit holder, as appropriate, is notified by certified letter (see Figure 8-12) after a period of three months for failure to display advertising content on an existing billboard, or for failure to erect a sign structure with advertising content on a newly permitted site. If after an additional three month period the sign owner or permit holder has not yet complied, a certified letter of permit revocation (see Figure 8-13) may be issued.

8.3 MOTORIST INFORMATION SIGNS

Regulations for motorist information signs are provided in WAC 468-70. Information sign assemblies consist of specific information panels on which individual business signs may be displayed (Figure 8-14).

In addition, the standard size for business signs along conventional roads is 36 inches by 18 inches. It may be appropriate to use freeway/expressway size panels and business signs, based on travel speeds and highway geometrics.

RCW 47.42.046 authorizes the Department to install specific information panels where space is available on interstate highway rights of way, to display individual business signs for gas, food, lodging, and camping activities. RCW 47.42.047 authorizes the Department to install specific information panels where space is available on primary and scenic highway rights of way, to display individual business signs for gas, food, lodging, and recreation (including camping), and tourist-oriented activities. These statutes also require the Department to charge reasonable fees for manufacturing and installing the individual business signs.

A. BUSINESS ELIGIBILITY

The purpose of motorist information signs is to guide travelers, people of all ages, to activities essential to their journey. The purpose is not for use as an advertising medium.

WAC 468-70-050 provides the minimum eligibility criteria that businesses must meet to qualify for the display of individual business signs on specific information panels. The following considerations also apply.

1. GAS ACTIVITIES

WAC 468-70-050(1)(a) specifies the following as minimum eligibility requirements for the display of individual business signs on gas activity specific information panels.

- Provide vehicle services including fuel, oil, tire repair and water.
- Be in continuous operation at least sixteen hours a day, seven days a week.
- Provide restroom facilities, drinking water, and telephone access.

Since inception of the motorist information signing program, there have been significant technological advances in the automobile and tire industries and a gas service trend toward mini-marts. Thus, it is appropriate to display individual business signs for gas activities which have at least gas, oil, and water and meet the other requirements for times of operation, restrooms, drinking water, and telephone access. In addition, the telephone is to be available at no cost for a person to acquire tire repair service, and existing and future gas activities meeting all the requirements of WAC 468-70-050(1)(a) have priority for receiving business signs (i.e., to replace an existing sign if space is limited).

2. FOOD ACTIVITIES

WAC 468-70-050(1)(b) requires that food activities be open at least twelve hours per day and serve breakfast, lunch, and dinner meals. With regard to some types of food activities, such as pizza houses, questions often arise about what constitutes breakfast and what are reasonable morning hours for food activities to open. (It is noted that the name of the activity frequently enables people to anticipate or pre-judge the types of food that are available.)

While it is not possible to develop a regulation to fit all situations, the following guidelines should be followed in determining whether a food activity fulfills the breakfast requirement:

- The food activity must serve what is normally considered to be a breakfast menu. This menu may range from items as simple as a continental breakfast through elaborate breakfast items and may consist of a small or large number of items.

- The breakfast menu should be available for at least several hours during what is normally considered the breakfast period. The Restaurant Association of Washington indicates that breakfasts are normally served from between 6:00 or 7:00 a.m. to 10:00 or 10:30 a.m. Thus, breakfast menus should be available for several hours preceding 10:30 a.m.

3. TOURIST-ORIENTED ACTIVITIES

The minimum eligibility requirements for the display of individual business signs on tourist-oriented directional signs (TODs) are provided in WAC 468-70-050(1)(f). A tourist-oriented business is defined as a lawful cultural, historical, recreational, educational, or entertaining activity or a unique or unusual commercial or nonprofit activity, the major portion of whose income or visitors are derived during its normal business season from motorists not residing in the immediate area of the activity.

The types of businesses not intended for display on TODs are those offering commonly available retail goods and services. Accordingly, the districts should review applying businesses on a case-by-case basis to determine their eligibility for the TODs program. For questionable businesses, the districts are to solicit concurrence from the State Traffic Engineer prior to final approval.

4. MULTIPLE BUSINESS ACTIVITIES

WAC 468-70-050(6) specifies that for businesses qualifying for business sign placement on more than one type of specific information panel, placement will be made on the type of panel, determined by the Department, which best describes the main product or service.

For interstate highways, in rural areas, business signs for a qualifying multi-business activity may be placed on more than one type of specific information panel, provided that a qualifying single business activity, either existing or future, will not be precluded from receiving business signing (e.g., the business may be required to remove the sign to accommodate another business).

B. PROCEDURES

The WSDOT district offices are responsible for processing applications and permits (Figures 8-15 and 8-16), determining business eligibility, and for billing and collecting annual maintenance fees. WAC 468-70-070, permits and procedure, provides general requirements and procedures for:

- The information contents on permit applications. Ineligible business grievance hearings. Fabrication and installation of

business signs. Business sign annual permit, maintenance, and replacement. Revocation and expiration of permits.

- The MIS status worksheet (Figure 8-17) may be used to assist district outdoor advertising personnel with pending applications.

1. SURVEILLANCE

Occasionally, the districts will learn through field review or motorist complaints that participating businesses are not operating within the eligibility requirements. When this occurs, a certified letter is sent to the business (Figure 8-18), followed up with a field review for compliance verification.

Business signs may be removed and permits revoked 30 days after the written notification for businesses not yet complying.

2. PERMIT RENEWAL AND MAINTENANCE FEES

The annual permit renewal and maintenance fees are billed about the first of the calendar year following these procedures:

- In December, the headquarters accounting office generates the billings.
- The accounting office forwards the billings to the districts.
- The districts mail the billings and collect the returned fees.

WAC 468-70-070 requires that permit renewal and maintenance fees be paid by February 1 and also specifies that failure to pay by that date causes the permit to expire. Businesses failing to pay the fees by February 1 are then sent a certified letter (Figure 8-19) requesting the payment.

Business signs may be removed and permits revoked thirty days after the written notification for businesses having not yet paid.

3. BIENNIAL PROGRAM DOCUMENTATION

Motorist Information signing on interstate highways is programmed utilizing Federal Aid funds. The FHWA requires that the following documents be submitted at the end of the biennium to complete the programmed accounts:

- Completion Letter - submitted by the District Program Manager to Headquarters Program Development Office, with a copy to FHWA.

- Materials Certification Letter - submitted by the District Traffic Engineer and sent to Headquarters Program Management Office.

- Cost Documentation - To include work order number, SR number, type of back panel, installation date, location by milepost and direction, and approximate cost.

Consult the District Documentation Engineer if assistance is needed for preparing these documents.

8.4 REST AREA ADVERTISING

Advertising display kiosks have been installed at the following rest areas adjacent to interstate highways.

Gee Creek, I-5 both northbound and southbound, at milepost 12.

Scatter Creek, I-5 both northbound and southbound, at milepost 91.

Sea-Tac, I-5 northbound only, at milepost 141. Silver Lake, I-5 southbound only, at milepost 188.

Smokey Point, I-5 both northbound and southbound, at milepost 207.

Bow Hill, I-5, both northbound and southbound, at milepost 237.

Custer, I-5, both northbound and southbound, at milepost 267.

Indian John, I-90, both eastbound and westbound, at milepost 89.

Sprague Lake, I-90, both eastbound and westbound, at milepost 242.

The headquarters public affairs office administers the rest area advertising program, utilizing a private company to contract for the advertising space leases. Thus, inquiries about this program should be directed to the Public Affairs Office in Olympia.

TYPE 4 THOUGH TYPE 7 SIGNS

REQUIREMENTS	INTERSTATE	PRIMARY CONTROLLED	PRIMARY UNCONTROLLED	SCENIC (3)
	WAC.REF.NO.	WAC.REF.NO	WAC.REF.NO	WAC.REF.NO.
ZONING (1)	486-66-060	486-66-060	486-66-060	486-66-060
SPACING (2)	468-66-080	468-66-110	468-66-110	
SIZE	468-66-030	468-66-110	468-66-110	
COPY	468-66-100	468-66-100	468-66-100	

(1) SEE FIGURE 8-1 FOR ILLUSTRATION AND DEFINITION OF AN UNZONED COMMERCIAL AREA.

(2) SPACING IS APPLICABLE BETWEEN TYPE 4, 5, AND 6 SIGNS. SEE FIGURES 8-2 THROUGH 8-4.

(3) TYPE 4 AND 5 SIGNS ARE NOT ALLOWED ADJACENT TO SCENIC HIGHWAYS. TYPE 6 SIGNS ARE ALLOWED TO BE MAINTAINED BY ANNUAL PERMIT RENEWAL.

TABLE 8-1

REQUIREMENTS	INTERSTATE	PRIMARY CONTROLLED	PRIMARY UNCONTROLLED	SCENIC (3)
	WAC.REF.NO.	WAC.REF.NO.	WAC.REF.NO.	WAC.REF.NO.
ZONING	N/A	468-66-050 (8C)	468-66-050 (8C)	468-66-050 (8C)
SPACING	N/A	468-66-050 (8F)	468-66-050 (8F)	468-66-050 (8F)
SIZE	N/A	468-66-030 (11C)	468-66-030 (11C)	468-66-030 (11C)
COPY	N/A	468-66-100 (4)	468-66-100 (4)	468-66-100 (4)

TABLE 8-2

OUTDOOR ADVERTISING CONTROL
Computer Coding Symbols

Card Code 6901

Column		
	1 - 4	Card Code
	5 - 10	Permit Inventory Number
	11	District Number (if record is to be deleted enter a "D")
	15 - 17	Sign Route
	19 - 22	Control Section
	26 - 29	C.S.M.P. (to nearest hundredth mile)
	32 - 36	S.R.M.P. (to nearest hundredth mile)

Col. 39
L OR R
The sign is on the left or Right side of the highway.

Co. 40-43
DISTANCE FROM C/L
Measured or estimated sign distance from highway.

Col. 44
DIRECTION VISIBLE
The sign is visible:

From direction of inventory	-D
From looking back from direction of inventory	-B
Both directions	-E

Col. 49-51
LENGTH
Sign size to nearest tenth foot.

Col. 52-54
HEIGHT
Sign size to nearest tenth foot.

Col. 55-58
AREA:
Sign area to nearest square foot.

Col. 62
TYPE
Type of sign:
Single Sign - S
Vee sign - V
Double Sign - D
Back to Back - B
*NOTE: If V, D, or B, inventory each sign.

Co. 63
SHAPE
Sign Shape:

Square	-S
Rectangular	-R
Circular	-C
Triangle	-T
Elliptical	-E
Other Shape	-O

Col. 64
CONDITION
Sign Condition:

Excellent	-1
Good	-2
Fair	-3
Poor	-4
Blank or Abandoned	-5
Under construction	-6

Col. 65-67
MATERIAL
Sign Material:

Wood	-W
Metal	-M
Combination Wood and Metal	-C
Painted on Bldg.	-P
Other Materials	-O

Col. 68-71
CITY NUMBER: City of Incorporated place - The City code as outlined in the publication, "U.S. Census of Population and Housing, 1960"

Col. 72-73
SYSTEM TYPE
If more than one type, use type with higher number.

FAP	-01
FAI	-02
Scenic & Recreational	-03
Scenic Areas	-04
National Park	-05
National Monument	-06
National Forest	-07
Public Beach	-08
Public Park	-09
Public Recreational Area	-10

Col. 74-77
ZONING

Industrial zoned	-01
Industrial unzoned	-02
Commercial zoned	-03
Commercial unzoned	-04
Other activities	-05

Col. 78
ILLUMINATION
Is sign illuminated:

Yes	-Y
No	-N

Card Code 6902

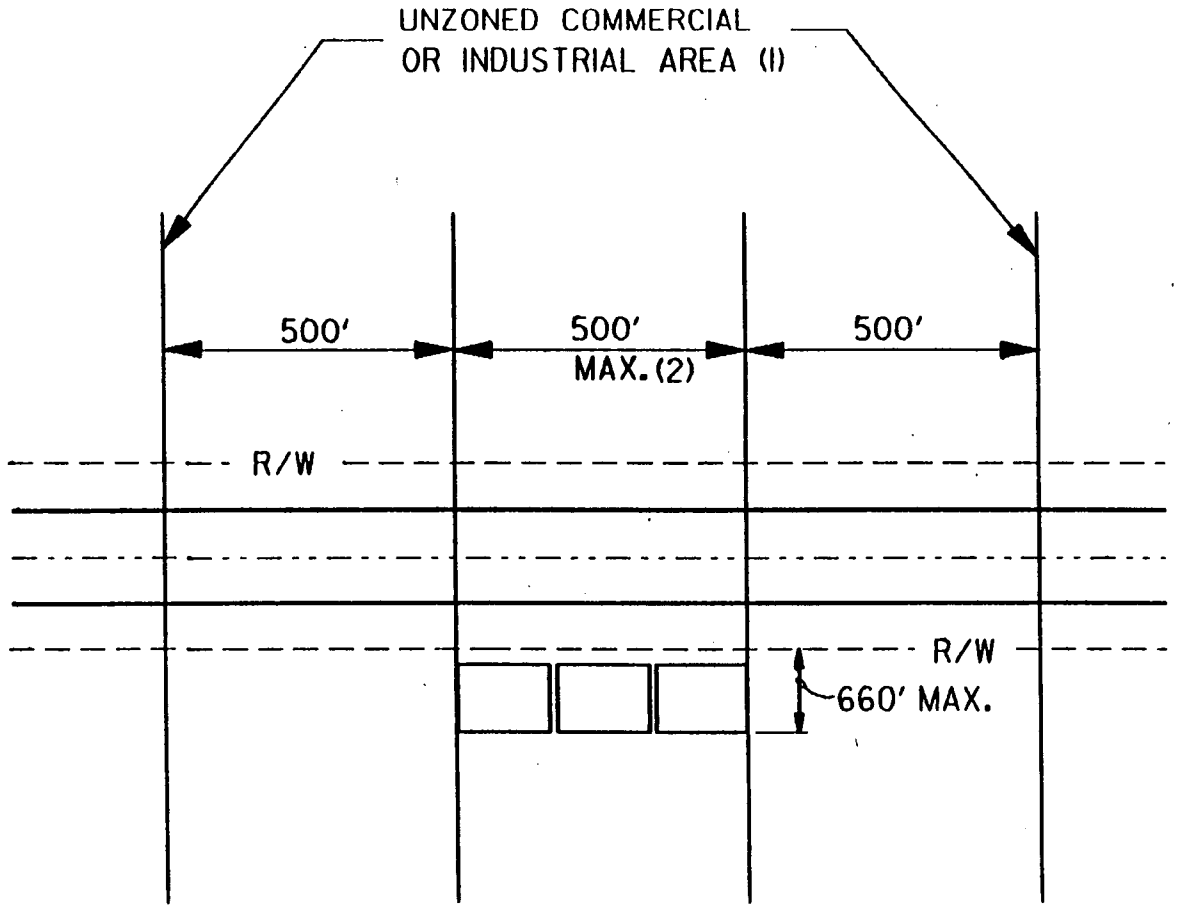
Column		
	1 - 4	Card Code
	5 - 10	Permit Inventory Number
	11 - 58	Sign Message or Remarks
	59	One-Way Couplet Reverse Lane Enter "C"

Card Code 6903

Column		
	1 - 4	Card Code
	5 - 10	Permit Inventory Number
	11 - 30	Sign Owner Name
	31 - 50	Sign Owner Address
	51 - 70	Sign Owner City, State and Zip
	71 - 75	Permit Number (entered at Headquarters)
	76 - 79	Permit Year (entered at Headquarters)
	80	How Removed: C-Compensation, S-State, O-Others

Card Code 6904

Column		
	1 - 4	Card Code
	5 - 10	Permit Inventory Number
	11 - 30	Property Owner Name
	31 - 50	Property Owner Address
	51 - 70	Property Owner City, State and Zip
	78 - 80	Sign Company Number (entered at Headquarters)



UNZONED COMMERCIAL OR INDUSTRIAL AREA

WAC. REF. 468-66-010

Figure 8-1

(1) BILLBOARDS MAY BE PERMITTED WITHIN THIS 1500' MAX. AREA MEASURED PARALLEL TO THE HIGHWAY.

(2) THREE OR MORE SEPARATE AND DISTINCT COMMERCIAL AND/OR INDUSTRIAL ACTIVITIES REQUIRED WITHIN 500', AND MAY BE LOCATED ON EITHER OR BOTH SIDES OF THE HIGHWAY. ACTIVITIES MUST BE WITHIN 660' OF R/W TO QUALIFY.

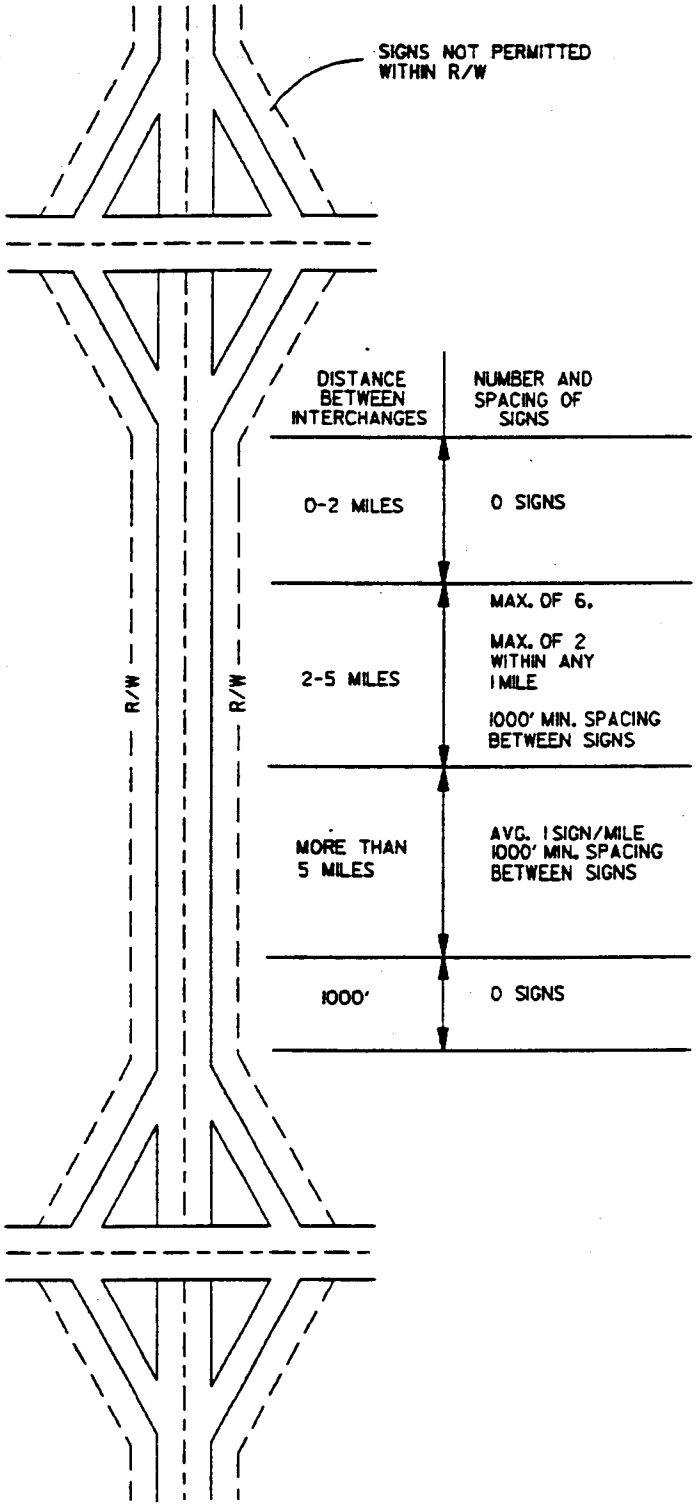
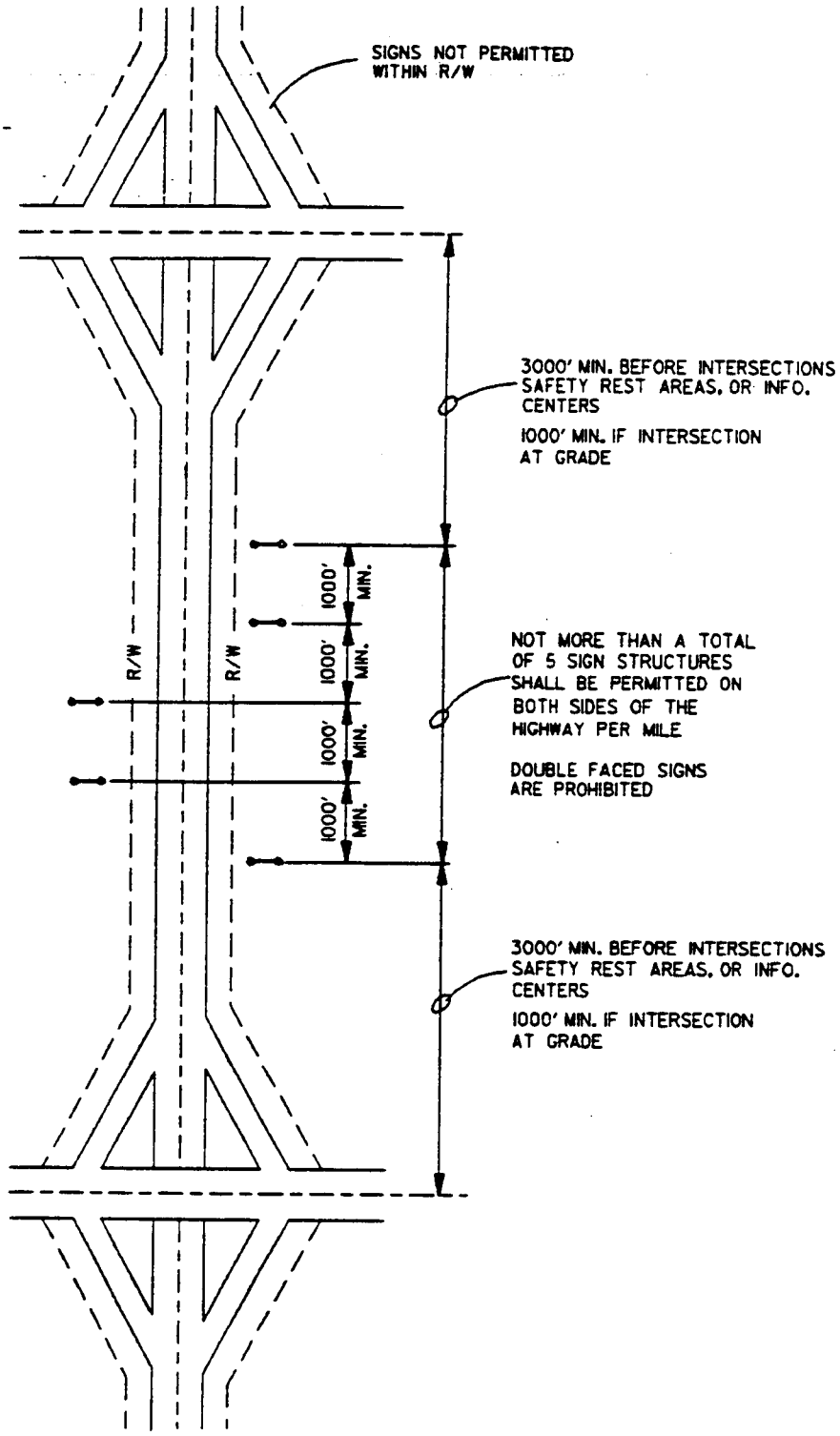

SIGNS NOT PERMITTED WITHIN R/W
DISTANCE BETWEEN INTERCHANGES
NUMBER AND SPACING OF SIGNS
0-2 MILES
0 SIGNS
2-5 MILES
MAX. OF 6.
MAX. OF 2 WITHIN ANY 1 MILE
1000' MIN. SPACING BETWEEN SIGNS
MORE THAN 5 MILES
AVG. 1 SIGN/MILE
1000' MIN. SPACING BETWEEN SIGNS
1000'
0 SIGNS
R/W
R/W
INTERSTATE
(TYPE 4, 5, OR 6)
WAC. REF. 468-66-080

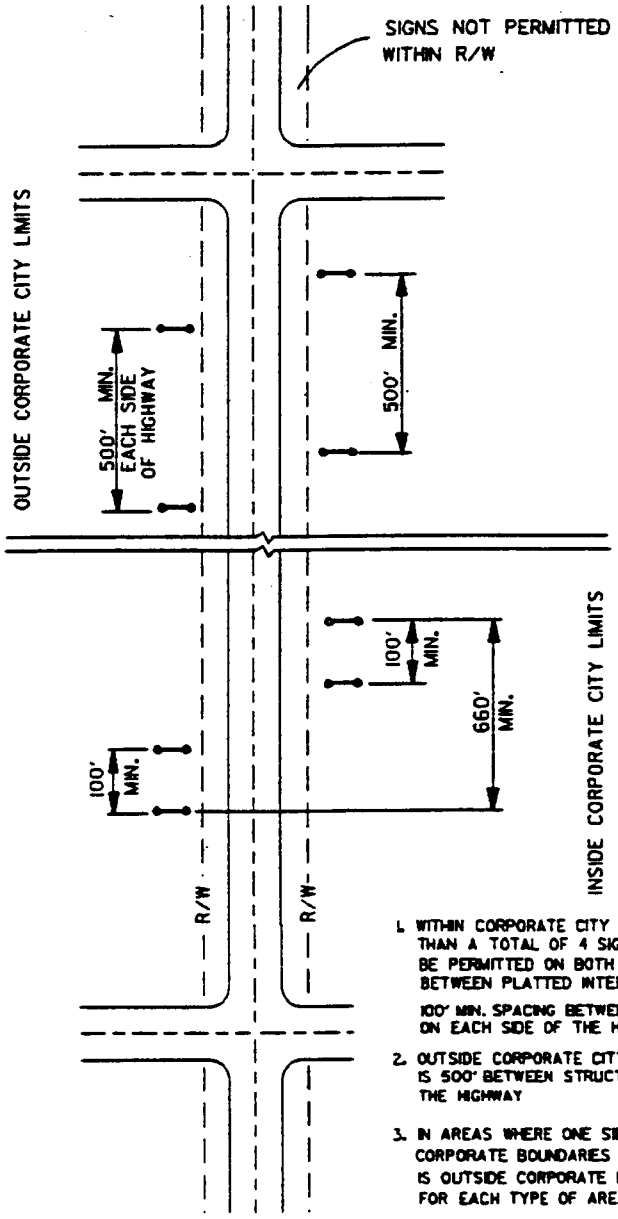
Figure 8-2



PRIMARY/CONTROLLED

(TYPE 4,5, OR 6)
WAC. REF. 468-66-110

Figure 8-3



1. WITHIN CORPORATE CITY LIMITS, NO MORE THAN A TOTAL OF 4 SIGN STRUCTURES SHALL BE PERMITTED ON BOTH SIDES OF THE HIGHWAY BETWEEN PLATTED INTERSECTIONS

   100' MIN. SPACING BETWEEN SIGN STRUCTURES ON EACH SIDE OF THE HIGHWAY

2. OUTSIDE CORPORATE CITY LIMITS, MIN. SPACING IS 500' BETWEEN STRUCTURES ON EACH SIDE OF THE HIGHWAY

3. IN AREAS WHERE ONE SIDE OF A HIGHWAY IS WITHIN CORPORATE BOUNDARIES AND THE OTHER SIDE OF THE HIGHWAY IS OUTSIDE CORPORATE BOUNDARIES, THE SIGN SPACING SHOWN ABOVE FOR EACH TYPE OF AREA IS APPLICABLE

PRIMARY/UNCONTROLLED

(TYPE 4, 5, OR 6)

WAC. REF. 468-66-110(c)

Figure 8-4

Washington State Department of Transportation

PERMIT LOG NUMBER _____

Mail With Proper Fee To:

WASHINGTON STATE
DEPARTMENT OF TRANSPORTATION
Transportation Bldg., Olympia, Washington 98504
ATTENTION - OUTDOOR ADVERTISING CONTROL

DISTRICT NO. _____

APPLICATION - OUTDOOR ADVERTISING SIGN PERMIT

D26-44 (HW)

TYPE OR PRINT Name and Mailing Address of Owner Sign in Space Below

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

PHONE _____

DATE _____ 19____

FOR STATE USE ONLY
DATE RECEIVED OLYMPIA _____
PERMIT NO. YEAR _____
ASSIGNED: _____ TAB NO. _____
DATE PERMIT ISSUED: _____
INVENTORY NO.: _____
CONTROL SECTION: _____
C.S.M.P.: _____
S.R.M.P.: _____

LOCATION OF SIGN:

STATE HIGHWAY NUMBER _____

DIRECTION & DISTANCE FROM CENTER OF NEAREST CROSS RD. OR ST. IN FEET _____

NAME OF NEAREST CROSS RD. OR ST. _____

SIDE OF HIGHWAY N ☐ E ☐ S ☐ W ☐

SIGN FACING N ☐ E ☐ S ☐ W ☐

SIGN DESCRIPTION:

SIZE: _____ Ft. X _____ Ft. TOTAL AREA SQ. FT. _____

SHAPE: ☐ RECTANGULAR ☐ SQUARE ☐ OCTAGONAL ☐ ROUND ☐ OTHER

OTHER: Describe _____

NAME AND ADDRESS OF ACTIVITY BEING ADVERTISED:

Fee: $10.00 Per Sign Face

Make checks or remittance payable to:

Department of Transportation

_____

_____

_____

SIGNATURE _____
Sign Owner

AUTHORIZATION OF OWNER OF LAND ON WHICH SIGN IS ERECTED OR MAINTAINED

NAME _____ ADDRESS _____

CITY _____ STATE _____ ZIP _____

I, the undersigned, have consented to the erection and maintenance of the above described outdoor advertising sign on property which (I own) (I lease) in conformance with Washington Outdoor Advertising control Sign Law (Chapter 62, Laws of 1971) and the Transportation Commission rules and regulations for outdoor advertising control along Interstate, Primary and Scenic routes.

SIGNATURE: _____
Property Owner

A COPY OF LEASE ACCEPTED IN LIEU OF SIGNATURE

This permit shall not be considered to allow a sign to be erected or maintained that is otherwise prohibited by Statute or by the Resolution or Ordinance of any county, city or town of the State of Washington. By issuance of this permit the WSDOT does not warrant that this sign is not prohibited by such resolution or ordinance.

Signature of Department of Transportation employee validates this permit and acknowledges receipt of fee paid.

SIGNATURE: _____
For Department of Transportation

DISTRIBUTION: White - DOT - Olympia
Canary - DOT - Olympia
Pink - District Office
Goldenrod - Return for Your Files

DOT 224-018 Revised 6/88

Figure 8-5

DOT FORM 700-008(X) Revised 8/85 OX A-219

Washington State Department of Transportation

INTRA-DEPARTMENTAL COMMUNICA

DATE: Date

FROM: Bob Howden
PHONE: SCAN 234-1187

SUBJECT: OAC SIGN PERMIT APPLICATION

LOG #

TO: Dist.

We are enclosing _____ sign permit applications from _____ that have been received by this office. Please return to this office no later than _____.

Please investigate the legality of the signs with respect to size, spacing, property owner consent, and highway right of way limits; and furnish your recommendations for approval at your earliest opportunity, together with all necessary information for issuance or reply to the applicant. If you recommend approval of these permits, enclose a completed Highway Form 224-024 (Outdoor Advertising Computer Update Cards).

If there are any discrepancies that arise concerning the permit application, please have them clarified by the sign owner.

BH:blb.660

Figure 8-6

CHECKLIST FOR OUTDOOR ADVERTISING PERMITS
FEDERAL AID PRIMARY SYSTEM

1. NATURE OF SIGN SITE
   - Not in Scenic Area _____ _____
   - In Commercial or Industrial Area _____ _____

2. SIZE
   - Length no larger than 50 ft. _____ _____
   - Height no larger than 25 ft. _____ _____
   - Area no larger than 672 square ft. _____ _____

3. SPACING
   - A. Inside Corporate Boundaries of Cities or Towns (no controlled access)
     - 4 or less structures in 660 feet along centerline (both sides) _____ _____
     - 4 or less structures per platted block (both sides) _____ _____
     - 100 ft. from another sign structure along centerline (both side) _____ _____
   - B. Outside Corporate Boundaries (no controlled access)
     - 500 ft. from another sign structure along centerline (each side) _____ _____
   - C. Limited Access Highways
     - 1000 ft. from another sign along centerline (both side) _____ _____
     - 3000 ft. from center of an Interchange, Safety Rest Area, or Information Center _____
     - 1000 ft. from intersection at grade _____ _____
     - Not double-faced _____ _____
     - 5 or less structures per mile (on both sides) _____ _____

Sign Owner: _____

Property Owner: _____

Milepost _____, SR _____

Location: _____

Comments: _____

_____

_____

_____

_____

Figure 8-7

CHECKLIST FOR OUTDOOR ADVERTISING PERMITS
INTERSTATE SYSTEM

1. **NATURE OF SIGN SITE**
   Not in Scenic Area _____ _____

   In Commercial or Industrial Area _____ _____

2. **SIZE**
   Length no larger than 20 ft. _____ _____

   Height no larger than 20 ft. _____ _____

   Area no larger than 150 square ft. _____ _____

3. **SPACING**

Distance Between Interchanges	Number and Spacing of Signs	
0 - 2 miles	0 - signs	_____
2 - 5 miles	Max. of 6 Max. of 2 within any 1 mile. 1000' min. spacing between signs	_____
More than 5 miles	Avg. 1 sign/mile 1000' min. spacing between signs	_____
Within 1000' of an on ramp	0 signs	_____

Sign Owner: _____

Property Owner: _____

Milepost _____, SR _____

Location: _____

Comments: _____

_____

_____

_____

_____

_____

_____

_____

Figure 8-8

OUTDOOR ADVERTISING COMPUTOR UPDATE CARD

DEPARTMENT OF TRANSPORTATION

CARD CODE	SIGN INVENT. NUMBER	DISTRICT	PLANNING SEQUENCE NUMBER	SIGN ROUTE	FCT. CL.	CONTROL SECTION	CONTROL SECTION SEQUENCE	CONTROL SECTION MILE-POST	SR SEQUENCE	SIGN ROUTE MILE POST	SIGN SEQUENCE	L or R	DISTANCE FROM C/L	DIR. VIS.	DISTANCE FROM R/W	SIGN LENGTH	SIGN HEIGHT	AREA OF SIGN	SIGN AREA CUT OUT	SIGN TYPE	SIGN SHAPE	SIGN COND.	SIGN MAT.	FRAME MAT.	SUPPORT MAT.	CITY NUMBER	SYSTEM - TYPE	LEFT ZONING	RIGHT ZONING	ILLUM.	DIST. FROM ACTIVITY
1 2 3 4	5 6 7 8 9 10	11	12 13 14	15 16 17	18	19 20 21 22	23 24 25	26 27 28 29	30 31	32 33 34 35 36	37 38	39	40 41 42	43	44 45 46 47	48 49 50 51	52 53 54	55 56 57 58	59 60 61	62	63	64	65	66	67	68 69 70 71	72 73	74 75	76	77	78	79 80
6 9 0 1																															

CARD CODE	SIGN INVENT. NUMBER	SIGN MESSAGE (LINE 1)	SIGN MESSAGE (LINE 2)	SIGN MESSAGE (LINE 3)	
1 2 3 4	5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26	27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42	43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58	59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
6 9 0 2					

CARD CODE	SIGN INVENT. NUMBER	SIGN OWNER ADDRESS (LINE 1)	SIGN OWNER ADDRESS (LINE 2)	SIGN OWNER ADDRESS (LINE 3)	PERMIT NUMBER	PERMIT YEAR	
1 2 3 4	5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72 73 74 75	76 77	78 79 80
6 9 0 3							

CARD CODE	SIGN INVENT. NUMBER	PROPERTY OWNER ADDRESS (LINE 1)	PROPERTY OWNER ADDRESS (LINE 2)	PROPERTY OWNER ADDRESS (LINE 3)	FEDERAL INVENT. NO.	SIGN CO. NO.
1 2 3 4	5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77	78 79 80
6 9 0 4						

DOT FORM 224-024 REVISED 5/76

Figure 8-9

PERMIT APPLICATION - TEMPORARY AGRICULTURAL DIRECTIONAL SIGN

PERMIT APPLICATION - ONE OR MORE TEMPORARY SIGNS TO BE ERECTED ON PRIVATE PROPERTY

TYPE OR PRINT Name and Mailing Address of Owner of Sign in Space Below

NAME	
ADDRESS	
CITY STATE ZIP	
DATE	TAX NO.

FOR STATE USE ONLY

DATE RECEIVED _____

APPROVAL DATE _____

EXPIRATION DATE _____

S.R.M.P. _____

LOCATION OF SIGN:

STATE HIGHWAY NUMBER _____

SIDE OF HIGHWAY N ☐ E ☐ S ☐ W ☐
SIGN FACING N ☐ E ☐ S ☐ W ☐

DIRECTION & DISTANCE FROM CENTER OF NEAREST CROSS RD. OR ST. IN FEET _____

SIGN DESCRIPTION:

SIZE: _____Ft. X _____Ft. TOTAL AREA SQ. FT. _____
SHAPE: RECTANGLE ☐ SQUARE ☐ ROUND ☐ OTHER ☐

DESCRIPTION OF SIGN COPY: _____

PRODUCT(S) BEING ADVERTISED: _____

NAME AND ADDRESS OF ACTIVITY BEING ADVERTISED: _____

Fee: $10.00 Per Sign Face

Make checks or remittance payable to:

Department of Transportation

The applicant agrees to remove the sign(s) at the expiration of this temporary permit or cover the sign(s) during the times when no sales occur, and further agrees to provide and maintain follow-through signing if required by the Department of Transportation. In addition, if the sign(s) remain up in non-compliance for longer than days after notification to the applicant thereof, the applicant does hereby authorize the Washington State Department of Transportation and its agents or employees to remove and dispose of such sign(s) and waives all claims for damages against the Washington State Department of Transportation and its agents or employees for such removal and disposal of each sign(s).
This permission and waiver is granted in order to permit the removal of such sign(s) as required by the Washington Highway Advertising Control Act of 1961 as amended by the Scenic Vistas Act of 1971 (Chapter 47.42 RCW).

SIGNATURE _____
Sign Owner

AUTHORIZATION OF OWNER OF LAND ON WHICH SIGN IS ERECTED OR MAINTAINED

NAME _____ *ADDRESS* _____

CITY _____ *STATE* _____ *ZIP* _____

I, the undersigned, have consented to the erection and maintenance of the above described outdoor advertising sign on property which (I own) (I lease) in conformance with Washington Outdoor Advertising Control Act of 1961 as amended by the Scenic Vistas Act of 1971 (Chapter 47.42 RCW) and the Department of Transportation rules and regulations for outdoor advertising control along Interstate, Primary and Scenic routes.

SIGNATURE _____
Property Owner

A COPY OF LEASE ACCEPTED IN LIEU OF SIGNATURE

This permit shall not be considered to allow a sign to be erected or maintained that is otherwise prohibited by Statute or by the Resolution or Ordinance of any county, city or town of the State of Washington.

Signature of Department of Transportation employee validates this permit and acknowledges receipt of fee paid

BY _____
For Department of Transportation

DOT FORM 224-068 (Front) REVISED 11/87

Figure 8-10

OUTDOOR ADVERTISING
ILLEGAL SIGN ACTION SHEET

1. SIGN DESCRIPTION

A. SR _____ M.P. _____ DIST. FROM L/R _____
SIGN OWNERS NAME _____ PROP. OWNERS NAME _____
B. DATE NOTED _____
C. APPROXIMATE SIZE _____
D. MESSAGE _____
E. MAKE LEGAL? YES _____ RCW/WAC _____
NO _____ RCW/WAC _____

COMMENTS: _____
_____

2. DISTRICT ACTION

A. DATE VERBAL CONTACT AND/OR FIRST LETTER
TO SIGN OWNER _____
TO PROPERTY OWNER _____

COMMENTS: _____
_____

B. DATE CERT. LETTER TO SIGN OWNER _____
COPY CERT. LETTER TO HQ TRAFFIC _____

C. FOLLOW-UP
SIGN UP _____
SIGN DOWN _____

COMMENTS: _____
_____

D. CERT. LETTER TO PROPERTY OWNER _____
COPY CERT. LETTER TO HQ TRAFFIC _____

E. FOLLOW-UP
SIGN UP _____
SIGN DOWN _____

F. DATE AG'S HELP REQUESTED BY LETTER TO HQ TRAFFIC _____

3. AG'S ACTION

A. DATE OF LETTER, COPY TO HQ TRAFFIC & DISTRICT OFFICE
TO SIGN OWNER _____
TO PROPERTY OWNER _____

4. DISTRICT ACTION

A. FOLLOW-UP AFTER AG'S LETTER(S)
SIGN UP _____
SIGN DOWN _____

COMMENTS: _____
_____
_____

B. SIGN STILL UP, LETTER TO OLYMPIA HQ TRAFFIC

5. AG'S ACTION

A. INSTITUTE REMOVAL LEGAL PROCEEDINGS.

Figure 8-11

Washington State
Department of Transportation
Transportation Building KF-01
Olympia, Washington 98504-5201
(206) 753-6005

Duane Berentson
Secretary of Transportation

DISCONTINUED SIGNS
THREE MONTH LETTER

CERTIFIED

Dear :

The Washington Administration Code (WAC), Chapter 468-66 Outdoor Advertising Control, requires that permitted *(billboards may be absent of advertising content for no longer than six months* or *billboard sites must have a billboard erected with advertising content within six months from the date of permit issue).*

You *(maintain a billboard* or *were issued a permit for a billboard site on* date), located along SR _____ at milepost _____, but *(have not affixed advertising copy to the sign structure for the last three months or have not erected a sign structure with advertising copy).* Please be advised that failure to *(affix advertising copy* or *erect a sign structure with advertising copy)* by (date) will result in revocation of your permit without refund.

For your information, I have enclosed a copy of the applicable WAC regulations. If you have any questions, please contact *(Mr. or Ms.)* (District OAC Representative) at _____.

Sincerely,

District Traffic Engineer

DTE:
Enclosure

Figure 8-12

Washington State Department of Transportation
Transportation Building KF-01
Olympia, Washington 98504-5201
(206) 753-6005

Duane Berentson
Secretary of Transportation

DISCONTINUED SIGNS
PERMIT REVOCATION LETTER

CERTIFIED

Dear :

The Washington Administration Code (WAC), Chapter 468-66 Outdoor Advertising Control, requires that permitted *(billboards may be absent of advertising content for no longer than six months* or *billboard sites must have a billboard erected with advertising content within six months from the date of permit issuance).*

With regard to the certified letter, dated (date of three month letter) you received from this office about the *(billboard* or *billboard site)* located along SR_____ at milepost_____, please be advised that your permit is hereby revoked in accordance with WAC 468-66-150.

For your information, I have enclosed a copy of the applicable WAC regulations. If you have any questions, please contact *(Mr. or Ms.)* (District OAC Representatives) at _____.

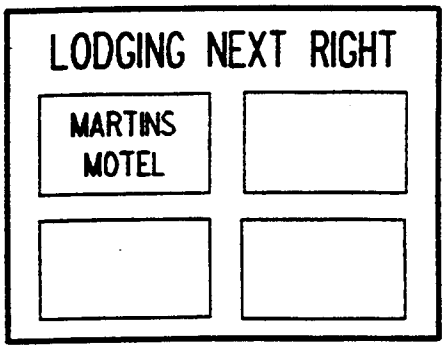
Sincerely,

District Traffic Engineer

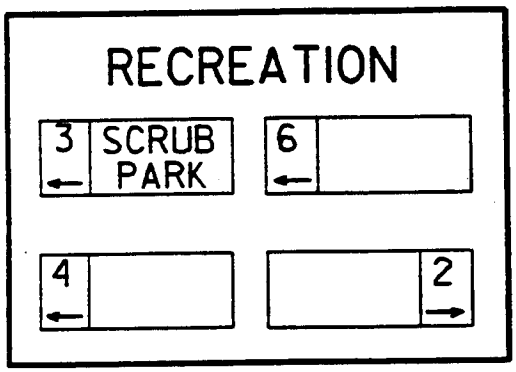
DTE:
Enclosure

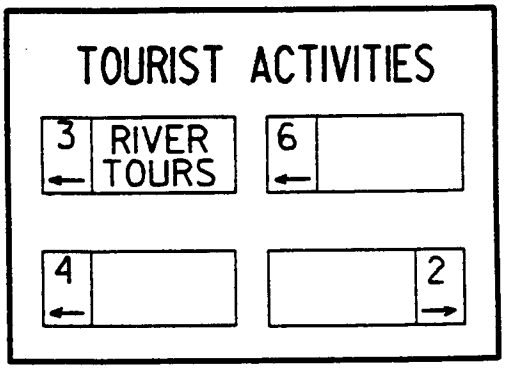
Figure 8-13

MOTORIST INFORMATION SIGN, INTERCHANGES



MOTORIST INFORMATION SIGN/TOURIST-ORIENTED DIRECTIONAL SIGN, INTERSECTIONS





NOTE: FOR SIGN INSTALLATION AND FABRICATION DETAILS SEE THE SCENIC VISTAS ACT BOOKLET, M 55-95, APPENDICES

Figure 8-14

Washington State Department of Transportation

PERMIT FOR MOTORIST INFORMATION SIGNING

District _____ Permit No. _____
1

In accordance with RCW 47.42 and Washington Administrative Code 468.70, and subject to all the terms, conditions and provisions written below or on any part of this form, PERMISSION IS HEREBY GRANTED TO _____

_____

for the privilege to have motorist information signing installed by the Department of Transportation. Such signing is to be installed on SR _____ , at an intersection or interchange located at State Route Milepost _____ .

DATED AT _____ this _____ day of _____ 19 _____

SECRETARY OF TRANSPORTATION

Payee No. _____
8 11

By _____

PRINT OR TYPE

Billing Name _____

I, the undersigned, hereby accept this permit subject to the terms and conditions as herein set forth.

_____

and address _____

Dated this _____ day of _____ 19_____

_____
SIGNATURE

GENERAL PROVISIONS

This permit is expressly conditioned and subject to Permittees:

1. Agreement to limit the height of any on-premise signs to no greater than 15 feet higher than the roof of the main building of the business; and,
2. Agreement to provide for and maintain adequate follow through signing; and,
3. Payment of a manufacturing and installation fee of _____ ; and,
4. Agreement to and payment of an annual maintenance fee, first payable on January 1, 19 _____ (and no later than February 1st) and every January 1st thereafter while signing is maintained, and,
5. Acknowledgement that the annual maintenance fee is set at _____ , subject to change by the Department of Transportation; and
6. Acknowledgement that assignment of this permit shall be effective only upon receipt of assignments by the Department of Transportation and,
7. Acknowledgement that this permit may be revoked for failure to provide any of these general provisions or for failure to provide the services and/or facilities required by section 468.70.050 and 468-70-070 of the Washington Administrative Code.

DOT FORM 224-042 REVISED 4/83

Figure 8-15

INSTRUCTIONS: Payment of fees to cover the expenses of manufacturing and installation, as shown on the front of this form, are due at this time. Complete and sign this form and send to the appropriate District Administrator along with payment of fees. District addresses are shown below.

DISTRICT NO.1
Dist. Administrator
15325 SE 30th Place
Bellevue, WA 98007-6597

DISTRICT NO.2
Dist. Administrator
1551 North Wenatchee Avenue
PO Box 98
Wenatchee WA 98801-1156

DISTRICT NO.3
Dist. Administrator
5720 Capitol Boulevard, KT-11
PO Box 9327
Olympia, WA 98507-9327

DISTRICT NO.4
Dist. Administrator
4200 Main Street, S-15
PO Box 1709
Vancouver, WA 98668-1709

DISTRICT NO. 5
2809 Rudkin Road
Union Gap
PO Box 12560
Yakima, WA 98909-2560

DISTRICT NO. 6
North 2714 Mayfair Street
PO Box 5299
Spokane, WA 99205-0299

Washington State Department of Transportation

PERMIT APPLICATION - ONE OR MORE BUSINESS SIGNS

PERMIT APPLICATION - ONE OR MORE BUSINESS SIGNS TO BE AFFIXED TO INFORMATION PANELS

For Department Use ONLY									
DISTRICT 1	***APPLICATION/PERMIT NO. 7								
State Rt. Mile Post 8 12			*Type of Highway 13	**Type of Business 14					
MANUFACTURING AND/OR INSTALLATION FEE						ANNUAL MAINTENANCE FEE			
No. of Mainline Signs 15		No. of Ramp Signs 22				Mainline Signs		Ramp Signs	
Standard Signs Mfg. and Install Fee	Mainline 16	16	21			29	34	35	40
	Ramp 23		28						
Custom Signs Installation Fee ONLY at $80.00 Each	Mainline 16		21			$10.00			
	Ramp 23		28			29	34		

BUSINESS NAME _____ (41 – 79)

LOCATION OF BUSINESS _____

Interchange or Intersection Name or Number and Description _____

_____

Fees in the amount of $75 are paid herewith to defray the basic administrative expense incident to the processing of this application according to Washington Administrative Code 468.70.070.

THIS APPLICATION IS SUBJECT TO RCW 47.42. WASHINGTON ADMINISTRATIVE CODE 468.70 AND PROVISIONS CONTAINED ON THE BACK HEREOF.

Applicant indicates willingness to enter formal agreement to limit the height of any on-premise signs to no greater than 15 feet higher than the roof of the main building of the business. (Applicable to businesses located within one mile of the interchange or intersection, and further applicable to on-premise signs visible from interstate highways. RCW 47.42.046 and RCW 47.42.047). Applicant further agrees to provide for and maintain follow through signing if required by the Department. Applicant expressly understands that failure to limit the height of the on-premise signs or to provide for or maintain follow through signing if required or to pay annual maintenance fees may result in the revocation of business signing.

Dated this _____ day of _____, 19 ____.

Address _____ _____ (Print Name)

_____ _____ (Signature)

Phone No. _____ _____ (Title)

EXPLANATION OF LEGENDS

*TYPE OF HIGHWAY
1 - INTERSTATE
2 - F.A. PRIMARY
3 - SCENIC

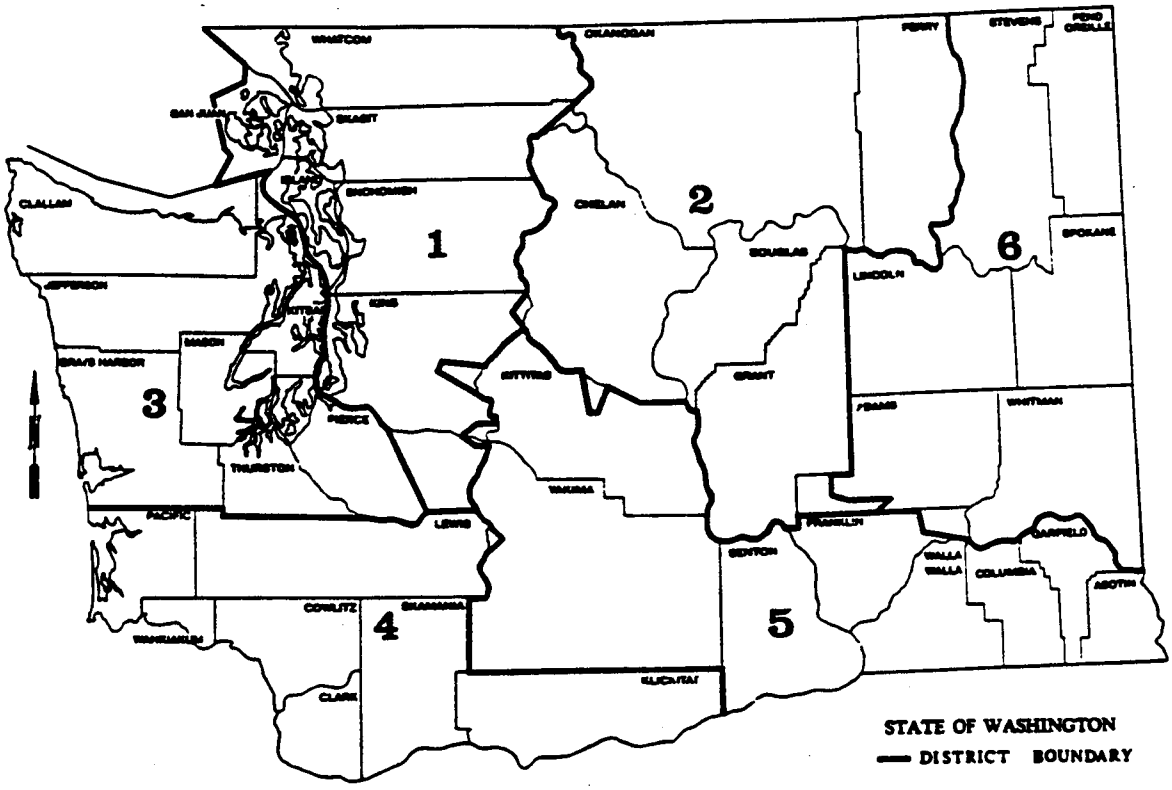
**TYPE OF BUSINESS
1 - GAS
2 - FOOD
3 - LODGING
4 - CAMPING
5 - RECREATION
6 - TOD

***APPLICATION/PERMIT NUMBER
1ST DIGIT - DISTRICT NUMBER
2ND, 3RD & 4TH DIGIT - STATE ROUTE NO.
5TH, 6TH & 7TH DIGIT - SEQUENCE NO.

DOT FORM 224-041 (FRONT) REVISED 7/87

Figure 8-16

INSTRUCTIONS: Complete and sign this form and mail with a processing fee of $75.00 to the Department of Transportation. Send a picture, drawing or sketch of the business signs you desire along with this application. The Department will have final approval on any design of a business sign. If a permit is approved, a copy will be sent to you for signing and return. At that time we will request additional payment of fees to cover the expenses of manufacturing and installation. Mail this application to the appropriate District Administrator. The District Addresses are shown on this application form.



DISTRICT NO.1
Dist. Administrator
15325 SE 30th Place
Bellevue, WA 98007-6597

DISTRICT NO.2
Dist. Administrator
1551 North Wenatchee Avenue
PO Box 98
Wenatchee WA 98801-1156

DISTRICT NO.3
Dist. Administrator
5720 Capitol Boulevard, KT-11
PO Box 9327
Olympia, WA 98507-9327

DISTRICT NO.4
Dist. Administrator
4200 Main Street, S-15
PO Box 1709
Vancouver, WA 98668-1709

DISTRICT NO. 5
2809 Rudkin Road
Union Gap
PO Box 12560
Yakima, WA 98909-2560

DISTRICT NO. 6
North 2714 Mayfair Street
PO Box 5299
Spokane, WA 99205-0299

DOT FORM 224-041 (BACK)
REVISED 7/87

MIS STATUS WORKSHEET

SR
MP
PERMIT #

Business type and name:

Date and summary of initial contact:

Information package and application sent:

Completed application and application fees received:

Review business eligibility and highway location (order backboards if needed):

Approved (backboard order date):

Denied (sent letter giving reasons and refund fees):

Issue sign specifications, information sheet:

Inspect logo signs, issue permit, collect installation fees:

Install signs:

Telephone contacts:

Figure 8-17

Washington State
Department of Transportation
Transportation Building KF-01
Olympia, Washington 98504-5201
(206) 753-6005

Duane Berentson
Secretary of Transportation

Certified Mail

Dear Sir:

The Department of Transportation periodically makes a field review of motorist information signing and ensures that each business is providing services for (*the required number of hours per day).*

This review indicated that (*your restaurant is not open for business twelve hours a day, seven days a week).*

Item 7 of the motorist information signing permit, which you signed, acknowledges that your permit may be revoked for failure to provide the services required by Section 468-70-050 of the Washington Administrative Code. Accordingly, we will require written assurance within 15 days that your facility will *(be open the required number of hours).*

Should you choose not to respond, we will assume that you no longer wish to participate in the motorist information signing program. Then, 30 days after receipt of this certified letter, we will revoke your permit and remove your business signs.

Your timely response to this matter is recommended. Should you have any questions, please do not hesitate to call.

Sincerely,

District Traffic Engineer

DTE:

cc: State Traffic Engineer

Figure 8-18

Washington State
Department of Transportation
Transportation Building KF-01
Olympia, Washington 98504-5201
(206) 753-6005

Duane Berentson
Secretary of Transportation

Certified Mail

Re: Annual Maintenance Fees
Motorist Information Signs

Dear Sir:

The Department of Transportation has not received your annual maintenance fees which were due February 1, _____.

Should you not make this payment within 15 days, we will assume that you no longer wish to participate in the motorist information signing program. Then, 30 days after your receipt of this certified letter, we will remove your business signs.

If you have mailed the maintenance fees, please disregard this letter.

Sincerely,

District Traffic Engineer

DTE:

cc: State Traffic Engineer

Figure 8-19

9.1 General

The Safety Management System (SMS) is a systematic process designed to assist decision makers allocate limited transportation safety resources. Through SMS, the state defines, prioritizes, and measures the effectiveness of safety efforts.

SMS consists of two key processes. The *Collaboration Process* provides statewide organizations with a reference network for sharing various available safety resources. The *Decision-making Process* ensures that all needs and opportunities are given due consideration in all phases of our plans and programs, and compatibility with the other management systems (Pavement, Bridge, Congestion, Public Transportation, and Intermodal) is maintained. The five steps of the Decision-making Process are:

- Needs Identification
- Solution/Resource Development
- Investment Prioritization and Implementation
- Investment Tracking
- Investment Evaluation

As resources allow, within their own existing processes, all jurisdictions within the state are encouraged to (1) take part in the SMS Collaboration Process, and (2) implement the SMS Decision-making Process. This occurs through the appropriate existing partnership and assistance forums for each jurisdiction. Examples: a city might work with WSDOT TransAid; a county might work with the County Road Administration Board; or the Department of Health might work with the Traffic Safety Commission.

There are three main goals of SMS:

1. Prevent and reduce the number and severity of roadway collisions;

2. Ensure that traffic safety will be considered at all phases of roadway-related programs;

3. Provide for partnership among citizens, statewide agencies, regional organizations, and local jurisdictions on traffic safety efforts.

There are also two main coverage elements of the SMS:

1. All public roads within the state;

2. All roadway, traveler, and vehicle safety-related elements.

While the SMS covers all public roads, the extent of SMS requirements (such as data collection, analyses, and standards) vary depending on roadway functional classification. Also, because each jurisdiction within the state implements SMS within their own individual processes and programs, describing each of them within this manual is not feasible. As an example, the following subsections describe WSDOT's implementation of SMS.

9.2 SMS Collaboration Responsibilities Within WSDOT

The region offices may contact the following Olympia Service Center offices for information, resources, and assistance regarding safety-related decisions:

Office (Service Center) — SMS Responsibilities

Transportation Planning (P&P) — Develops/ Maintains the Systems Plan: Service Objectives and Performance Indicators, needs identification, solutions/strategies, and financial responsibility.

Transportation Data (P&P) — Maintains traffic and highway crash statistics and technical assistance on safety data analysis.

Research (P&P) — Provides for research projects and reporting on highway safety issues.

Traffic (E&E) — Leads Development/Maintenance of the statewide SMS, leads standing committee for Workzone Safety, provides technical assistance/training on safety investment and benefit/cost analysis, and coordinates safety investment tracking and evaluation efforts.

Program Management (P&P) — Directs/Coordinates program activities, such as targeting region allocations and providing programming instructions to the regions.

Design (E&E) — Develops/Maintains design approach to effective safety design features/standards for transportation projects.

Maintenance (Operations) — Develops/Maintains effective approach to safety maintenance activities.

Construction (Operations) — Provides for implementation of transportation projects, and provides guidelines for workzone safety.

TransAid (TransAid) — Provides support and coordination with local transportation jurisdictions on highway safety issues.

Staff Development (Personnel) — Provides for training/staff development on highway safety for all program areas.

Communication and Public Involvement Office — Provides for public information and media coverage on traffic safety (i.e., "Give 'Em a Brake" campaign)

9.3 SMS Needs Identification Within WSDOT

Needs identification is the first step to ensure that safety is considered in all phases of traffic and roadway related efforts focused on the goal of preventing and reducing the number and severity of collisions. This basically means an identification of historically or potentially hazardous conditions, or identification of any cause/effect issues that contribute to collisions.

Measurable service objectives are established for all WSDOT programs and subprograms. These service objectives provide a baseline for needs identification in our long-range (20-year) system plan. Some examples of safety-related service objectives within WSDOT are:

Maintenance

- Ensure safe, reliable roadway surfaces.
- Maintain the visibility and operation of traffic control and safety devices.
- Provide safe travel through work zones.

Preservation

- Repave highways at regular intervals to minimize long-term costs.
- Restore existing safety features.

Improvements

- Improve highway sections that have a high accident history.
- Improve roadways where geometrics, traffic volumes, and speed limits indicate a high accident potential.
- Improve geometrics of the Interstate system per the FHWA/WSDOT Stewardship Agreement.

9.4 SMS Solution and Resource Development Within WSDOT

As safety needs are identified through the State Systems Plan for each biennium, solution and resource development is performed throughout the WSDOT program structure. This is generally carried out as scoping work by region project development staff (as determined by each region) for the Preservation and Improvements programs, and region/area maintenance staff for the Maintenance program.

Each region provides to Transportation Planning (P&P), resource estimates for safety related activities that address the identified needs. Supported by the other Olympia Service Centers, Transportation Planning then checks for financial feasibility. If the solution costs do not match expected revenues, the service objectives are reviewed and modified. Once the solution costs are in balance with revenues, the Systems Plan is updated. This occurs every two years.

9.5 SMS Investment Prioritization/ Implementation Within WSDOT

Prioritization is based on (1) the anticipated benefits of preventing and reducing collisions (focusing of identified needs) and (2) the cost and duration of implementing the solution. Many safety activities may overlap with solutions developed for other program/subprogram needs. Therefore, individual project prioritization should also be coordinated with those other efforts.

Prioritization of safety projects, funded from the Improvement Program, is based upon project benefit-cost ratios. First, the statewide System Plan needs are ranked from greatest to least, using societal costs of collisions per year as a common denominator. Then, starting at the top of the list, benefit-cost methods are applied to the solutions which adequately address the identified needs. To be considered for implementation, a safety solution must have a projected benefit value equal to or greater than the solution cost.

This analysis is repeated until the available safety improvement resources for a two year program have been allocated to the array of safety solutions which maximize the projected benefits.

Implementation includes the specific funding, scheduling, and management of the prioritized solution activities. Examples include: programming, design, construction or manufacturing, maintenance, operations, enforcement, and driver safety instruction.

9.6 SMS Investment Tracking Within WSDOT

As safety solutions are implemented under SMS they become safety investments. A variety of safety investment data will be tracked by location, funding source, projected benefit/cost, type of investment, and roadway safety feature to ensure that each investment can be easily identified for the purpose of monitoring and evaluation. The regions will uniformly track safety investments.

The basic elements of tracking are:

1. *Need Addressed* —For example: crash reduction, risk of leaving roadway, etc.

2. *Description* — A description of the identifiable safety related activity (e.g. straighten curve, install illumination, slope flattening, public ads on work zone traffic control, etc.), including location, region, roadway classification, etc.

3. *Date* — The date(s) the safety related activity is effectively implemented.

4. *Resources* — Funding (staff, equipment, time, etc.) requirements dedicated to each safety related activity.

5. *Projected Benefits* — Identification of expected benefits for identified needs from each safety related activity.

6. *Actual Benefits* — The actual benefits derived from the activity (e.g. societal costs of collisions, public education benefits, etc.)

7. *Investment Type* — The investment category of the activity. (General headings: System Management, Traffic control, Roadside, Roadway.)

8. *State Program Source* — The program/ subprogram (Maintenance, Preservation, Improvements) from which the investment was made.

The guidelines for safety investment tracking are currently being developed.

9.7 SMS Investment Evaluation Within WSDOT

Safety investments should be monitored and evaluated to determine whether appropriate and cost-effective investments were made. Monitoring and evaluating provides new insight for future problem identification, solution development, and solution prioritization and implementation. The districts will monitor and evaluate all safety investments.

All evaluations will be documented in a standardized format provided by the Olympia Service Center Traffic Office and should address each of the five items listed below:

1. Need addressed.

2. Total resource investment for all safety-related activities.

3. Projected benefits for each activity, based on the prevention and reduction in number and severity of collisions.

4. Actual benefits for each activity, based on the prevention and reduction in number and severity of collisions.

5. Associated collision rates and societal costs applicable to the "before/after" evaluation period.

As the evaluation data is compiled regionally and statewide, new trend data becomes available for future decision-making.

9.8 WSDOT Programming for Safety Preservation and Improvements

Programming safety dollars must be consistent with several plans, procedures and systems: SMS, Statewide Systems Plan, State Prioritization and Programming Law (RCW 47.05), and Federal Regulations for standards and the FHWA/WSDOT Stewardship Plan.

The programming instructions for the Roadway Preservation subprogram identifies typical safety "restoration" type items which are to be addressed on our Preservation projects. This is funded with a 12 percent program maximum allocation. The longer safety improvements which address System Plans safety needs in reduction or prevention of collisions are funded from the Improvements program. The Safety Improvement Projects Workbook guides the regions in the process of prioritizing safety improvements within the Safety Improvements subprogram.

9.9 References

Section 1034 (Public Law 102-240) of the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) calls for each state to develop six inter-related transportation management systems and a traffic monitoring system. By October 1, 1994, the state shall develop a work plan for SMS which will be fully operational by October 1, 1996.

Washington State Law, C 406 L 93, directs that measurable, outcome based objectives shall be used to track the performance of agencies with traffic safety responsibilities.

RCW 47.05 requires WSDOT to develop a six year program and financial plan for highway improvements specifying program objectives. The program and plan shall be based upon the improvement needs for state highways as determined by WSDOT.

Under RCW 47.01.250 the State Patrol, Washington Traffic Safety Commission (WTSC), County Road Administration Board, and the Department of Licensing shall consult with the Transportation Commission and WSDOT to ensure that their transportation related responsibilities, goals, and activities are fully coordinated. Results of this interaction shall be reported to the Governor and the Legislature.

Among other duties listed in RCW 43.59, the WTSC shall plan and manage at both the state and local level, safety activities and programs for the prevention of accidents on roads, streets, and highways. WTSC shall confer with and advise the political subdivisions and all agencies of Washington State government whose programs and activities are within the scope of traffic safety.

9:P:TM1