



Transmittal Number PT 08-011	Date February 2008
Publication Distribution To: All holders of the <i>Maintenance Manual</i>	
Publication Title <i>Maintenance Manual</i>	Publication Number M 51-01
Originating Organization Maintenance and Operations Division	

Remarks:

Please be aware that this revision is only available electronically.

Who to Contact:

Please contact Helen Simmonds at (360) 705-7866 with comments, questions, or suggestions for improvement to the *Maintenance Manual*.

Available On-Line:

To obtain the *Maintenance Manual* in its entirety, it is available on the Internet at:
<http://www.wsdot.wa.gov/publications/manuals/fulltext/M51-01/Maintenance.pdf>

Instructions:

Page numbers and corresponding sheet-counts are given in the table below to indicate portions of the *Maintenance Manual* that are to be removed and inserted to accomplish this revision.

Chapter	Remove		Insert	
	Pages	Sheets	Pages	Sheets
Contents	v - x	3	v - x	3
Chapter 6 Roadside Management	1 - 30	15	1 - 38	19
Index	1 - 8	4	1 - 8	4

Distributed By Directional Documents and Engineering Publications	Phone Number (360) 705-7430 Fax: 705-6861	Signature
---	---	-----------



**Washington State
Department of Transportation**

TECHNICAL MANUAL

Maintenance Manual

M 51-01

February 2008

Maintenance and Operations Division

Americans with Disabilities Act (ADA) Information

Materials can be provided in alternative formats: large print, Braille, cassette tape, or on computer disk for people with disabilities by calling the Office of Equal Opportunity (OEO) at (360) 705-7097. Persons who are deaf or hard of hearing may contact OEO through the Washington Relay Service at 7-1-1.

Washington State Department of Transportation
Directional Documents and Engineering Publications
PO Box 47304
Olympia, WA 98504-7304

Phone: 360-705-7430

Fax: 360-705-6861

E-mail: enrpubs@wsdot.wa.gov

Internet: www.wsdot.wa.gov/fasc/engineeringpublications/

Get the latest information on updates to WSDOT engineering manuals --
join Engineering Publications Listserv today at:

www.wsdot.wa.gov/fasc/engineeringpublications/listserv.htm

Contents

	Page
Foreword	i
Introduction.....	ii
Purpose of this Manual	ii
Performance Measurement	ii
Environmental Responsibilities	iii
Fiscal Management.....	iii
Chapter 1 Emergency Procedures	
General Responsibilities	1-1
Regional Emergency Response Plans.....	1-2
WSDOT Disaster Plan.....	1-2
Concepts of Operations.....	1-2
Organization and Assignment of Responsibilities	1-3
Administration and Logistics.....	1-3
Plan Development and Maintenance	1-3
Training and Exercises.....	1-3
Emergency Operating Procedures	1-3
General.....	1-3
Maintenance Field Personnel.....	1-4
Maintenance Superintendent or Supervisor.....	1-5
Abandoned Cargo	1-6
Clearing the Highway	1-6
Open Road Policy.....	1-6
Chapter 2 Work Zone Traffic Control and Safety	
General.....	2-1
Fundamental Principles	2-1
Traffic Control Zones.....	2-2
Traffic Control Devices.....	2-3
Cone Placement Procedure	2-5
Traffic Control Procedures.....	2-9
Off-Road Activities.....	2-10
Nighttime Activities.....	2-10
Automated Flagger Assistance Device (AFAD).....	2-10
Temporary and Portable Signal Systems	2-11
Non-motorized Traffic Control	2-11
Pedestrian Control	2-11
Bicycle Control.....	2-12
Safety	2-12
Work Zone Operations.....	2-12
Enforcement.....	2-13
Resources for Traffic Control and Work Zone Safety	2-13

	Page
Chapter 3 Pavement Patching & Repair	
General.....	3-1
Maintenance of Flexible Pavements	3-2
Load & Speed Restrictions	3-2
Pavement Deficiencies.....	3-2
Rutting.....	3-2
Alligator Cracking.....	3-2
Longitudinal Cracking	3-3
Transverse Cracking.....	3-3
Potholes.....	3-3
Raveling & Pitting	3-3
Flushing.....	3-4
Sags and Humps.....	3-4
Edge Raveling	3-4
Pavement Maintenance Techniques	3-4
Patching.....	3-4
Patching with Base Repair.....	3-4
Overlay Patches.....	3-6
Spreader Box Patching.....	3-7
Grader Patching.....	3-8
Rolling Hot Mix Patches.....	3-8
Effects of Traffic on a Patching Operation	3-9
Crack Sealing (or Pouring).....	3-10
Hot Pour Method.....	3-10
Cold Pour Method.....	3-10
Maintenance of Rigid Pavements	3-11
Portland Cement Concrete Pavement Crack Pouring.....	3-11
Asphalt Emulsion Surface Treatment	3-14
Fog Seals	3-14
Sand Seal.....	3-14
Aggregate (Chip) Seal.....	3-14
Pavement Conditions for a Successful Project	3-15
Material Selection.....	3-15
Asphalts and Emulsions	3-15
Common Types of Emulsions Used for Chip Seals	3-15
Aggregate	3-16
Weather	3-16
Roadway Preparation	3-16
Equipment	3-16
Distributor	3-16
Calibration Procedures.....	3-17
Distributor Calibrations.....	3-17
Nozzle Size	3-18
Proper Pressure	3-18
Spray Bar Height.....	3-20
Proper Nozzle Angle	3-21
Streaking Will Occur:.....	3-21
Cleaning of Distributor	3-21

	Page
Checking the Bitumeter	3-22
Traffic Control	3-22
Application of Asphalt.....	3-22
Spreading Aggregate.....	3-23
Chip spreader Calibration	3-23
Chip Spreader	3-24
Rolling	3-25
Spreading of Fines or Choking - Optional.....	3-25
Post-Seal Inspection.....	3-26
DOs of Seal Coating	3-26
DO NOTs of Seal Coating	3-27
Blade Mixed Asphalt Mix.....	3-27
Handling Emulsified Asphalts	3-28
Chapter 4 Drainage	
General.....	4-1
Drainage from Abutting Properties.....	4-1
Ditches and Gutters.....	4-2
Rockfall Ditches and Slope Benches.....	4-3
Dry Wells	4-3
Culverts.....	4-3
Automatic Pumps.....	4-4
Under Drains.....	4-4
Storm Sewers	4-4
Bank Protection	4-5
Detention Ponds and Tanks.....	4-6
Chapter 5 Maintenance of Structures	
General.....	5-1
Bridge Repair Guidelines	5-4
Bridge Information	5-5
Environmental Aspects	5-5
Utility Installations	5-7
Chapter 6 Roadside Management	
General.....	6-1
Definitions.....	6-1
Reference	6-2
Resources.....	6-2
Roadside Functions.....	6-2
Roadside Treatment	6-4
Maintenance Involvement in the Roadside Management Process	6-4
Roadside Maintenance and the Maintenance Accountability Process.....	6-4
Roadside Management Zones.....	6-5
Maintenance of Zone 1	6-6
Policy	6-6
Methods.....	6-8

	Page
Maintenance of Zone 2	6-8
Policy	6-8
Methods.....	6-9
Maintenance of Zone 3	6-10
Policy	6-10
Methods.....	6-10
Integrated Vegetation Management	6-10
Methods.....	6-11
Danger Trees.....	6-13
Disposal of Logs Dumped on Right of Way.....	6-14
Removal of Dangerous Objects and Structures	6-14
Trespass and Encroachment.....	6-14
Encroachments – General	6-14
Encroachment – Maintenance Crew Responsibilities	6-15
Franchises and Permits	6-15
The Use of Pesticides.....	6-16
Use and Evaluation of New Products	6-16
Pesticide License	6-17
Record Keeping	6-17
Product Labels	6-17
Posting Requirements	6-17
Aquatic Pesticide Applications	6-18
Pesticide Sensitive Individuals	6-18
Container Disposal	6-18
Use of Mowing Equipment.....	6-19
Other Cutting Methods	6-20
Cultural Control Methods.....	6-20
Biological Control	6-20
Burning Debris.....	6-21
Illegal Tree Removal.....	6-21
Significant Roadside Activities.....	6-22
Definitions	6-22
Notification.....	6-22
Removal of Debris and Rubbish.....	6-23
Litter Control and Partnerships for Roadside Enhancement	6-23
Adopt-a-Highway	6-24
Program Rules	6-24
Participant Eligibility.....	6-24
Assignment of Sections	6-25
Volunteer Adoptions	6-26
Sponsored Adoptions	6-26
General Permits for Roadside Enhancement	6-31
AAH Administrative Roles and Responsibilities	6-31
Maintenance and Operations Responsibilities.....	6-32
Region Responsibilities	6-32
Guidelines for Litter Crew Traffic Control.....	6-33
Two-lane/Two-way Roadway	6-33
Shoulder Closure – High Speed Roadway.....	6-35
Median Shoulder Closure.....	6-35

	Page
Auxiliary Facilities	6-35
Safety Rest Areas	6-35
Park and Ride Lots	6-38
Historical Markers.....	6-38
Viewpoints	6-38
Chapter 7 Snow and Ice Control	
General.....	7-1
Preparation for Winter Operations.....	7-1
Highway Categories.....	7-3
Special Criteria	7-4
Work on State Highways	7-4
City Streets on the State Highway System	7-6
Work on Other Roads and Areas.....	7-6
Abandoned or Illegally Parked Vehicles.....	7-7
Closures	7-7
Emergency Assistance	7-8
Precautions.....	7-9
Service Level Quality Measurement	7-9
Chapter 8 Traffic Services	
General.....	8-1
Reconstruction Principles	8-1
Signing	8-2
Signing Responsibility.....	8-2
Sign Installation	8-2
Maintenance.....	8-3
Sign Visibility	8-4
Sign Storage and Transportation.....	8-5
Delineation.....	8-5
Pavement Markings	8-5
Materials	8-8
Application	8-8
Surface Moisture Test	8-8
Marking Renewal or Replacement Frequency	8-8
Removal of Markings	8-9
Guideposts	8-9
Traffic Barriers and Impact Attenuators	8-9
Maintenance.....	8-9
Inspection.....	8-9
Repair.....	8-10
Standard Run of Barrier.....	8-11
Terminals and Anchors	8-11
Transitions	8-12
Impact Attenuators.....	8-13
Maintenance.....	8-13
Islands	8-13
Transit Vehicle Stop Zones	8-13
Maintenance.....	8-13

Chapter 9 Electrical System Maintenance

General..... 9-1
 Wiring and Connection Maintenance 9-1
 Enclosure Maintenance..... 9-1
 Documentation..... 9-1
 Changeable Message Sign Systems..... 9-1
 Drain Pump Systems..... 9-2
 Gate and Barrier Systems 9-2
 Minor..... 9-2
 Major..... 9-2
 Intersection Control Beacons(Includes Hazard Beacons) 9-2
 Illumination Systems 9-2
 Roadway Illumination Systems 9-2
 Sign Lighting Systems..... 9-3
 Services..... 9-3
 Signal Systems..... 9-3
 Vehicle Detection Systems 9-3
 Pedestrian Detection and Display System 9-3
 Vehicle Display Systems..... 9-3
 Signal Control Systems..... 9-4
 Sprinkler Systems 9-4
 Television Systems 9-4

Chapter 10 Miscellaneous

Right of Way Fences..... 10-1
 Road Approaches- General 10-1
 Typical Maintenance Responsibilities in Cities..... 10-1
 Maintenance Yards..... 10-6
 Stockpile Sites 10-6
 Materials from State Quarries or Pits 10-7
 Procurement of Materials 10-7
 Material Specifications-General 10-7
 Disposal of Surplus Items 10-8
 Equipment 10-8
 Inventoried Items 10-8
 Non-Inventoried Items 10-8
 Instructions for Radio Operation 10-8
 General Technique 10-8
 Helpful Reminders..... 10-8
 Work Scheduling and Reporting..... 10-9
 Budget..... 10-9
 Scheduling 10-9
 Reporting 10-10
 Environmental Sensitivity 10-10

Acronyms and Abbreviations.....Acronyms and Abbreviations-1

Appendix 1Appendix 1-1

Index..... Index-1

General

This chapter addresses roadside maintenance issues primarily as they relate to vegetation management. It also covers maintenance in relation to litter control and auxiliary features such as Safety Rest Areas, viewpoints, and historical markers. Roadside issues as they relate to areas of maintenance such as drainage, pavement, and maintenance of structures are covered in other chapters of the *Maintenance Manual*.

This chapter has been written to integrate with information relating to roadside management topics presented in all other departmental documents. In particular it is tied to the contents of the *Roadside Manual*, the *Roadside Classification Plan*, and the *Design Manual*. Roadside Maintenance Managers should be familiar with the contents of these other documents as they relate to roadside maintenance.

Definitions

Roadside: The roadside is the area outside the traveled roadway. This applies to all lands managed by the Washington State Department of Transportation (WSDOT) and may extend to elements outside the right of way boundaries. It includes unpaved median strips and auxiliary facilities such as rest areas, roadside parks, viewpoints, heritage markers, pedestrian and bicycle facilities, wetlands and their associated buffer areas, stormwater treatment facilities, park and ride lots, and quarries and pit sites within the right of way.

Roadside Management encompasses the planning, design, construction, and maintenance of the roadside.

Its goals include:

- Provide for all the highway functional and operational objectives.
- Protect the environment.
- Create and/or maintain desirable visual quality.

These goals can be achieved with the lowest life cycle costs by:

- Applying consistent, long term strategies throughout the management process.
- Using appropriate site specific Best Management Practices (BMPs).
- Using appropriate Integrated Vegetation Management (IVM) techniques.

Integrated Vegetation Management: Integrated Vegetation Management (IVM) is defined as a coordinated decision making process that uses the most appropriate vegetation management strategy on a site specific basis.

It utilizes a monitoring and evaluation system to ensure achievement of roadside maintenance program goals and objectives. IVM practices are environmentally responsible and economically sound. WSDOT uses IVM to design and construct roadsides which will grow and evolve with the natural ecosystem. The type of site specific vegetation chosen is designed to require the least possible attention from maintenance over the long term.

Best Management Practices (BMPs): They are physical, structural, and/or managerial practices that, when used singly or in combination, reduce the downstream quality and quantity impacts of stormwater.¹ Typical BMPs include biofiltration swales, wet ponds vegetated filter strips, and wet vault/tanks. BMP details can be found in the *Highway Runoff Manual*, Chapter 8.

Reference

Roadside Manual, WSDOT, M 25-30

Roadside Classification Plan, WSDOT, 1996

Integrated Vegetation Management for Roadsides, WSDOT, July 1997

WSDOT Maintenance Manual for Water Quality and Habitat Protection Guidance, WSDOT, IL 4020.00, July 1, 1999

Highway Runoff Manual, Chapter 8, WSDOT, M 31-16

Design Manual

Maintenance Accountability Process Handbook

Resources

Headquarters Maintenance Office

Region Landscape Architects

Headquarters Roadside and Site Development Office

Regional Environmental Offices

Roadside Functions

The roadside is managed to fulfill four functional categories: **operational, environmental, visual, and auxiliary functions**. By fulfilling highway needs in these four categories, the roadside contributes to WSDOT's delivery of transportation services. [Table 6-1](#) explains the functions and gives examples.

¹ *Highway Runoff Manual*, M 31-16. WSDOT, pp Glossary 1-2.

Function	Examples
Operational	Those functions that provide safe and multi-use roadsides. Operational functions include access control, providing vehicle recovery areas and sight distances with accommodations for signs and utilities, and snow storage. The <i>Design Manual</i> provides the primary guidance for operational roadside design guidance.
Environmental	Those functions that protect and enhance our natural and built surroundings. Environmental functions mitigate the roadway's impact on its surrounding ecosystem. Major environmental functions include: <ul style="list-style-type: none"> • Water quality (preservation, protection, and improvement) • Storm water detention and retention • Wetland and sensitive area protection • Noxious weed control • Noise control • Habitat protection and connectivity • Air quality improvement • Erosion control
Visual	Those functions that are designed and experienced primarily from a visual perspective. Visual functions promote a positive quality of life and are integral to operational, environmental, and auxiliary functions. They include enhancing guidance and navigation, distraction screening, corridor continuity, roadway, and adjacent property buffering, and scenic view preservation. There are two primary roadside views: Those from the roadway, and those toward the roadway. In addition many activities such as noxious weed control, wetland and sensitive area preservation, and habitat preservation are readily perceived and evaluated through sight.
Auxiliary	Those functions that provide additional operational, environmental, and visual functions to support or supplement the transportation system. Examples of auxiliary facilities are community enhancement areas, safety rest areas, roadside parks, viewpoints, agricultural uses, heritage markers, bicycle and pedestrian facilities, park and ride lots, and stockpile sites.

Table 6-1

Roadside Treatment

The *Roadside Classification Plan* (RCP) provides the basis for solutions to site specific questions on how to develop and manage the roadside. This document provides guidance for resolving the roadside functional needs with variations in site conditions, vegetative patterns, and geographic surroundings.

Maintenance Involvement in the Roadside Management Process

Maintenance plays the major role in the roadside management process. The overall goal of roadside maintenance is to sustain the roadside in a manner that satisfies the intent of the RCP and performs as many functions as possible, while requiring the least amount of care.

Roadside maintenance is a unique element within the highway maintenance program because much of the work involves caring for and/or controlling vegetation. Roadside plant communities are alive and part of a dynamic, ever evolving natural process. Therefore, proper maintenance of the roadside requires understanding of the many factors which contribute to the natural evolution of vegetation over time.

It is in the best interest of design and construction organizations to solicit input from the maintenance crews during the process of planning, designing, and constructing roadside features. Maintenance personnel should also take the initiative to provide documented input for consideration during this process.

It is vital that local maintenance employees be involved in the regional project development process as it relates to the roadside. The project delivery process within each region will vary. But, before a contract is finalized the project must be thoroughly reviewed by the local maintenance personnel with responsibility to care for the highway and roadside affected. Maintenance personnel can also offer valuable input during construction.

It is in the role of Design and Construction to continuously solicit maintenance input on the processes of building, preserving, and/or improving the highway. Maintenance personnel must take the initiative in offering appropriately documented input for consideration throughout the process of planning, design, and construction.

Roadside Maintenance and the Maintenance Accountability Process

The **Maintenance Accountability Process** (MAP) is used by WSDOT to explain the relationship between maintenance service levels and the resources required to deliver those levels. The MAP is a comprehensive management program that provides a clear link between maintenance goals, activities, service levels, the budget, and maintenance performance measures.

The major elements of roadside maintenance are referred to in the MAP as Group 3 – Roadside and Landscape Maintenance. The MAP defines roadside maintenance as having five major activities:

- Litter Pick Up
- Noxious Weed Control
- Nuisance Vegetation Control
- Control of Vegetation Obstructions
- Landscape Maintenance

These elements serve as “service level” or outcome indicators, and are intended to measure how well the roadside is fulfilling the major functional needs of the highway. All MAP activities are field measured on a regular basis to determine service levels statewide, as well as at the regional and maintenance area level.

One of the most valuable features of the MAP for roadside maintenance is its provision of consistent statewide outcomes for roadside maintenance decisions. These service level commitments serve as a basis for setting roadside maintenance action thresholds and help the areas plan roadside activities.

A unique result of applying an outcome based management system to the vegetation management process is the ability to measure results. It is possible to demonstrate an increasing service level over time without an increase in funding.

Roadside vegetation, if managed properly, can become more naturally self-sustaining over time and require less control from maintenance as it grows and matures. With IVM, the overall service levels for Group 3 will improve over time under the following conditions:

- Consistent adequate resources to use BMPs.
- Ability to apply properly timed target specific roadside maintenance treatments.

Roadside Management Zones

To address the highway’s functional needs (as describe above), the roadside may be divided into as many as three major bands of area referred to as Zone 1 – Vegetation Free, Zone 2 – Operational, and Zone 3 – Transition/ Buffer. Roadside maintenance priorities within these zones are established beginning with activities relating to the safe highway operations and maintenance, and preservation of the highway roadway.

Most “high priority” and routine roadside maintenance activities occur in Zones 1 and 2. They are designed and maintained to facilitate operational roadway functions, such as surface and subsurface drainage, traffic operations visibility and site distance. Zones 1 and 2 also allow unobstructed vehicle recovery where traffic may accidentally leave the roadway (referred to as the **Design Clear Zone**). The *Design Manual* provides guidance on the required extent of the roadside “clear zone” (Zone 2) for varying highway configurations. In some cases the actual requirements for the clear zone may extend beyond the right of way lines.

Zone 3 is present where adequate right of way area exists beyond what is necessary to deliver operational functions of the highway. Zone 3 is managed to address some safety functions such as hazard trees and trees shading the roadway. There are other operational functions which may be addressed within the area of Zone 3, such as drainage, noise and visual attenuation, and stormwater management needs. However, Zone 3 is primarily developed and maintained to address the visual, auxiliary, and non-regulated environmental functional needs of the highway. Zone 3 offers the greatest opportunity to create and maintain self-sustaining, low maintenance plant communities.

Roadside maintenance program objectives are established and prioritized to deliver the functional needs of the highway within the three zones.

Figure 6-1 shows a cross-section of a typical divided highway, illustrating typical relationships of the Roadside Management Zones within the highway right of way and giving examples of the functional objectives as they apply to the three zones.

Maintenance of Zone 1

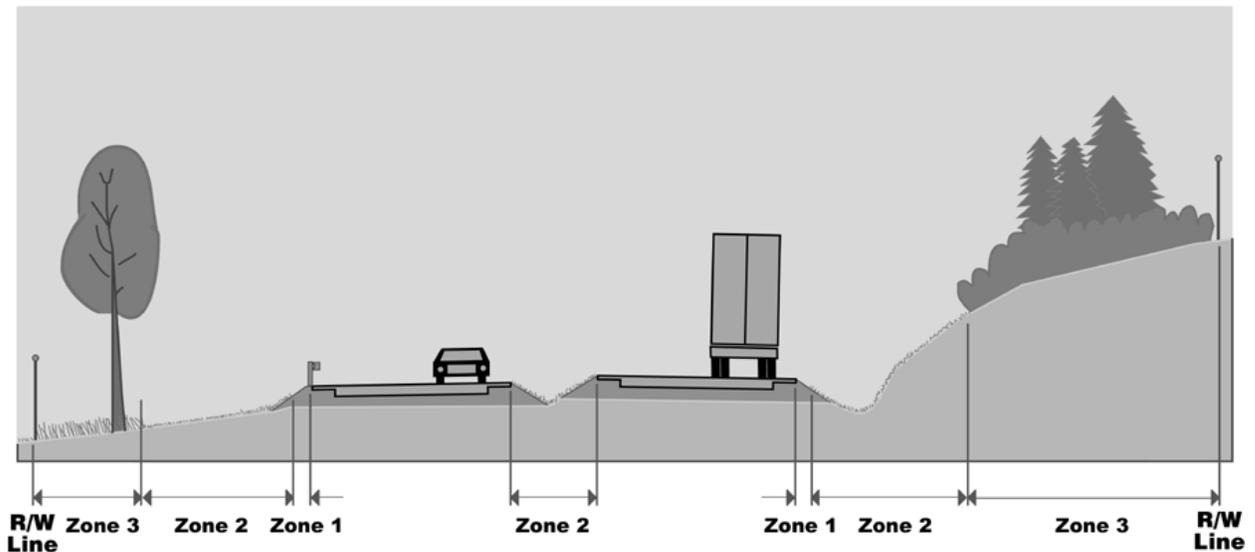
Policy

Zone 1 is maintained to remain free of vegetation. This zone begins at the edge of the pavement and extends outward to Zone 2. Zone 1 is no wider than necessary to achieve the functional objectives.

The optimum maximum width is two feet or to the back side of roadside hardware (guide posts/guardrail) if present. Variations in this width may be justified based on the following considerations.

Areas where Zone 1 requirements are less than two feet or unnecessary:

- Roadside and medians that have adequate profile and ditch to provide surface runoff.
- Required by environmental commitment.
- Immediately adjacent to flowing or standing water.
- Abutting curb and sidewalk sections.



Functional Zone Objectives

Zone 1 – Vegetation Free

(0 to 2 feet from pavement or as necessary)

- Provide for surface drainage
- Reduce fire potential
- Provide for visibility and maintenance of roadside hardware
- Prevent pavement breakup by invasive plants
- Provide sight distance for passing, stopping, and at intersections
- Prevent the buildup of wind blown debris and winter sand at the pavement edge

Zone 2 – Operational

(From Zone 1 or pavement edge to meet operational and maintenance needs)

- Maintain design width for vehicle recovery
- Provide sight distance for passing, stopping, at interchanges and at intersections
- Maintain hydraulic capacity of ditches
- Eliminate vegetative obstructions (trees with a trunk diameter of 4" or more)
- Control weeds
- Prevent erosion
- Provide wildlife habitat where compatible with roadway traffic
- Accommodate underground utilities
- Enhance visual quality

Zone 3 – Transition/Buffer

(From Zone 2 to Right of Way line)

- Promote self-sustaining plant communities
- Blend and/or screen adjacent surroundings to meet the goals and objectives of the [Roadside Classification Plan](#)
- Eliminate hazard trees causing excessive shade (ice and frost potential) on the highway pavement
- Control weeds
- Prevent erosion
- Maintain and enhance visual quality
- Preserve wetlands and wildlife habitat
- Accommodate utilities
- Preserve and conserve native plants and wildflowers

Typical Roadside Management Zones

Figure 6-1

- Turf grass areas in rest areas and formal landscapes.
- Adjacent to full depth pavement (where shoulder pavement functions as Zone 1).
- By agreement/permit where maintenance is done by others.

Areas where Zone 1 may be wider than two feet:

- Where visibility and maintenance of highway hardware such as guardrail or fencing must be facilitated.
- Where there is a high risk of fire.
- Natural rock and gravel ditches where it is impractical to maintain desirable vegetation.
- Narrow areas adjacent to formal shrub beds.
- Where farming activities take place very close to the roadway shoulder and it's impractical to maintain a strip of grass.
- Where drifting sand or snow may accumulate on the roadway as a result of vegetation growth at the edge of the pavement.
- For sight visibility at selected intersections or approaches when mowing is not practical.

Methods

Because Zone 1 is maintained to be free of vegetation, it requires more regular and routine maintenance attention than any other zone. The primary tools available to accomplish this are non-selective herbicide products which bind within the soil profile and suppress seed germination throughout the growing season. Non-selective herbicides which eliminate existing living plant material through contact with the leaves or stem may also be used to control emergent vegetation in this zone. But, the use of these non-selective post-emergent products alone may require more than one treatment during a single growing season. Labor time intensive non-herbicide controls are available for special situations.

Maintenance of Zone 2

Policy

Zone 2 is maintained to fulfill the safety and operational functions of the highway roadside. However, maintenance of this zone also has a significant impact on the visual functions, due to human perceptions of roadside neatness and degree of care. Negative visual impacts, such as brown outs from herbicide applications, should be avoided whenever possible.

Zone 2, when present, begins at the edge of the pavement or the outside edge of Zone 1. It extends outward to the right of way line or the edge of Zone 3 (where present). The optimum minimum width is determined by the clear zone vehicle recovery criteria which is given in the *Design Manual* and the site distance criteria given in the *Design Manual*. Roadside clear zone requirements may be eliminated, when appropriate, with the installation of guardrail or concrete barrier.

Variations from the optimum minimum width may be justified based on the following:

Areas where Zone 2 may be less than the minimum width specified in the *Design Manual*:

- Where compromises exist on older highways and adequate widths were not established during previous construction and maintenance funding levels do not provide for improvement.

Areas where Zone 2 may be wider than the minimum width specified in the *Design Manual*:

- Where the edge between Zone 2 and 3 has been set through the Design and Construction process and maintenance has adequate resources to sustain Zone 2 beyond the minimum required width.
- Where the outside edge of Zone 2 was not established through design and construction, but the *Roadside Classification Plan* allows for and maintenance has adequate resources to accomplish Nuisance Vegetation Control beyond the required minimum width.
- Where visual access is desirable across the right of way either from the road out or from lands adjacent to the right of way.

Methods

Most maintenance activities applied in Zone 2 are intended to keep vegetation from encroaching on the highway's safety and operational functions. The maintenance focus in Zone 2 is to selectively cut back or remove vegetation which impacts these functions. Selective methods should be used whenever possible to control unwanted vegetation. An example is using a broad leaf controlling herbicide to remove noxious weeds or nuisance vegetation from a grass stand. Other methods may be non-selective, such as mowing of a grass stand as needed to prevent undesirable vegetation from maturing or setting seed.

Maintenance work in Zone 2 presents some of the most visible evidence of roadside management. Methods selected may have a significant impact (positive or negative) on visual quality. The MAP does not directly measure

visual quality as part of the service level for roadsides. However, visual quality is important to the traveling public who perceive this as an indication of the overall maintenance service level.

Legislative service level commitments and funding levels often do not allow for consideration of the visual impact from Zone 2 maintenance. Plan the timing of herbicide applications for tree and brush control in Zone 2 to minimize “brown-outs.” Avoid the use of flail or rotary type side arm mowers for side trimming of native vegetation whenever possible.

Maintenance of Zone 3

Policy

Zone 3 exists only when there is adequate right of way beyond the requirements for Zone 2. It is managed to be self sustaining to the greatest degree possible, naturally evolving over time to blend with the surrounding vegetation and compliment the human built environment.

Zone 3 begins at the outside edge of Zone 2, or behind guardrail or concrete barrier. It extends to the right of way boundaries on the outside shoulder, or an opposing edge of Zone 2, such as in a wide median strip or the interior of an interchange configuration. Zone 3 may also include a managed strip along the outside edge of the right of way managed to allow for maintenance access if needed.

Methods

If Zone 3 has been properly designed and developed, very little attention from maintenance normally is required. Zone 3 maintenance activities are selective whenever possible. Examples of selective maintenance treatment include the removal of noxious or nuisance weeds, hazard trees, or the thinning of trees in areas where shading increases the likelihood of frost or ice on the roadway. Some pruning of trees may be required. The majority of this work must be done by hand. Chippers may be used to dispose waste material on site. Trees should be dropped in place and left to decompose within Zone 3 whenever possible.

Preserve desirable vegetation when nuisance vegetation such as Himalayan blackberry or Scotch broom is removed from Zone 3.

Integrated Vegetation Management

Integrated Vegetation Management is a coordinated decision making process that uses the most appropriate vegetation management methods and strategy, along with a monitoring and evaluation system, to achieve roadside maintenance goals and objectives in an environmentally and economically sound manner.

The majority of roadside management work is focused on the control of undesirable vegetation. This goes hand in hand with the establishment of and care for desirable vegetation. To accomplish this, WSDOT is required under RCW 17.15 to utilize Integrated Pest Management (IPM) principles.

WSDOT has defined IPM methodology as it applies to roadside vegetation management in the document *Integrated Vegetation Management for Roadsides, July 1997* and uses the term Integrated Vegetation Management (IVM) as synonymous with IPM. An IVM approach can be applied beginning at any point throughout the roadside management process.

Methods

The four basic groups of methods employed to manage vegetation are: biological, chemical, cultural, and mechanical. Use of the most effective method, or combination of methods within an IVM decision-making framework as described above will result in the highest roadside service levels at the lowest life-cycle costs.

- **Biological:** Methods which use living organisms to inhibit a host plant's ability to survive or reproduce are considered biological controls. Insects, diseases, and foraging animals, such as deer and cattle are examples of biological control organisms. Biological methods are typically applied only when weed infestations are so well established that total eradication is not practical or possible. Predators are dependent on the presence of host plants for survival. Careful testing and screening must be applied prior to releasing biological control organisms to ensure they will not also attack native or other desirable plants.
- **Chemical:** The use of herbicides to control weeds and undesirable vegetation, the use of plant growth regulators to reduce pruning or mowing requirements and the use of insecticides to control predatory insects of desirable plants are examples of chemical control methods. There are a wide variety of chemical control products available for vegetation management. Chemical methods can be somewhat controversial due to the potential impact of certain products on human health and the environment. Extra care must be taken when utilizing chemical controls to address public sensitivity to these tools and to minimize potentially adverse impacts.
- **Cultural:** Techniques which benefit the development and/or health of desirable, competitive plant material are considered cultural methods. Cultural methods also include the planting or seeding of desirable species. Planting and establishing the right of way in compliance with the [Roadside Classification Plan](#), through project design and construction are cultural control techniques.

- **Mechanical:** Methods which use equipment to mow, cut, prune, or cultivate in a manner which reduces, removes or prevents undesirable plant growth. Mowing Zone 2 to remove seedling trees and undesirable brush from a grass stand is an example of mechanical vegetation management.

There are many factors to consider when planning for and implementing an IVM program. These include prioritizing needs, and selecting the proper tools and strategies. Roadside maintenance priorities and Best Management Practices (BMPs) must be developed by the local maintenance crews for their geographic area. Priorities will be specific to the areas unique set of roadside configurations and based on service level commitments in the MAP. It is important for maintenance employees to utilize the many information resources and personnel with roadside expertise within the agency when planning for and carrying out roadside maintenance in their area.

Specific factors to consider when planning for and applying vegetation management techniques include the following:

- **Noxious Weed Control:** Noxious weed species and the processes for regulation and control are defined in RCW 17.10. All state agencies are required to control noxious weeds on lands they own.

Noxious weed control is important because new infestations often appear first along highway corridors. Management of the right of way, because of its linear nature, can impact an enormous number of neighbors. WSDOT must be a responsible steward of state owned land. It supports commerce and the economic viability of the agricultural community. The agency also values environmental preservation. To meet responsibilities it is necessary that noxious weeds be controlled. State law requires the control of certain weed species within highway right of ways. Activities required for control have to be given priority over all other vegetation management activities except those that directly and immediately affect the safety of the public.

Sometimes maintenance resources do not allow for full control of all noxious weed infestations within a given year. In these situations the area Maintenance Superintendent and the local county weed board will need to negotiate a multi-year strategy for regaining control.

When prioritizing control efforts apply the following guidelines:

- **First Priority:** Control all Class “A” noxious weed infestations and those weeds on the Class “B” list as designated by each individual county weed board or district to an acceptable level. The highest priority is for new infestations and established weed populations where adjacent neighbors are making an effort to comply with noxious weed regulations.

- **Second Priority:** Areas where WSDOT has controlled noxious weeds in the past which are adjacent to neighbors that are not making an effort to comply with noxious weed regulations.

Work cooperatively with local weed boards and districts to achieve compliance on the adjacent lands where possible by:

1. Sharing information on new infestations with weed boards.
 2. Advising weed boards of adjacent lands that are not in compliance.
 3. Requesting from the weed boards that appropriate “Weed Free” buffers be provided on lands adjacent to WSDOT right of ways.
 4. Participating in joint control efforts contracted by weed boards.
- **Lowest Priority:** These are areas where there is no potential for neighbors to be in compliance with noxious weed regulations and there will be ongoing seed production onto the highway right of way.

Danger Trees

Dead, leaning, or structurally unsound trees within the right of way can pose a threat to the traveling public. They can also damage the pavement, structures, or other parts of the highway. Remove all danger trees as soon as possible after they have been identified.

When practical, debris and wastes may be left on site within the boundaries of Zone 3. The Regional Maintenance Engineer will direct off site disposal or reuse of the wood. Danger trees outside the highway right of way (or permit boundaries such as in National Forests) may also be removed by WSDOT maintenance. If possible, consult with the property owner where the danger tree was grown prior to removal. If an emergency exists due to a danger tree outside the right of way, remove the tree immediately and notify the property owner at the earliest opportunity.

In areas where logging activities occur, adjacent clear-cuts may create a fringe of unstable trees on the highway right of way if not removed or thinned at the time of the adjacent logging. Whenever possible dangerous trees should be removed prior to or in conjunction with the adjacent logging operation. The process for removal and disposal (or sale) of timber from state property is outlined in RCW 47.12.140.

Clear cuts adjacent to the highway may create undesirable views from the road. Especially on corridors designated as scenic and recreational highways, care should be taken to preserve and protect as much of the smaller trees and native vegetation on the right of way as possible to maintain the desirable visual character of the corridor.

Disposal of Logs Dumped on Right of Way

Logs dumped on any state roadway, in any state highway drainage ditch, or within 30 feet of the edge of pavement, are to be removed immediately. Logs that remain within the state right of way for a period of 30 days should be confiscated and removed or disposed of as directed by the Maintenance Superintendent.

The log transporting firm is required to immediately remove any logs dumped on the roadway or drainage ditch. If it becomes necessary for the WSDOT to remove such logs in order to comply with the law, the transporting firm will be billed for the operation including any damage to the highway.

If any logs are left on state right of way for a period of 30 days, the region will notify the transporting firm, by letter, that the logs have been confiscated by the state.

The method of disposing of such logs is at the discretion of the Regional Administrator, taking into account the merchantable value.

Removal of Dangerous Objects and Structures

WSDOT has the authority to remove any structure, device, or natural or artificial object located sufficiently close to a state highway to constitute a hazard or obstruction.

Maintenance personnel should not arbitrarily remove any object from the roadside unless the object represents a definite danger to the highway itself or to highway users. The matter should be brought to the attention of the region office for an initial decision unless immediate local action is required. In some cases “Memorandums of Understanding” are in place with agencies like the Forest Service and National Park Service in order to handle these issues in the areas where they have jurisdiction.

Trespass and Encroachment

All WSDOT maintenance employees are required to obtain permission from property owners before entering private property, except in cases of an immediate emergency.

Encroachments – General

Maintenance field personnel are not expected to be familiar with all the laws and policies pertaining to the use of public right of way for non-state highway purposes; however, they should at least be aware of the following basic facts:

- No work of any kind shall be permitted on state right of way except that authorized by law. The department has adopted policies, rules, and regulations governing legal encroachments, and permission to occupy the right of way is always covered by a written permit, franchise, or agreement.

- On some highways the access rights of abutting property owners have been purchased by the state. This means that no approach roads to the highway can be constructed except those authorized in the access control plan as a result of right of way agreements.

Encroachment – Maintenance Crew Responsibilities

Maintenance Superintendent assigned to sections are charged with the responsibility of reporting to their superintendent any evidence of intended or actual encroachment on the right of way by individuals, firms, or agencies for non-state highway purposes.

Most violators are not aware of the law or have encroached inadvertently because of poor communication and/or unclear delineation of the right of way line.

Good public relations require that the local Lead Technician politely inform violators of the legal requirements as soon as an impending encroachment is observed, rather than to permit unauthorized work to proceed without such warning while the matter is being referred to someone else for handling. Major work is quite often contracted, and a contractor's crew may not have knowledge of a permit or franchise even if one has been granted. By a radio inquiry to his area office, the maintenance technician can usually determine if authority has been requested or granted.

Generally it can be assumed that permission has not been granted for anyone to install or erect signs, sub-standard or otherwise, on the right of way. Contact the local Maintenance and/or Region Traffic Office if there are questions about the legality of any sign.

Maintenance crews should be familiar with the right of way widths on their sections in order to detect possible encroachments.

Franchises and Permits

Franchises and permits are issued on standard forms that contain applicable legal requirements. Each encroachment document will include its exact location, any applicable special provisions required in the project, and how the installation is to be constructed.

A single application form, in which the applicant describes, with the aid of sketches and/or maps, what he wants to do, is used for both permits and franchises. An area or region employee makes a field investigation to determine whether or not the proposed work is permissible by law, what its effect will be on existing highway conditions, and what construction designs must be adopted to protect the interests and legal requirements of the state. If all is in order, the field investigator submits a recommendation that the application be accepted and approved and what, if any, conditions or restrictions should be included.

Maintenance should check to ensure adequate provisions are included for revegetation of any and all disturbed soil.

Franchises are issued for all utility encroachments that extend along the highway for a distance of more than 300 feet. Approval can only be granted by action of the department after the applicant has furnished proof that he has complied with all the legal requirements of posting and advertising.

Permits are issued for encroachments less than 300 feet in length. Permit forms are shorter than franchise forms and there are no posting and advertising requirements.

All permits on restricted access highways, and permits for any gas or petroleum products crossings, except local gas service line on any highway, regardless of access restrictions, must be approved by the department.

The department has extended authority to the Regional Administrator to approve all other encroachment permits, including those for local gas service crossings and for the cultivation and/or growing of agricultural crops.

See the *Utilities Manual* (M 22-87) for further information on WSDOT policy on franchises and permits.

The Use of Pesticides

Pesticides are an essential part of an IVM program. Herbicides are the major type of pesticides used by WSDOT. When applied properly, as instructed on the product labels, and used in combination with other vegetation management methods, herbicides are one of the most effective and economical tools available to the roadside vegetation manager.

Within the IVM decision-making process, herbicides are often used to achieve initial control of weed infestations. Once the infestation has been reduced or eliminated through herbicide applications, other methods can be employed for long-term vegetation management. Therefore, in a successful IVM program, overall herbicide use should decrease and applications become increasingly selective over time as beneficial competitors are allowed to become more established on the roadside.

Use and Evaluation of New Products

Any and all new pesticide products with potential application for roadside vegetation management by WSDOT will be formally evaluated for environmental and human health impacts prior to addition to the statewide contract and use on highway right of ways. No pesticide products will be used on WSDOT right of way without approval through the process as described below. The intent of this policy is to formalize the evaluation process for alternative pesticide products, not to discourage the use or research of new products.

1. Submit request for review/evaluation to the appropriate Eastside or Westside Roadside Vegetation Maintenance Manager.
2. If warranted an internal evaluation will be conducted by the Headquarters Maintenance Office to determine if a formal risk assessment is needed.
3. If a formal risk assessment is determined necessary, the product will be referred to an independent consultant for analysis evaluation and formal report on risk associated with the product.
4. The Headquarters Maintenance Office will review the formal risk assessment and a determination regarding use will be made. If the product is approved for use the product will be added to the state contract. If the product poses unacceptable risk it will not be included on the contract and the results of findings will be documented.

Pesticide License

All pesticides applied by WSDOT including herbicides, insecticides, fungicides, or other pest control agents must be applied by WSDOT employees or contractors licensed through the Washington State Department of Agriculture (WSDA). Licenses are obtained by passing uniform tests administered by WSDA. In order to maintain a pesticide license, applicators must attend and receive credit for continuing education certified through WSDA. Forty (40) recertification credits are required every four years and no more than fifteen (15) credits can be counted for any one year.

Record Keeping

Record all pesticide application information within the computerized application database on DOT Form 540-506 EF, Pesticide Application Record. State law, RCW 17.21, requires that records of all pesticide applications be retained for seven years.

Product Labels

The label for each pesticide restricts how and where the individual product may be used. This protects the environment and non-target plant material, and ensures the safety of the applicator and the public.

Posting Requirements

Immediately after the application of pesticides, it is required that signs be posted in those areas that are intended for public access, such as Safety Rest Areas and bicycle/pedestrian paths. RCW 17.21.410 lists legal requirements for posting public access. For all other applications made on the right of way with power equipment, posting is required in the form of placards on the spray apparatus. Requirements for posting right of way applications can be found in RCW 17.21.400.

Aquatic Pesticide Applications

Pesticide applications made in or over open water or within delineated wetlands are subject to additional regulation and come under the jurisdiction of the Washington State Department of Ecology (WSDOE). Operators making such applications must have aquatic certification on their pesticide applicator's license and a special permit must be obtained through WSDOE. The permit includes limitations on the products available for use and provisions for public posting and notification. The Headquarters Maintenance Office is responsible for negotiating and maintaining statewide coverage for aquatic pesticide applications.

Pesticide Sensitive Individuals

State law requires that pesticide applicators, prior to making an application, will notify individuals who have been medically certified as "pesticide sensitive" and live within one-half mile of the highway application site. The WSDA maintains and annually updates a list of individuals who have received this certification and their addresses. The HQ Maintenance Office is responsible for supplying information on pesticide sensitive individuals to the maintenance areas where notification is required. RCW 17.21.420 explains the process and requirements for establishing the list through WSDA. RCW 17.21.430 explains the requirements for notification of individuals on the list.

Container Disposal

The Washington Administrative Code (WAC) 16-228-185(2) states in part: "No person shall transport, handle, store, load, apply, or dispose of any pesticide, pesticide container or apparatus in such a manner as to pollute water supplies or waterways, or cause damage or injury to land, including humans, desirable plants and animals, or wildlife:...."

To comply with the law, all pesticide containers shall be triple rinsed (three times) each time, using a volume of an appropriate solvent (water, diesel, oil, etc.) equal to approximately 10 percent of the container's capacity. Rinsing of containers shall be accomplished as soon as possible after emptying. The rinse solution shall be added to the spray tank and considered as part of the pesticide carrier. Proper triple rinsing removes the "hazardous" stigma from the containers. However, the rinsed container must still be disposed of in the proper manner, as listed on the pesticide label.

The need for rinsing and disposal of containers can be eliminated if products are available in refillable bulk containers. Utilizing bulk and "mini-bulk" containers and metered pumps to transfer products from the container to the spray equipment reduces the chance of human contact. Where this system is used in conjunction with injection type spray equipment, unused product may be returned to the bulk container at the end of the day.

Use of Mowing Equipment

Mowing is often used to achieve a neat and aesthetically pleasing appearance on the roadside, giving the impression of a high maintenance service level. However, mowing can also be an important part of an IVM program on the roadside. In this way mowing is used to maintain the desired service level in relation to controlling vegetative obstructions and nuisance vegetation in Zone 2. Use the minimum number of mowing cycles necessary to accomplish IVM objectives for the specific site. In some cases mowing cycles may be reduced to once every two or three years (or more) without compromising service level commitments.

Annual multiple mowing cycles of non-irrigated erosion control grasses that are not regularly fertilized will cause thinning of the plant population. This will reduce the grasses' competitive capabilities and allow undesirable seedling trees, brush, and weeds to become established.

Avoid mowing in areas where wildlife habitat enhancement is a recognized part of the roadside management scheme. Essential mowing can be accomplished after the nesting period for upland game birds.

Do not remove more than one-third of the total grass height in a single mowing activity, unless the grass has produced seed and dried. Mowing frequency is dictated by this principle for turf areas in formally landscaped situations. Height of mowing for erosion control grasses shall not be less than four inches and preferably between six and eight inches.

Whenever possible, mowing activities should take place after erosion control grasses have matured and set seed. This is desirable for the health and long-term survival of the grass stand because it allows for root growth and development. It is also important to mow during the seasonal dry period to avoid damage to the grass stand from the tires of the mowers. Mowing when soil is wet causes tire slip and compaction. Tears and exposed soil from tire slip creates windows for erosion and weed invasion.

Do not mow newly seeded erosion control grass stands until the grass has been in place one full year.

As a rule of thumb, mowing will be necessary only for turf within formal landscaped areas to improve sight distance and to respond to local aesthetic considerations. When in doubt about the need to mow, look at the surrounding property. Keep the appearance of the highway roadside compatible with adjacent private property.

Other Cutting Methods

Use saws, axes, and other cutting implements to selectively remove individual plants or parts of plants and to remove plants that are too large to remove by mowing.

When the total plant is removed by cutting, a follow-up application with an herbicide labeled to prevent re-sprouting at the stump may be used. Cutting conifer trees below the lowest limb will eliminate regrowth. Re-sprouting of any tree or shrub will be minimized if the cutting takes place in the summer after the spring growth period is complete. The months of July, August, and September are the most effective period in which to cut trees, brush, and shrubs.

Avoid non-selective trimming on the sides of trees whenever possible. Trees should never be topped. If possible, remove the entire tree rather than damaging its natural form by pruning or topping.

Pruning of trees and shrubs may be necessary to remove unsightly dead stubs or other conditions that may endanger the plant's health.

Cultural Control Methods

Enhancing the competitive capabilities of a desirable vegetation by meeting its nutrient, moisture, and light requirements enables it to dominate the plant community and crowd out undesirable vegetation. Except in irrigated landscapes it is generally not possible to affect the moisture available to plants. Selective removal of plants that are shading desirable vegetation that needs high levels of light can be done in an integrated management plan. Nutrients are supplied through applications of fertilizers that replenish a depleted food supply.

Cultural control methods are essential to establish a desirable plant complex for the future once the competitors have been eliminated by cutting and/or spraying.

Biological Control

Predators normally depend on a very small number of plant species for their survival, which is what makes them effective control agents. However, a host plant will never be totally eradicated by biological methods alone. The population ratio of the host plant and its predator varies on a cycle of approximately seven years. When the population of the predator is high, it will dramatically reduce the population of the target host plant. However, when the host plant population begins to dwindle, fewer predators can be supported and the predator population will also begin to decrease.

Generally, biological control only works on introduced species of weeds that dominate due to a lack of natural predators in the ecosystem that the weed has invaded. In most cases, biological control measures are employed to suppress the spread of existing, well established weed infestations.

Biological control combined with cultural control can sometimes lead to eradication of a weed species such as Tansy Ragwort. Cinnabar Moth larvae feed on the Tansy Ragwort blooms. A Seed Fly reduces seed production, and a Flea Beetle reduces the plant's vigor by feeding in the crown and stems. Tansy Ragwort is a biennial plant that blooms and then dies if seed is produced in the second year. By introducing the biological predators, the seed produced is very limited. This limited number of seeds has little chance of establishing as plants if the surrounding soils have grass or other native vegetation that has been enhanced by a good fertilizer program.

The Cooperative Extension Service through Washington State University can provide assistance in evaluating the potential success of a biological control program.

Burning Debris

Burning of brush, slash, tumbleweeds or any other waste shall be accomplished in a manner and time that conforms to the rules and regulations of the regulatory agency for that area. Contact local air pollution authorities and fire departments regarding burning requirements.

Illegal Tree Removal

RCW 47.40 states that removal or damage to any desirable plant on the right of way by an unauthorized individual is a misdemeanor and punishable by law. RCW 64.12.030 and 040 discuss how courts assess damages for injury or removal of desirable plants. In cases where actions are witnessed or where it is obvious who the perpetrator is, the State Patrol and the Attorney General's Office should be called in for assistance.

Unauthorized removal of materials often occur when adjoining parties feel that the trees are blocking visibility across the highway right of way. A desire to have better visibility for their establishment, their product advertising, or simply wanting a better view of the surrounding area may lead these parties to remove vegetation without proper permission.

While it is difficult to continually monitor the entire right of way for this type of illegal activity, certain locations are more prone to neighbor's visibility issues than others and should be watched.

Significant Roadside Activities

Maintenance actions on the roadside can have a significant impact on adjacent property owners and others in the public. Involving appropriate customers in significant roadside maintenance activities will often help improve the public's confidence in WSDOT's ability to manage its transportation system in a manner that is responsive to customer needs.

Advance coordination mandated by this policy may increase the initial cost of any project. But, better communication and public involvement will result in fewer complaints, enhance department credibility and improve public trust.

Definitions

Maintenance Activity: Any activity undertaken by WSDOT maintenance employees within or adjacent to highways right of ways to preserve, protect, and enhance the safe mobility of the traveling public, the highway facility and the environment.

Significant Roadside Activity: Any activity that will substantially alter the visual appearance of a roadside. Significant activities include, but are not limited to:

- Removal of large stands of vegetation.
- Grading to re-contour slopes or ditches.
- Removal of natural or constructed noise or visual barriers.
- Any activity that alters the visual appearance of more than 1,000 linear feet of roadside.

Significant activities do not include ditch and culvert cleaning, herbicide applications, mowing, erosion/slide repairs, grass seeding/fertilizing, highway hardware repair/ installation, litter pick up, and/or emergency activities that are required as a result of a national disaster.

Notification

Notify the public and appropriate agencies about upcoming significant activities at least one week prior to action. Notification may include, but is not limited to the following actions:

1. Telephone call.
2. Flyer delivered to each residence.
3. Mailed notice.
4. Posted sign.
5. Newspaper news release.
6. Personal one on one contact.
7. Posted notice on local bulletin boards.

8. Public service announcement on radio or television.
9. Legal notice.
10. Town meeting.

Removal of Debris and Rubbish

Debris and rubbish deposited on or along the highway is picked up and disposed periodically as necessary. Debris such as fallen branches and articles that have fallen from vehicles, rocks, or earth slides onto the traveled portion of the roadway or onto shoulders or ditches should be removed immediately.

The remains of animals killed by motor vehicles should be removed promptly and buried at convenient locations. If license tags are present on domestic pets, notification of appropriate city or county is encouraged. The Wildlife Road Kill Report, Form 335-002, should be completed, especially for deer and elk, and submitted to Headquarters. This record of killed wildlife aids in the placement of signing and other preventive measures.

Occasionally, items of value are cleared from the right of way. If possible, the owners of the property should be notified. Otherwise, the property is retained for 30 days and the area office is notified. Generally, owners of such property will contact the department. If the property is not returned to the owners, the region either places the item in inventory or declares it surplus.

Litter Control and Partnerships for Roadside Enhancement

Litter is highly visible. A clean or littered roadside creates a perceived indication of the overall maintenance service level. Litter control and local community roadside enhancement are not high maintenance priorities. Roadside partnerships allow WSDOT to accomplish roadside clean up and enhancement at minimal cost.

Responsibility for litter control on state highways is shared between WSDOT and WSDOE.

WSDOE administers a fund generated through a state tax on the sale of all containerized goods, and is charged with leading education and prevention programs. WSDOE also utilizes a portion of the fund to pay for litter pick up programs, which may be employed to assist with cleaning litter on state highways.

The majority of litter pick up initiated by WSDOT takes place through the administration of the Adopt-a-Highway (AAH) program. WSDOT maintenance employees typically pick litter in advance of mowing operations to prevent shredding and spread of litter by mowing equipment, or where large debris such as discarded furniture items and tire shreds are present and pose a hazard to traffic.

The largest maintenance expenditure for litter control results from the pick up and disposal of bags filled by AAH volunteers, and WSDOE sponsored programs.

Adopt-a-Highway

The Adopt-A-Highway Program (AAH) allows citizens and businesses an opportunity to contribute to a cleaner environment and an enhanced roadside appearance through partnership with the WSDOT. The program is authorized and governed by state law as defined in RCW 47.40.100.

The program is intended for use in those situations where a volunteer group or business entity wishes to help WSDOT in the performance of litter control or other activities that will enhance the appearance of the roadside. Any activity undertaken as part of this program must be in the primary interest of the traveling public and must contribute to an improved visual and/or environmental condition. The outcome of any activity must be compatible with the surrounding roadside conditions and the department's overall policy and program goals.

Program Rules

It is important to maintain a level of consistency in administration of the program throughout the state, but the individual area maintenance offices must be somewhat flexible in their interaction with participating groups. Management of the program will therefore vary to some degree throughout the state; these rules and procedures are intended to provide consistency on statewide programmatic and legal issues.

Participant Eligibility

Any organization, individual, family, business, corporation, or combination thereof may participate in the Adopt-a-Highway Program by either voluntary efforts or by financially sponsoring roadside enhancement activities. The terms for each assignment shall be specified on the Adopt-a-Highway Agreement and subject to the following rules:

The name displayed on the AAH recognition sign shall be the official name of the organization, individuals, or business. Only the name may be displayed on the sign, no other information may be included. In the case of privately sponsored adoptions, where logo panels are provided by the sponsoring organization, additional information may be included if it is part of the organization's official logo.

Organizations shall not be eligible if their name:

1. Endorses or opposes a particular candidate for public office.
2. Advocates a position on a specific political issue, initiative, referendum, or piece of legislation.

3. Includes a reference to a political party.
4. Includes any words or reference to anything that may be considered or construed to be obscene to the general public.

Organizations whose agreements are terminated for failure to comply with terms shall be ineligible for participation until five years from the date of the termination.

Assignment of Sections

Sections shall be assigned on a first come, first served basis. Consider the type of location and anticipated volume of litter in relation to the type of group or privately sponsored adoption. Assignment of groups, locations, management of waiting lists, and special limitations or restrictions are determined by the regions. Limit volunteer adoptions due to safety concerns in locations with high traffic volumes, high litter volume, or difficult access. Sponsored adoptions may occur anywhere except construction zones. Standard litter control sections range from a minimum of two centerline miles to a maximum of ten centerline miles in length. Single organizations may adopt as many sections as desired, but each section adopted by that organization on a given route must be separated by a minimum of ten miles in the direction of travel. Wherever possible assign new adoptions next to existing adoptions.

Sometimes the AAH Program is used to initiate a roadside enhancement in addition to or other than litter control. The activities may include planting projects or graffiti removal. In these situations assignments may be made for specific locations less than two miles in length, such as at interchanges or bridge crossings.

For type and placement of AAH participant recognition signs, see [Traffic Manual](#) (M 51-02) Chapter 2.7.J and Appendix 2-9, signs 16-901 thru 16-905.

AAH agreements last for a minimum period of two years. The termination or renewal date for all agreements is February 28, unless otherwise canceled by either party. Agreements can be terminated by either party upon 30 days notice. For routine two year renewals, organizations with previously assigned sections have first right of refusal for their sections upon renewal.

Interruption of agreements may occur due to highway construction or improvement projects. WSDOT will notify all affected participants in the event of interruptions. During this period the area will be reserved for the original participants. Upon completion of construction the original participants have the option of renewing or terminating the agreement.

In some cases it may be desirable to establish agreements for special clean up or enhancement activities through a General Permit with Special Provisions for Roadside Maintenance.

Volunteer Adoptions

Volunteer adoptions are established through the form titled Adopt-a-Highway Agreement for Volunteers (Form 520-029) (see [Figure 6-2](#)).

Each volunteer organization participating in the program shall have a designated leader or coordinator.

All participants shall be at least 15 years of age.

All participants will submit a signed Adopt-a-Highway Participant Registration Form (see [Figure 6-3](#)) to WSDOT. This includes the requirement for signed parental consent to be submitted for all minors (participants under the age of 18), prior to their participation in any roadside activities.

During roadside clean up or enhancement activities, there shall be at least one adult supervisor present for every eight minors.

Upon completion of any and all AAH events, volunteers shall complete and submit to the department within seven days an Adopt-a-Highway Volunteer Participant Activity Report (see [Figure 6-4](#)).

Sponsored Adoptions

Sponsored adoptions are established through the form titled Adopt-a-Highway Agreement for Privately Sponsored Work (Form 520-028) (see [Figure 6-5](#)). This is a three party agreement between WSDOT, the sponsoring organization, and the organization providing the clean up or enhancement. WSDOT is not responsible for agreements or contracts made between a sponsoring organization and the organization providing the clean up or enhancement. Sponsored adoptions may be initiated by either a sponsor or a potential contractor wishing to solicit a sponsor. Agreements are granted on a first come, first served basis and will only be granted when a sponsor or contractor presents a copy of a signed contract to conduct the required work.

The cost of privately sponsored adoptions and the work involved is intended to be covered by the sponsor. The agreement between the sponsor and the sponsor's contractor must include provisions for all the equipment, materials, labor, and insurance necessary to accomplish the work specified in the agreement. Sponsors are required to pay a fee to the department covering the cost of sign fabrication, installation, and maintenance. The fee is based on the size and total number of signs required to satisfy the agreement, times the average cost per square foot for fabrication, and installation of the signs. The per sign cost also includes a nominal administration fee to help defer the cost of establishing the agreement and coordinating with the sponsor and the sponsor's contractor over time.



Adopt-a-Highway Agreement for Volunteers

Agreement Number:

This Agreement is made and entered into and between the Washington State Department of Transportation (WSDOT), hereinafter called the "Department" and

_____ ,
hereinafter called the "Grantee".

Whereas, the Department is granted the authority under RCW 47.40 to establish a state-wide Adopt-A-Highway Program: And whereas the Grantee wishes to contribute toward the effort to enhance roadside appearance;

The Department does hereby authorize the Grantee permission to participate in the Adopt-A-Highway Program by picking up litter, and conducting other enhancement work if specified, within the assigned section of highway designated below, in accordance with the following terms and conditions:

The Grantee does hereby agree:

1. To conduct activities in a safe manner and comply with any conditions as may be required by the Department for safety of the participants. Safety is the number one priority of the program.
2. To assign a leader to each crew, and that crew leader shall have a copy of this agreement with him/her while working on the roadside.
3. To pick up litter no less than _____ times per year. Additional clean ups should be done as necessary to maintain a neat appearance. Recommended interval for cleanup is:
_____ .
One cleanup shall take place during the month of _____ .
4. To have all participants wear the hat and vest furnished by the Department when out on the roadside. No more than _____ people shall participate in the activity at one time.
5. To have no more than _____ vehicles parked on the highway shoulder within the assigned area during an activity.
6. Participants shall be 15 years of age or older. The Grantee shall furnish supervision by one or more adults for every eight (8) minors (under 18 years of age) participating in the activity.
7. Each participant shall receive and review safety training materials and training aids provided by the Department before participating in a roadside activities.
8. To obtain supplies and materials from the Department during regular business hours.
9. To comply with all specifications in the attached Adopt-a-Highway Program Traffic Control Plan when conducting program activities.
10. To place filled bags at the highway shoulder for pickup and disposal by the Department.
11. Participants who find anything that they suspect to be hazardous shall not touch it, but take appropriate precautions and report the location and description of the material/substance to the Department Representative.

DOT Form 520-029
Revised 1/98

Adopt-a-Highway Agreement for Volunteers (Form 520-029)
Figure 6-2



Adopt-a-Highway Participant Registration Form

Name of Adopting Organization			
Name of Participant		Last four digits of Social Security Number	
Address	City	Zip Code	Telephone Number
Person to notify in case of emergency		Relationship	
Address	City	Zip Code	Telephone Number

The Washington State Department of Transportation's Adopt-a-Highway Program allows volunteers to enhance the appearance of Washington's state highways. Participants are advised that working adjacent to a state highway can be hazardous and shall exercise due care in performing litter pick up activities. Participants must receive safety training utilizing training aids furnished by the WSDOT prior to participating in any cleanup activities. Participants shall wear the hat and vest furnished by WSDOT, and appropriate protective clothing during cleanup activities.

Participants are entitled to receive full coverage for medical treatment necessitated by an injury incurred during participation in the Adopt-a-Highway Program under the Medical Aid Provisions of the Worker's Compensation Act, which is administered by the Department of Labor and Industries, but not for loss of time due to injury or illness or for lasting disability or death.

By signature below I verify that I am a volunteer, 15 years of age or older, have viewed the Adopt-a-Highway Safety Video, and read the Adopt-a-Highway Safety Tips Brochure. I also understand the right, responsibilities, and privileges of participation in the Adopt-a-Highway Program, and agree to hold harmless the Washington State Department of Transportation and their employees from liability for damages or injury resulting from my participation in this program.

Signature of Participant
Signature of Parent or Guardian if Participant is under the age of 18 years

Adopt-a-Highway Participant Registration Form

Figure 6-3



Adopt-a-Highway Agreement for Privately Sponsored Work

Agreement Number:

This Agreement is made and entered into and between the Washington State Department of Transportation (WSDOT), hereinafter called the "Department" and

_____ ,
hereinafter called the "Grantee".

Whereas, the Department is granted the authority under RCW 47.40 to establish a state-wide Adopt-A-Highway Program: And whereas the Grantee wishes to contribute toward the effort to enhance roadside appearance;

The Department does hereby authorize the Grantee permission to participate in the Adopt-A-Highway Program by privately contracting with:

_____ ,
hereinafter called the "Grantee's Contractor",

to accomplish (1) the work described below, (2) within the assigned section of highway designated below, and (3) only in accordance with the following terms and conditions:

The Grantee does hereby agree:

1. Maintain and honor a separate contractual agreement with the Grantee's Contractor to accomplish all work as described in this agreement.
2. To pay a fee of \$_____ to the Washington State Department of Transportation, to cover the cost of sign fabrication, installation and maintenance, and the cost of administering this agreement.
3. To notify the Department in the case of any change in party designated as the Grantee's Contractor and cooperate in the execution of a new agreement prior to new Grantee's Contractor engaging in any work.
4. To ensure that the Grantee's Contractor's work is in compliance with the terms of this agreement. Non-compliance will result in a termination of this agreement upon 30 days written notice.
5. To ensure that the Grantee's Contractor complies with all the necessary safety requirements, private insurance requirements, reports to the Department, procedural requirements and all other terms and provisions as described in this agreement.
6. In the case where the Grantee's Contractor is a private and independent contractor, the Grantee shall obtain at its sole cost, or cause the Grantee's Contractor to obtain at its sole cost, and keep in force during the term of the agreement, for the operations specified in this agreement, the following insurance requirements with companies licensed to conduct business in the State of Washington and approved by the State Insurance Commissioner pursuant to Chapter 48.05, RCW:
 - A. Commercial General Liability Insurance written under Insurance Services Office Form CG0001 or its equivalent with minimum limits of \$1,000,000 each occurrence and \$2,000,000 in the aggregate for each policy year with the State of Washington named as an additional insured in connection with the Grantee and Grantee's Contractor's performance of the work specified in this agreement.
 - B. Commercial Auto Liability Insurance providing bodily injury and property damage liability coverage for all owned and non-owned vehicles assigned to or used in the performance of the work for a combined single limit of not less than \$1,000,000 each occurrence with the State of Washington named as an additional insured in connection with the Grantee/Grantee's Contractor's performance of the work specified in this agreement.

DOT Form 520-028
Revised 6/98

Adopt-a-Highway Agreement for Privately Sponsored Work (Form 520-028) Figure 6-5

Each sponsoring organization shall have a designated contact person. Each organization providing clean up or enhancement work shall have a designated crew leader for each adopted section and a designated central contact for the organization.

If, during the agreement period, the sponsoring organization fails to meet its financial obligation for the activities specified, WSDOT will allow the organization providing the clean up or enhancement to continue work under the agreement for up to 30 days, at their own expense. If the organization providing the enhancement work fails to obtain a new sponsor within 30 days, the agreement automatically terminates and all agreed upon conditions for default shall apply.

If, during the agreement period, the organization providing the clean up fails to meet its obligation or otherwise dissolves its agreement with the sponsoring organization and discontinues work, the sponsoring organization has 30 days to find a new organization to provide the clean up. If the sponsoring organization fails to contract with a new organization to provide the clean up within 30 days, the agreement automatically terminates and all agreed upon conditions for default shall apply.

Upon completion of AAH events, the organization providing the clean up completes and submits a monthly report to the department.

General Permits for Roadside Enhancement

In some cases a General Permit with Special Provisions for Vegetation Management may serve as the most appropriate means to accomplish proposed roadside enhancement or special clean up work. Use this as an option over an AAH agreement if:

- The permit Grantee is not interested in recognition through the AAH program.
- The proposed work overlaps with existing AAH litter control assignments.
- The proposed work is a situation where an abutting neighbor maintains, such as a “No Spray” agreement.
- The proposed work consists of a limited number of events.

Fill out all General Permits for roadside enhancement work using the AAH database program. This allows information to be recorded and accessed in relation to any questions regarding statewide roadside partnerships.

AAH Administrative Roles and Responsibilities

Each region, and each maintenance area has unique personnel resources and responsibilities. They must assign responsibilities for the AAH Program to fit their maintenance and operations management structure.

Maintenance and Operations Responsibilities

The State Maintenance Engineer will designate the AAH Program Manager. This position will be responsible for:

1. Establishing and maintaining standard procedures to provide uniform implementation of the statewide AAH Program.
2. Providing, maintaining, and updating a statewide network database containing all participant information and standard forms, agreements, correspondence letters, and recognition certificates for the AAH Program.
3. Developing, producing, updating, and distributing to the regions all public information on the AAH Program. This includes brochures, safety literature, safety videos, and the WSDOT Web site.
4. Maintaining records on all participating sponsored contractors including proof of insurance, and monthly reports.
5. Assisting the regions in coordination of AAH partnerships throughout the state including litter control and enhancement efforts.
6. Overseeing and commenting on all procedures and issues relating to the AAH Program, including review of all proposed agreements which include enhancement activities other than litter control prior to signature.
7. Pay premiums or assessments required under the Revised Code of Washington (RCW) 51.12.035 to secure medical aid benefits under Chapter 51.36 RCW for all volunteers participating in the Program.
8. Record all agreement information and participant activity on the statewide AAH Database and update as needed.

Region Responsibilities

The Regional Administrator may delegate responsibilities for regional management and operation of the AAH Program to best serve the Program in that region. Day-to-day interaction with AAH participants will occur at the maintenance area level, but the area offices will receive varying levels of assistance from the regional offices throughout the state. The regions shall delegate responsibility for the following:

1. Assignment of participating groups or sponsors to appropriate sections of highway.
2. Work with potential partners to develop proposals for roadside enhancement other than litter control.
3. Determine appropriate specifications for all agreements, including frequency of litter pick up, special provisions, and plans for special enhancement projects.

4. Inform and discuss, if requested, with the Washington Federation of State Employees; regional Chief Shop Steward, any projects other than volunteer litter control prior to approval of the agreement.
5. Erect and maintain AAH Recognition Signs in accordance with signing guidelines contained in the *Traffic Manual* (M 51-02) Chapter 2.7.J.
6. Furnish volunteer groups with trash bags, required sign(s) and stand(s), a warning light, hats and vests for all volunteer participants, and all or a portion of the materials and provide assistance required for implementation of enhancement projects other than litter control.
7. Distribute safety information, training aids, and provide consultation to volunteer groups and sponsored contractors.
8. Pick up and dispose of litter bags collected by volunteer participants.
9. Collect and distribute funds paid for privately sponsored agreements to cover costs of sign fabrication, installation and maintenance, and processing agreement.

Guidelines for Litter Crew Traffic Control

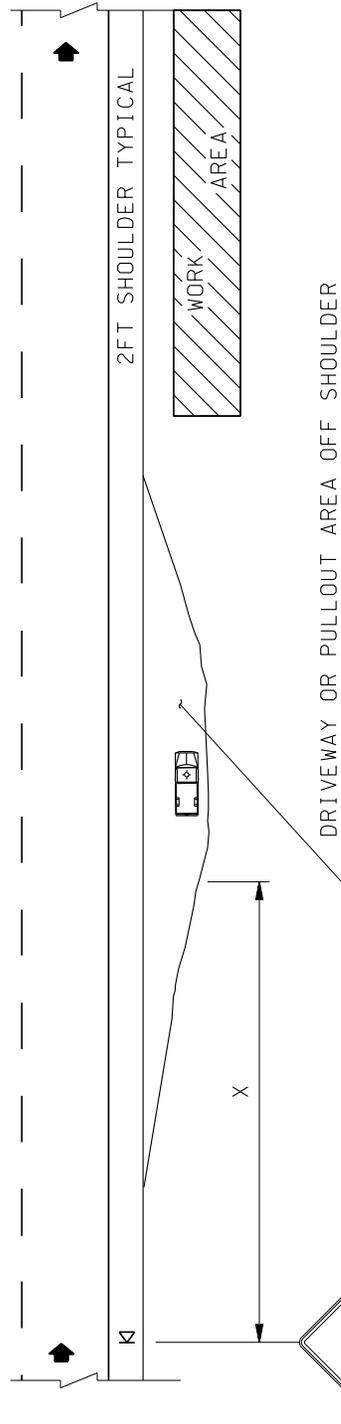
- Review traffic control plans prior to going out to pick up litter.
- Drive through assigned section and determine what safety concerns you will be facing.
- No stopping, parking, or buffering in the travel lane.
- Choose a safe place to let crew members out of the vehicles.
- Passengers should get out of the vehicle on the side away from traffic.
- Litter crew members should not walk on the paved shoulder.
- Walk facing traffic whenever possible.
- All litter crew members are required to wear an approved safety vest.

Two-lane/Two-way Roadway (see *Figure 6-6*)

1. Work areas should be limited to 2-mile increments.
2. Pick litter up only one side of the road at a time.
3. Use pullouts and driveways to get safely off the road.
4. Vehicles must stay off the paved, traveled portion of the highway and should use pullouts and driveways for buffering and loading and unloading.

GENERAL NOTES

- LITTER CREW PERSONNEL ARE TO REMAIN OFF THE PAVED SHOULDERS.



* W21-14
48" x 48"
B/O

* OR OTHER APPLICABLE LITTER CREW SIGN

SIGN SPACING = X (feet) (1)		
Rural Highways	60/65 MPH	800+-
Rural Roads	45/55 MPH	500+-
Rural Roads & Urban Arterials	35/40 MPH	350+-
Rural Roads, Urban Arterials Residential & Business Districts	25/30 MPH	200+- (2)
Urban Streets	25 MPH or LESS	100+- (2)

ALL SIGNS ARE 48" x 48" BLACK ON ORANGE UNLESS OTHERWISE DESIGNATED.

(1) All spacing may be adjusted to accommodate interchange ramps, at-grade intersections, and driveways.
(2) This spacing may be reduced in urban areas to fit roadway conditions.

LEGEND

- ▣ SIGN LOCATION
-  CREW VEHICLE W/ LIGHT

LITTER CREW TRAFFIC CONTROL PLAN
TWO-LANE / TWO-WAY ROADWAY

(REVISED FEBRUARY 2008)

Litter Crew Traffic Control Plan – Two-lane/Two-way Roadway
Figure 6-6

Shoulder Closure – High Speed Roadway (see [Figure 6-7](#))

1. Work areas should be limited to 2-mile increments.
2. Pick litter up on one side of the road at a time.
3. Vehicles must stay off the paved, traveled portion of the highway.
4. Find a safe place to set up signs and unload crew members.
5. When parking on shoulder, a minimum of 2 feet from the travel lane is required.

Median Shoulder Closure (see [Figure 6-8](#))

1. Work areas are 2-mile increments.
2. Find a safe place to set up signs and unload crew members.
3. Vehicles must stay off the paved, traveled portion of highway.
4. When parking on a shoulder, a minimum of 2 feet from the travel lane is required.

Auxiliary Facilities**Safety Rest Areas**

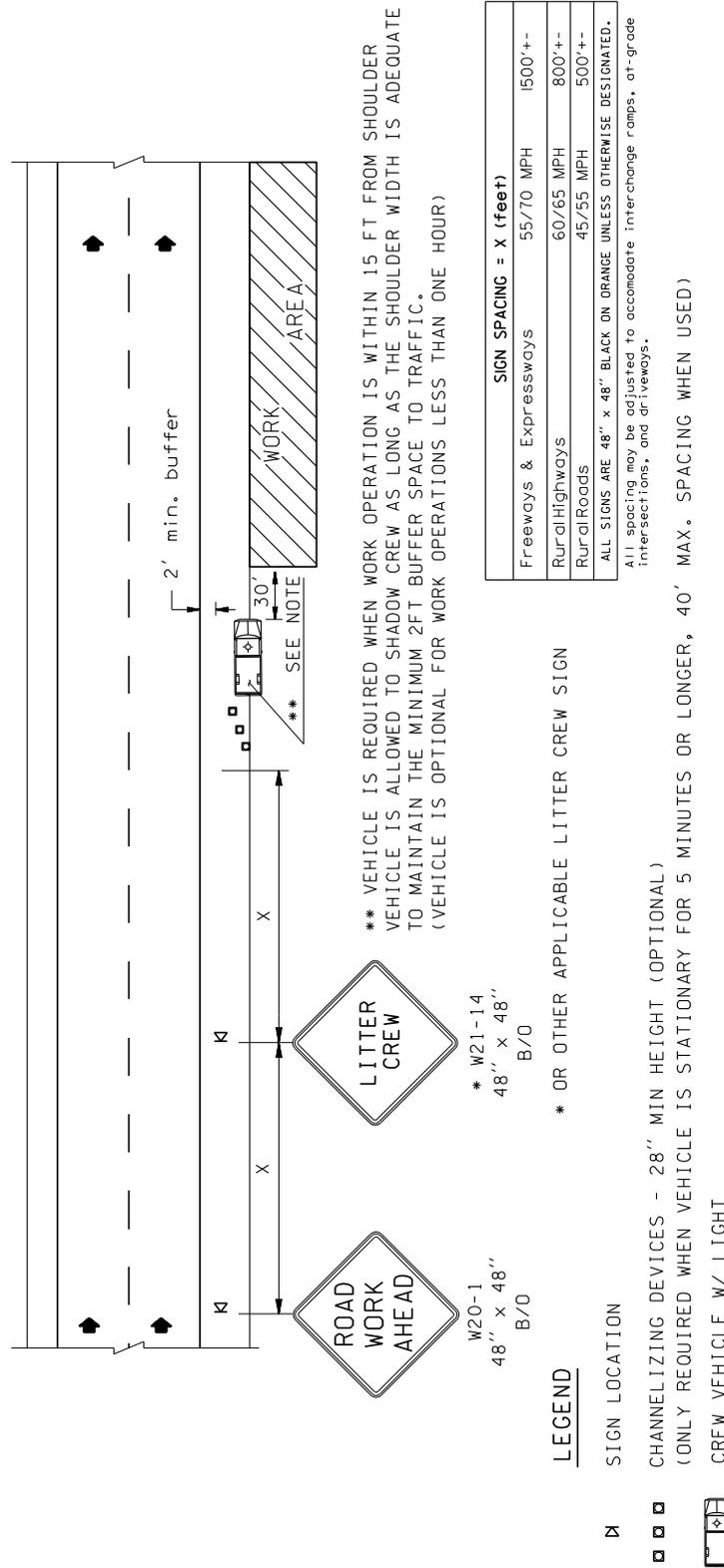
Safety rest areas have been developed throughout the state adjacent to the highway and within the right of way. These facilities provide places where motorists can get off the highway for short periods to nap, stretch, snack, and/or use the rest room. They also provide a safe place to pull over and telephone for help in the event of vehicle break down. Rest areas contribute to highway safety by allowing drivers to become refreshed and more alert when they resume their journey.

Regular maintenance of rest areas is important. A clean functioning rest area gives visitors and taxpayers a good impression of the state and of WSDOT. Frequency of maintenance depends largely on the use of the individual areas. Clean and service rest rooms at least twice per day or at four-hour intervals during periods of high use. Empty all trash cans. Pick up ground litter and have it removed on schedule. Wash and clean picnic tables and benches at least once a week or as often as necessary to maintain a neat appearance.

A poorly maintained safety rest area will tend to collect added trash. Users will have little respect or desire to put his trash in a litter barrel when large amounts of trash are already scattered about. Similarly, graffiti and other vandalism must be quickly repaired or additional abuse is likely. Some areas with toilets that are maintained by the department must receive extra attention and be maintained to a high degree of sanitation. Sewage disposal facilities

GENERAL NOTES

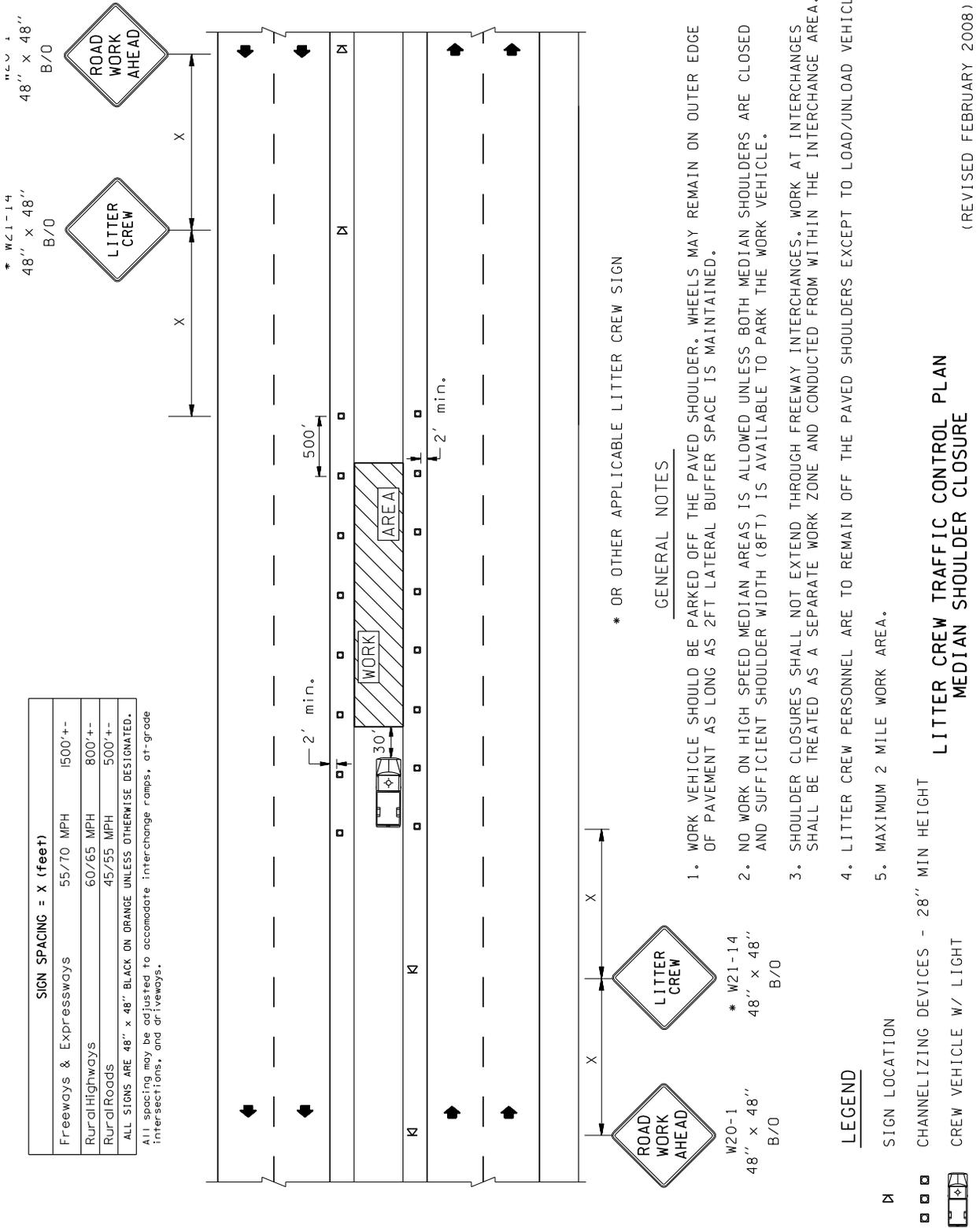
1. WORK BEHIND BARRIERS, MORE THAN 2FT BEYOND A CURB OR BEYOND 15 FT FROM THE SHOULDER DO NOT REQUIRE WARNING SIGNS AND CONES IF THE WORK VEHICLE WARNING BEACON IS VISIBLE.
2. NO WORK ON HIGH SPEED MEDIAN AREAS IS ALLOWED UNLESS BOTH MEDIAN SHOULDERS ARE CLOSED AND SUFFICIENT SHOULDER WIDTH (8FT) IS AVAILABLE TO PARK THE WORK VEHICLE. (SEE MEDIAN SHOULDER CLOSURE PLAN)
3. LITTER CREW PERSONNEL ARE TO REMAIN OFF THE PAVED SHOULDERS EXCEPT TO LOAD/UNLOAD VEHICLES.
4. RECOMMEND A SPOTTER WHEN POSSIBLE.
5. REFER TO ADOPT A HIGHWAY GUIDANCE FOR ADDITIONAL INFORMATION.
6. TWO MILE LIMIT ON WORK AREA.



Litter Crew Traffic Control Plan – Shoulder Closure – High Speed Roadway
 Figure 6-7

LITTER CREW TRAFFIC CONTROL PLAN
SHOULDER CLOSURE – HIGH SPEED ROADWAY

(REVISED FEBRUARY 2008)



Litter Crew Traffic Control Plan – Median Shoulder Closure
Figure 6-8

need scheduled maintenance of septic tanks, drain fields, pumps, filters, and back-flow prevention devices. In some rest areas chemical toilets are provided and maintained under private contract. Check them to assure that they are properly maintained. If they need attention or if there is indication of vandalism, report it immediately.

Some areas are provided with drinking water from springs or wells. Check these regularly for repair and sanitation. Take test samples of water to ensure a clean water supply. Turn off or divert contaminated water supplies until the source of contamination is found and corrected.

Park and Ride Lots

It is the policy of WSDOT to plan, coordinate, develop, and implement effective partnerships for park and ride facilities. Clean, well maintained facilities help to instill a sense of confidence and safety for the users. Maintenance is critical for customer and vehicular safety, accessibility, utilization, protection of the infrastructure investments, and reduction of potential liabilities for the department and/or transit agency.

Whenever possible, maintenance of park and ride facilities is arranged through agreement with the local transit agency. In cases where WSDOT maintenance is responsible for care of a facility, the *WSDOT Park and Ride Facilities Manual* (M 3010.00) provide guidance on activities and procedures.

Historical Markers

Historical markers and other interpretive signing within the right of way are maintained jointly with the Washington State Parks and Recreation Commission. Historical or interpretive signs and associated structures are maintained by Parks. WSDOT maintains road approaches, parking areas, litter barrels, and advance advisory signing.

Viewpoints

Viewpoints have been provided at many scenic locations. Like safety rest areas they are a definite asset and safety factor to the motorist. They generally consist of a parking area with litter barrels. Maintenance requirements are not as intense as for rest areas. But, viewpoints do require regular checks to keep litter barrels emptied and trash picked up. Maintain parking areas and keep fences and guardrail in good repair. Assure all warning signs are in place and clearly legible. Remove all undesirable brush that would reduce sight distance and obstruct the view. Dispose the debris away from the viewpoint.

A

- AAH Administrative Roles and Responsibilities, 6-31
- Abandoned Cargo, 1-5
- Abandoned or Illegally Parked Vehicles, 7-7
- Abutments, Bulkheads, Piers, and Intermediate Bents, 5-3
- Acronyms and Abbreviations, 11
- Administration and Logistics, 1-2
- Adopt-a-Highway, 6-24
- Advance warning, 2-2
- Aggregate, 3-16
- Aggregate (Chip) Seal, 3-14
- Agreed Upon Guidelines, 1-2
- Alligator Cracking, 3-2
- Application, 8-6
- Application of Asphalt, 3-22
- Aquatic Pesticide Applications, 6-18
- Asphalts and Emulsions, 3-15
- Asphalt Emulsion Surface Treatment, 3-14
- Asphalt Wearing Surface, 5-3
- Assignment of Sections, 6-25
- Automatic Pumps, 4-4
- Auxiliary Facilities, 6-35

B

- Bank Protection, 4-5
- Betterments - Pavement Markings, 1-3
- Bicycle Control, 2-10
- Biological Control, 6-20
- Blade Mixed Asphalt Mix, 3-27
- Bridge Drains, 5-3
- Bridge Information, 5-5
- Bridge Repair Guidelines, 5-4
- Budget, 10-9
- Buffer space, 2-3
- Burning Debris, 6-21

C

- Calibration Procedures, 3-17
- Changeable message signs, 2-4
- Changeable Message Sign Systems, 9-1
- Channelizing Devices, 2-4
- Checking the Bitumeter, 3-22
- Chip Spreader, 3-24
- Chip spreader Calibration, 3-23
- City/State Maintenance Responsibilities For City Streets As Part Of The State Highway System, 1-5
- City/State Maintenance Responsibilities Of Bridges That Convey Non-Limited Access State Highways That Are Also City Streets, 1-7

City Streets as Part of State Highways, 1-1, 1-2
City Streets on the State Highway System, 7-6
Cleaning of Distributor, 3-21
Closures, 7-7
Cold Pour Method, 3-10
Common Types of Emulsions Used for Chip Seals, 3-15
Concepts of Operations, 1-2
Concrete Deck, 5-3
Concurrences, 1-9
Concurrences with Recommendations for Acceptance, 1-9
Cone Placement Procedure, 2-5
Container Disposal, 6-18
Crack Sealing (or Pouring), 3-10
Cultural Control Methods, 6-20
Culverts, 4-3
Curbs and Railings, 5-3

D

Danger Trees, 6-13
Definitions, 6-1, 6-22
Delineation, 8-5
Detention Ponds and Tanks, 4-5
Devices, 2-7
Disposal of Logs Dumped on Right of Way, 6-14
Disposal of Surplus Items, 10-8
Distributor, 3-16
Distributor Calibrations, 3-17
Ditches and Gutters, 4-2
Documentation, 9-1
DOs of Seal Coating, 3-26
DO NOTs of Seal Coating, 3-27
Drainage, 4-1
Drainage from Abutting Properties, 4-1
Drain Pump Systems, 9-2
Dry Wells, 4-3

E

Edge Raveling, 3-4
Effects of Traffic on a Patching Operation, 3-9
Electrical System Maintenance, 9-1
Emergency Assistance, 7-8
Emergency Operating Procedures, 1-3
Emergency Procedures, 1-1
Enclosure Maintenance, 9-1
Encroachment – Maintenance Crew Responsibilities, 6-15
Encroachments – General, 6-14
Enforcement, 2-12
Environmental Aspects, 5-5

-
- Environmental Sensitivity, 10-10
 - Equipment, 10-8, 3-16
 - Expansion Joints, 5-3
- F**
- First Priority, 6-12
 - Flushing, 3-4
 - Fog Seals, 3-14
 - Franchises and Permits, 6-15
 - Fundamental Principles, 2-1
- G**
- Gate and Barrier Systems, 9-2
 - General, 3-1, 4-1, 5-1, 6-1, 7-1, 8-1, 9-1
 - General Conditions., 5-3
 - General Permits for Roadside Enhancement, 6-31
 - General Technique, 10-8
 - Grader Patching, 3-8
 - Grid Decks, 5-3
 - Guardrail (Barriers) Maintenance, 1-3
 - Guideposts, 8-8
- H**
- Handling Emulsified Asphalts, 3-28
 - Hand Signaling Devices, 2-7
 - Helpful Reminders, 10-8
 - Highway Categories, 7-3
 - Historical Markers, 6-38
 - Hot Pour Method, 3-10
- I**
- Illegal Tree Removal, 6-21
 - Illumination Systems, 9-2
 - Impact Attenuators, 8-10
 - Inspection, 5-1, 8-8
 - Instructions for Radio Operation, 10-8
 - Integrated Vegetation Management, 6-10
 - Intersection Control Beacons (Includes Hazard Beacons), 9-2
 - Inventoried Items, 10-8
 - Islands, 8-11
- L**
- Litter Control and Partnerships for Roadside Enhancement, 6-23
 - Load & Speed Restrictions, 3-2
 - Longitudinal Cracking, 3-3
 - Lowest Priority, 6-13

M

Maintenance, 8-3, 8-8, 8-10, 8-11
Maintenance and Operations Responsibilities, 6-32
Maintenance Field Personnel, 1-4
Maintenance Involvement in the Roadside Management Process, 6-4
Maintenance of Flexible Pavements, 3-2
Maintenance of Rigid Pavements, 3-11
Maintenance of Structures, 5-1
Maintenance of Zone 1, 6-6
Maintenance of Zone 2, 6-8
Maintenance of Zone 3, 6-10
Maintenance Superintendent or Supervisor, 1-4
Maintenance Yards, 10-6
Major, 9-2
Major Structures, 5-1
Marking Renewal or Replacement Frequency, 8-7
Materials, 8-6
Materials from State Quarries or Pits, 10-7
Material Selection, 3-15
Material Specifications-General, 10-7
Methods, 6-8, 6-9, 6-10, 6-11
Minor, 9-2
Minor Structures, 5-1
Miscellaneous, 10-1

N

Nighttime Activities, 2-9
Non-Inventoried Items, 10-8
Non-motorized Traffic Control, 2-10
Notification, 6-22
Noxious Weed Control, 6-12
Nozzle Size, 3-18

O

Off-Road Activities, 2-9
Oil Separators, 4-6
Organization and Assignment of Responsibilities, 1-2
Other Cutting Methods, 6-20
Overlay Patches, 3-6

P

Paint, 5-3
Parallel Ditches and Cross Culverts, 1-3
Park and Ride Lots, 6-38
Participant Eligibility, 6-24
Patching, 3-4
Patching with Base Repair, 3-4
Pavement Conditions for a Successful Project, 3-15
Pavement Deficiencies, 3-2

Pavement Maintenance Techniques, 3-4
Pavement Markings, 8-5
Pedestrian Control, 2-10
Pedestrian Detection and Display System, 9-3
Pesticide License, 6-17
Pesticide Sensitive Individuals, 6-18
Plan Development and Maintenance, 1-3
Policy, 6-10
Portland Cement Concrete Pavement Crack Pouring, 3-11
Post-Seal Inspection, 3-26
Posting Requirements, 6-17
Potholes, 3-3
Precautions, 7-9
Preparation for Winter Operations, 7-1
Procurement of Materials, 10-7
Product Labels, 6-17
Program Rules, 6-24
Proper Nozzle Angle, 3-21
Proper Pressure, 3-18

R

Raveling & Pitting, 3-3
Recommendations Accepted, 1-9
Reconstruction Principles, 8-1
Record Keeping, 6-17
Reference, 6-2
Regional Emergency Response Plans, 1-2
Region Responsibilities, 6-32
Removal of Dangerous Objects and Structures, 6-14
Removal of Debris and Rubbish, 6-23
Removal of Markings, 8-7
Repair, 8-8
Reporting, 10-10
Resources, 6-2
Right of Way Fences, 10-1
Roadside Functions, 6-2
Roadside Maintenance and the Maintenance Accountability Process, 6-4
Roadside Management, 6-1
Roadside Management Zones, 6-5
Roadside Treatment, 6-4
Roadway Illumination Systems, 9-2
Roadway Preparation, 3-16
Road Approaches – General, 10-1
Rockfall Ditches and Slope Benches, 4-3
Rolling, 3-25
Rolling Hot Mix Patches, 3-8
Rutting, 3-2

S

Safety, 2-1
Safety Rest Areas, 6-35
Sags and Humps, 3-4
Sand Seal, 3-14
Scheduling, 10-9
Second Priority, 6-13
Services, 9-3
Service Level Quality Measurement, 7-9
Signal Control Systems, 9-4
Signal Systems, 9-3
Significant Roadside Activities, 6-22
Signing, 8-2
Signing Responsibility, 8-2
Signs and Supports, 2-3
Sign Installation, 8-2
Sign Lighting Systems, 9-3
Sign Storage and Transportation, 8-4
Sign Visibility, 8-4
Snow and Ice Control, 7-1
Snow Plowing, 1-4
Special Criteria, 7-4
Sponsored Adoptions, 6-26
Spray Bar Height, 3-20
Spreader Box Patching, 3-7
Spreading Aggregate, 3-23
Spreading of Fines or Choking – Optional, 3-25
Sprinkler Systems, 9-4
Standard Run of Barrier, 8-9
State Owned Bridges That Convey City Or County Traffic Over
 A Limited Access Or Non-Limited Access Highway Corridor, 1-8
Steel Truss Members, 5-3
Stockpile Sites, 10-6
Storm Sewers, 4-4
Streaking Will Occur, 3-21
Stringers, Caps, and Floor Beams, 5-3

T

Television Systems, 9-4
Terminals and Anchors, 8-9
The Use of Pesticides, 6-16
Traffic Barriers and Impact Attenuators, 8-8
Traffic Control, 3-22
Traffic Control Devices, 2-3
Traffic Control Procedures, 2-8
Traffic Control Zones, 2-2
Traffic Services, 8-1
Training and Exercises, 1-3
Transitions, 8-10

Transit Vehicle Stop Zones, 8-11
Transverse Cracking, 3-3
Trespass and Encroachment, 6-14
Tunnels, 5-4
Typical Maintenance Responsibilities in Cities, 10-1
Typical Roadside Management Zones, 6-7

U

Under Drains, 4-4
Use of Mowing Equipment, 6-19
Utility Installations, 5-7

V

Vehicle Detection Systems, 9-3
Vehicle Display Systems, 9-3
Viewpoints, 6-38
Volunteer Adoptions, 6-26

W

Walls and Cribbing, 5-4
Waterways, 5-3
Water and Concrete Barriers, 2-6
Weather, 3-16
Wiring and Connection Maintenance, 9-1
Wood Truss Members, 5-3
Work on Other Roads and Areas, 7-6
Work on State Highways, 7-4
Work Scheduling and Reporting, 10-9
Work Zone Safety, 2-12
WSDOT Disaster Plan, 1-2

