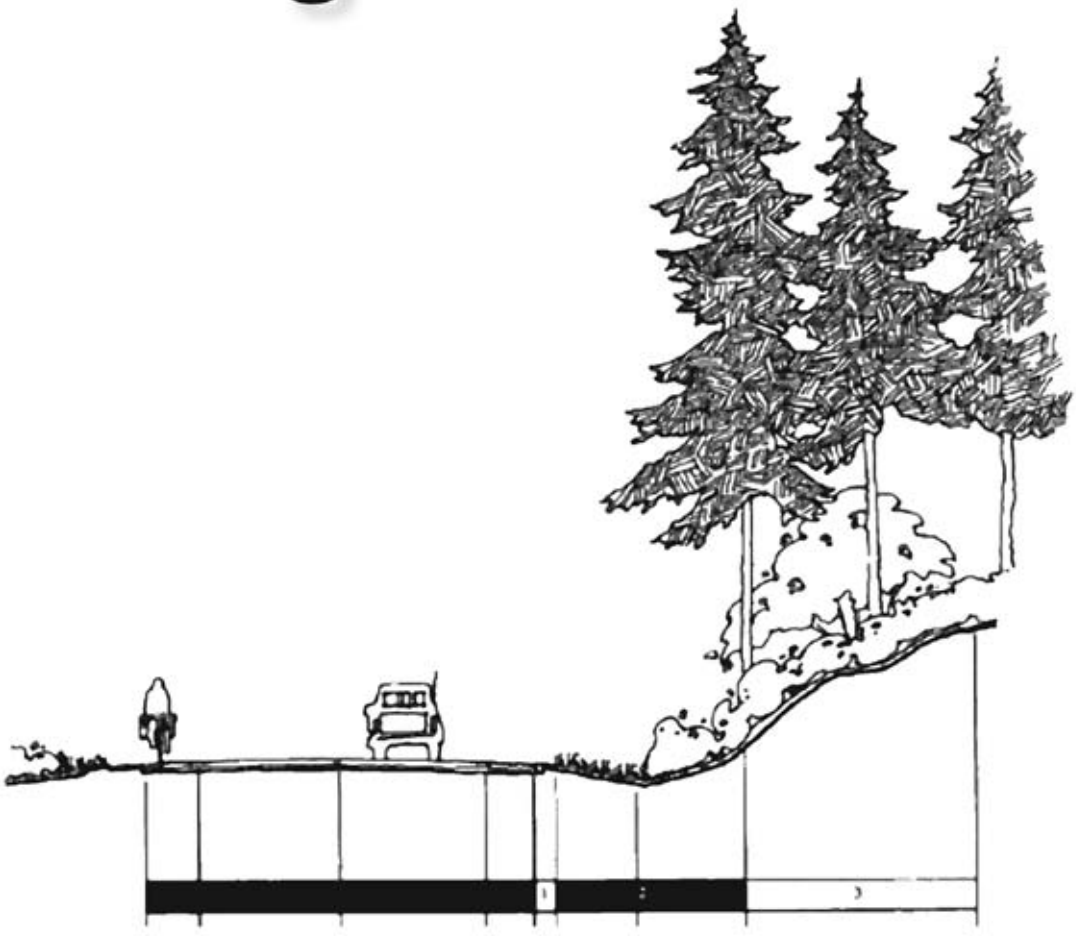
Guidelines for Vegetation Management



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FOREWORD

These guidelines will be of interest to local, regional, state and federal officials as well as other transportation professionals who work with them in dealing with roadside vegetation management. They will be of particular interest to those roadside vegetation managers just beginning their careers. The guidelines provide an overview of current agency practices, recent literature findings, and research on roadside vegetation management. Their primary purpose is to assist roadside vegetation managers in integrated roadside vegetation management decision-making processes into highway project planning, design, construction, and maintenance, as well as to document existing research and practice. Roadside vegetation managers are often faced with problems for which information already exists, in the form of reports and documents, or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated and as a result much of this useful information may go unused by the majority of roadside vegetation managers. These guidelines incorporate the current knowledge and practice of roadside vegetation management. The guidelines also include information extracted from survey responses from 29 state agencies, a glossary that defines technical terms and acronyms, and a compendium of 40 common roadside invasive species, with descriptions of each species, its biology, and common methods of control.

PREFACE

The impetus to writing these guidelines came about from the realization that there was an enormous amount of practical information on roadside vegetation management available but much of it was not being used because it was scattered and unevaluated. The information was dispersed not only in the mainstream literature, but in localized documents and research reports within government agencies. Upon undertaking this task, it quickly became apparent that another major source of the most current practical information on roadside vegetation management was that of the undocumented experience and expertise of roadside vegetation management practitioners. The unselfish cooperation of these individuals has greatly enhanced the utility of these guidelines. These guidelines provide DOT executive managers, middle managers, and supervising practitioners with a toolbox of effective strategies for planning and executing integrated roadside vegetation management programs.

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1.0 INTRODUCTION

To the uninitiated, roadside vegetation management may seem a routine job involving mowing, chopping down trees, and chemical applications. This is far from the truth.

Effective roadside vegetation management requires a high level of expertise and resources to plan, design, construct, and maintain the roadside environment. It requires the vegetation manager to make informed choices among management techniques and to integrate different techniques to achieve the greatest benefits. Such management is known as Integrated Roadside Vegetation Management (IRVM). IRVM involves the planting and establishment of sustainable vegetation on roadsides, and maintaining it through the use of cultural, mechanical, biological, and chemical methods *(161, 163, 183*).

The roadside vegetation manager today is faced with dwindling resources, increasing environmental and legal constraints, and increasing public pressure to provide safe and aesthetically pleasing roadsides.

Throughout the United States, and the world, roadside vegetation managers face similar challenges and opportunities. This project draws on the long term experience and expertise of these vegetation managers to create guidelines that provide the basic knowledge required to establish a roadside vegetation management program.

The guidelines are intended for any highway agency/organization, but will be particularly useful to those employees just beginning their career and needing to establish or improve their own vegetation management program. We are greatly thankful to the many roadside vegetation managers (from virtually every state) who provided us with literature and their feedback. The development of these guidelines would not have been possible without them.

2.0 EXECUTIVE SUMMARY OF BENEFITS

Before reporting on how to manage roadside vegetation, it is important to understand why it is done. The benefits of roadside vegetation management fall under the following categories:

- Safety
- Economics
- Erosion Control
- Environmental
- Legal and Regulatory Compliance
- Aesthetics
- Sustainable Transportation
- Context Sensitive Solutions
- Other Objectives

The roadside clearly has many different functions and these functions are not always compatible. For example, road safety and fire hazard management might require the removal of some vegetation, whereas environmental and landscape objectives may be to retain roadside vegetation.

To address these conflicts, an appropriate management framework needs to be established. Roadside management practices reflect the legislative obligations, economic pressures, and community values at the time. In the past, less consideration was given to the environmental value of roadside vegetation. Nowadays, roadside vegetation is recognized as an important asset and its management should reflect federal and state government policies including those for biodiversity. Likewise, the aesthetics of the roadside are very important and urban and environmental design is a key factor in new road construction projects. The public expects roadsides to be managed in a safe and environmentally friendly way.

3.0 SCOPE AND ORGANIZATION OF GUIDELINES

These guidelines provide a consistent, coordinated, proactive approach to roadside vegetation management. They are intended to be used as a starting point for a roadside vegetation management program and allow room for variations in state government laws, regulations, guidelines, and regional variation in roadside environments.

The guidelines do not include specific details on vegetation control practices, such as which specific herbicide to use, or which piece of equipment to purchase. Nevertheless, they provide enough information on vegetation management that new managers will generally understand how the various control methods and management structures work.

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APPENDIX A

Full Survey Results

Q1. Do you have a mission statement for your vegetation management program? A-2
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Q3. Have you recently done an assessment of your vegetation management program? If so, can you share your report with us? A-6
Q4. Have you further developed your plan to project the economic benefits of a good vegetation management program? If so, can you share that projection with us? A-7
Q5. Do you use the zone concept to plan your vegetation management program? If so, can you share your concept with us? A-9
Q6. Do you integrate condition assessment and inventory into the zone concept? A-11
Q7. Do you have a current condition assessment of your roadside vegetation? A-12
Q8. Have you established any vegetation management performance measures? If so, what are they? A-13
Q9. Have you used GPS/GIS methods in vegetation assessment? If so, how did you integrate GPS? A-15
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Q15. If possible, please provide details (such as an org chart) A-23
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Q17. Have you evaluated which contracting method is most effective? A-26
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Q19. Is your vegetation manager routinely involved in the planning, design of new or rehab highway projects? A-28
Q20. Do you have a formal, organized, and continuing training program? A-30
Q21. If so, describe the method your department uses to educate your staff—both management and field training . . . A-31
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Q23. Do you think vegetation research adds value or believability to the vegetation program? A-35
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APPENDIX B

Common Invasive Weeds

This document contains key information about 40 common invasive weeds of the United States *(By species name).*

Acroptilon repens	Russian Knapweed	B-3
Ailanthus altissima	Tree-of-Heaven	B-5
Bromus inermis	Smooth Brome	B-7
Bromus tectorum	Downy Brome (cheatgrass)	B-8
Cardaria draba	Hoary Cress (whitetop)	B-11
Carduus nutans	Musk Thistle	B-12
Centaurea biebersteinii	Spotted Knapweed	B-15
Centaurea diffusa	Diffuse Knapweed	B-17
Centaurea solstitialis	Yellow Starthistle	B-19
Cirsium arvense	Canada Thistle	B-21
Coronilla varia	Trailing Crownvetch	B-24
Cynodon dactylon	Bermudagrass	B-26
Elaeagnus angustifolia	Russian-Olive	B-27
Elaeagnus umbellate	Autumn Olive	B-30
Euphorbia esula	Leafy Spurge	B-32
Festuca arundinacea	Tall Fescue	B-35
Heracleum mantegazzianum	Giant Hogweed	B-36
Imperata cylindrical	Cogongrass (speargrass)	B-38
Isatis tinctoria	Dyer's Woad	B-40
Kochia scoparia	Kochia	B-41
Lepidium latifolium	Perennial Pepperweed (tall whitetop)	B-43
Ligustrum spp.	Privet	B-45
Lonicera tatarica	Tartarian Honeysuckle	B-47
Lotus corniculatus	Birdsfoot Trefoil	B-50
Microstegium vimineum	Japanese Stiltgrass	B-51
Pennisetum ciliare	Buffelgrass	B-53
Phalaris arundinacea	Reed Canarygrass	B-54
Phragmites australis	Common Reed	B-56
Polygonum cuspidatum	Japanese Knotweed	B-58
Pueraria lobata	Kudzu	B-60
Rhamnus cathartica	Common or European Buckthorn	B-64
Robinia pseudoacacia	Black Locust	B-66
Rosa multiflora	Multiflora Rose	B-68
Salsola tragus	Russian Thistle (tumbleweed)	B-70
Sapium sebiferum	Chinese Tallowtree	B-73
Solanum viarum	Tropical Soda Apple	B-75

Sorghum halepense Johnsongrass B-77
Taeniatherum caput-medusae Medusahead B-79
Tamarix spp Saltcedar or Tamarisk B-82
Tribulus terrestris Puncturevine B-84

Ordered by Common Name

Elaeagnus umbellate Autumn Olive B-30
Cynodon dactylon Bermudagrass B-26
Lotus corniculatus Birdsfoot Trefoil B-50
Robinia pseudoacacia Black Locust B-66
Pennisetum ciliare Buffelgrass B-53
Cirsium arvense Canada Thistle B-21
Sapium sebiferum Chinese Tallowtree B-73
Imperata cylindrical Cogongrass (speargrass) B-38
Rhamnus cathartica Common or European Buckthorn B-64
Phragmites australis Common Reed B-56
Centaurea diffusa Diffuse Knapweed B-17
Bromus tectorum Downy Brome (cheatgrass) B-8
Isatis tinctoria Dyer's Woad B-40
Heracleum mantegazzianum Giant Hogweed B-41
Cardaria draba Hoary Cress (whitetop) B-36
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