

HIGHWAY MANUAL
FOR
SUSTAINABLE LANDSCAPE MAINTENANCE



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Introduction

The Hawaii Department of Transportation manages more than 2,400 miles of paved freeways, highways and roadways on the six major islands of the State. The primary objective of HDOT is to provide safe and efficient travelways. As caretakers of roadside vegetation, you know that proper maintenance of roadsides is essential for a safe and pleasant driving experience. HDOT wants to bring about positive changes to roadside vegetation maintenance to make our roadsides safer, environmentally friendly and visually appealing, displaying a Hawaiian sense of place in a cost-effective, life-cycle manner. This manual will serve as the primary reference to help you make that happen. It is designed to provide you with the best ideas, concepts and tools for managing vegetation along roadsides in Hawaii.



Who should read this manual?

- ▶ HDOT landscape maintenance managers and grounds crew who maintain highway rights-of-way.
- ▶ Landscape designers.
- ▶ Roadside landscape vegetation contractors in Hawaii.
- ▶ HDOT and contracted inspectors.
- ▶ HDOT staff and contractors who are involved in planning and designing projects that need maintenance in the future.



What is the purpose of this manual?

This *Highway Manual for Sustainable Landscape Maintenance* will help you to:

- ▶ Become a good steward of the land.
- ▶ Learn to apply an integrated life-cycle approach to roadside vegetation management: understand key issues, planning, implementing, inspecting, monitoring and reviewing vegetation management to continuously improve practices.
- ▶ Learn roadside maintenance practices that are appropriate to your location and contribute to a Hawaiian sense of place while being consistent with the urban, suburban, rural, or conservation setting.
- ▶ Learn about standardized statewide roadside vegetation maintenance practices. As a manager, contractor, HDOT maintenance staff, or inspector, you will learn about standards and methods for common tasks.
- ▶ Learn strategies to prevent erosion, fertilizer, herbicide, sediment, debris and rubbish from entering our streams, rivers and oceans.
- ▶ Learn to detect new invasive species before they spread.
- ▶ Learn techniques to control the impacts and spread of invasive species that are already established along the roadside.
- ▶ Learn to better communicate with all people involved in roadside vegetation maintenance work within and outside of HDOT. Learn to gather relevant information and who to contact for specific issues.
- ▶ Learn to plan and implement environmentally safe and cost-effective methods of vegetation management along roadsides.

This manual will form the basis of a training program that all roadside vegetation maintenance staff and contractors are expected to take.



What does it mean to be a good steward?

The Hawaii Department of Transportation (HDOT) is one of the largest land stewards in the State of Hawaii managing over 2,400 miles of State roads. HDOT wants to bring about positive change to roadside vegetation maintenance with travelways that are safer, environmentally friendly, provide a sense of place, are visually appealing, and are managed in a sustainable manner. Good land stewardship should be the fundamental guiding principle for every action you take as an HDOT employee or contractor.

Being a good land steward means:

Taking care of the system as a whole – Always take a holistic approach to maintenance. A healthy ecosystem conducts a diverse array of ecological processes, such as soil formation, nutrient cycling, and hydrological cycling. These processes provide valuable ecological goods and services that benefit us all, including food, construction materials, clean air and water, climate regulation, natural beauty, tourism and recreation. Being a good steward means leaving the lands we manage a better place for the next generation.

Reduce waste and conserve resources – Strive to reduce consumption of renewable and non-renewable resources.

Make better use of existing materials, purchase local and sustainably produced materials, consider the full life cycle of products, and aim for zero waste.

Consider alternatives to chemical herbicides when other means are more practical or when there is the threat of an adverse environmental impact.

Replant eroded areas to help recharge our aquifers and reduce runoff and sediment.

Protect our biodiversity by nurturing native vegetation and eradicating invasive plants.

Use slow-release fertilizers or compost. Limit quick-release fertilizers which may leach through the soil or run off and pollute our waterways or cause algal blooms in the ocean.

Save our precious drinking water by optimizing irrigation controller programs to have seasonal programs with less irrigation during rainy season and regular/appropriate watering during the hot season.

Develop a compost program with the project's green waste.

Keep all fuel-powered equipment in perfect working order to reduce emissions. Use materials with less volatile organic compounds.

Maintain and enhance stability in nature – Wherever possible, sustain and encourage natural biological complexity and diversity; maintain natural functions on the land.

Doing your part – Remember, small changes combine to make a big difference. As you read this manual, consider all your options, question business as usual, make better use of our available resources, and find ways to lessen the negative impacts on our environment.

Eco

Always ask yourself, "Are the current practices the most sustainable?"



As caretakers of our Islands' roadside vegetation, you are the land stewards who take care of our finite resources and maintain a healthy ecosystem while providing a safe and pleasant driving experience. Your knowledge of proper vegetation maintenance will ensure a beautiful and sustainable landscape for all Hawaii's people and for the next generation who will inherit these Islands. You are responsible for making sure we leave behind for them an improved environment and a better quality of life.

This manual will serve as the primary reference to help you be a good steward. It is designed to provide you with the best ideas, concepts and tools for sustainably managing vegetation along Hawaii's roadsides.



How is this manual organized?

Chapter organization:

Chapter 2 and 3 – Planning roadside vegetation maintenance.

Plan integrated roadside maintenance according to a set of consistent standards. Here is a basic adaptive vegetation management template to create processes and solutions for your roadside situations.

Chapters 4 to 15 – Performing roadside vegetation maintenance.

These chapters address hands-on work in detail. A work plan or contract may form the basis of your work, but these chapters will help you understand what is expected when responding to a variety of situations. They also cover monitoring and inspection (quality control) of the various vegetation maintenance tasks.

Each chapter ends with a Reporting & Inspection box that contains important information that will need your compliance.



What do the initials and terms in this manual mean?

- ▶ **HDOT** – Hawaii Department of Transportation
- ▶ **Engineer** – Engineer, Branch Manager, Inspector or other HDOT representative in charge of planning or approving the work done on HDOT rights-of-way.
- ▶ **Right(s)-of-way** – Land set aside for transportation purposes and managed by a state or county agency; it usually refers to publicly managed land on the side of the road.
- ▶ **ROW** – Right-of-Way
- ▶ **ISC** – Invasive Species Committee
- ▶ **OISC** – Oahu Invasive Species Committee
- ▶ **HDOA** – Hawaii Department of Agriculture
- ▶ **HISC** – Hawaii Invasive Species Council



What icons draw my attention to important information?



Safety First! – Precautions you must take to work safely.



Jargon – Definitions and terminology are explained.



Tips – Objects you may need or actions you should take to do your job.



Warning – “Don’t do this” or watch for this problem.



Eco – Always choose a sustainable approach.



Remember – This is important.



Reporting & Inspection – File reports with the Engineer as required. Inspectors will check your reports and your work.



In a Nutshell – Summarizes “take-home messages.”



In a Nutshell

1. Be a good land steward. Take active responsibility for the lands under your care.
2. Stewardship is the recognition of our collective responsibility:
 - a. To retain the quality and abundance of our land, air, water and biodiversity.
 - b. To manage this “natural capital” to conserve all its values: environmental, economic, social and cultural.
3. Do your part: remember, small changes combine to make a big difference.
4. Consider all your options, question business as usual, make better use of our limited resources, and find ways to lessen the negative impacts on our environment.