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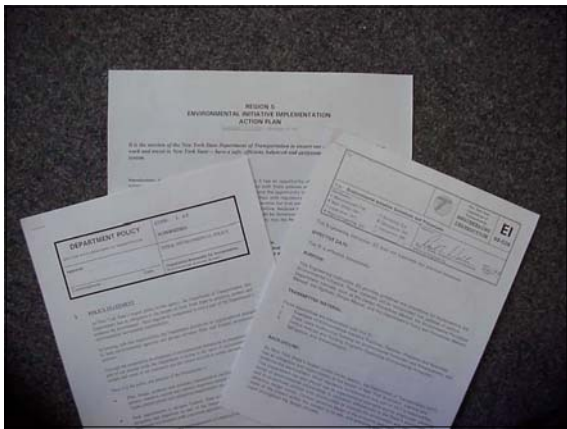
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## Did We Miss a Turn Somewhere?

*Transportation and the Environment – An Historic Overview*



- 50's - Interstate Era
- 60's - Environmental movement
- 70's - NEPA
- 80's - Permits
- 90's - Mitigation
- 00's - Streamlining ???
- 10's - Stewardship???
- 20's - ???????

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## NYS DOT Mission Statement

*It is the mission of the New York State Department of Transportation to ensure our customers – those who live, work and travel in New York – have a safe, efficient, balanced and environmentally sound transportation system.*



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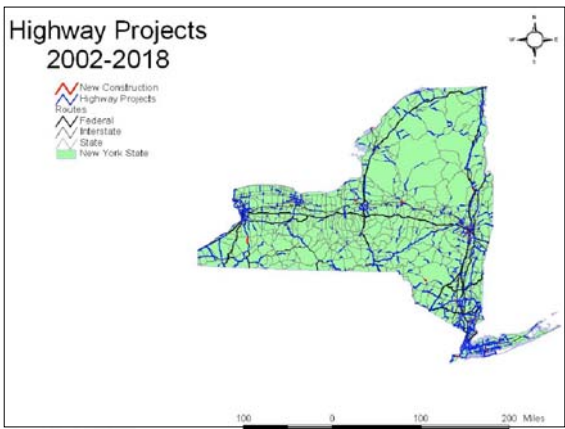
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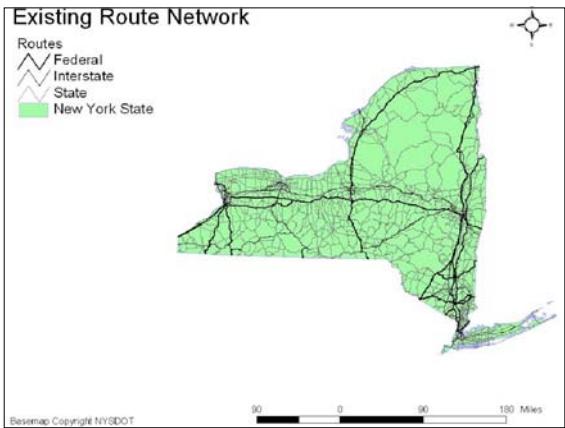
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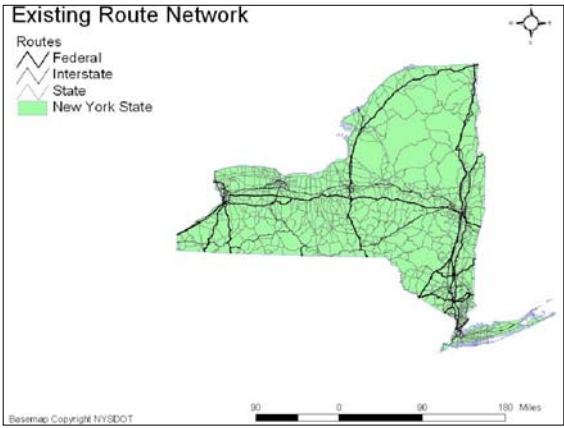
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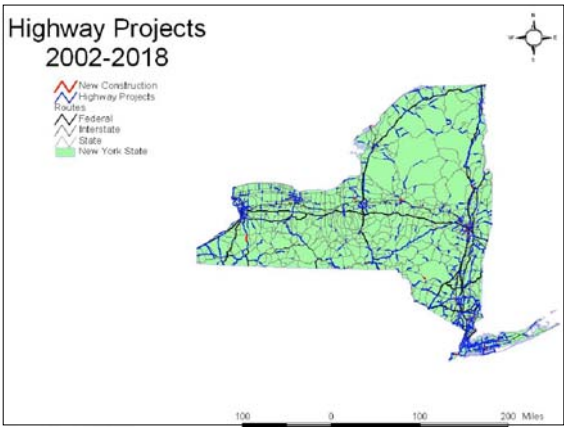
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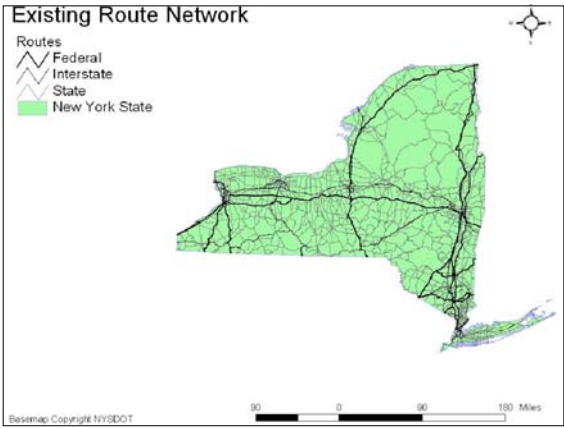
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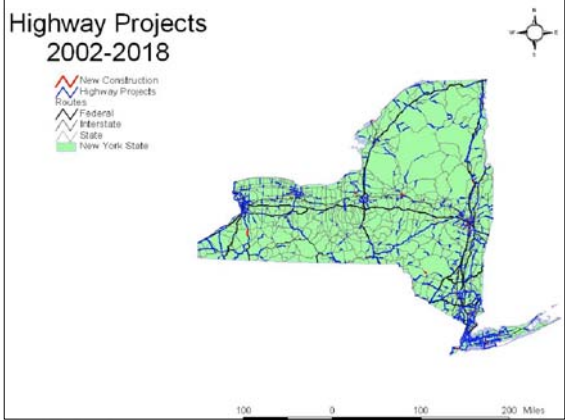
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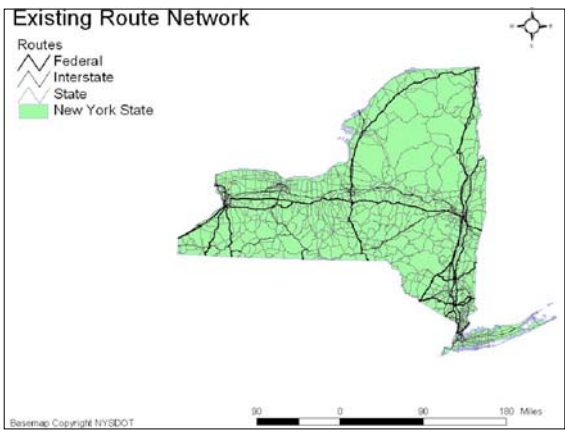
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**NYSDOT's  
Environmental Vision**

*What does stewardship mean to DOT?*

NYSDOT, as the state's largest public works agency, has an obligation and a responsibility to the people of New York to enhance, improve and protect the environment.



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## NYS DOT's Environmental Initiative

*Moving from Principle to Practice*

- Promote and strengthen an environmental ethic throughout the Department.
- Advance State environmental policies and objectives.
- Strengthen relationships with environmental agencies, groups and local municipalities.
- "IT'S OK TO BE GREEN"

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## Promote an environmental ethic throughout DOT

- Every DOT employee should look for opportunities to enhance the Department's environmental performance.

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**Peregrine Falcon nesting on Dunn Memorial Bridge**

The collage features a newspaper clipping with the headline "Peregrine falcons nesting in area again after hiatus". The text in the clipping discusses the return of peregrine falcons to the area after a long absence. It mentions that the birds were first seen nesting in the area in the late 1990s and that they have since become a regular sight. The clipping also notes that the birds are nesting on the Dunn Memorial Bridge, which is a popular spot for birdwatchers. The collage also includes a photograph of a falcon on a nest, a photograph of two young chicks on a nest, and a photograph of the Dunn Memorial Bridge.

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**Bikeways and multi-use trails**




**Interpretive kiosks and trailhead improvements**




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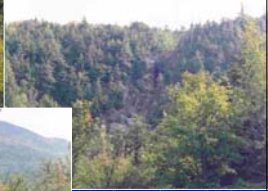
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**Scenic Vistas**

before

after




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**Invasive Plant Species Project**





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**Adjust ROW  
mowing  
management  
practices for  
habitat  
enhancement**



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**PIKE  
SPAWNING**



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**Karner blue butterfly study**



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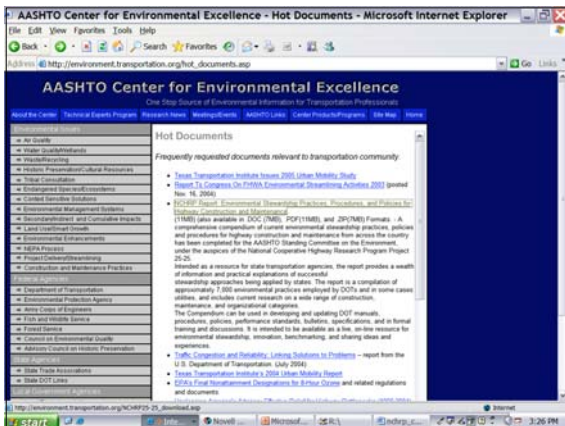
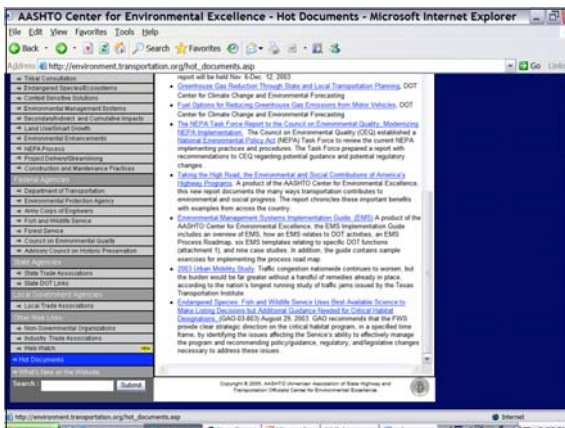
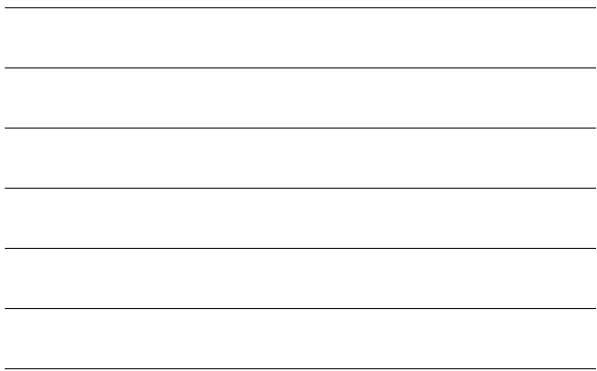
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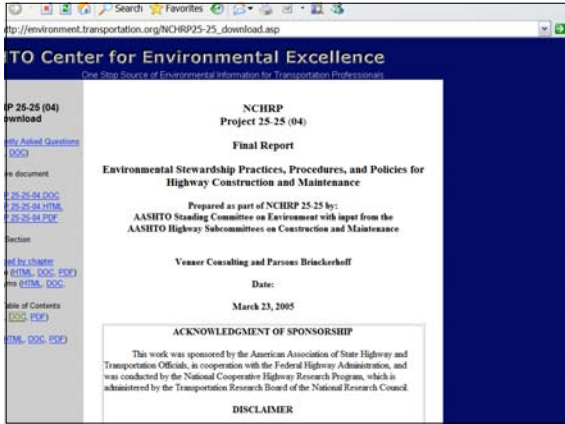
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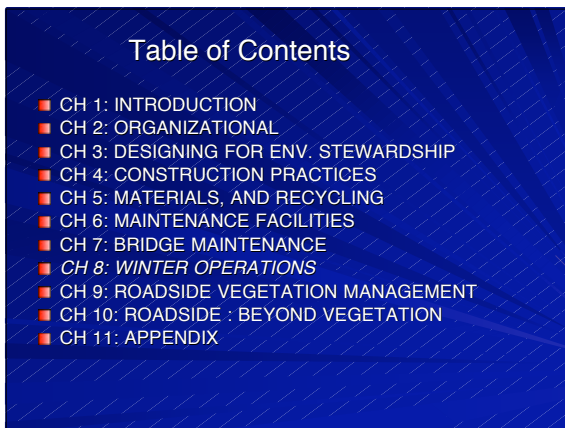
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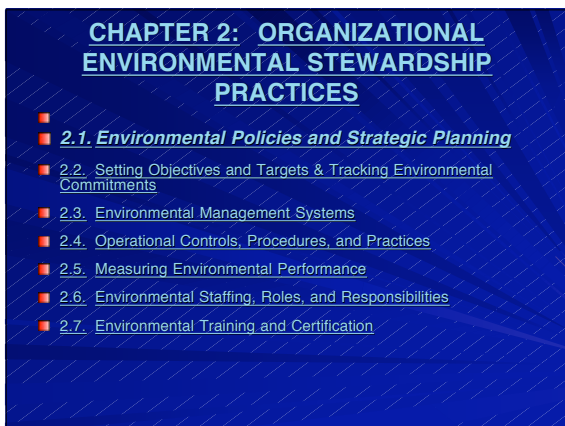
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## 2.1. Environmental Policies and Strategic Planning

- **Environmental Policies and Mission Statements**
- Methods for Staying Abreast of Legal and Other Requirements
- Identifying Environmental Aspects or Impacts of Operations
- Organization-Wide Strategic Planning for the Environment

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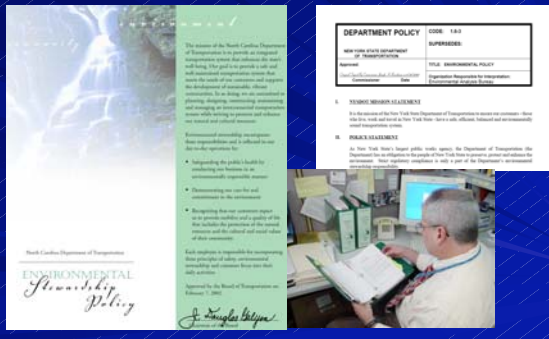
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## Environmental Stewardship Policies



The mission of the North Carolina Department of Transportation is to provide a safe and efficient transportation system that reflects the state and meets the needs of its citizens and supports the development of a sustainable, vibrant transportation system for the future. This commitment is reflected in the Department's Environmental Stewardship Policy, which is a key component of its overall mission.

**ENVIRONMENTAL STEWARDSHIP POLICY**

**DEPARTMENT POLICY** 0006-1303

NEW YORK STATE DEPARTMENT OF TRANSPORTATION	SUPersedes:
Number:	0006-1303
Effective Date:	01/01/2013
Replaces:	0006-1303

**PURPOSE/MISSION STATEMENT**

To be successful in the New York State Department of Transportation's mission to provide a safe, efficient, and sustainable transportation system.

**POLICY STATEMENT**

The New York State Department of Transportation is committed to providing a safe, efficient, and sustainable transportation system that reflects the state and meets the needs of its citizens and supports the development of a sustainable, vibrant transportation system for the future. This commitment is reflected in the Department's Environmental Stewardship Policy, which is a key component of its overall mission.

Approved by the Board of Transportation on 01/01/2013

*J. Douglas Bishop*

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## CHAPTER 2: ORGANIZATIONAL ENVIRONMENTAL STEWARDSHIP PRACTICES

- 2.1. Environmental Policies and Strategic Planning
- **2.2. Setting Objectives and Targets & Tracking Environmental Commitments**
- 2.3. Environmental Management Systems
- 2.4. Operational Controls, Procedures, and Practices
- 2.5. Measuring Environmental Performance
- 2.6. Environmental Staffing, Roles, and Responsibilities
- 2.7. Environmental Training and Certification

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## Environmental Commitment Tracking Through Construction & Maintenance

- DOT "Green Sheets" and the Emergence of Electronic Commitment Tracking Systems
- South Carolina DOT Interdisciplinary Accountability Teams
- New Jersey DOT Environmental Re-evaluation Checklists, Meetings, and Construction Field Reviews
- Kentucky Transportation Cabinet "Communicating All Promises (CAP)"
- Indiana DOT Environmental Compliance Certification
- **New York State DOT Environmental Commitment and Obligations Package for Construction (ECOPAC)**
- Caltrans' Environmental Commitment Tracking
- MSHA Environmental Compliance/Consideration Checklists and Independent Environmental Monitors
- WSDOT Environmental Requirements in Inspection Format
- Pennsylvania Turnpike Commission Database for Tracking Environmental Commitments
- NCDOT Environmental Control Teams, Field Monitoring, and Permits on the Web
- **Texas DOT Environmental Tracking System**
- FHWA's Domestic Scan on Environmental Commitment Implementation and Lessons Learned

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## NYSDOT Environmental Audit & Commitment Tracking

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## TxDOT Environmental Commitment Checklist

TXDOT ENVIRONMENTAL COMMITMENT CHECKLIST For Construction, Maintenance and Facilities Projects			
PROJECT:		DATE:	
CSJ:		DEGC:	
HIGHWAY:		Name	
<b>Stormwater Pollution Prevention</b>			
<b>Required Information and Documentation</b>			
Does the construction site have a Stormwater Permit?	Yes	No *	N/A
Is a notice posted in a publicly accessible location near where construction is actively underway (and moved as necessary)?	Yes	No *	N/A
Does the notice contain the following information:			
The permit number or a copy of the NOI?	Yes	No *	N/A
The name and telephone number of a local contact person?	Yes	No *	N/A
A brief description of the project?	Yes	No *	N/A
Location of SWSP (job site or other location).	Yes	No *	

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## Chapter Titles

- 1: Introduction and Research Approach
- 2: Organizational Environmental Stewardship Practices
- 3: **Designing for Environmental Stewardship in Construction & Maintenance**
- 4: Construction Practices - Environmental Stewardship
- 5: Pavement, Materials, and Recycling
- 6: Maintenance Facilities Management
- 7: Bridge Maintenance
- 8: Winter Operations and Salt, Sand, and Chemical Management
- 9: Roadside Vegetation Management
- 10: Roadside Management and Maintenance: Beyond Vegetation

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## CHAPTER 3: DESIGNING FOR ENVIRONMENTAL STEWARDSHIP IN CONSTRUCTION & MAINTENANCE

- 3.1. Beyond Mitigation: Projects to Achieve Environmental Goals
- 3.2. Context Sensitive Design/Solutions
- 3.3. Avoiding Impacts to Archaeological or Historic Sites
- 3.4. Habitat Connectivity and Wildlife Crossings
- 3.5. Culverts and Fish Passage
- 3.6. **Stream Restoration and Bioengineering**
- 3.7. Design Guidance for Stormwater and Erosion & Sedimentation Control
- 3.8. Drainage Ditches, Berms, Dikes, and Swales
- 3.9. Design for Sustainable, Low Maintenance Roadside
- 3.10. Designing to Reduce Snow, Ice, and Chemical Accumulation
- 3.11. Designing to Minimize Air Quality Problems
- 3.12. Design and Specification for Recycling
- 3.13. Designing to Minimize Noise
- 3.14. Lighting Control/Minimization
- 3.15. Safety Rest Areas, Traveler Services, and Parking Area Design

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## 3.6. Stream Restoration and Bioengineering

- Planning Considerations for Stream Restoration and Bioengineering
- Coordination and Communication on Bioengineering Projects
- Available Guidebooks and Research in Progress
- Bioengineering Technique Selection
- Bank Protection and Stabilization Techniques
- River Training and Channel Rehabilitation Techniques
- Stream Restoration Evaluation and Monitoring



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### Chapter Titles

■ 1: Introduction and Research Approach	■ 6: Maintenance Facilities Management
■ 2: Organizational Environmental Stewardship Practices	■ 7: Bridge Maintenance
■ 3: Designing for Environmental Stewardship in Construction & Maintenance	■ 8: Winter Operations and Salt, Sand, and Chemical Management
■ 4: Construction Practices - Environmental Stewardship	■ 9: Roadside Vegetation Management
■ <b>5: Pavement, Materials, and Recycling</b>	■ 10: Roadside Management and Maintenance: Beyond Vegetation

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### 5.6. Recycling in Pavement and Roadside Appurtenances

- Recycling in the Aggregate Industry and Pavement Construction
- Reclaimed Asphalt Pavement (RAP)
- Recycled Concrete Material/Aggregate (RCM/RCA)
- Recycled Roofing Shingles
- Fly Ash
- Foundry Sand
- Glass Aggregate/Cullet
- Steel Slag
- Scrap Iron Use for Steel Reinforcement
- Wet Bottom Ash and Boiler Slag
- Flue Gas Desulfurization (FGD) Waste
- Tire/Rubber Scraps
- Plastics
- Aluminum Sign Recycling and Chromate Coating Elimination




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## CHAPTER 6: MAINTENANCE FACILITIES MANAGEMENT

- [6.1. Planning and Prioritizing Environmental Improvements at Maintenance Facilities](#)
- **6.2. Facility Housekeeping Practices**
- [6.3. Yard and Floor Drain Management](#)
- [6.4. Under and Above-Ground Storage Tanks](#)




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### 6.2. Facility Housekeeping Practices

- [General Stormwater Protection Practices at DOT Maintenance Facilities](#)
- [Building and Grounds Maintenance](#)
- [Vehicle and Equipment Maintenance](#)
- [Sediment Control at Maintenance Facilities](#)
- [Materials Management at Maintenance Facilities](#)
- [Waste Management](#)
- [Drum/Container Management](#)
- [Spills and Leaks](#)
- [Ventilation and Exhaust Systems at Maintenance Facilities](#)
- [Facility Inspection and Reinspection to Achieve Environmental Goals and Continuous Improvement](#)

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### Materials Management and Runoff Prevention

- Sized for loader & truck
- Sealed and patched
- Clean
- Runoff to sediment trap
- Containment for 110% capacity
- Impervious pad
- Properly signed
- Drain closed
- No standing water




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## CHAPTER 7: BRIDGE MAINTENANCE

- 7.1. Preventative Bridge Maintenance Practices

- 7.2. *Avoiding and Minimizing Impacts to Fish and Wildlife And Enhancing Habitat*

- 7.3. Bridge Painting/Coating/Sealing and Containment Stewardship Practices



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### 7.2. *Avoiding and Minimizing Impacts to Fish and Wildlife And Enhancing Habitat*

- Scheduling Maintenance and Repair*

- Using Pre-Fabricated Bridges to Help Accommodate Stream/Fish Timing Restrictions*

- Reducing the Space Needed for Large Equipment Access*

- Bird and Bat Roosts in Bridges*



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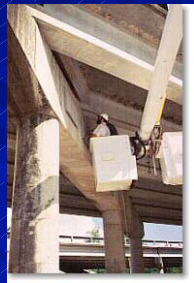
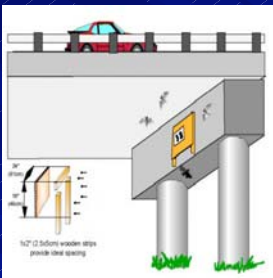
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### “Oregon Wedge” Daytime Bat Roost



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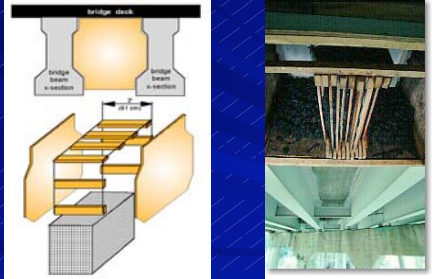
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Texas Bat-Abodes, Modified for a Steel I-Beam Bridge, Have Been Used to Attract Bats




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**CHAPTER 8: WINTER OPERATIONS & SAND, SALT, & CHEMICAL MANAGEMENT**



- 8.1. Selecting Snow and Ice Control Materials to Mitigate Environmental Impacts
- 8.2. Reducing Sand Usage
- 8.3. Strategic Planning for Reduced Salt Usage**
- 8.4. Stewardship Practices for Reducing Salt and Other Chemical Usage**
- 8.5. Winter Operations Facilities Management
- 8.6. Training for Salt Management and Winter Operations

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### 8.3. Strategic Planning for Reduced Salt Usage

- [Caltrans Salt Reduction Policy and Implementation](#)
- [NYSDOT's Salt Reduction Strategy](#)
- [PENNDOT District 10 Salt Management "After Action Reviews" and Annual Update of Salt Management Plan](#)
- [Ohio DOT Pretreatment, Weather, Decisionmaking, and Routing System](#)
- [Transportation Association of Canada Recommended Practices for Developing Salt Management Plans](#)



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### 8.4. Stewardship Practices for Reducing Salt and Other Chemical Usage

- [Shifting to Anti-Icing](#)
  - [Environmental Benefits and Cost Savings of Shifting to Anti-Icing](#)
  - [Stewardship Practices to Minimize Anti-Icing Materials Application](#)
  - [Road Weather Information Systems \(RWIS\)](#)
- [Precision Application to Manage and Reduce Chemical Applications](#)
  - [Spreaders, Spread Patterns, and Spreader Controls](#)
  - [Pre-Wetting Solid Materials to Minimize Bounce](#)
  - [Fixed Automated Spray Technology \(FAST\)](#)
  - [Calibration](#)
  - [Operational Support Equipment](#)
- [Monitoring, Recordkeeping, and Decision Support in Maintenance Management Systems](#)
  - [Evaluating Treatment Effectiveness](#)
  - [Environmental Performance Measures for Winter Operations](#)
  - [Non-Environmental Performance Measures for Winter Operations](#)
  - [Bringing It All Together: Michigan Vehicle Retrofits and Management System Partnership](#)

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### Annual Inspection, Calibration, and Training



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## Tracking & Analysis of Salt and Brine Application

- Computer or printer connects directly to spreader controller
- Information downloaded each shift
- Adherence to plan evaluated and plan revised annually



CONTRACT TO APPLICATION CHART									
FOR THE PROJECTS FOR STATE ST-131C, STATE ST-131C, STATE ST-131C, STATE ST-131C, STATE ST-131C									
Contract No.	Contract Name	Contract Location	Contract Start Date	Contract End Date	Contract Status	Contract Value	Contract Description	Contract Type	Contract Category
1	...	...	...	...	...	...	...	...	...
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## CHAPTER 9: ROADSIDE VEGETATION MANAGEMENT

- 9.1. The Importance of Vegetation in the Right-of-Way
- 9.2. Integrated Roadside Vegetation Management and Methods
- 9.3. Developing IVM or IRVM Plans
- 9.4. Inventory of and Management for Rare Species and Sensitive Resources in the ROW
- **9.5. Reduced Mowing Policies and Other Mechanical Vegetation Stewardship Practices**
- 9.6. Controlled Burning
- 9.7. Management of Woody Vegetation
- 9.8. Noxious Weed Management




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## 9.5. Reduced Mowing Policies and Other Mechanical Vegetation Stewardship Practices

- [Developing a Mowing Policy](#)
- [Mn/DOT's Mowing Policy and Practices](#)
- [Nebraska Department of Roads' Mowing Policy](#)
- [Wisconsin Department of Transportation Mowing Policy](#)
- [NCDOT Mowing Program Modifications to Encourage Wildlife Native and Rare Plant Species](#)
- [NYSDOT Stewardship Mowing Practices](#)
- [Mowing Management in Southern Quebec, Canada](#)
- [Oregon DOT's Mowing and Brush Removal Practices](#)
- [Other DOT Brush Control BMPs](#)




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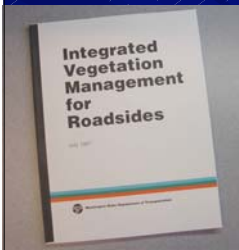
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## Mowing—“Quality Not Quantity”



- Other names:
- Planned mowing
  - Orchestrated mowing
  - Precision mowing
  - Mowing as part of IRVM

One mower width cuts save habitat and dollars




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## Chapter Titles

- 1: Introduction and Research Approach
- 2: Organizational Environmental Stewardship Practices
- 3: Designing for Environmental Stewardship in Construction & Maintenance
- 4: Construction Practices - Environmental Stewardship
- 5: Pavement, Materials, and Recycling
- 6: Maintenance Facilities Management
- 7: Bridge Maintenance
- 8: Winter Operations and Salt, Sand, and Chemical Management
- 9: Roadside Vegetation Management
- **10: Roadside Management and Maintenance: Beyond Vegetation**

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## CHAPTER 10: ROADSIDE MANAGEMENT BEYOND VEGETATION

- **10.1. Environmental Enhancement Practices & Partnerships**
- 10.2. Protection of Cultural and Historic Resources
- 10.3. Maintenance in Wetlands
- 10.4. Maintenance Near Waterbodies
- 10.5. Maintenance of Structures for Wildlife
- **10.6. Maintenance of Stormwater Facilities**
- 10.7. Maintenance of Roadside Public Facilities
- 10.8. Management of Portable Sanitary/Septic Waste Systems
- 10.9. Maintenance of Shoulders and Roadway Appurtenances
- 10.10. Sweeping and Vacuuming of Roads, Decks, Water Quality Facilities, and Bridge Stoppers
- 10.11. Maintenance Stewardship Practices for Slopes, Drainage Ditches, Swales, and Diversions
- 10.12. Erosion and Sediment Control in Maintenance
- 10.13. Recycling in Roadside Maintenance Operations
- 10.14. Preserving Air Quality in Maintenance and Operations
- 10.15. Painting Operation Stormwater BMPs
- 10.16. Road Waste Management
- 10.17. Spoil Disposal or Placement of Inert Fill
- 10.18. Maintenance of Soils
- 10.19. Emergency Actions
- 10.20. Field Review of Roadside Maintenance Operations

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### 10.1. Environmental Enhancement Practices and Partnership Efforts

- Water Quality Retrofit Programs
- Wetland Enhancement
- Terrestrial Habitat Enhancement
- Identifying and Implementing Aquatic Connectivity (Fish Passage) Improvements
- Installation/Improvement of Public Fishing Access
- Extending Highway Maintenance Activities to Bicycle Trails



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### NYS DOT Fishing Access Enhancement



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# Mn/DOT Hydraulic Structure Inspection, Location, & Repair System (HYDRINFRA)

Mn/DOT Office of Technical Support—Consultant Services  
Work Type Definition  
Rev. 4/2010

Work Type Number	Description
13.1 Hydraulic Structure Inspection, Location, Repair	Maintain Efficient Water Resources Engineering Offices (State Water Control Regions)
Work Type Objectives	HydrInfra will include project goals, tasks, milestones, dates, input, output and cost and an electronic copy of the current Technical Project Hydraulic Infrastructure (Hydraulic Data Dictionary code/ID) will be used to track project electronically.
Work Type Output	This work type includes the following desired levels of work: <ul style="list-style-type: none"> <li>• Level 1: Visual Inspection of hydraulic structures</li> <li>• Level 2: Video Inspection of hydraulic structures</li> <li>• Level 3: Cleaning of hydraulic structures.</li> </ul> Refer to the next page for descriptions of the three levels of work.
Work Type Equipment	Traffic control must be provided in accordance with one of the three levels of work. This includes coordination of lane closures with Minnesota Department of Transportation (MDOT) and any appropriate agency.
Work Type Output	HydrInfra includes electronic information sheets for each structure, distribution, log, location and flow connections between structures and a summary of all information shown on map and resulting from inspections.
Specific Examples of Output	<ul style="list-style-type: none"> <li>• 13.1.1 Visual or electronic inspection of hydraulic structures</li> <li>• 13.1.2 Video or electronic inspection of hydraulic structures</li> <li>• 13.1.3 Cleaning of hydraulic structures</li> </ul>
Quality Attributes of Output	<ul style="list-style-type: none"> <li>• Video inspections must be carried out at a slow rate of speed through the pipe and in lighting sufficient to illuminate the entire most circumference of the structure from the camera to approximately 10-20 feet ahead of the camera. The video must be visible, undistorted, and in digital format.</li> <li>• Output submissions must be legible and comply with the standards of video more than a work order original inspection is considered non-compliance performance.</li> <li>• Maps must be in MicroStation, ArcView or Adobe Acrobat format.</li> <li>• File/naming conventions of all output artifacts are indicated by the facility, including location, inspection attributes, and date; connections must be in Microsoft Excel or Access format, or in a delimited text file format (such as .csv, .xls, .dta).</li> <li>• Traffic control of lane closures must be conducted in accordance with the Minnesota Manual of Uniform Traffic Control Devices.</li> </ul>

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# Facilities Compliance Tracking




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## Product

- "Encyclopedic" inventory of environmental stewardship construction & maintenance practices in use across the country, by:
  - Functional areas within construction and maintenance
  - Environmental areas, such as air, noise, wetlands & water quality, cultural resources, fish & wildlife
- Links to examples or resources at state DOTs, research results, implementation tips, pictures, and performance measures in use

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## Implementation Concepts *Technical*

- Compendium to supported through AASHTO Center for Environmental Excellence
- Live on-line resource:
  - Environmental Stewardship – How to do it better
  - Innovation - What's being done, what works
  - Benchmarking - How are we doing?
  - Sharing ideas and experience
- Source for updating State DOT policies, performance targets, manuals, bulletins, specs and tailgate sessions

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## Implementation Concepts *Institutional* (ARTBA & AGC Join AASHTO)



- Joint Committee Statement adopted Sept 7, 2003
- Contractors embrace environmental stewardship
- Training workshops for contractor employees

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## “SYSTEMATIZATION” ?.... Green Highways



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NYS DOT Green and Blue Highways Initiative



Opportunities and Issues found in Survey

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NYS DOT Green and Blue Highways Initiative



- Water quality and vegetation:
  - Erosion/ditching
  - Vegetation

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NYS DOT Green and Blue Highways Initiative



- Invasives
  - Can tackle small patches on right of way (ROW)
  - Large infestations off ROW affect control efforts

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### NYS DOT Green and Blue Highways Initiative



#### ■ Signs

- River Road, a local scenic byway: Partner with Town government to sign byway?
- Partner with historic sites to improve markers?

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### NYS DOT Green and Blue Highways Initiative

#### ■ Improve access to natural resources

- Help State fisheries agency with fishing access?
- Upgrade pull-offs for access to views?



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### NYS DOT Green and Blue Highways Initiative



#### ■ Wildlife:

- Several deer crossings in survey segment
- Depending on site/traffic, deer reflectors might help reduce deer-vehicle accidents.

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## NYS DOT Green and Blue Highways Initiative

### ■ Next Steps

- Regions/Residencies to undertake surveys
- Regions/Residencies to plan/undertake work
- Work will advance in balance with
  - available staff/financial resources
  - work plans for core functions (bridge, pavement, safety, drainage)
- Main Office/Regions/Residencies to survey work accomplishments in fall
- All to evaluate process, revise and resume Spring '06

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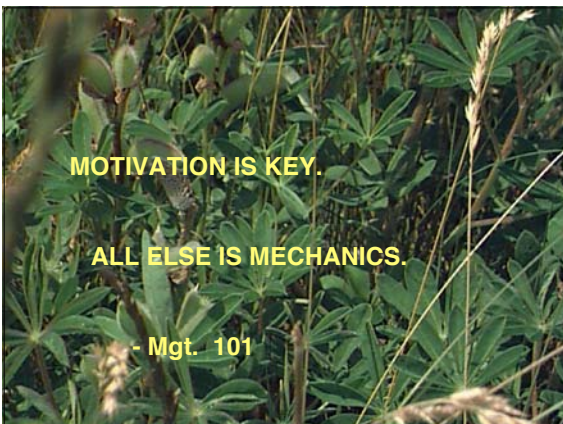
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## Steps to Instituting NYSDOT Environmental Initiative

- Mission statement – “environmentally sound”
- Environmental Guidance and Procedures
  - Incl. FHWA guidance on eligibility of federal-aid for environmental initiative activities
- Environmental Policy
- Environmental Accomplishments publication
- Website ([www.dot.state.ny.us/eab/envinit.html](http://www.dot.state.ny.us/eab/envinit.html))
- Environmental Awards
- Environmental staff in Maintenance and Construction

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