AASHTO Center for Environmental Excellence

www.environment.transportation.org
A one-stop source of environmental information for transportation professionals

Showcases state transportation success stories and innovative practices

Provides DOTs with environmental resources (information, links, contacts, innovative approaches)

Focus on collecting additional innovative practices from state DOTs
CONSTRUCTION AND MAINTENANCE PRACTICES

- A compilation of 7,000 environmental practices employed by DOTs
- Thousands of links
- Enables transportation agencies to benefit from each other's experiences
- Source for updating State DOT policies, performance targets, manuals, bulletins, specifications and tailgate sessions
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
CHAPTER 4: CONSTRUCTION PRACTICES FOR ENVIRONMENTAL STEWARDSHIP

4.1. General Construction Site Stewardship Practices
4.2. Preparing Access and Staging Areas
4.3. Construction Sequencing, Timing, and Acceleration
4.4. Discovery of Archeological or Historic Sites in Construction
4.5. Construction in Streams, Wetlands, and Other Environmentally Sensitive Areas

4.6. Erosion and Sedimentation Control
4.7. Vehicle Fluid, Fuel, and Washwater Control
4.8. Air Quality Control Practices
4.9. Noise Minimization
4.10. Materials Storage, Collection, and Spill Prevention on Construction Sites
4.11. Vegetation Management in Construction
4.12. Soil Management in Construction
4.13. Establishing Vegetation at Construction Sites
4.6 Erosion and Sedimentation Control

- Manuals for Stormwater and Erosion & Sedimentation Control
- Procedural Management Practices for Water Quality
- Dewatering and Managing the Watercourse
  - **Dewatering**
    - Flow Diversion
    - Cofferdams
    - Turbidity Curtains
    - Other Slope Stabilization and Drainage Techniques
    - Managing Excavated Material or Spoil
- Interception
  - Reducing Slope Length for Erosion Control
  - Fiber Rolls
  - Gravel Bags
  - Triangular Filter Dike
  - Strawbale Barriers
  - Geotextiles, Mats/Plastic Covers and Erosion Control Blankets
  - Inlet Protection Information:
- Infiltration - Sediment Basins and Traps
  - **Sediment Basins**
    - Sediment Trap
  - Sediment Basins
  - Sediment Trap
- Infiltration - Sediment Basins and Traps
  - Sediment Basins
  - Sediment Trap
  - Sediment Trap
- Vegetative Erosion Control
- Wind Erosion Control
- Sediment Tracking Prevention
  - Stabilizing Construction Entrances/Exits
  - Inspecting Adjacent Roads
  - Entrance/Outlet Tire Wash
  - Combining Recycling and Effective Erosion and Water Quality Control
- Erosion Control Structure Removal
- New Technologies
- Performance Monitoring Systems and Specifications for Contractors
  - MDSHA System for 100 Percent Compliance in Construction Erosion & Sedimentation Control
  - NCDOT Delegated Erosion and Sedimentation Control Performance Tracking
  - Contractor Disincentive Specs for Inadequate/Improper Installation of BMPs
  - WSDOT Application of ISO 14001 to Erosion and Sedimentation Control
**Measures to Minimize Impacts to Aquatic Habitat & Species During Dewatering**

- When construction work must occur within a year-round flowing channel, the work site must be dewatered. Dewatering can result in the temporary loss of aquatic habitat, and the stranding, displacement, or crushing of fish and amphibian species. Increased turbidity may occur from disturbance of the channel bed. Following these general guidelines will minimize impacts.

- **Prior to dewatering, determine the best means to bypass flow through the work area** to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates.

- **Minimize the length of the dewatered stream channel and duration of dewatering.**

- **Maintain stream flow to channel below construction site.**

- **Capture and relocate fish and amphibian species prior to dewatering to avoid direct mortality and minimize take.** This is especially important if listed species are present within the project site.

- **Coordinate project site dewatering with a fisheries biologist** qualified to perform fish and amphibian relocation activities.

- **Periodically measure air and water temperatures.** Cease activities when water temperatures exceed temperatures allowed by resource agencies.

- **Exclude fish from re-entering work area** by blocking the stream channel above and below the work area with fine-meshed net or screens. Mesh should be no greater than 1/8 inch. It is vital to completely secure bottom edge of net or screen to channel bed to prevent fish from re-entering work area. Exclusion screening should be placed in areas of low water velocity to minimize impingement of fish. Screens should be checked periodically and cleaned of debris to permit free flow of water.

- **Prior to capturing fish, determine the most appropriate release location(s).** Consider the following when selecting release site(s): similar water temperature as capture location, ample habitat for captured fish, and low likelihood of fish re-entering work site or becoming impinged on exclusion net or screen.

- **Determine the most efficient means for capturing fish.** Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping-down pool and then seining or dipnetting fish. If fish are abundant, periodically cease capture, and release fish at predetermined locations.

- **Minimize handling of aquatic species;** however, when handling is necessary, always wet hands or nets prior to touching fish.

- **Temporarily hold fish in cool, shaded, aerated water** in a container with a lid. Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release. Place a thermometer in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds those allowed by resource agencies fish should be released and rescue operations ceased. Avoid overcrowding in containers. Have at least two containers and segregate young-of-year (YOY) fish from larger age-classes to avoid predation. Place larger amphibians, in containers with larger fish.

- **Visually identify species and estimate year-classes of fish at time of release.** Count and record the number of fish captured. Avoid anesthetizing or measuring fish. If mortality during relocation exceeds 5 percent, stop efforts and immediately contact the appropriate agencies.

- **Submit reports of fish relocation activities to resource agencies in a timely fashion.**
Rain Water Gardens

Check dams @ 12” intervals or minimum 2 dams per

12”ml

6”min.

Tire stop or curb

2:1 max. side slope

12” topsoil

6” max. swale depth.

12” x 12” check flow area at

2:1 slopes

Inflow

5 ft. minimum

NOTE: Longitudinal slope 1-6%
Provide underdrain for slopes < 1.5%

Figure 9.7 Biofiltration Swale Access Features

Rain Water Gardens

maintenance access road (modular grid pavement porous pavement asphalt, concrete or gravel) for vehicle access

flow spreader

roadway length depends on swale area

biofiltration swale bottom (min. swale length=100 ft.)

Outlet
TRAINING

- Environmental Management Systems (EMS)
  - Provide guidance to states that are actively considering the development of an EMS

- Suggestions on training, peer to peer exchanges and workshops?
TECHNICAL ASSISTANCE

- Experts available to assist states with environmental matters on either a project or programmatic level

- Topics:
  - Environmental management systems (EMS)
  - Transportation project planning, development and design
  - Impact assessment and mitigations planning, design and construction
  - Waste management and pollution prevention
  - Context sensitive design/solutions (CSD/CSS)
  - Transportation and land use planning
  - Transportation program delivery streamlining
CONTEXT SENSITIVE SOLUTIONS (CSS)

- 2005 Best Practices in CSS competition
  - Received 75 submissions from 33 states
  - Awards presented at the AASHTO Annual Meeting

- National CSS Conference

- Peer-to-peer training
The “Taking the High Road” report, which documents environmental and social contributions of America’s highway programs

Documentation from the 2005 workshop, “Managing the NEPA Process for Complex Projects”

A how-to guide and toolkit on developing and implementing programmatic agreements

2002 and 2004 Best Practices in Smart Growth Competition Reports

2003 Best Practices in Environmental Stewardship Competition Report

EMS Training Guides

- EMS Implementation Guide
- EMS Handy Guide #1: Making the Case for an Environmental Management System
- EMS Handy Guide #2: EMS, A Bridge for Organizational Coordination and Communications
- EMS Workshop Presentations
COMMENTS/INFORMATION

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