



# Road Business

A University of New Hampshire Technology Transfer Center publication

Vol. 17 No. 2

Summer 2002



*NPDESII protects surface waters under the Clean Water Act*

## On the Road in New Hampshire

### *NPDES II Rule Changes Will Impact Many Municipalities*

A Fall 2000 *Road Business* article described the National Pollutant Discharge Elimination System, Phase II (NPDES II) regulations. In this issue we report on two recent changes that will impact New Hampshire municipalities. This article introduces the articles with an overview of NPDES II.

NPDES II consists of three sets of rules.

- Industrial Activities.
- Regulated Municipal Separate Storm Sewer Systems (MS4s).
- Construction Activities.

### Industrial Activities

NPDES II covers municipal garages, truck and vehicle washing, salt and sand storage, recycling centers, refuse transfer stations, and wastewater treatment plants. Municipalities will need a permit or a No Exposure Certification for each activity where stormwater flows into surface waters. To obtain a certification, a municipality must show that materials “are not exposed to storm water” during storage or handling operations. To get a permit will likely require a commitment to achieve a No Exposure Certification. The deadline for applications is March 10, 2003.

The “NPDES II and Highway Garage Complexes” article (Page 4) describes what cities and town must do to comply with these rules for

- Vehicle maintenance, repair, and lubrication
- Painting
- Fueling
- Salt and sand/salt storage
- Vehicle, equipment, and materials storage
- Waste storage
- Equipment and vehicle washing

Some municipalities will have to construct new or modify existing facilities. Many will have to establish a number of management practices.

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*continued from page 1*

## Regulated MS4s

An MS4, or “municipal separate storm sewer system,” is a road drainage system owned by a municipality: NPDES II regulates all MS4s located in “urbanized areas” (UAs) as defined by the Bureau of the Census. As described



in “NPDES II Impacts More Municipalities” (Page 3), EPA has designated 19 more cities and towns as MS4s. EPA has also expanded areas in many previously designated MS4s. Each regulated MS4 will have to develop a Storm Water Management Program (SWMP).

That program must contain six “minimum control measures.” Each is summarized below.

1. Public Education and Outreach. Inform citizens about the impacts polluted storm water runoff can have on water quality.
2. Public Participation/Involvement. Encourage citizen participation in program development and implementation.
3. Illicit Discharge Detection and Elimination. Develop and implement a plan to detect and eliminate illicit discharges to the storm sewer system.
4. Construction Site Runoff Control. Develop, implement, and enforce an erosion and sediment control program for construction activities that disturb one or more acres of land.
5. Post-Construction Runoff Control. Develop, implement, and enforce a program to address discharges from new development and redevelopment areas.
6. Pollution Prevention/Good Housekeeping. Develop and implement a program to prevent and reduce pollutant runoff from municipal operations.

## Construction Activities

Operators of a construction site must obtain a permit if they disturb one or more acres of land. If part of a larger development, areas less than one acre are also regulated. The “construction site operator” is the party or parties with operational control of plans and specifications or of day-to-day activities. (See EPA Fact Sheet 3.0, available on page 9)

If a municipality is a construction operator, it must obtain a permit. Construction activity does not include routine maintenance of roads and ditches.

As noted above, regulated MS4 municipalities must control construction site and post-construction site runoff. Their planning regulations should require construction operators to obtain permits. Their regulations should also address post-construction discharges.

# NPDES II Impacts More Municipalities

## 2000 Census Redefines MS4 Designations

The article on page 1 describes the NPDES II regulations. They will impact all New Hampshire municipalities. (See “NPDES II and Highway Garage Complexes” in this issue.) The greatest impact is on cities and towns with “Regulated Municipal Separate Storm Sewer Systems” (MS4s). An MS4 is a road drainage system owned by a government entity, such as a municipality. It includes all roads and streets, catch basins, curbs, gutters, ditches, culverts, man-made channels, and storm drains.

EPA designates MS4s located in “urbanized areas” (UAs) as defined by the Bureau of the Census. The 1990 Census UAs covered all of Dover, Manchester, Nashua, Portsmouth, Rochester, and Somersworth. They covered parts of

Amherst	Hudson	Pelham
Auburn	Litchfield	Plaistow
Bedford	Londonderry	Rollinsford
Durham	Madbury	Rye
Goffstown	Merrimack	Salem
Hollis	New Castle	Windham
Hooksett	Newington	

### Redefinition of MS4s

Based on the 2000 Census EPA has expanded the designated areas in many of these towns. It has designated all of Atkinson and parts of the following towns.

Brentwood	Greenland	Milford
Chester	Hampstead	Milton
Danville	Hampton	Newton
Derry	Hampton Falls	North Hampton
East Kingston	Kingston	Sandown
Exeter	Lee	Seabrook

The specific area definitions are in Census Bureau maps. EPA Boston, who administers NPDES II in New Hampshire, will distribute them. When available, the UNH T<sup>2</sup> Center will inform the impacted towns through the PW.Net and NHLogin email listserves. (To join PW.Net email a request to [t2.center@unh.edu](mailto:t2.center@unh.edu).)

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### What is Required

Municipalities with a regulated MS4 must develop a Storm Water Management Program (SWMP). The deadline for initial application is March 10, 2003. SWMP must be implemented over the following 5 years.

The SWMP must cover the six “minimum control measures” described on Page 1. The EPA describes specific requirements in a separate Fact Sheet for each measure. (See Page 9 or the EPA websites below.)

### Assistance to NH Municipalities

Various agencies can help the MS4 communities. The EPA Boston office, in addition to providing area definition maps, will have several outreach events this fall.

The NH Office of State Planning can provide model ordinances, regulations, and guidance. NH Department of Environmental Services staff can help with illicit discharge detection. The NH Department of Transportation is a regulated MS4 within the designated UAs. They will coordinate their SWMPs with affected municipalities.

Many UNH T<sup>2</sup> Center workshops and newsletter articles provide information useful for NPDES II compliance actions. It is developing a Drainage Maintenance System, which will help municipalities prepare and execute NPDES II.

Private engineers and vendors can assist with engineering studies, equipment, and construction. Finally, municipal officials can assist each other. PWNet is one way to communicate with peers.

#### Sources

EPA’s “NPDES Storm Water Program For Regulated Small MS4s”:  
[http://cfpub.epa.gov/npdes/stormwater/phase2.cfm?program\\_id=6](http://cfpub.epa.gov/npdes/stormwater/phase2.cfm?program_id=6)

EPA Fact Sheets:

[http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm?program\\_id=6](http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm?program_id=6)

# NPDES II and Highway Garage Complexes

*Application Deadline: March 10, 2003*



*A fueling station at a typical NH Highway garage. A cover over the fueling area is needed to comply fully with NHPDES II.*

## What Is Regulated

The National Pollutant Discharge Elimination System, Phase II (NPDES II) application date is March 10, 2003. It regulates rain, ice, and snow runoff to surface waters, whether over ground or through a storm water drainage system. Municipalities must comply for its highway garage complexes, refuse transfer stations, and wastewater treatment plants. Many cities and towns will have to construct or modify structures, and establish certain practices.

Highway garage complexes include buildings, facilities, and areas in which the following occur.

- Vehicle maintenance, repair, and lubrication
- Painting
- Fueling
- Salt and sand/salt storage (see box below)
- Vehicle, equipment, and materials storage
- Waste storage
- Equipment and vehicle washing

City/town officials must assess storm water flow throughout the complex. If storm water flows to a surface water, NPDES II applies.

This article describes the needed facilities and practices for highway garage complexes. Municipalities must have them in place by March 10, 2003

to qualify for No Exposure Certification. If not, they must prepare a Stormwater Pollution Prevention Plan (SWPPP). As will be seen below, a SWPPP is far more expensive than No Exposure Certification.

## No Exposure Certification

To qualify for No Exposure a municipality must prevent materials and activities from exposure to stormwater that flows to surface waters. One option is to relocate materials and activities to places with flow into the ground. Protection from exposure is the other.

The surest protection is in roofed and walled buildings. Roof only structures suffice where storm water does not flow through the structure. Fueling, for example, should be under a roofed structure with berms to deflect water runoff.

Drums, barrels, and tanks with taps or valves must be sheltered. Other containers can be stored outside shelters if tightly sealed. Equipment and vehicles must be sheltered if they leak or are otherwise a contamination source. No exposure certification might also require:

- Providing temporary covers over potential contaminants, such as compost piles.
- Removing particulate matter or visible deposits from roof stacks and/or vents.
- Washing pollutants from equipment and vehicles, and treating the wash water.
- Sweeping or covering materials that might become windblown contaminants.
- Repairing pipes that leak contaminants.
- Removing past contamination sources.
- Storing trash in covered containers without leaks.

## Stormwater Pollution Prevention Plan (SWPPP)

If exposure exists after March 10, 2003, a municipality must determine pollution sources and plan to eliminate them. The SWPPP has four elements:

1. Designate a Pollution Prevention Team.
2. Assess potential storm water pollution sources.

3. Establish management practices and controls.
4. Evaluate plan effectiveness periodically.

**Pollution Prevention Team.** A city or town must establish a team to develop the plan. Teams should have experts who know the regulations and employees who know the facility. A municipality can hire private engineers and other specialists as team members.

**Potential Pollution Sources.** Teams must identify everything that might pollute storm water runoff. They must prepare a site map that shows the pattern of storm water drainage, drainage system elements, and surface water bodies. They must also identify discharge locations and types, and the pollutants likely to be in them.

The team must also evaluate exposure to rainfall and runoff of the following:

- Fueling operations and storage
- Vehicle and equipment maintenance and cleaning
- Material storage and processing
- Loading and unloading operations
- Waste disposal practices

Team members must

- Evaluate the pollution potential of these areas.
- Determine potential pollution from other outdoor activities and dust or particulate generating processes.
- Measure and analyze storm water discharge quality and quantity.
- Test or evaluate for non-stormwater discharges, such as vehicle wash water.

**Management Practices.** The team must evaluate required pollution prevention practices.

- Maintaining a clean and orderly facility.
- Minimizing exposure of potential pollutants.
- Spill prevention and response procedures.
- Erosion prevention and sediment control.
- Runoff management, which might include vegetative swales, collection and reuse of storm water, inlet controls, snow management, infiltration devices, and detention or retention basins.
- Minimizing tracking and blowing of waste materials, sediment, and dust.

**Plan Effectiveness Evaluation.** The city or town must ensure future plan effectiveness and regulation compliance. This includes following the *Road Business, Summer 2002, Vol. 17, No. 2*

procedures described above, employee training, and routine inspections.

Quarterly, municipal employees or consultants must inspect discharges from each outfall. At least annually they must conduct a comprehensive compliance inspection. Inspectors must have the knowledge and skills to assess impacts on storm water quality. The municipality must correct deficiencies and submit a report to EPA.

## Recommendations

The UNH T<sup>2</sup> Center strongly recommends that municipalities qualify for No Exposure Certification. It also recommends that

- Cities and towns hire or engage professional experts to assess their highway garage complexes for compliance with all federal and state environmental rules.
- These experts prepare NPDES II and other applications.
- Road managers are involved in the assessment, applications, and permit execution.

The UNH T<sup>2</sup> Center has assembled the source materials. They are available on page 9 or the publications section of [www.t2.unh.edu](http://www.t2.unh.edu).

### Sources

*Conditional No Exposure Exclusion for Industrial Activity.* EPA Fact Sheet 4.0, January 2000. <http://www.epa.gov/npdes/pubs/fact4-0.pdf>.  
*Federal Register*, October 30, 2000, pp 64761-66, 64812-16, 64840-41, and 64877-80. <http://www.epa.gov/npdes/pubs/msgp2000-final.pdf>.

## Salt Storage Must Be Covered

NPDES II applies to winter salt stored where storm water flows to a surface water or storm sewer. "Salt" includes all sand or aggregate mixed with salt. Municipalities must enclose or cover piles except when adding or removing materials from the pile. Temporary covers must be thick, reinforced plastic sheets. Highway crews must minimize spills during loading and unloading, and clean up spills after.

Excepted are facilities that collect all the runoff from salt piles and reuse it or discharge it. NHDES Fact Sheet WD-WSEB 22-8 describes holding tanks and their registration.

### Sources

*Federal Register*, October 30, 2000, pp 64766 and 64811. <http://www.epa.gov/npdes/pubs/msgp2000-final.pdf>.  
*Holding Tanks for Floor Drains.* NHDES Fact Sheet WD-WSEB 22-8. <http://www.des.state.nh.us/factsheets/ws/ws-22-8.htm>.

# The STOP (R1-1) Sign and Supplemental Devices

## *Proper Placement, and Only When Necessary, Are Essential*



Figure 1. A properly installed STOP(R1-1) sign stop line, and crosswalk.

Motorists must always stop at a STOP (R1-1) sign. Moreover, motorists and pedestrians expect them to stop. Proper placement is essential to inform road users and to preserve respect for the most important of traffic signs. User respect is also maintained by installing STOP signs only when necessary.

This article describes how municipalities should install STOP and supplemental signs and pavement markings. It also discusses using STOP signs to control speed.

First a note about the Manual on Uniform Traffic Control Devices (MUTCD). It governs traffic control devices with standard, guidance, and option statements of practice. In this article the words "shall" or "required" are used for standard statements, "should" or "recommend" for guidance, and "may" or "permitted" for option.

### **Sign and Marking Installation**

Figure 1 shows one of three STOP signs at a T-intersection. It illustrates a properly installed set of traffic control devices.

The STOP sign has the required white on red retroreflective sheeting and standard letters. It is 30 by 30 inches, the required size for conventional roads. It is located on the right side of the traffic lane, and as close as practical to the intersection. The lateral offset (measured from the road or shoulder edge to the near edge of the sign) is 6 feet, the required minimum.

The almost 6 foot mounting height (measured from the pavement edge to the bottom of the sign) exceeds the required 5 foot minimum for "rural districts." The MUTCD requires 7 feet "where parking or pedestrian movements occur" to reduce the risk of pedestrians hitting the sign. In this instance, the sign height and distance off the sidewalk achieves this purpose.

The 3-Way (R1-3) supplemental plaque is required where STOP signs control all approaches. In Figure 1 it is in poor condition and should be replaced. It shall be 12 by 6 inches, white letters on a red background, and retroreflective. It may have a mounted height a foot less than the STOP sign.

The painted stop line is properly installed. It is the required solid white line extending across the approach lane. As recommended it is 12 to 24 inches wide with similar spacing, and is placed where the road user should stop. Being 4 feet in advance of the crosswalk, it conforms to the NHDOT Standard. (Without a marked crosswalk, the stop line should be placed at the desired stopping point, and between 4 and 30 feet from the nearest edge of the intersecting travel way.)

The crosswalk shown is the MUTCD Standard. The crosswalk lines are the required white stripes between 6 and 24 inches wide with similar spacing. They are the recommended 6 feet (at least) in length. (Two other layouts are permitted; see MUTCD Figure 3B-15.)

The crosswalk shown is the MUTCD Standard. The crosswalk lines are the required white stripes between 6 and 24 inches wide with similar spacing. They are the recommended 6 feet (at least) in length. (Two other layouts are permitted; see MUTCD Figure 3B-15.)

The Stop Ahead (W3-1a) sign is required where a STOP sign is not visible for a sufficient distance for motorists to respond. MUTCD Table 2C-4 provides recommended distances. For the 35 mph road in Figures 1 and 2, the recommendation is 150 feet. At that distance the illustrated STOP sign is visible, but the W1-3a is still permitted. With the foliage and unexpected need to stop, the



Figure 2. A properly installed Stop Ahead (W3-1a) sign.

Stop Ahead sign is probably a good idea. The Stop Ahead sign, at 160 foot from the STOP sign, exceeds the recommended warning to motorists.

The W3-1a sign in Figure 2 is of the required size (30 x 30 inches), color (yellow with black and red symbols) and offset (greater than 6 feet). Here too, the 6 foot mounting height is adequate. The MUTCD permits mounting on a utility pole.

This illustrates that more traffic control devices than the R1-1 are usually needed. All devices must be properly installed and maintained for motorist and pedestrian safety.

### The STOP Sign as Speed Control

The MUTCD recommends STOP signs only when one of four conditions exists (Section 2B.05). It also states that “STOP signs should not be used for speed control.” The illustrated STOP sign, however, has that purpose. After a car struck a child, residents petitioned for a 20 mph speed zone. The Town Council was reluctant to set such a low speed limit. Instead, it directed the STOP sign be installed.

Municipal officials often face similar decisions. They must balance resident wishes against more effective, but also more expensive, ways to calm traffic. In the Figures 1 and 2 example, residents are generally happy with the STOP sign. Perhaps they don't appreciate that the road might not be significantly safer with it.

The Institute of Traffic Engineers (ITE) analyzed studies of speed before and after unwarranted STOP signs. They found that motorists

reduced speed only a short distance before such a STOP sign. Midblock speeds decreased slightly on average and in a few cases increase. Within several hundred feet past a STOP sign, many cars travel as fast as if no sign existed. Moreover, as motorists accelerated from the sign, they had reduced ability to stop for an emergency.

Vehicle acceleration also increases air pollution. In addition, overuse decreases motorist respect for this important sign. While the author took the Figures 1 and 2 pictures, 17 cars rolled through the STOP signs; one came to a complete stop. This is consistent with studies that show less than 10 percent of drivers actually stop for unwarranted STOP signs.

Speed humps, rounded raised areas placed across the road, can be effective speed control measures if properly designed and spaced. ITE has a recommended design for a 12-foot long speed hump, 3 to 4 inches high. The design speed is 15 to 20 miles per hour. Shorter humps act like speed bumps, which are no longer used due to many lost liability suits.

Speed hump spacing depends on the desired midpoint speed. For example, a 200 to 250 foot spacing is needed to have an average 20 mph midpoint speed. They cost from \$2000 to \$2500 each.

Speed tables, essentially long speed humps, are usually 22 foot long with a textured material on the flat section. Fire departments usually prefer them to speed humps. They slow the traffic less than speed humps.

Other speed control measures include narrowing parts of the road or deflecting traffic with chokers or islands. Some have been successful, and many have failed. One reason for failure is residential objection. These measures slow traffic by inconveniencing motorists. Residents, who drive the roads frequently, are most inconvenienced.

#### Sources

*Guidelines for Design and Application of Speed Humps -- A Recommended Practice.* 1997. Institute of Transportation Engineers.

*Manual of Uniform Traffic Control Devices, Millennium Edition with Errata 1 Changes.* 2001. Federal Highway Administration. <http://mutcd.fhwa.dot.gov/kno-millennium.htm>

*Traffic Calming: State of the Practice.* 1999. Institute of Transportation Engineers. *Traffic Signing Handbook.* 1997

# New Hampshire Road Scholars

*We are pleased to recognize individuals who, during the Spring of 2002, have achieved the following levels in the UNH T<sup>2</sup> Center Road Scholar Program.*

**Master Road Scholar.** Participated in UNH T<sup>2</sup> Center training activities totaling 100 contact hours and covered the range of topics required for Road Scholar II.

<u>Road Scholar</u>	<u>Affiliation</u>
Mark Bucklin	Bristol
Frank Hoye	Keene
Ron Lavoie	UNH
Richard Lee	New London
Glen Tuttle	UNH

**Senior Road Scholar.** Participated in UNH T<sup>2</sup> Center training activities, which totaled 70 contact hours and covered the range of topics required for Road Scholar II.

<u>Road Scholar</u>	<u>Affiliation</u>
Scott Clarke	NHDOT
George Conkey	Dorchester
Carl Currier	Hooksett
Michael Hillhouse	Goffstown
Mike Reifke	NHDOT
Richard Smith	Lebanon Airport
Carl Somero	Milford
Ed Thayer	Washington
George Turcotte	Franklin

**Road Scholar II.** Participated in UNH T<sup>2</sup> Center training activities which totaled 50 contact hours and covered a set of minimum subject areas including road design and construction basics, other technical, tort liability or safety, and supervision or personal development.

<u>Road Scholar</u>	<u>Affiliation</u>
Stephen Bevis	Chesterfield
Michael Clarke	New Durham
Clark Craig	Hancock
Ronald Dubois	Peterborough
Ken Louzier	NHDOT
Emilio Risoni	Bedford
Glen Smith	Swanzy
George Sturgis	Exeter
Alan Swiadras	Bedford

**Road Scholar I.** Participated in UNH T<sup>2</sup> Center training activities which totaled 30 contact hours.

<u>Road Scholar</u>	<u>Affiliation</u>
Richard Abbott	Gilford
Bruce Adler	Chesterfield
Ernie Ball	NHDOT
Jim Brown	Salem
Jonathan Champagne	Andover
Tyler Frost	Goffstown
Dan Garlington	Plaistow
James Hathaway	NHDOT
Jean Marie Kennamer	Derry
Robert Nicol	Northfield
Dennis Patnoe	Lancaster
Steve Rougeau	Milford
John Silva	Gilford
Scott Simons	New Durham



# Publications

University of New Hampshire Technology Transfer Center

Copies of the following books and pamphlets, and our complete list of publications, are available through the UNH T<sup>2</sup> Center. When requesting an item with a charge, please include the check with your form. If ordering by mail, follow the instructions below. To request by telephone, call 603-862-2826, or in NH, 800-423-0060. You can also request by fax to 603-862-2364, or by e-mail to [t2.center@unh.edu](mailto:t2.center@unh.edu)

**The following materials are available free of charge.**

\_\_\_ *UNH T<sup>2</sup> Center Publications and Video Catalog.*

\_\_\_ *Administrative Rules for Safety and Health.* This publication from the New Hampshire Department of Labor describes the codes and rules for employee safety and health.

\_\_\_ *Asphalt Pavement Repair Manuals of Practice.* This manual discusses materials and procedures for sealing and filling cracks in asphalt-surfaced pavements. Information is also given about the materials and procedures for the repair of potholes in asphalt-surfaced pavements.

\_\_\_ *Chain Saw Safety.* Flyer on preventing accidents and proper maintenance of a chain saw.

\_\_\_ *Contractor Beware: Your Real-Life Guide to Power Line Safety.* A Public Service of NH guide to working safely around power lines and electricity.

\_\_\_ *Flowable Fill Packet.* This packet discusses different types of fills, covering specifications, materials and construction recommendations

\_\_\_ *Improving Highway Safety at Bridges on Local Roads and Streets.* This guide discusses effective low cost methods of improving and enhancing bridge and bridge approach safety.

\_\_\_ *NHPDES II Fact Sheets for Designated MS4S.*

\_\_\_ *NPDES II Regulations for Highway Garage Complexes,* features *Federal Register* October 30, 2000 and *Conditional No Exposure Exclusion for Industrial Activity.*

\_\_\_ *NPDES II and NHDES Regulations for Salt Storage,* features *Federal Register* October 30, 2000 and *Holding Tanks for Floor Drains.*

\_\_\_ *Statewide Travel Forecasting.* This FHWA book describes methods and techniques of statewide travel forecasting.

\_\_\_ *Work Zone Traffic Control Guide for New Hampshire Municipalities.* A pocket guide designed for quick reference for municipalities all over, in addition to NH. Helpful charts, illustrations, and diagrams are included in the information about traffic control devices, parts of a work zone, flagger tips, and much more. One per customer.

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### To Request Material by Mail

Check the items you would like to receive. Fill out this form and include a check in the envelope, if necessary. Cut out this page and mail to the UNH T<sup>2</sup> Center.

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Town: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

# Videos

*University of New Hampshire Technology Transfer Center  
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The following videos are available from the UNH T<sup>2</sup> Center Video Library. You can have five videos for a two-week period with no charge. To request by mail, check the videos you would like to borrow (up to 5), fill out the mail request form, staple closed, affix stamp, and mail. To request by telephone, call (603) 862-2826 or (800)423-0060 (in NH). Visit our complete publication and video catalog on our website at <http://www.t2.unh.edu>. Or email [t2.center@unh.edu](mailto:t2.center@unh.edu)

\_\_\_\_\_ **DC-209, Operating Tips Parts 1-7: Push-Pull Scrapers, Off-Highway Trucks, Track-Type Tractor, Loading Logic, Wheel-Tractor Scrapers, Track-Type Loaders, and Wheel Loaders**, 100 min. Fast-paced, short films about checking equipment, operating techniques, and safety. Also touches on inspection and start-up and shut-down procedures.

\_\_\_\_\_ **DC-216, Dust Control and Stabilization with Calcium Chloride**, 18 min. Explains road structure and base stabilization procedure and how CaCl<sub>2</sub> works as a stabilizer.

\_\_\_\_\_ **DC-217, Drainage Pipe Installation**, 17 min. Shows the correct procedure for drainage pipe installation. Discusses excavating, compacting,

\_\_\_\_\_ **M-227, Concrete Bridge Deck Repair**, 16 min. Explains the seven steps to repairing partial and full depth holes on the deck of a concrete bridge. These steps take the viewer through the entire process, from the materials needed to cleaning up the project when finished.

\_\_\_\_\_ **M-231, Mechanical Cleaning of Unlined Ditches**, 20 min. This tape defines the four principal features of a ditch and their functions. It then demonstrates two methods of mechanical cleaning of ditches. The first uses a motorgrader and the other uses a backhoe. It stresses the importance of reestablishing positive drainage.

\_\_\_\_\_ **M-236, Common Maintenance Problems and Causes**, 21 min. Broad overview of the causes of

problems on street and road systems which discusses the source of failures in asphalt pavements, portland cement concrete pavements, and surface treatment roads. It deals with gravel roads, paved and unpaved shoulders, drainage problems, and presents typical causes of these problems.

\_\_\_\_\_ **M-279, Contract Maintenance Series**, 35 min. This video discusses contract maintenance procedures and supervision

\_\_\_\_\_ **M-287, Bridge Maintenance for Local Crews**, 14 min. Explains preventive maintenance and how to perform maintenance on different types of bridges.

\_\_\_\_\_ **M-288, Problems with Gravel Roads**, 55 min. This video discusses various problems associated with gravel roads. It explains the causes of these problems along with how to recognize, fix, and prevent them. It also describes how each piece of equipment should be used.

\_\_\_\_\_ **M-287, Bridge Maintenance for Local Crews**, 14 min. Explains preventive maintenance and how to perform maintenance on different types of bridges.

\_\_\_\_\_ **M-288, Problems with Gravel Roads**, 55 min. This video discusses various problems associated with gravel roads. It explains the causes of these problems along with how to recognize, fix, and prevent them. It also describes how each piece of equipment should be used. FHWA

\_\_\_\_\_ Video Catalog.

Place  
Stamp  
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## Milestones:

*Fred Duefield* is the new Road Agent in Grafton.

*Steve Kimball* is now the Road Agent in Epsom.

*Mike Lavalla* is the new Public Works Director in Lebanon. Previously, he was the Public Works Director in Hartford, Vermont.

*David Leel* is now the Road Agent in New Ipswich.

*James Terrell* is the acting Road Agent in Walpole.

## Websites:

There are many helpful websites for public works employees. If you have others that your colleagues could benefit from, send the urls to [t2.center@unh.edu](mailto:t2.center@unh.edu). We'll publish the site and your name in *Road Business*. (*No commercial sites please*).

UNH T<sup>2</sup> Center: <http://www.t2.unh.edu>

CDL Study Guide: <http://www.driverstest.net>

How Stuff Works:  
<http://www.howstuffworks.com/>

Granit Conservation Lands:  
<http://www.granit.sr.unh.edu>

Metric Conversation Tool  
<http://convert.french-property.co.uk/index.htm>

National Stormwater Best Management Practices (BMP) Database  
<http://www.bmpdatabase.org/index.html>

Stormwater Manager's Resource Center  
<http://www.stormwatercenter.net/>

UNH Weather Station  
<http://www.weather.unh.edu/>

## Notice of Proposed Amendments to MUTCD:

### *Request for comments*

A proposed revision of the Manual on Uniform Traffic Control Devices (MUTCD), can be accessed on the MUTCD web page at: <http://mutcd.fhwa.dot.gov> The comment period is open until August 19, 2002.

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## NHOEM Training—Debris Management

The New Hampshire Office of Emergency Management is offering a two-day course on Debris Management, October 15-16 in Manchester. This course provides an overview of issues and recommended actions necessary to plan for, respond to, and recover from debris generating events. Alan Côte of Derry Public Works is instructing this informative course. Contact Roy Neider 271-2231 or 800-852-3792 to register or for more information.

### **PW.NET**

Want to know what is happening in other towns? Need a place to ask questions of other public works officials? Want to be the first to receive notifications of UNH T2 Center workshops? Then, subscribe to PW.NET. It's free. Send an email message to: [kathy.desroches@unh.edu](mailto:kathy.desroches@unh.edu)

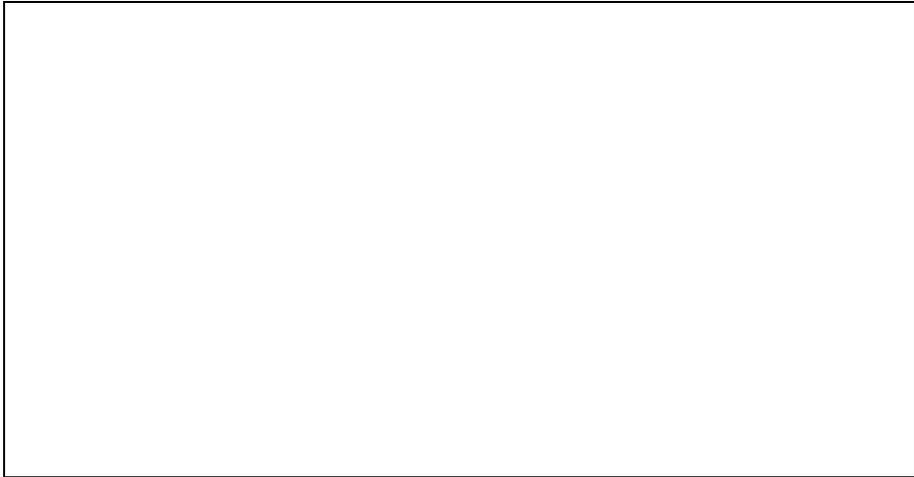
In the body of the message type:  
Add pw.net your name

For instance:

Add pw.net John Doe

# Road Business

Technology Transfer Center  
University of New Hampshire  
33 College Road, Kingsbury Hall  
Durham NH 03824-3591  
603-862-2826 or  
800-423-0060 (NH)  
Fax: 603-862-2364  
t2.center@unh.edu  
<http://www.t2.unh.edu>



## Calendar

*Planned UNH T2 Center workshops  
Fall of 2002*

*For additional information or registrations,  
call the UNH T2 Center or check the web-site.*

### **Basics of a Good Road**

1 Location

### **Cost Estimating & Budget Prep**

2 Locations

### **DrainMS**

1 Location

### **Erosion & Sediment Control**

2 Locations

### **Gravel Road Maintenance**

1 Location

### **Leadership Lessons**

1 Location

### **MUTCD**

2 Locations

### **Regulations for Municipal Garages**

3 Locations

### **Rehabilitation Project Planning**

1 Location

### **Specs, Bids & Contracts**

2 Locations

### **Storm Management & HazMat**

September 24, 2002 Concord

September 25, 2002 Lincoln

### **Winter Operations**

3 Locations

