



# ROAD BUSINESS

A newsletter for municipal employees, public and private road-related organizations, and citizens.

## On the Road in NH:



### Durham's First Roundabout: A Successful Traffic Calming Project

~Interview with Michael Lynch, Durham Public Works Director, and article submitted by Kaitlyn Nagle, T<sup>2</sup> Student Assistant

In fall 2010, the Town of Durham Public Works Department and the University of New Hampshire successfully constructed the Town's first roundabout. A roundabout allows vehicles to travel in one direction around a center island, without typically stopping, to reach their destination. A roundabout does not have any traffic signals or stop signs.

The construction of this roundabout was one of the projects included in the *Durham Public Works Department Capital Improvement Plan* and the *University of New Hampshire's Master Plan*. The Plan involves two connecting University roads; North Drive and South Drive. South Drive is not fully developed yet, but when completed, it is predicted to be the most traveled intersection in the town.

A roundabout was chosen in this location for many reasons. First, roundabouts improve safety by reducing fatalities, injuries, and crashes and they make conditions safer for pedestrians by slowing vehicle speed. Second, they reduce congestion by allowing vehicles to continue moving. Third, they reduce pollution and fuel use due to fewer stops, less abrupt accelerations and less time idling.

The main materials used for this project were recycled asphalt, porous pavement, new LED street lighting, thermal plastic street markings, and granite curbing. The Durham DPW utilized roadway reclamation when reconstructing Main St. The project took three years of planning and the construction took one year to complete.

The total cost for constructing this roundabout was \$200,000.00, and the University of New Hampshire funded 100% of the roundabout project.



The Town of Durham's first roundabout.

Grant funding was awarded from the Federal Highway Administration's (FHWA) American Recovery and Reinvestment Act and Traffic Enhancement (TE) programs for the rest of the project under the Master Plan.

Those involved in this project included Durham's Director of Public Works, Mike Lynch, Durham's Town Engineer, Dave Cedarholm, and several University representatives, including Paul Chamberlin, Paul Henry, Steve Pesci, and Doug Bencks. *(Con't on Page 3)*

#### Winter 2010

#### Vol. 25 No. 4

Durham's First Roundabout.....	1 & 3
Master Roads Scholars.....	2 & 3
The Role of Public Works in Emergencies.....	4 & 5
Using Waste Tires in Rubber Roads.....	6
Proper Salt Storage.....	6
New 2009 MUTCD Requirements.....	S1 - S4
Staying Healthy for a Longer Work Week.....	7
Performance Evaluations: A Great Tool.....	8
2010 UNH T2 Center Accomplishments.....	9
Facebook, Pubs/Vids, Going Green & Ctr. Info.....	10
Crossword Puzzle.....	11
T <sup>2</sup> Training Calendar, Milestones & Dates.....	12

UNH Technology Transfer Center Mission: To provide training and services concerning the technology and management of roads and bridges to municipal highway department officials.

## UNH T<sup>2</sup> Master Roads Scholars

*Master Roads Scholar is the fourth and final achievement level in the UNH T<sup>2</sup> Center Roads Scholar Training Program. It requires completing 100 contact hours plus the requirements for Roads Scholar Two: 25 hours in technical road construction, 5 hours in supervision or personal development, 5 hours in environmental, 5 hours in tort liability or safety, and 10 elective (other) hours.*

UNH T<sup>2</sup> Roads Scholar Program: [www.t2.unh.edu/training/rdsclr.html](http://www.t2.unh.edu/training/rdsclr.html) - UNH T<sup>2</sup> Training Calendar: [www.t2.unh.edu/training](http://www.t2.unh.edu/training)

### Master Roads Scholar—James Bean

James has been the Road Agent for the Town of Tuftonboro for the past two years. James likes his job because he enjoys being involved and being able to help the community.



James plans on continuing to attend training because he believes there is still a lot to learn. His favorite part of the Roads Scholar Program is the knowledge he gains that he brings back to the Board of Selectmen.

UNH T<sup>2</sup> to gain more knowledge. He advises new public works employees to “Keep yourself educated and keep an open mind.” Emile’s favorite part of the Roads Scholar Program is learning about many different subject areas and networking with employees from other towns.

Emile is married and has three daughters. He also enjoys Nascar.

### Master Roads Scholar—Matthew Costa



Matthew Costa has been an Equipment Operator with the Town of Amherst Department of Public Works for almost five years. He enjoys the variety of work and working with his fellow co-worker’s.

Matthew is motivated to continue attending training because he has a “hunger for knowledge”. He advises new public works employees, or new Roads Scholars, to ask questions and to pay attention. Matthew enjoys the UNH T<sup>2</sup> Roads Scholar Program and the networking opportunity it provides him to meet different people in the same career.

### Master Roads Scholar—Paul MacKinnon



Paul has been a Truck Driver for the City of Laconia’s Public Works Department for the past three years. Previously, he worked for the Town of Gilford for five years.

Paul says the city of Laconia’s Public Works department is currently working on drainage construction and upgrades. Paul enjoys the physical aspect of his job and being able to work outside.

Paul plans on continuing to attend training with UNH T<sup>2</sup> because he would like to continue his education. His advice for new public works employees is that “When you think you know everything, you never learn anything - learn as much as you can.” Paul’s favorite part of the Roads Scholar Program is the hands-on training.

Paul is a single parent to his son Terrance. He enjoys camping and all sports.

### Master Roads Scholar—Emile Lacerte

Emile is the Assistant Superintendent of the Highway Department for the Town of Bedford. He has worked with the town for three and a half years. He began his involvement with public works in 1991 when he worked for the Town of Pembroke as a Senior Foreman and later became the Public Works Director. He mostly enjoys working with the public and keeping the roads safe.



Emile plans to continue taking classes with

### Master Roads Scholar—Daniel Morrow



Daniel is the Highway Department Foreman for the Town of Exeter and he has worked there for six and a half years. Daniel really likes every aspect of his job, including plowing snow.

Daniel plans to continue to be involved in all classes available with UNH T<sup>2</sup> because he believes training and education motivate him the best. His advice for new public works employees is: “Knowledge and training are key!”

### Master Roads Scholar—Barry Mueller



Barry has been working for the NHDOT for the past 8 years. He began his involvement in public works as a truck driver. Currently his District is working on rebuilding two roads. Barry likes everything about his job and he advises new public works employees to

enjoy their job too.

Barry will continue to attend training with UNH T<sup>2</sup> because knowledge motivates him. His favorite part of the Roads Scholar Program is learning about new technology in the public works field.

*(Con't from Page 1)*

While building the roundabout, the Town of Durham and UNH also built a smaller, multipurpose path that can be used as an off-road bike lane, walking or running path, for skating-boarding and roller-blading or other methods of transportation. The multipurpose path travels all the way out to Route 155A and up into UNH's West Edge parking lot. The entire path is lit with energy efficient LED technology and includes the infrastructure to install several University Blue Box Security Systems. This campus-wide system allows for quick-dial during emergencies. The multipurpose path is made out of porous pavement, allowing it to absorb water, as opposed to traditional pavement where erosion and icing can occur.

In addition to the roundabout project, Mike Lynch has also been involved in other traffic calming projects. For example, one project focused on speed tables. A speed table is a raised elevation change in the road which contains a six foot long entrance ramp, a 10 foot long level platform and then a six foot long exit ramp on the other side. The speed table is 4 inches tall. A speed table is utilized because it is not as invasive as a speed bump or hump and it has been shown to be an effective traffic calming device.

Mike will soon be tackling another project in Durham on Pettee Brook Lane, a one-way street located in the downtown area. His department plans to narrow the road to add parking spaces and bump out traffic islands. They also plan to install new sidewalks, decorative street lighting along the entire length of

### Master Roads Scholar—Phillip Sylvia



Phillip is a Light Equipment Operator with the City of Laconia Department of Public Works.

Phillip would like to continue attending training with the UNH T<sup>2</sup> Center Roads Scholar Program. He advises new public works employees to attend training. He says there is a lot to learn about the public works field.

Phillip has a daughter named Terikah.

### Congratulations to all our Master Roads Scholars!



*Drawing of the construction plans for Pettee Brook Lane, Durham.*

roadway, a new bike lane, and kiosk parking meters; improve existing sidewalks; reset the granite curbing and construct a speed table to elevate the mid location crosswalk and slow down traffic.

Mike advises other road managers to involve the community with the decision-making process before completing final designs of new town projects. He says that holding public meetings to explain the new technology and showing renderings (see above) of plans will create excitement and support for a new project. Before implementing the roundabout, Mike had a professional visit the town to explain what a roundabout is and the benefits of having one. This seemed to help with gaining support from the community.

- For questions on this project, contact Michael Lynch, 603-868-5578 or [mlynch@ci.durham.nh.us](mailto:mlynch@ci.durham.nh.us).
- For more info. on roundabouts: <http://safety.fhwa.dot.gov/intersection/roundabouts/fhwasa08006/>

# The Large Role of Public Works in Emergencies

*Kathryn Myers, UNHT<sup>2</sup> Program Manager & Road Business Editor*

Since disasters are considered rare events in NH, public works officials may not receive the emergency response training or resources they need to properly respond in a disaster. The fact is, public works officials are busy completing their main jobs - the daily maintenance of municipal infrastructure. I know road managers take pride in being first responders and I know they accept this duty as part of their job. We saw many public works employees become engaged during the infamous tornado in July 2008 and the relentless ice storm in December 2008. This article will discuss some tools for road managers to use and implement to serve their community to the best of their ability as emergency first responders.

## Public Works Deemed First Responders

The horrific events of September 11, 2001 and Hurricane Katrina in August 2005, have taught many of us (the hard way) that municipal and county officials have a primary responsibility, and burden, of managing emergency events. In fact, the Department of Homeland Security (DHS) Presidential Directive 8 (HSPD-8) established the National Response Framework (NRF) as a guide for preparing for emergencies. The NRF emphasizes that local agencies must manage disasters on their own entirely or in some cases, without state or federal assistance for at least the first 24 to 72 hours.

Part of this preparation involves engaging public works in the planning and response of emergencies. HSPD-8 officially recognizes public works officials as first responders (*see [www.dhs.gov/xabout/laws/gc\\_1215444247124.shtm](http://www.dhs.gov/xabout/laws/gc_1215444247124.shtm)*). In addition, a National Advisory Council (NAC) to the Federal Emergency Management Agency (FEMA) was established by Congress in 2007 and includes representatives from the American Public Works Association.

## The New Role of Public Works in Emergency Management

Public works departments have the primary responsibility and authority for snow removal and they take great pride in delivering the best service they can. Snow removal is one example where public works officials in NH are well prepared. However, planning for other emergencies may be new to some public works officials

in NH, due to the fortunate lack of catastrophic events our state has seen. In other areas, like Los Angeles, California, where earthquakes are common, the public works agencies have been more involved in planning, prevention, mitigation, preparation and response. They have developed detailed plans and participated in regular training with other responder groups.

Emergencies in NH that would likely involve public works could include flooding, tornadoes, hurricanes, snow and ice storms, heat waves, oil, water, or gas pipeline ruptures, electrical system black-outs, explosions, haz-mat spills, or acts of terrorism. Public works officials can play a role in all of these emergencies by providing traffic control and planning evacuation routes, administering first aid, helping with fire suppression, rescue, or evacuation, transporting supplies or equipment, providing site security and control, or removing debris and clean-up.

Another emergency category that usually does involve public works is Traffic Incident Management (TIM). A traffic incident could be a collision, a breakdown, a spill of material, flooding or icing on the road, heavy fog, animals on the roadway, pavement damage, or a bridge failure. Traffic incidents can cause property losses, deaths and injuries, and delays can result in costing businesses billions of dollars annually. Road managers can aid in TIM by providing scene management, sand for absorbing spills, information to motorists, or equipment to clear debris. Road managers can also establish alternate routes for traffic, repair transportation infrastructure, and set-up TTC (Temporary Traffic Control) devices.

## Develop a Plan

Public works officials must develop a proactive plan to aid them during emergencies when time is limited and quick organized procedures are critical. Long-term planning and preparation for disasters can easily be postponed due to the daily maintenance activities public works are responsible for. However, road managers have been deemed, by law, a first responder so the community will depend on you. Start developing your plan now. Delaying will only cause more frustration and cost more in the long-term. The goal is to change from a reactive

mode to a proactive mode about managing emergencies.

## Plan Essentials

The four essential elements in a disaster response and recovery plan are Prevention and Mitigation, Preparedness, Response, and Recovery. Prevention and mitigation include a detailed inventory of assets that may be affected by a disaster and what steps can be taken to reduce that damage or loss. Preparedness includes planning, training, and evaluating. Response is determined by the disaster and would change with each incident. Recovery includes final actions to restore the area to the pre-disaster state and any after-action reports and changes to be implemented for next time.

## Join NH Public Works Mutual Aid

Once your plan is complete and weaknesses are identified in your system - such as lack of staff to handle tasks in an emergency - a mutual aid agreement can be enacted. The New Hampshire Public Works Mutual Aid Program is available to all NH municipalities (highway and/or water dept.), municipal building inspectors, and private water systems. For \$25 per year, you can join and gain instant access to a variety of hundreds of personnel and equipment at your disposal in an emergency (see [www.t2.unh.edu/ma](http://www.t2.unh.edu/ma) and join the network of 136 members in the state).

## Get the Proper Training

Emergency response training is critical to save valuable time and energy and to minimize duplication of effort. All employees need formal and on-the-job training in operation and safety of any equipment they will be responsible for. Employees will also need training concerning what specific tasks they will need to complete during an emergency. Routine exercises and drills are crucial to allow simulation of the event and reinforce learning. In particular, public works employees should be regularly retrained on the basics of the National Incident Management System (NIMS) as NIMS will apply until the situation has been officially declared over. Some training available in NH for public works:

1. National Incident Management System (NIMS) **IS-100 & 2: are both required for nearly all employees of public works agencies in order for those entities to be eligible to receive federal disaster reimbursement.** Watch for this training offered

by the New Hampshire Public Works Mutual Aid Program (see [www.t2.unh.edu/training](http://www.t2.unh.edu/training)).

2. NIMS IS-700.A - An Introduction: can be taken online for free at <http://training.fema.gov/EMIWWeb/IS/is700a.asp>
3. New Hampshire Public Works Mutual Aid offers training on using the NHPWMA Program throughout the year (see [www.t2.unh.edu/training](http://www.t2.unh.edu/training)).
4. UNH Technology Transfer Center offers classroom workshops, such as emergency communication and public speaking to aid in emergency response (see [www.t2.unh.edu/training](http://www.t2.unh.edu/training)).
5. USDOT FHWA offers online training in emergency transportation operations (see [http://ops.fhwa.dot.gov/eto\\_tim\\_pse/training/index.htm](http://ops.fhwa.dot.gov/eto_tim_pse/training/index.htm)).

## Summary

Public works employees are officially regarded as first responders as they have a pivotal role in planning, preparing and responding to disasters. It can be overwhelming to stay abreast of new laws, receive the proper training, and develop the necessary protocols needed for emergency management, especially for smaller agencies. However, most disasters occur at the local level. Therefore, response will depend on municipal governments to plan accordingly. The unique and diverse wealth of knowledge among public works officials will certainly aid in the flexible response needed to keep citizens safe and orderly.



**Locate these additional resources on our website:**  
[http://www.t2.unh.edu/video\\_pub/publist.html](http://www.t2.unh.edu/video_pub/publist.html)

1. *Emergency Response Guidebook*
2. *Roadway Safety and Disaster Response CD*
3. *The Role of Public Works in Emergency Response*
4. *Emergency Management Assistance Compact for Water Sector*
5. *Best Practices of Road Weather Management CD*
6. *Guide for Preparing Hazardous Materials Incidents Reports*
7. *Incident Sign Installation Guide*

*Reference: Bergner, David L. Public Works Superintendent, City of Overland Park, Kansas. Member, APWA Winter Maintenance Subcommittee, APWA Reporter, January 2010.*

## Using Waste Tires in “Rubber Roads”

*Submitted by Ashley Benson, UNHT<sup>2</sup> Student Project Assistant*

Highway departments all over the country have taken steps to join the global effort to curb waste, recycle and reuse products. Crumb rubber from recycled tires is now being added to pavements, through “thin rubber modified hot mix asphalt (HMA) surface courses or rubber modified spray applications used as pavement interlayers or surface treatments” (Santucci 1). The addition of “crumb rubber”—or small pieces of recycled tires—to pavements, not only reduces tire waste, but has also has produced rubber modified pavements that reduce cracking and pavement noise, and improve safety in wet weather.

There are three basic methods for the addition of reclaimed rubber to pavements: the wet process, the dry process, and the terminal blend process. The dry process is not recommended when modifying asphalt with rubber additives due to poor performance. In the wet process (also called the asphalt rubber process), asphalt is blended with rubber in a specialized blending unit and then applied afterward. The terminal blend process is still a wet process, but is mixed at a refinery or special terminal, not in a blending unit. Terminal blends require less rubber and more finely ground rubber than general wet process blends.

While there are plenty of reasons that highway departments should consider using rubber additives in their pavements, these mixes are not useful in certain situations. Avoid the mixes:

- in weather under 13 degrees Celsius,
- on top of severely cracked pavement,
- where traffic data has not been monitored,
- where large amounts of handwork is required,
- and where mix temperatures drop significantly before placement due to long haul distances.

Despite these constraints, both the terminal blend process and the asphalt rubber process provide cost-effective and environmentally friendly ways of maintaining and preserving our municipal roads.



*Reference: Santucci, Larry. “Rubber Roads: Waste Tires Find a Home.” *Pavement Technology Update*. 1.2 (2009): 1-12. Print.*

## Proper Salt Storage: A Reminder



Road managers should consider the benefits of investing in proper salt storage. Salt needs to be covered to prevent water from infiltrating the stock pile. Water contaminated with salt can end up polluting lakes and rivers, costing the town more money for proper clean-up and preparation for drinking water. In addition, a salt storage shed should be large enough to house all the salt needed for the winter. Replenishing your salt supply mid-winter can be risky and will usually cost more, since it would not be a bulk purchase.

*References: Hanneman, Richard L. “Storage Container.” *Roads and Bridges*. February 2008: 54-58. Print.*

# UNH T<sup>2</sup> Center Technical Note

## 2009 Revisions to MUTCD Is Your Department Ready?



According to the Manual on Uniform Traffic Control Devices (MUTCD), the manual defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic (<http://mutcd.fhwa.dot.gov/index.htm>). The MUTCD is published by the Federal Highway Administration (FHWA), under 23 Code of Federal Regulations (CFR), Part 655, Subpart F.

The MUTCD was revised in December 2009. This article will identify some of these revisions as a starting point, but please be sure to visit the website to read all the changes:

[http://mutcd.fhwa.dot.gov/kno\\_2009.htm](http://mutcd.fhwa.dot.gov/kno_2009.htm)

### Organization

All definitions now appear in Part 1 (Section 1A.13) and not in other parts. Approximately **70 NEW DEFINITIONS** have been added and **35 EXISTING DEFINITIONS** have been revised. You will also find that meanings of text headings (Standard, Guidance, Option, Support) have been relocated and clarified in this section. Metric values have been removed from the text, figures, and tables.

Thus all dimensions and distances are provided in English units. Many sections have been “relocated” to other existing or new chapters. The Final Rule was published in the Federal Register on December 16, 2009.

### Sign Colors

- Optional use of fluorescent colors including fluorescent red.
- Added purple for panels and plaques for electronic toll collection registration requirements.
- Removed yellow for school area signs.
- Required fluorescent yellow-green for school area signs.
- Optional use of fluorescent yellow-green color for pedestrian and bicycle application signs.

### LEDs on Signs

- Optional for individual use within the border, or within the legend or symbol.
- Shall not be placed within the background of a sign.
- Shall not be grouped as a “de-facto” beacon.
- For STOP or YIELD signs, LEDs may be placed within one border width from border.

### Street Name Signs

A **NEW** requirement is added to limit the only acceptable alternatives to green for the background color of Street Name signs to blue, brown, or

white to eliminate a wide variation in practice among jurisdictions. The white background is only allowed with a black legend.

A **NEW OPTION** is also added allowing the border to be omitted, as is common practice for post-mounted street name signs.

Colors are deemed inappropriate colors are being used because these are colors reserved for other traffic control device messages, or the colors used have poor contrast ratio between legend and background. The alternatives allow flexibility for communities in more densely developed areas to distinguish amongst themselves, providing additional navigational cues to road users.

There is a **NEW** table for letter heights on Street Name signs. See *MUTCD Table 2D-2* for recommended minimum sizes based on the mounting type, road classification, and speed limit.



### Some Word Message Signs Are Deleted

The HILL, DIVIDED HIGHWAY, DIVIDED ROAD, DIVIDED HIGHWAY ENDS, DIVIDED ROAD ENDS, STOP AHEAD, YIELD AHEAD, AND SIGNAL AHEAD word signs are **DELETED** from the MUTCD because symbol signs have been in use for more than 35 years and word signs have become obsolete.

### Community Wayfinding Guide Signs

**NEW** provisions are added regarding the use

of community wayfinding guide signs to direct road users to key local civic, cultural, visitor, and recreational sites and to other destinations within a city or a local urbanized or downtown area. Specific provisions regarding such design elements as background and legend colors, arrow placement, number of destinations, and general placement are included.



### Regulatory Signs, Barricades & Gates

Larger sizes for certain signs on multi-lane roads with speed limits of 40 mph or more will enhance a driver's recognition.

Larger sizes for STOP signs for multi-lane roads require:

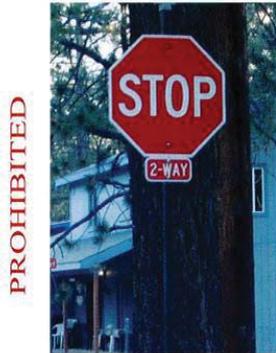
- 36" for any STOP sign facing a multi-lane approach,
- 36" for any multi-lane side road approach to a multi-lane road, and
- 36" for any side road approach to a multi-lane road with a speed limit of 45 mph or higher.

New guidance on factors to be considered when establishing intersection right-of-way control is based upon:

- \* Vehicular, bicycle & pedestrian volumes
- \* Number & angle of approaches
- \* Approach speeds
- \* Sight distance
- \* Reported crash performance.

The use of 2-WAY, 3-WAY, and

4-WAY plaque is **PROHIBITED**. The ALL-WAY plaque remains as a “shall” if STOP signs are used on all approaches.



There is a **NEW** plaque that MAY be used with STOP signs under special conditions.

Signs on the back of STOP/YIELD signs and stickers and other messages on STOP/YIELD signs and posts cannot obscure the shape of a STOP or YIELD sign. For signs mounted back-to-back, STOP or YIELD signs should stay within the edges. Placing two STOP or YIELD signs on the same post for emphasis is now **PROHIBITED**.



*Incorrect installation.*

A **NEW NO STRAIGHT THROUGH** symbolic sign is added using the Canadian standard symbol. The sign is useful at four-legged intersections where the prohibited through movement is onto a road that does not have a “Do Not Enter” condition.

And don’t forget those roundabouts where **NEW** roundabout directional arrows should be installed on central islands and roundabout circulation signs used as drivers approach (at mini-roundabouts combine these with a YIELD sign). Chevron signs may be mounted at a 4 foot height.

A **NEW** table (at top of next paragraph) recommends spacing of chevron signs.

Advisory Speed mph)	Curve Radius (feet)	Sign Spacing (feet)
15 or less	Less than 200	40
20 to 30	200 to 400	80
35 to 45	401 to 700	120
50 to 60	701 to 1,250	160
More than 60	More than 1,250	200

There are **NEW** optional signs for enforcement of start of turn lanes -- R3-20L and R3-20R indicate when a left or right turn lane begins. The two **NEW** plaques to the right may be mounted with regulatory signs.

### Pedestrians and Shoulders

Directions for pedestrians have been improved with overhead crossing signs R1 -9 and R1 -9a. Follow regulations of in-street pedestrian crossing signs for placement locations. Backgrounds may be fluorescent yellow or yellow-green. Remember that supports for in-street crossing signs must be designed to bend over and bounce back when struck.

A **NEW SHOULDER DROP-OFF** supplemental plaque may be mounted below a W8-17 sign. **NEW NO SHOULDER** and **SHOULDER ENDS** word message signs have been added to warn drivers that shoulders do not exist along the roadway or that the shoulder ends. Inconsistencies were found in the legends of signs currently in use. These signs are **OPTIONAL**.

A **NEW Combined Bicycle/Pedestrian** sign and a **NEW TRAIL X-ING** supplemental plaque are added to provide warning of a shared-use path crossing that is used by both bicyclists and pedestrians. Under the provisions of the 2003 MUTCD, as shown in the photo on the right, agencies needed to use both a pedestrian crossing signal and a bicycle crossing sign. This **NEW** sign combines both messages onto a single sign.



W11-15  
W11-15P



## NEW Signs and Plaques Warn of Conditions that Primarily Affect Motorcycles

A **NEW GROOVED PAVEMENT** sign (W8-15), a **NEW METAL BRIDGE DECK** sign (W8-16), and a supplemental plaque (W8-15p) can warn motorcyclists of dangerous road surface conditions. Table 2C-4 in the MUTCD provides guidelines for advance placement of these warning signs based on posted speeds and conditions. A motorcycle (W8-15p) plaque **MAY** be mounted below or above a W8-15 or W8-16 sign if the warning is intended primarily for motorcyclists.

## NEW Offset Side Roads & Double Side Roads

Intersection warning symbol signs are added, based on a study that showed variants of the W2-2 sign depicting offset side roads or two closely spaced side roads are used in many states. However, the relative distance between the two side roads and the relative stroke widths of the roadways varies significantly. As a result, uniform designs have been added to MUTCD and there is now a maximum of three side roads depicted with a maximum of two on the same side.

## Headlight Use Signs R16-5 to R16-11

Some States require motorists to turn on their vehicle headlights under certain weather conditions as a safety measure on roadways experiencing high crash rates or in special situations such as driving through tunnels. This is **OPTIONAL**.

## Alignments and heights

### CLARIFICATION OF SECTION 2C.06—HORIZONTAL ALIGNMENT OF WARNING SIGNS (Paragraph 2) and TABLE 2C-5

FHWA has issued an official interpretation under the designation “2(09)-2(1) -- Determination of Speed Differential for Curve Warning Signs and Plaques.” This will give agencies the flexibility to determine, based on engineering judgment, which speed value to use for the tangent approach to a horizontal curve (posted or statutory speed limit, 85th percentile speed or prevailing speed) in applying Table 2C-5. When it is determined that a curve warning sign with an advisory speed plaque will be installed for an approach to a curve, the decision as to which speed value to use shall be documented in the engineering study that is required in Section 2C.08 for the determination of the advisory speed.

The text of Sections 2A.18 and 2A.19 have been clarified and Figures 2A-2 and 2A-3 have been revised to conform to the text to clarify the minimum horizontal offset from the edge of a travel lane and/or shoulder.

## Part 9: Traffic Control for Bicycle Facilities

A **NEW** shared lane pavement marking is added, along with Guidance on placement and spacing. This new pavement marking assists bicyclists in determining the appropriate line of travel, and cues motorists to pass with sufficient clearance. The purpose of this new marking is to reduce the number and severity of bicycle-vehicle crashes, particularly crashes involving bicycles colliding with suddenly opened doors of parallel parked vehicles. When repainting these graphics, pay attention to matching the refreshed logo with a previous application.

Figure 9-C in the MUTCD illustrates the word, symbol and arrow pavement markings for bicycle lanes.

### Reference:

*This article was reprinted with permission from Mass Interchange, Volume 24, Number 3, Summer 2010, MA LTAP.*

# Staying Healthy For A Longer Work Week

*Submitted by Ha Hoang, T<sup>2</sup> Student Project Assistant & UNH Business Administration Student*

The average work week for Americans usually consists of 40 hours. However, public works professionals often work much more than 40 hours during the winter, since they are responsible for maintaining our roads and bridges. During the winter, highway department officials are required to work in frigid temperatures and in limited sunlight. Maintaining a healthy lifestyle can help you get through these longer work shifts, and stay awake, alert, and productive.

Here are some tips to help you when working longer hours this winter:

- 1. Get Enough Sleep!** Nothing is more important than getting enough sleep. Signs that you are sleep-deprived include yawning throughout the day, being more forgetful than usual, or experiencing body aches. Since your immune system recharges during sleep, sleep-deprived people are more likely to get sick. Studies support that the average adult functions best with 7 to 8 hours of sleep per night. However, other adults may need 9 to 10 hours per night, so it is very important to consider how much sleep you need on an individual basis. Learn to trust your body, not your clock.
- 2. Get a Healthy Intake.** Make sure you're getting enough vitamins and fluids during the day. Avoid coffee, soda, energy drinks, and candy bars. These will reduce your energy levels. Eat a healthy breakfast in the morning and avoid the typical meeting food, such as donuts. Instead, snack on fresh fruit and raw nuts to increase energy and drink plenty of water to keep you hydrated. The Institute of Medicine advises that men consume 3 liters (about 13 cups) and women consume 2.2 liters (about 9 cups) of total beverages a day.

- 3. Dress Accordingly.** Dress in layers so that you'll be comfortable with temperature changes. Being too hot may make you tired and being too cold will make you be less productive. Wear shoes or boots that support your feet if you're standing or walking for long hours.
- 4. Use Your Breaks Wisely.** Get up and take a stretch break if you've been sitting down for over an hour. Walk around and loosen up your legs and you'll feel more alert once the blood gets moving. If you've been doing strenuous work, stretch out and sit down to relax. Don't think about work while on break and take deep breaths to help your body relax. Enjoy a healthy snack to help you feel better as well.

- 5. Don't Work If You Can't.** Don't take on additional work or more hours if you're not feeling well. More importantly, do not report to work if you are sick. Instead, stay home to avoid spreading the germs. Your body needs time to relax and heal. Make taking care of yourself a first priority; work can wait.



Taking care of your body to be more awake and alert is important for you and the safety of others. Ensure you are taking the necessary steps to be able to be at your full potential while working.

Stay safe out there this winter!

*Reference: Seven Tips for Staying Healthy at Work. Team Beachbody - Improving Your Quality of Life with Health and Fitness. Retrieved from <http://www.howtobefit.com/stay-healthy-at-work.htm> on December 1, 2010.*

## Performance Evaluations Can be a Great Tool

*Submitted by Victoria Beale, Assistant LTAP Director in Ohio*

Do you dread conducting employee performance evaluations? The performance evaluation process doesn't have to be painful. Follow the rules below to make the performance evaluation a smooth process.

### **RULE # 1 - Set Your Expectations with a Work Plan.**

As the Supervisor you know what work needs to be completed each day. Do not assume employees are aware of this information. Instead, inform your employees what specific work needs to be completed today, this week, this month. By using a work plan (essentially a 'to-do list' for the performance evaluation period), you can effectively communicate your expectations for your employee's duties.

### **RULE #2 – Include Objective Tasks in Your Work Plan**

How do you know if someone completed their job? Develop work plan tasks that you will use as a guide to measure the performance of each task, at the end of the performance evaluation period. For example, write "Visit each field office a minimum of twice monthly" in your work plan instead of "Stay in contact with field staff." The former is much clearer than the latter and it can easily be measured.

### **RULE #3 – Communicate Your Work Plan and Follow-Up with Status Meetings**

Once the work plans are written, communicate them to your employees so they will have the plan you designed for them to complete their jobs. Next, set dates for periodic meetings with your employees to sit down to discuss their progress on the work plan tasks. Be sure to ask your employee if they need any additional tools or training to complete the assigned tasks. Also, discuss any challenges the employee is experiencing and agree to work plan adjustments. Take detailed notes during these meet-

ings and keep them in a file for reference when you write the annual performance evaluation.

### **RULE #4 – Use the Work Plan as the Foundation for Assessing the Employee's Performance**

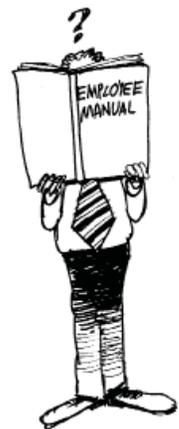
When it is time for the annual performance evaluation, you will be prepared to complete the review if you follow all these steps in this article. You will have the work plan and a record of any discussions between you and your employee on the work plan. This will help you objectively assess performance on goals. Taking time to assign and monitor work is a big part of your role as a supervisor.

### **Rule#5 – Once you Start Using Work Plans, Don't Stop!**

Using work plans to aid in your evaluation of employees is a continuous process. If there are uncompleted items on the work plan, add them to the next work plan. If new initiatives are developed that the employee will have a role in (even if a small role), add them to the work plan. The new work plan should be provided at the end of the performance evaluation meeting. This will set the tone for moving right into the next year's work and, when attached to the performance evaluation, it will provide documented proof that you communicated your expectations directly to the employee.

You can make performance evaluations much easier for yourself and the employee if you use this well documented process. Remember to incorporate these five basic rules and you will revolutionize your experiences with conducting performance evaluations. They will become a tool you'll love to use instead of loving to hate!

*Reference: This article was reprinted with permission from the Ohio LTAP Quarterly, Volume 25, Issue 3, Ohio LTAP.*



## *From the NH LTAP Program Manager* 2010 UNH T<sup>2</sup> Center Accomplishments



Another training season has come to an end. It is somewhat relieving as we switch our mindset from instant delivery to planning for the future (next season). However, it is also bittersweet as we have put energy and long hours into creating the previous training season - to only see it come to an end. Work never ceases when you work for, or in, municipal government! I say that humbly as I still consider myself 1) lucky to have a job in this economy and 2) very lucky to have the particular job I have, since I get to work with such great people both in and out of the office.

As our training season ends, I'd like to reflect on some accomplishments we've made in 2010. First, **we delivered 124 training sessions** for NH highway departments! This included 26 sessions (days) of Grader Operation and Safety, 12 sessions of Backhoe Operation and Maintenance, and 8 sessions of ATSSA Flagger Certification. **Linsey organized all 124 of these training sessions and Butch instructed, or co-instructed, 71 of these!** Also, **nine new training workshops were developed in 2010**, including a Pavement Preservation Conference and a Sign Retroreflectivity Summit. Amazing! In addition, **we exhibited at six events in 2010**, including the NH Good Roads Show, Mountain of Demonstrations, Emergency Management Conference, NH Snow Plow Rally, and the Local Government Ctr. Annual Conference.

I am proud to announce that we now have 5,330 contacts in our customer database - each contact attends our training or takes advantage of at least one of our services. Amazingly, there are currently **4,486 people enrolled in our NH Roads Scholar Training Program!** **408 students have reached Roads Scholar Level 1, 98 students have earned Roads Scholar Level 2, 113 students are at Senior (3) Level, and 208 students have graduated (level 4) from our NH Roads Scholar Training Program!** Congratulations to all of our Roads Scholars out there! Please call me if you'd like to instruct to give back what you have learned!

During 2010, we published four editions of the quarterly Road Business Newsletter, which had a total of 25 articles, including 18 original articles written by center staff. We also managed to serve on 10 boards and committees, manage 11 email listservs, update our center work plan, complete and analyze a state-wide needs assessment, develop a new layout for our workshop flyers and create a Center FaceBook page! Phew! Time for that break!

I would like to thank all our brave volunteer instructors. You get up in front of groups of people for every class and share your knowledge and stories so that your experiences can help someone else. Our Training Program would not be as successful without your hard work, energy or dedication.

I would also like to thank my two comrades - **Miss Linsey Shaw and Mr. Butch Leel** - for their hard work this past year. Linsey juggled numerous tasks and projects and met many deadlines all while supporting other staff in their roles here. Butch instructed and attended countless training workshops and events and spent many nights away from home to deliver training across the state of NH. The municipal highway workers in NH are lucky to have staff as bright, devoted, and creative as my staff is. I'm proud to serve with you both every day. Thank you from myself and on behalf of all of our NH customers! We couldn't do this without your tireless efforts! Looking forward to another successful and productive year in 2011! Stay tuned!

Sincerely,

*Kathryn A. Myers*

*Training Program Manager*

*UNH Technology Transfer Center*

*603-862-1362 or k.myers@unh.edu*



## NH LTAP is now on Facebook

Want to stay informed of our activities? Want to connect with other professionals who attend our training? Want to look at pictures from our training classes and other events?



Then “friend” us on Facebook to stay connected!

**Facebook:** [www.facebook.com/nhltap](http://www.facebook.com/nhltap)

### FREE UNH T<sup>2</sup> Road and Bridge Publications & Videos

- **329 Publications:** [www.t2.unh.edu/video\\_pub/publist.html](http://www.t2.unh.edu/video_pub/publist.html)
- **62 Videos:** [www.t2.unh.edu/video\\_pub/vidlist.html](http://www.t2.unh.edu/video_pub/vidlist.html)

All items are FREE and available from UNH T<sup>2</sup> (unless otherwise indicated). Videos are FREE to rent for three weeks and \$1.00 each to purchase. To request material, email: [t2.center@unh.edu](mailto:t2.center@unh.edu) or call 603-862-0599.

## GO GREEN with Road Business!

Start receiving *Road Business* by email only by joining the [road.business.listserv](mailto:road.business.listserv)!

Email [k.myers@unh.edu](mailto:k.myers@unh.edu) and include your name and affiliation. As soon as the newsletter is complete, you will receive an email with a link to the .pdf online.



Thanks in advance for being green!

To view previous newsletter editions: [www.t2.unh.edu/newsletter.html](http://www.t2.unh.edu/newsletter.html)

## About UNH T<sup>2</sup>

Congress established the Local Technical Assistance Program (LTAP) in 1982 to provide services to US municipalities. There is an LTAP Center in every US state and Puerto Rico, and there are Regional Centers serving Tribal Governments.



NH LTAP (UNH T<sup>2</sup>) was established in 1986. We continue the LTAP mission by providing training and services to NH municipalities. Our program is supported by the Federal Highway Administration, the NH Department of Transportation, the University of New Hampshire, and our National LTAP & TTAP Program.

## UNH T<sup>2</sup> Staff

- Charles Goodspeed, Faculty Liaison
- Kathryn Myers, Program Manager
- Linsey Shaw, Program Support Assistant
- Butch Leel, Technical Support Assistant
- Ashley Benson, Student Project Assistant
- Ha Hoang, Student Project Assistant
- Kaitlyn Nagle, Student Project Assistant

## UNH T<sup>2</sup> Advisory Board

### NHDOT Representatives

Glen Davison - Planning & Community  
Nancy Mayville - Planning & Community

### FHWA Representative

Christopher Tilley - FHWA Area Engineer

### Municipal Representatives

Alex Cote - Road Agent, Deerfield  
Martha Drukker - Associate Engineer, Concord  
Richard Lee - DPW Director, New London

### NH Public Works Standards & Training Council

Dave Danielson - Foresee Advocacy LLC

## About Road Business

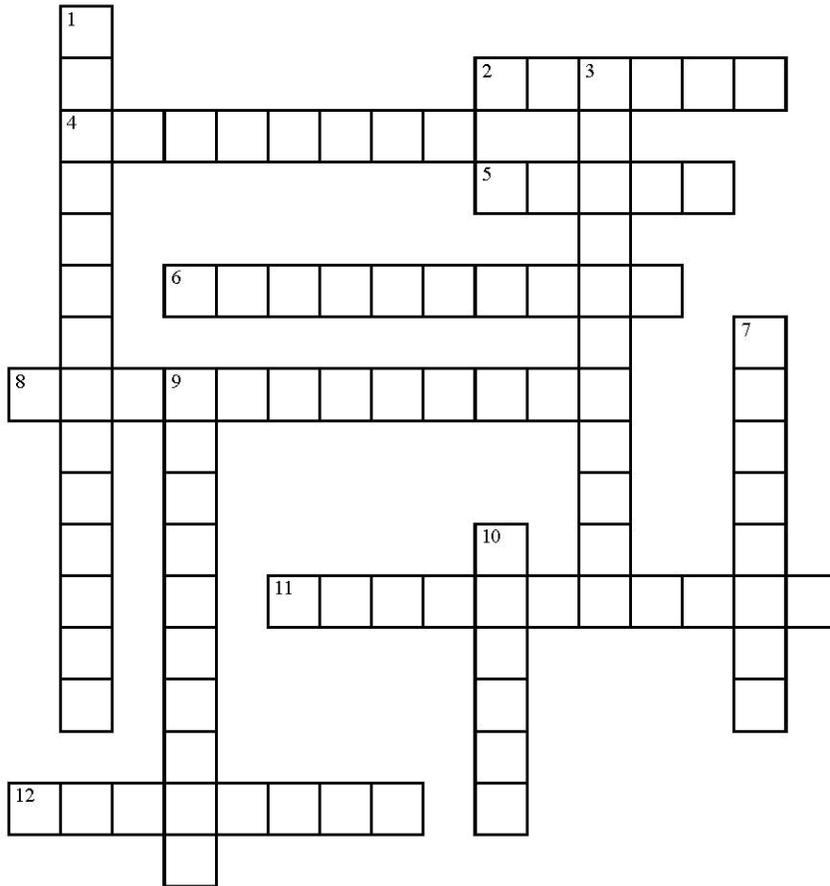
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# Crossword Puzzle

*Be the first to complete this crossword and fax it (603-862-0620) to win a FREE T<sup>2</sup> workshop!*

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

Email: \_\_\_\_\_ Phone: \_\_\_\_\_

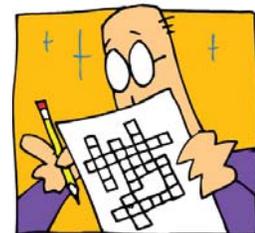


## ACROSS

2. Avoid caffeinated beverages such as \_\_\_\_\_ when working long winter hours at night.
4. Road managers should hold public \_\_\_\_\_ with their communities to gather support for construction projects.
5. \_\_\_\_\_ rubber is small pieces of recycled tires that are added to roadways.
6. Public Works Departments are regarded as first \_\_\_\_\_.
8. The four essentials for a disaster response and recovery plan are Prevention & Mitigation, \_\_\_\_\_, Response, and Recovery.
11. Performance \_\_\_\_\_ can be much easier for supervisors if they follow a work plan.
12. The NH LTAP is now on \_\_\_\_\_!

## DOWN

1. The UNH T<sup>2</sup> Center exhibited at the Mountain of \_\_\_\_\_ in 2010.
3. The MUTCD updates from 2009 allow the optional use of \_\_\_\_\_ colors for certain signs.
7. The \_\_\_\_\_ blend process is a way to add reclaimed rubber to pavements.
9. The use of 2-WAY, 3-WAY, and 4-WAY plaques on stop signs is now \_\_\_\_\_.
10. The first round-a-bout was constructed in \_\_\_\_\_ in fall of 2010.



## UNH Technology Transfer Center

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Durham NH 03824

603-862-2826 or  
800-423-0060 (NH)  
Fax: 603-862-0620  
t2.center@unh.edu  
www.t2.unh.edu



## Spring/Summer 2011 Training Calendar

[www.t2.unh.edu/training](http://www.t2.unh.edu/training)

Date	Topic	Roads	Scholar Hours	Location	Cost (Town/Private)
3/24	Municipal Garages & Safety	5	Safety	Moultonborough	\$60/\$100
3/29	Managing & Delegating for Towns	5	Supervisory	Concord	\$60/\$100
3/31	Recycled Materials in Road Projects	5	Environmental	Enfield	\$25/\$60
4/12	Gravel Road Maintenance	5	Technical	Deerfield	\$60/\$100
4/15	Road Managers Meeting	N/A		Moultonborough	FREE
4/19	MUTCD	5	Safety	Dover	\$60/\$100
4/28	Bucket Truck Operator Training	5	Safety	Washington	\$100/\$150
5/3	Workzone Traffic Control	5	Safety	Dover	\$60/\$100
5/11	Sustainability Management	5	Supervisory	Lebanon	\$60/\$100
5/25	Road Drainage & Culverts	5	Technical	Derry	\$60/\$100
5/26	Flagger Certification	5	Safety	Moultonborough	\$60/\$100
5/31	Advanced Erosion Control	5	Environmental	Dover	\$75/\$125
6/1	Basics of a Good Road	5	Technical	Lincoln	\$60/\$100
6/2	Chainsaw Safety & Maintenance	5	Safety	Groton	\$75/\$125
6/6 - 6/10	Grader Operation & Safety	10	Technical	Twin Mountain	\$150/\$250
6/7	Invasive Plants	5	Environmental	Derry	\$60/\$100
6/9	Public Relations for Public Works	5	Supervisory	Dover	\$60/\$100
6/15	Culvert Installation & Maintenance	5	Technical	Lincoln	\$60/\$100
6/16	Know Before You Dig	5	Safety	Amherst	\$60/\$100
6/17	Flagger Certification	5	Safety	Keene	\$60/\$100
6/21	Mutual Aid for Public Works	5	Safety	Concord	TBA
6/24	Road Management for Town Officials	5	Technical	Keene	\$60/\$100
7/15	Road Managers Meeting	N/A		Enfield	FREE
7/18 - 7/22	Backhoe Operation & Safety	10	Technical	Plymouth & Rumney	\$150/\$250

### Milestones

- **Patrick Bower** is the new Public Works Director for the Town of Raymond
- **John Riendeau** is no longer the Road Agent in New Boston.

### Dates

- **February 10:** NH Public Works Assoc. Winter Technical Meeting