

# ROAD BUSINESS

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

## On the Road in NH:



### Deerfield Completes 6,250 feet of Full-Depth Reclamation

Interview with Alex Cote, Deerfield Road Agent - Article submitted by Kaitlyn Nagle, T<sup>2</sup> Project Assistant

The Town of Deerfield Highway Department has begun using a new technique to road building called full-depth reclamation (FDR). FDR is the process of rebuilding worn-out asphalt pavement by recycling the existing road and using the old material in the new road. A strong and durable road base is created by grinding up the old asphalt and base materials, mixing them with cement and water, and compacting the mixture.

There are many benefits to using FDR. First, using a recycled base with added ingredients will make the new road stronger and more stabilized than the original base. Second, increased stabilization will lead to less maintenance on the road. Third, there is little to no waste since most, if not all, of the old material is being used. Fourth, the cost of recycling is 25% to 50% less than what it would cost for the removal and replacement of the old material if FDR is not implemented.

6,250 feet of Reservation Road in the Town of Deerfield NH was rebuilt using FDR. The project contractor was Pike Industries and the entire project took only two days to complete.

Alex Cote, Deerfield Road Agent, says his department chose to complete the road reconstruction using FDR in order to save his department money. Due to the poor road base condition of Reservation Road, it was more cost-effective to add cement to the

base to strengthen it than to replace all existing material.

Alex says his department plans to use FDR again and he recommends that other road managers consider using FDR as a cost saving method when a poor road base condition exists.

For questions on this project, contact Alex Cote, 603-608-9007, roads@townofdeerfieldnh.com



Back of the truck used on the FDR Project.

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

## 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—Robert Donnelly

Robert Donnelly is the Asst. Supervisor and a Heavy Equipment Operator for the Town of Enfield. Previously, he worked as a truck driver for the Town of New London.



Robert thinks that the Roads Scholar Program is a great thing, and says that he tries to learn as much as he can. His advises new public works employees to observe safety rules, and to learn as much as they can since it will help them in the future.

Robert's hobbies are hunting, camping, fishing, and snowmobiling. He is married to his wife of 22 years, Lisa. They have two daughters, McKenzie, 16, and Darcie, 19, and one son, Bradly, 15.

worked for seven years. Previously, he managed mowing operations at the Deerfield Fair for ten years.

He loves his job because he “likes doing something different and likes learning new things every day”. He also loves to see a road project progress from start to finish.

Matthew will continue to take classes with UNH T<sup>2</sup> because he likes the Program and gets new information and ideas.

Matthew enjoys four-wheeling and paint-balling. He has also volunteered for the Deerfield Fire Department for the past 19 years.

### Master Roads Scholar—Scott Gage

Scott Gage is a Highway Maintainer II for the NHDOT District 6. His favorite part of the Roads Scholar Program has been the knowledge he gained from the instructors and individuals. He says his work is interesting and he mostly enjoys the flexibility and experiences.



He advises new public works employees to listen, learn and apply it towards your work. He has decided to continue taking classes with UNH T<sup>2</sup> because knowledge and safety motivate him to do so. His hobbies are hunting and fishing. He is married with three kids and has two grandchildren.

### Master Roads Scholar—Eric Poitras

Eric Poitras has been a Truck Driver for the City of Dover for 8 years. His favorite part of working for the City of Dover is enjoying the crew that he works with.



Eric will continue to take classes with UNH T<sup>2</sup> because he believes employees should always continue educating themselves. He enjoys the interaction with other communities in the Roads Scholar Program. Eric's advice for new public works employees is “when opportunity knocks, open the door”, and “always keep educating yourself.”

### Master Roads Scholar—Matthew Kimball

Matthew Kimball is a Truck Driver and Laborer for the Town of Deerfield, where he has



### Master Roads Scholar—Earl Thibodeau

Earl Thibodeau is a Vector Operator for the City of Laconia Public Works Department, which he says he enjoys very much.

He advises new public works employees to work hard, keep “safety first” in mind, and re-



member it's their job to help the residents of their communities.

Earl will continue to take classes with UNH T<sup>2</sup>. He appreciates the instructors, and really enjoys the backhoe operation and safety courses.

### Master Roads Scholar—Edwin Wakefield



Edwin Wakefield has worked as Foreman for the Moultonborough Highway and Public Works Department for 14 years. He says he likes his job because he has “a boss that is very supportive and a crew that is fun to work with!” Edwin will continue to take classes with UNH T<sup>2</sup> because he is always willing to learn new and safer ways to do his job. Edwin enjoys the variety of classes available to him. His advises new public works employees to take all the classes they can. He says that they are very informative, and always offer new techniques and safer procedures. Edwin would like to extend a thanks to the selectmen for allowing and providing the option of the classes and workshops.

## Public Works Safety Poem

*Author Unknown*

- **We keep it safe to travel**, from home to work each day. Although some storms are difficult, **our ethics never sway**.
- We really do get weary, as **we work all through the night**. But **safety is our goal**, and we strive to do it right.
- **We strive to do the very best**, our budget will allow. **We try to keep the public safe**, as we drive around and plow.
- **We are the men and women**, that you think get in your way. As **we do our tasks we're given**, too bad you think of us that way.
- **We always do our best**. We just wish you would admire. **The long hours that go into it** and the wrath that we acquire.
- **We are the safety-minded**. Always on alert. We try hard to be careful, so **no one will get hurt**.
- **We always wear our hard hats**, our gloves and ear gear too. We even have the latest in fashionable steel toed shoes.
- So **please let it be known**, that no matter where you be. Come snow or high water, **it's public works you'll see**.



## ICE BAN

*By Kevin Barrett, President - Safe Road Services*

ICE BAN was introduced in New England in 1997 as the first agricultural by-product de-icer on the market. It is environmentally-friendly and cost-effective. The by-product portion of the blend is also a very powerful all-natural corrosion inhibitor (less corrosive than water per Washington DOT testing). It significantly reduces corrosion on ferrous metals, thus prolonging the life of sanders and loaders while reducing equipment maintenance costs. It can be used as a stockpile treating agent, for onboard pre-wetting and as a liquid anti-icing agent.

Extensive national testing as well as real world results in New England show that ICE BAN-treated salt out-performs straight salt and salt treated with CaCl<sub>2</sub> using significantly lower spread rates (33%-50%). It is effective to -5° F pavement temperature. ICE BAN turns white salt brown allowing for a dramatic reduction in the use of sand without the driving public being aware. This approach improves surface conditions during and after a storm event while reducing spring cleanup costs. It also leaves a significant residual on the roadway which can delay the first application of material going into the next storm.

*“Salt typically works down to about 20 degrees, after that it's not as effective. ICE BAN lowers that temperature to about 0 degrees and doesn't permit the street to refreeze after it has been treated. It is also less corrosive than calcium chloride.” -- Philip Bilodeau, P.E., Deputy Director of General Services, Concord, NH.*

*For questions, contact Kevin Barrett, 508-541-3121 or [saferoadservices@comcast.net](mailto:saferoadservices@comcast.net)*

# Federal Highway Administration Hot Topics

*For more information on any of these topics visit: [www.fhwa.dot.gov/everydaycounts](http://www.fhwa.dot.gov/everydaycounts)*

## Warm Mix Asphalt

Warm-Mix Asphalt (WMA) is the generic term for a variety of technologies that allow asphalt to be produced and then placed on the road at lower temperatures than the conventional hot-mix method.

WMA production is at temperatures ranging from 30 to 120 degrees lower than hot mix. In most cases, the lower temperatures result in significant cost savings and reduced greenhouse gas emissions because less fuel is required. WMA also has the potential to extend the construction season, allowing projects to be completed faster. By 2009, more than 40 States constructed WMA projects, with 14 adopting specifications to accommodate WMA.

## Prefabricated Bridge Elements and Systems

With Prefabricated Bridge Elements and Systems (PBES), many time-consuming construction tasks no longer need to be done sequentially in work zones. An old bridge can be demolished while the new bridge elements are built at the same time off-site, then brought to the project location ready to erect.

Because PBES are usually fabricated under controlled climate conditions, weather has less impact on the quality, safety, and duration of the project. The use of PBES also offers cost savings in both small and large projects. The ability to rapidly install PBES on-site can reduce the environmental impact of bridge construction in environmentally sensitive areas.

## Adaptive Signal Control Technology

Poor traffic signal timing contributes to traffic congestion and delay. Conventional signal systems use pre-programmed, daily signal timing schedules. Adaptive signal control technology adjusts the timing of red, yellow and green lights to ac-

commodate changing traffic patterns and ease traffic congestion. The main benefits of adaptive signal control technology over conventional signal systems are that it can:

- Continuously distribute green light time equitably for all traffic movements.
- Improve travel time reliability by progressively moving vehicles through green lights.
- Reduce congestion by creating smoother flow.
- Prolong the effectiveness of traffic signal timing.

Adaptive Control Software Lite (ACS-Lite) is an example of adaptive signal control technology. ACS-Lite was specifically designed to be deployed using conventional control equipment, communications, and traffic sensors on arterial streets, making it a cost-effective alternative to other signal timing adjustment technologies.

## Geosynthetic Reinforced Soil

Instead of conventional bridge support technology, Geosynthetic Reinforced Soil (GRS) Integrated Bridge System (IBS) technology uses alternating layers of compacted granular fill material and fabric sheets of geotextile reinforcement to provide support for the bridge. GRS also provides a smooth transition from the bridge onto the roadway, and alleviates the “bump at the bridge” problem caused by uneven settlement between the bridge and approaching roadway. The technology offers unique advantages in the construction of small bridges, including:

- Reduced construction time and cost, with costs reduced 25 to 60 percent from conventional construction methods.
- Easy to build with common equipment and materials and easy to maintain because of fewer parts.
- Flexible design that is easily modified in the field for unforeseen site conditions, including unfavorable weather conditions.

# Snow and Ice Equipment Maintenance

## Pre & Post Season Equipment Preparation

Follow the steps below before using equipment for the first time this winter season to help prevent malfunctions and prolong equipment life.

### Hydraulic System Inspection Service

- Change operation fluid in both main power units and angle cylinders.
- Inspect hoses for dry rot, cracks, or pressure bubbles and couplers if applicable.
- Clean out or replace internal filters or strainers.
- Check all fittings to make sure they are tight and are not leaking.

### Electrical Systems

- Inspect all connections to plows and vehicle harnesses for broken terminals.
- Coat each connection with dielectric grease.
- Check solenoid operation and connection.
- Test vehicle batteries and replace if necessary.
- Inspect vehicle lighting including wiring and sockets on headlights, taillights, stop lights, and turn signals.

### General Areas of Service

- Grease all moving/pivot points.
- Adjust trip springs and replace if needed.
- Check and tighten “nuts & bolts” on both plow assembly and vehicle mount.
- Inspect/replace cutting edge.
- Adjust plow lights.
- Order replacement parts for all types of plows.

## Maintenance During the Season

Remember the following steps to follow during the winter for maximum performance and fewer opportunities for serious damage:

- Thoroughly clean and wash all equipment. Use a pressure washer or car wash as an easy option to ensure that equipment looks its best and is functioning properly.
- While cleaning, look for structural problems.

Cracks are usually first shown by paint/powder coat cracking and rusting at joints. Look for bent, twisted, or distorted parts and schedule repairs.

- Regularly check for electrical problems including frayed and crushed wires, loose connections, damaged plugs or pins, broken bulbs, corroded or water-filled motors, and bad batteries, alternators and solenoids.
- Mount, load, and test all spreaders. Calibrate them and place calibration cards on each truck’s visor.

Take care of repairs and replacing parts as soon as possible to prevent further damage. Establish a repair and maintenance plan and checklist to use for inspecting equipment after each major event. The Salt Institute’s *Snowfighters Handbook* has a good template for this. Spending time before, during, and after each season for equipment maintenance will help prevent damage to equipment, increase employee safety, and save time and money.

*Reprinted with permission from MA LTAP, MA Interchange - Fall 2009 (original article from the Snow and Ice Management Association, Inc. [www.sima.org](http://www.sima.org))*

## S-A-L-T-E-D Advice for Storage

**S**afety means good visibility for operators, warning signs at entrance and security fencing.

**A**ccessibility means easy access for equipment and delivery trucks, space big enough for front-end loaders to maneuver, room for a 20-ft. extension of the pad in front of storage buildings, and doors large enough to accommodate equipment.

**L**egality means complying with local zoning ordinances and any required discharge permits.

**T**idiness means keeping buildings well maintained, good housekeeping around the storage site and screening the storage site with fencing or plants.

**E**conomics means permanent covered storage and locating the storage site to avoid long distance hauling.

**D**rainage means good drainage away from the stockpile, sloping bituminous pads (1/4 inch per foot downward from the center), continuing runoff, installing retention curbs if necessary and disposing of salt brine in conformance with applicable federal and state regulations and local ordinances.

## Steps to Guard Against Tort Liability

If you can answer “yes” to the following questions, your public works department is in a good position to defend itself against tort liability:

### Training

- Do employees regularly receive training appropriate for the work they perform and for the materials and equipment they use? YES NO
- Do employees understand the importance of using reasonable care in performing their duties? YES NO
- Are employees instructed to report hazardous conditions and to act on them? YES NO

### Signs and Markings

- Do you make an up-to-date copy of the Manual on Uniform Traffic Control Devices and other agency governing documents available to employees? YES NO
- Are employees familiar with the MUTCD and other governing documents? YES NO
- Are signs and markings adequate, properly installed and well-maintained? YES NO
- Do you have an up-to-date inventory of signs, signals and markings, and a plan for maintaining conformance with the MUTCD and other governing documents? YES NO
- Do you have and follow a plan for periodic day-and-night review of signs and markings? YES NO
- Are identified road hazards posted with appropriate warning signs based on the MUTCD and other governing documents? YES NO
- Are bridges properly posted for weight restrictions and low clearance? YES NO

### Roads, Culverts, and Bridges

- Do you have a current inventory of road, culvert, and bridge conditions, and a plan for addressing deficiencies? YES NO
- Is the right-of-way for your roads properly es-

tablished and recorded? YES NO

- Do you keep good records on agency activities, including roadway conditions, crashes, and maintenance work? YES NO
- Do you use current versions of accepted guidelines in road design, construction, operations, and maintenance? YES NO
- Are dead end roads and railroad crossings properly signed? YES NO
- Do you provide proper temporary traffic control in work zones? YES NO
- Are sight lines clear at intersections? YES NO

### Administration

- Are your roadways inspected on a regular basis? YES NO
- Is your equipment in good repair and are employees instructed to report faulty equipment immediately? YES NO
- Do you follow objective procedures in setting priorities? YES NO
- Are your maintenance standards achievable with the resources available? YES NO
- Do you have an established procedure for receiving complaints, acting on them, and recording all actions? YES NO
- Do you meet periodically with your legal counsel to review the status of roadway-related claims filed against your agency? YES NO

*Reprinted with permission from the NV LTAP, Milepost, Winter 2009.*

### NHDOT's website for Municipalities

[www.nh.gov/dot/business/municipalities.htm](http://www.nh.gov/dot/business/municipalities.htm)

This website has important information for public works departments, such as:

- Airport Block Grant, Bridge Aid, Federal Aid, Highway Block Grant, State Highway Aid, Permits & Rules/Regulations/Policies.

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

## Pavement Preservation: Right Treatment, Right Road, Right Time

*Submitted by Ashley Benson, UNHT<sup>2</sup> Project Assistant & UNH Masters in Literature Student*

Most people believe that a road in poor condition should be fixed first. However, pavement preservation stresses applying the *right treatment*, on the *right road*, at the *right time*. This means that road managers should be maintaining their existing “good” infrastructure first instead of fixing the “worst” roads first.

The “right” treatment refers to the best treatment or maintenance option for a particular road. The “right road” refers to the road that is still in “good” condition. The “right time” is before the pavement is severely damaged. The public is largely unaware of the “right treatment, right road, right time” concept. This is part of the challenge for road managers.

Road managers should complete smaller, less expensive repairs frequently to prolong major rehabilitation that all roads need eventually. A good pavement maintenance program will help avoid prolonged traffic disruption for major road projects and will save the community time and money.

According to the FHWA, “with timely preservation [municipalities] can provide the traveling public with improved safety and mobility, reduced congestion, and smoother, longer lasting pavements.”

The goal of a pavement preservation program is to enhance pavement performance and extend road “life”. This goal is accomplished through three main components: preventative maintenance,

routine maintenance, and pavement rehabilitation.

### Preventative Maintenance

Preventative maintenance is defined as “a planned strategy of cost-effective treatments to an existing roadway systems and its ap-



purtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition of the system (without significantly increasing the structural capacity)” according to the AASHTO Standing Committee on Highways.

Road managers should apply preventative maintenance to roads that are still in good condition as these roads are expected to have a long “service life” remaining. Preventative maintenance treatments include “asphalt crack sealing, chip sealing, slurry or micro-surfacing, thin and ultra-thin hot-mix asphalt overlay, concrete joint sealing, diamond grinding, dowel-bar retrofitting, and isolated, partial, and/or full-depth concrete repairs to restore functionality of the slab; e.g., edge spalls, or corner breaks” (FHWA).

The first tenet of pavement preservation states “right treatment.” Not all road treatments and maintenance activities are considered to be pavement preservation, or part of a pavement preservation

program. Pavement preservation activities are characterized by their intended purposes. Any treatment that is designed to restore the function of the existing road system and extend its service life is considered to be part of a pavement preservation program. Treatments that increase capacity or strength, while important, are not intended to preserve the lifetime of paved roads, and as such are not part of pavement preservation. The treatments that will be discussed and explained in this article are fog seals, crack sealing and crack filling, chip seals, slurry seals, micro surfacing, and thin asphalt overlays.

### **Fog Seals**

Fog seals are a method of pavement preservation that adds asphalt to an existing pavement surface. Fog seals are an inexpensive treatment that involves “spreading a diluted asphalt emulsion on the roadway” (*Brown 24*). This emulsion contains no added aggregate and is diluted to about 50%.

The intended purpose of a fog seal is to seal the pavement—by spreading the emulsion over the asphalt, raveling on the paved road is prevented and the asphalt is enriched. Fog seals can also be used to waterproof the road surface, prevent stone loss, and improve the surface appearance.

To achieve its goal of pavement preservation, the fog seal emulsion essentially fills the voids in the surface of the paved road, creating a smooth and waterproof surface that protects the road from further damage. If a fog seal is inappropriately applied, however, the result can be a very slick pavement. This can generally be avoided by ensuring that the emulsion is properly diluted before application—the FHWA provides checklists for all of the treatments explained in this article. Fog seals are a suitable treatment for roads that have an open surface texture and are weathered, heavily aged, and/or open graded.

### **Crack Sealing & Crack Filling**

Crack sealing and crack filling prevent the intrusion of water and other materials into the pavement cracks, which prevents further deterioration from the spreading of the cracks. Filling cracks is considered short-term treatment between major

maintenance or rehabilitation projects.

Crack sealing and filling are the right treatment for paved roads when the roadway base is sound, and the cracks are between 3 mm and 25 mm (0.1 inch to 1 inch). Crack sealing and filling can be completed during any time of year but work best when the temperature is cooler.



Decide whether a crack is “working” or “non-working” first in order to know whether to crack seal or crack fill. A “working crack” is a crack that has a large amount of horizontal movement. A “non-working” crack has a small amount of horizontal movement. Road managers should crack seal working cracks and crack fill non-working cracks.

When crack sealing, a crack sealant should be chosen that is capable of “remaining adhered to the walls of the crack, elongating to the maximum opening of the crack and recovering to the original dimensions without rupture, expanding and contracting over a range of service temperatures without rupture or delamination from the crack walls, and resisting abrasion and damage caused by traffic” (*Caltrans 3-6*).

There is less preparation work for crack filling and road managers can use material that have lower performance requirements than those used for crack sealing. For example, the materials used for crack filling do need some elasticity to accommodate the movement of the cracks but they do not need to be nearly as elastic or flexible as materials used for crack sealing.

### **Chip Seals**

The process of a chip seal is simple: an asphalt binder is sprayed on to the pavement, and then is covered by one layer of aggregate of a uniform size (the “chips”). After the chip seal is applied, the road is rolled to ensure a proper seal, and the debris is swept away.

Chip seals must be used on structurally sound roads in fair to good condition since they do not

increase the structural capacity of the road. Road managers should use chip seals on roads that display a loss of surface texture. Chips seals provide a method of cost-effective treatment that protects the pavement underneath it and extends the service life of the paved road. A chip sealed road is waterproof. Small cracks and imperfections that were present on the old surface are sealed.

Chip seals are one of the most cost effective methods of treatment—the initial treatment itself is inexpensive and can last five to seven years. With multiple applications, it is possible for the chip seal to last ten years.

### *Slurry Seals*

Like a chip seal, a slurry seal protects the pavement underneath and improves the surface of the paved road. If used on a newly paved road, a slurry seal will actually prevent surface problems, such as small cracks, raveling, and water and air permeability. However, a slurry seal is most often used to correct small surface distresses in older pavements, and to seal the surface of the paved road against further damage. A slurry seal is composed of crushed aggregate, an asphalt emulsion (and fillers), and water, which are mixed according to the manufacturer's instructions.

There are three types of aggregate used in slurry seals: Type I (fine), Type II (general), and Type III (coarse). Type I aggregate is used for slurry sealing in low traffic areas, and the fine texture is useful for maximum crack penetration. Type II are the most commonly used aggregates, used in areas of moderate to heavy traffic. Type III aggregate is used in areas where there are severe surface conditions, and provides friction and resistance for heavy traffic loads.

Special equipment is required for slurry seals; a slurry mixing unit with an attached spreader box will be necessary to ensure proper application. The slurry mixture is laid down as a coating on the paved roadway as the mixer/spreader is moved forward. Again, as a method of preventative maintenance, slurry seals do not offer structural improvements, but

rather extend the service life of the road by five to seven years.

### *Micro-surfacing*

Micro-surfacing is another convenient and cost-effective form of preventative maintenance for road repair. Micro-surfacing is a cold-mix asphalt mixture with added polymer modifiers, used to repair small distresses on paved roads.

Just like the slurry seal, micro-surfacing is made from a mixture of aggregate, an asphalt emulsion, and water. However, micro-surfacing also has additional materials, such as advanced polymers and other additives. These additional materials give micro-surfacing added capabilities that slurry seals do not have. The added polymers allow micro-surfacing to be used on high volume roads—roads that typically have around ten to fifteen thousand cars on them per day. Urban arterials are usually suitable for micro-surfacing.

Just like the slurry seal, micro-surfacing also requires special equipment: the micro-surfacing mixture is fed into a spreader box, which evenly spreads the mixture over one lane of paved road in a single pass. The edges of this mixture are automatically textured, and once injected with water, the micro-surfacing mixture is allowed to “cure” on the roadway. Only about one hour is necessary before the paved road can be opened back up for travel.

Micro-surfacing application can occur during a variety of temperature and weather conditions, and can be applied at night as well. This flexibility is particularly useful for high-volume roads, as it means that the paving season is lengthened significantly. Micro-surfacing is generally accepted as extending the service life of the road for over seven years.

### *Thin Asphalt Overlays*

The final method for preventative maintenance in pavement preservation programs is thin asphalt overlays. Thin asphalt overlays are useful for any paved road with minor distress, such as raveling or light cracking that originates on the pavement surface.

Thin asphalt overlay is a hot mix asphalt mixture of asphalt cement and aggregate, spread in a layer  $\frac{3}{4}$  to 1  $\frac{1}{2}$  inches thick over paved roads. Because the overlay is thin, the liquid asphalt layer binds the aged surface of the paved road together, and provides a strong but flexible new surface. Overlays typically last ten to fifteen years, and do bring a small structural benefit to the paved roads. Additionally, thin asphalt overlays restore skid resistance and ride quality, and also can reduce noise pollution on noisy pavement.

Road managers should not use thin asphalt overlays to correct widespread structural damage. Instead, road managers should spread thin asphalt overlays on the road surface before significant damage occurs. Like all of the treatments used in pavement preservation, overlays are solely intended for preventative maintenance.

## Routine Maintenance

Routine maintenance is any day-to-day, routinely scheduled work that serves to maintain and preserve a paved roadway condition, or to restore the roadway to an adequate level of service. Routine maintenance on a paved roadway includes roadside ditch and structure cleaning and maintenance, upkeep of pavement markings, pothole repair, and crack filling.

Other maintenance activities, such as corrective or catastrophic maintenance, or pavement reconstruction, are not considered a part of pavement preservation programs, because they are performed after serious damage has occurred to the paved road.

Routine maintenance help keep the paved road in serviceable condition, and aid in pavement preservation programs.

## Pavement Rehabilitation

The goal of pavement rehabilitation is to extend the service life of a paved road and/or improve road strength and load carrying capacity. Rehabilitation practices extend pavement life by eliminating pavement cracks or by increasing the thickness of existing pavement in order to strengthen it.

Pavement rehabilitation is divided into two categories that represent these two practices: minor and major rehabilitation.

### Minor Rehabilitation

Minor rehabilitation involves non-structural repairs that are intended to eliminate cracks due to age and environmental exposure. Minor rehabilitation activities such as these are considered to be part of pavement preservation because they are non-structural in nature.

### Major Rehabilitation

Major rehabilitations, on the other hand, are structural repairs that intend to extend the life of pavement. These do not qualify as part of a pavement preservation program, as they are structural enhancements.

Pavement preservation programs that make use of the preventative maintenance techniques outlined above provide long lasting protection for municipalities' paved roads. Studies show that for every \$1 spent on preventative maintenance and pavement preservation, the municipality saved \$6-\$8 on costly reconstructions and rehabilitations later.

Effective pavement preservation programs, in which the roadway undergoes preventative maintenance to stop damage before it occurs, are a cost-effective and safe alternative to allowing roadways to deteriorate until it is absolutely necessary to reconstruct them. By selecting the right treatment for the right road at the right time, municipalities can ensure that their roadways are long-lasting and in good condition continuously.

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# Six Tips on Managing Workplace Stress

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

Follow these tips to manage workplace stress:

- 1. Take a break.** Get up and stretch if you've been sitting all day. Take a walk and get a drink of water. Splash some water on your face. Have a quick snack to give you a boost of energy. These things will help clear your mind and give you a change in scenery. Avoid coffee and energy drinks since they will make you more tired later in the day.
- 2. Manage your work properly.** Organize your desk and keep it that way! Avoid frustration caused by clutter and disorganization. Occasionally, move your desk and set it up differently to give you the feeling of being in a new place. Prioritize what must be completed by the end of the day.
- 3. Involve others.** Talk with co-workers and go out to lunch with a group of your coworkers. Tell jokes to each other and build a support system. Help to create a friendly and comfortable work environment.
- 4. Don't share in spreading rumors.** Rumors are an easy conversation starter, but they have a negative effect on people. If possible, do not allow rumors to bother you. Speak with a co-worker directly before assuming anything. Do not start rumors as they are extremely unprofessional and can result in negative disciplinary action toward you.
- 5. Worry about work AT work.** Don't mold your day around work. Get up in the morning and get ready for your day, not just for work. Take a different driving route occasionally or listen to music – anything not related to work. Spend time with your family and friends after work. Avoid using the phone to chat about work or checking email after hours.

- 6. Keep a positive attitude!** Be proud of yourself when you get things done. Give yourself a pat on the back and smile. Know that you're doing a good job and trying your best. If the job becomes unfair, know that jobs are disposable. Don't stick around if you know it's a burden for you and others around you. Find something you love doing!

People manage stress differently. Don't let stress build up until it is no longer manageable. Instead, find ways that help manage stress and keep it contained.

*References:*

- [http://www.quintcareers.com/managing\\_job\\_stress.html](http://www.quintcareers.com/managing_job_stress.html)
- <http://www.rd.com/home-garden/8-secrets-to-managing-workplace-stress/article12560.html>

## Build a Better Mousetrap State & National Competition

*Sponsored by FHWA and LTAP and TTAP centers*

Help NH LTAP participate in this national competition by submitting a write-up and pictures of your inventions, gadgets, tools, equipment modifications, and processes that increase safety, reduce cost, improve efficiency, and improve the quality or efficiency of a job.

**Judging Criteria** will be based on: Cost, Savings/Benefit to the Community, Ingenuity, Transferability to others & Effectiveness.

**State prizes** include: An award certificate, a gift certificate for FREE T<sup>2</sup> training will be awarded to the top 2 winners, & mention in our quarterly newsletter, website, and email listserv. Also the NH winner is automatically entered into the national competition.

**TO ENTER:** Call NH LTAP at (603) 862-2826 and we will e-mail or fax you the form. There is no limit to the number of different entries from an organization.

This is a great way to exchange innovative local ideas and for local transportation workers to obtain some well-earned recognition for their hard work and innovation!

## 2009 Survey Results

Below are some statistics from our December 2009 survey. Information was collected from municipal highway departments in NH.

- An average of \$206.00 dollars per employee is reserved annually in the budget for training.
- 38% of respondents consider NH LTAP workshops for salary increases/promotions or their agency is “considering how to use these training programs”.
- Road Managers prefer training Monday through Thursday and one-third of respondents prefer training on Fridays.
- Road Managers want training from 8:00am until 2:00pm.
- Road Managers want training April through October.
- Safety and technical articles were indicated as the “most important” parts of the newsletter.
- 50% of respondents are aware that NH LTAP has staff that can visit your community to provide technical assistance.
- 97% of respondents use NH LTAP “training”; 67% read the “newsletter”; 44% use the “website”.
- 92% of respondents report NH LTAP services are either “extremely” or “somewhat” useful.
- The average population in respondents’ communities is 8,012.
- The average road miles that respondents maintain is 78.
- 71% of respondents have internet access at work.
- 82% of respondents have internet access at home.

## Welcome Ha Hoang

### T<sup>2</sup> Project Assistant

Ha Hoang is a Junior in the Whittemore School of Business and Economics (WISB) here at UNH with a concentration in Business Administration and a Minor in Computer Science.



He is working about 10 hours per week during the semester. He is responsible for administrative work, completing Master Roads Scholar interviews, updating flyers, creating folders and manuals, and workshop evaluations.

Ha likes photography, traveling, and sports. His favorite teams are the L.A. Lakers, the Boston Red Sox, and the New England Patriots!

Welcome Ha!

## Welcome Kaitlyn Nagle

### T<sup>2</sup> Project Assistant

Kaitlyn Nagle is a Senior in the College of Health and Human Services at UNH with a Major in Recreation Management and Policy with a Minor in Hospitality.

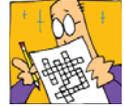


Kaitlyn is working about 15 hours per week during the semester. She is responsible for administrative work, completing articles for *Road Business*, updating flyers, creating folders and manuals, and website maintenance.

Kaitlyn is a member of the UNH Chapter of Alpha Phi Sorority. She also serves as the Recruitment Counselor Chair for the Panhellenic Council. She likes sports and music!

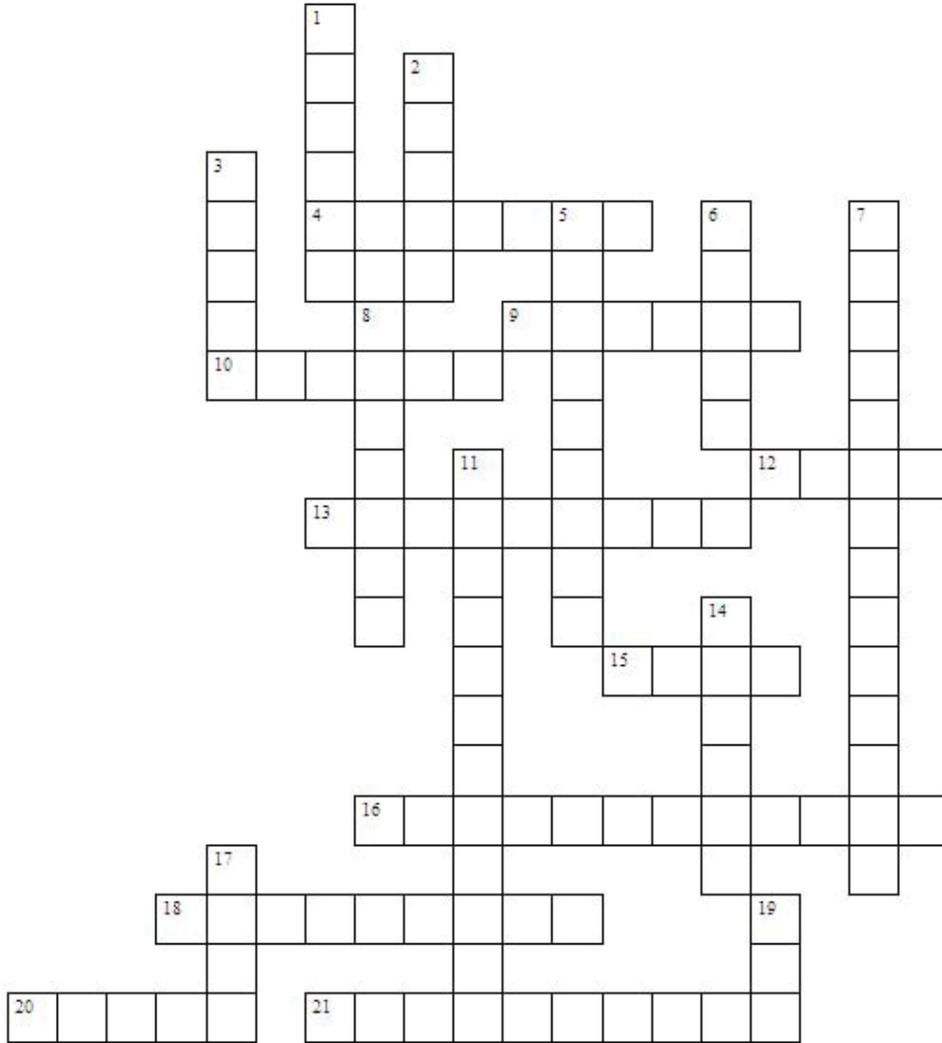
Welcome Kaitlyn!

# 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: \_\_\_\_\_ Email: \_\_\_\_\_



## ACROSS

4. Road Managers want training between April and \_\_\_\_\_.
9. Avoid drinking \_\_\_\_\_ to become less tired later in the day.
10. Check for \_\_\_\_\_ when performing maintenance on your equipment.
12. Organize your \_\_\_\_\_ to prevent stress.
- 13 The town of \_\_\_\_\_ completed 6,250 feet of Full-Depth Reclamation.
15. With P.B.E.S \_\_\_\_\_ consuming construction tasks no longer need to be done sequentially in work zones.
16. Checking equipment prevents \_\_\_\_\_ during the winter.

18. The by-product of ICE BAN significantly reduces \_\_\_\_\_.
20. \_\_\_\_\_ treatment, \_\_\_\_\_ road, \_\_\_\_\_ time.
21. Poor traffic signal timing contributes to traffic \_\_\_\_\_.

## DOWN

1. 62 \_\_\_\_\_ are available from UNH T<sup>2</sup>.
2. \_\_\_\_\_ (number of) states constructed WMA projects.
3. People believe that a road in poor condition should be \_\_\_\_\_ first.
5. E stands for \_\_\_\_\_ in "S-A-L-T-E-D advice for storage".
6. A.S.C.T continuously distributes \_\_\_\_\_ light time equitably for all traffic movement.
7. \_\_\_\_\_ is a cold-mix asphalt mixture for pavement preservation.
8. Test your electrical system and check your \_\_\_\_\_ and replace if necessary.
11. \_\_\_\_\_ prevents water intrusion for pavement preservation.
14. G.R.S provides \_\_\_\_\_ transition from bridges to roads.
17. Assessment given for steps to guard against \_\_\_\_\_ liability.
19. Luncheon hosted to celebrate \_\_\_\_\_ (number of) new Master Roads Scholars.

## 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)

Social media sites, such as Facebook, allow people to interact with each other, post announcements, watch media, or get updates.

If social media is used properly, it can be an important and cost-effective tool for municipalities to use. For example, you can create a Page dedicated to a business on Facebook. If someone becomes a “fan”, then any posts you make will automatically be sent to their page for viewing.

Here are some rules for remaining professional when using social networking sites at work:

1. Keep company and personal profiles separate.
2. Set the privacy settings to control who can view your page, posts, or comment on pictures.
3. Keep company contact information accurate.
4. Remove unnecessary content.
5. Establish goals for using social networking sites to help decide which option is best for your organization.



**Technology Transfer Center**  
New Hampshire LTAP at UNH

## NH Roads Scholar Program Changes

Effective, October 1, 2010, we are no longer requiring the 5 Basic hours in our Roads Scholar Program. Instead, participants need an extra 5 Technical hours.

### **New requirements for the Program:**

**RS Level 1** - Requires 25 training hours.

**RS Level 2** - Requires 50 training hours & specific subject area coverage including 25 technical hours, 5 supervision or personal development hours, 5 liability or safety hours, 5 environmental hours, and 10 additional hours (electives).

**RS Level 3** - Requires 75 training hours.

**RS Level 4** - Requires 100 training hours.

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

## Master Roads Scholar Luncheon

We celebrated at the Concord Holiday Inn on August 17, 2010 with a class of 10 new Master Roads Scholars!

Master Roads Scholar is the final achievement level in the NH Roads Scholar Program (training). Master Roads Scholars have at least 100 training hours (20+ workshops) and have fulfilled all of the training subject requirements for Roads Scholar II, such as 25 hours of technical road maintenance or repair, 5 hours supervision or personal development, 5 hours liability or safety, 5 hours environmental, and 10 additional hours (electives).

### **Congratulations to our new Master Roads Scholars!**



*Master Roads Scholars - left to right: Peter Furmanick, Randall Smith, Edwin Wakefield, Eric Poitras, Douglas Starr, Kevin McDonald, Kelly Gibbons, Matthew Kimball, Edward Thayer, & Earl Thibodeau.*

## Is Your Town a Member of NH Public Works Mutual Aid?

There are 132 NH community members of NHPWMA out of 234. Please know that in a declared emergency, FEMA will NOT reimburse a town for receiving assistance from another community member of NHPWMA if your town was not a member BEFORE the storm event.

For information on the Program, including how to join and benefits of joining, visit: [www.t2.unh.edu/ma/index.html](http://www.t2.unh.edu/ma/index.html)

### 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 \$5 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!

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 Federal Highway Administration, NH Department of Transportation, 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, Project Assistant
- Ha Hoang, Project Assistant
- Kaitlyn Nagle, 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 - Director of PW, New London

### NH Public Works Standards & Training Council

Dave Danielson - Foresee Advocacy LLC

## About Road Business

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www.t2.unh.edu



## Fall 2010 Training Calendar

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

10/6	Flagger Certification Training	5 Safety	Bow	\$60
10/6	Salt Reduction for Supervisors	5 Environmental	Derry	\$35
10/7	Basic Math	5 Basic	Amherst	\$60
10/8	Employee Safety	5 Safety	Lebanon	\$60
10/12	Winter Maintenance Fundamentals	5 Technical	Raymond	\$60
10/14	Recycling & Solid Waste	5 Environmental	Raymond	\$60
10/19	Employee Performance Evaluations	5 Supervisory	Lincoln	\$60
10/20	Flagger Certification Training	5 Safety	Mont Vernon	\$60
10/21	Full-Depth Reclamation	5 Technical	Derry	\$60
10/22	Road Managers Meeting	N/A	Goffstown	FREE
10/26	Workzone Traffic Control	5 Safety	Lebanon	\$60
10/27	Culvert Installation & Maintenance	5 Technical	Grantham	\$60
10/29	Salt Reduction-Road maintenance	5 Technical	Chocorua	\$60
11/2	Salt Reduction for Operators	5 Technical	Derry	\$35
11/3	Drainage, Drainage, Drainage	5 Technical	Milford	\$60
11/4	A Hard Road to Travel	5 Supervisory	Moultonborough	\$60
11/5	Bridge Maintenance	5 Technical	Rochester	\$60
11/9	Emergency Communications for PW	5 Supervisory	Dover	\$60
11/10	Recycling & Solid Waste	5 Technical	Claremont	\$25



### Milestones

- **Dave Lent** retired from the Town of Merrimack on July 1, 2010.
- **Kyle Fox** is the new Deputy Director for Merrimack DPW.
- **Adam Jacobs** is the new Operations Manager in the Town of Merrimack.
- **David Cook** is no longer the Public Works Director in Mason.

- **Dave Morrison** is the Interim Public Works Director in Mason.

### Dates

- October 22, 2010: Road Managers Mtg., Goffstown Town Hall, 8:30am - 11:30am
- October 28, 2010: NHPWA Annual Meeting, LGC, Concord, 9am - 1:30pm
- November 17-19: LGC Annual Conference, Radisson Hotel, Manchester