

# ROAD BUSINESS

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

## On the Road in NH: Center Harbor Replaces High Haith Bridge



Submitted by Jeff Haines, Road Agent, Center Harbor



The Town of Center Harbor, New Hampshire recently undertook the replacement of the bridge on High Haith Road over Squam Lake Canal. The former concrete slab bridge was constructed on stone masonry abutments around 1935. Over the years, settlement of the stone abutments and severe deterioration of the concrete deck had reduced the bridge's load capacity to 6 tons, resulting in its placement on the New Hampshire Department of Transportation's (NHDOT) Municipal Redlist. Additionally, this bridge serves as the only means of access to the properties on High Haith Island.

The Town secured funding through the NHDOT Municipally Managed Bridge Aid Program, a program which reimburses municipalities for 80% of project costs. In June 2008, the Town secured Quantum Construction Consultants, LLC of Concord, NH to design the new bridge.

The new 26-foot span bridge has been designed for HL-93 loading, in accordance with the AASHTO LRFD Bridge Design Specifications, as required by the Federal Highway Administration and NHDOT. The Town chose to utilize a concrete voided slab superstructure for its longevity, low maintenance requirements, and an appearance similar to that of the existing bridge. The verti-

cal roadway profile was adjusted to maintain the existing clearance under the new bridge, as requested by the Town, for continued canoe and small watercraft passage. To maintain traffic during the construction period, a temporary detour road was constructed adjacent to the bridge utilizing geotextile fabric to protect the wetlands.

Specialty project features include a rough-sawn heavy-timber bridge rail and guardrail system, as requested by the local residents, and vegetated Mechanically Stabilized Earth (MSE) retaining walls. The MSE retaining walls were used in place of stone fill along the roadway to blend with the natural surroundings of the location and to minimize the impacts to the adjacent lake and wetlands. The walls were constructed by wrapping geogrid around geotextile socks filled with growing media. The growing media was seeded as it was installed in the geotextile socks to produce a stable, vegetated roadway embankment.

The project was bid in October 2009 and the construction contract was awarded to M.E. Latulippe Construction, Inc. of Ashland, NH. Construction of the replacement bridge commenced in December 2009 and was completed by the end of May 2010.

### Summer 2011

### Vol. 26 No. 2

Master Roads Scholars.....	2 - 3
Ten Essentials of a Good Road.....	4 - 5
Customer Service Tips for Public Works.....	6 - 7
The Science of Highway Safety.....	S1 - S4
The Benefits of Using SAFE BIND.....	7
Street Name Letter Height.....	8 - 9
Managing Electronic Files.....	10
Message from the Center Manager & About T <sup>2</sup> .....	10
Crossword Puzzle.....	11
T <sup>2</sup> Training Calendar, Dates & Milestones.....	12

**NH Local Technical Assistance Program Mission:** To provide training and services concerning the technology and management of roads and bridges to municipal highway department officials.

NH LTAP at UNH, *Road Business*, Summer 2011, Vol. 26, No. 2

## NH LTAP 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 training 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.*

NH LTAP Roads Scholar Program: [www.t2.unh.edu/training/rdsclr.html](http://www.t2.unh.edu/training/rdsclr.html) ~ NH LTAP Training Calendar: [www.t2.unh.edu/training](http://www.t2.unh.edu/training)

### Master Roads Scholar—Shane Bilodeau



Shane Bilodeau has been a Highway Maintainer II for NH DOT for 3 years. Community involvement motivates Shane in his career. As a member of the safety committee, he is currently working on

the “Safety Day Program.” He was introduced to the Roads Scholar Program through a friend in the Department of Transportation and enjoys taking classes because it allows him to work with outside agencies and he sees the classes as “very user friendly.” He says the constantly changing information motivates him to take courses.

He finds the information he learned with the Technology Transfer Center to be useful and necessary, and states “I think that everyone should take these classes to be able to get a baseline on safety so everyone can go to work and then go back home to their families at the end of the day.” Shane and his wife Heather have 3 children together. He is a stamp collector and enjoys fishing, and camping with his family.

### Master Roads Scholar—Keith Brignano



Keith Brignano, a heavy equipment operator and CDL driver for the City of Laconia has been involved in Public Works “forever.” Keith’s father worked at a DPW for

18 years and his grandfather worked for the Highway Department for the State of Connecticut. Keith was

hired in 2000, and takes pride in working for the community of Laconia. He enjoys the different challenges presented every day when working for the public. The Roads Scholar Program offers Keith new learning opportunities with hands-on activities, and the constant changes in the program will continue to encourage and motivate Keith to be involved in the Roads Scholar Program.

Keith and his wife Heather have six kids together: Briget, Tim, Ali, Braydon, Gianna, and Whitney. To future public works employees and Roads Scholars, he advises listening to the veteran employees in the beginning and to try their techniques, and also not to take the joking personally.

### Master Roads Scholar—Alan Dews

Alan Dews has been with the City of Dover for 18 years as an Engineering Technician. Some of his duties include overseeing private subdivisions and reviewing driveway permits, among other engineering tasks.



Before his involvement with Public Works, Alan worked for a paving company for 5 years and served 4 years in the Air Force. The City of Dover is currently working on a Superfund site landfill, dredging the Cochecho River, and working on a bridge on Henry Law Ave. Alan has been married for eleven years and has a 9 year-old son. During his free time he enjoys fishing, traveling, and spending time with his family.

### Master Roads Scholar—Hazen Fisk

Hazen Fisk, from the Town of New Ipswich, has been a Highway Foreman for eleven and a half



years. He started his career in public works as a part-time plow driver. Hazen takes pride in making a difference in the community and enjoys being involved.

Through the Roads Scholar Program, Hazen loved being able to meet and talk with many people from different places. He is motivated to stay involved in courses to expand his knowledge of the job. Hazen's hobbies include camping, restoring classic cars, watching movies, and traveling. Hazen encourages future scholars: "Attend as many T<sup>2</sup> classes as possible. The job always changes and you can never learn enough about it!"

### **Master Roads Scholar—Russell Nickerson**



Russell Nickerson, a Highway Working Foreman, has been working for the Town of Hampton for 25 years. He started his career as a laborer for the Sewer and Drain Road Crew replacing drains and sewers. He

is challenged each day by his job and finds this to be encouraging. Currently, Russell is working on projects involving summertime paving and repairs, and starting a recycling pick-up. Russell takes interest in discussing similar issues that are taking place in other towns, and hearing new or similar solutions to these issues. He is motivated to continue to take courses with the Roads Scholar Program to stay up to date on the latest technology and flagger certifications.

During his free time Russell enjoys fishing, hunting, boating, biking, and spending time with family and friends. To future scholars he recommends our program, stating that "The Roads Scholar classes are very helpful and informative for safety and updates on things that are used in Public Works."

### **Master Roads Scholar—Jeffrey Remillard**

Jeffrey Remillard has been a Road Agent for the Town of Bradford for almost 2 years, and this position is his first within the field of public works. Prior

to working as a Road Agent, Jeffrey was a private contractor, and he wanted to use his 20 years of experience in this field in a new setting. He is motivated each day in his career and enjoys the opportunity each day to use problem-solving skills. Currently, his department is working on re-ditching and roadside cleanup throughout the town.



In the Roads Scholar program, Jeffrey enjoyed interacting with people from other towns and exchanging the best practices to use. He plans to stay involved in courses with the program so he can stay up to date on new information to help him do his job better.

He and his wife Kathleen have been married for 16 years and have 3 children. In his free time Jeffrey enjoys antique mack truck collecting, and his collection consists of 113 trucks. He also collects vintage construction equipment.

### **Master Roads Scholar—Laura Scott**

Laura Scott has been a Community Development Director for the Town of Windham for two and a half years. Since 2000 she has been involved in regional planning commissions to correct road issues. She feels that working with the people from the community of Windham makes her job worthwhile, and she is currently involved in working on new road standards and a winter maintenance policy.



In the Roads Scholar Program Laura has made many connections with other town employees and enjoyed learning "BMPs" (Best Management Practices). She plans on taking more classes with the program to continue to expand her knowledge.

When Laura is not working or taking courses she involves herself in volunteer opportunities, yoga, cooking, and reading. Laura suggests that new Roads Scholars take advantage of being able to learn practices from people of other towns.

# Ten Essentials of a Good Road

## *10 tips to help maintain and keep roads in good condition*

### **1. Keep Water Away from the Road**

Drainage cannot be overemphasized in road construction and maintenance. Too much water in the base material weakens the road, and water allowed to remain on top of a gravel or black topped road weakens the surface. Combined with traffic, the weakened surface and the weakened base can cause potholes and cracking. In addition, improperly channeled water causes soil erosion and deterioration of pavement edges. Whether it is mud in the spring or frost heaves in the winter, the presence of water on roads is trouble.

A good surface drainage system is the best way to decrease water damage on a road. Proper surface drainage prevents water from infiltrating the pavement and removes water from the driving lanes. A good drainage system will move water in a constant thin sheet to the side ditches, which carries the water away from the roadway.

A surface drainage system has four main components: road crown, shoulders, ditches, and culverts.

- The road crown, or super-elevation of the road surface, drains water off the road surface.
- Shoulders are an extension of the road surface and allow for water to flow continuously to the ditches.
- Ditches are used to carry water away from the roadway and need to be kept clean and protected from erosion. Water left in the ditch can sometimes leak back into the base, so water collected and carried through the ditch has to be directed away from the roadway at frequent intervals, sometimes using a culvert pipe.
- Culverts usually channel water from one side of the road to the other, helping to control the flow of water and slowing it down to reduce erosion.

### **2. Build on a Firm Foundation**

A highway wears out from the top, but it falls apart from the bottom. This means the road base determines the service-life of a road. Without adequate support from the road base, the road will deteriorate rapidly. A good road requires a suitable foundation composed of stable material. A road material is stable if it has negligible soil settlement following changes in moisture content. Additionally, a stable road does not deform excessively

under repeated loads, whether the material is wet or dry.

### **3. Use the Best Soils Available**

The supply of natural, good quality soils and aggregates is beginning to disappear. Blended or crushed gravel is a more expensive alternative, but the quality of soils used by a road manager will depend on local availability and budget. In deciding what is available and affordable, consider the long-term consequences of using lower quality material. Using inferior base material may require excessive maintenance during the road's life and, perhaps, expensive rehabilitation, making it less cost-effective in the long run.

### **4. Compact Soils Well**

The more dense a material is, the stronger it is. When soil is improperly compacted, future traffic loads or changes in moisture content can cause the road to settle or fail completely. Correct roadway compaction is achieved by pressing soil particles together, which expels some of the air from the mass, making the material more dense. Well-graded soils have a fairly even distribution of different particle sizes, which means they will compact more easily than poorly graded soils, which have mostly one particle size. Crushed or angular particles will compact to a more stable condition than rounded particles of a similar size. Finally, it is important to remember that a certain amount of moisture is necessary for good compaction.

### **5. Design for Winter Maintenance**

Roads designed in areas with heavy snowfall are useful guides for proper drainage design—these roads will be properly designed for not only the winter but the rest of the year as well. Consider the following: if the traveled way is wide enough to allow a snowplow and a school bus to meet, it should be wide enough for the rest of the year. If ditches and roadside areas are wide enough to store snow, chances are they will accommodate spring thaws and heavy water flows.

Road grades should be a minimum of 1% for drainage purposes and should not exceed 10% if possible. If the road is any steeper, it is difficult for heavy equipment to maneuver, especially in the wintertime.

Sight distance should also be considered in de-

signing a road. For safety's sake, a driver should be able to see 75 to 100 feet up the road for every 10 mile per hour increment of driving speed.

## 6. Build for Traffic Loads and Volumes

Thin ice on a pond may support a young skater, but it will crack and break apart under the weight of an automobile. Similarly, a road built to serve residential traffic will break down when it starts carrying a number of large trucks. Road managers know that roads, like bridges, should be designed with the expected traffic type and volume in mind.

A rule of thumb is to design a road to accommodate the largest vehicles that will use the road under normal operation. If in doubt, design the road for the largest piece of equipment that maintains it in all kinds of weather.

Road managers can get information and guidance from their State transportation agencies about the type and thickness of pavement mixes to apply to a gravel road. Generally speaking, a low volume road with some truck traffic can provide good services using a chip seal or sand seal. As traffic volumes and weights increase, cold-mix asphalt and hot-mix asphalt pavement may be better alternatives for road preservation and repair.

## 7. Pave Only Roads that are Ready

In their haste to get rid of another dusty gravel road, some agencies make the mistake of paving over a road that has not been properly prepared. The result may be a complete waste of money. Paving will not cure the other problems that the gravel road may have. A good paved road, without drainage issues, must be built of well compacted layers of free draining soil, must be able to carry expected traffic loads, and must be able to drain well. Paving over a gravel road without addressing these issues is a mistake, and the cost of correcting such a mistake is much higher than doing it right the first time.

## 8. Build from the Bottom Up

A road that has a poor base and poor drainage cannot be adequately improved with a top dressing of gravel or new pavement. It may be necessary, in some cases, to dig out the old road, put in new materials, and build up the road in layers.

Before doing anything to correct a road surface problem, road managers should take into consideration what is causing the problem underneath. Improper drain-

age, insufficient depth of base, or poor quality gravel may be the culprit. These should be corrected before spending money on the surface of any road.

## 9. Protect Your Investment

Roads and bridges need regular maintenance to keep them from deteriorating. The increased weight and frequency of traffic on roads, combined with adverse weather conditions, means an increased rate of road and street deterioration. Regular road and bridge maintenance preserves your municipality's road investment and prevents costly major rehabilitation later on. You can protect your roadway investment include focusing on:

- **Roadway surfaces:** blading and shaping; patching; resurfacing; dust control; and snow and ice removal.
- **Drainage:** cleaning and repairing culverts and ditches.
- **Roadside:** cutting bushes, trees, and grass; and repair and prevention of roadside erosion.
- **Bridges:** clearing channels; repair of rails, decks, and structure; and cleaning and painting.
- **Traffic services:** sign maintenance; and cutting vegetation to maintain visibility.
- **Special projects:** restoration or improvements; and emergency work such as removing slides, repairing washouts, and repairing retaining walls.

## 10. Keep Good Records

Road managers know their roads like the back of their hands. Most of them are walking history books when it comes to the roads they manage every day. This knowledge is of little use, except when the road manager is ill, moves, or retires.

Good record keeping makes roadwork much easier for everybody. It is easier to formulate budgets and to show the citizens a plan for roadwork. Recording which type of work was done on roads or bridges, when, it was completed and what materials were used can help a lot when making decisions later on.

Agencies can start by doing an inventory of all roads and bridges, listing length, width, surface types, culverts, problem areas, and other items. Placing these items on a map helps. Next comes listing and prioritizing needed improvements, putting a price tag on them, and taking care of a few problems each year.

*Reprinted with permission from the National Association of County Engineers (NACE) [www.naco.org](http://www.naco.org)*

# Customer Service Tips for Public Works

*Submitted by Kim Carr, West Virginia LTAP*

As a state or municipal worker in the public works sector, do you get tired of the constant praise and appreciation you are shown by the public? Or do you find yourself feeling like you are in the middle of a firing squad? My guess is that the vast majority of you would answer yes to the latter. Being employed in the public works sector can often feel like a thankless job. The fact is, as public servants, the services you provide have a daily impact on the people you serve. When all is going well you probably rarely hear about your positive impact. But, when the public or media, justifiably or not, do not think your agency is doing the best job possible, you often end up with individuals and groups who are very unhappy; and they aren't afraid to speak up about it!

Unfortunately, municipal highway departments do not always have the luxury of giving the public what they ask for and citizens often feel frustrated because they do not have the choice to switch to a different company if they do not like the level of service being provided. This can create frustration for both sides: citizens may expect more, even though their demands cannot be met due to rules, regulations, guidelines or budgets; highway department crews may become frustrated because they are unable to meet citizens' demands for these reasons. The following are a few simple steps you can take the next time you are confronted with an unhappy citizen.

## 1. Try Not to Take Rude Behavior Personally

This is often the most difficult thing to do, especially if you feel like you are being verbally attacked. Try, though, to put yourself in the citizen's shoes and find out what has occurred that has them so upset.

## 2. Genuinely Listen to Get to the Issue

No matter what the situation is, make a

point to actively listen to what each complainant has to say. Although you may not be able to resolve the issue in the exact manner requested, sometimes simply taking a few minutes to listen is the best course of action. If an upset community member feels you are truly trying to understand their situation, and you acknowledge the frustration they are feeling, you can help diffuse the individual's anger and help them become calmer and more rational. Essentially, by letting the person know that you truly want to understand, you help them move past their feelings and on to the concrete issues.

Additionally, your body language and tone of voice are two of your most valuable tools when speaking with an angry citizen. If an angry citizen is speaking loudly, do not raise your voice. Instead, speak calmly and more softly. Have open body language. Invite the person to sit down. Do not cross your arms and do not multitask—no phone calls, checking email, etc.

Remember that above all else, angry community members want to feel like you are making the effort to understand their situation. They want their feelings and emotions to be acknowledged by you. Often, simply acknowledging that the citizen is upset will help them relax. Remember to use a tone of voice and phrasing that is not accusatory, judgmental, or defensive.

## 3. Do Not Go Straight to Problem-Solving Mode

People commonly make the mistake of going straight to problem-solving mode when interacting with an angry citizen. Remember, if the person is still angry, they are going to be focused on what they are feeling instead of being ready to focus on possible solutions. By ignoring the anger and focusing on how you can alleviate it, you may actually

*(Cont. on page 7)*

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

## The Science of Highway Safety

*Highway Safety Manual is a valuable tool for local agencies*

*Submitted by John Rynnanen, Editor, Center for Technology & Training, Michigan Tech Transportation Institute*



As a civil engineer (or one who works closely with civil engineers) you know that when you're designing an intersection and you have a question about sight distance, you can look in the American Association of State Highway Transportation Officials (AASHTO) *Policy on Geometric Design of Highways and Streets* for an answer (A.K.A. the AASHTO Green Book). Similarly, when you have a question about signs, pavement markings and signals for the same intersection, you know you will find all the answers in your copy of the Manual on Uniform Traffic Control Devices (MUTCD).

But where do you look when you have a question about traffic safety? For example, what is

the safest method for handling left turn movements at a four-way signalized intersection? Until recently, you would have had to sift through multiple sources of information and there was no guarantee that you would find a definitive answer. The question about left turn movements exposes a dilemma that safety professionals have grappled with for years: What constitutes safety on a road? Must a road simply adhere to established design standards to be considered safe, or does it require something more?

### Standards Are Not Enough

Dr. Ezra Hauer, Professor Emeritus in the Department of Civil Engineering at the University of Toronto and internationally-recognized highway safety expert, introduced the adjectives “nominal” and “substantive” to help shed more light on the topic of roadway safety. In a 1999 paper titled “Safety in Geometric Design Standards”, Hauer wrote, “Nominal safety is judged by compliance with standards, warrants, policies and sanctioned procedures ... Substantive safety is measured by expected crash frequency and severity” (*Hauer 19*). Nominal safety, then, refers only to whether municipalities meet the bare minimum safety standards as outlined by law. Substantive safety—which Hauer indicates is just as important as meeting the standards—refers to what is safest for a given situations.

The problem with defining safety as a function of compliance with standards, Hauer asserted, is that “Limit standards do not tell the designer what the safest design is. Rather, they specify the limit of what is permissible.” (*Hauer 2*). This means that standards, on their own, are not enough to ensure maximum roadway safety, but only minimum expectations.

Today, the Highway Safety Manual (HSM), which is available through AASHTO, is the definitive source of substantive answers to roadway safety questions. The manual was developed and refined by a diverse team of roadway safety stakeholders over the past ten years to provide a single source for safety information and tools in a form that facilitates data-based decision-making.

### Major Effort

Creation of the HSM began in May 2000, under the direction of a group of volunteers from eight different subcommittees of the Transportation Research Board (TRB) in Washington DC. Research and development for the effort was funded in large part by the National Cooperative Highway Research Program (NCHRP), and the Federal Highway Administration (FHWA) provided supplementary funding and research support.

In 2006, a decision was made to publish the HSM as an AASHTO document, at which point a joint task force was formed with representatives from the AASHTO subcommittees on Design, Traffic Engineering and Safety Management. Over the next three years, the task force examined the HSM to ensure that it would meet the needs of State Departments of Transportation as well as local agencies. During that time, members of the task force also worked to promote the HSM within their respective subcommittees.

In 2009, after nine years of intensive development and careful refinement, the AASHTO board of directors approved the HSM for distribution.

### Valuable Resource, but Not a Standard

Priscilla Tobias, Bureau Chief of Safety

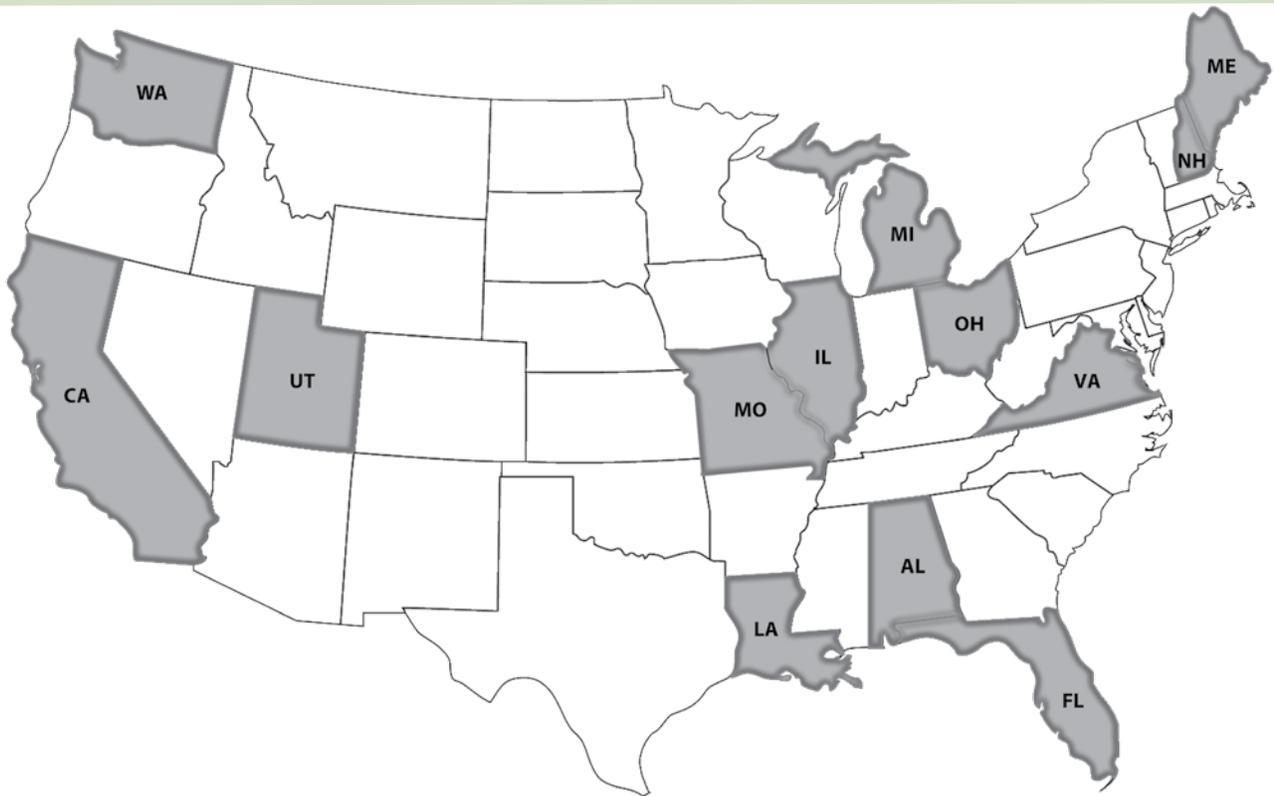
Engineering for the Illinois Department of Transportation (IDOT) serves as Chair of the task force that oversees the maintenance and on-going development of the HSM. She is extremely pleased that such a powerful tool is available for road owning agencies. “This manual represents the best safety-related science of our day,” she says. “And it has been thoroughly vetted by safety experts and representatives from all groups involved with roadway safety to make sure it’s accurate and relevant for all stakeholders. This is the first time we have had such a resource.”

Tobias is careful to stress that the HSM is not a standard, like the MUTCD. She cautions, “The manual is intended as a guide; nothing about it constitutes a legal standard, nor does it mandate responsibilities. It’s simply a great tool for making informed decisions about how to allocate resources to address safety issues most effectively.”

### New Direction in Highway Safety

The key to the manual’s usefulness lies in its thorough, scientific approach to identifying, analyzing and solving safety problems. First, many methods of site selection in the HSM help road agencies zero in on the most relevant sites by eliminating from consideration sites that are at a randomly high or low fluctuation in crashes. This means that only those sites that are consistently and habitually unsafe are identified—not just sites that are at an unusual high or low point in crashes. After a site is identified, the





HSM provides a means for analyzing the safety impact of decisions at all stages of the project development process. Agencies using the HSM are thus able to see the effectiveness of each safety improvement. Finally, the HSM includes an extensive catalog of proven crash modification factors (CMFs) for a variety of geometric and operational treatment types. Using CMFs, practitioners can predict the safety impact that a potential treatment or design may have on their road system.

Highway safety expert Dr. Hauer is pleased that the manual is available. He notes that “Publication of the Highway Safety Manual indicates wide recognition of the need for approaching safety in some evidence-based manner. With procedures that examine safety quantitatively rather than subjectively, the document is an important first step in the right direction.”

### Early Adopters Lead the Way

At three volumes and nearly one thousand pages, the HSM contains a formidable amount of in-

formation, especially for those who are not experienced in the practice of analyzing and improving roadway safety. To help make such extensive information available and to encourage road-owning agencies to use it, the NCHRP is sponsoring an effort that involves showcasing different states’ experiences with the HSM. The effort, officially titled the Lead States Initiative for Implementing the Highway Safety Manual, involves state and local transportation officials in thirteen states.

The project manager for the Lead States Initiative is Charles Niessner, senior program officer at NCHRP. To kick the project off, Niessner worked with Tobias’ AASHTO task force on the HSM to solicit participants from among State Departments of Transportation (DOTs). He was encouraged by the response. “Thirty DOTs initially expressed interest,” Niessner said. “That was encouraging. We didn’t expect that kind of response from the states because launching something like this is not a simple thing – it’s a major effort.” Niessner thinks the willingness to get involved is thanks to the requirement in the trans-

portation bill of 2005 (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU), that required each state DOT to establish a strategic highway safety plan by October 1, 2007. Niessner continues, “Requiring strategic highway safety plans really elevated the importance of roadway safety and helped everyone move more purposefully in that direction. I think the response to our invitation shows that our State DOTs see the HSM as another great tool to help refine our collective approach to improving the safety of our roads.”

### Michigan is a Lead State

Tracie Leix, supervising engineer for the Michigan Department of Transportation (MDOT) Safety Programs Unit, is managing MDOT’s participation in the Lead States Initiative. Leix is especially excited about the HSM because she expects it will enhance her group’s already healthy relationship with local road agencies. She and her team have seen first-hand how engaging with local partners on safety projects can produce great results. In 2004, Leix’s group, at the time under the leadership of Dale Lighthizer (retired 2010), established the Local Safety Initiative to help local road agencies in Michigan implement safety improvements.

“Through the local safety initiative, we stress the importance of measuring safety and quantifying the effectiveness of improvements,” Leix explained. “The HSM will be a great tool to support these efforts as we continue to work together with our local partners to improve the safety of Michigan roads.”

To help local agencies understand and use the HSM in Michigan, Leix and a Local Agency HSM Implementation Team are working with Michigan’s Local Technical Assistance Program (LTAP) to produce training materials for various groups of stakeholders that are involved in making roadway safety decisions. “Among our local agency partners, we have metro, urban, and rural agencies. And within each agency we have people dedicated to design, development, safety, and other focus areas,” Leix said. “No

matter where someone fits in the process of improving roadway safety, certain aspects of the manual apply to them. We’re working to make sure the training is relevant to each groups’ needs.”

### Not Just for State DOTs

Tony Giancola, Executive Director of the National Association of County Engineers (NACE), is also excited about the availability and relevance of the HSM for road-owning agencies across the country. “This is a very useful tool,” he said. “It will be a big help for road agencies at state and local levels as they evaluate, design, plan for and implement safety improvements in their respective communities.”

Everyone familiar with the HSM agrees that it will be a great tool for improving roadway safety, but some are expecting more—especially those who have experience with implementing safety improvements at the local level. Wayne Schoonover, P.E., County Highway Engineer for Ionia County Road Commission in Michigan, says the HSM could help local road agencies pay for road projects. He has been an enthusiastic participant in the Michigan Department of Transportation’s (MDOT) Local Safety Initiative program since it was created in 2004. “The success we’ve had in securing federal safety funding for Ionia County road improvements is a great example of the value of a data-driven approach to safety,” Schoonover said. “If not for the quantifiable solutions that MDOT’s Local Safety Initiative group helped us define, we would not have qualified. The Highway Safety Manual can help any agency define quantifiable solutions to their safety problems, which could help them secure similar funding.”

*For more information: [www.highwaysafetymanual.org](http://www.highwaysafetymanual.org).*

#### References

- Hauer, E. *Safety in Geometric Design Standards*. Retrieved December 9, 2010, From [https://ceprofs.civil.tamu.edu/dlord/CVEN\\_635\\_Course\\_Material/Safety\\_in\\_Geometric\\_Design\\_Standards.pdf](https://ceprofs.civil.tamu.edu/dlord/CVEN_635_Course_Material/Safety_in_Geometric_Design_Standards.pdf).

*("Customer Service," cont. from page 6)*

make the person more upset.

### Discuss Available Options

After getting to the issue that the citizen wants corrected, ask them if they have thought of some solutions for the problem. They may actually have a solution you have not thought of. However, because of funding issues, regulations, or other restrictions, you may not be able to give the citizen exactly what they want, and it is possible you may not be able to solve the problem. Instead of saying, "No. We can't do that," let them know what you *can* do and what options are available. When people feel

like they have some options, it makes them feel less helpless, and it also opens up the opportunity for a two-way dialogue.

While you will not be able to solve every issue to the complete satisfaction of every citizen, by listening, acknowledging their feelings, and discussing possible options, you will have a better chance of coming to a positive resolution that will satisfy everyone involved.

Good luck!

*Reprinted with permission from Country Roads & City Streets, Vol. 25, No.1 & 2, Summer 2010.*

## The Benefits of Using SAFE BIND

*By Kevin Barrett, Safe Road Services*

SAFE BIND is an environmentally friendly, high-performance blend of ammonium ligninsulfonate and calcium chloride brine used for fines retention, dust control and soil stabilization. Lignin is an organic material that fills the voids between cellulose fibers in trees, giving them firmness and rigidity. Essentially, it "glues" a tree together. Ligninsulfonate is a by-product of the paper-making process, during which lignin is separated from cellulose and reclaimed. As with other organic by-products, ligninsulfonate is an extremely powerful corrosion inhibitor, and can be useful in road preservation and maintenance.

Ligninsulfonates have a natural adhesive property when moist. When applied to dirt roads, the ligninsulfonate solution coats individual road particles with a thin adhesive-like film that binds the particles together. It acts as a dispersant, allowing the particles to pack closer together for a stronger surface. Consequently, water uptake by the road bed surface is greatly reduced, and the binder is less likely to be washed away by rain.

Commercial ligninsulfonate products meet the specifications of the US Forest Service Administration, General Service Administration and local and regional government standards, and have a long history of use on roads as a method for dust control and surface stabilization. Various agencies in North America and Europe have endorsed their use since the early 1900's.

SAFE BIND outperforms straight chloride brines, is cost competitive and significantly less corrosive than straight calcium chloride or magnesium chloride brines. Safe Road Services has been applying it to one half of the Gunstock parking lots for the Mountain of Demonstrations for many years.

For more information, contact: Kevin Barrett, [saferoadservices@comcast.net](mailto:saferoadservices@comcast.net)

The 2010 Build a Better Mousetrap Winner is...

### Town of Merrimack, Highway Department!

Congratulations for winning the NH LTAP Build a Better Mousetrap Competition last fall for your "Cutting Edge Rack"!

Congratulations Merrimack DPW!

They received free T<sup>2</sup> workshop registrations, a winners' certificate, and have been entered into the National LTAP Competition.

Thank you to the following volunteers for judging:

- Jennifer Perry, Public Works Director, Exeter;
- Alan Cote, PW Operations Superintendent, Derry;
- Butch Leel, Technical Trainer, NH LTAP;
- Kurt Grassett, Public Works Director, Hancock

# Street Name Letter Height

## *Q & A with Marty Calawa, FHWA*

Q1. Where do the changes in street name sign letter height come from?

A1. In general, the change in street name sign letter height, and case type, come from amendments to the federal Manual on Traffic Control Devices, or MUTCD; more specifically:

- The amendment to the MUTCD that changed the street name letter height from 4 inch to 6 inch was published in the Federal Register on January 9, 1997 and provided a 15 year implementation period, which leads to the compliance date of January 9, 2012.
- The amendment that changed the street name letter height to 8 inches on multi-lane streets with speed limits greater than 40 MPH was incorporated into the 2003 MUTCD, with a 15 year implementation period leading to the compliance date of December 22, 2018.
- The requirement to now use upper case and lower case letters for all street name signs comes with the 2009 MUTCD and has no deadline compliance date. Rather, this change to signs is only required when replacing existing signs for reasons other than simply meeting this provision. Obviously, this approach will eventually make all signs compliant over time as they are replaced for other reasons, or simply added to the system.

*Note: All of these changes are detailed in Chapter 2D of the current MUTCD and the compliance dates are listed with all the other compliance dates in Table I-2 in the introduction of the MUTCD.*

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Q2. Is this change mandatory?

A2. The change requiring upper and lower case letters is a “Standard” in the MUTCD and is therefore mandatory. Again, this only applies to signs you would be replacing anyway for other reasons so it is not mandatory to replace signs simply to meet this requirement.

The letter height change from 4 to 6 inch is required in typical situations. This change comes under the

text heading of “Guidance”, which is difference from the text heading of “Option”.

Text heading of “Guidance” in the MUTCD has confused some over the years, so I will try to clarify what it means. Some people have assumed that “Guidance” means it is optional, that is not the intent. In general, the text heading “Guidance” means that for all typical installations the provisions stated under that text heading should be adhered to. It is only under the more unusual situations should a deviation be considered, or if there are “Options” specifically allowed in the Manual, which are sometimes included. In regards to the 6 inch street name letter height provision, there are two possible reasons for deviation:

1. The MUTCD does specifically allow an “Option” to go with 4 inch letter height on roadways with posted “speed limits of 25 MPH or less”. This is specific to just these lower speed roadways.
2. The second is in the case of a non-standard installation. As with all direction provided under the text heading of “Guidance”, an engineer may make the judgment call to deviate from the stated direction. In this case, an engineer may determine that it would be appropriate to use a smaller, or larger, font size given the specific circumstance surrounding a specific location.

A couple of cautions on employing a deviation based on engineering judgment as described in #2 above: first is that this must be determined by an actual engineer, or someone directly under the supervision of an engineer, who has authority within that municipality to make that decision. Second, the decision maker should be able to support the decision based on some engineering criteria based on the specific situation surrounding that particular sign installation, or based on a published engineering study indicating this to be appropriate. This is important so that should that decision be called to question (think litigation) it can be readily defended. Remember, this change is not under the text heading of “Option”, but of “Guidance”, and is therefore a statement of general practice in typical situations. In other words, if the town does not have an engineer, or they generally have typical street sign installations, then they

should be adhering to this new change.

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Q3. What is the RSA, or law, that changes this requirement?

A3. This is not a State of New Hampshire change. In fact, to my knowledge there are no NH laws specifically describing traffic control requirements. Rather, NH depends on the Federal MUTCD and that is where these changes are found. The MUTCD, however, is back up by Federal law and regulations as the standard for all traffic control across the country on roadways open to public travel. Rather than reiterating the authority of the MUTCD here, it can be read in the Introduction section of the 2009 MUTCD on page I-1.

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Q4. Does the upper and lower case requirement mean we have to use a 12 inch sign blank?

A4. The MUTCD does establish sign size requirements for many signs, including the State Name Signs.

Table 2D-1, Conventional Road Guide Sign Sizes, shows street name signs as being 12 inches in height. Section 2A.11, Dimensions, does allow for smaller sign sizes on low-speed roadway (25 MPH or less), alley ways (where lateral space is limited), or private roads; when these smaller sized signs are determined by an engineer to be appropriate for this specific locations.

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Q5. How will the changes in requirements be enforced?

A5. there are no MUTCD police, per se. States and municipalities are simply required by law to follow the MUTCD and it's up to them to decide how to do that. There is no one specifically monitoring the compliance to the MUTCD for municipalities, though I admit that I may myself point out discrepancies from time to time as I may come across them, but that is for their own edification.

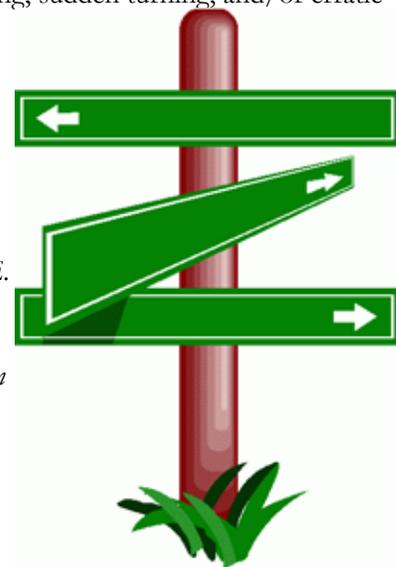
There are, however, potential consequences for not complying with MUTCD requirements, such as liability and safety issues that should be considered. For instance, should someone get hurt in a crash, the municipality could be questioned as to their keeping up with current standards, which could be a liability concern.

Even changes like this that some might think wouldn't have too significant an effect on a crash causation, could very well be called into question by lawyers and the municipality would have to defend whatever decisions they had made in this regard. Deviations from standard and general practice can be difficult to defend in court and can be considered an indication of lack of concern by a governing body.

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Putting on my safety hat for a minute let me say that adopting these changes in municipal operations is a positive safety improvement, and that is foremost in my mind. Four inch letters are difficult to read until you are very close to them. As I am sure you are aware, the drivers license eye exams does not require perfect 20/20 vision. Sign legibility studies have found that many need as much as 1 inch of letter height per 30 feet of legibility distance (See Section 2A.13 "Word Messages" in the MUTCD). This means that a number of legal drivers cannot even begin to read a street name sign with 4 inch letters until they are approximately 120 feet from it ( $4 \times 30 = 120$  feet), and possibly closer at night for some drivers. Once they are within legibility distance, they then need to actually read the sign, comprehend it, make a decision (turn or continue straight), and react (make the maneuver). Studies show that this "perception-reaction" time can take seconds, at which point they may be past the street (traveling at 35 MPH you are moving at 50+ feet per second). This can cause a lot of unnecessary slowing, backing, sudden turning, and/or erratic behavior leading to rear-end and other types of crashes.

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## Managing Electronic Files

The average worker loses two hours per work-week looking for misplaced electronic documents. Avoid storing dozens of files on the Desktop or in one large and disorganized folder in your system. Instead, follow these tips to get organized and save time:



- 1) **Make and Use Folders.** Many people save all files into one folder. Trying to find a file in that folder will quickly become difficult. Instead, make several folders and give them short but descriptive names so you can quickly and easily know what is inside.
- 2) **Choose Unique Names for Each File.** Picking a name for your file is as important as where you save it. Follow conventional rules, such as keeping the name short, avoiding spaces, and avoiding capital letters.
- 3) **File As You Go.** Avoid the habit of saving directly to the Desktop then moving the files later. Instead, file your document in a folder as soon as you create it.
- 4) **Use Nested Folders.** Nested folders are folders within folders. Use these as needed. This gives you the opportunity to be more organized. For example, you can separate old files from new files or separate completed projects from ongoing projects.
- 5) **Use the Sorting Options.** Sort your files within your folders to make it easier to quickly “see” the contents of that folder. You can sort by the files’ names, document type, or date created.
- 6) **Back-up Your Files.** Save your files to another location, such as a CD or external hard-drive. If you have non-sensitive files, you could save them online, through a service such as Google Docs. You will be able to access them at any time. This creates organization and frees up space on your computer.
- 7) **Manage Your Applications.** Only keep short-cuts to applications you use frequently on your desktop. Remove the ones you rarely use.

### References:

- “File organization tips: 9 ideas for managing files and folders” (2011). Retrieved on June 23, 2011 from: <http://www.microsoft.com/atwork/productivity/files.aspx>

## Message from the NH LTAP Program Manager

*Road Business to get new name and makeover!*

Thanks to the folks at the University of New Hampshire Creative & Editorial Services Dept. who have been working with me over the last few months to create the new layout. Stay tuned for it in September!

~Kathryn Myers

## About NH LTAP

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 T2) 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.

## NH LTAP Staff

- Charles Goodspeed, Faculty Liaison
- Kathryn Myers, Program Manager
- Butch Leel, Technical Trainer
- Beth Hamilton, Program Assistant
- Ashley Benson, Road Business Editor
- Meaghan Sullivan, Student Project Assistant

## NH LTAP 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

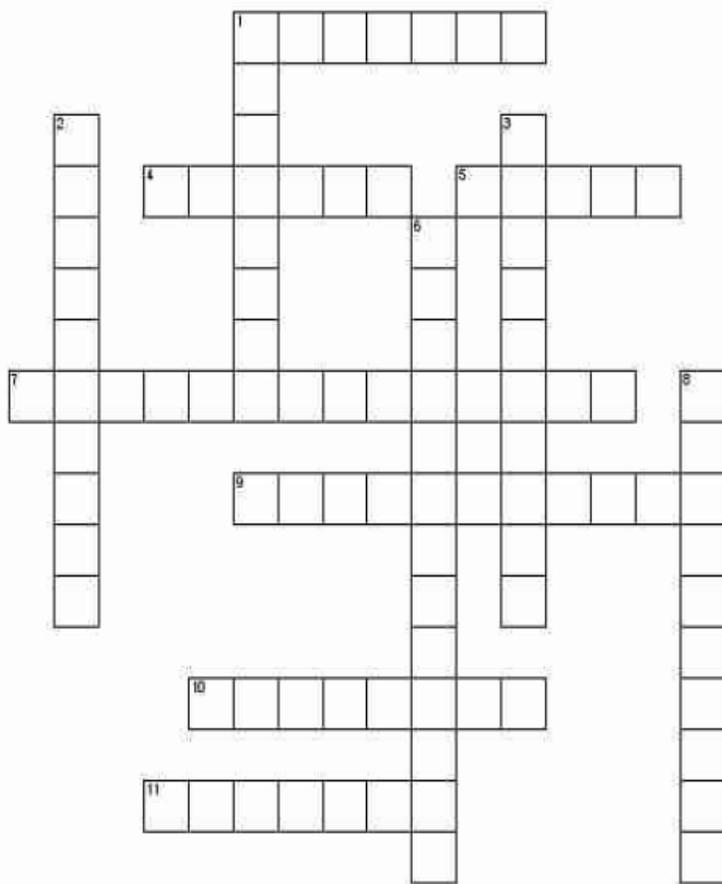
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# Crossword Puzzle

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

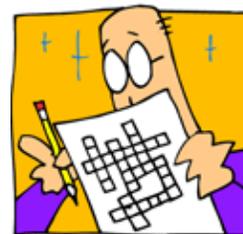
Name: \_\_\_\_\_ Affiliation: \_\_\_\_\_

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



## DOWN

1. \_\_\_\_\_ is one of the most important components of road construction and maintenance.
2. SAFE BIND acts as a \_\_\_\_\_, allowing the road particles to pack together for a strong surface.
3. All street signs must have a six inch letter height by the \_\_\_\_\_ date of January 9, 2012.
6. The Highway Safety Manual measures roadway safety \_\_\_\_\_; it's not just about numbers.
8. Save an average of two hours a week by properly managing your \_\_\_\_\_ files.



## ACROSS

- 1 \_\_\_\_\_ are used to carry water away from the roadway.
- 4 The Town of Center Harbor completed construction of a \_\_\_\_\_ in May 2010.
- 5 MUTCD requires all signs to now have upper and \_\_\_\_\_ case letters.
- 7 When helping an angry citizen, do not go straight to \_\_\_\_\_ mode.
- 9 \_\_\_\_\_ safety is measured by expected crash frequency and severity.
- 10 Road Business is getting a \_\_\_\_\_!
- 11 Roadway safety can be understood better through the categories of \_\_\_\_\_ and substantive safety.

## UNH Technology Transfer Center

33 Academic Way  
Durham NH 03824

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



# Summer/Fall 2011 Training Calendar

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

Date	Topic	Roads Scholar Hours	Location	Cost
7/18 - 7/22	Backhoe Operation & Safety	10 Technical	Plymouth/Rumney	\$150/\$250
8/15 - 8/19	Grader Operation & Safety	10 Technical	Hillsborough	\$150/\$250
8/23 & 24	Manager & Supervisor Series	10 Supervisory	Concord	\$90/\$150
8/25	Winter Maintenance: Salt Reduction	5 Environmental	Derry	\$50/\$50
8/26	Bucket Truck Operator Training	5 Safety	Newmarket	\$100/\$200
8/30	Drainage, Drainage, Drainage	5 Technical	Exeter	\$60/\$120
8/31	Culvert Installation & Maintenance	5 Technical	Lincoln	\$60/\$120
9/1	Chainsaw Operation & Safety	5 Safety	Jackson	\$60/\$120
9/7	Asset Management for Public Works	5 Technical	Manchester	\$60/\$120
9/8	Road Management for Town Officials	5 Supervisory	Concord	\$60/\$120
9/12 - 9/16	Grader Operation and Safety	10 Technical	Canaan	\$150/\$250
9/15	Full Depth Reclamation	5 Technical	Derry	\$60/\$120
9/27	Winter Maintenance Operations	5 Technical	Dover	\$60/\$120
9/28	Administrative Professionals	5 Supervisory	Concord	\$60/\$120
9/29	A Hard Road to Travel	5 Technical	Exeter	\$60/\$120
9/30	Road Managers Meeting	N/A	Deerfield	FREE
10/4	Gravel Road Maintenance	5 Technical	Enfield	\$60/\$120
10/6	Road Safety & Trees	5 Technical	Moultonborough	\$60/\$120
10/18	Ethics & Communication	5 Supervisory	Keene	\$60/\$120
10/20	Pavement Preservation Conference	5 Technical	Concord	\$60/\$120
10/25	Construction Inspection	5 Technical	Concord	\$60/\$120
10/26	Math for Construction	5 Technical	Concord	\$60/\$120
10/28	Salt Reduction in Winter Maintenance	5 Environmental	Ossipee	\$45/\$60
11/2	Budgeting for Municipalities	5 Technical	Deerfield	\$60/\$120

### Milestones

- Mark Beal is the new Road Agent in Richmond.
- Michael Corliss is the new Road Agent in Alexandria.
- Barry Mueller, Asst. Highway Patrol Foreman, NHDOT D4, passed away on June 25.
- Ronnie Pellissier is now the Road Agent in Allenstown.
- Richard Perusse is now the Road Agent in New Boston.
- Bill Ruoff is no longer the Public Works Director in Milford.
- Jeff St. Jean is the new Road Agent in Rollinsford.

### Dates

- 7/29: Good Roads Show, Loudon
- 9/21: NH Snow Plow Rally, Hopkinton
- 9/22 & 23: Construction Career Days, Hopkinton
- 9/30: Road Managers Mtg., Deerfield
- 11/16-18: LGC Annual Conference, Manchester