



# On the Road in New Hampshire

By Justin Pelletier, UNH T<sup>2</sup> Project Assistant & UNH Civil Engineering Student  
*Thanks to Kurt Grasset, Hancock Road Agent, for completing an interview and submitting the pictures.*



Eleven hundred feet of Norway Hill Road in Hancock underwent full-depth reclamation (FDR) this summer. FDR is the recycling of old road material by crushing and mixing it with cement and water then compacting it to create the base for a new road.

Hancock worked with *Pike Industries* on the project. The FDR lasted three days. The road was reclaimed on day one; cement was used to stabilize the base on day two; and the road was paved on day three. The project cost \$149,000.

The town of Hancock was awarded a FEMA Hazard Mitigation Grant. This covered 75% of the total cost. Half of the 75% was paid to the town before construction began. The other half was reimbursed after the project was completed.

Prior to FDR, the road had very poor drainage. Both ditches frequently overflowed during heavy rain. Driveways washed out in spring and ice sheets formed in winter.

The road now has a closed drainage system with catch basins and cape cod berms to direct water. Pipes were installed below the frost line so runoff can flow freely.

Hancock’s Selectboard was pleased that FEMA contributed fiscally. Local residents, particularly the ones who experienced flooded yards, washed out driveways, and ice-covered roads, are very happy with the expected project results.

Kurt Grasset, Hancock Road Agent, did consider other options for the project. He thought about shimming and overlaying new asphalt over the existing road. This would have cost the town \$17,000. Kurt also considered completing all repairs except upgrading the drainage system. This would have cost the town \$133,000. However, both alternatives would have done little to improve the drainage or prevent further damage to the road due to freeze/thaw cycles.

Kurt advises other municipalities when considering such a project, to do their research and be thorough. Kurt says The Road Recycling Council in Cambridge, MA, is a great resource ([www.roadrecycling.org](http://www.roadrecycling.org) or 857-998-0119).

Kurt and his crew are very happy with the project results. Road reclamation is a great option for municipalities that are looking to save money and resources.

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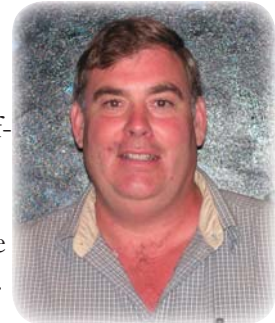
## Master Roads Scholars

### Master Roads Scholar—Scott Brooks

Scott Brooks has been the Road Agent for the Town of Freedom for 12 years. Scott began working in public works departments when he was a teenager.

Scott will continue to take classes with T<sup>2</sup> to stay current in his field and be as efficient as possible while doing his job.

Scott has been married for 23 years. He has three children. His oldest daughter has her degree in elementary education. His middle child is working toward a degree in Civil Technology and Construction Management at the UNH Thompson School. His youngest daughter is a senior in high school and would also like to pursue a career in elementary education. Scott loves hunting, fishing, being outdoors, and really “enjoys a job well done.”



### Master Roads Scholar—William Byrne

Bill Byrne is the highway superintendent for the City of Keene. Bill has been with Keene for 19 years and has been the superintendent for 11 years. He was hired for ground and general maintenance. After two years, he was promoted to foreman.

Bill will continue to take classes with the Technology Transfer Center to become more educated, learn of any new technology available, and to refresh his mechanical skills.

Bill enjoys spending time with his wife, Julie, and kids, Ryan and Molly. He also likes fishing, cooking, and gardening.



### Master Roads Scholar—Gerard Decosta

Gerard Decosta is the Road Agent for the Town of Litchfield. He has worked there since 2002. Even though Gerard has reached the Master Roads Scholar level, he will continue to take classes with T<sup>2</sup> because he enjoys the material and networking with others.

Gerard has been married for 16 years to Julie. He has four children and six grandchildren. He likes to be outdoors, hunt, fish, and ride his motorcycle. He also enjoys hanging out with his wife and believes that “family is the most important thing.”



Congratulations  
Scott, William, and Gerard!

# Working with Difficult Behavior

By Kathryn Myers, UNH T<sup>2</sup> Training Program Manager

Learn about human behavior to understand your own behavior, others' behavior, and cope better with difficult behavior.

First, accept that you cannot change others' behavior. Instead of forcing a behavior change, you can influence others to want to change their behavior. Everyone is responsible for their own quality of life. Do not rely on others for happiness. Instead, take control of your own happiness.

This article presents characteristics of difficult behavior and techniques to stop or prevent it. It also explores ways to communicate in order to build better relationships.

There are many opinions on the definition of difficult behavior. Some examples of difficult behavior are: acting overly defensive, overly critical, aggressive, and passive aggressive. This article explores each category in more detail.

## Overly Defensive Behavior

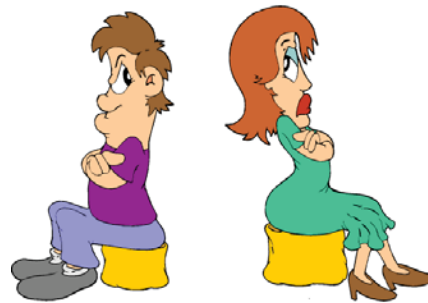
Defensive behavior is caused by a pattern of thinking. Instead of talking about the topic, the defensive person is preoccupied with thinking that others see them as ineffective or incompetent. The defense is to overly defend one's actions by talking excessively and aggressively about why their actions were correct. They try to avoid being seen as unworthy or incompetent.

The defensive person is often insecure and truly believes that everyone is out to "get them" or embarrass them in front of a group. Defensive behavior will occur when one feels vulnerable.

With time, defensive behavior causes people to lose credibility and respect. Eventually, others may refuse to work with this person. The defensive person will eventually not be regarded as part of the team (or crew).

## Leadership & Hypercritical Behavior

Leadership is a positive behavior. A leader is often relaxed, effective, and charming. Others listen to leaders and learn how to act from their behavior.



Hypercritical behavior is a negative behavior. Hypercritical people are extremely "picky" and want the finished product just so. This behavior creates stress for co-workers and subordinates because projects are often rejected or asked to be redone.

The hypercritical person focuses on control. They will eventually lose this control because people will start refusing to work with them or discount their opinion.

## Aggressive & Passive Aggressive Behavior

Aggression and assertiveness are different concepts. Aggression is intended to cause harm or pain. Assertiveness is stating opinions and feelings, and influencing others.

Aggressive people can be hostile and intimidating and can create an unsafe work environment. Do not argue with an aggressive person because they will become angry. Do not ignore aggressive behavior because it will continue and amplify. Instead, inform the aggressive person how their behavior affects others in a stern yet caring tone. Remain confident and in control. Stop the conversation completely if verbal abuse begins.

Change working partners if the situation does not improve. Talk to Human Resources when the aggressor is the supervisor. If the behavior continues, consider changing jobs.

Passive aggressive behavior is resistance to authoritative requests. Resistance may be resentment, stubbornness, procrastination, or intentional failure of assigned tasks.

Address the behavior by speaking with the person. Ask them why assignments are not being com-

pleted. Tell them how their actions affect others. Offer help and advice. Avoid being confrontational because they will act defensive and may not retain the information that is discussed. Be sensitive.

## Values

Values are beliefs that people hold strong emotions for. They are created by experience, such as family or upbringing. In the work environment, you must cooperate with people who have different values than you. This can be challenging. People will defend their values and beliefs without even knowing it. Also, people are often unaware of what values they have.

Do some self-reflecting to try and understand your own values. Ask yourself what situation caused you to act a certain way. What emotions were you feeling? More importantly, why were you feeling that emotion? Try to understand others' values. Don't take things personally at work.

## Tips to Avoid Being Difficult

Actively listen by repeating out loud what you heard. Ask the person to restate what they said if you are confused. Doing these two things will greatly improve communication.

Ask for time to respond when a question requires significant thought. Allowing time to think often helps to create a more appropriate response.

Consider attending workshops on communication, listening skills, and team-building. Everyone benefits from these classes. Gaining better communication skills helps in any environment.

## Stress is a Contributing Factor

Stress is a physical response to a perceived threat. This threat could be fear, such as perceiving there is not enough time to complete a task, or fear of failure. Behaviors indicating stress are: exhaustion, change in appetite, headaches, or change in sleeping patterns.

Do not have important conversations when feeling stressed. Instead, cope with the stress in healthy ways, such as meditation, exercise, or spending time with family.

## Tips for the Supervisor

There are other reasons why an employee may exhibit difficult behavior. Employees might believe that a task is beyond their ability, may not know what is expected of them, may believe an idea won't work, or may not feel comfortable talking to their supervisor.

Document when the behavior begins. Be aware of personal issues such as divorce or loss of a loved one. Inform employees of support services, such as human resources, when personal problems interfere with work. Do not fire an employee without extensive investigation. There are laws protecting employees undergoing personal problems.

Document employee behavior, conversations, and explained consequences for their behavior. Terminate an employee whose behavior does not improve after issuing appropriate warnings and if no personal problem is present.

## Motivation and Happiness

Keep employees motivated and happy by assigning new tasks. Expect excellence and be clear on your expectations. Be proactive by informing all employees of the consequences of difficult behavior. Provide constant feedback. When confronting negative behavior, use specific, clear, and direct statements and provide examples. Be professional and not emotional.

Everyone has (and uses) defense mechanisms. However, people are usually unaware when they are using them. Think carefully before acting to recognize your own defense mechanisms and avoid using them.

Don't give up on this process. Be persistent and patient. Time and effort is needed to change thought patterns and behavior.

### References:

- Diversity in Today's Workforce-A Challenge for Supervisors. SeaBright Insurance Loss Control*, <http://www.sbic.com/ssus/1997/ssu199711.pdf> (Accessed February 2, 2007)  
*Taylor, Barbara. Dealing with Difficult People*, <http://www.itstime.com/mar99.htm> (Accessed January 30, 2007)

## Benefits of Testing Aggregate

Aggregates are used in construction to give asphalt and concrete mass and strength. Aggregates are found naturally in the Earth as sand, gravel, or clay.

All aggregates are different. Gravel is coarse (larger) aggregate and clay and silt are fine (small) aggregates. Test aggregate to determine the quality of material. Doing a simple visual test is inadequate. Aggregate quality is based on gradation, fines content, and plasticity. Select good quality aggregates to improve construction materials and reduce maintenance.

This article includes information on:

- the benefits of testing aggregates,
- which material to accept and reject, and
- tips when working with contractors.

### Sampling

Work with an experienced sampler to ensure material brought to the lab is representative of the entire batch. Poor sampling techniques can lead to inaccurate test results.

### Gradation

Test aggregates for gradation. A gradation test measures the size distribution, or amount of coarse and fine aggregates in a sample. Use a sieve analysis to test gradation. Stack mesh screens, or sieves, in order by size. Place the largest mesh sieve at the top and the smallest mesh sieve at the bottom. Then, pass the aggregate through the sieves from top to bottom so that large (coarse) aggregates will be retained on the top sieves and small (fine) aggregates will be retained on the bottom sieves.

The correct gradation depends on the intended use of the aggregates. *Table 1* (p.6) provides two examples of requirements for specific purposes.



*Top: A USA Standard Testing Sieve No. 200.*



*On Left: A USA Standard Testing Sieve. The opening in millimeters and in inches is listed on each sieve.*

### Fines

Fines are the small particles in an aggregate that bind larger particles together. Fines shrink and swell as their water content changes. Fines are hard when dry and soft when wet. In wet weather, the surface may rut but it will quickly dry and harden in sunny and windy weather.

Test to determine the fines content. Lab tests will show the percent of fines and if they are clays or silts. Clays are preferred because they provide a better binding action than silt.

Use fine aggregate (i.e. silt) for the surface to provide a smooth driving surface and ensure ability to bind with gravel. A good surfacing gradation requires more materials passing through a #200 sieve than the base course.

Use aggregate with only 1-10% fines in the base. Too many fines will cause the base to lose strength and stability during wet weather. The result is rutting (grooves in the gravel) or pavement failure.

### Plasticity

Plasticity is the likelihood that a particular aggregate will deform, or permanently change shape. The plasticity index (PI) is a measure of the plasticity of an aggregate. Clays have high plasticity and

silts have low plasticity. This is why clays provide a better binding action. Soils lacking silts and clays will have a PI of 0.

It is impossible to determine plasticity without testing. Use a laboratory test to determine whether the fines are clays or silts. As with gradation, the required PI depends on the intended use. *Table 1 (below)* shows required PIs for a typical aggregate base course and a typical gravel surface.

**Table 1: Examples of Gradation and Plasticity requirements for Two Gradations**

Specification Requirements	Typical Aggregate Base Course	Typical Gravel Surface
1 inch	100	
3/4 inch	80-100	100
1/2 inch	68-91	
No. 4	46-70	50-78
No. 8	34-54	37-67
No. 40	13-35	13-35
No. 200	3-12	4-15
PI	0-6	4-12

### Specification Differences

Use larger aggregate to increase the strength in asphalt paving mixes. Use smaller aggregates when chip sealing. Larger stones are difficult to retain in liquid asphalt and cause windshield damage, excess tire noise and are often dislodged by snow plows.

### Quality Control

Approximately 94 percent (by weight) of hot mix is aggregate. The remaining 6 percent is asphalt cement. Ensure the asphalt is the right type and mixed correctly. Use good quality aggregate for the base course to prevent pavement failures. Use good quality gravel for the road surface to avoid problems with washboarding, rutting, or loosening in dry weather.

### Cost Benefit

Testing may seem expensive, but it is necessary to minimize future expenses. Always test when large batches of aggregates are necessary to reduce future maintenance and to produce a quality finished product.

### Working with Contractors

Look up specifications for gradation, fine content, and plasticity index before getting the needed material. Inform the crushing contractor of the specifications. Test the aggregate, and if it fails, work with the crushing contractor to solve the issue. Do not accept material that does not pass specifications. It is up to the crushing contractor to provide exactly what is specified. However, it is up to you to ensure you get exactly what you need.

*Source:*  
*Benefits of Testing Aggregate, Street Wise, Fall 2001, Vol. 1 No. 3, p. 1-3*  
[www.t2.unh.edu/StreetWise/streetwise\\_0601.pdf](http://www.t2.unh.edu/StreetWise/streetwise_0601.pdf), accessed May 11, 2008

## We Want Customer Input!

- What topics would you like to see addressed in future additions of *Road Business*?
- Would you like to submit an article on the current “hot topic” in your town?
- What areas of training are needed in your town?
- What other information services could we provide?

Email comments, suggestions, questions, or ideas to [k.myers@unh.edu](mailto:k.myers@unh.edu)

**Thank you in advance for your submissions!**



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

## Unpaved Roads

By Chris Bourque, UNH T<sup>2</sup> Project Assistant & UNH Civil Engineering Student

Over 50 percent of roads in the United States are gravel. This meant 1.6 million miles of road in 2000. The design of gravel roads is similar to paved roads. Create a good crown, shoulders, and roadside ditching for gravel roads. These will improve road drainage and life expectancy.

An unpaved surface allows easier seepage of water into the road, dusting, and increased wear from traffic. Gravel roads require more frequent maintenance and rehabilitation than paved roads. Paving a gravel road is very beneficial, but the decision to pave a gravel road is not always simple.

### Design

Design is a necessary process in the creation of a road to minimize:

- failure in the subgrade,
- surface damage, and
- costs associated with maintenance and rehabilitation.

Most maintenance personnel can answer this question, “What are the three most important factors in designing a good road?” The answer is “Drainage, drainage, drainage!” Improving a road’s drainage significantly decreases the amount of road maintenance. While proper drainage can be expensive, it will save money over time by eliminating costly maintenance and rehabilitation projects.



Key drainage features are:

- crown,
- ditches,
- shoulders, and
- culverts where necessary.

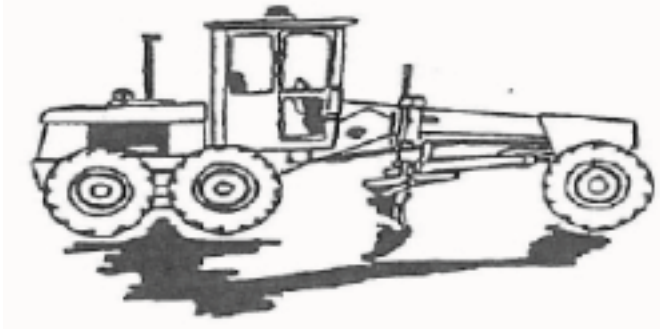
These features will keep surface water away from the roadway and subgrade.

Another key design element is the aggregate subgrade. The minimum design thickness is four inches, which is twice the maximum particle size, or the structural thickness plus the aggregate loss (operational loss); whichever is greater. However, a depth of six inches is typical. What material you use is the

most important thing to consider when designing the subgrade. Choose the best gravel that fits into the budget.

## Maintenance Practices

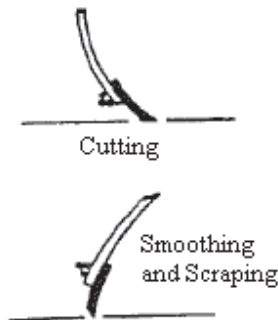
The purpose of road maintenance is to preserve the shape and structure of the road and to maintain a smooth travel surface. Perform maintenance on gravel roads with a motor grader. Gravel road maintenance is best done in wet weather to reduce loss of fines, such as dust.



Reshape the roadway, shoulders, and ditches regularly. Maintain about a 4% (or 1/2 inch per foot) crown on the roadway with as little deviation as possible. Use a grader to create a crown that follows a straight line from the centerline of the road to the shoulder.

Patching and filling in dips is also a good practice. Fill in the hole or dip with excess material and blade it to match the shape of the roadway. Compact both the roadway and patches to prevent water from entering the subgrade, minimize damage from traffic, and provide a smooth riding surface.

Shape the shoulder to be at least as steep as the roadway to allow water to flow off the roadway. Often, when a shoulder is shaped too high, a secondary ditch is formed. Water accumulates in the secondary ditch rather than run-



ning off into the ideal ditch. The water then seeps into the subgrade and softens the roadway.

Softened areas present severe problems in periods of heavy rainfall because they lead to significant erosion or “washouts.” Reshape in spring when roadside vegetative growth is minimal.

Ditches are always necessary even where space is limited. Make ditches wide and deep enough to carry runoff from the roadway. Shape the ditch steep enough to keep water moving away from the road. Do not allow water to become stagnant because it creates a breeding ground for mosquitoes.

Consult the *Motor Grader Operator's Manual* by the UNH Technology Transfer Center for more information on reshaping gravel roads.

## Mowing

Mowing is a beneficial maintenance practice. It facilitates shouldering and other maintenance work, allows recovery of gravel that has drifted off the roadway, and increases driver safety by improving sight distance. Roadside vegetation catches drifting snow and keeps it on the roadway. Mowing allows drifting snow to pass over the roadway. This reduces snow removal costs and damage from freeze-thaw cycles.

## Dust Stabilization

One nuisance created on gravel roads is dusting. Dusting occurs when weather or traffic causes fine aggregates to release into the air. As much as one ton of aggregate is lost per mile of gravel road each year for every vehicle using the road daily (*Gravel Roads Maintenance and Design Manual, FHWA and SD LTAP, 2000*).

Reasons to use dust stabilization include:

- to respond to resident complaints,
- reduce material loss,
- save on expensive maintenance, and
- minimize impact on the nearby environment.



However, if the traffic volume on the road is low and no residents have complained, then taking stabilization measures may not be worth the cost.

Table 1 (on tech. note p.4) lists several dust stabilizers. Select which stabilizer to use based on budget, desired functionality and environmental characteristics.

## When to Pave a Gravel Road

Cost is the major issue affecting municipalities when considering whether to pave a road. However, the long-term maintenance cost should be considered as well as the immediate construction cost. Several questions must be considered, including:

- Is there enough traffic to justify paving the road?
- Should the drainage and subbase be repaired instead of paving?
- Do standards require the road to be paved?
- What does the public think?
- Which will be the most cost effective over time?



## Additional Factors

Many other factors influence the decision of whether to pave a gravel road, including:

- Paved roads increase safety by improving

skid resistance and visibility from reduced dust. However, people tend to speed more on paved roads than on gravel roads.

- Gravel roads look more natural than paved roads, which is a factor when considering road aesthetics.
- There is usually increased runoff (water and salt) from a paved road since pavement prevents water penetration; whereas gravel surfaces allow some penetration. Increased runoff creates a larger impact on the surrounding environment.
- There may be inevitable reasons for repair, such as installing underground utilities or use of the road by heavy vehicles. Consider keeping a road unpaved if major repairs cannot be avoided. It is less expensive to repair a gravel road than a paved road.

The *Gravel Road Maintenance and Design Manual* by the South Dakota LTAP and FHWA, provides a good rationalization on whether or not to pave a gravel road.

*Sources*  
*Gravel Roads Maintenance and Design Manual, FHWA and SD LTAP, November 2000*  
*Maintenance of Aggregate and Earth Roads, Washington State DOT, June 1987*  
*Earth and Aggregate Surfacing Design Guide for Low Volume Roads, USDA, September 1996*  
*Dust Palliative Selection and Application Guide, USDA, November 1999*

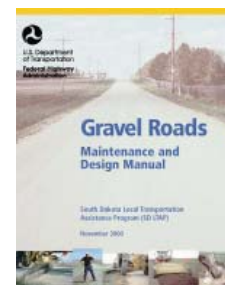


Table 1. Types of Stabilizers

Stabilizer	Attributes	Benefits	Limitations	Typical Dosage
Calcium Chloride (CaCl <sub>2</sub> )	Hygroscopic--draws moisture from air to keep road surface constantly damp	<ul style="list-style-type: none"> <li>Increases surface tension of water--holds water to surface and tightens soil particles</li> <li>Allows regrading and re-compacting of road without losing moisture and density</li> <li>Works well for most dust stabilization purposes</li> </ul>	<ul style="list-style-type: none"> <li>Tends to leach out during severe rain--may impact local water quality</li> <li>May cause slippery surface if the road has a lot of fine aggregates</li> </ul>	<ul style="list-style-type: none"> <li>One per season</li> </ul>
Clay Additives	Agglomerates with fine dust particles	<ul style="list-style-type: none"> <li>Increases dry strength of road surface</li> <li>Natural--minimal environmental impact</li> <li>Infrequent dosage</li> </ul>	<ul style="list-style-type: none"> <li>Difficult to haul</li> <li>Difficult to mix with gravel</li> <li>Not suitable for heavy traffic loads</li> </ul>	<ul style="list-style-type: none"> <li>Once every five years</li> </ul>
Lignin	Binds surface particles	<ul style="list-style-type: none"> <li>Suitable for heavy traffic loads</li> <li>Works well in dry weather</li> <li>Natural--minimal environmental impact</li> <li>Strongly increases dry strength of road</li> <li>Waterproofs road</li> </ul>	<ul style="list-style-type: none"> <li>Not effective in wet weather</li> <li>Causes slippery surface when wet</li> <li>Causes brittle surface when dry</li> </ul>	<ul style="list-style-type: none"> <li>One to two per season</li> </ul>
Magnesium Chloride (MgCl <sub>2</sub> )	Hygroscopic--draws moisture from air to keep road surface constantly damp	<ul style="list-style-type: none"> <li>Strongly increases surface tension--forms a hard road when dry</li> <li>Allows regrading and re-compacting of road without losing moisture and density</li> <li>Works well for most dust stabilization purposes</li> </ul>	<ul style="list-style-type: none"> <li>Same as Calcium Chloride (top)</li> </ul>	<ul style="list-style-type: none"> <li>One per season</li> </ul>
Petroleum Products	Binds surface particles	<ul style="list-style-type: none"> <li>Waterproofs road</li> <li>Functions in wet weather</li> <li>Works well for most dust stabilization purposes</li> </ul>	<ul style="list-style-type: none"> <li>Significant environmental impact</li> <li>Banned in some areas</li> <li>Expensive</li> </ul>	<ul style="list-style-type: none"> <li>One per season</li> </ul>
Sodium Chloride (NaCl)	Hygroscopic--draws moisture from air to keep road surface constantly damp	<ul style="list-style-type: none"> <li>Relatively inexpensive</li> <li>Abundant--often part of municipalities' winter maintenance budget</li> </ul>	<ul style="list-style-type: none"> <li>Requires frequent reapplication</li> <li>Corrosive to steel</li> <li>Not very effective</li> </ul>	<ul style="list-style-type: none"> <li>Two per season</li> </ul>

# Public Works Management System Software Update

By Bob Strobel, UNH T<sup>2</sup> Software Project Manager

The UNH T<sup>2</sup> Ctr. has been developing software for public works since the 1990s. Software packages to manage roads, road signs, drainage and equipment have been distributed. The last major update was in 1998. That will change in October when we release the new PWS Suite.

For the last two years, the UNH T<sup>2</sup> Ctr. has been working on software updates. There have been a few major changes. First, we've added new technology. This includes an easily understood, map-based interface to locate assets, such as roads, signs, and culverts. All modules use the same map interface.

Second, we've combined all of the earlier programs into one program. PWS Suite includes drains, roads, signs and a generic data collection package, which is set up by the user to collect specific information. Now, there is only one screen that displays all of the collected information for their roads, signs, drainage and others.

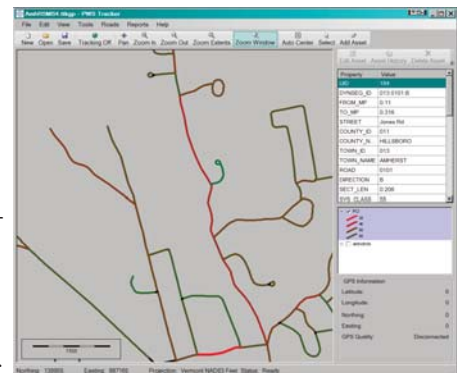
Several towns have provided real-world testing of the program for us. South Berwick, ME had students collect data on their drains and road signs for three summers. They reported that asset collection for drainage items, such as catch basins or manholes, took an average of 45 seconds each in the downtown area and less than two minutes each in rural areas.

Amherst, NH used the roads component of the PWS Suite to collect information on their public works infrastructure. Two summer interns collected road condition surveys in one week for 108 miles of roadway. This project took three weeks less than scheduled.

When compared to the other software products Amherst has used, Dave Demeo (UNH Civil Engineering student) said, "I did not start using the software until August. After using it for a few days, I wish I had it all summer. I had been using an outdated version of ArcView for the previous two months and struggled. From what I have seen and experienced with the two systems, it is apparent how

user friendly PWS Tracker actually is."

Part of the decision to move to a map-based interface was to greatly reduce data entry. Geographic



Information System (GIS) software is becoming more common. Most road inventory data has already been collected by some public agency (RPC, DOT or state GIS warehouse) and simply needs to be imported into PWS Suite then verified.

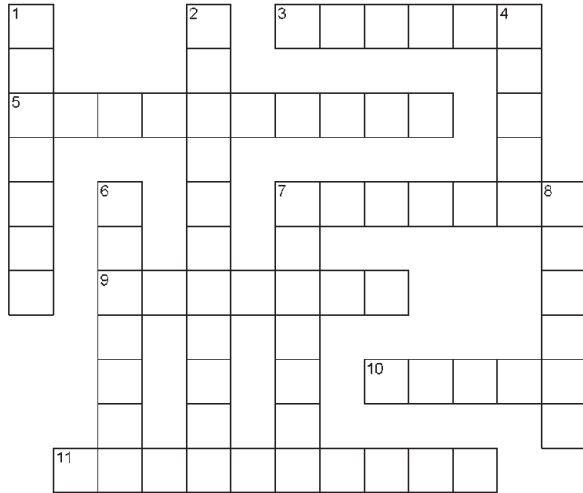
To assist in plotting assets, likely asset locations can be found using the map layers. For example, display the stream network on the road map where a stream crosses a road, usually some type of structure will exist. Display the road network on the map and road intersections should have signage. Add an item by clicking on the map and filling out the user-friendly form that pops up.

In the past, the UNH T<sup>2</sup> Ctr. programmed the following management systems: Road Surface (RSMS), Sign Inventory (SIMS), Drains (DrainMS), and Municipal Equipment (MEMS) with funding from the Federal Highway Administration (FHWA). Therefore, we were able to distribute the software for a very small fee (\$25). The funding for that program is no longer available, so a public-private partnership between the UNH T<sup>2</sup> Ctr. and PWS Solutions ([pws-solutions.com](http://pws-solutions.com)) was created to bring the updates to life.

The PWS Suite is affordable with an introductory price for municipalities of \$559. The UNH T<sup>2</sup> Ctr. will provide free technical assistance for users. During the development of the partnership a few false starts occurred. However, the end is in sight and I look forward to teaching classes on the software (see [www.t2.unh.edu/training](http://www.t2.unh.edu/training)).

# Crossword Puzzle

*Test your knowledge after reading this newsletter*



www.CrosswordWise.com

## DOWN

- 1 The UNH T<sup>2</sup> Center Roads Scholar Program has merged with this academy (abbr.).
- 2 This is typically used to perform maintenance on gravel roads.
- 4 A \_\_\_\_\_ analysis is used to test gradation.
- 6 Nuisance on gravel roads that causes resident complaints, environmental impacts, and other issues.
- 7 Drainage management software abbreviation.
- 8 \_\_\_\_\_ is a physical response to a perceived threat.

## ACROSS

- 3 The beliefs that people hold strong emotions for.
- 5 Aggregate quality is based on gradation, fines content, and \_\_\_\_\_.
- 7 Four drainage features for gravel roads are crown, \_\_\_\_\_, shoulders, and culverts.
- 9 Road \_\_\_\_\_ Management Systems (RSMS).
- 10 Small particles such as silts and clays.
- 11 \_\_\_\_\_ is intended to cause harm or pain.

## UNH T<sup>2</sup> Center Roads Scholar Program Update

The UNH T<sup>2</sup> Center Roads Scholar Program has merged with the New Hampshire Public Works Standards and Training Council (NHPWSTC) Academy effective August 19, 2008. The changes are summarized below:

- All Academy hours will also count as hours in the Roads Scholar Program (we would only accept up to 10 hours prior),
- the administration for all Academy classes are now done by the UNH T<sup>2</sup> Center (the NH Local Government Center was the prior administrator),
- those who graduate from the Academy Level 1 (after passing all required exams) will also graduate from the Roads Scholar Program level 1 (Academy level 1 is 25 hours, T<sup>2</sup> Center required 30 hours for level 1 prior), and
- those who graduate from the Academy Level 2 (after passing all required exams) will also graduate from the Roads Scholar Program level 2 (again, we would only accept up to 10 hours prior).

*Note: These changes will be in effect as long as there remains a signed contract by the NHPWSTC & UNH T<sup>2</sup>*

UNH T<sup>2</sup> would like to thank the NHPWSTC Board members who worked diligently over many months to create this contract. We feel it is a win for everyone, including the most important people, our customers!



## Farewell | Kathy

Kathy DesRoches is now the Workforce Development Director for Manchester Community College.

Kathy worked for UNH T<sup>2</sup> for twelve years. She was hired as the Program Assistant and became Director of Educational Programs.



Kathy's efforts toward improving customer service and the mutual aid program, among other efforts, will not soon be forgotten.

Thank you Kathy for all you've done. You are missed by all at T<sup>2</sup> and UNH!



## Welcome | Linsey

Linsey Shaw was hired on September 1, 2008.

Linsey's responsibilities include managing our database, including mailing lists, customer information, workshop registrations, and mutual aid information. Linsey will manage our publication and video libraries, update flyers, and coordinate mailings. She will contribute to *Road Business* by writing articles, and submitting the calendar and publications and videos page.



Linsey graduated from Southern New Hampshire University with a BS in Business Studies, with a concentration in Business Administration. She enjoys photography and currently provides Senior portraits.

Welcome to our team Linsey!

## Dates

- **LGC Annual Conference:** November 12-14, 2008
- **Stormwater Specialty Conference:** October 1, 2008- Anheuser Busch Plant, Merrimack NH. *This event is co-sponsored by NEAPWA and NHPWA.*

## Milestones

- **Albert Anderson**, Hancock, retired.
- **Mike Fudala**, NHDOT, passed away.
- **Steve Gray**, NHDOT, retired.
- **John Thayer** is the new Road Agent in Sanbornton.

## Websites

- **LGC Legislative Bulletins:** [www.nhlgc.org/LGCWebSite/Advocacy/legislative\\_bulletins.asp](http://www.nhlgc.org/LGCWebSite/Advocacy/legislative_bulletins.asp)
- **LGC Training Calendar:** [www.nhlgc.org/LGCWebSite/Calendar/eventcalendar.asp](http://www.nhlgc.org/LGCWebSite/Calendar/eventcalendar.asp)
- **Primex Training Calendar:** [www.nhprimex.org/EducationTraining/MemberOnlyBenefits/MasterTrainingCalendar.php](http://www.nhprimex.org/EducationTraining/MemberOnlyBenefits/MasterTrainingCalendar.php)
- **NHI Training Catalog:** [www.nhi.fhwa.dot.gov/training/brows\\_catalog.aspx](http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx)
- **APWA Online Workshops:** [www.apwa.net/events/](http://www.apwa.net/events/)
- **NHDES A-Z Topics:** [www.des.state.nh.us/programs.asp](http://www.des.state.nh.us/programs.asp)
- **FHWA Legislation & Regulations:** [www.fhwa.dot.gov/legsregs/legislat.html](http://www.fhwa.dot.gov/legsregs/legislat.html)

These publications and videos are available from the UNH T<sup>2</sup> Center **free** of charge. To request material, fax this completed form to 603-862-0620.

## Publications



### \_\_\_ Asphalt Texturing Information

**Package:** Information on who has done it, what it looks like, and who to call for more information.

\_\_\_ **Bicycle and Pedestrian Safety-CD ROM:** Contains information on bicyclist safety awareness. *USDOT & FHWA.*

\_\_\_ **Blading Aggregate Surfaces:** Information on blending aggregates; equipment, smoothing and reshaping; blading under special road conditions, such as intersections and railroad crossings; condition of cutting edge; and personnel and equipment safety. *NACE, 1990.*

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

\_\_\_ **Controlled Low Strength Materials (CLSM):** A.K.A. flowable fill, flowable mortar, K-Krete, and other various names. CLSM technology, including application, material properties, mix proportioning construction, and quality control procedures. *American Concrete Institute.*

\_\_\_ **Local Low Volume Roads and Streets:** Rural streets and other less-traveled roads, including inventory, classification, financial planning, program assembly, and helpful resources. *ASCE.*

\_\_\_ **Purchasing Authority, NACE Action Guide:** Legal requirements, ethics, and funding issues that are concerned with purchasing authority, and procurement considerations, specifications, and methods. *NACE, 1995.*

\_\_\_ **United States Road Symbol Signs:** Double-sided poster illustrating the meaning of symbols on signs. A must for every work environment concerned with road safety and repair. *USDOT & FHWA.*

\_\_\_ **User-Friendly Guide to Timber Bridges:** Guide to choosing, using, and preserving the right wood, and how to make the decision to build a timber bridge. *UNH T<sup>2</sup> Center.*

## Videos



### \_\_\_ Accessible Sidewalks: Design Issues for People with Disabilities, DC-2,

41 min. DVD -- Provides appropriate design guidelines and recommendations for roads and sidewalks for people who use wheelchairs, have ambulatory impairments, low vision, and are blind. *US Access Board.*

\_\_\_ **Chainsaw Safety, ST-235,** 21 min. DVD -- Demonstrates the do's and don'ts of chainsaw operation. *Oregon Saw: Chain Division.*

\_\_\_ **Common Maintenance Problems and Causes, M-236,** 21 min. DVD -- Discusses problems with gravel roads, paved and unpaved shoulders, and drainage and presents typical causes of these problems. *FHWA.*

\_\_\_ **Highway Safety & Trees: The Delicate Balance, ST-1,** 21 min. DVD -- Encourages highway agencies and the public to work together to improve safety while minimizing damage to the environment. *FHWA.*

\_\_\_ **The Importance of Road Drainage, DC-251,** 19 min. DVD -- Emphasizes the importance of drainage, including surface and subsurface drainage, drainage systems, and procedures for their inspection and repair. *FHWA.*

\_\_\_ **New Hampshire Public Works Mutual Aid Program, PA-236,** 10 min. DVD -- This is an informational video that explains the benefits of joining the Mutual Aid program.

\_\_\_ **Preventive Maintenance: Project Selection, M-284,** 30 min. DVD -- The principal is to apply the right treatment to the right road at the right time. It explains the advantages of preventive maintenance and the importance of preserving the life of the road, rather than restoring it. *FHWA.*

\_\_\_ **Safety Starts with Crash Data, ST-2,** 23 min. DVD -- Encourages law enforcement personnel who collect data at crash scenes to thoroughly investigate these crashes and submit accurate, complete, and timely reports. *USDOT, FHWA, Federal Motor Carrier Admin., & National Highway Traffic Safety Admin.*

## Customer Information

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

Title: \_\_\_\_\_

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

Mailing address: \_\_\_\_\_

Town/City: \_\_\_\_\_

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

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

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

## Listservs

A listserv is a free way to use email to exchange information. To subscribe send an email to [k.myers@unh.edu](mailto:k.myers@unh.edu)

**Include:** your name (first and last), your email, and the list name you want to subscribe to.

### PW.NET

Want to know what is happening in other towns? Or learn the latest regulations? Need a place to ask questions of other public works officials? Want to be the first to receive notifications of UNH T<sup>2</sup> Center trainings and other special projects? Sign up for [pw.net](http://pw.net) ❖

### OFFICE.ADMIN

Do you work in an office? Do you spend a lot of time working on a computer? Do you supervise others? Do you conduct interviews? Sign up for [office.admin](http://office.admin) ❖

### NE.PAVEMENT

Do you work in the New England region and manage a pavement program? Are you interested in learning about the latest products or solutions for pavement management? Sign up for [ne.pavement](http://ne.pavement) ❖



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

## Who Are We?

Congress established the Local Technical Assistance Program (LTAP) in 1982 to provide services to US cities and towns that maintain over three million miles of road and 29,000 bridges.



There is an LTAP Center in every US state and Puerto Rico, and there are Regional Centers serving Tribal Governments.

The UNH T<sup>2</sup> Center was established in 1986. We continue the LTAP mission by providing many services to NH cities and towns, the NH Department of Transportation, and private road-related organizations.

## Program Supporters

- Federal Highway Administration
- NH Department of Transportation
- UNH

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

- Charles Goodspeed, T<sup>2</sup> Center Director
- Kathryn Myers, Training Program Manager & Road Business Editor
- Robert Strobel, Software Project Manager
- George Leel, Technical Support Assistant
- Linsey Shaw, Program Assistant
- Christopher Bourque, Project Asst.--UNH Civil Engineering Student
- Julia Faller, Project Asst.--UNH Business Student
- Justin Pelletier, Project Asst.--UNH Civil Engineering Student

*Road Business* is a quarterly publication of the University of New Hampshire Technology Transfer Center. Any opinions, findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect the views of FHWA, NHDOT, or UNH. Any product mentioned in the *Road Business* is for information only and should not be considered a product endorsement.

# Road Business

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 603-862-1362 or  
 800-123-0060 (NH)  
 Fax: 603-862-0620  
 t2.center@unh.edu  
 www.t2.unh.edu



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

## Fall 2008 Training Calendar

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

### Basics of Road Design and Construction

November 14	<i>Academy Level II: Drainage, Drainage, Drainage</i>	Concord	\$60 or \$66
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### Supervisory or Personal Development

October 28	Public Speaking	Manchester	\$75
November 6	Managing Highway Departments	Keene	\$75

### Technical Aspect of Road Maintenance or Repair

October 1	Reconstruction Project Planning	Plymouth	\$60
October 2	Guardrail Installation & Maintenance	Concord	\$60
October 7-10	Grader Operation and Maintenance	Pembroke/Hillsborough	\$120
October 14	Culvert Installation & Maintenance	Lebanon	\$75
October 15	Winter Maintenance Fundamentals	Keene	\$75
October 16	Winter Maintenance Fundamentals	Plymouth	\$75
October 21	Culvert Installation & Maintenance	Concord	\$75
October 22	Bridge Maintenance	Somersworth	\$75
October 23	Full-Depth Reclamation	Concord	\$75
October 29	Gravel Road Maintenance	Lebanon	\$75
October 30	All About Roadway Material	Somersworth	\$75
October 31	Road Managers Meeting	Bow	FREE
November 5	Roadside Design	Concord	\$75
November 6	<i>Academy Level II: Basics of Plan Reading &amp; Cost Estimating</i>	Concord	\$60 or \$66
November 17	<i>Academy Level II: Water and Wastewater Treatment</i>	Franklin	\$60 or \$66
November 18	A Hard Road to Travel	Concord	\$60
November 20	<i>Academy Level II: Winter Maintenance Operations</i>	Concord	\$60 or \$66



### Tort Liability or Safety

October 24	Flagger Certification Training	Lincoln	\$45
November 4	Municipal Permits	Rochester	\$60
November 19	<i>Academy Level II: Tort Liability</i>	Manchester	\$60 or \$66