On the Road in New Hampshire

The Town of Exeter uses a new solution to an old problem

The Town of Exeter is applying a foreign solution to a local problem. The problem is how to get people to yield at yield signs. The solution is to paint “yield” markings on the road in the same way a stop-bar would be painted at a stop sign.

The markings are known as “Shark’s Teeth” because the elongated yield signs look like shark’s teeth and because they indicate a potentially dangerous situation. Shark’s teeth were first introduced in Denmark during the 1980’s and are now prevalent throughout Europe as well as in several states in this country. Keith Noyes, the Director of Public Works, first learned of this new technology when flipping through a trade magazine earlier this year. Noyes decided to try the Shark’s Teeth because a few yield intersections in town were considered dangerous and he was very close to recommending stop signs. Noyes “doesn’t like the idea of using stop signs as a method of speed control where a yield sign is more appropriate.” The painted shark’s teeth are being used to emphasize the yield sign.

The use of the painted markings is in a trial period. Exeter’s Police Chief James Gilmore has said the paintings haven’t been in place long enough to know if they have been effective. It’s something that will have to be looked at later because these aren’t intersections where accidents occur daily.

If the painted shark’s teeth accomplish what is expected, then Noyes will have them painted at more yield intersections throughout town. He doesn’t intend to have them painted in areas where crosswalks or other markings are already in place, he believes too many markings will only confuse drivers.

The Public Works Department fabricated their own templates for the markings using masonite, rather than purchasing pre-made templates. They experimented with the size of the markings and found 2’x5’ worked best with a 6” space between each “tooth.” The number of teeth they use at each intersection varies with the width of the road. At one intersection they used 5 teeth and another only 4 because one road was not as wide.
Master Road Scholars

Master Road Scholar Douglas Barnard

Doug Barnard is an engineering technician for the City of Concord. He assists with all phases of municipal engineering, such as subsurface drains, road work, buildings, and park planning. He enjoys his job a great deal because he always finds it different and challenging. He develops projects for the city to build and works with all departments.

After studying Civil Engineering at the University of New Hampshire, Doug was a medic in the Air Force. He worked for the State of New Hampshire as a designer/surveyor, and was a construction engineer with Midway Construction Co. He has been at his current job for twenty-six years.

He attends training workshops because he, "enjoys the camaraderie" and loves learning. He likes to "share common problems with officials from other towns and learn how others tackle the same difficulties." Doug’s supervisors are proud of him. They announced his Master Road Scholar status at a council meeting which aired on the cable channel in Concord. They feel that the city benefits from the information Doug receives at the courses. Doug and his supervisors feel that the UNH T² Center training sessions are convenient, offer good information, and are reasonably priced.

Doug plans to be married in August of 1997 in Indiana to his fiancée, Donna. He is an enthusiast of classic British motorcycle restoration and is a member of the organization British Iron of NH, which meets once a month in Massachusetts for rides. Doug also enjoys traveling and puttering around his house.

Congratulations Master Road Scholar Doug Barnard!

Master Road Scholar Leighton Cleverly

Leighton “Chum” Cleverly has been the Public Works Director for the Town of Bow for the last thirteen years. Previously, he was a road agent in Vermont and in the Navy where he was a flight engineer for patrol planes and took part in the Cuban Blockade. He is a member of the Bow Highway Safety Committee and the Emergency Management Committee, the chairperson of the Joint Loss Management Committee, and a representative to the Regional Refuse Disposal Commission.

Currently, Chum is the editor of “Road Runner,” the newsletter for the New Hampshire Road Agents Association, and is involved with the Property Liability Trust’s plow rallies held each September around the state.

Chum attends each class out of interest and usually again after about four years as a refresher. He likes to learn and “keep up with new technology, trends, and products.” He enjoys the interaction of the town professionals who attend the T² Classes. Chum believes that “education is expensive, but ignorance costs more.” His supervisors are glad he is trying to better himself. Chum sends his workers to any classes they show an interest in.

Chum has been married to his wife Jean for thirteen years; he has six children, and eight grandchildren. One of his many hobbies is sailing, and he owns a 25’ Laguna which he moors on Lake Winnipesaukee. He is also a licensed airplane pilot. Chum enjoys writing, and recently won a prize for poetry from Channel 9.

Congratulations Master Road Scholar Chum Cleverly!
More Master Road Scholars ...

Master Road Scholar John Fernald

John Fernald is the Road Agent in Nottingham. He has held the position of Road Agent twice: once after college, for two years, and currently for twelve years. He worked “in between” at Pawtuckaway State Park. He loved working with the New Hampshire State Park service and expected that to be his career, but the cutbacks in the 1980’s put an end to his plan. During his time at the Park, John found time to drive across the country twice, which he enjoyed very much, but both times in the winter when the park was closed. John attended college at Thompson School of Applied Science at the University of New Hampshire and received his Associate’s Degree in Soil and Water Conservation.

The title of Master Road Scholar and the award are less important to John, than his striving to make himself better. He frequently attends classes because he desires to learn new things and to “improve his knowledge of roads.” He enjoys talking with other Road Agents and getting to know what other communities are doing.

John has one full-time employee who also attends training. Most recently he attended Maintenance and Grading of Unpaved Roads in April.

John is single and lives in the house he grew up in just up the road from his brother who owns a dairy farm. In his spare time he enjoys helping out his brother on the dairy farm, and hiking.

Congratulations to Master Road Scholar John Fernald!

Master Road Scholar Kenneth Fletcher

Kenneth Fletcher differs from the T²Center’s other Master Road Scholars because he works for the New Hampshire Department of Transportation (NHDOT) instead of a municipality. As Highway Maintainer One, Ken assists a driver or patrol officer in doing maintenance. Ken has been with the NHDOT for 2 years and has also worked with the Traffic Division.

Previously, he worked in construction and as a mechanic and was the Road Agent in Washington for 5 years. He is in the Army National Guard, 744 Transportation Division out of Hillborough where he is a First Cook and served in the Persian Gulf.

Ken started taking classes because he was an elected Road Agent and wanted “to save money for the town with the T² expertise.” Now he takes classes to learn “modern” techniques and to assist in acquiring job promotions.

Ken has been married to Agnes for 34 years. Agnes works as a Finance Administrator for a local dentist. They have 3 children and 3 grandchildren. In his spare time, Ken likes to hunt, camp, travel and carpentry. Recently he has taken up fly fishing.

Congratulations Master Road Scholar Kenneth Fletcher!

Do you need mutual aid with beaver problems?
Contact Master Road Scholar and licensed trapper: John Starkey at the Merrimack Highway Department.
603.424.3522
35 Work Zone Traffic Control Kits Are Distributed

UNH T² Center Obtains a Grant Which Provides Kits to Municipalities on a Cost Share Basis

In the Fall of 1995, the UNH T² Center held a meeting to discuss how to improve work zone safety in the state of New Hampshire. It was obvious something was needed to assist municipalities because nationally the number of incidents at work zone sites had been steadily increasing. Statistically it was a matter of time before something would happen here in NH. The success of the meeting hinged on creating a plan to apply for funds to purchase work zone traffic control kits, awarding the kits, and distributing them.

Participating in the meeting were Alan Burgess of NH Correctional Industries; Edgel Crabtree, the Program Manager at the State of New Hampshire Highway Safety Agency; Jonathan Kipp of Compensation Funds of New Hampshire; Ken Roberts, representing the NH Road Agents Association and the Road Agent in Alton; and Ken Ward of NHMA Property Liability Trust. These gentlemen were instrumental in the success of the NH program that recently disturbed 35 work zone traffic control kits to local municipalities. At the time of the meeting, they determined the content of the kits and the training requirements. It was determined that the selected municipalities must have had a supervisor, in charge of the work zone, attend a work zone traffic control course given by the UNH T²Center or the American Traffic Safety Services Association (ATSSA) during the past 2 ½ years. This would ensure that the kit would be properly used.

The federal funds to purchase the kits were provided through the NH Highway Safety Agency. Once the funding was secured the kits went out to bid Waste Inc. of Concord, received the bid to purchase the kits.

Concurrently, the UNH T² Center reviewed 64 applications from various towns and cities who wished to receive the kits. The UNH T² Center selected the municipalities based on their need. Each town paid a 25% cost share of the kit. Last month the UNH T² Center provided training for supervisors who were not able to meet the training requirement. Peter Coughlan and Gary Williams, from the Maine Local Roads Program (T² Center), conducted the training.

Each kit contains the basic signs and devices necessary to set up a work zone for nearly all situations encountered on local two-lane roads. Supervisors and crew-members picked up their kits at Waste Inc. during the week of October 7th. The UNHT² Center expects to receiving funding next year to purchase approximately 25 more kits so this successful program can be repeated.
1996 UNH T² Center RSMS Surveys Completed

By Lauren Chaffee

CE Students (L-R): Bill Young, Scott Bourcier, Nick Sanders, Erik Hall, and Brian Jankauskas. Missing Dan Cassidy

This summer, six UNH civil engineering (CE) students have successfully completed Road Surface Management System (RSMS) surveys of New Hampshire local roads. The UNH T² Center has provided this service for the past three years to any municipality that desires to have its roads surveyed for minimum cost. This year fourteen New Hampshire towns and cities took advantage of this program, up from ten last year. Due to the success and positive response from municipal officials, the UNH T² Center plans to offer it annually.

This summer the students traveled 14,718 miles and spent 1,784 hours conducting extensive surveys and administering the RSMS process. First, they met with the Road Agent or Public Works Director in a participating town to get an overview of the local roads. The official provided the information needed to accurately assess the roads. The students inventoried the roads, assessed their condition, and entered the data into the RSMS computer program. They met with the municipal road manager who selected a maintenance or repair method for each road section. They returned to the computer lab where they calculated cost estimates, determined repair priorities and prepared a formal report.

New Hampshire municipalities have found the program to be of great benefit. It gives an objective description of the road conditions and an estimate of the cost to repair them. In addition to a complete, organized report with recommended plans for mainte-

nance and estimated cost, officials receive a data diskette containing all the information as a reference and record account of the results. Some community officials may be so used to their own roads that they may not notice small problems which these students pick up on their travels. Officials are often surprised at the results, and many use the reports to help make important decisions, such as preparing budgets and work schedules. Sheldon Morgan, the Public Works Director in Gilford, was particularly pleased with the RSMS Survey this year. He felt the program was “cost-effective” and “would recommend it to any community.”

The students also benefit from the project. In addition to having a good summer job, the students gain valuable hands-on experience in their field of study. They learn things that are impossible to teach in a classroom, experiencing first-hand the problems with real roads and understanding what goes on in the “real world.” They work independently, which encourages responsibility; they deal with people, which helps with personal skills; and they gain important computer knowledge while using the software in the computer lab.

As stated, the UNH T² Center plans to continue this program next year. If this interests you or if you have questions about RSMS, please feel free to contact David or Kathy at the UNH T² Center.

Brian performs a double check on the data before printing the final report for one town.
Deicing, Anti-Icing, and Chemical Alternatives

Emerging Technologies to Consider for Particular Snow or Ice Control Situations

Since the 1930s, state and local road agencies have used rock salt as the primary chemical for fighting ice build up. “Snow fighters” in the NHDOT and in other states have conducted several experiments which indicate that, in certain circumstances,

- An anti-icing approach provides safer roads at less cost than a deicing approach,
- Calcium chloride combined with rock salt melts ice and snowpack more effectively than salt alone, and
- Other chemicals should be considered, especially for bridges and some high volume roads.

Deicing and Anti-Icing

Conventional winter operations employ, where necessary, a deicing approach. Operations begin with removal of as much snow as possible during a storm. If snowpack or ice develops, the road agency spreads rock salt to melt its way through the snow/ice layer. When sufficiently softened or loosened from the pavement, crews plow the snow or ice off the roadway.

The initial operation in an anti-icing approach is to spread liquid chemicals to pavement as a pre-storm treatment. Rather than reacting to ice formation, anti-icing methods seek to prevent snow or ice from bonding to the pavement. Snow plows can then remove snow more easily to clear pavement, thereby providing safer roadways sooner. To effectively apply this approach, the road manager must

- Adopt a systematic, anticipatory approach to prevent formation of bonded ice or snow,
- Have accurate weather information in a form which enables forecast of pavement temperatures, and
- Have knowledge of the various chemicals and their applications.

For workshops given this fall, the UNH T² Center staff rewrote a FHWA manual on effective anti-icing practices. (See page 9 to request a copy.) The manual applies to the low volume roads typical in New Hampshire and does not cover some chemicals discussed by salespeople and in the public press. These chemicals are discussed below.

Prewetting

Salt prewetted with a liquid is effective as an anti-icer or deicer because prewetted salt clings to the road rather than bouncing off. Prewetted salt can be applied at a faster rate. This procedure saves money and minimizes environmental affects; 25-65% more prewetted salt remains on the roadway. Highway departments also use less resources because the spreader load covers more area, requiring fewer trips to the garage to reload.

The lowest cost prewetting liquid is a sodium chloride (salt) brine. It lowers the freezing point of salt a few degrees, is very inexpensive and doesn’t remain wet on the roadway. “Just wetting down a load of salt with a water hose is preferable to laying down dry salt,” says Tom Donahey, Director of Maintenance Programs for the Iowa DOT.

Calcium chloride (CaCl₂) increases the effectiveness and efficiency of salt as a deicer or anti-icer. The Merrimack Public Works Department has used calcium chloride since 1985, on average about 5,000 gallons each winter. Master Road Scholar John Starkey speaks highly of CaCl₂. He calls it, “another bullet in the gun” when it comes to fighting snow and ice. “It makes salt work below 20°F, and keeps the salt from bouncing all over the road.” John also recognizes its anti-icing potential, noting that the prewetted salt “seems to leave a residue on the streets,” which helps if another storm occurs within 4-5 days. “It buys a couple of hours before we need to go out.”

The corrosion rate from rock salt treated with 32% liquid CaCl₂ is about the same the as the corrosion rate of rock salt alone. A reformulated grade of liquid CaCl₂ provides lower corrosion levels. It contains a small amount of a corrosion inhibitor which forms a protective barrier between metal surfaces and the deicing chemical. It is a non-toxic, environmentally safe compound with the ability to cut through snow and ice more quickly than salt or magnesium chloride. Also because it doesn’t leave sediment in tanks, it allows easy clean-up of vehicles.

Liquid Chemical Alternatives

Several chemicals have been tested as alternatives to conventional road salt. Calcium magnesium acetate (CMA) is considered the most viable alternative because of its low environmental impact and low corrosion level. It is less effective, however, in that CMA melts ice at a slower rate than salt alone. It is also more expensive. CMA is created from limestone and acetic
acid (a component of vinegar), and is therefore biodegradable. When CMA degrades, the calcium and magnesium elements are said to actually improve the water and air permeability of the soil by restoring sodium-compacted soils.

Since acetate degrades into carbon dioxide and water, and is a natural component of plant decay, CMA is appropriate where roadside vegetation, crops, or ground water are especially vulnerable. Being less corrosive than salt, some agencies prefer CMA for use on bridges, parking structures, side walks, and certain road surfaces (it does cause major scaling).

The cost of CMA is approximately $600/ton whereas salt generally costs $20-40/ton. Some advocates of CMA argue that the initial costs may be misleading because replacement costs for roads and bridges damaged by chlorid-related corrosion should be factored into the overall figures.

The pelleted form of CMA is usually preferable to the powdered form, since the powder dust is less controllable. Pelletized CMS does not bounce off the road before melting and its residual action can reduce reallocation frequency.

The Massachusetts District 6 engineer reports that an average of 260 lb. of CMA per lane-mile were used to provide the same level of service as 300 lb. of salt per lane-mile. Frequency of application in CMA treated areas was lower than salt application frequency, more plowable and had better traction. It is best to apply CMA before the snowfall because it is most effective in preventing snow from packing and bonding.

Potassium Acetate, (KAc) is formed through a chemical reaction of acetic acid and potassium carbonate (or potash). On a test section of state road over two winters, the New Hampshire Department of Transportation found that KAc worked effectively, was easy to store and use, and was non-corrosive. It was also very expensive (costing 27 times more than salt and sand).

Other chemicals have been used for deicing or anti-icing under very special conditions. Some products under research, such as sodium formate, can react with car exhaust to form a deadly dormic acid. Uric acid and hydrofluoric acid are effective, but are far more corrosive than other deicing materials. Urea is a corrosion fighter and a fertilizer. It is mostly used on airport ramps and walkways to prevent the ice to pavement bond but since it promotes plant growth, it shouldn’t be used near the water because it could promote aquatic plant growth which can deplete the oxygen in water and cause fish kills.

Charts with recommended rates of application for all these materials are available by calling the T2 Center.

Sources:


*What you need to Know about Deicers*, Better Roads, October 1989.

---

**Guidelines for Spring Road Use Restrictions**

*Record Keeping Should Begin in November*

Spring thaw, and the need to set load limits, might seem a long way off. Yet, the *Guidelines for Spring Road Use Restrictions*, distributed at “Load Limits” workshops last spring, rely on average temperatures for the entire winter. These guidelines were prepared by the UNH T2 Center staff based on research conducted at Washington State University and confirmed as practical by the Maine DOT. They provide criteria to determine:

- **Where** to apply load restrictions,
- **The amount** of the load restriction to apply, and
- **When to apply** and **when to remove** load restrictions.

The “when to apply” and “when to remove” criteria depend on average daily temperatures during the freezing as well a thawing periods. One can acquire temperature records from newspapers or other local sources where they are most accurately and conveniently kept throughout the winter period.

The Guidelines were prepared for application by road managers whether or not they attended a workshop. It describes the procedure to make the above determinations, and contains forms for recording temperatures and for performing simple calculations. It is available at no charge from the UNH T2 Center. See page 9 to request your copy.
Technology Transfer Center Celebrates its 10th Anniversary

August of 1996 marks the tenth anniversary of the Technology Transfer Center. We'd like to share a few highlights from over the years.

1986
- The University of New Hampshire Technology Transfer Center opens.
- First issue of Road Business is published.
- Staff: John A. Anderson, Project Director; Yvonne E. Allen, Administrative Assistant; Charles H. Goodspeed, University Liaison.
- First Pavement Management Course held.

1987
- Start offering free publications upon request
- Introduction of the video loan program, with 27 tapes
- First meeting of Road Agents Association at Cold Regions Research and Engineering Laboratory (CRREL) in Hanover.
- Allen Lary becomes the President of Road Agents Association
- Bridge workshops were offered

1988
- Roads Scholar Program for municipalities is introduced
- Mountain of Demonstrations held, located Waterville Estates, in Campton
- Road Surface Management System (RSMS) issued for paved roads.
- Training and technical support for RSMS begins.

1989
- Road Surface Management System revised to include unpaved roads

1990
- Edwin R. Schmeckpeper added to staff as a Research Engineer and instructor.
- Jennifer Rand replaces Yvonne Allen as administrative assistant

1991
- Computer Aided Design (CAD) workshop offered
- Dowel and Glulam timber bridge and concrete span bridge erected in parking lot at Mountain of Demonstrations

1992
- Edwin Schmeckpeper earns Ph.D. and leaves to assume an Assistant Professorship at Iowa.
- Paul Brown becomes Research Engineer.
- Center awards CEU’s for the first time for training.
- A.R. Van de Meulebroecke added to staff as T² engineer.
- Pattie Ferrelli becomes a consultant for Public Works Software.
- First Municipal Equipment Management System (MEMS) workshop offered.
- Quick Guides are published and distributed.
- Cold Emulaiton research conducted on Madbury roads.

1993
- John Anderson earns Ph.D. and becomes Director of Pennsylvania T² Center.
- Dave Fluharty replaces John Anderson as Director.
- Hilar Varrick from Estonia begins a one year internship at UNH T² Center.
- Mountain of Demonstrations held in Nashua.

1994
- Road Scholar Program revised: features four levels of recognition.
- Jennifer Rand leaves the T² Center to attend graduate school at Tufts in Boston, MA.
- Kathy DesRoches replaces Jennifer Rand as Program Assistant.
- RSMS surveys by Civil Engineering students offered.
- Master Road Scholar level achieved for the first time.
- Mountain of Demonstrations returns to Waterville Estates.

1995
- Master Road Scholars become Advisory Board for training
- 24 foot timber bridge beams are set and a 50 long 8’ high foot timber retaining wall built at Mountain of Demonstrations

1996
- First annual Road Scholar Directory published
- Tour of previous demos conducted at Mountain of Demonstrations
- Center applies for a receives grant to partially fund Work Zone Traffic Control kits for municipalities
PUBLICATIONS
from the
University of New Hampshire Technology Transfer Center

Copies of the following books or pamphlets are available through the UNH T²Center. You can request them by mail or telephone. If by mail, follow the instructions below. To request by telephone, call (603) 862-2826, or in New Hampshire, (800) 423-0060.

- **Best Management Practices for Erosion.** Published by the FHWA. Provides guidance in preventing erosion and controlling sediment of highway construction projects.

- **NEW! National Association of County Engineers Action Guide Vol. III-7. Subsurface Soil Exploration.** Discusses the effects of subsurface soils on all types of structures. Includes soil properties and advice on what to do with the results of soil analysis.

- **The Snowfighter's Handbook.** A practical guide for snow and ice control before, during, and after a storm. Published by the Salt Institute.

- **The Salt Storage Handbook.** A practical guide for storing and handling deicing salt. Published by the Salt Institute.

- **NEW! National Association of County Engineers Action Guide Vol. I-8. Public Awareness and Support.** Provides program and personal development skills on how to deal with the public, communities, news media, and government at all levels.

- **NEW! National Association of County Engineers Action Guide Vol. III-5. Drainage** Includes methods and laws about drainage. Gives ideas on drainage structures and management, and provides information on the environmental criteria and economic aspect of drainage.

- **CDL Information Sheets.** Describes basic drug testing procedures, provides information about setting policies for a drug testing program before positive results occur, and lists providers of CDL testing.

- **NHDOT Classification of Highways.** A synopsis of Highway Aid available to Municipalities

- **Manual of Practice for Effective Anti-icing Program.** A FHWA publication edited for local municipalities.

- **Guidelines for Spring Road Use Restrictions.** Use this handy system to set load limits during “mud season.”

---

To Request Material by Mail

Check the items you would like to have. Fill in your name, address, and other information. Cut out or copy pages 9 and ten, fold so the UNH T² Center address is on the outside, staple closed, and mail.

Name

Address

Address

Town  Zip

Position

Organization:

Private:   Federal:

State:    Local:

Academic:     Other
VIDEOS

from the
University of New Hampshire Technology Transfer Center

The following are some of the videos available from the UNH T² Center Video Library. You may take the videos out for a two week period. There is no charge. To request by mail, check the videos you would like to have, fill out the mail request form on page 9, staple closed, and mail. To request by telephone, call (603) 862-2826 or (800)423-0060 (in NH).

-- DC-234 Stowell Road Bridge Reconstruction, Merrimack NH Cost benefits and other advantages of timber bridges.

-- M-201 The Snowfighters Methods, procedures, and equipment for effective and efficient snow removal on streets and highways.

-- M-231 Mechanical Cleaning of Unlined Ditches Defines the four principals features of a ditch and their functions. Demonstrates two methods of mechanical cleaning using a motorgrader and a backhoe. Stresses the importance of reestablishing good drainage. Excellent training film for crews.

-- M-235 Reshaping Earth and Gravel Shoulders Shows proper procedures for reshaping earth and gravel shoulders to correct shoulder drop-offs, rutting, build-up of material, and excessive weed control to maintain safe shoulder with proper cross slope. Nine steps are outlined, and tools and equipment are described.

-- M-265 Salt—The Sensible Deicer Compares why salt is a better deicer than abrasives through cost comparisons and the melting abilities of ice. Discusses other benefits of salt.

-- M-266 Maintaining a Safe Roadside Presents unsafe road sites in order to underscore the importance of maintaining safe roadsides.

-- M-269 New Life for Old Roads Describes the Full Depth Reclamation process, noting precautions to take in order to ensure success.

-- M-285 Response to Winter Discusses the levels of service a department of transportation expects to provide.

-- New! M-287 Bridge Maintenance for Local Road Crews Demonstrates simple maintenance measures and discusses reasons to perform maintenance.


-- New! M-290 Sign Maintenance and Installation From public complaint to installation of signs. Discusses traffic control devices and field operations.

-- ST-235 Chainsaw Safety Demonstrates the do’s and don’ts of chainsaw operation.

-- Catalog of UNH T² Center Videos.


TECHNOLOGY TRANSFER CENTER
CIVIL ENGINEERING
UNIVERSITY OF NEW HAMPSHIRE
DURHAM NH 03824-3591
Introducing “Roadnet”

An Internet Connection for Road Managers, Planners, and Others Involved in Local Roads

The Technology Transfer Center has created a listserv to enable people concerned with New Hampshire roads to network informally with each other. A listserv enables the participants to ask questions and get almost instant replies, usually within a day and sometimes less. It’s like having an electronic address book that accesses multiple names without having to update the book yourself. You send a message to one address and the message is automatically forwarded to everyone who is on the list. Then people may answer back individually to you or to everyone.

Why would you want to use a listserv? You might want to know if someone has used a particular brand of culvert or wonder if anyone has experience with a new product. It also allows users to alert others regarding information that they might find useful, like a new sales person is working for a company or they found out about a new source of funding which they might not have considered before. Nationally, the T2 Centers use a similar type of list and find it useful. The T2 Centers have found various uses for their list such as giving away extra publications they don’t have a use for; for example, concrete road materials in NH or snow and ice control information in Florida.

Unlike a web page, which requires users to search for messages, a member of a listserv sends email to a central email address which is electronically distributed directly to every other group member. To subscribe, first you must be sign up with an internet provider such as: America on Line (AOL), Compuserve, Internet Connection (IC), Monadnet, or Ultrarenet. Most providers supply users with software to access the internet as well as customer support. You may use your office or a personal address.

To subscribe to the listserv send a message to: T2.NHROADS-request@unh.edu. In the body of your message type: add T2.NHROADS Your name. For instance: add T2.NHROADS John Doe

Once your subscription has been processed, two Welcome messages will be sent to you which will include information on to how to use the list. The welcome messages should be saved for future reference. Lists can provide a useful source of information and they are fun to use. If you have any questions or concerns, please call (or email) Kathy (kathy.desroches@unh.edu) for more information.

Updated Noise Wall Material Comparison
Available From The T2 Center

By Lauren Chaffee

The May/June 1996 issue of The Wall Journal contained a table comparing various noise wall materials. David R. Freudenrich, Senior Engineer of the Maguire Group, Inc. in Pittsburgh, Pennsylvania updated and expanded from one published earlier in a fall issue of The Wall Journal. Freudenrich added many new products and many previously omitted. The table includes information on and some results of specific American Society of Testing Materials (ASTM) tests used to evaluate the materials.

For each product, Freudenrich provides the manufacturer, contact person with phone number, trade name, wall type, material type, and cost range. He also provides a comprehensive list of the physical properties needed to select the appropriate materials for the various conditions. Among the properties tested and added to the table are fire resistance, weatherability, freeze/thaw cycling, absorptivity, reflectivity, noise reduction, compressive strength, and hardness. Mr. Freudenrich compiled all of this information, plus much more, into the easy-to-use table. A copy of his table is available from the UNH T2 Center at 800/423-0060 (in NH) or 603/862-2826; or by E-mail at kathy.desroches@unh.edu.
# Calendar

<table>
<thead>
<tr>
<th>OCTOBER</th>
<th>14 COLUMBUS DAY</th>
<th>15</th>
<th>16 MEMS, Berlin</th>
<th>17</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>22</td>
<td>23 American Traffic Safety Services Association (ATSSA) Course NHMA PLT</td>
<td>24 RSMS, Lebanon; ATSSA Course NHMA PLT</td>
<td>25 RSMS, Lebanon; ATSSA Course NHMA PLT</td>
<td></td>
</tr>
<tr>
<td>NOVEMBER</td>
<td>4 ELECTION DAY</td>
<td>6</td>
<td>7 RSMS, Dover</td>
<td>8 RSMS, Dover</td>
<td></td>
</tr>
<tr>
<td>11 VETERANS DAY</td>
<td>12 Preventive Maintenance, Hillsborough: Introduction to Computers, Dover</td>
<td>13 Preventive Maintenance, Portsmouth</td>
<td>14 MEMS, Dover</td>
<td>15 Preventive Maintenance, Lancaster</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>20</td>
<td>21 NHMA CONFERENCE</td>
<td>22 NHMA CONFERENCE</td>
<td>23 NHMA CONFERENCE</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28 THANKSGIVING</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

| DECEMBER         | 2               | 3 Task Management, Campton | 4   | 5   | 6   |
| 9                | 10 Task Management, Manchester | 11 | 12   | 13  |

January 14, 1997 Incident Command System for Public Works—Concord Fire Training Academy

For additional information or registrations, call the UNH T² Center.

Attention Readers and Editors: You may reproduce any materials written by the UNH T² staff, using the credit line: Reprinted from Road Business, (season)Year, the newsletter of the University of New Hampshire Technology Transfer Center.

Road Business is published quarterly by the Technology Transfer Center at the University of New Hampshire (UNH). The UNH T² Center is supported by the Federal Highway Administration (FHWA), the New Hampshire Department of Transportation (NHDOT), and UNH. Any opinions, findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect the views of the FHWA, NHDOT, or UNH.

Any product mentioned in Road Business is for information only and should not be considered a product endorsement.