



US Department of Transportation
Federal Highway Administration

ROAD BUSINESS



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Vol. 3 No. 1

Winter 1988



Above: A typical winter scene in New Hampshire, snow covered trees, snow covered hills, and passable roads.

On The Road In New Hampshire

The pleasant mystery of the missing plow

One morning I woke up and found a tremendous number of those cold white crystals piled up by my door and completely hiding my driveway. Not at all an uncommon sight in the state of New Hampshire, but somewhat disconcerting for those of us on our way to work at the start of a day.

This morning was different. It wasn't just the surprise I felt when I discovered the

eight-plus inches of snow that arrived unexpectedly in the middle of the night, there was something missing. Something just didn't seem quite right and I couldn't put my finger on it.

The snow had apparently stopped falling sometime before my little 2¹/₂ year old "alarm clock" woke me up at 6:00 AM. Katy got breakfast, Sheila got ready for work, and I got a shovel.

Before long, we were all on our way. None of us had any major difficulty in reaching our destinations. Sheila got to Portsmouth Hospital in plenty of time to help deliver babies (the new mothers also got to the hospital), Katy got dropped off at the baby sitter's in Exeter, and I made it to the University in Durham.

So, what was wrong? What was missing? What was different about this morning? -- Then it dawned on me, Where were the snow plows? I jumped back in my car and went in search of at least one plow, one grader on the move. I drove the roads in the city, the back roads of the country, and the many arteries in between. Not a plow in site.

I got back to Durham and wondered, has New Hampshire found a new way to clear its roads? Kids got to school, businesses were open, expectant mothers got to the hospital, and the New Hampshire road agents (at least the lucky ones) finally got a little sleep.

More often than not, being a road agent is a thankless job involving long hours and requiring a great deal of dedication. So, from all of us in New Hampshire who like to enjoy "business as usual," I would like to thank our road agents and the other public works employees for a job well done. ■

Roadway Work Zones: Warning And Guidance

Road Agents and contractors have a responsibility to warn the motorist that work is being done on the roadway

With warmer weather and Road Repair Ahead, we are about to go charging full tilt into the latter. As we do this we have to recognize the consequences of these activities to the motorist and we must evaluate how we can better protect the driver and the worker in the construction and maintenance zones.

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!!! FREE !!! For The Asking

Below is a brief explanation of two manuals available, at no charge, from the Technology Transfer Center. Both of these publications were written with local roads in mind. They will be useful to most individuals concerned with town roads and they should be particularly useful to those individuals involved in planning. To order call 800-423-0060 or send in the attached mailer specifying your request.

(1) Quality Assurance For Local Governments

Poorly built and maintained roads are both expensive and inconvenient for taxpayers. The quality of work performed on roads and streets directly influences the useful life of the facility, the maintenance costs, the levels of service, and the user costs.

Quality assurance is a broad term that refers to all of the activities necessary to verify, audit, and evaluate quality. It is more than quality control, which is only one element of quality assurance. There is a need for a broad concept of quality assurance because the quality of a road or street is influenced by many activities other than just field operations. Planning establishes quality goals and broad objectives. Design implements those objectives and sets the specific levels of quality to be achieved. Construction builds the project to the level of quality specified. Finally, maintenance activities retain the level of quality required.

A quality assurance program does not have to be complicated. It should simply be a common sense approach to ensuring that the public dollar is well spent. A quality assurance program should address four questions:

- What do we want?
- How do we order it?
- Did we get what we ordered?
- What do we do if we didn't get what we ordered?

This manual is an outgrowth of efforts by FHWA, state highway agencies, and many others to improve the quality of the national highway system through the use of advanced quality assurance techniques. FHWA approved the preparation of this manual to develop a program "for improved highway construction management, including development of a highway quality control and testing program for use by local government units." ■

(2) Low-Cost Methods For Improving Traffic Operations On Two-Lane Roads

A substantial number of two-lane roads experience operational and safety problems on a regular basis. These problems can often be traced to three basic causes:

- Inadequate road geometry (e.g., width, grades, alignment, and sight distances), either at specific locations or over long sections;
- Lack of passing opportunities, due either to limited sight distance or heavy oncoming traffic volumes; and
- Traffic conflicts due to turns at intersections and driveways.

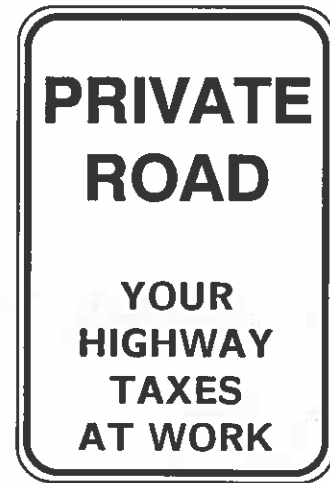
Many of these operational and safety problems could be overcome by expensive improvements. Funds for road upgrading, however, are very limited. This has led to a growing backlog of rural roads requiring improvement.

An alternative approach is to provide low-cost improvements on existing two-lane rural roads, thus covering a much larger proportion of the roads in need of upgrading. Research and experience have shown that the provision of passing lanes, turning lanes, localized alignment improvements, and other relatively low-cost measures can be highly cost-effective in improving both traffic operations and safety on existing two-lane rural roads. These options are also appropriate for roads with lower traffic volumes which do not warrant major improvement projects and on recreational or other routes with high seasonal demand.

This guide presents information on a range of low-cost road improvements, with particular emphasis on passing and turning improvements. It is primarily oriented toward individuals responsible for planning. ■

What Will They Think Of Next?

Heritage Foundation Looks At Privatizing U.S. Road System



A December 1987 report by the Heritage Foundation examines the possibility of selling the nation's roads to a private operator as a method of improving maintenance and dealing with "the needs of a growing, changing economy." The report is entitled *Using Competition to Break the U.S. Road Monopoly*.

The report characterizes federal highway projects as "pork-barrel" spending to please constituents, rather than efforts to finance an efficient system. The report is also critical of the relationship between user-fee funding and road use.

Among the privatization approaches suggested are electronic road pricing, monthly access fees for road use, or privately-owned streets constructed by private developers. The foundation recommends that ownership of each road be assigned to one level of government, with subsequent sale to private firms. Tax revenues would be transferred to the new owner. The report concludes, "As in any private market, the total amount of money spent on the nation's roads, and the distribution of those funds to particular uses, would reflect the cumulative choices of individual Americans."

The above article was reprinted from the American Road & Transportation Builders Association (ARTBA) Newsletter, Vol. 32, No. 4, February 9, 1988 ■

A Closer Look

The first in a series: An item by item look at the check list, Questions For Computer Buyers, which appeared in the last issue of Road Business

by Dr. Dot

A previous article appearing in Road Business (Vol.2 No.4 – copies are available at no charge from the Technology Transfer Center; simply send in your request on the mailer attached to this newsletter) suggested a check list that could be used when buying a computer. The present article is intended to address the first four items on that check list: (1) Where am I going to buy the computer? (2) What kind of service do I want, or need, from the company? (3) What kind of warranty do they offer? (4) How knowledgeable is the person who is selling me the computer system?

Selecting any piece of computer hardware for a DOS (IBM compatible or clone) system is a little like looking at a Chinese menu. You select one item from Column A, two from B, and so on. The only problem is that some of the items in Column A don't work with some of the items in Column B. As result, you need to find someone who is knowledgeable in these things and willing to guide you through the menu.

This person can be yourself, another individual in your work place, or someone at a computer store. In any event, this person must be adept in the areas of computer software, hardware, and maintenance. Does this person know what is involved in connecting a serial or parallel printer to a microcomputer? If the computer is not working right, can this individual run a diagnostics program and determine what is wrong? Can this person write batch files and config.sys files to configure the software and hardware? These are all typical of tasks assigned to the person who is your "micro-computer guru."

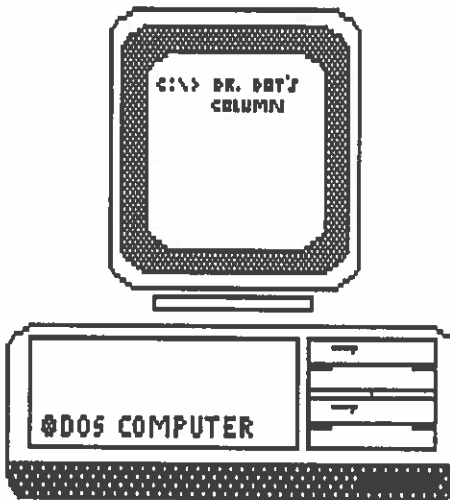
If you determine that you have an in-house microcomputer expert, you then have much more flexibility as to where you can purchase your hardware and software. If you do not have a resident expert, then you must look to a full service computer store to supply you with the software, hardware, programming expertise, maintenance, and support.

There are different sources from which you can purchase your computer system and you can expect different services

from each. Below are some general pros and cons for three different sources.

Mail order: These companies usually have the lowest prices and the lowest level of support. Everything is handled through the mail or over the telephone. Many offer very good warranties (usually one year), but repair work must be done at their location. This means costly shipping and significant down time. You need to have enough knowledge to put the hardware together, load the operating system and configure the software. After the warranty period, most phone calls or repairs are handled on a pay-as-you-go basis unless you purchase a maintenance contract. Price is the main advantage here.

National company direct: Many large companies have a sales force that can sell



equipment directly to a customer. This approach is mainly advantageous for government agencies and large companies that will write purchase agreements with the national company. In return for an agreement to purchase a significant number of microcomputers, computer companies will often provide a good price, some type of maintenance contract, and other support.

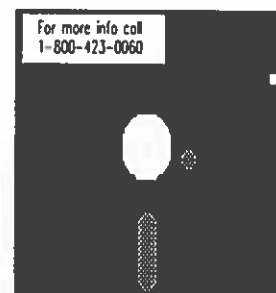
Local computer store: This is the place where you can receive the most hand-holding and individualized attention (this article is not referring to a K-Mart or Toys'R'Us). You can expect to get locally handled maintenance, personalized responses to questions, assistance with the installation of hardware and software, and a friend to help reduce computer anxieties. However, the quality of the service will vary from store to store and from salesperson to

salesperson. When you go to a computer store you should be trying to find the perfect marriage between product and service. The level of confidence and trust you feel is almost as important as the actual product being sold. The main disadvantage is that the price is often higher than other vendors.

Each of the above has its pros and cons. Remember, in most instances, you get what you pay for. One can not expect to pay mail order prices and then receive red carpet service (however, some of the service is tremendous). So, if you are contemplating the purchase of a microcomputer you should determine ahead of time what services you need, or what services you are willing to forego in return for a reduced price.

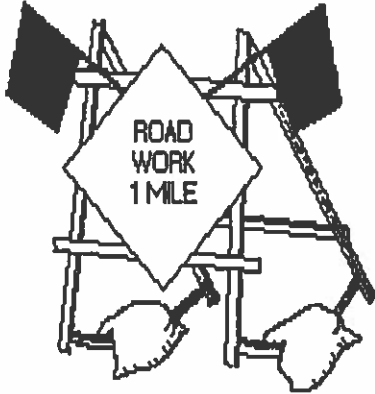
Finally, once you have decided where you are going to purchase your system, work up a series of questions for the individual with whom you will be dealing. Don't be afraid to ask a question that sounds stupid. The way the person answers your questions will help you evaluate the type of service they are willing to provide. An interesting article to read prior to entering a computer store is Rick Giampietro's "How Not To Shop At A Computer Store." A copy of this article can be obtained for \$4.00 by calling Antic Publishing, Inc. at 1-800-234-7001 and asking for the 1987 winter issue of *Start* (Vol.2 No.3).

In the next *Road Business* article we will continue to take a closer look at the numerous items found on the check list. Our discussion will cover such topics as different types of computers, central processing units, disk drives, and numeric co-processors. However, should you find yourself in a buying situation and need some further information right away, please feel free to give us a call at 800-423-0060. We will be happy to assist you in any way we can.



Work zone safety...
continued from p. 1

Mr. Richard D. Morgan of the Federal Highway Administration summarized the problem in the January 1987 issue of *Roads and Bridges*. He indicated that in the past, construction centered on new alignment, and was away from existing traffic; however, today there is considerably more reconstruction in the midst of traffic. Increased maintenance activities and worker exposure have resulted in a rise in work zone fatalities from 500 in 1982 to 700 in 1985.



One of the major reasons for work zone accidents is the introduction of a surprise element into the roadway. Our drivers do not expect to crest a hill and see a backhoe on their side of the highway or to have their lane of a street blocked by utility work. For this reason, we need to give ample warning to the driver who may be less than fully attentive.

The most common type of work zone fatality involves vehicle-to-vehicle collisions such as head-on or rear-end accidents. This points out the need to provide proper guidance and information to the driver on what to expect and do. Over 50% of work zone fatalities occur at night; thus, proper delineation through the use of illuminated or reflectorized traffic control devices must be provided.

The key words are **WARN** and **GUIDE**. **Warn** the driver that something out of the ordinary is taking place in the roadway and **guide** the motorist through the area of activity. Part VI of the *Manual on Uniform Traffic Control Devices (MUTCD)* provides the standards needed for signing and marking street and highway construction and maintenance operations — a copy of the MUTCD is available for loan through the Technology Transfer Center, or it may be purchased for \$44.00 by writing to the following address: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

So what does all this mean for you as a city or township official? First of all, you have a responsibility to warn the motorist that work is being done on the roadway. Second, this also applies to contractors and utility companies whom you have allowed to work within or nearby the roadway.

Sometimes dimensions and standards can be quite complex and you may not have all the signs, barricades and cones to do the job perfectly. Even though this occurs, you will be better off in a liability law suit if you can show that you made some attempt at marking work zones. At a minimum, you should have a **ROAD WORK AHEAD** sign, some traffic cones, and a **LANE CLOSED** sign if a lane is to be blocked off.

The above article was acquired from the North Dakota Technology Transfer Center. ■

For The Record

U.S. Transportation Secretary, Jim Burnley, in an address to the North Carolina Street and Highway Management Conference

"As the interstate highway system nears completion, we must begin looking to the future of the nation's highway program. A key issue we must discuss and debate is where we draw the line on federal support of highways. Clearly, the federal government will continue to have a role in assuring that the Interstate system is properly maintained.

"However, once the interstate system is completed, most of the future highway needs of the United States will be local in nature and will not require federal involvement. The issue boils down to two fundamental questions: who should have the primary authority over expenditures for highways — the federal government or the states? How should the revenues necessary to meet these needs be generated?

"I want to encourage the states, organizations representing transportation interests, the academic community and private sector groups to begin wrestling with these fundamental issues now. We cannot afford to wait until we are nearing the end of the reauthorization cycle."

The above article was reprinted from the *American Road & Transportation Builders Association (ARTBA) Newsletter*, Vol. 32, No. 4, February 9, 1988 ■

Did You Know ?

It might be time to experience state prison

Some of the low cost options available to towns for purchasing road signs are no longer accessible. However, the New Hampshire state prison is still in business. They have a sign shop that can meet most of your town's needs, including competitive prices — a need that we all have!

The N.H.S.P. Sign & Engraving Shop is a complete screen printing production facility. They maintain a large inventory (5,000+) of the most commonly requested signs and accessories. All signs are manufactured from 3M Engineer Grade and high intensity reflective sheeting heat applied to .080 aluminum to meet the federal Manual On Uniform Traffic Control Devices and the New Hampshire Department of Transportation standards.



The sign shop is set up to handle both mass production and single specialty signs. They offer on-site design and art services in addition to accepting camera ready and standard street sign orders. For more information or for free price quotes call Bob Hunneyman, sign shop manager, at 603-271-1874 or write to the following address:

New Hampshire State Prison
Correctional Industries
Sign and Engraving Shop
281 North State Street
Concord, NH 03301 ■

American Public Works Association Technology Transfer Publications

To assist with technology transfer problems, the Colorado chapter of APWA established a Publication Committee, which has assembled a list of 54 helpful publications. A complete list of these publications and an order form is furnished for your convenience. Each publication sells for \$1.00 per copy.

Publication List

<u>No.</u>	<u>Title & Author</u>
1	Geographic Computer Mapping; Mike Pearson
2	Computers Encourage Peak Performance in Public Works; Roger Krempel
3	New Materials that Save Money and Combat Soil Problems; Mike Cowell
4	What We Learned From Cleaning the 1982 Blizzard; Eric Pahlke
5	Once A Patch, Always A Patch; Don Park
6	Storm Water Management: An Issue that Won't Wash Away; Bill Ruzzo
7	Why Drainage/Flood Control Should be Considered a Utility; E.G. Wilkinson
8	Allow Competitive Bidding Between Material Suppliers; Rodger Young
9	Land Fills: Can We Avoid Past Mistakes; Regan Heath
10	Colorado Snow: A Resource or A Responsibility; Roger Krempel
11	Death Knell Sounds For A Storm Drainage Fee; Richard Plastino
12	Storm Drainage Design and Technical Criteria; Mike Serlet & Bill Ruzzo
13	Fees and Utility Taxes Assure Adequate Street Funding; Roger Krempel
14	Pavement Management Strategy Preserves City Streets; Roger Krempel
15	APWA To Develop Standard Specifications; Rodger Young
16	Does Your Water System Have Hydro-Electric Generating Potential?; Roger L. Wheeler, Peggy Wrenn & Brian Grant
17	Snow Job; John Mrozek
18	A Utility Approach To Comprehensive Stormwater Management; Marc Engemoen & Roger Krempel
19	How Do We Tackle the Infrastructure Problem; Dennis Polhill
20	What Is Pavement Management?; Dennis Polhill
21	Future of Water Reuse; Roger Krempel
22	Economics of Timely Street Maintenance; Roger Krempel
23	Quality Circles Improve Productivity; Roger Krempel
24	Water & Sludge Reuse Pays Off in Colorado; Ron Hellbusch
25	Mapping Helps 'New' City Grow; Wm. A. Sterling
26	Keeping Ahead of the Water Supply Game; Roger Krempel
27	Automotive Mechanics in Quality Circles; Roger Krempel
28	A Usable Input-Output Flow Chart of a Municipal Water System; Ventura Bengoechea, David Hendricks & R.Krempel
29	Araphoe County Prepares For Future Rapid Growth; Kent Lande & Ernest Hamilton

- 30 Citizens Demand Repairs; Kent Lande & L.Hunking
- 31 Denver's Snow Control Plan Blends Judgment and Technology; John Mrozek
- 32 Quality Circles-An Update; Roger Krempel
- 33 How Broomfield Uses Performance Specifications for Street Acceptance; Gene Putman & Dennis Polhill
- 34 How Do You Manage the Project That is Too Big for You to Manage; Errol Snider
- 35 Neighborhood Referral: Keeping One Step Ahead; Rick Solomon
- 36 Urban Runoff Pollution; Roger Krempel & Bill Ruzzo
- 37 Research Needs for Infrastructure Management; Neil S. Grigg
- 38 New Fee Funds Street Maintenance; Jay Kole & Robert Lee
- 39 Developing an Effective Storm Drainage Maintenance Program; Marc Engemoen
- 40 Stormwater Management Emphasizes "Soft" Improvements; Marc Engemoen
- 41 Pavement Management Saves Road Rehabilitation Dollars; Jim Lawson
- 42 Making Traffic Signals User Friendly; John Arnold, Robert Lee & Richard Ensdorff
- 43 How One City Wins The War Against Potholes; John Nystrom
- 44 Computer Use in Hydraulics and Hydrology; James T. Wulliman & Larry A. Muller
- 45 Readily Expandable Sludge Destruction Capacity; Arden Wallum
- 46 Quality Circles: An Update; Roger Krempel
- 47 Handicapped Accessibility - 504 Transition Plan; Rita Davis & Don Gaeddert
- 48 Financing Infrastructure with Development and User Fees in Ft. Collins; Roger Krempel
- 49 Thoughts on How To Solve the Infrastructure Problems Facing Colorado; Roger Krempel
- 50 Mile-deep Reactor Destroys Sludge with Ease; Gerald Rappe & William Schwoyer
- 51 Hartland Manages Roads; Jim Pequette
- 52 Pavement Management-Design or Dilemma?; Dennis Polhill
- 53 Evaluating a Pavement Management System; Dennis Polhill
- 54 Privatization of Public Works; Dennis Polhill

All orders must be prepaid -- \$1.00 per copy

I have checked the boxes at left.

Date: _____

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33
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Signature: _____

Name: _____

Responsibility: _____

Organization: _____

Address: _____

Total Amount Due: \$ _____ Check No. _____

Mail to: American Public Works Association
 c/o Dennis Polhill
 245 So. Benton, Suite 230
 Denver, CO 80226

GENERAL COMMENTS:

CHANGE OR ADDITION OF TITLE AND/OR ADDRESS:

Please fill in *old* address:

Please fill in *new* address:

INFORMATION REQUEST: (please use this space for any general comments, questions, or suggestions you may have. Remember to include your telephone number)

PLEASE! PUT YOUR RETURN ADDRESS IN THE UPPER LEFT HAND CORNER OF THE REVERSE SIDE OF THIS PAGE. FOLD, STAPLE, AND MAIL.

Road Business Index 1986-1987

The following is a listing of articles that have appeared in past publications of Road Business. Past issues may be ordered free of charge from the Technology Transfer Center by calling toll free 1-800-423-0060 or by using the mailer included in this newsletter.

PAVEMENTS

Pavement Management: The 7 Big Questions...Vol.1 No.1

Discusses what pavement management is, how it works, and who benefits from it.

Standard Definitions For Seal Coats...Vol.1 No.1

Introduces common types of seal coats and discusses the materials commonly used for each one.

Pavement Maintenance Treatments...Vol.1 No.1

Quantifies and estimates the life of various surface treatments commonly used to maintain roads in New England.

Asphalt Paving Materials...Vol.2 No.2

Provides a basic introduction to the many types and grades of asphalts from solids to thin liquids.

Your Best Defense In The War Against Potholes...Vol.2 No.2

Discusses the performance characteristics of 3¹/₂" to 4" thick pavements.

'Tis The Season To Be Jolly - Not To Be Paving...Vol.2 No.4

Compares some of the advantages of early season paving to the disadvantages of late season paving.

BRIDGES

Avoid A Bridge Catastrophe...Vol.2 No.1

A checklist, for the non-engineer, is offered for assessing if a bridge is structurally deficient or functionally obsolete.

The Ingenuity of "Yankee" Highway Engineers...Vol.2 No.1

The use of portable temporary bridges in New Hampshire.

Timber Bridges...Vol.2 No.1

Timber can offer some real advantages to towns facing bridge replacements with limited funds.

Winter Is Never Over In New Hampshire...Vol.2 No.2

The use of linseed oil for the protection of concrete structures.

Directions For Using Boiled Linseed Anti-Spalling Compound...Vol.2 No.2

A step-by-step guide for making a boiled linseed mixture.

Check Your Mailbox...Vol.2 No.3

Discusses some mailings sent to New Hampshire towns that concern posting bridges and tort liability.

Bridge Raincoats...Vol.2 No.3

Discusses the use of a rubberized asphalt concrete waterproofing membrane as another method for protecting bridge deck overlays.

Post Your Bridges...Vol.2 No.4

Acknowledging a bridge deficiency is the best defense in a liability case.

Air Entrained Concrete...Vol.2 No.4

Suggests that air entrained concrete is a good protection against freeze-thaw cycles and you may want to consider using it for your next new structure.

MAINTENANCE

Avoid Icy Litigation...Vol.1 No.1

17 points to consider in preparation of a snow and ice control policy.

Preparing For Winter Operations...Vol.2 No.4

Discusses equipment, materials, and planning for snow removal.

Low-Cost Antifreeze Can Clog Engines...Vol.2 No.4

Discusses potential problems which may result from using low-cost automobile antifreeze to cool heavy duty diesel engines.

Controlling Roadway Ice...Vol.2 No.4

Discusses a paving system developed in Sweden that can help to control roadway ice.

COMPUTER

Its Bark Is Worse Than Its "Byte"...Vol.1 No.1

General discussion about computers.

Center For Microcomputers Opens Up...Vol.1 No.1

Gives information about the McTrans Center (Computers In Transportation): how to get on their mailing list and how to obtain the transportation software and source book.

"Ware" Am I?...Vol.2 No.1

Offers an introduction to computer software and hardware.

Soft Does Not Mean Easy...Vol.2 No.3

Discusses what to look for when buying software.

Making A List And Checking It Twice...Vol.2 No.4

Offers a check list approach to buying a computer system.

SAFETY AND LIABILITY

Front End Loader Safety...Vol.1 No.1

Safety tips for front end loader operation.

Why Did It Happen To Me?...Vol.2 No.1

Offers some ideas on avoiding future accidents.

Tips For Reducing Tort Liability...Vol.2 No.1

Offers a definition of *tort* and 13 tips for avoiding potential liability cases.

DESIGN

Road Design Standards...Vol.2 No.1

Suggests minimum design standards for rural subdivision streets.

One Dollar Spent on Drainage Will Save Two Dollars on Maintenance...Vol.2 No.2

Discusses aspects of proper drainage, the most important element in road design.

Ice And Grader Blade Cart...Vol.2 No.3

Drawings for building an ice and grader blade cart.

Manhole Cover Lifter...Vol.2 No.4

Drawings for building a manhole cover lifter.

OTHER

Did You Know?...Vol.1 No.1

You can "piggy-back" with state contracts to save money when purchasing.

On The Road In New Hampshire...Vol.2 No.1

The town of Madbury tells how to help avoid new subdivision problems and offers a residential subdivision checklist.

Did You Know?...Vol.2 No.3

A zip code can help to recover stolen signs; some tips for graffiti removal.

On The Road In New Hampshire...Vol.2 No.3

The town of Hopkinton discusses how it saves money by adopting a new approach to paving. ■

R. A. A. NEWS

The New Hampshire Road Agent Association

Sneak Previews

Two new products will soon be available for New Hampshire's towns and cities: (1) a low cost road surface management system (2) a handbook of standard specifications for local roads

(1) Cost Effective Road Surface Management

A superintendent of public works once said, "What is needed is some easy-to-use method that a road foreman or even a selectman could use to quantify the distress in their roads and pavements, rate them on a scale of one to one hundred, prioritize the maintenance and rehabilitation needs, and point the way to the most cost-effective maintenance method." With this in mind the T² Center, in cooperation with a long list of national and state organizations, has developed just such a program.

At the Road Agent Association meeting, to be scheduled in May or June of this year, there will be a demonstration of the new Road Surface Management System (RSMS). Should you have any questions about the system or if you are thinking of doing a road inventory and condition assessment, please contact the T² Center at 1-800-423-0060 or send in the mailer attached to this newsletter.

(2) Standard Specifications for Local Roads

Numerous towns have been asking for a handbook that would address standard specifications for local roads. Recently, the Technology Transfer Center, in collaboration with various town officials around New Hampshire, put together a manual covering this subject. The handbooks are expected to be ready for the annual spring Road Agent Association meeting. All towns attending the meeting will be able to acquire a complimentary copy at that time. ■

Quiet...Pavement Cutter at Work

An innovative approach to removing distressed asphalt pavement

Distressed asphalt pavement is being removed quickly and quietly in the city of Riverside, California.

A shop-designed and fabricated pavement cutter wheel has been added to the bucket of a new wheel loader, enabling the Riverside Public Works Department to do more work with less equipment and fewer people. And, to the delight of residents of neighborhoods and business districts, street repair is no longer accompanied by the noise of pavement breakers and jackhammers.

With the growth of Riverside from an orange grove community to a city of 170,000 with 720 miles of mainly asphalt streets (many dating back to the 1950s), street patching has become an activity accounting for nearly half of the street maintenance department's budget. The novel idea of combining cutter wheel and wheel loader grew from the recognition of Riverside Public Works Department personnel that extensive pavement removals were costly, time-consuming, and aggravating to surrounding residents.

The 14-inch diameter steel disc cutter is installed in a modified scarifier tooth. A steel socket for the tooth was welded to the heel of the bucket, where a steel pin holds the wheel strut in place. The loader's wheel assembly has been redesigned so that the wheel can be removed from the socket

without interfering with loader bucket operation. A hand-operated cable winch installed on the rear of the bucket permits easy installation and removal of the cutter wheel.

To cut pavement, the operator presses the cutter onto the outline of a spray-marked cutout. Hydraulic down pressure and the weight of the bucket force the cutter through the surface crust. Where pavement is particularly hard or thick, the full cutting depth of six inches usually can be attained by filling the loader bucket. To speed removal of the pavement, cutouts are always made at least as wide as the loader bucket so that the loader also can easily remove the pavement. The short turn radius of the articulated loader is also an asset on small and busy streets.

Riverside gains the best production result when all pavement scheduled for replacement in a single day is outlined for the cutter wheel at the outset: the loader handles all pavement removal, leaving the area free for the paving crew. With this working pattern, the cutout and paving crew can remove and replace 10,000 sq. ft. of distressed asphalt in a single day, using only the loader, supporting dump trucks, and the paving spread.

For further information, contact Dick Cielland or Larry Schnore, Riverside Public Works Department, (714) 351-6127, or call the New Hampshire Technology Transfer Center, 800-423-0060.

We are continually looking for more new ideas. Should you happen to have an idea that you think would be helpful to other road agents, please send it in to us and we'll help spread it around.



Left: Loader with pavement cutter wheel attachment; Riverside, CA.

Source: *Tech Transfer*, No. 19, October 1987, University of California, Berkeley

Training Holds Up In Court!

The value of training

Every profession offers training courses that are taught by the leaders in the field, most of whom are volunteering their services in order to keep the cost down. Most fees are used for lodging, food, and transportation, but even those costs have risen with inflation. Many municipalities, feeling the financial crunch, are reluctant to fund training; however, the dividends returned to them in savings as a result of such training are many, many times the cost. Using the cost of training as an excuse not to send an employee to a school is doing a disservice to the community.

I have never attended a conference where I have not saved my municipality several times the cost of attending. Last year, I was engaged as an expert witness in three lawsuits against three different municipalities. My job was to testify as to what were the standard procedures followed by a majority of municipalities when plowing snow. I was instructed to find how many courses on snow removal were offered in the last five years within 100 miles of the municipal employees being sued, and what the costs were of such courses.

There were courses conducted by the Department of Community Affairs of that state each of the five years. One was 15 miles from the community being sued. Due to the fact that these employees did not follow accepted practice, and had not attended any courses at any time, they were found negligent. The judge admonished the employees, and said that it was no excuse that the community could not afford to send them. They were told that they should have paid their own way, as they have as much responsibility to know the latest techniques as their elected officials.

In all three cases the question of punitive damages was brought up, and the responsibility was placed on the employee for not obtaining the necessary training to do the operation efficiently with the latest techniques.

Training makes leaders; and leaders are more likely to get promoted than survivors or followers. The great Henry Ford once said, "The best investment a man can make is in himself!"

The value of training -- PRICELESS!

The above article was prepared by Harry Blasco, Director of Public Works, Allentown, PA for Moving Forward, Pennsylvania Local Roads Program. ■

ROADS SCHOLAR

Certificate of Training

The New Hampshire Technology Transfer Center,

in cooperation with the University of New Hampshire and New England regional states affiliated with the Federal Highway Administration's Rural Technical Assistance Program,

Certifies that *John Road Agent Doe*
has satisfactorily completed 80 hours of training in local roads management skills

Dick Lemieux
Transportation Planner, Federal Highway Administration
John Andersson
Director, Technology Transfer Center

Jim Moore
Administrator, Bureau of Municipal Highways, NHDOT
February 28, 1988
Date

New Hampshire Roads Scholar Program For Municipalities

A low cost training program designed for non-engineers

The New Hampshire Technology Transfer Center at the University of New Hampshire is pleased to announce the New Hampshire Roads Scholar program for Municipalities.

The people who work in New Hampshire towns, villages, and cities in the roads and public works field are always looking for ways to do their job better and to improve their skills. Constraints on time and money have prevented many from taking the training they would like to have. The New Hampshire Roads Scholar Program for Municipalities will help to fulfill the desire for achieving a solid grounding in local roads management skills. Upon successfully completing the program requirements, the participants will receive a certificate and other recognition designating him or her a New Hampshire Roads Scholar. While this is not a degree program in technology, participants will have attended an excellent

basic program available nowhere else at such a low cost.

The instructors for each session will be first-rate and recognized as experts in their subjects. Each day will be lively, informative and of great practical benefit to the person and the community. Participants will receive many useful materials to supplement the classroom instruction.

The Roads Scholar Program for Municipalities should be of interest to any non-engineer who is a road commissioner, road foreman, public works person, town manager or selectman.

The cost per person for each day will be 20 dollars. Look for more information, brochures and registration forms in your mail.

Sorry. Each day is limited to 25 persons to insure maximum participation during each session. ■

This is a local roads Technical Newsletter. It is written for New Hampshire's town and city employees who are responsible for planning and managing low volume roads.



TECHNOLOGY TRANSFER CENTER (T²C)

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