



U.S. Department of Transportation
Federal Highway Administration

ROAD BUSINESS



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Above: From left to right are Jim County, Allen Lary, and Leon Lemoine. "We assessed the condition of Cannan's roads in one day."

On The Road In New Hampshire

Cannan, NH gets to the bottom of its road problems by examining the surface.

In June of this year, Allen Lary, Cannan's Road Agent, attended a road surface management seminar. He wasn't satisfied with just learning about it. He wanted to make it a reality in his own town. "I needed a way to come up with some good accurate figures to help plan for future road projects," Allen said. "Pavement Management seemed a good place to start."

The next step was to find a way to do the job for a low cost. This is when Allen thought about the University. He began talking to the Civil Engineering Department at UNH.

Would it be a good student project? Would it fit in with their studies? Would students be able to do the job? Would Cannan get a working pavement management system? The answers were yes.

On October 15th, the first step was made. It was not only a big step for Cannan but it was an example of a big cooperative effort. UNH coordinated activities. Bob Lyford, Highway System Manager for NHDOT, arranged for the use of the State's ARAN's truck (Automatic Road Analyzer) and supplied two expert technicians, Jim County and Leon Lemoine. Allen Lary pulled together all his straight line diagrams and set up the routes. The results showed the efforts. A complete road inventory and condition assessment for an entire town was completed in less than a day.

The job's not over yet. The data needs to be compiled, analyzed, and put into a workable form. Then, with the help of UNH faculty and students, Allen Lary will learn to operate a specially designed computer software program. I've never used a computer in my life" says Allen, "but it doesn't sound too difficult. I know it will give us the opportunity to run a good pavement management program without a lot of manpower and that's important to me. I'm convinced that pavement management can increase the quality of our roads here in Cannan." ■

A New Program Comes To New Hampshire

Statements from NH Division of FHWA, the Highway Commissioner and the Bureau of Municipal Highways.

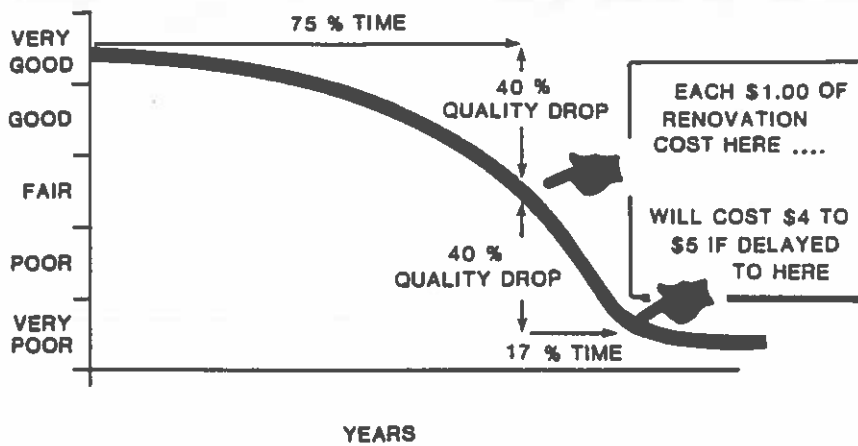
On behalf of the Federal Highway Administration, we welcome New Hampshire to the growing family of T2 Centers. There are now 42 Centers in the United States.

"T2" is merely a shorthand notation for the term "Technology Transfer". T2 Centers are one of several activities funded through the "Rural Technical Assistance Program", created by the Congress in 1981.

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Above: As the years increase, the PCI rating (measurement of the structural integrity and surface condition of a road) decreases dramatically and the cost of maintenance/rehabilitation increases.

Pavement Management: The Seven Big Questions

A concise explanation of pavement management and its benefits.

We've all been hearing a lot about this one. In fact, it's one of the latest and hottest highway topics across the nation. It's being talked about in small rural towns, large metropolitan cities, state DOT's, and FHWA. Everybody's talking, listening and reading about Pavement Management. But what is it? How does it work? What exactly is being managed? Why is it so popular? Who benefits? There are many questions to be answered. Let's look at some of them individually.

(1) What is Pavement Management? — It is an answer to a continually growing problem. In most towns and cities the individual responsible for the roads is running in leaps and bounds from one fire to another. He is trying desperately to maintain good roads, recondition some that are falling apart and others which may have failed. He is further frustrated by not being able to get what he believes is the necessary financing to properly approach the problem. Pavement Management is one approach to addressing these problems. It is a method for maintaining roads by systematically analyzing pavement life cycles, determining when to do maintenance, determining the best and most cost effective software, and then budgeting accordingly to prevent any major road deterioration.

(2) How does it work? — Pavement Management works like any other business operation. It's the development and implementation of a sound plan and it starts by analyzing the current position. If you

don't know where you stand, it's very hard to get to where you want to go. Just picture yourself in the woods with a map showing many pathways, but there's no mark on the map to show you where you are. It may be impossible to find a pathway out within your survival time. The same holds true with Pavement Management.

The first step is to inventory all roads to enable a systematic assessment of the road system's condition and any potential structural or material deterioration. This tells us where we are. The second step is to analyze all the information gathered and determine the best and most cost effective alternatives for meeting the maintenance and rehabilitation needs for each road. This tells us the different pathways we need to travel to reach our final goal (i.e. to maintain a road system within which all roads are in good condition). The third step is to prioritize when things are to be done by assessing the maintenance and rehabilitation needs along with costs and potential benefits. This shows us how the planning pathways will link together as we go from one project to another to reach our goal. The fourth step is to set up a 5-10 year LRBP (Long Range Business Plan) outlining budget and funding requirements. After modification and approval, this becomes the final "road map", or strategy, to our objective. The work then begins and the process starts over.

(3) What does it cost? — The most startling costs come from our new awareness. Pavement Management practices will enable us to review the present condition

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Avoid Icy Litigation

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

More and more law suits are being filed against our cities and towns. One way to provide a good defense is to have written policies. Listed below are 17 points to consider in writing a snow and ice control policy.

(1) Write it down: A written snow and ice control policy will be easier to use in defense of a municipality's actions than an unwritten policy.

(2) Put together a manual: If the policy or level of service is to be implemented by an operations manual, the manual should be referred to in the policy and made a part of it by reference.

(3) Document what is happening: A record system should be established by which the municipality can document that it complied with its level of service and the time that each component of the policy was completed.

(4) Your new policy should supersede all others: A written policy should state that it supersedes all previously issued documents and unwritten policies, on the subject.

(5) What you don't do is also policy: If a municipality does no snow or ice removal, salting, or sanding, that in itself is a policy and it should be formalized by resolution of the town or city governing body.

(6) Specify the timing of the policy: The written policy should state the specific time the policy is in effect and under what circumstances.

(7) State who should be notified of problems: The municipality should stipulate that the public works department or legal department or both are to receive accident reports and that there be coordination between the police, public works department, and legal department on actions taken to rectify snow and ice problems at problem locations.

(8) Spell out all exceptions: If the policy states under what circumstances the normal policy is superseded, all the relevant circumstances should be included in the statement.

(9) Develop decision making board: If the normal policy is superseded by a decision-making process, the decision should be made by agreement of as many people as practicable who are responsible for snow and ice removal functions, e.g., mayor/city (town) manager, police chief, public works director, etc.

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A New Program. . .
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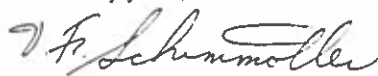
The program was intended to provide technical assistance for rural agencies having transportation responsibilities.

Local Highway agencies in the United States are responsible for the maintenance of approximately two thirds of the Nation's rural roads. The States and the Federal Highway Administration, on the other hand have historically conducted the lion's share of highway related research and development. In a nutshell, the T2 Center program is aimed at improving communications between these groups.

A key word here is "Communication". The Federal Highway Administration hopes communication, in this instance, means two way communication. We hope, (as you at the local level do) that this effort doesn't degenerate into a one way periodic listing of research reports — available for the asking. On the contrary. We see this as an ongoing dialog. Under the T2 Center concept, it is your responsibility at the local end to tell your T2 Center what you need and what you want in the way of information. The Center can best help those who ask for help.

We wish the University of New Hampshire much success. And we wish you, the users of the Center, much profit from the Center's activities during the coming year. Remember, it's your Center. Please use it!

Sincerely yours,



Vincent F. Schimmoller, P.E.
Division Administrator
Federal Highway Administration
New Hampshire Division

The Highway Commissioner:

The New Hampshire Department of Transportation welcomes the Technology Transfer Center to New Hampshire. The Center will provide local communities the opportunity to locate and use invaluable technical data in the transportation field at no cost to the community.

Only those communities who participate and use the available services will actually receive the full value of the program. I encourage all communities to contact the Center with questions, requests and/or input.

Its Bark Is Worse Than Its "Byte"

Computers made basic, by Dr. Dot.

Everywhere one looks there is something dealing with computers; cars, stoves, televisions, telephones and toys. They have invaded all aspects of our lives.

The problem is that while computers are usually very beneficial and have added significantly to our lives, they have also created much apprehension. Many people feel that computers actually control their lives. How many times have you heard someone complain about a computer error in their phone bill or that they were being treated like a number and not like a person?

Computers are nothing more than advanced calculators; boxes with lots of electronics inside. Their primary function is to perform repetitive and boring calculations. A computer can give a person extra time to do other things while it grinds away at the boring math. And, like

anything worthwhile, you can learn how to use it. With the proper skills, you can control a computer, make it do your bidding and not the reverse.

In the forthcoming newsletters we will provide a series of articles about computers. The purpose of this series will be to familiarize people with computers and their uses. We hope to remove the mystique and fear that computers and the computer industry have created. There will be articles explaining the different parts of a computer system, defining terminology, how to deal with computer sales people (alias used car salesmen), and reviews of highway related programs.

Do you have any specific questions about computers? We would be glad to assist you in finding out the answer. Just call us on our toll free number (1-800-423-0060) or write to the following address:

Technology Transfer Center
University of New Hampshire
Department of Civil Engineering
Transportation Research and
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Durham, NH 03824 ■

The success of the Center will be commensurate with the use by the Cities and Towns it was set-up to serve. I urge each of you to use the services provided by the Center and to cooperate with it fully so people of New Hampshire receive the maximum benefit from an improved transportation system.

Sincerely,



Wallace E. Stickney, P.E.
Commissioner
NH Dept. of Transportation

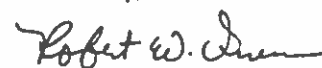
The Bureau of Municipal Highways:

Through a Rural Transportation Assistance Program grant for the Federal Highway Administration, the New Hampshire Department of Transportation has established a Technology Transfer Center to serve all New Hampshire cities and towns. The Center should be viewed as an extension of the services the Department has been providing each community on a limited basis. It will provide a "one stop" service where you can obtain up-to-date technical data you may need to better serve your community.

John A. Anderson as the Project's Director and Dr. Charles H. Goodspeed of U.N.H.'s Civil Engineering Department will be directing the Center. They are there to serve you, and I urge each community to take advantage of this service. The goal of the Center is to provide the information you want so your transportation network can best serve your community. The only way this program can be successful is for local officials to use the Center.

As the Department's coordinator of the Technology Transfer Center, I encourage anyone who has comments or suggestions on what the Center is doing or should be doing to help you to please let me know.

Sincerely,



Robert W. Greer
Administrator
Bureau of Municipal Highways ■

Standard Definitions For Seal Coats

Seven definitions outlining the construction procedures and materials used in seal coats.

It's always nice to talk the same language. It helps us communicate and share our thoughts and experiences. One thing which assists in this process is to maintain standard definitions. Among other things, they can be used to assist in discussing road surface maintenance treatments with individuals who may be less familiar with road terminology than we are.

■ **Seal Coat** — A thin liquified asphalt surface treatment used to waterproof and give it the texture of an asphalt wearing surface. Depending on the purpose, seal coats may or may not be covered with aggregate. The main types of seals are sand seals, slurry seals, fog seals, and aggregate seals, (the latter are sometimes referred to as chip seals or armor coats).

■ **Prime Coat** — A fairly heavy application (quantity wise) of a dilute or thin liquid asphalt of low viscosity to an unbound granular base like gravel. The objective being to penetrate the gravel an inch or two in depth thus water-proofing it and enhancing its structural strength properties. It also saturates the surface so asphalt in a subsequent liquid asphalt treatment will not be absorbed into the gravel. Rates vary (.30 to .50 gal/yd²) depending on the tightness of a gravel base or its capacity to absorb the asphalt.

■ **Fog Seal** — A light application of slow-setting emulsified asphalt diluted with water. It is used to renew old asphalt surfaces and seal small cracks and surface voids on open graded pavements. It must be applied with extreme caution so as not to create a slippery surface (its usage is rare in the northeast where dense, tight pavement surfaces are the most prevalent types). Application rates are light (0.10 to 0.15 gal/yd²) and sand blotter is recommended. It is intended to fill very small cracks and voids and adds little as a surface improvement.

■ **Sand Seal** — An application of a low viscosity or moderately diluted asphalt covered with fine, (sand gradation) aggregate. The low viscosity and sand combination is designed to fill many fine cracks on the existing surface. Application rates

are in the order of 0.18 to 0.25 gal/yd² with 18 to 25 lbs. of sand cover. This amounts to a new layer about 3/16 of an inch thick and is intended for lower volume roads.

■ **Slurry Seal** — A mixture of slow setting emulsified asphalt (cut-backs are never used), fine aggregate, mineral filler, and water. It is used to fill cracks in old pavements, restore a uniform surface texture and seal the surface to prevent moisture and air intrusion into the pavement. A single slurry seal applies 10-15 lbs/yd² of asphalt and aggregate for about 1/8". A double slurry seal yields about 25 lbs/yd² or a layer 3/16" to 1/4" in thickness.

■ **Single Surface Treatment** — A single application of liquified asphalt to any unpaved road surface followed by a single layer of aggregate of as uniform size as practicable. The thickness of the treatment is about the same as the maximum size of the aggregate particles. A single surface treatment is used as a wearing and waterproofing course. When it is applied to an existing paved surface it should technically be called an **AGGREGATE SEAL**.

Since the stone size aggregate looks like chips this kind of treatment is commonly called a **CHIP SEAL**. While 3/8" to 1/2" size stone is the most common used and yields about 35-45 lbs/yd² or 3/8 of an inch in thickness, some lighter applications using 3/16 to 5/16 size aggregates are used occasionally. The yield would, accordingly, be much less.

■ **Multiple Surface Treatment** — Two or more surface treatments placed one on the other. In its most common form, the maximum aggregate size of each successive treatment is usually one half that of the previous one. The total thickness is about the same as the nominal maximum size of aggregate particles of the first course. A double surface treatment (chip seal), ranges from 1/2" to 3/4" in thickness depending on the size of stone chosen. Total application coverage would be in the order of .40 to .65 gallons of asphalt and 45 to 75 lbs/yd² of aggregate.

The above information was reprinted, with permission, from R. H. Joubert of The Asphalt Institute. ■

Icy Litigation. . .

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(10) **Notify your public:** The policy should be communicated to local newspapers and radio and television stations so they may in turn inform the public about the level of service the municipality is applying.

(11) **Outline special practices:** If a municipality has followed practices such as not salting new concrete streets for one or two winters, or not removing snow piles at intersections or on medians until all snow routes have been completed, these practices should be spelled out in the policy.

(12) **Treat bridges specifically:** A municipality should consider including in its policy specific bridge deck frost and ice control procedures.

(13) **Set road clearing priorities:** A municipality should consider a policy based on road clearing priorities rather than tying the policy to specific time periods or specific snow depths that may or may not be meaningful in certain circumstances. This is best amplified in an Operations Manual.

(14) **Determine a means to verify events:** If a municipality adopts a level of service which is triggered by a natural event(s), a means of measuring, documenting, and recording that event should be established. As a suggestion, municipalities can use records published in local newspapers or broadcast by local TV or radio stations to establish or verify the weather conditions.

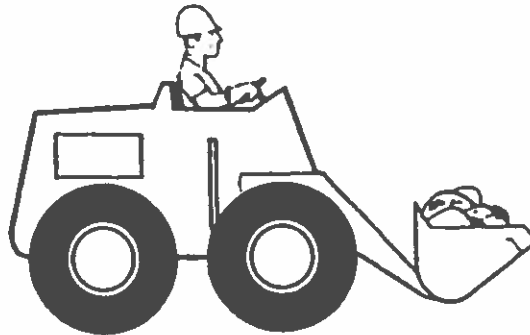
(15) **Be realistic:** A municipality should not adopt a policy which is so unrealistic it can't comply with that policy because of unusual circumstances.

(16) **Include complaint procedures:** A snow and ice control policy should include a standard complaint procedure, especially if complaints will result in a deviation from the normal policy. As a policy matter, it is desirable to identify who should receive complaints, the circumstances under which complaints call for deviation from the normal policy, and means for verifying complaints.

(17) **Document and spell out parking ordinances:** If a municipality has a specific restrictive parking ordinance to facilitate snow and ice removal which is initiated by an official announcement, the wording should be clear and concise, and an official record should be kept of its implementation and termination.

The above material was presented at the 1986 annual NHPWA meeting by L. David Minsk of the Cold Regions Research and Engineering Laboratory. ■

Front End Loader Safety



The front end loader is one of the most hazardous pieces of equipment that we use in road work. Fatalities involving the front end loader lead all other equipment used in the mineral industry. Statistics show that most accidents occur while the machine is backing up. Most fatalities occur when the unloaded machine is being driven at high speeds from one area to another. This is especially dangerous because the front end loader, when empty, tends to bounce and weave at high speeds. Downgrades are also particularly hazardous due to the increased problems in controlling the vehicle. Other hazards include collisions with other equipment while operating in congested areas, getting caught in pinch points of the bucket arms or articulated steering, and spilling of parts of the load on the operator or others working in the area.

1. Before starting the front end loader the operator should check the machine for safety factors, including tires, brakes, emergency brakes, hydraulic systems, steering, lights, and alarm systems. Use a checklist. If anything is wrong with the equipment it should be reported. Do not start the machine if it is not in safe condition!
2. The operator should wear the proper protective equipment for the job: safety hat, shoes, and glasses, and any other equipment needed for the specific job.
3. Before starting the machine the operator should make a thorough check of the area around the machine to be sure that the area is clear for movement.
4. No riders other than the operator should ever be allowed on the machine.
5. The operator should move the equipment very cautiously, especially in congested areas. When backing, the operator must have a clear field of vision and signal by horn or other device so that others in the area will know what he is doing.
6. While driving the machine, the operator should consider road conditions, weather, traffic, and grade. The loader should be moved at a speed slow enough to insure total operator control at all times.
7. When working near embankments or on grades, edges must be guarded by riprap, barricades, berms, or other suitable means to lessen the possibility of running off the edge. The loader speed should be regulated to a minimum, the engine should be engaged, and the transmission should be in low range.
8. In loading a truck, load from the driver's side whenever possible. The loader must know where the driver is at all times and traffic patterns for the area must be known and followed.
9. On leaving the cab, the bucket must be grounded and the machine shut down and locked to prevent any use by unauthorized persons.

The preceding article was excerpted from Transportation Information Exchange News, issue 7, July 1984, Winooski, Vermont.

These safety tips have been provided to you
by your New Hampshire Technology Transfer Center

-- Please post for employees to read --

Technology Transfer Center, The University of New Hampshire, Dept. of Civil Engineering,
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Pavement Management. . .
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of our roads and what to expect one and two years into the future. We will become aware of the monies required for complete maintenance and rehabilitation of the total road network. Most importantly, we will be able to determine the most economic manner in which to spend our monies (find the most affordable path).

There are many ways to go about implementing a Pavement Management System and the costs are directly related to the intricacy of the system. A town may, or may not, wish to hire a consultant. They may, or may not, decide to invest in a small computer to assist in analyzing all the data being collected. Yet, no matter how elaborate or simplistic the program, it is worth investing the time to begin some form of Road Surface Management.

(4) Who's the manager? — An individual such as the Road Agent, Highway Superintendent, Town Engineer or Public Works Director is the front line manager. This person must be allowed to play a key role when it comes to planning and implementing a Pavement Management program. It is their keen knowledge, their ability to acquire new information for solving new problems and their creativeness which supplies the ingredients necessary to build a strong base for such a program. The Selectmen, Town Managers, and other local government personnel serve as the behind the scenes second line managers. They are the financial controllers. A good Pavement Management System demands a cooperative effort from all involved parties.

(5) What exactly is being managed? — The bottom line is simple. Pavement Management manages both time and money. It tells us the best way we should spend our money and it tells us the best way we should spend our time. Pavement Management looks at the service life of each road (time) and the most cost effective way to maintain it (money). If we can manage this. . . we will have managed well!

(6) Why is it so popular? — Because it works. It is said that 90% of any problem is being aware of it. Pavement Management not only makes everyone aware of a situation but it supplies an approach as well. It may be a long term plan, but it's something we can hold in our hand, implement and evaluate.

(7) Who benefits? — The nice thing about Pavement Management is that it has benefits for everyone. First, it involves more than just one person or department. An integrated management team is required for the system to work. This in turn builds important communications and mutual interest. Second, it provides a consistent and effective procedure for relating pavement performance to specific maintenance

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Pavement Maintenance Treatments

Pavement treatments from a cost-effective point of view.

The purpose of this article is to quantify and estimate the life of various treatments commonly used to maintain roads in New England. These include sprayed on seals, cold mixes and hot mixes. (For more information on seal coats in terms of construction procedure and materials used, refer to the article in this newsletter entitled "Standard Definitions for Seal Coats").

There are numerous variables that can significantly effect durability or performance of maintenance treatments. TRAFFIC, DRAINAGE, EXISTING ROAD CONDITION AND STRUCTURAL CAPACITY (quality and thickness of original construction), QUALITY OF SURFACE TREATMENT, and of course, ENVIRONMENTAL FACTORS (degree of frost and winter elements) just to mention a few. These conditions are reflected in the estimates of service lives to be discussed in this article. Although it would not be uncommon for an application to fall outside these estimate ranges, yielding a longer or shorter life depending on how favorable or unfavorable the conditions actually are, some basic rules of thumb have been found to hold true. These rules can provide us with some good hints when it comes to evaluating the most cost effective treatment.

Before taking a look at specific treatment methods there is one general rule of thumb to remember. Loss of crown, excessive rutting in the wheel paths or anything that ponds water on the surface will

greatly affect service life and performance. Liquid asphalt seal coats are usually thin uniform layers and do not correct for this without preleveling to restore the crown and provide good surface drainage.

Below is a quick reference guide with comments on performances, advantages and disadvantages of six maintenance treatments:

■ Sand Seal — Yields a thickness about $3/16"$ thick at about 18-25 pounds per square yard. . . Generally this has the lowest initial cost compared to other seal coating applications. It seals only and does not add structural strength. It does not level, smooth or correct crown significantly unless preleveling is done first. Application is dusty and best restricted to low volume low speed roads. The average service life is 3-6 years. The main advantage is that it can be done with local labor and sometimes local aggregate. The manhole or watergate castings are not generally adjusted.

■ Slurry Seal — A single coat $1/8"$ thick = 12 pounds per square yard. A double coat $1/4"$ thick = 25 pounds per square yard. . . A slurry seal coat must be applied by a specialty contractor which results in a moderate to higher initial cost. The main advantages are that it's a quicker, neater application, and manhole castings generally do not need adjustment. It should be applied in good, low humidity weather. The average life for a single coat is 3-5 years. A double application is 5-8 years. A slurry seal provides a smooth tight surface similar to hot mix. It is good for low and moderate volume roads. But it is not recommended for high speed roads.

■ Aggregate or Chip Seals — A $3/8"$ thick seal uses $3/8"$ to $1/2"$ chips at 33 to 45 pounds per square yard. A $1/4"$ thick

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Below: Routine pavement maintenance treatments categorized by treatment type, ranked in order of general treatment cost, and matched to average road volume (traffic volume).

TREATMENTS IN ORDER OF COST	AVERAGE ROAD				
	LOW	MED-LOW	MEDIUM	MED-HIGH	HIGH
\$ Sand Seal	X				
Slurry Seal	X	X			
Chip Seal	X	X	X		
Cold Mix	X	X	X		
Thin Hot Mix (Sand mixes)	X	X	X	X	
Thick Hot Mix (Asphalt concrete)	X	X	X	X	X
\$\$					

NOTE: The above is appropriate as a general guideline only. At all times it is recommended that local practices and experience be taken into consideration.

Maintenance Treatments. . .

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seal uses 3/16" to 5/16" chips at 25 to 35 pounds per square yard. . . Chip seals have a low to moderate initial cost depending on how much local labor and aggregate sources are available. The manhole castings are generally not adjusted and a good chip seal provides excellent skid resistance and can provide attractive color by choice of stone. The average life is 5 to 8 years and works well for moderate volume roads. Exceptionally good ones have gone much longer. The 3/8" - 1/2" chip seal is the most common seal coat treatment used in New England.

■ **Thick Hot Mix** — 165 pounds per square yard to 220 pounds per square yard is general coverage for a 1 1/2" to 2" thickness. . . Hot Mix or Asphalt Concrete is a high quality, thoroughly controlled hot mixture of asphalt cement that is well graded, has a high quality aggregate and is thoroughly compacted into a uniform dense mass. This thick overlay not only seals but adds significant structural improvement often doubling or tripling capacity (depending on existing thickness). It seals, smoothes the ride and corrects crown and drainage features substantially. Extra rough roads may require pre-leveling in applying a 1 1/2" overlay. It is the highest form of maintenance and upgrading treatment for low volume roads and is the most expensive of all the treatments listed here. Thick hot mix is probably the most common rehabilitation treatment used in New England. It has an average life of 15-20 years on high volume roads and longer on lower volume roads.

■ **Thin Hot Mix Overlay** — 55 to 110 pounds per square yard is general coverage for a 1/2" to 1" thickness. . . Thin hot mix overlays (sandy type mixes less than 1" thick) are of a finer graded aggregate than normally used in the thicker type mix. Also, they are considered as sealing treatments primarily and not structural improvements. They smooth the surface quite well, yet, very rough surfaces need to be pre-leveled or the mix will apply poorly and the mat will have to be thickened. Thinner treatments can be used on lower volume roads in better shape, while thicker treatments are recommended on higher volume roads and rougher surfaces. Multiple treatments, if applied in timely stages, can add strength. However, care must be taken that these relatively stiff treatments are not put on roads in need of significant structural upgrading as large deflections will cause the surface to crack. The average life is 6-12 years.

■ **Cold Mix Overlays and Maintenance Applications** — Quantity applications of Cold Mix are similar to the Hot Mix applications noted except they are not recommended for use in thin layers as an exposed surface. . . Asphalt mixes that use

liquified cutback and emulsified asphalts so they can be mixed cold, either through plant or on the grade using graders or travel mixers, are often called maintenance mix, stockpile mix, cold mix or a combination of all three. Cold mix is less costly than hot mix since local labor and aggregate can be used. Due to the fact that cold mixes use cutbacks or emulsions, they are not considered as high a type of pavement material as hot mix asphalt concrete. Cold mix durability, in particular its ability to seal, (most cold mix can be used to level and strengthen) is difficult to predict as precisely as hot mix. Most cold mix is sealed with a seal coat before or immediately following one winter. Exceptions exist and local experience and practice must be consulted.

The information for this article was obtained, edited and printed with permission from R. H. Joubert of The Asphalt Institute. ■

Did You Know?

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

Would you like to save money on the new tires, chain or truck you have to purchase? Now you can.

The state of New Hampshire has a list of vendors they currently purchase goods and services from. Any NH governmental body is entitled to take advantage of possible discounts set up for the State.

Your town may already have a list of these vendors. If not, you can get a list from the New Hampshire Municipal Association by calling 1-800-852-3358.

Just one of NHMA's many fine services is acquiring updated vendor information from the state and distributing it to their members. Most likely, your town is already an NHMA member, if not, you can get more information about NHMA by calling their toll free number, 1-800-852-3358. ■

Comments?

Questions?

Suggestions?

Call us on our toll free number.
We want to hear what you have to say! This is a program for you.

1-800-423-0060

Pavement Management. . .

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and rehabilitation treatments and costs (the reader is referred to the pavement deterioration/rehabilitation relationship graph and the pavement maintenance treatments article in this Newsletter). Third, it allows for a logical approach to budgeting, therefore, minimizing the amount of guess work and "gut feel" involved. Fourth, it provides an avenue for communicating needs to an elected body in a logical and concise manner so that the decision makers will be able to reasonably predict the outcome of their decisions. Fifth, it makes it easier to handle problems identified by citizens. When a citizen can be told what is being planned to correct the problem and how a specific road fits into the overall needs of the community, further complications are quickly diffused. Sixth, and most important, it allows for priorities and needs to be defined so that the best results can be achieved with the monies that are available. In other words, the "greatest bang for the buck".

If you would like to know more about Pavement Management, please contact the Technology Transfer Center by calling toll free, 1-800-423-0060. ■

Center For Microcomputers In Transportation Opens Up

A transportation software and source book is now available.

The Federal Highway Administration (FHWA) has announced the opening of its new microcomputer user support center, effective July 14, 1986. The new service is called the Center for Microcomputers in Transportation (McTrans).

The primary purpose of McTrans is to serve as a center of technology exchange for microcomputer software in the areas of transportation under the purview of the Federal Highway Administration.

The Center will distribute public domain software at a minimal cost to the user. In addition, it will provide technical assistance in the use of the software. McTrans will have a diverse team of engineers who are experts in all areas of highway transportation and have extensive experience in micro-computer applications. The support staff will include specialists in the areas of traffic engineering, hydraulics, construction management, rural and urban planning, pavements, safety and highway design among others.

One publication now available through

McTrans is the latest version of the *Microcomputers in Transportation Software and Source Book*. This publication contains about 200 descriptions of microcomputer software packages along with their sources (these sources include public and private agencies alike).

The Software and Source Book (product # MTPS86) is available FREE from the McTrans Center. A mailing fee of \$1.75 (\$5.00 outside U.S.), plus 25 cents (\$1.00 foreign) per copy is required.

Persons wishing to order this book, or wishing to be put on the mailing list for the McTrans newsletter (which will include notices of available software), should write to:

The Center for Microcomputers
in Transportation
University of Florida
346 Weil Hall
Gainesville, Florida 32611
(904) 392-0378

or contact the NH Technology Transfer Center at the University of New Hampshire (1-800-423-0060). ■

Calendar Of Events

- Transportation Research Board (TRB) meeting
January 12-16, 1987; Washington, DC
- International Construction Equipment Exposition
February 21-26, 1987; Las Vegas, NV
- Fourth International Conference on Low-Volume Roads: TRB
August 16-20, 1987; Ithaca, NY
- Second North American Conference on Managing Pavements: FHWA, MTC, AASHTO, TRB, SHRP, IRF, CIDA, RTAC
Nov. 2-6, 1987; Toronto, Canada

**Further information on up-coming conferences, meetings, and training programs (on the local, state, national, and international level) will be provided to you, via newsletter or special mailing, as it becomes available.

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Give us the information and we'll print it in our next issue. Send your ad to:

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University of New Hampshire
Department of Civil Engineering
Durham, NH 03824

or

Call us toll free at 1-800-423-0060



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**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.**