

Technology for

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Geotextiles in Alaska: An Improving Technology

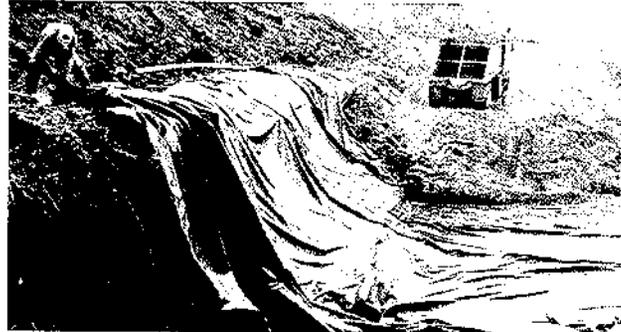
As with almost any new technology, the record of geotextiles in Alaska is a mixture of successes and failures. However, with more than four million square yards of geotextiles installed in road embankments between 1978 and 1989, improved designs seem to be

having their desired effect. Four examples of Alaskan geotextile successes are described by Matt Reckard, DOT&PF engineer.

Reckard says that geotextiles have been widely used in Alaska to deal

with a standard problem everywhere, the separation of fines from gravels. He cited an up-grade of Dawson Road in the North Pole area. The thin, narrow road

through black spruce bogs was slated for increased depth and widening. The heavy construction equipment, though, forced mud



Geotextile Project - Farmers Loop

up through the old gravel road until the "pumping" was halted with a geotextile.

A portion of the Tok Cutoff was rebuilt in 1989 to remedy a long-

(continued on page 2)

Are European Highways Better Than Ours? Does It Matter?

Strategic Highway Research Program (SHRP) staff assembled a U.S. delegation that toured six European countries in September 1990. They represented the federal government, state governments, industry, and various organizations. The perhaps surprising consensus of the group was that European highways, especially pavements, are better!

Wayne Muri, Chief Engineer of the Missouri Highway and Transporta-

tion Department says "...they invest far more in their highways. They have better technology and it is implemented more rapidly. And the emphasis is on quality and effectiveness, rather than efficiency." Mr. Muri goes on to say "the European public is conditioned to expect a quality highway system, and they expect to pay for it."

(continued on page 3)

Geotextiles in Alaska (continued from page 1)

itudinal crack problem. This road passes through some notoriously difficult permafrost bog terrain. Previous geotextile use for separation had permitted building a new alignment without subcuts, but a secondary goal, long-term road surface improvement, hadn't worked. In fact, three bituminous surface treatments were applied in less than a year to sections where the thawing permafrost "became so sloppy that you needed hip boots to walk around." The design called for a geogrid underlain by a fabric. This was laid about a foot below the surface to prevent top course material from filtering down into cracks that would develop in the subgrade. So far, it's worked; the repairs have been relatively minor.

A large permafrost fill section between Nenana and Fairbanks on the Parks Highway has a long history of sidebank slumping. After initial failures using insulation, air ducts and snow sheds, a redesign has worked for almost 5 years. During a rebuild, a geotextile spread on the ground sur-

face was covered with fill material and the edges lapped over the fill to form a "geotextile mattress"; another geotextile layer was spread on that, covered with fill, and the edges



Geotextile Project - Farmers Loop

lapped up and over. This was repeated until there were 8 "mattresses", then the surface course was applied. According to Reckard, "We still get dips, but not the big, open cracks." The next problem areas tar-

geted for this remedy are Farmers Loop Road in Fairbanks and Tenderfoot Flats, between Fairbanks and Delta.

Finally, a novel idea for geotextiles is being evaluated at a bridge site. With a nod to Wyoming DOT, from whom the Alaska DOT&PF got the idea, the Juneau office is testing a modified form of the "geotextile mattress" in one lane next to a concrete bridge abutment. They're trying to avoid the development of THE BUMP, the lip that forms at the bridge edge as the fill material behind the abutment settles and as the abutments, without fill on the river side, lean slightly towards the river. The fabric was spread, filled, and the end next to the abutment was folded up and over the fill. This was repeated until they had the right ramp depth. The jury's still out, but it looks good.

In line with our improving history, geotextiles in Alaska seem to logically meet a need, and we're going to see continued use throughout the state.

Cost-Effectiveness of Geotextiles, Review of Performance in Alaskan Roads, FHWA-AK-RD-90-04, by Matthew Reckard; with assistance from Matthew Reckard.

News & Views

704 Alaskan CDLs Issued

As of the end of March, 1991, 704 Commercial Driver's Licenses had been issued in Alaska. One DMV source commented that heavy-duty vehicle drivers are tending to do a little better on the CDL written test than Class D (light-duty vehicle) drivers do on theirs. Many of our experienced Alaskan drivers are taking advantage of this time before April 1, 1992, to use the skills-test waiver to obtain a CDL without having to take a road test.

McTrans Announces McPrimer!

The University of Florida's Transportation Research Center announces the release of its 150 page primer which is accompanied by a tutorial disk covering introductory PC topics. See insert for more info.

Trucking Company Fined for Drug Violation

The Federal Highway Administration (FHWA) has fined an interstate trucking company \$15,000 for knowingly permitting a driver to operate a truck after he tested positive on a pre-employment drug test.

The action is the first civil penalty levied by the FHWA under the drug regulations, which went into effect December 1989. It was imposed on the Action Express, Inc. motor carrier of Boise, Idaho. Secretary of Transportation Samuel Skinner announced the fine, saying "the department is serious about enforcing its anti-drug regulations in the interest of the safety of all people who use the highways. This company showed a willful disregard for good safety practices when it let a person drive after being informed that the person's pre-employment drug test was positive. This just simply cannot be allowed."

Under the FHWA regs, a driver is considered medically unqualified to



News & Views continued

drive after testing positive for marijuana, cocaine, opiates, amphetamines or phencyclidine (PCP). The driver must be medically recertified as being drug free before driving privileges are reinstated. The FHWA drug regulation originally called for random and some post-accident testing, but that regulation was suspended by a court injunction, which is now under appeal.

From *The AASHTO Journal*, 7 September 1990.

The American Association of State Highway Officials (AASHTO) Executive Director Francis Francois concluded that a 40-year pavement design life as opposed to the 20 years used in much of the U.S. was a major factor. He also pointed out that concerns about noise reduction and skid resistance dominate the timing and selection of surface treatments to a far greater extent than in the United States. One of Mr. Francois' greatest concerns was that European governments provide much more support to highway research than does the U.S. Even hot-mix contractors do more research than their U.S. counterparts.

Both Messrs. Muri and Francois remarked on the close cooperation between government and industry in European highway construction. Mr. Francois pointed out a "downside" in the concentration of European highway construction in fewer but larger companies. These companies may have overlapping ownership and sometimes partial government ownership. The result is less competition and, therefore, higher construction costs than in the U.S. Such apparent conflicts of interest would in all probability be illegal in the U.S.

Differences in the U.S. and European approach to contractual arrangements were also noted. One of these included an emphasis on results rather than on the procedures of construction. Another was a frequent requirement that contractors guarantee their work, sometimes for up to five years. Such approaches provide contractors with a profit-driven incentive to develop and use new technologies. The contracting procedures are flexible enough to permit contractors to frequently use their own designs.

Damian Kulash, Executive Director of SHRP, felt "that several European asphalt mix designs, modifications, and laboratory techniques could constitute valuable innovations for the United States." One of these innovations is stone mastic asphalt. Several European countries have demonstrated excellent performance from this binder-rich mix that uses gap-graded, hard aggregates with a fiber modification to maintain a thick binder coating. In addition,

A Humorless Situation: Keep Your Bridge Decks From Cracking Up

How are the bridge decks in your area? A standard problem for decks is corrosion of the reinforcing steel. Weathering and wear-and-tear start small cracks in the concrete, allowing water and air to come into contact with the steel, which rusts. Rust occupies a larger volume than the original steel (much like ice has a larger volume than water), and, since concrete can't expand, it cracks. Water and air have greater access through these larger breaks. In addition, the rust that's already there acts as a catalyst, so the steel rusts even faster, cracking the concrete further until the deck is in poor shape.

The rusting process can be stopped by connecting the rebar to another material that gives up its molecular electrons more easily than iron, forcing the steel to act like a cathode, instead of an anode, in an electrolytic cell. This is the basis for impressed current cathodic protection (CP) systems. For the big "electrolytic cells" in which we're interested (bridge decks), these can take the form of electrically conductive polymer concrete overlays. However, the combination of good cathodic protection plus a skid- and water-resistant surface has been elusive, until now.

FHWA recently studied an overlay that not only distributed the current across the bridge deck surface, it was also skid-resistant. A test installation on a highly deteriorated bridge that was actively corroding arrested the corrosion process. Over the 18-

month study period the rectifier remained very stable, delivering a constant present current to the CP system the whole time. The low voltage that was required meant a high efficiency.

Bond strength measurements showed that the overlay bonded well to the underneath concrete, and skid tests done with both bald and threaded tires more than exceeded minimum standards in Virginia, the site of the study.

Installation included bridge deck evaluation, traffic control, cleaning of the deck surface, installation of the conductive overlay, and design and installation of the CP system. The costs for the Virginia project came to \$17.79 per square foot, but that will vary with location and size of the bridge deck.

FHWA rightfully points out that, although these results are encouraging, it's really not possible to predict a 15- or 20-year performance from an 18-month test. They'd like to see results from a bridge that has corroding reinforcing steel but with the deck still in sound condition.

Right now your Alaska T2 Program has only a Technical Summary of the study, and we're trying to get the entire report. Call us if you're interested and want to learn more.

"Electrically Conductive Polymer Concrete Overlay as Secondary Anode for Cathodic Protection", FHWA-RD-90-005.



some of the porous or "drainable" European asphalt mixes seem to incorporate innovative features not found in similar U.S. mixes.

Mr. Kulash is working with the participants in the tour, industry associations, and the FHWA to plan demonstration projects to promote the implementation of some of the European practices in this country.

The second part of the title asks "Does It Matter?" if European high-

ways are better than ours. Wayne Muri provided a concise answer: "We are entering an era of brutal economic competition in the international marketplace. Europe's superior four-lane road system gives them a competitive edge in moving goods economically. And the unified European Economic Community will outpace the U.S. come 1992."

Adapted from The Virginia Eclectic, April 1991.

The Alaska Transportation Technology Transfer (T2) Program is a cooperative effort between the Alaska Department of Transportation and Public Facilities (DOT&PF) and the University of Alaska Fairbanks (UAF) Institute of Northern Engineering. This program is funded by the Federal Highway Administration and the Alaska DOT&PF.

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Dr. Thomas C. Kinney, Associate Professor, UAF Department of Civil Engineering

No. 21

Embryonic geosynthetics first hit the scene over 4000 years ago. That's when Babylonians copied the birds and beavers' concept of using foreign materials to strengthen earthen structures. Since then, adobe structures, reed reinforced paths, and corduroy roads have been part of several cultures. Fabrics were introduced in the 1940s with a few isolated uses of jute matting to control erosion, assist in drainage, reinforce embankments, and stabilize roadbeds over very soft subgrades. The advent of plastics has made fabrics more versatile and longer lasting.

Modern geosynthetics started with the wholesale marketing of "filter fabric" in the late 1960s. Enthusiastic salesmen desperately needed new markets for carpet backing and upholstery materials because of a decline in the housing industry. Most materials were needle-punched, nonwoven fabrics resembling felt. Initially marketed to be used in drainage structures to keep fines from migrating into the drainage medium, they came to be known as "filter fabrics".

By the early '70s, people began to experiment with nonwoven and woven fabrics in reinforcement and erosion control applications. By the late '70s, manufacturers were creating fabrics specifically for sale to the geotechnical industry.

Until the mid '70s, nearly all design was being done for contractors by fabric salesmen who had little research and/or engineering input. In the late '70s the engineering and scientific community joined the fabric industry to develop material properties and

design techniques. In 1982, the American Society for Testing and Materials (ASTM) formed D35, the first dual designation committee within the organization, and they coined the term "geotextile" very early on. D35 reflected the interests and influence of both the fabric (geotextile) industry and geotechnical engineering, and now meets with the geotechnical committee.

One of D35's first duties was to establish terminology...geogrid, geodrain, geonet, geocomposite, etc. Geosynthetic is the general term for all geostuffs.

In the early 1980s, a proliferation of products was designed specifically for use in earth structures. At the same time, ASTM developed an impressive array of standardized test methods for the new products. Manufacturers are now in a position to produce materials with virtually any properties the designer desires. Some products are more expensive than others, but the possibilities are essentially limitless.

In the late '70s and the early '80s, manufacturers approached the industry with gusto. They started extensive market research supported by quality design research. The products, uses, and technology grew rapidly—in fact, exponentially. Sales grew so fast that they attracted the oil industry's attention, since plastics are predominantly petroleum products and the growth curves showed tremendous profit potential. Oil companies started price wars that destroyed the profit margin, killing most of the research and essential-

ly stopping the technology's growth.

From 1985 to 1988, the State of Alaska and the University of Alaska Fairbanks were leaders in geosynthetic research. Although limited research still occurs, there are many unanswered questions regarding some basic applications.

So where are we today? Many of the numerous geosynthetics applications used in the transportation industry have well developed design criteria and prove to be cost effective. Others are cost effective but have no well developed design criteria. Finally, some are simply not cost effective.

Geosynthetics can perform three basic functions:

- 1) separation, filtration, and drainage
- 2) reinforcement
- 3) erosion control

Separation may be between fine-grained and coarse-grained soils. For example, geotextiles can be folded around rock in a French drain and around perforated pipes in a pipe drain. They can keep the fines from being washed out from behind riprap, and they can keep fine-grained subgrade soils from contaminating clean base course materials. Geomembranes, such as pond liners, fall in this category, as do those used to make concrete forms and sand bags. Design procedures are fairly well established, and the applications have proven effectiveness.

Filtration is an interesting term. It has been used extensively in the geosynthetic industry to mean the prevention of fine-grained soil migration into drainage systems.

A filter is something that takes particulate matter out of a solution, such as dirt out of gas or dirt out of air. The term was initially used to mean taking fines out of the groundwater as it passed into the drainage system. However, filters collect fines and therefore have to

Fabric Prevents Muddy Road

A 250' stretch of particularly muddy dirt road near Shutesbury, MA, wasn't muddy this spring, despite warm weather and rain. Last September, a three-person crew scraped the road to a depth of 12", laid out 300' of polypropylene fabric in overlapping strips, then covered it with 12" of gravel. Says the local highway superintendent: "It worked fine."

Adapted from MASS Interchange, Spring 1990.

be replaced periodically or they were not needed in the first place. The function of a geosynthetic in drainage is either to keep the soil particles from moving or to provide for water flow within the plane of the fabric. The design criteria and construction procedures for both are well developed. The first use is really separation, and its success depends as much upon construction procedures as on the correct choice of materials. Geosynthetics are used as a filter in a silt fence. The trick is to design the system to be self-cleaning.

Reinforcement, the second basic function, is cost effective in many applications. Although design procedures are available, they are frequently not fully developed in terms of sophistication, accuracy, or reliability. Geosynthetics used for retaining walls and stabilization

of steepened slopes are economically very advantageous, and design procedures are well developed. All indications are that the design procedures are very conservative. Since the geosynthetic cost is a small part of the total project cost, even conservative design procedures don't lead to large additional costs. In Alaska, geosynthetics have been used to reinforce embankments to limit settlement damage. (See "Geotextiles in Alaska", this issue).

You'll also find them used for reinforcement in the subgrade and base course materials. There are many design procedures on the market, and there is considerable evidence that the concept is viable and economically advantageous. There are, however, inconsistencies in design procedures and conflicting evidence in literature as to why, how, and how well the concept works. The basic problem stems from the fact that, in order to have reinforcement, the geosynthetic must carry some stress, and in order for it to carry significant stress, it must undergo significant strain. In most of our applications, significant strain would be interpreted as complete failure of the system. In spite of this inconsistency, the concept works. We just have to figure out why, then develop good design procedures that can be used for economic analysis.

Geosynthetics are frequently used for erosion control, the third basic function. There are several materials on the market for this purpose. In general, they are porous enough to allow plants to grow through them and thick enough to prevent flowing water

from eroding the underlying soil. The design procedures are largely empirical but effective.

There are a host of other uses for geosynthetics in the transportation industry, such as the use of impregnated nonwoven geotextiles in, or under, pavement overlays. At one time the concept was that the material acted as a bonding agent and a cushion, creating reinforcement and preventing reflective cracking. Today those aspects are downplayed, and the thrust is put on waterproofing aspects after cracking has occurred.

Building in a Wetland

Virginia DOT resorted to geotextiles to control sedimentation while building a parallel lane across a densely vegetated, totally inundated wetland. Before placing fill, a woven geotextile fabric was rolled out wide enough to extend beyond each side of the proposed road prism. There was no demucking; the fabric was placed directly over the aquatic plants, with only large shrubs and small trees requiring cutting. A temporary silt fence marked construction zone boundaries. Fill placed along each edge of the geotextile weighed down the material. Next, the central space was infilled. When it reached subgrade elevation, the side slopes were immediately seeded, then blanketed with another geotextile fabric, this one an excelsior-type soil retention blanket. The fill, with the exception of the riding surface, was essentially encapsulated.

For more information, call Robert Pickett (804/899-4209).

Adapted from the Virginia Eclectic, January 1991.

For More Information

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by Billy Connor

What kind of computer should I buy? That's a question I'm continuously asked. My answer: It all depends. Before you know what kind of computer to buy, you need to ask yourself how you plan to use it. The size and configuration will then be based on those answers. The next few articles in future issues of *Technology for Alaskan Transportation* will lead you through the thought process of selecting a new computer or upgrading your present system.

Before we begin looking at hardware (the computer equipment), let's analyze your computing needs. On the back of this page, I have included a questionnaire — a checklist of sorts — for you to fill out. Be honest and keep an eye toward the future. The intent is to find as good a fit with your computer as you would with your clothes. If you are buying or upgrading machines for several users, the questionnaire should be filled out for each person.

While you're thinking about answers to the questions on the checklist, let's introduce you to the parts of the computer. Every computer is comprised of five basic parts:

1. The Central Processing Unit (CPU)
2. Memory
3. Storage media
4. Input devices
5. Output devices

The Central Processing Unit (CPU)

The CPU is the brains of the computer. It controls what the machine does and when it does it. For example, when you type on the keyboard, the CPU controls what happens to that data. When you ask the computer to add two numbers, the CPU does that. Because the CPU either controls or does the work, it also controls the speed and processing power of the machine. In many respects, the CPU is the ideal boss. It not only directs all of the work, but also does all of the hard stuff. We will discuss this further in future editions.

Memory

Many people confuse memory and disk space. A computer's memory is a temporary storage area for data. When you turn the computer off, it loses whatever is in memory. That's kind of like my kids. They forget whatever turns them off. The CPU writes information in memory until it needs it. Depending upon the software program, that could be immediately or hours later.

Storage Media

Computing systems require long-term storage of information. There are a variety of ways this is done. The most common storage devices on desktop computers are the floppy disk and the hard drive. Other media include 9 track tape, tape cartridges, and compact disk (CD's). Each has its use.

Input Devices

Input devices allow data to be entered into the computer. Examples of input devices are the keyboard, a mouse, bar code readers, and telephone modems. Floppy drives and hard drives are also used as an input media.

Output Devices

Output devices are used to extract data from the computer for human use or to transfer data to other computers. Examples of output devices are monitors, printers, modems, and even disk drives.

Putting It All Together

Each of these parts work in concert to produce a useful tool. Today, you can separately select each of the five components that provide just the right total machine for your needs. Filling out the questionnaire will help you select each part.

The next issue will discuss how to select the right CPU and the amount of memory you need. The following issue will address how to select the most useful storage media, and input and output devices. After that, we'll explore how to select the right vendor.

COMPUTER SELECTION QUESTIONNAIRE

Check the column that indicates how often during a week you use the software listed. The next issue of *Scrambled Disks and Fried Drives* will provide a key that denotes the size of computer you need, based on the boxes you've checked.

SOFTWARE	AMOUNT OF USE				MINIMUM DISK SPACE (MB)	
	N	S	O	F	SOFTWARE	DATA
Word Processing					10	10
Desktop Publishing					10	20
Spread Sheets					10	10
Database					7	5
Computer Aided Design					15	40
Accounting (1)					15	15
Engineering Software (1)					20	20
Windows					20	10
DOS					2	-
OS/2					4	-

KEY: N=NEVER, S=SELDOM, O=OCCASIONALLY, AND F=FREQUENTLY

(1) These softwares vary in requirements. After selecting the software you intend to use, change the disk space requirements according to the vendor's requirements.

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Place a check by the publications you wish to borrow.

- ___ **Alternative Analysis of X-Ramp and Diamond Ramp Designs**, ID-699, Texas Transportation Institute, State Department of Highways and Public Transportation, Cooperative Research, PB87-169546, 49pp.
- ___ **Application of Analysis Tools to Evaluate the Travel Impact of Highway Reconstruction with Emphasis on Microcomputer Applications**, ID-690, NTIS, PB89-187181, June 1988, 166pp.
- ___ **Asphalt PASER Manual: Pavement Surface Evaluation and Rating**, ID-684, Transportation Information Center, University of Wisconsin-Madison, 39pp.
- ___ **Briefs of Research Problem Statements Considered by the AASHTO Select Committee On Research for the FY 1991 Program of the NCHRP**, ID-692, October 1989, 50pp.
- ___ **Concrete PASER Manual: Pavement Surface Evaluation and Rating**, ID-683, Transportation Information Center, University of Wisconsin-Madison, 48pp.
- ___ **Demand Responsive Approach to Highway Maintenance and Rehabilitation: Volume I-Development of Concepts and Examples**, ID-689, DOT Washington D.C., NTIS, PB87-156816, ___ **Gravel PASER Manual: Pavement Surface Evaluation and Rating**, ID-682, Transportation Information Center, University of Wisconsin-Madison, 32pp.
- ___ **Expandable Membrane Ground Anchors in Talus**, ID-702, #DP-68, USDOT/FHWA, FHWA-DP-89-068-006, September 1989, 45pp.
- ___ **Flexible Pavement Condition Rating Guidelines for Municipalities**, ID-710, Research and Development Branch, Ministry of Transportation, Ontario, SP-022, August 1989, 95pp.
- ___ **Further Improvements In Cathodic Protection**, ID-698, USDOT/FHWA-RP-88-267, April 1989, 187pp.
- ___ **Guardrail Installation and Repair**, ID-701, NW Technical Transfer Center and Alaska T2 Program, 1989, 20pp. Supplement to videotape, see video list.
- ___ **Guide To Common Road and Equipment Maintenance Procedures**, ID-680, Supplements to International Road Federation Videotapes, Louisiana Transportation Research Center, 1989.
- ___ **Highway Drainage Core Curriculum Modules**, ID-695, USDOT/FHWA, Includes: Culvert Hydraulics, Improved Inlets, Energy Dissipators, Pavement Drainage, Storm Drain Design, Storm Water Management, Stable Channel Design, Erosion and Sediment Control, December 1984.
- ___ **Hydrology: A Training Course Utilizing Microcomputers Graphics**, ID-696, Student Manual, FHWA-HI-88-003, December 1984, 150pp.
- ___ **In SITU Bioremediation of Spills From Underground Storage Tanks: New Approaches for Site Characterization**, ID-705, NTIS, PB89-219976, Project Design and Evaluation Of Performance, July 89, 39pp.
- ___ **Integrated Vegetation Management for Transportation Systems**, ID-703, Looks at chemical, physical, and biological methods. Notebook for course of same name. Instructors: Dr. Tim Tilsworth, Michael Travis, C.E.P., P.E., and Larry Johnson. Costs: \$15.00, must be paid for in advance.
- ___ **Managing Snow Removal and Ice Control Program**, ID-686, Special Report #42, APWA, 1974, 168pp.
- ___ **Manual for Condition Rating of Flexible Pavements: Distress Manifestations**, ID-709, Research and Development Branch, Ministry of Transportation, Ontario, SP-024, August 1989, 111pp.
- ___ **Manual for Condition Rating of Gravel Surface Roads**, ID-708, Research and Developments Branch, Ministry of Transportation, Ontario, SP-025, August 1989, 61pp.

- ___ **Manual for Condition Rating Of Surface-Treated Pavements Distress Manifestations**, ID-707, Research and Development Branch Ministry of Transportation, Ontario, SP-021, August 1989, 73pp.
- ___ **Miami's Downtown Component of Metrorail Public-Private Coverture Financing Using a Special Assessment District**, ID-688U, NTIS, PB84-211606, February 1984, 65pp.
- ___ **Municipal Liability in Wisconsin: Highway Problems**, ID-685, Department of Governmental Affairs, Transportation Information Center, University of Wisconsin-Madison, 38pp.
- ___ **Pavement Maintenance Guidelines: Distresses, Maintenance Alternatives, and performance Standards**, ID-706, SP-001, Research and Development Branch, Ministry of Transportation, Ontario, August 1989, 174pp.
- ___ **Rehabilitation of Concrete Pavements**, July 1989, FHWA/USDOT,
 - ___ ID-697A Volume I: Repair Rehabilitation Techniques, FHWA-RD-88-071.
 - ___ ID-697B Volume II: Overlay Rehabilitation Techniques, FHWA-RD-88-072.
 - ___ ID-697C Volume III: Concrete Pavement Evaluation and Rehabilitation System, FHWA-RD-88-073
 - ___ ID-697D Volume IV: Appendixes, FHWA-RD-88-074
- ___ **Research and Development Publications Catalogue**, ID-704, PUB-90-01, Research and Development Branch, Ministry of Transportation, Ontario, January 1990, 106pp.
- ___ **Standard Plans for Highway Bridges**, USDOT/FHWA,
 - ___ ID-693A Volume I: Concrete Superstructures, Jan. 1990.
 - ___ ID-693B Volume II: Structural Steel Superstructures, Aug. 1982.
 - ___ ID-693C Volume III: Timber Bridges, Jan. 1979.
 - ___ ID-693D Volume IVA: Typical Continuous Bridges Load Factor Design, April 1984.
- ___ **Status of the Nation's Local Mass Transportation: Performance and Conditions Report to the Congress**, ID-687U, UMTA, Washington D.C., NTIS, PB88-249081, June 1988, 240pp.
- ___ **Transportation Finance and Economic Analysis Issues**, ID-681, 1197, TRB/NRC, 76pp.
- ___ **Understanding the Capabilities and Needs of Special Passengers**, ID-694U, Participants Workbook, UMTA/RTAP Training, International Support Services, 90pp.
- ___ **Vehicle Mobility on Thawing Soils**, ID-691, Interim report on CRREL's test program, Special Report 89-31, CRREL, September 1989, 16pp.
- ___ **W-Beam Guardrail Repair and Maintenance, A Guide for Street and Highway Maintenance Personnel**, ID-700, USDOT/FHWA-RT-90-001, 34pp.

These publications may be borrowed for three weeks. If you wish to receive a copy of any of the above publications to keep, please contact Susan Earp at the Alaska Technology Transfer Program at 474-2484 to see if it can be obtained or if duplication is possible.

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 City: _____ State: _____ Zip: _____ Phone: _____

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For back issues of our newsletter and inserts, or to get on our mailing list, write: Publications, Transportation Technology Transfer Program, DOT&PF, 2301 Peger Road, M/S 2552, Fairbanks, AK 99709-5316. For more information, you can also call (907) 474-2484.

Place a check by the videos you wish to borrow.

- ___ Lee Boy Asphalt Maintainer (Shoulders), ID-159, 12 mins.
- ___ Roscoe Asphaltite AA-200, ID-161, 11 mins. Equipment Development for pothole patching.
- ___ The Roll of Drums, ID-162, 17 mins. Dramatizations of short cuts that caused dangerous situations.
- ___ Shake Hands with Danger, ID-162, 22 mins. Dramatizations of actual on-the-job accidents that occurred.
- ___ Open Roads: A Look At Freeway Incident Management, ID-164, FHWA, March 1991, 20 mins. Presents in clear, nontechnical language, the current state-of-the-practice of freeway incident management and is intended for viewing by top level management, elected officials, citizen groups, and other interested parties.
- ___ Paths of Thunder, ID-165, 20 mins. On-the-job safety.
- ___ Employee Assistance Program: A Free Ride for All, ID-166, 14 mins.
- ___ What's the Cause, ID-167, 15 mins.
- ___ The First Step to Safety, ID-168, 10 mins.
- ___ Recycling Roads with Asphalt Emulsions, ID-169, Iowa State University, 25 mins. Shows process and procedures of cold mix of asphalt with emulsions at plant and in place recycling.
- ___ Better Roads with Petromat Fabric, ID-170, Montana State University, Phillips 66, 30 mins. Procedure for installing petromat. Talks about scenarios for when petromat should be used. Introduction to Petrotac.
- ___ A Highway Built On Sand (Foam Mix), ID-171, Montana State University, 20 mins. (No Sound.)
- ___ Guidelines for Spring Highway Use, ID-172, Washington State, 45 mins. Cold weather related pavement problems. How to recognize these problems, prevention and maintenance. Focusing mostly of load restrictions. Publication: Supplement to videotape, ID-8, *Guidelines for Spring Highway Use Restrictions*.
- ___ Idea Store V, ID-163, Penn DOT, 1991, 11 mins. Hard hats, tire inflation tips, communication to the public and adopt-a sign program are included.
- ___ Better Inductive Loop Detectors, ID-173, FHWA, 1/27/86, 15:30 mins.
- ___ Chemistry Talk - Using HPLC on Asphalt, ID-174, Montana State, 8/2/85, 15 mins.
- ___ Dust Control 1989, ID-175, The Dow Chemical Company, 1989, 15:54 mins.
- ___ EPS Blocks for Soil Stabilization, ID-176.
- ___ Extremely Alaska, ID-177, 15 mins, condensed version.
- ___ Field Aggregate Sample, ID-178, 11 mins.
- ___ Highway Capacity, ID-179, Delaware Transportation Center, 15:10 mins. Short Version.
- ___ Opening Up The Country, ID-180, 15 mins.
- ___ Paving the Way For Tomorrow's Highways, ID-181, SHRP, January 1989, 16:10 mins.

- ___ **Roadway Maintenance Cost Analysis, ID-182,**
 - ___ ID-182A: Part 1 Equipment Cost, 1 hr.
 - ___ ID-182B: Part 2 Cost Analysis, 35 mins.
 - ___ ID-182C: Part 3 Deferred Maintenance Costs.
 - ___ ID-182D: Part 4 Budget Presentation.
- ___ **Standard AASHTO Tests, ID-183, 1:38:50 mins.**

These videos/publications may be borrowed for three weeks. If you wish to receive a copy of any of the above videos please contact **Susan Earp** at the Alaska Transportation Technology Transfer Program at (907)474-2428 to see if it can be obtained or if duplication is possible.

Please print your name and address below, and mail to:
Alaska Transportation Technology Transfer Program
Department of Transportation and Public Facilities
2301 Peger Road M/S 2552
Fairbanks, AK 99709-5361

Name: _____ Title: _____ M/S: _____
 Organization: _____
 Address: _____
 City: _____ State: _____ Zip: _____ Phone: _____

For More Information

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McTrans Announces McPrimer!

McPrimer is a 150 page primer accompanied by a self-paced, self-scoring tutorial disk covering introductory PC topics. It gives a complete overview of the Disk Operating System (DOS) and an introduction to a few application to first-time computer users. The tutorial disk allows users to move at their own pace and provides hints and quiz scoring feedback to assure success.

Topics covered include:

- ❑ PC hardware systems and how they work
- ❑ Key DOS commands and file management tasks
- ❑ Advanced DOS activities of batch file creation
- ❑ Hard drive management, organization and back-ups
- ❑ Introduction to Lotus 1-2-3
- ❑ Word processing and database concepts

A typical benefactor of this learning system is the person new to PCs, or one with some experience but desiring refinement in the areas mentioned above. Many first time users have a fear concerning accidental data loss or just plain embarrassment from "ordinary" questions. McPrimer eases the user through these concerns quickly and in a relaxed, enjoyable manner at their own pace.

Author Peter Diotte is a certified instructor with degrees in engineering and business. Mr. Diotte's publication is used by many introductory students in classrooms and work places alike. It is the writer's hands-on teaching experience and long term business systems consulting and programming that has lead to the development and refinement of this superior introductory text and disk.

McPrimer can be purchased from the McTrans Center for \$20, plus a \$5 processing fee per order, which includes the tutorial disk and a companion instruction book. Quantity and academic discounts are available. For additional information or to order McPrimer contact:

McTrans Center
University of Florida
512 Weil Hall
Gainesville, FL 32611-2083
Phone: 904/392-0378
Fax: 904/392-3224

MAILING LIST ALERT!

One of our computer hard drives crashed, wiping out all additions and changes to the mailing list for our newsletter, and course announcements which were made after March, 1991. If the Spring 1991 - Volume 16, Number 1 issue of this newsletter went to the wrong address, we apologize, and ask that you contact us again with your new address. Also, if you know anyone who mentioned they didn't receive the newsletter, please suggest that they also contact us with their addition/correction. No course announcements have been mailed since February, so you haven't missed any of those. We regret any inconvenience this may have caused.

STATEWIDE RESEARCH LIBRARY HAS MOVED

Due to the recent closing of the Statewide Research office, that library has been taken over by the Technology Transfer Program. Statewide Research publications will be available free of charge until supplies are depleted. Contact T2 at the address and phone number listed below. In the future, copies can be obtained from AEIDC in Anchorage by writing to *AEIDC, 707 "A" Street, Anchorage, AK 99501* or by calling (907)257-2733. Reference materials can be borrowed from the T2 Library for a three week period. T2 Library policy governing borrowing, copying, late fees and replacement of lost reference materials will apply. If you have any questions contact Susan Earp at the following address or phone number.

**Alaska Transportation Technology Transfer Program
Department of Transportation and Public Facilities
Planning M/S 2552
2301 Peger Road
Fairbanks, Alaska 99709-5316
(907)474-2484**

Tidbits

Did You Know...?

...you should always put the vehicle key in your pocket while doing a pretrip inspection — or someone might move the vehicle while you are checking underneath it.

...the most important—and obvious—reason for doing a vehicle inspection is safety. Inspecting your vehicle helps you to know your vehicle is safe.

Excerpted from the Alaska Commercial Driver License Manual, available from your nearest DMV office.

Also...

...you can get a learner's permit while you practice driving commercial vehicles. To get a CDIP (Commercial Driver's Instruction Permit), you must have a valid driver's license, be age 17 or older and pass the general knowledge section of the CDL written exam. There's a \$3 fee. Currently, the CDIP is good for 2 years, but the federal government is considering limiting it to less than that.

...driving under the influence of alcohol or other drugs, leaving the scene of an accident, or committing a felony involving the use of a commercial motor vehicle all result in minimum one-year disqualifications from driving commercial vehicles for first-offense convictions. Second offense conviction of these violations will result in lifetime disqualifications.



TECHNOLOGY TRANSFER

1991 T2 CALENDAR OF EVENTS

JULY						
S	M	T	W	T	F	S
	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			

 See below for locations.

AUGUST						
S	M	T	W	T	F	S
				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

July 29 - August 3: IRWA Course 404, Appraisal Theory & Principles, Fairbanks. Contact Gene Newman 907-452-4761.

August 4-5: IRWA Course 400, Uniform Standards of Professional Appraisal Practice, Fairbanks. Contact Gene Newman 907-452-4761.

August 13-15: ASCE Water Surfer Profile Computation Using HEC-2, Anchorage. Contact ASCE Continuing Education Services at 1-800-548-2723.

SEPTEMBER						
S	M	T	W	T	F	S
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					

OCTOBER						
S	M	T	W	T	F	S
		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		

October 1-3: National Highway Institute Demonstration Project 73, Culvert Design, Anchorage. Sponsored by FHWA & DOT&PF. Contact Tom Moses or Skip Barber at 338-4200.

Meetings Around the State

Alaska Society of Civil Engineers - Anchorage: Third Tuesday of every month at noon at the Northern Lights Inn. **Fairbanks:** Third Friday of every month at noon at the Captain Bartlett Inn. **Juneau:** Second Wednesday of every month at noon at the Westmark-Juneau. This chapter does not meet June-August.

Alaska Society of Professional Engineers - Fairbanks: First Friday of every month at noon at the Captain Bartlett Inn.

Institute of Transportation - Anchorage: Third Thursday of every month at Elmers.

International Right of Way Association - Anchorage: Sourdough Chapter 49 meets the second Thursday of every month at noon at the Anchorage International Inn except July and December. **Fairbanks:** Arctic Trails Chapter 71 meets the second Wednesday of every month at noon at the Sunset Inn at noon except December. **Juneau:** Totem Chapter 59 meets the first Wednesday of every month at noon at Mike's Place in Douglas.

If you would like to publicize an event in our calendar, please contact us at (907)474-2484.

Who's Who in Alaska's Transportation Network

Spotlight on Wayne Larson, Busy Fella'

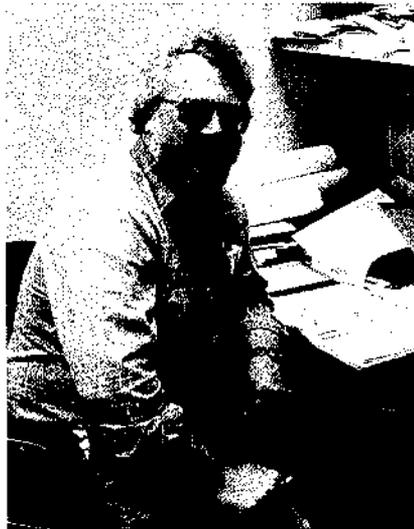
If you want to follow this man's example, get ready for a busy life! Wayne Larson is

- * Project Engineer for the City of Fairbanks
- * U.S. deputy surveyor for mineral claim patents
- * Chair of the Fairbanks Chamber of Commerce Transportation Committee
- * member of the Fairbanks North Star Borough Platting Board
- * active in the Alaska Chapters of the American Society of Civil Engineers and the National Society of Professional Engineers
- * parent volunteer for the Boy Scouts of America

—and we get our piece of him, too; he's on the Alaska T2 Advisory Board.

One of Wayne's professional satisfactions is seeing his personal touch on capital improvements in his home town. He values lasting results, and, as Project Engineer, has many opportunities to shape them. Because of the City of Fairbanks' "cradle to grave" engineering philosophy, he's involved in every aspect of a project, from planning and design through construction. City jobs often concern utilities (water, sewer, etc.). Currently, Wayne's designing the utilities relocation required by a major road rebuild. For variety, he helps folks with their sanitary engineering problems.

This Jack-of-All-Trades arrived in Alaska 26 short years ago and can reminisce about small-town Anchorage (remember when there was less than 100,000 population?). A stint with the U.S. Navy took him away, but he came back and joined DOWL Engineering in '70. A goal to complete his education brought him to Fairbanks and the University of Alaska in '73. A new father at the time, he not only completed the mining engineering curriculum, he took a job with the



Wayne Larson, Project Engineer,
City of Fairbanks

Highway Department. Obviously, he's maintained this busy lifestyle for a long time.

Leaving DOT&PF in '81, Wayne became the Fairbanks Branch Manager for USKH. By the time he left them for the City, three years later, he could look at the new Fairbanks International Airport terminal and runway improvements and a new dormitory complex on the University of Alaska Fairbanks (UAF) campus as part of his mark on the community.

Wayne has long appreciated the research partnership between DOT&PF and UAF. Good applied engineering research needs funding consistency as well as open, inventive minds; these elements were in place. But it also needs a way to get information out, to clear away the appearance of an Ivory Tower—hence his interest in T2.

If he had his way, the T2 Advisory Board would have as many members as there are communities in Alaska. Each town and village could then see the opportunities for information exchange and training. For such a "low key" kind of person, Wayne has some stimulating "high strung" ideas. Another example: he'd like to see an experienced engineer—someone who can tip a cup of coffee and talk shop—regularly do a swing throughout the state, telling the T2 story. For non-Alaskans, that may sound like a logical and standard undertaking, but it means the same as traveling from Los Angeles to Bismarck via Topeka and Savannah, often leaving land highways to travel by marine ferry and small plane.

For all this, Wayne has his feet on the ground. Sometimes, that ground is under water—specifically, when he's dipnetting salmon from the Copper River at Chitina. He also halibut fishes at Homer. Don't ask us where he finds the time.

If you'd like to talk to him about municipal engineering or T2, the Fairbanks City Engineer's number is 459-6765.