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Local Technical Assistance Program

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Anchorage Street Maintenance Saves Backs (and Money)

The Municipality of Anchorage Street Maintenance snowplow operators were being seriously injured from hitting high utilities (storm and wastewater manhole basins) in the streets around the city of Anchorage during winter operations. Given Alaska's ground conditions and temperatures, utilities will continue to raise due to freeze-thaw cycles, assuring that manhole lowering is a continuous process. Street Maintenance workers manually lowered 1,166 manholes in 1999, and experienced repetitive stress and back injuries during the process. There had to be a better way.

Street Maintenance workers talked to other northern cities in the United States that were experiencing problems with high utilities in the streets. Several of them recommended the PECO Puller. Street Maintenance contacted current owners, who gave glowing testimonials. Besides significantly increasing safety and decreasing injuries, the puller also saves money because it reduces the amount of time needed to cut asphalt and raise utilities. It completely eliminates

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the need to use a jackhammer and allows very little material to fall down into the manhole. Based on that information, the Municipality of Anchorage decided to give the PECO Puller a try and ordered one for its summer 2000 maintenance activities.

The PECO Puller is an asphalt manhole casting cutter and extractor, and it adjusts for different sizes and types of catchments. It has diamond bits on the teeth, allowing workers to get about 60 cuts in brittle asphalt. It also has dog-ears underneath the cutter; those swing out to lift the asphalt, eliminating the need for heavy manual labor. Municipal public works

professionals developed the puller in response to an obvious need for a safer and more efficient way to adjust manhole castings.

Street Maintenance ordered the 48" x 12" model for \$14,000, and their equipment technicians designed and fabricated a quick-couple mounting unit so the puller could be attached to a Case 821 Loader, as shown in the photos. The PECO Puller enabled the Municipality to increase production by cutting one inch of asphalt per minute, maximizing equipment and operator resources. They eliminated repetitive stress and back injuries from heavy lifting, provided a cleaner and neater operation, minimized motorist inconvenience, and eliminated the plowing hazards for their operators. A win-win situation. According to Valerie Bell, "We love our PECO Puller!"





Photos courtesy of Municipality of Anchorage, Department of Public Works, Street Maintenance

For information on the Municipality of Anchorage's experiences with the PECO Puller, call Valerie Bell at 907-343-8372. For equipment specs, contact the manufacturer: Voelker Enterprises, Inc., Innovative Highway Equipment, P.O. Box 868, Pine Bush, New York 12566, 914-744-2014, fax 914-692-2533. Note: as a government, not-for-profit organization, Alaska LTAP provides information and does not endorse any products.



The “Permanent” Straight Cutting Edge

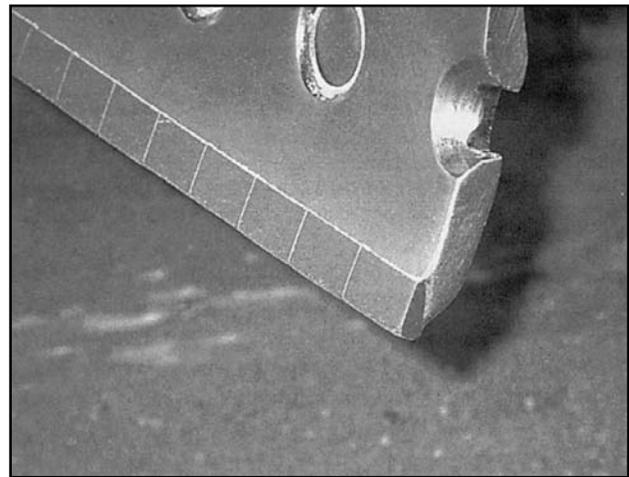
By Ken Skorseth, South Dakota LTAP Field Services manager. From *The Connection* a publication of the South Dakota Local Transportation Assistance Program

There is one problem that has plagued operators of graders since the machine was invented. That is the tendency for the cutting edge on the moldboard to wear faster in the middle than at the outside edges. This is a particular problem on those machines used in gravel road maintenance. Since the leading edge (toe) of the mold-board runs along the outside edge of the roadway where traffic has not compacted the gravel, the cutting edge naturally wears less than the center, which normally is running over the compacted wheel tracks in the roadway. When a cutting edge develops excessive wear in the center, real problems also develop on the road. The road will no longer have a straight “A” shaped crown like the roof of a house, but will instead take on a rounded shape known in engineering terms as a parabolic crown. The real challenge is trying to keep the cutting edge straight.

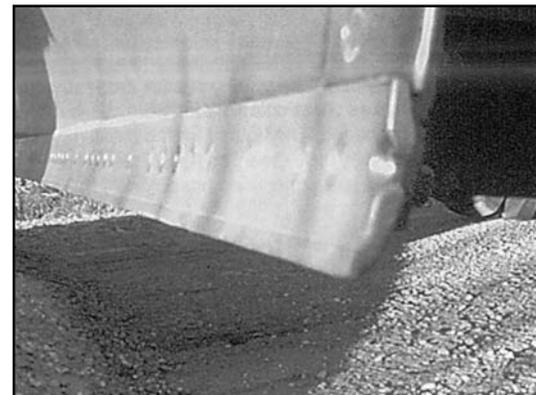
There may be a new solution. We have observed the test of a carbide-faced cutting edge used through the 1999 maintenance season at the Hamlin County Highway Department. At the present time the results look good. There are two or more types of solid carbide-faced cutting edges on the market presently. Hamlin County is using one marketed by Caterpillar. Carbide is extremely hard and has great resistance to abrasive wear; however, it can sometimes break when striking an immovable object such as the tip of a large rock protruding up from the subgrade. Hamlin County did not experience a problem with this. The photos with this article were taken after the cutting edge had been used for 650 hours. The center sections of the cutting edge were rotated to the outside once during the season. (The cutting edge comes in two-foot sections.) The cutting edge has 50 to 60% of its wear life left. The obvious advantage is the resistance to center wear, which means the cutting edge stays relatively straight for a long period of time. Not having to frequently change or straighten the cutting edge is another advantage.

However, experience can certainly vary. Another cutting edge like this one is working in South Dakota with over 800 hours performance. On the other hand,

there has been some disappointing performance on a couple of machines that are used to blade gravel roads that have quartzite material used for surface gravel. On these machines, wear life was short. Keep in mind though—South Dakota’s quartzite is some of the hardest stone in the world. If you decide to try a set of these, pay close attention to the manufacturer’s recommendations on how to use them to maximize their wear life. It’s also wise to do a test on one set only. These edges are expensive! However, if they outwear many sets of conventional cutting edges, they may be cheap in the long run. But the real advantage is better shape of the roadway.



Close-up view of the carbide face on the cutting edge.



Cutting edge after 650 hours of use in gravel road maintenance.

The First Interagency Conference on Comprehensive Planning in Indian Country:

Building Stronger Tribal Communities Through Planning

November 28–30, 2000 Palm Springs, CA

There is no registration fee for this conference. It is sponsored by:

U.S. Department of Housing and Urban Development,
Office of Native American Programs
U.S. Department of Interior, Bureau of Indian Affairs
U.S. Department of Health and Human Services, Indian Health Service and Administration for Native Americans
U.S. Department of Agriculture U.S. Environmental Protection Agency

Building Stronger Tribal Communities Through Planning is an interagency event scheduled for November 28–30, 2000. This three-day conference is a unique collaboration among several government agencies charged with addressing Native American issues and is an opportunity to learn and share ideas about comprehensive planning and how it can impact tribes. The conference will cover topics of importance to tribes such as infrastructure, housing, and economic and community development, among other critical issues. A series of technical assistance and training

sessions as well as small group discussions will be featured.

The conference will be held in Palm Springs, California, at the Palm Springs Marquis Conference Center Resort. Registration forms are available and a conference brochure will be available shortly. NOTE: Please do not make nonrefundable travel arrangements until you have registered with the conference coordinator and have received a written confirmation.

For more information call the conference information line at (703) 902-1236 or go to:



The Alaska Region Bureau of Indian Affairs Tenth Annual Providers' Conference

The Alaska Region Bureau of Indian Affairs Tenth Annual Providers' Conference is November 27–29, 2000, at the Eagan Convention Center in Anchorage. Registration begins at 7:00 A.M. on Monday, November 27, with the opening general session at 1:00 P.M.

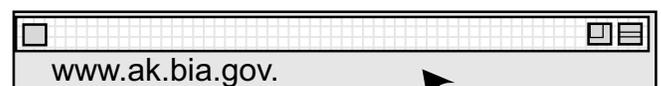
Program agenda includes contracting, credit & finance, education, employment & training, housing improvement program, roads, social services, and tribal government services.

Breakout session for the roads portion of the Conference on Tuesday, Wednesday, and Thursday, cover

a variety of topics: The Indian Reservation Road Program, TEA 21 negotiations, transportation planning procedures and guidelines, lessons learned during road construction, road grading & road maintenance, and more.

Call Jeff Harmon at BIA in Juneau 907-586- 7397, or e-mail him at DavidHarmon@bia .gov.

Also see BIA's web site at:



"Improving Alaska's quality of transportation through technology application, training, and information exchange."



“People, Plants and Paving” Training Program to be Held in Conjunction With NAPA’s 2001 Annual Convention

The National Asphalt Pavement Association (NAPA) is sponsoring a new educational event for superintendent level and field personnel in conjunction with its February 2001 Annual Convention and World of Asphalt Show in Orlando, Florida.

The training on Thursday, February 8, 2001, based on NAPA’s popular Paving Superintendents and Facilities Operation training courses, will focus on improving productivity and quality of hot mix asphalt (HMA) production and paving. Three concurrent two-hour training sessions will be offered on Thursday morning.

The People Session will focus on the people management skills that are necessary for foremen and superintendents to get the most out of their crews. The Plant Session will focus on aspects of production that affect efficiency and quality of HMA. The Paving Session will present the latest in paving technology that affects quality and efficiency. Each session will be repeated so attendees may attend two sessions.

For more information on the training programs or to register, please contact Jenny Thornberry, NAPA’s training coordinator at 1-888-HOT MIXX (1-888-468-6499).



NAPA Announces Eighth Annual U.S. Hot Mix Asphalt Conference

The Eighth Annual United States Hot Mix Asphalt Conference has been scheduled for November 15–17, 2000, at the Regal Cincinnati Hotel in Cincinnati, Ohio.

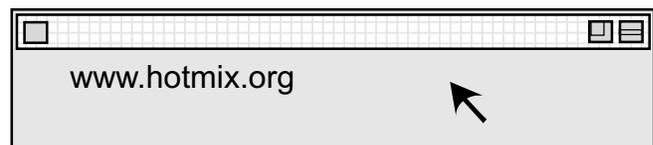
The theme of this year’s conference is quality. Topics will include “long-run” pavements, high-performance intersections, stone matrix asphalt (SMA), lessons learned from award-winning projects, and alternative contracting practices such as incentives and performance specifications. One entire morning’s sessions will focus on Superpave production and construction.

The sponsors of the event are NAPA, the State Asphalt Pavement Associations, and the Asphalt Institute, in association with Federal Highway Administration (FHWA), American Association of State Highway and Transportation Officials (AASHTO), National Association of County Engineers (NACE), and Ohio Department of Transportation.

A preliminary program and registration information for the Eighth Annual U.S. Hot Mix Asphalt Conference can be obtained by contacting Carol Prouty, National Asphalt Pavement Association, NAPA Building, 5100 Forbes Blvd., Lanham, MD 20706-4413. Phone: 301-731-4748, toll-free 1-888-468-6499; fax 301-731-4621.

The registration fee is \$175 per person in advance, or \$225 per person on site.

Information about the conference and on-line registration are also available on NAPA’s home page at:



APEC Produces Emissions Publication

Lanham, MD—The National Asphalt Pavement Association (NAPA) announces the release of the publication entitled *Best Management Practices to Minimize Emissions During HMA Construction*, written by the Asphalt Pavement Environmental Council. The council is comprised of the National Asphalt Pavement Association (NAPA), the Asphalt Institute (AI), and the State Asphalt Pavement Associations (SAPAE). This document was produced in an effort to provide continuous improvement in product and environmental quality.

The *Best Management Practices to Minimize Emissions During HMA Construction* provides the HMA industry with some guidance that may assist in producing high quality HMA in an environmentally

friendly manner. It reviewed the best practices available for plant mix production and field compaction temperatures, the use of aggregate and RAP, the use of antistripping additives, burner operation and maintenance, equipment utilization, and the impact of ambient weather conditions.

Best Management Practices to Minimize Emissions During HMA Construction (Order number EC-101) is available at the list price of \$2.50 for members, government agencies, and not-for-profit organizations, plus shipping and handling. To order, contact the publications coordinator at the NAPA office, toll-free 888-468-6499, fax 301-731-4621, e-mail publications@hotmix.org, or order on-line through www.hotmix.org.

NAPA Announces 46th Annual Convention and World of Asphalt Show

The National Asphalt Pavement Association's 46th Annual Convention and World of Asphalt trade show, to be held February 4–8, 2001, at the Wyndham Palace Resort & Spa in Orlando, Florida. The convention will be preceded by committee meetings February 2–4.

Keynote speaker will be General Colin L. Powell, USA (Ret.). Workshop Sessions will include environmental, e-commerce, technical, and marketing topics of interest to the industry. NAPA's prestigious paving, environmental, community involvement, and business awards will also be presented.

A preliminary program and registration information for NAPA's 46th Annual Convention can be obtained by contacting Carol Prouty, Meetings Assistant, National Asphalt Pavement Association, NAPA Building, 5100 Forbes Blvd., Lanham, MD 20706-4413, 301-731-4748. NAPA's toll-free phone number is 1-888-468-6499 (1-888-HOT MIXX) and the fax number is 301-731-4621. Information about the convention is also available on NAPA's home page, www.hotmix.org. Information on the World of Asphalt™ Show, being produced and managed by CONEXPO-CONAGG Show Management, is available by calling 1-800-355-6635 or visiting the website below.



General Colin L. Powell to be keynote speaker.



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Living Snow Fences Reduce Costs, Improve Safety

Japanese Manual Offers Snowbreak Guidelines

By Dan Gullickson of Minnesota DOT's Office of Environmental Services; this information was originally published in Minnesota Technology Exchange Newsletter.

The Federal Highway Administration has released a highway snowstorm countermeasures manual translated from the Japanese original. It is a technical standard that calls for properly created highway snowbreak forests. The objective of the guide is to promote a "live thing construction method" for preventing winter traffic obstructions, rather than the commonly used civil engineering methods.

"Highway snowbreak forests are highly valued for their endurance and their contribution to the highway view in addition to their effect as snowbreaks," said Highway Planning Section Chief Yoshiaki Takeda. "We established the research group to study how to create roads that overcome snow and winter," Takeda said.

Common problems discussed include weather-related obstructions such as:

- snowdrifts,
- freezing and blowing snow, and
- avalanches.

The main reason for traffic obstructions during winter is the poor visibility that is created when snowdrifts provide a source for blowing snow. The Hokkaido Development Bureau decided to promote several methods that can help counteract this. Methods include:

- snow shelters,
- snowbreak fences,
- snowbreak forests,
- snowbreak land cuts,
- snowbreak earthen mounds, and
- highway traffic information systems.

The guide also includes tips to help with the growth management required to maintain a snowbreak forest. Sufficient growth management is necessary to ensure realization of its original purpose.

The research reveals that the primary factors that determine the effectiveness of snowbreak forests are width of the forest zone, density of the tree crowns, tree type, and tree height.



The *Snowbreak Forest Book* is intended to be used as a guideline to provide safer winter roads. It offers the technologies developed by the Japanese that show promise of being equally successful here in the United States. These technologies can also be used in conjunction with snowstorm countermeasures already in use both locally and nationally to produce winter roads that are safer and more comfortable to drive on than ever before.

Phone NTIS at 703-605-6000 to get your copy of the *Snowbreak Forest Book*.

Minnesota Learns from Snowbreak Experience

From the 1930s throughout the 1950s, Minnesota's Department of Transportation (Mn/DOT) planted 12 million trees and shrubs along 600 miles of highway in the name of snow control. These plantings were

installed 75 feet from the highway centerline. History shows that the plantings were too close to the highway and actually made the problem worse.

Proper engineering of living snow fences involves three key elements: height, density, and length.

Height affects snowdrift length and depth. Snow storage capacity increases more than four times when the height is doubled. For example, one 10-foot-tall row of caragena will store as much snow as four rows of 5-foot-tall cotoneaster. Typically, vegetative barriers need to be set back 10 to 15 times the mature height from the area to be protected.

Density affects both windward and leeward snow drift lengths and heights. Density is determined by the species, number of rows, and plant spacing. Winter density of deciduous species must be considered. The density of the vegetation should be uniform with no openings and gaps.

Length determines the maximum area that can be protected. Less snow is stored at the ends of barriers. Therefore, one needs to extend the living snow fence 100 feet beyond the area to be protected. In the winter of 1996-97, Mn/DOT hired an international snow control consultant to assess 18 drifting problem areas in southern Minnesota. He concluded that a 10-foot-tall fence is required to provide adequate protection over an average winter. This conclusion was based on estimates of snow transport to maximize the benefit/cost ratio. If more conservative guidelines are desired, a 12-foot-tall fence would provide sufficient capacity 95 years out of 100.

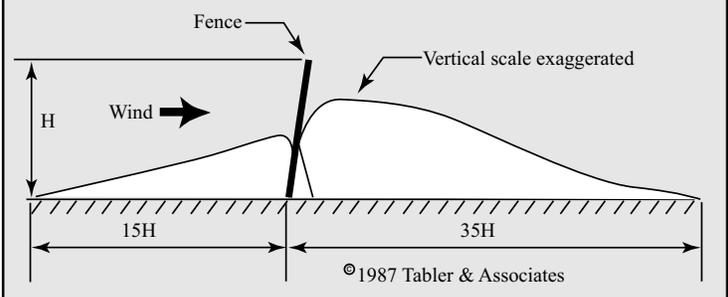
This was affirmed in Springfield, Minn., where an 8-foot-tall structural fence set back 275 feet from the highway centerline held back 11,424 tons of snow. Typically it costs \$3.00 per ton to mechanically remove the snow. During the winter of 1996-97 alone, an estimated savings of \$34,272 was realized.

Living snow fences have proven to be a popular method for controlling snow drift in Minnesota—reducing wind speed, improving driver visibility, reducing snow removal costs, enhancing the appearance of roadsides and communities, and even enhancing crop production by 10% or more.

The following list and drawing are from SHRP's 1991 Snow Fence Guide.

Tips to Remember

1. Mechanical snow removal costs about 100 times more than trapping snow with fences.
2. The best fence porosity is 40% to 50%.
3. For effectiveness and economy, a single row of tall fences is always preferable to multiple rows of shorter fences.
4. One 6-ft. (1.8-m) fence = 2 rows of 4-ft. (1.2-m) fence. One 8-ft. (2.4-m) fence = 5 rows of 4-ft. (1.2-m) fence
5. Fences can improve driver visibility and reduce ice.
6. To improve driver visibility and to maximize effectiveness, fences should be 8 ft. (2.4 m) or taller.
7. Fences should be set back at least 35H from the road shoulder (see figure below).
8. Extend fences beyond protection limits to an angle of 30° on either side of the prevailing wind direction.
9. Although fences should be perpendicular to the prevailing wind direction, departures up to 25° are permissible.
10. Leave a gap equal to 10% of the total fence height under the fence.



Watch for snow fence design and installation training in Alaska during 2001, sponsored by LTAP. Call Sharon McLeod-Everette, 907-451-5323, sharon_mcleod-everette@dot.state.ak.us



New Test Developed to Measure Chloride Penetration in Concrete

Originally published in U.S. DOT FHWA Research & Technology Transporter, April 2000

Researchers at the University of Toronto developed a new method for predicting chloride ion penetration in bridges and pavements. The new method—the rapid migration test—will be used to predict the resistance of concrete to chloride ion penetration. This information will be useful in evaluating new mixes, accepting or rejecting new concrete specifications, and evaluating in-place concrete.

One of the current standard test methods used to assess the resistance of concrete to penetration of chloride ions is the rapid chloride permeability test. This test, officially known as AASHTO T 277-93, “Electrical Indication of Concrete’s Ability to Resist Chloride,” measures the charge passed through a concrete specimen subjected to 60 volts DC for six hours. Variable results have been reported with the rapid chloride permeability test when certain mineral admixtures such as silica fume were included in the concrete mixture and when calcium nitrite (included in some corrosion inhibitors) or reinforcing steel have been present.

The new rapid migration test is based on a test developed by Tang and Nilsson at Chalmers Technical University in Sweden. The test specimens are 50 mm long and 100 mm in diameter as in the rapid chloride test. The rapid migration test uses the setup shown in

Figure 1 with 0.3 M sodium hydroxide ponded on the top of the specimen, and a 10-percent solution (by mass) of sodium chloride at the bottom of the specimen. Similar liquids are used in the rapid chloride test, but they differ in the concentration of the solutions. For the rapid migration test, the specimen is initially subjected to 30 volts DC, and the resulting current determines the voltage to be applied for the duration of the test. The voltage is applied for three different time periods varying anywhere from 2 to 96 hours. Following the test, the specimen is split in half and a silver nitrate spray is applied to identify the depth of chloride penetration into the specimen.

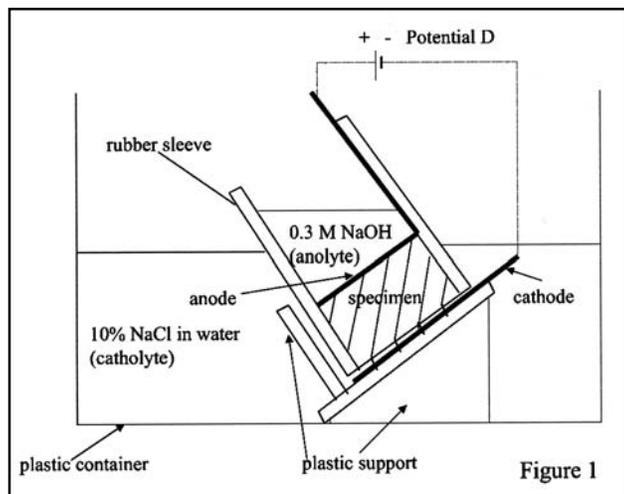
Field trials of the rapid migration test are under way at Turner Fairbank Highway Research Center and at the Texas DOT, Ontario Ministry of Transportation, Virginia Transportation Research Council, and at the University of Toronto. All field trials are using concrete from batches that were mixed at TFHRC. Results of the field trials and results from all phases of the research study will be documented in the final research report, due out early this summer.

For more information contact:

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or:

Susan Lane 202-493-3044
susan.lane@fhwa.dot.gov

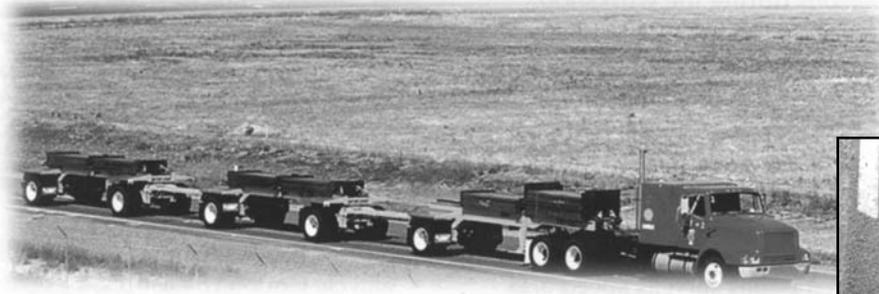


The rapid migration test, pictured here, is a new method for predicting chloride ion penetration in bridges and pavements.

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FHWA Studies Effects of Pavement Roughness at WesTrack

By Terry Mitchell. Originally published in U.S. DOT FHWA Research & Technology Reporter, June 2000



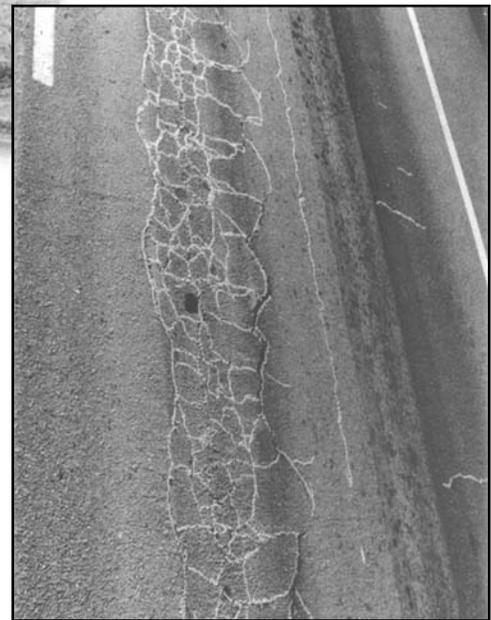
WesTrack driverless vehicles.

Research often produces unexpected benefits. A recent example is the WesTrack project, an accelerated pavement test funded jointly by FHWA and the National Cooperative Highway Research Program (NCHRP). Although designed to examine how materials and construction variations affect pavement performance, the WesTrack project has provided interesting secondary data on how pavement roughness affects truck fuel and maintenance costs.

The primary objectives of the FHWA/NCHRP study were to continue the development of performance-related specifications for hot-mix asphalt pavement construction and to provide an early validation of Superpave mixture design procedures. To do this, four driverless trucks traveled more than 1.3 million km (820,000 mi) and applied some 4.9 million 80-kN (18,000-lb) Equivalent Single Axle Loads (ESALs) to pavement test sections. The test sections, which were placed in a 2.8-km (1.8-mi) loop, were loaded over a 2.5 year period.

Throughout the loading period, data were collected on many vehicle parameters, including fuel consumption. When the researchers focused on two periods just before and after a major rehabilitation (prior to the rehabilitation, parts of the track had become very rough because of fatigue failures and patch deterioration), they found significant differences in fuel consumption and in frequency of vehicle mechanical problems.

After the rehabilitation, which reduced the average International Roughness Index values of the track



Example of pavement roughness.

tangents by at least 10 percent, the trucks used 4.5 percent less fuel per km than they did on the rough (prerehabilitation) pavement. The vehicles' gross weight, speed, and aerodynamic profile were fixed, the vehicles were very well maintained throughout the WesTrack experiment, and data were corrected for environmental factors. As a result, the reported increases in the fuel consumption could be attributed directly to the pavement roughness. The data also showed a significant reduction in the frequency of fatigue failures in truck components, e.g., trailer frames and springs, after the rehabilitation.

For more information contact:
Terry Mitchell
202-493-3147
terry.mitchell@fhwa.dot.gov



What is the National Pollution Discharge Elimination System (NPDES) Storm Water Program?

Polluted storm water runoff is a leading cause of impairment to the nearly 40 percent of surveyed U.S. water bodies which do not meet water quality standards. Over land or via storm sewer systems, polluted runoff is discharged, often untreated, directly into local water bodies. When left uncontrolled, this water pollution can result in the destruction of fish, wildlife, and aquatic life habitats; a loss of aesthetic value; and threats to public health due to contaminated food, drinking water supplies, and recreational waterways.

Mandated by Congress under the Clean Water Act, the NPDES Storm Water Program is a comprehensive two-phased national program for addressing the non-agricultural sources of storm water discharges that adversely affect the quality of our nation's waters. The program uses the National Pollutant Discharge Elimination System (NPDES) permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by storm water runoff into local water bodies.

Phase I of the U.S. EPA's storm water program was made known to the public in 1990 under the Clean Water Act. Phase II is the next step and expands Phase I by requiring additional operators of municipal separate storm sewer systems and operators of small construction sites to control storm water runoff.

Who in Alaska is Covered by the Phase II Final Rule?

No municipalities in Alaska have been designated under Phase II Final Rule. However, EPA has the discretion to designate municipalities and other public systems (military bases, schools, cities, etc.) in the future.

What is Alaska Doing About the Phase II Final Rule?

Rather than waiting to react to EPA's decisions about stormwater management, the Alaska Department of Environmental Conservation (ADEC), Division of Air and Water Quality organized a training session and workshop on Phase II. ADEC, EPA Region 10 Office, the National Stormwater Center, and representatives from municipalities developed and presented the training session and workshop in Anchorage October 5 and 6, 2000. The organizers hope to begin to frame a statewide action plan for storm water. The action plan will key off of the six "Minimum Control Measures" outlined under the Phase II requirements for municipal systems.

Contacts

EPA
 George Utting, Storm Water Phase II
 Matrix Manager
 Phone: 202-260-9530
 E-mail: Utting.George@epa.gov

Daniel Weese, Storm Water Phase I
 Matrix Manager
 Phone: 202-260-6809
WeeseDaniel@epa.gov

Storm Water Phase LI Proposed Rule Hotline
 202-260-5816
sw2@epa.gov

Storm Water Hotline
 800-245-6510

NOL Processing Center
 301-495-4145

Water Resource Center
 202-260-7786
centerwater@epa.gov



State Stormwater Permits and Application forms:
 Alaska Department of Environmental Conservation
 Water Quality Permitting Section / Storm Water
 555 Cordova St.
 Anchorage, AK 99501
 Phone: (907) 269-7692
 Fax: (907) 269-7508
 Email: GregoryDrewiecki@envircon.state.ak.us
 Contact: Gregory Drewiecki

Stormwater Phase H Requirements and Training
 Alaska Department of Environmental Conservation
 Water Quality Permitting Section I Storm Water
 410 Willoughby Ave., Ste. 105
 Juneau, AK 99801
 Phone: (907) 465-5321
 Fax: (907) 465-5274
 Email: Jpowell@envircon.state.ak.us
 Contact Jim Powell

For more information about storm water, see the ADEC homepage:
www.state.ak.us/dec/dawq/nps/stormwater.htm

Recommended EPA National Pollutant Discharge Elimination System (NPDES) Resources

Region 2 NPDES Permitting Program
 Facilities which discharge pollutants from point sources into waters of the United States are required to have permits.
<http://www.epa.gov/region02/water/wpb/npdes.htm>

NPDES Permit Writers' Training Course
 Provides information about the NPDES Permit Writers' Training Course.
<http://www.epa.gov/owm/npdesup.htm>

Additional Sources of Information: Permit Writers Course
 Provides links to information on water permits and permit writing.
<http://www.epa.gov/owm/pcrslib.htm>

EPA Region 10 Wastewater Discharge Permits (NPDES) Unit
 The NPDES Permits Unit is responsible for issuance and modification of permits.
[http://yosemite.epa.gov/r10/water.nsf/webpage/EPA+Region+10+Wastewater+Discharge+Permits+\(NPDES\)+](http://yosemite.epa.gov/r10/water.nsf/webpage/EPA+Region+10+Wastewater+Discharge+Permits+(NPDES)+)

National Pollutant Discharge Elimination System (NPDES) Permitting Program
 The purpose of the National Pollutant Discharge Elimination System (NPDES) Program is to protect the environment.
<http://www.epa.gov/owm/npdes.htm>

Region 6: Water Quality Protection Division
 This page provides information about the Region 6 Water Quality Protection Division.
<http://www.epa.gov/earthlr6/6wq/6wq.htm>

For additional information go to <http://www.epa.gov/owm/npdes.htm>. For information on both NPDES and storm water programs, go to <http://www.epa.gov/eftp/watstormpermits.html>.



Asphalt Pavement is the Surprise Leader in Recycling of Various Materials

New survey ranks asphalt pavement as recycled the least when in fact it's recycled the most

LANHAM, MD. (April 12, 2000)—What's recycled the most? While Americans are accustomed to thinking about recycling their newspapers and beverage containers, the most widely recycled product in terms of both percentage and tonnage is actually asphalt pavement.

A Federal Highway Administration report shows that 80 percent of the asphalt pavement that's removed each year during widening and resurfacing projects is reused. The 80 percent rate for using reclaimed asphalt pavement (RAP) is substantially higher than the U.S. Environmental Protection Agency's recycling rates of 60 percent for aluminum cans, 56 percent for newsprint, 37 percent for plastic soft drink bottles, 31 percent for glass beverage bottles and 23 percent for magazines.

The extent to which RAP is reused, however, isn't widely known. In a survey of 1,000 adults commissioned by the National Asphalt Pavement Association (NAPA), Americans ranked asphalt pavement as being recycled the least among nine products. When asked which of the nine is recycled the most, 35 percent of Americans said paper, followed by 31 percent for aluminum and 21 percent for plastic. When asked which is recycled the least, 29 percent said asphalt pavement, followed by 18 percent for rubber and 16 percent for yard waste. "Asphalt pavement admittedly isn't prominent on the public's radar screen for recycling. But every year, approximately 73 million tons of reclaimed asphalt pavement are reused, or nearly twice as much as the combined total of 40 million tons of recycled paper, glass, aluminum, and plastics," said Mike Acott, president of NAPA. EPA figures show that Americans recycle only 28 percent of items in the municipal solid waste stream, which the EPA hopes will increase to 35 percent by the year 2005.

Added Byron Lord, deputy director of the Office of Pavement Technology of the Federal Highway Administration, "For every ton of municipal solid waste, our nation generates about 35 tons of nonhazardous industrial solid waste. Our landfill space would be overwhelmed if it weren't for large-scale recycling of industrial products such as asphalt pavement. The asphalt paving industry is truly a leader in this respect."

Asphalt pavement accounts for 92 percent of the nation's highways and roadways, and RAP is used as part of new pavement, roadbeds, shoulders, and embankments.

"In 1970, the year of the first Earth Day, worn-out asphalt pavement was discarded in landfills. Today, as the 30th anniversary of Earth Day approaches, we are able to say that the recycling of asphalt pavement is an everyday business practice," Acott said.

Acott noted that using RAP has economic benefits for taxpayers, as well as environmental benefits. "Using RAP results in lower costs. We use less virgin material and, by avoiding trips to the landfill, we use less diesel fuel. Considering today's fuel prices, these savings add up considerably for taxpayers on public road projects," Acott said.

Other findings from NAPA's recent survey help portray the state of recycling in America. For example, 46 percent of Americans rated their own interest in recycling as high or very high, while 33 percent said it was average and 20 percent said it was low or very low.

They gave even lower marks to their community's interest in recycling. Only 36 percent rated their community's interest as high or very high, while 37

continued



percent said it was average and 23 percent said it was low or very low. Interest in recycling was higher in the Northeast and West than in the rest of the country. Most Americans take part in at least some sort of recycling program. The survey showed that more than three-quarters (77 percent) said they recycle at least some aluminum cans. About two-thirds (67 percent) said they recycle newspapers, along with 65 percent who said they recycle plastic bottles; 60 percent, glass bottles; 58 percent, magazines; 55 percent, plastic bags; 54 percent, tin cans; and 53 percent said they recycle white paper.

The survey also found that Americans see the United States as having made improvements in recycling in the past 10 years: 43 percent said it had improved a great deal, 50 percent said it had improved a moderate amount, and only 5 percent saw no improvement.

In the survey, the firm of Bruskin/Goldring Research completed telephone interviews with 1,009

adults selected at random from March 24 through March 26, 2000. The sample error in a survey of this size is ± 3 percentage points.

For more information contact:

Margaret Cervarich: 888-468-6499, ext. 113
 mbc@hotmix.org

Jon Newman: 804-698-8831
 jon.newman@martinagency.com

The National Asphalt Pavement Association (NAPA) home page is:



Alaska Recycles Asphalt

In Alaska, roughly 90 percent of asphalt is reused, according to asphalt workers at Alaska Department of Transportation and Public Facilities (DOT&PF)—and that is on a statewide basis. The re-use could be as high as 100 percent, because some of the unused 10 percent of recycled asphalt pavement is given to contractors, and they may be recycling it in ways Alaska DOT&PF doesn't know about.

There are two primary ways that workers recycle Alaska's asphalt: either reclaiming it or milling it.

Reclaiming is done with a reclaiming machine, which looks much like a great big rototiller. It's used in areas where there's no curb and gutter. Once the reclaimer mixes 2" of asphalt concrete with 2" of base to make a stabilized base (this is a typical reclaimed mix; other ratios of asphalt and base are sometimes used), the paver paves over the top of the new base to achieve a new surface.

Using a milling machine, such as a Rotomill, is another way to recycle asphalt in areas where curb and gutter prevent using a reclaimer. First, workers mill



the asphalt with the milling machine. Then they haul the recycled asphalt away to use on a future project on city streets or low volume roads. Once the recycled asphalt is gone from the road surface, workers lay new asphalt in its place.

The Yukon Territory also recycles their high float pavement, using a farm tractor and a disc—working the pavement into the base course. Then they re-pave with high float to achieve a new driving surface.



Survey results: What Your Peers Use for Their Winter Roads

Article reprinted from *Better Roads magazine*

Salt, salt, and more salt. That's still the dominant material used in both deicing and anti-icing efforts throughout the winter states, according to a recent *Better Roads* survey of 625 winter maintenance professionals.

Opponents of the material may argue about what the real cost is of using salt on our roads and bridges, but no one can deny that it's still the cheapest, by far, compared to any other deicing agent in actual cost per ton (generally less than \$30). The price must be right because 58 percent of respondents say they use salt, either solid or brine, as a deicing agent. Even more interesting is that over 50 percent of the 163 responding say they use it in their anti-icing efforts. Percentages in the survey are rounded to the next half-percent.

Anti-icing

As for those who start the good fight before ice or snow actually hits the ground, the survey seems heartening. Almost 62 percent said they were using anti-icing methods compared to the 38 percent who

said they were not. And, of those using anti-icing to fight winter's frozen precipitation, 82 percent said it was cost effective in comparison to their use of deicing materials after storms have hit. That's a good sign for those advocates who've only recently been pushing for increased anti-icing efforts.

Of course, some winter maintenance supervisors might not understand that anti-icing and deicing are really two different weapons, so there's a margin for error. We're pretty sure of this because, when asked what material they used in their anti-icing, 4 percent of respondents said sand or cinders, both of which would not be of much use on the roads before ice or snow falls.

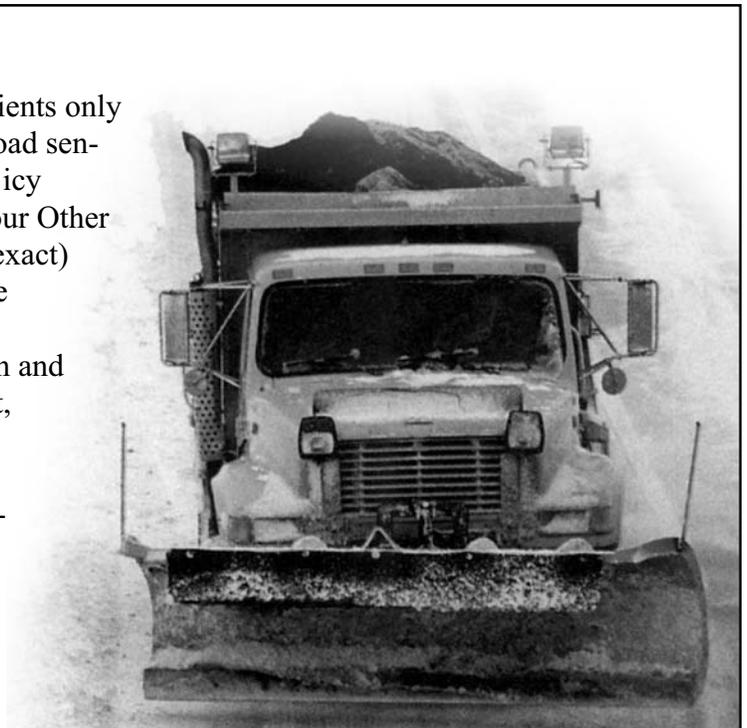
In other materials, we already mentioned that over half (50.5 percent) said they use salt as their anti-icing agent. A majority (38.5 percent) specified salt in its solid form, while 6.5 percent said they use liquid, or brine. And another 5.5 percent said they use salt, but did not specify either solid or liquid.

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Icy Weather Anticipation

We (*Better Roads* magazine) gave survey recipients only two specific choices—local weather reports and road sensors—as to what methods they use in anticipating icy weather, but we got a wide variety of answers in our Other category. Of course, some respondents (45, to be exact) use more than one method and those answers were added to the total.

Weather reports (including local weather station and Doppler radar information) are used by 62 percent, while 16 percent use road sensors/RWIS. Other methods used, accounting for a total of about 22 percent, included personal observation and experience (7.5 percent), DTN's subscription weather center system (6 percent), information from other agencies (5 percent), regular and infrared thermometers (2 percent), and the Internet (1.5 percent).



Calcium chloride, while not exactly nipping at salt's heels, made a pretty good showing in anti-icing, with 20 percent of respondents saying they use it. That total breaks down to about 13 percent using liquid calcium chloride, 3.5 percent solid, and another 3.5 percent not specifying.

Overall, 11 percent of those responding use magnesium chloride before a winter storm, with 5 percent using liquid, 2 percent solid, and 4 percent unspecified.

Newcomer Ice Ban, classified as an agricultural byproduct, was generally identified directly by either that name, Magic, or M-50, and showed about 5.5 percent of respondents using it during anti-icing. Calcium magnesium acetate was identified by respondents as CMA, a registered trademark of Cryotech, Inc. A total of 4.5 percent say they use it—3.5 percent using it as a liquid and 1 percent using the original solid granules. The remaining 5.5 percent were unspecified materials.

Deicing Agents

We knew there was some stiff competition out there, but we weren't really prepared for all the different kinds of deicing materials and brands respondents said they use. The big three—salt, calcium chloride, and magnesium chloride—accounted for over 88 percent of materials, with more than 20 different brands mentioned.

Salt. As shown, 58 percent of respondents use salt on their roads, mostly in its solid form. Less than 5 percent use brine compared to the 95 percent who use it as is. Of manufacturers, Cargill was mentioned most often, followed by Morton, International, Hutchinson, Sifto, and IMG. Numerous others were listed only once.

Calcium chloride. Nearly 22 percent use calcium chloride, which is put down on the roads more in a liquid form (61 percent) than a solid (39 percent). Only two manufacturers were mentioned more than once—most listing Dow followed by General Chemical. A distributor—All-State Asphalt—was listed as a supplier several times.

Magnesium chloride. About 8.5 percent use magnesium chloride. It's also sprayed more than spread, with 82 percent using it as a liquid and 18

percent putting it down as a solid. The only company mentioned more than once was IMC.

Others. Nearly 5 percent use an agricultural byproduct on their roads. That percentage is split almost evenly between Ice Ban, made from a byproduct of corn, and urea, which is made from animal urine and used widely on airport runways. About 2 percent use pre-packaged mixtures of deicers, although many of those polled use more than one deicer and combine the materials themselves. Less than 5 percent of those polled use CMA, or were unclear in their responses.

Switching Deicers?

We asked if respondents were considering trying a new deicing material and 19 percent said they were. Of that, 32 percent were considering calcium chloride, another 32 percent were thinking about trying Ice Ban, and 16 percent may try magnesium chloride. Mingled in the remaining 20 percent were brine solution, brand names Freeze-Guard and Ice Slicer, an unspecified agricultural byproduct, and a mix of calcium chloride and magnesium chloride.



For further information on this subject see these articles in *Better Roads* magazine Vol. 70, no. 4, April 2000:

"Mixing It Up With Winter Maintenance supervisors." Your peers comment on their mixtures and other procedures.

"Iowa Tackles Winter Weather." RWIS and real-time radar satellite checks help crews clear the roads.

To find a report titled *Manual of Practice for an Effective Anti-icing Program* go to:

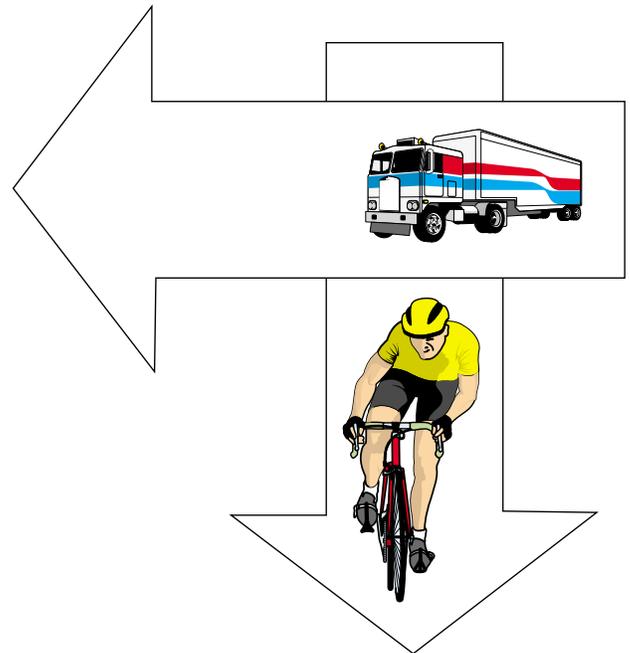


Pedestrian and Bicycle Crash Analysis Tool (PBCAT)

What is PBCAT?

In 1998, 5,220 pedestrians and 761 bicyclists were killed, accounting for 14 percent of all traffic fatalities. An additional 69,000 pedestrians and 53,000 bicyclists were reported to have been injured as a result of collisions with motor vehicles. PBCAT is a software product intended to assist state and local pedestrian and bicycle coordinators, planners, and engineers with this problem.

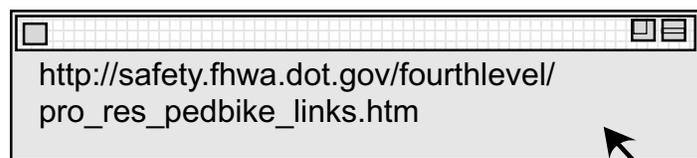
PBCAT accomplishes this goal through the development and analysis of a database containing details associated with crashes between motor vehicles and pedestrians or bicyclists. One of these details is the crash type, which describes the pre-crash actions of the parties involved. With the database developed, the software can then be used to produce reports and select countermeasures to address the problems that are identified. PBCAT is now available and includes the software itself and the User's Manual (UI-IWA-RD-99-192).



To obtain the software, visit the Pedestrian and Bicycle Information Center website at:



Here's a link to a FHWA web page for bicycle and pedestrian safety.



FHWA Develops Tools for More Strategic Work Zone Planning

With the national highway system complete and more rehabilitation work being done to maintain existing roads, increased attention is being paid to work zones. Often, the user delays caused by work zones and the resulting costs to motorists, as well as the costs of mitigation strategies to lessen these delays, are not considered during the design and planning of projects. A new initiative of the Federal Highway Administration (FHWA), known as the Strategic Work Zone Analysis Tools (SWAT) program, is out to change this.

Four tools are being developed as part of the initiative: an Expert System software program, a traffic impact analysis spreadsheet, a cost/alternative analysis spreadsheet, and a detailed simulation model. "These tools will greatly expand the analysis capabilities of highway agencies," says John Harding of FHWA. "Other tools that are out there don't encompass the impacts to areas surrounding work zones."

With the Expert System, a user would enter data on the characteristics of the work zone, such as what type of highway improvement or repair work is being done and the duration of the work. The program would then

provide a list of possible mitigation strategies for reducing work zone delays and costs, such as retiming an alternative route's traffic signals.

The traffic impact analysis spreadsheet, known as QuickZone, would take the analysis a step further by comparing the traffic impacts for work zone mitigation strategies and estimating the costs associated with these impacts. For example, if a highway agency was widening a lane of traffic, QuickZone could estimate the costs of doing work at night instead of during the day or diverting the traffic to one road versus another road during different phases of the construction. The costs can be estimated for both an average day of work and for the whole life cycle of construction.

The cost/alternative analysis spreadsheet will provide more detailed cost analysis, while the simulation model will be used in conjunction with QuickZone to more precisely estimate the impacts of specific work zone strategies and the effectiveness of mitigation techniques.

Version 1.0 of QuickZone is scheduled to be released in March of next year. In the meantime, a prototype version will be available for trial use and evaluation. A user need only have Microsoft Excel 97 or higher running on a Windows-based PC to use the QuickZone application. The evaluators will include a steering committee composed of states and Metropolitan Planning Organizations, among others.

A definite date has not yet been set for the release of the Expert System software, cost/alternative analysis spreadsheet, and simulation model. The SWAT program is expected to run through 2004.

For more information, or if you are interested in using and evaluating QuickZone, contact Raj Ghaman at:

FHWA, 202-493-3270

fax: 202-493-3219

e-mail: raj.ghaman@fhwa.dot.gov

Web Sites of the Quarter



Some of these sites take you directly to an online magazine or newsletter; others are the web site of an organization or agency. All are helpful for people in the road design, construction, and maintenance business.

A new web site directory for traffic and transportation experts, with

links to many related sites is:

www.trafficking.com

Hot Mix Asphalt Technology magazine;

National Asphalt Pavement Association

www.hotmix.org

The Asphalt Contractor magazine

www.asphalt.com

Public Roads magazine; Turner-Fairbank Highway Research Center

www.tfhrc.gov

Asphalt magazine; The Asphalt Institute

www.asphaltinstitute.org

Better Roads magazine

www.BetterRoads.com

Erosion Control magazine

www.forester.net/ec.html

International Erosion Control Association

www.ieca.org

Governing magazine

www.governing.com

American City & County magazine

www.intertec.com

Public Works magazine

www.pwmag.com

Concrete Repair Bulletin

www.icri.org

ITE Journal

www.ite.org

Roads & Bridges

www.sgcpubs.com

AASHTO Quarterly

www.aashto.org

Traffic Technology International for information, email

traffic@ukintpress.com

The Asphalt Contractor

www.asphalt.com

TR News, the magazine of the Transportation Research Board

www.national-academies.org/trb/

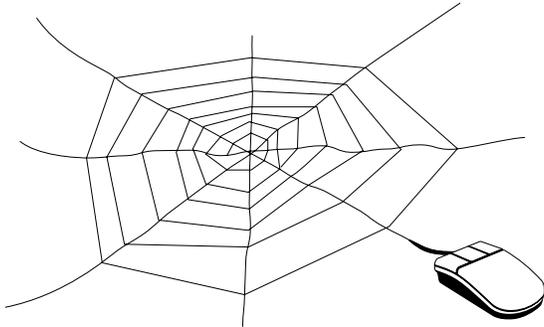
Routes Roads

www.piarc.lcpc.fr



Spinning Your Own Web Site: Part Two

Second in a series of articles about web site development reprinted here with permission from Technology News of the Iowa State University and the Center for Transportation Research and Education



Acquiring the Tools

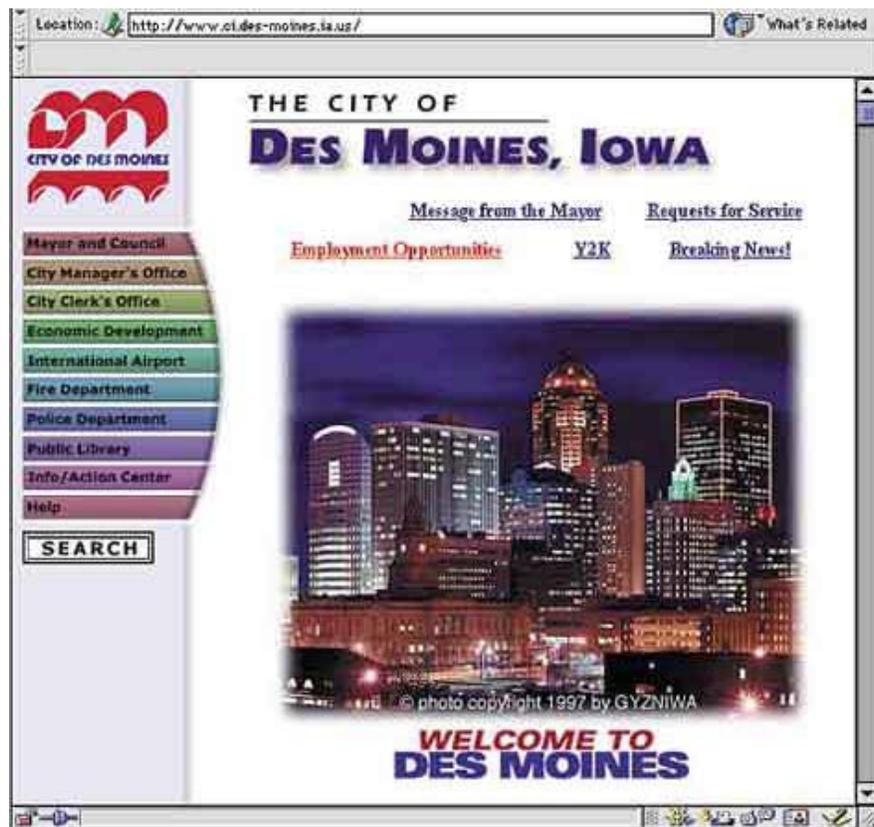
Part of the planning involved with developing a World Wide Web (web) site for your transportation agency includes gathering the right tools for the job. These days the tools are extremely user friendly. Even if you decide that your agency will be outsourcing its web work, understanding the tools others need to

create your web site will help you plan your end of the partnership. No web design firm or hosting service will know your customers the way you do. That's why it's important for someone in your transportation agency to be involved in the development of your web site, especially when it comes to selecting/creating text and images to represent your agency.

Part One: Connecting to the Internet

A computer and a modem are the basic pieces of equipment you'll need to access the Internet, create your web site, and eventually upload your site to a host computer, known as a server. A phone line is the most common way of connecting to the Internet. If this is how your agency connects to the Internet, you may want a phone line dedicated to that purpose. People

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trying to reach you on that line while you're connected to the Internet will get either a busy signal or a continuous ring. Many companies offer Internet access, which usually includes an e-mail account as well as access to the web; subscribers then access the Internet by dialing up the server via their phone line. Check your local phone company and your local Yellow Pages. Many local telephone companies in Alaska can offer Internet access at reasonable rates. With the proliferation of Internet service provider (ISP) businesses, it's likely that you'll be able to find a company that suits your needs and budget. For many places in Alaska, Internet access can be accomplished by dialing a local number rather than a long distance number. Monthly fees for Internet access with local dial-up range from \$20–25 and up. This fee usually includes an unlimited number of hours online. The ISP you choose should be able to give you all the software and instructions you'll need for making your computer ready to contact the outside world. At this stage don't worry about choosing a server for your website. Your ISP may also be your host provider, but it doesn't have to be. By connecting to the Internet before your web site is ready to go, you will have a chance to see what other sites look like and how they function. You'll probably get lots of good ideas about what you want your own site to do and how it will look. The web is also a good source for some of the software you may want for developing your site.

Part Two: Selecting Software

The basic pieces of software you'll need to develop your web site include the following: a simple text editor like Notepad or Wordpad to write and edit html code (Microsoft Word is not a simple text editor; it allows you to save as html, but it's difficult to edit the html code itself), a web browser such as Netscape Communicator or Internet Explorer to view your work, an ftp (file transfer protocol) program (such as WS_FTP for PCs and Fetch for Macs) to upload your files to the web server that will be hosting your site (you can get this from your ISP or download it free from the web), and an image editor, such as the photo editor included with MS Office 97, if you want to create or manipulate images for your site. Many different text editors and image editors are available

online as demonstration models (or betas), which expire after 30 days or a set number of uses, or as freeware or shareware, software that can be downloaded from the web for little or no cost and with little or no technical support. Check out the link "development tools" at www.download.com for many of these options. There are also tips about downloading. Two other types of software that may be nice to have but aren't strictly necessary include WYSIWYG (what you see is what you get) editors and web authoring tools. WYSIWYG editors such as Home Site and RoboHELP, beta freeware which can be downloaded from the web, allow you to design your pages without writing html code.

You may be thinking you'll skip the text editor, thank you very much, and just use a WYSIWYG editor. Consider this: would you reconstruct a road without knowing the load-bearing capacity of the sub-base, base, and pavement you plan to use? Learning the basics of how html works will help you understand the underlying structure of web pages, the building blocks of the World Wide Web. Web authoring tools like Adobe PageMill or Microsoft FrontPage 98 help you manage your web site, especially if you anticipate that your site will grow beyond 10 or so pages. They also allow you to create web pages without knowing html code. Keep in mind, however, that all these different programs require time to learn. Research your needs and select software that you'll stick with in the long run so you'll become proficient with it. The next article in this series will jump into the nuts and bolts of web site creation, including choosing and organizing content and developing a logical structure and navigation scheme.

For more information about developing a web site for your transportation agency, call Michele Regenold, communications specialist and webmaster at CTRE, 515-296-0835, e-mail mregenol@iastate.edu.



Winter Operations and Operator Safety are Hot Topics

DOT&PF Research Projects

Alaska DOT&PF takes operator safety during winter operations seriously. Two new research projects focus on maintenance operations performed during winter months: 1) plowing snow under low visibility conditions, and 2) cleaning up after avalanches. Besides increasing worker safety, the department thinks the information and activity to be studied under two research projects that are just gearing up will also make for more efficient operations. Because local governments and other agencies, like the Alaska Railroad and the U.S. Forest Service, also deal with winter operations and avalanches, the department expects broad-based benefits to occur.

Evaluation of Remote Control Equipment

Alaska DOT&PF will install the Teleoperated and Automated Maintenance Equipment Robotics (TAMER) remote control equipment on a single 2000 Case 921C loader and put it to the test at Alaskan avalanche cleanup operations at Thompson Pass, near Valdez. Here, annual snowfalls cause avalanches that frequently exceed 14 meters (45 feet) and commonly close the Richardson Highway. There are merely six hours of daylight during the darkest of the winter months, which means cleanup activities happen during times of very low visibility.

Researchers will share results from this study with Alaska and other state maintenance crews that perform work in avalanche areas. Ideally, the information gathered will guide future winter maintenance equipment procurement and operation decisions.

Project Objectives

- Define and quantify any process and safety improvements achieved by employing TAMER on avalanche cleanup operations in Alaska.
- Quantify the reduction in road closure time and reduced worker exposure to hazardous

conditions that result from using the TAMER technology.

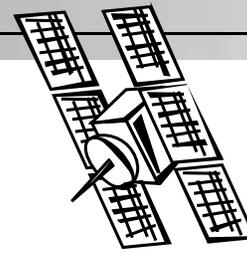
- Document ways to optimize remote controlled avalanche cleanup operations under conditions of extreme cold and extended hours of darkness.

Project Status

The TAMER equipment is in hand and is currently being installed on the loader. We expect delivery of the retrofitted loader to Valdez in mid-November 2000. Workers will evaluate the equipment during the following two winters.

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Applications of GPS and Vehicle Detection

Maintenance operations performed during winter months are inherently dangerous to maintenance equipment operators and the motoring public. In Alaska's northern latitudes, workers perform these operations mostly in the dark and under low visibility conditions. Blowing and drifting snow can obscure obstacles and reduce visibility even further, creating a high potential for accidents. In some instances, conditions reduce visibility to such a degree that snow removal operations are postponed. This delay is often more costly in time and effort.

Furthermore, during limited or zero visibility conditions, operators who are familiar with the area frequently navigate by using scarce visual cues and sometimes by feel. Operating under these conditions—plus monitoring the application of sand and gravel, communicating with a dispatcher, and keeping the vehicle in the roadway while avoiding obstacles—can bring about extreme driver stress and fatigue.

Technology exists to mitigate these highway maintenance problems. Global Positioning Systems (GPS) with integrated communications and moving map technology can display valuable reference information for the operator and the base station: automatic reporting of vehicle location information to a base station along with the vehicle's speed, time, and status.

Collision Avoidance Radar Systems (CARS) offer additional safeguards. They can detect buried obstacles in the field of view, calculate closure speed, and provide audible and visual warnings.

Project Objectives

- Expose Maintenance and Operations supervisors and operators to existing technologies that increase situational awareness and safety.
- Provide the operator with a vehicle positioning system capable of automatic reporting and moving map display.
- Evaluate the safety and productivity benefits against the cost to employ this technology.

Project Status

We are currently negotiating contracts with GPS and CARS vendors. We expect to outfit the GPS system by mid-November 2000, followed by the CARS system by January 2001. It should take just about a year to test and evaluate this new technology.

For more information on TAMER technology call Clint Adler, 907-451-5321 or e-mail clint_adler@dot.state.ak.us

For more information on the GPS detection project call Simon Howell at 907-451-5482 or e-mail at simon_howell@dot.state.ak.us



Grader Operators Obtain Skills and Share Techniques

This past summer, Alaska DOT&PF's LTAP staff contracted with Alaska Operating Engineers/Employer's Training Trust to provide grader operator training. The classes, which were primarily hands-on, took place across much of the state. You probably remember seeing photos in previous issues of this newsletter. Participants received a three-ring binder full of materials, received demonstrations from the instructors, and practiced in a grader. Topics covered included blading straight, ditching, restoring a crown, rebuilding a bad road, and doing finish work, called blue-topping. The finish classes learned how to calibrate automatic controls, and how to blade a road using the automatic control system.

The original grader training, held in 1998, proved successful enough that the program expanded a little each year. This summer, our joint venture allowed us to provide basic, intermediate, and advanced grader operator training, reaching 128 people from 70 cities and villages. Three instructors went to Anchorage, Anvik, Elim, Emmonak, Fairbanks, Kotzebue, Nome, Palmer, Shungnak, Soldotna, St. Mary's, Tazlina, and Unalakleet. Grant Weir and Dan Sanders handled the intermediate and advanced training, while Russ Penrod took on the basic training.

We owe thanks to numerous organizations for their help in making this training a reality. The city government at most locations provided a grader and fuel, or a location to work—thanks to the public works directors and city managers. In Fairbanks, Earthmovers loaned a grader with automatic controls, while Great Northwest provided a training site. And DOT&PF provided equipment, fuel, and training sites at every location.



Instructor Russ Penrod discussing blading techniques with George Beans, Sr. in St. Mary's.

Instructor Russ Penrod (center) talks about windrows and moving materials at St. Marys' basic grader operator class with (left to right) Rick Busch, Russian Mission; Don Hunter, Jr., Marshall; George Beans, St. Mary's; Perry Burress, Area Airport Manager at St. Mary's; and Pete Tyson, St. Mary's mechanic.





Left to right: Instructor Russ Penrod; Ada Jordan, Tanana; Tom Holly, Bettles.



Left to right: Russ Penrod; Freligh Dalrymple, Fairbanks; Ronald Miller, Fairbanks; Walter Carlo, Fairbanks; Nick Gardener, Central.



Left to right: Albert Evans, Nulato; Russ Penrod; Andy Simon, Sr., Allakaket; and Patricia Salmon, Chalkyitsik.

"Improving Alaska's quality of transportation through technology application, training, and information exchange."

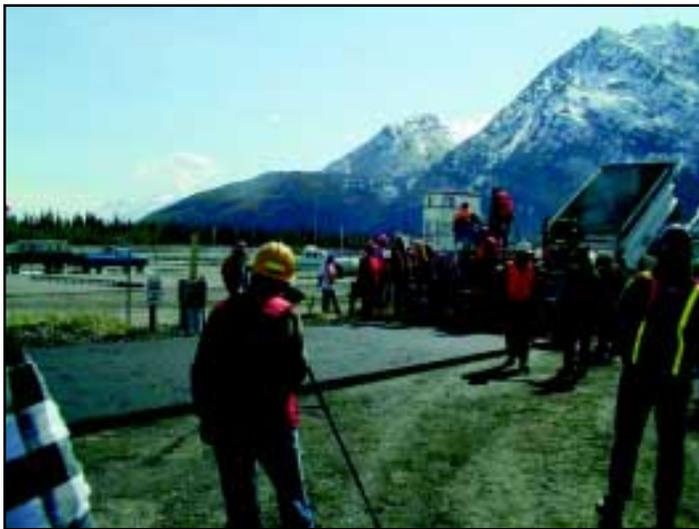
Asphalt Laydown Workshop a Success

Alaska Operating Engineers/Employer’s Training Trust approached DOT&PF’s LTAP staff with the concept of combining forces to provide unique training to their apprentices and journeymen as well as to DOT&PF and local agency construction inspectors. By working interactively and hearing the same information, workers would be able to better understand one another during actual construction jobs. With a little planning, the concept turned into a training session. The union’s apprentices and journeymen took on rebuilding and paving the Alaska Speedway in Palmer for the Alaska Drag Racers Association, who were in need of a safe, functional area to race.

For the paving portion, roughly 36 people, including union journeymen and apprentices, contractors,



In the control room of the asphalt hot plant.

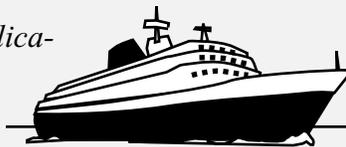


Using the new Thermal Camera on a tripod to view hot asphalt.

Municipality of Anchorage, DOT&PF, and City and Borough of Juneau, participated in a classroom session in mid-May, taught by Training Trust instructors who were assisted by DOT&PF staff. DOT&PF staff gave a classroom overview of thermal segregation problems and causes, then took a brand-new thermal camera out to the paving operations. Materials staff from DOT&PF worked with the asphalt plant operator and presented tours of the asphalt plant operations, explaining the asphalt preparation process and why temperature control is a critical factor in successful paving operations.



If you don't receive TR News, a publication of Transportation Research Board, National Research Council, you missed a feature article on DOT&PF's Alaska Marine Highway System. The July-August 2000 issue focuses on "Ferries in the 21st Century," and includes five pages, including photos and graphs. Starting with a history that begins with the Alaska Steamship Company and ending with fast ferries that are now entering the



AMHS fleet, the writers offer a projection of service yet to come. To borrow a copy of this periodical, contact the LTAP Library. Call Judy or Ann at the Mather Library, Geophysical Institute, University of Alaska Fairbanks, and ask to borrow that issue of TR News. It's also on the web at:
http://www4.nationalacademies.org/trb/onlinepubs.nsf/web/tr_news



Training (www.dot.state.ak.us, click on "Training Opportunities")

Date	Event	Sponsor/Contact	Location
Dec. 5–6	NHI 13613, Using the National Intelligent Transportation System Architecture for Deployment – Public Sector	Simon Howell 907-451-5482 * Sharon McLeod-Everette 907-451-5323 *	Anchorage
Dec. 5–6			Juneau
Dec. 12–14	Environmental Remediation Technology	Ann Marie Marson (EPA) (907)-271-3419	Anchorage
Feb. 6–8	NHI 13239, Geotechnical & Foundation Engineering: Module 9 – Geotechnical Earthquake Engineering	Sharon McLeod-Everette 907-451-5323 *	Juneau
Feb. 8–9	NHI 13401, Principles of Writing Highway Construction Specifications	Sharon McLeod-Everette 907-451-5323 *	Fairbanks
Feb. 10–11			Anchorage
Feb. 13–14			Juneau

* www.dot.state.ak.us/external/state_wide/T2/cal.htm

Meetings Around Alaska

Society	Chapter	Meeting Days	Location & Contact
ASCE	Anchorage	Monthly, 3rd Tues., noon	Northern Lights Inn
	Fairbanks	Monthly, 3rd Wed., noon	Captain Bartlett Inn
	Juneau	Monthly, 2nd Wed., noon*	Westmark Hotel * except June–Aug.
ASPE	Anchorage	Monthly, 2nd Thurs., noon	West Coast International Inn
	Fairbanks	Monthly, 1st Fri., noon	Captain Bartlett Inn
	Juneau	Monthly, 2nd Wed., noon*	Westmark Hotel * except June–Aug.
ASPLS	Anchorage	Monthly, 4th Tues., noon	Ah Sa Wan Restaurant
	Fairbanks	Monthly, 4th Fri., noon	Ethel's Sunset Inn
	Mat-Su Valley	Monthly, last Wed., noon	Windbreak Cafe George Strother, 745-9810
AWRA	Northern Region	Monthly, 3rd Wed., noon	Rm 531 Duckering Bldg., University of Alaska Fairbanks Larry Hinzman, 474-7331
ICBO	Northern Chapter	Monthly, 1st Wed., noon	Zach's Sophie Station Jeff Russell, 451-5495
ITE	Anchorage	Monthly, 4th Thurs., noon**	Sourdough Mining Co. ** except July & Dec.
IRWA	Sourdoughs Ch. 49	Monthly, 3rd Tues., noon**	West Coast International Inn
	Arctic Trails Ch. 71	Monthly, 2nd Thurs., noon**	Oriental House
	Totem Ch. 59	Monthly, 1st Wed., noon	Mike's Place, Douglas ** except July & Dec.
PE in Government	Anchorage	Monthly, last Fri., 7 a.m.	Elmer's Restaurant
Society of Women Engineers	Anchorage	varies	Karen Helgeson, 522-6513



Generous permission has been given to reprint the following five articles by Metric Today, the publication of the U.S. Metric Association.

Department of Transportation Clarifying Usage of Metric Units

The Federal Register of 24 April (vol. 65, no. 79) carried a statement that the U.S. Department of Transportation (DOT) National Highway Traffic Safety Administration (NHTSA) is “amending selected Federal motor vehicle safety standards by converting English measurements in those standards to metric measurements.” It states that this is the third and final action to be taken to implement the policy that the metric system *is* the preferred system to use.

Another item in that Federal Register states that the DOT text, which describes regulatory traffic control signs, will be reformatted “to include metric dimensions and values for the design and installation of traffic control devices.”

A DOT memorandum issued by Brent Felker, deputy director, project development, to DOT personnel indicates that, although some projects have been granted an exception to the use of inch-pound units, those requesting permission to use inch-pound units for projects will have to supply complete justification. The memo states that anyone involved in proving this justification would have to convince so many DOT facility heads that it will be found to be “more time and cost-effective to deliver the project in metric units.”



American Welding Society Revising its Metric Practice Guide

John Gayler of the American Welding Society (AWS) reports that the AWS published its first metric standard, *Metric Practice Guide for the Welding Industry* in 1975, and this guide has been updated and revised three times since then. Currently, its Committee on Metric Practice is working on the fourth revision of that standard. Gayler serves as the secretary of that committee, which meets once a year during the AWS Conference and Exhibition. Dave Thomas chairs the committee. The meeting took place, this year, in Chicago, on April 25.

The standard was written to support the AWS policy on metrication, which states: “The AWS supports a timely transition to the use of SI units. The AWS recognizes that the U.S. Customary System of units will eventually be replaced by the SI units. To delay the transition to SI units and to lengthen unnecessarily the transition period results in greater costs and confusion and increases the loss of compatibility with the

international market.” Some time ago, AWS requested that USMA furnish some SI-knowledgeable volunteers to assist them in keeping their metric standard up to date. As a result, USMA members Gene Mechtly and Jim Frysinger agreed to provide help with the standard. Mechtly attended the Chicago meeting. Also in attendance at the meeting was USMA member Bruce Barrow. Gayler reports that a number of improvements to the *Metric Practice Guide for the Welding Industry* were approved by the committee. Among them was the designating of the primary reference for this standard as the U.S. Federal Register Notice (thereby deleting the previously existing statement that “pertinent ANSI and ISO documents” were the primary references).



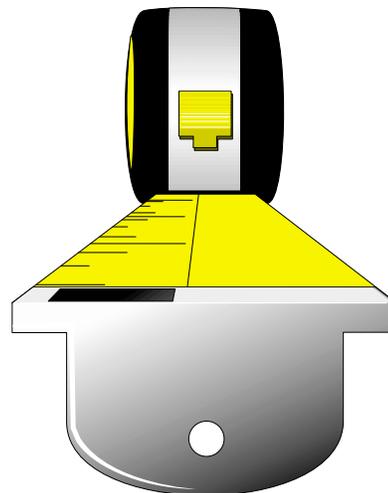
ASCE Metric Group Recommends Publicizing Use of SI Units in ASCE Standards

At its February 20, 2000, meeting in Orlando, Florida, the American Society of Civil Engineers (ASCE) Committee on Metrication (COM) discussed the lack of advertising of the fact that most ASCE standards include both inch-pound *and* metric units. COM chair Maria Grazia Brushchi, P.E., CAMS, planned to write to the applicable ASCE committees that handle this matter to request advertising of the ASCE standards with a mention that dual units are used. At the meeting, Austin Skromme was made the new Control Group member for the COM.

A review of ASCE publications showed that most journals are published in metric or dual units. It was agreed to ask Kelly Mansfield, *ASCE News* editor, to reinstate the COM's *Metric Column*, and suggestions were made for obtaining articles for that column. Also discussed was the possibility of providing metric panels for a number of upcoming conventions/conferences, including the ASCE October 2000 Convention in Seattle. The next COM meeting is tentatively scheduled for June 2001.

Measuring Metric

Cooper Tools boasts a line of 13 metric-only Lufkin tape measures, varying in width from 3 to 25 mm and in length from 0.8 to 8 meters. A catalog may be obtained from Cooper Tools Customer Service at 919-362-1670. For e-mail: cooperinfo@coopertools.com. Internet: www.coopertools.com/catalog/pdf/htoolcat_99/DOCS/LUFKIN.PDF (you need the Adobe Acrobat Reader, available free on the Internet at www.adobe.com, to view the PDF-format file).



Bill Nye's Response to the *Post* Article

A letter in the 25 May *Washington Post* from Television's Bill Nye, the Science Guy, stated the following:

"The . . . Canadians' mixed use of metric and English measures was insightful and charming. The United States also is ambivalent about measures, but the metric system is easier, and the sooner we use it, the better.

"We can take plenty of nonintrusive steps. For example, car companies could make the kilometers-

per-hour markings bigger than the mph ones on dashboards. Then, at last, we could all drive 100. We'll get used to kilometers fast, just as we all have to imbibing beverages packaged in liter bottles. Then, we can sell to people all over the world. In general, we have 10 fingers, so we should use them."

—Bill Nye, Seattle



METRIC UNITS USED BY THE CONSTRUCTION TRADES

	Quantity	Unit	Symbol	
Surveying	length	kilometer, meter	km, m	
	area	square kilometer hectare (10 000 m ²) square meter	km ² ha (hm ²) m ²	
	plane angle	degree minute second percent	° ' " %	
Excavating	length	meter, millimeter	m, mm	
	volume	cubic meter	m ³	
Paving	length	meter, millimeter	m, mm	
	area	square meter	m ²	
Concrete	length	meter, millimeter	m, mm	
	area	square meter	m ²	
	volume	cubic meter	m ³	
	temperature	degree Celsius	°C	
	water capacity	liter (cubic decimeter)	L (dm ³)	
	mass	megagram (metric ton) kilogram	Mg (t) kg	
Masonry	length	meter, millimeter	m, mm	
	area	square meter	m ²	
	mortar volume	cubic meter	m ³	
Steel	length	meter, millimeter	m, mm	
	mass mass per unit length	megagram (metric ton) kilogram kilogram per meter	Mg (t) kg kg/m	
Carpentry	length	meter, millimeter	m, mm	
Plastering	length	meter, millimeter	m, mm	
	area	square meter	m ²	
	water capacity	liter (cubic decimeter)	L (dm ³)	
Glazing	length	meter, millimeter	m, mm	
	area	square meter	m ²	
Painting	length	meter, millimeter	m, mm	
	area	square meter	m ²	
	capacity	liter (cubic decimeter) milliliter (cubic centimeter)	L (dm ³) mL (cm ³)	
Roofing	length	meter, millimeter	m, mm	
	area	square meter	m ²	
	slope	percent ratio of lengths	% mm/mm, mm/m	
	Plumbing	length	meter, millimeter	m, mm
		mass	kilogram, gram	kg, g
capacity		liter (cubic decimeter)	L (dm ³)	
pressure		kilopascal	kPa	
Drainage	length	meter, millimeter	m, mm	
	area	hectare (10 000 m ²) square meter	ha m ²	
	volume	cubic meter	m ³	
	slope	percent ratio of lengths	% mm/mm, mm/m	
HVAC	length	meter, millimeter	m, mm	
	volume (capacity)	cubic meter liter (cubic decimeter)	m ³ L (dm ³)	
	air velocity	meter/second	m/s	
	volume flow	cubic meter/second liter/second (cubic decimeter per second)	m ³ /s L/s (dm ³ /s)	
	temperature	degree Celsius	°C	
	force	newton, kilonewton	N, kN	
	pressure	pascal, kilopascal	Pa, kPa	
	energy	kilojoule, megajoule	kJ, MJ	
	rate of heat flow	watt, kilowatt	W, kW	
Electrical	length	millimeter, meter, kilometer	mm, m, km	
	frequency	hertz	Hz	
	power	watt, kilowatt	W, kW	
	energy	megajoule kilowatt hour	MJ kWh	
	electric current	ampere	A	
	electric potential	volt, kilovolt	V, kV	
Trucking	resistance	milliohm, ohm	mΩ, Ω	
	distance	kilometer	km	
	volume	cubic meter	m ³	
	mass	megagram (metric ton)	Mg (t)	



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Research and Technology Transfer Adds a New Face

Steve Saboundjian, P.E., joins the Alaska DOT&PF Research and Technology Transfer section. He came to the Research unit from the University of Alaska Fairbanks, where he was a research associate with the Transportation Research Center, and where he obtained his Ph.D. in civil engineering/transportation materials.



Steve Saboundjian, new addition to DOT's Research and Technology Transfer staff.

Steve's background is in materials and asphalt. He is responsible for most of DOT&PF's research projects that deal with those topics. Steve can be reached at 907-451-5322, or at steve_saboundjian@dot.state.ak.us.

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