Year-End Update From TTAP

By Alice Karsama

Winter is upon us again in the North Country, as we near the end of another year at TTAP. Outside, the sound of snow squeaking underfoot testifies to the cold temperatures (it sounds like walking on Styrofoam packing peanuts.) In keeping with the season, TTAP is offering Snowfighting Workshops, based on a new CD-ROM training package. Taught by TTAP Instructor, John Lovato, workshops can be scheduled in your community by calling TTAP at 1-888-230-0688.

We also expect to be holding a number of P.L. 93-638 Contracting Workshops in the near future. The Seneca Nation will be host site for a 638 Workshop in New York State, currently set for the week of February 6th, 2001. Watch for brochures, announcing exact dates and location. This workshop will include an update on the Negotiated Rulemaking Process, which is in the comment period.

We also have several 638 Workshops in the planning stages for tribes around Minnesota. We will give further notice as initial plans are firmed up. If you would like to host a 638 Contracting Workshop in your community, please call to make arrangements.

TTAP has also developed a Proposal Writing Workshop. The first one was held in Michigan in late November. It was productive and informative but, as luck would have it, we received 12 inches of snow the evening before, and a number of attendees had to cancel their travel. We are ready to offer the Proposal Writing Workshop in other locations, as well, so if you would like to host this workshop, please let us know.

Our Website (http://www.ttap.mtu.edu) has been updated to include funding sources from the Catalog of Federal Domestic Assistance (CFDA) with links to each listed site. This new addition results from extensive research by Robert Gagnon, TTAP Manager, and some website wizardry by student, Dustin Denkins. Please visit our website and click on the “Funding Sources” button (at left screen) for a list of programs and funding for which tribes can apply.

Our TTAP-L e-mail list is also active. Messages go out to subscribers on topics ranging from U.S. DOT news releases, to workshops, training courses, conferences, and other news items. Our list is available for your use, as well. To post a notice or message, contact us by phone or email.

Anyone with e-mail can subscribe to TTAP-L, by sending an e-mail message addressed to: majordomo@mtu.edu. In the body of the message, type the words, “subscribe TTAP-L” and send. Each subscriber receives a confirmation message and a welcome to the list.

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This issue of Pathways has an update on recent TTAP activities and future plans, with a rundown of current workshops. It also contains articles on essentials for a good road, ideas for using discarded tires as a means to prevent erosion, and news about Cabazon Indian business development which includes a facility to recycle tires into crumb rubber for asphalt.

The Seneca Nation in New York is planning to host a TTAP 638 Contracting Workshop in early February, 2001. Watch for flyers announcing exact dates and location. We are still seeking host tribes in the south and southeast for this and other workshops. There is no cost to the host tribe, but we do need a facility in which to conduct training.

And last, but not least, please help us welcome our newest student employee, Ryan Erkilla, who joined us in early fall. Ryan is from Norway, Michigan and a sophomore in Civil Engineering at MTU. He has been busy taking an inventory of our library video tapes and publications, so catalogs can be produced and sent out to our readers. We feel fortunate to have Ryan on our staff!

Happy Holidays
Alice Karsama, Editor

Visit our Internet Home Page at: http://www.ttap.mtu.edu

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Winter 2000-2001
Federal Lands Highway Program

TEA-21 Changes Explained in Informational Pamphlet...

The Federal Lands Highway Program (FLHP) provides funding for a coordinated program of public roads and transit facilities serving Federal and Indian lands. TTAP has received a supply of pamphlets describing the Federal Lands Highway Program under the new TEA-21 legislation.

The seventeen-page booklet contains information about the Federal Lands Highway Program (FLHP), the FLHP Organization, the Emergency Relief for Federally Owned Roads (ERFO) Program, the Defense Access Roads (DAR) Program, and a TEA-21 Funding Authorization Table.

An introductory message from Kenneth R. Wykle, FHWA Administrator, states: “Over 30 percent of the nation is Federal or Indian land. Providing access to and within these lands, under the Federal Lands Highway Program (FLHP) is one of the FHWA’s core business functions. In various partnerships with the Federal land management agencies, Indian tribal governments, and State and local transportation agencies, the Federal Lands Highway Office administers the FLHP.

“I look forward to continue working with Congress and our partners to improve the transportation mobility to and within Federal and Indian lands in an environmentally sensitive manner, and in implementing the new FLHP provisions contained in the Transportation Equity Act for the 21st Century (TEA-21).”

Sections of the booklet outline program changes as a result of TEA-21, items eligible for FLHP funding and funding categories, and services provided by the Federal Lands Highway Program.

Call the TTAP at 888-230-0688 to obtain a free copy of this new TEA-21 Informational Pamphlet from the FLHP.

Pavement Preservation CD-ROM Available at TTAP

Highway agencies across the country are departing from old traditional reactive maintenance approaches, to new pro-active preservation strategies designed to protect the highway infrastructure. Highway managers face increasing demands for limited transportation funding. Preserving the highway network is the most cost-effective and efficient means to assure serviceable roadways in the future. But perhaps the greatest benefit derived from preservation is improved overall performance, measured by such attributes as ride quality, safety and extended service life.

Pavement preservation provides a chance for agencies to improve customer satisfaction. The public has come to expect and even demand a smooth ride without inconvenience or annoying traffic delays, even those caused by construction and maintenance. Preservation treatments are often placed quickly and with little or no delay to the traveling public. Embracing pavement preservation allows agencies to focus on the customer, while improving the network’s surface condition and maintaining its overall system integrity.

Moving pavement preservation towards implementation requires an agency to tailor a program to address specific needs. This transition is best accomplished by reviewing and adopting successful practices of other highway agencies.

We are pleased to provide the CD-Rom entitled, “Pavement Preservation: State of the Practice, July 2000.” This compact disc contains information needed to successfully initiate a pavement preservation program.

The CD-Rom was developed as a cooperative effort of the American Association of State Highway and Transportation Officials (AASHTO) Lead State Team for Pavement Preservation, the Foundation for Pavement Preservation, and the Federal Highway Administration.

For more information on pavement preservation, please contact your local FHWA Division Office, or Mr. John Fiegel, of the Foundation for Pavement Preservation by phone at 202-367-1 166 or by e-mail at John_Fiegel@dc.sba.com. You may also contact Mr. Jim Sorenson of FHWA’s Office of Asset Management by phone at 202-366-1333 or e-mail: james.sorenson@fhwa.dot.gov.

Submitted by:
John Fiegel, Executive Director, Foundation for Pavement Preservation & Madeleine Bloom, Director, FHWA Office of Asset Management
Ten Essentials of a Good Road

Here are 10 basic tips to help maintain and keep your roads in good condition

1 Keep water away from roads. Drainage cannot be overemphasized in road construction and maintenance. Water affects the entire serviceability of a road. Too much water in the base material weakens the road. Water allowed to remain on top of a gravel or black-topped road weakens the surface and, combined with traffic, causes potholes and cracking. If improperly channeled, water causes soil erosion and a breakdown of pavement edges. Whether it is mud in the spring or frost heaves in the winter, the presence of water in roads is nothing but trouble.

A good surface drainage system is the best way to lessen water damage on a road. Proper surface drainage prevents water from infiltrating the pavement surface and removes water from the driving lanes in a constant thin sheet to the side ditches, which carries the water away from the roadway. A surface drainage system has four main components: road crown, shoulders, ditches, and culverts.

The road crown, or super-elevation of the road surface, drains water off the road surface.

Shoulders are an extension of the road surface and allow for the continued flow of water to the ditches.

Ditches are used to carry water away from the roadway. They need to be kept clean and protected from erosion. Water left in the ditch can sometimes leak back into the base.

Water collected and carried in the ditch has to be directed away from the roadway at frequent intervals, sometimes using culvert pipe.

Culverts usually channel water from one side of the road to the other, helping to control the flow of water and slowing it down to reduce erosion.

Road managers are guided by the principles that water runs downhill, that water needs outlets at the bottom of all grades, and that puddles mean problems.

2 Build on a firm foundation. A highway wears out from the top, but it falls apart from the bottom. This is another way of saying that the road base determines the service life of a road. The base supports everything above it, including traffic.

Without adequate support, the road will deteriorate rapidly. A good road requires a suitable foundation composed of stable material. A road material is stable if it has negligible soil settlement with a change in moisture content and does not deform excessively under repeated loads, whether the material is wet or dry.

3 Use the best soils available. The supply of natural, good-quality soils and aggregates is beginning to disappear. Blended or crushed gravel is a more expensive alternative. The quality of soils used by a road manager often depends on local availability and budget. In deciding what is available, consider the long-term consequences of using lower quality material. Using inferior base material may require excessive maintenance during the road's life and, perhaps, expensive rehabilitation. The adage "pay me now or pay me later" applies to road building.

4 Compact soils well. The more dense the material is, the stronger it is. When soil is improperly compacted, future traffic loads or changes in moisture content can cause settling and failure of the roadway.

Compaction is achieved by pressing soil particles together, which expels some of the air from the mass, making the material more dense. Well-graded soils having a fairly even distribution of particle sizes will compact more easily than poorly graded soils that have mostly one particle size. Crushed or angular particles will compact to a more stable condition than rounded particles of similar size. A certain amount of moisture is necessary for good compaction.

5 Design for winter maintenance. In areas that receive substantial snowfalls, roads that are designed for winter maintenance should be adequate for the rest of the year. Consider the following: if the traveled way is wide enough to allow a snowplow and a school bus to meet, it should be wide enough for the rest of the year.

If ditches and roadside areas are wide enough to store snow, chances are they will accommodate spring thaws and heavy water flows.

Grades should be a minimum of 1% for drainage purposes and should not be greater than 10% if at all possible. If the road is steeper, it is difficult for heavy equipment to maneuver, especially in the wintertime.

Sight distance should be considered in designing a road. For safety's sake, a driver should be able to see 75 to 100 feet up the road for every 10 miles per hour of driving speed.

6 Build for traffic loads and traffic volumes. Thin ice on a pond may support a young skater, but it will crack and break apart under the weight of an automobile. Similarly, a road built to serve residential traffic will break down when it starts carrying a number of large trucks. Road managers know that roads, like bridges, should be designed with the expected traffic type and volume in mind.

A rule of thumb is to design a road to accommodate the largest vehicles that will use the road under normal operation. If in doubt, design the road for the largest piece of equipment that maintains it in all kinds of weather.
Ten Essentials of a Good Road, continued

Road managers can get information and guidance from the state transportation agencies about the type and thickness of pavement mixes to apply to a gravel road. Generally speaking, a low-volume road with some truck traffic may provide good services with a “chip seal” or “sand seal.” As traffic volumes and weights increase, cold-mix asphalt and hot-mix asphalt pavement may be better alternatives.

7 Pave only roads that are ready to pave.
Some agencies make the mistake of paving over a road that is not properly prepared in their haste to get rid of another dusty gravel road. The result may be a complete waste of money. Paving will not cure the other problems that the gravel road may have. It still must be built of well-compacted layers of free-draining soil, be able to carry expected traffic loads, and be able to drain well. The cost of rebuilding a mistake is much higher than not making the mistake and doing it right the first time.

8 Build from the bottom up.
A road that has a poor base and poor drainage cannot be adequately improved with a top dressing of gravel or new pavement. It may be necessary, in some cases, to dig out the old road, put in new materials, and build up the road in layers.

Before doing anything to correct a road surface problem, road managers should take into consideration what is causing the problem underneath. Improper drainage, insufficient depth of base, or poor quality gravel may be the culprit. These should be corrected before spending money on the surface.

9 Protect your investment.
Roads and bridges need regular maintenance to keep them from deteriorating. The increased weight and frequency of traffic on roads, combined with adverse weather conditions, means an increased rate of road and street deterioration. Regular road and bridge maintenance preserves our road investment and prevents costly major rehabilitation later on. Maintenance activities include:

- Roadway surfaces: blading and shaping, patching, resurfacing, dust control, snow and ice removal.
- Drainage: cleaning and repairing culverts and ditches.
- Roadside: cutting bushes, trees and grass, repair and prevention of roadside erosion.
- Bridges: clearing channels, repair of rails, decks, and structure, cleaning and painting.
- Traffic services: sign maintenance, cutting vegetation to main visibility.

10 Keep good records.
Road managers know their roads like the back of their hands. Most of them are walking history books when it comes to the roads they manage every day. This knowledge is of little use, however, when the road manager is ill, moves, or retires.

Good record keeping makes roadwork much easier for everybody. It is easier to formulate budgets and to show the citizens a plan for roadwork. Recording which type of work was done on roads or bridges, when, and what materials were used can help a lot in making decisions later on.

Agencies can start by doing an inventory of all roads and bridges, listing length, width, surface types, culverts, problem areas, and other items. Placing these items on a map helps. Next comes listing and prioritizing needed improvements, putting a price tag on them, and taking care of a few problems each year.

Reprinted from Arkansas Roads & Streets; adapted from an article in the Kentucky Transportation Center’s “The Link” Newsletter, Spring 1993.
What Can Be Done With All Those Tires?

Use of Discarded Tires in Highway Maintenance

- A Translab Design Information Brochure -

The high cost of new construction materials, coupled with waste material disposal problems, has focused attention on recycling waste products for use in transportation projects.

One such waste product is the discarded tire, which has several uses:
- for shoulder reinforcement on highway slopes,
- for channel slope protection, or
- as a barrier to mechanically control blowing sand in low rainfall areas until vegetative windbreaks can become established.

A brochure developed by the Transportation Laboratory in Sacramento discusses the first two uses of scrap tires listed above. Blowsand interception using discarded tires was not covered, as it was found to be expensive.

The Transportation Laboratory has researched this area with the following objectives:

- Develop engineering guidelines for the use of discarded truck tires and recycled materials as a mechanical means to stabilize highway shoulder erosion problems.
- Determine if discarded truck tires and recycled materials would be feasible for low velocity drainage channel slope protection.

This research resulted in a brochure entitled "Use of Discarded Tires in Highway Maintenance," copies of which can be obtained from TTAP.

The brochure includes two sheets of drawings offering guidelines for using discarded tires to control erosion of embankments and to control erosion on channel banks.

These guidelines are plans which will allow designers to develop discarded tire projects. They will also provide maintenance personnel with an immediate solution for an erosion problem until more permanent measures can be undertaken. The expected life of a shoulder reinforcement project, for example, can be 5 to 10 years.
Cabazon Expand Environmentally Friendly Businesses

Mecca, Calif. - Business and economic development is often seen as opposed to the environment, but the California Cabazon tribe believes this is not always the case and has set out to prove it. The Cabazons are directly in the middle of an economic empowerment zone and regard their environmentally friendly industries as an example for other zones across the nation.

For the last 18 months, the 42-member Cabazons have operated a tire "crumbling" facility on their reservation at the edge of the Mojave Desert, as part of a larger environmentally friendly business plan that is in no way complete.

In addition to the tire facility, the tribe also operates a 50-megawatt power facility that uses green waste, such as wood and tree trimmings, as its primary fuel.

Cabazon CEO, Mark Nichols, says this results from careful, long-term planning begun in the 1970s. "In 1976 the tribe began a reorganization effort whose goal was to have the tribe work more efficiently in the modern world. The trick was to find economic expansions that would ultimately be consistent with traditional values, particularly a clean environment," Nichols says.

The Cabazons came up with the first of several 10- and five-year plans to develop these goals. Since the Cabazon reservation was divided into four separate areas, the tribe decided each should take on a specialized facet of tribal needs. Over time, the tribe decided the four task areas should be residentertainment, commercial, residential, and waste management.

One result has been a tribal entertainment facility opened on the land nearest Interstate 10 that includes Fantasy Springs Casino and an adjacent bowling alley. On the 640-acre resource recovery stretch, the tribe tried several forms of economic development, including a service to clean up poison soil at former gasoline stations.

The most important initial tribal facility was the Colmac power station. The idea resulted from a California state mandate governing the amount of biodegradable waste in dumps and landfills. Cabazon had been looking for help with this when they decided to open a power plant, using wood and other plant materials to fuel the turbines creating electricity.

Director of legal affairs for Cabazon, Patrick Schoonover, says most of the power generated from this facility ultimately goes to southern California energy providers. The tribe is negotiating for a larger plant for its own industrial needs as well as an additional source of power for southern California. "Because of (deregulation) the market has created a demand for additional power sources in southern California; we're hoping to be an additional provider."

Eighteen months ago, the tribe opened a 30,000 square foot state-of-the-art tire crumbling facility. It employs 32 people and shreds tires to be recycled into other uses. The facility employs the latest computer controls and is run by Dan Swanson, who has been in that line of work for 10 years.

Swanson says the plant has contracts with several southern California tire dealers, with the recent Firestone recall also giving the plant extra business. "As far as I know, this is the only Native American-owned tire recycling facility in the country."

Swanson says the tribe is looking to further develop the resource recovery area by bringing in light industries that would be integrated into the tire crumbling facility and the proposed power plant. Nichols and Schoonover think it feasible to bring in light industries to utilize the recycled rubber, the by-product of the tire facility, and manufacture it into other uses, such as materials for roofing. They also think the tribe can expand beyond tires and rubber products to include recovery of metals such as copper and aluminum, as well as extracting platinum from catalytic converters of junked cars.

Another project the tribe is looking at is aquaculture. Integrating their waste management goals, the tribe feels they could use an aquaculture facility to not only raise shrimp but to sell the by-products as fertilizer to farms.

In preparation for these projects the tribe has conducted a Programmatic Environmental Impact Study (PEIS) to clear the way for future development. The PEIS is something usually used by cities for the same reason. This is the first time an Indian tribe has done this.

Adapted by permission from Indian Country Today, Internet URL: www.indiancountry.com/
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Snowfighting Training

A new TTAP Workshop! A new training CD!

"Snowfighting Training Materials" - a training CD from the Salt Institute

TTAP is offering Snowfighting Training Workshops, based on the "Snowfighting Training Materials" CD-Rom from the Salt Institute.

Workshops will be conducted by TTAP Heavy Equipment Instructor, John Lovato, at your location.

You provide the location, the students, and a plow if you have one; we'll provide the rest.

To Arrange a Workshop in Your Community, call TTAP: 1-888-230-0688

This CD contains handouts and inserts designed as introductory overviews for the public official and for the operators themselves.

It includes an introductory letter to the trainer, and Power Point presentations for both elected officials and the operators.

For information on more snowfighting training materials, see the Salt Institute website:

www.saltinstitute.org/snowfighting

Call TTAP for your free disc

Thanks to the Salt Institute for providing this training aid:

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