Tribal, State, and Federal constituents met this spring to recap last year’s events and discuss upcoming activities. With passage of the new transportation bill last year, SAFETEA-LU, there was a lot of information to cover on new funding and allocation methods.

The annual BIA/State/Tribal meetings were held in the following locations:

4/4-6/06 Wisconsin Meeting, Ho-Chunk Nation (Baraboo, WI)
5/2-3/06 Minnesota Meeting, Upper Sioux Tribe (Granite Falls, MN)

BIA staff provided both general program and regional specific information on the following topics:

- Regional/Agency Update
- SAFETEA-LU Update (Rollout)
- Indian Reservation Road (IRR) Inventory & RIFDS
- Transportation Planning
- High Priority Projects (HPP)
- Road Maintenance
- Bridge Program

In addition, State Department of Transportation representatives from each respective state were present to provide updated information about State transportation programs, new opportunities available for Tribes within the State programs, data sharing opportunities, available resources and answer any questions. MTU TTAP provided mini training sessions in conjunction with each meeting.

The meetings are held annually in the Midwest and hosted by a different tribe each year. The goal of these meetings is to foster inter-governmental coordination between Tribes, States, the Federal Government, and other local transportation partners. Contact your regional BIA office for copies of presentations or to offer to host a future meeting.

Safety Corner: Highways for Life

“The purpose of Highways for LIFE (HfL) is to advance Longer-lasting highway infrastructure using Innovations to accomplish the Fast construction of Efficient and safe highways and bridges... The three goals of HfL are to...

- Improve safety during and after construction,
- Reduce congestion caused by construction, and
- Improve the quality of the highway infrastructure.”

Editor’s Corner

The big news for this issue occupies the smallest corner on page 11: Michigan Tech TTAP is rolling out distance education workshops. What is “distance education” you might ask? For us, it means that we are preparing workshop materials that you normally would see in a classroom and offering those materials to you via the Internet. You can sign up for a class and watch/listen to the presentations whenever it is convenient for you, instead of having to wait for us to visit your area or travelling to an out of town class. We’ll also be offering some live classes and meetings via the Internet.

All of this technology and the expert advice to get us started has been generously donated to us by the FHWA on a trial basis. If there is significant demand for this method of training and it becomes popular, then we can establish a permanent system to offer you these opportunities indefinitely. To determine how popular (or unpopular) these distance education classes are, we’d like you to sign up and try the workshops and honestly answer the accompanying survey questions. As always, we will work to deliver the training, services, and information you need and ask for, and this is a good way to let us know if this system will serve you well.

You need a computer with a web browser and a broadband connection to the Internet to participate. To get started, go to <http://www.ttap.mtu.edu/workshops> and look for the classes marked “distance ed.” From there, you’ll be directed to another web site were you can try out the classes and give us feedback. --John

PS: Training requests for 2007 are due December 8, 2006 (submit distance education training requests at any time)

The deadline for contributing suggestions, corrections, or information for publication in the next Pathways, Volume 12, No. 3, is August 28, 2006. Any contributions made after that date will appear in Volume 12, No. 3. You may contribute information for publication on www.ttap.mtu.edu at any time.

Pathways is published quarterly by the Tribal Technical Assistance Program, in the Michigan Tech Transportation Institute at Michigan Technological University. The Tribal Technical Assistance Program is part of a nationwide effort jointly financed by the Federal Highway Administration (FHWA) and the Bureau of Indian Affairs (BIA). It intends to relay the latest technology and information on tribal roads and bridges, tourism, recreational travel, and related economic development to tribal transportation and planning personnel. Tribes in the Michigan Tech TTAP region include those in the Minneapolis and Eastern BIA Regions. Contact the TTAP office for a free Pathways subscription, or to submit articles and suggestions.

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3,832 copies mailed this edition. The Michigan Tech TTAP logo was created by Sally R. Brunk, Lac du Flambeau Band of Lake Superior Chippewa. Michigan Tech TTAP and Pathways are sponsored by the Federal Highway Administration and the Bureau of Indian Affairs. Michigan Tech University is an equal opportunity educational institution/equal opportunity employer. Copyright © 2006 Michigan Technological University
Validation of Accident Models for Intersections

“The existing crash prediction models for rural intersections developed for the Interactive Highway Safety Design Model (IHSDM) require validation and recalibration to improve their credibility and enhance their applicability. This report describes the results of validation and calibration of motor vehicle crash models for rural intersections. Both the validation and recalibration activities were conducted in pursuit of one overriding research objective, which was to make marginal improvements to an existing set of statistical models for predicting crashes at two- and four-lane intersections, with the primary intent to be used in the IHSDM.

The five types of intersection models for which conclusions are drawn and recommendations are made are: three-legged stop controlled intersections of two-lane roads; four-legged stop controlled intersections of two-lane roads; three-legged stop controlled intersections with two lanes on minor and four lanes on major road; and four-legged stop controlled intersections with two lanes on minor and four lanes on major road, and signalized intersections of two-lane roads.”


Report No. FHWA-RD-03-037, March 2005

Document links:
http://www.tfhrc.gov/safety/pubs/03037/03037.pdf PDF version (1.6MB)

Planning for Transportation in Rural Areas

“This document is designed as a resource to rural planners, city and county engineers, stakeholders, local officials, and other decision-makers involved with developing rural transportation plans. It is intended to foster a better understanding of the characteristics, issues, and trends affecting rural transportation systems and the benefits of good rural system planning. It provides approaches and case study profiles for public consultation, environmental review, transit system planning, intelligent transportation system planning, and access management. The document does not establish a step-by-step process for rural transportation planning. Rather, it provides information and references that participants in rural transportation planning can use in fashioning a planning process that best suits local circumstances.”


Document links:
http://www.fhwa.dot.gov/planning/rural/planningfortrans PDF version (1.25MB)

Pavement Preservation Toolbox Strategies for Preventive Maintenance Programs

“State and local transportation agencies around the country are adopting pavement preservation programs to extend pavement service life, improve safety, and lower life-cycle costs. To help agencies meet their goals, this CD presents a broad range of preservation strategies and preventive maintenance techniques/technical information for managers and engineers and program information for planners and policymakers. From evaluation through quality control, these Toolbox resources offer practical, authoritative guidance on using preservation technologies in highway preservation programs.”

- Pavement Preventive Maintenance Technologies: Guidelines (evaluate pavements, choose strategies, and apply treatments)
- Pavement Preservation Programs: Concept and Development (current thinking in pavement preservation)
- Resources: Industry and Government (national organizations and Federal programs)


Document links: no on-line version as of publication. Contact TTAP for a free copy.
Road Safety Audit Workshop Wrap-Up
Performing regular Road Safety Audits in your jurisdiction is easy and fun!

Adapted by John Velat from Application of Road Safety Audits to Urban Streets

TAP held two Road Safety Audit trainings preceding the BIA/State/Tribal meetings in Sault Ste. Marie, MI and Baraboo, WI. Students learned how Road Safety Audits (RSAs) can help make safer roads, and how to develop an RSA program and team for their jurisdictions.

Here are some tips from those classes and from published RSA resources that will help you make your roads safer. Look for links to additional RSA resources throughout this article and at <http://www.ttap.mtu.edu>.

What is a Road Safety Audit?

A road safety audit is a formal safety performance examination of an existing or future road or intersection by an independent audit team. <http://safety.fhwa.dot.gov/rsa>

For each stage of a road’s construction, there are Road Safety Audit tasks to perform. The five stages of road construction and their auditing activities follow.

Stage 1: Feasibility (Planning) Stage

• Evaluate options such as route locations, layouts, treatments, interchange locations and type access control, impacts on the existing road network and other features.

As with any project, the first step of a road safety audit is to plan. During the feasibility planning stages, you are determining What you need to do and Where you’re going to do it. This may be the easiest part of planning, because for most agencies, the Where is a jurisdiction determined by law or treaty. You should already have road maps of your jurisdiction, and you will need those maps to plan What you’ll be doing.

The goal of your RSA is to create safer roads, so a good place to begin is by determining What can be done to address existing safety concerns and how to design new, safer roads. For existing roads, you may have formal data identifying problem areas in your jurisdiction, or you may simply have anecdotal evidence that a particular section of roadway or intersection has more problems than others. Either way, you can use the formal data and/or anecdotal evidence to make a list of known or perceived problem areas, then move on to prioritizing the problems based on time, staff, and financial constraints.


Much of the planning portion of a Road Safety Audit involves getting your people and resources in line with your plans. Once you have a team and have decided what you’ll be evaluating, you’ll be entering implementation phases. Because implementation includes evaluation of plans, the planning and implementation phases will sometimes occur simultaneously. Implementation includes evaluation and modification of existing infrastructure to react to changing traffic patterns, unforeseen problems, changing weather, and damage or unsanctioned modifications.

Stage 2: Draft Design Stage

• Examine general design standards such as horizontal and vertical alignment, intersection and interchange type and layout, sight distances, lane and shoulder widths, superelevation, and provisions for pedestrians and bicyclists.
Stage 3: Detailed Design Stage
- Assess final geometric design features, traffic signing and marking plans, lighting plans, landscaping, intersection and interchange details, provisions for special users such as elderly pedestrians, handicapped, cyclists, drainage, guardrail and other roadside objects.

The draft and detailed design stages are when you are evaluating new construction plans to be sure you’ve accounted for all engineering and design factors, as well as accounting for design elements that affect non-motorized and non-typical motorist users. Always remember that no matter how much you might know about safety, engineering, planning, or transportation, you will always overlook design and planning details that others will see from their respective viewpoints. You may find your best experts among mothers who drive their kids to school or bicyclists who have to share the road with three-ton SUVs. The team who evaluates a design or existing road must include both technical experts and users, as well as administrators and legal experts. This doesn’t mean that you need to develop your agency’s transportation plans during dozens of town-hall meetings, but it should mean that you will present your ideas to the public and other experts during key decision-making stages and allow for feedback, input, and changes throughout the process.

Stage 4: Pre-Opening Stage
- Perform a final check prior to opening to ensure that you have addressed the safety concerns of all road users and that you’ve eliminated any hazardous conditions you’ve found. This audit includes both day and night checks, evaluations in wet and dry weather, and for driving, riding, and walking.

The best time to begin safety planning is before problems occur. If a crash already happened, it may mean that your road has a bad design to start with. The RSA process begins by assembling a team who will be the key decision makers for the design and planning of your new road or changes to existing infrastructure. This means that safety audits occur even as you are thinking about building a road, bridge, or pedestrian path. Safety will be a driving factor in how you build, so it must be considered from the very beginning. Safety is also a component of the actual construction, so again, it must be considered during engineering and implementation. Finally, keeping roads safe is an ongoing process of feedback and modification during the entire life of your transportation infrastructure and influences all components of an asset’s lifetime. Much of your ongoing maintenance and upkeep is driven by the need to keep transportation infrastructure safe and improve safety into the future.

Don’t forget that what we consider good practice now may prove to be disastrous 5, 10, or 20 years down the road (see figures 1-4 and figures 8-10).

RSA, cont’d on pg. 6

Just because you’ve done a great job planning and designing your roads, doesn’t mean they remain safe even just a few days later. Conduct follow-up RSAs every year to find problems that can appear any time, like these mailboxes. (Figure 4)
Stage 5: Existing Roads Stage

Perform audits on existing facilities to be sure your previous plans and modifications have had their desired effects. Recognize that roadway use, volume, and environment may change over time, so you should audit recently opened road sections as well as your full inventory of roads over time.

During this first part of implementation, you are in the Final Design Stage of an RSA. This is the stage where you publish the details of your plan and subject them to community and peer review. At this point you are telling others what you’ve decided to do and how you’ve considered things like geometric design features; traffic signing, marking and lighting; provisions for pedestrians, cyclists, disabled, elderly; access control; etc.

You should be done with most of your office work now, and it’s time to get this RSA out onto the road. The next stage is called Pre-Opening Stage and requires on-site evaluation of the area under audit in all weather and from the perspective of all potential users. Do not overlook the importance of this seemingly redundant step, even if it is for a green-field construction project. A set of eyes on site can help you see the obvious before it becomes a problem. If the RSA is for existing roads, then be sure to observe the subject site at different times of the day, on different days, and from several users’ standpoints. It’s amazing what you can see when you stand at an intersection and consider how ridiculous the existing pedestrian access can be (see figures 5 & 6).

Once you have built a road, don’t forget to go back days, weeks, months, and even years after construction to perform follow-up road audits. Traffic patterns, vegetation, and pedestrian use change over time, and infrastructure may have suffered damage, vandalism, or unsanctioned changes.

So far, you’ve learned about Who should participate, Where RSAs should take place, What should be evaluated, and When to perform the RSA. Next, you’ll learn How to perform the audit.

How to Perform Road Safety Audits

1. Select the Road Safety Audit Team

From the previous planning section, you learned that almost anyone can and should participate in the RSA process. The team should be independent of the construction and engineering companies that will build or modify the roads under review so that the design is viewed with “fresh eyes.” One or more professional safety engineers and auditors will contribute the necessary credibility to the audit team and ensure formal processes are followed.

2. Provide the Background Information

During planning, you collected background design, standards, crash data, traffic volumes, community input, plans, and drawings. The team takes this information and collects any missing information that was not available during the planning efforts. Background information should also contain a statement of purpose and scope.
3. Hold a Commencement Meeting

The designer or client calls the commencement meeting to discuss pertinent information and concerns and turns over relevant data to the auditors. The client discusses the purpose and scope with the audit team and defines auditor, manager, and client roles. Define deliverables at this meeting so that each participant is clear of what is expected and when it is due.

4. Assess All Documents

The audit team reviews all documents to record initial impressions and defines possible safety problems exposed by observation, data, and/or anecdotal evidence. Refer to checklists to ensure that each audit subject is evaluated in the same way (see figures 12 and 13).

5. Inspect the Site

Inspect each site several times at different times of the day and night over the course of several days to get the best possible overall understanding of how the road is used by all classes of motorized and non-motorized users. Include observations of adjacent roads and properties to see how changes may affect traffic patterns for the surrounding area. Use site inspection checklists for audit consistency. Conduct this inspection concurrently with the document review.

6. Write the Road Safety Audit Report

Write a RSA report that identifies safety deficiencies and recommends corrective actions. Recommendations should focus on the direction of possible solutions rather than detailing an exact remediation. Identify urgent safety issues that pose imminent danger to road users. The RSA report must be delivered as a “stand alone” document by independent auditors and is not a draft for comment and negotiation with the designer and client.

7. Hold a Completion Meeting

The audit team should present their findings to the designer and client at a completion meeting. At this meeting, the RSA team also explains their recommendations and answers any questions. The results need to be presented in a proactive, positive manner rather than as a criticism of the proposed design, plan, or construction program.

8. Write a Response to the Audit Report

The designer/client should prepare written responses to all audit recommendations. This response document, sometimes called a “Corrective Action Report,” is part of the formal audit process and should be signed by an official with the authority to enforce decisions. This report should include a response to each RSA report recommendation to identify corrective actions; rejected recommendations; recommendations accepted “in principle” but requiring further discussion as to the corrective actions; and those corrective actions which only address part of the problem.

9. Implement the Agreed Changes

The designer/client implements the accepted corrective actions. Keep a written record of the corrective actions for future reference.
Road Safety Audits, continued from page 7

10. Use Knowledge Gained

As the RSA process proceeds, the designers, clients, and auditors will learn from their activities. Transferring this knowledge between the constituents will shorten the RSA process and improve future designs. This is the final step in the audit process. This feedback process should include feedback to other projects, feedback to the design profession, feedback into revised standards, and feedback to the auditors. Don’t forget to continue to review projects and their influence in the future.

Note that the designer/client is responsible for the first three and last three steps, 1. Select the Road Safety Audit Team; 2. Provide the Background Information; 3. Hold a Commencement Meeting; 8. Write a Response to the Audit Report; 9. Implement the Agreed Changes; 10. Use Knowledge Gained. The auditors are responsible for the middle four steps, 4. Assess All Documents; 5. Inspect the Site; 6. Write the Road Safety Audit Report; and 7. Hold a Completion Meeting.

Checklists: The “Heart” of The Audit Process

Checklists are a key part of the audit process, ensuring consistency between audits and sites, and creating an important paper trail for post-audit reviews. They also help focus the evaluation on specific issues to be included in the audit. The checklists can be paper or computerized forms and are the primary information tools for identifying safety problems. Separate checklists have been developed for audits at each stage in the process. The Stage 1–Feasibility Stage checklist addresses items “in principle” while the Stage 5–Existing Roads checklist focuses on the manner in which design has been translated into practice. (Figures 12 & 13 show sample checklists, complete checklists can be downloaded at <http://www.landtransport.govt.nz/funding/tfm9/tfm9-app2.doc> and <http://www.landtransport.govt.nz/funding/tfm9/tfm9-app1.doc> as well as with the on-line version of this newsletter at <http://www.ttap.mtu.edu/pathways>). You can modify the sample checklists, or make up your own, but either way, you will find them helpful for keeping your audits consistent and professional.

The Issue of Standards and Road Safety Audits

A Road Safety Audit is not intended to replace construction inspections or to verify a project’s standards compliance. Standards and guidelines do not assure that adequate safety is provided, but provide a framework within which you work. While standards provide a framework used to initiate a design, they may be out of date, not applicable to the circumstances in the design, or they may not address the complexities of a given situation.
 Liability Issues

Safety audits should be considered part of an agency’s road safety plan. Road safety audits focus on correcting problems before they occur, but also may serve to address emerging danger spots. Some concerns have been raised that the use of safety audits would increase an agency’s liability. On the contrary, safety audits should and are considered a reasonable approach to improving safety and should not be considered an admission that a problem exists. Would an agency increase its liability if it rejects an audit recommendation and an accident occurs? Not necessarily, as the plaintiff would still need to prove negligence and that the problem was ignored after being put on record. The identification of “potential safety areas” should be even less problematic than the identification of “hazardous locations” in the Highway Safety Planning process now used by states.

Special Considerations for Rural Agencies

Adapting road safety audits to rural local roads poses some unique challenges. Typically these agencies do not have the financial resources nor the engineering expertise to address all the details as set forth in safety and design guides. In addition, much of the roadway network is composed of low volume roads, both paved and unpaved. Alignments and cross sections commonly do not provide the same level of safety as on main highways. These agencies need to balance safety objectives with convenience, protection of the environment, and cost.

Checklists tailored to the problems most often encountered on rural local roads were developed. These were based on findings by the National Association of County Engineers which stated that high frequency problems on county roads include malfunctioning traffic signals, sign defects, roadside hazards, deficient guide/guardrails, shoulder maintenance, road surface maintenance, roadway and intersection geometry, snow/ice control, and removal of highway debris.

Given the limited resources available to rural local agencies, the feasibility of conducting audits by using a team of independent safety specialists was limited. The approach that is being evaluated is an audit using a team composed of the county road superintendents from neighboring counties. Their skills in identifying safety issues and improvements are being compared to those of an independent team of safety professionals. These audits pinpointed several safety deficiencies and validated the checklists as being practical and useful in ensuring that key safety issues are identified and that issues of independent auditor skills are more clearly described.

Road Safety Audits, continued on page 11
Poison ivy can be harmless to some, an annoyance to others, and even deadly for a few. As you go about your spring and summertime maintenance and construction projects, you will most likely run into this prolific pest. Hopefully, with a little knowledge, you can identify the plant and avoid a week or more of oatmeal baths and oozing skin.

The best way to identify poison ivy (Rhus radicans) is by its characteristic compound leaf consisting of three leaflets. The leaflets are two to four inches long, dull or glossy green with pointed tips. The middle leaflet is generally larger than the two laterals. The margins of the leaflets are variable, appearing irregularly toothed, lobed, or smooth. The leaves are positioned alternately on the stems. In contrast, Virginia Creeper, a non-poisonous vine often mistaken for poison ivy, has five leaflets radiating from one point of attachment.

The blistering rash caused by poison ivy is the direct result of contact with the oily toxicant, known as “urushiol.” Urushiol is found in resin ducts within the plant’s phloem. These ducts are found throughout the plant, including the roots, stems, bark, leaflets and certain flower parts. The plant has to be crushed, broken, or in some way injured to release the resin. The injury may be something as little as an insect chewing on the plant. Once urushiol is released, it can find its way to your skin by direct contact with the plant and then spread by touching other parts of the body.

Because the sticky, oily substance is easily transmitted, there are indirect ways to contact it, for instance, from the fur of the family pet, garden tools, garden gloves, clothing, golf balls or other objects that have come in contact with an injured plant. Contrary to popular belief, the rash from poison ivy cannot be transmitted from touching the oozing blisters.

If you know you have contacted poison ivy, wash the area as soon as possible with soap and cool water. Warm water may cause the resin to penetrate the skin faster. Because urushiol can penetrate in a matter of minutes, you may still get a rash, but at least you have contained the infected area. A visible reaction, redness and swelling may be apparent within 12 to 24 hours. Contact your family physician or pharmacist for recommendations for effective nonprescription medication.

One additional caution is that people can contract a rash by exposure to smoke of burning poison ivy; be careful not to burn wood with the poison ivy vine attached to it. Take extreme caution to avoid inhaling smoke or contact of smoke with skin and clothing.
Conclusion

Road Safety Audits are a critical part of an overall road construction and maintenance plan. The formal procedures and guidelines available make the process easy to implement and have proven to reap tremendous returns in reduced crashes and injuries. RSAs should be considered an ongoing process that any jurisdiction can undertake, even if no construction is planned. Considering the fact that rural roads, and especially roads on Indian lands, have the highest crash and fatality rates in the USA, you should place RSAs high on your list of priorities.

References


Coming Soon, More Ways to Learn!

Michigan Tech TTAP held two Road Safety Audit workshops this spring, one in Baraboo, WI and the other in Sault Ste. Marie, MI. The classes were small, and many of the participants had to take two or three days out of their busy schedules to attend the workshop. We’d like to visit more tribes each year and have every interested client attend classes like this, but with 64 tribes to serve, it’s difficult to reach everyone we’d like to. Not to mention the fact that many of you just can’t find the time to take advantage of our workshops and seminars, yet.

Beginning this summer, you can participate in Michigan Tech TTAP’s trial of distance education technologies for this and other classes that you used to have to travel to. To find out more and to sign up, go to <http://www.ttap.mtu.edu/workshops>. You don’t have to be affiliated with a Michigan Tech TTAP client tribe to take part.

Don’t worry, we won’t stop visiting all of our clients or replace all of our classes with computer-based training, but we do hope that these distance-ed classes will reach more of you more often.

Training requests for classroom/field workshops in 2007 are due December 8, 2006 (submit distance education training requests at any time)
Upcoming Events

9th Annual National Tribal Transportation Conference
November 13-16, 2006
Morongo Casino Resort and Spa in Cabazon, California

USET Annual Meeting & Expo
October 8-12, 2006
Pearl River Resort in Choctaw, Mississippi

2006 Minnesota Tribes & Transportation Conference
October 17-18, 2006
Northern Lights Casino & Event Center
Leech Lake Indian Reservation, Minnesota

Training requests for 2007 are due December 8, 2006