Two New Local Road Safety Programs to Launch in Kansas

By Lisa Harris

Two strategies advanced by the Kansas Local Roads Safety Team, and now funded, will provide a framework for improving safety on roads owned by local governments, and ongoing safety training and assistance.

The Kansas Strategic Highway Safety Plan (SHSP) contains strategies for reducing crashes on the state and local systems. The tables at right are taken from the plan (2014). They show, on average, there are almost as many fatalities on locals roads than on state highways, and more disabling injuries on local roads than on state highways.

The Local Roads chapter of the Kansas SHSP contains strategies developed by a team of representatives from local agencies, KDOT and FHWA to reduce the number of fatalities and disabling injuries in half by 2029—a tall order—especially since the local road system is so vast and much of it is not built to modern standards. It was

LTAP Director Honored at Retirement

By Lisa Harris

Pat Weaver honored for her 33 years of leadership and mentoring at KU

The Transportation Center marked an important occasion recently with a celebration of the career and retirement of Patricia (Pat) Weaver. Pat was Executive Director of the Center and a Research Scientist at the Kansas University Transportation Center where she has worked since 1982. Pat was director of LTAP as well as the Rural Transit Assistance Program (RTAP). With RTAP she worked extensively with rural and small urban transit systems and has conducted research in the area of transit demand analysis and system planning.

Her primary responsibilities at the University of Kansas included research, training

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and technical assistance to rural programs. Pat managed a number of projects funded by the Federal Transit Administration, the Federal Highway Administration, State DOTs, and local governments. She has provided consulting services to other states and transit operators around the country.

Pat was (and still is) very active at the national level, especially in transit. She completed a term as Chair of the National RTAP Review Board; is a member of the Transportation Research Board (TRB), chair of the TRB Committee on Rural and Intercity Bus Transportation (AP055) and has served on the planning committee for several National Conferences on Rural Public and Intercity Bus Transportation. She's a member of the Transit Cooperative Research Program (TCRP) Oversight and Project Selection (TOPS) Committee and has served on a number of panels with the TCRP. She is a member of the Advisory Board of the National Transit Institute, and is a member of numerous other professional associations.

Pat received numerous awards, including the CTAA Founder’s Award from the Community Transportation Association of America in 2013, the Roger Tate Award from the TRB Committee on Rural Public and Intercity Bus Transportation in 2008 for dedicated service, outstanding accomplishment and lasting contribution to rural mobility, the Willie M. Murray Award from the Kansas Public Transit Association in 2003 for her outstanding and dedicated long-term service on behalf of Kansas Public Transportation, and the Federal Transit Administration Region VII Award in 2012 in recognition of 25 years of exemplary service to the Rural Transportation Assistance Program and the promotion of rural public transportation.

Pat was instrumental in launching the Kansas Roads Scholar Program in 2000 with the Kansas County Highway Association, and with KDOT and the Kansas Association of Counties as partners. The Kansas Chapter of APWA was added as a partner in 2014.

If you know Pat, you know she will stay active in her retirement. Besides looking forward to spending more time with her family—and on her bicycle—Pat will continue to promote bicycling and transit. She has been certified by the League of American Bicyclists to teach Smart Cycling classes to children as well as adults. The goal is to help people feel more secure about getting on a bike, to create a mind-set that bikes are treated as a vehicle, and to ensure that people on bikes know how to ride safely and legally.

Pat has been an inspiring leader and mentor to her staff and graduate research assistants as well as a caring and encouraging supervisor. We’ll miss you, Pat! Congratulations on a retirement well earned.

[Note: Lisa Harris is now the Director for LTAP and RTAP and is Interim Director of the KU Transportation Center. Special thanks to Kristin Kelly for planning the retirement event.]
clear that two key strategies would have to be:
1) assist local governments in developing plans that identify and prioritize safety improvements, and 2) provide on-site, ongoing safety training and technical assistance to help communities reduce crashes, including assistance in applying for funding. These strategies have recently received funding and will be launched in 2016.

Local Road Safety Plans

The Kansas Bureau of Local Projects has initiated a program to have counties develop Local Road Safety Plans (LRSPs). “Kansas envisions great benefits from counties having their own LRSPs,” said Nelda Buckley, KDOT local road engineer. These plans can be used by counties for both developing everyday maintenance priorities as well as applying for federal-aid safety funding. The plans will be developed by team of consultants with participation by the local community.

KDOT will benefit from this approach, as well, by being able to compare projects throughout the state for funding based on similar priorities. KDOT has made 90 percent federal safety funding (HSIP) available for counties with LRSPs.

The first four counties to take advantage of the funding are Barton, Butler, McPherson, and Stafford. Representatives of these counties recently interviewed consultants and selected the team of TranSystems and Kimley-Horn to develop four LRSPs as a pilot project. (Kimley-Horn is also developing LRSPs for counties in Iowa.) Once the process is worked out and an LRSP template created, the goal is that each of the remaining 101 counties would have an LRSP within five years. Funding is expected to be allocated for 20 counties per year; the first 20 have been selected, the next 20 are currently being identified.

Any county interested in participating or obtaining additional information may contact Nelda Buckley with KDOT's Bureau of Local Projects at NBuckley@ksdot.org or (785) 296-0417.

Safety circuit rider program

Kansas LTAP has received funding from KDOT’s Bureau of Research to add a Safety Circuit Rider (SCR) program. Two or more “circuit riders” will travel around the state to local agencies to provide safety training and technical assistance where needed. An advisory board with local agencies of different sizes will be assembled to develop the particulars of the program to meet Kansas needs. Safety Circuit Rider Continued on page 6
Based on 3-year crash data (2010–2013) published by KDOT, on average, nearly 110 people in Kansas are killed annually and another 3,500 are injured in roadway departure crashes involving roadside fixed-objects. This accounts for nearly 30 percent of all fatalities statewide. http://www.ksdot.org/bureaus/burtransplan/prodinfo/accista.asp

When it comes to improving safety for road departure crashes, the primary objective is to keep the vehicles from leaving the road in the first place, through measures such as signage, pavement markings, delineation, and rumble strip/stripes. In reality, however, some road departures still occur. To help make the road safer for these motorists, roadsides should be designed and/or retrofitted, when possible, to have a sufficient “clear zone” with recoverable slopes—free of any hazardous fixed-objects.

Potential roadside hazards

A number of fixed-objects along a roadside can be considered potential hazards to the road users. Most typical objects include:

- Ditches
- Curbs
- Utility poles
- Median barriers
- Sign posts
- Guardrails
- Trees
- Fences / Gates
- Bridge rails
- Culverts ends / headwalls
- Embankments / Bridge Piers
- Mailboxes
- Edge drop-offs

What fixed objects are hit the most frequently in Kansas?

According to 2010-2013 crash data published by KDOT, the highest number of fixed-object crashes involved ditches, with an average annual of 1,480 crashes per year, followed by curbs at 1,200 crashes per year, utility poles at 1,050 crashes per year, dividers and median barriers at 1,020 crashes per year, and sign posts at 870 crashes per year. http://www.ksdot.org/bureaus/burtransplan/prodinfo/accista.asp

What is a clear zone?

The Roadside Design Guide, 4th Edition, 2011, published by the American Association of State Highway Transportation Officials (AASHTO) defines clear zone as “the unobstructed, traversable area provided beyond the edge of the through traveled way for the recovery of errant vehicles. The clear zone includes shoulders, bike lanes, and auxiliary lanes, except those auxiliary lanes that function like through lanes.” It further states that the clear zone distance varies depending on the traffic volumes, speed, and roadside geometry.

According to the Roadside Design Guide, on a low-speed, low-volume rural roadway, the clear zone distance can be as little as 7 feet, whereas on a high-speed, high-volume freeway the distance can be as high as 46 feet or more. In urban areas, however, where the speeds are much lower and the environment is much more constrained (limited right-of-way, presence of sidewalks, on-street parking, street furniture, and etc.) the minimum lateral offset from face of the curb to the obstruction is 1-1/2 feet, although 4 to 6 feet is preferred.

What to do about roadside hazards

Before you take any action on how to treat an existing fixed-object along a roadside, ask yourself the following questions:

- Is the fixed object located in the clear zone?
- Is it considered hazardous?
- Can you remove the hazard?
- Can you relocate it to where it is less likely to be hit?
- Can you reduce crash severity if the object is hit?
- If you cannot remove, relocate, or modify the hazard, is adding a guardrail feasible? If not...
- Would delineation help guide drivers around the hazard particularly at night and in low visibility conditions?
Some Examples of Dangerous Fixed Objects

- Ditches that are non-traversable (steeper than 3:1, horizontal:vertical).
- Sign posts that are not crashworthy (wood posts larger than 4 inch X 4 inch with no weakening holes) or not breakaway (metal posts).
- Trees with trunks 4 inches or more in diameter.
- Mailboxes with wood posts that are larger than 4 inch X 4 inch.
- Mailboxes with metal post that are embedded more than 23.6 inches in the ground and are stronger than 2 inch diameter standard strength steel.
- Pavement edge drop-off greater than 2-1/2 inches.

Roadside Hazards  Continued from page 5

based on the likelihood of crashes using factors such as:

- Roadside features;
- Prevailing speed;
- Traffic volumes; and
- Location of the obstacle (hazard)

Once higher-risk locations are identified, the local agency can be proactive and make low-cost safety improvements at these locations, whether there has been a crash at a site or it’s a “crash waiting to happen.”

For additional information on the systemic safety approach refer to these publications:

http://safety.fhwa.dot.gov/local_rural/training/fhwasa12017/


Conclusion

Just as roads can be dangerous if they are not well designed, so can roadides. Local agencies should become aware of the roadside hazards in their jurisdictions and take steps to mitigate them. We hope this article provides some food for thought in getting started.

For more information, or if you have questions about a particular roadside hazard in your area, contact Mehrdad Givechi, safety engineer at Kansas LTAP at (785) 864-2593 or mgivechi@ku.edu.

Sources:


FUNDING FOR ROADSIDE SAFETY IMPROVEMENTS

High Risk Rural Road (HRRR) funds, available from the KDOT Bureau Local Projects (BLP), have been used for removal of fixed-objects in clear zones. Nelda Buckley, local road engineer with BLP, shared with us the following locations where removal of fixed-objects has been implemented in the past three years or so. In most cases this would involve extending culverts/boxes as part of a larger project, she said.

- Rooks County – hand rails and tree removal
- Saline County – grading, surfacing, bridges, etc.
- Sedgwick County – removal of bridge rail
- Miami County – lower roadway elevation
- Montgomery County – culvert extensions
- Butler County – realignment
- Montgomery County – new box, pipe, ditch lining

For more information on the High Risk Rural Roads Program and its application process, go to: https://www.ksdot.org/Assets/wwwksdotorg/bureaus/bureLocalProj/BLPDocuments/Programmatic_FHWA_BLP.pdf

Two New Local Safety Programs  Continued from page 3

programs are in several other states and each have their own flavor depending on local needs.

After the advisory board meets, the circuit rider position(s) will be advertised and the program will get up-and-running. It is envisioned that Kansas will have at least two circuit riders and they will each have a territory to cover. Counties will have first priority for assistance but cities without their own engineers will also have high priority. Services will be offered in consultation with the local community visited, and could include on-site training on maintenance practices that improve roadway safety, signing do’s and don’t, removal of roadside hazards, worker safety training, help with applying for funding, and presentations to commissioners and other stakeholders on the importance of investing in safety.

For questions contact Lisa Harris at lharris@ku.edu. Look for more information soon.
How Many Ways Can You Improve an Unsignalized Intersection?

Maybe more than you think. The Unsignalized Intersection Improvement Guide lists 75 ways and where each of those ways are most useful.

[Editor’s note: The Institute of Traffic Engineers (ITE) website has an excellent resource on improving safety at unsignalized intersections. It is written for local agencies, it has a wealth of information without being overwhelming, it is very easy to navigate, and it’s free. The following is adapted from the Guide.]

From 2010 to 2012, more than 70 percent of all intersection-related fatal crashes nationwide involved unsignalized intersections. These accounted for approximately one of every six fatal crashes on U.S. roadways. As such, and because the vast majority of intersections in the U.S. are unsignalized, it is vital that state and local transportation agencies consider how their design and management practices can better address safety performance, operations, and access for all users at these types of intersections.

**Written for local agencies**

The majority of unsignalized intersections are owned and operated by local agencies. Many smaller jurisdictions do not have professional traffic engineers on staff but must frequently make decisions on safety treatments and enhancements at unsignalized intersections. These agencies need practical guidance to assist them in arriving at, and justifying, these decisions to policymakers and the public. The Unsignalized Intersection Improvement Guide (UIIG) was developed to address this need.

**Guide helps in identifying the problem and finding solutions**

The UIIG is prepared to primarily aid local agency practitioners (city and county) in selecting design, operational, maintenance, enforcement, and other types of treatments to improve the safety, mobility, and accessibility of all users at unsignalized intersections. It is designed under the assumption that an unsignalized intersection (or group of unsignalized intersections) has been identified as having a problem related to traffic safety, operations, or access. The UIIG assists the user in confirming there is indeed a problem and identifying the type and potential cause of the problem, and then offers possible treatments—also identified as countermeasures or strategies—that address the problem. The selection of the desirable treatment for implementation is to be determined by the agency with input from and review by the affected stakeholders within the community.

**Written for non-engineers**

The UIIG’s primary audience is the agency (or individual) responsible for the roads within a local government jurisdiction, especially those agencies lacking staff with a formal education in highway and traffic engineering principles. However, even trained staff from state and local highway agencies may find this Guide helpful as they address various problems at their unsignalized intersections.

**Designed to stay current**

The UIIG is hosted by the Institute of Transportation Engineers (ITE) under the sponsorship of the Federal Highway Administration (FHWA), with full access by all interested parties at no cost. It has been prepared as a web-based resource with the intent that it will be used online and that it can be modified as necessary to incorporate new information. By using the UIIG online, users will have access to the latest information on the various treatments that can be used to improve safety, mobility, and access at unsignalized intersections.

**Where to find the guide**

Accessing the Guide is easy. Go to http://www.ite.org/uiig/ and you’re there.
Practical Road Safety Assessments Provide Path to Safety for Bicyclists, Pedestrians and Transit Riders

By Pat Weaver

“Sharing the road” takes on new meaning when expanding the application of a Road Safety Assessment (RSA) process beyond safe travel of automobiles on our roadways. Understanding the interaction between cars, bikes, walkers and transit riders on the roadway was brought to life in recent initiatives forwarded by USDOT Secretary Foxx for Safer People, Safer Streets.

This US Department of Transportation (DOT) initiative’s goal is to reduce the growing number of pedestrian and bicyclist injuries and fatalities through a comprehensive approach that addresses infrastructure safety, education, vehicle safety, and data collection. Every state is involved, including Kansas and Missouri. As part of Secretary Foxx’s initiative, road safety assessments (RSAs) focusing on pedestrian, bicyclist and transit user’s safety were conducted by DOT field offices in every state and the US territories; to date, 52 and counting. The purpose of these RSAs was to identify ways to improve safety across all modes.

I was privileged to serve on two teams in our area, and had the chance to observe firsthand how to incorporate bike-ped-transit elements into a road safety assessment process. At first glance it might appear that RSAs focusing on all the modes might not apply to counties and smaller communities. And transit managers might not think that bicycle and pedestrian issues are all that relevant to their operations. However, even in rural communities transit riders are almost always pedestrians first—and the ability to get to transit vehicle safely is of critical importance—whether they’re traveling to a bus stop on a fixed route system or just getting from their front door a bus at the curb. There are many lessons learned that apply to all communities and transit systems, regardless of size.

This article provides a recap of the road safety assessments conducted in Kansas and Missouri—one in Lawrence, Ks., and the second in Kansas City, Mo. I’ll share some of the results, how these lessons might be applied to smaller communities, and some of the resources available to champion similar efforts in your community.

USDOT leads the way

Emphasis on inclusion of bicycle, pedestrian and transit elements in the transportation network has steadily increased. The most recent example is that of the Safer People, Safer Streets initiative which began in 2014 as a way to recognize and address the rising numbers of pedestrian and bicyclist injuries and fatalities related to collisions with motor vehicles. The goal of the initiative is to protect people on foot and bicycle by fostering a safe environment with good multimodal integration so that even more Americans will feel comfortable enough to take advantage of walking and biking.

As part Safer People, Safer Streets, several administrations within USDOT were directed to help identify at least one site in each state as a target for a Road Safety Assessment focusing on bicyclists, pedestrians and transit users. A representative of one of three

Resources on Road Safety Assessment

- Pedestrian, Bicycle, and Transit, City of Lawrence, Kansas, 19th Street from Iowa to Barker Practical Road Safety Assessment. March 26, 2015.

A version of this article also appeared in the January 2016 issue of the Kansas TransReporter for transit agencies.
administrations (Federal Highway, Federal Transit or National Highway Traffic Safety) led the RSA team and compiled the reports for submission to the Secretary.

This initiative continues as part of Secretary Foxx’s Mayor’s Challenge for Safer People, Safer Streets for which individual cities can still sign up to participate. Wichita has expressed interest in conducting a multimodal assessment, according to Mark Bechtel, team leader for Planning and Program Development, FTA Region VII Office, and leader of the Missouri RSA conducted as part of this initiative in Spring 2015 (Rodriguez, 2015). Several smaller communities in Kansas are considering RSAs or other efforts to support safe walking and biking as part of a grant program led by the Kansas Department of Health and Environment (See sidebar at right).

**Practical RSAs**

The Practical RSA (PRSA) approach was used for the assessments conducted in Lawrence and Kansas City. PRSAs generally are used by KDOT’s Bureau of Local Projects for safety projects, following a simplified process for assessment. The PRSA does not attempt to gather extensive data other than what is readily available, and has a simplified report format to document findings.

The primary intent is to identify measures, depending on available resources, that reduce the potential for fatal or severe injury crashes in the corridor. A PRSA does not necessarily lead to the development of a safety project, but to the identification of low-cost solutions that may be implemented by maintenance forces. Moderate-and higher-cost solutions are also identified for consideration by an agency for its planning and project development process (Harris, 2013).

A multimodal PRSA is one in which all modes are taken into consideration: drivers, bicyclists, pedestrians, and transit riders. A multimodal approach benefits from having representatives across disciplines (roads and bridges, transit agencies, planning, public administrators, elected officials, law enforcement, bike/ped and transit advocacy groups, advisory committees, and more).

As a transit manager alone, you have very little ability to influence where sidewalks are placed or improved. However, as part of a community team, you can help target those areas in which sidewalks or other improvements would most improve mobility in your community.

Beyond the different representatives in your city or county, it can be important to include representatives across jurisdictional boundaries: city, county, regional, Tribal, State, and Federal, depending on the type of assessment being conducted. Resources may be available beyond your own agency or local government that can help make improvements a reality.

**Multimodal RSAs in Kansas and Missouri: The results**

The observations documented for each of the targeted PRSAs in Kansas and Missouri provided suggestions, not mandates, for changes that could be made. The overall goal was to identify a variety of measures that could be taken, as resources are available, to make improvements to enhance the safety of the respective corridors.

In Lawrence, the PRSA examined a 2.5 mile segment of 19th Street, along the south side of the University of Kansas, which, at the time, was part of a studied corridor for a proposed transit transfer center. In Kansas City, the site was a 2-mile segment of Prospect Avenue along a proposed Bus Rapid Transit (BRT) alignment, as well as near several elementary schools.
with active or proposed Safe Routes to Schools projects.

Three teams were formed at each site for bicycling, walking, and transit use, to collect data on conflicts, discontinuous segments, accessibility, and user comfort.

Each team assigned to a mode used that method of travel (walked, biked, or rode the bus) while completing a checklist at intervals along each corridor. Suggestions were developed in each of the final reports, organized as low-cost, medium-cost and high-cost. For example, low cost suggestions were the addition of shared lane markings, upgrading crosswalk markings, and establishing a bike boulevard along a path parallel to the study area. Examples of moderate-cost solutions include adding pedestrian-actuated signals and adding sidewalks to complete disconnected segments. Higher-cost alternatives generally were for lane reconstruction to add bicycle and/or pedestrian facilities.

While these two PRSAs were conducted in more-urban areas with fixed route transit, the lessons learned can certainly apply in smaller communities. There was evidence, even in these urban areas, of transit riders being forced out into the street to get to the bus stop, or standing in a field to wait for a bus with no shelter, regardless of the weather. Having others experience these conditions (other than the riders) is pretty powerful in recognizing the extent of the challenges.

What’s next?
The 52 PRSAs completed around the country are being compiled in a final report, according to Edwin Rodriguez, transportation management specialist for the FTA Office of Research, Demonstration and Innovation (Complete Trip, 2015). In addition to the final report, work is just beginning on a Bicycle-Pedestrian Safety Guidebook, being developed by FTA’s Office of Research, Demonstration and Innovation. Completion is anticipated for Fall 2016, said Rodriguez.

PRSA resources for rural and small communities in Kansas
Are you interested in learning more about implementing an PRSA in your community to address improvements for transit, walking and biking as part of the transportation network? If so, there are many informational and technical assistance resources available to help you.


Within the state, Kansas LTAP provides RSA technical assistance to implement an RSA in rural and small communities. Just call Mehrdad Givechi at (785) 864-2593 to request assistance or email mgivechi@ku.edu. See the list on page 8 of this article for links to even more resources.

Conclusion
The multimodal RSAs championed by USDOT provided a unique opportunity for representatives of various disciplines and organizations to work together who may not have had thought to consult with one another. The 52 sites for which PRSAs were conducted provided a unique perspective on traffic safety, considering walking, bicycling and riding the bus on our roadways. In addition to the multimodal approach, these PRSAs also brought together representatives of organizations all concerned with traffic safety in some form, but who rarely work together.

As FTAs Mark Bechtel said, “The Regional NHSTA Office is located in the same building as ours, but until the RSA I didn’t know anyone in that office. After the RSA, I now recognize them in the hallway and will be more likely to think of ways to collaborate in the future.”

Sources:
• Harris, L. (2013, Fall). KDOT Hosts “Practical” RSA in Montgomery County. Kansas LTAP Newsletter, pp. 6-7.
Five individuals earned roads scholar certificates in Fall 2015, with most of them receiving certificates for more than one level. Below are the graduates, listed by their jurisdiction. Congrats to all!

**Fall 2015 graduates:**

**Johnson County**
- Rob Callahan – Levels II and III
- Joe Venneman – Levels II and III

**Linn County**
- Melinda Bolling – Levels II and III

**Saline County**
- Darren Fishel – Levels II and III

**Franklin County**
- Ryan Fine – Level III

**Recognitions held**

The Kansas Chapter for the American Public Works Association (APWA) held its most recent Roads Scholar recognition ceremony in November in El Dorado. Ron Seitz (KDOT) and Lisa Harris (LTAP) presented the certificates on behalf of APWA.

Norm Bowers coordinates recognitions for the counties, and held Darren Fishel’s recognition at a District 2 meeting and the Johnson County recognitions at Johnson County Public Works. More recognitions are planned for Spring district meetings.

**Advisory board to meet in Spring**

The Kansas Roads Scholar Program is guided by an advisory committee of KCHA and APWA representatives and other Program partners. The committee meets annually in the Spring. The next meeting is April 8, 2016.

For more information on the Kansas Roads Scholar Program, visit [http://www.ksroadscholar.org](http://www.ksroadscholar.org), or contact Kristin Kelly at (785) 864-2594 or kbkelly@ku.edu.
Cones Sound a Warning of Work Zone Intrusion

By Mehrdad Givechi, P.E., P.T.O.E

The Manual on Uniform Traffic Control Devices (MUTCD) contains standards and guidance on the design and application of traffic control devices to guide road users in and through work zones. However, some work zones present safety challenges that require additional efforts to enhance workers’ safety. For this reason, Federal regulation 23 CFR 630 Subpart K encourages state highway agencies to consider the use of other traffic control devices that can help reduce work zone crashes and improve worker and road user safety. Local agencies may have situations where extra safety is also needed.

A number of measures identified in this regulation specifically address motorist and worker safety; one of these is an intrusion alarm system. This article will describe how intrusion alarms work, and report on research conducted in Kansas that compared two of the available models.

Intrusion alarms

Where they are used. Intrusion alarms are used primarily in temporary work zones with short work duration where adding a positive protection system such as concrete barrier is not feasible. Intrusion alarms do not take the place of a physical barrier, but will give workers a number of seconds to clear the area when the work zone is breached by an errant vehicle.

Technology used. Intrusion alarms use one or more sensors mounted on a typical work zone barrier such as a cone, drum, or delineator. Some models have the alarm mounted on the device and will sound if struck by an errant vehicle. One model has a transmitter on the cone and a receiver closer to the workers in the work zone.

Popular types. Commonly used cone-type intrusion alarms are the following:

SonoBlaster®: This is a stand-alone, impact-activated system. Upon impact by an errant vehicle, the device’s built-in CO2 powered horn blasts to signal the intrusion into the protective zone, giving the workers reaction time to move out of the harm’s way. Each unit comes with one CO2 cartridge, good for one use. The cost for one unit, including the mounting bracket, is less than $100. Additional cartridges are sold separately at $3.00 each. http://www.transpo.com/roads-highways/safety-products/wz-intrusion-alarm

Intellicone®: This system has two components – a base unit (Portable Site Alarm) that acts as a signal receiver equipped with an audio-visual alarm; and a series of integrated lamps and sensors that transmit the signal to the base unit when tilted past a certain angle. The base unit is powered by an internal rechargeable battery. The sensors are each powered by a 6V battery. http://www.intellicone.co.uk/

Safety Line™ SL-D12: This system also consists of transmitter and receiver. A dual infrared beam is projected by the transmitter to the receiver. When an errant vehicle enters the work zone obstructing the beam, it causes the air horn and the strobe light on the receiver to be activated. Multiple units can be linked together. The units are powered by 12V batteries with an option of solar panels to extend the battery life in between the charge. The cost per system (receiver and transmitter) is $4,000. http://ops.fhwa.dot.gov/wz/workshops/originals/Ken_Kochevar_ID.ppt

Research in Kansas

A recent Master’s thesis research project conducted by Chris Novosel at the University of Kansas field tested two of these intrusion alarm systems – SonoBlaster® and Intellicone® - at several locations in eastern Kansas:

• Storm sewer project on a collector street in Lawrence;
• Street widening project on a principal arterial in Lawrence;
• Bridge repair project on an interstate highway in Lenexa;
• Crash attenuator replacement project on an interstate highway in Kansas City, Kansas.

Novosel said the perceived and actual levels of protection
and the ease of use influence the acceptance of the devices by work zone employees. In his research he asked workers in Kansas and other states that use warming cones following questions:

Is the intrusion alarm effective in warning workers of vehicles that breach the work zone in such a way to allow them to take action to avoid being struck by the vehicle?

Does the intrusion alarm give the workers a feeling of protection and safety?

Is the intrusion alarm easy to install, activate, and replace?

The findings indicated that there were some difficulties with both systems, mainly with the sound levels of the alarms. In general, however, workers responded favorably to the systems and felt like the audible cones would give them more time to react to work zone intrusion.

When asked workers about the sound level of the alarm for the two systems tested, the overall response was that SonoBlaster’s alarm was slightly easier to hear than Intellicone, particularly in a louder ambient environment due to background traffic and construction activities.

Limitations of the study

Some of the limitation of the research included:

- Set up, take down and monitoring the devices in the field were done by the researcher, so no information on how workers felt on the ease of use of the systems was available. However, from Chris’ experience the set up and take down process was easier for Intellicone® than SonoBlaster®
- The workers awareness of the field testing likely affected their reaction time.
- The systems were not tested for night time or moving operations.
- The field test was conducted using a limited number of devices at each site, which was far below the manufacturers’ suggested number of units to be used in an actual work zone environment.

In sum

In general, workers indicated that both systems were recognizable as an alarm when loud enough to hear. They indicated that such devices would make them feel safer to some extent at varying degrees. When asked where these systems can be most effective, their response was:

- On major highways with high speeds;
- On roads with low ambient noise;
- In areas with limited sight distance such as along horizontal curves and or vertical curves; and
- Night time operation with limited visibility.

Resources on Intrusion Alarms

The National Work Zone Safety Information Clearinghouse


Transpo SonoBlaster® Overview Video, 3:08 minutes, Uploaded April 17, 2009

Transpo Sonoblaster® WZ Alarm Mounting and Deployment Video, 7:08 minutes, Uploaded April 17, 2009. www.youtube.com/watch?v=WRFjerUnNVo

Sources:

MORE

By Lisa Harris

See download / ordering information on next page.

Rumble Strip Implementation Guide: Addressing Pavement Issues on Two-Lane Roads
12 pages, FHWA. April 2015. This guide covers pavement-related considerations for rumble strip installation on new and existing pavements. As practitioners determine where and how to install rumble strips, there are several pavement-related variables that need to be taken into account and addressed to ensure that they will not accelerate pavement deterioration.

Rumble Strip Implementation Guide: Addressing Noise Issues on Two-Lane Roads
18 pages, FHWA. April 2015. This guide explores potential noise issues related to rumble strips, and how to respond to public complaints about that noise. The guide presents information from agencies that have experience with field implementation, policy development, and outreach.

A Guide for Reducing Collisions Involving Telephone Poles
2 page “Tools for Life” fact sheet by the Transportation Research Board. Focuses on lower-cost strategies, that can be implemented quickly, for reducing the likelihood that a vehicle will strike a utility pole.

SPRING 2016:

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<td>4 part series on April 18, April 25, May 2 and May 16</td>
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<tr>
<td>Gravel Road Maintenance ▲L1</td>
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<tr>
<td>April 20 in Fredonia</td>
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ROADS SCHOLAR LEVEL 2 TRAINING

With the exception of the pre-conference class below, Level 2 classes are offered by the Kansas Association of Counties. Several will be offered in Spring 2016. See their calendar of classes at http://ks-kac3.civicplus.com/calendar.aspx?CID=14

Supervisor’s Role in Enhancing Cooperative Work Relationships ▲L2 |
| May 11 in Newton (This is an APWA Kansas Chapter pre-conference workshop) |

MEETINGS

| Kansas Transportation Engineering Conference |
| April 12-13 in Manhattan |
| http://conferences.k-state.edu/transportation/ |
| Kansas Transportation Safety Conference |
| April 18-20 in Topeka |
| http://kupce.ku.edu/transportation-safety |
| Kansas County Highway Association Spring Meeting |
| May 9-11 in Garden City |
| http://www.kansascountyhighway.org |
| Kansas Chapter APWA Spring Meeting |
| May 11-13 in Newton |
| For information, contact Suzanne Loomis at sloomis@newtonkansas.com |

MARK YOUR CALENDAR

| MINK Local Roads Meeting |
| September 28-29 in St. Joseph, MO. |
| For information, contact Lisa Harris at LHarris@ku.edu |

Looking for Hosts for Gravel Roads Classes

Kansas LTAP offers its Gravel Road Maintenance workshop “on demand”. This training has been designed especially for individuals who operate motor graders. These classes require a minimum of 10 students and will be delivered at a location determined by the agency requesting the course. The host agency must also provide a motor grader and a location for field operations. Please note that registration will be open to other agencies. To request gravel roads training in your jurisdiction please contact Kristin Kelly at kbkelly@ku.edu or (785) 864-2594.
FREE ROAD & BRIDGE RESOURCES

GUIDES
You are free to keep hard copies, when available. Or you can download at the links provided.

❑ Rumble Strip Implementation Guide: Addressing Pavement Issues on Two-Lane Roads
RumbleStripGuide_Pavement/pavement_bpg.cfm

❑ Rumble Strip Implementation Guide: Addressing Noise Issues on Two-Lane Roads
RumbleStripGuide_Noise/noise_bpg.cfm

❑ A Guide for Reducing Collisions Involving Telephone Poles

EQUIPMENT LOANS
We offer the following items for loan to local highway agencies. There could be a waiting list for these items. Contact mgivechi@ku.edu for counter boards and LHarris@ku.edu for the Safety Edge shoe.

Safety Edge Paving Shoe. This Advant-Edge shoe attaches to a paver with a universal bracket, provided with the shoe. Several counties have borrowed this attachment and have reported good results.

NEW MODEL — Manual Traffic Data Collector (TDC ULTRA), by Jamar Technologies, Inc. A small lightweight electronic board that can be used to, manually, do turning movement counts, classification counts, gap studies, stop sign delay studies, signalized intersection delay studies, speed studies and roundabout movement data. The unit comes in a case.

NEW MODEL — Automatic Traffic Data Recorder (TRAX Apollyon), by Jamar Technologies, Inc. Can be used to collect traffic volume, speed, vehicle class, and timing gaps using pneumatic road tubes. The unit is lightweight.

__________________________
REQUEST FORM

Name _____________________________________________________ Phone number _____________________________

Position ______________________________________  E-mail address __________________________________________

Agency ________________________________________________________________________________________________

Street Address __________________________________________________________________________________________

City _______________________________________       State  ___________________  Zip+4 ________________________

*For requests outside the United States: After receiving your request, we will notify you of the postage cost and will send materials after receiving payment for postage.
Let us help you find the answers to your transportation-related questions.

The Kansas Local Technical Assistance Program (LTAP) is an educational, technology transfer and service program of the Kansas University Transportation Center (KUTC). Its purpose is to provide information to local government highway departments and their personnel and contractors by translating into understandable terms the latest technologies in the areas of roads, highways and bridges.

The Kansas LTAP Newsletter is published quarterly and is free to counties, cities, townships, tribal governments, road districts and others with transportation responsibilities. Editorial decisions are made by Kansas LTAP. Engineering practices and procedures set forth in this newsletter shall be implemented by or under the supervision of a licensed professional engineer in accordance with Kansas state statutes dealing with the technical professions.

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