Public works crews work hard for their communities. Their job responsibilities require both technical expertise and physical strength. Their work can be dangerous and can result in injury, especially if employees are not thoroughly trained or are not in good physical condition.

According to the Kansas Workers Risk Cooperative for Counties (KWORCC), an insurance pool, the top three causes of injuries claimed by Kansas road and bridge departments, in terms of both frequency and cost are:
1) Strain or injury by lifting
2) Fall or slip injury
3) Struck or injured by an object.

In about a 12-year period from 1999 through 2010, Kansas county road and bridge departments filed almost 700 claims for strain and injury with KWORCC, with total costs of $4.9 million. See page 2 for a breakdown of injuries and costs to the counties in the KWORCC insurance pool.

Employee injuries increase the cost of doing government business. These costs can include medical treatment, higher worker’s compensation insurance premiums, and litigation.

Costs per injury can vary widely, but KWORCC data shows that claims average about $7,000 for a lifting injury or a slip and fall injury, $13,000 for a repetitive motion injury, and over $130,000 for an electric shock or burn. These costs do not include additional indirect costs associated with injuries and illnesses such as lost productivity, re-training, hiring new employees, and litigation.

Start planning now to replace your outdated safety vests and suits.

The Federal Highway Administration is getting more serious about road crew safety on local roads. While the 2003 version of the Manual on Uniform Traffic Control Devices (MUTCD) required ANSI II or III type vests to be worn by workers on all federal-aid roads and right-of-way (ROW), the new 2009 version of the MUTCD extends that requirement to ALL roads (and ROW) open to the traveling public, including those owned by counties, cities, townships and tribes.
Shake, rattle & roll Continued from page 1

employees, administrative time, repair and replacement of equipment, etc.

Other consequences of an employee injury include possible trauma experienced by co-workers in witnessing and responding to an accident, and, of course, effects on the injured employee and his or her family. An injured employee may experience pain and suffering, lose income, and miss opportunities for future job advancement.

How to respond?

Clearly, it is in the best interest of local governments to do all they can to prevent injuries on the job. Here are a few things that can help:

• **Invest in good quality equipment and worker apparel and make sure it is well maintained.**
• **Keep up on OSHA regulations and also MUTCD regulations affecting work zone safety.** These federal regulations are designed with employee safety in mind.
• **Thoroughly (and regularly) train your employees about safety on the job.** (See sidebar for some sources of training resources in Kansas.)
• **Encourage your employees to eat healthy foods and stay fit.** Have healthy choices in the vending machine.

This issue of the *Kansas LTAP Newsletter* contains articles that touch on all these aspects of worker safety. Enjoy reading, and be safe out there.

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### Worker Safety Resources in Kansas

**KWORCC.** This county insurance pool has cooperated with another county pool, KCAMP, to provide a library of videos for loan. They are available to members of these insurance pools for a two-week free loan period. Topics range from back injury prevention to safe vehicle operations to hazardous materials safety to office safety. KWORCC also offers a loss prevention manual with many safety tips and information on how to respond to an accident. [http://www.kworcc.com/SafetyVideoLibrary.pdf](http://www.kworcc.com/SafetyVideoLibrary.pdf)


**Kansas LTAP.** We have a searchable lending library catalog that covers many topics related to road and bridge work, including worker safety. Loans are free for anyone. We also have safety posters for download, free publications, newsletter articles searchable by topic, and a worker safety guide (see next page). [http://www.ksltap.org](http://www.ksltap.org)

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### KWORCC Claim Analysis by Accident Type for County Road and Bridge Departments

*Claims from January 1, 1999 to November 30, 2010*

<table>
<thead>
<tr>
<th>Accident type</th>
<th>Severity</th>
<th>Frequency</th>
<th>Average claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strain or injury by lifting</td>
<td>$4,917,594.00</td>
<td>685</td>
<td>$7,178.93</td>
</tr>
<tr>
<td>Fall or slip injury</td>
<td>$3,930,276.00</td>
<td>569</td>
<td>$6,907.34</td>
</tr>
<tr>
<td>Struck or injured by an object</td>
<td>$3,331,478.00</td>
<td>385</td>
<td>8,653.19</td>
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<tr>
<td>Motor vehicle</td>
<td>$1,295,828.00</td>
<td>163</td>
<td>7,949.87</td>
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<td>Occupational hazard: repetitive motion</td>
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<td>13,860.03</td>
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<tr>
<td>Heat/cold/burn/scald</td>
<td>$321,335.00</td>
<td>114</td>
<td>2,818.03</td>
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<tr>
<td>Electric shock or burn</td>
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<td>2</td>
<td>131,420.00</td>
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<tr>
<td>Cut/puncture/scrape</td>
<td>$232,968.00</td>
<td>320</td>
<td>728.03</td>
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<tr>
<td>Step/strike against</td>
<td>$231,780.00</td>
<td>159</td>
<td>1,457.74</td>
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<tr>
<td>Caught in or between</td>
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<td>144</td>
<td>1,556.49</td>
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<td>Animal or insect</td>
<td>$98,663.00</td>
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<td>1,701.09</td>
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<td>Foreign body in eye</td>
<td>$28,667.00</td>
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<td>Miscellaneous causes</td>
<td>$18,311.00</td>
<td>66</td>
<td>277.44</td>
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</table>

Source, KWORCC, courtesy of Carl Eyman, February 5, 2010.

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*Insurance claims do not include additional indirect costs such as lost productivity, re-training, hiring new employees, administrative time, equipment repair, etc.*
“Heck, I Can Lift That!” (But Should You?)

By Matthew Barnett

As we age, muscle strains and back injuries are more likely to happen. So it’s important to properly lift heavy loads when working. In fact, the Bureau of Labor Statistics states that over one million workers suffer from back injuries a year, and that back injuries account for one out of every five workplace injuries. The Occupational Safety and Health Administration (OSHA) safety training Web site states that almost 80 percent of people will experience back injury during their lifetime. Whenever lifting a load, always consider proper lifting techniques and tips to prevent injury.

Aging effects start early

Why are back injuries more common with age? First, most working adults are no longer running and jumping all over the place everyday and using a variety of different muscles, and unfortunately, a lot aren’t exercising either. Second, after age 20, people are fighting an uphill battle just to maintain muscle mass. Medline Plus, a service of the U.S. National Library of Medicine, states that muscle atrophy (the wasting or loss of muscle tissue) occurs naturally with age, but it can also be a result of either lack of physical exercise or a neurological reason. Disuse atrophy, the more common of the two, is caused by sedentary jobs, medical conditions that limit movement, or decreased activity levels, and it is usually reversed with vigorous exercise or better nutrition.

For many, back pain is due to poor technique when lifting loads or using their back improperly. According to OSHA, you can help keep your back healthy by using proper techniques when lifting heavy loads, keeping good posture, and exercising.

Proper technique

The folks at UCLA have some important information about lifting techniques, and they make some good points. According to them, the way you carry heavy objects can subject your back up to 10 times the pressure of the objects’ actual weight, and the pressure increases the farther away from your body the object is held. They recommend:

- Always test the weight of unfamiliar loads before lifting, and practicing safe lifting techniques, such as getting a co-worker to help lift or using equipment.
- Pre-plan your lift, and have a planned route for getting the load from A to B.
- Keep your legs shoulder-width apart.
- Keep your stomach muscles tight: strong stomach muscles can serve the same purpose as back belts to protect your back when lifting.
- Bend at your knees, not your waist.
- Keep your back when bending and lifting.
- Hold the load close to your body and at waist height to reduce the pressure on your back.
- Lift smoothly; don’t jerk your muscles as you lift.
- Hold the load close to your body and at waist height to reduce the pressure on your back.
- Sudden movement and weight shifts can injure your back. By keeping good vertical alignment from your ears down to your shoulders and hips, you will maintain the natural curvature in your back when bending and lifting.
- When you turn while holding a load, turn by moving your feet, not by twisting your back. It’s extremely important not to twist when lifting.
- Stretching and strengthening your muscles can also help you reduce the risk of back injuries.

Don’t just tell ‘em, show ‘em

Education about proper heavy lifting is so important to a road and bridge department that it’s worth taking the time to drive the message home in a variety of ways. Iowa LTAP has a free online module that can be used for in-house training on the topic.

Anyone who participates in the heavy lifting module will leave knowing how to properly lift and carry loads, when to use alternatives for lifting, and why it’s important to an individual and an agency that loads are lifted and carried properly.

There are multiple training activities:
- Videos and discussions,
- Mock scenarios (debris on the floor, sharp edges, tripping, twisting, and throwing/dropping boxes),
- Inspection methods (sharp corners, slippery textures, and heavy loads),
- team lifting, and
- Alternatives to lifting (handcart/crane).

The module comes with a list of materials needed, and an outline of supervisor responsibilities.

Iowa LTAP has safety training modules on other topics as well. See page 7 for more information on those.

Sources:
Safety vest Continued from page 1

The 2009 version of the MUTCD has not yet been adopted in Kansas, but it’s only a matter of time. So it’s a good idea to start planning to replace your safety vests that do not meet the new standards. The deadline for compliance is December 31, 2011.

New vest requirements
There are two things to remember about the regulations:
1) High-visibility vests will be required on ALL roads (and ROW) open to public travel.
2) Particular vests are required.
Even if you are using ANSI II and III vests already, they may not meet the regulation. The vests required under the new MUTCD must be “labeled as meeting the ANSI 107-2004 standard performance for Class 2 or 3 risk exposure.” Look at the tag inside the garment.

By the way, if there is no tag on the garment, or it’s so faded you can’t read it, take the vest out of your inventory. You have no way of proving the garment meets the standard.

After the deadline, anyone working on your roads or ROW, including contractors, utility companies, firefighters and emergency personnel, will need to wear either an ANSI II (2004) vest or ANSI III safety suit, depending on the volume and speed of adjacent traffic and whether the work is being done at night.

Q&A about the requirements
I spoke with Gelene Savage, staff attorney for KDOT, about some of the legal ramifications of the requirements.

How will the requirement be enforced?
Legally, failure to wear the proper safety apparel will be considered negligence—the same as if you don’t put up a road work ahead sign. This could result in damages being assigned to your local government if the worker not being visible is determined to be a factor (i.e., proximate cause) of a crash.

If contractors hired by a local government do not comply with the requirements, who is liable?
This depends on the language in your contracting documents. The contracting documents should require that contractors, sub-contractors, and any person working under the authority of the contractor or sub-contractor comply with the latest version of the MUTCD. However, regardless of the contract language, governmental entities that maintain roadways have a non-delegable duty to maintain the roads in a reasonably safe condition for the traveling public. If the lack of an appropriate vest is determined to be a violation of the duty to maintain the roads in a reasonably safe condition for the traveling public, then a governmental entity could be found liable.

How about utilities working in the street or ROW? Same situation. It’s a good idea to require permits for utilities working in the ROW and to have those permits require conformance with all provisions of the MUTCD.

What about people who are on the road in the ROW for whom there is no permit process?
One of the big issues regarding safety apparel in work zones and on the ROW is the presence of media representatives in these areas. The MUTCD says they should wear vests (should, not shall). Title 23 of the Code of Federal Regulations says that governments are not responsible for people they can’t control, like the media in this case. Unlike for contractors and utilities, there is no permit process for media representatives to be in these areas. [Although not obligated to, local governments could inform local media outlets about the new guideline for safety apparel directed at media staff. -Ed.]

A new option has been added to the 2009 MUTCD that allows first responders and law enforcement personnel to use safety apparel meeting a newly-developed ANSI standard for “public safety vests” because this type of vest will better meet the special needs of these personnel.

Firefighters or other emergency responders engaged in operations that directly expose them to flame, fire, heat, and/or hazardous materials may wear retroreflective turn-out gear that is specified and regulated by other organizations.

Also, a recommendation is added that all on-scene responders and news media personnel in traffic incident areas should wear high-visibility apparel.

How should local governments respond to these new requirements?
• Replace outdated safety apparel by December 31, 2011 or sooner.
• Train your employees about the new regulations.
• Make sure you have designated someone on staff to decide which apparel will be worn on which job.
• Make sure your contracts and permits require compliance with MUTCD.
• Inform your permittees about the change in the regulation.

More information
For more information, visit the MUTCD Web page at http://mutcd.fhwa.dot.gov. You will find the 2009 version of the MUTCD and presentations that explain the changes from the previous version. If you have a particular question, feel free to contact Tom Mulinazzi at Kansas LTAP at (795) 864-2928 or tomm@ku.edu.

Sources:
• Gelene Savage, Kansas DOT. Interview. April 13, 2010.

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1 Because each situation is different, local governments should contact their own legal advisor for advice about the use of and contracting for the use of safety vests to be in compliance with the MUTCD. Ms. Savage’s comments should not be taken as legal advice.
Fall Protection Tips

Fall protection starts with good training, and employees remembering to use it.

Slips and falls are the #2 cause for worker insurance claims for county road and bridge departments in Kansas. Here are some tips for preventing falls:

• Take the time to identify all potential tripping and fall hazards before work starts.

• Look for fall hazards such as unprotected floor openings/edges, cords, and loose material underfoot.

• Inspect fall protection equipment for defects before use.

• Select, wear, and use fall protection equipment appropriate for the task.

• Chose the correct ladder for the task, read the instructions, and be sure that the ladder is in good condition. Check for surrounding hazards, stable footing, and the proper angle.

• Never stand on the top rung/step of a ladder.

• Use handrails when you go up or down stairs or on and off equipment.

• Practice good housekeeping. Keep cords and air hoses out of walkways or adjacent work areas.

• Contact your supervisor if you see fall hazards or have any other questions about fall prevention. Do not work until unsafe conditions have been corrected.

Fall protection starts with good training, and employees remembering to use it.

Kansas LTAP has recently reprinted its Workplace & Equipment Safety Workbook (with an updated cover) to be able to distribute more copies of this helpful publication to local agencies. The workbook contains safety information on 17 topics especially relevant to road and bridge work:

• Hard hat use
• Lifting and carrying
• Special considerations for seasons/weather/time of day
• Safe flagging
• Safe road maintenance and sign installation
• Shop safety
• Safe vehicle maintenance
• Safe trenching
• Safe forestry operations
• Safe motor grader operation
• Solid waste collection safety
• Safe mowing
• Poison ivy
• Lyme disease
• West Nile virus
• Dealing with meth lab waste
• Contact lens safety

Every shop should have at least one of these books. To order your free copy(ies), turn to page 15.

Sources:
A thorough walk-around can identify situations at your shop that are either being done right or need to be fixed.

This checklist is adapted from one designed by Region 1 of the Environmental Protection Agency (EPA) to help public works facilities achieve and maintain compliance with environmental, health and safety requirements. It is based on federal regulations as well as nationally recognized fire codes, and is edited here to show the tasks most relevant to safety.

This checklist is designed to help identify issues that may need further attention. It does not substitute for review of actual state and federal regulations.

Walk-around of the yard and shop
Be alert for the following good safety practices as you conduct a walk-around:

Yard
- Waste materials abandoned on the property or that have been picked up are identified, stored according to hazard, and disposed of properly.

Building
- Employees have been trained in the use of fire extinguishers.
- Aisles and emergency exits are clear, and exit signs are posted over doors.
- Smoking is prohibited near volatile fluids.

- Electrical receptacles have no open grounds or reverse polarity.
- Circuits are labeled and the circuit box is closed. Access to the circuit box is clear within 5-10 feet.
- Electrical outlets have cover plates. No wires are frayed, damaged, or taped off.
- Wiring is enclosed in electrical metallic tubing or rigid metal pipe.
- There is adequate central ventilation and adequate local ventilation for carbon monoxide from tailpipe exhaust systems.

Materials and waste storage and management
(including oils, solvents, antifreeze and gasoline)
- Drums, tanks and other containers are labeled with the name of the material they hold (for example, waste oil) and the type of hazard they present (e.g., flammable).
- Waste containers are labeled with the date when contents were first added.
- Lids are tight-fitting and sealed, and bungs are closed.
- Waste storage area is labeled.
- There are no leaks or excessive spillage in chemical or waste storage areas, including around solvent sinks, pumps, pipes, hoses, and valves.
- Flammable (flash point <140°F) materials are stored in an area (such as an air-tight metal cabinet) approved by the local fire department.
- Flammable and hazardous liquids are stored in containers that are either approved by the U.S. Department of Transportation or by the State Fire Marshall, or listed and labeled by the National Registration and Testing Laboratory (UL-listed).

General equipment
- Lifts have operable safety locks; are tested and serviced monthly.
- Wheel grinders have properly adjusted tongue guards and work rests.
- Placard overhead storage with approved load limits and install guard rails.
- Electrical outlets have cover plates. No wires are frayed, damaged, or taped off.
- Wiring is enclosed in electrical metallic tubing or rigid metal pipe.
- There is adequate central ventilation and adequate local ventilation for carbon monoxide from tailpipe exhaust systems.

Health and safety
- The shop has written contingency plans for fire prevention, emergencies, and spill control, posted near phones and potential sources of spills.
- Spill control materials are available on-site.
- Materials Safety Data Sheets (MSDSs) are available for all chemicals.
- Eye wash and showers providing 15 minutes of continuous flush are available in areas where acids and bases are used.
- Employees are trained in chemical hazard, safety, and emergency preparedness.

Vehicle fluids
- Oily shop rags are placed in sealed, labeled metal containers and laundered by a licensed facility.

Solvents parts cleaning
- Lid of solvent parts cleaner is closed.
- Parts cleaner is labeled with material name and hazard type.
- If flammable solvent (flash point <140°F, <200°F in R.I.) is used, the parts cleaner has a fusible link that locks shut in the case of fire.
- Parts cleaner filters are handled as a hazardous waste.

Source:
Are you looking for materials to use at your regular safety meetings? Iowa LTAP has created six training modules that might just be the ticket.

The modules, collected in a 476 KB PDF, cover the following topics:
- Hard hats
- Lifting and carrying
- Shop safety
- Work site safety
- Safe vehicle operation
- Snow and ice operations

These modules have easy-to-use, customize-able training materials for conducting worker safety training sessions. You can use these modules in any order—and you can use them to train new employees or review safety topics with more experienced employees.

Each module includes a handout for employees and a guide for the trainer. The handout provides employees with an outline of important information on the module topic. The trainer guide includes training activities, training goals, and tips for supervisors. See box at right for a sample lesson plan on hard hats that really hits home!

The modules are online at www.ctre.iastate.edu/pubs/worker_safety.

Adapted with permission from Technology Exchange, Minnesota LTAP, Fall 2006, Vol 14, No. 4.

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**Fork Lift Operation: “Chance Takers are Accident Makers”**

OSHA has regulations for forklifts detailing operator training requirements, forklift inspection needs, safe driving rules, and requirements for charging and changing batteries. The regulations even spell out what vehicle characteristics are necessary in certain types of work areas. For example, if you have an area with flammable gases or combustible dusts, it makes a difference how the forklift is powered. The following tips will help you minimize potential accidents:

- High-lift-rider industrial trucks should be equipped with overhead guards.
- Anyone operating a forklift needs to have been trained and be able to show a valid certificate.
- The rated capacity of the lift should be clearly marked for the operator.
- When general lighting is less than 2 lumens per square foot, auxiliary lights should be provided.
- Steering knobs or spinners should not be installed on steering wheels where the steering hand wheel may spin in rough terrain, such as construction ruts or curbing.
- Battery-powered forklifts need designated charging areas with eye wash and fire protection nearby, and adequate ventilation.
- Operators should always wear seat belts and look out for other workers in the area.

This LTAP Workplace Safety Tip is courtesy of the Minnesota LTAP, http://www.mnltap.umn.edu

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**Sample lesson plan on hard hat safety**

1. Show video and discuss. (6 min.)
2. Pass around a bad hard hat. Ask learners to shout out the defects. If they don’t identify all the flaws, point them out. (3 min.)
3. Pass around a hard hat that’s been left in the sun too long. Ask learners if they can see anything wrong with it. Explain that ultraviolet rays make the hat weaker and that it’s best to store hard hats out of direct sunlight. (3 min.)
4. Show the inside of a good hard hat and pass around a few good ones. Explain the importance of the suspension, how it works, and how to adjust it to fit properly. (3 min.)
5. Explain your agency’s policy on when to wear a hard hat. Ask several “what if” questions that require learners to think about different work situations and whether a hard hat is required. (4 min.)
6. Ask learners to grab a hard hat and adjust it for their own wear. Check to make sure they’re doing this properly. (5 min.)
7. Spread out a tarp or plastic sheeting (preferably outdoors to avoid a mess). Place a poor-fitting hard hat on a melon and smack the hard hat with the sledgehammer. Ask for a volunteer to adjust a hard hat to fit another melon. Ask for additional volunteers to drop objects on it and finally to smack it with the hammer. (7 min.)
8. Ask learners to explain the benefits of wearing a hard hat. (2 min.)
The RSA model works well for identifying pedestrian hazards and making improvements.

The document titled *Pedestrian Road Safety Audit Guidelines and Prompt Lists*, published by the Federal Highway Administration, provides transportation agencies and teams conducting a roadway safety audit (RSA) with a better understanding of the needs of pedestrians of all abilities.

The Guide has two primary sections:

1) The *Knowledge Base Section* discusses the basic concepts behind a Pedestrian RSA, such as
   - Understanding the characteristics of all pedestrians,
   - Analyzing pedestrian crash data, and
   - Pedestrian considerations in the 8-step RSA process.

2) The *Field Manual Section* includes the guidelines and prompt lists. The guidelines provide detailed descriptions of potential pedestrian safety issues while the prompt lists provide a abbreviated version of the same information.

**What is considered in a Pedestrian RSA?**

There are six universal considerations for the entire RSA site:

- **Needs of pedestrians:** Do pedestrian facilities address the needs of all pedestrians?
- **Connectivity and convenience of pedestrian facilities:** Are safe, continuous, and convenient paths provided along pedestrian routes throughout the study area?
- **Traffic:** Are design, posted, and operating traffic speeds compatible with pedestrian safety?
- **Behavior:** Do pedestrians or motorists regularly misuse or ignore pedestrian facilities?
- **Construction:** Have the effects of construction on all pedestrians been addressed adequately?
- **School presence:** Is the safety of children in school zones adequately considered?

RSA teams have special considerations beyond those of a typical RSA and should include safety experts with experience in developing the various aspects of a roadway and pedestrian facility. For example, at least one person on the team should be familiar with the Americans with Disabilities Act (ADA) requirements so as to understand how these affect design options, and how safety concerns for all road users can be addressed while meeting the ADA requirements.

It is critical that RSA team members have a working knowledge of pedestrian design requirements as well as an understanding of the relative safety of various design features. The RSA team should be familiar with national and State guidelines and standards for pedestrian safety covered in:

- **AASHTO’s A Policy on Geometric Design of Highways and Streets (Green Book).**
- **ADA Accessibility Guidelines (ADAAG).**
  http://www.access-board.gov/adaag/html/adaag.htm
- **Manual on Uniform Traffic Control Devices.**
  http://mutcd.fhwa.dot.gov/ser-pubs.htm
- **Applicable State-specific documentation**, such as State statutes and laws governing pedestrian and motorist responsibilities. In Kansas, these can be found at the Kansas Department of Transportation’s Bicycling and Pedestrian Web site: http://www.ksdot.org/burRail/bike/

**Anticipated challenges in conducting pedestrian-oriented RSAs**

While the number of agencies implementing RSA programs in general is increasing, FHWA points out that organizations face numerous challenges in using RSAs to address pedestrian safety. The following are some of the key challenges:

**Identifying the projects that are prime candidates to be audited.** In many cases, the issue of pedestrian safety is not given a high priority—for example, construction projects that close sidewalks. Procedures need to be established that ensure that pedestrian issues are addressed in all projects. Using an RSA for those projects that are identified as having a significant impact on pedestrian flows can potentially have major benefits. Section 3.4 of the FHWA Guidelines provides additional information on the types of projects for which pedestrian RSAs should be considered.

**Convincing agencies of the need for an independent, experienced auditor on pedestrian-focused projects.**

Many communities have been conducting RSAs or similar environmental assessments with untrained or informal auditors such as community members. While local...
community members who often use the facilities being audited have a strong awareness of many problems observed on those facilities, they may not have the background knowledge necessary to identify relationships to the built environment and potential solutions.

Another problem with local community members using the RSA is that they may be used to certain situations and not perceive them as threatening and potentially risky as an outside trained auditor might; “fresh eyes” may be needed to take into consideration a variety of safety concerns and provide innovative recommendations to mitigate issues.

Although outside RSA team members may not have an institutional memory of the facilities being audited, they may 1) carry less bias in terms of considering safety issues, 2) be better trained to comprehensively assess the environment and identify relationships between safety, behavior, and the physical and social environment, and 3) be in a better position to coordinate findings with the responsible parties to promote change and implement improvements.

**Ensuring the needs of all roadway users are considered.** Whereas the focus of this guide and materials is on pedestrians, it is important that the needs of all road users are considered when conducting an RSA. This includes not only understanding design principles, but also the laws that affect all users. Failure to consider all users appropriately may result in potential safety issues going unnoticed by the RSA team or inappropriate suggestions being made for all road users. For example, installation of a sign or signal for one type of user may create sight distance issues for another type. The intent of this guide is to assist RSA teams in considering potential pedestrian issues, not to lead teams to place any lower priority on other road users.

**Understanding the different relationships between agencies and the public in pedestrian-oriented RSAs.** Pedestrian-oriented RSAs may involve local pedestrian and community groups either as part of the RSA team, or as advocates for specific issues or concerns. Members of these groups may be able to add more details on the pedestrian's perspective of facilities, thus further ensuring the needs of users are met. Sometimes an RSA may even be initiated at the request of such a group. It is important for the RSA team to consider the role these organizations may play in the improvement process when planning an RSA and suggesting mitigation strategies.

**Using Pedestrian RSAs in school areas**

Schools pose unique pedestrian safety problems because of the age of pedestrians and the mix of pedestrian, bicycle, and vehicular traffic. Potential issues are exacerbated with the increasing number of students driven to school, thereby increasing the number of drop-off and pick-up points. Because of the uniqueness and complexity of a school’s problems, a review by an independent RSA team could help assure that a balanced approach is taken to address safety. School officials and parents are closely involved with the problems and are acutely aware of day-to-day operation of the school facility and have strong opinions regarding problems and their solutions. The value of the RSA team’s findings is in the independent perspective of the task and the need to consider a variety of stakeholder viewpoints and perceptions in the process.

**Pedestrian RSAs in Kansas**

To our knowledge, no one in Kansas has yet performed a pedestrian RSA. Becky Pepper, bicycling and pedestrian coordinator for the Kansas DOT, said “I don’t know of any KDOT efforts in regard to a Pedestrian RSA.” She mentioned that MARC [the Kansas City area MPO] hosted an FHWA training session for RSAs in urban areas and is looking closer at developing RSA procedures for the region. Aaron Bartlett of MARC reported that they have not done an official Pedestrian RSA, but they got a taste of some of the issues in a safety training that examined a location that had a new shopping/restaurant area across a busy street from a large retirement community.

Kansas LTAP has been conducting roadway safety assessments in rural locations, and has not conducted a Pedestrian RSA to date.

**Funding available for Pedestrian RSAs?**

When asked if there is any funding available to locals for conducting RSAs, Pepper said “I’m not quite sure what state funds may be available, if any, after all the cuts, but Safe Routes to School (SRTS) funds could be used for preliminary engineering (PE) to determine appropriate countermeasures. Federal HSIP funds could also be used [for this].” She noted that PE funds are being used in a SRTS project in FL District 7 to determine appropriate countermeasures.

Wherever there are pedestrian safety problems, a Pedestrian RSA is a comprehensive analysis tool that can help solve those problems. Download FHWA’s Pedestrian Road Safety Audit Guidelines and Prompt Lists at the link listed with the source information below.

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**Pedestrian RSA Zones**

Areas to be considered in pedestrian safety take into account the different areas people will be on foot:

A. Streets
B. Street crossings
C. Parking areas/adjacent developments
D. Transit areas

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Questions and Answers About Transporting Heavy Loads in Kansas

By Lisa Harris

At the request of one of our Kansas LTAP advisory board members, I recently interviewed Angel Fitzgerald about how routes are selected for transporting heavy and oversize loads on the state highway system in Kansas. Fitzgerald is office coordinator for KDOT District 1, and handles the permit applications they receive for such moves in Northeast Kansas.

How does KDOT determine the routes for heavy and wide loads on the state system?

KDOT does not determine the routes; instead, the mover submits a proposed route with the state permit application. However, KDOT will revise the proposed route, if necessary. Movers typically draft their routes with the help of a trucking company or a load escort service.

At the state level, who reviews and approves the permits in Kansas?

The Kansas Corporation Commission's Kansas Trucking Connection approves the majority of moving permits—32 types, in fact. However, Superloads and Large Structures must be approved by KDOT first. Superloads that weigh 150,000 lb or more need to have a bridge analysis done by the State Bridge Office in KDOT's Bureau of Design. Permits for moving Large Structures, such as houses, are reviewed by the office coordinator of each KDOT district the load will pass through. All other permits are handled directly by the Kansas Trucking Connection. Visit their Web site at www.kstrucking.org.

What does KDOT consider when reviewing a route?

Besides the weight and size of the load, we also consult the 511 system and what it says about expected construction along the way, and road conditions.

Do the movers need to contact the cities and counties that they pass through, as well as the state?

Yes, they are supposed to, although unfortunately sometimes they don’t. Sometimes KDOT will work out the logistics of a move together with the local governments.

Who is responsible for traffic control?

The movers provide their own traffic control. In the rare instances when we recommend additional police support, the movers are responsible for hiring off-duty officers to provide that service.

Does the permit and review system work well in Kansas?

Generally, yes. It’s successful in catching potential problems and approving effective routes. It’s also successful in terms of being business-friendly. We hear from the movers that Kansas is way easier than other nearby states. We have fewer restrictions. For example, one nearby state has a 4:00 PM curfew, they charge a lot for their permits, and it takes a long time to get permits approved.

In Kansas we try to keep things moving, but we do have a few reasonable restrictions; loads can’t be moved at night, on weekends, or in inclement weather. We also restrict movers during rush hour. Besides having fewer restrictions, our permits cost a lot less than in some other states. The movers always comment that Kansas does everything possible to help them.

What kinds of problems do you encounter?

When we do have problems, it is usually because an out-of-state mover does not know the permit process and does not allow sufficient time to get the necessary approvals. Or they don’t contact the local governments.

Any changes ahead?

We’re looking into developing a more automated system for permit review—one in which you could punch in a route and the program would say if the route is OK for the particular load. We’re having meetings about that right now.

For more information, contact your local KDOT district office [see http://kdotapp2.ksdot.org/WelcomeContact/contact.aspx] or visit the Kansas Trucking Connection at http://www.kstrucking.org.
What to Know About Watts

By Dave Ball

This article is about the proper use of extension cords. The U.S. Consumer Product Safety Commission (CPSC) estimates that 4,000 injuries a year treated in emergency rooms are caused by extension cords. When I read that statistic I assumed that the vast majority of the injuries were caused by tripping on an extension cord; in reality it’s closer to 50 percent. Thousands of injuries are also caused each year by the overloading and/or misuse of extension cords.

The CPSC estimates that about 3,300 residential fires are caused by extension cords each year, killing 50 and injuring an additional 270 people. The most frequent of such fires are short circuits, overloading, damage, and improper use of extension cords.

Below are some safety tips regarding the use of extension cords.

Extension cord safety tips
• When shopping for an extension cord, look for the UL symbol. This means that samples of that particular cord have been tested by Underwriters Laboratories and received consumer safety approval.
• Extension cords come in a variety of lengths. Select a cord that is long enough to meet your needs. Never attempt to extend the length of an extension cord by connecting it with another extension cord.
• Don’t use extension cords with cut or damaged insulation. Exposed conducting wires can put you at risk for fire, burns and electrical shock.
• Do not cut, file or otherwise alter an extension cord’s grounding pin or plug blades to make it easier to plug into an outlet! If the plug does not fit into an outlet, have an electrician replace the receptacle.
• Extended exposure to outdoor conditions can deteriorate an extension cord, so store it indoors, regardless of its indoor/outdoor rating.

Extension cords come with information needed for their proper use—information such as the wire size, volts, amps, and (sometimes) watts. All of these are very important. I would like to focus on the watts an extension cord can accommodate.

By simply multiplying the amps by the volts produced by an electrical item, you arrive at the watts. Why be concerned about watts? If you have items plugged into an extension cord that exceed the capacity of that cord, you are creating an unsafe situation. In one instance that caused a fire, an electric heater, a lamp, and a television were plugged into an extension cord that was found to be the source of the fire. I decided to find out if this would be an easy mistake to make. When looking at a Web page for extension cords, I found two different extension cords, both 15’ long with the same gauge wire. One specified 10 amps, 125 volts, and 1250 watts. The other one only specified 13 amps and 125 volts, so I had to calculate the watts. The second one can accommodate 1625 watts (amps x volts=watts).

I have a television set from the 1980s that demands 110 watts, a lamp with a 100 watt light bulb in it, and an electric heater that can gulp down 1500 watts. (You can find out the watts needed by looking for labels on the appliance or bulb.) 110 + 100 + 1500 = 1710 watts. Neither one of those extension cords are safe to use in this situation.

See what problems can arise for the unaware?

• To avoid potential safety hazards, always unplug extension cords when they are not being used.
• Keep all outdoor extension cords clear of snow and standing water, and well protected from the elements.
• Never use a cord that feels hot or is damaged in any way. Touching even a single exposed strand can result in an electric shock or burn.

For additional tips on both electrical cord safety and purchasing, visit www.holidaysafety.org.

Please share these tips with your family and co-workers. You may just save someone’s life.

Source: CableOrganizer.com.

Dave Ball is the safety training coordinator for the Riley County Department of Public Works. He can be reached at (785) 339-2981 or at dball@rileycountyks.gov.
Given its size, a skid steer loader seems like it would be an easily controllable machine, but size can be deceiving. It is important to keep in mind that the power a skid steer loader can generate can sometimes overwhelm its operator. Accidents that can happen with a skid steer loader include rollovers, runovers, and pinning between the bucket and the frame or between the lift arms and the frame.

Safety while entering and exiting
One of the most common ways an accident occurs is from the operator entering or exiting the machine. Most of the skid steer loaders must be entered or exited through the front, over the bucket or other attachment. Because of this it is very important that safety precautions are followed when entering or exiting the machine. See the blue box on this page for recommendations from the National Institute for Occupational Safety and Health (NIOSH).

Use caution during operation
Beyond safely entering and exiting the machine, it is vitally important to maintain safe operation of the skid steer loader. The operator should always read the operator’s manual before operating the machine because it provides specific information about that particular machine. Some of the safety rules to follow include:
• Work with the seat belt fastened and the restraint bar in place.
• Operate the loader from the operator’s compartment, never from the outside.
• Stay seated when operating the loader controls.
• Keep your arms, legs, and head inside the cab while operating the loader, when possible.
• Plan to load, unload, and turn on level ground.
• Never exceed the manufacturer’s recommended load capacity for the machine.
• Avoid traveling across slopes; travel straight up or down with the heavy end of the machine pointed uphill, always facing the direction of travel.
• Keep bystanders away from the work area, and
• Never modify or bypass safety devices.

Built-in safeguards
The safeguards with which most skid steer loaders are equipped are there to prevent fatal accidents. The first safeguard comes in the form of interlocking. This means that the controls are interlocked so that a safety control or fixture (such as a seat belt or restraint bar) must be secured or activated before operational controls can function.

The other safeguards are:
• rollover protective structures,
• falling object protective structures,
• side screens, and
• seat belts or operator restraint bars.

It is also important to keep safety in mind when maintaining or inspecting the skid steer loader. Maintenance or service should never be performed under a raised lift arm unless a manufacturer-approved lift arm support is used properly. The equipment should be maintained and inspected according to the manufacturer’s instructions.

The skid steer loader should also be supported according to the manufacturer’s instructions prior to raising the lift arms and cage.

Bottom line
Skid steer loaders may seem like small, manageable machines, but using them improperly can lead to injuries or fatalities. It is important to always use and maintain the safety devices provided by the manufacturers, to follow safe operating procedures and safe mounting/dismounting procedures, and to train operators to follow the manufacturer’s procedures for operating and servicing skid steer loaders.

Source: “Skid Steer Safety.” Adapted with permission from Colorado LTAP, a newsletter of the Colorado Local Technical Assistance Program, Fall 2004.

The following recommendations were given by NIOSH for safely entering and exiting a skid steer.

• Enter only when the bucket or other attachment is flat on the ground or when the liftarm supports are in place.

• When entering the loader, face the seat and keep a three point contact with handholds and steps.

• Never use foot or hand controls for steps or handholds.

• Keep all walking and working surfaces clean and clear of debris.

• Before leaving the operator’s seat:
  — Lower the bucket or other attachment flat to the ground.
  — Set the parking brake.
  — Turn off the engine.

• If you are not able to exit through the front of the machine, use the emergency exit through the roof or across the back.
Healthy Habits Can Reduce Stress and Fatigue

By Matthew Barnett

Stress happens to everyone. Stressful situations can initiate our “fight or flight” instinct. This reaction, also known as the stress response, occurs when we sense danger, and this heightened state is our body’s way of protecting us.

Even though it may not always feel like it, stress can actually be beneficial by helping you stay focused, energetic, and alert. In extenuating circumstances stress can help save your or others’ lives. It can give you that extra energy to finish a job that needs done, or help you in an emergency. However, stress can easily go from helpful to problematic.

**Signs of stress**

- Common signs of stress include:
  - headache
  - fatigue
  - sleep disturbance
  - upset stomach
  - difficulty concentrating
  - low morale
  - poor relations with family, co-workers, or friends.

These symptoms can affect your health, mood, productivity, and your overall quality of life.

Stress can happen at work when job requirements surpass the capabilities, resources, or needs of the worker. It’s true that we all handle our stress differently, but learning how manage our stress is key to job performance, staying safe, and keeping mentally and physically fit. Poor health and injury are real risks that accompany job stress.

**Stress-related fatigue**

Individuals with stress-related fatigue often experience many other symptoms: loss of motivation, muscular weakness, poor stamina, and lack of focus. While it is a common health complaint, fatigue could also indicate more serious physical or psychological health issues. There are ways to reduce fatigue, which we will discuss here, but if it persists, see a doctor.

Stress can be experienced by anyone, which is why anyone can benefit from the following tips to help keep you on your toes and your head off your desk.

**Ways to reduce stress**

Because there is no one way to best reduce stress for everyone, here is a list of helpful tips for you to consider, based on your circumstances.

**The 4 A's.** The National Rural Transit Assistance Program (RTAP) recommends thinking over the Four As: avoid, alter, accept, or adapt. One of the four As might work better than the others in each situation.

- For example, if religion and politics are hot buttons for you, avoid talking with co-workers about them. If you argue about the same subject with the same people, avoid bringing it up, or excuse yourself when it does.
- Some situations require you to alter or adjust your attitude and adapt to a new routine.
- When situations are unavoidable, such as serious illness or death of a loved one, it’s best to cope with stress by accepting the way things are.
- Sometimes a simple change in attitude can even work wonders. It’s a better solution to adapt to a situation you can’t change instead of trying to fight a losing battle. In these situations you may feel as if you’ve lost control, and changing your expectations and attitude may help you to feel more calm and in control of the situation.

**Exercise.** To relieve stress at work, try exercising. You’ve heard your doctor say it for years, and it’s not a new idea. Exercise can reduce susceptibility to illnesses, speed up your metabolism, increase blood flow, and increase oxygen to your brain.

- Here some easy exercises for the workplace: neck stretches and head rolls, hand massages, shoulder shrugs, arm and finger stretches, upper back and body stretches, leg stretches, and stretching your lower back and knees by bringing your knees to your chin. These will not only give your brain a rest for a moment, but they will also keep you from feeling stiff after sitting for extended periods of time.

As for exercising outside of work, http://www.fitness.gov explains that individuals who engage in near-daily physical activity of 30 minutes or greater will experience fewer days of sickness with the common cold. This Web site also argues that exercise and a well balanced diet can help your body avoid chronic fatigue. Moderate physical activity will improve physical and mental health.

**Benefits to you and your agency**

A healthy lifestyle will help you feel more energetic, more in control, and happier. It provides benefits to your agency also, in terms of increased morale and productivity. Getting enough sleep, eating healthy foods, and exercising and stretching are all positive ways to keep you going at work. Granted, these changes are not always easy to make, but making and committing to a plan of action will always be helpful.

**Sources:**

- www.nationalrtap.org
- www.fitness.gov
RESOURCES

By Lisa Harris

MAINTENANCE OF SIGNS AND SIGN SUPPORTS

This guide, specifically developed for local governments, is an update to the same titled guide published in 1990. It is intended to help local agencies ensure their signs are maintained to meet the needs of the road user. The guide succinctly covers the following topics: a description of sign types, sign materials and sign supports; sign installation procedures; and the elements of a sign management system including inventory, inspection, preventive maintenance, repair and replacement, and record-keeping. FHWA. January 2010.

HEY FLAGGERS: HEADS UP!


CHOOSING THE RIGHT LADDER

This two-page guide is part of OSHA’s Toolbox Talk safety training series. This one describes how to choose the right ladder for the job, whether working around electricity, carrying loads on the ladder, working outside, etc. It also includes notes for discussion leaders and review questions for trainees. US. Department of Labor.

WORKPLACE & EQUIPMENT SAFETY WORKBOOK


CALENDAR

Visit our Web site for even more training calendar listings and to register for workshops. Go to http://www.ksltap.org and click on “View the LTAP Calendar.”

2010 KANSAS COUNTY HIGHWAY ASSOCIATION SPRING CONFERENCE
5/10-12 in Hutchinson

PRE-CONFERENCE WORKSHOP ON TRAFFIC IMPACT STUDIES
5/12 in Hays

APWA KANSAS CHAPTER 2010 SPRING CONFERENCE
5/12-14 in Hays

MUTCD FOR TECHNICIANS
May 18th in Garden City
▲T

INTRODUCTION TO ARC GIS
August in Lawrence

ADVANCED GIS
August in Lawrence

PUBLIC WORKS I AND II
September 8-9th – Hutchinson
September 15-16 – Olathe
▲S

TRAFFIC IMPACT STUDIES
September 22nd Overland Park
September 29th Pittsburg
▲M-e

BRIDGE MAINTENANCE
October 5th – Colby
October 6th – Hays
October 7th – Wichita
October 8th – Topeka

MUTCD FOR TECHNICIANS
October 19th – Great Bend
October 20th – Wichita
October 21st – Chanute
October 22nd – Lawrence
▲T

CONCRETE ROAD & STREET MAINTENANCE
October 14th – Hutchinson
October 28th – Manhattan
▲T

TRAFFIC IMPACT STUDIES
November 1st – Hays
November 9th – Hiawatha
▲M-e

ROAD SAFETY ASSESSMENT
November 30th – Ottawa
▲M-e

Classes Coming in Fall 2010:

OVERVIEW OF ENGINEERING FUNCTIONS IN PUBLIC WORKS
2 locations
▲M-r

LOCAL/STATE PROJECT COORDINATION
3 locations
▲M-r

RIGHT-OF-WAY TRAINING
3+ locations

For information on calendar items or to suggest a topic for an LTAP workshop, contact: Kristin Kelly, LTAP Training Coordinator, 785/864-2594, kbkelly@ku.edu.

▲T = KS Road Scholar Program Level 1 — Technical skills required course.
▲S = KS Road Scholar Program Level 2 — Supervisory skills courses are provided by the Kansas Association of Counties. Go to http://www.kansascounties.org and click on “Education Program.”
▲M-r = KS Road Scholar Program Level 3 — Master Road Scholar required course.
▲M-e = KS Road Scholar Program Level 3 — Master Road Scholar elective course.

MORE TRAINING ON CONCRETE ROAD & STREET MAINTENANCE

At its last meeting, the Kansas LTAP Advisory Committee identified deteriorating concrete road and streets as a topic of growing concern in the State. In response, we will hold two more workshops on concrete road repair this coming October. See above for dates, locations, and how to register.
FREE ROAD & BRIDGE RESOURCES

Check off your selections, fill in the bottom portion, and return this form to:
Kansas LTAP Materials Request, 1530 W. 15th St., Room 2160, Lawrence, Kansas 66045 or fax to 785/864-3199

TRAINING GUIDES & REPORTS

You are free to keep these unless otherwise noted.
Or you can download at the links provided.

Maintenance of Signs and Sign Supports
or ❑ request hard copy

Hey Flaggers: Heads Up!

Choosing the Right Ladder
or ❑ request hard copy

KS LTAP Workplace & Equipment Safety Workbook
45 pages. See description on page 5.
❑ request hard copy

EQUIPMENT

We offer turning movement counter boards for loan to local highway agencies. Email mgivechi@ku.edu to arrange a loan.
There could be a waiting list for these items.

❑ Turning Movement Counter Board DB-400, Jamar Technologies, Inc.
A basic model for recording turning movements at intersections. The board is lightweight and comes with its own case.

❑ Turning Movement Counter Board TDC-8, Jamar Technologies, Inc.
Can be used to do turning movement counts, classification counts, gap studies, stop-delay studies, speed studies, and travel time studies. The board is lightweight and comes with its own case.

Our resource catalog of reports and training videos is searchable online. Visit www.ksltap.org

REQUEST FORM

❑ send materials indicated ❑ address correction ❑ add to newsletter mail list ❑ send Road Scholar Program brochure
❑ send 2009 Kansas LTAP Resource Catalog of free training videos and publications

Name __________________________________________ Phone number ___________________________

Position ______________________________________ E-mail address __________________________________

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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 at the Kansas LTAP help you find the answers to your transportation-related questions.

Kansas LTAP, 1530 W. 15th St. #2160, Lawrence, KS, 66045. Call 785/864-5658 (fax 785/864-3199) http://www.ksltap.org

The Kansas Local Technical Assistance Program (LTAP) is an educational, technology transfer and service program of the Kansas University Transportation Center (KUTC), under the umbrella of the KU Transportation Research Institute. 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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KUTC Executive Director ....................................Pat Weaver
LTAP Director ..................................................Tom Mulinazzi
Manager of Communications & Outreach ..........Lisa Harris
Contributors ..................................................Matthew Barnett, Dave Ball

KUTC Resource and Education Staff
■ Traffic and Hwy. Engineering..........................Tom Mulinazzi
   Steve Schrock & Mehrdad Givechi
■ Road Surface Mgmt./Soils..........................Bob Parsons & Jie Han
■ Bridge Structures, GIS and CAD.....................Bryan Young
■ Engineering Computer Applications.............Mehrdad Givechi
■ Drainage......................................................Dave Parr
■ Environmental Engineering.........................Dennis Lane
■ Construction Engineering............................Yong Bai
■ Public Transit..............................................Pat Weaver
■ Publications & Outreach (785) 864-2590........Lisa Harris
■ Training & Road Scholar (785) 864-2594......Kristin Kelly
■ Lending Library (785) 864-5658.....................Alice Kuo

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