This past Spring the City of De Soto (Ks.) formed an ad-hoc committee to review the City’s policies and regulations about certain activities that take place within the City's rights-of-way (ROW). Primarily, we were concerned with how best to regulate the use and maintenance of the ROW by individual property owners throughout the City. Also, City officials had become concerned about the safety hazards created by massive mailbox structures or other substantial landscaping improvements installed close to the roadway.

There were three main issues the committee wanted to address.

1) While De Soto City ordinances clearly regulate public improvements and utility excavations performed by professional contractors or franchise utility providers, we had no formal rule in place that establishes the expectations and responsibilities of everyday activities like trash pick-up, mowing, and landscaping typically performed by homeowners.

2) We had no written standards for the placement of landscaping improvements or the construction and location of mailboxes.

3) There has long been confusion about who owns and maintains private driveway approaches and culverts in De Soto. It became clear to city officials that a formal policy was needed to uniformly police these matters.

Continued on page 2

Getting Serious About Maintenance of the Right-of-Way

Survey results helped the City of De Soto craft a use and maintenance policy.

Tips for Maintaining Concrete

[We’ve heard from some cities in Kansas that they are having more than the usual problems with crumbling concrete. This article outlines basic steps in concrete repair. In our Winter 2011 issue, we’ll discuss specs for concrete roads and curbs/gutters.]

Routine maintenance for concrete pavements generally includes regular street sweeping and joint/crack sealing. Sweeping removes caked mud, abrasives, and other debris from the surface. Clean pavement surfaces help keep drains clean and make travel safer for bicyclists. Regularly cleaning and sealing joints and random cracks keeps them free of water and sediment and protects the subgrade from water intrusion.

Temporary (asphalt) repair: For areas experiencing scaling, faulting, pumping, or blowups, a temporary repair using asphalt may be appropriate. Steps: 1. Blow out joints with compressed air. 2. Remove broken

Continued on page 11
ROW maintenance  Continued from page 1

Concern about liability was a key factor in the City’s interest in developing a ROW maintenance policy. In most cases the ROW is owned by the city, and therefore the city has a legal responsibility to police and control the activities that take place within the ROW, including the part that lies outside of the traveled portion of the roadway. If a city (or county) allows an unsafe condition to persist within their right-of-way, even if that condition was not created by the local government that owns the ROW, legal liabilities exist.

One of the initial tasks of our committee was to gather information about the ROW maintenance policies and practices of other cities and counties throughout our region (Northeast Kansas). Through our research it became evident that there is a good deal of diversity among these entities about how to deal with these subjects. Predictably, counties differ from cities in several areas like mowing, weed control, and trash pickup. We also noted differences among the cities and among the counties on many topics.

We found it difficult to establish common trends among the agencies, and we found no good comprehensive source of information about what other agencies are doing statewide. In many cases it appeared that, like De Soto, other communities in our region lacked a formal written policy on these topics. As a result, current practices are the cumulative result of past decisions rather than a deliberate set of standards that reflect the policies of the local governing body or community as a whole.

ROW maintenance survey conducted

In an attempt to obtain more complete information, we worked with Norm Bowers with the Kansas Association of Counties and Lisa Harris and Kristin Kelly with Kansas LTAP to create an on-line survey about ROW maintenance practices throughout the State. It included 49 questions on topics such as mowing, trash pickup, trees & landscaping, grading & excavations, mailboxes, driveway culverts & approaches, franchise & private utility work, and on-request traffic control devices. Invitations to participate in the survey were distributed to local road agencies throughout Kansas via the KS LTAP e-mail discussion list in May 2010. By the end of June, the survey had collected results from 52 agencies including 18 cities, 31 counties, and 3 others (township, tribal government, etc.).

Some interesting results include the following:

Mowing
• Most counties (nearly 75 percent)—but only 28 percent of cities—mow the entire right-of-way adjacent to rural or agricultural areas.
• The vast majority of the mowing performed by road agencies is done with in-house staff. Only 12 percent of respondents reported that any portion of their mowing activities are contracted.
• 65 percent reported that they mow their rights-of-way two to four times per season.

Trash pickup
• 66 percent of agencies reported that the rarely pick up small items of trash and debris, yet 90 percent will pick up large items such as furniture, appliances & tires.

Grading & landscaping
• Most cities (88 percent) allow the planting of trees within a ROW, while 77 percent of counties do not.
• For existing trees within the right-of-way, most cities (71 percent) and about half of the Counties consider them the property of the abutting landowner and consult the landowner before removing a tree.
• 75 percent of respondents reported that the grading of a roadside ditch by a homeowner is either prohibited or discouraged.

Mailboxes
• 76 percent reported that their agency does not have specific standards for the construction or location of mailboxes within the right-of-way.
• Only 19 percent prohibit the installation of “monument” type mailboxes.

Driveways & culverts
• 61 percent if cities do not have specific standards for the installation of driveway culverts. 81 percent of counties do have specific standards.
• After the installation of a culvert, 90 percent of counties reported that ownership of the culvert transfers to the county. In contrast, 59 percent of cities reported that the culvert remains under the ownership of the adjacent landowner.
• 84 percent of counties reported that they are responsible for replacement or repairs to driveway culverts, yet 65 percent of cities reported that the responsibility lies with the adjacent land owner.
• 94 percent of cities indicated that the adjacent landowner
City of De Soto’s New Right of Way Maintenance Policies: A Summary

Mowing
In addition to mowing City-owned property such as the parks, city shop, and city hall, De Soto also mows various areas of right-of-way around town. It is understood that some of the areas that are currently mowed by the City are not necessarily the result of a policy or even an affirmative decision to mow a particular area. The Committee reviewed these areas and generally agreed that the level of service currently provided is appropriate. There was no cause to drastically modify the areas that the City currently mows.

Based on past practices and a review of the areas currently mowed by the City, the following general policy guidelines defining De Soto’s approach to mowing have been set:
• The City mows ROW where sight distances are limited and keeping roadside vegetation mowed is critical for safety reasons.
• The City mows ROW that would present a danger to the homeowner if he or she attempted to perform the maintenance. Examples include areas along higher traffic volume roads, or areas that have very steep side slopes.
• The City mows areas that lie between adjacent roads, or areas where it is not completely clear who would be considered the “adjacent” land owner.
• The City mows ROW in rural areas where the abutting properties are vacant or agricultural.

According to the policy, it is the adjacent land owner’s duty to mow and maintain all areas abutting a non-agricultural use or abutting a property that is zoned commercial or industrial. The City will mow the ROW abutting properties that are agricultural unless those areas are zoned commercial or industrial.

Driveway Approaches and Culverts
Property owners are responsible for maintaining all driveway approaches and associated drainage culverts on their property or within the ROW adjacent to their property at their own cost. However it is recognized that since these elements are technically on city property, the liabilities associated with unmaintained culverts or poorly installed culverts cannot be completely transferred to the landowner. The City therefore maintains a right to correct hazardous situations if they arise.

The City has long had specific requirements for the installation of driveways and culverts, but has historically not assumed “ownership” of those elements, even though they are within the ROW. De Soto’s new policy does not specifically state that the culverts are the property of the City, but in effect they are city property because they are within the right-of-way.

Landscaping, Obstructions & Junk
Under De Soto’s new policy, grasses, flowers and “other vegetation” are allowed within the ROW as long as they do not interfere with traffic sight lines. The policy prohibits planting trees within the ROW, and gives the City the right to remove an existing tree if it interferes with the maintenance, reconstruction, safety or use of the road. It also prohibits the placement of obstructions or junk within the right-of-way. There have been several locations throughout town where homeowners have placed large stones within a ditch or directly adjacent to the road that may pose a hazard to a vehicle. These applications of landscaping elements within the ROW are now prohibited, and De Soto intends to require the removal of landscaping boulders that exist at a handful of locations throughout the City.

Mailboxes
A major portion of the new policy relates to the construction of mailboxes. Throughout the state and country, traffic officials have long recognized the safety hazard caused by some mailboxes. Of particular concern are mailboxes constructed with stone, brick, or other heavy support structures. These are commonly referred to as “monument” type mailboxes, and they can be deadly if struck by a vehicle. A national standard for mailbox construction, entitled A Guide for Erecting Mailboxes on Highways, published by the American Association of State Highway & Transportation Officials (AASHTO) in 1994, has been adopted by reference. This standard gives specific criteria to make mailboxes less hazardous in high traffic areas. De Soto’s policy prohibits any new construction of monument-type mailboxes, and treats existing monument mailboxes as “Non-conforming Structures” that are allowed to stay, but cannot be replaced if they are damaged by more than 50 percent.
Hydrodemolition Helps Rehabilitate Bridge

High pressure water preps bridge.

The Boone County (Missouri) Public Works Department recently completed a project that repaired two deteriorating bridge decks (Nashville Church Rd. and Old No. 7) using a method uncommon to county projects. The deteriorated surfaces were removed by hydrodemolition and replaced with a course of latex-modified concrete (LMC), leaving the bridges with decks that are expected to last the life of the rest of the structures.

Both bridges are located in rural parts of Boone County on roads that receive traffic consisting of everything from heavy farm machinery to bicyclists. The existing deck on the Nashville Church Road bridge had a significant amount of exposed rebar on its deck. This was most likely due to the scant amount of concrete cover over the rebar from its original construction (less than 1 inch in places), causing it to rust and "pop" the concrete surface. The Old No. 7 bridge did not show the low amount of cover problem, but had curb drains that were perpetually clogged. This standing water is likely what lead to this bridge's eroded deck surface.

Hydrodemolition, a process that uses a very high pressure water jet (around 120,000 psi), was used to remove all deteriorated concrete and a prescribed depth of sound concrete from the existing deck surfaces. This process leaves a very rough surface for the LMC to bond with.

Latex-modified concrete was chosen as the replacement surface due to its bonding strength with the remaining deck, its ability to be poured in thin lifts without sacrificing strength and durability, and its greater resistance to infiltration of moisture and chemicals than...
traditional concrete.

APAC Missouri was awarded the contract for the project with a bid of $152,173.40, for the repair of both bridge decks. American Hydro, Inc., out of Maryland, was subcontracted by APAC for the hydrodemolition work. The contract allowed for a maximum of 30 working days to complete both bridges. Boone County also offered an early finish incentive to APAC of $750/day with a cap of $5,000 for every working day the project was complete ahead of schedule.

The project officially began on September 29, 2009, with the closure and hydrodemolition of the Old No. 7 bridge deck. After the demolition was completed on Old No. 7, the hydrodemolition machine was transported to Nashville Church Rd. where the demolition was begun. The hydrodemolition and vacuuming of the deck surface is about a day process for bridges of this size (Nashville Church Rd 136’ and Old No. 7, 78’ in length).

The hydrodemolition on these bridges was calibrated to remove ½” of sound concrete. In the areas of the most amount of deteriorated concrete, the decks were left with a surface about 3” below the original grade, with significant amounts of exposed rebar which were also cleaned of rust in the process.

After the old deck surface is removed, crews set edge forms and railing that the paving screed rides on. LMC is UV, temperature, and wind sensitive, and as such needed to be poured at night. The pour for Old No. 7 began on October 2nd at around 4:00 a.m. Unlike traditional concrete that can be hauled in, pre-mixed from a mix plant, the LMC used for this project was mixed at the site on a special truck that holds the aggregate, cement, latex, and water in separate hoppers and mixes each at their determined rate in a chute just prior to placement. After about 3 hours, the crews had the LMC poured textured and covered before the sun had a chance to shine on it.

The LMC was allowed to cure for four days. On October 6th, crews removed the covering, screed rails, installed asphalt approaches, and removed detour signs, opening the bridge to traffic.

The Nashville Church Rd. bridge progressed in a similar manner, with the pour happening on October 6th, and being open to traffic on the 14th. APAC had both bridges open well early of the contract time limit, and will collect all of the early finish incentive.

Post-repair sounding of the deck revealed no areas of delamination that were present prior to the repair. The decks now have a uniform surface with a slight green tint from the latex which the contractor has said will fade away with time. These repairs, along with some post-project improvements to the drainage on Old No. 7, are expected to leave these bridges with decks that will last as long as the rest of the structures.

Source:
• Reprinted from “Hydrodemolition and Latex Modified Concrete Bridge Deck Repairs in Boone County.” Boone County Public Works, September 2009.

Vest Clarification

By Lisa Harris

In our Winter 2010 issue, we reported on a new federal rule that will require anyone working in a right-of-way on any public road (hard-surfaced, gravel, whatever) to wear ANSI Class II 107-2004 compliant safety apparel. The article focused on vests, but to clarify, a compliant T-shirt would be also be suitable.

As reported by the Cornell Local Roads Program: “According to the FHWA, as long as the apparel meets ANSI Class II, 107-2004 requirements, the flagger, or any other worker, is in compliance with the MUTCD. Flaggers are not required to wear a vest. A shirt, jacket, vest or any other apparel meeting the standard is acceptable. However, a local agency may require that the flagger wear a vest as a local policy.”

To determine if a garment is compliant, look at its tag.

Source:
• Does a flagger have to wear a vest? Cornell Local Roads Program Quick Answer Series. http://www.clrp.cornell.edu/q-a/index.htm.
Tips for Effective Sign Maintenance

Traffic signs will require repair or replacement for any one of a number of reasons including:

- Vandalism.
- Hit by vehicle.
- Relocated and/or adjusted by private individuals.
- Damage by weather or other natural factors.
- Reached its useful life.

When a traffic sign requires replacement, consideration should be given to the reason why the problem exists.

Although sign vandalism in some cases seems to be an overwhelming problem, it is a situation that cannot be ignored. Examples of sign vandalism include sign stealing, over-painting, and bullet holes. Also, signs are often severely bent or knocked down by vehicles running off the road and hitting the sign, which is why crashworthy sign supports should be used. Signs can be bent, twisted, knocked down or even blown away by strong winds. Finally, signs will eventually become ineffective, when they have reached their service life, because the colors have faded and/or the retroreflectivity level is below the minimum required for that type of sign.

When signs are damaged by vandalism, by a vehicle hit, or by weather factors, the sign technician must determine if the sign should be repaired, replaced, or left as is. This is usually a field judgment. More often than not, it is cheaper to replace a badly damaged or unreadable sign than attempt many repairs in the field.

When determining whether or not to conduct repairs in the field, the technician should consider the repair costs, remaining service life of the sign face after repairs and the value of the sign blank (when it is reusable) against replacing it with a new or recycled sign. A sign technician should not leave a sign down or take a damaged sign away and leave nothing in its place. The technician should always have a replacement sign or sufficient repair materials while working in the field. If a field repair is appropriate or repair of the sign is needed until a replacement sign can be obtained, consider the following tips while performing the work.

Field repair of bent signs

Signs may be bent such as this STOP sign shown in Figure 1, on page 7. While many bent signs can be read in the daylight, some bent signs, even signs with minor bending, are difficult to see at night because they no longer reflect the light from the vehicle’s headlights back to the driver’s eyes. Minor bending like this may be repaired by removing the sign from the post and straightening the sign face.

If after straightening, the message remains clear, legible, retroreflective and the sign surface is not opened, cracked or separated from the sign face, it may be reused. Remember, if a sign is so badly bent that it will take several hours to fix, it is often cheaper to replace the sign and leave any repair or salvage to a shop operation. To repair a sign with minor bends:

1. First try to straighten the sign. If possible, bend the sign back in place on the sign post with hand pressure (wear leather gloves).
2. If the sign cannot be straightened sufficiently with hand pressure, remove the sign from the support and place it on a flat surface such as a truck bed, trailer bed, or fender dolly. Use cardboard or cloth to protect the sign face and pound it flat with a rubber mallet. (The cloth and rubber mallet will minimize further damage to the reflective sheeting.)
3. If the sign is no longer serviceable, replace it immediately if it is a regulatory or warning sign. If a replacement sign is not immediately available, remount the existing sign until you return later with a satisfactory replacement.

Field repair of scrapes and holes

Signs with scraped faces (usually as a result of being hit in a collision) or signs that have holes in them (typically as a result of gunshot vandalism) are often no longer legible, particularly at night. The damaged areas no longer reflect light back to the driver.

The sign in Figure 2 has been hit by several gunshots. Even with the holes, the sign can be read during the day and functions as intended, but leaving a sign up in this condition does not convey a serious message and may encourage more gun shots to this and other signs. The sign should be replaced or repaired as soon as practical. Minor damage can often be repaired in the field.

Field patching can be done by preparing a repair kit that includes the appropriate colors and types of new sheeting materials (including pressure-sensitive adhesive sheeting), cleaners and sealants. To repair a sign with scrapes or a few holes:

1. The sign should first be straightened and any bullet holes pounded flat using cardboard or cloth to protect the sign face and pound it flat with a rubber mallet.
2. Clean the area(s) to be patched with Xylol, then Varnish Naphtha.
3. If you carry replacement sign faces or patching materials, make sure that the retroreflective material being used for patching is the same as the material on the face of the sign. If in doubt about what type of sheeting to use replace the sign.
4. Follow the manufacturer’s recommendations when making field patches. Cut background field patches slightly larger than the damaged area. Pressure sensitive material should be extended at least 1/2-inch beyond the damaged area.
5. Replace the damaged legend with diecut, pressure sensitive, pre-spaced letters, borders and symbols and firmly squeegee into place.
6. Seal the hole on the back of the sign by applying aluminum foil tape to stop moisture from reaching the adhesive on the sign sheeting patch. For large holes, start placing the foil...
at the bottom of the hole, overlapping about 1/2-inch in a shingle fashion as you move up covering the hole.

7. If the sign is subject to snow burial and the replacement sheeting extends to the top edge of the sign, place transparent film along the top edge to seal out any moisture. Of course, if a sign can be relocated to an area to avoid snow burial, it should be.

**Field removal of spray paint on signs**

The sign shown in Figure 3 has been sprayed with black paint. Everyone who looks at the sign notices it. At night the message becomes hard to read. The safety effectiveness of this sign is significantly reduced and requires immediate attention.

Over-painted signs can often be cleaned, but many cleaning materials will damage the sign face materials which will result in the need to replace the sign.

There are several approaches to over-painted signs. All these approaches work to varying degrees to help reduce and control this problem. Generally a combination of these approaches is recommended for communities with recurring or increasing vandalism.

Paint can sometimes be removed from the face of signs without damaging or reducing the sign’s retroreflective properties. Several manufacturers have developed sign protective overlays that are more tolerant to paints and cleaning agents, and they have also developed improved cleaners.

Paint should not be removed with abrasive compounds or implements that will leave the sign face scratched (e.g., steel wool). After cleaning off the paint, signs should be inspected under night conditions or measured to determine if they have retained sufficient retroreflective characteristics to remain legible at night.

**Sign has reached or exceeded its service life**

Over time the colors of the sign facing will fade—especially for signs facing south towards the sun—reducing the contrast level between the legend and the background. The sheeting’s retroreflectivity properties will diminish, such that the sign can no longer be seen and read by the driver from an adequate distance. Under either condition the sign has reached its service life and should be replaced.

There is a new standard in the MUTCD for maintaining sign retroreflectivity and contrast levels. By January 2015, agencies are required to replace regulatory, warning and ground-mounted guide signs (except street name signs) that fall below the minimum requirements. By January 2018, the replacement requirement extends to street name signs and overhead guide signs.

As noted earlier the agency’s inspection program should be able to identify signs that need to be replaced for this reason. Also mentioned earlier is the possibility of cleaning the sign to extend its useful life.

An agency can program the replacement of signs due to low levels of retroreflectivity by methods other than a field inspection, including:

- Based on expected sign life—the sign is replaced when it has reached its expected life, which is based on the experience of retroreflectivity degradation in the geographic area.
- Blanket replacement—all signs in an area or route, or of a given sign type are replaced at specified time intervals.
- Control signs—replacement of signs in the field is based on the performance of a sample set of signs placed and monitored in the maintenance yard.

For more information on maintenance of signs as well as sign supports, consult the FHWA guide that was source of this article, referenced below. The guide was last updated in January 2010.

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**Source:**
A Leg Up

Complete Streets, Part 2

Second in a series on designing (and retrofitting) streets to meet the needs of all users.

In our last issue we discussed Complete Streets design considerations for the travel of all users: pedestrians, cyclists, and transit riders, as well as freight and automobiles. We explained that Complete Streets is meant to be a flexible planning process to suit each situation. Now we'll look at some cities that are taking steps to implement Complete Streets, including three in Kansas.

Iowa City, Iowa

Iowa City's Complete Streets policy was adopted in 2008. The plan requires that bicycle, pedestrian and transit facilities be included in all subdivision plans, unless an existing parallel trail is located near a proposed street. Trail connections are required if a park is nearby; likewise, bike racks are required at all commercial and high-density residential properties.

The plan also states that pedestrian connections are required from sidewalks to doors on commercial properties. Freight transportation was not as much of a component due to the low use of freight transportation in the city.

Improvements planned and completed: A pedestrian and bicycle count program is to be added to the City's traffic count program. Older neighborhoods have been retrofitted with sidewalks and bicycle lanes, equaling eight miles of sidewalk/bicycle lane improvements in the city. Transit stops have been upgraded to include paved areas and bus turnouts.

Fort Collins, Colorado

In 1997, Fort Collins passed a comprehensive city plan, and in 1999, they established a Complete Streets policy. In a city-county joint effort, separate but complementary bike and pedestrian plans were established [they are often combined], which allowed a better analysis of the needs of each of these modes of transportation. Freight transportation was not addressed due to low incidence of that mode. The city's plan allows for more detail in its design standards, such as dedicated bike lanes and enhanced pedestrian environments.

Public involvement was a big part of the planning process. There is both pro-growth and anti-growth sentiment in the community. Complete Streets made growth more palatable due to its aesthetic, recreational and safety benefits. In the public work sessions, the plan was designed to be flexible in its implementation. Greater emphasis was placed on design flexibility for corridors with a high degree of density. Currently the city is focused on retrofitting older neighborhoods that do not have Complete Streets facilities such as bike lanes, sidewalks, median islands, accessible pedestrian signals, and green landscaping design.

Champaign, Illinois

Like Iowa City, Champaign, Illinois, implemented their transportation plan in 2008 with Complete Street concepts in mind. Input came from public meetings, multiple drafting sessions, Council workshops, engineers and a local bicycling group. The result: more consistent street cross section diagrams, a better balance of Complete Street requirements and an updated development code.

Improvements made: Bicycle facility standards have been improved on a citywide basis. This allowed construction of improved connections to the university and four additional miles of bicycle lanes during the summer of 2010. Green Street, the community's first Complete Street, has been constructed and the City has seen, as

Sources:
- Complete Streets Lawrence, Kansas: Considerations for the Future of Multimodal Transportation. City of Lawrence, KU. May 2010. PDF
- Jessica Mortinger. Personal interview. City of Lawrence. 8-5-10.
- Carol Kachadoorian. Personal interview. National Complete Streets Coalition. 8-10-10.
- Nancy Johnson. Personal interview. Heartland Healthy Neighborhood Coalition. 8-10-10.
a result, increased economic development in the area, reduced congestion and a more aesthetically pleasing atmosphere for pedestrians.

**Salina, Kansas**

Salina is just now implementing Complete Streets designs in their future road network. The policy of the City of Salina is to design streets that accommodate all transportation modes. If a mode cannot be accommodated, it must be justified and an alternative street must be identified at that time to accommodate multiple users. Complete Streets should at a minimum strive to incorporate the following elements:

- Automobile lanes.
- Sidewalks and pedestrian amenities (on both sides of the street).
- Dedicated bike lanes or striped shared lanes.
- Transit (bus) stops.
- Pedestrian amenities.

In addition to the design of Complete Streets, Salina has identified 12 streets as “impact streets.” Impact streets have a higher standard of aesthetic design. This is achieved primarily through streetscaping (street trees, plantings, artistic lighting, etc.), pedestrian amenities (benches, trash receptacles, water fountains), enhanced crosswalk facilities and other improvements such as public art.

Impact streets are defined as streets that people identify with in a community—streets that citizens use on a regular basis to access key areas of the community, and more importantly, these are streets that visitors to Salina are likely to use. The City of Salina plans to showcase the quality of the built environment through these streets.

**Lawrence, Kansas**

Lawrence is in the beginning stages of garnering public and political support for Complete Streets. This fall there will be a Complete Streets public presentation and an invitation-only workshop presented by two speakers who are part of the National Complete Streets Coalition—Carol Kachadoorian and Michael Moule. The city wants to build public support with the presentation and then discuss possible policy and potential infrastructure improvements.

Specifics of the workshop are being planned, but the intended result will be a city-specific plan for laying the foundation of Complete Streets in Lawrence. Information about workshops available from the National Complete Streets Coalition can be found at their Web site: http://www.completestreets.org.

A report completed by the University of Kansas in partnership with the City of Lawrence laid the groundwork for the City’s Complete Streets discussion. The report, *Complete Streets: Lawrence, KS Considerations for the Future of Multimodal Transportation*, discusses the existing conditions of Lawrence’s infrastructure and policy, as well as defining Complete Streets. At the end of the study, potential improvements are discussed. The study also talks about peer cities, their successes and problems, and what lessons can be learned from them.

**Topeka, Kansas**

Topeka’s City Council approved a resolution that “paved the way” for a future policy for Complete Streets. The resolution makes Complete Streets ideals a strong consideration for new projects. As of now, however, a Complete Streets policy has not been adopted.

In Topeka, most Complete Streets will be retrofitted, according to Tim Paris, City of Topeka Planning Department, who explained that Topeka is not seeing a lot of new road projects right now.

Paris said retrofitting is much more expensive than designing new projects to include Complete Streets design. And that brings up the question of funding. Where will it come from?

The City Council is responsible for approving the budget. Presently there are no funds that can be used directly for the types of improvements needed to create Complete Streets designs. The city passed a half-cent tax for the improvement of existing structures, but none of that money can be used for new structures and design elements. Paris explained that if there isn’t an existing structure (like a median, for example) to begin with, they can’t fund it with the half-cent tax funding. The city generally uses these funds for repaving.

Paris is hopeful that they can find funding for Complete Streets retrofits from other outlets and expand the scope of improvement projects that use the half-cent tax. Public support is key to getting the City Council to allocate funds for Complete Streets projects. Organizations like the Heartland Healthy Neighborhood Coalition are great supporters of Complete Streets, but Paris explained that there just might not be enough people who walk, ride or bike to work and shopping districts for the City Council to make funding available. Paris said he wished more people in Topeka made use of other modes of transportation besides their cars.

Topeka’s situation illuminates a Catch-22 in implementing Complete Streets. Public support from multimodal users increases the chances of getting local funding for Complete Streets and retrofits. However, safe pedestrian, bicycling and transit facilities need to be in place to encourage people to use multiple modes of transportation in the first place. The communities profiled in this article are being forward-thinking in building Complete Streets concepts into their road construction policies now—so that all modes can grow with the community and be supported over time.

**More information**

For more information on Complete Streets, visit the Web site for the National Complete Streets Coalition at http://www.completestreets.org.
Rules and Regs… We All Have to Live By Them

By Eric Deitcher

Recent federal LPA review in Kansas yields some lessons learned.

As the Local Liaison for the Bureau of Local Projects, one of my responsibilities is to review projects from Local Public Agencies (LPAs) to make sure that state and federal regulations were followed in acquiring right-of-way for their projects. The Federal Highway Administration (FHWA) also periodically selects projects across Kansas for this same review process. A federal review was recently completed. This article will describe a few things learned from that review.

In June, John Knowles from the Kansas Division of FHWA selected for review seven LPA projects in Kansas for which right-of-way was acquired. He randomly selected one project in each KDOT District and an additional one in a MPO area. He and I conducted the reviews, and, for the most part, they were uneventful. Of the seven, six were accepted without needing any additional reviews of their project, but they did have some minor issues to address, which I’ll mention later.

Unfortunately, one project review did not go so well. This particular project had absolutely no documentation within the project files or even files of public record to show that the needed property was ever acquired for the project. And that is a problem. Here’s why:

Federal regulations prohibit federal funds being spent on private property. On this particular project, approximately $425,000 in federal funding was spent in the construction phase. If this LPA is unable to document, in a timely manner, that the local government obtained the needed right-of-way, they may have to repay the entire $425,000 back to FHWA. And if you think that can’t happen, go back my article in the Fall 2009 Kansas LTAP Newsletter and read how an LPA in Nebraska had to pay back $6.9 million for not properly acquiring the right-of-way for their project.

The Kansas LPA in question is now working hard to correct this situation and I am sure that in the end they will have all of the documentation in hand and they will not have to repay any of those federal dollars back to FHWA.

As I mentioned, the other six LPAs did have some minor issues we had to address. Those largely had to do with the lack of proper documentation within their tract files. That has been a persistent issue for most LPAs throughout my career here at KDOT.

Here are some examples:

1) Lack of certificates of title showing ownership of property to be acquired. You have to know who owns the property being acquired so you can be sure you have obtained the signatures of all those with a legal interest. Some properties have multiple owners.

Documents need to be dated to verify that the steps of ROW acquisition were done in the correct order.

2) Lack of dates on the documentation. You need to have to the documents dated. During federal and state reviews, we check the sequence of the documents. The proper sequence is property appraisal, appraisal review by another appraiser, agency approval of the appraisal, and written offer to property owner(s). Each of those steps needs to be documented with dates of completion.

3) Improper documentation of payment justification in Administrative Settlements. Administrative Settlements are used when a landowner is paid more than the amount he or she was originally offered. The settlement must document why the LPA authorized the increase in payment.

4) Lack of documented agency approval prior to written offer being made. The Agency [the LPAs elected officials] must approve the amount of the appraised amount prior to a written offer being made. It is that action that establishes “Just Compensation.”

5) Lack of written negotiation notes. The acquisition agent needs to prove that he or she negotiated in good faith with the landowner. This is documented in written negotiation notes. The notes also need to demonstrate that the landowner was provided with the acquisition brochure making them aware of their rights as a landowner. This brochure is available by downloading it from http://www.ksdot.org/burLocalProj/default.asp.

6) Lack of proof of payment to landowner. The landowner is to be paid
Concrete repair

**Continued from page 1**

Concrete and square up the sides of the area. 3. Apply a tack coat. 4. Place an asphalt wedge and compact it.

**Joint repair.** For corner breaks, spalling, and D cracking, repair the area using a concrete mix. Steps: 1. Saw cut, break out, and remove loose material, leaving the faces of the removal vertical. Use a cutting torch or saw to cut pavement reinforcement. (Normally the steel network is not reestablished.) 2. Clean the hole with compressed air. 3. Fill the hole with concrete mix, normally delivered by a ready-mix operation. 4. Consolidate the mix with a vibrator. 5. Screed and finish the surface, but do not add water. (Adding water to the surface dilutes the cement paste, increasing chances of future surface scaling.) 6. Texture, then cure the concrete by covering with a liquid curing compound, plastic, and/or wet burlap. (The burlap should be kept wet until the initial concrete strength is developed.)

**Mud jacking.** Mud jacking raises and adjusts a slab that has settled. Workable material is forced through holes drilled in the concrete slab, exerting pressure to raise the slab. Steps: 1. Examine the site and determine low spots. 2. Drill approximately 2-inch diameter core holes through the concrete slab at selected locations. 3. Starting at the downhill portion of the void and working up, begin pumping the mud jack mix into the holes. As the mixture raises the slab to the desired elevation or the void fills to capacity, move uphill to the next set of drill holes. It’s important to lift the slab uniformly to avoid cracking it. 4. After removing the hose, plug each hole temporarily with a plastic plug or a burlap bag until the mixture has cured. 5. After the entire slab area has been adjusted to grade, clean out each hole and refill with a fast-setting cement grout. 6. Reseal cracks and joints.

**Blowup repair.** Temporary asphalt patches may be initially applied to blowups that occur late in the day. Later, perform a permanent, full-depth patch. Leave room for future pavement expansion to prevent another blowup at the same location.

**Crashworthy Sign Post Deadline Coming**

By Lisa Harris

When do sign posts have to meet the new standards for crashworthiness? The 2009 National Manual on Uniform Traffic Control Devices (MUTCD) states that all signs in the clear zone must be made crashworthy (breakaway, yielding, or shielded with a longitudinal barrier or crash cushion).

The MUTCD’s Table I-2 lists the compliance date for roads with a posted speed of 50 mph or more as January 17, 2013. While there is no specific date for other roads, any new sign support installation should meet the standard. So, as you replace your signs, be sure any new supports meet the standard.

Here is the relevant language from the 2009 MUTCD:

**Section 2A.19 Lateral Offset:**

**Standard:**

For overhead sign supports, the minimum lateral offset from the edge of the shoulder (or if no shoulder exists, from the edge of the pavement) to the near edge of overhead sign supports (cantilever or sign bridges) shall be 6 feet. Overhead sign supports shall have a barrier or crash cushion to shield them if they are within the clear zone. Post-mounted sign and object marker supports shall be crashworthy (breakaway, yielding, or shielded with a longitudinal barrier or crash cushion) if within the clear zone.

Concrete repair
Continued from page 11

Surface patching. Apply a surface patch to repair corner breaks, scaling, D cracking, and construction joint deterioration where the depth of deterioration is no more than 25 percent of the total pavement thickness. Steps: 1. Mark the area to be patched 2 to 3 inches outside the damaged area. 2. Remove surface concrete with light-to-medium-weight hammers. 3. Sandblast exposed concrete and clean the area with compressed air. 4. For other than pre-cast, place a form for reestablishing the shoulder edge. 5. In reinforced pavement (except for precast repair), reestablish the reinforcement by overlapping and tying or welding with either a double-face 4-inch weld or a single-face 8-inch weld. 6. Brush in cement or epoxy grout. 7. Place low-slump concrete with mechanical vibratory screeds. 8. Texture and cure the concrete. 9. Apply a double application of white pigmented curing compound.

Full-depth repair. Apply a full-depth repair for corner breaks, scaling, D cracking, construction joint deterioration, and localized distresses where the depth of the deterioration is greater than 25 percent of the total pavement thickness or covers a large area. Steps: 1. Mark the area to be patched 2 to 3 inches outside the damaged area. 2. Saw cut and remove full depth of concrete slab in the marked area. 3. Remove any unsound base or subbase. If a pre-cast slab is to be used, the base or subbase needs to be restored and compacted. Correct serious drainage problems with a lateral subdrain, etc. 4. Other than pre-cast, place a form for reestablishing shoulder edge. 5. Sandblast exposed concrete and clean area with compressed air. 6. Use coated dowel bars and deformed rebars for load transfer in all full-depth repairs. 7. Place low-slump concrete with mechanical vibratory screeds. 8. Texture and cure the concrete. 9. Apply a surface patching and finishing of concrete pavements. Salt and deicer are definitely a bad thing. Some newer concrete surfaces do not experience much of a spalling/scaling problem, depending on how well the surface is finished/sealed. Some deicing salts cause an increase in the freeze-thaw cycles that have a negative effect on concrete surfaces that are not finished properly. Proper concrete mixes, placement and finishing of concrete can make a big difference in the life of a concrete pavement. Salts and chloride deicers will have little to no effect on these pavements."

Source: “Concrete Pavement Maintenance Activities.” Technology News, January-February 2007 issue, a publication of the Iowa LTAP at the Center for Transportation Research and Education at Iowa State University.

Sign Up For Maintenance Training

By Kristin Kelly

Well-trained road maintenance crews save road agencies money! Training helps your employees work more efficiently, use materials and equipment effectively, and have fewer injuries.

Kansas LTAP, in cooperation with the Kansas Road Scholar Program, offers roadway maintenance training annually as part of the Level I Road Scholar Technical Skills Program. Topics include Asphalt, Concrete and Gravel Road Maintenance as well as Snow and Ice Control.

These classes are primarily intended for county, city, state, township and tribal road/street crews and supervisors, and others with responsibility for road maintenance.

Asphalt Road and Street Maintenance. The KS LTAP and the Kansas Asphalt Pavement Association (KAPA) cooperate to bring Kansas road and street crews information on maintaining Kansas low volume paved roads with improved and asphalt-treated wearing surfaces. Topics include the basics of a good road, pavement management basics, asphalt materials and products, soil stabilization, sealing asphalt roads, hot mix asphalt, pavement maintenance materials, methods and equipment, pavement hot-place/cold-place recycling and full depth reclamation. (Offered in Spring)

Concrete Road and Street Maintenance. This course presents the practices of designing, constructing, and rehabilitating concrete pavements. Other topics covered include basics of concrete properties, jointing & use of reinforcing steel, curing and proper time to open pavements to traffic, CPR Patching (Full depth, particle depth, stitching, dowel bar retrofit, grinding), use of concrete overlays, roller compacted concrete, and full depth reclamation. Instruction is provided by staff of the Missouri/Kansas Chapter American Concrete Pavement Association, Kansas Ready Mixed Concrete Association, Monarch Cement Co., LRM Industries, and South Central Cement Promotion Assoc. (Offered in Spring)

Gravel Road and Street Maintenance. This training has been designed especially for individuals who operate motor graders. The morning session is held in a classroom and covers topics such as typical problems with gravel roads, aggregate, dust abatement, traffic control, and best
practices for grading roads including equipment operation. The afternoon session includes equipment demonstrations at an outdoor site. Host counties provide a motor grader, an operator, and a gravel road for the demonstration. If you are interested in being a host agency for a 2011 course, please contact Kristin Kelly (785) 864-2594 or kbkelly@ku.edu. (Offered in Spring)

Snow and Ice Control. This is our annual Fall training that includes topics on how to get the most out of your snow removal equipment, effective use of chemicals in de-icing and anti-icing, work zone safety issues, road weather information systems, winter planning, and money saving techniques. Videos and materials on plowing and spreading techniques will be shown and discussed. Snow plow operators, supervisors, and dispatchers are encouraged to attend.

The KS LTAP training calendar can be accessed online at www.ksltap.org “View LTAP Calendar” link.

If you have comments or questions on the KS LTAP Training or the Kansas Road Scholar Program please contact Kristin Kelly at (785) 864-2594 or kbkelly@ku.edu.

Anything New in Pothole Repair?

By Matthew Barnett

During fall and winter, cold, wet precipitation sits on top of the roadways and slips through cracks into the subgrade of your roads. Overnight it freezes and expands, pushing the road upward. During the day the frozen water thaws, and the road gets pushed back down from travelers’ tires. This all-too-common cycle can wreak havoc on your roads and create hundreds of potholes to fix during spring and summer.

Usually a “throw and roll” cold patch does the job, at least for a while. It’s the procedure of choice for our region to use in colder weather when hot mixes aren’t feasible, but is it the best procedure still? Here are a couple different ways to go about filling your potholes:

Throw and roll: Material is placed in a hole, which may be filled with water and debris, and then compacted by four to eight passes the truck tires.

Edge Seal: This is the throw-and-roll procedure plus edge sealing, using asphalt tack and sand on the road surface.

Semipermanent: Water and debris are removed from a hole, the sides are squared up, and cold patch material is placed in the hole and compacted by rollers or vibratory compactors.

Spray injection: Water and debris are blown out of a pothole, virgin asphalt and aggregate are sprayed into the pothole, and a layer of aggregate is placed on top of the patch.

According to the Federal Highway Administration, the throw and roll technology is still the preferred method for pothole patching in the Midwest. Throwing material into a hole and passing over it eight or so times with your truck tires does seem like an easy and efficient fix. But is it the best fix?

In a study conducted by FHWA’s Pavement Technology Program, three cities in a wet-freeze zone like ours were selected for testing for the best methods for filling potholes. They learned that the throw and roll was still the best method compared to edge seal and semipermanent, but only if quality materials were used. They found that the semipermanent method’s higher cost outweighed the cost savings due to the extra time that the potholes remained in good repair. Spraying hot mix into potholes is the most uniform way of filling the holes though, if operated by a trained employee.

The main objective in filling potholes is speed. The sooner it’s filled after a pothole is discovered, the better the results. FHWA researchers concluded that high quality material throw and roll procedures are the best options. Spray injection also rated well. Using better quality materials reduced repatching, reduced labor cost, less equipment needed, less traffic control, and less user delay. When you consider the safety of your crew working alongside the road, using quality materials should far outweigh using less expensive mixes.

Sources:
RESOURCES
By Lisa Harris

A Guide for Addressing Collisions with Trees in Hazardous Locations

Tree crashes are strongly correlated with traffic volume, roadway geometry, and overall roadside condition. The objectives of this research report are to identify and recommend strategies to reduce the incidence of crashes into trees. NCHRP Report 500, Volume 3, Transportation Research Board, 73 pages, 2003.

A Guide for Reducing Collisions Involving Utility Poles

Similar to the above research report about collisions with trees, this one addresses collisions with utility poles and offers ways to reduce associated hazard. NCHRP Report 500, Volume 8, Transportation Research Board, 76 pages, 2003.

Strategies for Improving Roadside Safety

A good overview of the various factors (human, geometric etc.) that affect roadside safety and what can be done to improve safety. A good publication to share with elected officials when seeking funding for roadside safety improvements. TRB National Research Council, November 2007. 8 pages.

CALeNdAR
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.

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

MINK LOCAL ROADS MEETING
October 29-30 – St, Joseph, MO

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

SNOW & ICE CONTROL ▲T
October 19th – Great Bend
October 20th – Wichita
October 21st – Chanute
October 22nd – Lawrence

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

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

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

RIGHT-OF-WAY TRAINING
October 12 – Norton
October 13 – Garden City
October 14 – Salina
October 15 – Topeka

LOCAL/STATE PROJECT COORDINATION ▲M-r
October 26 – Hays
October 27 – Salina
November 3 – Topeka

APWA KANSAS CHAPTER FALL MEETING
October 12 – Olathe

KANSAS COUNTY HIGHWAY ASSOCIATION FALL MEETING
November 15 – Overland Park

OVERVIEW OF ENGINEERING FUNCTIONS IN PUBLIC WORKS ▲M-r
December 15 – Hays

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.

Become a Kansas Road Scholar!
http://www.ksroadscholar.org
Learn • Grow • Excel

RIGHT OF WAY ACQUISITION CLASSES

Specific procedures must be followed in acquiring right-of-way if state and/or federal dollars are used in a project. This workshop will cover the acquisition process as required by the Uniform Act, changes in the appraisal law, and changes that are in process for KDOT’s Right-of-Way Acquisition Guide for Local Public Agencies. This is a half-day workshop and will be offered in 4 locations across the state. See above for dates.
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.


A Guide for Reducing Collisions Involving Utility Poles
76 pages. See description on page 14. Download at [link].

Strategies for Improving Roadside Safety
8 pages. See description on page 14. Download at [link].

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.

REQUEST FORM
❑ send materials indicated    ❑ address correction    ❑ add to newsletter mail list
❑ send 2009 Kansas LTAP Resource Catalog of free training videos and publications    ❑ add to LTAP email discussion list

Name _____________________________________________________  Phone number _____________________________
Position ______________________________________  E-mail address __________________________________________
Agency ________________________________________________________________________________________________
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City _______________________________________       State ___________________  Zip+4 ________________________

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

*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.ksitap.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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