



kansas intelligent transportation systems

# Quarterly

## Anti-Icing System in District Six

In Kansas, winter invariably means dealing with snow and ice. According to Jaci Vogel, Assistant Bureau Chief, Construction and Maintenance, one thing KDOT has done to prepare for the winter season is to install a fixed

automated anti-icing system in District Six.

District Six forces installed the automated anti-icing spray system in the summer of 2000. The system is located on the U.S. Highway 50/83/400 and K-156 interchange bridge and ramps, along the east edge of Garden City. When icy or snowy conditions are predicted, there will be no delay, waiting for crews to mobilize and reach the bridge and ramps.

The automated system is structured to begin spraying anti-icing material onto the bridge and ramps after being triggered via pager by the local supervisor. Ron Hall, District 6 Maintenance Engineer says they plan to continue this second winter with pager activation. The next step will be to connect the system to Roadway Weather Information System (RWIS) to make the system totally automated.

The system, Odin Guardian Model, was manufactured by Odin Systems International, Inc., Barrington, Illinois. It consists of an on-site pump house, material storage tanks, 5,800 feet of pipe and spray nozzles. The spray nozzles are located in the pavement or bridge deck, flush with the road surface. Each nozzle is activated through a solenoid, which allows KDOT to choose the order in which the nozzles apply treatment.

KDOT chose to use Cryotech® CMAK (Calcium Magnesium Acetate with Potassium) as the anti-icing chemical to be used with the anti-icing spray system. CMAK was recommended by the system manufacturer, and has numerous advantages over other de-icing chemicals. For one, CMAK is a clear liquid, without suspended particles, and therefore won't settle within the lines of the system. In addition, CMAK does not contain chlorides, which are known to cause corrosion-related deterioration of bridges. It is environmentally safe, biodegradable, has low toxicity to aquatic organisms and humans and requires fewer applications than other anti-icing chemicals.

District Six obtained the anti-icing system because Area Supervisor, Dave Marsh, saw a display of the system at a conference and thought it had merit for this location. According to Ron Hall, the bridge where the system is installed has a history



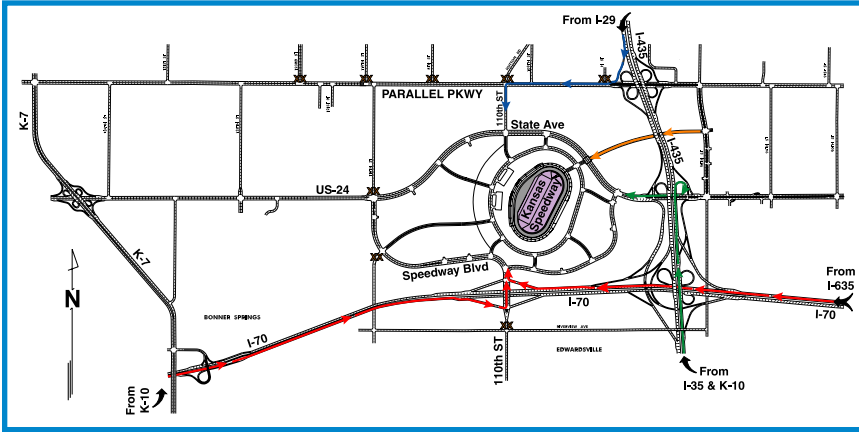
*An example of a spray nozzle spraying chemical onto the pavement surface.*

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Fall 2001

# ITS Aids Traffic at Kansas Speedway



Wandotte County and Kansas City, Kansas are home to the new Kansas Speedway. The track is located northwest of the intersection of I-70 and I-435 on the western side of the KC metropolitan area. This opening season, races were held in June, July and September. The largest event, the NASCAR Winston Cup took place the weekend of September 29th. Traffic control becomes a major issue with the impact to Kansas City only equaled by football and baseball games being played at the same time at the Truman Sports Complex located on the other side of the metro area.

*A map of the traffic routes around the recently opened Kansas Speedway.*

several years ago. Other stakeholders were involved including the Unified Government public works department and the KCK Police Department, the Missouri Highway Patrol, along with other local police departments. A consultant, TranSystems Corporation, prepared plans which focused on primary routes, alternate routes and signing.

The traffic management plan included twelve portable changeable message signs - six on I-70 and six on I-435 to inform motorists of traffic conditions and suggested alternate routes. Before, during and after each event, ADDCO's BaseStation software controlled all message boards from the Unified Command Post established at the KDOT Bonner Spring's office. Prior to each event, portable CCTV units, called "Smart Zones" were dispatched to three different locations at key intersections. These cameras were mounted 40 feet above ground and allowed KHP and KDOT to verify incidents and monitor mainline traffic on the Interstates as well as traffic on city streets. By monitoring the real-time video images, motorists were re-routed to alternate entrances as capacities reached their maximums on primary routes. The cameras have the capability to pan, tilt and zoom, which was controlled from the command post. The images were transmitted directly to the command post using a 2.4 GHz wireless transmission and projected onto screens to create a "video wall" for viewing by all.

The system was complemented by four highway advisory radios, static traffic controls such as signing, barricades and cones, standard radio communications, two Kansas Highway Patrol Helicopters and up to eighty Kansas Highway Patrol officers.

During the first event in June, traffic involving 45,000 fans was completely cleared in less than an hour. The July Indy race Craftsman Truck Series was a complete sellout with approximately 80,000 fans in attendance. Traffic was cleared in less than two hours after that race. The September NASCAR event drew 110,000 fans. The system and personnel performed at their best on this day with free-flow conditions reported on almost every route away from the speedway. Traffic at the speedway was cleared in 1-½ hours. The previous best reported for any other NASCAR Winston Cup Event was 2 ½ hours. KDOT and KHP appreciated the order of events, with smaller events first allowing staff to fine-tune the traffic control system in preparation for the largest event.

For each event, KDOT leased the entire system and related traffic control operations from United Rentals Inc. who purchased most of the equipment from ADDCO. In addition to supplying equipment, ADDCO set up the communications network and provided event staffing.

KDOT and KHP participated in scanning tours of available technologies and traffic control strategies prior to the Kansas Speedway events. KDOT has already begun to share its approach with other speedways and agencies across the U.S. The goal continues to be safe, efficient travel for motorists - a universally appealing goal, leaving risky driving to the racers, not the fans.

*\* Information for this article provided by Matt Volz and Stan Whitley of KDOT and Brian Nicholson of ADDCO.*



*A portable Smart Zone set-up as used for the Kansas Speedway.*

## Anti-Icing System in District Six

*Continued from front page*

of accidents, with ice as a contributing factor. In addition, one ramp has a hill, which trucks have a difficult time climbing in icy and snowy weather and the other ramps have curves. Funding for this project came from the Traffic Engineering Safety Set-Aside program.

Advantages of this system include applying material quickly. As soon as the local supervisor sees the potential for snow or icing conditions, material can be applied to the pavement surface within

one minute of the pager call, obviously much faster than a crew can get to the scene and treat the affected area. Once activated, the nozzles fire for two seconds and have a spray pattern no higher than one foot off the ground. Each nozzle fires twice, with a short time period between fires in case of interference by a passing

automobile. After the system has fired each nozzle twice, it shuts down and waits for the next activation via pager.

The concept behind the system is to keep the bridge in the same condition as the highway, not letting the bridge freeze before the road. How many times the bridge needs treatment depends on the severity of the weather. For example, for a "frost event" one application will be enough to treat the bridge. However, for a severe winter storm additional treatments may be needed. The de-icing chemical applied to the pavement prevents the ice and snow from bonding with the pavement; therefore, snowplows can easily remove accumulated snow and ice.

Another advantage is a smaller amount of de-icing chemical will be used, as the material is applied right where it is needed. The system can be set to how long and often the material is applied, based upon road conditions. Odin Systems says with the short spray time, only ½ percent of all drivers will ever see the nozzles go off.

Several other states have the Odin Spray System including Colorado, Nebraska, Virginia, Minnesota, Maryland, and Wisconsin. Canada, Chile and Norway have also installed the anti-icing spray system. KDOT will expand this system to cover the planned Mary St. interchange, 1/4 mile north of this location.

District 6 used the system during the three storms in the 2000-2001 winter, considering this the problem discovery stage. This coming winter the system will be considered one of the routine tools available to KDOT during storms. For more information on the fixed anti-icing system, contact Ron Hall, KDOT District Six Maintenance Engineer, at PO Box 619, Garden City, KS 67846-0619, (316) 276-3241 or [rhall@ksdot.org](mailto:rhall@ksdot.org)



*The shed that houses the pump and controls and the storage tanks for the anti-icing system.*

## KC Scout Ground Breaking Held on September 25, 2001

The joint KDOT-MoDOT Freeway Management System, known as KC Scout, began construction this September. Incorporating Intelligent Transportation Systems, ITS, the Scout system goals are to reduce highway congestion, reduce rush-hour accidents, increase rush-hour speeds, reduce emergency response times, and decrease air pollution from slow or idling traffic.

Phase I, as defined in the ITS Early Deployment Study for the Kansas City Metropolitan Bi-State Area, will include field devices and fiber optic communication lines along portions of I-35, K-10, US 69, I-435, and I-70. Motorists will encounter some delays due to loop detectors being installed in traffic lanes at designated locations. Large overhead Dynamic Message Signs and CCTV cameras will be installed above and adjacent to the roadway so as to provide some of the field links necessary for the gathering and dissemination of information from the Traffic Operations Center. The new Traffic Operations Center is under construction at the MoDOT District 4 Office in Lee's Summit, Mo. and will provide coordination of freeway traffic operations for both states.

KC Scout will use information from loop detectors and cameras to detect problems on the freeways. Staff will be able to quickly verify incidents and make better decisions as to how best to respond. The response might include: dispatching Motorist Assist services, notifying and coordinating with emergency services, creating electronic sign messages along affected routes, sending updated information to local media and Highway Advisory Radio, and broadcasting traffic updates over the internet.

This first phase will cover 50 miles of the area's most congested freeways. It will include approximately 670 loop detectors, 37 changeable message signs and 75 CCTV cameras. Over 100 miles of fiber optic cable will be installed along the freeways, providing a crucial telecommunication link.

Area consultants included HNTB for the preliminary study, Black & Veatch and NET for the design and DTI for the fiber optic backbone. Capital Electric of Kansas City is the prime contractor for construction of Phase 1.

# CVISN Projects Underway

CVISN (Commercial Vehicle Information Systems and Networks) refers to the collection of information systems and communications networks that support commercial vehicle operations (CVO). These include information systems owned and operated by governments, motor carriers, and other stakeholders. The Federal Motor Carrier Safety Administration (FMCSA) CVISN program is not trying to create a new information system, but rather create a way for existing and newly designed systems to exchange information through the use of standards and available communications infrastructure. The CVISN program provides a framework that will enable government agencies, the motor carrier industry, and other parties engaged in CVO safety assurance and regulation to exchange information and conduct business transactions electronically. The goal of the CVISN program is to improve the safety and efficiency of commercial vehicle operations.

The focus of the CVISN program during 2001 has been on the following four projects:

**Web Based Permit Application** - KDOR contracted with INK for software development and working in cooperation with KDOT, KCC and KHP is providing Internet access for permit issuance. First phase includes escrow account customers only. Second phase will add credit card use. Third phase will incorporate truck routing assistance for OS/OW permits. This project had an initial rollout to a few selected customers for beta testing. Presently, there are 85 customers with access to the application with five to ten customers being added weekly.

**Truck Routing Information System** - KDOT in cooperation with KDOR is developing a GIS-based routing map with access to current road and bridge data. The initial goal is to replace the current paper maps supporting the review process for oversize and overweight permits. The final goal is the development of a fully automated routing application. First phase was assessment of data quality and needs analysis. Second phase was proof of concept using prototype area that included most of Shawnee County. Third phase will expand to approximately 12 counties and upgrade map functionality. Fourth phase will expand to entire state and develop interfaces. This project is presently in the third phase of development.

### **Electronic Screening at Interstate Weigh Stations**

KMCA endorsed PrePass in Dec 2000. Since the endorsement, KMCA and PrePass worked with KTA, KDOR, KCC & KDOT to acquire authorization to provide electronic screening in Kansas. The PrePass system creates a carrier incentive program to comply with safety regulations and credential requirements. The first deployment is scheduled to be installed at South Haven on the KTA in September. The other five interstate sites will be deployed following a short evaluation of the South Haven site. PrePass plans to have all the sites deployed before the end of 2001.

### **Trucking Portal**

Along with the Web Based Permit Application, a web portal was created to allow motor carriers electronic one-stop shopping. The portal provides links to relative sites, so the motor carrier can obtain pertinent information without searching several different locations.

Approval has been granted to use ITS Set-Aside funds for adding the application for International Registration Program (IRP) and International Fuel Tax Agreement (IFTA) to the portal in fiscal years 2002 and 2003, respectively.

*\*Information for this article provided by Ken Gudenkauf of KDOT - Traffic Engineering*



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