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Are We There Yet?

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Greenville's Solid Waste Administrator Receives National Recognition

APWA Honors Ed Marr at Annual Conference

Ed Marr, the City of Greenville's Solid Waste Administrator, received the American Public Works Association's 'Professional Manager of the Year Award—Solid Waste" this week at the 2008 APWA International Public Works Congress & Exposition in New Orleans. According to APWA, the awards program recognizes outstanding individuals representing the best in the public works field and the primary focus of the Professional Manager of the Year Award in the Solid Waste category is recognition of exceptional management, operation and maintenance of public sector solid waste operations.

As part of its tribute to the Top Ten Public Works Leaders of the Year, APWA awarded Professional Manager of the Year awards in the categories of Engineering & Technology, Fleet Management, Solid Waste, Transportation and Water Resources. According to APWA, Marr was recognized for his outstanding career achievements and for his vision, passion, and delivery of service to the community. Since becoming the City's Solid Waste Administrator in 2002, Marr has implemented numerous new programs that have resulted in increased operational efficiency and productivity. One of his most significant accomplishments has been the establishment of South Carolina's first transfer station for handling yard waste debris. This program is very important to the city and citizens of Greenville. The fleet of trash collection vehicles no longer make long trips to the landfill. The debris is now transported to a transfer station. Other projects that Marr initiated revolved around recycling and waste reduction. The city had privatized recycling collection in the 1990s and had issues with price, customer service, and financial returns from the recyclables. Marr recognized these problems and brought that service in house. This created savings of more than $200,000.00. In addition, the city has implemented its own processing center for its recyclables which generated revenue for the general fund.

"This is a considerable honor, not only for Ed, but also for the City of Greenville," said Brian Watson, Assistant Public Works Director. "We're proud that Ed and the City's Solid Waste Division have been recognized nationally for their outstanding leadership and dedication to the Greenville community.

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An Ounce of Prevention

Preventing Backovers of Road Construction Workers

by Scott Schneider

On July 18, 2006, a 21-year-old road construction worker was killed when a dump truck partially loaded with asphalt backed over him. The victim was working at night on a state highway paving project. The dump truck driver was backing through the work zone with the truck's back up alarm sounding.

The paver and paving crew had already re-positioned to the next section of roadway to be paved. The dump truck driver was watching the driver's side mirror as he was backing to align the truck with the re-positioned paver. As he was backing up, he did not see anyone behind the truck. He then saw something appear out from under the front of the truck, at which time he stopped the truck. Evidence suggests the victim had his back to the dump truck. The victim had not been assigned tasks within the workzone but may have been shoveling spilled asphalt. Emergency medical services (EMS) personnel were called and arrived on the scene to find the victim deceased.

Preventible Deaths

Every two weeks a highway construction worker is killed by a construction vehicle in a "backover" accident. The death in the sad story above, as described in a National Institute of Occupational Safety and Health (NIOSH) fatality report (#2006-03), could have been prevented. Consider this:

1. A dump truck weighs about 40,000 pounds. A construction worker weighs about 200-250 pounds. If you pick a fight with a dump truck, you will lose.
2. Dump trucks have tremendous blind spots for drivers. That huge truck bed in the back that holds the dirt or asphalt blocks the driver's view. He cannot see what is behind him. He could not know a worker might be back there.

There are many ways to prevent these types of deaths:

Back Up Alarms

The first line of defense is having an operational back up alarm. However, back up alarms may not be effective. Work sites are generally noisy, and alarms are often hard to distinguish or locate. New types of alarms have been developed that are easier to hear and to distinguish from background noise (see for example: www.reverseinsafety.co.uk). You should make sure all vehicles have functioning back up alarms when they come on the site. Do not let trucks come on the site unless their alarms are working. Talk with the truck owners about getting better back up alarms.

Spotters

Another line of defense is a spotter. Whenever anyone is working near a dump truck, they need to have someone else watching their back. These "spotters" need to be constantly alert and in communication with the drivers. Spotters have also been run over by vehicles while doing

OSHA Standard 1926.601(b)(4):

No employer shall use any motor vehicle equipment having an obstructed view to the rear unless:

(i) The vehicle has a reverse signal alarm audible above the surrounding noise level or:

(ii) The vehicle is backed up only when an observer signals that it is safe to do so.

their jobs. If you can't see the driver, then the driver can't see you.

The state of Washington now has a law that requires a spotter or a back up camera whenever workers have to work behind a vehicle. If the driver looses communication (sight) with the spotter, he must stop. Federal Occupational Safety and Health Administration (OSHA) standards require a spotter if you have no back-up alarm. A device has also been developed called the "Truck Stop," which allows a spotter to signal the truck driver to stop using a buzzer in the cab.

Internal Traffic Control Plans

Another line of defense is to have a construction traffic control plan for inside the work area and not just for traffic going through the work zone. This plan is called an Internal Traffic Control Plan (ITCP). This plan has a few simple principles:

1. Set aside areas as walking routes for workers and mark them clearly so drivers will not go there;
2. Mark other areas as routes for traffic;
3. Make traffic flow in one direction, entering one way and exiting another to reduce backing up; and
4. Let all workers and drivers coming into the area know about the plan and that it will be enforced.

If trucks are not backing up as much, the risk of back over fatalities is much lower. The Laborers' Health and Safety Fund of North America has developed a booklet with the American Road & Transportation Builders Association, NIOSH, and others to explain how to develop an ITCP. The booklet can be downloaded at the National Workzone Safety Clearinghouse at: www.workzonesafety.org.

Back-Up Video, Radar, & Tag-Based Warning Systems

Many new cars now offer a back up video camera or radar system so drivers can see or be alerted to what is behind them when they back up. The radar systems will beep louder or faster as you approach the rear of your garage or the car parked behind you. Several large companies like UPS now use cameras on their delivery trucks. Similar equipment exists for construction trucks.

NIOSH has been testing various equipment on jobsites to see what works best. They have concluded that back up video cameras are helpful in giving operators a view of what is behind them. They work best when you also have a radar system that alerts the driver something may be behind them and directs their attention to a monitor.

Problems & Solutions

One potential problem being worked out is that radar systems may be too sensitive and give too many false alarms. One potential solution is a new system that gives each worker a tag to wear with a chip that emits a signal picked up by the system. Then the detector will only respond to workers in the back up area.

Back up video camera systems cost a few hundred dollars to add on to a construction vehicle, but this cost is minor compared to the hundreds of thousands of dollars that the vehicle costs and the value of the lives it would save. Construction companies buying new vehicles should ask about adding such equipment.

Older vehicles can be retrofitted in the shop during regular maintenance. The NIOSH report on backover technology can be found at: www.cdc.gov/niosh/mining/pubs/pdfs/ri9660.pdf.

In Conclusion

We do not have eyes in the back of our heads, but we can put eyes in the back of a vehicle, we can minimize the amount we have to back up or have spotters' eyes watching us while we work. Maybe then we will never again have to hear that our friend or co-worker has been killed by a mammoth truck.

Scott Schneider is a division director at the Laborers' Health & Safety Fund of North America. He can be reached at 202-628-5456.

New Signal Timing Manual Ready for Free Download

The FHWA Office of Operations has issued *The Signal Timing Manual*, the first comprehensive guide to current practices related to traffic signal timing. Properly timed signals save gas by keeping traffic moving smoothly. All the elements of signal timing, from policy and funding considerations to timing plan development, assessment, and maintenance are covered. The manual is the culmination of research into practices across North America and serves as a reference for a range of practitioners, including traffic engineers, signal technicians, design engineers, teachers, and university students. It is available at http://www.signaltiming.com.

Issues Related to Red-Light Camera Enforcement Systems

By Noor Elmitiny and Essam Radwan, Ph.D., P.E.

The number of fatal motor vehicle crashes at traffic signals increased 18 percent between 1992 and 1998, far outpacing the 5 percent increase in all other fatal crashes. In 2005, red-light running caused more than 800 fatalities and 165,000 injuries in the United States. Although research shows no strong correlation between red-light-running violations and red-light-running crashes, it is the goal of traffic engineers and law enforcement officers to reduce the occurrences of these violations.

Red-light camera enforcement systems have been deployed in communities, but the jury is still out about the acceptability of such systems by motorists, the political and legal issues concerning successful implementation, and public education and awareness about the potential benefits.

This feature reports on a special session entitled "Photo Enforcement—A Snapshot," which was part of the Human Behavior/Multi-Modalism track at ITE's 2008 Technical Conference and Exhibit, held in cooperation with the Federal Highway Administration (FHWA) in Miami, FL, USA, from March 31–April 2, 2008. Other information was gathered from the literature to supplement information presented in the special session to generate this feature.

Introduction

Red-light running contributes to substantial numbers of motor vehicle crashes and injuries annually on a national basis. Retting et al. reported that drivers who run red lights are involved in an estimated 260,000 crashes each year, of which approximately 750 are fatal and that the number of fatal motor vehicle crashes at traffic signals increased 18 percent between 1992 and 1998, far outpacing the 5-percent increase in all other fatal crashes.[1]

Red-light running is a traffic behavior that is considered to be the leading cause of high-speed angle collisions at intersections. One of the approaches that can reduce red-light running is better enforcement at intersections. Red-light signal enforcement at an intersection requires extensive police monitoring, occupying a large portion of local police resources. The idea of a camera enforcement system started to emerge as a potential costeffective tool because of the capability of monitoring the intersection 24 hours per day at reduced manpower.

There is an apparent resistance from the public to the wide implementation of camera enforcement systems because of concerns about privacy and other political issues. This article discuses the red-light camera system, how it works,

experience from system implementation, and issues related to its application.

How The System Works

According to Nicholas J. Garber et al., the red-light-running camera enforcement system has many labels, including photo-red enforcement and automated enforcement.[2] The system mainly consists of a camera that detects a vehicle running the red light and takes a photograph of the license plate of the violating vehicle that enters the intersection after the signal turns red. Usually the system begins after a given fraction of a second, called the "grace period."

The system also records other information about the violation, including time and date of the violation, speed of the violating vehicle, license plate number and the time elapsed after the onset of the red signal. All of this information is recorded along with the photo of the violating vehicle. The data then can be reviewed and validated, and the approved violation can be sent to the vehicle's registered owner.

Some other states promote the responsibility of the driver; a camera must face the front side of the vehicle to prove the identity of the driver. In such cases, the ticket issued by

the system is equal to the ticket issued by a police officer on-site, including fine value, number of points placed on the driver's license and license suspension.

System Effectiveness (Implementation Experience)

The red-light camera enforcement system has been implemented in states including Virginia, Maine, Georgia, Arizona, and Iowa. Many other countries, including Australia, Canada, Singapore, and the United Kingdom, have been using the system as a possible countermeasure for the red-light-running problem.

The following section summarizes information about selected locations that have implemented the system and their findings. The Raghavan Srinivasan report on worldwide experience and the Iowa, Georgia, and Virginia experiences were extracted from presentations made at the ITE conference. The Arizona and Australia experiences were taken from supplemental readings in the literature.

Srinivasan presented a critical review of studies that have evaluated automated enforcement systems.[3] He evaluated two technologies: speed enforcement and red-light cameras. For the red-light camera section, he focused on seven key studies. The major findings of his presentation were that right-angle crashes decrease and rearend crashes increase with the use of these cameras. Furthermore, benefits anticipated from this system depend on several factors including the number of rear-end and right-angle crashes at any location.

In 1995, Virginia's General Assembly authorized the use of photo red-light monitoring as a demonstration program in ten jurisdictions in the Commonwealth. The program was implemented in seven jurisdictions from 1997 through 2003. The Virginia Traffic Research Center at the Virginia Department of Transportation prepared several reports on the program and found that, in general, rear-end crashes increased, the number of crashes at the monitored intersections increased, and, at some intersections, the number of injury crashes increased.

In his presentation, Khoury concluded that automated enforcement is a powerful tool in the highway safety toolbox, and a successful program should give strong consideration for the engineering and education aspects of implementing such technology.[4]

In Georgia, the system was authorized in 2003 and a was study conducted by the Red Light Camera Subcommittee of the Georgia Section of ITE's safety committee. Although the sample size of the study was not statistically significant, the study found that rear-end crashes in general increased with the exception of one location and that the other aspects of safety varied from one location to another. The study showed that the system achieved effectiveness in some locations but had nearly no effect in other locations.

Clark indicated that busy intersections have large numbers of crashes and that annual crash frequency varies with or without red-light cameras.[5] Traffic engineers need to be more involved in the selection of sites where these devices are to be installed and need to consider less involvement from vendors in this process. He concluded that yellow timing and clearance interval calculations must be taken seriously and done accurately.

In Iowa, the system was first implemented in 2004. Since then, three communities have implemented their systems. In a study by the Center for Transportation Research and Education at Iowa State University, it was found that the camera system is highly effective in reducing red-light-running related crashes and has succeeded in reducing rear-end crashes at the monitored intersections.[6]

The study found that the monitored intersections observed a 40 percent reduction in overall crashes while intersections that did not have the system observed only a 12 percent crash reduction. Furthermore, the intersections with red-light cameras had a 90 percent reduction in red-light-running related crashes while the other intersections did not experience any reduction.

The study found that the monitoring system also was effective in reducing rear-end crashes; intersections within the system observed a 40 percent reduction in rear-end crashes while the control intersections suffered a 29 percent increase in rear end-crashes. This is the first study to report the reduction in rear-end crashes as a measure

of effectiveness for the red-light camera system.

In Arizona, a study was conducted to evaluate the effectiveness of the red-light camera system. The study found that the intersection with red-light cameras showed a decrease in angle crashes resulting from red-light running and an increase in rearend crashes. However, the study also stated that many confounding factors relate to safety issues, and the red-light trend at intersections with no red-light monitoring cameras might observe a reduction in numbers of crashes related to red lights because of what is known as the spillover effect. The study also suggested that the effect of red-light cameras should be evaluated as a system of intersection performance rather than intersection by intersection.[7]

A study conducted in Australia compared five years before the red-light camera system was implemented with the five years after system implementation. The study did not find any overall reduction in the number of crashes resulting from the system. Low crash sites suffered an increase in the crash rate and high crash sites experienced a decrease in the number of crashes. There was a significant increase in rear-end crashes.[8]

Most of the studies agreed that redlight cameras increased rear-end crashes (except the study in Iowa). Although some of them reported effectiveness in reducing red-light related crashes, other studies reported very little or no improvement. It is to be noted that some states treat the citation differently by holding the driver responsible for the violation rather than the vehicle's registered owner, enabling legal treatment of a camera citation as if a police officer issued an on-site citation. Most other red-light camera systems send the citation to the vehicle's registered owner regardless of who was driving the car.

Political Acceptability And Legal Issues

The use of a red-light camera system to cite motorists for violating a red light requires legal issues to be addressed by the local authorities in each community to organize the operations and the boundaries of operating the system. "Guidance for Using Red Light Cameras," by FHWA and the National Highway Traffic Safety Administration, addresses the legal requirements for the red-light camera system.[9] Some of the issues highlighted by the publication include privacy, citation distribution and types of penalties. These issues should be thoroughly addressed and resolved prior to system start-up.

At the present time, two approaches have been adopted by states in the deployment and operation of red-light camera systems:

- Driver responsibility: where a law enforcement officer alleges a driver has committed a violation and issues a citation, there should be photographic evidence that allows the driver to be identified. This requires that one or more red-light camera(s) be installed at the site in strategic locations so that a frontal view of the vehicle is recorded as it runs the red light. The recorded view should allow the driver and vehicle identities to be clearly determined. If the recorded view of a driver is obstructed or not clear, no citation should be issued. Additionally, a method should be provided through which the registered owner can certify that he or she was not the driver at the time of the violation.

  In states where red-light cameras are applied as described above, red-light violations recorded by red-light cameras are considered moving violations with citations carrying the same penalties as citations issued by law enforcement officers, including points and holds on vehicle registration or driver license renewals for unpaid fines.

- Registered owner responsibility: where the registered owner is responsible for the citation, only photographic evidence that identifies the vehicle and its license number is required. Typically, states where redlight cameras have been adopted in this manner have enacted legislation at the state level that authorizes the use of red-light cameras or permits local agencies to enact local ordinances for use of red-light camera systems.

Because the system photographs need to be thoroughly reviewed by a police officer before issuing the ticket, such as in North Carolina, it was reported that in the first year of system implementation, only 40.3 percent of the vehicles caught on camera were issued a ticket.[10] This number should be considered a reasonable estimate of the percentage of citations that can be issued from the system.

Some of the legal issues related to the use of red-light cameras as stated by FHWA include:

- authentication of photographs;
- chain of evidence of photographs;
- compliance with enabling statutes;
- foundation: device reliability (maintenance, checks for accuracy, training of personnel involved in the process);
- misuse or dissemination of photographs;
- municipal drafting, notice—compliance with applicable state rules for service;
- proper notice of use of photo redlight enforcement (signs); and
- standing—who can bring an action, when and where

Most of the legal issues relate to the right of authorities to issue a ticket based on a photo versus direct citation by a police officer. This belief of unfair citation may lead to more court challenges and may increase the burden on police officers because they will be required to appear at court hearings. Unless this issue is resolved and the public

is educated about the fairness of the system and how the citation system works, authorities risk increasing the burden on police officers.

"The Red Light Running Crisis," by the Office of the Majority Leader of the U.S. House of Representatives, included the following statement: "We are told to accept the idea that our laws should be administered by machines—not human beings—because it is a matter of safety. We must accept this expansion of government and this Orwellian threat to our privacy because cameras are the solution to the so-called red light running crisis."[11]

Such a statement shows the public concern about the idea of issuing citations based only on computer decisions. The public should be made fully aware that the citations are issued by a police officer after reviewing the photos and confirming that there is hard evidence of the violation.

Conclusion

Since the studies do not prove a significant decrease in the number of crashes as a result of the use of the red-light camera system, there has been a growing question about the validity of implementing the system and whether it is just a way to tax the motorist rather than promoting safety. Some studies have associated the cameras with a significant increase in the number of rear-end crashes. None of the studies have tried to draw a conclusion about the system effectiveness based on the circumstances during which the system was implemented. Such a study could classify the intersections and situations where redlight cameras are effective, leading to better implementation of the system.

Using the red-light camera system is associated with numerous legal and privacy concerns that should be addressed, and the public should be educated about how the system works before it is implemented. It should also be made clear to the public that the cameras are a way to help police officers monitor the intersection more extensively and that the system does not issue tickets on its own.

Although very few studies reported benefits from red-light camera systems, they should not be discarded altogether. Studies should try to identify when it is justified to use the cameras to achieve better driving conditions for road users.

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(cont. on page 10)

Highway Fatalities Drop as Motorists Drive Fewer Miles

Rising prices at the gas pump appear to be having at least one positive effect: Traffic deaths around the country are plummeting.

National Safety Council researchers report a 9 percent drop in motor-vehicle deaths during the first five months of this year compared with the same period last year. Year-to-year drops were 18 percent in March and 14 percent in April.

There are 31 states that have seen traffic-death declines of at least 10 percent so far this year, The Associated Press reported, while only eight states have seen an increase in fatalities this year. No one can say definitively why road deaths are tumbling, but it is happening as Americans cut back on driving because of record-high gas prices. The federal government stated that vehicle miles traveled this April fell 1.8 percent compared with a year ago. That continues a trend of decreasing miles traveled that began in November.

Reprinted with permission from the *AASHTO Journal,* July 25, 2008, page 10.

Rural Highway Safety Clearinghouse

Looking for training or materials specifically for transportation in rural areas? The Rural Highway Safety Clearinghouse is for you. The clearinghouse facilitates research, training, and outreach activities related to rural transportation safety.

Funded by the Federal Highway Administration, the clearinghouse is an easy to use website that provides links to safety publications and other resources grouped by safety topics, including the four E's: education, emergency medical services, enforcement, and engineering. Additional topics include data, statistics, driver behavior, safety planning, seat belts, and work zone safety.

The site will collect and market best practices as well as the latest findings in rural safety research. It also encourages sharing information about rural safety publications and other resources. To access the clearinghouse, visit www.ruralhighwaysafety.org.

National Roadway Safety Award Winner

South Carolina DOT: Infrastructure Improvements

Successful Countermeasure for Fatal Crashes

Crash Reduction by Improving Safety on Secondaries (CRISOS)

In response to an alarming death rate on South Carolina's rural secondary roads, this program was developed as a countermeasure for fatal crashes. The state maintains just over 31,220 miles of roads. With narrow travel lanes, sharp curves, and very narrow shoulders, the roads offer little room for recovery for an inattentive, speeding, or inexperienced driver. Unfortunately, few safety resources were available to mitigate these safety problems.

Crash Reduction by Improving Safety on Secondaries (CRISOS) implements low cost, short-term engineering strategies to target the reduction of traffic injuries and fatalities on state maintained rural secondary routes with the highest crash severity rankings.

Education, Emergency Medical Services (EMS), and enforcement strategies complement engineering efforts. The South Carolina Department of Transportation (SCDOT) met with state EMS and public information and education specialists and gained their support to conduct educational efforts. Law enforcement agencies agreed to target additional enforcement on CRISOS roads. As a result, increased citations were issued and preliminary results from six CRISOS-completed roads show a 47.6 percent decrease in fatalities and a 16.5 percent decrease in injuries from a five year average.

Road safety audits, using multidisciplinary teams, were utilized to identify the safety problems on selected roads and to develop prioritized recommendations for short-term, intermediate, and long term improvement strategies. Specific outreach was made to other safety partners for assistance with the program, including the involvement of EMS with educational programs and both local law enforcement agencies and the Highway Patrol with targeted enforcement efforts. SCDOT was able to stretch limited financial resources with FHWA assistance in converting state matching dollars for use in funding the program. Evaluation data for all roads was compiled prior to implementation, and SCDOT is continuing to collect data to determine the on-going effectiveness of strategies implemented.

For more information, contact:
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Asset Management Overview

Excerpt from FHWA-IF-08-008, Asset Management Overview.

What Is Transportation Asset Management?

Asset management in the transportation industry is a relatively new concept. It means many things to many organizations, but its practices provide a solid foundation for programs that optimize the performance and cost-effectiveness of transportation facilities. At its core, asset management is a business process. The application of asset management principles often means a change in thinking at every level in an organization to base decisions on information and on getting results.

The roots of today's asset management programs originated in private industry, integrating many of the ideas of W. Edwards Demming, Malcolm Baldridge, and others. Because of its focus, asset management has been highly successful in companies that require a substantial asset base for their operations, such as electrical power companies, telephone companies, large trucking companies, and railroads. In these companies, the goal was clear—maintain a prescribed level of service at the lowest cost possible. Assets that did not meet these criteria were taken out of service and sold. This focus on guaranteeing an acceptable level of service to the customer has had positive results and has made substantial profits for these companies.

Elected officials and public agency managers noted these advancements in the private sector and began to identify ways that government could be run as a business. Although profit is not a motive in the public sector, the basic concepts of performance and cost-effectiveness apply to virtually all government activities. In addition, the sheer investment in transportation assets owned and operated by public agencies is enormous—over $1.75 trillion. In 1993, the U.S. Congress passed the Government Performance and Results Act, legislation that identified accountability at all levels in the Federal Government as a priority. Many states have enacted similar legislation, typically calling for state agencies to report what is bought with public funds, how spending decisions are made, and what is accomplished. For transportation agencies, this means a full and updated accounting of the public assets—roads, bridges, and other facilities—that form the basis of Transportation Asset Management.

Defining Transportation Asset Management

Although defining asset management in the private sector was a straightforward process, for the transportation community, it has been somewhat of a struggle. Early definitions identified strategic management as the goal and were often all-inclusive in their descriptions, but they were not always sufficiently focused enough to be useful working definitions.

An asset management decision making framework needs to be guided by performance goals, cover an extended time horizon, draw from economics as well as engineering, and consider a broad range of assets. At its most basic level, Transportation Asset Management links user expectations for system condition, performance, and availability with system management and investment strategies. Regardless of the definition, the focus is on performance of assets. The underlying goal of asset management is to take a broad approach to resource allocation and programming decisions that will provide greater value to the system and overall satisfaction for end users through improvements in program effectiveness and system performance.

Transportation Asset Management provides for a fact-based dialogue among system users and other stakeholders, state government officials, and managers concerned with day-to-day operations. This dialogue results when relevant, objective, and credible information is made accessible to all participants in the decision making process. As such, decisions can be based on detailed input regarding available resources, current system condition and performance, and estimates of future performance. The information underlying asset management—sometimes raw data and at other times data generated from the analytical process—is fundamental to an improved understanding of the economic tradeoffs, return on investment, and potential value of the end product.

The Federal Highway Association (FHWA), with leadership from the Office of Asset Management, partners with the American Association of State Highway and Transportation Officials (AASHTO), state and local departments of transportation (DOTs) along with FHWA field offices, the Transportation Research Board, and industry in encouraging the application of asset management. As defined by the AASHTO Standing Committee on Highways, Planning Subcommittee on Asset Management, Transportation Asset Management is a strategic and systematic process of operating, maintaining, upgrading, and expanding physical assets effectively throughout their lifecycle. It focuses on business and engineering practices for resource allocation and utilization, with the objective of better decision making based upon quality information and well defined objectives.

Over the years, a number of management systems derived from the private sector have been adopted by transportation agencies with varying degrees of success. Some of these include management by objectives, goal-

oriented management, risk-based management, and, more recently, enterprise resource planning (ERP). Asset management has many similarities to these methods and incorporates some of the same concepts. The distinguishing feature of asset management, however, is its central focus on assets, their condition, and their performance. Systems such as ERP are based on costs and, in particular, on manpower costs versus manpower performance and progress toward selected goals. Asset management optimizes, rather, on asset performance versus cost and is more suited to transportation organizations with substantial investments in physical assets.

There has been some confusion about the relationship between management systems and asset management. Management systems provide key information and analysis capabilities to agencies implementing asset management principles, but they do not constitute the whole of asset management. Decisions rendered in an asset management environment are much broader in scope, require substantially more economic analysis, and normally involve more than one kind of asset. Transportation Asset Management focuses on the whole transportation infrastructure and makes possible decisions that reflect the optimal performance of that infrastructure compared to the resources required to operate and maintain it. Additionally, asset management examines investment timing, tools, and economic analyses to assure the effective use of available funds. For example, if borrowing rates are high, an economic analysis might look at tradeoffs between increased costs of repairs due to delaying the work and additional costs incurred by borrowing funds at the current higher interest rate. Another example is evaluating the overall benefit—cost advantages of conducting regular pavement preservation efforts as compared to resurfacing and replacement. Yet another example is examining tradeoffs between construction costs and maintenance costs over the life of the asset (such as cost savings from installing median guardrail over turf versus maintenance costs for the turf over many years).

The Core Principles of Asset Management

- **Policy-driven**—Resource allocation decisions are based on a well-defined set of policy goals and objectives.
- **Performance-based**—Policy objectives are translated into system performance measures that are used for both day-to-day and strategic management.
- **Analysis of Options and Tradeoffs**—Decisions on how to allocate funds within and across different types of investments (e.g., preventive maintenance versus rehabilitation, pavements versus bridges) are based on an analysis of how different allocations will impact achievement of relevant policy objectives.
- **Decisions Based on Quality Information**—The merits of different options with respect to an agency's policy goals are evaluated using credible and current data.
- **Monitoring Provides Clear Accountability and Feedback**—Performance results are monitored and reported for both impacts and effectiveness.

(cont. from page 7)

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Information Request and Address Change Form

Videos and publications from our library are available on-line at www.clemson.edu/t3s.

The videos and publications are free to individuals employed by any city, county, or state government agency in South Carolina. You can obtain a free single copy of most publications, or borrow a copy of one of our "for loan" publications and videos.

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DVD

☐ *Developing and Managing an Urban Forestry Program for Public Works*, US Forest; APWA
This DVD was recorded from the APWA Click Listen and Learn program.

Publications

Urban Forestry Best Management Practices for Public Works Managers, APWA. Four reports covering best management practices in urban forestry management.

- ☐ Budgeting and Funding
- ☐ Staffing
- ☐ Ordinances, Regulation, and Public Policies
- ☐ Urban Forest Management Plan

☐ *Minimum Retroreflectivity Levels for Blue and Brown Traffic Signs,* FHWA

Priority Market Ready Technologies and Innovations, FHWA. The Federal Highway Adminstration's research and technology leadership team endorses four new priority, market ready technologies and innovations (T&Is). Fact sheets are available on the following:

- ☐ Adaptive Control Software Lite (ACS-Lite)—This cost effective technology improves efficiency and prolongs the effectiveness of traffic signal timing by updating critical timing parameters in response to current traffic conditions.
- ☐ Bridge and Tunnel Security—This assessment tool provides resources to help agencies make their critical bridges more secure.
- ☐ Construction Analysis for Pavement Rehabilitation Strategies (CA4PRS)—This software identifies optimal rehabilitation strategies to balance the construction schedule with inconvenience to drivers and transportation agency costs.
- ☐ US Limits—This web-based expert advisor system is designed to assist practitioners in determining appropriate speed limits in speed zones.

T³S Welcomes New Employee Jodi Redlinger

Jodi Redlinger joined the T³S staff in June. Jodi is from Pittsburg, PA, and is a recent graduate of Clemson. As a student, Jodi worked as an accounting and finance tutor for the athletic department and will continue to work with them on a part time basis. Jodi will be the primary phone/e-mail contact for T³S and will be handling registrations, payments, and the overall budget for our office. Please take time to welcome Jodi to T³S and the LTAP family.

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