T³S

Are We There Yet?

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South Carolina Transportation Technology Transfer Service

In This Issue...

Your Guide to Work Zone Public Outreach Campaigns

With work zones accounting for 10 percent of all roadway congestion and ranking second only to poor traffic flow in causing dissatisfaction among drivers, communicating with road users, the general public, area businesses, and others about road construction projects and accompanying work zones is essential to the smooth operation and completion of a project. A new guidance document available from the Federal Highway Administration (FHWA), Work Zone Public Information and Outreach Strategies, is designed to help transportation agencies plan and implement effective public information and outreach campaigns for work zones. This document also provides support to agencies in their efforts to implement the recently updated Work Zone Safety and Mobility Rule.

Published by FHWA in the Federal Register in September 2004, the Work Zone Safety and Mobility Rule's primary goal is to reduce crashes and congestion in and around work zones (the text of the rule is available online at www.ops.fhwa.dot.gov/wz/resources/final_rule/language.htm). The rule also addresses the use of public information and outreach as a work zone management tool. For certain types of projects, the rule requires the use of public information and outreach strategies to inform those affected by the project of expected work zone impacts and changing conditions. "Many transportation agencies have found that public information and outreach efforts are an effective work zone management tool. When the public and other road users know what to expect, they can become a partner in helping to manage work zone congestion and safety," says Tracy Scriba of FHWA.

The new guidance document is the second in a series of four FHWA guides supporting implementation of the rule (see November 2005 *Focus*). In addition to guidance, the document contains numerous examples of work zone public information and outreach campaigns used by transportation agencies.

The guide includes sections on designing and planning a public information and outreach campaign for work zones, as well as possible communication strategies for implementing campaigns. Designing a campaign includes such steps as determining the appropriate size and nature of the outreach effort and identifying resources to use. These include internal resources such as agency public relations personnel, existing agency Web sites, and existing traveler information systems (highway advisory radio and dynamic message signs), and external resources, such as radio, TV, and newspaper advertising. Public information centers and kiosks can also be used.

Also important to the outreach campaign is identifying partners, including State and local agencies; law enforcement; major employers and institutions, such as hospitals, in the affected area; groups such as neighborhood associations and business associations; and traveler

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information providers, such as radio and TV stations. These partnerships are valuable in clarifying and improving the message to be communicated, particularly to diverse population groups such as non-English speaking residents, truck drivers, or the elderly; distributing information; identifying ways to minimize the negative effects of a project; and perhaps even sharing in the costs of a campaign.

Identifying the target audience and designing communication strategies that are effective for that audience are also key to any public information and outreach campaign. For example, commuters are typically aware of travel conditions but have less flexibility in planning their trip. Information on alternate routes or additional transportation options, such as transit, may be most helpful to this type of traveler. Noncommuters may be less aware of travel conditions but are more likely to respond to messages about changing the timing or destination of a trip. Travelers from outside of the local area are also typically less aware of road conditions and harder to inform about construction projects. To help reach such travelers, the I-95 Corridor Coalition produces a brochure twice a year on work zones and other potential problem areas on I-95. This brochure is distributed to welcome centers, rest areas, transportation agencies, private companies, and individuals up and down the east coast. It is also available online at www.i95coalition.org.

Commercial truck drivers may need specialized work zone information because of tight schedules, oversize or dangerous loads, or overnight travel. When planning an outreach campaign, it is important to consider if the work zone affects a route with heavy truck traffic or one that is near a freight terminal. During the I-65 construction project in Kentucky, which involved full road closure on weekends, outreach specifically targeted to truckers included publicizing project details and alternate routes in a direct mailing to trucking companies, in trucking industry publications, and on the CB radio network.

San Francisco, California, also used a specialized approach when it provided information to area residents on the Octavia Central road project in Spanish, Chinese, Japanese, Korean, Tagalog, and Russian. The outreach campaign for the Virginia Department of Transportation's Springfield Interchange project, meanwhile, included working with retirement and nursing homes near the project area to inform them of the impacts of the project and the need for extra caution around the work zone area. And in Santa Cruz, California, visually-impaired pedestrians were specifically targeted in the outreach campaign for a work zone that affected downtown sidewalks.

In developing a campaign message, successful work zone outreach efforts emphasize that safety comes first and remind drivers to take precautions to protect themselves and highway workers, including adhering to posted speed limits, keeping a safe distance from the car ahead, and minimizing distractions, such as the use of cellular phones. Another primary message for outreach campaigns is that motorists should plan ahead to minimize delays. Campaigns should publicize information on alternate routes and, depending on the project, can provide information to travelers and major employers on carpooling/ridesharing, transit, park and ride, and telecommuting options. Transportation agencies should also look to provide travelers with current details on work zone status, including the dates and times of work zone activity; travel times and delays; and the routes, lanes, and ramps affected.

To help agencies determine which communication strategies to use for a particular campaign, the guide contains a section with details on such strategies as branding a project through the use of graphics, logos, and catchphrases; working with the mass media; creating and maintaining Web sites; and designing printed materials, including brochures, flyers, and newsletters. Also covered is the role that technologies such as email alerts, project hotlines, and dynamic highway message signs can play in a successful outreach campaign.

The guidance document also includes a checklist of tasks that are often involved in public information and outreach campaigns. Appendices feature blank templates that can be used to develop a campaign and identify target audiences, messages, products, goals, and resources. Sample templates are also included that contain information for a fictional project.

The new guidance document, as well as additional information about the Work Zone Safety and Mobility Rule, is available online at www.ops.fhwa.dot.gov/wz/resources/final_rule.htm. Two additional guidance documents will be released this year by FHWA: Developing and Implementing Transportation Management Plans for Work Zones and Work Zone Impacts Assessment: An Approach to Assess and Manage Work Zone Safety and Mobility Impacts of Road Projects. For more information, contact Tracy Scriba at FHWA, 202-366-0855; email: tracy.scriba@fhwa.dot.gov.

T³S Growing Pains Spotlight the Importance of New Workshop Registration Procedures

by Sandi Priddy, T³S Program Manager

In the last few months the Transportation Technology Transfer Service (T³S) has experienced some growing pains. Growth for our program is wonderful because it means we are reaching more people through workshops and other venues. However, when you experience a growth spurt, sometimes there are growing pains as well. In the past, we have offered more lecture-type workshops and seminars that allowed us to have as many registrants as the capacity of the meeting room. Recently we have offered more "hands-on" courses such as *Chain Saw Safety*, *Zero-Turn Lawn Mower Operation*, and most recently *Basic Surveying*. These courses have small class size limits to allow sufficient time for each individual participant to complete the hands-on exercises.

Originally, we scheduled 3 *Basic Surveying* workshops. We had so many registrants that we added 3 more. Even then, we still had walk-ons show up for the first 3 workshops. As a result, some of the walk-ons who had hoped to participate in the workshop experienced frustration because there was no room for them. In the past we have always tried to accommodate walk-ons, but this is not usually possible in the "hands on" type of workshops that have enrollment limits.

We understand this frustration, and we hope that we can offer some suggestions that will rectify these problems in future workshops. With some of these new courses, we are reaching an entirely new segment of our work force in South Carolina, and we are excited about that; however, we do not want these potential new participants to give up on us due to an initial bad experience. Here are some suggestions for a process that will hopefully allow us to avoid such problems in the future.

Some of frustrations from our workshops were due to the fact that people mailed in their registration forms, and those forms did not reach us in time to notify them that there was no space available. We will always note in our workshop announcements if there is a lower limit on participants. *You should never attend one of these workshops unless you have received a confirmation from us, or without first calling to confirm that there is room for additional participants.* All of our courses are first-come first-served, which means the earlier you register, the better chance you have to get into these small hands-on courses.

The fastest mode of registration is our on-line registration page, which can be found at www.ces.clemson.edu/t3s. You immediately receive an on-line copy of your submission form, and we are currently working diligently to upgrade our system so that you will receive automatic e-mail confirmation of your on-line registration. The second fastest way to register is by fax to 864-656-2670. All of our workshop brochures list the web address and the fax number. The use of these two means by all course registrants would help our staff tremendously. *If you choose to register by regular mail, we cannot guarantee that you or your employees will have a seat in the class.*

Until we have the automatic e-mail confirmation capability, we will confirm your registration by either personal e-mail from one of our staff or by phone, so please include a contact phone number and an e-mail address on your registration form. Please continue to send a copy of your registration with your check to the office. This helps our staff tremendously in determining for which class to credit the check.

Thank you for your support of our program. If you have any questions concerning our program or registration procedures, please give us a call toll free at 888-414-3069. We look forward to working with you in the future, and please remember to let us know if you change positions or locations.

Many 'Extreme Commuters' Enjoy the Ride

The desire to get away from the city and enjoy suburbia has turned some people into "extreme commuters." They travel more than 90 minutes to work one way. The U.S. Census Bureau says they are the fastest growing group of commuters with more than 3.4 million drivers involved.

High gas prices and a departure time between 5 and 6 a.m. aren't slowing the rise. Now more than ever, people are willing to trade time in their car for a bigger house and a bigger yard. The long drive allows them to buy a home at half the price the same home would cost in the city.

An online poll by Newsweek shows that 37 percent of commuters don't mind the trip, and 13 percent said they enjoy it. But studies show that distractions such as eating or cellphone use increase the chance of a crash significantly.

Reconsidering Roundabouts

This proven safety solution reduces the number and severity of intersection crashes and is gaining popularity across the U.S.

An Issue Brief by the Federal Highway Administration and the Institute of Transportation Engineers

Photos courtesy of Phil Demosthenes

History of Roundabouts

The "modern roundabout" is commonly confused with older-style traffic circles and rotaries. Traffic circles have been around almost a century, with the first documented one in the U.S. being built in 1905 on the southwest corner of Central Park in New York City and named after Christopher Columbus. From the start, traffic circles provided the ability for a city to tie a number of intersecting streets together and make a landscaped central circle that had aesthetic value to the community. Many large circles or rotaries were built in the United States until the 1950s when they fell out of favor. The older-style rotaries enabled high-speed merging and weaving of vehicles that led to a high crash experience.

The modern roundabout was developed in the United Kingdom to rectify problems associated with these traffic circles. In 1966, the United Kingdom adopted a mandatory "give-way" rule at all circular intersections, which required entering traffic to give way, or yield, to circulating traffic. This rule prevented circular intersections from locking up by not allowing vehicles to enter the intersection until there were sufficient gaps in circulating traffic.

What is a Modern Roundabout?

A modern roundabout is a one-way circular intersection without traffic signals in which traffic flows around a center island. Roundabouts feature yield control for all entering traffic, channelized approaches and appropriate geometric curvature to ensure that travel speeds on the circulatory roadway are typically less than 30 mph. Roundabouts must be designed to meet the needs of all users—drivers, pedestrians, pedestrians with disabilities and bicyclists. When designing roundabouts, special considerations must be given to the needs of pedestrians with visual disabilities who are unable to judge adequate gaps in traffic at roundabouts. Proper site selection and pedestrian channelization are essential to making roundabouts accessible to all users. Roundabouts can also be designed for trucks and larger vehicles and in geographic areas where significant snowfall is the norm during the winter.

Features of Modern Roundabouts

The design and traffic control features of roundabouts are as follows:

- Yield control is used on all entries.
- Circulating vehicles have the right-of-way. All vehicles circulate counter-clockwise and pass to the right of the central island.
- A central island further channelizes vehicles' paths once within the circulatory roadway.
- Pedestrian access is allowed only across the legs of the roundabout, behind the yield line to the circulatory roadway.
- Each approach to the roundabout has a splitter island —a raised or painted area on an approach used to separate entering from exiting traffic and to channelize and slow entering traffic.
- Yield lines mark the point of entry from each approach into the circulatory roadway. Entering vehicles must yield to any circulating traffic coming from the left before crossing this line into the circulatory roadway.
- Landscaping buffers are provided at most roundabouts to separate vehicular and pedestrian traffic and to encourage pedestrians to cross only at the designated crossing locations.
- Accessible pedestrian crossings should be provided at all roundabouts. The crossing location is set back

from the yield line and the splitter island is cut to allow pedestrians, wheelchairs, strollers, and bicycles to pass through. Tactile surfaces should be used to warn pedestrians with visual disabilities that they are about to enter the roadway.

Roundabout Safety

Research indicates that well-designed roundabouts can be safer and more efficient than conventional intersections, because:

- Roundabouts have fewer conflict points than conventional intersections.
- Roundabout use eliminates the potential for hazardous conflicts, such as right-angle and left-turn head-on crashes. Because fewer potential conflicts between road users are present, and pedestrian crossing distances are shorter, single-lane approach roundabouts produce greater safety benefits than multilane approaches.
- Low absolute speeds associated with roundabouts allow drivers more time to react to potential conflicts and also help to improve the safety performance of roundabouts.
- Most road users travel at similar speeds through roundabouts. Their lower relative speeds reduce crash severity compared to some traditionally controlled intersections where the difference in vehicle speeds is greater.
- Roundabouts have fewer annual injury crashes than rural two-way stop-controlled intersections, regardless of minor street demand volumes.
- Roundabouts have fewer injury accidents per year than signalized intersections, particularly in rural areas. At volumes greater than 50,000 average daily traffic (ADT), urban roundabout safety may be comparable to that of urban signalized intersections.

A December 2002 report by the Maryland Highway Administration indicates that 15 single-lane roundabouts have greatly improved intersection safety in the area where they were installed. The analysis shows there has been a 100 percent decrease in the fatal crash rate; a 60 percent decrease in the total crash rate; an 82 percent reduction in the injury crash rate; and a 27 percent reduction in the property damage only accident rate.

Safety Problems Susceptible to Correction by Roundabouts

The decision to install a roundabout as a safety improvement should be based on a demonstrated safety problem of the type susceptible to correction by a roundabout. A review of crash reports and the type of accidents occurring is essential. Examples of safety problems include:

- High rates of crashes involving conflicts that would tend to be resolved by a roundabout (right angle, head-on, left/through, U-turns, etc.).
- High-crash severity that could be reduced by the slower speeds associated with roundabouts.
- Site visibility problems that reduce the effectiveness of stop sign control (in this case, landscaping of the roundabout needs to be carefully considered).
- Inadequate separation of movements, especially on single-lane approaches.

Issues to Review When Considering Roundabout Design Alternatives

The following issues should be considered before making the decision to implement a roundabout design:

- The context of the project must be considered. What are the regional policy constraints that must be addressed? Are there site specific and community impact reasons why a roundabout of any particular size would not be a good choice?
- The space feasibility for a roundabout. Is there enough right-of-way to build the roundabout? Is right-of-way acquisition required? If "yes," this introduces administrative complications that some agencies might want to avoid.
- The physical or geometric complications—such as right-of-way limitations, utility conflicts, drainage problems and unfavorable topography—that may limit visibility or complicate construction.

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Going Green With U.S. Highways

In today's world, transportation planners are challenged to balance the need for a safe and efficient transportation system with the necessity to protect the environment. Without proper planning, transportation projects can adversely affect air and water quality, threatened and endangered species, and cultural and natural resources, such as historic sites, parks, forests, wetlands, and fragile ecosystems.

To minimize the impact of transportation projects on the environment, the Federal Highway Administration (FHWA), U.S. Environmental Protection Agency (EPA), and several other organizations recently created the Green Highways Partnership (GHP) to identify and promote environmental stewardship in transportation planning in the Mid-Atlantic States. According to FHWA's Office of Planning, Environment, and Realty Associate Administrator Cynthia J. Burbank, "The Green Highways Partnership is a turning point toward the creation of good will relationships and partnerships for the advancement of transportation and the environment."

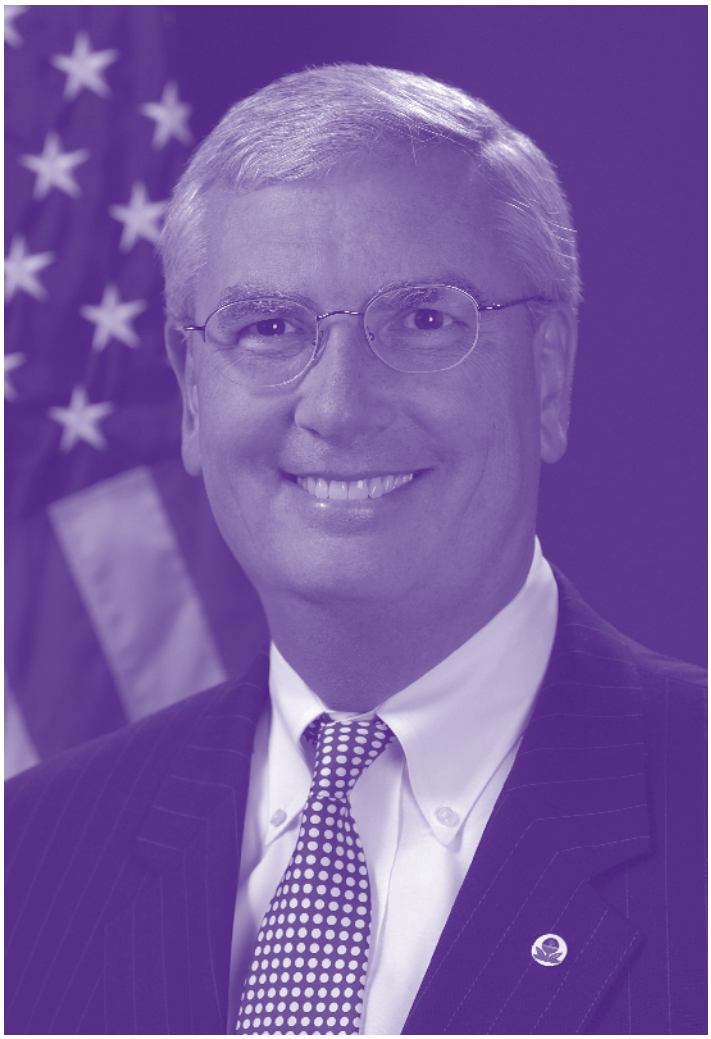
GHP was created to promote innovative streamlining and market-based approaches toward sustainable solutions for transportation and environmental improvements. GHP seeks to eradicate the traditional disconnect between the transportation and environmental communities through communication and cooperation, which will allow for a mutually beneficial relationship. GHP focuses on the following three elements:

- Partnership development, which consists of integrated public-private partnerships with a broad range of stakeholders including Federal and State transportation, regulatory, and resource agencies; contractors; industry; trade associations; academic institutions; and nongovernmental organizations to create long-term institutional change.
- Recognition and awards that encourage a proactive setting to pursue GHP objectives and emphasize streamlining, market-based approaches, integrated watershed planning, design, construction, maintenance, and use of recycled materials.
- Opportunities for joint funding and integrated goals, joint research and technology transfer, and cross collaboration.

In November 2005, GHP members held a forum in College Park, MD, to share ideas on designing GHP, which is still in the formative stage, and developing a Green Highways Recognition Program. Several hundred participants, including environmental, human health, real estate, socioeconomic, and transportation specialists, attended the 3-day event.

To kick off the forum, many attendees, including representatives from the American Concrete Pavement Association (ACPA), Natural Resources Defense Council, and U.S. Fish and Wildlife Service, participated in an executive session aimed at identifying innovative approaches to integrating environmental stewardship into transportation planning. Participants agreed that GHP members should achieve a number of goals, including developing frameworks for integrating recycled materials into projects and disseminating information on past successes to help facilitate replication of best practices.

Also during the executive session, participants presented a draft roadmap for the rollout of GHP beyond the Mid-Atlantic States. In addition, they discussed some of the challenges GHP members face. For example, many agreed that important first steps will include persuading some in the transportation community to look beyond the view that the regulatory community represents an impediment



EPA Administrator Stephen L. Johnson

to transportation work and securing an agreement with regulators to work together.

Participants in the executive session also discussed creating a Green Highways Recognition Program to honor highway agencies for outstanding efforts to incorporate environmental considerations into highway projects. GHP members suggested making participation voluntary and using the program to spotlight organizations that share their best practices throughout their respective States.

After the executive session, presentations covered numerous topics, including planning and preliminary design, final design and construction, and operations and road maintenance. ACPA's Robb Jolly, for example, spoke about the opportunities facing the concrete and cement industry from the environmental perspective, such as the increased use of recycled materials on projects and the impact of concrete on sustainability in transportation infrastructure. He also presented an agenda for advancing sustainable practices via a framework for innovation and the launch of a new Web site for the cement and concrete industry that promotes the transfer of knowledge on environmental issues and practices.

By the end of the forum, participants agreed on the following three conclusions:

- GHP should establish more formal methods of information sharing and communication.
- A recognition program would inspire nationwide replication of best practices designed to integrate environmental stewardship into transportation planning.
- GHP should create a national roadmap for developing more environmentally friendly highways. At the conference, a draft was presented to the executive session participants. Representatives from GHP are still finalizing the roadmap and determining how to implement it.

In addition to the recent forum, GHP is undertaking several pilot projects in the Mid-Atlantic States to demonstrate how to achieve a "better than before" outcome for the human, natural, and built environments after completion of transportation projects. Initial projects likely will focus on recycling, storm water management, conservation, and ecosystem management. Look for future articles in FHWA's *Research & Technology Transporter* to learn more about these projects and their progress. For more information, visit www.greenhighways.org or contact:

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- The proximity of generators of significant traffic that might have difficulty negotiating the roundabout, such as high volumes of oversized trucks.
- The proximity of traffic control devices that would require preemption, such as railroad tracks or drawbridges.
- Whether traffic congestion would cause routine backups into the roundabout, such as over-capacity signals or freeway entrance ramps. The successful operation of a roundabout depends on unimpeded flow on the circulatory roadway.
- Whether nearby intersections of a major arterial and a minor arterial or local road might create unacceptable delay to the major road. Roundabouts delay and channelize all traffic entering the intersection and could introduce excessive delay or speed inconsistencies to flow on the major arterial.
- Heavy pedestrian or bicycle movements in conflict with high traffic volumes pose problems for all types of traffic control.
- Is there a coordinated signal system? Are the intersections located on arterial streets within a coordinated signal network? In these situations, a signalized intersection incorporated into the system might improve the level of service on the arterial.

The existence of one or more of these conditions does not necessarily preclude the installation of a roundabout. Roundabouts have been built at locations that exhibit nearly all of the conditions listed above. The issues may be resolved through coordination with and support from other agencies and implementation of specific mitigation actions.

Safety Zone

A Guide for Reducing Work Zone Collisions

In 1998, the American Association of State Highway and Transportation (AASHTO) approved its Strategic Highway Safety plan, which was developed by the AASHTO Standing Committee for Highway Traffic Safety with the assistance of the Federal Highway Administration, the National Highway Traffic Safety Administration, and the Transportation Research Board Committee on Transportation Safety Management. The plan includes strategies in 22 key emphasis areas that affect highway safety. The plan's goal is to reduce the annual number of highway deaths by 5,000. Each of the 22 emphasis areas includes strategies and an outline of what is needed to implement each strategy.

Over the next few years the National Cooperative Highway Research Program (NCHRP) will be developing a series of guides to assist state and local agencies in reducing injuries and fatalities in targeted areas. Each guide includes a brief introduction, a general description of the problem, the strategies/countermeasures to address the problem, and a model implementation process.

One of these guides in now available, Volume 17: A Guide for Reducing Work Zone Collisions (NCHRP Report 500). This implementation guide provides guidance to highway agencies that desire to implement safety improvements in work zones. It includes a variety of strategies that may be applicable to specific work zones or to agency procedures.

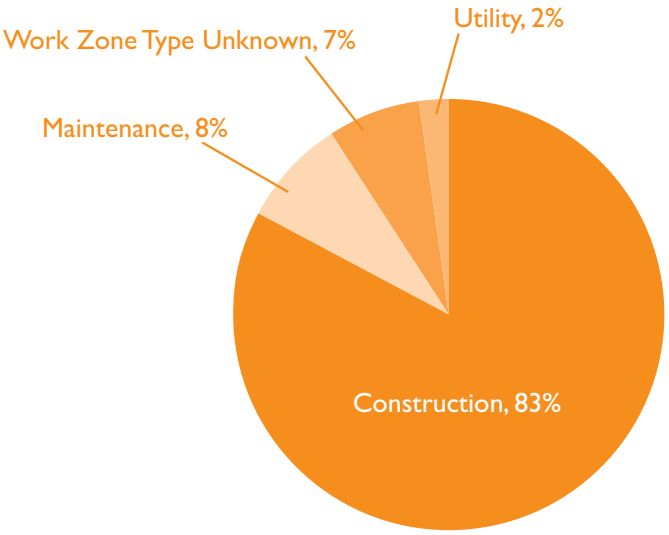


Exhibit 1-1
Work Zone Fatal Crashes by Work Zone Type in 2003
Source: FARS Web-Based Encyclopedia, January 2005 http://www-fars.nhtsa.dot.gov/

Exhibit 1-1 displays a trend of increasing deaths attributed to work zones from 1994 to 2003. During this timeframe, anecdotal evidence suggests that the number of work zones have increased, although no definitive evidence or study encompasses all types of work zones. As more and more of the nation's infrastructure reaches the end of its life cycle, work zones are expected to remain a familiar sight on our roadways.

Exhibit 1-2 shows the types of work zones in which fatal crashes occurred in 2003. The preponderance of crashes occurred in long-term construction zones.

A review of FARS data for 2003 yields additional insight into fatal crash characteristics in work zones:

- More than half of all fatal work zone crashes occurred during the day.
- More than twice as many work zone fatal crashes occurred on weekdays as on weekends.
- Fatal work zone crashes occurred most often during the summer months.
- Almost 30 percent of fatal work zone crashes occurred on Interstate roadways.
- Almost 60 percent of fatal work zone crashes occurred on roads with a posted speed limit of 55 mph or greater.
- Single-vehicle crashes accounted for over half of all fatal work zone crashes.
- Rear-end fatal crashes were 25 times more common in work zones relative to all fatal crashes.
- Ten percent of work zone fatalities were pedestrians and bicyclists.
- Heavy trucks were involved in more than 20 percent of fatal work zone crashes.
- Alcohol was involved in almost 40 percent of fatal work zone crashes.

In addition to the trends identified in FARS, an American Road and Transportation Builders Association (ARTBA) review of federal data from the Bureau of Labor Statistics indicates that roadway construction workers are killed at a rate nearly three times higher than other construction workers and eight times higher than general industry workers.

The report discusses six objectives and strategies: reduce the number, duration, and impact of works zones; improve work zone traffic control devices; improve work

zone design practices; improve driver compliance with work zone traffic controls; increase knowledge and awareness of work zones; and develop procedures to effectively manage work zones.

To view this complete report from the Transportation Research Board's web site as a PDF, go to: http://www.trb.org/news/blurb_detail.asp?id=5901.

Exhibit I-2
Number of Work Zone Fatalities and Fatal Crashes, 1994 - 2003
Source: FARS Web-Based Encyclopedia, January 2005 http://www-fars.nhtsa.dot.gov/

Geotech at a Glance

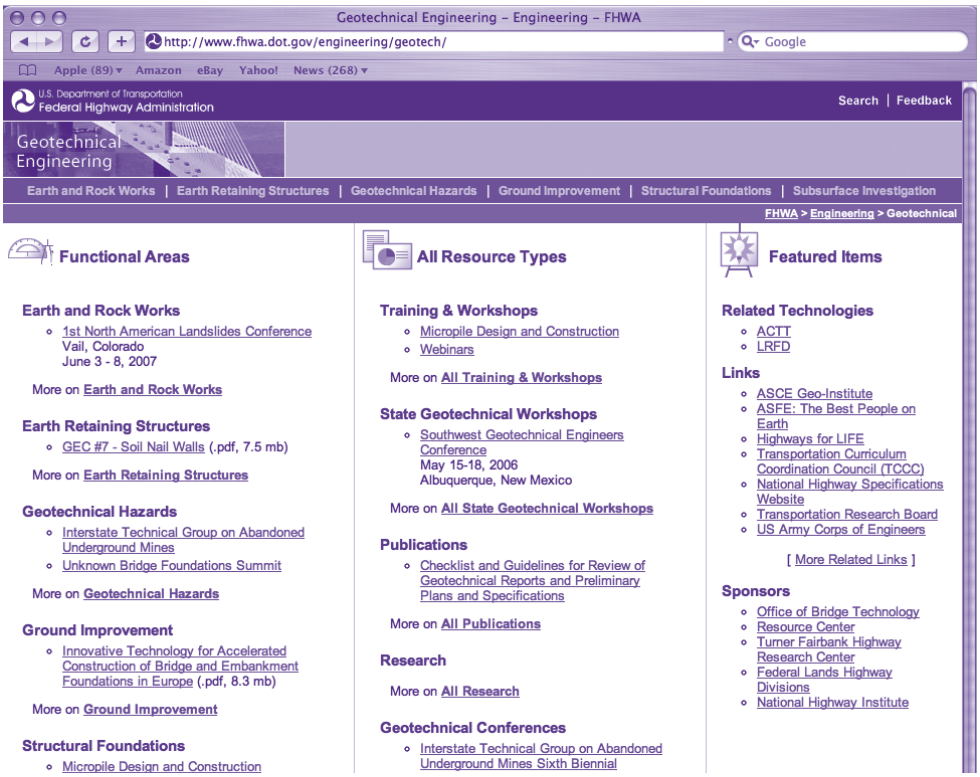
A new Federal Highway Administration (FHWA) Web site dedicated to geotechnical engineering (www.fhwa.dot.gov/engineering/geotech) brings together a range of resources in one convenient location. "The topic-based framework for the new Web site allows the user to easily search and locate FHWA technical and program solutions to geotechnical challenges engaging the transportation community," says Corey Bobba, Geotechnical Engineer in FHWA's Eastern Federal Lands Highway Division office.

The site's featured technology areas are earth and rock works, earth retaining structures, geotechnical hazards, ground improvement, structural foundations, and subsurface investigation. Each technology area includes information on publications, software, policy memos, training and workshop opportunities, research, and staff contacts.

A resource-based view of available information is accessible in the "All Resource Types" section, which lists details on software, training, workshops, conferences, research, and publications for all of the technology areas. An extensive list of links to related Web sites is also featured, including those of the Transportation Research Board, U.S. Army Corps of Engineers, and the American Society of Civil Engineers' Geo-Institute.

Additional topic-based Web sites launched by FHWA during the past year include hydraulics engineering (www.fhwa.dot.gov/engineering/hydraulics) and pavements (www.fhwa.dot.gov/pavement).

For more information on geotechnical technologies, contact Corey Bobba at FHWA, 703-404-6348; email: corey.bobba@fhwa.dot.gov. To learn more about FHWA's topic-based Web sites, contact Bob Hayes at FHWA, 202-366-4970; email: robert.hayes@fhwa.dot.gov.



Roadwise Cleaning

It's time to shift gears from winter to spring/summer operations. Now is the time to service and prepare machinery that will be needed not only for spring work but also for summer and fall use. Tractors, mowers, air compressors, distributors, self-propelled rollers, brush cutters, concrete power screeds, lay-down machines and power tools need to be gone over and made ready for what's ahead.

Bridges

Winter operations often leave an accumulation of icing sand along the curb and gutter of bridge decks as well as on top of the curb and around the bridge guardrail posts.

After sweeping the deck with a power broom, it is a good idea to come along with a power wash to thoroughly remove the residual sand from expansion seals/joints and from around the base plates of the rail posts. The power washing operation also will clean areas of the steel railing and components that have been scratched or in some way damaged by the plows during winter.

These areas of cosmetic damage can then be prepared for touch-up painting to minimize any damage from corrosion. It is especially important to maintain the protective coating around base plates and anchor bolts because water and slush tend to sit there for extended periods of time.

Make sure that deck drains are cleaned out and check super-structure elements beneath the deck that need cleaning, painting, or some other type of attention.

Spring is also when minor accident damage and deck spalls appear that were not evident during the winter.

Your spring work plan should include vegetation control. Large vegetation needs to be removed from beneath the structure before it causes channel flow problems or impedes inspection. Sometimes it is advantageous to chemically treat some areas to stem the proliferation of undergrowth instead of fighting the problem by continuously mowing or using the chain saw.

Spring also is the best time to review your most recent bridge inspection reports and see what the engineer's recommendations were in regard to scour repair, weight limit postings, etc. For greater efficiency try to take care of all the maintenance at once.

Signs and Delineators

Winter operations can be hard on roadside markers such as signs and delineators. This is especially true on rural highways that lack sizeable shoulders and thus require locating markers near the edge of the roadway. Signs and markers that have not become misaligned or completely destroyed often need attention as well.

The melting snow combined with the dust and grit accumulation on the road surface make for a murky slush that vehicles splatter on signs and delineators. This debris destroys the reflectivity needed for night visibility. You want to clean the signs and delineators once the slush season has passed.

Where there is a sufficient right-of-way area for signs and delineators, you may want to consider moving them farther away from the edge of the roadway surface. In particularly splash-prone areas this could be an activity scheduled for upcoming months to minimize damage and the need for as much cleaning in the future.

Guardrails

Most guardrails are located on hills and curves—the areas that receive the bulk of the sanding during winter maintenance operations. Consequently, the icing sand buildup around the posts and beneath the rail itself must be removed and hauled away.

Leaving this build up can eventually create a ramp effect for an errant vehicle to be vaulted to a height that reduces the guardrail's effectiveness. Although there are machines designed specifically to remove this material from beneath the rail and from around the posts, most crews employ a more labor-intensive method that involves pulling the material out toward the roadway and loading it with the use of a small ski loader.

Simply shoving the material out from under the rail and over the inslope is not a recommended procedure from an environmental standpoint or where appearance of the roadside is a consideration.

Culvert Inspection and Clean Out

Early spring runoff can cause conditions around smaller drainage structures that need to be taken care of to allow them to work. The accumulation of debris around the inlet will impede the flow of the water entering the culvert.

Culverts that have not been properly sized or installed can develop problems at the outlet end that require constant attention. Water velocity through the pipe that is too high can cause a deep scour hole where the water exits the pipe.

When the velocity is too low, water-borne silt will tend to settle at the outlet. If allowed to build up, the silt eventually will reduce the carrying capacity to the point of burying that end of the culvert.

Sometimes the scour hole problem can be corrected by using rip rap so that the water velocity is dissipated before entering the natural drainage channel farther down stream. Generally, the silting problem only can be addressed by periodical inspection and cleaning out the channel when the situation requires that something be done.

By Former Western Satellite Coordinator Jim Hennen, South Dakota LTAP. Reprinted with permission from Special Bulletin #36, South Dakota LTAP.

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Publications

☐ *2006 ITS Operations Resource Guide* (for loan only)

☐ *Pavement Preservation Checklist Series*, FHWA,
- ☐ "Diamond Grinding of Portland Cement Concrete Pavements"
- ☐ "Dower-Bar Retrofit for Portland Cement Concrete Pavements"
- ☐ "Partial-Depth Repair of Portland Cement Pavements"
- ☐ "Full-Depth Repair of Portland Cement Pavements"
- ☐ "Hot-in-Place Recycling Application Checklist"
- ☐ "Cold-in-Place Asphalt Recycling Application Checklist"
- ☐ "Slurry Seal Application Checklist"

CDs & DVDs

☐ *Dangerous Travelers: Controlling Invasive Plants along America's Roadways* (DVD), USDA Forest Service, 26 min.
Covers best management practices to assist road maintenance crews in controlling the rapid spread of invasive plants. Highlights plant identification, inventory systems, mapping, treatments, etc.

☐ *Road Safety Fundamentals*, FHWA, (DVD)
Field Reference Guide, Instructors Notes, Movie Files, PowerPoint Presentation for Instructor, Participants Notebook

☐ *Gravel Road Maintenance: Meeting the Challenge* (DVD/CD), Minnesota LTAP
Discusses Safety Elements, Shaping the Roadway, Good Surface Gravel, Dust Control,
CD contains FHWA's Maintenance and Design Manual

☐ *System Security Awareness for Transportation Employees*(CD), TRB
System Security Awareness for Transportation Employees provides transportation department employees, supervisors, and managers with practical knowledge and skills that will help you effectively carry out your responsibilities concerning operation and infrastructure security.

☐ Other _____
_____
_____

SPEED BUMP **Dave Coverly**

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