South Carolina Transportation Technology Transfer Service Winter 2003

Quarterly

Are We There Yet?

by Sandi Priddy, Program Manager

Are we there yet? As a child, it seems I asked that question a thousand times, and I'm sure you did as well. Any time there was a trip out of the ordinary, the question despised and hated by all parents was inevitable—*Are we there yet?*

I have been working with T³S for over 7 years, and I felt it was time to ask that question about our program. We have gained much ground over the last few years. We have a database that manages our workshop agenda enabling us to print rosters, nametags, certificates, track professional development hours (PDH's) earned, payments, as well as other functions. We also have a web site that allows you to register for our courses on–line, order publications and videos from our library, and links you with other vital transportation organizations. We have also updated our newsletter over the last few years, changing the look and increasing the amount of information we provide from 6 to 12 pages. We have come a long way, but we're not quite there yet.

Since 1986, our newsletter has been called the T³S Quarterly. It definitely was time for a change and a new look. This "new look" will begin with our next newsletter. We hired a graduate student to assist us in this endeavor. Brian Verhoeven, a student in Professional Communications, came on board September of this year and immediately went to work on giving us a brand new look. Thank you Brian for all of your hard work. I can't take credit for the new name either. Brandt Gilbert, the husband of one of the Civil Engineering Department staff, came up with the new name. Thank you Brandt!

Are we there yet? I think this is a question we can ask ourselves as individuals as well as the organization for which we work. Am I reaching the goals I have set for myself? Is my department or agency reaching the goals they have established?

Ask that question each time you receive our newsletter. It is our mission to assist you in reaching those goals. We are striving to make the newsletter both informative and entertaining by providing you with the latest innovations in technology as they are made available to us.

We may not be there yet, but we're on our way. We hope you like our new look and name, but most of all we hope you learn something from our newsletter or training courses that will benefit you and your organization. We look forward to working with you this year.

Volume 14, Number 4

In This Issue…

Partnerships, Innovation Build a Bridge in South Carolina

Reprinted from the Federal Highway Administration's FOCUS newsletter

In 1929, the first bridge over the Cooper River and Town Creek in Charleston, South Carolina, opened with a 3-day gala celebration. The 4.36-km (2.71-mi) bridge, later to be known as the Grace Memorial Bridge, was the fifth largest structure of its type in the world at that time. The landmark bridge was followed by construction of a second structure over the Cooper River, the Pearman Bridge, which opened to traffic in 1966. In recent years though, it became clear to the South Carolina Department of Transportation (SCDOT) and the community that the two bridges had become functionally obsolete. The Grace Memorial Bridge has only two 3-m (10-ft) lanes, lacks shoulders, and has only a limited ability to carry vehicles weighing more than 5 tons. The Pearman Bridge, meanwhile, provides two northbound lanes and one southbound lane, but does not have emergency shoulders or a median to separate opposing traffic. And neither bridge has enough vertical or horizontal clearance to safely accommodate today's larger shipping vessels. "The two older bridges were congested and in dire need of replacement," says Charles Dwyer of the SCDOT.

Replacing the two bridges with a new Cooper River Bridge has required the SCDOT and the Federal Highway Administration (FHWA) to identify innovative sources of funding for the massive project and to work closely with residents, city and town officials, and others in the surrounding communities to choose a context-sensitive design that would fit in with the historical aesthetic of the city and to minimize the impact of the construction on the community.

The first concrete girder is set into place between two pier caps for the new bridge's Meeting Street off-ramp.

A design/build contract for the new Cooper River Bridge was executed in July 2001 with Palmetto Bridge Constructors (PBC). PBC is a joint venture of Skanska USA and HBG Constructors. The lead designer is Parsons Brinckerhoff. Construction of the bridge is required to be completed by 2006. Construction has been accelerated, however, and the contractor is now aiming to complete work early by having both directions of traffic using the new bridge in the summer of 2005. As of August 2003, more than 50 percent of the bridge's concrete had been placed. The use of the design-build concept has helped accelerate the completion of the largest single infrastructure contract in SCDOT's history.

The new Cooper River Bridge will have the longest cable-stay span in North America, stretching 471-m (1,546 ft) across the Cooper River. The total length of the bridge is 4.02 km (2.5 mi). A diamond tower design was chosen after several public hearings provided feedback on various design options. "There

With a project budget of $677 million, SCDOT had to develop an innovative financing plan that includes several partners.

was a lot of public input as to what the structure would look like. The community involvement has been an ongoing effort," says Tad Kitowicz of FHWA's South Carolina Division Office. "We have held a lot of public hearings and worked hard to involve residents. As Charleston is a historic city, we need something that will fit with the surrounding area and become a landmark of the city," adds Dwyer. A 3.6-m (12-ft) bicycle and pedestrian lane was added to the design at the urging of the local community. The lane includes observation sites with benches.

The new Cooper River Bridge will have the longest cable-stay span in North America, stretching 471-m (1,546 ft).

Additional interchange ramps were also added after consultation with local officials. To encourage public input and feedback on the project and provide information, a Community Bridge Office was set up. A Web site (www.cooperriverbridge.org) has also provided frequently updated news and information on the project.

The new bridge's cable-stayed span will be suspended by 128 cables from two diamond towers at each end of the span. The cables are to be anchored on the bridge's deck level and inside of the diamond towers. To protect them from weather conditions, the bridge cables will be enclosed in a high density polyethylene pipe. The diamond towers will support an eight-lane road deck that is almost 61-m (200 ft) above the median high tide mark. Platforms and tower elevators that can be used for safety inspections and maintenance have been incorporated into the design. With a project budget of $677 million, SCDOT had to develop an innovative financing plan that includes several partners. The South Carolina Infrastructure Bank, which was established by the State in 1997 to provide loans and other financial assistance for major projects, has contributed $325 million in funding. A $215 million Federal loan was provided under the Transportation Infrastructure Finance and Innovation Act, which is being repaid by SCDOT, Charleston County, and the South Carolina State Ports Authority. Additional funding has come from FHWA.

To learn more about the Cooper River Bridge Project, visit the Cooper River Bridge Web site at www.cooperriverbridge.org or email the SCDOT at info@cooperriverbridge.org.

You Too Could Be Saved By a Hard Hat

Have you noticed that insurance companies have stopped using the word "accident"? When cars hit each other or something else, it's now called a "crash."

They might believe that most of these incidents are no accident, but when it comes to head injuries prevented by hard hats, accident (or freak accident) are very appropriate descriptions.

While concentrating on the job, people may forget that safety gear can mean the difference between life and death. Nothing makes that more clear than stories of how hard hats saved lives. Following are a few examples given in Compliance. While these occurred mainly at hazardous sites, this type of accident can occur in many areas.

* While operating mining equipment in an underground shaft, a miner noticed a crack in the roof about 11 feet above him. Then a large section of the overhead material broke loose. He was knocked to the ground, and his hard hat seriously damaged. But thanks to his hard hat, he suffered only cuts, scrapes and bruises.
* When working under an overhead conveyor belt, a man was struck by a 40-pound rock that slipped off the belt and hit him in the head. His heavy-duty helmet was cracked, but the man was saved from serious injury.
* Another fellow was standing at a road construction project when the sideview mirror of a passing truck struck him on the head. The ER doctor said his helmet, which was split in two, saved his life.
* At a construction site, an 8x8x16 concrete block fell from a scaffold. It struck a worker on the head and right arm. Though his hard hat was badly damaged and he was dizzy and bruised, his injuries were not serious. His life was saved.

Skip the Cruise Control on Slick Roads

The American Automobile Association says turning off cruise control when it's raining or snowing is just common sense. Not only do you have greater control without it, disengaging cruise is an extra step to take if you are losing control of the car.

Most vehicles call for tapping the brakes to disengage. When it's raining or the road is slick with snow, that can be dangerous, especially at high speeds.

The danger on roads covered with snow or ice is obvious. On rain soaked roads, it might not be as apparent. At 60 mph, there can be total separation of the tire from the pavement when it's raining, a situation called hydroplaning. Even new tires can lose significant traction when there is water on the road.

On wet and snowy roads, the AAA recommends:

1. Slow down and turn off your cruise control.
2. Avoid hard brakes and sharp turns.
3. Stay in the tracks of the car in front of you and increase your following distance.

The same instructions apply when you find yourself in fast, close traffic on the highway. On a highway into town during morning traffic, everyone is in a hurry. Two or more lines of traffic can be moving at speeds up to 60 miles an hour, and cars are closer together than they should be.

Under these circumstances, you need total and immediate control of the car, and that is easier to achieve when cruise is not engaged. When something happens ahead of you, it will be easier to stop quickly.

Are You Sure You're Not Driving Under the Influence of Drugs?

re-printed from the 1998 Fall issue of the Arizona Milepost

As drivers take to the roads, they may be under the influence of drugs that impair their driving and not even know it! Many people are unaware that commonly used over–the–counter and prescription medications often can affect driving ability just as alcohol and illicit drugs do.

Medicines, such as antidepressants, antihypertensives, sleep medications and sedating antihistamines are among the culprits. Because some of these medications interfere with signals in the nervous system, they can diminish your driving ability by causing drowsiness. This can result in slowed reaction time to other drivers and pedestrians, and to roadway dangers such as bad weather, sudden curves, loose gravel and potholes. In fact, more than 10,000 auto accidents each year involve drivers who became drowsy. Before getting behind the wheel, consider the following tips for making your next road trip as safe and responsible as possible.

- When shopping for over–the–counter drugs, be sure to look for warning labels on your medications such as "may cause drowsiness" or "avoid driving a motor vehicle."
- Always consult with your physician or pharmacist about the side effects of medications including any over–the–counter drugs you are taking.
- Follow your physician's directions when taking your medications—especially if you are taking more than one. Your doctor or pharmacist can answer any questions you might have.
- Ask your doctor for non–sedating alternatives to the drugs you may be using. For example, while several over–the–counter and anti–allergy medications cause drowsiness, non–sedating anti–allergy medications are available by prescription.
- Avoid "self–medicating" with caffeine, sugars, or other stimulants. Although certain stimulants may improve alertness, they also may interfere with your thinking ability, making it harder to recognize and react to hazards such as curves and sudden stops.
- Never borrow someone else's medication.
- Pay attention to fatigue. If you feel drowsy, pull over to a rest stop and close your eyes or get some fresh air.
- If you take medication for a chronic illness, you should ask your doctor or pharmacist what the potential is for your medication or condition to impair your ability to drive.

Bridge Trivia

- **Oldest Bridge in the world still in use**. Dating back to 850 B.C., the slab stone single–arch bridge spans the River Meles in Izmir, Turkey.
- **Oldest U.S. bridge in the continuous use.** Built in 1697, the stone–arch Frankford Avenue Bridge crosses Pennypack Creek in Philadelphia. The 75 foot long, three span bridge was constructed as part of the Kings Road which connected Philadelphia with New York.
- **Oldest US covered bridge in continuous use.** Completed in 1829, the 256 foot long, double span Haverhill Bath Bridge crosses the Ammonoosuc River between the towns of Bath and Haverhill, New Hampshire.
- **Longest U.S. suspension bridge.** The Verrazano–Narrows Bridge is 4,260 feet long. Built in 1964, it spans the mouth of upper New York Bay and connects Staten Island to Brooklyn.
- **Highest bridge above water.** The Royal Gorge Bridge in Colorado is 1,053 feet above the Arkansas River. Its main span is 880 feet long and was constructed in six months in 1929.
- **Highest altitude bridge in the world.** The Bailey Bridge is 18,379 feet above sea level. The 98 foot long bridge was built in Ladakh Valley, India, in 1982.
- **Busiest bridge in the world.** The San Francisco–Oakland Bay Bridge was used by an average of 274,000 vehicles a day in 1996 for an annual total of 100 million vehicles.
- **World's longest suspension bridge.** Japan officially opened the world's longest suspension bridge in 1997. Linking the islands of Shikoku and Honshu, the Akashi Kaikyo Bridge has a mainseam of 6,530 feet, with a total length of 12, 832 feet. It is engineered to withstand an 8.5 magnitude earthquake.

City of Wilmington's
"Open Cut" Program

The Issue

Each year the City of Wilmington issues about 750 permits for work within public rights-of-way. The rapid growth in the City of Wilmington had the right-of-way inspectors being responsible for overseeing too many projects to ensure that acceptable "open cut" repairs were consistently provided to the citizens of Wilmington.

Of great concern was the substandard pavement patches contractors placed on the City streets. A poorly constructed patch quickly settles or disintegrates, creating an unsatisfactory and sometimes unsafe riding surface. Several factors contributed to this problem. First, heavily traveled roads are dangerous places to work, and crews frequently rushed to complete a patch. Second, it is difficult to develop adequate backfill compaction on many pavement cuts. Lastly, some crews perceived repairing the underground utility as their primary task and pavement patching as a secondary requirement of completing the job.

The Solution

The City of Wilmington established straight forward utility cut restoration practices for methods, procedures and materials used during all utility cut repairs on City maintained streets, increasing pavement integrity, improving safety and rideability for the citizens of Wilmington.

The "open cut program" was put in place November of 1999. As a result of the implementation of this program, the City's asphalt settlement failure rate is very small (approximately 1% or less), street maintenance expenses have been reduced and customer complaints (utility cut ride quality and safety) are at an all-time low.

The City charges a fee of $325.00 for each "Open Cut" permit, which is transferred to our Street Rehabilitation program and $225.00 for each "Utility Cut Repair" permit.

The City of Wilmington, Street Division, patches cuts for only City departments (water, sewer and stormwater), N.C.N.G and BellSouth. Private contractors are required to patch their own utility cuts. The Contractor/ Permitee is also responsible for all settlement over all trenches for a period of 12 months.

The City of Wilmington has on file a data base of approximately 1,050 utility cuts since November 1999 with the open cut date, patch date, size, company or city department making the cut and physical location. Compaction test are performed on all utility cuts backfilled with soil material prior to installing the final surface course using the Dynamic Cone Penetrometer. Approximately 475 compaction tests have been done using the penetrometer. This device is very affordable and user friendly.

If you would like to have additional information regarding the City of Wilmington's "Utility Cut Program", please contact Skeet Carr, Senior Engineering Technician for the City of Wilmington Street Division at (910) 341-5999.

(Excerpts taken from "Recommended Improvements to City of Wilmington Procedures Concerning Permits, Fees, and Processes for Utility Cuts on City Maintained Streets" written by James R. Flechtner, P.E., City of Wilmington Public Services & Facilities Dept., 1998)

Did you know?
You Can Kill Pop-up Ads.

It's aggravating when you're working on the Internet and a pop-up ad suddenly fills your window. Many fill it so completely you can't drag the ad around to get it out of the way.

According to Dr. Bombay, tech advisor for the Indianapolis Star, the code that launches the ad removes all normal toolbars and buttons, so you can't get rid of it. What do you do then?

You can kill the active browser window by pressing Alt and the F4 key. Bombay says you really need a pop-up blocker to keep ads from showing up in the first place. The Google toolbar performs that task very well. It's free. The toolbar combines a search bar, form-completion tool, and the pop-up blocker.

To install it, go to toolbar.google.com.

2004 T³S Tentative Workshop Schedule

The tentative schedule of T³S workshops that will be offered in 2004 has been established. We have several new courses we will be presenting along with topics that have remained popular through the years.

Barry Saunders will be returning with a new management topic entitled "Managing diversity in the workplace."

Bob Horan was introduced to you in 2003. He will be returning to South Carolina with the topic Asphalt Construction Inspection.

Topics relating to safety are always popular and beneficial. Trenching and Shoring Safety will be offered as well as Railway Crossing and Intersection Safety.

The First Annual Count on Concrete Conference held this past November was labeled a great success. If you were unable to attend the first, make plans to attend this year.

Ken Skorseth from South Dakota will be presenting one of South Carolina's all time favorite topics, Gravel Roads. Ken authored the gravel roads manual for the Federal Highway Administration.

Another new topic for 2004 will be Fundamentals of Contracts. Dr. Ed Back, a construction management professor from Clemson's Civil Engineering Department, will present this topic.

In 2003, Wayne Sarasua taught a two day, hands-on computer course: "Travel demand forecasting." Wayne will return in 2004 with a two day workshop: "Travel demand forecasting using Transcad." Dr. Sarasua will begin with an introduction to Transcad and both days will offer plenty of hands-on computer exercises.

Although we do not have dates set for all of the workshops at this time, we will post the dates as they are confirmed on our website at http://www.ces.clemson.edu/t3s and also in each issue of our newsletter. We will also continue to mail brochures in advance of each workshop.

While the schedule shown in the table below is tentative, 2004 promises to be an excellent year for T³S workshops with a number of first time offerings. We look forward to seeing you at some workshops this year.

Topic	Speaker	Date	Location
Managing Diversity in the Workplace	Barry Saunders	January	Columbia
SC Highway Conference	Bob Horan	March 24-26	Clemson
Road Safety	Fred Rank	April	Charleston/Columbia
Fundamentals of Contracts	Edward Back	May	Charleston/Columbia
Transcad Hands on Computer	Wayne Sarasua	August	Columbia- 2 Day
Asphalt Pavement Construction	Bob Horan	September	Charleston/Columbia
Unpaved Roads	Ken Skorseth	October	Charleston/Columbia
OSHA Requirements (Trenching)	Van Henson	November	Charleston/Columbia

Safety Zone

Highway Maintenance Safety, Support, and Service

http://gulliver.trb.org/news/blurb_detail.asp?id=2012

Transportation Research Record (TRR) 1824 covers highway work zone safety, maintenance management, inclement weather and nighttime services, signs, and markings. This issue examines speed reduction strategies, law enforcement pullout areas, traffic queues in high-volume urban roadways, retroreflectance of pavement markings and traffic signs, and winter road-maintenance operations.

Geometric Design Consistency on High-Speed Rural Two-Lane Roadways

http://gulliver.trb.org/news/blurb_detail.asp?id=2029

TRB's National Cooperative Highway Research Program (NCHRP) Report 502: Geometric Design Consistency on High-Speed Rural Two-Lane Roadways presents rules on geometric design consistency suitable for use in an expert system such as the Interactive Highway Safety Design Model (IHSDM). The rules can also be used directly by a designer to evaluate roadway designs or to conduct reviews of existing roadways, in order to help improve design consistency and safety.

Pedestrians and Bicycles 2003

http://gulliver.trb.org/news/blurb_detail.asp?id=2017

Transportation Research Record (TRR) 1828 focuses on the safety and convenience of pedestrian and bicycle travel in urban and rural areas. Among the pedestrian research topics covered are methods to reduce traffic speeds in high-pedestrian rural areas, an analysis of North Carolina's guidelines for school walk zones, and an examination of pedestrian safety with a raised median and redesigned intersections. This issue also covers the safety of intersections for cyclists and preferred commuter bicycle routes.

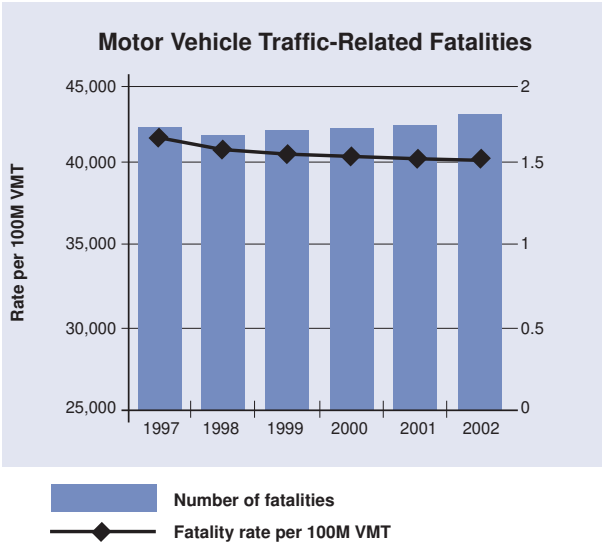
Geometric Design Program

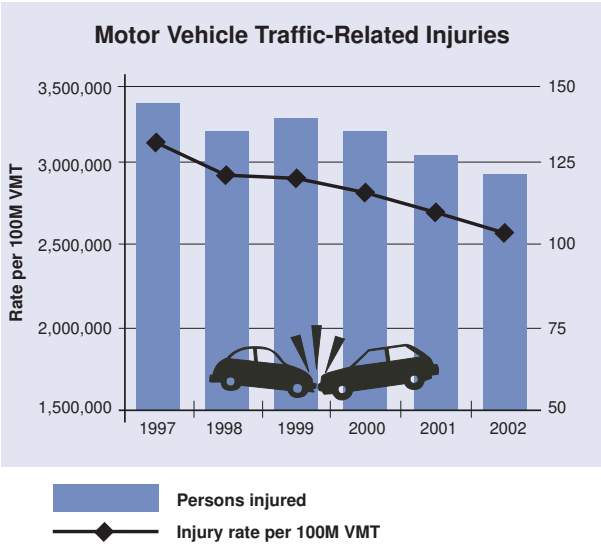
Clayton Chen, a member of the Intersection / Geometric Design team in the Federal Highway Administration (FWHA) Office of Safety Design, is pleased to announce that the newly developed "Geometric Design" program area (http://safety.fhwa.dot.gov/geometricdsgn/index.htm) has been added to the FHWA's Office of Safety website (http://safety.fhwa.dot.gov/programs.htm). At this initial stage, information covered under this Geometric Design program area includes Interactive Highway Safety Design Model (IHSDM), Roadside Safety Analysis Program (RSAP), and Resurfacing Safety Resource Allocation Program (RSRAP). You will find program status, planned activities, technical assistance as well as helpful links to available software, references, reports / documents, workshops and training opportunities from the above website.

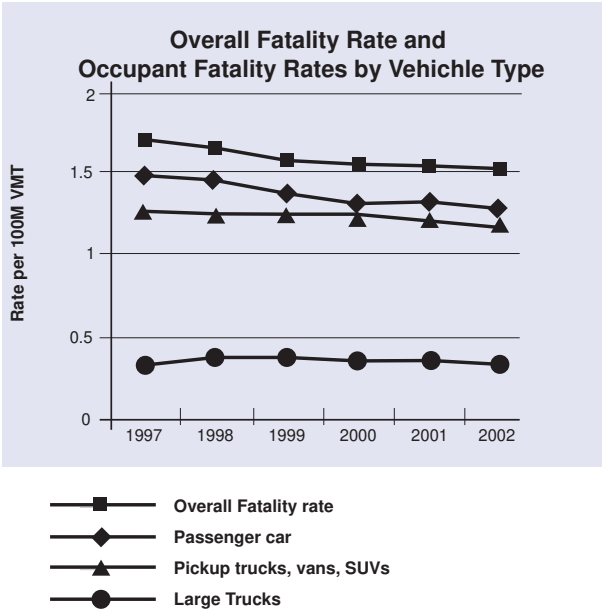
Managing Pavement Edge Drop-Offs to improve Safety and Reduce Tort Liability Workshop

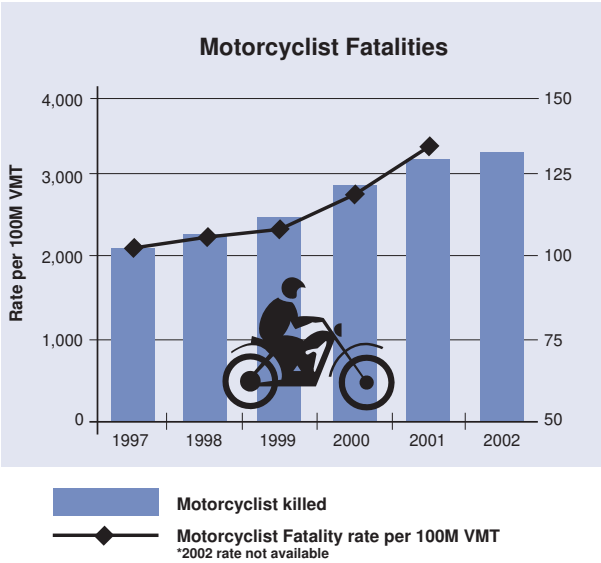
On February 11, 2004, FHWA will sponsor a one-day, invitational workshop to discuss pavement treatment options to reduce and prevent crashes caused by unsafe pavement edge drop-offs. It will be held at the Georgia International Convention Center, College Park, Georgia (near the Atlanta Airport). Prominent speakers will present sessions on pavement drop-off issues including problem identification, research, tort liability, maintenance training, and State experiences with using the beveled edge when resurfacing. Participants expect to become familiar with the pavement drop-off problem and techniques, both existing and those under development. If interested, please contact Harry W. Taylor at harry.taylor @fhwa.dot.gov or Frank Julian at frank.julian@fhwa.dot.gov

Recent Highway Safety Data: Traffic Related Fatalities and Injuries







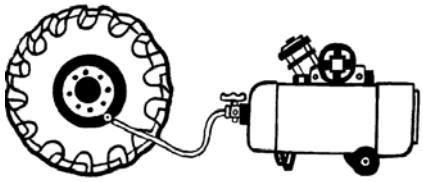


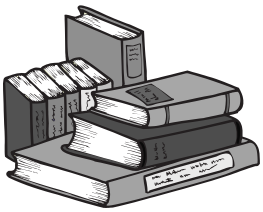
Data sources for the graphs shown are from:
Fatality data: Fatality Analysis Reporting System (FARS), 1996-2000 File, 2001 Annual Report File, 2002 Early Assessment File

Injury data: National Automotive Sampling System (NASS) General Estimates System (GES) 1996-2001. 2002 Early Assessment File

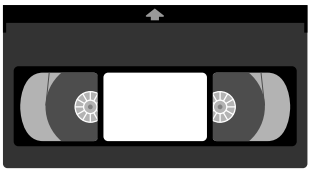
Tire Pressure Drops in Cold Weather

Monitor your tire pressure twice a month in winter because freezing temperatures reduce pressure. According to the Goodyear Tire and Rubber Company, a tire inflated at 32 pounds per square inch (PSI) on a 70-degree Fahrenheit day will register at an under-inflated 26 PSI in cold weather. A properly inflated tire provides optimum traction, which is crucial on icy or snowy roads. It will also last longer.





Publications Available



Publications

US Pavement Markings, brochure, USDOT, FHWA

General Development Process for In-Vehicle Icons, Technical Brief, FHWA

Meeting the 21st Century Challenges of System Performance Through Better Operations, FHWA, PL- 03-012

NCHRP Report 500, A Guide for Addressing Agressive-Driving Collisions, TRB

Safety Priorities, pamphlet, FHWA . Discusses FHWA's focus on reducing the number of highway related fatalities and injuries by focusing on where fatalities and injuries occur and why they occur.

Implementing Local Agency Safety Management, pamphlet, Washington State Technology Transfer Center & FHWA. Discusses Safety Management Systems for reducing fatalities on county roads and city streets.

Pavement Preservation Checklist Series, FHWA. These publications are spiral-bound, pocketsize books, which will assist you in the field. They provide information and techniques that will enable you to maintain roadways that are in need of repair.

Crack Seal Application	Chip Seal Application
Fog Seal Application	Joint Sealing Portland Cement Concrete Pavements
Microsurfacing Application	Thin Hot Mix Asphalt Overlay

Videos

Surveying Safety (17:10) Iowa Department of Transportation. Recognizes the many different kinds of hazards surveyors can find themselves in both inside and outside of the highway workzones, pre–construction and post–construction phases as well as helping the surveyor to realize their responsibility for his or her safety.

Loading , Transporting, & Unloading Safety (11.08) Iowa Department of Transportation. This video focuses on dangerous situations related to large equipment transportation and avoiding unsafe activities, recognizes hazards of visibility around large equipment, and shows awareness of how easily equipment can become unbalanced.

Paving Safety (11:10) Iowa Department of Transportation. Discusses the common hazards of asphalt cement concrete and Portland cement concrete paving operations as well as specific hazards to asphalt cement concrete and Portland cement concrete. This video also recognizes the dangers attributed to night paving.

Structures Safety (12:20) Iowa Department of Transportation. Shows potential dangers presented by other structures already in the construction area, and the l dangers presented by gravity in both below-and above-ground operations.

One Step From Death (11:11) Iowa Department of Transportation. This video emphasizes the need for awareness in the line between the workzone and the traffic zone. Helps the employee realize that the threat to safety lies not just from oncoming traffic, but also from heavy equipment and other contractor vehicles within the work zone.

Information Request and Address Change Form

To order any of the publications, videos, or other materials listed in this or other issues of *T³S Quarterly*, complete this form and mail it or fax it to **Sandi Priddy** at the address or phone number shown below. You can also order videos and publications on-line at *http://*www.ces.clemson.edu/t3s.

The publications in this issue are free to individuals employed by any city or county 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.

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Publications

- ☐ US Pavement Markings,
- ☐ General Development Process for In-Vehicle Icons
- ☐ Meeting the 21st Century Challenges of System Performance Through Better Operations
- ☐ NCHRP Report 500, A Guide for Addressing Agressive-Driving Collisions
- ☐ Safety Priorities
- ☐ Implementing Local Agency Safety Management
- ☐ Pavement Preservation Checklist Series

Videos

- ☐ Surveying Safety
- ☐ Loading , Transporting, & Unloading Safety
- ☐ Paving Safety
- ☐ Structures Safety
- ☐ One Step From Death

Other

Name: _____

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Address: _____

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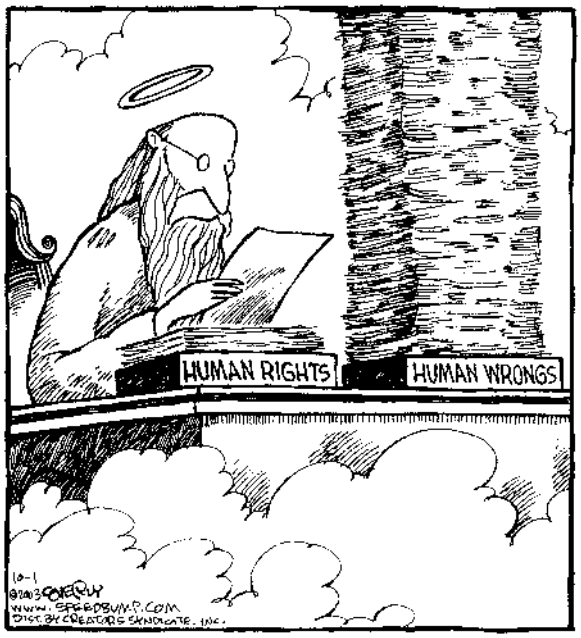
Phone: _____ Fax: _____

☐ ***This is a new address***

☐ ***Please add my name to your mailing list***

SPEED BUMP **Dave Coverly**



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