



Are We There Yet?

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T³S Hosts Peer Exchange

The Transportation Technology Transfer Service (T³S), South Carolina's Local Technical Assistance Program (LTAP) center, held a peer exchange October 26-28, 2005. The goals of the peer exchange were:

- to share information or best practices for improving our program, and
- to review our management process and organizational structure.

Peer exchange participants must be familiar with the LTAP program and are selected and invited by the host state.

Invited participants from other LTAP centers included:

- Lisa Harris, Kansas LTAP, Kansas University Transportation Center
- Marie Walsh, Louisiana LTAP, Louisiana Transportation Center, LSU
- James Martin, North Carolina LTAP, Institute for Transportation Research and Education, NC State University
- Frank Brewer, Tennessee LTAP,

Tennessee Transportation Assistance Program, University of Tennessee

- Ed Stellfox, Maryland LTAP, Maryland Transportation Technology Transfer Center, University of Maryland

Others who participated in the peer exchange included Mike Sanders, SCDOT; David Law, FHWA; Ralph Pearson, Richland County; and Wes Wagner, City of Greer. Ralph and Wes are members of the T³S Advisory Board.

Prior to everyone's arrival in Clemson, we sent out a list of topics that would be discussed during the meeting. Each invited member of the peer exchange team also gave an overview of their center's overall structure.

Some of the topics considered during the peer exchange included:

- Database management.
- Purging outdated names from your database.
- On-line registration directly into your database.

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The LTAP Center for South Carolina



Controlling Erosion on Local Streets and Roads

A look at erosion control problems and solutions at the local level

Local government street and road maintenance managers face unique erosion control problems. With narrower street right-of-ways than their state and Interstate cousins, construction-related erosion, blocked drainage systems, and unvegetated shoulders present constant challenges.



Blanket logs hold newly seeded vegetation in place on a steep slope.

Erosion is primarily caused by water, but wind and gravity add to the problems — especially in new street or complete road rehab conditions.

Soil type makes a big difference too, with sandy soil having the best infiltration rate and clay soil being most susceptible to runoff and erosion.

Four basic steps help control erosion:

1. Slow water movement.
2. Divide the runoff.
3. Aid water infiltration.
4. Use mechanical and/or structural retention methods.

Vegetation is the erosion controller's friend. Establishing or replanting vegetation with appropriate shaping can handle much of any excess water flow. When vegetation alone isn't enough, other bioengineered or mechanical methods or structures may be needed.

When creating an erosion control plan, the following Minnesota Local Road Research Board checklist provides the basics:

- Minimize both the area and time that soil is exposed.
- Manage stormwater moving across a site by reducing its velocity and volume.
- Install erosion and sediment control measures early in construction and keep them well maintained.
- Keep sediment on site.
- Staged seeding as areas of a project are complete can reduce erosion by 90%.
- Maximize vegetation establishment by selecting the appropriate seed, knowing and preparing the soil, preparing the seedbed, and planting at the right time.

Construction and control

Street and other projects that disturb an acre or more come under

stormwater permitting requirements in many areas, and these require both temporary and permanent erosion and sediment control plans.

Temporary erosion control, when construction bares the street's soil, should include:

- Minimization of the area exposed at one time and exposure duration. This can be achieved with a staging plan that specifies temporary seeding as areas of construction are completed.
- Minimization of the disturbed area. Clear only within a limited construction area or as required for safety or clear zones.
- Use erosion control practices throughout the project. This includes covering soil, roughening the slope on the contour, or tracking the area with a cleated dozer.
- Placing the gravel base as soon as the subcut is finished.
- Stripping existing topsoil and storing it for later use. Stockpiles should be seeded.
- Temporary mulching and seeding should be repeated as needed throughout the work.
- Erosion control costs less than sediment control, so give it your attention.
- Stabilize small critical areas such as culvert outlets.

Use care when counting on earth diversions to control runoff. They can erode and intensify erosion problems — especially on grades greater than 5%.

Wide, shallow channels with dense vegetation can encourage infiltration and help trap pollutants.

Erosion control blankets and

(cont. on page 4)

Temporary Erosion Control Measures			
Practice	Material	Equipment Needed	Effective Duration
Temporary slope mulching	Mulch type 1, 3	Mulch blower	1+ rain event of up to one month
Temporary slope mulching	Spray-on newspaper/wood mulch	Hydroseeding	1+ rain event of up to one month
Temporary slope seeding, fertilizing, and mulching	Seed	Any mechanical , seeder mulch blower	One field season
Grading slopes (shaping, rounding)	Topsoil	Shaping dozer	Should be done before temporary seeding
Ditching stabilization within 200 feet of a stream	Erosion control blanket	Rake, shovel, staples	Project duration
Pipe inlet protection	Erosion control blanket	Rake, shovel, staples	Project duration
Runoff velocity control	Very high-flow geotextile	Soil sliced silt fence machine	Project duration

Erosion Control Devices	
Device	Application Areas
Earth diversions and swales	Use at construction perimeter, toe of slopes, around stockpiles, near wetlands
Erosion control blanket	Slopes steeper than 1:3 and in v-shaped erosion ditch bottoms
Stabilization mats	Use on longer-term projects
Mulching and turf establishment	To hold bare soil in idle areas; in areas with exposed soil 200 linear feet from a water source
Ditch checks	Use at the crest of back or fill slopes or to divert runoff from a work area
Sandbag barrier	To protect excavations, for culvert replacements, to dike channel changes, and to serve as sumps during dewatering
Shaping and grading	Slopes and ditches as construction progresses
Silt fence	As temporary barrier to filter sediment from sheet flow
Soil berms	Where land adjacent to a planned-cut section drains toward a road, and the area will yield sufficient runoff to cause erosion
Temporary slope stabilization	To convey drainage down cut or fill slopes and pipe down drain
Triangular silt dikes	Place in ditches with slopes of 6% and less; use only during construction

Vegetation, ditching, runoff spreaders, and bioengineering are some of the best methods of permanent erosion control.

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stabilization mats can help hold the soil in place on steep slopes and in areas without vegetation. Bury the top end of the blanket at least 6 inches to ensure that water moves over it and not under it.

Mulch can also provide cover for bare soil or newly planted vegetation. More than the shoulders need erosion control during construction. Disturbed areas near culverts and drain inlets and outlets, embankment slopes, and bridge slopes that drain toward a river or stream also require attention.

Soil berms can be erected to temporarily channel water toward drainage systems.

Temporary drains using plastic or metal pipe can be used to move water away from erosion-prone areas.

Filters, berms, and sediment basins are considered perimeter control devices. These reduce runoff and let soil settle back into place.

A silt fence or a tiered silt fence can prevent soil runoff into streams



Lack of vegetation along this country road led to serious erosion problems.

or rivers near street or road construction.

Permanent erosion control

Vegetation, ditching, runoff spreaders, and bioengineering are some of the best methods of permanent erosion control.

The street should have an adequate right-of-way to provide gentle sloping and adequate use of roadside vegetation.

The erosion control plan should preserve roadside trees and shrubs where possible, since these will absorb large amounts of water.

Build shoulders at angles to ensure slope stability and use existing vegetation.

Note natural drainage patterns and work these into your plan.

Remember that natural materials such as vegetation, soil, and riprap provide erosion control at an economical cost.

Plants help reinforce the soil and provide drainage and wicking.

Permanent Erosion Control	
Device	Application area
Design elements	The entire project area can be positively affected by good design
Ditches and liners	Ditches
Detention pond	Regional ponds with larger drainage areas are generally more cost effective than site basins
Riprap	At pipe outlets, in ditches
Runoff spreaders	On shoulder slopes at super-elevated curves, adjacent to shoulder on vertical curves, broken-back safety fill slopes
Soil bioengineering	Along streams or shorelines
Turf establishment	Everywhere on a project, including temporary stockpiles and borrow locations

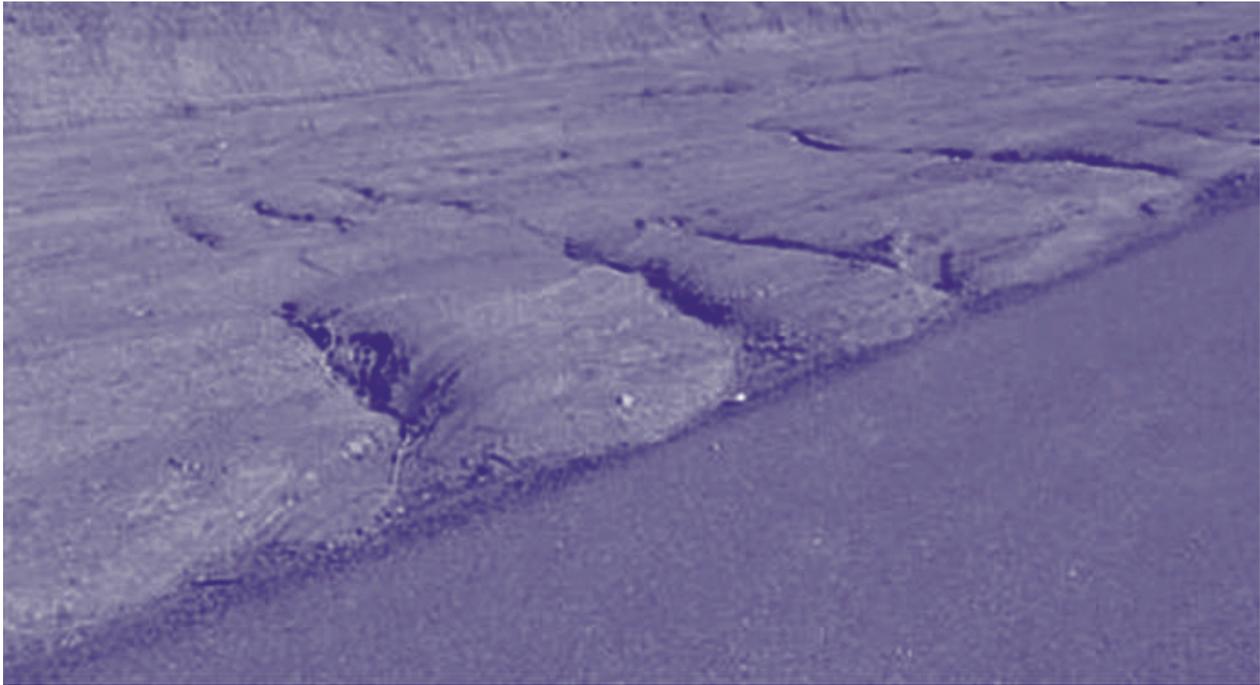


Photo shows how lack of vegetation allowed erosion and road damage

Brush layering uses easily grown plants such as dogwood to help hold soil on steep slopes.

Focus of vegetation

The Texas Department of Transportation has researched erosion control capabilities of native plants compared to introduced species. Surprisingly, they found that native wildflower and grasses were less effective than introduced species such as Bermuda grass.

California research also looked at vegetation as an erosion-control method. They developed an end-user software program called Highway Erosion Assessment Tool. This evaluates data collected on site related to slope, vegetation coverage, soils, parent material, aspect, and so on.

Fifty-seven sites were monitored with the criteria of:

- Sites where the last significant construction activities took place from one to 10 years ago.
- Sites where some type of construction specs and design drawings were potentially available.
- Sites with a history of erosion challenges.
- Sites that had apparent erosion control measures currently being implemented or implemented as part of construction.

- Sites designated as a concern by staff.
- Sites with some successful erosion control, or sites with successful and unsuccessful erosion control practices to offer paired comparisons.
- Sites representing significant geographic, climatic, or soil conditions.
- Sites with diverse geographic, climatic, or soil characteristics to avoid repetitious evaluations.

Use of the program helped determine the types of most useful vegetation, conditions where vegetation could help most, and so on.

San Juan County, Washington reuses vegetation after local road construction. Plants are removed and roots kept moist and covered with mulch until replanting. Cut-and-fill areas have slopes warped to give a more gradual grade to better support replanted vegetation.

Local crews also avoid disturbing key roadside vegetation when grading roads as an additional erosion-control method. ▼

Written by Ruth W. Stidger, Editor-in-Chief of Better Roads. Originally printed in the

Erosion Control Videos

Videos that can help train construction crews in erosion-control practices for local roads provide sound help:

- Culvert Pipe Placement; Pennsylvania Department of Transportation; 9 minutes.
- Culverts: Not Just Something to Pass Over; University of Wisconsin-Extension; 20 minutes.
- Ditch Maintenance; Federal Highway Administration; 17 minutes.
- Drainage Pipe Installation; Pennsylvania DOT; 18 minutes.
- Drainage Structures; FHWA; 35 minutes.
- Erosion Control for Water Quality Protection; Cobbossee Water District and the Maine Department of Environmental Protection; 25 minutes.
- Importance of Road Drainage; FHWA; 19 minutes.

October 2005 issue of Better Roads. If you wish to subscribe, please visit www.BetterRoads.com.

A Digital World of Pavements

A world of pavement information is now available with one click at www.fhwa.dot.gov/pavement. The Federal Highway Administration's (FHWA) new topic-based Web site is the one-stop destination for information on everything from pavement design and construction to maintenance and rehabilitation.

Visitors can select a specific topic, such as design, or choose a focus area, such as "Optimize pavement performance," "Advanced quality system," "Pavement surface characteristics," or "Environmental stewardship." Also featured are listings for publications, software, upcoming conferences and events, and workshops and training, including National Highway Institute courses. Additional options for site users include looking up technical guidance and technology transfer resources, as well as information on pavement research.

Site visitors can also find links to pavement-related communities of practice, such as one on the Mechanistic-Empirical Pavement Design Guide. A list of links to other useful Web sites offers related sites in the categories of asphalt, concrete, recycling, and the Long-Term Pavement Performance program.

The site's comprehensive list of contacts include FHWA staff across the country, as well as State highway agencies' key personnel and contacts at various industry associations.

For information on specific pavement subjects, please contact the individuals listed by topic on the Web site. For more information on FHWA's topic-based Web sites, contact Bob Hayes at FHWA, 202-366-4970 (email: robert.hayes@fhwa.dot.gov). A topic-based site is also available for hydraulics engineering (www.fhwa.dot.gov/engineering/hydraulics), with additional sites for other program areas under development. ♣

2006 Workshop Dates Planned

The tentative list of T³S workshops that will be offered in 2006 has been established. We have several new courses that we will be presenting along with topics that have remained popular through the years.

In 2004 T³S became a co-sponsor, along with the Clemson Extension Service, the SC Department of Transportation, and the SC Department of Health and Environmental Control, offering "Certified Erosion Prevention and Sediment Control Inspector" course numerous times throughout the year. Back by popular demand, we will again offer these courses in the spring along with a new course entitled "Plan Review," which will be a two-day course designed for technical staff who are not licensed professional engineers.

"Chainsaw Safety" was of the most popular new classes for 2005. We will offer an advanced chainsaw safety class in 2006 and are negotiating to present a zero-turn lawn mower safety class as well.

Dr. Edward Back, a first time presenter for T³S in 2005, returns to present "Project Scheduling."

Mike King from Kentucky, will again be presenting a management course, "Basic Supervision."

Fred Ranck from FHWA will be back to present a new topic on Roundabouts. We will also be introducing Dane Ismart, formerly with FHWA, who will present "Asset Management," another new course planned for 2006.

We are also currently planning the Fourth Annual Count on Concrete Conference.

We had also planned to offer a new workshop on basic surveying techniques in 2005. We were unable to offer the course in 2005 but plan to offer it in 2006.

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- Newsletter articles.
- E-mail distribution of newsletters, course brochures, and other communications.
- Promotional issues such as advertising materials and trade show exhibits.
- Identification of and evaluation of instructors.

- Software selection, including database and publication software.
- Circuit rider programs.
- Division of work responsibilities among center staff.

Invaluable information was gained during this meeting that we can implement to enhance the service that we provide to our clients throughout the state of South Carolina. ♣

Ralph Pearson Retires

If you have ever met Ralph Pearson from Richland County, chances are he is one person you will never forget. After 31 years as the Richland County engineer, Ralph is retiring on December 30th. Ralph grew up in Aiken, SC, and received both his undergraduate degree (1970) and masters degree (1984) from the University of South Carolina. He began his career with the SCDOT in 1970 working with the bridge design group. He then worked for a consulting firm for a short time before beginning his career with Richland County. During his tenure at Richland, he has been active in APWA and has been a tremendous support to the T³S program. Ralph serves on our advisory board and will be greatly missed.

Early in his career he saw the need for a county atlas and took the initiative to develop and produce a road atlas for the county. Richland County has 400 miles of paved road and 250 miles of unpaved roads and has 350,000 residents. Ralph considers this a major accomplishment of his career. Other accomplishments during his tenure with Richland County include developing both pavement and geometric design standards for the county.

We all have work related “war stories,” and when I asked Ralph about his all time favorite, he shared this experience. He had a paving crew on a job site and had a complaint from a citizen that the crew was paving on her private property. She asked him to investigate so Ralph went out to the job site. He was trying to determine where the owner’s property line was and was looking for the property pins.

The complaining citizen, not realizing who was on her property, called the sheriff and had Mr. Pearson arrested for trespassing. He was finger printed, had his mug shot taken, and then was later released. As a memento from this event and the days when prisoners worked on road crews, he still has some prison garb as a reminder.

On a personal note, Ralph has been married for 37 years to Beth and has two daughters, Aimee, who just

gave him his first grandchild in August, and Jennifer, who shares something in common with her dad. Jennifer also began her career with the SCDOT and worked on the Cooper River Bridge project.

Ralph has several hobbies, one of which is very unique. In November, Ralph and a group of his friends make cane syrup from sugar cane. He likes antiquing and also enjoys sailing and scuba diving. He looks forward to traveling after retirement and playing with grandchildren. One of his first after retirement ventures will be a Windjammer cruise with his wife to St. Vincent and the Grenadines, West Indies.

Ralph has no regrets about his career with Richland and stated that Richland has given him a better career than

he deserved. Thank you, Ralph, for your hard work and dedication. We salute you. ♡



Safety Zone



BUCKLED UP! Seat belt usage reaches an all-time high



A record 82 percent of Americans wear their safety belts while driving or riding in their vehicles, the Department of Transportation announced Sept. 30.

In the past five years, safety belt use has increased steadily from 71 percent in 2000 to 82 percent

this year. The increase in belt use over the past year alone has prevented 540 fatalities, 8,000 serious injuries and \$1.8 billion in economic costs.

DOT attributes the trend in large part to states that have passed primary safety belt laws. Twenty-one states, the District of Columbia and Puerto Rico have primary safety belt laws that allow police officers to stop a motorist solely for belt violations.

Simple, low-cost changes can reduce urban car crashes

Did you know that 8,000 deaths and more than 1 million injuries occur each year on America's urban arterial roads? Many of these crashes are not just bad luck, but take place at predictable locations and involve predictable sequences of events leading up to the accidents. A new study by the Insurance Institute for Highway Safety shows that researching local arterial roads and making some relatively simple and inexpensive changes can drastically diminish the number of accidents that take place.

(Cont. on page 9)

Health Zone

Methamphetamines

Methamphetamine has experienced widespread use in rural areas of the Midwest but is also becoming increasingly popular in metropolitan areas. Use is most prevalent among teens and young adults between the ages of 12 and 30. Women are just as likely to use meth as men.

Methamphetamine stimulates the central nervous system. Users experience a feeling of exhilaration and a false sense of well being followed by a severe crash, users continue to take the drug in increasing doses, making it highly addictive.

Methamphetamine users may appear restless, anxious or paranoid. Some users exhibit aggressive behavior and impaired judgment, and they may experience hallucinations.

Is there a Meth Lab Near You?

Methamphetamine labs are often located in rural areas because of the strong odor produced by the manufacture of methamphetamine. According to the Illinois State Police, some common signs of a meth lab include:

- Unusual, strong odors similar to cat urine, ether, and ammonia;
- Residences with windows covered or painted;
- Renters who pay their landlords in cash;
- Traffic - people coming and going at unusual times, especially at night;
- Excessive trash including items such as antifreeze containers, propane tanks, drain cleaner, starter fluid or duct tape; and
- Unusual amounts of clear glass containers being brought into the home.

If you suspect the manufacture of meth in your community:

- Keep your distance - labs can explode from the volatile chemical combinations used to produce the drug.
- Call local law enforcement or the state police. If you find trash items used in the production of meth, do not attempt to dispose of them yourself.



This article was adapted from the Illinois Attorney General's Methamphetamine Brochure.

Richard Retting, senior transportation engineer at the Insurance Institute for Highway Safety says, "Urban arterials weren't built to accommodate today's heavy traffic. They've evolved as traffic has increased, and they haven't always evolved in the best way to enhance safety and ensure a smooth flow of traffic. It's a matter of studying the urban arterials to pinpoint where crashes are occurring frequently and then identifying potential solutions, looking first for less costly measures that can be implemented more quickly than major re-engineering."

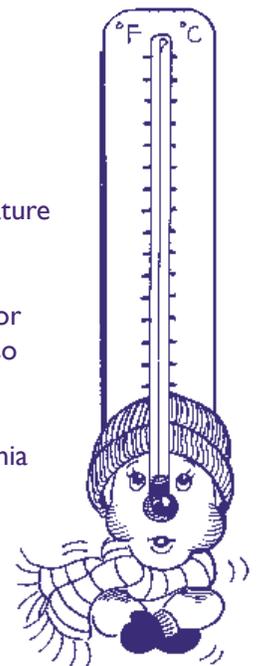
Retting led a study of suburban Fairfax County, Va., near Washington, D.C. Once problem areas were found, measures such as adding protected left-hand turn signals at problem intersections or moving a bus stop a few hundred feet dramatically reduced and sometimes eliminated crashes at those sites altogether. These measures were not very costly.

Here is a summary of improvements made through the study over a period of two years:

Targeted Crash Type	Average Crashes/Yr. Before	Solution	Average Crashes/Yr. After
Left Turn	8.7	added protected turn signal	0.0
Left Turn	4.6	added protected turn signal	0.0
Rear End	8.3	extended merge lane	3.0
Rear End	8.2	extended merge lane	0.9
Rear End	3.5	eliminated bus stop	1.4
Rear End	4.3	widened shoulder to accommodate bus stop	2.5

Warning Signs of Hypothermia

During cold weather, it's important to watch out for the signs of hypothermia, a dangerous condition that occurs when the body temperature falls so low that it impairs physical and mental functioning. Some symptoms are what you might expect — complaints about being cold or uncontrolled shivering — but others are not so obvious. The Mayo Clinic advises watching for impaired or slurred speech, blurry vision, and clumsy movements. In severe cases, hypothermia can cause stiff muscles, dark and puffy skin, irregular heart rate and breathing, and unconsciousness. If you think someone might be suffering from hypothermia, take him or her to a warm, dry place and call for medical attention immediately.



Lost and Found: Historic Battlefield Discovered During Bridge Project

In the early morning hours of November 9, 1780, General Thomas Sumter and his American patriots drove Major James Wemyss and his British troops from a field at Fish Dam Ford on the Broad River in Chester County, SC. Along with the better known engagements at Kings Mountain and Cowpens, the skirmish was one in a series of battles that turned the tide of the Revolutionary War in South Carolina and led to the British surrender at Yorktown, VA. Over the years, the exact location of the Fish Dam Ford Battlefield was lost, and many scholars believed the site was destroyed by a quarrying operation. That is, until recently.

While conducting preliminary archaeological studies for a project to replace a bridge over the Broad River, researchers working on behalf of the South Carolina Department of Transportation (SCDOT) inadvertently discovered the location of the long-lost battlefield. To protect the historic site, one of the few undisturbed Revolutionary War battlefield sites in the State, SCDOT and the Federal Highway Administration (FHWA) purchased 143 acres from the landowner and donated them to the South Carolina Department of Natural Resources (SCDNR).

The key to finding the battlefield location was the discovery of a map drawn by battle participant Colonel Richard Winn. A researcher from the Museum of York County in South Carolina found the historic map among Winn's memoirs in the Library of Congress. The map showed that the battle site was on the opposite side of the river from the quarry. After the discovery of the battlefield, SCDOT engineers designed the new bridge to minimize its impact on the historic site.

Archaeological investigations performed as part of the environmental documentation for the project led to the discovery of several rifle pits, or two-man foxholes,

and the patriots' campsite. The camp was buried under approximately 2 meters (7 feet) of alluvial sediment deposited by the Broad River during the late 19th and early 20th centuries. The investigators also found unfired musket balls in the rifle pits and at the camp. In addition, the investigators recovered other artifacts from the camp area, including pewter buttons marked "USA."

Purchasing the land not only preserved a historic treasure but also helped the agencies avoid the costs and delays that would have been required for conducting an archaeological

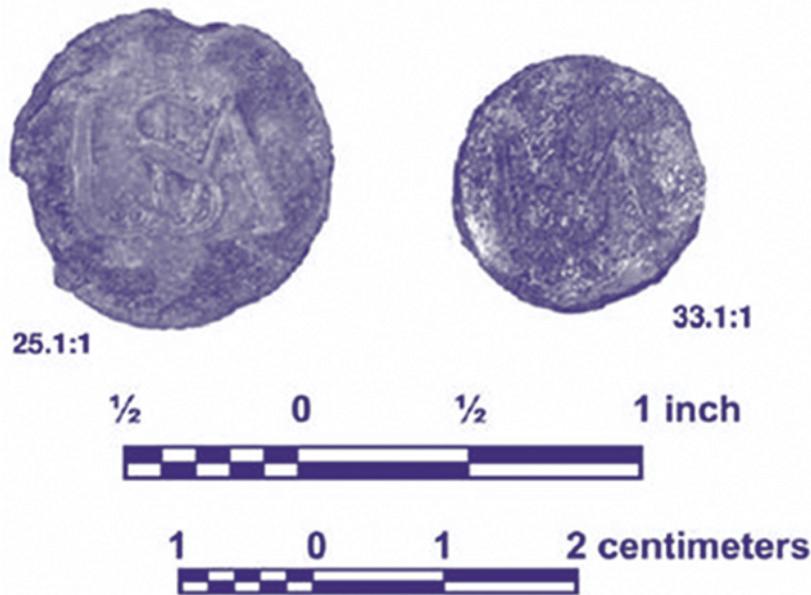
excavation before constructing the new bridge. The \$300,000 land purchase resulted in a \$1.5 million savings over SCDOT's original plan to acquire only 30 acres and conduct invasive excavations. Further, the innovative approach of acquiring and preserving the battlefield supports FHWA's initiative to promote environmental stewardship and streamlining.

In June 2005, FHWA and SCDOT hosted

a ceremony attended by Federal, State, and local officials to celebrate the acquisition of the battlefield site. SCDNR will preserve the site under South Carolina's Heritage Trust Program. Created in 1976, the program protects areas of historical, cultural, and archaeological significance and opens them to the public for educational and recreational uses.

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Among the artifacts recovered from the battlefield site were these pewter buttons marked "USA." (Photo Credit: SCDOT)

Information Request and Address Change Form

Videos and publications from our library are available on-line at www.ces.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.

Transportation Technology Transfer Service

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Publications

- Roadway Safety Hardware Asset Management Systems Case Studies*
FHWA, HRT-05-073
- Analytical Tools for Asset Management*, NCHRP 545, TRB.
- Asset Manager PT*, Version 1.0 Users Guide, Cambridge Systematics, Inc.
- Access Rights, A Synthesis of Highway Practice*, NCHRP Synthesis 351,

DVD

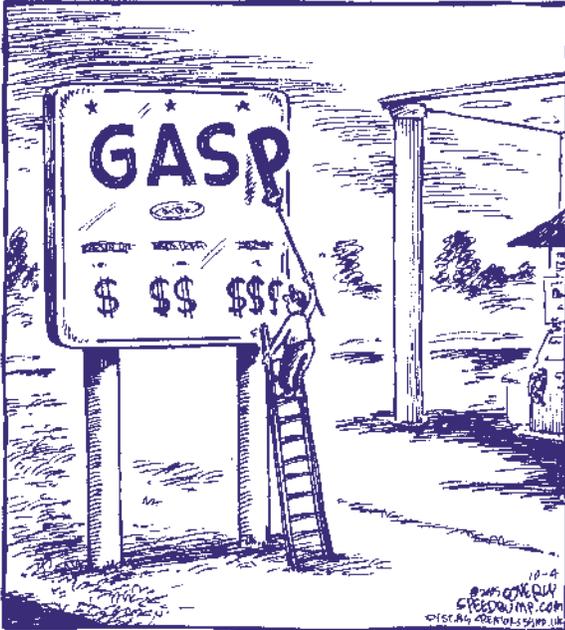
- Flagging in the Work Zone, Safety in Your Hands*, Oregon T2 Center and FHWA
Covers proper flagging practices and techniques that help make work zones safer for flaggers, workers, and roadway users.
- Pavement Preservation Toolbox (Strategies for Preventive Maintenance Programs)*, FHWA. Slurry seal and Micro-surfacing are two of the tools available in the Pavement Preservation toolbox that can provide cost-effective options to prolong pavement life/
- Preventive Maintenance—It’s A Decision and Surfacing Systems*, (ISSA). The package explains the advantages, benefits, and economics of Pavement Preservation and Slurry System preventive maintenance treatments for existing asphalt roadways.

Other

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SPEED BUMP

Dave Coverly



Are We There Yet? is published by the South Carolina Transportation Technology Transfer Service (T³S) for the benefit of county and municipal government agency personnel in South Carolina. T³S, administered by the Clemson University Civil Engineering Department, is the Local Technical Assistance Program (LTAP) center for SC. T³S is part of a nationwide network of LTAP centers established by the Federal Highway Administration (FHWA) in cooperation with state transportation agencies. T³S is jointly funded by FHWA and the South Carolina Department of Transportation (SCDOT). The views, opinions, and recommendations contained in the newsletter do not necessarily reflect the views of the FHWA or the SCDOT.

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