TECHNOLOGY NEWS
Iowa's Local Technical Assistance Program (LTAP): providing transportation technology transfer for Iowa's cities and counties

March–April 2003

Acronyms in this issue

AASHTO	American Association of State Highway and Transportation Officials
CTRE	Center for Transportation Research and Education
FHWA	Federal Highway Administration
Iowa DOT	Iowa Department of Transportation
ISU	Iowa State University
LTAP	Local Technical Assistance Program
MUTCD	Manual of Uniform Traffic Control Devices

Iowa's "border to border" enforcement projects

ENCOURAGING MOTORISTS to obey speed limits, drive responsibly, and wear their seat belts is a significant traffic safety issue that law enforcement agencies take seriously. Coordinated corridor enforcement efforts can be particularly effective.

"Seeing a string of cops slows people down," says Captain Bob Rushing, law enforcement liaison with the Iowa Governor's Traffic Safety Bureau (GTSB), a position administered by CTRE.

In 2002, nine "border to border" corridor projects were conducted on

- US Highway 34, April 25
- Interstate 29 and Avenue of the Saints, May 23
- US Highway 61, June 21
- Interstates 35 and 80, August 29
- US Highway 71, September 12
- US Highways 20 and 30, October 17

More than 1,000 law enforcement personnel from many different city, county, and state police and public safety departments cooperated in each event leading to more than 6,000 speeding violations and more than 2,500 safety belt violations. Approximately 60 motorists were also arrested for operating while intoxicated (OWI), and 150 commercial vehicles were put out of service.

Rushing, a retired captain from the West Des Moines Police Department, coordinates all the corridor enforcement projects each year and responds to local requests for such projects. "We tune the motoring public up pretty frequently in Iowa," he says.

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(Top) Law enforcement personnel from six agencies participated in the I-80 event in Pottawatamie County. (Bottom) During this traffic stop on US 61 in Dubuque County, officers discovered that the vehicle was stolen, and the driver was arrested.

Correction

The cover story in the January–February 2003 issue of *Technology News* inaccurately defined fiber reinforced polymer (FRP) as "a . . . resin system reinforced with . . . glass or epoxy fibers." Wally Mook, director of public works for the City of Bettendorf, has pointed out that the correct definition is "a . . . resin system (polyester, vinyl ester, or epoxy resin) that holds together a system of glass, carbon, or Aramid fibers."

Thanks for straightening us out, Wally.

Preparation of this newsletter was financed through LTAP, a nationwide effort financed jointly in Iowa by the FHWA and the Iowa DOT. Iowa's LTAP is housed and administered at ISU's Center for Transportation Research and Education (CTRE).

The mission of Iowa's LTAP: To foster a safe, efficient, environmentally sound tranportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer, thus improving the quality of life for Iowans.

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Roads Scholars earn recognition for training

IOWA's Roads Scholar program quietly kicked off in 2002, and now it's time to make a little noise. Already several people have earned enough credits to qualify as "scholars."

The Roads Scholar program recognizes transportation workers who are committed to improving their skills and increasing their knowledge. The program consists of

- a core curriculum of training workshops,
- a system for tracking individuals' workshop attendance, and
- recognition for levels of achievement (see the sidebar below).

How to participate
Participation is automatic and free to anyone who attends a qualifying workshop* or has participated in at least one such workshop since January 2000.

Iowa Roads Scholar Levels

Level	Contact Hours (Credits)
Roads Scholar I (approximately 6 workshops)	30
Roads Scholar II (approximately 10 workshops)	50
Senior Roads Scholar† (approximately 14 workshops)	70
Master Roads Scholar (approximately 20 workshops)	100

† Five core courses must be completed to achieve Senior Roads Scholar. They are
- Basic math
- Flagger training
- Work zone safety
- Iowa Maintenance Training Expo
- Supervisory fundamentals

Check your status
Nearly 4,000 Iowans have received credit for workshops they've attended since January 2000. To check the number of credits you've earned in the program, see the Roads Scholar website, www.ctre. iastate.edu/roadscholar/.**

If you can't find your record in the online database, contact Lori Wildeman, program coordinator, 515-294-1866, lwild@iastate.edu.

If your record doesn't include credit for a particular workshop you've attended since January 2000, send Lori a copy of the workshop certificate (fax 515-294-0467), and she'll add the credit to your record.

Supervisors can also review their employees' training records.

Register for workshops online
CTRE and LTAP-sponsored workshops will be posted on the Roads Scholar website. Online registration will be available (though online payment will not).

Individuals can register themselves, or one person can register several people from one shop.

Workshop registration brochures will continue to be mailed to cities and counties, and you can continue to register by fax or e-mail if you wish.

For more information
Contact Lori Wildeman, LTAP program coordinator, 515-294-1866, lwild@iastate.edu, or see the program website, www.ctre. iastate.edu/roadscholar/. •

* Qualifying workshops: You'll automatically earn Roads Scholar credit when you participate in LTAP or CTRE-sponsored workshops. You may earn credit for attending workshops sponsored by other organizations. To find out, contact Lori Wildeman, 515-294-3781, lwild@iastate.edu.

** While you're checking your workshop attendance record, you can update your address and other contact information. This information is for CTRE communications only.

Enhanced sign for safer moving operations

IMPROVING SAFETY for motorists and workers was the motivation behind the enhanced sign. The standard orange "road work ahead" sign was enhanced with a six-inch fluorescent yellow green background. Hanging this sign on the back of a truck makes moving operations more visible.

The Iowa DOT maintenance crew in Sidney developed the sign, and the Iowa DOT's Employee Safety and Health Team suggested improvements to it.

See assembly instructions below. Materials include

- a 48" x 48" plywood sign (options: Road Work Ahead, One Lane Road Ahead, Right/Left Lane Closed Ahead)
- a 60" x 60" sheet of aluminum with a 34" x 34" center cut-out
- fluorescent yellow green sheeting for a 6" border
- two hangers/brackets
- four each: lock washers, nuts, flat washers, and 3/8" x 2" bolts

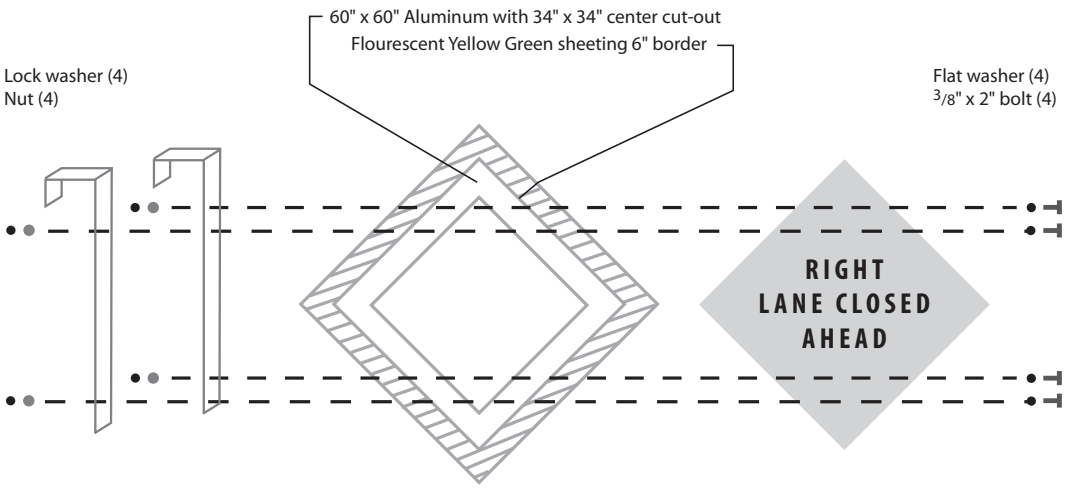
The materials cost approximately $150 for the background only, $250 including the work zone sign.

The fluorescent yellow green background makes this orange sign stand out when hanging on an orange truck. (Note: For demonstration purposes only, the sign in this photo was hung on the side of a truck.)

For more information, contact Jeff McQueen, Sidney maintenance shop, 712-374-2515, or Barb Mallon, Employee Safety and Health Team, 515-239-1594.

Editor's note: The "enhanced sign" is one of several winning innovations from the Better Mousetrap competition at the Iowa Maintenance Training Expo in 2002. In each issue of Technology News we're highlighting one of the winners. For information about other winning "mousetraps," see CTRE's website: www.ctre.iastate.edu/ ("Popular Links"). •

ASSEMBLY INSTRUCTIONS
FYG BORDER SIGN FOR MOVING OPERATIONS



Iowa Department of Transportation

LOCAL TECHNICAL ASSISTANCE PROGRAM IOWA LTAP 1st CENTER

CTRE
Center for Transportation Research and Education

IOWA STATE UNIVERSITY

GASB Statement 34: On-ramp to transportation asset management or detour to business as usual?

Tom Maze, transportation engineer
Omar Smadi, pavement management specialist

Local governments shouldn't adopt asset management systems because of an accounting standard. They should adopt them because such systems improve the return the public receives from its investment in public infrastructure.

WHEN PUBLISHED in 1999, Governmental Accounting Standards Board Statement 34 (GASB 34) represented the most significant change to Generally Accepted Accounting Practice (GAAP) since accounting standards were established in 1934. Especially important was a new requirement that government agencies capitalize infrastructure assets in their annual comprehensive financial reports; that is, they must include historical value.

Organizations with more than $100 million in annual revenue should have completed their first financial reports under this new requirement on July 1, 2002. The deadline for smaller organizations takes place over the next two years.

To determine how GASB 34 requirements are being implemented, CTRE recently surveyed several large midwestern cities about their methods for capitalizing infrastructure assets. The results were not what we would have expected when GASB 34 was published.

None of the cities surveyed uses the asset management approach (called the "modified approach" in GASB 34).

Two ways to capitalize assets
GASB 34 allows agencies to value their infrastructure using either of two approaches.

One is conventional depreciation, whereby the original cost of constructing an asset is the asset's historical value, that value is depreciated over the asset's estimated life, and depreciation becomes an annual expense. Preservation activities that add to the life of the asset are applied to its capitalized cost.

The other method, the modified approach, supports asset preservation. Agencies identify a minimum condition for each asset and manage the asset to maintain or exceed the minimum condition. Costs to maintain and preserve assets become an annual expense.

The modified approach requires the use of management systems (pavement, bridge, signs, etc.) to ensure the condition standard is met.

The difference between these two approaches is that

- the depreciation method depreciates assets over time and
- the modified approach preserves asset value.

Differences in accounting for capital, preservation, and maintenance costs under each approach are shown in the table below.

	Depreciation Approach	Modified Approach
Maintenance costs	Expense	Expense
Preservation costs	Capitalize	Expense
Additions and improvements costs	Capitalize	Capitalize

Public works support
The modified approach was included in GASB 34 due to the encouragement of the public works community, including lobbying by AASHTO. Their rationale was that public works professionals seek to preserve their infrastructure assets, and the modified approach simply represents good management practice.

When GASB 34 was adopted, most public works professional organizations encouraged use of the modified approach; the APWA officially endorsed it.

Survey approach
To understand how widely the modified approach is being used, we interviewed financial managers at nine large cities that have produced GASB 34-compliant financial reports. These cities are in Iowa, Minnesota, Nebraska, and South Dakota.

To receive consistent information, we developed a brief series of questions. The questions involved determining the following:

1. What approach was used to capitalize assets (depreciation or modified approach)?
2. What role did asset management systems play in the development of GASB 34-compliant financial reports?
3. What value was derived from compiling GASB 34-compliant annual financial reports?

Findings
1. None of the cities used the modified approach, even though public works managers generally supported its use. Financial managers, who take the lead in compiling GASB-compliant reports, generally preferred conventional depreciation.

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FIND A COMPLETE LISTING OF TELEPHONE NUMBERS AT
http://www.dot.state.ia.us/dotdiv.htm

A LOOK INSIDE THE

In 2002 the Iowa DOT reorganized its managerial and administrative structure. Some changes are significant for local agencies.

Less centralized, more local
District engineers now have more administrative authority. Under the new organization, they

- can issue utilities and access permits;
- can make maintenance decisions in the field;
- are encouraged to integrate local activities like traffic safety, utilities, and construction and maintenance. The district engineer can direct local engineers to other sections within the district that can help.

Overall structure
The Iowa DOT's administrative structure now consists of six district offices and seven divisions: Highway (combined maintenance, engineering and project development into a single division), Planning and Programming, Modal, Information Technology, Director's Staff, Motor Vehicle, and Operations and Finance.

Most divisions offer services to local engineers and transportation authorities.

For more information
To learn more, contact Dena Gray-Fisher, 515-239-1922, dena.grayfisher@dot.state.ia.us.

DIRECTOR'S STAFF

- serves as the department's liaison with the Iowa legislature and members of Congress
- develops the Iowa DOT's administrative rules, policies, and procedures
- manages the Iowa DOT's media and marketing strategies

For information about state transportation policies, contact Dan Franklin, policy and legislative services director, 515-239-1131.

PLANNING AND PROGRAMMING

- develops long-range and short-range transportation system plans, including the department's Five-Year Program
- conducts public involvement sessions
- administers the Revitalize Iowa's Sound Economy (RISE) program, which can provide local agencies with tools (such as accelerated approval and building of access roads) for enticing businesses to reside in Iowa
- develops city, county and state transportation maps
- administers the State Transportation Enhancement, State Recreational Trails, National Trails and Iowa Clean Air Attainment programs
- coordinates planning activities with MPOs and RPAs
- manages the traffic count program

For more information contact Neil Volmer, 515-239-1661.

INFORMATION TECHNOLOGY

- provides internal Iowa DOT support for technology, automation, and communication
- provides local agencies with specific global positioning systems (GPS) information and geographical information systems (GIS) tools like maps, terrain data, location transportation statistics, and other useful data

For more information contact Steve Gast, 515-239-1284.

MOTOR VEHICLE

- enforces federal and state motor vehicle laws and regulations
- manages driver testing, licensing, and revocations
- maintains and updates crash reports and information
- titles and registers vehicles that operate interstate
- registers aircraft and aircraft dealers
- enforces federal motor carrier safety standards
- titles and issues registrations for all official vehicles and special and personalized plates
- administers county-based registration and refunds for non-interstate vehicles
- regulates all dealer, manufacturer, wholesaler, recycler, and leasing licensing programs

For more information contact Shirley Andre, 515-237-3202.

REORGANIZED IOWA DOT

HIGHWAY

The Highway Division is divided into three main bureaus:

Statewide Operations Bureau

- construction
- contracts
- local systems
- maintenance
- materials

This bureau acts as a liaison between local agencies, the construction industry, professional associations, and the U.S. DOT and helps local agencies comply with state and federal standards. For more information contact Larry Jesse, Office of Local Systems, 515-239-1528.

Engineering Bureau

- design
- bridges and structures
- right of way
- location and environment
- traffic and safety

For more information contact Mitchell Dillavou, 515-239-1128.

Research and Technology Bureau

This bureau works with Iowa universities to educate future engineers while encouraging research into new practices and technologies that will improve

- traffic flow
- highway safety
- materials and structures
- maintenance

For more information contact Sandra Larson, 515-239-1646.

MODAL

The Modal Division includes offices for rail transportation, aviation, andpublic transit, each of which manages safety, funding, policy, and infrastructure issues related to its respective mode of transportation.

Aviation: Contact Michelle McEnany, 515-239-1659.

Rail Transportation is a good resource for local agencies that have concerns about highway-rail upgrades or other modal safety issues. For more information contact Peggy Baer, 515-239-1052.

Public Transit: Contact Michelle McEnany, 515-239-1659.

OPERATIONS AND FINANCE

- facilities management
- document services
- finance
- procurement and distribution
- human resource support
- materials purchasing
- disposal of surplus Iowa DOT vehicles

Local agencies can submit a request for materials like fuel or salt to the division, which then purchases materials in bulk. Bulk purchase means substantial discounts for both the Iowa DOT and local agencies.

Local agencies can participate in auctions of used maintenance equipment and vehicles.

For more information contact Nancy Richardson, 515-239-1340.

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2. Management systems, like pavement management systems, were generally used to provide data to support capitalization of assets for depreciation-based reports.

   However, capital improvement planning documents and other financial records were generally the primary resource for identifying historical costs and historical activities.

3. When asked about the value of creating a GASB 34-compliant financial report, the majority of financial managers viewed capitalizing infrastructure assets as a bookkeeping exercise of dubious value.

A few managers thought it might help future budgeting for capital improvements and preservation. By knowing the magnitude of asset depreciation, cities might seek to fund costs of depreciation.

Some financial managers even noted that interest in asset preservation was helping promote the concept of asset management.

The majority of financial managers viewed capitalizing infrastructure assets as a bookkeeping exercise of dubious value.

Still, there seemed to be little interest in eventually migrating to a preservation approach for financial reporting.

Reconsidering GASB 34

Like the APWA and AASHTO, we at CTRE have strongly promoted the modified approach. As engineers and planners, we believe that the modified approach is the technically correct way to manage infrastructure assets. We believe that asset management provides value and improves decision making.

Initially we thought that an accounting standard would be an on-ramp to asset management. Instead it seems to be no more than an interesting detour.

Bottom line

GASB 34 is an accounting standard, and the purpose of accounting standards is to create uniform financial reports so that creditors and the public can understand the fiscal operating performance, solvency, and creditworthiness of an agency.

Local governments shouldn't adopt asset management systems because of an accounting standard. They should adopt them because such systems improve the return the public receives from its investment in public infrastructure. •

Overview of methods for controlling erosion and storm water

THE DEADLINE for public agencies to comply with Phase II of the Environmental Protection Agency (EPA) storm water regulations is March 10, 2003. (See the September–October 2002 issue of *Technology News*.)

One tool for meeting the requirements is preventing or controlling erosion on roadside slopes and ditches.

The deadline for complying with EPA Phase II storm water regulations is March 10, 2003.

Erosion control methods

Agencies can stabilize soil (*stabilization methods*) or build structures (*structural methods*) in slopes and ditches to help control erosion and runoff. Both methods can be *temporary* or *permanent*.

Temporary measures are used on highly erodable slopes until vegetative growth is sufficient to hold soil in place. Permanent stabilization methods are used to protect erosion-prone slopes after construction, when no further disturbances are expected.

Temporary stabilization methods

- *Mulching.* Various organic or synthetic materials are applied to the slope. They may also help protect and stimulate growing vegetation.
- *Erosion control blankets.* Synthetic or biodegradable blankets are placed on slopes for several months until vegetation can grow. Blanket types are chosen based on the topography of the slope. They include wood fiber, straw/coconut, straw, and bonded fiber blankets.
- *Temporary seeding.* Rapid-growing annual grasses are seeded into slopes to provide a root base to hold the soil in place during and after construction.

Permanent stabilization methods

- *Turf reinforcement mats (TRMs).* TRMs are placed on slopes similar to erosion control blankets. However, TRMs combine vegetation and synthetic materials to form a strong, permanent mat.
- *Permanent seeding.* Perennial grasses are also seeded into slopes. Although they develop more slowly than annual grasses, they can withstand cooler seasons. Worker can also plant legumes, which produce their own nitrogen and grow even in less fertile soil. Two commonly used legumes that prosper in Iowa are Crown vetch and Sericea lespedeza.
- *Sodding.* Sod is placed on slopes and provides immediate turf stability and establishes a strong root system in a short amount of time.
- *Topsoiling.* Previously used or organically enriched soil is placed over exposed subsoil to encourage the growth of vegetation. It may be followed by permanent seeding with grasses or other perennials.

Temporary structural methods

- *Check dams.* Check dams are placed in ditches or waterways and prevent soil erosion by reducing the speed of water flow. These dams may consist of straw bales or riprap and can reduce the water's effect on the soil.
- *Slope drain.* Slope drains are flexible or rigid conduits that transport runoff water down exposed slopes. These drains can be used during construction, until permanent drain structures are installed.

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A silt fence is placed near a slope drain to prevent soil and silt from washing down the right of way.

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- *Silt fences.* Silt fences filter sediment before runoff leaves the construction site. These fences are usually synthetic filter fabrics attached to posts embedded into the ground.

Permanent structural methods

- ***Energy dissipaters.*** Energy dissipaters reduce water velocities at pipe outlets to prevent scouring (soil stripping caused by water force). The types of energy dissipaters include the hydraulic jump, impact basin, drop structure, riprap basin, and stilling well.
- ***Riprap.*** Riprap is the use of stones, either loose or anchored with mortar, to construct or strengthen a slope. When applied to slopes, riprap protects the soil and slows the water flow. Six main types of riprap can be used to help prevent erosion: dumped, hand-placed, wire-enclosed, grouted, concrete, and concrete-slab. Riprap may also be used as a temporary erosion control method.

Before riprap may be laid, a filter layer should be placed on the bank. The filter layer, or blanket, can help prevent water from eroding bank soil from between the gaps in the riprap cover. A bank with only a slight grade may not require a filter layer.

Storm water filtration and detention methods

Agencies may also need to engage in storm water management practices unrelated to erosion control. For instance, the following techniques can be used to direct storm water runoff and filter out runoff pollutants:

- ***Vegetated swales.*** A vegetated swale is a permanent, broad, shallow channel with vegetation covering the side slopes. It is placed on property lines that have a natural grade or may be used in place of a curbs, gutters, and storm sewer systems.
- ***Sand filters.*** Sand filters consist of a set of chambers or basins that remove several common pollutants from the storm water. They are built underground and may outlet to a storm drainage system or directly to surface water.
- ***Bioretention.*** Bioretention uses soil and both woody and herbaceous plants to biologically remove runoff pollutants. Runoff passes over a sand bed, which slows its velocity and distributes it evenly along the length of a ponding area. The ponding area is where the water is stored until it evaporates or is gradually absorbed by surrounding vegetation.
- ***Infiltration drainfields.*** Storm water is diverted into a storm sewer system that passes through a pretreatment structure. The structure removes coarse sediment, oil, grease, and other pollutants from the water. The water continues through a perforated pipe that distributes the runoff evenly through the drainfield. Then the water filters down into the subsoil where it is absorbed.
- ***Infiltration trenches.*** Three-foot wide trenches are filled with stone and a six-inch diameter perforated PVC pipe. As storm water enters the pipe, it is evenly distributed into the subsoil.
- ***Porous pavement.*** Porous pavement is a special type of pavement that allows storm water to pass through it and into the subsurface. It reduces the amount of runoff. If properly maintained, porous pavement may filter some runoff pollutants.
- ***Storm water wetlands.*** Wetlands, both manmade and natural, function as storm water pollution prevention mechanisms by providing a place for water to go. Wetlands are natural filters where chemicals break down and encourage vegetative growth.
- ***Wet detention ponds.*** Wet detention ponds are structures built to detain and treat contaminated storm water. Runoff from a storm is detained and treated until it is "pushed" into a spillway by runoff from the next storm.
- ***Baffle boxes.*** Sediment removal boxes are similar to sand filters. They are subsurface concrete boxes that allow coarse sediments to settle while storm water continues to flow.

This picture shows two different types of erosion control: stones lining the bank of a waterway and silt fences in the road's right of way to hold soil and silt in place.

For more information

Information in this article is adapted from the U.S. DOT's *Best Management Practices for Erosion and Sediment Control* and from the EPA's *Best Management Practices for Storm Water*. For more information contact Jim Hogan, CTRE library coordinator, 515-294-9481, hoganj@iastate.edu. •

LAW continued from page 1

The GTSB goals for corridor enforcement are

- to achieve motorists' compliance with traffic laws. The enforcement project is well advertised in the media before the event to eliminate the "gotcha" factor and to encourage compliance.
- to make a long-term, positive impact on motorists. Rushing hopes that the public will wonder how long the project will last. Maintaining a perception of high enforcement encourages compliance with traffic laws. •

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