Inside this issue

IOWA STATE UNIVERSITY
Institute for Transportation

Underbridge Inspection Vehicles available to local agencies

After a few years' hiatus, in 2013 the Iowa DOT restarted its program of leasing Underbridge Inspection Vehicles (UBIVs) to local agencies that want to take advantage of this equipment during the bridge inspection season.

The Iowa DOT has priority use of its three UBIVs but will work with local agencies to accommodate their bridge inspection needs.

Through a lease agreement, and for an hourly fee, the Iowa DOT provides a truck, driver, and a basket operator. Up to two local inspectors with fall-protection gear can be in the basket with the operator.

In 2010, the Iowa DOT temporarily stopped providing this service to local agencies due to a shortage of personnel, according to Jerry McClain, Iowa DOT Office of Bridge Maintenance and Inspection. He is glad that the department has decided to once again lease the equipment to cities and counties.

"Outside of the Iowa DOT, it's often difficult to lease this type of equipment, and mobilization can be quite expensive," he says.

To receive a lease agreement and get on the schedule, contact McClain, 515-239-1435, jerry.mcclain@dot.iowa.gov. ∎

Inspecting the U.S. 18 Border bridge In Lyon County over the Big Sioux River with the help of a UBIV (Photo courtesy of the Iowa DOT)

From the director: change and opportunity

As we get a foothold into 2014 it's clear that this year will be one of big transitions for the Iowa LTAP. We will start doing some new workshops that may end up being offered on a regular basis. We also will start taking a smaller role in other events and trainings, like Snow Roadeo and the Snow Plow Operator Training (SPOT). Many of these decisions are being made by Iowa LTAP because its entire technical support staff will also change this year. Transition, change, and opportunity.

Iowa LTAP will be advertising three positions during the coming year. This will offer new opportunities to new people and incorporate new knowledge, capabilities, and background into the Iowa LTAP assistance list. It's exciting. We'll continue to serve your needs as best we can during this time. If having a job assisting local transportation agencies with their technical needs is something you have thought about, give me call.

In the meantime we've brought on Steve Struble, ex-Warren and O'Brien County engineer, as the interim Safety Circuit Rider to help us achieve our service goals. Steve is available, at your site, for work zone and flagger training and can provide technical assistance.

Registration for some of our workshops is currently open or will soon begin. Those that are up and running include our Motor Grader Operator training and the Work Zone training that is done with the Iowa DOT. There is also a Federal Highway Administration Every Day Counts (EDC) webinar or exchange on intelligent compaction scheduled for April 3, 2014.

Recently, a survey about excavation safety and mower safety workshops was completed, and it looks like we may offer one or two sessions of both of these if we see the demand. These two efforts require a decent number of attendees, so take advantage of them when they get advertised. We are also holding the two-week bridge inspection course in April and trying to work out possibly offering the fracture-critical bridge inspection course this fall. We also have plans for more accessibility courses and also more right-of-way acquisition courses.

To close, I'd like to thank everyone here in Iowa for their support. I'm approaching four years as the Iowa LTAP Director and have enjoyed the challenges and new opportunities for professional development that seem to pop up just about every day.

This year may be one of those mileposts that impacts the program for many years to come. If you have any input, we'll be asking our advisory board and, of course, you can just give me ring or send an email. ∎

Forward.

Keith

GIS-based traffic sign application helps Ames meet federal mandates

by Jim Baumann, Esri

With the regular influx of new student residents at Iowa State University, it is important for the streets and highways in Ames to be clearly signposted. Appropriate signage minimizes accidents and provides clear directions to both new students and to Ames visitors (like sporting event attendees) who are unfamiliar with the town. Additionally, the city has to conform to state and federal standards regarding signs, as outlined in the FHWA's *Manual on Uniform Traffic Control Devices* (MUTCD).

Ben McConville, GIS manager in the city's public works department, has been using ArcGIS for asset management for many years. Among the city's numerous assets, there are more than 9,500 local traffic signs.

"Street signs are a challenge to accurately manage," says McConville. "You would think it is a fairly straightforward procedure; however, there are normally multiple assets residing at the same location.

"For example, in addition to the signpost, you may have three or four signs attached to it. So, at that identical location, your database will include maintenance histories, accident reports, and retroreflectivity records for each sign as well as the post. In addition, there are replacement and maintenance schedules and vegetation management procedures related to the assets at that same location."

A custom application: GIS Assets

Recently, Ames partnered with DGTex, Inc., to create a custom GIS-based sign management application called GIS Assets. It's built on ArcGIS Runtime SDK for iOS and runs on the Apple iPad. See Figure 1.

The application, which is now available on iTunes, is used to collect data, such as traffic sign inventories and asset information, from the field and integrate the information and other remotely collected data with the department's geodatabase that is managed by ArcGIS for Server.

Dominic Roberge, GIS specialist for the city, worked hand-in-hand with traffic maintenance staff and developers at DGTex to design the application and database schema.

"I spent a great deal of time identifying the needs of the crews and exactly what gaps the application needed to fill," says Roberge.

"Among them were the need for bar coding and the ability to handle complex relationships. I then designed the database schema to accommodate these needs and published the web services accordingly."

The city uses a RoadVista model 922 retroreflectometer to measure the reflectivity of each of its signs, which is required for the federally mandated retroreflectivity survey. In addition to measuring its reflectivity, the device records a sign's GPS coordinates and reads the bar-coded label attached to it for identification purposes. See Figures 2 and 3.
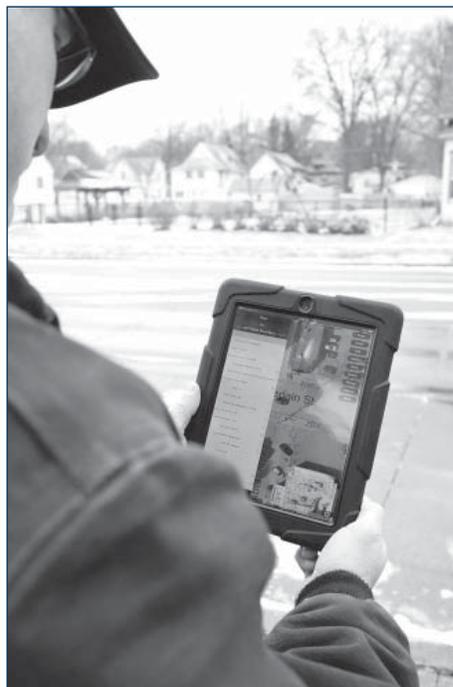
Figure 1. GIS Asset runs on an Apple iPad, allowing portability and broad functionality (All photos courtesy of Esri)

Figure 2. One device measures sign retroreflectivity and records GPS coordinates

Figure 3. The same device also reads the bar code attached to the sign for identification purposes

"Signs are frequently knocked down by vehicle accidents, vandalism, or snowplows," says Bill Latham, an Ames traffic maintenance worker.

"Often the signs are simply dropped at the maintenance shop by law enforcement or maintenance crews with no explanation of where they may have come from. By using bar coding, staff can easily see exactly which sign it is and where it came from, making it easy to reset."

Back in the office, the data recorded by the retroreflectometer is downloaded to the GIS Assets application, which uses the sign's bar code for reference. See Figure 4.

The application then performs a join to the department's geodatabase, and the field data are automatically added to it, which helps centralize all remotely collected data with the geodatabase.

Because each sign's reflectivity data and history are now part of the database, the city's traffic department can easily check to see if a specific sign is in compliance with the MUTCD. This verification can be done by

public works staff from either the office or in the field with their iPads, which saves both time and money.

"During city construction activities, GIS Assets has proved to be extremely helpful," comments Terry J. Keigley, an Ames traffic maintenance worker. "Contractors often remove entire blocks of signs prior to construction. Sign crews are now able to easily reset the signs in the exact location with no measuring. The GPS typically gets us close enough to where we can find the existing hole or stem to place the sign on."

Before implementing the sign management application, the Ames public works department was faced with bulk replacement of its signs in a specified area every five years in order to comply with FHWA mandates. With the application, field crews can now evaluate these assets sign by sign and then send this information to the geodatabase back in the office, where it is determined whether a sign should be repaired or replaced and work orders issued, depending on the decision.

Enhanced functionality
In addition, the iPad provides other functionality that is enhancing the department's workflow. These functions include messaging between workers, broadcast emails, and shooting a photograph or video of an emergency situation in progress, such as a

Figure 4. Bar-coded identification labels are attached to the backs of signs

water main break, and sending the video to the engineering department for evaluation. This information can also be attached to the geodatabase.

"The ability to easily attach pictures is a huge benefit," says Brad Becker, traffic signal lead technician. "Pictures are a great tool to help us see what information may not be in the attributes. For example, not every MUTCD code indicates what the exact wording is on the sign. By looking at the picture, we can easily see."

"Centralizing all our public works asset data has really been a big benefit to us," says McConville. "Previously, there was a lack of integration and field connectivity, which made work tracking and inventorying difficult."

The GIS Assets application has sparked interest from other departments and is increasing the use of ArcGIS in Ames, particularly because the city has an Esri enterprise license agreement (ELA). "The ELA has opened up a ton of doors for us," says McConville. "It's given us the opportunity to really explore what we can do with GIS."

Planned expansion of GIS Assets

The next project for the Ames public works department is expanding its use of the GIS Assets application by making greater use of its bar-coded reading capability.

"Adding bar coding to all our public works assets makes it much easier for crews to immediately identify an asset in the field, determine its condition, and then send that information back to the geodatabase for further review," concludes McConville. "It will really help streamline our field crews' work and continue to keep our geodatabase up to date."

For more information

Contact Ben McConville, City of Ames, 515-239-5162, bmcconville@city.ames.ia.us.

Editor's note: This article has been adapted from an article that will be printed in the July 2014 issue of CE News*, with permission.* ■

New requirements for nighttime personal protective equipment (PPE) extended to contractors

by Mark Bortle and Donna Buchwald, Iowa DOT

With changing PPE requirements by the Iowa DOT, local agencies may likewise consider requiring that personnel working on city and county projects at night be equipped with Class E pants or shin reflectors (gaiters).

To enhance workers' visibility (and thus their safety) at night, the Iowa DOT currently requires all personnel—both Iowa DOT inspectors and contractor staff—to wear Class 2 vests when they are working on Iowa DOT projects at night in the highway right of way. In addition, the department currently requires its inspectors to wear Class E pants when working on site at night.

These PPE requirements are being revised and enhanced in two ways. Effective with this construction season, the Iowa DOT is now requiring all personnel (Iowa DOT and contractor) to wear both Class 2 vests and either Class E pants or shin reflectors (referred to as "gaiters") when working on site at night. The choice of Class E pants or gaiters is up to each worker.

A revised Iowa DOT policy will allow the shin reflector option in lieu of Class E pants for Iowa DOT inspection staff. The upcoming General Supplemental Specification, GS-2005 (effective with the October 21, 2014 letting),

incorporates into the standard specifications the upgraded PPE requirements, including the requirement to wear Class E pants or shin reflectors, for all contractor employees.

The proposed GS specification language follows (changes are in italics):

> **2528,03,L,5.** All personnel in the highway right-of-way are required to wear *orange or strong yellow green* ANSI 107 Class 2 apparel at all times when exposed to traffic or construction equipment. *Orange or strong yellow green ANSI 107 Class E pants or shin reflectors/gaiters are also required to be worn at night. Shin reflectors/gaiters shall have a minimum of two, 2 inch bands of retroreflective material spaced at least 6 inches apart. Background material shall extend at least 2 inches above and below the retroreflective bands and continue through the length of the shin reflector/gaiter. The shin reflector/gaiter shall completely encircle the leg and be worn on the lower leg between the knee and the ankle.*

For more information, contact Mark Bortle, Office of Construction, Iowa DOT, 515-239-1587, mark.bortle@dot.iowa.gov. ■

Local Road Safety Plan peer exchange

by Bob Sperry, Local Roads Safey Liaison, Iowa LTAP

On October 9–10, 2013, the FHWA conducted a peer exchange for area FHWA personnel, state DOTs, and counties, covering the development of local agency road safety plans. Several states, including Kansas, Missouri, Colorado, Michigan, Minnesota, along with a delegation from Iowa, attended the peer exchange. Six county engineers, four people from the Iowa DOT, Keith Knapp and Bob Sperry from Iowa LTAP, and Jerry Roche from FHWA attended the two-day event in Bloomington, Minnesota.

Initial statements and comments were made by the states attending, noting any local safety plan efforts that were proposed (or already under way) and also what they expected to take home from this meeting.

Minnesota's experience

Minnesota federal and state representatives then presented a history/overview of their project—how the idea was initiated and how it came into fruition by progressing through a series of steps and learning as they went—from their vantage points.

Following that presentation, a couple individual Minnesota counties discussed the challenges they faced as they put their own plans together before the statewide effort took off. Based on their experiences and input, the Minnesota DOT developed the idea for Local Safety Plans into a request for proposals (RFP) for a group of eight counties. An outline of the process included public input, education, data collection and analysis, and project identification and prioritization, with a concluding public presentation/explanation of the plan for each participating county.

The Minnesota process began with a public meeting with the supervisors, engineering, and law enforcement as well as the public. The upcoming project was discussed and

input received from all members attending as to their vision of what problems existed and what mitigations were envisioned to provide improved safety for their own counties.

Data collection involved reviewing the crash data for the roads in a group of counties and then identifying any common features associated with those crashes. The seriousness or importance of those features was rated as to their relation to the crashes. Then, those features were looked for and identified in each county. Where higher than average risk existed, a mitigation strategy was planned and a project developed to minimize the crash risk. After all projects had been developed, they were prioritized and provided in a booklet to the county engineer, with the supporting data explaining the process.

These studies in Minnesota were funded with federal Highway Safety Improvement Program funds. The ensuing project applications were made simply by tearing out a proposed project sheet, signing it, and sending it in for processing and budgeting in the future.

Following completion of the first pilot group's plan, the project was extended and additional groups of counties were added, until all counties that wanted programs had been completed. (The final few were in progress during this peer exchange.)

Iowa's action plan

Frequent breakout sessions at the peer exchange allowed the delegations to discuss many of the details with each other, as well as with the individual counties that had the plans. Before the conclusion of the exchange, each state was encouraged to develop an action plan for follow-up on their return home.

The Iowa delegation was very encouraged and impressed with the process, and developed their own detailed action plan. The Iowa plan considered specific plan development challenges in Iowa, partnering needs with schools and law enforcement, and educational needs for the public and public officials to make this a priority.

Since the peer exchange, much progress on this Iowa action plan has been made. Two committee and many Iowa DOT meetings have been held, ironing out funding details and slight changes to the RFP that are desirable, and molding the RFP into the contract process. Currently, it is drawn up to include 12 county plans to be completed in one year (expandable to include all 99 counties—if they wish to participate—in the following four years). Product delivery for the individual Local Road Safety Plans include the following:

- Introduction
- Comprehensive crash analysis
- Safety emphasis areas
- Safety strategies
- Detailed crash analysis
- Safety projects

Proposals were to be received by March 7, 2014, on this RFP. Following evaluation of the proposals, a contract can be negotiated and hopefully signed in the near future. Work on the initial Iowa plans can then start as early as the contractors' schedules allow.

For more information

If your county has not yet indicated that it would like to be included in the development of a Local Road Safety Plan, please contact Terry Ostendorf, Iowa DOT Office of Traffic and Safety, 515-239-1077, and ask to be added to the list. ∎

New resources for deploying 3D engineered models and slide-in bridge construction (SIBC)

Are you thinking about switching from 2D plan sets to 3D engineered models in your highway and bridge construction projects?

Or about designing and constructing a slide-in bridge (also known as a "lateral slide")?

Under contract to FHWA, InTrans is "stocking the shelves" of two new websites with resources culled from organizations and projects around the country related to 3D engineered models and SIBC. Via the sites, InTrans is also providing quick-response expert information for anyone with specific questions about 3D engineered models or slide-in bridge construction; see the Technical Support Services Centers (TSSCs), and complete the quick form for free, expert advice.

www.fhwa.dot.gov/3D/ (search "fhwa 3D")

www.fhwa.dot.gov/slide/ (search "fhwa slide")

One user of the 3D TSSC had this feedback for the subject matter expert: *"I really appreciate your quick reply. That sounds like solid advice . . . ."*

These informational resources are part of FHWA's Every Day Counts (EDC) initiative to accelerate the implementation of market-ready technologies, including 3D engineered models and SIBC. ◼

Conference calendar

Date	Event Name	Location	Contact
March 2014			
28	Work Zone Safety 2014	Ames	Steve Struble
April 2014			
3	Intelligent Compaction: Understanding the Technology (an FHWA Every Day Counts Exchange)	Ames	Keith Knapp
3–4	Spring Conference: Iowa Chapter, American Public Works Assocation (co-sponsor: Iowa Society of Solid Waste Operations)	West Des Moines	Peggy Englehart
7–11 14–18	NHI Safety Inspection of In-Service Bridges (10-day course)	Ames	Sharon Prochnow
May 2014			
6	Motor Grader Operator (MoGO) Training	Oskaloosa	Bob Sperry
13	Motor Grader Operator (MoGO) Training	Decorah	Bob Sperry
20	Motor Grader Operator (MoGO) Training	Creston	Bob Sperry
28	Motor Grader Operator (MoGO) Training	Cherokee	Bob Sperry
June 2014			
3	Motor Grader Operator (MoGO Training	Ames	Bob Sperry

Contact information

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Bob Sperry, 515-294-7311, rsperry@iastate.edu
Steve Struble, 515-294-6384, sstruble@iastate.edu ◼

Event details and online registration

Watch for details and online registration information, by specific dates/events, on the online calendar, www.intrans.iastate.edu/mors/calendar/. ◼

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