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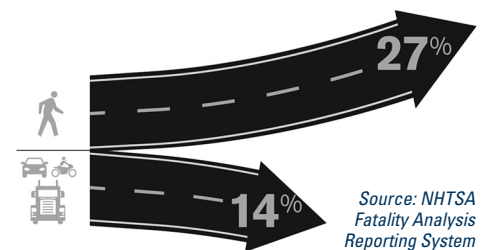
## Iowa DOT taking STEPs to improve pedestrian safety

Safe Transportation for Every Pedestrian (STEP) has been identified as an initiative of the 5th round of the FHWA Every Day Counts (EDC) program. According to the National Highway Traffic Safety Administration, 2017 saw 5,977 pedestrian deaths nationwide. This is approaching over 6,000 deaths a year, a level not seen since 1990. Pedestrian fatalities have increased 27% from 2007–2016, while all other traffic deaths have decreased 14% over the same period. The Governors Highway Safety Association's 2017 preliminary report on Pedestrian Traffic Fatalities by State shows Iowa averaging 22 pedestrian deaths a year from 2014–2016.

As part of FHWA's EDC-5 initiative, FHWA is featuring several proven, but underutilized innovations that can shorten the project delivery process, enhance roadway safety, reduce congestion, and improve environmental sustainability.

FHWA's STEP initiative, led by Becky Crow and Peter Eun, features seven pedestrian safety countermeasures that help to reduce pedestrian fatalities and serious injuries. These initiatives are included in the table.

These innovations are typically low-cost stand-alone improvements, or they are easy



**Pedestrian fatalities increased 27% from 2007–2016, while all other traffic deaths decreased by 14%**

to incorporate into a proposed roadway improvement project. Additional information on these initiatives is available from FHWA in their Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations.

Zero Fatalities remains Iowa DOT's goal for roadway fatalities. Reducing the number of fatalities will involve making improvements to help with safety for all road users, regardless of the mode of transportation.

Article written and provided by John E. Dostart, Urban Engineer, Iowa DOT, Local Systems Bureau.

### Related Links

- <https://www.nhtsa.gov/road-safety/pedestrian-safety>
- [https://www.ghsa.org/sites/default/files/2018-03/pedestrians\\_18.pdf](https://www.ghsa.org/sites/default/files/2018-03/pedestrians_18.pdf)
- [https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_4/guide\\_to\\_improve\\_uncontrolled\\_crossings.pdf](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/guide_to_improve_uncontrolled_crossings.pdf)

Countermeasure	Reduction in pedestrian crashes
Rectangular rapid flashing beacons	47%
Leading pedestrian intervals (giving pedestrians a 3+ second head start at a traffic signal)	59%
Crosswalk visibility enhancements (increased signage, narrowing the road at the crosswalk, wider striping)	23%–48%
Raised crosswalks	45%
Pedestrian refuge islands	32%
Pedestrian hybrid beacons (Hawk Signals)	55%
4-lane to 3-lane conversions	19%–47%

## Acronyms and Abbreviations in *Technology News*

AASHTO	American Association of State Highway and Transportation Officials
APWA	American Public Works Association
FHWA	Federal Highway Administration
ICEA	Iowa County Engineers Association
IHRB	Iowa Highway Research Board
InTrans	Institute for Transportation (at ISU)
Iowa DOT	Iowa Department of Transportation
ISU	Iowa State University
LTAP	Local Technical Assistance Program
MUTCD	Manual on Uniform Traffic Control Devices
NACE	National Association of County Engineers
TRB	Transportation Research Board



U.S. Department of Transportation  
Federal Highway Administration



### About LTAP

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## From the Director:

# Information, knowledge, and wisdom

We are awash in information. I've had a number of conversations, in both a technical and non-technical context, that have essentially focused on the subjects of knowledge and wisdom. So, for this column, the first thing I did was...you guessed it...a search of the internet. It is a wonderful tool. I could have easily spent many hours going through numerous articles and discussions on this subject (FYI - I did not.). It is clear, from a technical point of view, and with a good eye for distinguishing between good, poor, and just plain false information (Does it take wisdom to even make this differentiation?), someone can really appear or become quite knowledgeable in just about any subject.

Identifying good and also applicable information, however, is becoming more and more difficult due to all the options that are now literally at our fingertips. The relationship society and people have with information and knowledge is changing. And it's impacting, in my opinion, relationships between the professional and public, employer and employee, and the gang at the local watering hole. Is recognition of these shifting sands one of the first steps in effective interaction and/or management today? Is it also an understanding that anything, when done to an extreme, often results in something being lost or pushed aside? Are we losing something when we depend on the internet too much and/or believe that all the information it contains is wisdom?

So what is wisdom? People have many answers to this question. In the technical sense, in my opinion, wisdom comes with experience and application. What information and approach will help me do my job in the most efficient and effective manner but also be appropriate in the context of this situation? It's also

recognizing that everything that we do interacts and connects to something or someone else. And, whether information and knowledge that is acquired can be used for the betterment of a situation. The idea that comes to mind, over and over again, is that wisdom requires someone to have proper insight into how things really are. The "actuality" of existence. In other words, can the "scholar" or "sage" at the top of the mountain truly be wise? It depends.

Providing advice, input, and/or instruction on the phone or in a training workshop that applies to the needs of the audience members and shows a clear insight into those needs is both helpful and effective. Today, we can share this type of wisdom through various means, but all the options will have both advantages and disadvantages to those in attendance and, in more general terms, to our society at large.

We hope that Iowa LTAP provides you with information and knowledge, but also transfers some wisdom in all the events and workshops we are involved with each year. We have had a very busy spring – thanks to those of you that were able to attend our events. We are currently advertising the ICEA Midyear Conference, and the August Iowa State Association of Counties (ISAC) affiliate meeting for ICEA will include an hour of ethics for those interested. Soon, we will be putting out more information about our fall events. These events should include some workshops about safety, bridge construction, and others.

With deepest gratitude. ■

Keith

# Iowa DOT leverages funds for box beam bridge bundling project

## Accelerated Innovation Deployment (AID) grant to help replace eight county bridges

In September 2018, the Iowa DOT was awarded a \$1,000,000 FHWA Accelerated Innovation Deployment (AID) grant. IHRB matched the federal funds with \$250,000 to provide the funding for a unique collaborative effort between the Iowa DOT and eight counties across the state of Iowa.

The primary objective of the project is to utilize innovative contracting to replace eight county-owned bridges in eight different counties under one materials package using prefabricated bridge elements and other innovative materials. The project uses newly developed Iowa DOT Single Span Concrete Box Beam Bridge Standards with ultra-high performance concrete (UHPC) connection details.

By combining the eight projects, the state will be able to take advantage of economies of scale by bundling the supply of the standard box beams and UHPC connection material into one contract. Bundling the projects also makes the use of innovative materials a much more viable option for local agencies.

The Iowa DOT project was in the April 2018 statewide letting and the successful bidder was Forterra Pipe and Precast in the amount was \$1,249,952. The Iowa DOT developed a materials contract utilizing added-options bidding to fabricate and supply the box beams and UHPC connection material for eight different structures.

The proposed structures are 50 feet in length using precast box beam elements and UHPC in the joints. An executive committee made up of DOT, county, and FHWA representatives developed ranking

criteria to select the successful candidates for replacements.

The eight individual counties are in the process of developing bridge projects that will receive the box beams and UHPC material. Their projects will include the costs to install the box beams and UHPC material supplied by the Iowa DOT project.

The first bridge is scheduled in Davis County for a September 2018 letting. The remainder of the counties (Winneshiek, Buchanan, Fayette, Lyon, Madison, Monona, and Dallas) plan to have their bridges ready for bidding in the fall and/or winter of 2019 with construction of the eight county bridges expected to occur in the summer of 2020.

*Article written and provided by Brian Moore, Secondary Roads Research Engineer, Research and Analytics, Iowa County Engineers Service Bureau. ■*

# FHWA releases Low-Cost Safety Improvements videos

FHWA recently released a series of six short videos that focus on inexpensive ways to improve safety on roadways. The Low-Cost Safety Improvements series features videos on

- A Systemic Approach for Stop-Controlled Intersections
- Enhanced Delineation on Horizontal Curves
- Unpaved Roads
- Walking and Biking
- Longitudinal Pavement Markings
- Speed Management Techniques

According to the FHWA, the videos, which are each about 3 to 5 minutes long, are meant “to help practitioners incorporate road safety into their existing responsibilities.”

Many of the videos prominently feature research being done at InTrans and the ways practitioners in Iowa have enacted some of these low-cost safety improvements. That includes LTAP’s Safety Circuit Rider David Veneziano, who led a series of one-day

training workshops on low-cost safety improvements in April.

The videos are available here: <https://www.youtube.com/user/USDOTFHWA/videos>. ■



## Iowa LTAP Mission

To foster a safe, efficient, and environmentally sound transportation 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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# REACTOR Lab research focuses on work zone safety

Road Work Ahead.

We're all familiar with the orange warning signs that appear on Iowa roads each spring and the frustration road construction can bring to commuters.

Part of that frustration can come from motorists not knowing what is being done or why the project is needed. But imagine the stress reduction if drivers could know the extent of the work zone, where workers are currently focusing their efforts, how far the lane reduction lasts, and more, to have smoother and safer travels.

That's exactly what the Real-Time Analytics of Transportation Data (REACTOR) Lab researchers at InTrans are aiming to do now with a project to support the Iowa Department of Transportation's Traffic Operations Bureau efforts to keep the wheels moving efficiently today and to support more connected transportation in the future.

By using connected devices in arrow boards, traffic cones, and vehicles, researchers are developing a process to integrate work zone information to provide vehicles and users with precise details about the location and start and end times of the road work.

"We currently don't know all of the details, which makes it difficult to monitor safety and mobility performance as well as just provide accurate information to the public," said Skylar Knickerbocker, a co-director of the REACTOR Lab.

"The idea is that we can use technology to improve our work zone data while minimizing the work by field staff."

Researchers will map work zones to paint a real-time picture of what's happening on the road, including where there's congestion or a crash has occurred. This will allow drivers to have more information to make better decisions. They can decide to avoid the work zone or go through it with the knowledge of the extent of the actual work, reducing frustration for everyone.

Armed with this information, the idea is that both drivers and workers will be safer through the duration of the work zone activities.

National Work Zone Awareness Week has been held annually for the past 20 years. The 2019 awareness week was April 8 through 12, and had the theme of "Drive Like You Work Here." ■



The REACTOR Lab collects data from work zones that it processes to aid in decision making

# CP Tech releases next-generation *Integrated Materials and Construction Practices (IMCP)* manual

When the *Integrated Materials and Construction Practices for Concrete Pavement* (IMCP) manual was first released in 2006, the goal was to bridge the gap between recent research and concrete pavement production practices. Since then, it's had a significant impact in the industry.

However, as the road-building environment has gotten more complex and research continues to advance, the National Concrete Pavement Technology Center (CP Tech) set out to update and refresh the manual.

The 2019 edition brings the newest information available and includes the growth and innovations that have been implemented into practice during the past 13 years. Like its predecessor, the manual provides practitioners with the best tools for designing, building, and maintaining concrete pavements using the best technologies available.

This next-generation IMCP manual adds a chapter on sustainability and offers significant updates on the development of test methods that evaluate the concrete mixture and the new pavement for the properties that govern performance. The structure of the manual is otherwise similar to the 2006 edition and organized for easy reference to applicable sections.

The updated IMCP manual enables readers to

- Understand concrete pavements as complex, integrated systems
- Appreciate that constructing a concrete pavement project involves several discrete practices that interrelate and affect one another in various ways

- Implement technologies, tests, and best practices to identify materials, concrete properties, and construction practices that are known to optimize concrete performance
- Recognize factors leading to premature distress in concrete and learn how to avoid or reduce them
- Quickly access how-to and troubleshooting information

The manual is useful for engineers, quality control personnel, specifiers, contractors, materials and equipment suppliers, technicians, construction supervisors, and tradespeople alike.

The new *Integrated Materials and Construction Practices for Concrete Pavement* manual can be accessed here: <https://cptechcenter.org/research/completed/next-generation-concrete-pavement-road-map/>. ■



Portable central-mix concrete plant (left and right photos: Jim Grove, ATI Inc./FHWA, used with permission)



Curing machine coats both the top surface and sides of a slipform paving slab

## New Innovations page planned for LTAP site

Be on the lookout for a new page planned on the new LTAP site.

The Innovations page will share links to technological advances developed in Iowa and throughout the nation. The page will spotlight a featured innovation, like the entries from recent Build a Better Mousetrap winners. The page will be featured under the resources tab at <https://iowaltap.iastate.edu/>.

The new LTAP site has now been live for 6 months, offering several resources, a calendar of events, and lists annual and special workshops. Click around the site and let us know what you think! ■

# Transportation research investigates flooding impacts

Iowa Farm Bureau Federation's economists say the state may see upward of \$2 billion in damages from recent flooding, noting that there have been multiple breaches in levees with roads and bridges rendered unsafe or impassable.

To study such events and help Iowa and other states deal with floods, a team of researchers at ISU's Department of Civil, Construction, and Environmental Engineering and InTrans is working with the Iowa DOT.

Alice Alipour, assistant professor of civil, construction, and environmental engineering, is leading a team of researchers to understand the adverse effects of floods on built infrastructure, propose mitigation strategies, and plan for possible failures such that the disruption to the transportation system is minimized.

"We understand that natural hazards, in this case floods, are going to happen," Alipour said. "Our goal is to prevent major dysfunctionality in the network and to plan for possible failures such that the closures in the road network do not adversely impact the everyday lives of the communities or the long-term economy of the state."

Alipour and her colleagues at Iowa State, including Omar Smadi, take a multi-scale approach to studying the Iowa road network.



**Alice Alipour, Omar Smadi, and PhD student Ning Zhang (from left to right) from ISU discuss flooding and infrastructure as part of an ongoing research effort to mitigate transportation disruptions caused by natural disasters**

"As the project co-PI, my role is to determine the impacts of these natural hazards, flooding for example, on the performance of the physical assets such as pavements, so that further analysis can be carried out to assess the overall impact on the transportation network," said Smadi.

At a smaller scale, they look into individual transportation assets such as bridges, culverts, and segments of the road pavement and assess the vulnerability of each asset to flood events of different intensity. At a larger scale, they consider the whole transportation network of the state and assess the damage to the community functions due to closure or failure of any of those assets.

"This is an end-to-end approach that we take," Alipour said. "With a proper understanding of the vulnerable segments of the road network and the impact it could have on the communities, agriculture, and economy of the state, we loop back the consequences to design, mitigation, and post-event recovery efforts. This will provide a resilient network, in which evacuation and disaster relief efforts can be prioritized and efficiently accomplished for the communities affected by these events."

Smadi said: "When managing our transportation infrastructure, it is critical to consider risk as required by the two most recent highway authorizations, MAP-21 and FAST acts. Understanding the vulnerability of the transportation network aids in evaluating the risk and addressing that risk as part of the decision making process".

Building on previous findings of the research team at Iowa State, the project with Iowa DOT is in its first phase. The goal is to provide a fully functional resilience assessment and enhancement tool that can be used for decision making purposes. ■

*"This will provide a resilient network, in which evacuation and disaster relief efforts can be prioritized and efficiently accomplished for the communities affected by these events."*

*—Alice Alipour, Assistant Professor of Civil, Construction, and Environmental Engineering at ISU*

# Workshop and conference calendar

Date	Event Name	Location	Contact
<b>July 2019</b>			
11	ICEA Midyear Conference	Ames	Keith Knapp
<b>August 2019</b>			
21–22	2019 Mid-Continent Transportation Research Symposium	Ames	Judy Thomas
21–23	ICEA Affiliate Meeting at ISAC Annual Conference	Des Moines	Keith Knapp
<b>September 2019</b>			
17–19	Iowa Streets and Roads Workshop and Conference	Ames	Beth Richards
25–26	MINK Conference	St. Joseph, MO	David Veneziano
30–1	Midwest Traffic Incident Management Safety Summit (MTIMSS) 2019	Ames	Judy Thomas

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## Event details and online registration

Watch for details and online registration information, by specific dates and events, on the Iowa LTAP Workshops page, [iowaltap.iastate.edu/workshops/](http://iowaltap.iastate.edu/workshops/). ■

## Iowa LTAP Tech Corner—Iowa 511 app

### What is it?

Want to keep updated about construction projects and their associated detours this summer season in Iowa?

The Iowa 511 app is the Iowa DOT's official traffic and traveler information app. No matter the season or weather condition, the app provides up-to-date traffic information for interstates, US routes, and state highways throughout the state.

### How does it work?

The app allows users to customize their view by adding layers of information, including incidents, construction, Waze reports, and winter driving. In some locations, traffic camera images show the extent of the changes.

Users can also search for their destination and see any details that could impact their planned route. Additional features include hands-free, eyes-free, audio notifications of traffic events while users drive, a zoom-enabled map, and information about highway rest area locations and current traffic speeds statewide.

Remember that while traveling, mobile communication devices should be used only when the motor vehicle is at a complete stop off the traveled portion of the roadway. Do not text and drive or use this app while driving.

### Where can I get it?

Available for free on iTunes or Google Play. ■



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