Iowa Build a Better Mousetrap winner named

Clay County earns top spot with Wright and Des Moines counties getting second and third, respectively

Some old tires and the shop's reciprocating saw was all it took for the Clay County Secondary Roads Department staff to solve two issues at once and to invent a simple Type 3 barricade weight.

The staff's ingenuity helped Clay County earn the top prize in the Iowa Build a Better Mousetrap (BABM) Competition this year. Their innovation has also been submitted to the FHWA for a chance to receive national recognition.

Wright and Des Moines counties earned second and third place, respectively, in this year's competition. Wright County submitted an auger safety valve, and Des Moines County submitted a culvert inspector device.

The winning counties were initially recognized at the ICEA Mid-Year Conference in July and received a plaque at the Iowa Streets and Roads Conference in September. All three received a number of free workshop registrations, and first place will also get a celebratory lunch at their county shop. Congratulations to them all!

More details about those innovations are as follows:

Clay County -- Type 3 Barricade Weight
Clay County used a Sawzall reciprocating saw to cut a single snowplow truck tire to make two barricade weights. Not only did it reuse old and otherwise unusable tires but it also saved the county from having to purchase sandbags and sand as well as the associated issues with lifting the sandbags, their storage, and their damages/leaking over time.

“The tire barricade weights have at least a 20-year shelf life and can be reused over and over again. Once enough weights have been created, there is no need to create more,” read the county's entry.

Thus, there will not be future costs once enough barricades have been created. The overall costs were simply replacing the Sawzall blades (at $3 per blade) and less than two minutes for labor, though the invention also saved on tire disposal fees and sand costs.

BABM winners continued on page 3
From the Director:
Murmuration inspiration

Being lucky, in my opinion, depends on your point of view. The way we “see” things can, if we let it, be heavily influenced by our frame of mind. A habitual way of “seeing” that is set through a wide range of past and present influences. There are, however, methods to shift these long-term habits, irrespective of external forces, and “look” through a different lens, if that is something of interest. It’s a path, at least for me, that never lacks for effort, and I suspect I will be walking my entire life. One method I try to apply is to remember something that I’ve mentioned in this past columns. Lately, here in Iowa, I’ve been grateful for each day. Big or small. I think I’ve mentioned this in past columns. I’m grateful for each day. Big or small. I think I’ve mentioned this in past columns. Lately, here in Iowa, I’ve been grateful for and taking inspiration from murmurations. Those that walk this land, if they are lucky, will almost inevitably be in the presence of this phenomena. Like them or not (as standing below them can result in some messiness), they often stop me in my tracks. These flock formations, individuals acting in coordination, create constantly flowing art in the sky. It’s an incredible example, to me, of an organic entity that seems to exist and not exist all at same time. Individuals join in and key off their nearest neighbors to produce a system (an outcome if you will) that is more than the sum of its parts.

I’ve noticed this same phenomena occurring with teams and hiking partners that work well together. Each are playing off the others’ best capabilities, working together, and appreciating the effort. These examples might not be as artistic as a murmuration, but it can still be a thing of beauty.

The Iowa LTAP team, I think, produces outcomes that can’t always be explained by adding the sum of its parts together. When one plus one equals three, it can really be an interesting place to be because it takes the analytical mind and throws it into the contemplative realm, but that’s a subject for another column.

LTAP currently has a needs assessment survey available at this link: https://iastate.qualtrics.com/jfe/form/SV_3vISLL4zH5pTwx4. It will be open until the first week of November. We will also be offering our monthly webinars, Multidisciplinary Roadway Safety Series, and Winter Maintenance Workshop series in the coming months. An introduction to AutoCAD will also be advertised soon. We hope these offerings will be of value to those that attend and that they share the knowledge that they gather to serve the greater good.

With gratitude.
Keith

Reminder: Training Needs Assessment Survey

What are your training and technical assistance needs? Iowa LTAP is looking for your input! We are listening.

Please take a few minutes to answer the questions in the below link or QR code at right to help us in our organizational and planning decisions. We are looking for as much information as possible. Your input is crucial.

Link to survey: https://iastate.qualtrics.com/jfe/form/SV_3vISLL4zH5pTwx4. Please provide your input by the first week of November.
BABM winners continued from page 1

**Wright County — Auger Safety Valve**

Wright County staff developed a safety valve that disables the hydraulic auger motor on the sander of a plow truck in order for the bottom tailgate of the truck to be able to open. The safety valve isolates the motor such that it is safe for the driver to clean out the auger area without the possibility of the auger turning.

The device was made at a cost of about $105 in materials using shop tools and assembled within 1 to 2 hours, with 1 person doing the work, though an assembly line process could make the valve faster. It uses a stainless rod, high-pressure quarter turn valve, and a stainless flat steel to make a bracket that holds the rod and valve.

“We created a device to help plow truck drivers stay safe when working around the auger with as little inconvenience to the driver as possible. Our goal was to have this device to minimize the possibility of an accident to help insure that everyone goes home safely at the end of their shift,” read the county’s entry.

**Des Moines County — The Culvert Inspector**

Looking for a way to inspect the inside of crossroad culverts that were too small in diameter to fit a person, county staff went shopping, spent a couple hours fitting the pieces together, and then ultimately ended up with the culvert inspector.

Their purchases? A remote control car, GoPro camera that links to a phone application (app) and some accompanying accessories, a flashlight, zip ties, duct tape, and a rope. The shopping trip totaled $450, and then 2 hours of labor later, they had a device that could go where staff could not and to allow them to see inside smaller culverts.

“Since January 2021 this has been a game changer for us. We can effectively get a good visual on the condition of our pipe, where before we didn’t have the greatest access,” read the county’s entry.

Additional details about this year’s innovations will soon be available on the Iowa Innovations web page. In the meantime, check out the previous years’ winners at https://iowaltap.iastate.edu/iowa-innovations/.

2023 saw the most entries to the BABM Competition for the past several years, and Iowa LTAP staff appreciate all participants. To get a head start on the 2024 contest, visit https://iowaltap.iastate.edu/iowa-babm-competition/ to learn more about submitting an entry next year.

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**Iowa LTAP marks 40 years**

The Iowa LTAP was initially founded as a Technology Transfer Center on January 28, 1983, after the federal government for the first time appropriated funding for states to establish rural transportation assistance programs.

Over the years, the Iowa LTAP has gone through several name changes, but its mission has always been the same: to provide technical and management assistance to Iowa’s local governments and thus improve traffic safety through locally coordinated multidisciplinary efforts to build on trusted relationships.

To celebrate (and note) its 40th anniversary, the Iowa LTAP put together a booklet looking back at the founding of the program and how it has changed and grown—along with the world around it—since 1983.

**Iowa LTAP at 40 Years—Then and Now** includes the following:

- Insights into the changes to its ongoing programs and resources
- A look back at the changes to Technology News and technology in general
- Background on past and current staff
- Thoughts on the future of the program

Iowa LTAP staff will be distributing printed copies of the booklet at events, but anyone can check out the PDF draft online at https://iowaltap.iastate.edu/about-ltap/.
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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Technology News to transition to all-electronic edition
LTAP plans to publish final print copy in December 2024, seeks subscriber emails

After more than 40 years of printing a regular Technology News edition, the Iowa LTAP is planning to transition to an all-electronic newsletter by the end of 2024.

While staff are still solidifying details of the transition, we’re announcing early and hoping readers will want to continue to hear from us after the printing ends.

For those who already receive the electronic edition of Technology News or who already receive our Iowa LTAP Biweekly Resource newsletter, you will automatically be added to our electronic edition.

For those not currently subscribed to our electronic editions but would like to continue to receive Technology News after printing ends, please fill out either of the following:

• The 2023 Training Needs Survey (https://iastate.qualtrics.com/jfe/form/SV_3v1SSL4zH5pTwX4), particularly answering questions related to the transition.

• Join the Biweekly Resource newsletter edition by going to the Iowa LTAP homepage (https://iowaltap.iastate.edu/), clicking on the Subscribe to Our List link, and filling out the requisite information.

During this transition time period, please reach out to Director Keith Knapp (kknapp@iastate.edu or 515-294-8817) with any feedback or thoughts. We appreciate input on everything Iowa LTAP does, and we thank you in advance for bearing with us during this time.

Background on the transition
Within three months of the Iowa LTAP being established at ISU in 1983, the staff had put together and printed its first Technology News newsletter, a publication that has been printed on a regular basis ever since.

From a high of about 3,000 print subscribers in 1999, Technology News still goes out to nearly 1,300 readers each quarter. However, new subscription requests during the past nearly 5 years skew toward preferring an electronic copy of the newsletter (82% prefer either electronic or both electronic and physical, just 17 percent only want a physical copy).

Additionally, since the COVID-19 pandemic required Iowa LTAP to take all of its efforts online and necessarily increase its electronic mailings, we now have a strong mailing list and a reader base accustomed to hearing from us online and in a timelier manner.

Iowa LTAP staff have been discussing this possible transition from print internally and with the advisory board for about the past 5 years, and put simply by Director Keith Knapp, “It’s time.”
New tool helps agencies determine structural capacity of pavements

Those responsible for constructing and maintaining local roads systems know better than most the complexity of their pavements. The pavement structures often have multiple layers of various ages, thicknesses, stress levels, materials, conditions and past traffic impact.

These complexities can be a challenge for local public works agencies and county engineers in their efforts to estimate the structural capacities of in-service pavements and develop cost-effective strategies for managing their pavement systems.

To aid in those efforts, as part of an overarching research project, the Program for Sustainable Pavement Engineering & Research (PROSPER) developed a tool for engineers to use in their routine pavement analysis, design, and asset management. The Pavement Structural Analysis Tool (PSAT) has the added benefit of giving city and county engineers another means to better communicate with the public and elected officials regarding pavement needs.

The easy-to-use PSAT is a Microsoft Excel, macro, and Visual Basic for Applications (VBA)-based automation tool that is comprised of several consecutive subsections. In addition to the tool, the PROSPER project team led by PROSPER Director Halil Ceylan developed a user guide to aid in the tool’s use.

“The PSAT developed as part of this project is beneficial to Iowa county engineers responsible for pavement management,” said Ceylan, who is also a professor at Iowa State University. “It helps users make informed decisions about managing paved county roads, and this leads to an increase in the overall performance of the pavement network and improvements in pavement preservation and rehabilitation practices.”

The tool offers users the ability to predict critical pavement responses (maximum stresses, strains, and deflections), calculate equivalent thickness, compute current traffic load repetitions, detect fatigue and rutting failures, compute the structural number of each layer, determine damage, and estimate the remaining service life/remaining service interval.

It also allows the user to analyze two different pavement systems and one pavement system for multiple purposes, including a structural capacity comparison, traffic effect under different axle loads, modulus effect using different equivalent moduli, and structural capacity for one pavement system at a time.

The tool as currently developed can analyze three different pavement types: (1) asphalt concrete (AC) on a stabilized base, (2) AC on a granular base, and (3) AC on a stabilized base and granular base. It also analyzes up to 10 layers by using the equivalent layer theory, where multilayered pavement systems are converted into three-layered systems—an asphalt layer, a base layer, and a subgrade layer.

The team hopes to continue work on developing tools to aid agencies by developing a smartphone-based version of the tool, a similar tool for rigid (concrete) pavements, a structural overlay design tool, and a platform that integrates several tools that have been developed or are in development, among others.

To learn more about the PSAT, view the user guide, and download the tool, go to the project page at https://prosper.intrans.iastate.edu/research/completed/development-of-pavement-structural-analysis-tool-psat-for-iowa-local-roads/.


“The PSAT developed as part of this project is beneficial to Iowa county engineers responsible for pavement management.”

—Halil Ceylan, principal investigator on PSAT research project
In brief: Lasting LTAP impacts

In 2021, the Iowa Governor’s Traffic Safety Bureau (GTSB) found that 72% of fatal crashes in Iowa occurred on secondary roads, which accounts for approximately 79% of Iowa’s total roadways.

In response to statistics like these, the GTSB decided to shift the focus of its “High Five Rural Traffic Safety Project” back to seat belt enforcement. The campaign launched in October 2022 and included five participating rural counties: Appanoose, Fremont, Humboldt, Keokuk, and Mitchell.

These counties were chosen by the GTSB, along with a multidisciplinary team of traffic safety professionals, following a review of existing seat belt compliance figures and crash data. The ultimate goal of the project was to assist these counties in building safer communities by increasing overall roadway safety and seat belt enforcement and compliance. Local agencies worked to educate drivers on the benefits of complying with Iowa’s traffic laws while a Road Safety Assessment (RSA) team (which was facilitated by Iowa LTAP’s Safety Circuit Rider—David Veneziano) helped to identify prospective safety improvements at sites throughout each county.

According to Veneziano, all the RSAs were successful, however, one stood out as particularly impactful as it relates to seat belt use.

On June 20, 2023, during the RSA for Appanoose County, the team performed site evaluations at five intersections for safety improvements. There was also a pre-review of the county’s crash data, looking at the number of unrestrained fatalities. At the time, there had not been a fatal crash this year within Appanoose County. However, while traveling to the third assessment site, the team arrived on the scene of a fatal crash, which appeared to involve an unrestrained driver. The driver had been ejected after their vehicle encountered the ditch, which also caused the vehicle to roll and come to rest on its side.

“All I could think was that this is the reason why the High Five campaign is being conducted and that seat belts should be worn,” said Veneziano. “Seat belts make a difference. This crash could have been survivable.”

The team still had two additional sites to visit during the RSA. Veneziano recounts thinking, “Nothing else can happen from here, right?” However, at the fifth site, the team was met by more police lights. This time, it was due to an unrelated high-speed chase, which coincidentally ended at the intersection the team planned to review.

Despite delays during their field review, the RSA team provided Appanoose County a combination of both low- and high-cost, along with short- and long-term, improvement options, which included trimming vegetation, new or additional signage, and major reconfigurations to specific intersections to improve safety and functionality.

According to Veneziano, who was able to work directly with county engineers and local partner agencies, the RSAs conducted as part of this “High Five” project have been both impactful and successful. In fact, in reviewing crash data and trends in preparation for the assessment in Fremont County, it was observed that there has been a decrease in unrestrained crashes in 2023, which is likely due to their participation in the program.

With this “High Five” project now completed as of September 2023, it is the hope that the program’s impact will continue to not only encourage seat belt usage but change driver behavior overall.

Iowa LTAP currently performs roadway/intersection safety reviews on request, so if your agency is interested, or you have additional questions, please contact David Veneziano at 515-294-5480 / dvenez@iastate.edu. Iowa LTAP safety reviews are always conducted for free, thanks to Iowa DOT Traffic and Safety Bureau funding, in an effort to assist local agencies in maintaining safe and efficient roadways. Don’t forget to continue sharing your impact stories with us!

Article written by Brandy Haenlein, a communication specialist with InTrans.

Meet David Carney, new SUDAS director

The former Sioux City Public Works Director will also lead Iowa Public Works Service Bureau

The Iowa Statewide Urban Design and Specifications program (SUDAS) welcomed its new director, David Carney, in August.

“I am very excited to have been selected as the new SUDAS Director,” Carney said in the SUDAS announcement. “This will be an exciting career opportunity for me, while getting to remain active in the public works sector. Following in the footsteps of Paul Wiegand, Larry Stevens, and Dale Harrington is an honor in itself.”

Carney joins SUDAS with over 30 years of experience in public works engineering and maintenance—including 13 years with the City of Sioux City and 7 years with Monona County—and nearly 20 years of service on various SUDAS committees.

While the position will be different in some ways from his previous experience, Carney is ready and enthusiastic to take on the new role.

“I am looking forward to this new challenge. Iowa has something unique here with our SUDAS program,” said Carney, who is also leading the new Iowa Public Works Service Bureau (PWSB).
**Workshop and conference calendar**

[Information current as of September 20, 2023] Iowa LTAP will continue holding both virtual and in-person events and trainings throughout the fall.

For the most up-to-date information about in-person attendance requirements and additional upcoming virtual events, please check regularly at [https://iowaltap.iastate.edu/events/](https://iowaltap.iastate.edu/events/) and consider subscribing to our mail list at [https://iowaltap.iastate.edu/](https://iowaltap.iastate.edu/) for email updates.

<table>
<thead>
<tr>
<th>2023</th>
<th>Event Name</th>
<th>Location</th>
<th>Contact</th>
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<tbody>
<tr>
<td>October</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3–5</td>
<td>SPOT and Iowa State Roadeo 2023</td>
<td>West Des Moines</td>
<td>Beth Richards</td>
</tr>
<tr>
<td>10</td>
<td>Multidisciplinary Roadway Safety Series</td>
<td>Atlantic</td>
<td>David Veneziano</td>
</tr>
<tr>
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<td>Multidisciplinary Roadway Safety Series</td>
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<td>David Veneziano</td>
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<td>David Veneziano</td>
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<td>David Veneziano</td>
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<td>Waterloo</td>
<td>David Veneziano</td>
</tr>
<tr>
<td>26</td>
<td>Risk Management Lessons Learned from Lawsuits Against Local Road Agencies</td>
<td>Webinar (12:00 p.m. CT)</td>
<td>Keith Knapp</td>
</tr>
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<tr>
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<td>Winter Maintenance Workshop</td>
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<td>Paul Albritton</td>
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<td>Eagle Grove</td>
<td>Paul Albritton</td>
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<td>Traffic and Safety Forum</td>
<td>Ames</td>
<td>Judy Thomas</td>
</tr>
<tr>
<td>9</td>
<td>Winter Maintenance Workshop</td>
<td>West Union</td>
<td>Paul Albritton</td>
</tr>
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<td>Iowa Better Concrete Conference</td>
<td>Ames</td>
<td>Denise Wagner</td>
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<td>Atlantic</td>
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<td>Ames</td>
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<td>15</td>
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<td>Keith Knapp</td>
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<td>13–15</td>
<td>Iowa County Engineers Conference</td>
<td>Des Moines</td>
<td>Jacy Ripperger</td>
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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/](https://iowaltap.iastate.edu/workshops/).

*SUDAS director continued from page 6*

SUDAS Program Director Beth Richards and Carney now take on the task of developing a funding source for the PWSB in addition to improving the accessibility and acceptance of the program for over 900 cities across the state. The major task for SUDAS will be making updates to ensure compliance with the newly adopted Public Right-of-Way Accessibility Guidelines (PROWAG).

Carney is filling the roles after the retirement of previous Director Paul Wiegand in July:

“I want to say that the last 18 years has been very rewarding. It has been so good because of you—the public works professionals in the state,” Wiegand said. “I have had the pleasure of working with the SUDAS users across the state, and it is because of your involvement that we have been able to develop and maintain the only statewide design and construction specifications program in the nation.”

Wiegand, who retired after 51 years in public service, also noted that he and SUDAS Program Director Beth Richards have worked hard over the past five years to establish the Iowa PWSB, and he hoped city staff continued to help make the service bureau a success.

“We still have a long road ahead of us, but we’ve already made great headway with the PWSB. I look forward to what David and I can do together to further improve the services we provide and the cities we serve,” said Richards.

In addition to the new director, SUDAS is looking for a database administrator to aid with Iowa PWSB web management, after the May departure of the inaugural person to hold the position.
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