

ILLINOIS INTERCHANGE

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BUILD A BETTER MOUSETRAP

Barry Kent, Technology Transfer Program Manager

Have you or one of your co-workers recently built an innovative gadget or developed an improved way to do a job? Well, now is the time to show off your creativity. The Illinois Technology Transfer (T2) Center is participating in the 2019 Build a Better Mousetrap National Competition sponsored by the Federal Highway Administration's Local Technical Assistance Program (LTAP) and Tribal Technical Assistance Program (TTAP) centers. https://www.fhwa.dot.gov/ clas/Itap/build_better_mousetrap.aspx

The Build a Better Mousetrap National Competition's purpose is to collect and distribute real world examples of best practices, tips from the field, and assist in the transfer of technology for local and county transportation workers and other LTAP/TTAP clients.

We are looking for projects that you, your employees or crew designed and built. Projects can be anything from the development of tools, equipment modification, and/or processes that increase safety, reduce cost, improve efficiency, and improve the quality of transportation.

Judging criteria will be based on a fivepoint scale used at both the state and national levels:

- Cost
- Savings/Benefits to the Community
- Ingenuity

- Ease of Transference to Others
- Effectiveness

Submit entries to the Illinois T2 Center, where an independent panel of judges will pick a state winner. State winners will be announced in the Summer of 2019 and entry will be submitted to the National Local Technical Assistance Program/Tribal Technical Assistance Program (LTAP/TTAP) Build a Better Mousetrap Competition. National winners will be announced at the annual National LTAP/TTAP Conference on August 12-15, 2019 in Stowe, Vermont.

You can submit your entries by email to Barry.Kent@illinois.gov

The deadline to submit your entry is June 1, 2019. Not sure what to submit? Check out some past Mousetrap examples from other T2/LTAP Centers:

https://intrans.iastate.edu/app/uploads/ sites/10/2018/07/2015_Mousetrap_Entry_ Booklet.pdf

https://cornell.app.box.com/v/examples

https://www.clrp.cornell.edu/ trainingevents/BBMT.html

http://www.dot.state.oh.us/Divisions/ Planning/LocalPrograms/LTAP/Documents/ Ohio_LTAP_Center_Build_a_Better_ Mousetrap_Competition_2016.pdf

Good luck!



ILLINOIS TECHNOLOGY

TRANSFER CENTER

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Please pass this on to other interested parties in your office.



Illinois Department of Transportation Bureau of Local Roads and Streets 0



BASIC PESTICIDE USE AND TRAINING

Barry Kent, Technology Transfer Program Manager

A pesticide is any substance or mixture of substances used to destroy, suppress, or alter the life cycle of any pest. The pests could include algae, bacteria, unwanted weeds, or insects. Pesticide controls pest organisms by physically, chemically, or biologically interfering with their normal behavior. Although pesticides can be useful, they can also be dangerous if used carelessly or are not stored properly.

Some basic safety tips include:

- Always read the label first and follow the directions to the letter.
- Don't use more pesticide than directed by the label. Don't think that twice the amount will do twice the job.
- Use personal protective equipment when handling pesticides such as gloves, long pants, and long-sleeve shirts.
- Don't spray outdoors on windy or rainy days.

Deciding how and where to store pesticides can be as important as how and where pesticides are used. After purchasing the pesticide, read the label to see if any special precautions should be taken for safe storage. Store pesticides in the original containers and make certain the labels are intact. Pesticides should be stored in a locked storage room, cabinet or secure area. The area should be used only for pesticides and pesticide equipment and should be well-lit and well-ventilated. When applicators mix and load pesticides, they are handling the pesticide in its most concentrated form. It is during this process that they face the greatest risk of exposure and the greatest potential for environmental contamination. Taking precautions before, during, and after mixing and loading pesticides will not only ensure safety, but also save time and prevent accidents.

TRAINING

In Illinois, it is required that any person handling, applying or supervising the use of pesticides as part of that person's job must be certified and licensed by the Illinois Department of Agriculture.

Some basic precautions when mixing pesticides are:

- Read the label
- Never eat, drink or smoke while handling pesticides
- Do not handle pesticides if you are taking medication that might make you dizzy
- Don't work alone
- · Wear the correct protective clothing
- Have clean water and detergent available in the mixing and loading area
- · Mix pesticides outside whenever possible
- Open pesticide containers carefully
- Measure accurately

Pesticides most commonly affect the systems in the body that control nerves and muscles. Symptoms of exposure to pesticide poisoning can vary depending on the level of exposure. Mild poisoning



symptoms can include headache, dizziness or nausea. Severe poisoning symptoms could include the inability to breathe, unconsciousness and uncontrollable muscular twitching. If left untreated, the exposure could lead to death. Immediate treatment can make a difference in a person's recovery. Knowing the signs and symptoms of pesticide exposure is very important. It is important that employees learn to recognize these symptoms so they can recognize a potential overexposure in themselves or in a co-worker.





EVERY DAY COUNTS 5 INNOVATIONS Better, Faster, Smarter

Every Day Counts (EDC) is a State– based model that identifies and rapidly deploys proven, yet underutilized innovations to shorten the project delivery process, enhance roadway safety, reduce traffic congestion, and improve environmental sustainability. The Federal Highway Administration (FHWA) works with state transportation departments, local governments, tribes, private industry and other stakeholders to identify a new collection of innovations to champion every two years that merit accelerated deployment.

EDC 5 INNOVATIONS (2019-2020)

ADVANCED GEOTECHNICAL EXPLORATION METHODS

Conventional subsurface exploration methods provide limited data for project design, which can result in constructability issues and increased cost. Advanced geotechnical exploration methods offer solutions for generating more accurate geotechnical characterizations that improve design and construction, leading to shorter project delivery times and reducing the risks associated with limited data on subsurface site conditions.

COLLABORATIVE HYDRAULICS: ADVANCING TO THE NEXT GENER-ATION OF ENGINEERING (CHANGE)

Advances in hydraulic modeling tools are providing a more comprehensive understanding of complex flow patterns at river crossings versus traditional modeling techniques. These 2D hydraulic modeling and 3D computer visualization technologies also facilitate more effective communication and collaboration, improving agencies' ability to design safer and more cost-effective and resilient structures on waterways.

PROJECT BUNDLING

Many States continue to see an increase in the number of highways and bridges need-

ing attention, and those that are posted for reduced loads adversely affect travel, freight movement, and emergency response times. Project bundling helps address this national issue. By awarding a single contract for several similar preservation, rehabilitation, or replacement projects, agencies can streamline design and construction, reduce costs, and effectively decrease transportation project backlogs.

REDUCING RURAL ROADWAY DEPARTURES

Reducing fatalities on rural roads remains a major challenge in the United States. Roadway departures on the rural road network account for one-third of traffic fatalities. Systemic application of proven roadway departure countermeasures, such as rumble strips, friction treatments, and clear zones, helps keep vehicles in their travel lanes, reduce the potential for crashes, and reduce the severity of those crashes that do occur.

SAFE TRANSPORTATION FOR EVERY PEDESTRIAN (STEP)

Pedestrians accounted for 16 percent of all roadway fatalities, and crashes are predominantly at midblock and intersection crossing locations. As pedestrian safety continues to be a concern for transportation agencies across the country, cost-effective countermeasures are available to assist practitioners in providing safer crossings for all pedestrians.

UNMANNED AERIAL SYSTEMS (UAS)

UAS can benefit nearly all aspects of highway transportation, from inspection to construction and operations, by collecting highquality data automatically or remotely. These relatively low cost devices allow agencies to speed the data collection needed for better-informed decisions while reducing the adverse impacts of temporary work zones on work crews and the traveling public.

USE OF CROWDSOURCING TO ADVANCE OPERATIONS

State DOTs and local agencies traditionally rely on data from fixed sensors and cameras that monitor single locations to operate and manage their transportation systems. Using new sources of crowdsourced traffic data, agencies have access to large amounts of reliable, real-time data with more geographic coverage of the transportation system than with traditional sources. Combining crowdsourced data with traditional data sources enables better management and operation of the transportation system through faster detection of and response to problems. faster and more accurate traveler information to the public, and more proactive and effective operations strategies.





VALUE CAPTURE:

CAPITALIZING ON THE VALUE CREATED BY TRANSPORTATION

When public agencies invest in transportation assets that improve access and increase opportunity in the community, adjacent property owners benefit through greater land value and other economic impacts. Many techniques are available to the public sector to share in a portion of this increased land value to build, maintain, or reinvest in the transportation system.

VIRTUAL PUBLIC INVOLVEMENT

Robust public engagement during transportation planning and project development can accelerate project delivery by identifying issues and concerns early in the process. Virtual public involvement techniques, such as telephone town halls and online meetings, offer convenient, efficient, and lowcost methods for informing the public, encouraging their participation, and receiving their input.

WEATHER-RESPONSIVE MANAGEMENT STRATEGIES

More than 20 percent of crashes are weather related, and weather-associated delays can result in significant losses in productivity and efficiency. Weatherresponsive traffic and maintenance management strategies support State and local transportation agencies in deploying improved traffic control and traveler information systems that will significantly reduce highway crashes and delays resulting from adverse weather. It also promotes anti-icing strategies for reducing chloride use. The EDC program has made a significant positive impact in accelerating the deployment of innovations and in building a culture of innovation within the transportation community. By advancing 21st century solutions, the transportation community is making every day count to ensure our roads and bridges are built better, faster, and smarter. For additional information about EDC, visit their website at www.fhwa.dot.gov/ innovation/everydaycounts/







educate and innovate with expert insights and training, and engage the industry at networking events.

March 5-8, 2019

Indiana Convention Center Indianapolis, IN Sessions begin March 5 Exhibit hall open March 6-8

REGISTRATION OPEN

800-441-6832 | worktruckshow.com | info@ntea.com | #worktrucks19



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TECHNICAL CONGRESS



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2018-19 Training ILLINOIS TECHNOLOGY TRANSFER CENTER

Training Class Instructor

ADA Self Evaluation and Transition Plans Tim Peters (IDOT)

ADA/PROWAG (Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way) Seminar Traci Baker (FHWA), Carrie Nelsen (IDOT)

Basic Essentials of the Uniform Act, Real Estate Workshop for LPAs

James Kyte (FHWA)

Basic Math Refresher Training Barry Kent (IDOT)

Basic Supervisory Skills Barry Kent (IDOT)

Concrete Structures Doug Dirks (IDOT)

Earth Excavation and Embankment Ryan Sheley (IDOT)

Excavating-Trenching County Highway Department

Flagger Training Stephanie Stoverink (IDOT)

Grant Accountability and Transparency Act (GATA)

Carissa Calloway (IDOT), Dana Edwards (IDOT), Denise Johnson (IDOT), Shelly Runyard (IDOT), Aubrey Schuckman (IDOT), Cassandra Squires (IDOT), Melanie Turner (IDOT)

General Administrative Duties of the Township Highway Commissioner

Barry Kent (IDOT)

HEC-RAS Training Consultant

FHWA

IDOT Phase 1 Course John Sherrill (IDOT), Felecia Hurley (IDOT), Carlos Feliciano (IDOT), Charles Riddle (IDOT), Kevin Stallworth (IDOT), Janel Veile (IDOT), Cindy Stafford (IDOT), Janis Piland (FHWA), Ken Runkle (IDOT)

Illinois Roads Scholar Program APWA Chicago Metro Chapter in conjunction with IDOT T2

Implementing Safe Work Zone Operations Strategies FHWA

Instructing the Implementing Safe Work Zone Operations Strategies Training Course

MFT (Motor Fuel Tax) Accounting & Compliance Review Amy Whitecotton (IDOT)

MUTCD (Manual on Uniform Traffic Control Devices) Training Dean Mentjes (FHWA), Marshall Metcalf (IDOT)

Permeable Pavements Workshop FHWA

Pile Foundation Construction Inspection Mike Copp (IDOT)

Plant Mix Asphalt: Design, Construction, Maintenance, and Rehabilitation Kevin Burke III (Illinois Asphalt Pavement Association)

Project Administration Seminar

QBS (Qualification Based Selection) Training Tim Peters (IDOT)

Seal Coats (Oil and Chipping) Terry Fountain (Consultant)

Snow and Ice Control Tim Peters (IDOT)

Steel Structure Construction Inspection Justan Mann, Ryan Sheley (IDOT)

TMOST (Tractor Mower Operator Safety Training) Consultant

Understanding USACE and IDNR/OWR Permitting Requirements for Road Projects

Donna Jones (Army Corp of Engineers), Steve Altman (IDNR) – Downstate

Keith McMullen (Army Corp of Engineers), Steve Altman (IDNR) – St. Louis District Julie Rimbault (Army Corp of Engineers), Gary Jereb (IDNR) –

Chicago area

WMFT (Web Motor Fuel Tax)

Barry Kent (IDOT)

Work Zone Safety

Juan Pava (IDOT), Dean Mentjes (FHWA)

You, Others & Their Real Colors (Real Colors Series Program) Real Solutions (Real Colors Series Program) Real Applications (Real Colors Series Program) Real Teams (Real Colors Series Program) Stephanie Stoverink (IDOT)



OUT AND ABOUT

come meet the T2 staff!

The Illinois Technology Transfer Center events in 2019

January 13-15 in Washington DC at the Winter NLTAPA meeting March 5-8 in Indianapolis, IN at The Work Truck Show 2019 March 25-26 in Springfield at the TCTR DBE conference March 26-27 in Decatur at the ECIHCA seminar April 10-12 in Bloomington at the IACE annual Spring meeting May 1-3 in Peoria at the APWA Illinois Chapter conference May 6-10 in Effingham at the APWA Illinois Roads Scholar Program May 22-24 in Villa Park at the APWA Chicago Metro Chapter conference June 18-19 in LaHarpe at the WCIHCA seminar August 5-6 in Peoria at the THCOI conference August 12-15 in Vermont at the NLTAPA conference September 13 in Peoria at the APWA Snow Roadeo September 19-20 in Chicago at the IML conference October 9-11 in East Peoria at the IACE annual Fall meeting October 15-16 in Bloomington at the IPWMAN conference November 10-11 in Springfield at the TOI education conference



The T2 center has a strong relationship with the following:

APWA

(American Public Works Association) ECIHCA (East Central Illinois Highway Commissioners Association)

IACE

(Illinois Association of County Engineers)

(Illinois Municipal League)

IPWMAN (Illinois Public Works Mutual Aid Network) LTAP

(Local Technical Assistance Program) NACE

(National Association of County Engineers)

NLTAPA (National Local Technical Assistance Program Association)

NTTD (National Transportation Training Directors)

TRB (Transportation Research Board)

TCTR

(Today's Challenge Tomorrow's Reward) THCOI

(Township Highway Commissioners of Illinois)

TOI

(Township Officials of Illinois) TOIRMA

(Township Officials of Illinois Risk Management Association)

WCIHCA

(West Central Illinois Highway Commissioners Association)



CCPR FOR COLD RECYCLING RAP

Barry Kent, Technology Transfer Program Manager Thanks to Asphalt Contractor magazine for its assistance with this article

With mountains of reclaimed asphalt pavement (RAP) building throughout the country, cold central plant recycling (CCPR) is giving government agencies and asphalt producers alike the opportunity recycle that RAP into useful cold mixes.

With CCPR, the plant comes to the stockpile, not the other way around. CCPR plants may be factory-made, or trailer-mounted, assembled from existing equipment. Either way, a pugmill stabilizes the RAP using asphalt emulsion, Portland cement or foamed liquid asphalt.

- The mobility of the cold recycling mixing plant means it can be used right at a construction site, or right at the RAP stockpiles at a plant. This eliminates the need to haul materials away from the jobsite and haul new materials back in, saving money and time in trucking, and reducing mobile emissions. Minimal to no permits will be required.
- The central plant operates at high levels of productivity with consistent quality, with the whole operation being concisely controlled. CCPR plants include material hoppers, a belt scale, a computer controlled recycling agent system, an additive system (if necessary), in addition to the pug mill.
- Discharge conveyors enable the stabilized, recycled mix to either be stockpiled or continuously loaded on to trucks for immediate placement on the jobsite.

A two-lane section was completed combining CCPR with cold in-place recycling (CIR) and full-depth reclamation (FDR). The project saved millions of dollars by reusing the resources at hand, rather than buying and transporting tons of new material to the site and disposing of the old.

For the CCPR, asphalt layers were milled down about 10 in. and that stockpiled RAP was cold-recycled in an on-site mobile central plant where a foamed asphalt binding agent was added. In this case a Wirtgen KMA 220 cold recycling mixing plant recycled the RAP in mixes at ambient temperatures for full reuse. The binding agents added to the recycling process included 1 percent of cement and 2.2 percent of foamed liquid asphalt.

The twin-shaft continuous mixer of the KMA 220 transformed the source material and the two additives into a homogeneous cold mix of high quality that was directly discharged into a waiting truck via a loading conveyor. Its mobile design enabled the mixing plant to be set up in the immediate vicinity of the construction site, which not only reduced the distance to be covered by the transport trucks, fuel consumption rates and CO2 emissions but, in the final analysis, also resulted in a significant reduction of the overall construction costs.

The material recycled and upgraded by the KMA 220 mixing plant was transported back to the construction site for placement.

In summary, CCPR is a viable alternative when stockpiles of high quality RAP are available, or when it is not possible to in-place recycle the pavement, according to the Asphalt Recycling & Reclaiming Association (ARRA). This process delivers long-term, high quality pavements while decreasing emissions and saving the road owners money.

LEARN MORE

View the FHWA TechBrief on cold recycling here: www.fhwa.dot.gov/ pavement/asphalt/pubs/hif17042.pdf

Read about cold recycling of asphalt at ARRA's web site:

www.arra.org/page/coldrecycling

Visit contractor Coughlin Company's page at www.coughlincompany.com/ central-plant-recycling/

Read more about Wirtgen Group's KMA 220i cold recycle plant at www.wirtgen.de/en/products/ cold-recyclers-soil-stabilizers/mobilecold-recycling-mixing-plant/kma220.php

For more on pavement preservation, visit FP2 Inc. at www.fp2.org, and the National Center for Pavement Preservation at

www.pavementpreservation.org

And for more on CCPR in the context of pavement preservation, visit the new web site of the Pavement Preservation & Recycling Alliance (PPRA) at www.roadresource.org



2018 reconstruction, millings from existing pavement are cold central plant-recycled using foamed asphalt process in Wirtgen KMA 220i, and stockpiled for replacement as base course. Along with full-depth recycling (FDR), intensive asphalt pavement recycling will save millions over three-year course of project

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ASK AN ENGINEER!

Is there an engineering issue that is troubling you? Are you confused on how to address a specific road problem? Then the "Ask an Engineer" section is here to help! Submit your safety, engineering or other road questions to us and we will consult an engineer within the Illinois Department of Transportation to find an answer for you. Questions can be emailed to Barry.Kent@illinois.gov or mailed to Illinois Department of Transportation, Ask an Engineer (Attn: Barry Kent), 2300 S. Dirksen Parkway, Room 208, Springfield, IL 62764.

The T2 Center will randomly pick a question to appear in the Newsletter.

QUESTION: When a tree root causes a sidewalk to raise up and/or break apart, what is the best solution?

ANSWER: Unfortunately, this is not a problem with an easy solution. However, if there are tree roots damaging the sidewalk, this problem needs to be addressed: the sooner, the better!

Vertical surface discontinuities are defined as vertical differences in level between two adjacent surfaces. They shall be 0.5 inches maximum.

WAYS TO ADDRESS VERTICAL SURFACE DISCONTINUITIES

If adequate, non-damaged sidewalk (36" to 48", depending upon requirements) exists for the pedestrian access route, the damaged sidewalk around the tree could be removed, enlarging the tree pit. If the raised portion of the sidewalk creates a minor tripping hazard, a concrete saw or grinder could be used to remove material to provide a smooth walking surface. Shaving and beveling uneven concrete is about a quarter of the cost of replacing it. It may be possible to repair badly lifted sidewalks by ramping the sidewalk over the tree roots. Ramp runs may have a running slope of 8.33 percent maximum.

Some sidewalks are so damaged they need to be replaced. After the concrete is removed, it is occasionally necessary to grind down the tree's surface roots. There are a few tactics to fix the problem and prevent a reoccurrence. Some effective methods are:

- Put down a thicker base layer of rock under the new concrete allowing the roots to expand.
- Reinforce the concrete with rebar or use a thicker concrete slab (4" to 6") to make the sidewalk less likely to break or lift.
- Rebuild the sidewalk to bend or slope around the tree, giving the trunk and roots room to grow.
- Replace the damaged concrete panel with asphalt. It may be possible to ramp over tree roots with asphalt rather than remove them.

As a last resort, sometimes it's best to just remove the tree and start over. Keep in mind the intent is to address the situation as best as you can.





U.S. Department of Transportation Federal Highway Administration

Local government and tribal transportation practitioners across the U.S. are responsible for more than 75 percent of our Nation's highway network. AASHTO's TC3 training library is one resource for local and tribal agencies in building and maintaining the skills necessary to operate such a vast system. FHWA has an agreement with AASHTO to provide local government and tribal transportation practitioners with access to this library.



What is TC3?

About the Courses

TC3 is AASHTO's online training library of 190+ training modules. Courses are developed by subject matter experts and include national best practices. All courses are available on the TC3 website and also a mobile app, available on iOS and Android systems.



TRANSPORTATION Curriculum Coordination

AASHO

COUNCIL

Courses are developed using a Core Curriculum Matrix model that focuses on six technical

categories: construction, employee development, maintenance, materials, pavement preservation, and traffic and safety. Each category is divided into four skill levels that define a career progression, from entry level (Level I) through management and administrative (Level IV). Users can then take courses that match their field and skill level.

For maximum flexibility, users can build a personal library of courses. They can also start and stop courses as needed based on their schedule. The platform includes a dashboard that tracks progress through each course a user starts so they can see where they are at a glance and pick back up where they left off.

More than 90 percent of the courses also qualify for professional development hours (PDHs) that can contribute to continuing education and licensure renewal.



Get Started!

Access to courses is available to local agency and tribal staff only. To get started:

Create an AASHTO account login at https://register.transportation.org

- Select Register. Then you must enter your agency email address.
- After registration is complete, you will have unlimited access to the curriculum.
- To browse and gain access to the TC3 course offerings, go to https://tc3.transportation.org/
- Use promotion code: D5X3-B3D9-52CB-4XCX
- For additional help, watch this YouTube video: https://youtu.be/NcFONY2R78s

FHWA does not endorse specific products, services or enterprises.

TC3 www.tc3.transportation.org FHWA Center for Local Aid Support (CLAS) CLAS@dot.gov www.fhwa.dot.gov/innovativeprograms/centers/local_aid



Illinois Interchange

