



# Moving forward

Ohio Department of Transportation Research Program Newsletter

2023 Volume 1



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## FY2023 STAR Recipients

In July 2022, ODOT launched a new grant-style program meant to engage students at Ohio-based colleges to address transportation topics in an innovative manner. The Student Transportation Advancement Research (STAR) Program was designed to challenge students and ODOT to think outside-the-box in order to identify novel approaches to solve issues, create new value by applying new processes or techniques to established topics, or simply test out new ideas. The first STAR RFP was issued in September 2022 with 10 different topics. A total of 15 proposals were received. ODOT is pleased to announce that 6 STAR grants were awarded.

STAR Project	Agency Principal Investigator	Student Team
Explore the USDOT/Leidos CAVE-In-A-Box Tool	University of Cincinnati Arthur Helmicki	Sai Bonthu Ethan Link
Explore the USDOT/Leidos CAVE-In-A-Box Tool	University of Cincinnati Munir Nazzal	Ryan Mahle Dmitry Manasreh Safaa Swaleh
In-Road Electric Vehicle Charging for Parked Vehicles	Wright State University Hamed Attariani	Tyler Ricketts Majid Dousti
Evaluate Sources and Reduction Potential for Nitrogen and Phosphorus in Vegetated and Un-Vegetated Ditches	The Ohio State University Jon Witter	Benjamin Phillips Alex Grimm Travis Mecklenburg
GIS Tools to Identify Bridges with Bats	University of Cincinnati Joseph Johnson	Janette Perez-Jimenez Jacob Koch
Investigate the Effectiveness of Compost Blankets for Roadside Vegetation Establishment and Stormwater Management	University of Akron Nariman Mahabadi	Armin Motahari Mohammed Rafid Al Haidar

ODOT Research is looking for feedback from the research community on the STAR program so we can make improvements. If you are a researcher from an Ohio-based university, please take a few minutes to complete a brief survey.

[STAR Program Survey](#)



# ODOT & ORIL Issue RFPs for FY2024

ODOT and Ohio’s Research Initiative for Locals (ORIL) are currently accepting proposals for their fiscal year 2024 programs.

2024-01	Investigation of Wrong Way Pavement Alert Devices
2024-03	Investigation of Innovations in Mounted Attenuators for Safety in Work Zones
2024-04	Development of a Pavement Repair Guide and Training Tools
2024-05	Veterans’ Glass City Skyway Bridge Main Cable Evaluation
2024-06	Evaluation Methods for Ohio's Post-World War II (WWII) Residential Properties
2024-07	Investigating Innovations in Litter Collection
2024-08	Correlation of New Sensor Types vs. Retroreflectivity Ratings
2024-09	Re-evaluating Asphalt Rutting Test for Balanced Mix Design and Quality Assurance Acceptance
2024-10	Strategic Mowing and Nutrients in Roadway Stormwater
2024-12	Investigation of Vegetation Mitigation and Uncrewed Aircraft Systems
2024-13	Economic Development Impacts of ODOT Funding on Public Roadways
2024-14	Determining the Effectiveness of Commercial Vehicle Safety Alerts
2024-15	Exploring the Use of Ground-Based Robotic Assistance in Uncrewed Operations of State DOTs
2024-16	Division of Engineering Research-On-Call
2024-17	Division of Planning Research-On-Call
2024-18	Division of Construction Research-On-Call
2024-19	Division of Operations Research-On-Call
2024-20	DriveOhio Research-On-Call
2024-21	Research Technology Transfer Research-On-Call
2024-ORIL1	Pavement Marking Selection for Local Public Roads in Ohio
2024-ORIL2	ORIL Research-On-Call

Submissions for these RFPs must be received by **3:00PM (ET)** on **March 17 2023**. RFPs and instructions are available on the [RFP website](#). Please read all instructions carefully and make sure you are following the guidelines. Allow for adequate time to submit proposals via the online submission process to avoid delays and technical issues.

All questions concerning RFPs should be submitted as described on the [RFP website](#). Clarifications will be posted as they become available, so be sure to check the site regularly for updates.

If you are thinking about submitting a proposal, check out the “Insider Tips to Getting Your Proposal Noticed” article on page 6 of the [2022Volume1](#) edition of *Moving Forward*.

## OTEC 2023 Call for Abstracts

The Ohio Transportation Engineering Conference (OTEC) 2023 will be taking place October 17-18, 2023 at the Convention Center in Columbus, Ohio. This year’s theme is: Leading the Transportation Transformation. Abstracts are now being accepted. The deadline to submit an abstract is April 7, 2023. Researchers with active projects must obtain approval from ODOT Research **before** submitting an abstract to OTEC. To request approval, complete a [project change request form](#) for permission to disseminate preliminary results.



For additional information on OTEC, check out the [conference website](#).

# Acoustic Effectiveness of Vinyl Fence Noise Walls

by Kimberly Burton, Principal Investigator, Burton Planning Services, Westerville, Ohio

There is currently a lack of material options from which noise walls can be constructed, and there has been limited research on vinyl material as a noise abatement option. Therefore, ODOT contracted with Burton Planning Services from February 2021 to August 2022 to study the acoustic, aesthetic, and cost benefits of vinyl materials to guide future noise mitigation implementation strategies.



To accomplish this effort, the research team performed a literature search on vinyl noise barriers, conducted acoustic testing on three locations with vinyl materials, and then analyzed the data to develop recommendations and conclusions.

The acoustic effectiveness of vinyl materials was evaluated using the feasibility and reasonableness factors based on ODOT's existing noise program. The results indicated that vinyl materials are an attractive and effective option for mitigating the impacts of traffic noise. Construction

best practices were also identified to improve the vinyl noise wall installation process. In addition, ideal site conditions were identified for vinyl materials, including relatively flat terrain, minimal obstructions, maintenance accessibility, and soil and ground conditions that are not sandy and do not have high water content.



Vinyl materials can deliver 75% of the noise reduction performance of concrete materials for 50% to 75% of the cost.

The results can be used to guide future noise mitigation strategies. There is a possibility of providing noise mitigation to more Ohio communities while saving taxpayer dollars. As a result, the end users of this research could include state DOTs, engineers, planners, and environmental specialists across the U.S. who are interested in more noise mitigation options. In the future, ODOT could consider integrating vinyl noise walls into its noise program in the following ways: integrate vinyl materials into existing programs, create a new vinyl noise wall program, consider a vinyl noise wall alternative on a case-by-case basis, or provide information on vinyl materials to local governments and private communities.

The research project *Acoustic Effectiveness of Vinyl Fence Noise Walls (SJN 136141)* was conducted by Burton Planning Services with the assistance of CAP-STONE & Associates, Inc. To read the fact sheet, [click here](#). To access the entire final report, [click here](#). To watch the Research Results Presentation, [click here](#).

## Peer Exchange Explores Partnerships

A Peer Exchange was held November 29-30, 2022 at ODOT. The Peer Exchange theme was collaborations between state DOT research programs and LTAP Centers to support technology transfer activities. Attendees traveled from Georgia, Vermont and Washington DOT/LTAP programs for the day and a half meeting.

Each participating state (both the Research Program and the LTAP Program) provided a 20-minute presentation on the first topic which was the current status, structure and relationship between the Research and LTAP programs, including where they both fit in their state DOT table of organization and their programs' mission, vision and goals. Each state discussed how they are funded, staffing, what types of activities they perform and whether implementation of research findings was a focus.

Of particular interest to all attendees was the extent and frequency of the collaboration currently existing between the Research Program and the LTAP Center, and what that looked like. There was ample time in the agenda for brainstorming between the Research and LTAP staffs with a substantial amount of open conversation focusing on each state. Attendees discussed ways in which they could expand upon their current levels of collaboration by identifying potential connections between the two programs, ways to enhance technology transfer activities and how to overcome barriers that were present at their agencies.



## ORIL Board Representative Update

The conclusion of 2022 brought about the expiration of terms for multiple ORIL Board representatives. This resulted in the selection of new board members, which was organized by each respective association with expiring terms.



The County Engineers Association of Ohio (CEAO) appointed Darren Lebrun (Scioto County) to replace Mark Eicher (Muskingum County), reappointed Warren Schlatter (Defiance County) and appointed Jeff Mainden (Athens County) to finish the remaining term of Steve Luebbe (Fayette County).



ODOT selected Craig Landefeld (Pavement Engineering) to assume the position vacated by Keith Smith (District 8) and Mike Loeffler (Structural Engineering) to assume the position vacated by Jennifer Elston (District 8).



Ohio Municipal League

The Ohio Municipal League (OML) reappointed Brian Thomas (City of Perrysburg) and Bob Taylor (City of Dublin).



An open solicitation for applications for the academic representatives was issued by ODOT's Research Section. The Board selected Dr. Patrick Bassal (The Ohio State University) and Dr. Serhan Guner (The University of Toledo) to fill the positions vacated by Dr. Benjamin Sperry (Ohio University) and Dr. Jonathan Witter (The Ohio State University).

The ORIL program extends its sincerest appreciation to the retiring board members as well as those who have agreed to serve for an additional term. The donation of their time and expertise has helped develop a research program that is designed and positioned to provide solutions to issues on Ohio's local roadway system and improve Ohio's overall transportation system. The ORIL program also welcomes the new board members. Additional information on board members is available on the [ORIL website](#).

## ORIL Board Selects Chair for 2023



The ORIL Board is pleased to announce that Greg Butcher has been selected to serve as Board Chair for the 2023 calendar year. Greg is currently the City Manager of Pickerington with oversight of all city operations. Prior to joining the City of Pickerington, he was the long-standing Engineer of Violet Township. We are looking forward to Greg's continued leadership, vision, and dedication to the future of the ORIL program.

## Analysis of Mitigating Concrete Cracks with Bacteria

Concrete is typically utilized by villages, cities and counties in Ohio for the construction of bridges. Throughout its life, concrete develops cracks in the surface, which allows water into the voids. During the freeze thaw cycle of the winter, the water freezes and expands causing the size of the crack to expand. Larger cracks allow more water to enter the structure, which results either in larger cracks or additional cracking. This cycle continues until local failure occurs in the concrete, which can result in costly repairs.

One potential way to address this issue is to introduce bacteria into the concrete mix. The concept is that when the bacteria is exposed to air, the bacteria precipitates a calcite into the concrete. This calcite fills the cracks and bonds to the concrete, mitigating the negative impacts of concrete cracking. If this method is successful and cost-effective, this could provide local public agencies with an opportunity to reduce maintenance and repair activities and the associated costs.



The goal of this research was to assess the feasibility and impact of incorporating bacteria into concrete mixes used on the local roadway system for extending service life.

*Article continued on page 5 →*

# Mitigating Concrete Cracks with Bacteria ... Continued

To address the limitations in knowledge associated with use of bacteria in concrete to prevent cracking, this project investigated the influence of a variety of bacterial systems, including ones produced using local Ohio cement and fly ash, mixture designs, curing, and exposure conditions, to determine bacterial system efficiency over time, and optimum growth conditions. To prove the ability of the systems to be upscaled to more realistic production sizes, and realistically examine many of the factors affecting in-situ placements, concrete pavement mixtures (in the form of a sidewalk) were cast using an ODOT QC1 mixture, exposed to the Ohio environment, and tracked over the second year of the project, to establish viability of the system when exposed to real-world environmental conditions.

### Can bacteria heal concrete cracks?

Yes, bacteria were able to heal cracks in mortar samples if samples were sprayed daily with additional nutrient solutions over 6-8 weeks.

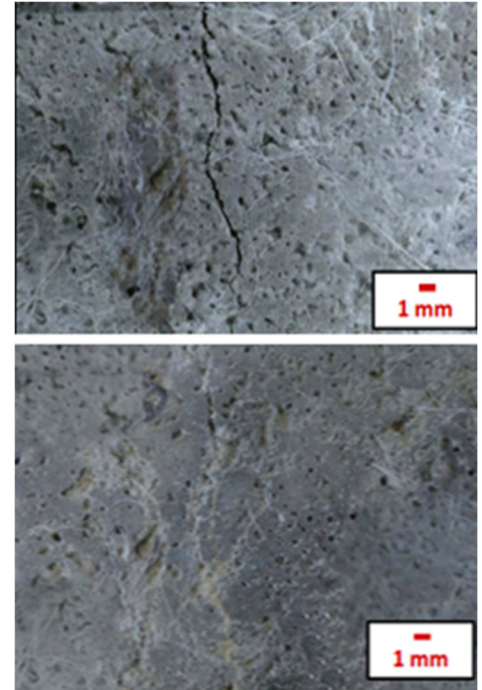
### Can we produce "better" bacteria from the local environment?

Maybe. Bacteria produced from local soil samples did successfully heal cracks but was generally outperformed by the standard bacteria (*B subtilis*). The slight cost savings associated with the environmental sample doesn't appear worth the performance reductions and potential system variability. Still, it is possible that other starting materials or locations may provide better, more resilient strains of bacteria.

### Can we use existing concrete mixture designs successfully for bacterial concrete mixtures?

Yes and No.

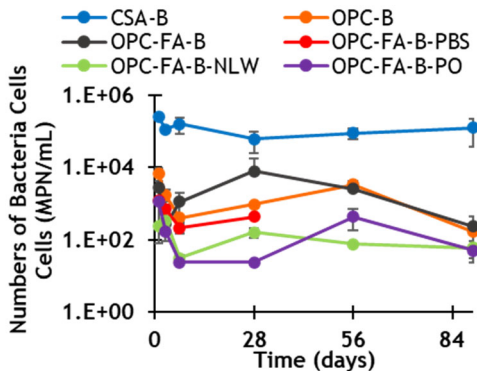
- > Fly ash and tap water did not reduce bacteria numbers. However, non- or de-chlorinated water must be used.
- > Bacteria must be mixed in using a protective media. Here bacteria were sorbed into a small amount of lightweight sand.
- > CSA cement increased the numbers of bacteria surviving in samples by 100x that of OPC and could lead to longer periods over which crack healing would be successful.
- > Bacteria had little effect on concrete compressive strengths, nor resistance to freezing and thawing. Some improvements in permeability in bacteria mixes were evidenced by reduced water absorption.



Cracked *B. Subtilis* bacteria mortar before and after healing

### How do we cure the concrete to induce crack healing?

Nutrients and hydration for the bacteria were applied by spraying in a manner similar to application of curing compound. Samples cured by ponding retained fewer living bacteria and did not demonstrate significant crack healing.



Viability of *B. subtilis* bacteria in mortar cubes. PO: cured by ponding in nutrient solution, PBS: saline solution use in lieu of mixing water, NLW: lightweight sand not used.

### How do environmental stressors like heat, cold, and salt affect the bacterial system?

All environmental stressors reduced bacteria numbers and prevented successful crack healing.

### How much does incorporating bacteria into concrete cost?

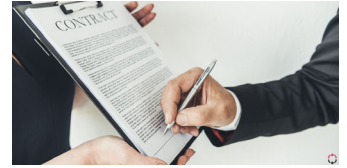
Initial concrete materials costs are approximately double that of non-bacterial mixes.

This research project was conducted by The Ohio State University under the direction of Dr. Lisa Burris, with the assistance of Dr. Natalie Hull, Cansu Acarturk, Judith Straathof, and Yijing Liu.

To read the fact sheet, [click here](#). To download the final report, [click here](#). To view the research results presentation, [click here](#).

# Updates to Standard Research Agreements

In January 2023, ODOT’s Chief Legal Counsel updated the templates for the standard research agreements. Specific edits can be viewed for each template on the Standard Research Agreements drop-down on the [Research Manual Website](#).



- **Period of Performance:** The State of Ohio’s budget is developed and authorized on a biennial basis. Each biennium begins on July 1st in odd calendar years (e.g., July 2023–June 2025). As mandated by the Ohio Constitution, the State’s ability to authorize expenses is limited to the biennium in which the contract is issued. The process of “renewing” research contracts has been clarified in this section of the contract. ODOT’s Research Section will provide all active contracts with written notification of ODOT’s intention to renew. Contractors will be required to acknowledge and accept the renewal. This renewal process does not change any provisions of the contract, previously issued addenda, or the approved proposal. ODOT Research Section will repeat the renewal process for all contracts that cross over future biennium until the project is completed.
- **Protection for Contracting Authority:** Language was added that the Contractor understands that their employees may be given access to situations including, but not limited to active construction projects, work zones and heavy equipment.
- **Responsibility for Claims:** Language was clarified to indicate that the Contractor will be responsible for liability brought about by the negligence of their employees, agents, or subcontractors and will not be responsible for liability caused by negligence of the State, its employees, other contractors or agents.
- **Limitation of Liability:** Language was clarified to indicate that neither party will be liable for any indirect, incidental, or consequential loss or damage of any kind.

The new contract language is effective with all contracts issued for FY2024, which includes the currently posted RFPs. Researchers considering on submitting proposals should make sure the offices at their agency that sign contracts are aware of the changes *before* making any submissions.

# Award Winning Research

Recently, several ODOT research projects have received regional and national recognition.



The Ohio Chapter of the International Society of Arboriculture (ISA) presented ODOT with the Safety Award for the efforts associated with the research project “Efficient and Safe Removal and Debris Disposal of Ash Trees Killed by Emerald Ash Borer.” To access the final report, conducted by Davey Resource Group, [click here](#).



The Intelligent Transportation Society (ITS) of the Midwest presented ODOT and DriveOhio with the 2022 Project of the Year for the efforts of the Ohio-led pooled fund study on Automated Vehicles [TPF-5 (453)]. The award focused on the “Infrastructure Owner Operator (IOO) Strategic Roadmap for Accelerated Adoption of Automated Vehicles” that was conducted by AECOM. To access the final report, [click here](#).



AASTHO RAC selected “Using Environmental DNA (eDNA) to Determine Hellbender Distribution” as a High Value Research Project for 2022. The study, conducted by the University of Cincinnati, was highlight at TRB 2023. To access the final report, [click here](#).

# Upcoming Research Results Presentations

ODOT's Research Section is offering the below live research results presentations. These events are free, however, registration is required. Use the links provided to register. Certificates of attendance will be provided by the Ohio LTAP Center for professional development hours. If you can't make it to the live presentation, don't worry. Results presentations are recorded so you can view them at a later date.

## Inlet Protection Comparison for Sediment Control on Roadway Construction

Presenter: Anil Tangirala and Justin Kerns, ms consultants, inc.

**March 9, 2023—2:00PM—3:00PM (EDT) — To register, [click here.](#)**

Description: The Inlet Protection Comparison for Sediment Control on Roadway Construction research project intends to provide Ohio Department of Transportation (ODOT) with performance data associated with key criteria for manufactured inlet protection devices in order to assess which products are appropriate for inlet sediment controls on ODOT roadway construction projects. The research team constructed a full-scale testing facility on Ohio State's University's campus to simulate stormwater runoff and sediment loading of a typical roadway construction project. Commonly available manufactured inlet protection products were compared to Ohio Environmental Protection Agency approved practices through a combination of performance and longevity testing. Based on the test results, the research team identified performance measures and material specifications of inlet protection devices to be used in developing a qualified product database and a procedure for assessing future devices. The research team also recommended new and updated inlet protection guidance for incorporation into ODOT's design documents.



## Optimizing the Performance of Item 404-Low Volume Traffic Mixes

Presenter: Ala Abbas, University of Akron

**March 13, 2023, 1:00PM—2:00PM (EDT) — To register, [click here.](#)**

Description: Most local public agencies (LPAs) in Ohio follow the Ohio Department of Transportation (ODOT) specifications for designing asphalt mixtures placed on low-volume roads, with the majority of these agencies using Type 1 surface mixes prepared using PG 64-22 asphalt binders. As an alternative, some LPAs use Item 404LVT, a recipe mix that can be placed at thickness of 1 inch to correct minor surface distresses. The main goal of this study was to optimize the Item 404LVT specifications for use by LPAs in Ohio on low-volume local roads. To achieve this objective, information was collected about the current state-of-the-practice for using Item 404LVT mixes in Ohio. In addition, a laboratory testing plan was designed and executed using materials collected from different asphalt plants across Ohio. This research project also involved evaluating the field condition of pavement sections constructed using Item 404LVT mixes. Based on the outcome of the laboratory test plan and the pavement condition evaluations, several recommendations were made to improve the performance of Item 404LVT mixes. In addition, recommendations were made to modify the Item 404LVT specifications in order to make the mix more cost-effective without compromising its performance. *This research project was sponsored by Ohio's Research Initiative for Locals (ORIL).*



## Driveway Assisted Devices

Presenter: Deborah McAvoy, Ohio University

**March 20, 2023, 1:00PM—2:00PM (EDT) — To register, [click here.](#)**

Description: The purpose of this research was to evaluate the performance of the driveway assisted devices (DADs) and, based on the findings, provide recommendations for consideration of their inclusion into FHWA's Manual on Uniform Traffic Control Devices (MUTCD). It is anticipated that MUTCD 6F.84 on temporary traffic control signals may require some adjustment to allow for driveway assistance devices that do not comply with all the current requirements for traffic signals. This research determined if DADs are a safe, effective and cost-effective means for maintaining driveways in a signalized work zone.



## Eastern Massasauga Rattlesnake: Ohio Population Survey and Survey Technique Development

Presenter: Bill Peterman, The Ohio State University

**April 12, 2023, 10:00AM—11:00AM (EDT) — To register, [click here.](#)**

Description: Eastern Massasaugas (*Sistrurus catenatus*) endangered in Ohio and federally threatened. Current approved survey methods involve corrugated tin surveys supplemented by visual encounter surveys. While effective, these traditional methods have low detection rates and require intensive field effort which can complicate environmental reviews of project impacts to the species. The Adapted-Hunt Drift Fence Technique (AHDriFT) presents an opportunity to potentially increase survey efficiency and effectiveness. This research found AHDriFT was effective at detecting massasaugas across all surveys.



# ODOT's Research Program is Everywhere

Over the past 7 months, ODOT's Research staff went to various events spreading the word about the cool things that come out of research projects. Here's a few of the highlights...



Team UpDOT, August 2022



OTEC, October 2022



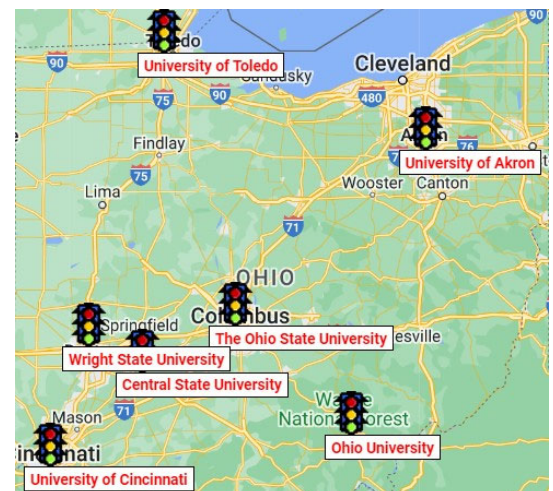
Ohio Township Association Winter Conference, January 2023



Ohio State Fair, August 2022

In the Spring of 2022, ODOT Research announced they would be offering visits to the various universities in Ohio. In addition to an open offer for any university to request a visit, individual invitations were sent to twenty-two different institutions. Seven universities accepted the offer and ODOT's Research crew visited those campuses during August 2022. The feedback from those visits was very positive, so Research is planning on making these activities a standard part of our outreach efforts. Every few years, ODOT Research will coordinate visits to Ohio-based universities. These visits can be used to provide updates on the program, learn about the capabilities and expertise of the university, and offer specialized training to university staff on a variety of topics including, but not limited to, invoicing, contracting, inventory, proposal preparation, and so forth. In addition to this focused outreach effort, universities may contact the Research Section at any time to request a visit tailored to their specific needs.

If your institution didn't have a visit in 2022, or you were unable to attend your university's event, you can access the presentation and handouts from the August 2022 visit on our website by [clicking here](#).



University Visits 2022



# New Final Reports Available Online

Project Information	Links
Acoustic Effectiveness of Vinyl Fence Noise Walls (August 2022), Kimberly Burton, Burton Planning Services	<a href="#">Fact Sheet</a> <a href="#">Final Report</a> <a href="#">Results Presentation</a>
Analysis of Mitigating Concrete Cracks with Bacteria (December 2022), Lisa Burris, The Ohio State University ( <i>ORIL PROJECT</i> )	<a href="#">Fact Sheet</a> <a href="#">Final Report</a> <a href="#">Results Presentation</a>
Development of Simplified Factors for Lateral Distribution of Loads of Non-Standard Gauge (NSG) Axles (June 2022), Travis Butz, Burgess & Niple, Inc.	<a href="#">Fact Sheet</a> <a href="#">Final Report</a> <a href="#">Results Presentation</a>
Division of Construction Research On-Call, Halil Sezen, The Ohio State University  Task 3: Detection of Distress in Asphalt Concrete Pavement (March 2022), Harold Von Quintus, Applied Research Associates, Inc. Task 5: Downward Imaging Techniques to Detect Pavement Defects (October 2022), Harold Von Quintus, Applied Research Associates	<a href="#">Task 3 Final Report</a>  <a href="#">Task 5 Final Report</a>
Division of Engineering Research On-Call (ROC), Kevin White, E.L. Robinson Engineering of Ohio, Co.  Task 3: Scour Prediction Tools (May 2022), Daniel Che, Ohio University Task 4: Implementation of Structural Design Methodology for Spray Applied Pipe Liners in Gravity Storm Water Conveyance Conduits (August 2022), Shad Sargand, Ohio University Task 5: Detention Basin Water Quality Outlet Redesign (August 2022), Mark McCabe, JEO Consulting Group, Inc. Task 6: Noise Barrier Foundation Design (July 2022), Peter Narsavage, EL Robinson Engineering of Ohio Co. Task 7: Chemical Stabilization of Subgrades Cement Changes (August 2022), Karl Berghauer, Resource International, Inc.	<a href="#">Task 3 Final Report</a> <a href="#">Task 4 Final Report</a> <a href="#">Task 5 Final Report</a> <a href="#">Task 6 Final Report</a> <a href="#">Task 7 Final Report</a>
Division of Operations Research On-Call (ROC), Bastian Schroeder, Kittelson & Associates Inc.  Task 3: Measuring ODOT's Towing Recovery Incentive Payment (TRIP) Program (May 2022), Kevin Lee, Kittelson & Associates Inc. Task 5: ODOT Overtime Management (June 2022), Bastian Schroeder, Kittelson & Associates Inc.	<a href="#">Task 3 Fact Sheet</a> <a href="#">Task 3 Final Report</a>  <a href="#">Task 5 Fact Sheet</a> <a href="#">Task 5 Final Report</a>
Division of Planning Research On-Call, Benjamin Sperry, Ohio University  Task 10: Deer Passage Through Rock Channel Protection (RCP) Designs and Options (November 2022), Benjamin Sperry, Ohio University	<a href="#">Task 10 Final Report</a>
Efficient and Effective Ways to Manage Water Through ODOT's Temporary Fills During Construction (May 2022), Daniel Che, Ohio University	<a href="#">Fact Sheet</a> <a href="#">Final Report</a> <a href="#">Results Presentation</a>
Efficient and Safe Removal & Debris Disposal of Ash Trees Killed by Emerald Ash Borer (November 2022), Cheryl Daniels, Davey Resource Group, Inc.	<a href="#">Fact Sheet</a> <a href="#">Final Report</a>
Infrastructure Owner Operator (IOO) Strategic Roadmap for Accelerated Adoption of Automated Vehicles (AVs) [Automated Vehicle Pooled Fund Study: TPF-5(453)] (June 2022), Paul Avery, AECOM	<a href="#">Final Report</a>
Stream & Wetland Mitigation Forecasting: Developing a Predictive Model for Faster Project Delivery and Cost-Savings (July 2022), Elizabeth Myers Toman, The Ohio State University	<a href="#">Fact Sheet</a> <a href="#">Final Report</a> <a href="#">Results Presentation</a>
Winter Pothole Treatments for Local Roads (May 2022), Munir Nazzal, University of Cincinnati ( <i>ORIL PROJECT</i> )	<a href="#">Fact Sheet</a> <a href="#">Final Report</a> <a href="#">Results Presentation</a>

# Farewell Zona

We are saying goodbye to Zona Kahkonen Keppler who retired in December 2022. After the ODOT Library closed, Zona was asked to join the Research Office to assist staff with all things research and information related. If you had the opportunity to work with her one-on-one, you would agree that there was no piece of information or obscure research report that she couldn't locate!

Zona was also ODOT's alternate AASHTO RAC member and managed the Research Office's national activities. Now that she is retired, her plans include more time in the gym, heading out West to hike and rock hunt, spending more time with her kids and grandchildren, and of course reading!



# Upcoming Events

<b>March 2023</b>	9 - Results Presentation: Inlet Protection 13 - Results Presentation: 404 LVT Mixes 17 - ORIL & ODOT RFP Closes @ 3PM(ET) 20 - Results Presentation: DADs 29 - NCHRP 20-44(28) ODOT Webinar on Channel Maintenance 30 - NCHRP FY2024 State Ballots Due	<b>June 2023</b>	19 - ODOT Closed  FY2024 Contract Negotiations ODOT Research Reassess STAR Program
<b>April 2023</b>	12 - Results Presentation: Easter Massasauga  ORIL & ODOT Review Proposals for FY2023	<b>July 2023</b>	State FY2024 Begins 4 - ODOT Closed 24-27 - AASHTO RAC Summer Meeting 26 - ORIL Board Meeting
<b>May 2023</b>	1-5 - AASHTO RAC Region 3 Peer Exchange 17 - ORIL Board Meeting 29 - ODOT Closed  ODOT Governance Finalizes Researcher Selections for FY 2024 Projects SP&R-B Work Program Book Submission to FHWA Ohio Division Office		

Research Section Staff		
Vicky Fout	Program Manager	614-466-3029
Michelle Lucas	Contract Manager	614-644-8135
Jill Martindale	Project Manager	614-644-8173
Jen Spriggs	Project Manager	614-644-5754

Ohio Department of Transportation  
 Office of Statewide Planning & Research  
 1980 W. Broad Street, MS 3280  
 Columbus, OH 43223

[research@dot.ohio.gov](mailto:research@dot.ohio.gov)  
[www.transportation.ohio.gov/research](http://www.transportation.ohio.gov/research)