National Center for
INFRASTRUCTURE
TRANSFORMATION
Led by: Prairie View A&M University

- **Federal Agency and Organization Element to Which Report is Submitted** – US Department of Transportation, Office of the Assistant Secretary for Research and Technology (OST-R), University Transportation Center Program (UTC)
- **Federal Grant or Other Identifying Number Assigned by Agency** - National University Transportation Center (UTC) headquartered at Prairie View A&M University and focused on Improving the Durability and Extending the Life of Transportation Infrastructure
- **Project Title** – National Center for Infrastructure Transformation
- **Center Director Name, Title, and Contact Information (e-mail address and phone number)** – Judy A. Perkins, Ph.D., PE, Director, juperkins@pvamu.edu, 936-261-1655.
- **Name of Submitting Official** – Same as Center Director
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- **Signature of Submitting Official** -

PRAIRIE VIEW A&M UNIVERSITY
Texas A&M Transportation Institute
RUTGERS Center for Advanced Infrastructure and Transportation
MICHIGAN STATE UNIVERSITY
ASU Arizona State University
BLINN
TEXAS A&M UNIVERSITY

1. ACCOMPLISHMENTS

a. What are the major goals of the program?

Prairie View A&M University (PVAMU) leads the National Center for Infrastructure Transformation (NCIT). The following consortium partners support PVAMU - Arizona State University (ASU), Blinn College District (BCD). Michigan State University (MSU), Rutgers University (RU), Texas A&M Transportation Institute (TTI) and Texas A&M University (TAMU). NCIT's goal is to support improving the durability and extending the life of transportation infrastructure by transforming the transportation system through leadership, research, education and workforce development (EWD), and technology transfer and collaboration (T2C).

b. What was accomplished under these goals?

Leadership/Management Important Activities

- The NCIT Leadership meets weekly and consists of the following individuals:
  - Judy Perkins – Director/Advancing Education in Excellence (AEIE) Coordinator
  - Melissa Tooley - Deputy Director/Research Coordinator
  - Claudia Zapata – ASU - Associate Director & AEIE Coordinator
  - Marshall Rich – BCD - Associate Director & EWD Coordinator
  - Bora Cetin – MSU – Associate Director
  - Md Jobair Bin Alam – PVAMU- Associate Director
  - Yonggao Yang – PVAMU- Associate Director & EWD Coordinator
  - Patrick Szary – RU – Associate Director
  - Anand Puppala – TAMU – Associate Director
  - Charles Gurganus – TTI – Associate Director & EWD Coordinator
  - Paul Carlson – TTI – T2C Coordinator
- The NCIT Executive Leadership consisting of the Director and Deputy Director met with all Associate Directors, the AEIE Coordinators, EWD Coordinators, and T2C Coordinator to discuss management and operational matters, their roles and responsibilities, and policies and standing operating procedures (SOPs) that will guide NCIT's business practices.
- The Director and Deputy Director meet virtually and in person on a regular basis to ensure the execution of NCIT's implementation plan and calendar of events for Year-1, Year-2, and upcoming Year-3.
- The Associate Directors meet periodically with the research faculty at their respective institutions to share Center information, ensure implementation of individual and collaborative projects/programs, and respond to questions and/or comments.
- During Fall 2024, the NCIT Director met with PVAMU's President, the Provost and Senior Vice President for Academic Affairs, Vice President of Research & Innovation, and the Dean of the Roy G. Perry College of Engineering (RGPCOE). The purpose of the meeting was to obtain an update on NCIT, and it was decided that PVAMU's executive leadership would meet with the Director twice a year.
- NCIT's Advisory Board held a virtual meeting on December 6, 2024. Participating in the meeting were nine members of the Advisory Board, nine members of the Leadership Team, and three staff members. The agenda topics included an update on NCIT's accomplishments, Year #2 plans, and an open discussion on future research priorities, EWD initiatives, and the engagement of industry.
- NCIT's executive leadership consisting of the Director and Deputy Director participated in the NCIT PVAMU Internal Oversight Committee second meeting on December 6, 2024. The Committee members consist of the Provost and Senior Vice President for Academic Affairs; Senior Vice President for Business Affairs and Chief Financial Officer; Vice President of Research & Innovation; and Dean of RGPCOE. This committee is charged with monitoring the effectiveness of NCIT's internal processes, thus ensuring compliance with the Notice of Funding Opportunity. The committee will meet quarterly and are immensely proud to have PVAMU leading a national-tier US Department of Transportation (USDOT) University Transportation Center (UTC) focused on improving durability and extending the life of transportation infrastructure. The agenda topics included an update on NCIT's progress-to-date (from the first meeting held on March 6, 2024, to December 6, 2024), Year #2 priorities, Year #2 contract agreements, status of project meeting cost sharing obligations, the reconciliation of Year #1

funds, addition to current membership, and the proposed April 2nd site visit from the US DOT Office of the Assistant Secretary for Research and Technology,

- The Director, RU Associate Director, and NCIT Staff (Elissa Cuellar – TTI UTC Assistant Director and Haylee Yung – TTI UTC Associate Program Director) attended the Council of University Transportation Center (CUTC) Winter Meeting in Washington, DC during January 4-5, 2025.
- PVAMU to receive the Workforce Development Leadership Award during the CUTC Winter Meeting held in Washington, DC on January 4, 2025. Read more about the award here: https://aptapassengertransport.com/apta-sponsors-cutc-award-renews-mou/.

Collectively and individually, NCIT's leadership cadre are having a significate impact on the UTC infrastructure community through the education, research, and outreach efforts occurring on their campuses and beyond. The NCIT consortium members continue to mentor and encourage students, early career faculty, and experienced researchers to look for more prominent roles throughout the transportation profession. Below are the achievements of NCIT's faculty, students, and staff for this reporting period.

- **BCD**
  - Marshall Rich and Jay Anderson are creating a pathway for graduates from the Highway Construction Workforce Partnership (HCWP) Program to enter to earn their Associate of Applied Science (AAS) degree in Construction Management and Highway Construction Occupational Skills Award. This will be a shift from a separate highway construction degree to one that provides coursework related to highway construction as well as have a direct feed into an existing construction related degree offered at BCD.
  - BCD and TTI have the HCWP Program listed as a Department of Defense Skill bridge option for transitioning servicemembers.
  - In January 2025, two BCD students (Marcos Espinoza and Thomas Trouts) and two staff members (Lauren Buth and Marshall Rich) attended the Transportation Research Board (TRB) Annual meeting in Washington, DC. Marcos and Thomas are part of the BCD's Engineering Academy which provides a pathway for students to enter TAMU's engineering program.
- **MSU**
  - Surya Congress received the Withrow Teaching Excellence Award 2025 from MSU's College of Engineering.
  - Farhad Abdollahi received his PhD in Fall 2024 at MSU's Department of Civil and Environmental Engineering. A portion of his PhD studies was funded by NCIT on a project titled: "I*mpact of Climate Change on Road Maintenance Budgets and Practices*." Dr. Abdollahi won the Best Poster Award from the "TRB Subcommittee on Sustainable and Resilient Pavements" for a paper presented at the 2024 TRB Annual Meeting. The awarded paper is entitled, "UPDAPS-Flood: A Mechanistic-Empirical Flexible Pavement Analysis Tool to Evaluate the Effect of Flooding Events on Flexible Pavement Performance." After graduating, Dr. Abdollahi is working as a Research Engineer at Genex Systems-Asphalt Binder and Mixture Laboratory for the Federal Highway Administration's Turner-Fairbank Highway Research Center.
- **PVAMU**
  - Precious Ejiekeme was honored with the 2025 Outstanding Graduate Student Award from the Computer Information Systems Master's Program.
  - Judy Perkins received the 2025 RGPCOE Outstanding Faculty Research Award.
  - Judy Perkins received the 2024 Excellence in Research & Technology Award from the USDOT Future of Transportation Summit Team, January 2025.
- **RU**
  - New Jersey Department of Transportation (NJDOT) research staff selected Todd Pisani to present a poster on the EDC-7 Pilot Evaluation of Strategic Workforce Development for Justice-Challenged Youth: project during the 26th Annual NJDOT Research Showcase in October 2024.
  - Peter Jin won the NJDOT Research Implementation Award for his work related to Intelligent Transportation Systems (ITS) in Middlesex County in October 2024. Dr. Jin is working with NCIT researchers on the ongoing ITS Scorecard effort.

Research Important Activities

NCIT's research program includes traditional engineering and planning research but also policy research to ensure that the Infrastructure Investment and Jobs Act's (IIJA) unprecedented investment is made wisely. NCIT now has a total of 21 active projects - 16 research, 3 EWD, and 2 T2C - operating in the second year of the grant.

During this reporting period, one new research project was funded and is listed in Table 1 below. The Principal Investigator (PI) received the Kickoff Research Packet for the NCIT research projects/programs. Per Table 1, TTI's project proposes to conduct a calibration process to region specific local (rural versus urban) and environmental conditions, policies, and materials that will allow for the development of state-of-the-art technology to improve design methods and construction procedures for low volume roads.

Table 1 – NCIT Research Project (1 Total)

Project Number	Project Title	Lead Institution
1	Development of a Regional Model for Pavement Design for Local Low-Volume Road Conditions	TTI

Also, during this reporting period, NCIT launched their Year #3 procurement process on November 5, 2024. The initial timeline included a November 5th Call for Problem Statements and would conclude with rendering a decision on Full Proposals by March 31st. However, the timeline underwent several adjustments to accommodate recommendations from the partners and the decision on full proposals will occur by May 30th.

EWD Important Activities

The scope and reach of the NCIT consortium will have a major impact on the transportation workforce through its EWD programs. NCIT is creating an inclusive culture to develop a globally competitive workforce by educating the next generation of transportation leaders. Through collaboration and engagement with various educational stakeholders, programs and activities are designed to address critical workforce needs and prepare a diverse pool of future professionals who are innovative and creative thinkers. To support the goal of producing graduates and a professional workforce proficient in the skills needed in the infrastructure focus areas, a collection of strategies and approaches are used.

Advancing Excellence in Education (AEIE) Scholarship

NCIT is committed to shaping the next generation of transportation leaders through strategic investment in education, research, and mentorship. As part of this commitment, the Advancing Excellence in Education (AEIE) Scholarship was established to support outstanding undergraduate students pursuing degrees in transportation related disciplines. In addition, the winners are required to complete the NCIT's Leadership through Mentoring Program, participate in the NCIT Student Council, and are paired with a mentor from among the NCIT leadership ranks, such as an advisory board or steering committee member.

In Fall 2024, four exemplary students were awarded the AEIE Scholarship, and they are (1) Jimmy Hanashian (ASU), (2) Ishaan Patel, (3) Taylor Stenzel, and (4) Nasir Starks (PVAMU). All the recipients are majoring in civil engineering.

Highway Construction Workforce Partnership (HCWP) Program

In Fall 2023, the Highway Construction Workforce Partnership (HCWP) Program launched its inaugural 15-week session, enrolling high school students in a curriculum that blended classroom instruction with hands-on training in highway construction fundamentals, workplace safety, and heavy equipment operation.

By Summer 2024, interest in the HCWP Program had grown significantly. The curriculum changed from 15-weeks to an intensive 6-week course. While shorter in duration, the program maintained its rigor and

value. Students trained in highway safety protocols, materials testing, equipment operation, and took part in a live hot-mix asphalt paving exercise.

To date, two cohorts have completed the program. The first cohort consisted of six graduates and the second cohort graduated 11 students. All 17 graduates secured employment in the heavy highway construction industry immediately upon graduation. Cohort #3 has 10 students, and their session will begin on March 31, 2025.

Additionally, the success of the HCWP Program served as the foundation for PVAMU to receive the Workforce Development Leadership Award during the CUTC Winter Meeting held in Washington, DC on January 4, 2025. Sponsored by the American Public Transportation Association, the award was accepted by the NCIT Director and per the photo below, several other NCIT members participated in the award recognition as well.

From left to right: **Ryan Stiesi**, Public Relations Specialist, Center for Advanced Infrastructure & Transportation (CAIT), RU; **Patrick Szary**, NCIT Associate Director, RU; **Haylee Yung**, UTC Associate Program Director, TTI; **Elissa Cuellar**, UTC Assistant Director, TTI; **Judy Perkins**, NCIT Director, PVAMU; **Carita Ducre**, Vice President, Workforce Development & Educational Services Department, APTA; **Cherise Myers**, Director, Workforce Development, APTA; **Joe Niegoski**, Senior Director, Educational Services, APTA; **Doran Barnes**, CEO, Foothill Transit, West Covina, CA, **and** APTA Past Chair of the Board of Directors; and **Art Guzzetti**, Vice President, Mobility Initiative and Public Policy Department.

Dr. Judy Perkins (center) of PVAMU accepts the APTA-sponsored CUTC Workforce Development Leadership Award

Leadership through Mentoring Program

The goal of the NCIT Leadership through Mentoring programming is for graduate and undergraduate students to learn how to diversify their participation in leadership processes beyond the hierarchical leader-follower construct. This effort focuses on understanding leadership as a ubiquitous and ever-present social process of influence within groups to prepare students for working in the transportation industry. Transportation industry professionals need a broad array of leadership competencies to engage with multiple simultaneous complex projects responding to communities changing regional needs, climate change, or remediating past highway projects that harmed historical marginalized communities. Graduate students and undergraduate students apply together for this semester-long collaboration and those undergraduates

selected receive a stipend. This structured mentorship process emphasizes shared leadership actions that are distinct from hierarchical leading actions. The mentor pairs develop and implement a mentoring plan that supports both partners' goals and objectives. A mentorship coordinator supports the mentor pairs, meeting individually with pairs to start and then twice monthly. All the mentor pairs also participate in online exercises to expand their leadership knowledge and competencies.

Five versions of the online course have been created thus far to accommodate participants and across the consortium, a total of 20 participants completed various versions of the course and 6 are enrolled to complete the course by August 2025.

TTI 2025 Summer Undergraduate Research Internship Program
It is more than just an internship; it is an opportunity for students to embark on a journey of discovery within the dynamic and ever-evolving field of transportation. Whether someone is interested in infrastructure durability and resiliency, economic analysis for transportation improvements, or innovative technologies shaping the future of transportation, this internship is a gateway for undergraduates to take part in real-world research.

This program is offered through NCIT's TTI partner and is open to undergraduate juniors. Every student should have a strong enthusiasm for engaging in research, be paired with a TTI research mentor, and contribute to an ongoing research initiative within one of TTI's UTCs. The core focus area of the respective UTCs are as follows:

- Center for Advancing Research in Transportation Emissions, Energy, and Health: Transportation Emissions, Energy, and Health
- NCIT: Infrastructure Transformation
- SPTC: Climate-related Transportation Challenges/Resilience

Recruitment for the program concluded in February 2025 and student selection will be completed in April 2025.

Student Council
The NCIT Student Council unites student representatives from each member institution to foster leadership, collaboration, and professional development across the consortium. This vibrant council provides students with opportunities to contribute to NCIT's mission while developing key competencies in leadership, research, and ethical practice.

Meetings are held virtually at least once per semester with the inaugural meeting held in April 2024 with 10 students in attendance. During Spring 2025, students began sharing their research and NCIT-related activities, enriching cross-institution collaboration and peer learning. In February 2025, two BCD students - Thomas Trouts and Marcus Espinoza – gave a presentation on the what they learned and experienced from attending the 2025 TRB Annual Meeting. Through these activities, the Student Council aims to create a vibrant, inclusive community that empowers the next generation of infrastructure leaders.

Student Graduates for Fall 2024
We are thrilled to announce the outstanding achievements of Farhad Abdollahi from MSU and Udochukwu Igwenagu from PVAMU. Both graduated in December 2024. Farhad Abdollahi received a doctoral degree in Civil & Environmental Engineering and Udochukwu Igwenagu obtained a master's in computer information systems. Dr. Abdollahi supported Dr. Muhammed Kutay's project entitled, "Impact of Climate Change on Road Maintenance Budgets and Practices." Mr. Igwenagu supported Dr. Jobair Bin Alam's project entitled, "A Smart IoT-Based Detection System for Remote Earth Movement of Highway Embankment Civil Engineering."

T2C Important Activities

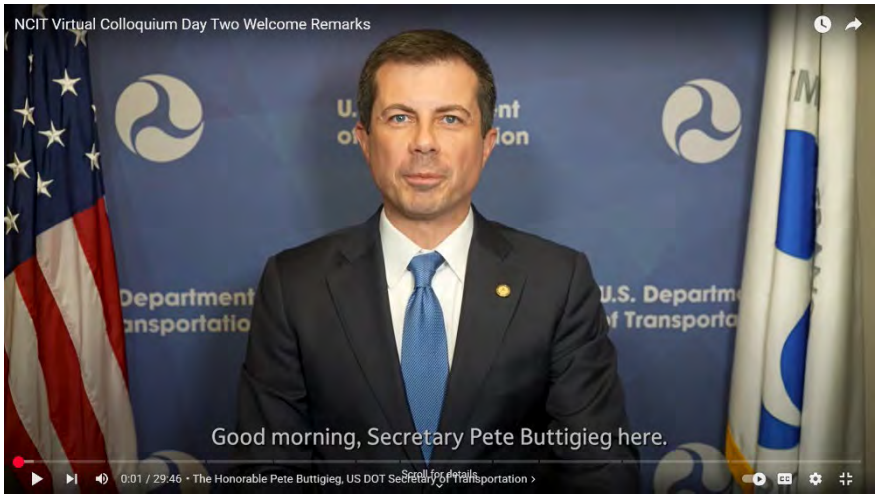
Proven T2C techniques combined with strong industry, agency, and association partnerships will ensure that NCIT's output is put into practice.

NCIT Webinar Series

- The NCIT Webinar Committee was successful in hosting an online seminar during this period. Dr. Alison Black, Senior Vice President & Chief Economist with the American Road & Transportation Builders Association was our speaker. Her presentation was entitled, "Unlocking the Future: How the IIJA is Impacting the U.S. Transportation Construction Market." Thirty-four were in attendance on Tuesday, October 8, 2024, and the presentation covered how the market impacts of the IIJA legislation is reshaping U.S. transportation, how the IIJA's historic investment is affecting the transportation construction market and discuss how states are utilizing federal funding from the IIJA's highway and transit programs. Additionally, information regarding allocation strategies and key projects that drive infrastructure development across the country was shared.

2024 Inaugural NCIT Virtual Colloquium

- The NCIT Colloquium is a cornerstone of our mission, grounded in collaboration, innovation, and a steadfast commitment to advancing transformative practices that improve lives, expand opportunities, and enhance the resilience of our multimodal surface transportation infrastructure systems. This inaugural event held during November 12 - 14, 2024, marked a significant milestone in NCIT's mission to promote its core objectives. Hosted by PVAMU, the 3-day event brought together a lineup of distinguished speakers, faculty researchers, and emerging leaders across the NCIT consortium.
- The event opened with remarks from the former U.S. Secretary of Transportation Pete Buttigieg, joined by esteemed academic leaders including the presidents of ASU, MSU, PVAMU, RU, the vice chancellor & dean of TAMU college of engineering and chancellors of BCD and the Texas A&M University System. Other senior USDOT officials and the TTI Agency Director were among those providing opening remarks as well. Their presence reflected the national importance of NCIT's work and underscored the commitment to building resilient and technologically advanced infrastructure systems.
- Speaking on the importance of the NCIT, Former Secretary Buttigieg praised PVAMU for making history in 2023 as the first HBCU to lead a national level USDOT UTC. He emphasized the importance of inclusive research and leadership, noting, *"It only makes sense; HBCUs have long been centers of achievement and innovation, where talent is fostered and groundbreaking research is conducted.*" He added that the work underway at NCIT and at universities nationwide *"is going to transform transportation as we know it, connecting people to jobs and education, improving safety and reliability, and fostering life-changing technological breakthroughs."* Click this link to view and listen to the recordings of the Opening Remarks session - https://youtu.be/d6tfgMD4MT4.



Former USDOT Transportation Secretary Pete Buttigieg

- Moreover, the colloquium featured more than 30 speakers and moderators, including federal and state transportation leaders, university researchers, and private-sector innovators. Sessions spanned a range of topics such as automated inspection technologies, resilient infrastructure, education and workforce development, and technology transfer.
- The event also spotlighted:
  - Keynote addresses from executive leaders with Infrastructure Engineering Incorporated & Affiliates and the Texas Department of Transportation (TxDOT)
  - 9 student speakers (undergraduate and graduate) presenters
  - 23 faculty/researcher presenters
- Among other highlights of the event was the recognition of outstanding student presenters, whose work showcased the creativity and research excellence emerging from NCIT's academic network and reflected the future of transportation innovation.
- Dr. Perkins, NCIT Director stated "*The NCIT Virtual Colloquium provides a unique opportunity to bring together some of the brightest minds in transportation*."
- Read more about the colloquium event here: https://online.flippingbook.com/view/276252034/
- On March 18, 2025, two PIs complete the required T2C/Intellectual Property (IP)/Commercialization Webinar in Year-2. NCIT engages Pete O'Neill, Chief Innovation Officer of the Texas A&M Innovation Office to discuss topics on IP (license of IP rights), patents (process and timeline), copyrights, trademarks, proprietary information, trade secrets, commercialization, invention disclosures, and public disclosures.

2025 Transportation Research Board (TRB)Annual Meeting

- The 2025 TRB Annual Meeting, held in January, featured a significant presence from NCIT. NCIT faculty and research members delivered 18 lectern presentations and participated in 34 poster sessions, showcasing a wide range of projects and research efforts.
- This strong representation provided an opportunity for NCIT to share the progress and impact of its initiatives in transforming the future of transportation. From infrastructure innovation to workforce development and policy research.

2025 NCIT TRB Travel Assistance Program

- NCIT remains steadfast in its commitment to student development by supporting participation in the annual TRB Meeting, one of the most prestigious gatherings in the transportation field. Through its TRB Travel Assistance Program, NCIT awards up to ten graduate students each year with $1,500 in travel support, enabling them to attend without the financial burden that often accompanies conference travel.
- More than just a travel grant, the initiative encourages students to present or co-author peer-reviewed research papers, helping them sharpen their communication skills, gain professional feedback, and expand their academic networks. Students supported by NCIT not only represent their institutions but also the broader NCIT consortium, showcasing research with real-world relevance and academic excellence.
- The 2025 Cohort had nine students deliver lectern presentations highlighting two of NCIT's three research topical pillar which are (1) Infrastructure Durability and Resiliency and (2) Technology. The nine students represented ASU (1 student presenter), MSU (4 student presenters), PVAMU (1 presenter), and TAMU (3 presenters) consortium partners.
- Through this initiative, NCIT ensures that student voices are not only supported financially but also uplifted and celebrated on a national stage, fostering the next generation of transportation leaders.

Administrative/Management Important Activities

- The Director and TAMU Sponsored Research Services (SRS) representatives met on a regular basis with our UTC Grants Manager to ensure NCIT would successfully meet the UTC reporting requirements.
- Paul Carlson with TTI joined NCIT as a T2C Coordinator in February 2025.

- The Director, RU Associate Director, and NCIT Staff (Elissa Cuellar – TTI UTC Assistant Director and Haylee Yung – TTI UTC Administration) attended the Council of University Transportation Center (CUTC) Winter Meeting in Washington, DC during January 4-5, 2025.

b. How have the results been disseminated?

Combining the efforts of supported researchers, we successfully disseminate the results from our three core areas of research, EWD, and T2C, through the following avenues:

- NCIT website [https://ncit.pvamu.edu/], total visits to the site as of March 31, 2025, was 8,031.
- 46 conference poster presentations
- 49 conference lectern presentations
- Access colloquium presentations and videos [https://online.flippingbook.com/view/276252034/]

c. What do you plan to do during the next reporting period to accomplish the goals?

Leadership/Management Important Activities

- Schedule a follow up meeting between the NCIT Director and PVAMU's executive leadership.
- The NCIT Committees listed below will use their Year #3 Plans of Action to ensure programs/projects involving all partners are successfully implemented.
  - NCIT AEIE Scholarship – Perkins (**Chair**), Tooley, and Zapata
  - NCIT Student Council – Rich (**Chair**), Gurganus, and Yang
  - NCIT Traveling Assistance to TRB Annual Meeting – Cetin (**Chair**), Zapata, and Puppala
  - NCIT 2025 Virtual Colloquium Event – Szary (**Chair**) and RU Personnel
  - NCIT Webinars – Puppala (**Chair**), Alam, Szary, and Tooley
- NCIT's Advisory Board second meeting will occur by June 2025. NCIT's Advisory Board meeting agenda will include topics such as NCIT Update, NCIT Year #3 Portfolio of Activities (Research, EWD, and T2), NCIT Project Presentation entitled, "*The Impact of Electric Vehicle Infrastructure on Transportation Revenues," NCIT* Advisory Board By-Laws, Expanding Advisory Board Membership, NCIT Year #4 Outlook & Recommendations, and tour NCIT Related Research Facilities
- During August 5-8, 2025, BCD, PVAMU, TAMU, and TTI will host an in person NCIT Annual Partner's Meeting. The details of this meeting will be discussed in the next SAPR.
- By August 2025, select one more NCIT T2C coordinator to fill the current vacancy.

Research Important Activities

- Ensure PVAMU and the UTC Grants Manager receive all IRB approvals for specific research projects/programs.
- Finalize the Year #3 procurement process by selecting projects to be funded by May 30, 2025.

EWD Important Activities

- The NCIT Student Council will host their April 2025 meeting, and four students will present on the NCIT research project they work on. The student presenters are listed below.
  - Kalani Rajamanthri (ASU) – Graduate Student
  - Alyssa Magyar (MSU) - Undergraduate
  - Segun Akinwa (PVAMU) – Graduate Student
  - Clay Caldwell (TAMU) – Graduate Student
- The second Smart Transportation Technology Workshop will be held from May 20-22, 2025, at PVAMU and will cover topics such as the role of Internet of Things (IoT) and Artificial Intelligence (AI) technologies impact on modern infrastructure transportation systems. Dr. Yang and his team expect to host 15 students during the 2025 workshop.
- ASU's K-12 education and outreach efforts will include offering a science, technology, engineering, and mathematics (STEM) Teachers Program to teachers and community college faculty teaching at schools from rural areas that serve Native American populations. During Summer 2025, the K-12 teachers and community college faculty will take part in authentic research experiences with ASU faculty researchers funded to work on NCIT related research projects. ASU expects to have two STEM teachers take part in this program.

- The HCWP third cohort began on March 31 and conclude on May 9, 2025. Twelve students will participate in the six-week course, which followed the proven format of the previous two cohorts while incorporating updated training modules and broader industry engagement. The cohort graduates can apply their HCWP Certificate toward an Associate of Applied Science (AAS) degree offered at the Houston Barbara Jordan Career Center. This is an important benefit from the program and an opportunity for academic advancement for students looking to further their education while gaining on-the-job experience. Also, continuing the program's forward momentum, the fourth cohort is scheduled to begin on June 2, 2025.
- TTI 2025 Summer Undergraduate Research Internship Program offered through NCIT's TTI partner will begin on May 27, 2025, and end on August 1, 2025. This is an opportunity for undergraduate students to embark on a journey of discovery within the dynamic and ever-evolving field of transportation. Whether someone is interested in infrastructure durability and resiliency, economic analysis for transportation improvements, or innovative technologies shaping the future of transportation, this internship is a gateway for undergraduates to take part in real-world research.
- Ensure PVAMU and the UTC Grants Manager receive all IRB approvals for specific EWD projects/programs.
- Additional participants from TAMU are expected to join the Summer 2025 and Fall 2025 courses offered by the Leadership through Mentoring Program.
- ASU will pursue attracting undergraduate students to transportation engineering through the Vertically Integrated Project (VIP) Program. In this program students will be engaged in long-term research projects led by faculty and industry members, while receiving academic credit. Established course line numbers for undergraduate students at ASU to register for the VIP Program have been processed so students can register for the Fall 2025 semester.
- In addition to the TTI and BCD recruitment of area high school seniors, the HWCP program was approved by the Texas Veterans Commission to allow veterans to use their government issued benefits for enrolling in the BCD class. Efforts are underway now to inform the various military branches about the opportunity and prepare for and prepare for Cohort 3 which is projected to start in April 2025.

<u>T2C Important Activities</u>

- The NCIT Webinar Committee have plans to offer a May 2025 and June 2025 webinar. The May 2025 webinar is entitled, "The Impact of IoT, LiDAR and AI Technologies on Transportation Geotechnics," and the June 2025 webinar is entitled, "The Importance of Geotechnical Research to Support Strategic Goals of a Transportation Agency."
- Ensure that all new PIs and Co-PIs complete the required T2C/Intellectual Property (IP)/Commercialization Webinar in Year-2. NCIT will have the T2C Coordinator conduct the training and ensure topics on IP (license of IP rights), patents (process and timeline), copyrights, trademarks, proprietary information, trade secrets, commercialization, invention disclosures, and public disclosures are covered.
- Support the 2026 NCIT TRB Travel Assistance Program by encouraging all NCIT funded students to participate.
- Zapata, C. and Rajamanthri, K. submitted an abstract titled "Nonlinear Shear Strength Characteristics of Frost-Susceptible Silty Soils Under Varying Moisture Conditions." It has been accepted for the 2026 Geo-Congress Conference scheduled for March 9-12, 2026, Salt Lake City, Utah.
- Work on activating social media platforms such as Facebook, Instagram, Twitter, and YouTube to transfer research results to practitioners and the transportation infrastructure community.
- By May 2025, develop the NCIT Blog to display current and trending news to practitioners and the transportation infrastructure community.
- Ensure the Research in Progress (RiP) Database is current on all active projects, thus contributing to the dissemination of valuable knowledge and research findings.

Administrative/Management Important Activities

- Complete on boarding personnel to fill the Administrative Associate (III) position by April 2025.
- Finalize hiring NCIT's headquarters primary staff that will fill four vacant positions – (1) Associate Level (I), (2) Budget Specialist (II), (3) Communications Manager, and (4) Program Coordinator (II).
- Occupy designated NCIT office space.
- Prepare for NCIT Open Houser Event.

2. PARTICIPANTS & COLLABORATING ORGRANIZATIONS

a. What organizations have been involved as partners?

As part of every NCIT project proposal, the PI must name a Project Monitor (i.e., stakeholder(s)). Additionally, they must describe how they will engage industry stakeholders(s) and what they expect them to add to the project. Engagement of stakeholders from the outset will ensure that all projects work toward improving the durability and extending the life of the nation's infrastructure, with the mindset of adoption and implementation of research findings. Below is a list of organizations (name, location, and partner's contribution) that are involved with the NCIT ASU projects for which Kamil Kaloush is the PI.

- Creative Paving Solution, Tempe, AZ - Facilities and In-Kind Support
- Fisher Industries' Southwest Asphalt Division, Glendale, AZ - Facilities and In-Kind Support
- International Road Federation, Alexandria, VA – Facilities
- ViaSun Corporation, Tempe, AZ – Collaborative Research, Facilities, In-Kind Support, and Personnel Exchange

During this reporting period, the BCD Associate Director, Marshall Rich engaged with TTI and Texas Department of Transportation's (TxDOT's) Connect You to Jobs (CU2J) Program to assist with expanding the HCWP Program via recruitment initiatives.

RU's PI (Vassiliki Demetracopoulou) engaged new stakeholders for the Integration of Equity and Justice in Transportation Asset Management project. Below is Table 2 displaying the stakeholders that have (1) responded to the industry survey and (2) indicated that they are willing to participate in follow on sessions and in the research.

Table 2 – RU Led Project

Organization Name	Organization Location	Partner's Contribution
New Jersey Department of Transportation	New Jersey	Collaborative Research
Illinois Department of Transportation	Illinois	Collaborative Research
Kentucky Department of Transportation	Kentucky	Collaborative Research
Massachusetts Department of Transportation	Massachusetts	Collaborative Research
Minnesota Department of Transportation	Minnesota	Collaborative Research
Pennsylvania Department of Transportation	Pennsylvania	Collaborative Research
Texas Department of Transportation	Texas	Collaborative Research
Utah Department of Transportation	Utah	Collaborative Research

RU's research team led by PI (Todd Pisani) continues to have discussions with local organizations listed below:

- Children's Inter-Agency Coordinating Council, Camden, NJ – Collaborative Research
- Community Networking Association of Camden, NJ – Collaborative Research
- The Learning Alliance Corporation, Basking Ridge, NJ - Collaborative Research
- Youth Services Commission, Camden, NJ – Collaborative Research

One of TTI's PI, Curtis Morgan, continues to collaborate with the organization (name, location, and partner's contribution) listed below. This taskforce works under the Texas Department of Transportation by keeping track of Connected and Autonomous Vehicles (CAV) activities happening across the state. The TTI research team and the Texas CAV Task Force members exchange information which helps the research team find any information gaps that can be addressed by the NCIT project.

- Texas Department of Transportation Connected and Autonomous Vehicles Task Force, Austin, TX, Information Exchange

The remaining partners, MSU, PVAMU, and TAMU continued to engage with the stakeholders listed in previous SAPRs. Collaborative research is still the primary contribution organizations, including other consortium partnering institutions, are providing to the individual as well as collaborative NCIT projects deployed.

b. Have other collaborators or contacts been involved?
Marshall Rich (BCD Associate Director and Co-PI of the HWCP project) collaborated with TTI, and the Texas Department of Transportation's Connect You to Jobs (CU2J) to expand recruitment options for HWCP.

3. OUTPUTS

a. Publications, conference papers, and presentations
The NCIT faculty and students were successful in publishing journal articles as well as presenting their research results at different venues. NCIT is extremely proud of our students, faculty, and the mentoring our students receive from the faculty. Below is a summary of the output for this reporting period.

1) *Journal publications:*
   - Members from the ASU partner submitted a paper for publication by MDPI Special Issue on Sustainable Innovative Solutions for Pavement Construction and Resilient Infrastructure. Kaloush, K., Medina, J., Karam, J., and Obando, C., "Rubberized-Aerogel Composite for Construction Materials," [Passed First Screening]
   - Members from the ASU partner submitted a paper for publication in the Automation In Construction Journal. Vedula, N., Beheshti, M., Madasu, S., and Ozer, H. (2025). Vedula, N., Beheshti, M., Madasu, S., and Ozer, H. (2025). "Development of a Framework for Evaluation of Asphalt Pavement Construction using Unmanned Aerial Vehicles (UAV) Imagery," [Under Review]
   - Members from the MSU partner submitted a manuscript to the International Journal of Pavement Engineering that is currently under review. Abdollahi, S.F., Kutay, M.E., and Lanotte, M., "UPDAPS-Flood: A Mechanistic-Empirical Flexible Pavement Analysis Tool to Evaluate the Effects of Flooding Events on Flexible Pavement Performance."
   - Members from the RU partner submitted a paper to that is currently under review by Acta Geotechnica, a bimonthly peer-reviewed engineering journal published by Springer. is currently under review. Chen, X. and H. Wang, "Flooding-Induced Subsurface Moisture Variations in Pavements During Inundation and Recovery Periods."
   - Members from the RU partner submitted a paper to that is currently under review by Acta Geotechnica, a bimonthly peer-reviewed engineering journal published by Springer. is currently under review. Chen, Z. T. and H. Wang, Multi-Criteria Decision-Making of Hybrid Charging Infrastructure for Fuel Cell and Battery Electric Buses Energies."
2) *Books or other non-periodical, one-time publications:* Nothing to Report.
3) *Identify for each one-time publication:* Nothing to Report.
4) *Other publications, conference papers and presentations:*

NCIT Virtual Colloquium Student Poster Presentations (12-14 Nov 2024) – Total is 9.

- Presentation by S. Gonnabathula (TAMU-Graduate), A. Puppala (TAMU), and P. Bhaskar (TAMU) on "Application of Innovative Geosynthetics to Improve Drainage and Resiliency of Highway Embankments Subjected to Extreme Climatic Conditions," occurred at the 2024 NCIT Virtual Colloquium.
- Presentation by J. Italiya (PVAMU-Graduate), R. Kommalapati (PVAMU), and M. Mannar (PVAMU) on "Life Cycle analysis of U.S. Electric Vehicle Charging Station," occurred at the 2024 NCIT Virtual Colloquium.
- Presentation by M. Hartfield (PVAMU-Undergraduate) and J. Alam (PVAMU) on "Sustainable Slope Performance Monitoring Using Internet of Things (IoT)," occurred at the 2024 NCIT Virtual Colloquium.
- Presentation by M. Manock (ASU-Undergraduate) and J. Karam (ASU) on "A Sustainable Approach for Making More Climate Resilient Asphalt Pavements," occurred at the 2024 NCIT Virtual Colloquium.
- Presentation by A. Patel (RU-Graduate) and V. Demetracopoulou (RU) on "Challenges in Integrating Equity into Transportation Asset Management (TAM)," occurred at the 2024 NCIT Virtual Colloquium.
- Presentation by K. Rajamanthri (ASU-Graduate) and C. Zapata (ASU) on "Variation of Soil Shear Strength with Moisture Content: A Comparative Study of Soil and Soil-Geosynthetic Interface," occurred at the 2024 NCIT Virtual Colloquium.
- Presentation by S. Sannala (TTI-Graduate), A. Mukhopadhyay (TTI), J. Braley (RU), N. Gucunski (RU), P. Saraswatula (TTI), and A. Mistri (TTI) on "Increasing the Lifespan and Resiliency of Bridge Superstructure Concrete Through Durability-Based Performance Evaluation," occurred at the 2024 NCIT Virtual Colloquium.
- Presentation by T. Stenzel (MSU-Undergraduate) and K. Cetin (MSU) on "Research on Digital Collaboration Using Industry Foundation Classes (IFC) and BIM Technology," occurred at the 2024 NCIT Virtual Colloquium.
- Presentation by Q. Zulfiqar (MSU-Graduate) and B. Cetin (MSU) on "Long Term Performance Monitoring of Stabilized and Cement Related Granular Layers in Pavements," occurred at the 2024 NCIT Virtual Colloquium.

NCIT Virtual Colloquium Lectern Presentations – Total is 23.

- Presentation by A. Ahmed (PVAMU) on "Smart Transportation Technology Workshop," occurred at the 2024 NCIT Virtual Colloquium, EWD Session.
- Presentation by J. Alam (PVAMU) on "A Smart IoT-Based Detection System for Remote Earth Movement of Highway Embankment," occurred at the 2024 NCIT Virtual Colloquium, Technology Session.
- Presentation by C. Bora (MSU) on "Use of Innovative Geosynthetics to Improve the Resiliency of Highway Embankment Slopes Under Extreme Climatic Conditions," occurred at the 2024 NCIT Virtual Colloquium, Infrastructure Durability and Resiliency Session.
- Presentation by J. Chandler (ASU) on "NCIT Leadership through Mentoring Program," occurred at the 2024 NCIT Virtual Colloquium, EWD Session.
- Presentation by S. Congress (MSU) on "Exposing Michigan Communities to New Infrastructure Monitoring Technologies: Engaging Students and Parents," occurred at the 2024 NCIT Virtual Colloquium, EWD Session.
- Presentation by S. Congress (MS) on "Asset Management of Bridges Using Uncrewed Aerial Vehicles and Machine Learning Models," occurred at the 2024 NCIT Virtual Colloquium, Technology Session.
- Presentation by V. Demetracopoulou (RU) on "Integration of Equity and Justice in Transportation Asset Management," occurred at the 2024 NCIT Virtual Colloquium, Policy Session.
- Presentation by P. Ejikeme on "AI & Transportation (Optimizing E-Bike Bike Route Usage)," occurred at the 2024 NCIT Virtual Colloquium, EWD Session.
- Presentation by B. Glover (TTI) on "The Impact of EV Infrastructure on Transportation Revenues," occurred at the 2024 NCIT Virtual Colloquium, Policy Session.

- Presentation by C. Gurganus (TTI) on "Highway Construction Workforce Partnership – Creating the Next Generation Heavy Highway Worker," occurred at the 2024 NCIT Virtual Colloquium, EWD Session.
- Presentation by L. Higgins (TTI) on "Summer Undergraduate Transportation Internship Program," occurred at the 2024 NCIT Virtual Colloquium, EWD Session.
- Presentation by K. Kaloush (ASU) on "A Sustainable Approach for Making More Climate Resilient Asphalt Pavements," occurred at the 2024 NCIT Virtual Colloquium, Technology Transfer Session.
- Presentation by Y. Kim (TAMU) on "Enhancing Durability of Stabilized Soils for Resilient Transportation Infrastructure Under Extreme Weather Conditions," occurred at the 2024 NCIT Virtual Colloquium, Infrastructure Durability and Resiliency Session.
- Presentation by R. Kommalapati (PVAMU) on "Environmental Impact and Lifecycle Costs of Electricity Charging and Hydrogen Refueling Stations to Support Future Advanced Vehicles," occurred at the 2024 NCIT Virtual Colloquium, Policy Session.
- Presentation by M. Kutay (MSU) on "Impact of Climate Change on Road Maintenance Budgets and Practices," occurred at the 2024 NCIT Virtual Colloquium, Infrastructure Durability and Resiliency Session.
- Presentation by J. Kuzio (TTI) on "Infrastructure Funding and Policy Considerations for EVs: A Life-Cycle Based Assessment," occurred at the 2024 NCIT Virtual Colloquium, Policy Session.
- Presentation by A. Lovelady (PVAMU/TAMU) on "Identification and Elimination of Barriers to Technology Transfer at HBCUs and MSIs," occurred at the 2024 NCIT Virtual Colloquium, Technology Transfer Session.
- Presentation by A. Martin (TAMU) on "Optimizing Asphalt Mixture Performance Testing for Balanced Mix Design," occurred at the 2024 NCIT Virtual Colloquium, Infrastructure Durability and Resiliency Session.
- Presentation by A. Mukhopadhyay (TTI) on "Increasing the Lifespan and Resiliency of Bridge Superstructure Concrete Through Durability-Based Performance Evaluation," occurred at the 2024 NCIT Virtual Colloquium, Infrastructure Durability and Resiliency Session.
- Presentation by C. Morgan (TTI) on "Necessary Infrastructure Accommodations for Automated Trucks and Truck Platoons," occurred at the 2024 NCIT Virtual Colloquium, Technology Session.
- Presentation by H. Ozer (ASU) on "Automated Construction Quality Monitoring and Inspection Protocols using Uncrewed Aerial Vehicles," occurred at the 2024 NCIT Virtual Colloquium, Technology Session.
- Presentation by T. Pisani (RU) on "EDC-7 Pilot Evaluation of Strategic Workforce Development for Justice-Challenged Youth," occurred at the 2024 NCIT Virtual Colloquium, Policy Session.
- Presentation by C. Zapata (ASU) on 'Education and Outreach at ASU: Research Experience for Teachers & Vertically Integrated Project," occurred at the 2024 NCIT Virtual Colloquium, EWD Session.

TRB Poster Presentations (5-9 Jan 2025) – Total is 34.

- Poster presentation by T. Bennert (RU), B. Lu (RU), X. Zhang (RU), and H. Wang (RU) on "Predicting Asphalt Pavement Friction Using Texture-Based Image Indicator," occurred at the 2025 TRB Annual Meeting, Session 2045.
- Poster presentation by T. Bennert (RU), X. Zhang (RU), and H. Wang (RU) on "Analysis of Rubber Pavement Texture Contact Characteristics for Friction Prediction with Polishing Effect," occurred at the 2025 TRB Annual Meeting, Session 2045.
- Poster presentation by J. Braley (RU), P. Grubtis, M. Morgese (CAIT), R. Cucuzza, M. Domaneschi, M. Rad, and A. Maher (RU) on "Numerical Modeling of the BEAST Specimen Considering Delamination Scenarios," occurred at the 2025 TRB Annual Meeting, Session 2218.
- Poster presentation by B. Cetin (MSU), M. Uduebor (FGCU), J. Daniels (UNC), and M. Naqvi (TFHRC) on "Estimation of Osmotic Suction in Freezing Soils," occurred at the 2025 TRB Annual Meeting, Session 2037.

- Poster presentation by B. Cetin (MSU), M. Belalzadeh (ISU), J. Ashlock (ISU), U. Farooq (MSU), and C. Santos (MSU) on "Evaluation of the Effect of Aggregate Gradation Using California Bearing Ratio and Resilient Modulus for Blends of Recycled and Quarried Aggregates," occurred at the 2025 TRB Annual Meeting, Session 2040.
- Poster presentation by B. Cetin (MSU), P. Chen (MSU), K. Chatti (MSU), F. Abdollahi (Genex Systems), and M. Kutay (MSU) on "Impact of Equivalent Loading Frequencies on Flexible Pavement Mechanistic-Empirical Distress Predictions," occurred at the 2025 TRB Annual Meeting, Session 3106.
- Poster presentation by B. Cetin (MSU), Md Sadiq (BEC), R. Velasquez (MnDOT), C. Aydin (MnDOT), and B. Izevbekhai (MnDOT) on "Influence of Initial Stiffness and Foundation Uniformity on Pavement Performance," occurred at the 2025 TRB Annual Meeting, Session 4034.
- Poster presentation by B. Cetin (MSU), F. Abdollahi (Genex Systems), M. Kutay (MSU), M. Lanotte (MSU), and P. Chen (MSU) on "UPDAPS-Detour: A Mechanistic-Empirical Flexible Pavement Analysis Tool to Evaluate the Effect of Detour Traffic on Pavement Performance," occurred at the 2025 TRB Annual Meeting, Session 4040.
- Poster presentation by S. Congress (MSU), G. Gupta (MSU), N. Gupta (MSU), M. Mohammadpour (MSU), P. Savolainen (MSU), and T. Gates (MSU) on "Driver Merging and Lane Utilization Behavior Under Zipper Merge Lane Control," occurred at the 2025 TRB Annual Meeting, Session 3143.
- Poster presentation by S. Congress (MSU), N. Pawar (UT), J. Prozzi (UT), and F. Hong (TSU) on "Deep Learning Framework for Infrastructure Maintenance: Crack Detection and High-Resolution Imaging of Infrastructure Surfaces," occurred at the 2025 TRB Annual Meeting, Session 3205.
- Poster presentation by B. Glover (TTI), D. Inoue (U of T), C. Sabillon-Orellana (U of T), J. Prozzi (U of T), and B. Glover (TTI) on "Revenue-Cost Analysis for Roadway Assets in Texas," occurred at the 2025 TRB Annual Meeting, Session 2158.
- Poster presentation by K. Kaloush (ASU), M. Hasan (ASU), N. Rahman (ASU), and H. Noorvand (ASU) on "Enhancing Thin Asphalt Overlay Performance Through Optimized Mix Design: An Investigation of Key Parameters," occurred at the 2025 TRB Annual Meeting, Session 3040.
- Poster presentation by M. Kutay (MSU), T. Islam (MSU), P. Vaddy (MSU), and A. Archilla (UH) on "Evaluation of Spray-On, Rejuvenator-Treated Asphalt Concrete Pavements for Stiffness and Cracking Resistance," occurred at the 2025 TRB Annual Meeting, Session 2161.
- Poster presentation by M. Kutay (MSU), H. Muslim (MSU), S. Haider (MSU), P. Vaddy (MSU), F. Kaseer (MDOT), and E. Akerly (MDOT) on "Performance-Related Specifications Framework Using Dielectric Profiling System to Improve Asphalt Pavement Longitudinal Joint Performance," occurred at the 2025 TRB Annual Meeting, Session 3201.
- Poster presentation by J. Kuzio (TTI), H. Ju (TAMU), M. Steadman (TTI), N. Wood (TTI), and M. Burris (TAMU) on "Review of Administrative Costs in Road Usage Charging Projects," occurred at the 2025 TRB Annual Meeting, Session 2157.
- Poster presentation by D. Little (TAMU), A. Barzarbekova (TAMU), Y. Kim (TAMU), and J. Rushing (ERDC) on "A Novel Testing to Assess Moisture-Induced Durability of Stabilized Soils Under Cyclic Loading," occurred at the 2025 TRB Annual Meeting, Session 3101.
- Poster presentation by A. Maher (RU), M. Morgese (CAIT), M. Halfway (IDS), N. Hutton (RU), and R. Kumapley (Port Authority NY & NJ) on "Asset Investment Planning and Optimization Methodology in Consideration of Asset Life Cycles: A Port Authority of New York and New Jersey Case Study," occurred at the 2025 TRB Annual Meeting, Session 4079.
- Poster presentation by C. Morgan (TTI), S. Sharma (TTI), B. Trefz (TTI), J. Warner (TTI), D. Berling (TTI), and J. Merritt (TTI) on "Harmonizing Commercial Vehicle (Trucks) Weight Requirements for Emergency Transportation of Critical Commodities," occurred at the 2025 TRB Annual Meeting, Session 4082.
- Poster presentation by A. Mukhopadhyay (TTI) and P. Saraswatula (TTI) on "Innovative Performance-Based Approach for Effective Utilization of Ground Glass Pozzolan with Metakaolin for Alkali-Silica Reaction Mitigation in Job Mixtures," occurred at the 2025 TRB Annual Meeting, Session 4037.

- Poster presentation by H. Ozer (ASU), N. Vedula (ASU), M. Beheshti (ASU), and S. Madasu on "Thermal Segregation and Compaction Quality Analysis of Asphalt Pavements Using Uncrewed Aerial Vehicles," occurred at the 2025 TRB Annual Meeting, Session 2160.
- Poster presentation by H. Ozer (ASU), A. Ramakrishnan (UIUC), I. Al-Qadi (UIUC), and A. Alrajhi (ASU) on "Impact of Truck Platoon Rest Period on Mechanistic-Empirical Flexible Pavement Design," occurred at the 2025 TRB Annual Meeting, Session 3106.
- Poster presentation by H. Ozer (ASU), I. Al-Qadi (UIUC), E. Tutumluer (UIUC), and I. Qamhia (TEST) on "U.S. Experience with Inverted Pavement: A Case Study in New Mexico," occurred at the 2025 TRB Annual Meeting, Session 3201.
- Poster presentation by H. Ozer (ASU), S. Aker (ASU), A. Zahid (ASU), and M. Beheshti (ASU) on "Exploring the Root Causes of Wide Thermal Cracks in the Southwestern Region of United States," occurred at the 2025 TRB Annual Meeting, Session 3205.
- Poster presentation by H. Ozer (ASU), A. Zahid (ASU), N. Rahman (ASU), A. Alrajhi (UNR), and G. Rowe (Abatech) on "Development of an Accelerated Long-Term Aging Protocol for Simulating Asphalt Concrete Mixture Aging in Regions with Extreme Climatic Conditions," occurred at the 2025 TRB Annual Meeting, Session 4090.
- Poster presentation by B. Prieto (TTI), M. Monsreal (TTI), S. Ozkul (USF), J. Rivera (TTI), and W. Eisele (TTI) on "Cargo Consolidation to Reduce Traffic Congestion: Model, Algorithm, and Application Case," occurred at the 2025 TRB Annual Meeting, Session 4046.
- Poster presentation by A. Puppala (TAMU), J. Huang (TAMU), and A. Deshmukh (NEx) on "Developing Preliminary Guidelines for Soil Stabilization Using Liquid Polymers," occurred at the 2025 TRB Annual Meeting, Session 3101.
- Poster presentation by A. Puppala (TAMU), A. Kumar (TAMU), A. Deshmukh (TAMU), N. Biswas (UML), P. Bhaskar (TTI), and B. Mebarkia (TxDOT) on "Lime Stabilization of Moisture-Susceptible Soil in Highway Embankment Slopes: A Case Study from Houston, Texas," occurred at the 2025 TRB Annual Meeting, Session 3101.
- Poster presentation by A. Puppala (TAMU), M. Sanei (TAMU), N. Biswas (UML), and S. Chou (TAMU) on "Utilizing Recycled Concrete Aggregate Fines as Co-Additives in Low-Carbon Cement for Problematic Soil Stabilization," occurred at the 2025 TRB Annual Meeting, Session 3102.
- Poster presentation by H. Wang (RU) and K. Shen (RU) on "Emerging Challenges of Electric Truck Platooning on Flexible Pavement Performance," occurred at the 2025 TRB Annual Meeting, Session 2044.
- Poster presentation by P. Szary (RU), Md Islam (Rowan Uni), Md. Nayeem (Rowan Uni), and M. Jalayer (Rowan Uni) on "Analyzing School Bus–Related Crashes in New Jersey Using Machine Learning Techniques," occurred at the 2025 TRB Annual Meeting, Session 3039.
- Poster presentation by H. Wang (RU) and X. Chen (RU) on "Assessing Flooding Impact on Flexible Pavement Using AASHTO 1993 Method with Various Subgrade Modulus Approaches," occurred at the 2025 TRB Annual Meeting, Session 3045.
- Poster presentation by H. Wang (RU) and B. Cui (RU) on "Numerical and Experimental Evaluation of Adhesion Properties of Asphalt-Aggregate Interfaces Using Molecular Dynamics Simulation and Atomic Force Microscopy," occurred at the 2025 TRB Annual Meeting, Session 3103.
- Poster presentation by H. Wang (RU) on "Asphalt Pavement Pothole Repair for Enhanced Performance and Environmental Sustainability," occurred at the 2025 TRB Annual Meeting, Session 3153.
- Poster presentation by H. Wang (RU), J. Zhao (RU), and L. Fay (WTI) on "Prediction of Roadway Friction for Winter Maintenance Using Machine Learning Models," occurred at the 2025 TRB Annual Meeting, Session 4038.

TRB Lectern Presentations (5-9 Jan 2025) – Total is 18.

- Presentation by J. Alam (PVAMU), R. Debnath (PVAMU), A. Ahmed (PVAMU), and R. Mozumder (PVAMU) on "Enhanced Earthen Slope Monitoring with IoT-Enabled Systems," occurred at the 2025 TRB Annual Meeting, Session 3126.

- Presentation by T. Bennert (RU), N. Elias (Cal Poly), E. Haji (UN), F. Zhou (TTI), J. Epps (TAMU), A. Hand (UN), and K. Chan (TTI) on "Rutting Mechanical Tests for Balanced Design of Airfield Asphalt Mixtures," occurred at the 2025 TRB Annual Meeting, Session 3034.
- Presentation by B. Cetin (MSU), E. Adeyanju (UNC), E. Bautista (MnDOT), M. Lanotte (MSU), and J. Daniels (UNC) on "Comparative Life-Cycle Assessment and Cost Analysis of Frost-Resistant Gravel Road Treatments in Rural Iowa," occurred at the 2025 TRB Annual Meeting, Session 2026.
- Presentation by B. Cetin (MSU), M. Naqvi (TFHRC), Md Sadiq (BEC), and J. Daniels (UNC) on "Understanding Freeze-Thaw in Soils: An Analysis of Salt Effects Using Different Freeze-Thaw Protocols," occurred at the 2025 TRB Annual Meeting, Session 4012.
- Presentation by B. Cetin (MSU), S. Gonnabathula (TAMU), N. Biswas (UML), K. Ramineni (TAMU), Md Sadiq (BEC), R. Velasquez (MnDOT), and A. Puppala (TAMU) on "Evaluating the Performance of Wicking Geotextile Under Freeze-Thaw Conditions Below Pavement Infrastructure," occurred at the 2025 TRB Annual Meeting, Session 4012.
- Presentation by B. Cetin (MSU), E. Adeyanju (UNC), Y. Saulick (Univ. of Ottawa), M. Uduebor (FGCU), and J. Daniels (UNC) on "Design and Construction of Engineered Water Repellency at MnROAD," occurred at the 2025 TRB Annual Meeting, Session 4012.
- Presentation by B. Cetin (MSU), E. Adeyanju (UNC), E. Bautista (MnDOT), M. Lanotte (MSU), and J. Daniels (UNC) on "Environmental and Economic Assessment of Engineered Water Repellency for Frost Mitigation in Low-Volume Flexible Pavements in Minnesota," occurred at the 2025 TRB Annual Meeting, Session 2026.
- Presentation by A. Martin (TAMU), O. Altarawneh (TAMU), E. Masad (HBKU), and E. Arambula-Mercado (TTI), A. Leavitt on "Performance and Aging Characteristics of Asphalt Binders and Asphalt Mixtures Incorporating High Reclaimed Asphalt Pavement and a Recycling Agent," occurred at the 2025 TRB Annual Meeting, Session 2135.
- Presentation by A. Martin (TAMU) on "Recycling Agents as a High Recycled Asphalt Materials Strategy: Dosing, Effectiveness, and Further Concerns," occurred at the 2025 TRB Annual Meeting, Session 4086.
- Presentation by A. Mukhopadhyay (TTI), A. Mistri (TTI), and P. Saraswatula (TTI) on "Systematic Evaluation of the Effectiveness of Coating and Sealer Materials for Protecting Bridge Substructure Concrete Against Moisture and Chloride Ingress," occurred at the 2025 TRB Annual Meeting, Session 2077.
- Presentation by H. Ozer (ASU) and M. Behesti (ASU) on "A Viscoelastic Computational Fracture Mechanics Approach for the Analysis of Thermal Reflective Cracking in Asphalt Overlaid Jointed Concrete Airfield Pavements," occurred at the 2025 TRB Annual Meeting, Session 2093.
- Presentation by H. Ozer (ASU), E. Tseng (TEST), I. Al-Qadi (UIUC), E. Tutumluer (UIUC), and I. Qamhia (TEST) on "Life-Cycle Assessment of Inverted Pavement Case Studies in the United States," occurred at the 2025 TRB Annual Meeting, Session 3023.
- Presentation by H. Ozer (ASU), H. Wang (RU), K. Shen (RU), B. Bairgi (AU), and A. Alrajhi (NCAT) on "Mechanism Analysis of Asphalt Pavement Slippage Failure at High-Speed Exits of Airports," occurred at the 2025 TRB Annual Meeting, Session 3034.
- Presentation by H. Ozer (ASU), F. Liu (UIUC), I. Al-Qadi (UIUC), and M. Beheshti (ASU) on "Asphalt Concrete Overlay Thermal Reflective Cracking Stress Intensity Factor Prediction Using Machine Learning," occurred at the 2025 TRB Annual Meeting, Session 4062.
- Presentation by A. Puppala (TAMU), P. Bhaskar (TTI), J. Suarez (TAMU), and D. Goehl (TTI) on "Assessment of Wicking Geotextiles for Enhanced Drainage and Reinforcement in Flood-Prone Coastal Highway Slopes," occurred at the 2025 TRB Annual Meeting, Session 2189.
- Presentation by H. Wang (RU) and B. Cui (RU) on "Enhancing Pipeline Corrosion Prediction Through an Ensemble Bayesian Neural Network Model with Uncertainty Analysis," occurred at the 2025 TRB Annual Meeting, Session 2013.
- Presentation by H. Wang (RU) and X. Chen (RU) on "Prediction of Nonlinear Moisture Profile in Pavement Foundation Using Machine Learning–Based Method," occurred at the 2025 TRB Annual Meeting, Session 3125.

- Presentation by H. Wang (RU), D. Xiao (UW), and X. Chen (RU) on "Impact of Concrete Sealer and Salt Usage on Concrete Bridge Deck Rating in Wisconsin," occurred at the 2025 TRB Annual Meeting, Session 3130.

Other Conference Presentations (8 Lectern & 3 Poster) – Total is 11.

- Presentation by Alam, J., Manzano, L., Debnath, R., Ahmed, A., Williams, S., and Hartsfield on "An IoT-Based Monitoring System for Detecting Slope Movement," occurred at the 2025 ASCE Geotechnical Frontiers Conference, March 2025.
- Presentation by Debnath, R., Ahmed, A., and Alam, J. on 'On Developing Smart IoT-Based Distributed System for Remote Detection of Slope Movements," occurred at the 2025 International Conference on Computing, Networking and Communications, February 2025.
- Presentation by Naqvi, M.W., Sadiq, F., Cetin, B., and Daniels, J. on "Evolving Road Resilience in Cold Climates: A Comprehensive Review and Cost Comparison," occurred at the Geo-Frontiers, Louisville, KY, March 3, 2025.
- Presentation by Sadiq, F., Velasquez, R., Cetin, B., and Izevbekhai, B. on "Numerical Simulation of Freeze-Thaw Depth in Pavements Using PLAXIS Thermal and Validation with Field Data, at Geo-Frontiers," occurred at the Geo-Frontiers, Louisville, KY, March 5, 2025.
- Presentation by Congress, S. on "Leveraging Drones for 360°Bridge Inspections and Erosion Detection," occurred at the Indo-US Workshop, Geo-Frontiers Conference 2025, March 2025, Louisville, KY, USA.
- Presentation by Congress, S. on "UAVs and Machine learning techniques for monitoring transportation geotechnical infrastructure assets," occurred at the Theme Lecture, Indian Geotechnical Conference 2024, December 19-21, 2024, Aurangabad, India.
- Presentation by Martin, A. on "Response: Case Study and Research on the Use of High RAP," occurred at the 2025 New York State Annual Asphalt Paving Conference, Troy, NY, March 13, 2025
- Presentation by Puppala, A. on "Applications of Uncrewed Aerial Vehicles (UAVs) for Structural Health Monitoring of Transportation Geotechnical Infrastructure Assets," occurred at the 5th International Conference on Transportation Geotechnics, Sydney, Australia, November 20-22, 2024.
- Poster presentation by Vedula, N., Beheshti, M., Madasu, S., & Ozer, H. on "Thermal Segregation and Compaction Analysis during HMA Construction using UAVs" occurred at the 2024 Arizona Pavement Materials Conference, Tempe, AZ.
- Poster presentation by Vedula, N., Beheshti, M., Madasu, S., & Ozer, H. on "Thermal Segregation and Compaction Analysis during HMA Construction using UAVs" occurred at the 2025 TRBAM, Washington, D.C.
- Poster presentation by Vedula, N., Beheshti, M., Madasu, S., & Ozer, H. on "Thermal Segregation and Compaction Analysis during HMA Construction using UAVs" occurred at the 2025 SSEBE Graduate Poster Symposium, Tempe, AZ.

b. Website(s) or other Internet site(s).

NCIT will continue to be a national showplace through the Internet and social media platforms such as Facebook, Instagram, Twitter, and YouTube to transfer research results to practitioners and the research community. The site provides comprehensive information about NCIT and its programs/projects. Updates to the NCIT website will occur on a continual basis. To directly access NCIT's 21 active research projects use the following link [https://ncit.pvamu.edu/projects/].

c. Technologies or techniques.

Nothing to Report.

d. Inventions, patent applications, and/or licenses.

- The ASU project entitled, "Automated Construction Quality Monitoring and Inspection Protocols using Uncrewed Aerial Vehicles," filed to ASU's Skysong Innovations an invention disclosure. The title of the submission was "Unmanned Aerial-Vehicle Assisted Real-Time Construction Quality Support System". The disclosure is in provisional patent stage.

e. Other products, such as data or databases, physical collections, audio or video products, application software, analytical models, educational aids, courses or curricula, instruments, equipment, or research material.
Nothing to Report

4. OUTCOMES

a. Increased understanding and awareness of transportation issues.
Nothing to Report.

b. Passage of new policies, regulation, rulemaking, or legislation.
Nothing to Report.

c. Increases in the body of knowledge.
Nothing to Report

d. Improved processes, technologies, techniques, and skills in addressing transportation issues.
Nothing to Report.

e. Enlargement of the pool of trained transportation professionals.
The eleven graduates of the HWCP Cohort #2 are gainfully employed in the highway construction field.

f. Adoption of new technologies, techniques, or practices.
Nothing to Report.

5. IMPACTS

a. What is the impact on the effectiveness of the transportation system?
Nothing to Report.

b. What is the impact of technology transfer on industry and government entities, on the adoption of new practices, or on research outcomes which have led to initiating a start-up company?

- The ASU project entitled, "A Sustainable Approach for Making More Climate Resilient Asphalt Pavements," now have a start-up company. The new aerogel-modified asphalt technology has commercialization potential, especially in regions with extreme climate conditions.

c. What is the impact on the body of scientific knowledge?
Nothing to Report.

d. What is the impact on transportation workforce development?

- **MSU**
  Farhad Abdollahi – PhD Graduate - Civil & Environmental Engineering – Fall 2024
- **PVAMU**
  Udochukwu Igwenagu – Master Graduate - Computer Information Systems – Fall 2024

6. CHANGES/PROBLEMS

a. Changes in approach and reasons for change.
Nothing to Report.

b. Actual or anticipated problems or delays and actions or plans to resolve them.
Nothing to Report.

c. Changes that have a significant impact on expenditures.
Nothing to Report.

d. Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards
Nothing to Report.

e. Change of primary performance site location from that originally proposed.
Nothing to Report.

7. SPECIAL REPORTING REQUIREMENTS

NCIT completed the Exhibit D Form for three new projects and will enter required information for them into the TRB's RiP Database (https://rip.trb.org/).