



# NEW JERSEY STATE TRANSPORTATION INNOVATION COUNCIL

[www.NJDOTtechtransfer.net/NJ-STIC](http://www.NJDOTtechtransfer.net/NJ-STIC)

2<sup>nd</sup> Triannual Meeting  
August 7, 2024  
10:00am – 12:00pm



# WELCOME

## Eric Powers

Assistant Commissioner

NJDOT Statewide Planning, Safety & Capital Investment

## Megan Fackler

Director

Division of Statewide Planning



# FEATURE PRESENTATION

## Low-Carbon Transportation Materials Grant Application

**Giri Venkiteela**

*Research Scientist 2*

NJDOT Bureau of Research, Innovation & Information Transfer

## High Value Research Project Spotlight

**Amanda Gendek**

*Manager*

NJDOT Bureau of Research, Innovation & Information Transfer



# FHWA UPDATES



Christopher Paige

Innovation Coordinator & Community Planner  
FHWA, NJ Division Office

## CIA TEAM

### SAFETY

NJDOT – Dan LiSanti  
FHWA – Amy Kaminski

## CIA TEAM

### PLANNING & ENVIRONMENT

NJDOT – Sudhir Joshi  
FHWA – Sutapa Bandyopadhyay

## CIA TEAM

### INFRASTRUCTURE PRESERVATION

NJDOT – Shivani Patel  
FHWA – Nunzio Merla

## CIA TEAM

### MOBILITY & OPERATIONS

NJDOT – Vandana Mathur  
FHWA – Ek Phomsavath

## CIA TEAM

### ORGANIZATIONAL SUPPORT & IMPROVEMENT

NJDOT – Kristal Walker  
FHWA – Christopher Paige

CIA TEAM

**SAFETY**

NJDOT – Dan LiSanti

FHWA – Alan Huff

Task	Status
Literature review of relationship between quality of streetlighting on pedestrian safety, fatalities, and serious injuries.	Complete
Summary of best practices and recommendations in design guidance for pedestrian-scale lighting, defining specifications of minimum and maximum luminance, illuminance, color-corrected temperature, and fixture spacing, positioning, and height.	In progress
Draft Pedestrian Scale Lighting resource content outline and layout.	In progress
Final Pedestrian Scale Lighting resource synthesizing best practices in the types of lighting, luminaire placement, and ways to reduce fatalities and serious injuries.	In progress



# PEDESTRIAN SCALE LIGHTING RESEARCH & RESOURCE



**RUTGERS-NEW BRUNSWICK**  
**Edward J. Bloustein School**  
**of Planning and Public Policy**  
 Alan M. Voorhees Transportation Center





# NIGHTTIME VISIBILITY FOR SAFETY

- Developing traffic signal pole and mast arm details for signalized intersection installations
- Includes backplates with retroreflective tape on signal indications

CIA TEAM

**INFRASTRUCTURE  
PRESERVATION**

NJDOT – Shivani Patel

FHWA – Nunzio Merla



# EDC-7 Enhancing Performance with Internally Cured Concrete (EPIC<sup>2</sup>)



## **Purpose:**

To implement the use of internally cured concrete to reduce shrinkage cracking and achieve long-term performance in concrete bridges, roads and repairs.



# EDC-7 Enhancing Performance with Internally Cured Concrete (EPIC<sup>2</sup>)

## Status:

- HPIC Specifications have been finalized
- Incorporated in Special Provisions for 1<sup>st</sup> pilot project





# EDC-7 Enhancing Performance with Internally Cured Concrete (EPIC<sup>2</sup>)



## Status:

- Coordinated with suppliers for availability of materials and supply experience





# EDC-7 Enhancing Performance with Internally Cured Concrete (EPIC<sup>2</sup>)

## Status:

- Attended the NYS Peer Exchange on EDC-7 EPIC<sup>2</sup> Initiative on May 29-30, 2024, in Albany, NY.

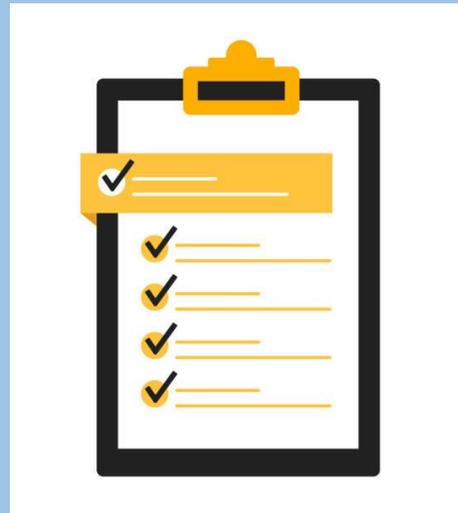




# EDC-7 Enhancing Performance with Internally Cured Concrete (EPIC<sup>2</sup>)

## Currently Working on:

- Preparing for the Final Design Submission of the candidate bridges
- Scoping additional projects
- Applying for STIC incentive funding
- Coordinating with Bureau of Materials and Regional Materials





# EDC-7 Enhancing Performance with Internally Cured Concrete (EPIC<sup>2</sup>)

## Next Quarter:

- Continue coordination with concrete suppliers
- Purchase several centrifuge apparatuses
- Update the HPIC Specifications



Figure 1—Centrifuge Apparatus (Source: LTRC/DOTD)



# UPDATE on EDC-6 UHPC Innovation



- Developing a lessons-learned publication on UHPC overlays



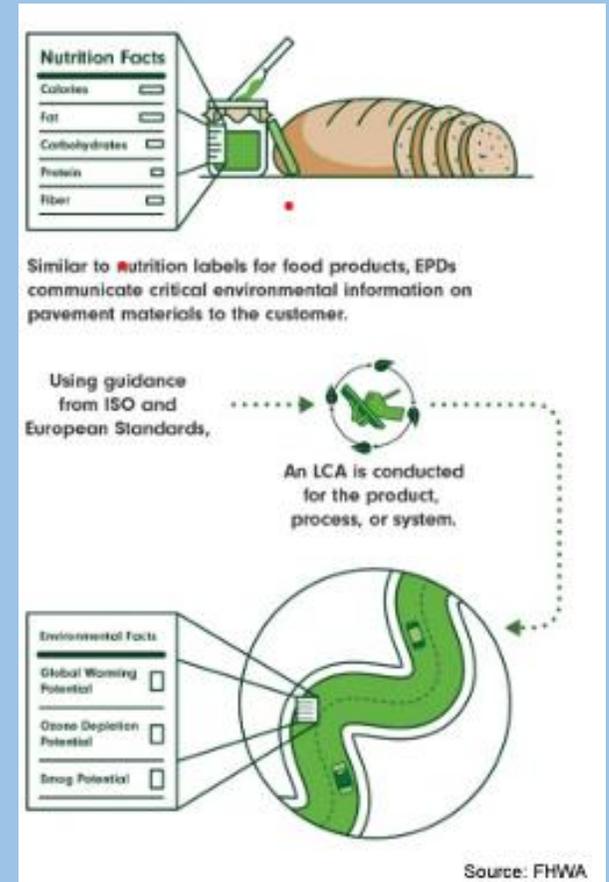


# EDC-7 Environmental Product Declarations (EPDs) for Sustainable Project Delivery



## Purpose:

To identify and understand the environmental impacts from resource use, energy, and emissions in construction and consider alternatives using third party verified reports.





EDC-7  
Environmental  
Product  
Declarations  
(EPDs) for  
Sustainable  
Project Delivery

## Status:

- Attended FHWA Climate Challenge & EDC-7 EPDs for Sustainable Project Delivery National Symposium





EDC-7  
Environmental  
Product  
Declarations  
(EPDs) for  
Sustainable  
Project Delivery

## Currently Working on:

- Comparing specialty mixes to regular mixes





EDC-7  
Environmental  
Product  
Declarations  
(EPDs) for  
Sustainable  
Project Delivery



## Next Quarter:

Continue working on:

- research efforts and state surveys
- project tasks related to FHWA's Climate Challenge



Questions?

CIA TEAM

**ORGANIZATIONAL  
SUPPORT &  
IMPROVEMENT**

NJDOT – Kristal Walker

FHWA – Chris Paige

# Implementation Plans

## Development Stage Updates:

- Funding request pending FHWA approval



We redirected our request for funding to FHWA through our On-the-Job Training Supportive Services (OJT/SS) funding allocation process. This request is still pending FHWA approval. Consequently, funding options are being explored if the request is denied, or remains in an pending status.

# Implementation Plans

## Development Stage Updates:

Contractor Compliance unit collaboration efforts continues:



- Working with the Office of Federal Contractor Compliance (OFCCP) on best practices
- Engaging with State Transportation Agencies with effective Workforce Development Programs
  - ✓ Webinars
  - ✓ Participating in the upcoming, EDC-7 Fireside Chat on August 15, 2024 regarding workforce partnerships

# Implementation Plans

## Development Stage Updates:

Contractor Compliance unit collaboration efforts continues:



- The next scheduled Construction Contracting Industry meeting will be held on August 28, 2024. Topics discussed:
  - ✓ Unions
  - ✓ Apprenticeship Programs

# SWD Workshop in Syracuse, NY

## *Peer Exchange*

- **Event Information:**

- July 10 & 11, 2024
- New York, Maine, New Jersey, Connecticut, Louisiana and New Hampshire

- **Event overview provided by:**

- Christopher Paige



CIA TEAM

**PLANNING &  
ENVIRONMENT**

NJDOT – Sudhir Joshi

FHWA – Sutapa  
Bandyopadhyay

# Department's Decarbonization Efforts



NJDOT identified five Carbon Reduction Categories for the following transportation project types that reduce emissions which are already being pursued throughout the state

- ❖ Promote Electric and Zero-Emission Vehicles – Supports transition from fossil fuels to electricity and other alternative fuels increase
- ❖ Use of Mass Transit and Active Modes- Encourages a shift away from the single occupancy vehicle (SOV) trips
- ❖ Support Efficient Roadway Operations- Improves the traffic flow and reduce delay
- ❖ Incorporate Efficient Construction and Maintenance- Includes use of recycled materials and efficient equipment operations
- ❖ Enable Innovative Solutions – Continues to explore new methods, technologies, and more sustainable materials
- ❖ Established CMAQ Performance 4-year targets: These projects and programs will contribute to CO2 emissions reduction for the established 4-year targets.





# Implementation Plan



- ❖ Coordinate with MPOs and Stakeholders to assist with the implementation of the GHG emissions reduction.
- ❖ Provide resources, guidance and the best practices to MPOs, Counties and Municipalities.
- ❖ Continue to fund and deliver the projects that reduce GHG emissions.
- ❖ Incorporate Carbon Friendly Elements into the existing projects.
- ❖ Purchase cleaner vehicles and Construction equipments.





# Potential Next Steps



- ❖ NJDOT anticipates to start ranking and scoring Carbon Reduction and GHG Emissions Reduction Projects based on the criteria to be determined
- ❖ Include the CRP funded projects in the STIP to justify and inform use of the CRP funds
- ❖ Use GHG impacts as a mandatory STIP project selection criterion to incorporate the project level GHG reporting
- ❖ NJDOT anticipates updating the CRS every two years to align with the STIP
- ❖ NJDOT anticipates to evaluate CO2 impacts of CRP funds
- ❖ NJDOT will implement the FHWA approved Carbon Reduction Strategies in the STIP
- ❖ Share data with MPOs and other Stakeholders



CIA TEAM

**MOBILITY &  
OPERATIONS**

NJDOT – Vandana Mathur

FHWA – Ek Phomsavath

# EDC-7: NEXT-GENERATION TIM - TECHNOLOGY FOR SAVING LIVES

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- Using technology for more effective traffic incident management.
- Notify the motorists of traffic incidents, prevent secondary crashes, and ensure the safety of emergency responders.



# EDC-7: NEXT-GENERATION TIM - TECHNOLOGY FOR SAVINGS LIVES



## Deployment of TIM Technologies:

- Light towers are equipped on NJDOT Incident Management Response Trucks (IMRT) to provide lighting at incident scenes.
- Utilizing LED flares at incident scenes.
- DriveWyze provides real-time notifications to truck drivers about stopped queues and slowdowns.



## Institutionalized Stage:

- Integrate activities into the NJDOT ITS/Traffic Operations work programs.
- Offer real-time alerts to truck drivers for slowdowns and congestion.
  - “No Trucks in Left Lane” alerts to avoid traffic congestion.



# DRIVEWYZE ALERTS

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- “No Trucks in Left Lane” alerts to avoid traffic congestion, increase traffic flow, and increase safety
- Notifications are sent approximately every 15 miles on a 3-lane roadway
  - Following is the text that goes out:
    - **Title:** LEFT LANE RESTRICTED
    - **Message:** No Trucks Left Lane



# DRIVEWYZE ALERTS

Site ID	Site Name	Last 90 days @ July 25/24		Last 90 days @ March 27/24	
		Alerts	Trucks	Alerts	Trucks
21936	NJ DOT Truck Left Lane Restrictions I-287 Edison NB	25242	7702	25190	7415
21937	NJ DOT Truck Left Lane Restrictions I-287 Bridgewater NB	30626	10084	28863	9326
21938	NJ DOT Truck Left Lane Restrictions I-287 Harding Township NB	37078	12488	35234	11383
21939	NJ DOT Truck Left Lane Restrictions I-287 Montville NB	37167	12619	34186	11491
21940	NJ DOT Truck Left Lane Restrictions I-287 Mahwah SB	52931	14158	48371	12800
21941	NJ DOT Truck Left Lane Restrictions I-287 Riverdale SB	32029	11536	29520	10359
21942	NJ DOT Truck Left Lane Restrictions I-287 Hanover SB	33086	11446	31079	10395
21943	NJ DOT Truck Left Lane Restrictions I-287 Bedminster SB	36889	12677	34082	11471
21944	NJ DOT Truck Left Lane Restrictions I-287 Piscataway SB	29412	9296	28118	8864
<b>Total</b>		<b>1786108</b>	<b>515432</b>	<b>1717619</b>	<b>482100</b>

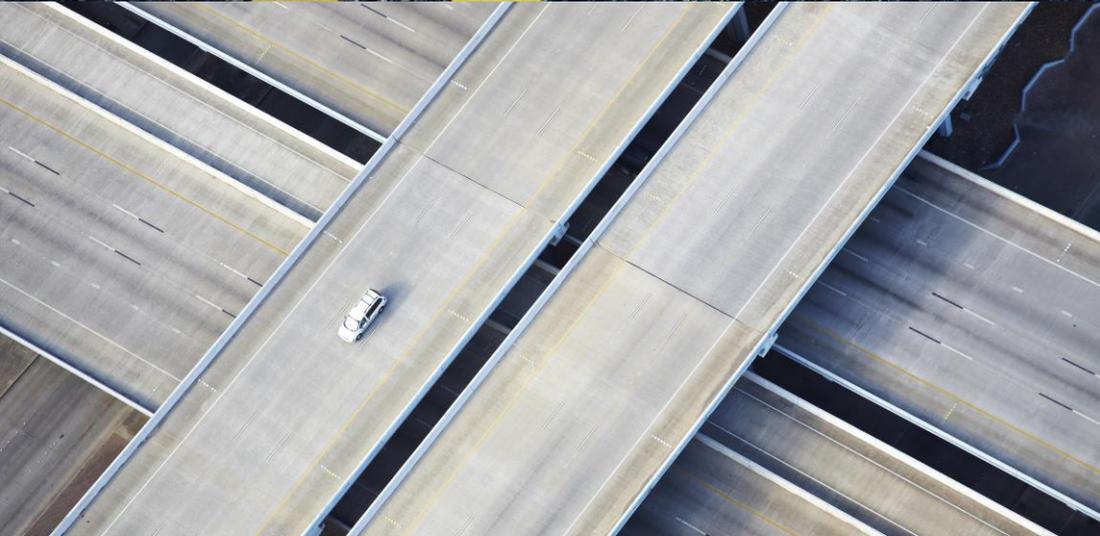
- Alerts are sent in real-time. Sending notifications since August 17, 2023.
- To date, **1,786,108** total alerts have been sent, and **515,432** to the commercial vehicle trucks.

Feature Presentation

**NJDOT Low-Carbon  
Transportation  
Materials (LCTM)**

**Giri Venkiteela**

Bureau of Research, Innovation &  
Information Transfer



# NJDOT Low-Carbon Transportation Materials (LCTM) Program

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NJ STIC Triannual Meeting, August 7<sup>th</sup> 2024



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**BUREAU OF  
RESEARCH, INNOVATION,  
& INFORMATION TRANSFER**

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# Grant Program Information

# AVAILABLE FUNDING

All awards of LCTM funds are available for obligation through **September 30, 2026**, and available for expenditure before **September 30, 2031**.

FHWA **anticipates at least \$22 million** will be made available to each State DOT that addresses the eligible application factors and subfactors in Section 8 Application Review Information of this RFA. Any award under this RFA will be **subject to the availability of funding**, and FHWA reserves **the right to make no awards under this RFA**.

# Eligible Materials Categories

Asphalt



Concrete



Steel



Glass



NJDOT is interested in all these four materials

# FHWA GRANT PROGRAM GOALS

- **Increasing the use** of lower carbon materials and products that are used in projects funded under 23 U.S.C.
- **Facilitating the use** of low carbon transportation materials while ensuring appropriateness for use in projects eligible under 23 U.S.C.
- **Promoting technology transfer** and enhancing workforce development to increase the adoption of environmental quantification techniques used in decision-making by transportation agencies; and
- **Encouraging State DOTs** to begin LCTM activities and building successful low carbon transportation material identification **frameworks** that eventually may be replicated by non-State recipients eligible to apply for LCTM funding.

# Request For Application (RFA)

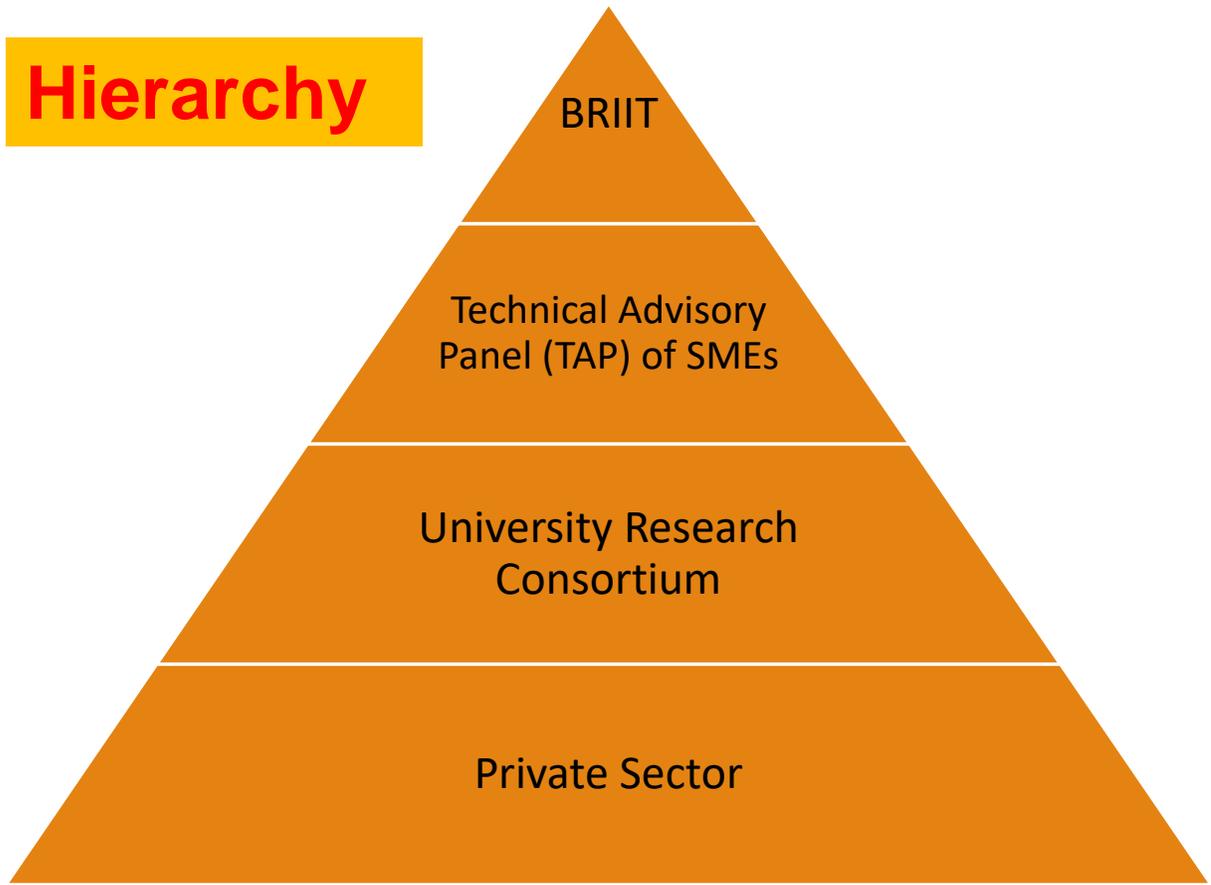
**June 10, 2024**, State DOTs can directly apply to this RFA by submitting their Application Materials, outlined in Table 2, to the program inbox at [FHWALowCarbonMaterials@dot.gov](mailto:FHWALowCarbonMaterials@dot.gov); do not use the Grants.gov 'Workspace' to prepare and submit the Application Materials. Late applications will not be reviewed

**Table 2.** Application Materials Overview

Part	Comments	Page Limit
SF-424, Application for Federal Assistance	Applicants may leave fields 5a, 5b, 6, 7, and 13 blank	None
SF-424C, Budget Information for Construction Programs		None
SF-424D, Assurances for Construction Programs		None
Volume 1: Technical Application	<i>Attach to SF-424, Item 15</i>	15 pages
Volume 2: Budget Application	<i>Attach to SF-424, Item 15</i>	None
Additional Supporting Documentation	<i>Attach to SF-424, Item 15, As needed</i>	10 pages

**Administration  
and  
Technical Activities Plan**

# Hierarchy



## Low-Carbon Transportation Materials WEBSITE

1. Homepage [www.njdottechtransfer.net](http://www.njdottechtransfer.net) website
2. Ongoing research and updates
3. LCTMs database
4. Newsletters
5. LCTM training aids
  - Videos, how-tos, factsheets, webinars
6. NJDOT-LCTM progress meetings

One stop shop for all NJDOT LCTM program resources

## Phase 1

### **2 to 3 Year duration**

- ID of low carbon materials
- EPDs
- Testing
- Spec Development
- Tech Transfer

### **NJDOT SMEs**

- Materials
- Environmental
- Planning

## Phase 2

### **2 Year duration**

- Construction Projects
- Tech Transfer

### **NJDOT SMEs**

- Pavement
- Bridge
- Project Management
- Planning
- Environmental

# Proposal Tasks

Task 1 - Process for Substantially Lower Embodied Carbon

Task 2 - LCTM Quality Assurance (QA) and LCTM Specifications

Task 3 - Construction Project Identification

Task 4 - Use of LCTM on Projects

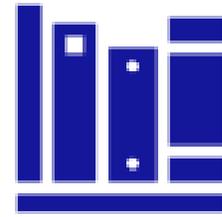
Task 5 - Substantially Lower Embodied Carbon

Task 6 - Quality Assurance and Acceptance

Task 7 - Use of LCTM on Construction Projects

# Timeline

1. Forming teams NJDOT TAP and University Consortium ( **May 9<sup>th</sup> – May 15<sup>th</sup>** )
2. NJDOT meeting with University Consortium ( **May 17<sup>th</sup>** )
3. University Consortium task wise budget, duration and overall Gantt chart for assigned material category due ( **May 31st** )
4. NJDOT Grant Proposal submitted on **Friday, June 7<sup>th</sup>**



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& INFORMATION TRANSFER**

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**Thank you**

Feature Presentation

# High Value Research Project Spotlight

**Amanda Gendek**

Bureau of Research, Innovation &  
Information Transfer



HIGH VALUE  
RESEARCH

1

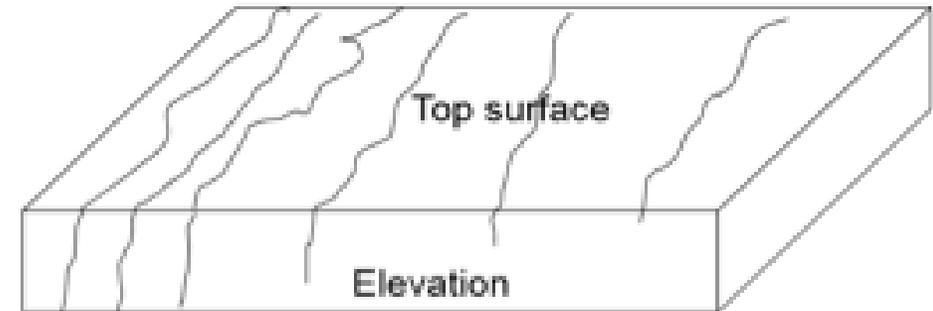
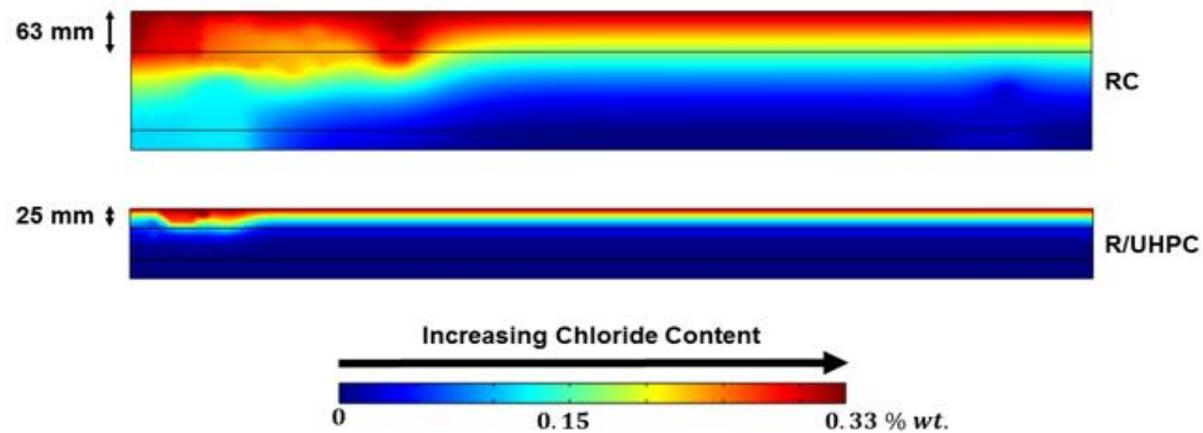


NJDOT received two awards during the AASHTO RAC 2024 annual meeting

# Advanced Reinforced Concrete Materials for Transportation Infrastructure:



Figure 4. Galvanized, black, ChromX and epoxy-coated bars



2



# Supplemental Categories – 2024

Maintenance, Management, and Prevention

*The American Association of State Highway and  
Transportation Officials Recognizes*

## New Jersey Department of Transportation

*Innovative Pothole Repair Materials and Techniques*

*Jenni Hosey* *Rebecca Ridenour*  
JENNI HOSEY & REBECCA RIDENOUR

*Co-Chairs, Value of Research Task Force*

*Cameron Kergaye*  
CAMERON KERGAYE

*Chair, AASHTO SCR&I Research Advisory Committee*



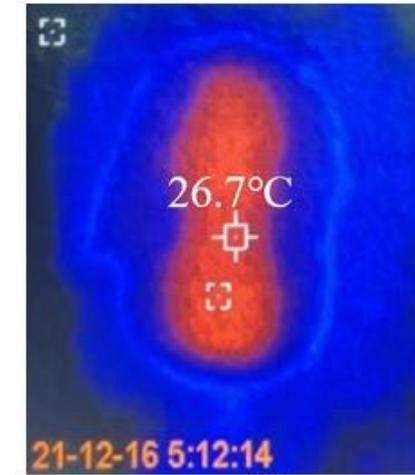
## Innovative Pothole Repair Materials and Techniques:



Figure 44. Portable infrared heater



(a)



(b)

Figure 39. Temperature distribution, (a) Before heating, (b) After heating

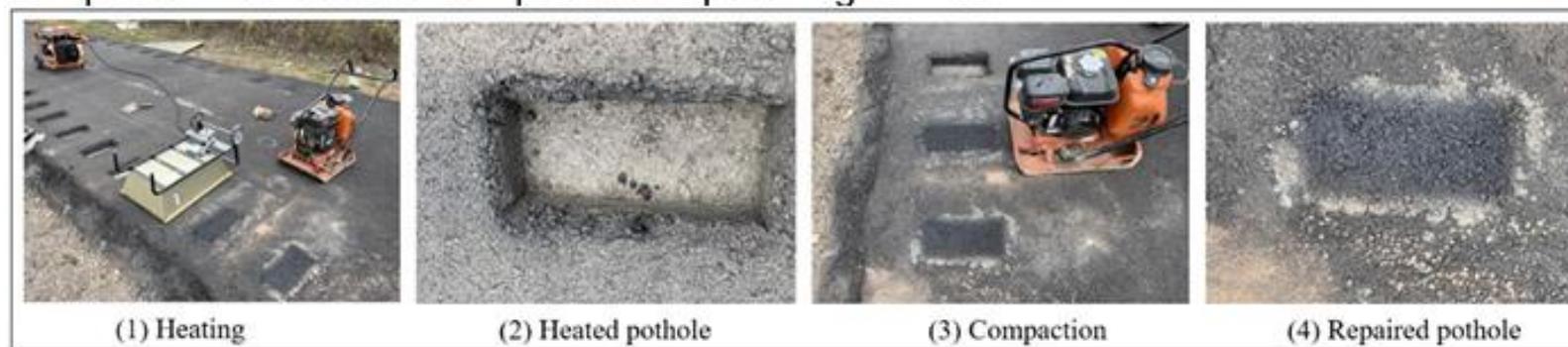


Figure 48. Pothole repair with infrared heating method



# REMINDERS & ANNOUNCEMENTS

NJDOT Tech Transfer Website  
[www.njdottechtransfer.net](http://www.njdottechtransfer.net)

NJ STIC Website  
[www.njdottechtransfer.net/nj-stic/](http://www.njdottechtransfer.net/nj-stic/)

# NJ Transportation Ideas Portal

**Welcome!** The New Jersey Department of Transportation's Bureau of Research uses this website to gather and share ideas from NJDOT's research customers and other transportation stakeholders.

**Research Ideas.** We seek to fund research that leads to implementation – to the testing and adoption of new materials and technologies, to better specifications and to greater efficiency. We strive to discover and advance feasible solutions for more durable infrastructure, greater environmental protection and resilience, and improved mobility and safety for residents, workers and visitors.

**Innovation Ideas.** We encourage the deployment of innovations and knowledge transfer. We work with the New Jersey State Transportation Innovation Council (NJ STIC) whose mission is to identify, evaluate, and where possible, rapidly deploy new technologies and process improvements that will accelerate project delivery and improve the quality of NJ's transportation network.



The graphic features the logo of the New Jersey Department of Transportation (NJDOT) on the left, which includes a stylized arrow pointing right within a circular border containing the text "DEPARTMENT OF TRANSPORTATION" and "THE STATE OF NEW JERSEY". To the right of the logo is the text "BUREAU OF RESEARCH" in a serif font, with a magnifying glass icon above the word "RESEARCH". Below the logo and text is a collage of images: a street scene with cars and a traffic light, a hand pointing at a screen with various transportation icons (car, bus, train, bicycle, pedestrian), and a city skyline at sunset. A large blue starburst shape is overlaid on the bottom right of the collage, containing the text "DUE December 31st".

**DUE  
December  
31st**

[njdottechtransfer.ideascale.com](http://njdottechtransfer.ideascale.com)



# STIC INCENTIVE PROGRAM

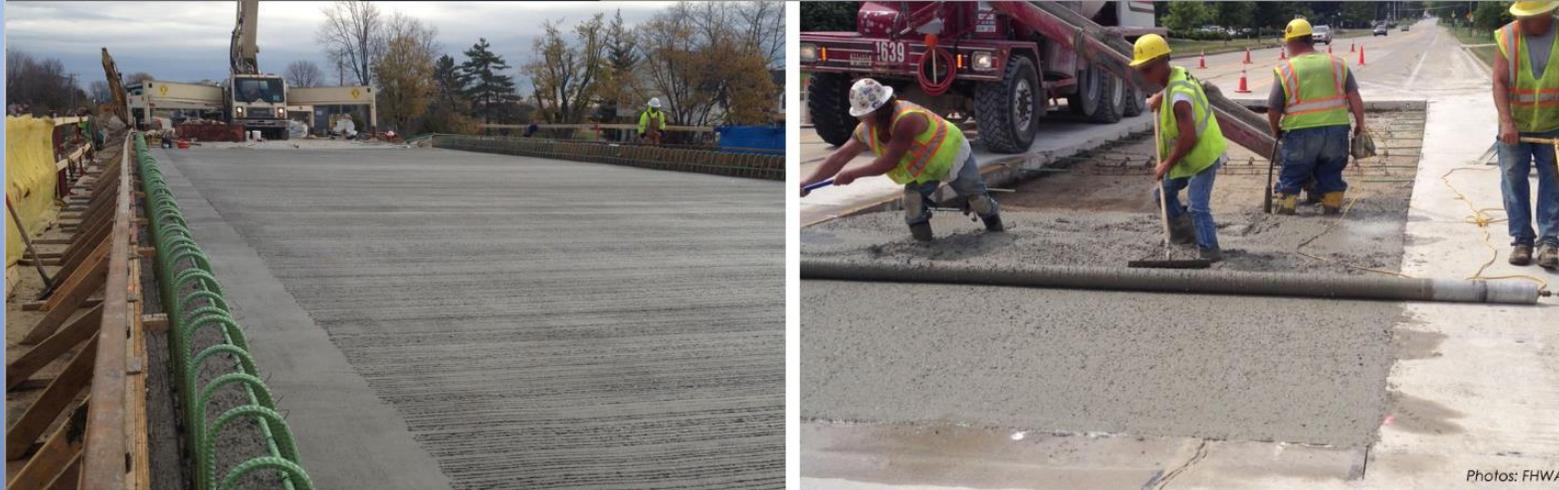
NJDOT Tech Transfer Website

<https://www.njdottechtransfer.net/new-jersey-stic-requests/>

Selection Criteria  
Eligible Projects/Activities  
How to Apply  
List of Projects

[https://www.fhwa.dot.gov/innovation/stic/incentive\\_project/](https://www.fhwa.dot.gov/innovation/stic/incentive_project/)

# Implementation of High Performance Internal Cured Concrete (HPIC)



Enhancing Performance with Internally Cured Concrete (EPIC<sup>2</sup>)

NJDOT Division of Project Management Team D  
Infrastructure Preservation CIA Team  
led by Shivani Patel and Nunzio Merla

# 104th TRB Annual Meeting

We look forward to seeing you in Washington, DC, for the 104th TRB Annual Meeting on **January 5–9, 2025**.



**Registration will Open in September**

<https://trb-annual-meeting.nationalacademies.org/>



  
**BUREAU OF RESEARCH**

SAVE THE DATE  
October 23, 2024

New Jersey Department of Transportation  
**26th Annual NJDOT Research Showcase**

*Pathways to Sustainability*



# NEXT MEETING

Exec. Team Meeting - November 6th 10:00am - 11:00am

NJ STIC 2024 3<sup>rd</sup> Triannual Meeting - December 18th 10:00am - 12:00pm

NEXT CIA TEAM  
FEATURE PRESENTATION

# SAFETY



THANK YOU!

[www.NJDOTtechtransfer.net/NJ-STIC](http://www.NJDOTtechtransfer.net/NJ-STIC)

NJDOT Bureau of Research  
(609) 963-2242