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#### **TECHNICAL COORDINATION COMMITTEE MEETING**

#### **December 14, 2023**

#### **Opening Remarks and Introductions**

The quarterly North Carolina Technical Coordination Committee (NC-TCC) Meeting was held on 14 December 2023 via Microsoft Teams. The purpose of the meeting is to provide awareness and request feedback on the North Carolina Transportation Innovation Council (NC-TIC) program and share ongoing project progress and results. The purpose of the NC-TIC is to foster a collaborative culture within NCDOT for the rapid implementation of meaningful innovations to efficiently deliver to the public a modern, high quality transportation system.

Alyson greeted meeting participants and provided an overview of the meeting agenda. Meeting slides and attendance can be found in Attachment A.

#### **FHWA Division Administrator**

After opening remarks from Alyson Tamer, Edward Parker the Deputy Division Administrator (FHWA) introduced Yolanda Jordan, as the new North Carolina Division Administrator. Yolanda Jordan started work in her new position in September 2023. She has been with FHWA for 17 years and worked in NCDOT for 10 years prior. The North Carolina Division is one of the 52 operating Federal-aid Division Offices of the Federal Highway Administration and is located in Raleigh, NC. The Division is responsible for administrating the Federal-aid highway program to help maintain the integrity and safety of North Carolina's roads and bridges.

#### **FHWA Update**

After introductions to Yolanda Jordan, Edward Parker provided a status update on federal funding incentive programs. Every Day Counts (EDC) national – There has been minimum change since last update with focus on recent infrastructure laws that has allowed project funding. North Carolina has received \$349 million for road projects thus far. ECD-7 rolled out in February 2023 and State Transportation Innovation Councils (STIC) funds are available. Accelerated Innovation Deployment (AID) provides up to a million dollars for competitive grant funding and closes in January 2024. Acceleration Market Readiness (AMR) provides funding to spur the advancement of emerging transformative innovations that have potential to enhance roadway safety, shorten



the project delivery process, and improve the performance of the transportation infrastructure. Provides up to \$3 million but currently no open projects for funding cycle.

#### **EDC-7 Quick Status**

Following the FHWA update Alyson Tamer provided a high-level overview of current EDC-7 projects. Currently North Carolina has five active EDC projects.

- Nighttime Visibility for Safety investigates and implements safety countermeasures for inclement visibility conditions and is currently in the Development Stage.
- Next Generation TIM: Technology for Saving Lives investigates the use of different technologies to aid in early warning and traffic control. Currently four technologies are being investigated, Unmanned Aerial Systems (UAS), Debris Removal Systems, Emergency Lighting Systems, and Advanced Warning Systems. The project is currently in the development stage.
- Integrating Green House Gas Assessment and Reduction Targets in Transportation
  Planning provides resources to help agencies quantify greenhouse gases and set goals
  to decrease motor vehicle, construction, and life-cycle emissions through planning and
  project development. The project is currently in the demonstration phase.
- Rethinking DBE for Design-Build investigates DBE in construction. Many
  disadvantaged business enterprise program procedures do not adequately address
  design-build contracting. New practices are available to support the effective integration
  of program requirements to help small, disadvantaged businesses compete for designbuild contracts. The project is currently in the developmental stage.
- Strategic Workforce Development investigates career opportunities. The demand for highway workers is growing, and emerging technologies require new skills. This innovation helps stakeholders improve their ability to identify, train, and place highway construction workers. The focus will expand to rural and Tribal communities to increase career opportunities. The project is currently in the development stage.

#### **Upcoming Knowledge Shares**

Following the EDC-7 status update, Janaki Patel, the CLEAR Program Manger provided an update on upcoming Knowledge Shares for the next quarter. The CLEAR Program is NCDOT's knowledge management program. And Lunch and Learn's kicked off in 2022 as a component of



the CLEAR Program with 30 different topics to date. Topics ranging from design, maintenance, and construction are presented to DOT professionals, PEF engineers, other industry professional, students, and anyone that is interested in a particular topic. We share the communications poster to our email list serve, Employee News, other email list serves, LinkedIn and we encourage people to share to their circles to anyone who they think may be interested. A sample registration page can be found in the attached slides of these minutes. Average attendance is over 300 people and the largest one was over 500 people. One professional development hour is available for each webinar to those that need them. Lunch and Learn topics are recorded and the presentation is posted to our knowledge share site for future reference. A QR code in the attached slides will take you to the form to fill out your information and join the email list. In March we are having a Lunch and Learn on a STIC Project, during that lunch and learn, we will share a little bit about funding and STIC in general, with the purpose of sharing Lessons Learned and Best Practices from industry partners. In addition to the Post Construction Assessments and CLEAR updates industry partners. The next Knowledge Share will take place in March.

# STIC Project Highlight: Tactical Library and Deployment Selection for Bike PED Safety Countermeasures

Following the Upcoming Knowledge Shares Joe Furstenberg shared a recent STIC project in Wilmington, NC. In 2016, 72% of nationwide pedestrian fatalities occurred away from intersections (e.g. mid-block locations) and 26% at intersections. Several cost-effective countermeasures can be systematically applied to reduce crashes and save lives by using temporary materials. Temporary materials are valuable in broadening exposure to specific solutions and developing state data of their effectiveness in improving pedestrian safety. This program launched the creation of a tactical materials library and deployment selection tool for temporary bicycle and pedestrian countermeasures related to FHWA's Safe Transportation for Every Pedestrian (STEP) program.

The deployment selection tool aids communities in identifying the appropriate countermeasure that addresses the specific location and safety concern. The selection tool will form the foundation for a deployment request of library materials, which will include a site-specific analysis to measure safety impact and evaluate the need and benefit of permanent improvements. An example project from 3<sup>rd</sup> Street and Market Street in Wilmington, NC was presented to the group that implemented curb extensions at the intersection. Curb extensions reduce vehicle turning speeds, shorten crossing distances for pedestrians, and increase space for those waiting to cross. Curb extensions



were deployed on the northeast corner and southwest corner of the intersection utilizing the parking areas along Market Street. Impacts on reduced accidents in the area will be reviewed, future considerations could include a process for maintain interim design countermeasure solutions and include steps to replace it with a more permanent design solution in the future.

#### AID Project Highlight: Harker's Island (CFRP)

Following the STIC Project Highlight, Trey Carroll shared a recent AID project that was conducted near Harker's Island. The Harker's Island Bridge Replacement Project replaced two bridges located in a highly corrosive coastal environment in Division 2 (Carteret County) with a single 3,200' bridge and will utilize Carbon Fiber Reinforced Polymer (CFRP) materials in lieu of traditional carbon steel reinforcement. The structure will serve as the only vehicular access to Harker's Island and will accelerate the adoption of innovative CFRP materials by NCDOT, promote state of the art technologies and new business practices that will provide longer-lasting structures with improved reliability and service life in North Carolina's corrosive coastal environments. Construction on the bridge concluded this winter and was open to traffic in December. The bridge will be studied to document deterioration and maintenance over its life span.

#### **NCTIC Program Management Updates**

After conclusion of the AID and STIC highlights, Alyson Tamer presented program management updates and goals for the upcoming year. The NC-STIC Chapter will be updated in the new year which was previously recharted in 2019.

#### **Open Discussion**

Alyson Tamer asked if there were any additional items for discussion. Theresa Canales commented that it would be nice to showcase what we have done to encourage new ideas with employees and thanked Alyson for the presentation.

#### **Adjournment**

Concluding the open discussion, Alyson Tamer adjourned the meeting.



#### **ATTACHMENT A: ATTENDANCE AND MEETING SLIDES**

TCC 12/14/23 Attendees			
Clare Fullerton (Jacobs)	Kate Davison (NC State)		
Robert Barrier	Michael Mann (Jacobs)		
Christy Berk	Janaki Patel		
Curtis Bradley	Sam Boswell (Cape Fear Council of Governments)		
Theresa Canales	Alicia Simmons		
Trey Carroll	Alyson Tamer		
Matt Clarke	Victor Barbour (AGC)		
Nastasha Earle-Young	Julie White		
Joe Furstenberg	John Dixon		
Yolanda Jordon (FHWA)	Brennon Fuqua		
Catherine Peele			



# North Carolina Transportation Innovation Council

**Technical Coordinating Committee Meeting** 

December 14, 2023

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

# **Meeting Agenda**

Welcome

Introduction of New Division Administrator

FHWA Update

**EDC7 Quick Status** 

**Upcoming Knowledge Shares** 

STIC Project Highlight

**AID Project Highlight** 

NCTIC Program Management Updates

**Open Discussion** 

Adjourn

# **Opening Remarks & FHWA Updates**

## **EDC-7 Innovations**

<u>Innovations</u>	Where we are now	Where do we want to be in two years	<u>POC</u>
Nighttime Visibility for Safety	Development Stage	Assessment Stage	Shawn Troy
Next Generation TIM: Technology for Saving Lives	Development Stage	Assessment Stage	Dominic Ciaramitaro
Integrating Green House Gas Assessment and Reduction Targets in Transportation Planning	Demonstration Stage	Assessment Stage	Heather Hildebrand
Rethinking DBE for Design-Build	Development Stage	Development Stage	Tonya Marriott Lisa Wilson
Strategic Workforce Development	Development Stage	Institutionalized Stage	Ebony Pittman Ayanna Wallace

<sup>\*</sup> Enhancing Performance with Internally Cured Concrete (EPIC2)
\* Environmental Product Declaration for Sustainable Project Delivery



# **Upcoming Knowledge Shares**

Janaki Patel, PE CLEAR Program Manager

December 14, 2023

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

# **Lunch and Learns**



#### **Environmental Documents Lunch and Learn Webinar**

#### Event details

- ### 4/13/2023, 11:30 AM 4/13/2023, 1:00 PM
  Time zone: (UTC-05:00) Eastern Time (US & Canada)
- Microsoft Teams meeting
- **≡** About the Webinar:

NCDOT is required under state and federal law to consider the environmental impacts of our projects. Our environmental policy staff will help to demystify the regulations and requirements that go into our environmental documents. We will explain some of the opportunities and risks in our environmental decisionmaking processes, with a goal of helping you understand how the environmental analyses affect our everyday planning and design practices.

#### Presenters:

Colin Mellor John Jamison



Register for this event	* Required
First name *	
Last name *	
Last name	
Email *	





LUNCH & LEARN MARCH 22, 2023 11:45 a.m.-1 p.m.

Pavement Chip Seals

#### **ABOUT THIS WEBINAR:**

Pavement preservation treatments are an effective means of improving surface quality and extending the service life of pavements. The design of pavement preservation treatments has undergone significant developments over the past two decades. In the United States, they have become increasingly more critical for highway agencies due to the aging and deterioration of the nation's road network.

#### This presentation will:

- Summarize findings from a series of NCDOT projects in the past two decades that investigate the effects of aggregate gradation, polymer-modified emulsions, rolling protocols, and application rates of aggregate and emulsion on the performance of chip seals.
- Review the performance-related mix design method and framework for the performance-related specification for emulsions that were developed under the National Gooperative Highway Research Program (NCHRP) Project 09-50.

#### PRESENTER:

#### Y. Richard Kim, Ph.D., P.E., F.ASCE

Jimmy D. Clark Distinguished University Professor
Alumni Association Distinguished Graduate Professor
Department of Civil, Construction, and Environmental Engineering
North Carolina State University



Questions? Contact the CLEAR team at clear@ncdot.gov.

# **Lunch and Learns**

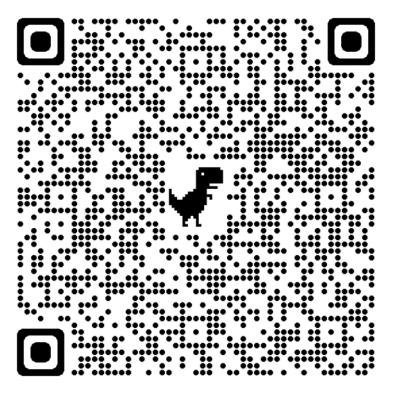
# Upcoming Topics for 2024:

- Airports for Highway Engineers
- Research Program Overview
- Factors Affecting Constructability of Intersections and Interchanges
- STIC Projects





Join our Email List for more information on Upcoming Lunch and Learns



Email jhpatel@ncdot.gov OR CLEAR@ncdot.gov if you have a topic you would like to present!





# STIC Highlight: Tactical Library and Deployment Selection for Bike Ped Safety Countermeasures

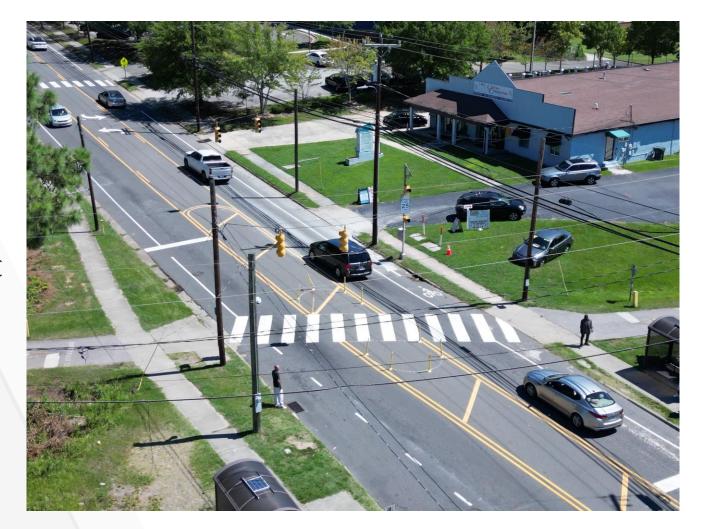
Joe Furstenberg
Project Manager, Integrated Mobility Division

December 14, 2023

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

# **Overview of the Final Report**

- Purpose of the Project
- Process
- Countermeasure Selection
- Site Identification
- Deployment Example: Wilmington, NC
- Challenges and Lessons Learned
- Conclusions & Future Consideration



# **Purpose and Overview of the Project**

IMD Core Goals: Increase Access, Enhance Quality of Life, and Ensure Safety

- Purpose:
  - Identifying Low-Cost Safety Countermeasures,
  - Selecting Sites on State-owned Roadways,
  - Deploying Proven Safety Countermeasures and,
  - Evaluating the Process to inform NCDOT's Safe System approach.
- Funding:
  - FHWA State Transportation Innovation Council (STIC) Program
    - Technology and Innovation Deployment Program (TIDP)
    - Awarded in 2020
    - Scope updated in 2021

- Pilot Project Process
  - Countermeasure selection and site identification
  - Interim design decision matrix and coordination
  - Deployment and evaluation
  - Post-deployment interviews and findings
- Deliverables:
  - Project Report
  - 10 Deployment Sites

## **Process Overview**



# **Selecting Countermeasure Types**

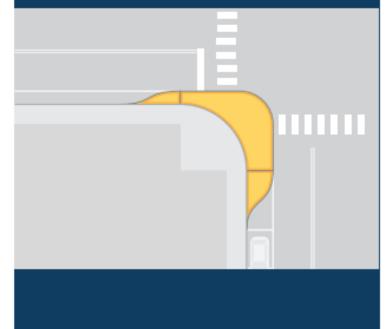
#### Key Considerations:

- Low Cost
  - Flex posts, paint, and minimal installation costs
  - Removable (low cost)
- Simple to Deploy
  - Installed within existing right-of-way, maintained existing lane and signal configurations
  - Temporary applications, removable infrastructure after 90-day deployment
- Proven to Reduce Risk and Exposure
  - Benefits quantified through crash modification factors (CMFs) which calculate the expected reduction in fatal and severe injury crashes after implementing a specific countermeasure



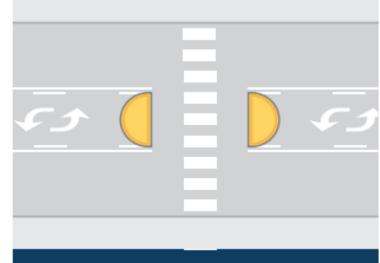
## **Curb Extensions**

Curb extensions reduce vehicle turning speeds, shorten crossing distances for pedestrians, and increase space for those waiting to cross.



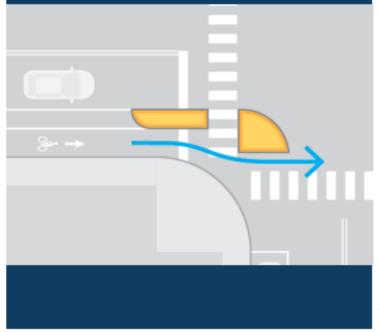
## **Median Refuges**

Median refuge islands reduce crossing distances and provide protected space in the center of the roadway for pedestrians and bicyclists.



## **Protected Corners**

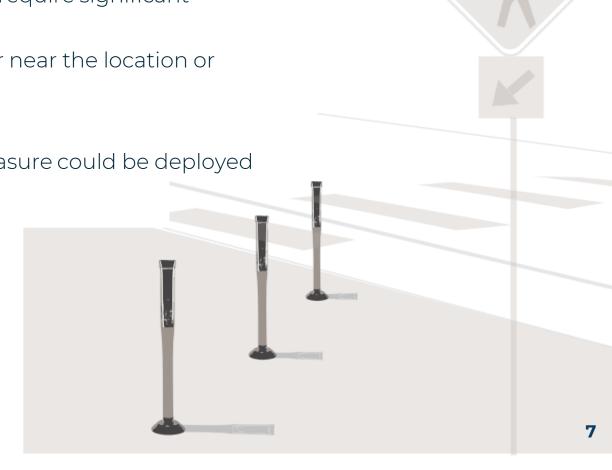
Protected corners at intersections reduce vehicle turning speeds, improve sight lines, and provide people on bicycles advanced queuing to travel through an intersection.



## **Site Identification**

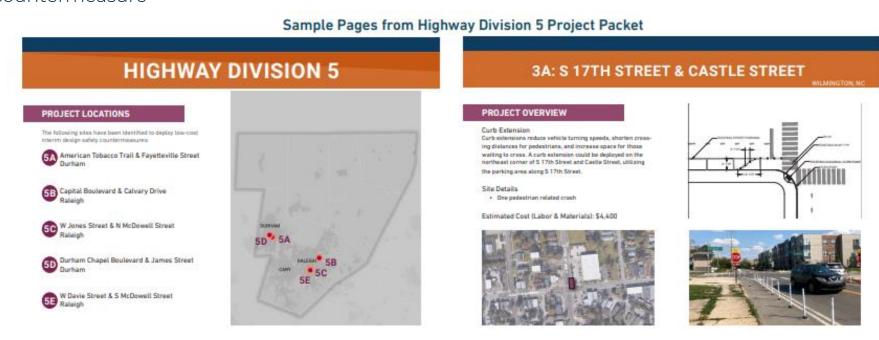
#### **Project Team Analysis Considerations**

- Intersection or mid-block crossings on NCDOT maintained roadways
- Existing crosswalks where deployment would not require significant milling or re-striping.
- History of pedestrian and/or bicyclists crashes at or near the location or located in an area with high pedestrian activity.
- Existing compliant ADA curb ramps
- Existing right-of-way space where the countermeasure could be deployed
  - For intersection sites, this included:
    - Existing on-street parking
    - Striped shoulders or,
    - Wide outside lanes
  - For mid-block crossing sites, this included:
    - Existing center-turn lane and/or,
    - On street parking,
    - Striped shoulders or,
    - Wide outside lanes



## **Site Selection Coordination & Refinement**

- Initial list of 36 sites developed in 2022 for coordination with the highway division, traffic safety, and local municipality staff
- A project packet was developed with the following information:
  - An overview of the goals of the project and the countermeasures being proposed
  - Outlined responsibilities for the consultant team, IMD, and the NCDOT Highway Division
  - Timeline of the pilot (90-day temporary installation with option to keep)
  - Map of project locations with the specific division
  - Project Cut Sheets for each site included:
    - Aerial map of the site, crash history, estimated cost, simple construction detail, brief explanation of proposed countermeasure



#### **Project Pairs Grouped By Countermeasure**

COUNTERMEASURE	CONTEXT PAIR	LOCATION	СІТҮ	HIGHWAY DIVISION
Curb Extensions	Three-lane mid-block crossings	Tar River Trail & Leggett Road	Rocky Mount, NC	4
		W Main Street at Town Hall Building	Gibsonville, NC	7
Median Refuge	Three-lane greenway crossing	American Tobacco Trail & Fayetteville Street	Durham, NC	5
		Bicentennial Greenway & Old Oak Ridge Road	Greensboro, NC	7
Protected Corner	Existing bicycle lanes through a four-way intersection	Durham-Chapel Hill Boulevard & James Street	Durham NC	5
		State Street & Main Street	Yadkinville, NC	11
Curb Extensions	Multilane intersection with wide outside lanes	3rd Street & Market Street	Wilmington, NC	3
		Trollinger Avenue & Williamson Avenue	Elon, NC	7
Curb Extensions	Downtown intersection with on- street parking	S 17th Street & Castle Street	Wilmington, NC	3
		W Jones Street & N McDowell Street	Raleigh, NC	5

# **Example Pilot:**

# 3<sup>rd</sup> Street at Market Street Wilmington, NC

### 3rd Street at Market Street

#### Wilmington, NC

#### Site Details

- · Countermeasure: Curb extensions
- · Roadway space: On-Street Parking
- · Crash history: 3 pedestrian injury crashes, 5 total crashes



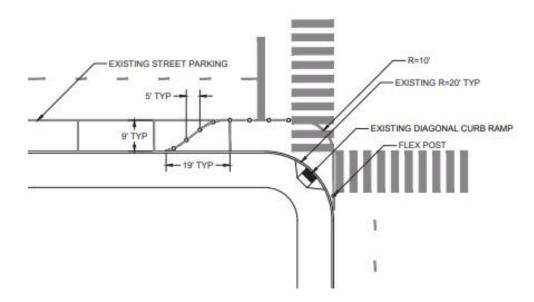
#### Opportunities to Reduce Risk

Curb extensions reduce vehicle turning speeds, shorten crossing distances for pedestrians, and increase space for those waiting to cross. Curb extensions could be deployed on the northwest corner and southwest corner of 3rd Street and Market Street, utilizing the parking areas along Market Street.

#### Aerial Map



#### Typical Design Treatment

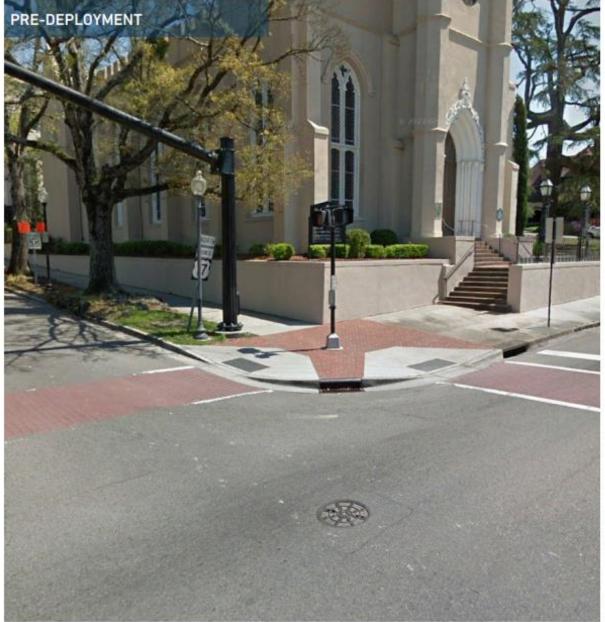


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Site Specific Design Treatment



# **DEPLOYMENT PHOTOS**







# **Challenges and Lessons Learned**

- Challenges:
  - COVID-19 Pandemic
    - Impacts felt throughout the project, including early delays due to shifting schedules and virtual work along with later in the project with limited staff capacity and funding needs.
  - Communication across Divisions
    - Each highway division is unique, and the experiences related to safety countermeasure deployment varied.
  - Clear Pilot Project Purpose
    - As a new and innovative approach to safety, emphasizing the purpose of the project became crucial (review of the process not the countermeasures).
  - Project Authority and Momentum
    - Project momentum was stalled due to internal reviews and hesitancy related to site selection and deployment strategies; clear authority to move the pilot project forward impacted early momentum.

#### Lessons Learned:

- Communicate with Highway Divisions Staff Early
  - Valuable early in the process to gain buy-in and refine the selection process
- Communicate with Municipal Staff Early
  - Bringing local stakeholders into the process earlier may result in more cost effective and innovative deployment opportunities.
- Start with Purpose
  - Communication materials could be distributed to NCDOT staff, municipal staff, and local elected officials to developed shared understanding and addressing real and perceived impacts of pilot project deployment – emphasize "pilot"
- Create a Path Forward
  - A formalized process is needed for future iterations
  - Future considerations might include a process for maintaining interim design countermeasure solutions and include steps to replace it with a more permanent design solution in the future.

## **Conclusions and Future Considerations**

- A New Approach Can Be Effective
  - Pilot projects prove quick deployment is possible with criteria.
- Interim Design Solutions are Desirable
  - Municipalities indicated that elements for separation that benefit pedestrians and bicyclists is an action they hope to do more often in the future, positive feedback received.
- Systemic Safety Actions May Require More Explanation
  - Deploying countermeasures that reduce risk aligns with the Safe System Approach and Framework goals, it will be important to provide training at the state and local level to develop strategies that are both reactive and proactive to meet Safe Systems objectives.
- Future Considerations:
  - Evaluate different countermeasures
  - Deploy the same countermeasures through a different site identification process
  - Integrate interim design and deployment into larger safety projects
  - Dedicate funding to rapid deployment, proactive projects
  - Formalize a clear process and guidelines for interim countermeasure deployment with opportunities to develop into permanent infrastructure.

# **Contact Us**

Joseph Furstenberg

jcfurstenberg@ncdot.gov



















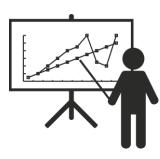
# **Upcoming STIC Schedule**



February: STIC Application Window Opens



- March: NCTIC Meeting Prepare Scoring Criteria, EDC7 Presentation
- March: STIC Lunch and Learn
- April: STIC Application Window Closes
- May: NCTIC Submit STIC Application Questions
- June: NCTIC Meeting STIC Applicants Present, NCTIC Votes on Projects





# AID Highlight: Harker's Island (CFRP)

Trey Carroll, PE

Assistant State Structures Engineer - PEF Coordination, Program Management & Field Ops

December 14, 2023

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

# Carbon Fiber Reinforced Polymer (CFRP) Prestressing Strands

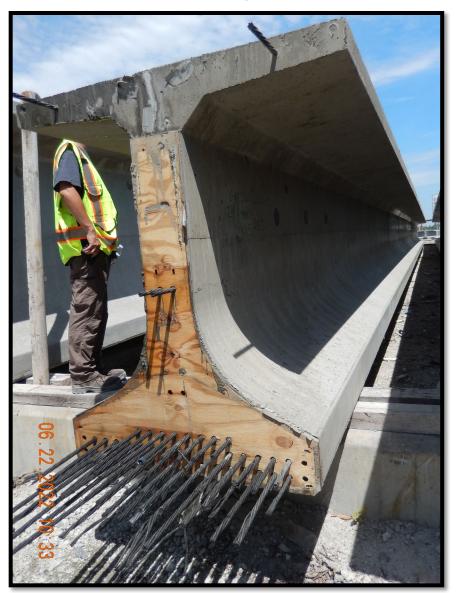
Harkers Island Bridge Replacement Project (B-4863)

- AID Commitment: \$1,000,000
- CFRP Prestressing Strand:
  - 115 Girders: 650,000 Linear Feet CFRP Strand
  - 212 Piles: 335,000 Linear Feet CFRP Strand
  - CFRP Project Cost \$5,915,000
- Construction Let Amount: \$59,995,745

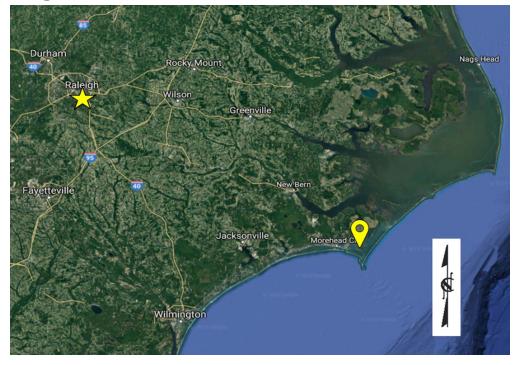




Funding for agencies to use innovations to deliver projects faster, better, and smarter.



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# Harkers Island AID Project Highlight













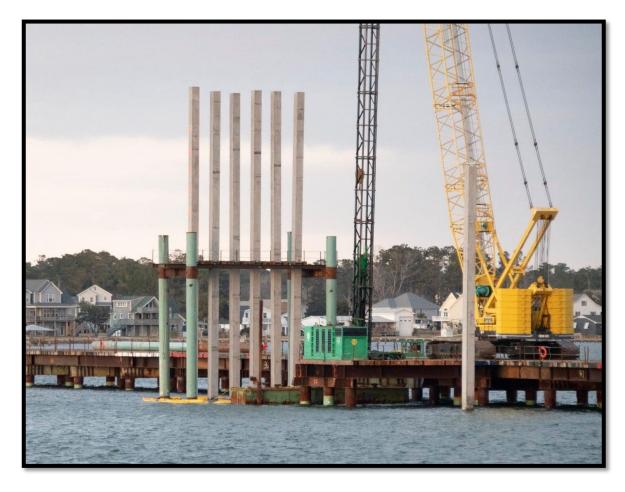


# Carbon Fiber Reinforced Polymer (CFRP) Prestressing Strands



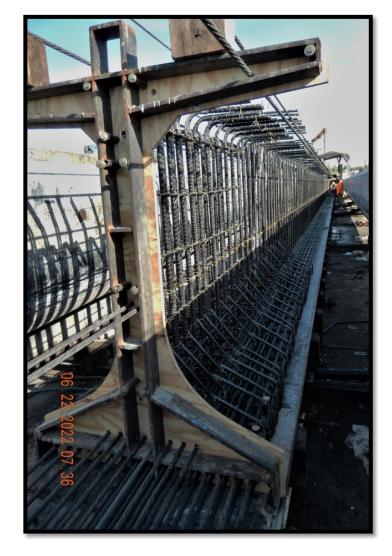


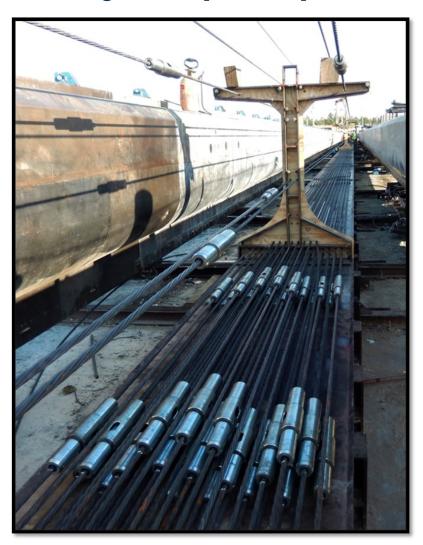






**CFRP Prestressed Concrete Piles** 



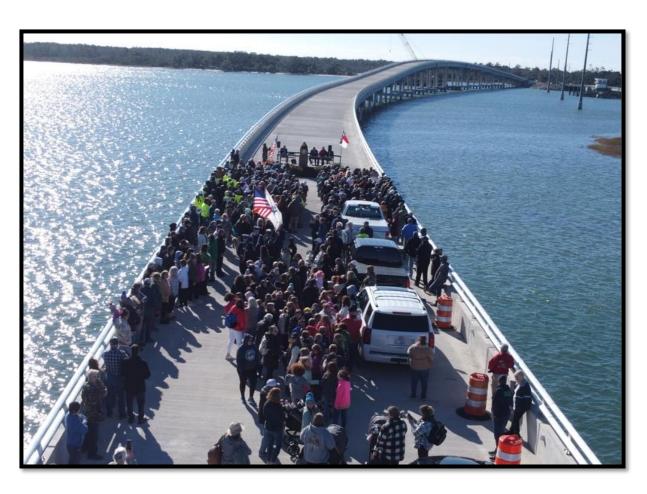




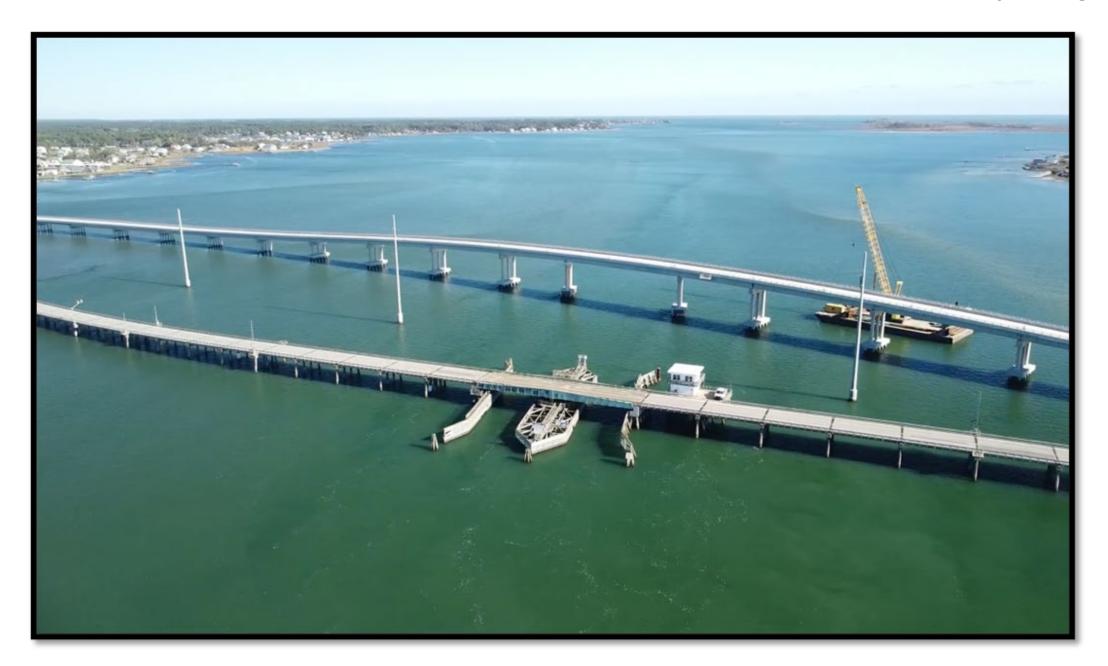




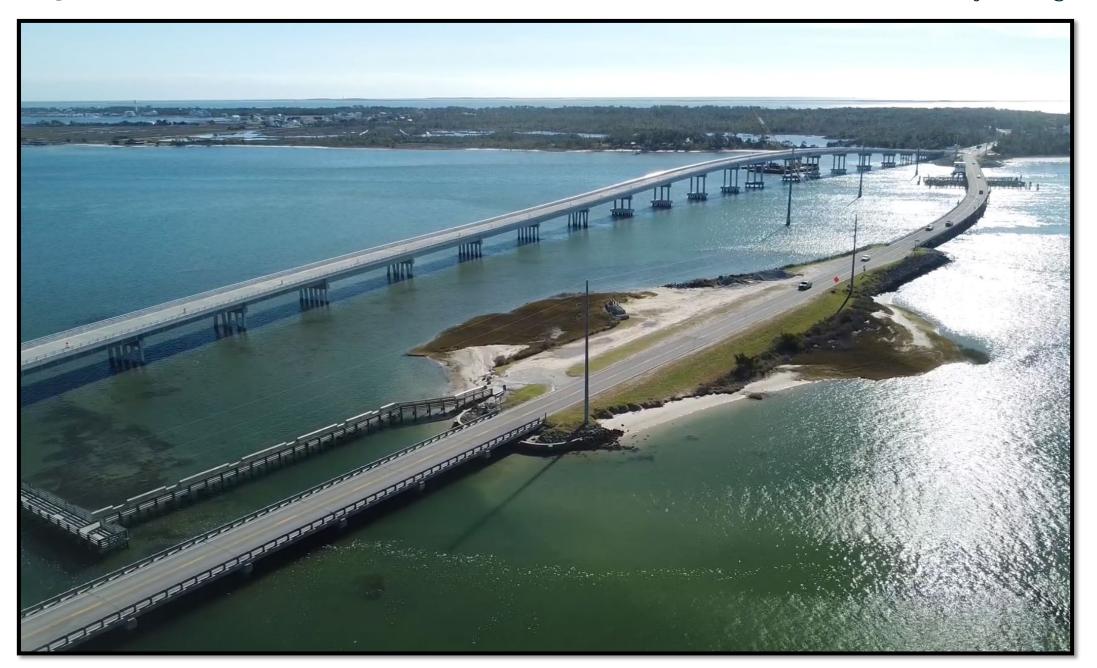
Bridge Opening December 12, 2023







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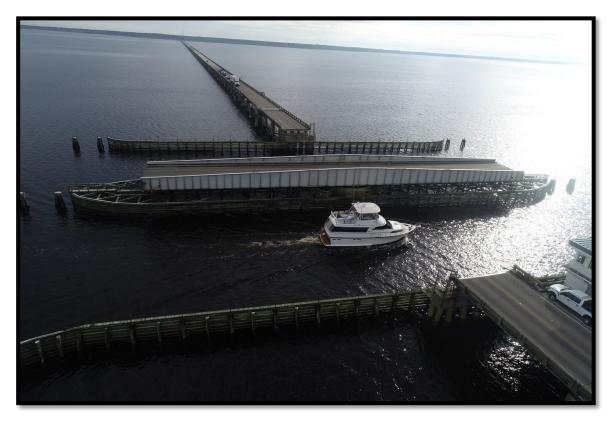


# **Current/Future Projects**

BR-0160: Calabash River Brunswick County



HB-0001: Alligator River Tyrrell & Dare County



# **Contact Us**

Trey Carroll, PE

thcarroll1@ncdot.gov 919-707-6465

- ncdot.gov/projects/harkers-island/Pages/default.aspx
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Thank you!

#### **Upcoming AID Schedule**



- New Notice of Funding Opportunity (NOFO) for the AID Demonstration Program (Opportunity No. 693JJ324NF-AIDDP)
- Multi-year NOFO
  - First solicitation period for FY 23 is now open from October 24, 2023 to January 23, 2024
  - FY 24 solicitation period begins February 27, 2024 to May 28, 2024
- The NOFO will also cover FY 25 and FY 26



# NCTIC Program Management Updates

Alyson Tamer, PE, CPM State Value Management Engineer

December 14, 2023

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

### **NCTIC Program Management Updates**

- Updated Charter
- Goals for 2024
  - Increase Participation and Variety of Projects
  - Be competitive with AID and IPD
  - Conduct Knowledge Shares to support increase of impact and institutionalization of innovations

# **Open Discussion**

