

# North Carolina Turnpike Authority

Operations Committee Meeting

July 22, 2021



# Opening Comments

**JJ Eden**

Executive Director

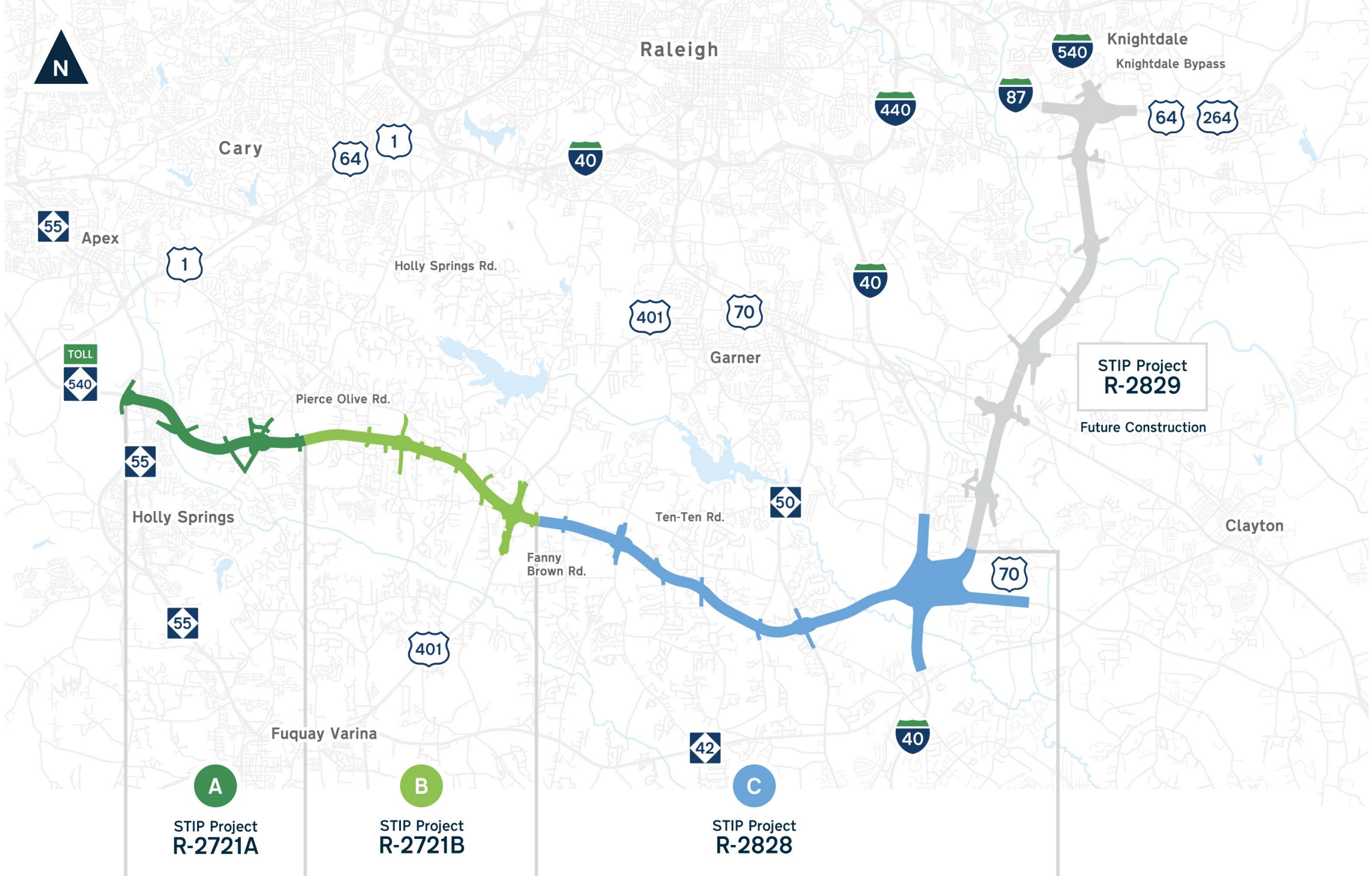
## May Statistics

- Triangle Expressway
  - Transactions: 4.73 million
  - Revenue: \$3.67 million
- Monroe Expressway
  - Transactions: 3.51 million
  - Revenue: \$1.68 million
- Transponders
  - Nearly 16,300 distributed
  - Distributed over a million transponders

# Complete 540 Construction Update

**Dennis Jernigan, P.E.**  
Deputy Chief Engineer for Highway Operations





**A**  
STIP Project  
R-2721A

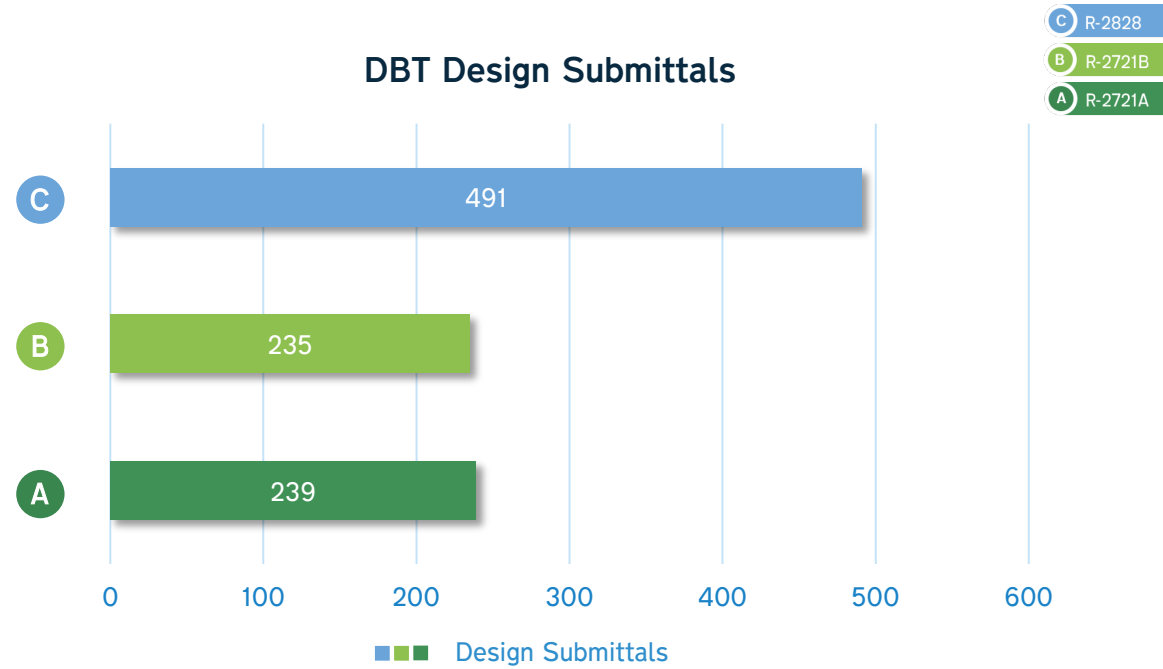
**B**  
STIP Project  
R-2721B

**C**  
STIP Project  
R-2828

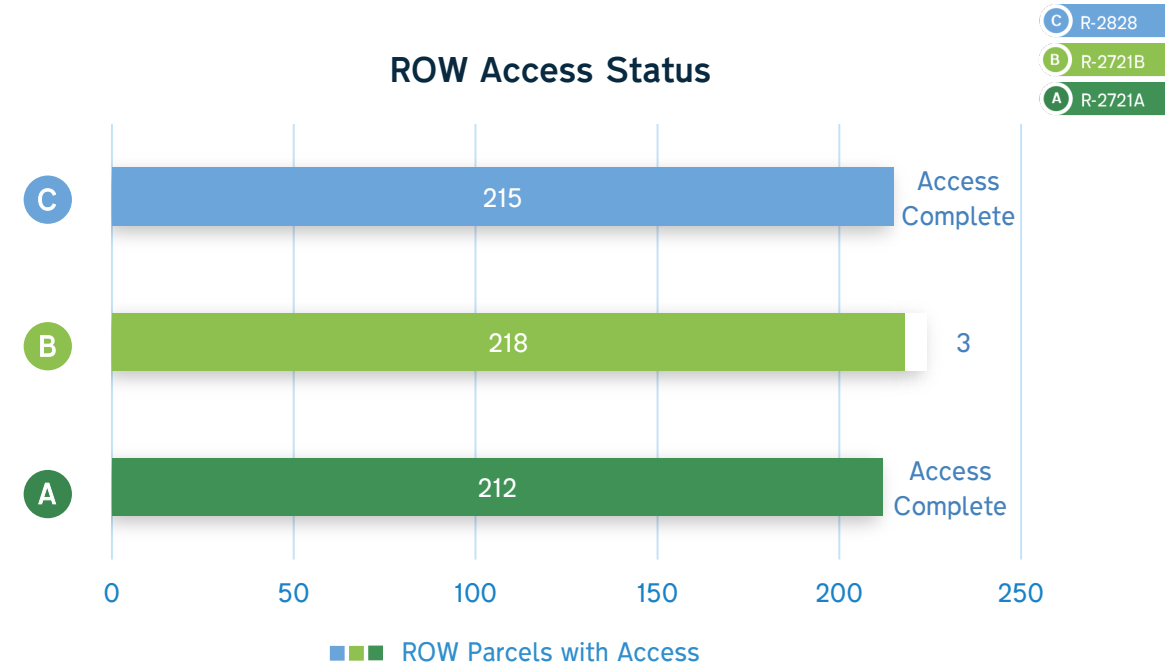
STIP Project  
R-2829  
Future Construction



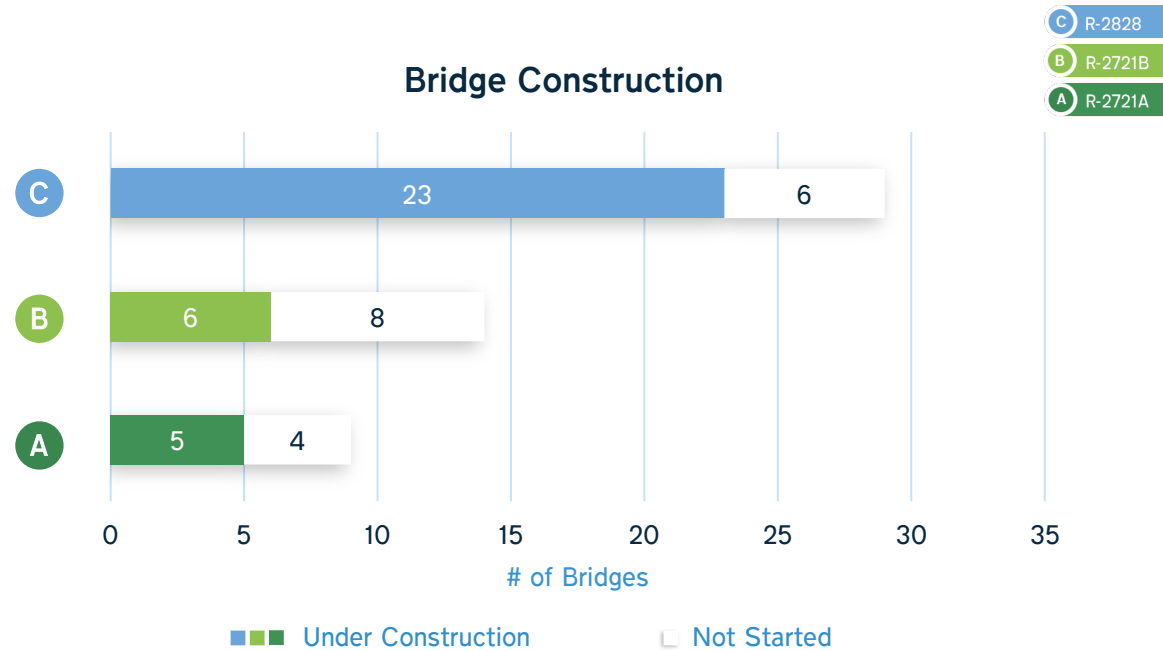
## DBT Design Submittals



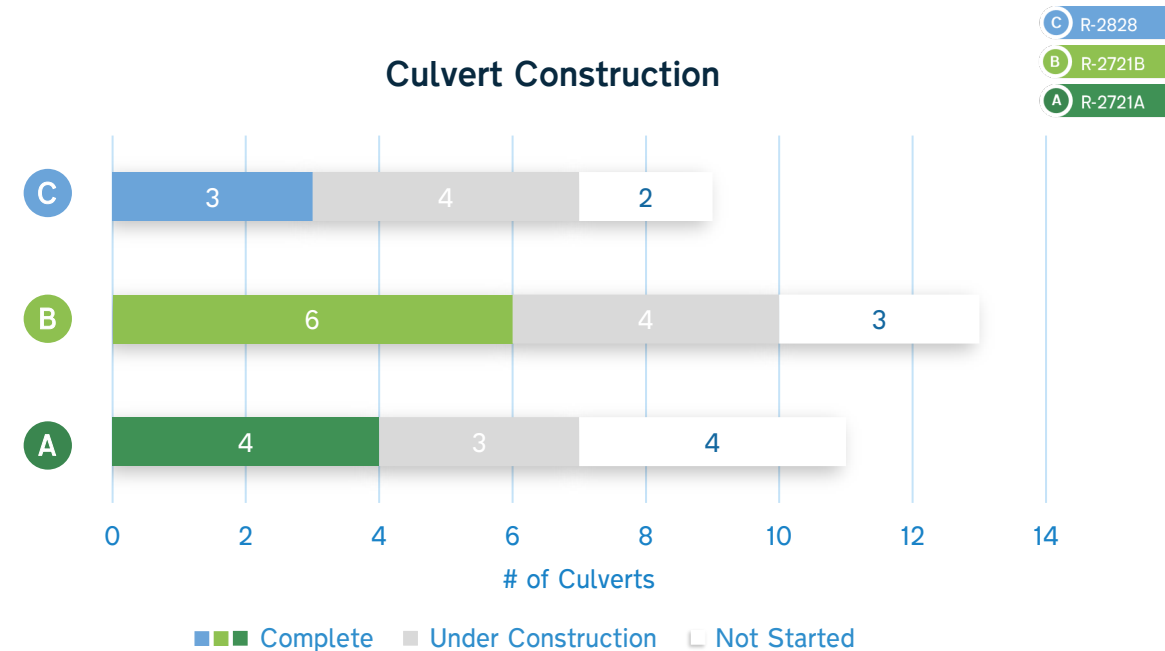
## ROW Access Status



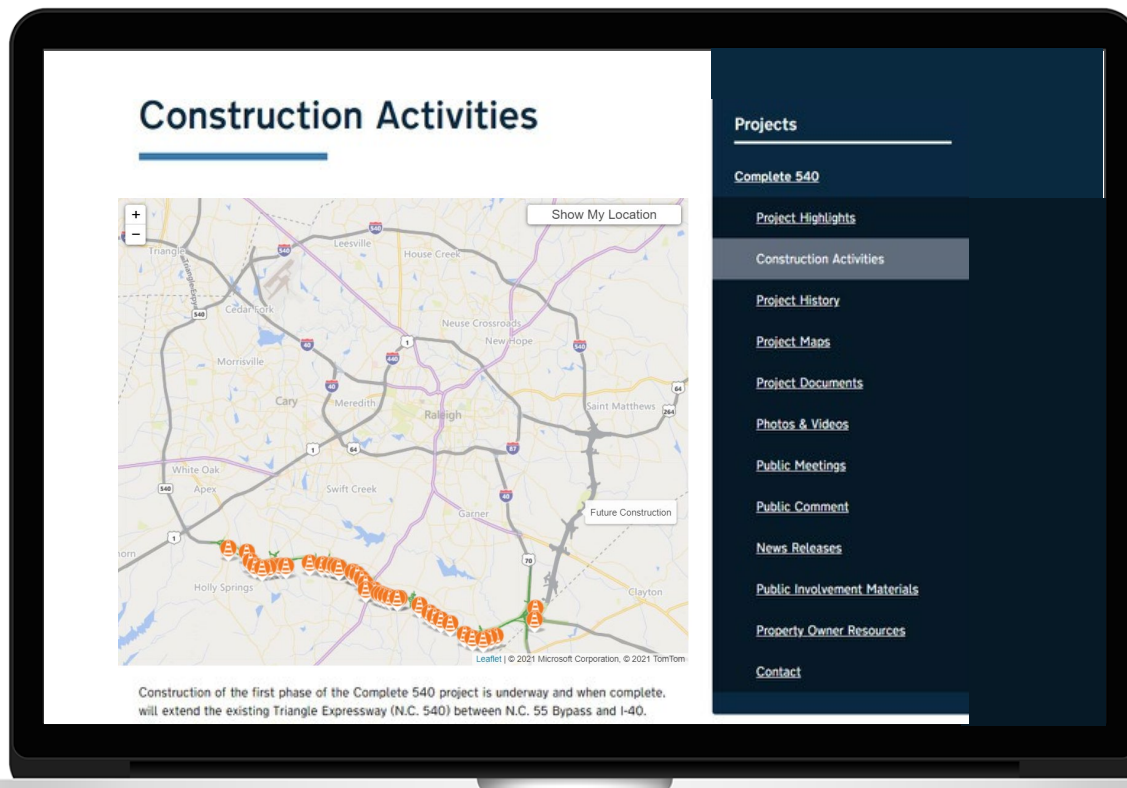
## Bridge Construction



## Culvert Construction



# Complete 540 Interactive Map

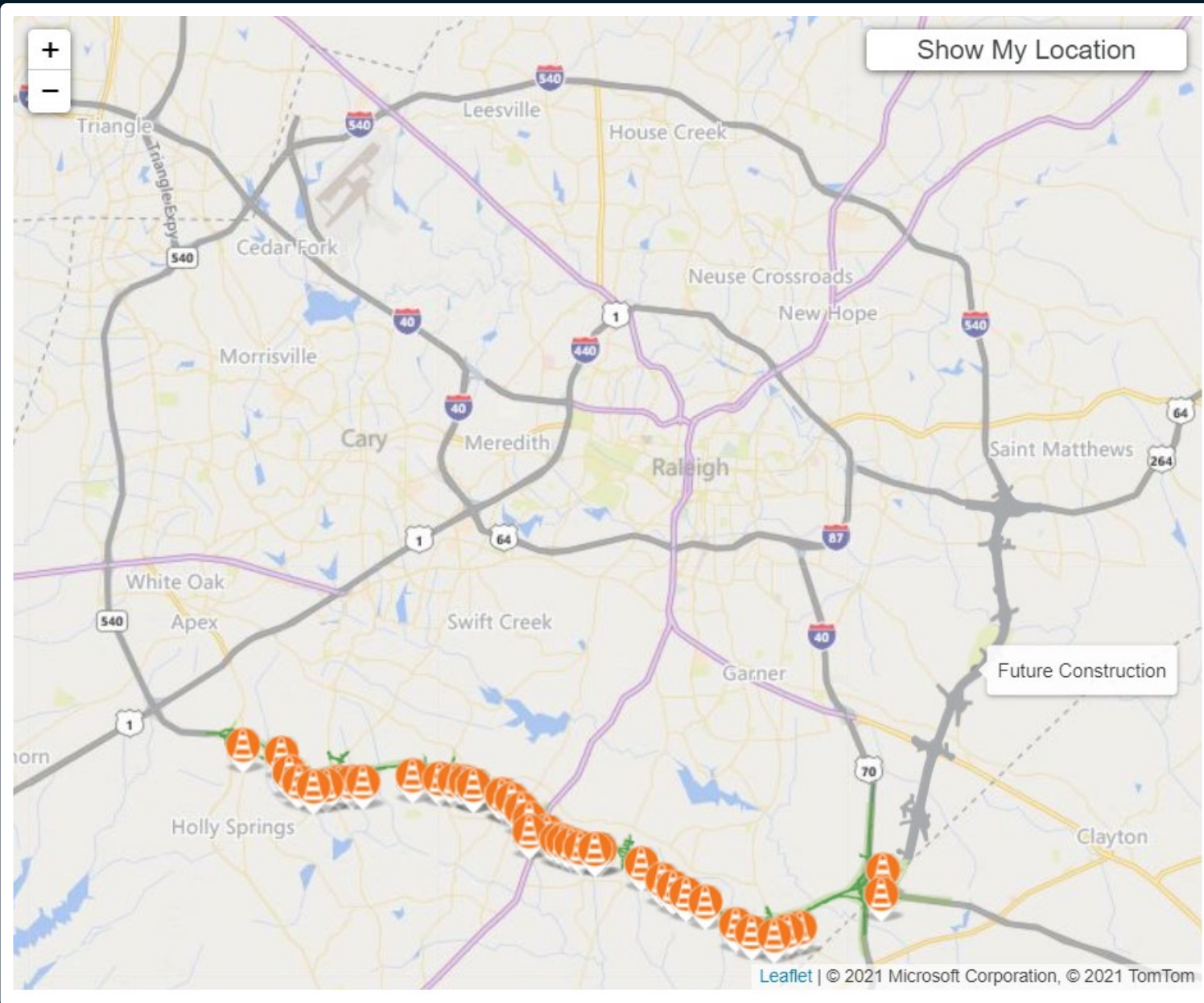


Creative

Connected

Convenient











































# Community Outreach





## Complete 540 Outreach



**Virtual/In-Person Meetings**

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**Resident Communications**

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**Fuquay Varina Chamber, ASHE Carolinas,  
IRWA, Holly Springs, Knightdale, Wake  
County Board Committee, & Johnston  
County Economic Development**





THINK  
2021



## Squaring the Circle in North Carolina's Capital Region

As plans took shape to finish Raleigh's outer loop highway, the state's turnpike authority's Complete 540 inclusion strategy was guided by a time-honored principle: Being a good neighbor.

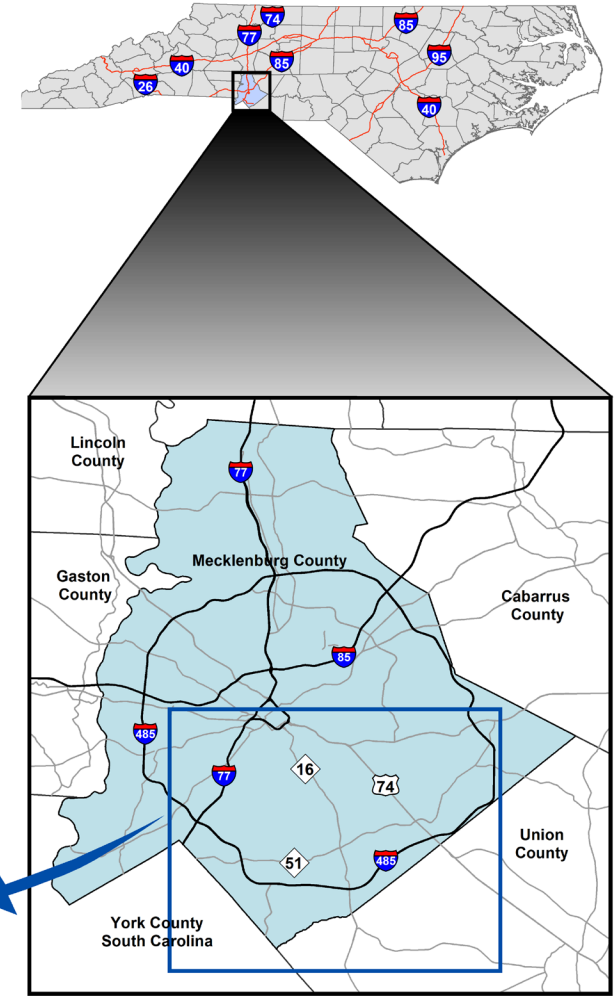
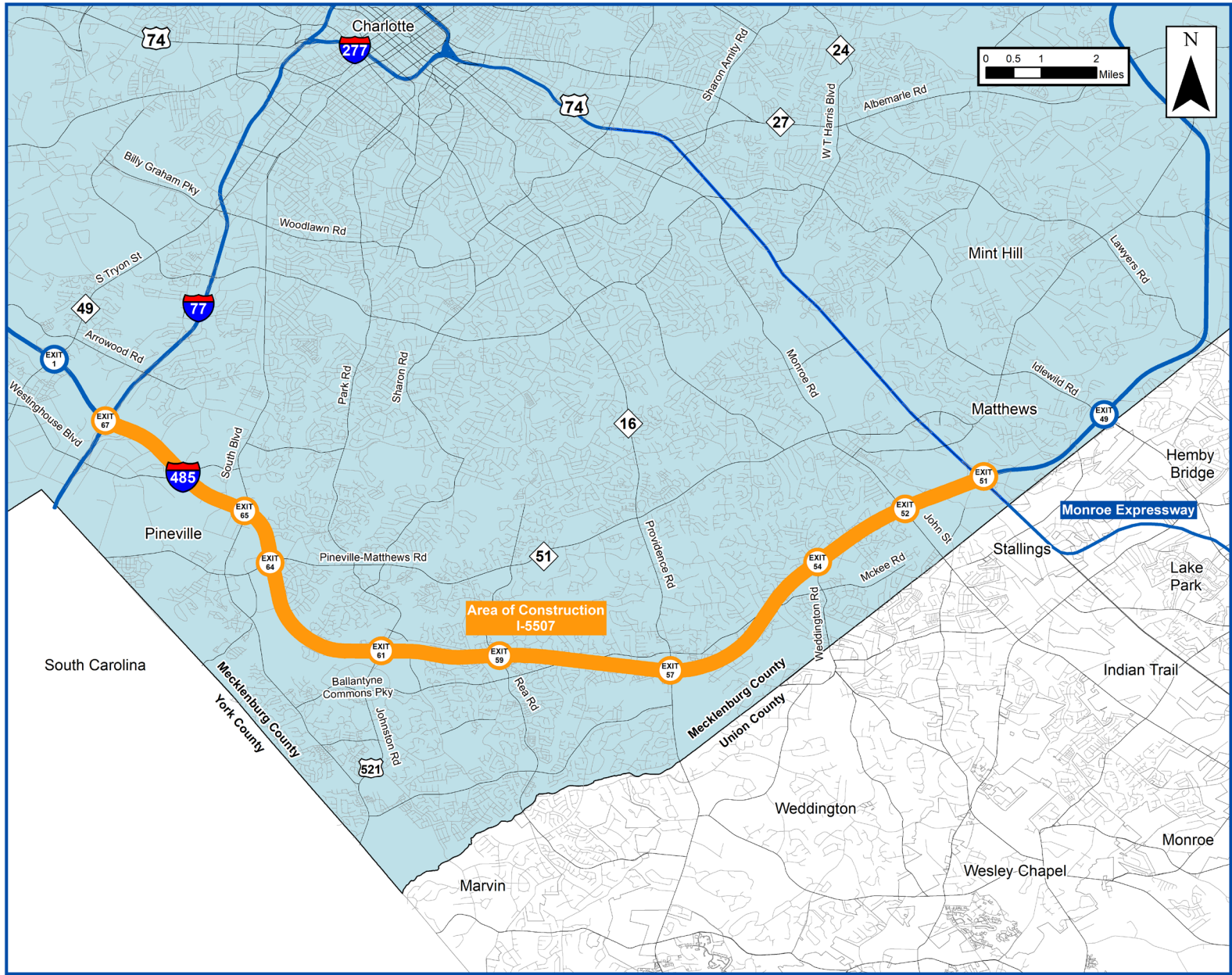
By Dennis Jernigan, PE, Deputy Chief Engineer for Highway Operations and Rodger Rochelle, PE, Chief Engineer | [North Carolina Turnpike Authority](#)

Glance at a road map of Greater Raleigh and you will see a vast, semicircular highway - called the Outer Loop - surrounding the capital region.



# I-485 Express Lanes Update

**Andy Lelewski, P.E.**  
Director of Program Development







# Division 10 Construction Update

- Twelve structures and two box culverts are under construction
- Six box culverts have been completed
- Over 32 miles of portable concrete barrier have been installed
- Approximately 40,660 LF of pipe has been constructed



# Division 10 Construction Update

- Over 12 miles of median widening is under construction
- 32,000 LF of median barrier wall is complete
- Soil stabilization, ABC placement, and asphalt paving is ongoing
- Over 42,100 LF of conduit has been installed for ITS/AET facilities



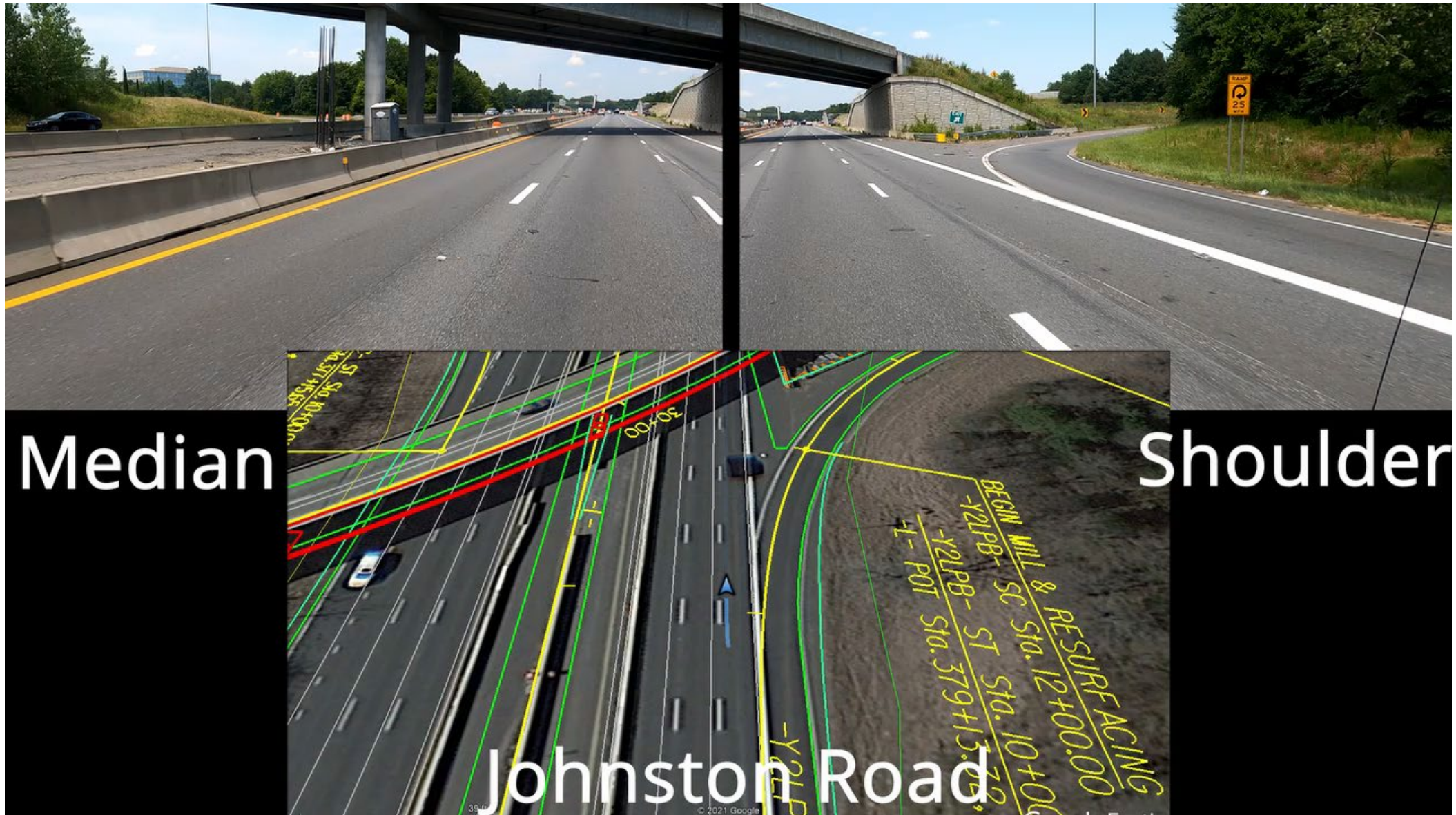


# Division 10 Construction Update

- Johnston Road interchange Direct Connector construction is ongoing
- Elm Lane Bridge approach slabs poured
- Westinghouse bridge beams set and preparing for bridge deck
- Median pavement continues for the shifts to the inner lanes



# Johnston Road Direct Connectors Status







# NCTA Summer Intern Braedon Hill

- East Carolina University, Construction Management
- Summer Intern Project – I-485 Tolls/ITS GIS Construction Management Tool

## Summer Intern Work Plan

Intern: Braedon Hill (6/1/21 – 8/13/21), East Carolina University, Class of 2024, B.S. Construction Management

NCTA Supervisor: Andy Lelewski

Summer Project: I-485 Express Lanes NCTA GIS Construction Management Tool

### Other Summer Work & Experiences:

- Shadow I-485 Express Lane construction work
- Shadow Complete 540 construction work
- Contribute to the development of the Complete 540 NCTA GIS Construction Management Tool
- Obtain a working knowledge of tolling, ITS, signing, and asset management



## I-485 Express Lanes NCTA GIS Construction Management Tool

Description: NCTA has developed a GIS tool and database for all toll and ITS elements (for the I-485 Express Lane project. The tool will allow NCTA to efficiently manage and monitor the construction of these elements (several hundred) and provide for a seamless handoff to the NCTA toll operations side. Braedon will populate this database with these elements – this work will include understanding and managing construction plans and submittals and will require a thorough understanding of the toll and ITS construction of the project. He will also be using the tool in the field to update the progress of the construction elements.

Key Team Members: Bob LaGatta (Project Engineer), Dave Jones (Project Engineer), I-485 Express Lane Residents Office staff

### Duties:

- Review toll and ITS plans and submittals and populate the GIS tool and database
- Using NCTA existing iPad equipment, perform field checks and update of asset construction status
- Continuous coordination with NCTA staff and NCDOT Residents office

### Deliverables:

- Fully populate GIS tool and database
- Update GIS tool and database with current construction progress
- Report and presentation to NCTA Executive Leadership

Tools Learned: ArcGIS, SharePoint, Adobe Acrobat Pro, BlueBeam, MicroStation

Skills Learned: Construction Project Management etiquette, field safety, Quality Control

# I-485 Tolls/ITS GIS Construction Management Tool

## Purpose:

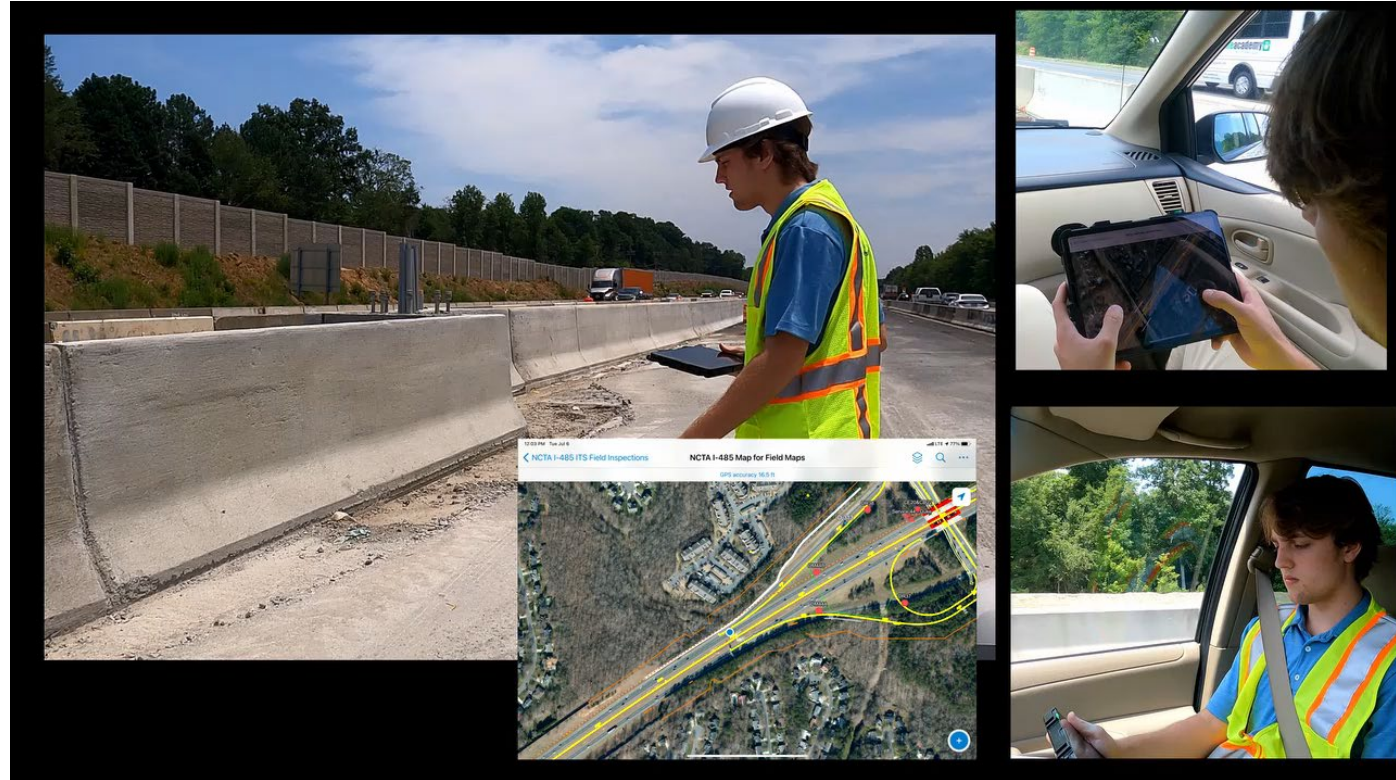
- Provide collaborative tool to track and communicate progress of the Tolls and ITS project

## Users:

- NCTA Staff & Consultants
- NCDOT Resident Engineers
- Field Operations Personnel

## Scalable:

- Based on proven ESRI GIS technology used by NCDOT
- Features can be added or changed to adapt to the needs of the project
- Communication between sites and Raleigh is in real-time. (Updates in the cloud)



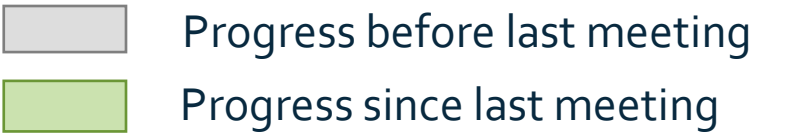




# Demonstration: I-485 Tolls/ITS GIS Construction Management Tool

Demonstration Video BOD 4.mp4

# Division 10 Construction Update



## ➤ Toll-Related Construction Progress

- Toll Rate Message Signs (17)
- Static Toll Sign Groups (78)
- Power Services (47)
- ITS/AET Conduit (25.3 mi)
- AET Toll Gantry (9)
- ITS Devices (217)

Complete: 0	Under Construction: 7
Complete: 0	Under Construction: 33
Complete: 0	Under Construction: 0
Complete: 11.8%	
Complete: 0	Under Construction: 2
Complete: 0	Under Construction: 0

## ➤ Overall Construction Progress

- Asphalt Paving





# SPOT 6.0 Update

**Andy Lelewski, P.E.**  
Director of Program Development

# Projects to Evaluate for Tolling

## Prioritization 6.0

Project	Description
US 17 New Bern Bypass	New location road, in Craven County
Cape Fear River Crossing – <i>Complete Project (A+B)</i>	New location road and structure over the Cape Fear River, in Brunswick and New Hanover Counties
Cape Fear River Crossing – <i>Project A</i>	New location road from US 17 to NC 133, in Brunswick County
Cape Fear River Crossing – <i>Project B</i>	New location road and structure over the Cape Fear River from NC 133 to US 421, in Brunswick and New Hanover Counties
I-77 Express Lanes	From the Belk Freeway (Exit 9) to Brookshire Freeway (Exit 11), in Mecklenburg County
I-77 Express Lanes	From SC line to Belk Freeway, in Mecklenburg County
I-540 Peak Period Managed Shoulders	From I-40 to US 1, in Wake and Durham Counties
I-540 Peak Period Managed Shoulders	From US 70 to I-87, in Wake County
I-74 Carolina Bays Parkway	New location road, in Brunswick County
I-485 Express Lanes	From I-77 (Exit 67) to I-85 (Exit 10), in Mecklenburg County
I-485 Express Lanes	From US 74 (Exit 51) to NC 24/27 (Exit 41), in Mecklenburg County
Direct Connector Ramps at US 74/I-485 Interchange	From I-485 Express Lanes (Exits 51 to 67) to/from the US 74 Express Lanes



# Evaluation Process

## Prioritization 6.0

### Develop NCTA Standards for SPOT



Develop analysis models/tools and document analysis procedures

### Analyze SPOT 6.0 Projects



Prepare sketch-level traffic and revenue (T&R) estimates



Develop capital cost estimates for ITS and toll infrastructure and systems (ITS equipment, toll equipment, ITS infrastructure, toll infrastructure, back office systems, customer service facilities, etc.)



Develop operations and maintenance (O&M) as well as renewal and replacement (R&R) cost estimates associated with the ITS and toll infrastructure and systems



Summarize toll revenues from T&R estimates and toll costs (tolling capital costs, O&M and R&R estimates) for SPOT

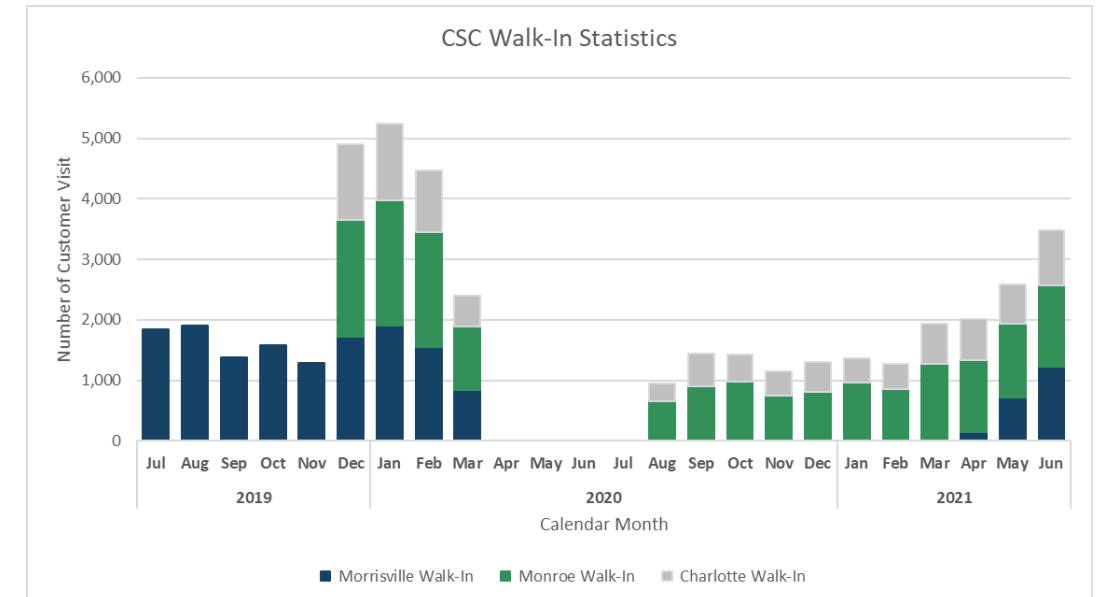
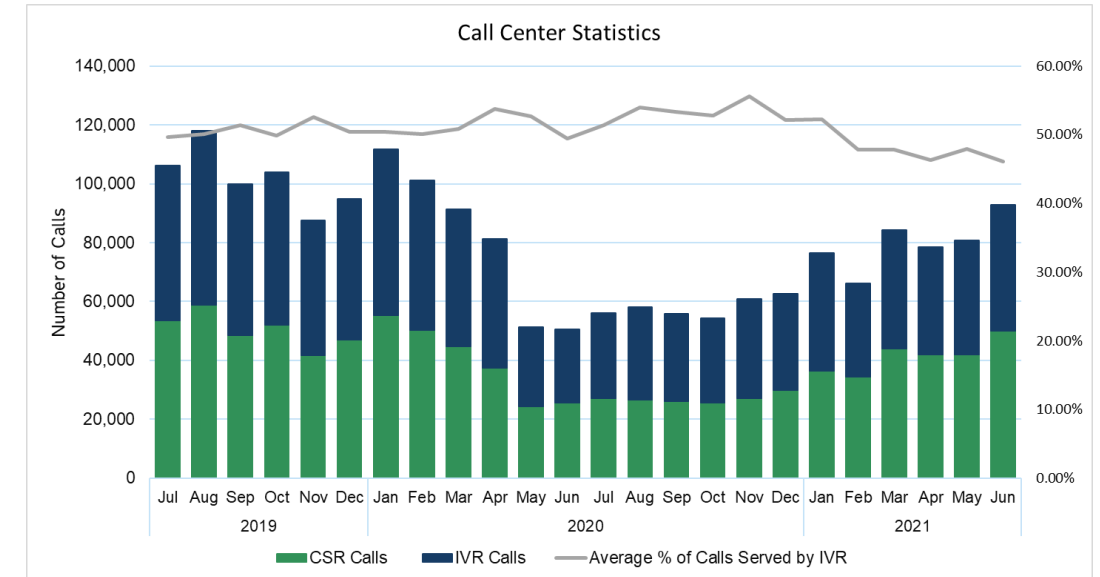
# Customer Service & Toll Technology Update

**Manish Chourey**  
Chief Technology Officer



# Customer Service Update

- CSC Operations trending back to normalcy
  - Employees and Embedded Consultants plan to return to CSC
  - CSRs are spaced out to meet social distancing (6+ feet)
  - CSC is keeping current with incoming workload (Service requests, Customer Calls and fulfillments)
  - Few CSR's will continue to Work From Home (WFH)
- Call volumes are close to Pre-Covid
- Morrisville Walk-In center opened on April-21st
- Effective July-2021: All efforts are resumed to collect outstanding debt





# Roadside System Updates

## Triangle Expressway Retrofit Updates

- All Toll Zones Retrofit are complete.
- Image Review activity is no longer required at CSC.
- ITS Field Device Installation complete.

## Transitioned from legacy contract to new contract

- Contract amendment
- Prepare for Operational Acceptance Test (OAT)
- Review As-Built Design Document and KPI Guidebook





## On Call Consultant Letter of Intent (LOI)

- Issued on April-1<sup>st</sup> 2021
- Responses were received from 9 separate firms
- Selected multiple firms with focus in specialized work areas:
  1. Business and technical operations audit and compliance
  2. Application support
  3. Technical program/project management
  4. Development, Implementation, and Management of As-A Service Offerings
- Developing scope of work with selected firms

Selected On Call Firms
Atkins Global
CDM Smith
Deloitte
Gannett Fleming
RK&K
RS&H



# I-485 Express Lanes Toll Collection System Procurement Schedule

Category	Date
✓ RFP Issued	April 14, 2021
✓ Mandatory Pre-Proposal Scope of Services Meeting	April 30, 2021 (1:00 p.m. to 3:00 p.m. ET)
✓ Proposer Questions Due	May 14, 2021 (4:00 p.m. ET)
✓ Proposals (Technical and Price) Due	July 12, 2021 (4:00 p.m. ET)
Notification of Proposers Shortlisted for Oral Presentations	August 19, 2021
Oral Presentations and Interviews	Week of September 6, 2021
Ranking of Proposers for Negotiations	September 10, 2021
Notice to Proceed / Award of Contract	September 22, 2021

NCTA reserves the right to modify the schedule at any time and for any reason.







# Internship Program

**Manish Chourey**  
Chief Technology Officer



## Brennan McLaughlin

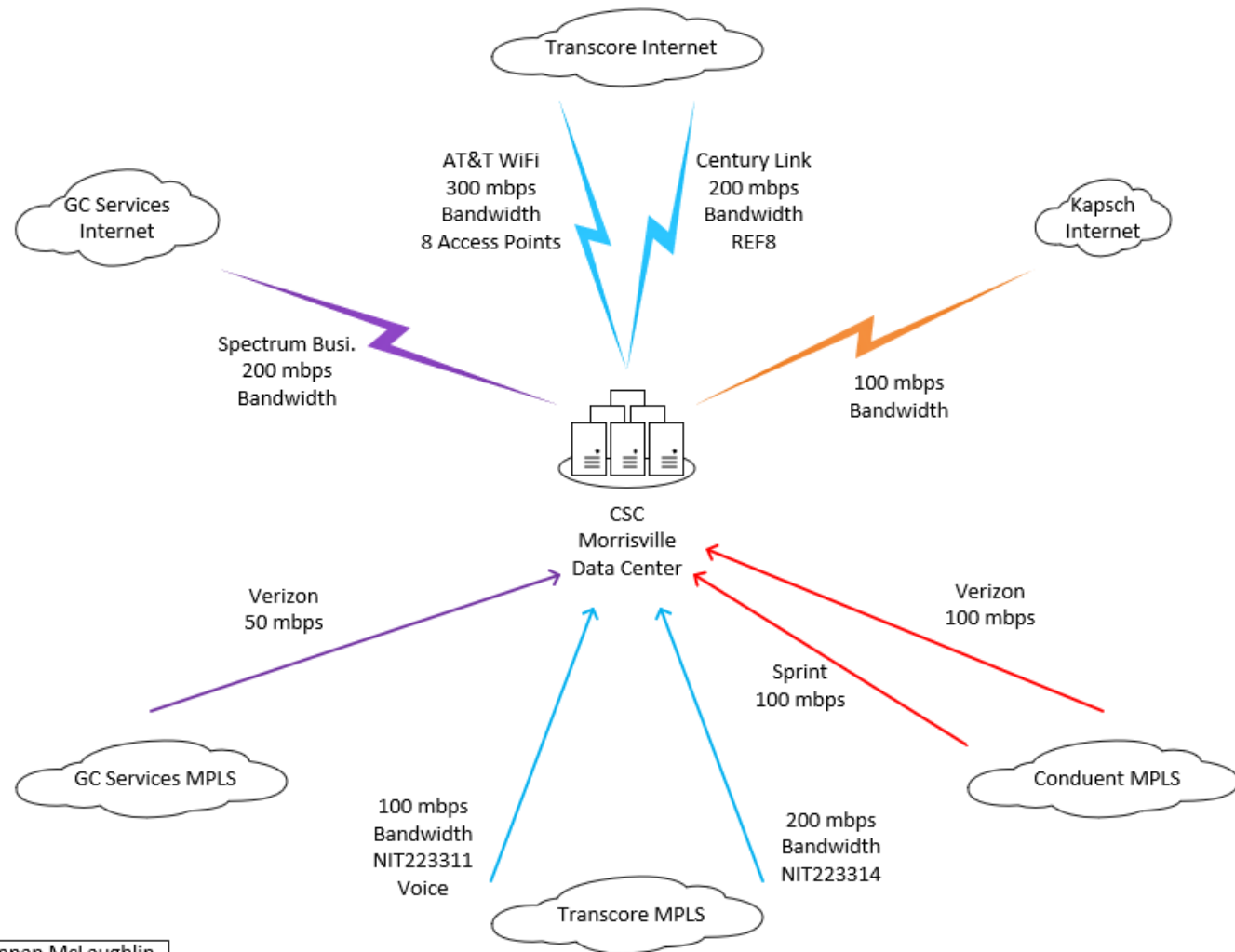
- Enrolled at the University of North Carolina at Charlotte
- Pursuing Bachelors of Science in Computer Science
- Focusing on NCTA Network Mapping



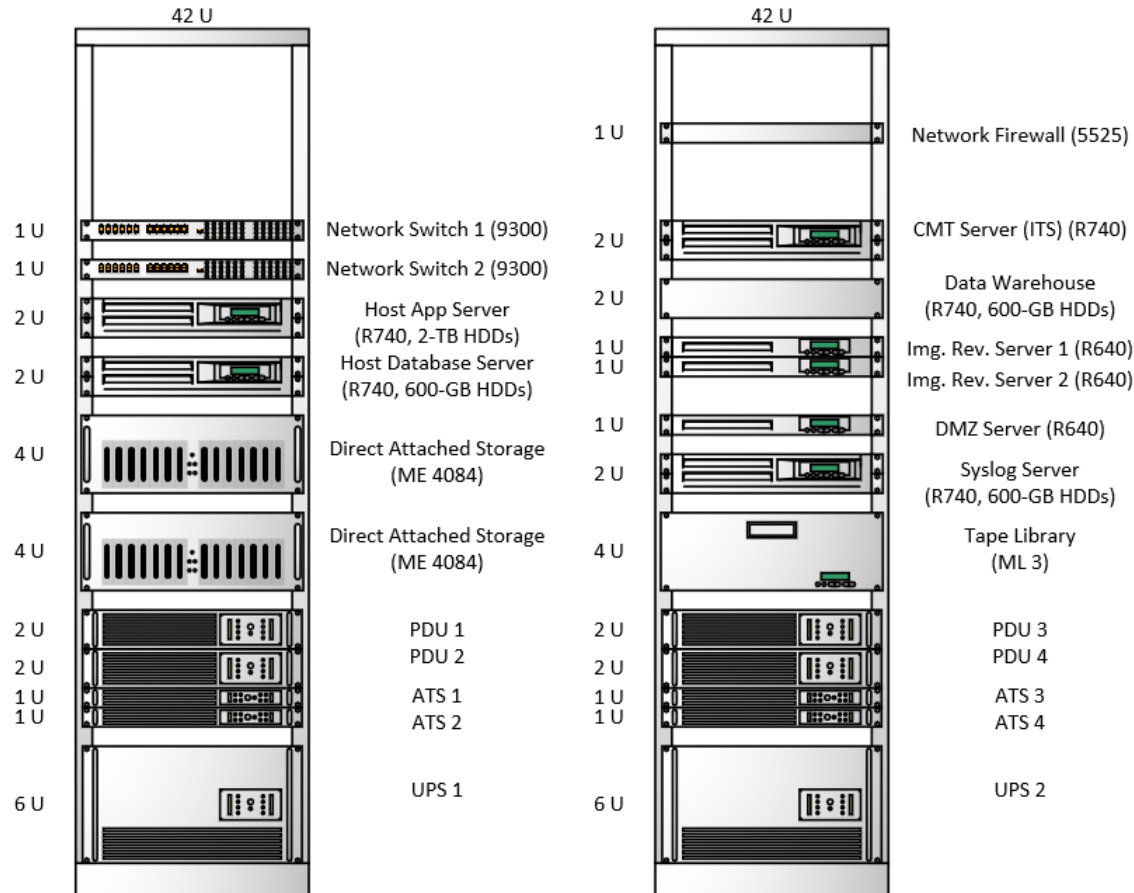


# NCTA Network Mapping Project

- The goal of this project is to document for incoming network connections to Morrisville, Charlotte, and Monroe CSC.
- The diagram centralizes connections from multiple sources in a single view.
- This has given me the opportunity to learn about networks and get an overview of their layout.



By : Brennan McLaughlin
6 JUL2021
MPLS Internet Combined



# Data Center Inventory Project

- The goal is to have an updated diagram showing current hardware and its location.
- This project has focused on taking account of hardware in the Data Center in Morrisville.
- This project has given me a chance to learn about hardware for the toll collection system.



# Areeba Khokar

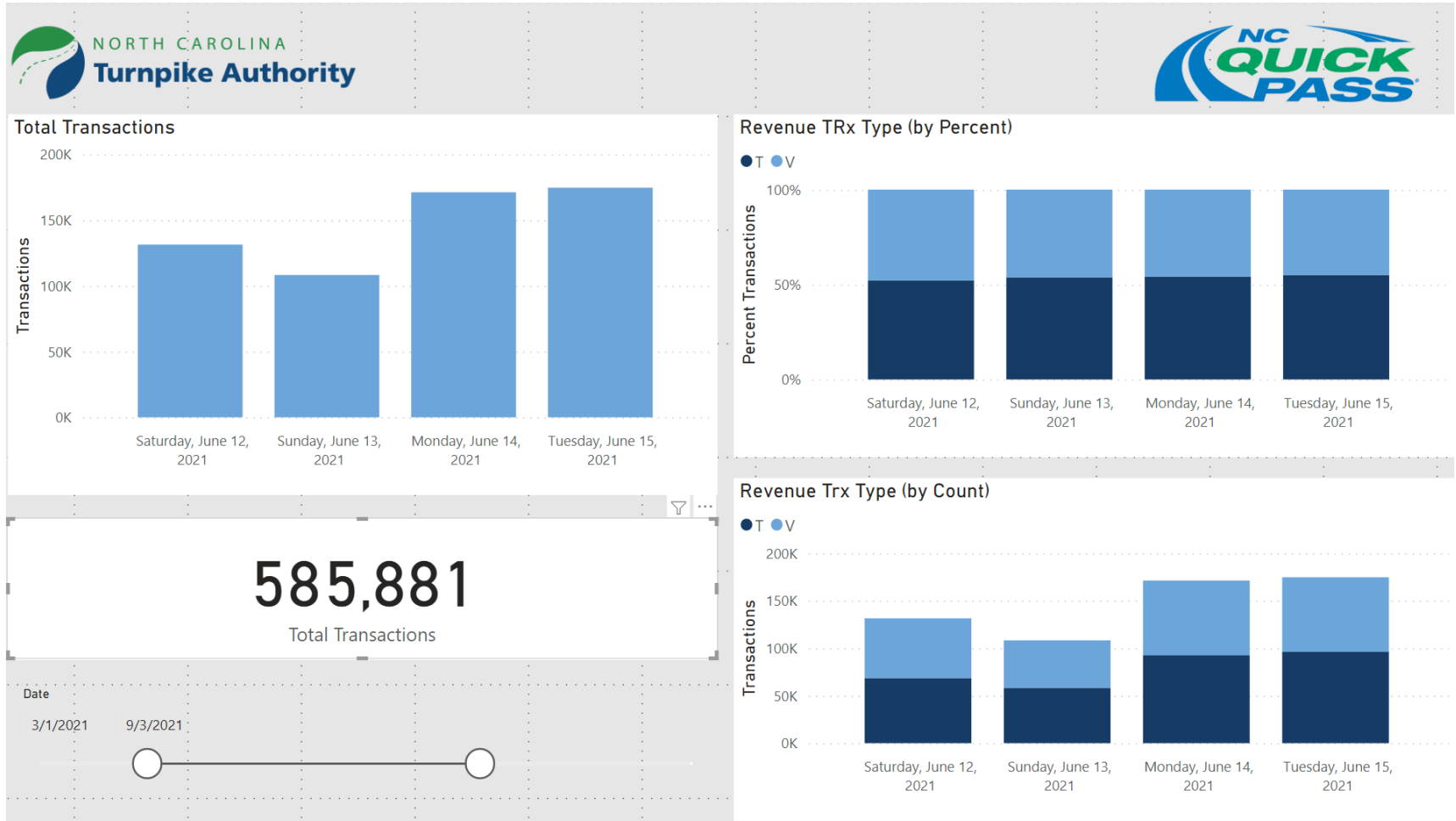
- Enrolled at the University of North Carolina at Chapel Hill
- Pursing a Bachelors of Science in Computer Science and Pre-Business Administration
- Focusing on Improving & Adding to NCTA Dashboards & Tools



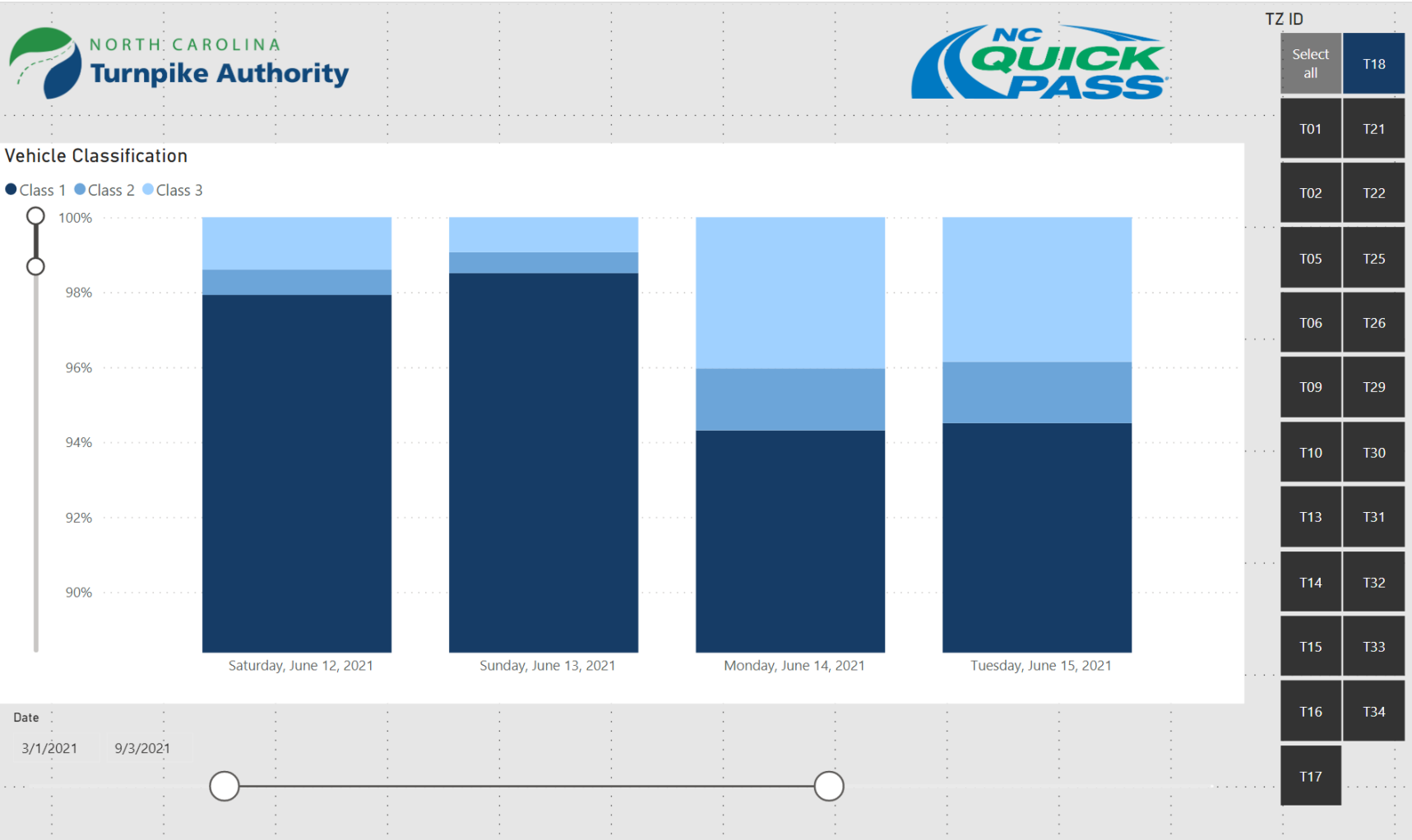
THE UNIVERSITY  
*of* NORTH CAROLINA  
*at* CHAPEL HILL

# Improve Add Dashboards / Tools

- The goal is to consolidate traffic reporting across all roadways.
- This project will provide a data dictionary across all roadways with common definitions.
- This project has given me a chance to learn about how data is extracted and used by business and technical teams.







# Automate Audits

- The goal is to extract data and provide visual benchmarks with exception outliers.
- This project has focused on developing automated dashboards.
- This project has given me a chance to learn about how to build metric to visual operational efficiencies.



# Mobile Payment Pilot Updates

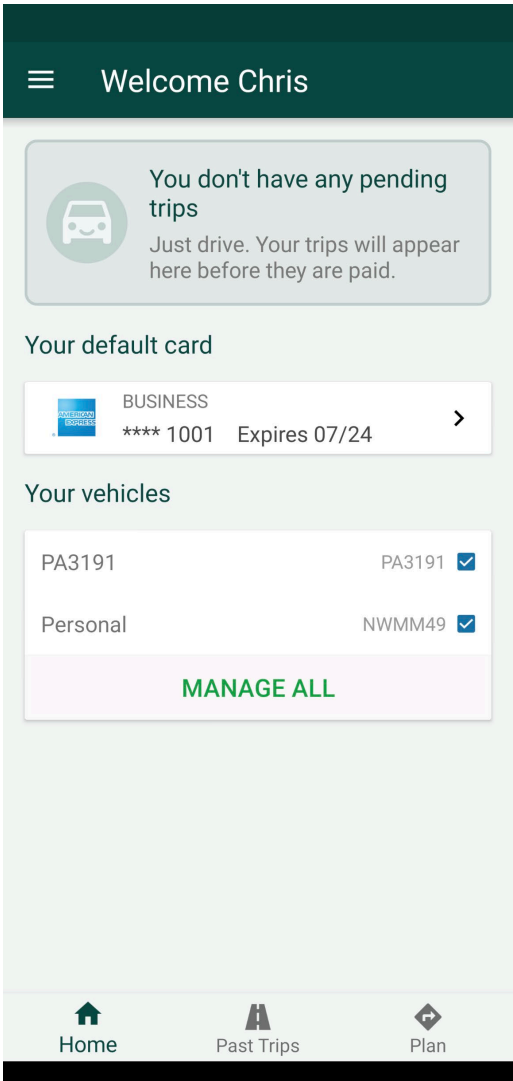
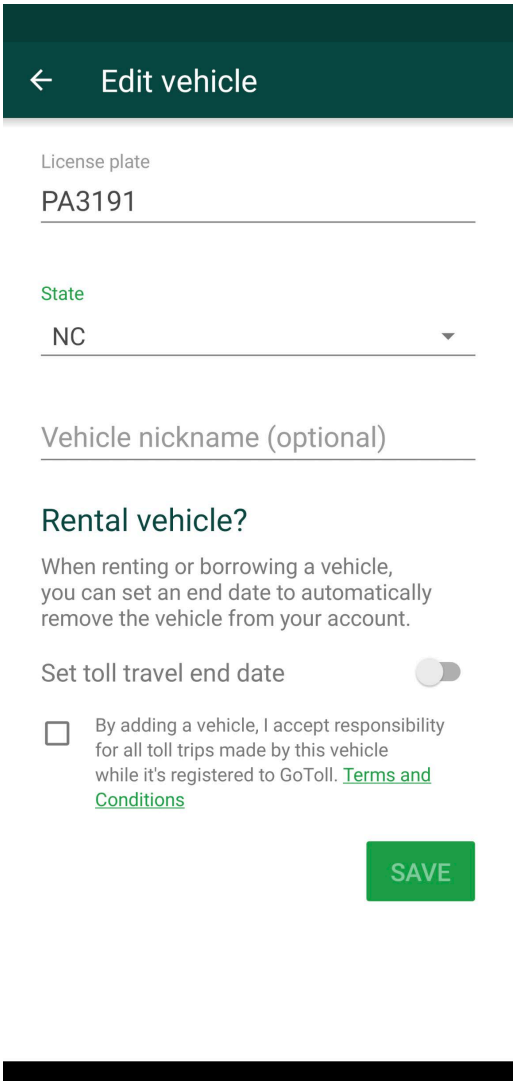
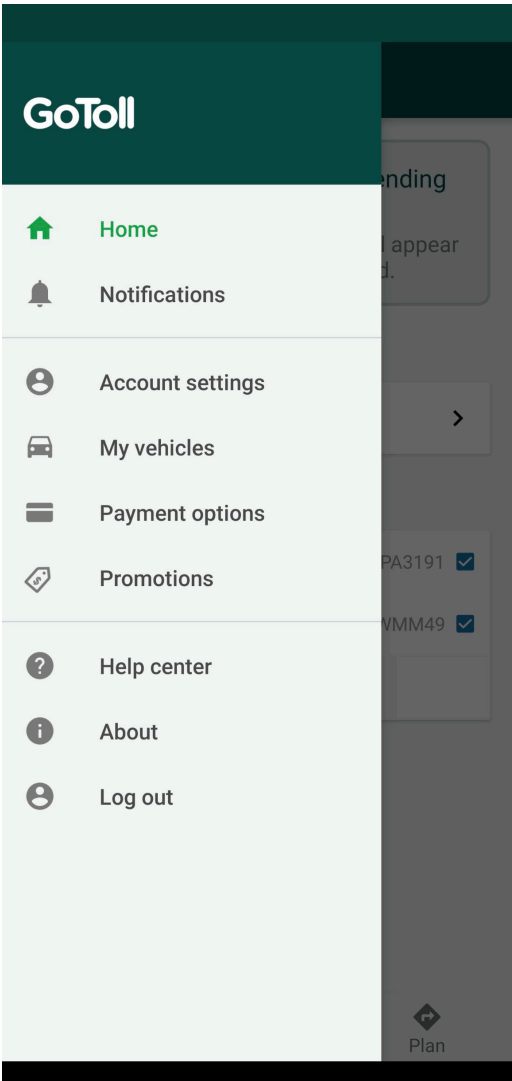
**Manish Chourey**  
Chief Technology Officer



## Project Overview and Goals

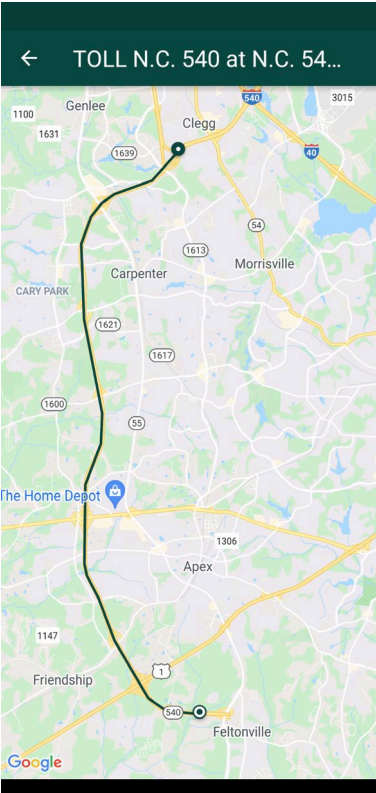
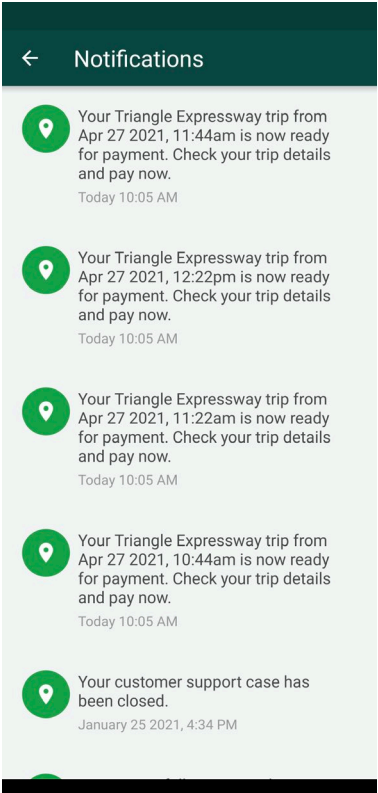
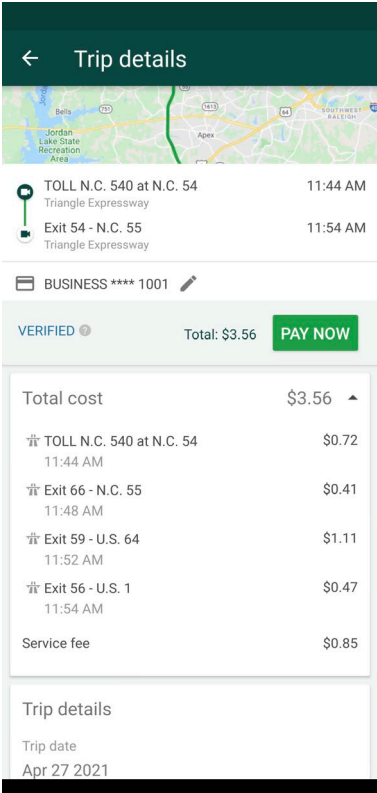
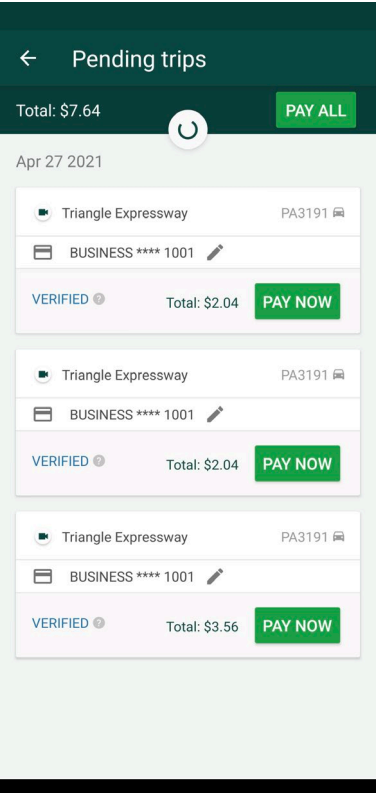
- **What:** Test Mobile Payments using License plate images using mobile app
- **Target Market:** Causal customer who wants to register with LPN and Payment Method
- **NCTA Goals:**
  - Test new payment options and platforms
  - Develop NCTA policy for new payment option
  - Determine how to integrate multiple providers
  - Determine policy for use on Interoperable Facilities and Express lanes

# Customer Experience





# Trip Summary After Driving




# Make a Payment

× Receipt

Amount paid  
**\$3.56**

Receipt #66Uh34CzTxd3zP3SjrVJY8


Date	Total amount
May 05 2021	\$3.56

Payment method  
 BUSINESS \*\*\*\*  
1001

EMAIL RECEIPT

← Payment

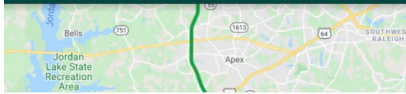
Total amount  
**\$3.56**


 BUSINESS  
\*\*\*\* 1001 Expires 07/24  
Default Card


USE NEW CARD



PAY \$3.56 NOW

← Trip details







 TOLL N.C. 540 at N.C. 54  
Triangle Expressway 11:44 AM

 Exit 54 - N.C. 55  
Triangle Expressway 11:54 AM

 BUSINESS \*\*\*\* 1001 

VERIFIED ⓘ Total: \$3.56 **PAY NOW**

Total cost \$3.56 ▲

 TOLL N.C. 540 at N.C. 54 11:44 AM	\$0.72
 Exit 66 - N.C. 55 11:48 AM	\$0.41
 Exit 59 - U.S. 64 11:52 AM	\$1.11
 Exit 56 - U.S. 1 11:54 AM	\$0.47
Service fee	\$0.85

Trip details

Trip date  
Apr 27 2021



# Trips Explained

← Trip details

TOLL N.C. 540 at N.C. 54  
Triangle Expressway 11:44 AM

Exit 54 - N.C. 55  
Triangle Expressway 11:54 AM

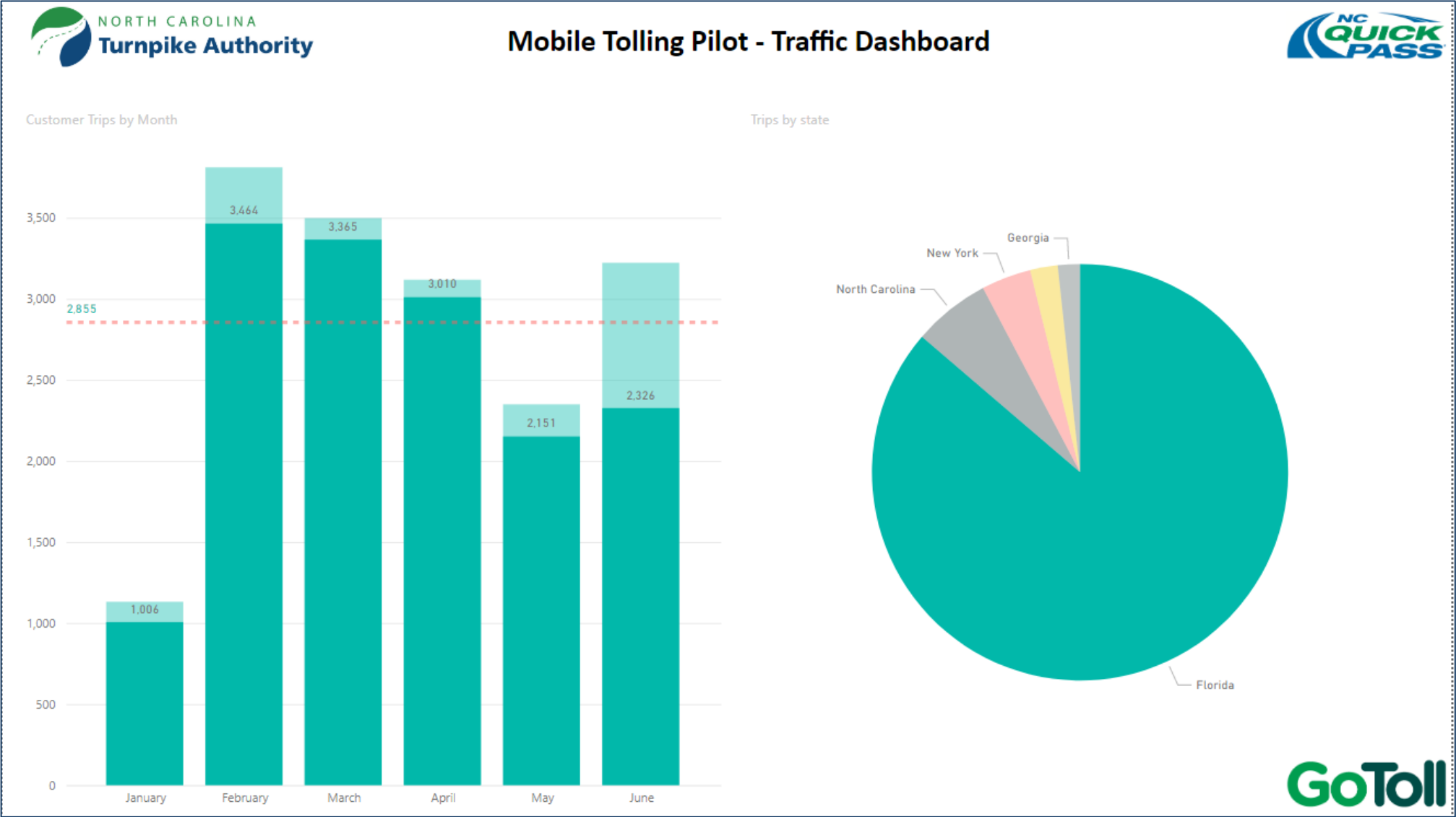
BUSINESS \*\*\*\* 1001

VERIFIED Total: \$3.56 **PAY NOW**

Total cost	\$3.56 ▲
🚗 TOLL N.C. 540 at N.C. 54 11:44 AM	\$0.72
🚗 Exit 66 - N.C. 55 11:48 AM	\$0.41
🚗 Exit 59 - U.S. 64 11:52 AM	\$1.11
🚗 Exit 56 - U.S. 1 11:54 AM	\$0.47
Service fee	\$0.85

- Trips for NCTA are developed at facility level and customers charged per trip.
  - Triangle Expressway is one trip
  - Monroe Expressway is one trip
- Trips are built for up to 30 minutes after the last transactions received the same direction for the same license plate.
- Trips prohibited on I-77 Express Lanes.

# Traffic Dashboard





# Contact Us



[ncdot.gov/turnpike](http://ncdot.gov/turnpike)



[@NCTurnpike](https://twitter.com/NCTurnpike)

[ncquickpass.com](http://ncquickpass.com)

[@NC\\_QuickPass](https://twitter.com/NC_QuickPass)



**Thank you!**