Welcome and Introductions

Joe Milazzo II, RTA
Welcome and Introductions

Pete Marino, Smith Anderson
RTA freeways chair
Welcome and Introductions

Denny Edwards, Greater Raleigh CVB
RTA tourism and business travel chair
I-40 Partnership Overview

Meredith McDiarmid, NCDOT
I-40 Regional Partnership Executive
I-40 GOALS and FOCUS AREAS

- Improve the travel experience
- Identify projects and funding opportunities
- Strengthen relationships
- Implement Active Traffic Management techniques
- Transform into “multimodal freeway” to prioritize transit

letsgetmoving.org/I40plan
I-40 Partnership – past meetings

- Oct. 17, 2019  SAS, Cary
- Oct. 18, 2018  Research Triangle Park Headquarters, RTP
- Oct. 25, 2017  Research Triangle Park Headquarters, RTP
- Oct. 24, 2016  Research Triangle Park Headquarters, RTP
- June 18, 2015  Joint Force Headquarters (JFHQ), Raleigh
- June 12, 2014  Joint Force Headquarters (JFHQ), Raleigh
- June 4, 2013  Joint Force Headquarters (JFHQ), Raleigh
- Dec. 20, 2012  Research Triangle Park Headquarters, RTP
- June 28, 2012  Research Triangle Park Headquarters, RTP
- Dec 6, 2011  Fidelity Investments, Cary
- Sep. 13, 2011  Cisco Systems, Research Triangle Park
- April 26, 2011  NetApp, Research Triangle Park
- Dec. 7, 2010  Research Triangle Park Headquarters, RTP
- Sep. 24, 2010  Fidelity Investments, Durham
- June 15, 2010  NetApp, Research Triangle Park
- June 16, 2009  Research Triangle Park Headquarters, RTP
AGENDA

• Active projects
• Updates on traffic and funding
• Upcoming and future projects
• Final remarks
ACTIVE PROJECTS
I-40 and parallel / reliever routes
I-40 active project updates

Joey Hopkins
NCDOT Div. 5
I-40 Partnership

Joey Hopkins, Division 5 Engineer

August 2020
Division 5 Active Projects

- I-40 Widening
- I-40 at Aviation Pkwy
- I-40 at Airport Blvd
- I-885
- I-440 Improvements
- Beautify Fortify
- Complete 540
I-40 Widening, I-440 to NC 42/Cleveland Rd

Project Description
- 440 Beltline to Cornwallis Rd
- Contract July 2018 / STW w/ RK&K
- Contract - $360,175,000
- Modify Interchange at NC 42 / New Interchange at Cleveland Rd
- Collector Distributor Design at 42 and Cleveland Rd – reduces access points to I-40
I-40 Widening, I-440 to NC 42/Cleveland Rd

Shift traffic to temporary pattern on NC 42 late Fall 2020

Open new flyover Fall 2020
I-40 Widening, I-440 to NC 42/Cleveland Rd

Shift traffic at Swift Creek Fall 2020

Phased traffic shift including loop Fall 2020
I-40 Widening, I-440 to NC 42/Cleveland Rd

Innovations

• Median Access – I-40 to Swift Creek

• Ramp off existing East Garner Rd over I-40

• 21,375 loads of material delivered directly to median

• Conveyor installation Fall 2021
I-40 and Aviation Parkway Interchange

- Contract - $21.5 M w/Flatiron Construction
- Traffic Shift to Stage II Bridge Fall 2020
- 85% complete (Spring 2021)
I-40/Airport Blvd Interchange

- Contract $34.9M w/Zachry
- Bridge Construction & I-40 Traffic Shift late 2020
- Complete Pleasant Grove Church Rd early 2021
- 23% Complete (Summer 2023)
I-885/Triangle Connector

- Contract $142M to Dragados USA
- US 70 Traffic Shift to Median Fall 2020
- Connector to Open Spring 2021
- 90% Complete (Spring 2021)
I-885/Triangle Connector

I-885 (Approx. Distance = 8.63 miles)

- Eliminate NC 147 and Add to I-885, length = 4.79 miles
- Segment A (from I-40 to Durham Municipal Boundary, length = 3.22 miles)
- Segment B (within Durham Municipal Boundary, length = 1.57 miles)
- Add to I-885, length = 0.05 miles
- Segment C (from Durham Municipal Boundary to Durham Municipal Boundary, length = 0.31 miles)
- Segment D (from Durham Municipal Boundary to US 70, length = 0.64 miles)
- Existing US 70: Add I-885, length = 2.89 miles
- Segment E (from US 70 to US 70 Business, length = 0.45 miles)
- Segment F (from US 70 Business to I-85, length = 2.44 miles)

Legend:
- Major Roads
- Minor Roads
- Railroad Track
- Major Hydrography (Stream/River)
- Municipal Boundary
- County Boundary

Created: 07/15/2019
I-885/Triangle Connector

Potential Design Exceptions
• Substandard Bridge Rail
• Landscaping
• Interchange Spacing
  • I-40/Cornwallis/T.W. Alexander
  • I-85/Cheek Rd
• Additional Investigation Needed
  • Cheek Road Bridge
  • US 70 EB Exit onto Cheek
  • Other?
I-440 Improvements

- Awarded to Lane Construction/HDR Design Build Team in October 2018.
- Work Began July 2019
- Contract Value $346 MIL
- Completion Date July 2023
- Add Additional Lane in Each Direction
- Bring up to Current Interstate Standards
- Modify Existing Interchanges
I-440 Improvements

Active Construction
• Utility Relocation
• Wade, Western, Melbourne, Jones Franklin Bridges
• Grading
• Drainage

Upcoming Construction
• Hillsborough St. Bridge
• I-440 EB Traffic Shift
• Hillsborough/Blue Ridge
Blue Ridge Road Grade Separation

- Closure Begins After State Fair 2021
- Reopens Summer 2023
- Hillsborough Closed 6 months
- Beryl Closed 10 months
Improvements

Wake County

Melbourne Rd

Jones Franklin

Wade Avenue
I-40 Landscaping

What is it?
- Over 1400 Plants/Trees
- 3000 CY of Mulch
- Over ½ Million SF of Pine Straw
- 1 Year Establishment

Where is it?
- Gorman
- Lake Wheeler
- South Saunders
- Hammond
- Rock Quarry
- Poole

South Saunders St
I-40 Landscaping

South Saunders St
Complete 540 (Triangle Expressway)
Complete 540 (Triangle Expressway)
Design-Build Contracts

**R-2721A (4.3 miles)**
- Flatiron Constructors, Inc. / Branch Civil, Inc. JV
- Lead design firm - Gannett Fleming, Inc.
- $183.5M
- Plans 80% Complete / R/W 98% Settled

**R-2721B (4.9 miles)**
- Flatiron Constructors, Inc. / Branch Civil, Inc. JV
- Lead design firm - HDR Engineering, Inc. of the Carolinas
- $160M
- Plans 85% Complete / R/W 96% Settled

**R-2828 (8.6 miles)**
- The Lane Construction Corporation / Blythe Construction, Inc. JV
- Lead design firm – WSP USA Inc.
- $403.2M
- Plans 93% Complete / R/W 90% Settled
R-2721A (4.3 Miles)

- Flatiron Constructors, Inc. / Branch Civil, Inc. JV
- Lead design firm - Gannett Fleming, Inc.
- $183.5M
- Plans 80% Complete / R/W 98% Settled
R-2721B (4.9 Miles)

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- Lead design firm – WSP USA Inc.
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THANK YOU!!
UPDATES ON TRAFFIC AND FUNDING
Coronavirus and recovery: traffic impacts

Jennifer Portanova
NCDOT Mobility and Safety
COVID-19 Traffic Impacts

Jennifer Portanova, PE, NCDOT

I-40 Partnership Annual Meeting, August 11, 2020
COVID-19 Traffic Impacts Overview

• Traffic Volumes decreased
• Interstate Speeds increased
• Interstate Congestion decreased
• Overall Crashes decreased
• Fatal crashes remained the same

North Carolina COVID-19 Phases
• March 30, 2020 – Stay at Home Order
• May 8, 2020 – Phase 1
• May 22, 2020 – Phase 2
• TBD – Phase 3
NC VMT Systemwide Change

- Greatest decrease in VMT at 45% after Stay at Home Order
- Latest Week 20 – 12% decrease in VMT

Source: NCDOT’s Traffic Survey Group

Phase 1

Phase 2

Stay at Home Order

- Average 10% decrease in daily traffic volumes from the yearly average
- NC Traffic follows the National Traffic trends

Source: MS2SOFT Dashboard
• Weekday PM peak speed begin increase in March above 2019 speeds
• Current speeds remain above 2019
• Average interstate speeds are about 10 mph faster than the 2019

Source: The Eastern Transportation Coalition’s RITIS Probe Speed Data Analytics Portal
https://pda.ritis.org/suite/
Percent of County Interstate Road Miles with Any Weekly Congestion Weekdays PM Peak

*For each TMC segment, any 15-min aggregated probe speed < 40mph is considered as congestion that week

- Congestion dropped to nearly zero (Ramp Meters turned off)
- May 2020 – Congestion about half of what it used to be for Charlotte
- July 2020 – Congestion increasing but not back to normal

Source: The Eastern Transportation Coalition’s RITIS Probe Speed Data Analytics Portal
https://pda.ritis.org/suite/
• Overall 5-week rolling average are currently 11% below the Pre-COVID baseline

Source: NCDOT’s Signal System Timing and Operations Group
Data derived from traffic signal vehicle detection, typically 6’x6’ in-pavement inductive loops
COVID-19 Impacts on Arterials:

- Overall less traffic on the arterials
- More evenly distributed traffic throughout the day
- Significantly lower hourly volumes

Concord Pkwy – Morehead Rd
• North Carolina Crashes:
  • Overall crashes are down
  • Count of fatal crashes have remained the same

• National Safety Council reported:
  • April 2019 fatalities per million vehicle miles = 1.08
  • April 2020 fatalities per million vehicle miles = 1.45

<table>
<thead>
<tr>
<th>Week</th>
<th>Total Crashes by Week</th>
<th>Fatal Crashes by Week</th>
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<tbody>
<tr>
<td></td>
<td>2019</td>
<td>2020</td>
</tr>
<tr>
<td>March 30 – April 5</td>
<td>6600</td>
<td>2800</td>
</tr>
<tr>
<td>June 22 – June 28*</td>
<td>5100</td>
<td>4000</td>
</tr>
</tbody>
</table>

*Data from June 2020 is still preliminary and may be underestimated due to processing lag

Source: Data inferred from NCDOT Traffic Safety Unit COVID-19 Impact on Traffic Crashes Report
## COVID-19 Traffic Impacts Summary

<table>
<thead>
<tr>
<th>Increased</th>
<th>Decreased</th>
<th>Remained the Same</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate Speeds</td>
<td>Statewide Traffic Volumes</td>
<td>Number of Fatal Crashes</td>
</tr>
<tr>
<td>Arterial AM &amp; PM Peak Period Volumes</td>
<td>Interstate Congestion</td>
<td>Overall Crashes</td>
</tr>
</tbody>
</table>

### What’s Next?
- Phase 3
- Schools
- New norms?
Questions?
NCDOT financial overview

Joey Hopkins
NCDOT Div. 5
Today’s Discussion

Pre-COVID-19

Deferred Maintenance/Recent Storms

Current Situation

NCDOT Response
Pre-COVID-19

Storm response/recovery and legal settlements depleted cash balance, department enacted aggressive measures:

• Delayed project lettings, reduced capital program
• Decreased or suspended routine maintenance

NCDOT enacted a spend plan with targets below appropriated levels

• Appropriations for restricted accounts increased, decreased General Maintenance Reserves (GMR)
• NCDOT had to prepare for mandated move of funds into new disaster reserve
Nearly the same Appropriation received in FY 1992/93 Biennium
### Storm Costs vs GM&R Appropriations

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</thead>
<tbody>
<tr>
<td>Declared</td>
<td>$300,861,306</td>
<td>$23,143,177</td>
<td>$398,272,125</td>
<td>$132,757,375</td>
<td>$109,614,198</td>
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<tr>
<td>Non-Declared</td>
<td>$566,943,620</td>
<td>$43,611,048</td>
<td>$268,424,883</td>
<td>$89,474,961</td>
<td>$45,863,913</td>
</tr>
<tr>
<td>Total</td>
<td>$867,804,926</td>
<td>$66,754,225</td>
<td>$666,697,008</td>
<td>$222,232,336</td>
<td>$155,478,111</td>
</tr>
</tbody>
</table>

- Average GM&R appropriations **declined by 33%** since 2016
- While annual **storm expenditures** have **increased by > 200%**
- Result is a “perfect storm” for maintenance funding issues
Comparison of NCDOT spending: GM&R stands out

<table>
<thead>
<tr>
<th>Cumulative FY 2003-2019 amounts</th>
<th>Approp’s</th>
<th>Expenditures</th>
<th>Unexpended Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Program (STIP)</td>
<td>$34,305m</td>
<td>$33,273m</td>
<td>+ $1,031m</td>
</tr>
<tr>
<td>Ferry, Rail, Aviation</td>
<td>$ 2,896m</td>
<td>$ 2,832m</td>
<td>+ $ 64m</td>
</tr>
<tr>
<td>Programmatic Maintenance</td>
<td>$ 8,836m</td>
<td>$ 8,660m</td>
<td>+ $ 175m</td>
</tr>
<tr>
<td><strong>General Maintenance and Reserves</strong></td>
<td>$ 9,029m</td>
<td>$ 9,699m</td>
<td>- $ 669m</td>
</tr>
</tbody>
</table>

**SUBTOTAL**

<table>
<thead>
<tr>
<th></th>
<th>$55,067m</th>
<th>$54,465m</th>
<th>+ % 602m</th>
</tr>
</thead>
</table>

less GARVEE debt service reserve - $ 132m

**TOTAL UNEXPENDED or CASH BALANCE**

+ $ 470m

Note: programmatic maintenance includes contract resurfacing, pavement preservation, bridge program, bridge preservation, roadside environmental

Note: the above table doesn’t include the smaller accounts (Contingency, Spot Safety, Secondary Road, etc.)

- Storm costs were **$667M** from FY17 through FY19
Current Situation

Pre-COVID-19, NCDOT operating on thin margin

Because NCDOT is 100% receipt supported, COVID-19 impact to traffic volumes is devastating
- Volumes down by 40% - 50%
- Impacts revenue by nearly $300M in FY 2020
- Projected to impact revenue by more than $550M in FY 2021

Even with cuts already made, obligations not being kept, NCDOT hit cash floor
Comparison to Previous Event

The Great Recession (Dec/2007 to June/2009)

<table>
<thead>
<tr>
<th>Comparison Time Interval</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Quarter</th>
<th>Next 4 Quarters</th>
<th>Total Recession 12/07 to 6/2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Consumption</td>
<td>-1.8%</td>
<td>-4.3%</td>
<td>-4.9%</td>
</tr>
<tr>
<td>Total Revenues</td>
<td>-3.1%</td>
<td>-7.3%</td>
<td>-6.5%</td>
</tr>
<tr>
<td>Recovery Time*</td>
<td></td>
<td></td>
<td>57 Months</td>
</tr>
</tbody>
</table>

COVID-19 Impact (Mar/2020 to ???)

<table>
<thead>
<tr>
<th>Comparison Certified Budget</th>
<th>Quarter (Apr – June/2020)</th>
<th>SFY 2020</th>
<th>SFY 2021</th>
<th>COVID Impact ?? to ??</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Consumption</td>
<td>-38% to -42%</td>
<td>-7% to -11%</td>
<td>-2% to -6%</td>
<td>???</td>
</tr>
<tr>
<td>Total Revenues</td>
<td>-32% to -36%</td>
<td>-6% to -10%</td>
<td>-7% to -11%</td>
<td>???</td>
</tr>
<tr>
<td>Recovery Time*</td>
<td></td>
<td></td>
<td></td>
<td>???</td>
</tr>
</tbody>
</table>

*Recovery Time to Pre-recession levels
# State Revenues (Highway Fund and Highway Trust Fund)

<table>
<thead>
<tr>
<th>Comparison Certified Budget</th>
<th>Quarter (Apr – June/2020)</th>
<th>SFY 2020</th>
<th>SFY 2021</th>
<th>COVID Impact 2020 to 20??</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Consumption</td>
<td>-40% average</td>
<td>-9%</td>
<td>-4%</td>
<td></td>
</tr>
<tr>
<td>Total Revenues</td>
<td>-$261M</td>
<td>-$513M</td>
<td></td>
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</tr>
</tbody>
</table>
Current Actions

Keep 620 active construction projects moving if possible
- Suspension of these projects could cost $1.5M per day in claims

Delay contract advertisements over next 12 months
- Delay approximately 250 projects estimated at $2.1B
- Remaining projects estimated at $675M (all supported by bonds or grants)

Personnel Changes
- Hiring Freeze
- 50% cost reduction in temporary and contract employees
- Planning for possible furloughs, Reduction In Force (RIF)
Actions Going Forward

Immediately suspend:

- Wildflower Program
- Litter Sweep
- Engineering Training Program
- HBCU and Summer Internship Program
- Economic development grants and projects
- Passenger ferry from Hatteras to Ocracoke
- State Park road maintenance
- Reimbursement to schools for road improvements

Significantly reduce:

- Mowing along roadways and rest areas
- Storm repairs
- Sign repairs
- Patching pavement
- Municipal support for traffic signal/signs/landscaping
- Traffic signal installation
- Spot safety projects
- Incident Management Assistant Program (IMAP)
- Ferry and rail operations
State Legislation

- SB 704 – Delays the transfer of $61M into the new Transportation Emergency Reserve for future storms

- HB 1043 – $300M from CARES Act to GMR subject to amending language to allow for continued operations

- HB 77 – Budget Appropriations for FY21
HB 77

- Increases maintenance funding
- Reduces funding to Modes
- Reduces funding to STI
- Reduces funding to Mobility/Modernization
- Reduces Powell Bill Allocation
HB 77

• Gas Tax Floor (36.1c) for 2021
• NC Build Bond Changes
  • $700M for 2021
  • Active Projects
  • Unexpended funds
• GARVEE Debt Service
• COVID-19 Funds
HB 77

- Changes to Tax Revenue Distribution
- Additional Reporting
- Board of Transportation
- Restructure
- Duties
Questions?
UPCOMING AND FUTURE PROJECTS
Upcoming and future projects

Richard Hancock
NCDOT Div. 5
I-40 Partnership

Richard Hancock, Division 5 Planning Engineer

August 2020
Division 5 Future Projects

- US 70
- US 1
- US 64
US 70 from I-540 to T.W. Alexander

- Upgrade US 70 to a controlled-access facility from I-540 to west of TW Alexander Dr in Raleigh
- New Interchange at Brier Creek Pkwy
- Partial Interchange at T. W. Alexander
- New Interchange west of T. W. Alexander
- R/W & Construction January 2021 Design Build Project
- Estimated Cost - $325 M
US 70 from Lynn Road to west of T.W. Alexander

- Upgrade US 70 to a controlled-access facility from Lynn Rd in Durham (East End Connector) to west of TW Alexander Dr in Raleigh

- Convert the at-grade intersection of US 70 with Mineral Springs Rd / Sherron Rd / South Miami Blvd to an interchange

- Access to US 70 will be provided at interchange locations

- R/W – 2024

- Construction – 2027

- Estimated Cost - $288 M
US 1 From I-540 to Harris/Purnell Roads

- General Project Needs:
  - Traffic Congestion
  - Trip Time Unreliability
  - Safety Concerns
US 1 From I-540 to Harris/Purnell Roads

**Project Description**

- Upgrade US 1 to a controlled-access facility
- Interchange locations – Perry Creek/Durant; Burlington Mills; US 1A/Falls of Neuse; Harris/Purnell Road
- Estimated Cost - ~$460 million
- Project Development on hold
- Construction
  - Durant/Perry Creek 2022
  - Burlington Mills & US 1A 2023
  - Harris/Purnell - 2027
US 64 Improvements in Apex & Cary

- Interchanges at Laura Duncan and Lake Pine
- Grade Separations at Edinburgh Dr, Shepherds Vineyard Dr
- Reduced Conflict Intersection Options Between Lake Pine and US 1
- R/W – 2021
- Construction – 2025
- Cost – Est. $177M
THANK YOU!!
I-40 widening in Orange County

Laura Sutton
NCDOT Project Management Div. 7
I-40 Widening in Orange County Update
Laura Sutton, CPM, P.E.
NCDOT Project Management Unit
August 11, 2020
Purpose and Need

• Relieve peak hour congestion with level of service (LOS) D or better in 2040

• Improve traffic flow and continuity between the existing 8-lane section at the beginning of the project (I-85) and the existing 6-lane section at end of the project (Durham County Line).
• Utilize the existing median width for 1 additional travel lane in each direction separated by a concrete median barrier, for a total of 6 travel lanes.

• Replace the existing 10-foot paved outside shoulders with 12-foot full depth paved shoulders, which will allow for operation of Bus on Shoulder System (BOSS).

• Outside widening is required due to vertical clearance issues and for maintenance of traffic to replace 2 bridges at I-40 WB over Old NC 86 and I-40 EB over Millhouse Road/Norfolk Southern Railroad.
NC 86 Interchange Improvements

- Modify existing diamond interchange by adding loop for I-40 WB to NC 86 SB and relocating on ramp for I-40 WB.
- Add storage capacity at existing ramps.
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2019:</td>
<td>Environmental planning document (CE) signed.</td>
</tr>
<tr>
<td>October 2019:</td>
<td>Firm contracted to begin work on I-3306AB/AC designs. The AB segment includes the widening of I-40. The AC segment includes the NC 86 interchange improvements. Proposed design improvements on NC 86 SB between the I-40 EB ramp termini and Perkins Drive has not been included at the request of the Town of Chapel Hill.</td>
</tr>
<tr>
<td>April 2020:</td>
<td>I-3306AB/AC preliminary plans approved.</td>
</tr>
<tr>
<td>May 2020:</td>
<td>Project placed on hold.</td>
</tr>
</tbody>
</table>
Upcoming Activities

I-3306AB/AC:
• Complete right-of-way plans
• Begin right-of-way acquisition
• Complete final plans

I-3306AA:
• Select design firm
• Complete design scoping and fee estimate
• Begin design work for preliminary plans
# Schedules

## I-3306A: I-40 Widening in Orange County

### Current Design-Bid-Build Letting

<table>
<thead>
<tr>
<th>NC 86 to Durham County Line (I-3306AB/AC)</th>
<th>FFY 2020</th>
<th>FFY 2021</th>
<th>FFY 2022</th>
<th>FFY 2023</th>
<th>FFY 2024</th>
<th>FFY 2025</th>
<th>FFY 2026</th>
<th>FFY 2027</th>
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</thead>
<tbody>
<tr>
<td>CURRENT Design-Bid-Build Letting</td>
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<tr>
<td>FFY 2020</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
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<tr>
<td>FFY 2021</td>
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<td>FFY 2025</td>
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<td>FFY 2026</td>
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<td>FFY 2027</td>
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### POTENTIAL Design-Build Letting

<table>
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<tr>
<th>NC 86 to Durham County Line (I-3306AA, AB &amp; AC)</th>
<th>FFY 2020</th>
<th>FFY 2021</th>
<th>FFY 2022</th>
<th>FFY 2023</th>
<th>FFY 2024</th>
<th>FFY 2025</th>
<th>FFY 2026</th>
<th>FFY 2027</th>
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<tbody>
<tr>
<td>CURRENT Design-Bid-Build Letting</td>
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<tr>
<td>FFY 2020</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
</tr>
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<td>FFY 2021</td>
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<td>FFY 2023</td>
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<td>FFY 2024</td>
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<tr>
<td>FFY 2025</td>
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<tr>
<td>FFY 2026</td>
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<tr>
<td>FFY 2027</td>
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</tr>
</tbody>
</table>

**Notes:**
- Hold: Holds activity for the specified period.
- Design - R/W Plans: Design of right-of-way plans.
- Design - Final Plans: Design of final plans.
- Procure: Procurement of materials.
- Construction: Construction phase.
- R/W Acquisition: Right-of-way acquisition.

**Dates:**
- Q1: January to March
- Q2: April to June
- Q3: July to September
- Q4: October to December

---

**Potential Projects:**
- NC 86 to Durham County Line (I-3306AB/AC)
- I-85 to NC 86 (I-3306A)

**Status:**
- Current: Active project.
- Potential: Project may be considered in the future.

---

**Contact:**
- For more information, visit [ncdot.gov](http://ncdot.gov).
I-40 managed freeway: on-ramp signal expansion

Derrick Lewis
NCDOT Feasibility Studies
I-40 Managed Motorways

: I-6006, I-40 from NC 54 to Wade Avenue

Derrick Lewis, PE
August 2020
Study Components

- Coordinated Adaptive Ramp Metering (CARM) is a signalized ramp metering operational strategy that aims to maximize freeway throughput, reduce delay, improve travel time reliability, and reduce crashes.

- A series of gantries to enable Advanced Traffic Management Systems (ATMS) is also considered. This would allow implementation of systems such as Dynamic Speed Limits, Dynamic Lane Assignment and Queue Warning.
<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Average</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramp Meter</td>
<td>$41,400,000</td>
<td>$46,700,000</td>
<td>$51,900,000</td>
</tr>
<tr>
<td>ATMS</td>
<td>$30,800,000</td>
<td>$31,800,000</td>
<td>$32,800,000</td>
</tr>
<tr>
<td>Total</td>
<td>$72,200,000</td>
<td>$78,500,000</td>
<td>$84,700,000</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td></td>
<td></td>
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<tr>
<td>--------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>With CARM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without CARM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td></td>
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<td></td>
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<tr>
<td>% Diff</td>
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<td></td>
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</tr>
<tr>
<td>2045</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Demand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>290,469,591</td>
<td>288,656,767</td>
<td>1,812,825</td>
<td>0.63%</td>
</tr>
<tr>
<td>Total Delay (hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>446,648</td>
<td>578,911</td>
<td>(132,263)</td>
<td>-22.85%</td>
</tr>
<tr>
<td>Total VMT (miles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90,675,812</td>
<td>89,871,037</td>
<td>804,775</td>
<td>0.90%</td>
</tr>
<tr>
<td>Total VHT (hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,535,616</td>
<td>2,682,544</td>
<td>(146,928)</td>
<td>-5.48%</td>
</tr>
<tr>
<td>Average Speed (mph)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.76</td>
<td>33.50</td>
<td>2.26</td>
<td>6.74%</td>
</tr>
<tr>
<td>Delay per mile traveled (mins)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.30</td>
<td>0.39</td>
<td>(0.09)</td>
<td>-23.53%</td>
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</tbody>
</table>
## Peak Hour Changes

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>PM</th>
<th>Difference</th>
<th>% Diff</th>
<th>AM</th>
<th>PM</th>
<th>Difference</th>
<th>% Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With CARM</td>
<td>Without CARM</td>
<td></td>
<td></td>
<td>With CARM</td>
<td>Without CARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Demand</td>
<td>71,749,790</td>
<td>70,994,646</td>
<td>755,143</td>
<td>1.06%</td>
<td>86,970,731</td>
<td>86,400,976</td>
<td>569,754</td>
<td>0.66%</td>
</tr>
<tr>
<td>Total Delay (hours)</td>
<td>139,987</td>
<td>178,105</td>
<td>(38,118)</td>
<td>-21.40%</td>
<td>209,025</td>
<td>265,513</td>
<td>(56,488)</td>
<td>-22.27%</td>
</tr>
<tr>
<td>Total VMT (miles)</td>
<td>22,957,100</td>
<td>22,670,954</td>
<td>286,146</td>
<td>1.26%</td>
<td>27,537,191</td>
<td>27,317,521</td>
<td>219,671</td>
<td>0.80%</td>
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<tr>
<td>Total VHT (hours)</td>
<td>39,903,576</td>
<td>42,399,014</td>
<td>(2,495,438)</td>
<td>-5.89%</td>
<td>50,818,670</td>
<td>54,634,956</td>
<td>(3,816,286)</td>
<td>-6.99%</td>
</tr>
<tr>
<td>Average Speed (mph)</td>
<td>34.52</td>
<td>32.08</td>
<td>2.44</td>
<td>7.59%</td>
<td>32.51</td>
<td>30.00</td>
<td>2.51</td>
<td>8.37%</td>
</tr>
<tr>
<td>Delay per mile traveled (mins)</td>
<td>0.37</td>
<td>0.47</td>
<td>(0.11)</td>
<td>-22.38%</td>
<td>0.46</td>
<td>0.58</td>
<td>(0.13)</td>
<td>-21.90%</td>
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</table>
Raleigh/Durham Opportunity Cost

- Average Value of Time (per hour) $14.22
- Total Daily Delay (hours) 132,263
- Opportunity Cost for Lost Time (Daily) $1,880,778
Questions?

Derrick Lewis, PE
Manager, Feasibility Studies Unit
dlewis@ncdot.gov
I-40 express lanes

Andrew Bell, HNTB
H184316 I-40 Express Design
NC 55 to Airport Blvd

August 11, 2020

Andrew Bell, PE, PTOE
Forecasts provided by
Patriot Transportation Engineering &
Three Oaks Engineering
In general, 2045 peak hour volumes are 1.5X higher than 2018 peak hour volumes.
Feasibility Study Considerations

- Peak-hour congestion
- Adjacent planned projects
- Freeway-to-freeway O-D pairs
- Elimination of weaving segments
- Transit connectivity
- Right-of-way costs/impacts
- Compatibility with Managed Motorways
- Compatibility with Managed Lanes
- Potential for expansion, if needed
Short-Term: One-way Frontage Roads

- 2 to 3 lanes in each direction along frontage roads
- Connects ramps between NC 147/I-885 and I-540/NC 540
- Eliminates weaving segments along I-40
- Additional on-ramps for I-40 EB, off-ramps for I-40 WB based on demand
- Higher right-of-way costs, lower construction costs

![Diagram of proposed frontage roads with existing lanes and variable widths.](image)
Long-term: One-way Frontage Roads + Elevated Lanes

- 3 elevated lanes in each direction
- Connects I-40 west of NC 147/I-885 with I-40 east of I-540/NC 540
- Allows thru traffic on I-40 to bypass RTP exits
- Option to implement other freeway connections (NC 147/I-885, I-540/NC 540)
- Option to implement managed lane concepts
- Higher construction costs, lower right-of-way costs
Agency Involvement

- NCDOT Feasibility Studies Unit
- NCDOT Division 5
- NCDOT Congestion Management
- CAMPO
- DCHCMPO
- City of Durham
- City of Raleigh
Questions?

Andrew Bell, PE, PTOE
Project Manager, HNTB
aabell@hntb.com
Bus On Shoulder System (BOSS): Regional study

Alex Rickard, CAMPO
The Triangle Bus on Shoulder Study has five purposes:

1. Evaluate peer BOS systems to identify updates to best practices

2. Evaluate whether conditions are appropriate for expanding BOS on the Triangle’s roadway network

3. Prioritize implementation of BOS expansion, including where improvements could be leveraged through ongoing projects

4. Evaluate the North Carolina statewide BOS operations guidance to determine where changes could be made to enhance BOS implementation across the state

5. Develop updated messaging to improve public and driver awareness regarding BOS operations, particularly where new operations will begin
Potential Study Corridors will be refined as study moves forward.
Who is involved:

**Consultant Team:** HDR and Cambridge Systematics

**Funding Partners:** CAMPO and GoTriangle

**Technical Steering Committee:**
- CAMPO
- GoTriangle
- DCHC MPO
- NCDOT
- FHWA
- NC State Hwy Patrol
- RTA
Bus on Shoulder Study Timeline:

**Study Start:** July 2020

**Expert Panel:** August 27, 2020

**Recommendations:** May 2021

**Presentations:** June/July 2021

**Contacts:**

Shelby Powell, CAMPO
Shelby.Powell@campo-nc.us

Patrick McDonough, HDR Project Manager
Patrick.mcdonough@hdrinc.com
Bus On Shoulder System (BOSS): I-540 expansion

Willie Noble, GoTriangle
I-540 Bus on Shoulder: NC 54 to US 1
FAST network study

Joe Furstenberg
NCDOT Integrated Mobility
Preliminary Study Findings

I-40 Regional Partnership, August 11, 2020
Freeway And Street-based Transit network study

Joint initiative funded by RTA business coalition, GoTriangle, and NCDOT

- Lead consultant VHB, with Stantec and Catalyst Design
Overall study objectives

- Advance ideas for improving and accelerating regional connectivity
- Encourage a “FAST” mindset – identify low-cost transit advantages that can be implemented quickly, scale over time
Goals of a regional FAST network

- Leverage roadway system to create multimodal freeways and streets
- Incorporate and extend 5 approved BRT corridors, link to commuter rail
- Quickly create a viable, illustrative enhanced regional transit network
- Serve as template for other initiatives in North Carolina
Study Methodology
Mobility Criteria

- **Travel Demand**
  - Traffic Volume
  - Transit Ridership

- **Transit Performance**
  - Service Frequency
  - Bus Speed

- **Traffic Performance**
  - Traffic Delay
  - Volume/Capacity

- **Context**
  - Land Use Density
  - Intersection Density

Accessibility Criteria

- **Access Equity**
  - Job Access

- **Planned Projects**
  - STIP Review

- **Missing Links**
  - Unserved Areas
Low-cost transit advantages
Low-cost transit advantages: Freeways

Prioritize corridor features where they are anticipated to have the greatest impact.
Low-cost transit advantages: Streets

- Transit Signal Priority
- Queue Jump Lanes
- RED Lanes

Prioritize corridor features where they are anticipated to have the greatest impact.
Low-cost transit advantages: Stops

- Level Boarding
- Enhanced Bus Stop
- “Floating” Bus Stop
Proposed 2025 FAST network
Preliminary Findings

**FAST Network**

**Immediate Freeway Corridors**

- **US 15/501**: Bus On Shoulder System
- **I-40 & NC 147**: Bus On Shoulder Expansion, Increased Service Frequency & Span
- **South Durham**: Direct Pedestrian Access
- **RTP/Davis Drive**: Direct Access Ramps
- **RDU**: Direct Access Ramps
- **Wilmington St**: Direct Access Ramps
Preliminary Findings

Immediate Freeway & Street Corridors
Preliminary Findings

**FAST Network**

**Immediate Freeway & Street Corridors**

**US 15/501**
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding

**Glenwood Ave (west of I-440)**
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding
- RED Bus Lanes (portions)

**NC 54/Raleigh Rd**
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding

**Glenwood Ave (east of I-440)**
- Traffic Signal Priority
- Enhanced Access/Stops/Boarding
- RED Bus Lanes (portions)

**Holloway/Main/Erwin**
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding
- Floating Bus Stops

**Six Forks Rd**
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding
- RED Bus Lanes (portion)
- Floating Bus Stops

**Capital Blvd**
- Traffic Signal Priority
- Queue Jump Lanes
- Future Through Lanes
- Enhanced Access/Stops/Boarding

**Poole Road**
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding
- Floating Bus Stops

**Systemwide**
- Increased Frequency
- Off-Board Fare Collection
Preliminary Findings

10 freeway and street FAST corridors

7 of 10 begin at a proposed BRT linkage
Example future FAST corridors
Preliminary Findings

FAST Network

Immediate Freeway & Street Corridors
Enhanced freeway transit advantages

Direct access ramp

Transit priority shoulder

Freeway transit station
Next Steps
Preliminary Findings

Public Comment Period

• Download a version of this presentation at letsgetmoving.org/FAST

• Email comments to FAST@letsgetmoving.org

• 45-Day Comment Period
  July 16-August 31
Next Steps

- Review ongoing/upcoming highway projects for potential transit advantage incorporation opportunities

- Develop implementation playbook for several illustrative examples
  - High priority projects
  - 0-5 year projects
FINAL REMARKS
I-40 Regional Partnership
12th Annual Meeting

Tuesday, August 11, 2020

Coordinated by the Regional Transportation Alliance business coalition in cooperation with the NC Department of Transportation and area partners