NORTH CAROLINA
Department of Transportation









Wrong-Way Driver Detection and Notification Program Update

North Carolina Turnpike Authority

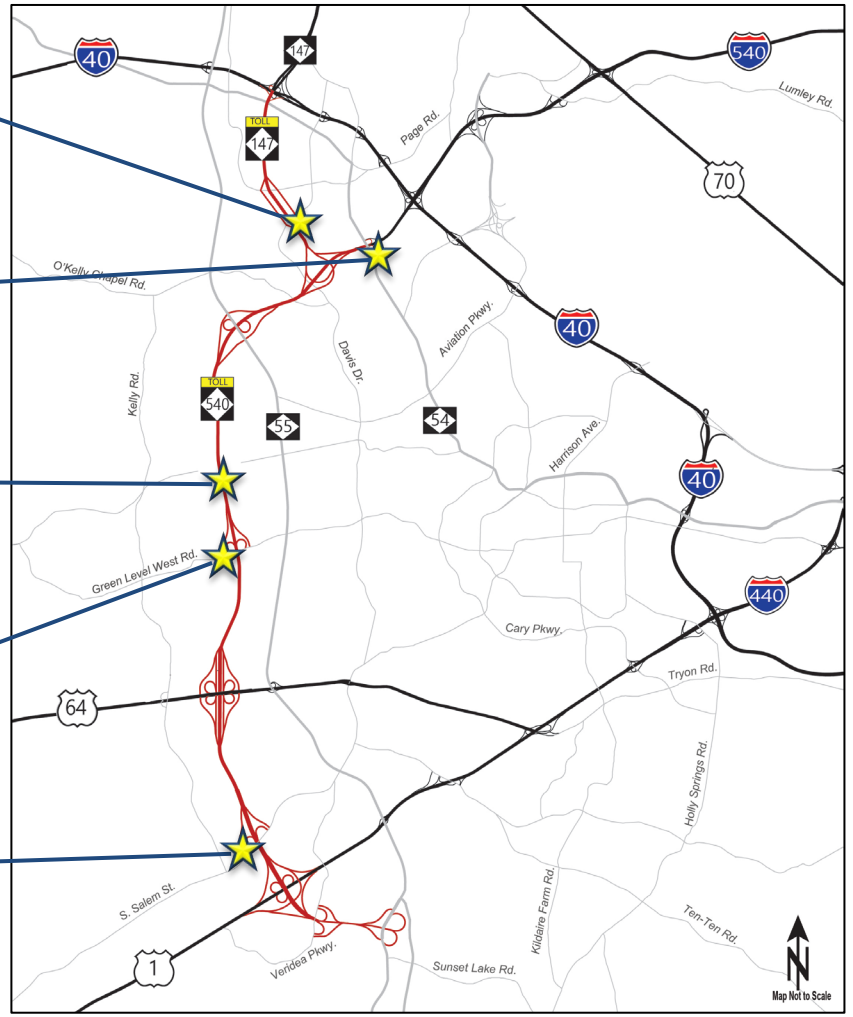
October 16, 2019 – updated June 2020 (draft)

Program Goals

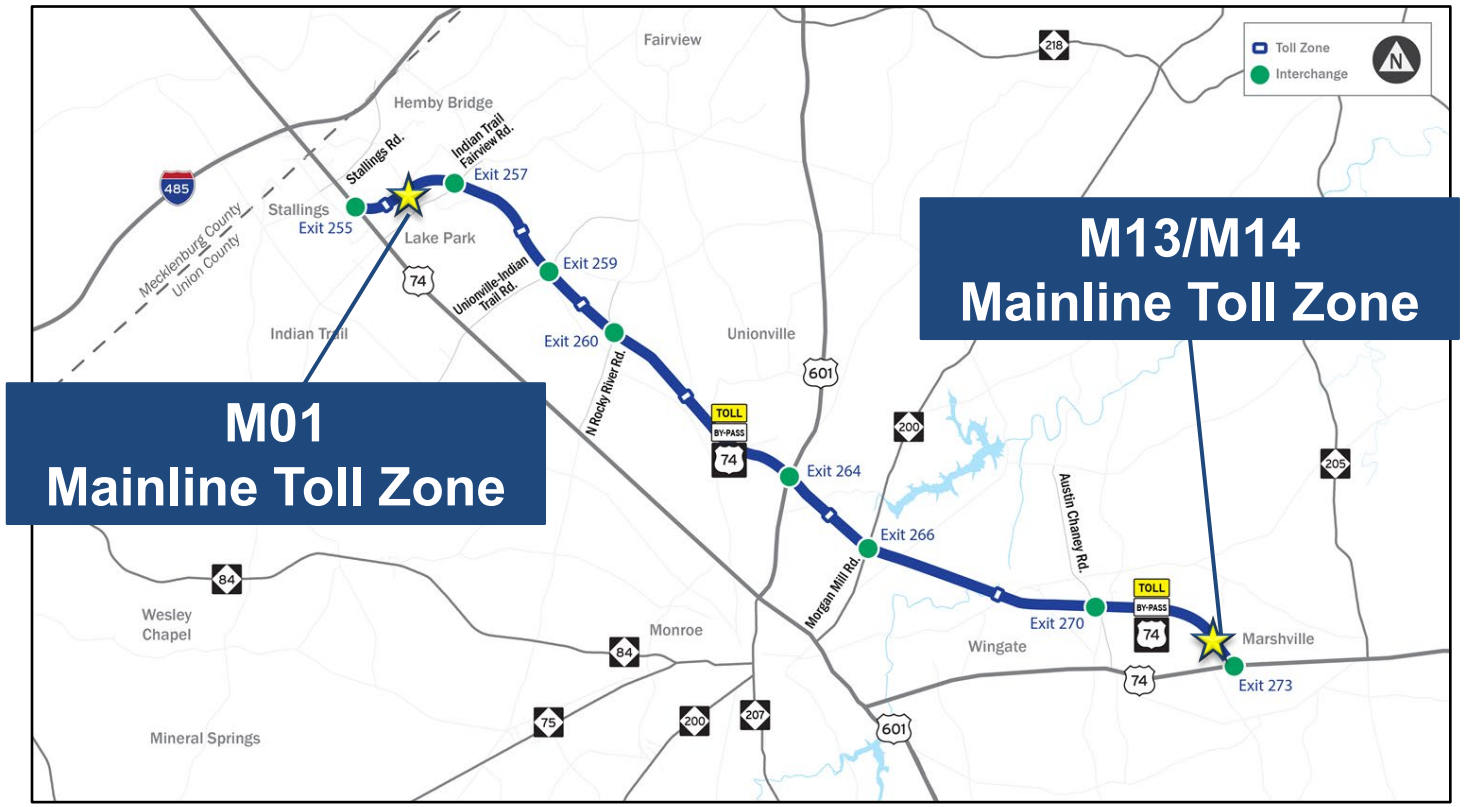
1) Evaluate pilot sites and factor lessons learned into program moving forward
2) Continue to evaluate technology
   - MHC Corbin pilot planned for Fall 2019
3) Develop updated Concept of Operations to describe programs
4) Design/deploy Monroe Expressway program in early 2020
   - Thru TSI contract or separate procurement
5) Design/deploy Triangle Expressway (entire) program in 2020
   - Thru TSI contract or separate procurement
6) Design/deploy Complete 540 program in 2019-21
   - Thru D/B contract and/or TSI contract

Pilot Program Locations

- Davis Drive Off-Ramp
- NC-54 Off-Ramp
- T17/T18 Mainline Toll Zone
- Green Level W. Rd. Off-Ramp
- South Salem Street Off-Ramp



Pilot Program Locations



Existing WWDDN pilot program sites/vendors

1) Tapco – Davis Dr. full ramp implementation
   - BlinkLink software
2) TraffiCalm – Salem St. full ramp implementation
   - Glance software
3) FLIR – Davis Dr. thermal camera deployment
   - Flux configuration software
4) SICK – NC 54 ramp microwave detection
5) MH Corbin – Green Level W ramp
   - LIDAR detection, thermal tracking camera
6) Tapco/TraffiCalm/Conduent – T17/T18 mainline
7) TraffiCalm/TransCore – M1/2, M13/14 mainline

(all on Tri-Ex except #6)

Mainline Toll Zone

ROADSIDE TECHNOLOGY

Wrong-Way Electronic Signs

Once a wrong-way vehicle is detected by toll system loops, red flashing lights are activated to alert the driver.

Street View of Northbound Lanes


Street View of Southbound Lanes

Davis Drive

TRAFFIC SIGNAL, PAVEMENT MARKINGS & SIGNING

1 Enhanced Traffic Signal Heads
Traffic signal heads now display green directional arrows to indicate "no turns".


Old Traffic Signal Heads


NewTraffic Signal Heads

2 Enhanced Pavement Markings
Wider pavement markings increase the ramp intersection visibility and reinforce the prohibited traffic movement.

3 New Enhanced Signs
Oversized static signs reinforce prohibited traffic moves.

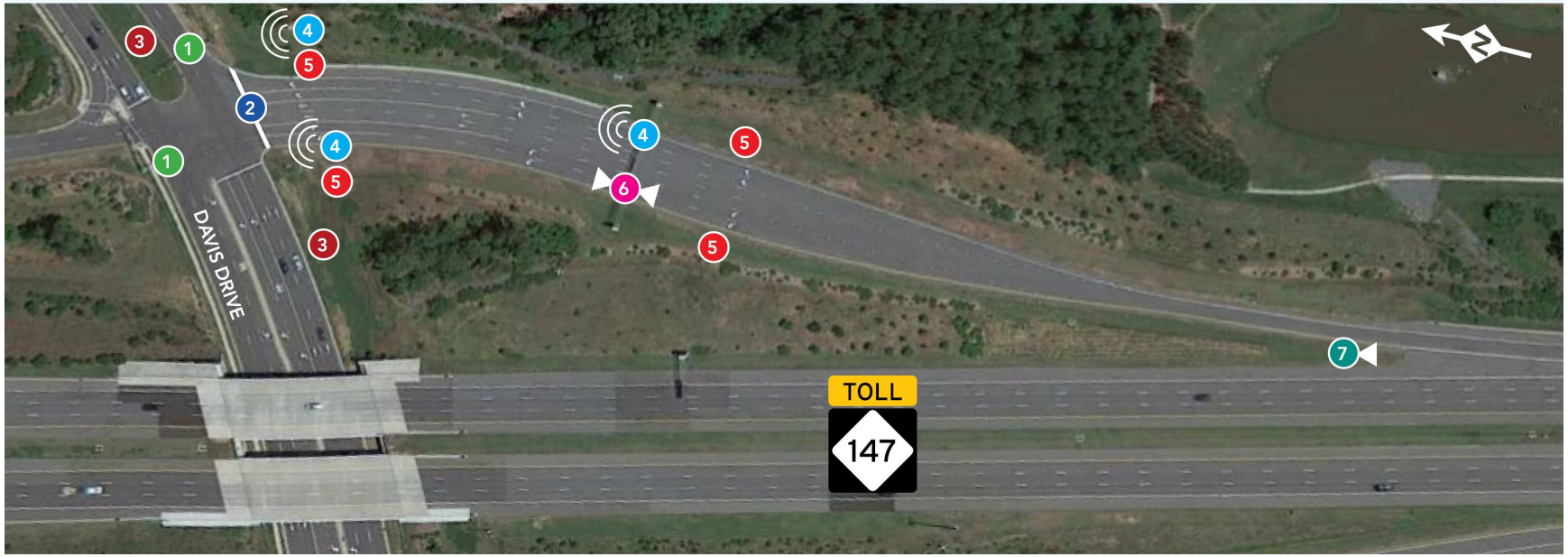
ROADSIDE TECHNOLOGY

4 Radar Detection
Detects vehicles driving in the wrong direction on the off-ramp.

5 Wrong-Way Electronic Signs
Once a wrong-way vehicle is detected by radar, red flashing lights are activated to alert the driver.

6 Incoming/Outgoing Cameras
Two-directional cameras provide real-time wrong-way driving verification information to Turnpike Authority Traffic Management Center operators.

7 Verification/Confirmation Camera
If the driver does not correct their direction of travel on the ramp, this camera provides verification of continued wrong-way driving on the Expressway.



South Salem Street

TRAFFIC SIGNAL, PAVEMENT MARKINGS & SIGNING

1 Enhanced Pavement Markings
Wider pavement markings increase the ramp intersection visibility and reinforce the prohibited traffic movement.

ROADSIDE TECHNOLOGY

2 Radar Detection
Detects vehicles driving in the wrong direction on the off-ramp.

3 Wrong-Way Electronic Signs
Once a wrong-way vehicle is detected by radar, red flashing lights are activated to alert the driver.

4 Incoming/Outgoing Cameras
Two-directional cameras provide real-time, wrong-way driving verification information to Turnpike Authority Traffic Management Center operators.

5 Verification/Confirmation Camera
If the driver does not correct their direction of travel on the ramp, this camera provides verification of continued wrong-way driving on the Expressway.

Updated Concept of Operations to include:

1) Program goals and objectives
2) Summarize work to date
3) Peer/technology review
4) Deployment plan
5) Design concepts
6) Cost estimates
7) Schedule
8) Standard operating procedures
9) Evaluation plans

Key/other considerations

1) For ramps: How much signage is necessary? Where should it be located?
2) How will our different detection technologies (Monroe: loops, Tri-Ex microwave) affect our approach?
3) How will the WWDDN "fit" into potential CAV technology such as DSRC and V2V?
4) Compare/contrast conventional detection/camera/sign solutions with newer digital analytic approaches (MHC, SAS, etc.)
5) Monroe WWD pavement marking project
6) NCDOT Research Project 2019-25 for Monroe WWDDN
7) Coordination with Auburn University efforts