

THE BOSS IMPLEMENTATION BLUEPRINT

June 2021

Bus On Shoulder System (BOSS)

Expansion in the Triangle Region



EXECUTIVE SUMMARY








What is a Bus On Shoulder System, or BOSS?

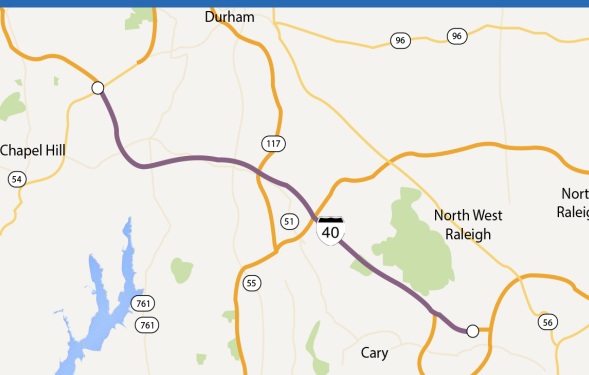
A Bus On Shoulder System, or BOSS, is a cost-effective and comparatively easy-to-implement solution to improve bus service performance on limited access facilities. With BOSS, buses are allowed to drive on the shoulder when certain conditions are met.



Key Benefits of BOSS:

-  Allows buses to bypass congestion
-  Helps reduce delays to transit riders during heavy traffic periods, and improve on-time performance
-  Can be implemented incrementally, and at a relatively low cost per mile
-  Has an excellent safety record
-  Acts as an advertisement for the transit service as it keeps moving when traffic stops




Where is BOSS currently operating in the Triangle?

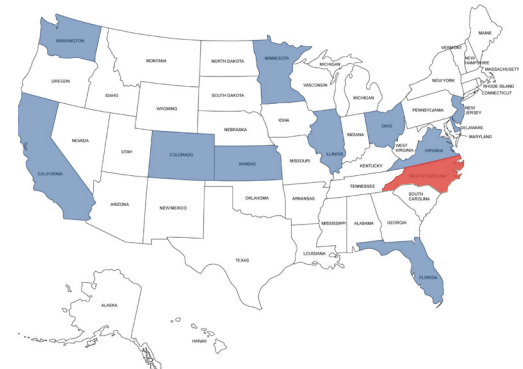


Current BOSS Operations on I-40 in the Triangle

BOSS has been successfully operated in the Triangle along I-40 from US 15-501 to east of Blue Ridge Rd along Wade Avenue since 2012.

The Triangle and NC are BOSS Leaders

-  BOSS is currently deployed or under development in 11 states, with the largest deployment in Minnesota, at 290 miles of BOSS facilities.
-  The Triangle and North Carolina are home to one of the five largest BOSS deployments by mileage.
-  With completion of this study, North Carolina has one of the most well-defined sets of BOSS design and operating standards in the USA.



Where in the Triangle would BOSS provide the most benefit?

HIGHEST SCORING CORRIDORS

(RED AND ORANGE ON MAP)



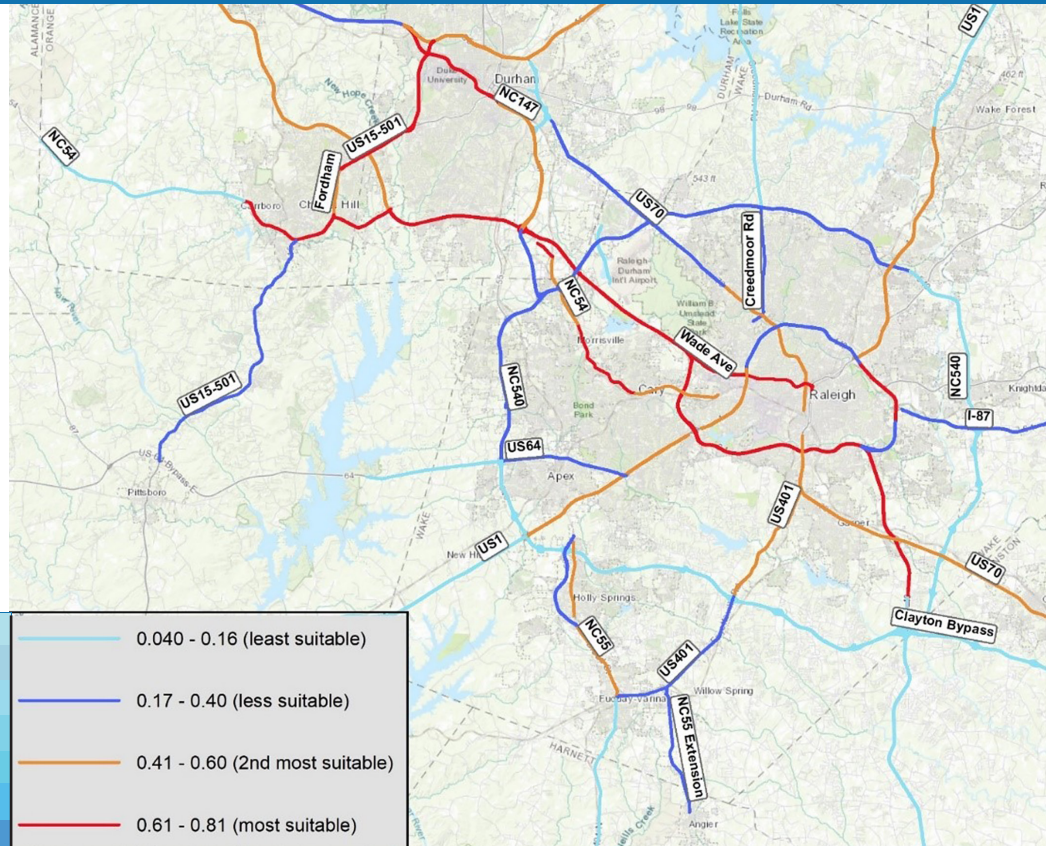
ATTRACTED MANY TRIPS



HAD LONGEST RUSH HOUR DELAYS



HAD LOTS OF BUS SERVICE



BOSS EXPANSIONS:

Primary BOSS Expansion

The best BOSS expansion opportunities are along interstates and connect Key transit destinations such as:

- UNC-Chapel Hill
- Duke University
- Downtown Durham
- Research Triangle Park
- NC State University
- Downtown Raleigh.

The top scoring BOSS Opportunity segments total 75 miles.

Secondary BOSS Expansion

The second-best BOSS expansions connect suburban markets to downtowns along US 1, NC 54, US 70, and US 401.

Intersections where major arterials cross the routes listed above could be excellent locations for future park and ride lots. **The second-best scoring BOSS Opportunity segments total 139 miles**

Which future Triangle projects are the best BOSS implementation opportunities?

This study took a qualitative approach to screen for near-term projects in regional plans that had attributes that were supportive of BOSS implementation, including:

-  Existing pavement conditions
-  Regional traffic system operations
-  2020-2029 STIP Commitments and SPOT projects






A promising opportunity for the Triangle is to consider an expanded BOSS network through the collection of Traffic System Management and Operations (TSMO) investments that NCDOT has planned in the region to enhance travel time reliability.

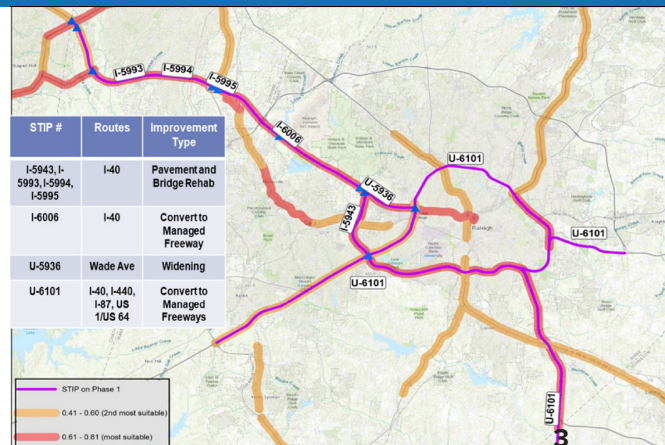
Phase 1 of these TSMO improvements includes 71 miles implemented over the next decade through STIP projects along I-40, I-440, I-87, and US 1. Phase 2 is implemented beyond the next decade encompassing 120 more miles resulting in an expanded, broader regional network along the fully complete I-540 and parts of US 1, US 64, and US 70.

Which Triangle projects scored highly for BOSS benefits AND have TSMO improvements planned?

The study reviewed the STIP for existing projects that are both planned for TSMO investment and also scored in the Top scoring or Second-Best Scoring group of segments for BOSS benefits, and found that the projects in the map to the right with a purple centerline and red or orange outline offer particular promise.

These facilities include:

-  US 1 from NC-540 in Apex to I-40 in Raleigh, continuing along I-440 to Wade Avenue
-  I-40 from exit 289 to the Johnston County Line
-  I-440 from US 1 North to I-87 in East Raleigh



Design and Operating Criteria to Standardize Implementation



The study worked to develop detailed design standards for BOSS expansion in the Triangle, with two types of criteria:



Example – Shoulder width: Minimum 11 feet, Recommended 12 feet

Minimum Criteria

Minimum criteria to meet for each design criterion to operate Bus On Shoulder, very useful in evaluating existing facilities for BOSS use

Recommended Criteria




Criteria that allows for robust BOSS operations, very useful in planning to design future facilities to be BOSS-ready from day one



NCDOT is currently working on studies that may update how they design roadway shoulders in general, independent of BOSS operations. When that work is complete, NCDOT can use the BOSS Design Criteria and their revised standards to update the BOSS Implementation and Operations Plan.

Teamwork Makes BOSS Work for the Community

Stakeholder Roles and Responsibilities

| Stakeholder | Roles and Responsibilities |
|--|---|
|  | <p>Owner and operator of the road; Design, permitting, and approvals; Project implementation; Motorist-oriented information about BOSS; Facility maintenance including sweeping shoulders</p> |
|  | <p>Operates the transit buses; Bus operator training; Public Awareness, Transit Passenger- Other transit oriented information about BOSS; Performance monitoring; Emergency response</p> |
| <p>NC State Highway Patrol</p> | <p>Responsible for enforcing laws and responding to crashes/incidents</p> |
|   | <p>Prioritize future BOSS project investment in Metropolitan Transportation Plans</p> |
|  <p>Local Motorists</p> | <p>Support safe BOSS operations by allowing buses to transition safely from travel lanes to shoulders, and across interchange ramps</p> |

Study Conducted by:



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