

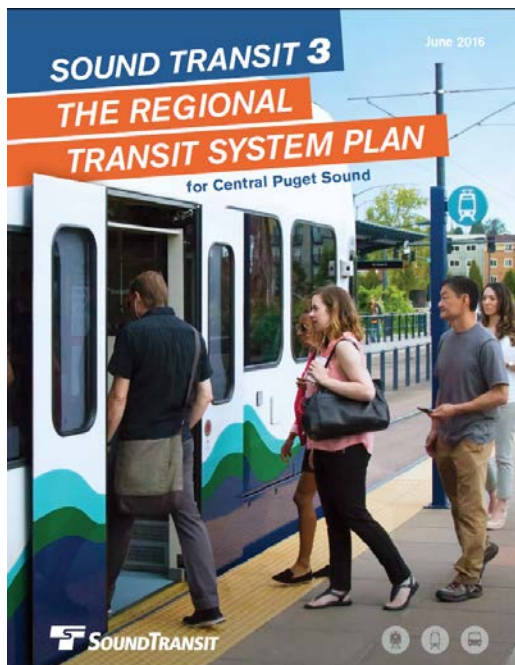
# Example of what BOS looks like....

SHOULDER  
AUTHORIZED  
BUSES  
ONLY



Bus-on-shoulder operations on the left-shoulder in Chicago.  
(Source: Pace Bus)

## ST3 “Early Deliverable” Project



“The Bus-on-Shoulder program provides opportunities for **buses to use shoulders on freeways and state highways during periods of congestion** in general traffic and/or HOV lanes subject to safety and regulatory approval.

This program **requires coordination and further study with transit partners, WSDOT** and the Federal Highway Administration to determine specific potential locations.

**Freeways that could be included in the program are I-5, I-405, SR 167 and SR 518.** Improvements include capital infrastructure to enable the overall Bus-on-Shoulder program to operate efficiently.”

# Goals

- Improve transit speed and reliability
- Focus improvements for maximum benefit
- Use by ST buses and other transit agencies
- Use best practices for safe, efficient operations



Minneapolis, Minnesota



Static Bus-on-shoulder message sign on US 9 arterial in Old Bridge, New Jersey. (Source: TCRP Report 151)

## FEATURES:

- Buses can use shoulder when traffic slows operating speed below threshold
- 35 mph top speed in shoulder; no more than 15 mph faster than adjacent lane



# Experience with Design and Operation

**NCDOT NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
Connecting people, products, and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina.

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Public Transportation Division  
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**Bus on Shoulder System**

**BOSS**  
Bus On Shoulder System

In partnership with local public transportation systems, the N.C. Department of Transportation's Bus On Shoulder System, also known as BOSS, helps keep buses on time, provides more reliable service and encourages the use of public transportation, which reduces traffic congestion on North Carolina roads.

BOSS offers immediate benefits during times of moderate or heavy traffic congestion. It is not limited to rush-hour congestion; bus drivers can move to the shoulder at any time during major traffic backups.

**BOSS in Use**

Since August 2013, BOSS has been used along both directions of Interstate 40 from U.S. 15-501 in Durham County to Wade Avenue in Wake County. BOSS also continues on Wade Avenue between I-40 and Blue Ridge Road.

BOSS is in use on the following GoTriangle routes in Durham County:

- Chapel Hill Express (CRX)
- Route 800 – Chapel Hill to the Regional Transit Center via The Streets

**BOSS Area Map**

**BOSS Fast Facts**

**Service Areas:**

- Durham County service 2012.
- Activating on I-40 in Wake County August 2013.

**Service Restrictions:**

- Used at the driver's discretion when traffic slows to 15 MPH.
- Buses may travel no faster than 15 MPH when in shoulder.

**Cost:**

- Approximately \$2,000 per mile including signage.

Maximum BOSS operating speeds	
Travel Speeds in Main Lanes	Maximum Bus Speeds in Shoulder
Above 35 mph	Buses may not travel on shoulder
20 to 35 mph	35 mph (maximum speed in shoulder)
15 mph	30 mph (i.e., 15 mph above main lanes)
5 mph	20 mph (i.e., 15 mph above main lanes)
Stopped (0 mph)	15 mph (i.e., 15 mph above main lanes)

North Carolina DOT BOSS program description (Source: NCDOT website)

**TCRP**  
REPORT 151

**A Guide for Implementing Bus On Shoulder (BOS) Systems**

Transportation Research Board of the National Academies

Transit Cooperative Research Program

Sponsored by the Federal Transit Administration

TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

TCRP Report 151 Cover (Source: Transportation Research Board website)

## RTD LAUNCHES BUS-ON-SHOULDER OPERATIONS FOR FLATIRON FLYER ON U.S. 36

Posted on 05/03/16

RTD's Flatiron Flyer bus rapid transit (BRT) buses are now able to drive on the shoulder of U.S. 36 during certain traffic situations.

Buses will be able to drive on the shoulder under the following conditions:

- The traffic speed in the general purpose lanes is less than 35 mph—any time of day.
- The bus cannot exceed the speed of general purpose traffic by more than 15 mph, with the maximum speed being 35 mph.

Only RTD buses will be allowed to travel on the shoulders, at the discretion of the bus operator. Shoulder use for emergency responders and broken-down vehicles will continue to be a priority.

**Only RTD buses are authorized to use the shoulder with the following conditions:**

- The traffic speed in the general purpose lanes is slower than 35 mph.
- The bus does not exceed 15 mph over the speed of traffic in general purpose lanes, with the maximum speed being 35 mph.

**All private vehicles must remain in the general purpose lanes or the Express Lanes. Do not follow the bus onto the shoulder.**

The diagram shows a cross-section of a highway with four lanes: Express Lane, General Purpose Lane, General Purpose Lane, and Shoulder. A blue RTD bus is shown driving on the shoulder. A sign on the right side of the highway reads "SHOULDER AUTHORIZED BUSES ONLY". Yellow arrows point to the Express Lane, General Purpose Lane, and Shoulder, indicating that private vehicles are not allowed to use the shoulder.

As a part of the U.S. 36 Express Lanes project with the Colorado Department of Transportation, the shoulder of the highway was expanded to 12 feet wide and built to withstand the weight of a bus.

# Sound Transit BOS project

- \$102M overall project budget
- Funded by 3 subareas (Snohomish, South King, Pierce)
- Benefits can be shared across subareas and transit agencies
- Improve sections and facilities used by bus routes along state highways (including I-5, I-405, SR 518, SR 167)
- **Early deliverable – all improvements open for service by 2024**






Bus-on-shoulder operations in Minneapolis-St. Paul.  
(Source: Metro Transit)

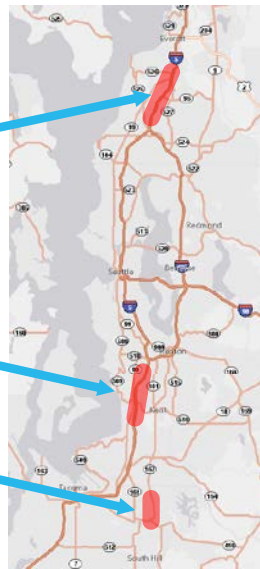
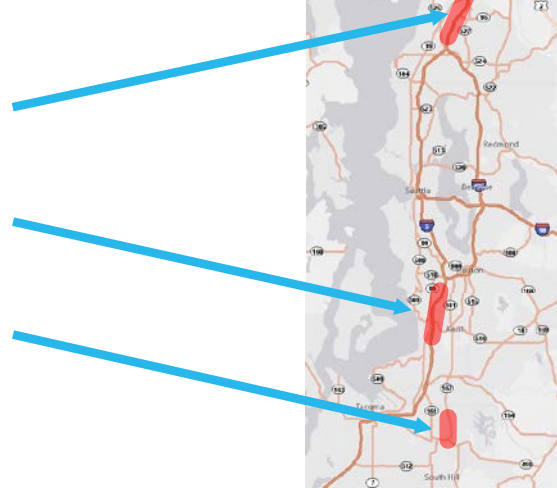
# Project development



**Start of  
service  
2021 to 2024**



-  **Project A**
-  **Project B**
-  **Project C**



WSDOT  
designs,  
constructs,  
owns, operates  
and maintains

# First Project: Lynnwood to Mountlake Terrace

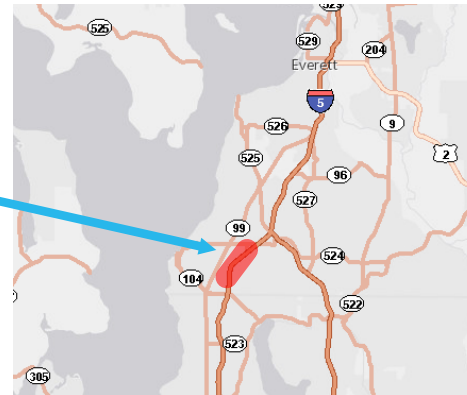
**Final Design & environmental  
review**  
Completed

**Construction**  
2018

**Start of  
service**  
2019



Southbound I-5  
inside shoulder  
between 44<sup>th</sup> Ave  
and MLT Transit  
Center ramp



# Summary

- ST3 Early Deliverable - by 2024
- Goal of improving transit speed and reliability on freeways and other state highways
- \$102M overall project budget
- Budget and benefits across 3 ST subareas
- Feasibility Study in 2018 to identify potential improvements
- Improvements will incorporate best practices for safe, efficient operations
- WSDOT is project partner