

# US ROUTE 1 HARD SHOULDER RUNNING

By: New Jersey Department of Transportation

## IN THIS CASE STUDY YOU WILL LEARN:

1. The New Jersey Department of Transportation (NJDOT) identified lane reduction as the main contributor to congestion on a key corridor.
2. Hard shoulder running was piloted as the solution to reduce congestion and improve travel times through the US Route 1 corridor.
3. A measurable decrease in travel times was seen along both directions of the corridor.

## BACKGROUND

The New Jersey Department of Transportation (NJDOT) and the Township of South Brunswick, New Jersey identified that congestion on US Route 1 in both directions, between the intersections of Independence Way and Raymond Road, was elevated during peak commuting hours on weekdays. The leading cause of congestion in this area was identified as the reduction of traffic from three lanes to two, occurring in both directions of travel, which resulted in bottlenecks.



In efforts to relieve the congested traffic (typical average peak period speed about 20-25 MPH which is 50 percent of the free flow speed in this location), NJDOT and South Brunswick Township worked together to

create an appropriate solution which would not only reduce congestion, but also keep traffic flowing and improve the safety of motorists.

A problem screening was performed by NJDOT, examining low cost TSMO solutions that would provide congestion relief. On June 16, 2017, the selection of Hard Shoulder Running (HSR) as the selected congestion management strategy was announced. It was determined that this pilot project could be implemented quickly at a low cost but with potentially high benefits.

The HSR strategy would be implemented temporarily and observed for six months. At the end of the six months, an analysis of the effectiveness of the HSR operation would be performed. At that time, the NJDOT would determine whether additional ITS enhancements would be added and whether the HSR operation would become permanent.

HSR would only allow passenger vehicles to use the shoulder as a travel lane for the 1.9-mile stretch of US Route 1 in both the northbound and southbound directions during the hours of 6 a.m. to 9 a.m., and from 4 p.m. to 7 p.m. Monday through Friday.

During the first few weeks of HSR operation, traffic was observed entering the southbound shoulder about a half-mile upstream of the official starting point for the shoulder use.

NJDOT and South Brunswick officials agreed that it would make sense to extend the HSR limit north by about a half-mile. This would mitigate confusion between motorists when using the shoulder.

## TSMO PLANNING, STRATEGIES, AND DEPLOYMENT

The Project Team consisted of multiple divisions within NJDOT, South Brunswick Township, a lead designer, sub-consultant, contractor, and technology sub-contractor. A Traffic Management Plan, in accordance with the NJDOT Traffic Mitigation Guidelines, was required and utilized during the project.

**System Detectors (side-fire radars)** on the corridor were used as an operational monitoring tool as well as a performance measurement (traffic volume throughput) tool. The radars within the HSR operational limits were re-zoned to include the shoulder as well as the through lanes to allow more detailed monitoring of traffic volumes and driver behavior (i.e., percent of traffic willing to use the shoulder).

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Through TRANSCOM, a multiagency non-profit in the NY, NJ, and CT area, a project monitoring site was set up so the operations staff could quickly identify if there was an increase in travel time and if there was any construction or unplanned incidents within the limits of the HSR. Also, traffic surveillance cameras were installed on utility poles along the corridor allowing both NJDOT and South Brunswick officials to monitor the shoulder use on a continual basis.

The US Route 1 HSR pilot project was scheduled to begin on June 26th, 2017, with the duration set at six months.

### COMMUNICATIONS PLANNING AND EXECUTION

NJDOT and South Brunswick officials held regular meetings to discuss the status of the project during both the design and construction phases. As construction activities were coming to a close, public outreach was conducted.

### OUTCOME, BENEFIT AND LEARNINGS

On February 26, 2018, NJDOT announced the outcome of the congestion relief pilot project. The motoring public using US Route 1 in South Brunswick during the morning and evening peak hours saw a measurable decrease in their commuting times.

Due to the successful results, NJDOT is currently in the process of making this a permanent improvement to the corridor. This includes lane control signs indicating the status of the shoulder (closed/open). Additional traffic surveillance cameras will be installed to monitor the shoulder, and more dynamic message signs will also be installed to display traveler information.

South Brunswick Township officials have been pleased with the HSR operation on US Route 1. The success of this project has prompted the NJDOT to consider HSR as a standard TSMO strategy when scoping cost-effective congestion management projects in the state.

### FURTHER INFORMATION

NOCoE Knowledge Center: <https://transportationops.org/knowledge-center>