

I-476 ATC (116225) and I-476 HSR (104821) Project Description

Project Description:

The SR 476 Sec ATC project will implement Active Traffic Management strategies including variable speed limit and queue detection systems to better manage congestion and improve safety along approximately 14.1 miles of Interstate 476 including at the I-476/I-95 interchange. Southbound limits along I-476 extend at the southern end from the convergence of the I-476 southbound ramp onto I-95 south to the northern limit 0.5 miles north of Exit 13 at SR 30. I-476 Northbound limits extend from the southern limit at the I-95 southbound ramp to I-476 and the northern limit at Marple Road near Exit 9.

The proposed roadside equipment will be connected to the Regional Traffic Management Center through the existing fiber optic communication system established within the project limits. All facilities will be installed in existing PennDOT Legal Right-of-Way.

The SR 476 Sec HSR project will provide for the active management of transportation and demand by providing operational improvements on I-476 between the PA 3 and I-95 interchanges, and on I-95 between the I-476 and US 322 interchanges with a series of measures that will allow for the ability to dynamically manage recurrent congestion based on prevailing and predicted traffic conditions through the installation of systems and devices for variable speed limits and queue detection. Speeds will be dynamically changed based on road, traffic and weather conditions. Warning signs will be used to dynamically display alerts to drivers that congestion and queues are present.

The SR 476 Sec HSR project will provide the ability to dynamically manage recurrent congestion based on prevailing and predicted traffic conditions through the following: 1) Dynamic lane assignments, shoulder, and junction control improvements--The shoulders will be dynamically controlled along with travel lanes for opening/closing on a temporary basis in response to increasing congestion or incidents; and 2) Adaptive ramp metering will be used to dynamically adjust signals at the ramp entrances to proactively manage vehicle flow from access roads. The work will likely include: upgrade of existing roadway shoulders to a consistent width and pavement thickness, relocation of drainage inlets in some shoulders, traffic signal modifications at interchanges, construction of gantries for signs and ITS devices, removal or upgrade of existing ramp metering devices, construction of emergency pull off areas, and providing better access for emergency responders to enter and exit the highway(s) during incidents.

Project Purpose and Need:

Purpose: The purpose of this project is to reduce congestion and reduce crashes on I-476 from SR 3 to I-95 and on I-95 southbound from I-476 to SR 0322 west.

Need(s):

1. High Traffic Volume – Traffic volumes range from 86,800-108,000 vehicles per day on I-476 north of MacDade Boulevard (Seg 0002/0003) in the project area.
2. High Crash Rates – An crash analysis for each of the interchange ramps and the segment of I-476 immediately north of the 476-95 interchange was completed for the 2005 to 2009 period. Findings of this analysis indicate that individual segments range from significantly under (less than 50 percent) to greater than the statewide average, including hit fixed object crashes and rear end crashes.
3. Traffic Congestion on Interstate 476 - The Final Record of Decision for the original I-476 construction included provisions that downsized S.R. 0476 between West Chester Pike and MacDade Boulevard to reduce the footprint of the right of way, minimizing impacts to parklands, historic resources, and streams.

Due to downsizing, the four lane section experiences recurring traffic congestion. Specifically, INRIX vehicle probe data shows, between 7:00 AM and 9:00 AM, the average travel speed on northbound S.R. 476 between Baltimore Pike and West Chester Pike is 30 to 40 MPH. During the same time on southbound I 476, the average speed from the transition to two lanes to the Media Bypass is also 30 to 40 MPH. Between 4:00 PM and 6:00 PM, the average travel speed southbound between West Chester Pike and the Media Bypass is less than 45 MPH; and at the West Chester Pike Interchange, where the lane drop occurs, it is 30 to 35 MPH. Travel delays of 10 to 15 minutes are common. A VISSIM model analysis of future conditions shows grid lock conditions, as traffic along the entire length of I 476 approaches capacity.

4. Traffic Congestion Spillover onto Local Roadways – I-476 serves as a major artery of the Philadelphia region, functioning as both local expressways for commuters living within the surrounding suburban communities of Philadelphia, as well as a north south regional connector of Philadelphia to cities/states to the north and south. As a result of studying traffic movement in and around the I 95/I 476 Interchange during the Phase 1 and 2 studies, it was determined that traffic was being generated on local roads within the City of Chester and surrounding communities as a result of travelers trying to detour around the interchange, especially during peak hour travel intervals. The added congestion and bottleneck conditions within local road networks has had a negative effect on commerce and industry, as well as a lower quality of life for the residents and business owners in the communities within the vicinity of these roadways.

Project Setting and Distinct Project Features:

The project area is in multiple municipalities in Delaware County, Pennsylvania including the City of Chester; the Townships of Chester, Haverford, Nether Providence, Radnor, Ridley, Springfield, Upper Providence, Nether Providence, and Marple; and the Boroughs of Swarthmore, Ridley Park, and Upland. SR 476 is a limited access interstate carrying six lanes of traffic from SR 3 to the north and four lanes of traffic from SR 3 to I-95. The traffic throughout this project area is highly congested, occurring daily and is a major impediment to the traveling public. SR 476 contains six segments with crash rates 1-2 times above the statewide average crash rate and six segments with crash rates more than twice the statewide average crash rate. The project area contains 20 rear end crash clusters.