Statewide Work Zone Monitoring Archived Data Portal (SWMADP)

Quick Start Guide

ITS RESOURCE CENTER | NJIT

SWMADP Development

While the New Jersey Department of Transportation (NJDOT) has deployed intelligent transportation system (ITS) devices to monitor the mobility impact of long-term work zones, no comprehensive data collection and monitoring activities have been conducted for comparatively short-term work zones.

Recently, NJDOT implemented a work zone monitoring system on the I-295 Direct Connect Project to ensure that performance thresholds were not exceeded during construction activities. As an expansion of the I-295 Direct Connect monitoring program, NJDOT deployed advanced ITS data collection sensors to collect data and monitor mobility performance measures at work zones on state highways and arterials throughout the state.

It has been well known that the use of deterministic queue estimation models that were based on roughly estimated work zone travel demand and roadway capacity could yield biased results in cases where the demand and/or capacity estimates were not accurate. To address this issue, an extensive work zone data collection program, focused on travel speeds and traffic volumes, was performed, and the collected data was archived.

To support the utilization of the archived work zone data, a web-based Statewide Work Zone Monitoring Archived Data Portal (SWMADP) was developed.
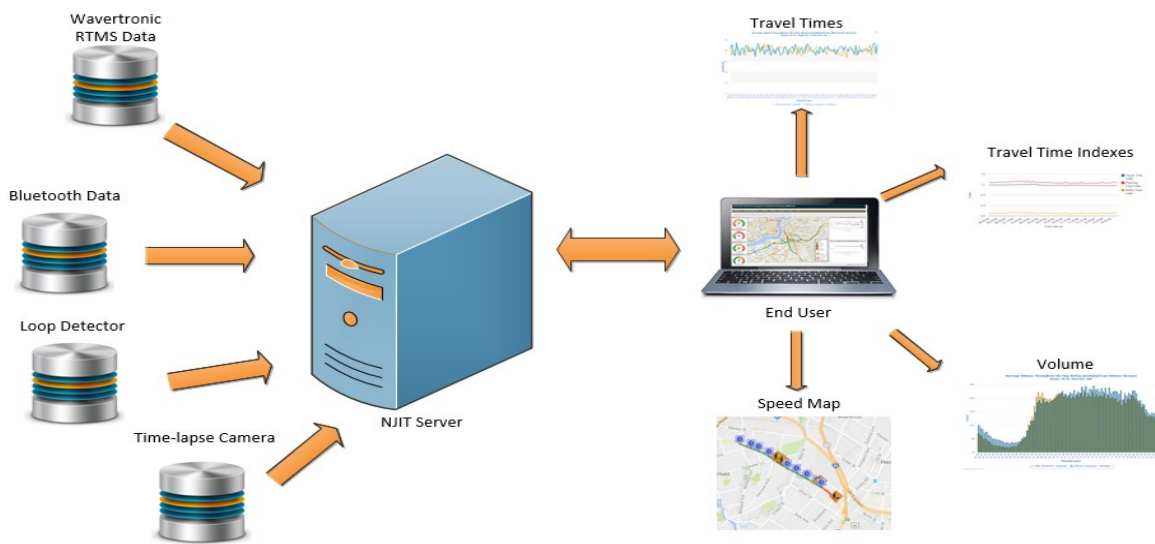
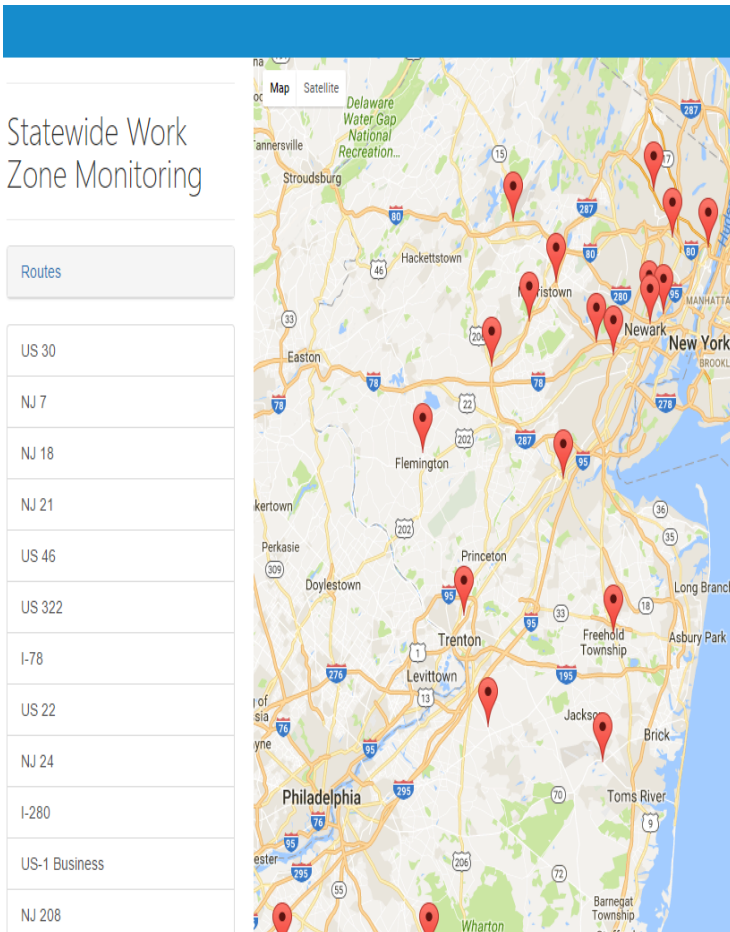*System Architecture*

System Requirement

SWMADP is web-based and free of installation. Most internet browsers support SWMADP, including:

- Google Chrome
- Microsoft Internet Explorer
- Mozilla Firefox
- Apple Safari.

Login Instructions

The URL for SWZMT is: http://njdotestip.njit.edu/TIS/home.jsp

SWMADP Home Page

Currently, there are 2 types of credentials: the agency credential and the public credential.

Agency Credential: This type of credential allows broad access to historic traffic data and downloadable content, however system administrator access is required.

Public Credential: This type of credential is available to the general public and is free of charge, however access to historic data and downloadable content is limited.
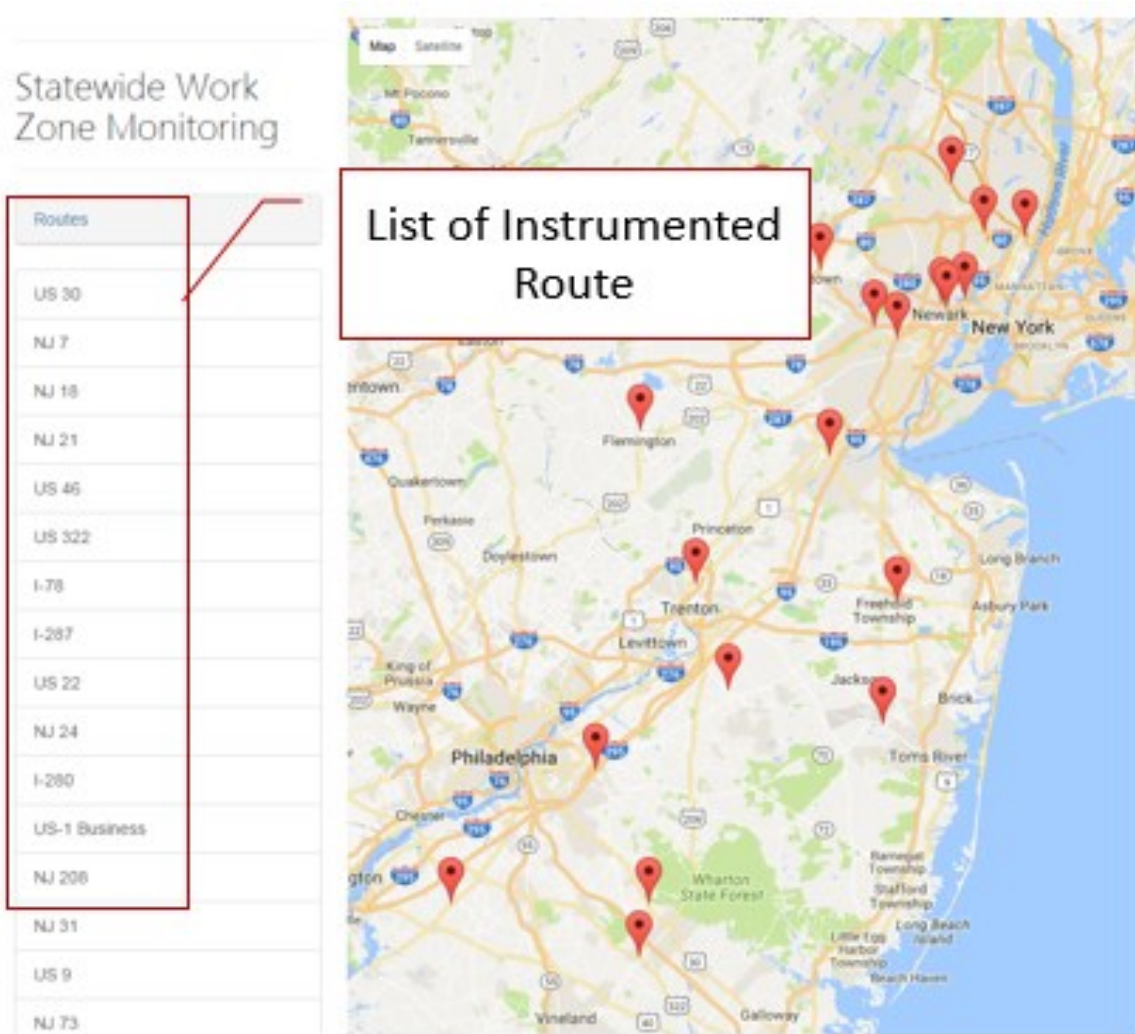
Application Overview

Dashboard

The Dashboard of the SWMADP can be divided into two parts. The left side of the dash-board displays a list of state highways and arterials where advanced ITS data collection sensors have been installed in a work zone area. The right side of the dashboard shows a map highlighting the location of each work zone. Once the route of interest is selected, users are then directed to the route portal.

SWMADP Dashboard

Application Overview

Route Portal

The route portal, illustrated below, includes all of the available data and analysis options pertaining to work zones. Geographical location information for each work zone area and deployed ITS devices are illustrated on a map. By hovering the cursor on: an ITS device icon; or on the roadway link between two successive Bluetooth devices, a preview of the archived volume (or speed) data profile is displayed on the bottom left of the screen. Users can then download the archived data by clicking first on the ITS device icon and then on the "Download Report" button at the top of the device icon. Users can also toggle the date menu to include either weekday or week-

SWZMT Route Monitoring Portal

Application Overview

Device Information

When an ITS device icon is clicked, its geo-coordinates, route direction, and milepost are displayed as shown in the box to the right. The date range of the data collection periods with and without the work zone in place are shown. The duration of the data collection periods vary with each work zone area.

Bluetooth Sensor

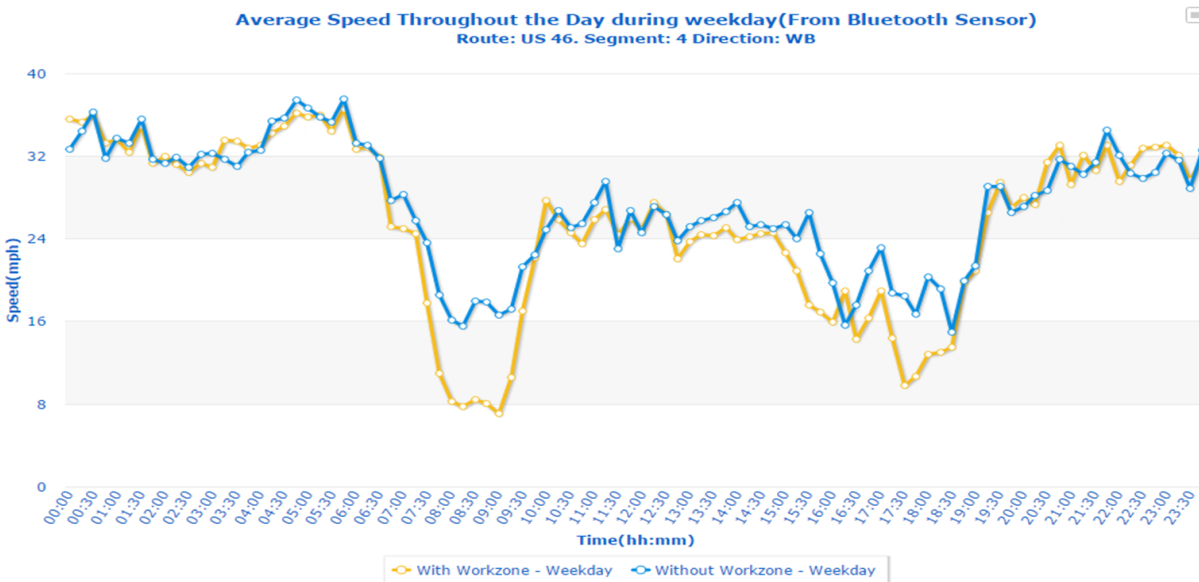Geocode: 40.75806,-74.16667999999999
Direction: SB
Mile Post : 3.873
Data Collection Start Date with WZ : 2015-10-13
Data Collection End Date with WZ : 2015-10-19
Data Collection Start Date without WZ : 2015-10-20
Data Collection End Date without WZ : 2015-10-24
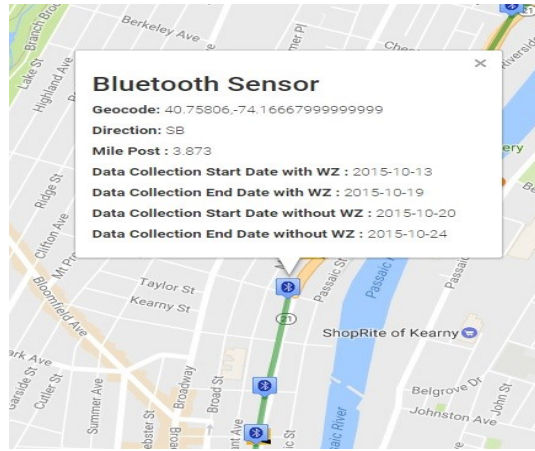
Data Analytics: Average Speed

A time series plot of average link speed is available for each selected work zone area. When users click on the roadway link between two consecutive Bluetooth devices on the map, a time series plot of the average travel speed with and without the work zone in place is generated. An example of a time series plot of the average weekday travel speed on a US 46 work zone (Segment 4, westbound direction) is shown below. The data with and without the work zone in place are shown in yellow and blue, respectively.

Average Speed Throughout the Day during weekday(From Bluetooth Sensor)
Route: US 46. Segment: 4 Direction: WB

With Workzone - Weekday   Without Workzone - Weekday

Statewide Work Zone Monitoring Archived Data Portal

Application Overview

Data Analytics: Traffic Volume

A time series plot of average traffic volume is also available for each selected work zone area. When users click on an icon of the volume measurement device, a time series plot of the average volume with and without the work zone in place is generated. An example of a time series plot of the average weekday traffic volume on a US 46 work zone (Segment 4, westbound direction) is shown below.

The data with and without the work zone in place are shown in yellow and blue, respectively.

By comparing traffic volumes and travel speeds with and without the work zone in place, the impact of different types of work zones on roadway capacity can be better estimated.

Average Volume Throughout the Day during weekday(From Volume Sensor)
Route: US 46. Direction: WB

With Workzone - Weekday   Without Workzone - Weekday

FusionCharts XT Trial

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