MDTA’s I-895 Bridge Project
Smart Work Zone Implementation
SWZ – Smart Work Zone

- Agencies can use a variety of ITS applications to enhance work zone mobility and safety.

- **Real-time traveler information systems** provide drivers with real-time travel conditions prior to and within a work zone, and may also provide information on alternative routes in the corridor. The goal is to divert drivers away from the work zone when congestion exists.

- **Queue warning systems** quickly detect the presence of congestion at the work zone and warn approaching motorists that traffic is slowed or stopped ahead.

- **Dynamic lane merge systems** encourage motorists to merge at specific points as they approach a lane closure, depending on current operating conditions.

- **Incident management systems** enable agencies, contractors, and responders to detect incidents in the work zone faster, allowing quicker response and clearance.

- **Variable speed limit systems** harmonize speeds before and within the work zone, calming traffic flow and warning of slowed or stopped traffic ahead.

- **Automated enforcement systems** detect and capture images of speeding vehicles for enforcement purposes.

- **Entering/exiting vehicle notification** warns drivers of slow-moving construction vehicles that may be entering the travel lane. It can also warn travelers that a work vehicle is exiting the travel lane and not to follow it into the work space.

- **Performance measurement systems** monitor and archive data on traffic conditions to support real-time traveler information dissemination, modify operations, and facilitate evaluation.
SWZ – Common Applications

Queue Warnings

Variable Speed Limits

Applications

Zipper (Late) Merge

Truck Entry Systems
SWZ – Queue Warning Systems

Typical Equipment:
1 PCMS w/Doppler + 4 Sensors
1 Optional Added PCMS
(1 mi before Taper)

Typical Benefits:
Reduce Chance of Rear End Crashes by 18-45%
SWZ – Queue Warning Systems

Source: ARTBA Work Zone Safety Consortium (Sept 2015)
I-895 Bridge Project – SWZ Overview
I-895 Project Area

Project Limits:
• 1,000 FT South of Tunnel (MM 8.80) to Interstate Ave / Boston St (MM 11.65)
• Project will extend about 3 miles (bridge ~ ¾ mile long)

Scope of Work
• Replacement of Canton Viaduct
  • Complete replacement of the 60 year-old, Canton Viaduct and Holabird Ave. Ramp Bridges
• Rehabilitation to the BHT
  • Tunnel deck
  • Portal approaches and retaining walls
  • Interior tiles
  • Fire main and standpipe
  • Rehabilitation of tunnel approach roadway and retaining walls
I-895 – SWZ Overview

Schedule:
Advertisement: Summer 2017
NTP: April 2018
Main Bridge Construction: November 2018
  Reduced Lanes only after I-95 Improvements complete
  After Thanksgiving
Construction Complete: Summer 2021

Impacts & Other Project Scheduling

• 3 major harbor crossings
  ▪ I-95 (Major North/South Route)
  ▪ I-895 (Parallels I-95, Thruway)
  ▪ I-695 (Baltimore Beltway)

• All harbor crossings are tolled facilities operated by MDTA
I-895 – SWZ Overview

- **I-95**
  - I-895 diversion route with excess capacity
  - FT-3003 / I-95 from Moravia Road to the Fort McHenry Tunnel
    - Capacity Improvements

- **I-695**
  - I-895 diversion route with excess capacity
  - KB-3003 / Maintenance and Repairs of Curtis Creek Drawbridges
    - Reduced capacity on I-695; Completed before Canton Viaduct Stage 2

- **I-895**
  - HT-2658 / I-895 Over Patapsco River Flats Superstructure Replacement
    - Reduced capacity on I-895; Already Encourages diversion from I-895
I-895 – SWZ Overview

Maintenance of Traffic -

• **Stage 1**
  - Two lanes each direction
  - Sub-stages 1A, 1A-1, 1B and 1C

• **Stage 2**
  - One lane each direction (southbound bridge)
  - Closure of Holabird Avenue Ramp
  - Sub-stages 2A, 2B and 2C

• **Stage 3**
  - One lane each direction (northbound bridge)
  - Sub-stages 3A, 3B-1, 3B-2 and 3C

• **Stage 4**
  - Two lanes each direction

- Short Term Roadway Closures (Nights & Weekends)
- Long Term Roadway Closures (24/7)
- Two-way Traffic Operations in each bore maintained for majority of Stages
I-895 – SWZ Overview

I-895 Traffic Management System

GENERAL SYSTEM SPECIFICATION:

• The project utilizes Portable Traffic Sensors (PTS) and Portable Variable Message Sign (PVMS).

• PTSs and PVMSs used are self contained trailer mounted portable units.

• All PVMSs AND PTSs are proposed to use solar power.

• All PVMSs AND PTSs are proposed to communicate using cellular or wireless internet communications.

• All PVMSs incorporate a branding sign for the project as shown in the plans and specifications.

• The contractor was required to install the above devices for construction stages 2, 3 AND 4, including all associated sub-stages, OR as needed by engineer.
I-895 – SWZ Overview

• Contractor Installed/Maintained
  Operational for Stages 2, 3, and 4

• Real-Time Congestion Warning

• Regional Deployment of Devices
  10 Portable Traffic Sensors
  I-895
I-895 – SWZ Overview

• Regional Deployment of Devices

13 Portable Variable Message Signs

I-895 – I-95
I-695 – I-97
MD 295 – MD 2
US 40 – Moravia Road
I-895 – SWZ Overview

• Regional Deployment of Devices

13 Portable Variable Message Signs

I-895 – I-95
I-695 – I-97
MD 295 – MD 2
US 40 – Moravia Road
I-895 – SWZ Overview

System Map

National Operations Center of Excellence
I-895 – SWZ Overview

• Remote Data Collection and Automated Data Processing
  Speed Thresholds
  Volumes
  Lane Occupancy

• Web-based System Management

• User Notifications
  Email or Text

• MDTA System Override
  Avoid Conflicting Messages
I-895 – SWZ Overview

• Penalties for Non-Operational System
  $2,500 per day first 10 days
  $5,000 per day every day after 10

• Project “Branding”

• Contract Unit Cost
  • $690,000 Lump Sum
I-895 – SWZ Overview
I-895 – Hybrid Routes

- 3rd Party TT Data (From PCMS to Sensor)
- Combined 3rd Party & Portable Sensor Route
- Portable Sensors (From Closest PCMS to Tunnel)
- Results in Cost-Effective Best Travel Time Data
I-895 – Message History & TT Data

Alt Rte Suggested
TT > 3X Free Flow
I-895 – Automated Alerts to TMC

SB PCMS 10 Rte (Free Flow=8) is MAJOR CONGESTION. Current Times are > 3X (Normal) | 01/22/2019 08:03:40 AM

SB PCMS 10 Rte (Free Flow=8) is now FREE FLOW condition | 01/22/2019 09:01:40 AM
SWZ – Heat Map Reports
Hover Over Any Sensor Speed to See Details

See All Message Sign Change History