Leveraging E-Ticketing to Improve Work Zone Safety

MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

How the STIC and ADCMS Grant Opportunities Became the Highway to Interoperability with e-Ticketing



Office of Construction / eConstruction Division

2026



MDOT MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

NATIONAL WORKZONE SAFETY INFORMATION CLEARINGHOUSE



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Launch Procedures

- Prepare the Team and Develop the Documentation
  - EDC4 & EDC6
  - ADCMS Grant application process
- Provide Necessary Training
  - Review the Specification and Procedures
  - Field e-Ticketing Pre-Construction Conferences
- Where the Launch Plan Stands.
  - Following up and Reinforcement.
  - Monthly tracking and notifications
- Launch Day
  - Statistical Achievements
  - Our Destination



Initial Preparations 2017-2020



- STIC Grant and EDC-4
  - eConstruction Team (later becoming a Division)
  - Comprehensive Assessment of Current Conditions
  - Mobile Devices out to Field Staff
  - Implementation of the electronic Maryland Construction Management System (eMCMS)
  - Automations
    - Contract initialization, funding categories/codes, progress payment workflows, financial account management.
  - Application Programming Interfacing (API) of eMCMS to AASHTOWare and Bid Express eBidding tools

Working Through Challenges Outside Our Control and Continued eMCMS rollout 2020-2024

Several attempts were made to digitize our delivery tickets when the need for social distancing occurred.

- Ticket ledgers
- Drop boxes
- Research and testing of digital solutions
  - ticketing
  - Construction Document Management
  - Improvements in Safety with the use of mobile devices





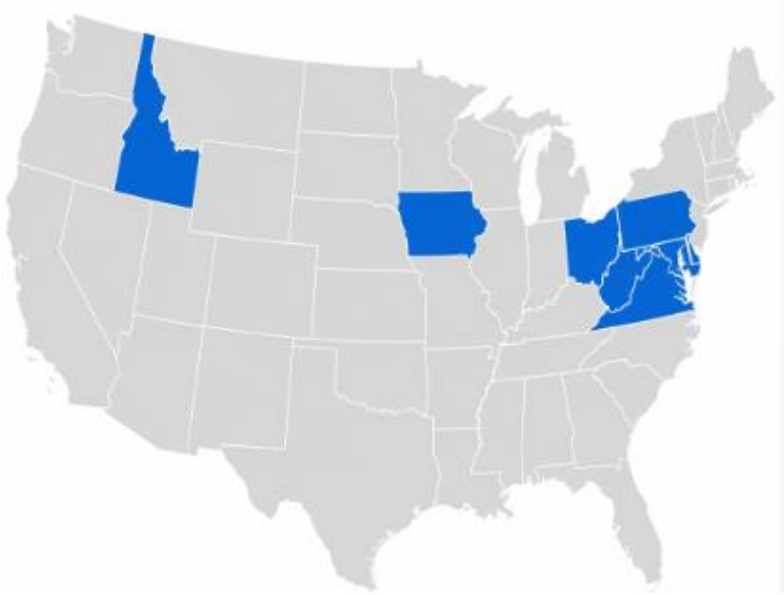
EDC-6 2021 – 2022 e-ticketing and Digital As-Builts
Through participation in EDC-6 SHA was able to generate an e-ticketing specification and find the perfect solution.

How did EDC-6 Help?

- December 5th – 8th FHWA Everyday Counts e-Ticketing National Workshop in Savannah, GA.
- Peer Sharing with Delaware, Alabama, Georgia, and our other neighboring DOTs.
- Sample Specification to build regional and national consistency
- Friendships built with contacts throughout the nation.



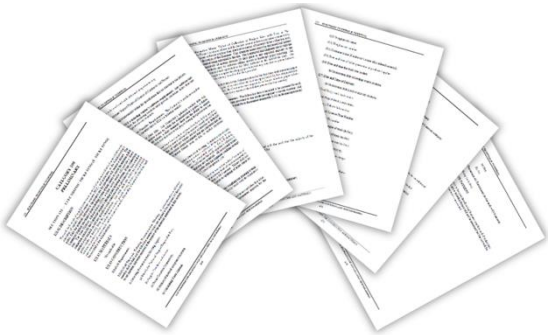
FY24 Advanced Digital Construction Management System Grant - ADCMS



WorkerShield - How Failure Led to Success

- Focused on Worker Safety and advance notifications to traveling public.
- 7 States included
  - Maryland, Delaware, West Virginia, Virginia, Pennsylvania, Idaho, and Iowa.
- Coordination between DOTs to prepare application
- Built lasting relationships
- Shared Best Practices and a Plan for future destinations.

Launch Protocol - The Specification and Training the Staff.



Specification 121 – ELECTRONIC TICKETING (E-TICKETING)

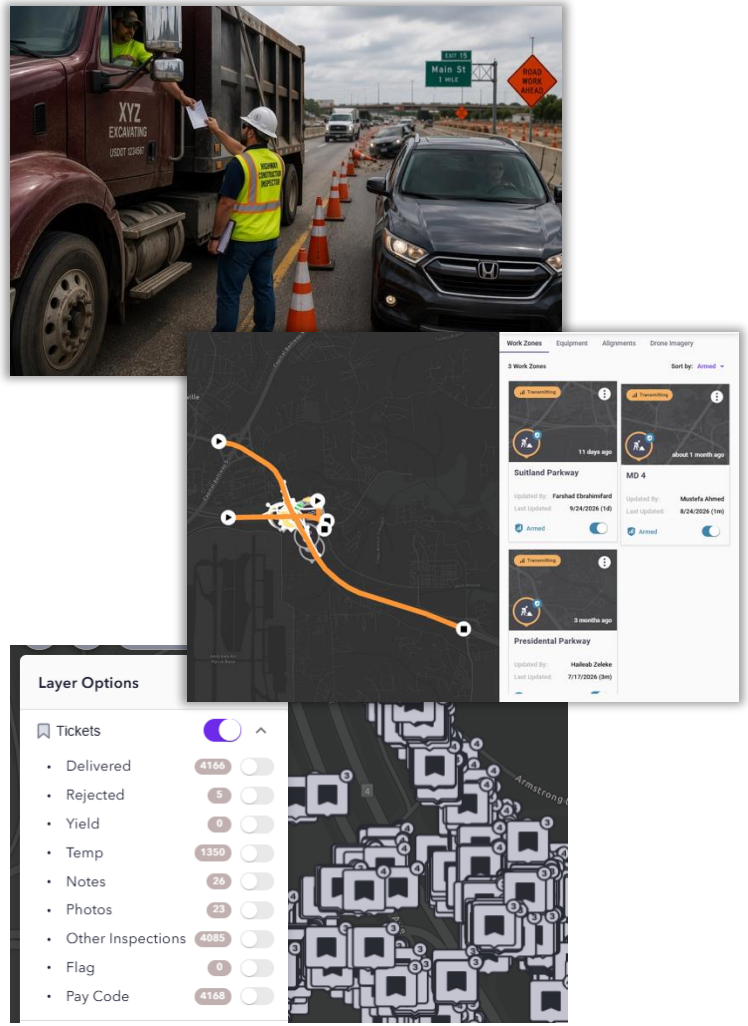
- Explains the data connection
- Pre-Construction Meeting
- Available Data Field Requirements for vendor
- And more



Training Various Levels of Staff with a Variety of Technics.

- Administrator Level in-person Trainings and Demonstrations
- Vendor online Training academy
- In-person field training on mobile devices
- Virtual meetings and customer service
- Weekly Health Checks with Vendor

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Launch Plan – Status Report

E-Ticketing

- Asphalt, concrete, aggerates
- Removed staff from a dangerous routine.
- Reduce paper and possibility of loss tickets

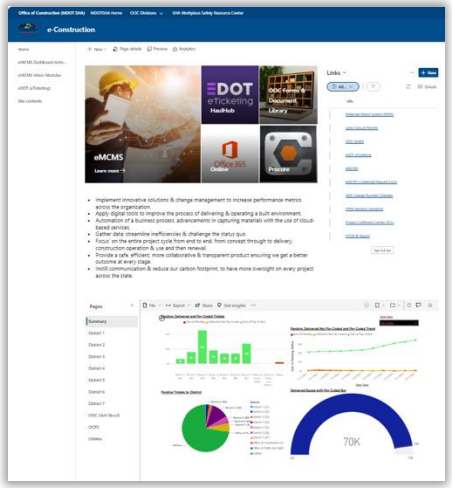
Digital Work Zones

- GIS Layered work zones based on design files
- Worker Activity reporting to navigation applications
- Worker presence history for ASE

Ticket Data and Sample Locations

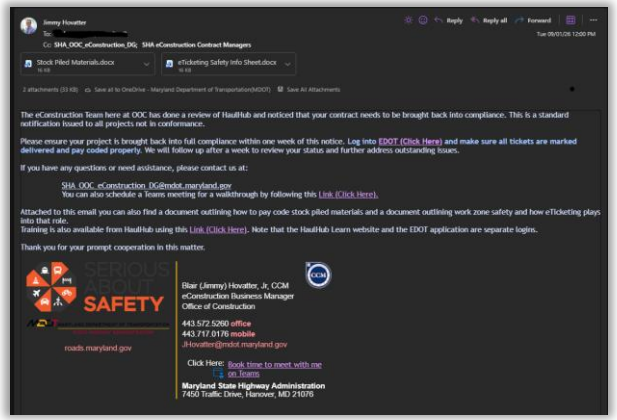
- GPS Ticket delivery location data upon acceptance
- Photo location and directional data for sampling
- Ticket database with variety of filtering options.

Launch Plan – Follow ups and Reinforcement



Providing Real-Time Data to Users

- Incorporated Power-BI into our SharePoint page
  - Provides project specific data and status
  - View from Admin, District, or Project Level
- Used for monthly Tracking by Administrator
  - Monthly emails to projects out of compliance



Project Meetings

- Booking Links on emails
- Pre-Constructions
- Progress Meetings
- Follow-up Trainings



Weekly Vendor Meetings

- Health check
- Vendor enhancements
- Administrative needs
- Issue resolution

Launch Day – Rocketing Down Connected Corridors

Trendsetting Statistics

- **92** EDOT Projects
  - Over **26,000** material tickets received
  - Tickets Inspected **99.76**%
  - Ticket Pay Coded **96.55**%
- **157** Digital Work Zones
  - **34** Projects
  - **~422,376** Drivers Impacted
  - **~171,079** Alert Upvotes
- **5** Connected Equipment Contractors
  - Volunteer basis
  - Working with Industry on Spec

Future Destinations

- Expansion of connected equipment
  - Better public notification
  - Consistent record for ASE
- Digital As-builts
- Continued replacement of paper reporting
- Collection of exact sampling locations





Thank you for your time, questions?