REMODELING HOW WE PLAN AND DEPLOY WORK ZONES

BRIAN CROSSLEY, MANAGER, TEMPORARY TRAFFIC CONTROL UNIT

pennsylvania
DEPARTMENT OF TRANSPORTATION

OUTLINE

LaneEval - Web-based Lane Closure Analysis Tool

- Deployment Status Update
- Background

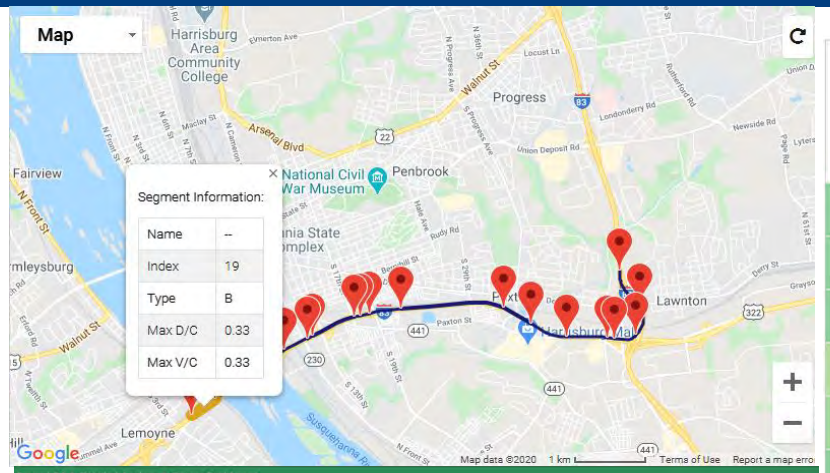
PUB 213 Work Zone Selection Tool

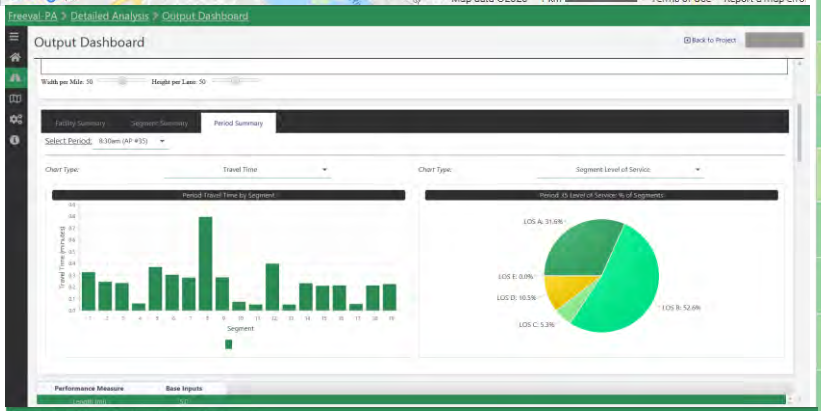
- Introduction of new tool and features
- Tool Demonstration

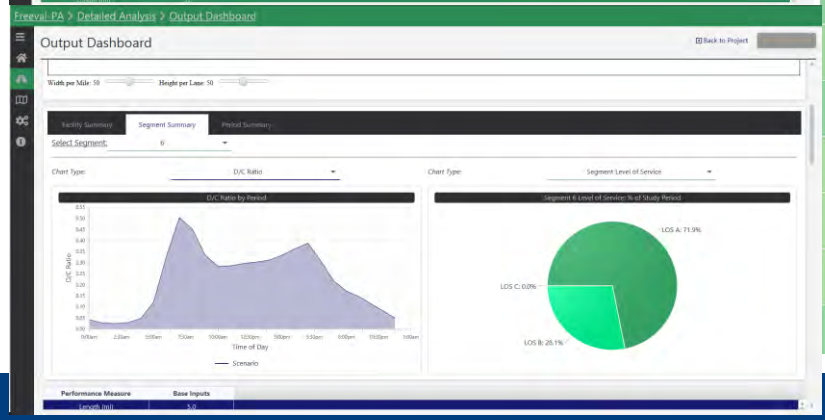
PennDOT LaneEval Update

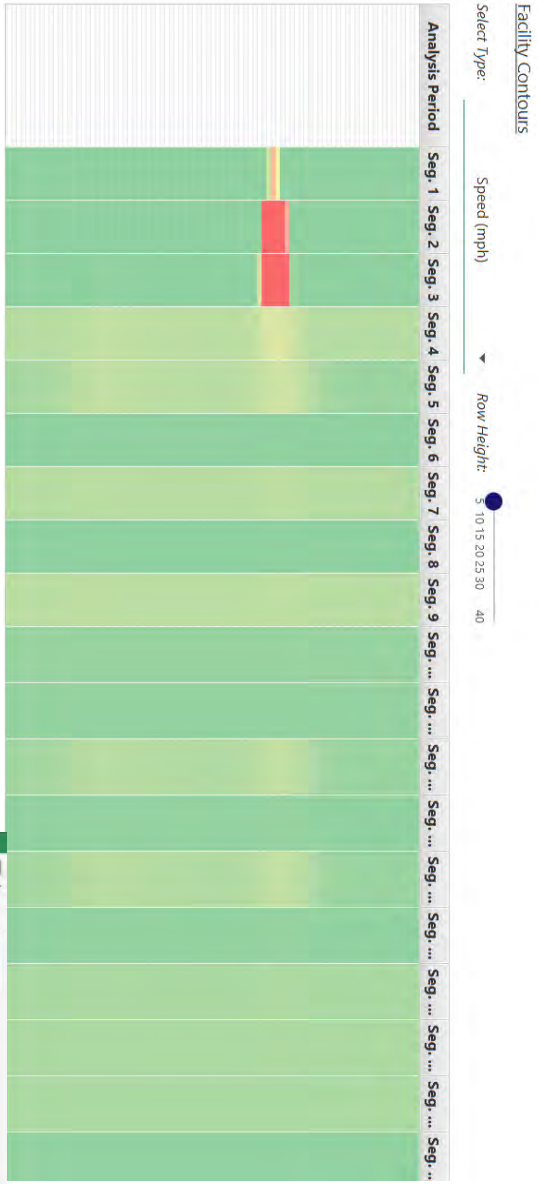
METHOD OVERVIEW

- Tool to Automate HCM Freeway Facilities Method
- Similar results to microsimulation, but faster application and easier calibration
- Oversaturated Flow with Queue Propagation and Dissipation
- Work Zone & TSMO Strategies
- 24-hour analysis
- History
  - Original Spreadsheet (late 90s)
  - Converted to desktop tool in 2015
  - Transition to web-based tool in 2024/2025



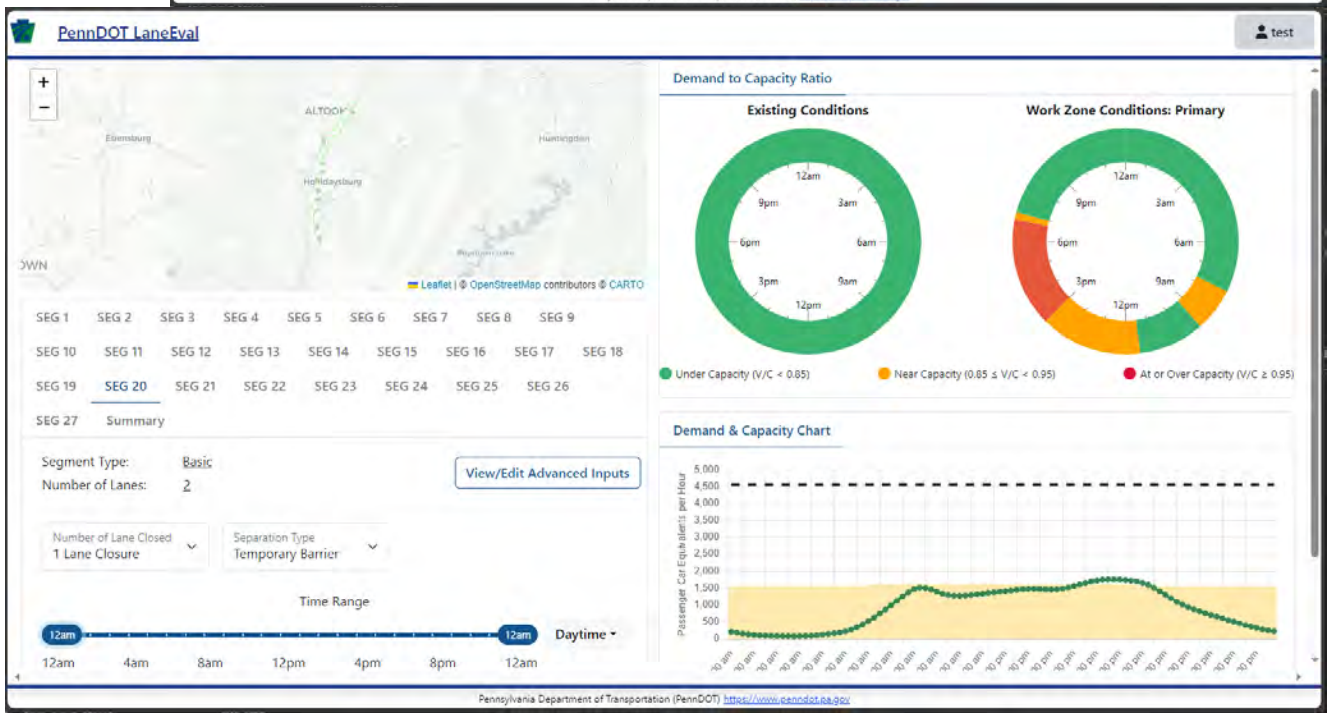






WHY WEB-BASED?

- Simple, Planning level analysis tool for Freeways
- Minimal inputs required
- More detailed and more precise than spreadsheet methods
- Easy access for any user across devices
- Easy data update through centralized database
- Rapid deployment of features and functionality updates



PennDOT Uses for LaneEval

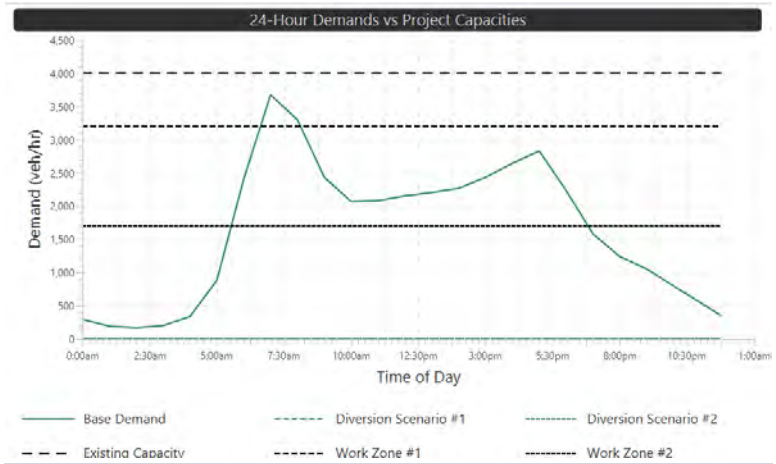
LaneEval Web-Tool

- Volume-to-capacity screening
- Work-Zone Staging and Lane Reservation
- Diversion Sensitivity
- High-Level Scenario Planning
- Work zone delay and queuing analysis

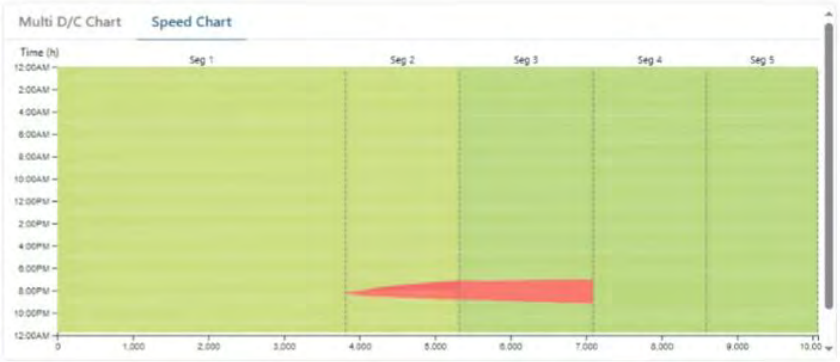
FREEVAL-PA

- Very complex geometries
- Detailed TSMO and Alternatives Analysis

Five Major Components of LaneEval Tool

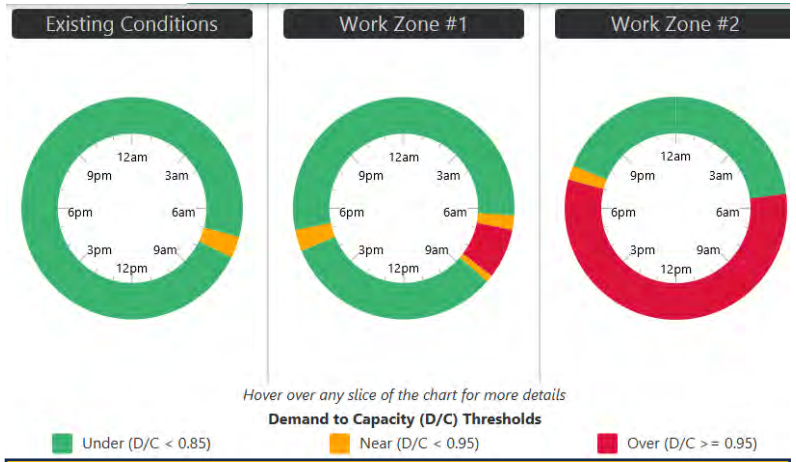


24-hour Demand Profiles

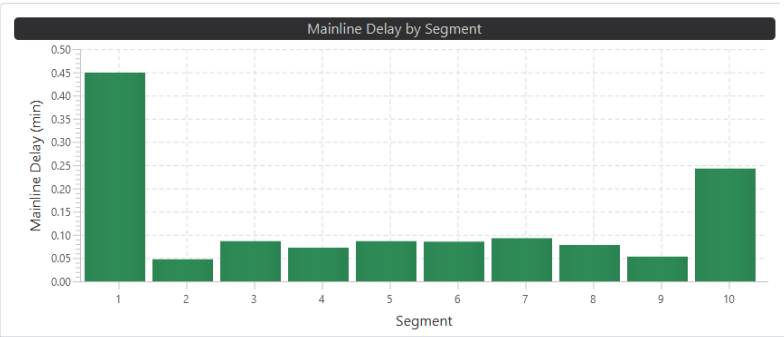


Shock-Wave Based Queuing Method

Statewide Network (and Data)



HCM Capacities & D/C Ratios

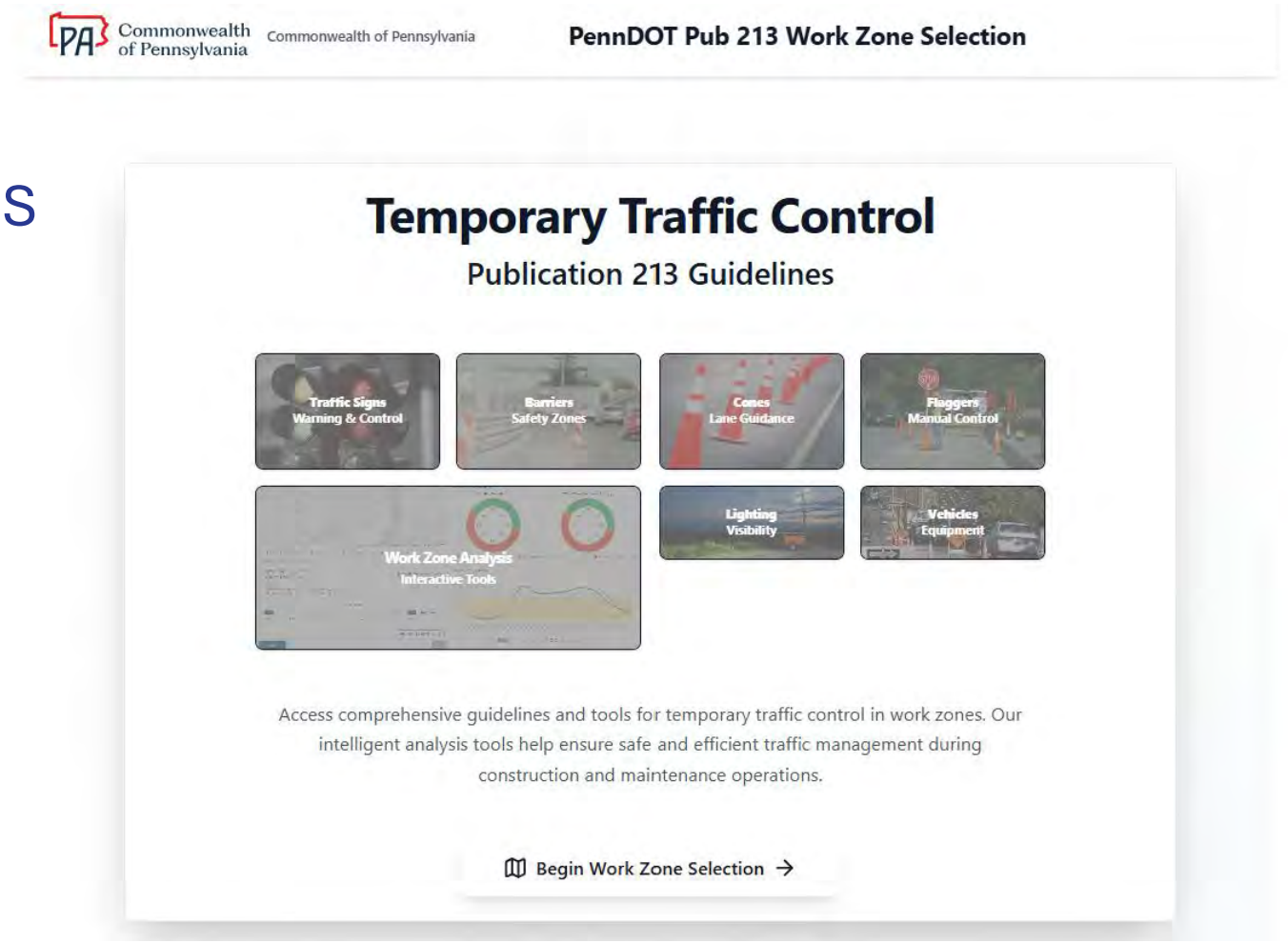


HCM Delay and Travel Time Estimates

PennDOT PUB 213 Work Zone Selection Tool

WHAT:

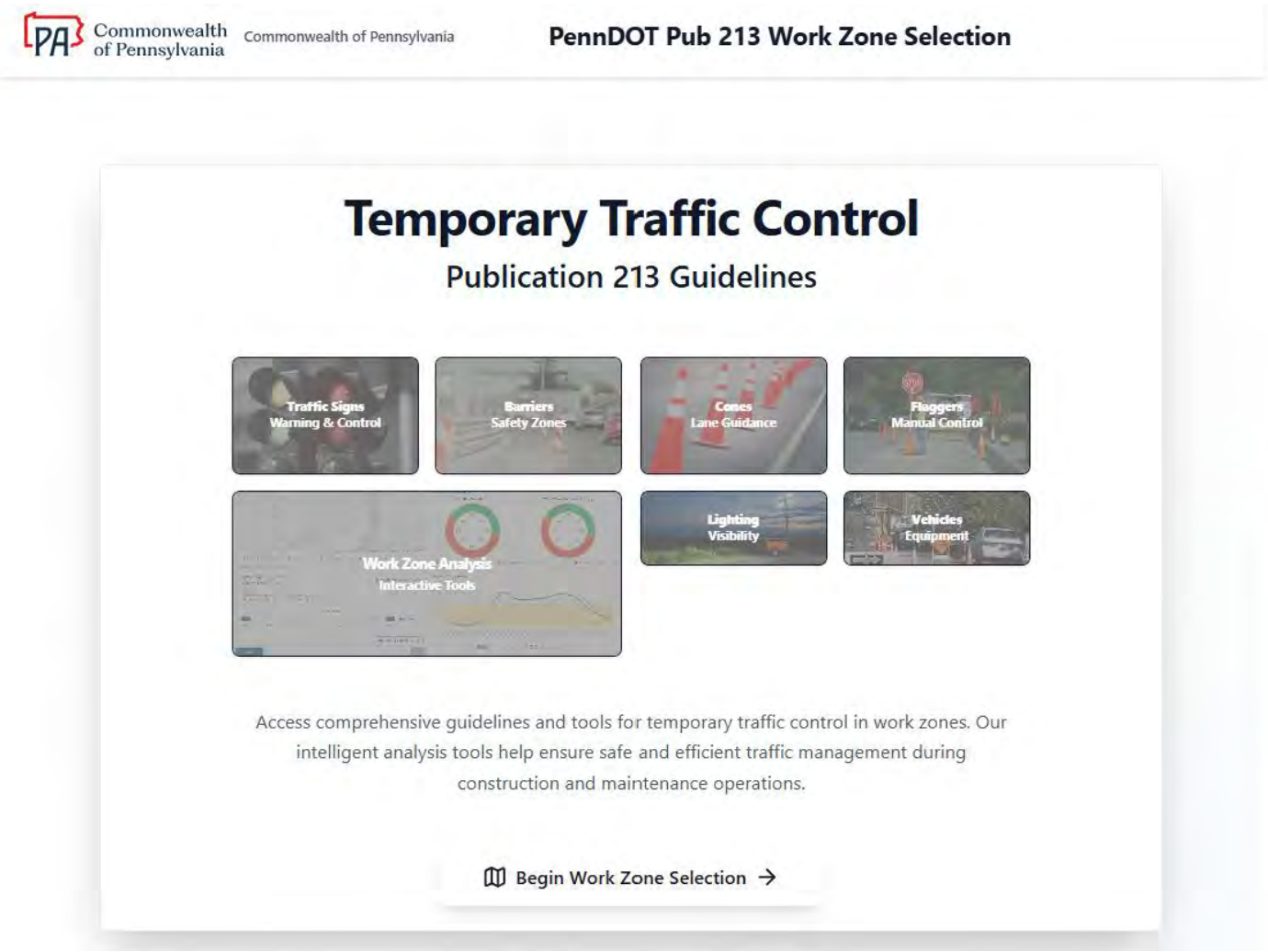
- WEB APPLICATION, AVAILABLE AS BOTH DESKTOP AND MOBILE OPTIONS
- STEPS USERS THROUGH A SERIES OF QUESTIONS TO DETERMINE RECOMMENDED WORK ZONE SCENARIOS
- UTILIZES DATA FROM PENNDOT AND OPENSTREETMAP
- TOOL OUTPUTS ONE OR MORE RECOMMENDED PENNSYLVANIA TYPICAL APPLICATION (PATA) DRAWINGS FOR THE REQUIRED



PennDOT PUB 213 Work Zone Selection Tool

WHY:

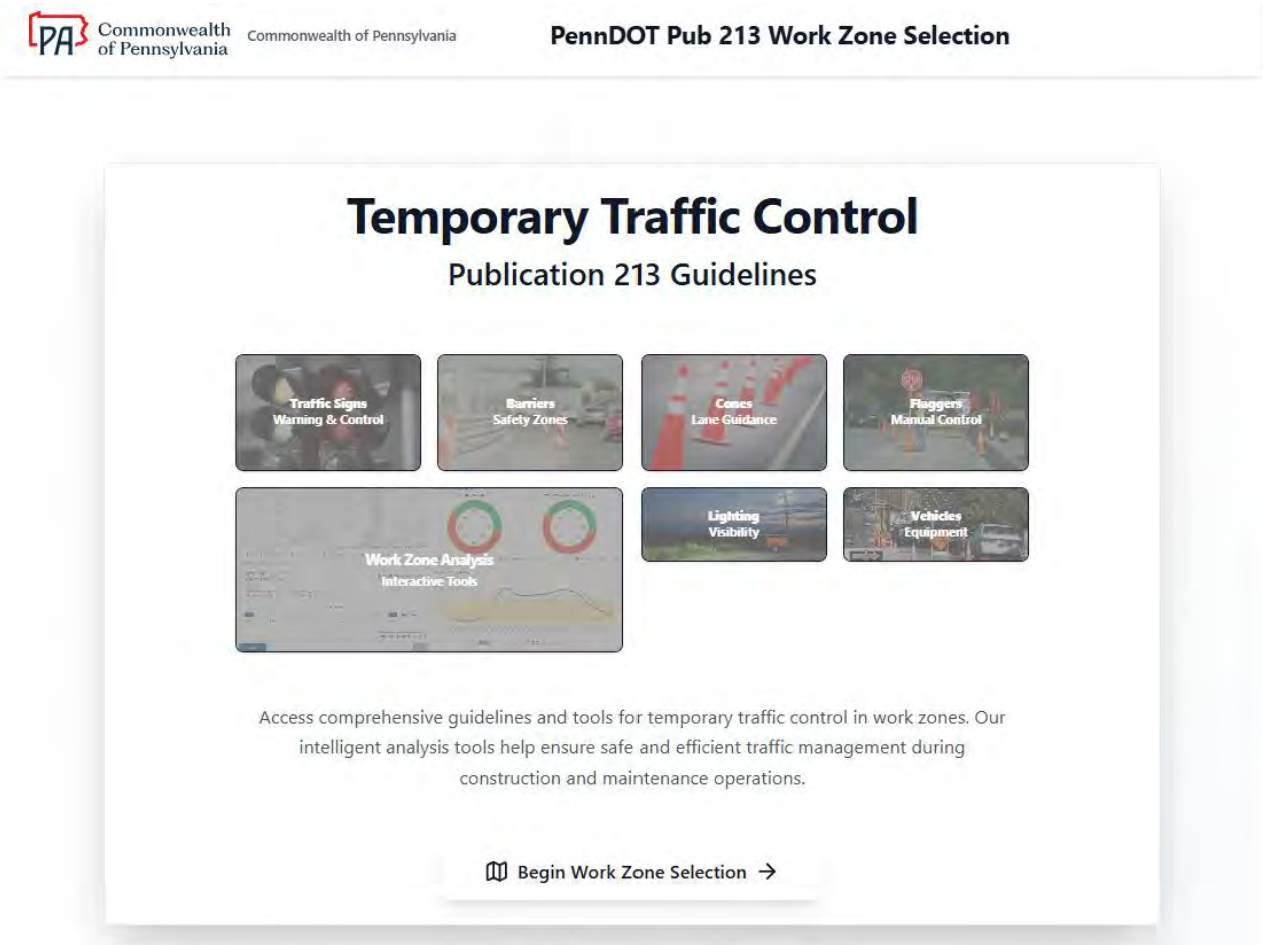
- TRANSITION FROM A STATIC GUIDE (PUB 213), TO AN INTERACTIVE TOOL
- IMPROVE PLANNING WITH MAINTENANCE CREWS
- SIMPLIFY STEPS FOR WORK ZONE SELECTION
- VISUALIZE WORK ZONE ON A MAP INTERFACE



PennDOT PUB 213 Work Zone Selection Tool

TIMELINE:

- PHASE 1 – *BETA VERSION OF TOOL* - COMPLETE (JUNE 2025)
- PHASE 2 – *MAPPING FUNCTIONALITY* – IN PROGRESS (JUNE 2026)



PennDOT PUB 213 Work Zone Selection Tool

1. **Work Zone Selection –** Select roadway segment(s) on map

2. **Gather Data –** Automatically retrieve segment-related data

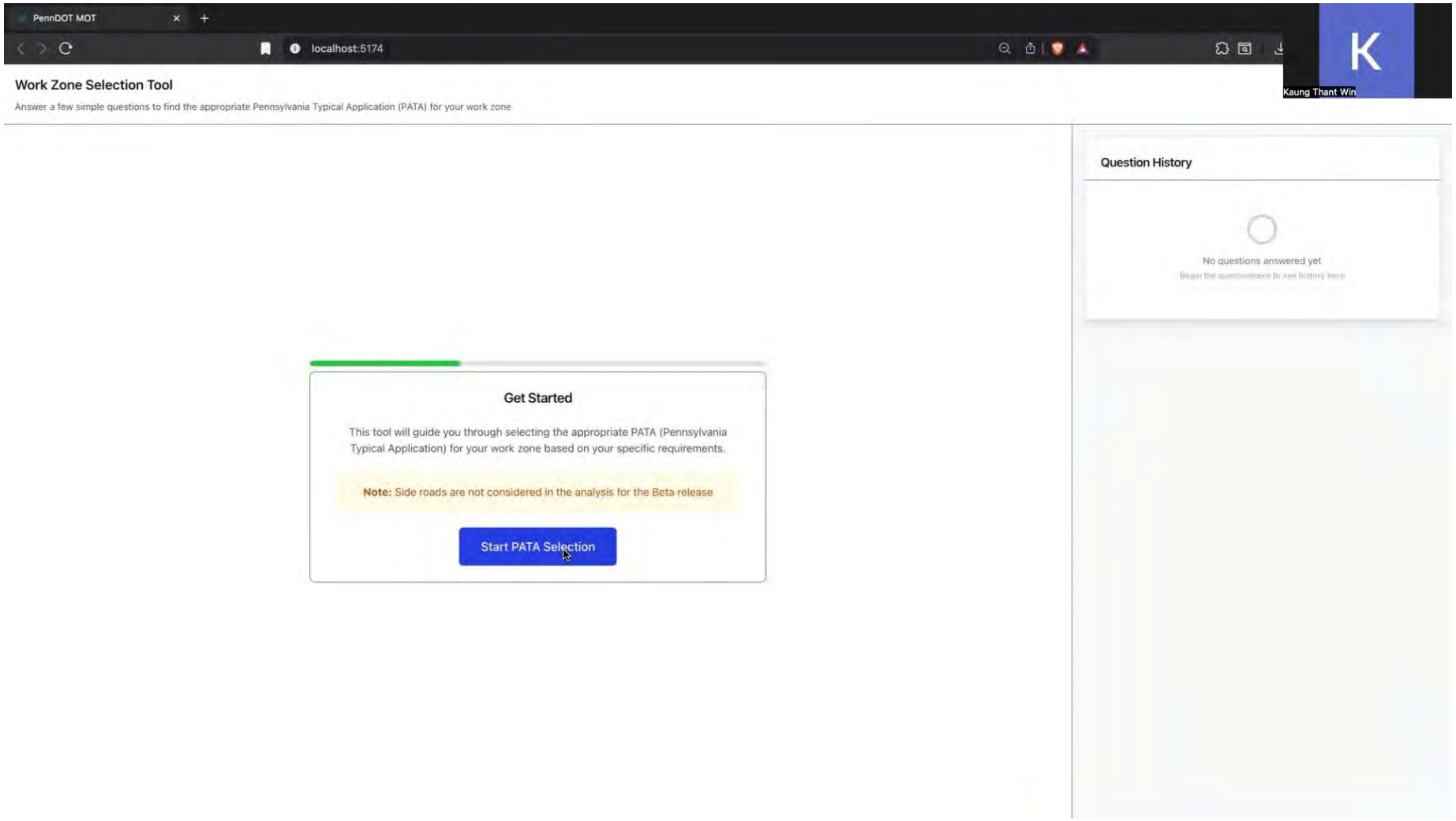
3. **Provide Specifics –** Answer questions on details (road type, traffic control, etc.)

4. **PATA/ GA flow –** If an intersection exists near the work zone, outputs PATA + GA information

PennDOT PUB 213 Work Zone Selection Tool

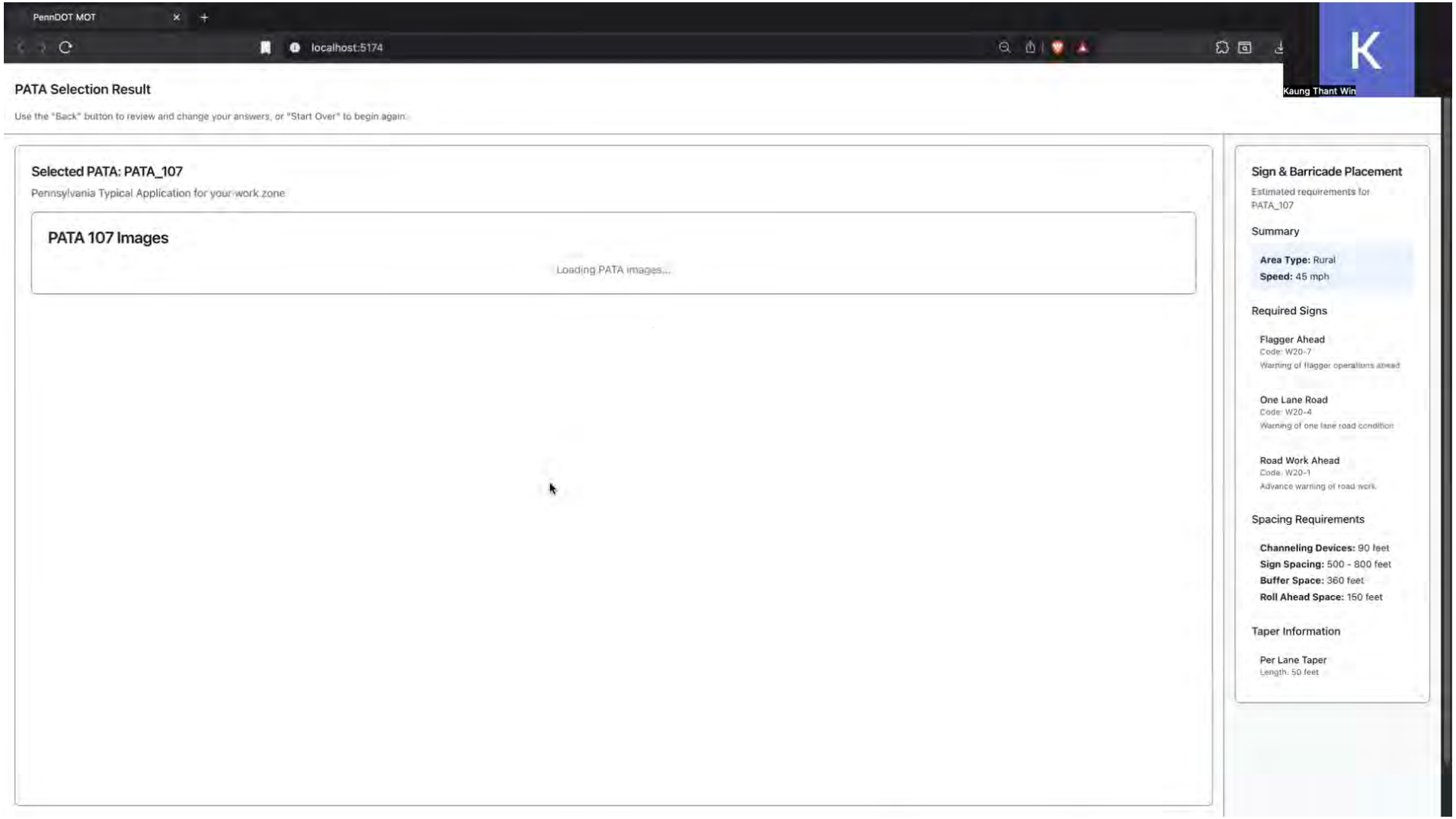
Work Zone Selection On Map

PennDOT PUB 213 Work Zone Selection Tool



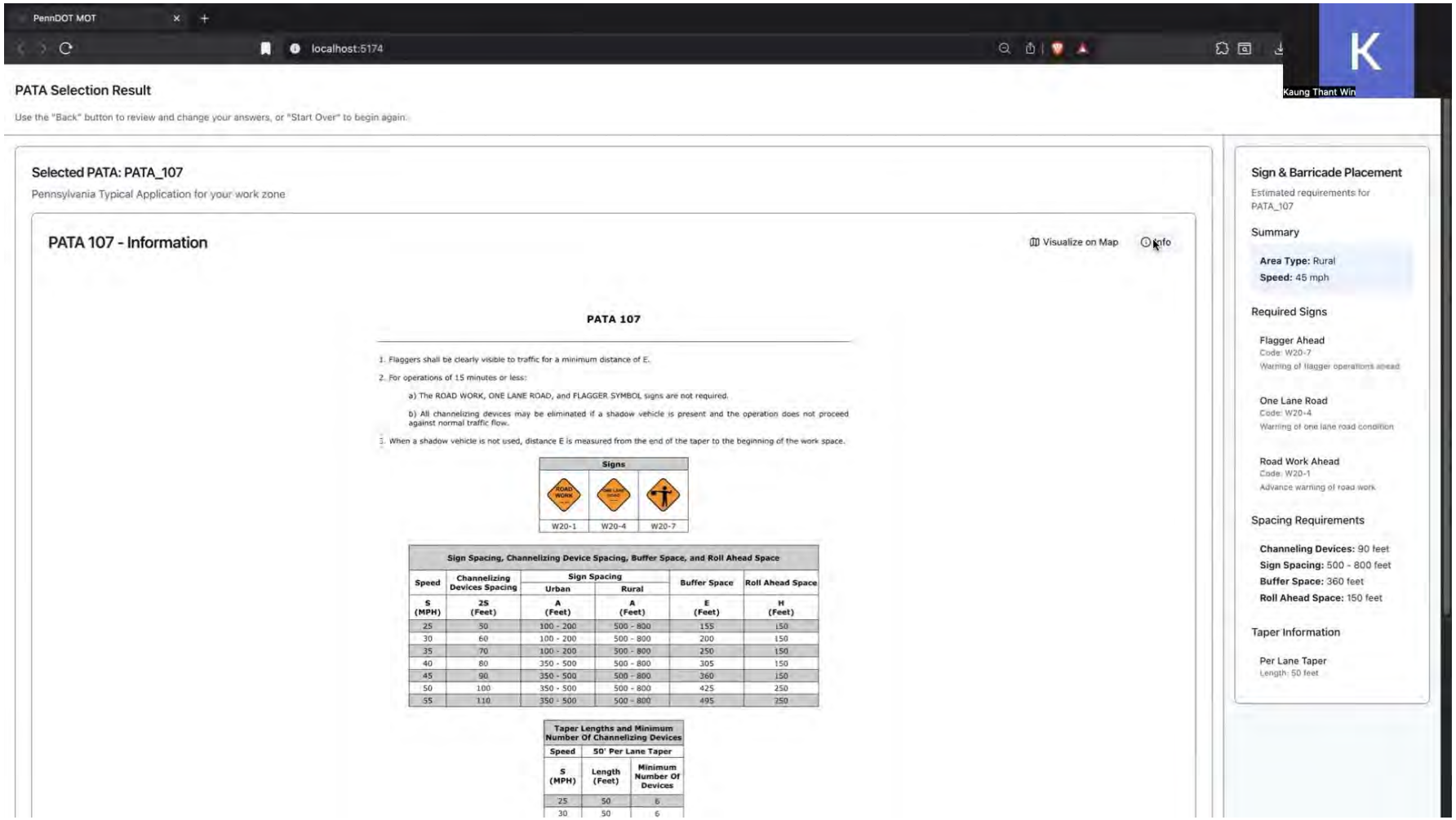
Answer Questions about the Work Zone

PennDOT PUB 213 Work Zone Selection Tool



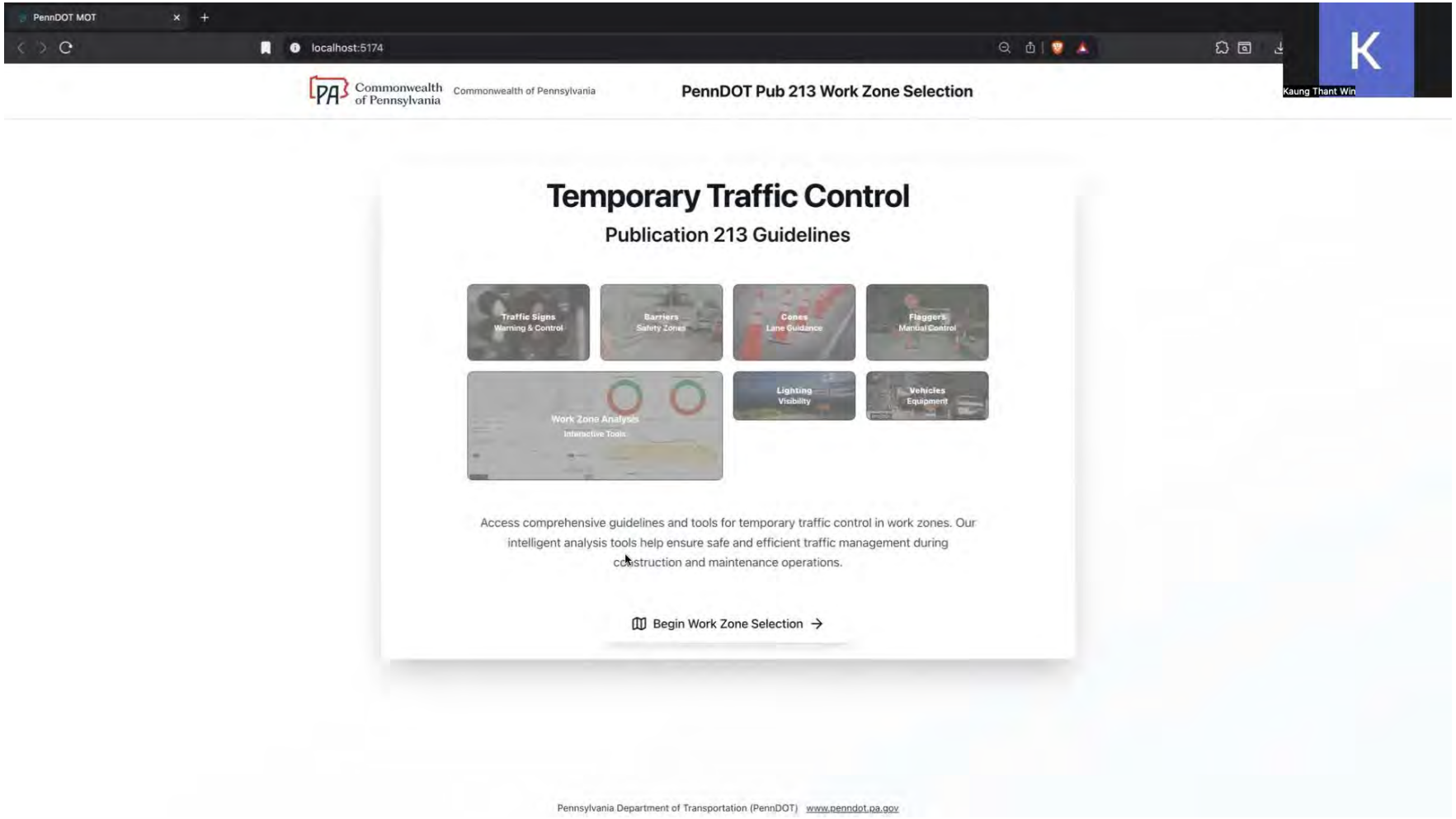
PATA Displayed

PennDOT PUB 213 Work Zone Selection Tool



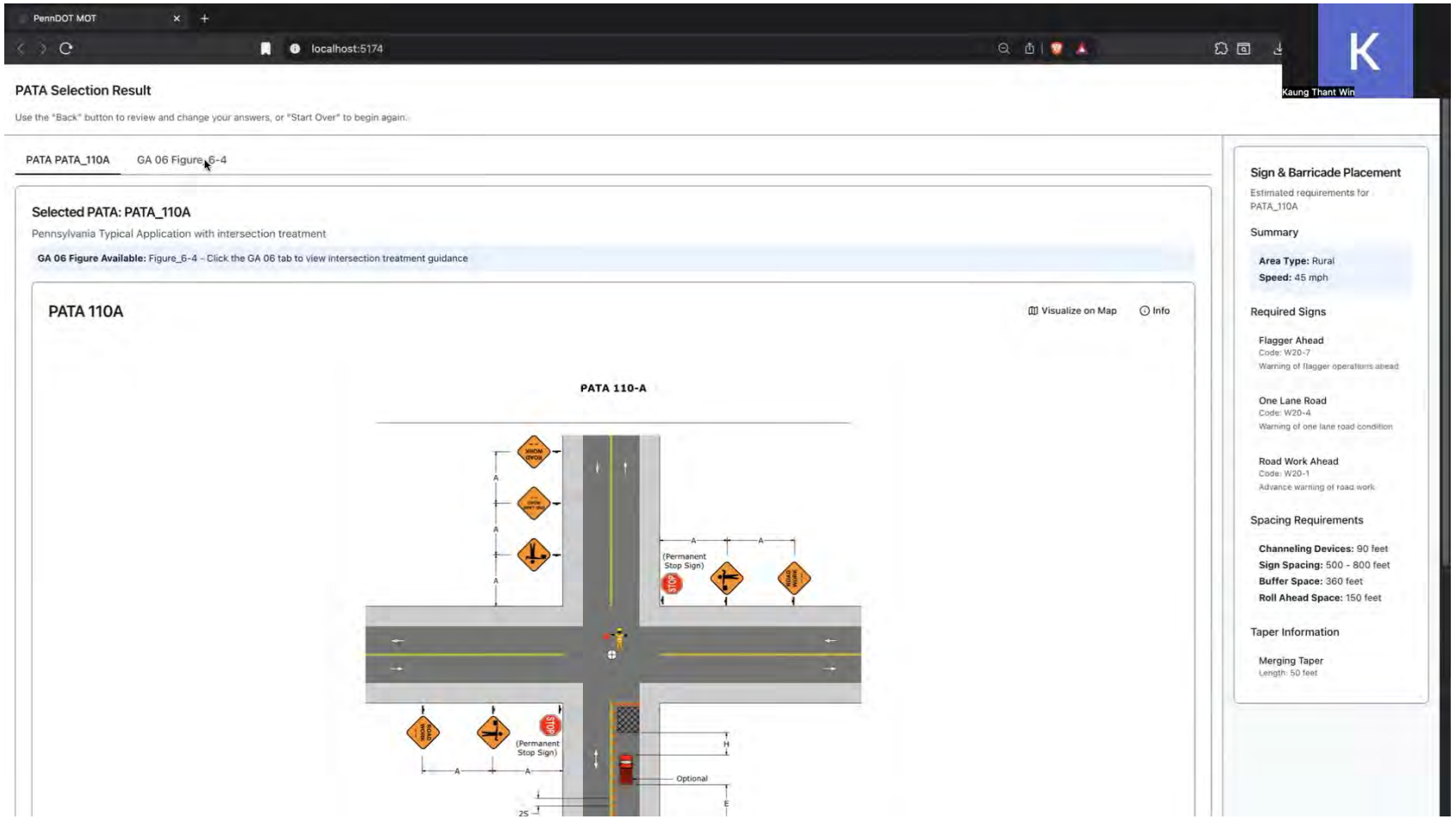
PATA Information Synopsis

PennDOT PUB 213 Work Zone Selection Tool



Intersection Detection

PennDOT PUB 213 Work Zone Selection Tool



General Application Information

LANE RESERVATION SYSTEM

Brian Crossley
Manager, Temporary Traffic Control Unit
PennDOT

Mike Davidson, PE, PTOE
Drive Engineering

pennsylvania
DEPARTMENT OF TRANSPORTATION

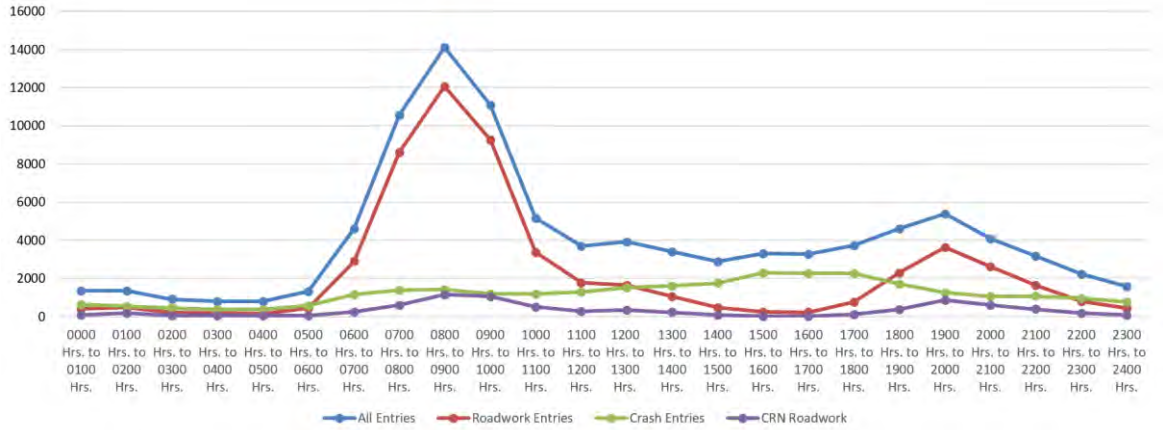
Lane Reservation System

The Lane Reservation System (LaneRez) is a web-based platform to schedule, coordinate, and report work zone activities on state roadways to internal and external transportation partners.

Benefits:

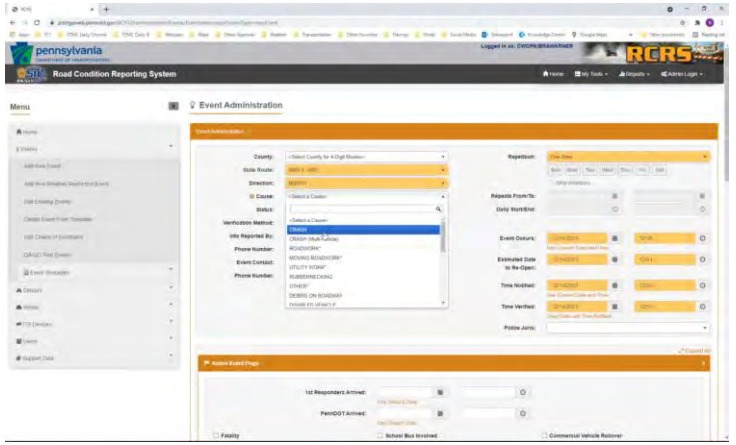
- Improve safety
- Standardize and streamline work zone planning
- Reduce conflicts
- Reduce congestion
- Work zone data sharing
- Improve TMC Operations

Lane Reservation System



Yearly Work Zone Entries

CAUSE	ALL ROUTES	CORE NETWORK ONLY
ROADWORK	27,635	11,866
MOVING ROADWORK	6,239	4,325
UTILITY WORK	5,114	590
TOTAL	38,988	16,781



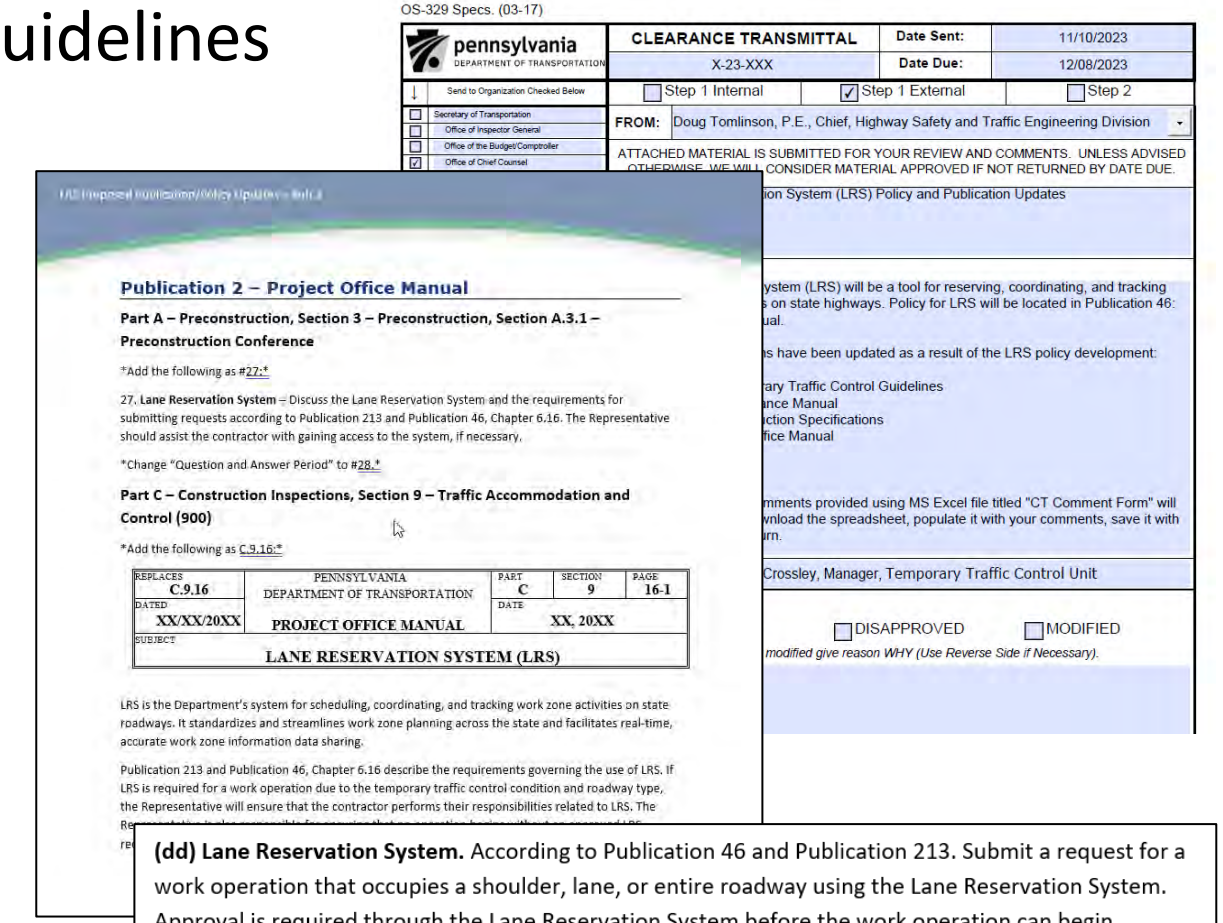
Lane Reservation System - Concept of Operations

More than four (4) working group meetings held.

- Over 50 PennDOT personnel across the state
- Design/Construction
- Maintenance
- Traffic Engineering

Lane Reservation System – Policy Updates

- Pub 213 – Temporary Traffic Control Guidelines
- Pub 46 – Traffic Engineering Manual
- Pub 23 – Maintenance Manual
- Publication 408 - Specifications
- Special Provisions



OS-329 Specs. (03-17)

pennsylvania DEPARTMENT OF TRANSPORTATION

CLEARANCE TRANSMITTAL	Date Sent:	11/10/2023
X-23-XXX	Date Due:	12/08/2023

Send to Organization Checked Below — ☐ Step 1 Internal ☑ Step 1 External ☐ Step 2

☐ Secretary of Transportation
☐ Office of Inspector General
☐ Office of the Budget/Comptroller
☑ Office of Chief Counsel

FROM: Doug Tomlinson, P.E., Chief, Highway Safety and Traffic Engineering Division

ATTACHED MATERIAL IS SUBMITTED FOR YOUR REVIEW AND COMMENTS. UNLESS ADVISED OTHERWISE, WE WILL CONSIDER MATERIAL APPROVED IF NOT RETURNED BY DATE DUE.

...ion System (LRS) Policy and Publication Updates

...ystem (LRS) will be a tool for reserving, coordinating, and tracking ...s on state highways. Policy for LRS will be located in Publication 46: ...ual.

...s have been updated as a result of the LRS policy development:

...ary Traffic Control Guidelines
...nce Manual
...ction Specifications
...fice Manual

...mments provided using MS Excel file titled "CT Comment Form" will ...wnload the spreadsheet, populate it with your comments, save it with ...rn.

...Crossley, Manager, Temporary Traffic Control Unit

☐ DISAPPROVED ☐ MODIFIED

modified give reason WHY (Use Reverse Side if Necessary).

Publication 2 – Project Office Manual

Part A – Preconstruction, Section 3 – Preconstruction, Section A.3.1 – Preconstruction Conference

Add the following as #27:

27. **Lane Reservation System** – Discuss the Lane Reservation System and the requirements for submitting requests according to Publication 213 and Publication 46, Chapter 6.16. The Representative should assist the contractor with gaining access to the system, if necessary.

Change "Question and Answer Period" to #28.

Part C – Construction Inspections, Section 9 – Traffic Accommodation and Control (900)

Add the following as C.9.16:

REPLACES C.9.16	PENNSYLVANIA DEPARTMENT OF TRANSPORTATION	PART C	SECTION 9	PAGE 16-1
DATED XX/XX/20XX	PROJECT OFFICE MANUAL	DATE XX, 20XX		
SUBJECT LANE RESERVATION SYSTEM (LRS)				

LRS is the Department's system for scheduling, coordinating, and tracking work zone activities on state roadways. It standardizes and streamlines work zone planning across the state and facilitates real-time, accurate work zone information data sharing.

Publication 213 and Publication 46, Chapter 6.16 describe the requirements governing the use of LRS. If LRS is required for a work operation due to the temporary traffic control condition and roadway type, the Representative will ensure that the contractor performs their responsibilities related to LRS. The Re...

(dd) Lane Reservation System. According to Publication 46 and Publication 213. Submit a request for a work operation that occupies a shoulder, lane, or entire roadway using the Lane Reservation System. Approval is required through the Lane Reservation System before the work operation can begin.

At the preconstruction conference, submit a request to the Representative to gain access to the Lane Reservation System, if necessary.

2 Step Clearance Transmittal Process

Policy Enhancements completed Fall '25

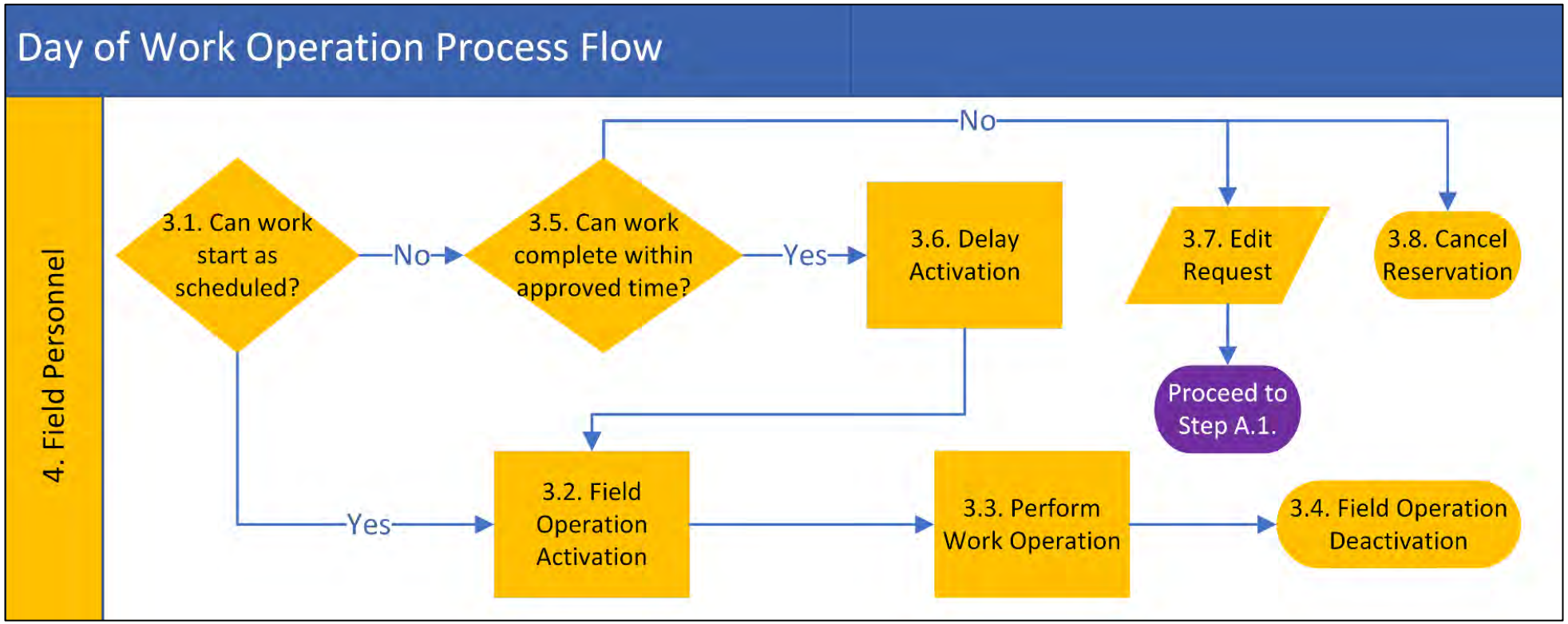
Policy Highlights – Reporting Timeframe

Roadway Type	LaneRez Reporting Type	Reporting Timeframe
Freeways and Expressways	Request Submission	14 days before work is activated
	Operation Activation	15 minutes
	Operation Deactivation	Immediately upon conclusion
Conventional Highway	Request Submission	Two full workdays before work is activated
	Operation Activation	15 minutes
	Operation Deactivation	Immediately upon conclusion

Lane Reservation System – Request Priority

1. **Emergency Work** – Unplanned work to address an event that causes an immediate safety or mobility issue, such as a traffic incident, trees down across a roadway, roadway repair, or utility repairs in accordance with Title 67 PA Code, Chapter 212.414.
2. **Contractor Project Work** – Planned work performed by a contractor associated with an ECMS project number.
3. **PennDOT Work** – Planned maintenance work performed by PennDOT Maintenance personnel, contracted crews, or municipalities performing work for PennDOT under an Agility Agreement.
4. **Municipality Work** – Planned work associated with a municipality owned/led project that includes roadway, bridge, or roadway facility construction, reconstruction, or maintenance.
5. **Permit/Utility Work** – Planned work associated with utilities and permits according to Publication 282: Highway Occupancy Permit Operations Manual.

Policy Highlights – Activation/Deactivation



Responsibility to Activate/Deactivate/Delay Work Zone		
Construction	Primary	Superintendent, Foreman, etc.
	Secondary	Inspector
Maintenance	Primary	Foreman
	Secondary	AHMM, RPC

Lane Reservation System - Testing

- Current and upcoming construction projects (2026 Q1)
- Soliciting Districts and business partners (Western, Central, Eastern regions)
- Helps to iron out any wrinkles!!

HELP WANTED – Apply Within

Lane Reservation System – Roll-Out

Cooperative decision with the districts on what roadway network they want to require in Phase 1:

- Core roadway network (Limited Access Roads, Major Arterials)
- All State Routes

Anticipated effective dates:

- Phase 1 “Go-Live” with volunteer districts (2026 Q2)
- Phase 2 “Go-Live” - additional districts added (2026 Q3)
- Phase 3 “Go-Live” – IF NECESSARY – Remaining (2026 Q4)

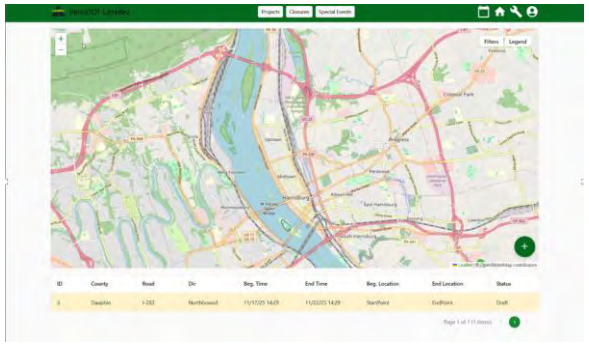
DEMO VIDEOS

- **Nick Boltralik**
- Research Computer Scientist – Intelligent Systems Division
- nicholas.boltralik@swri.org

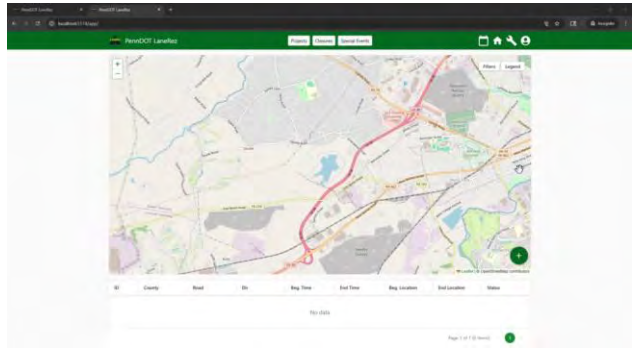
- **Abraham Marcos Toache**
- Senior Computer Scientist – Intelligent Systems Division
- abraham.marcostoache@swri.org

DEMO VIDEOS

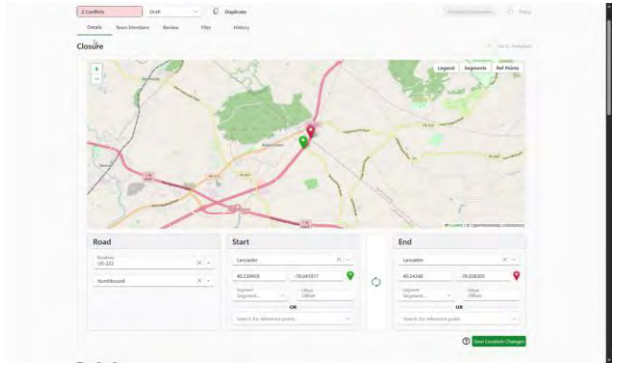
Map Page



Closure List



Create a Closure



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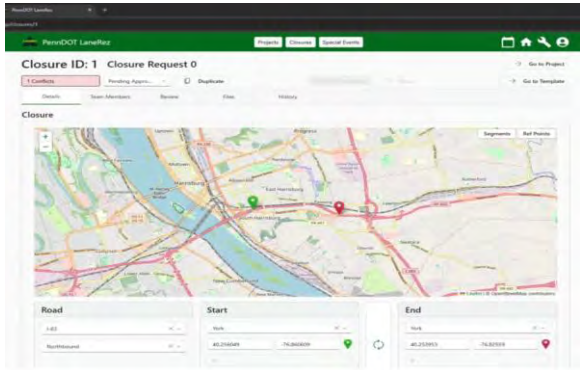
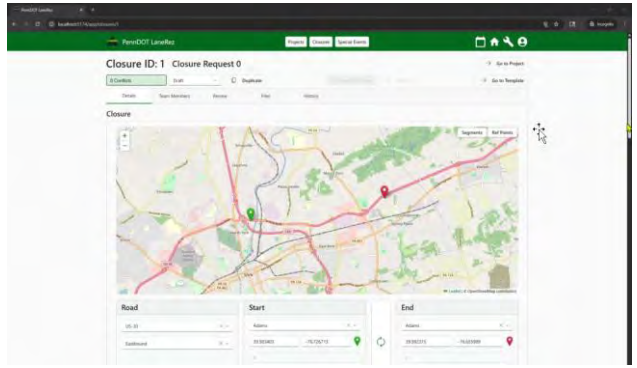


Closing Lanes



Traffic Control Plan

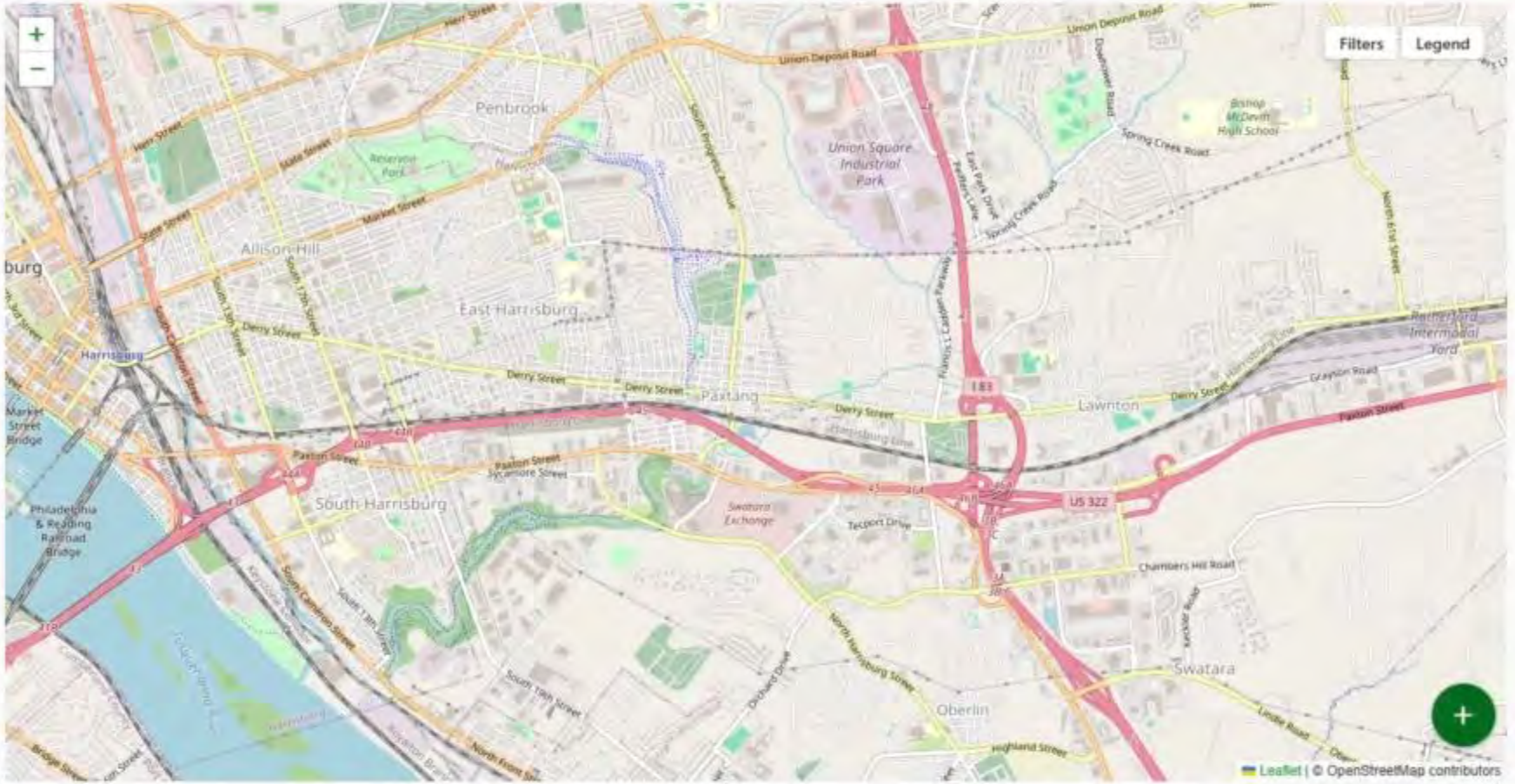
PennDOT LaneRez

localhost:5174/app/

Incognito (2)

PennDOT LaneRez

Projects | Closures | Special Events



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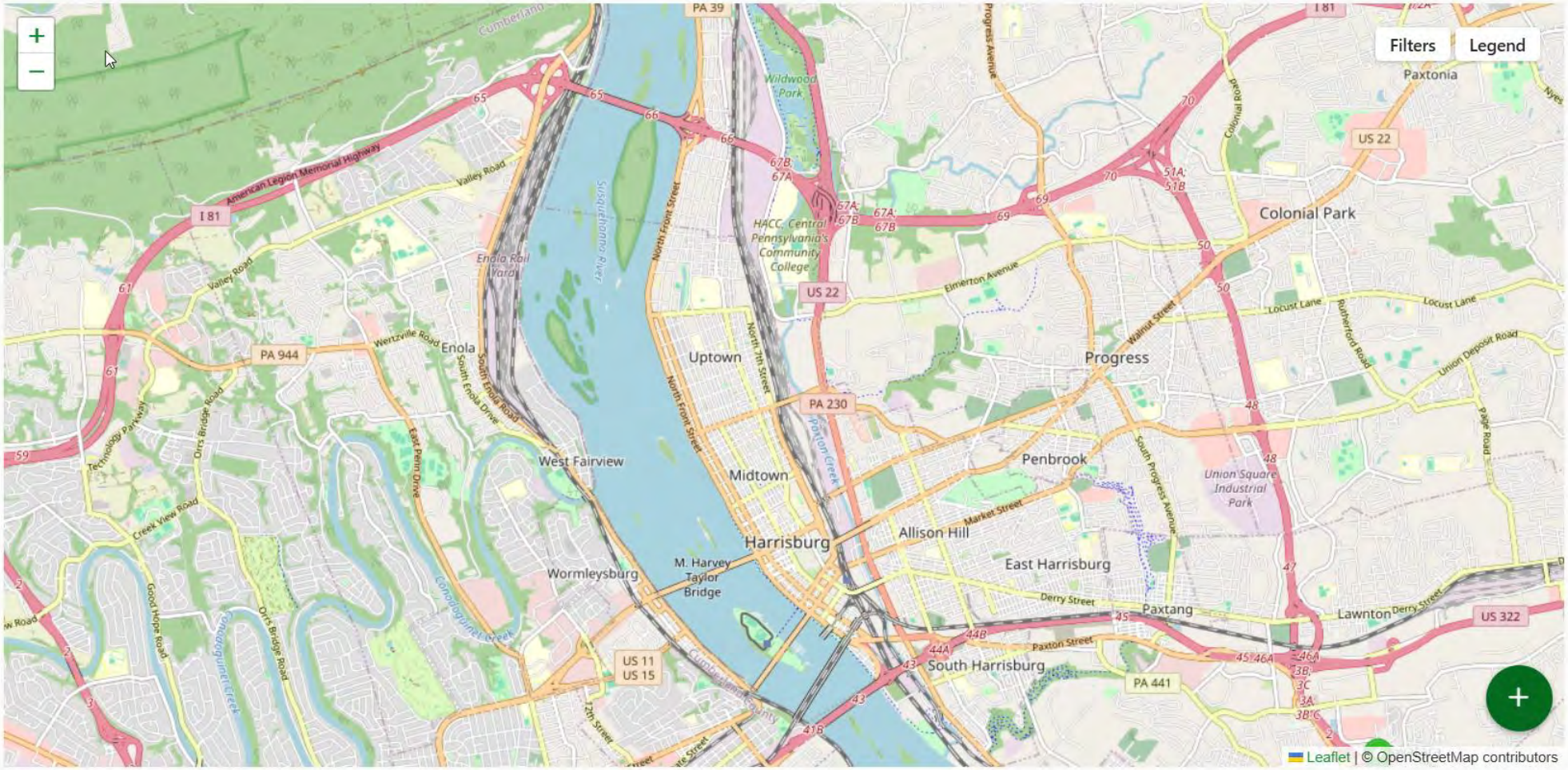
No data

Page 1 of 1 (0 items)



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4	Dauphin	I-283	Northbound	11/17/25 14:29	11/22/25 14:29	StartPoint	EndPoint	Draft

Page 1 of 1 (1 items) 1

PennDOT LaneRez

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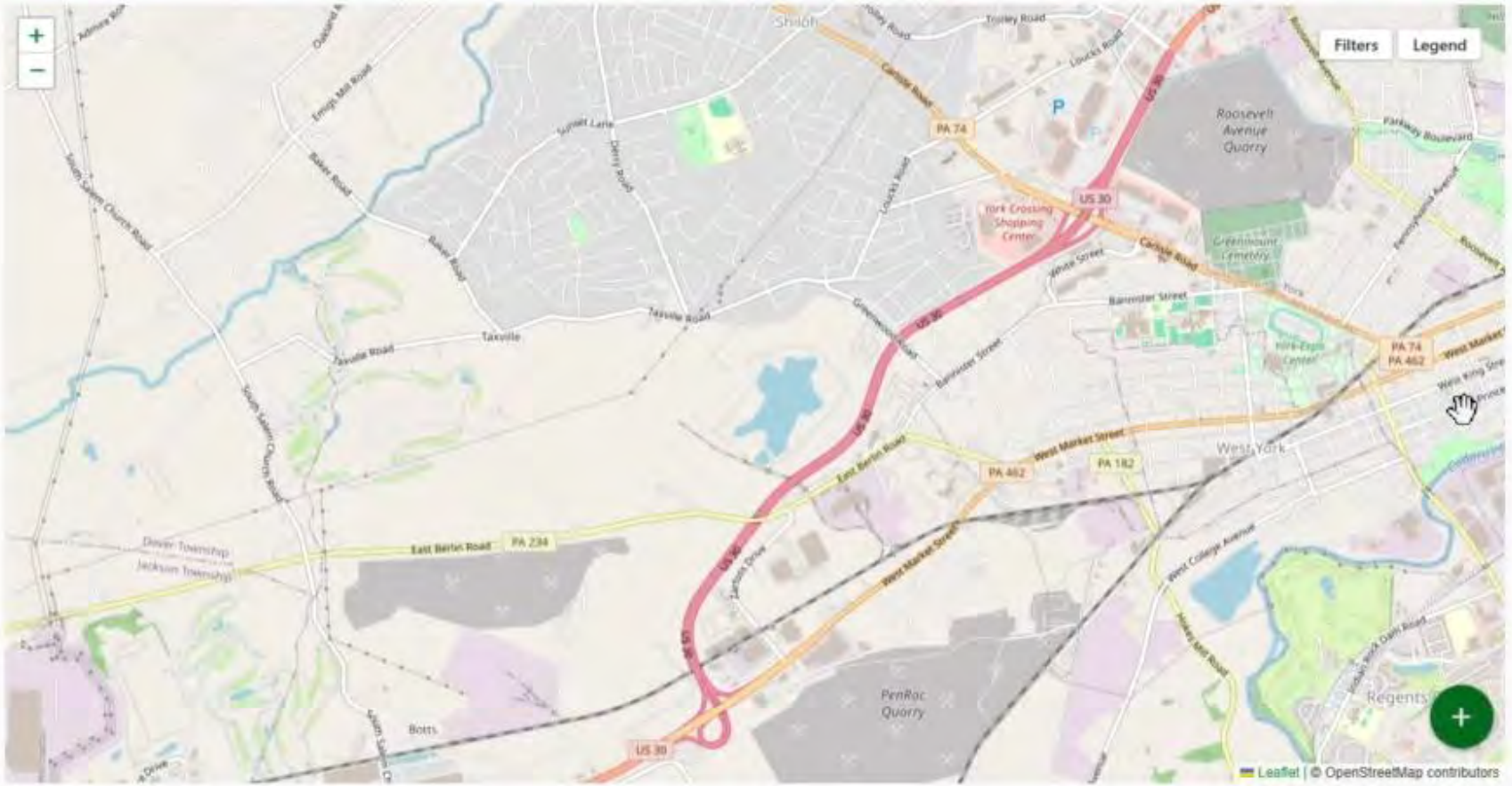
PennDOT LaneRez

Projects | Closures | Special Events



ID	County	Road	Dir	Beg. Time	End Time	Beg. Location	End Location	Status

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2 Conflicts | Draft | Duplicate | Activate/Deactivate | Delay

Details | Team Members | Review | Files | History

Closure

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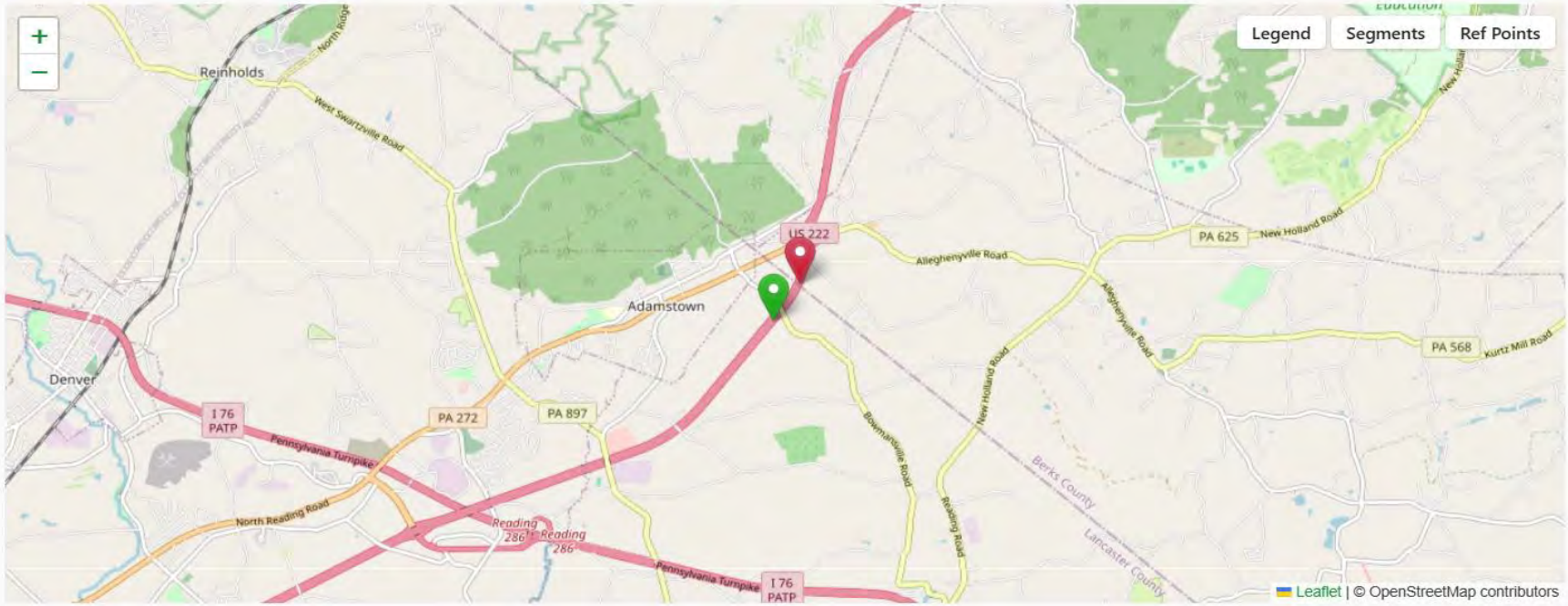


Road

Roadway: US-222

Northbound

Start

Lancaster

40.239459 | -76.041917

Segment: Segment...

Offset: Offset

OR

Search for reference point...

End

Lancaster

40.24348 | -76.038305

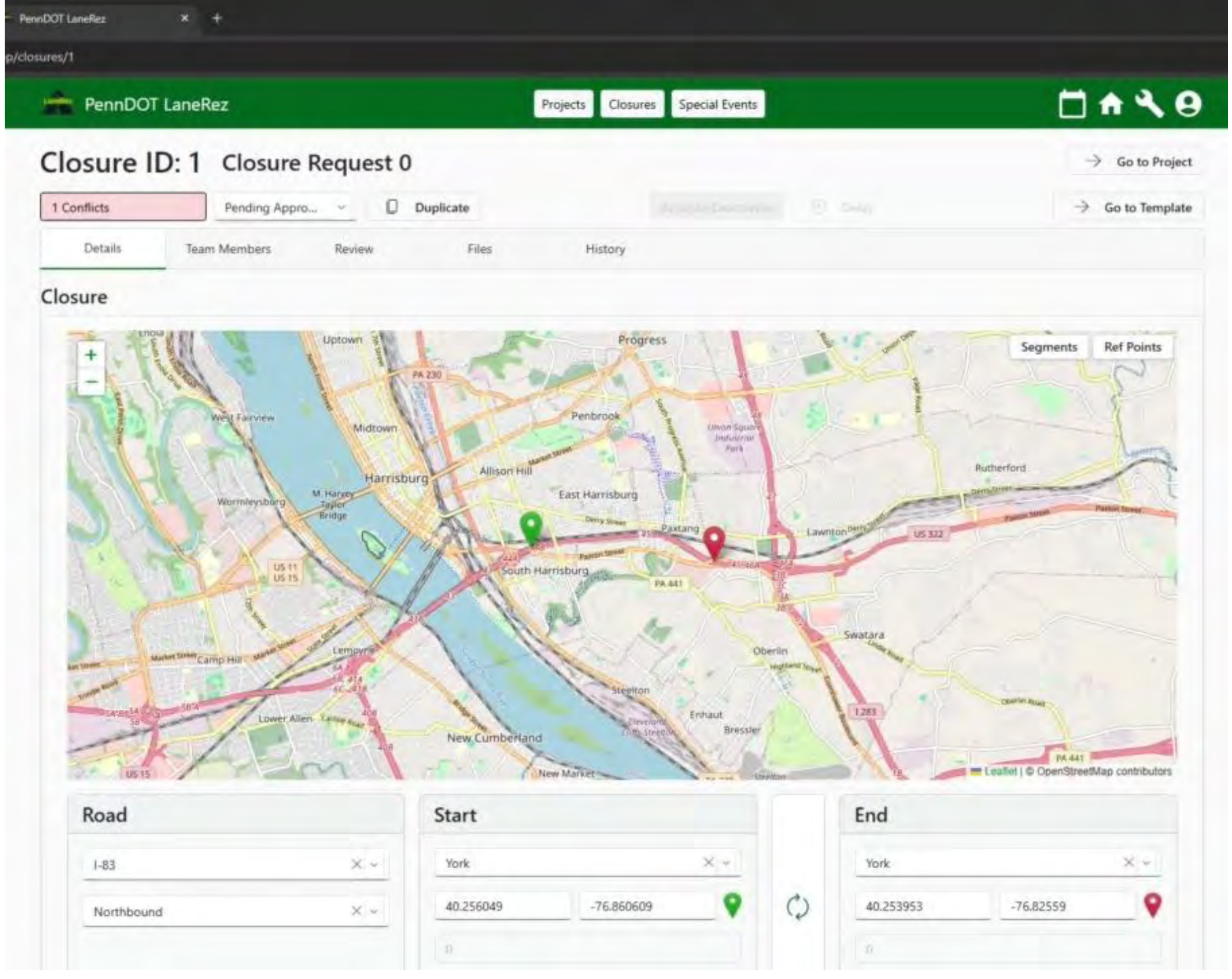
Segment: Segment...

Offset: Offset

OR

Search for reference point...

Save Location Changes


PennDOT LaneRez
p/closures/1
PennDOT LaneRez
Projects
Closures
Special Events
Closure ID: 1
Closure Request 0
Go to Project
1 Conflicts
Pending Appro...
Duplicate
Go to Template
Details
Team Members
Review
Files
History
Closure
Segments
Ref Points
Uptown
Progress
PA 230
West Fairview
Midtown
Penbrook
Harrisburg
Allison Hill
East Harrisburg
Rutherford
Wormleysburg
M. Harvey Taylor Bridge
Paxtang
Lawnton
US 322
South Harrisburg
PA 441
US 11
US 15
Swatara
Oberlin
Camp Hill
Lemoyne
Steelton
Enhaut
Bressler
Lower Allen
New Cumberland
I 283
New Market
Leaflet | © OpenStreetMap contributors
Road
I-83
Northbound
Start
York
40.256049
-76.860609
End
York
40.253953
-76.82559

PennDOT LaneRez

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PennDOT LaneRez

Projects | Closures | Special Events

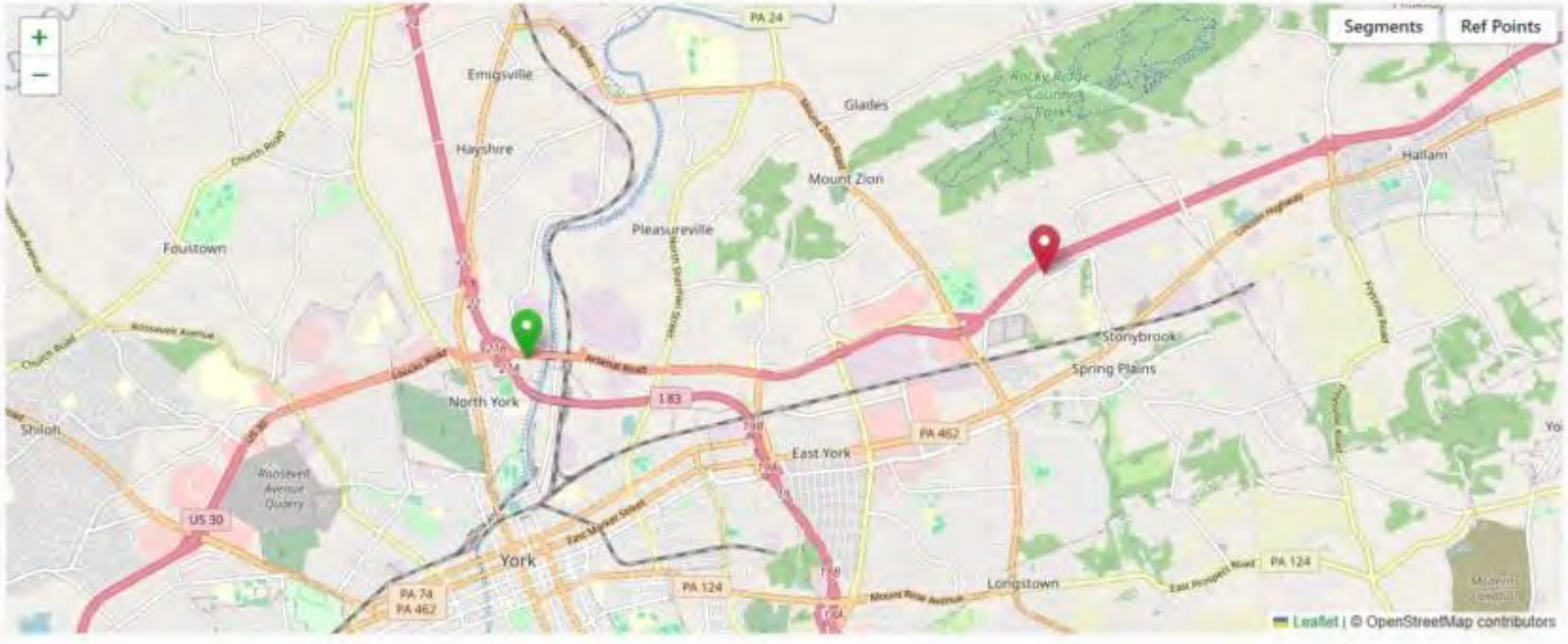
Closure ID: 1 Closure Request 0

Go to Project

0 Conflicts | Draft | Duplicate | Go to Template

Details | Team Members | Review | Files | History

Closure



Road

US-30

Eastbound

Start

Adams

39.983403 | -76.726713

End

Adams

39.992215 | -76.655989

vhb + Drive Engineering

joining forces

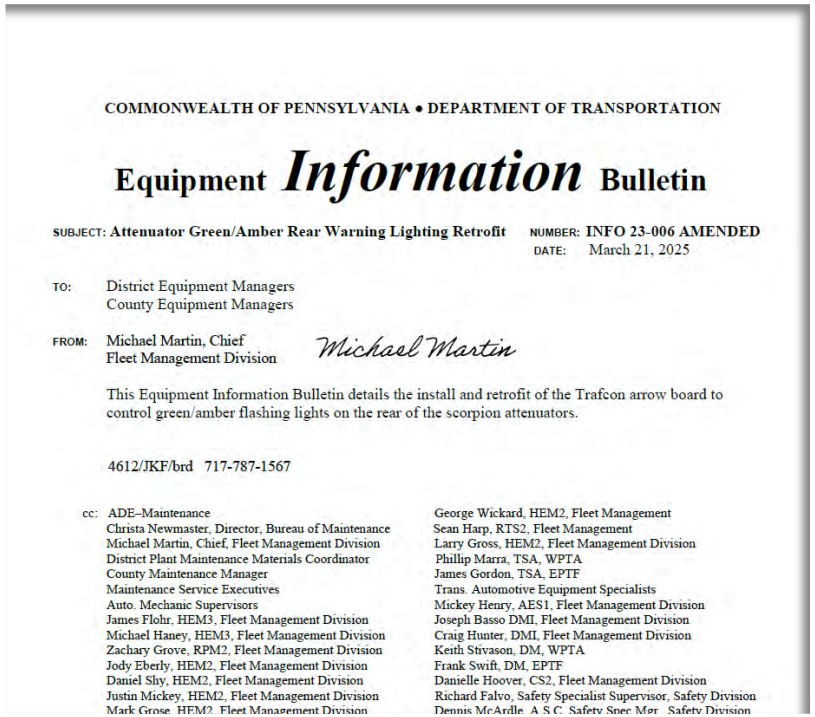
THANK YOU

- Mike Davidson
- Drive Engineering

WORK ZONE DEVICES AND INNOVATIONS

pennsylvania
DEPARTMENT OF TRANSPORTATION

“Green Lights” on work vehicles



COMMONWEALTH OF PENNSYLVANIA • DEPARTMENT OF TRANSPORTATION

Equipment *Information* Bulletin

SUBJECT: **Attenuator Green/Amber Rear Warning Lighting Retrofit** NUMBER: **INFO 23-006 AMENDED**
DATE: March 21, 2025

TO: District Equipment Managers
County Equipment Managers

FROM: Michael Martin, Chief
Fleet Management Division *Michael Martin*

This Equipment Information Bulletin details the install and retrofit of the Trafcon arrow board to control green/amber flashing lights on the rear of the scorpion attenuators.

4612/JKF/brd 717-787-1567

cc: ADE–Maintenance
Christa Newmaster, Director, Bureau of Maintenance
Michael Martin, Chief, Fleet Management Division
District Plant Maintenance Materials Coordinator
County Maintenance Manager
Maintenance Service Executives
Auto. Mechanic Supervisors
James Flohr, HEM3, Fleet Management Division
Michael Haney, HEM3, Fleet Management Division
Zachary Grove, RPM2, Fleet Management Division
Jody Eberly, HEM2, Fleet Management Division
Daniel Shy, HEM2, Fleet Management Division
Justin Mickey, HEM2, Fleet Management Division
Mark Grose, HEM2, Fleet Management Division
George Wickard, HEM2, Fleet Management
Sean Harp, RTS2, Fleet Management
Larry Gross, HEM2, Fleet Management Division
Phillip Marra, TSA, WPTA
James Gordon, TSA, EPTF
Trans. Automotive Equipment Specialists
Mickey Henry, AES1, Fleet Management Division
Joseph Basso DMI, Fleet Management Division
Craig Hunter, DMI, Fleet Management Division
Keith Stivason, DM, WPTA
Frank Swift, DM, EPTF
Danielle Hoover, CS2, Fleet Management Division
Richard Falvo, Safety Specialist Supervisor, Safety Division
Dennis McArdle, A.S.C. Safety Spec Mgr., Safety Division

Tiered roll-out based on District/County priorities (i.e. Interstates, major arterials)

- **Phase 1**: Winter Operations Field Staff – Dump Trucks and Foreman Crew Cabs
- **Phase 2**: Winter/Spring 2024-25 focus on Truck Mounted Attenuators (TMAs) and Additional Field Response Equipment (Assistant Manager Vehicles)
- **Phase 3:** Spring 2025 focus on key Mobile pieces (line painting trucks, vac trucks, etc…)
- Spring 2025 revisit other pieces of equipment at the Equipment Managers Meeting

Modular Work Zone Barriers

Residential Driveway Temporary Signals

U.S. Department of Transportation
Federal Highway Administration

1200 New Jersey Avenue, SE
Washington, D.C. 20590

February 21, 2025

In Reply Refer to:
HOTO-1

Daniel Farley, PE
Director, Bureau of Operations
Pennsylvania Department of Transportation
400 North Street, 6th Floor
Harrisburg, PA 17120

Dear Mr. Farley:

Thank you for your letter requesting approval to use the Residential Driveway Temporary Signal statewide in Pennsylvania. Your request is made under the provisions of Section 1B.07 of the 11th edition of the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) and our Interim Approval memorandum (IA-23) dated January 8, 2025, for the optional use of the Residential Driveway Temporary Signal.

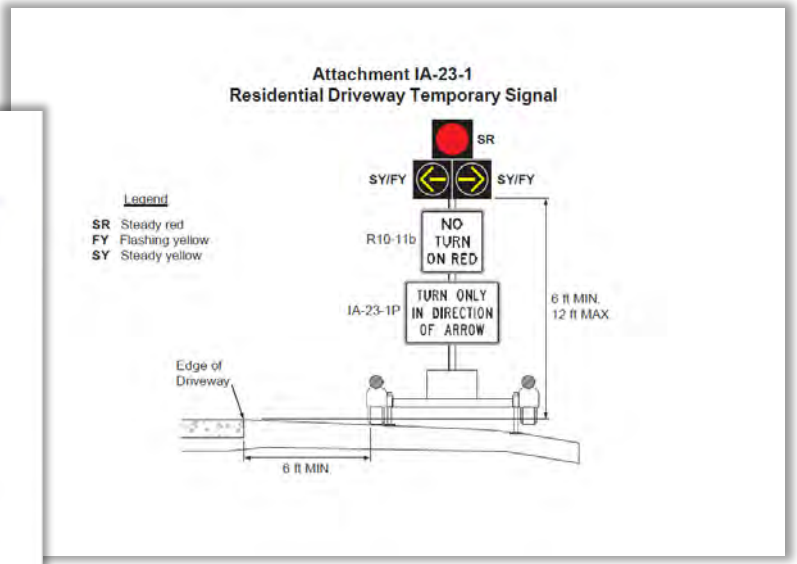
Your request is approved. Please maintain and periodically update a list of all locations where the Residential Driveway Temporary Signal is installed and please check for any State laws and/or directives covering the application of these MUTCD provisions that might exist in the State of Pennsylvania. Your specific approval has been assigned the following number and title: "IA-23.9 — Residential Driveway Temporary Signal – Pennsylvania (Statewide)." Please reference this number and title in any future correspondence.

Thank you for your interest in improving road-user safety.

Sincerely yours,

Mark R. Kehrli
Director, Office of Transportation Operations

cc: J. Engle, FHWA-PA



FHWA's Approval for conditional use in PA

THANK YOU

Brian Crossley
Manager, Temporary Traffic Control Unit
bcrossley@pa.gov

pennsylvania
DEPARTMENT OF TRANSPORTATION