PENNDOT'S WORK ZONE INITIATIVES

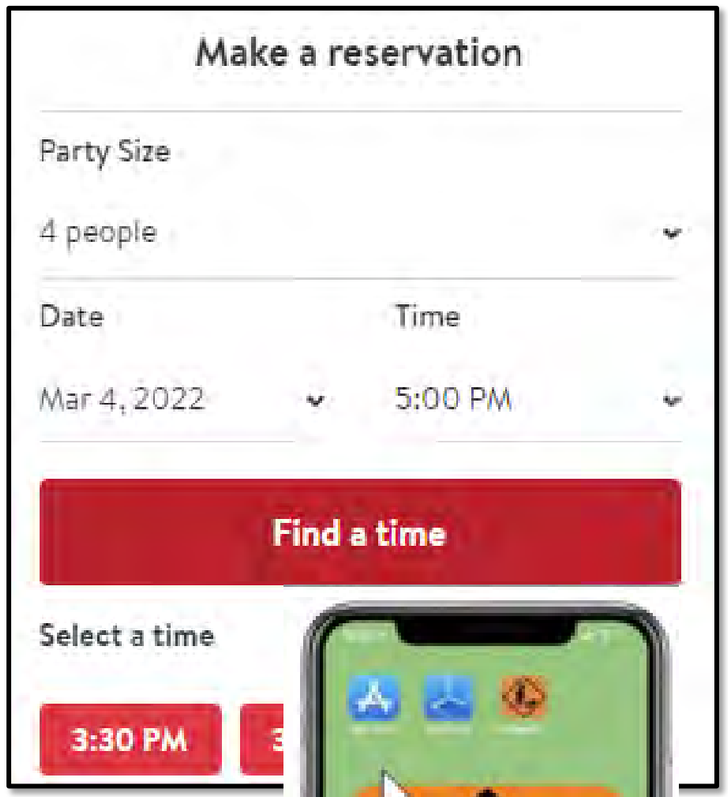
RYAN MCNARY – CHIEF, OPERATIONS AND TSMO PERFORMANCE

BRIAN CROSSLEY – MANAGER, TEMPORARY TRAFFIC CONTROL UNIT

pennsylvania
DEPARTMENT OF TRANSPORTATION

LANE RESERVATION SYSTEM

LANE RESERVATION SYSTEM



LANE RESERVATION SYSTEM

- LaneRez will be a web-based platform to schedule, coordinate, and track work zone activities on state highways
- Mobile compliant site for field personnel to easily activate/ deactivate work zones instead of calling TMC
- LaneRez entries will be required for all lane/shoulder closures on freeways and expressways

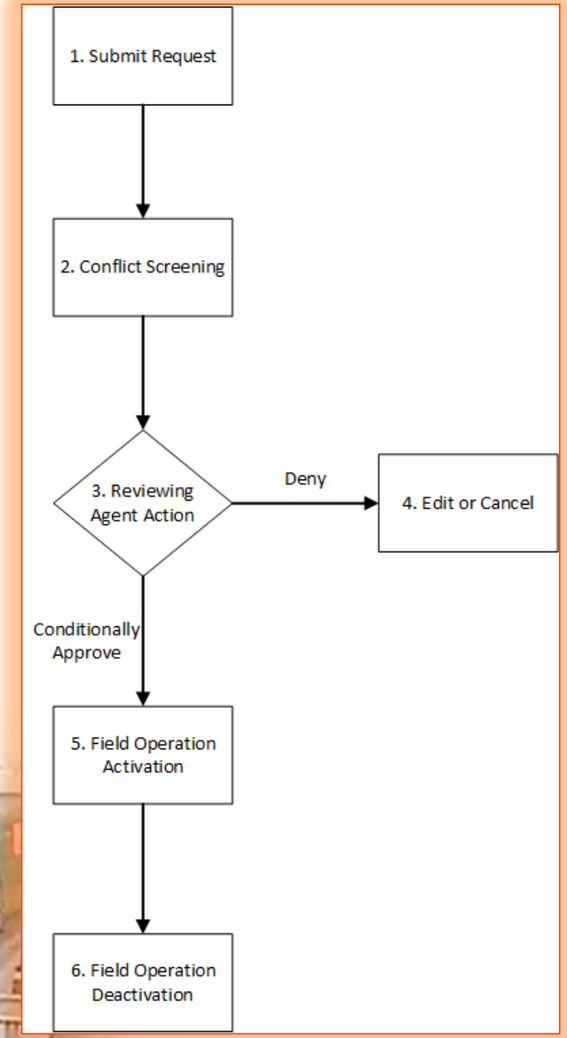
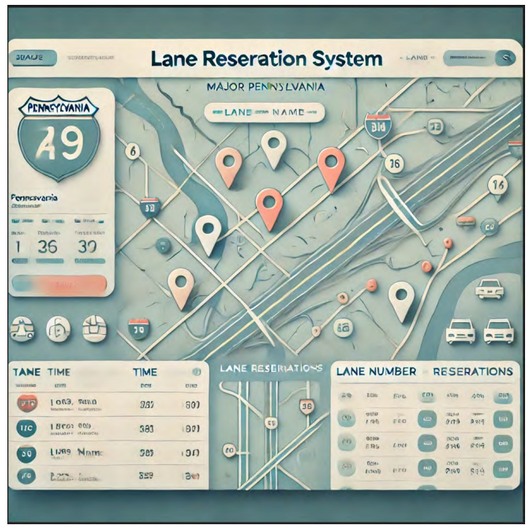


Exhibit 6-15 Planned Work Reporting Timeframes and Requirements

Roadway Type	LaneRez Reporting Type	Reporting Timeframe	TTC Condition		
			Full Road Closure	Lane Closure / Lane Restriction	Shoulder Closure
Freeways and Expressways	Request Submission	14 days before work is activated	REQUIRED		
	Operation Activation	15 minutes			
	Operation Deactivation	Immediately upon conclusion			

LANE RESERVATION SYSTEM

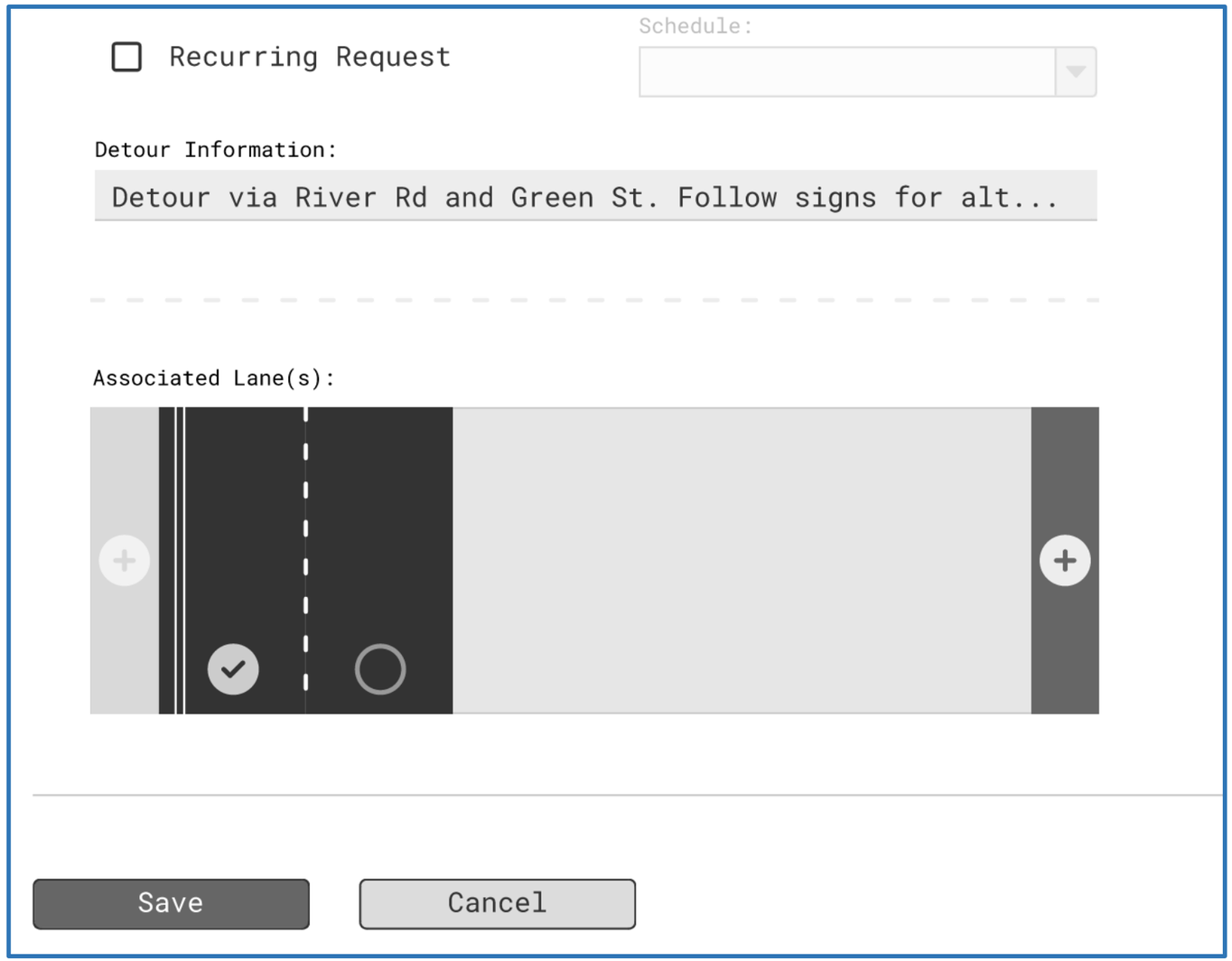
Map landing page to view work zones



LaneRez will screen against conflicts:

- Holidays
- Location to other work zones
- LaneEval
- Special events
- Oversize / overweight restrictions

Entering requests



LANE RESERVATION GO-LIVE

LaneRez Draft Policy
Winter 23/24

Event Mgmt Testing
Spring/Summer 24

Event Mgmt "Go-Live"
Fall 24

Construction & Maintenance Testing
Spring/Summer 25

LaneRez Limited Access "Go-Live"
Spring/Summer 25

2023 Q4 | Q1 Q2 2024 Q3 Q4 | Q1 Q2 2025 Q3

Event Mgmt Design And Development
Fall 23
Winter 23/24

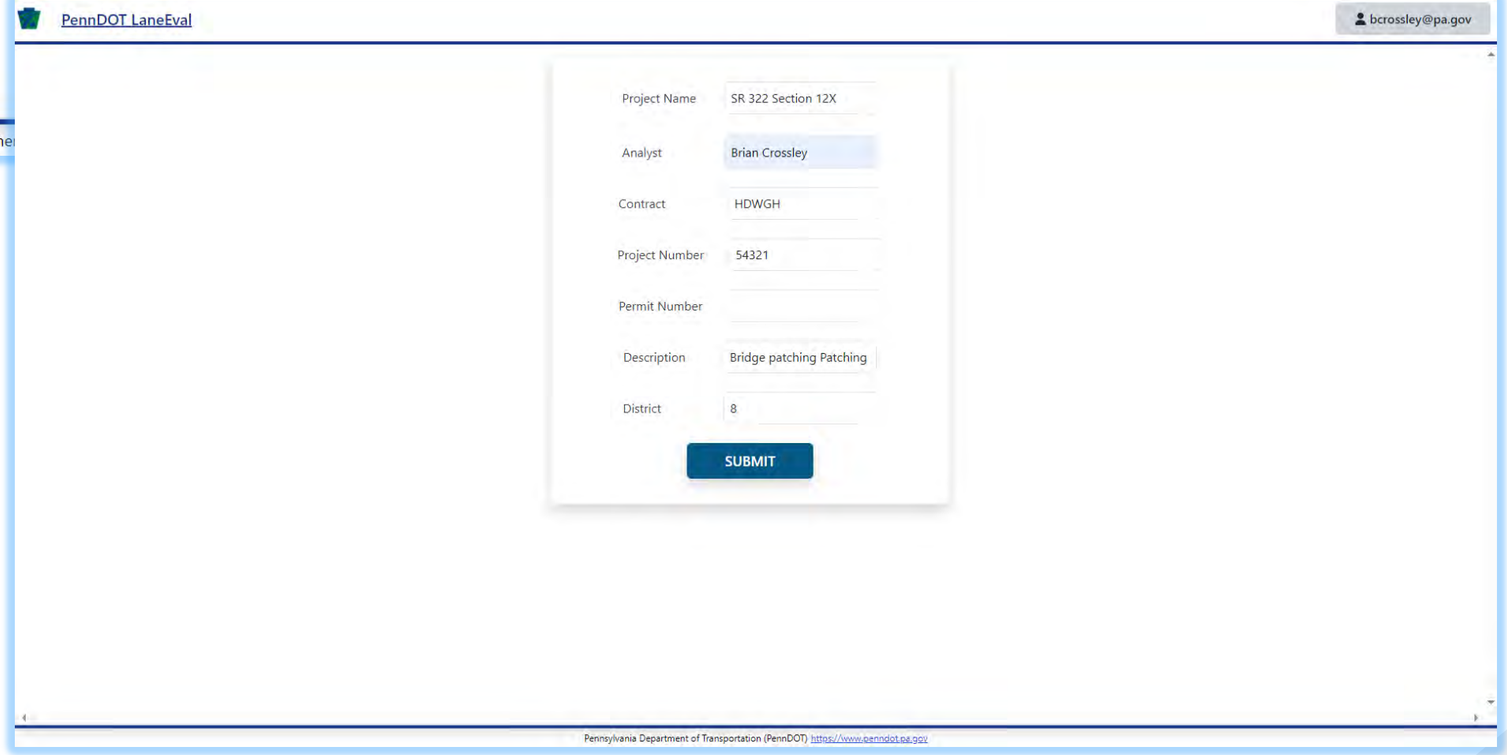
LaneRez Design and Development
Fall 24
Winter 24/25

Policy Finalized And Training
Winter 25

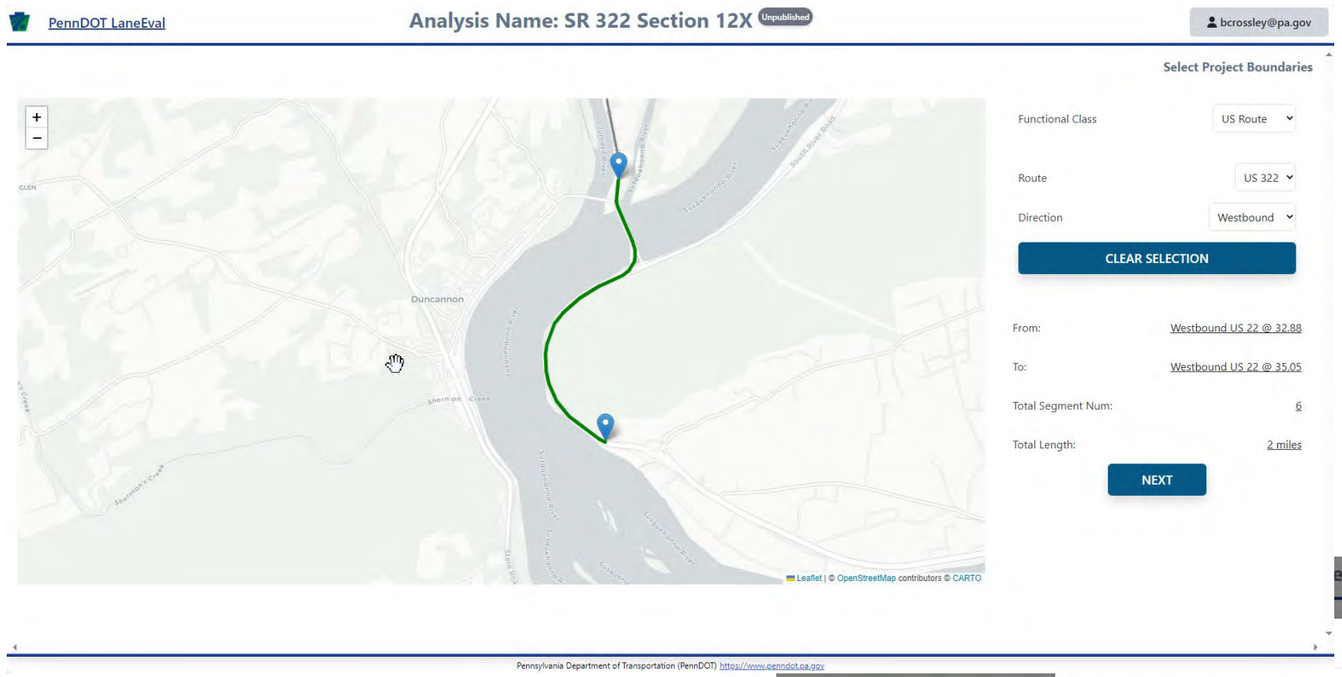
LaneRez Power User Testing
Spring 25

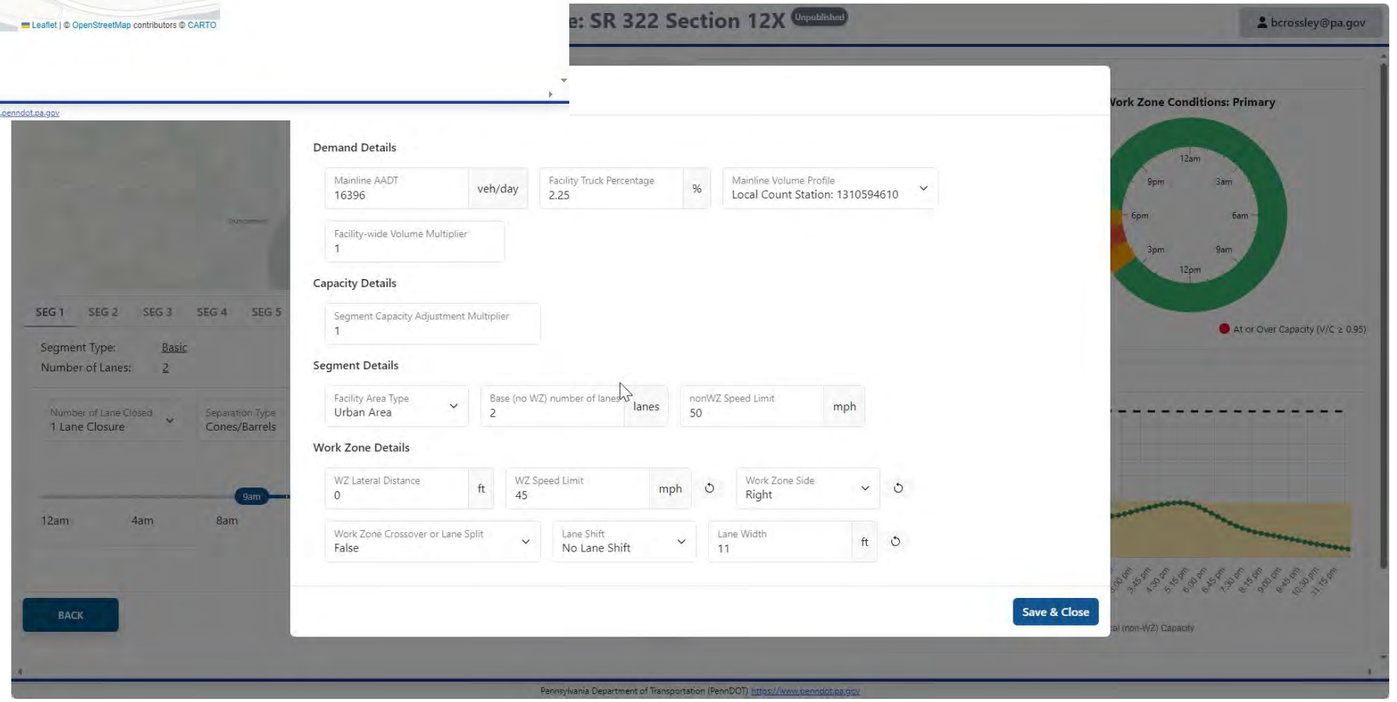
LANE EVALUATION (LANEEVAL) AND WORK ZONE BUILDER APPLICATION

LANE EVALUATION SYSTEM



LANE EVALUATION SYSTEM





LANE EVALUATION SYSTEM

PennDOT LaneEval

Analysis Name: SR 322 Section 12X Unpublished

bcrossley@pa.gov

SEG 1 | SEG 2 | **SEG 3** | SEG 4 | SEG 5 | SEG 6 | Summary

Segment Type: Off-Ramp
Number of Lanes: 2
Off Ramp AADT: 0

View/Edit Advanced Inputs

Number of Lane Closed: 1 Lane Closure

Separation Type: Cones/Barrels

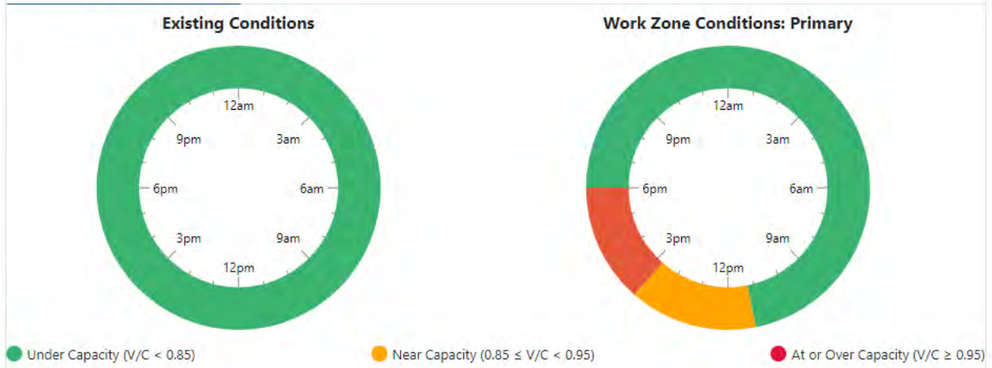
Time Range

12am 4am 8am 12pm 4pm 8pm 12am — 9am — 6pm — Daytime

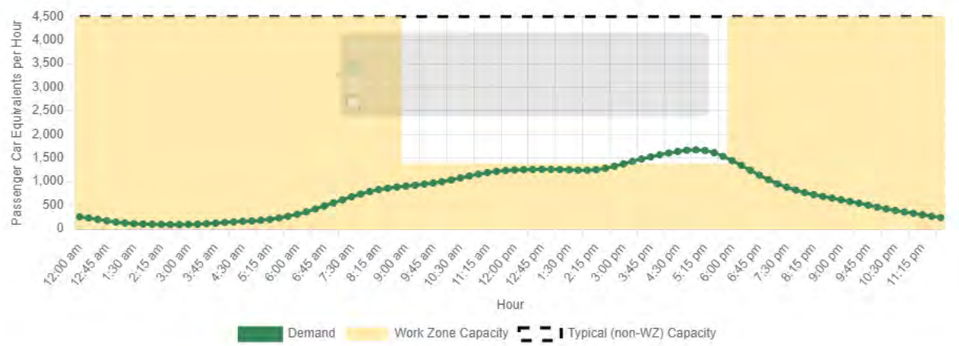
Apply To All Segments

BACK

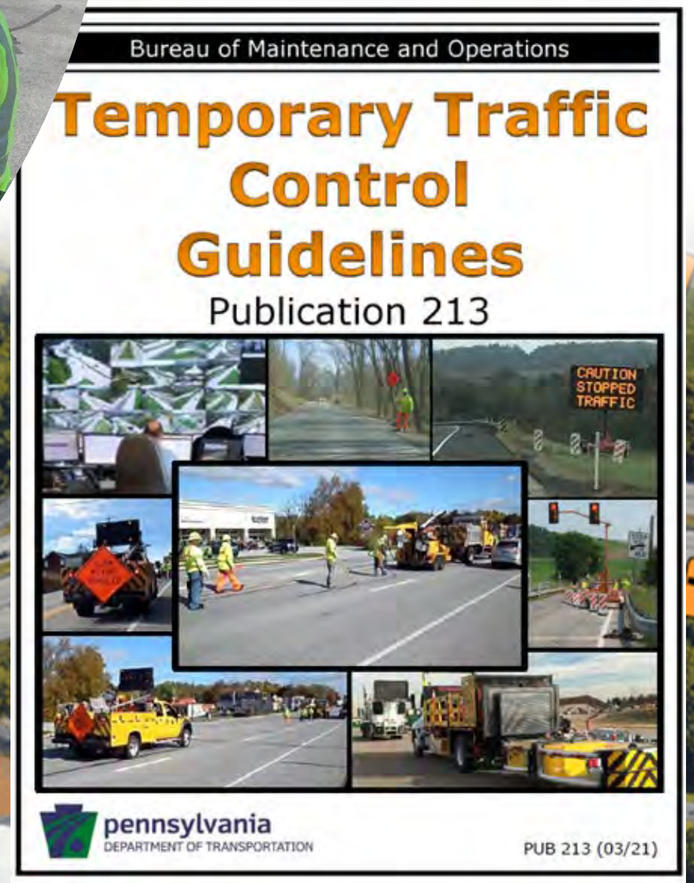
Demand to Capacity Ratio

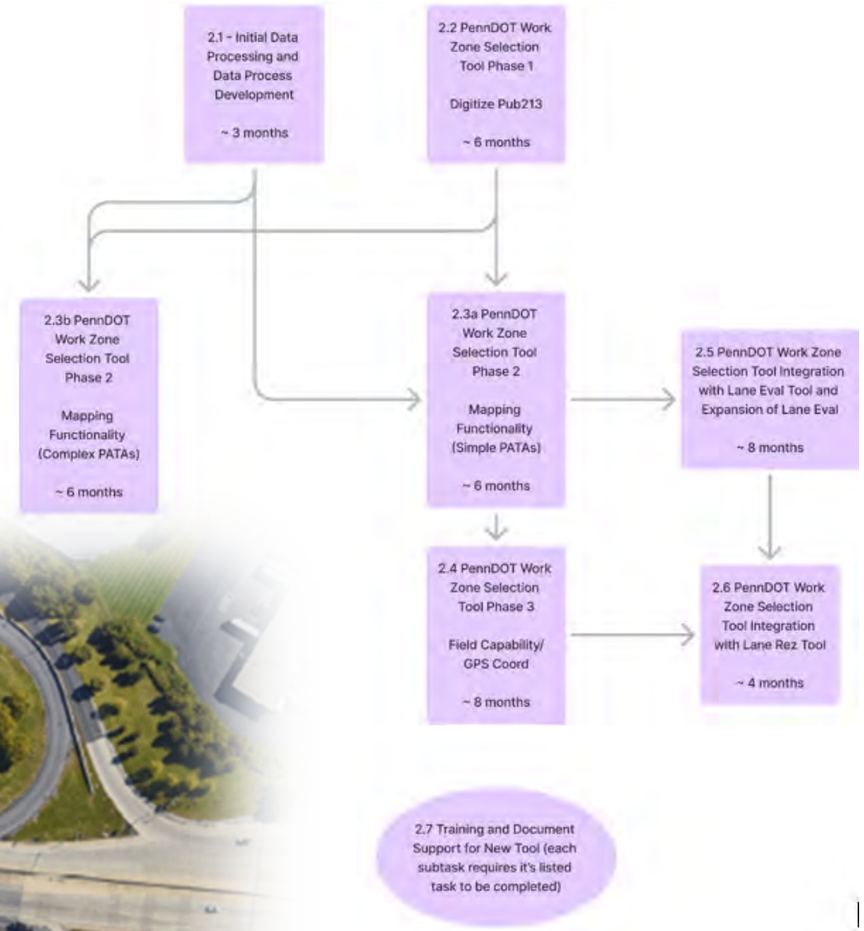


Demand & Capacity Chart



WORK ZONE BUILDER APPLICATION





VIRTUAL QUEUE PROTECTION

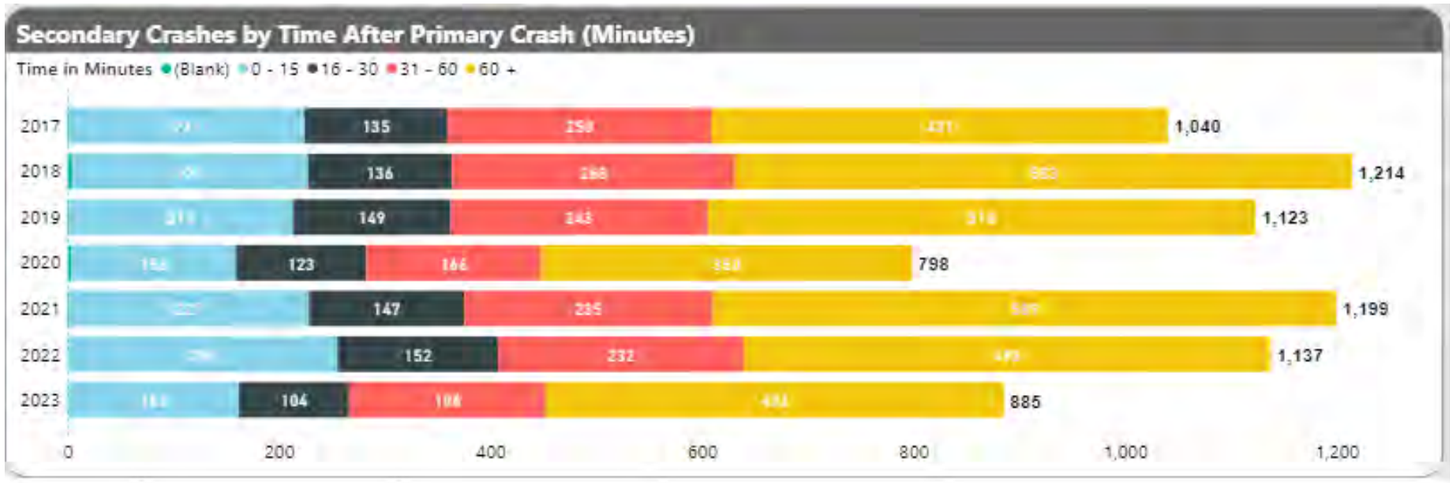
THE CASE FOR QUEUE PROTECTION

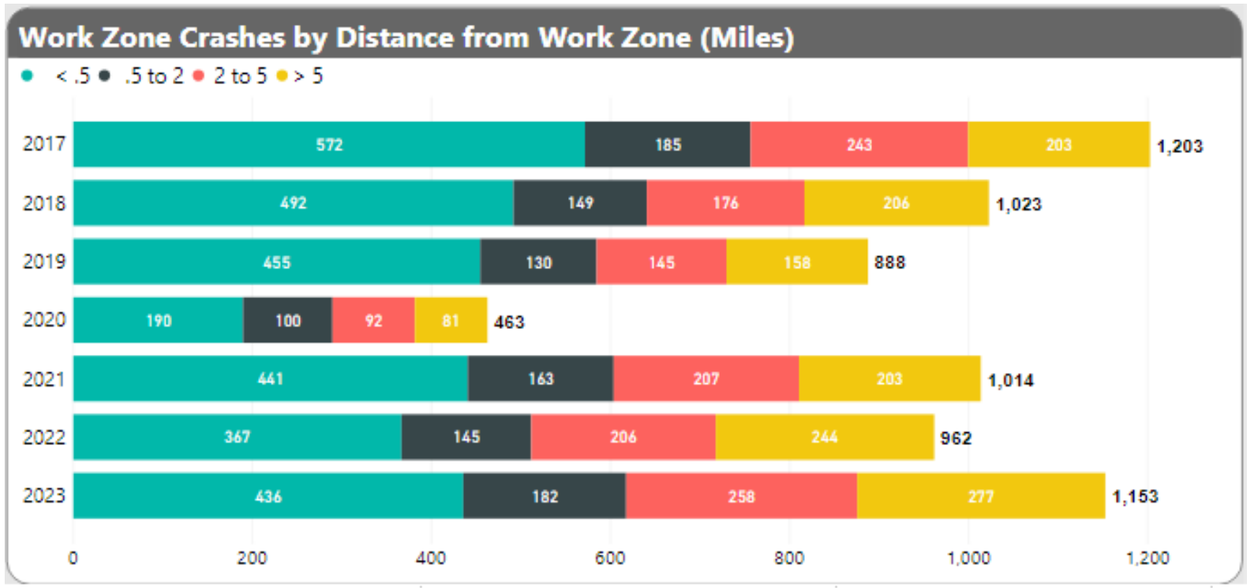
~7000 crashes annually in existing congestion

~1000 work zone congestion crashes

~1000 secondary crashes

CMS available to warn in 90%+





WHAT IS VIRTUAL QUEUE PROTECTION?

Automated messaging on CMS

- Alerts motorist to traffic queuing

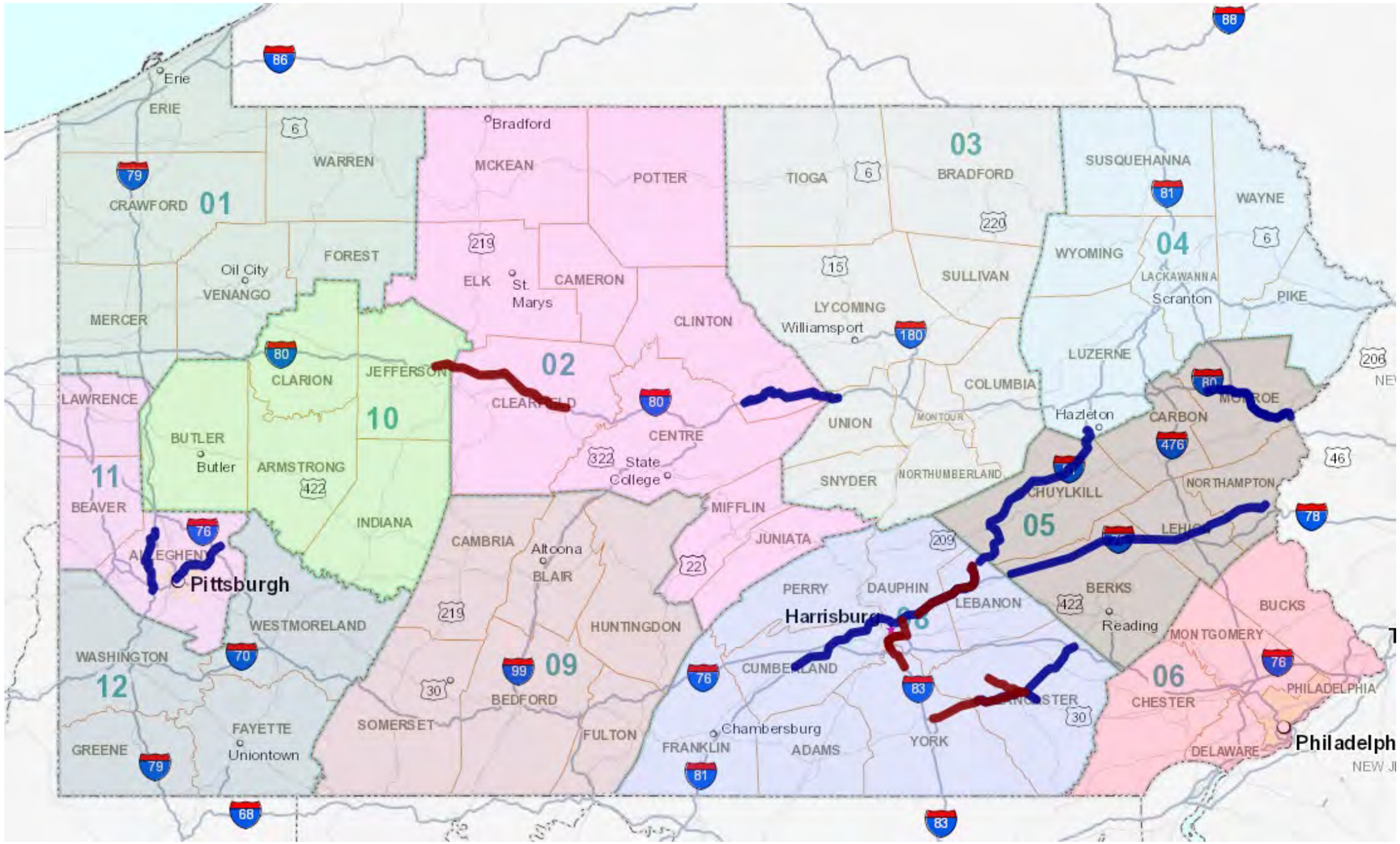
Powered by INRIX speed data

- Data is available statewide
- No need for equipment deployment

Can be implemented anywhere CMS are present

- Must be connected to ATMS

2024 DEPLOYMENTS



~ 600 miles of roadway covered

5700+ work zone events and 4400+ incidents occurred in corridors (As of April 2024)

ANALYSIS BACKGROUND

11 Corridors with at least 1 year before/after data

- Before: From 1/1/2021 to activation
- After: From activation to 12/31/2023

Convert data to annual averages

RESULTS - SAFETY

10% annual reduction in total crashes

14% annual reduction in rear end crash

35% annual reduction in fatal crashes

- 46% reduction in fatal truck crashes

12% annual reduction in injury crashes

- 15% reduction in injury truck crashes

$53 million annual reduction in crash costs to society

Overall Reductions per Year			
Category	**Passenger Vehicle Crashes**	**Truck Crashes**	**Total**
Total Crashes	119	64	183
Rear End Crashes	58	38	96
Fatal Crashes	1	6	7
Injury Crashes	43	43	86
Crash Cost	$25,187,703	$28,252,664	$53,440,367

RESULTS - MOBILITY

72K+ annual reduction in vehicle travel times

- 109K reduction in person travel times

$2.2 million annual travel time cost savings

$300K annual vehicle operation cost savings

RECOGNITION

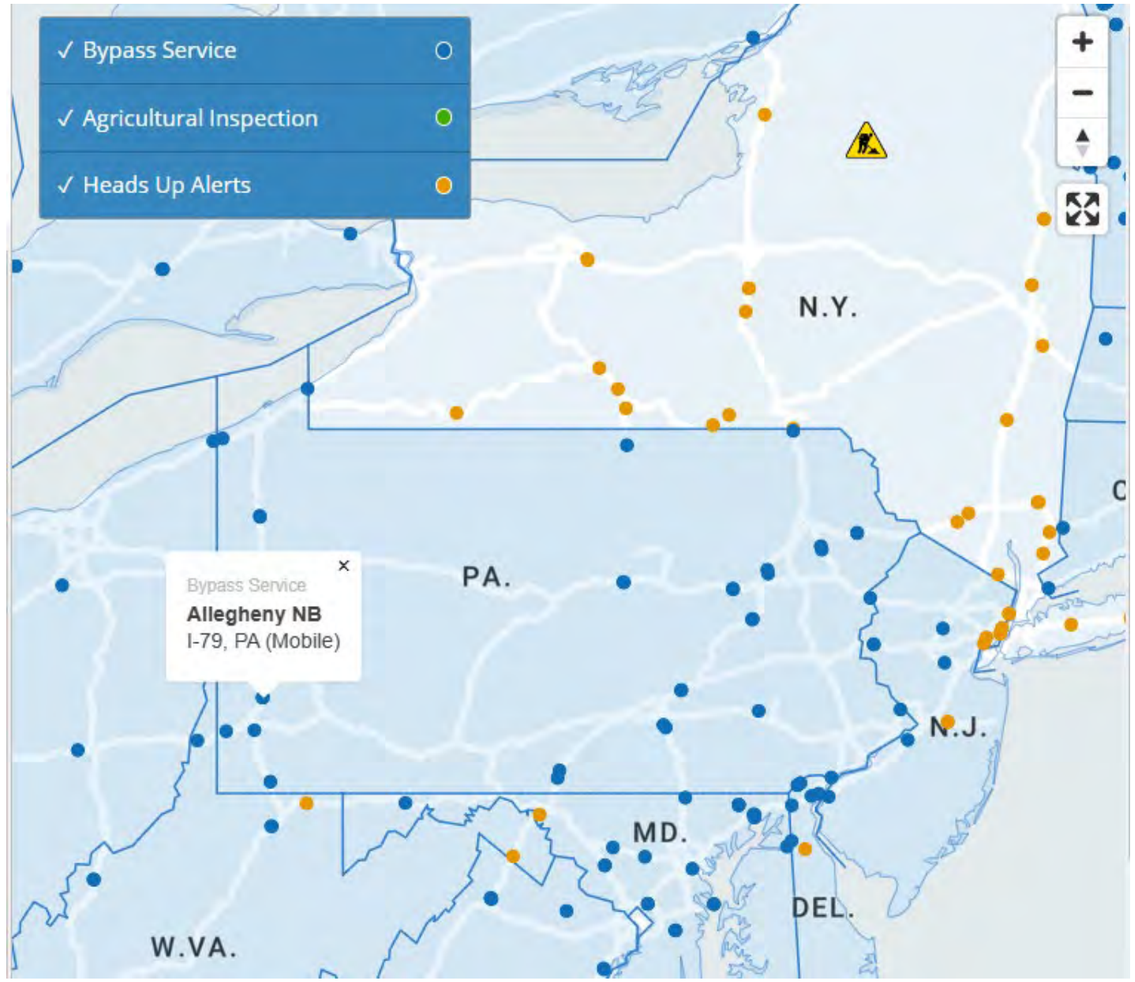
2024 AASHTO Regional America's Transportation Award

2024 National Operations Center of Excellence TSMO Award for Best TSMO Project, Overall Winner

DRIVEWYZE VIRTUAL SIGN NETWORK IN PA

- Updating Drivewyze's under legal bridge height database
- Setting up 25 geofenced virtual sign gates
  - Commercial vehicle movement restrictions
    - Winter operations, work zones (i.e. left lane only applications)

Drivewyze®

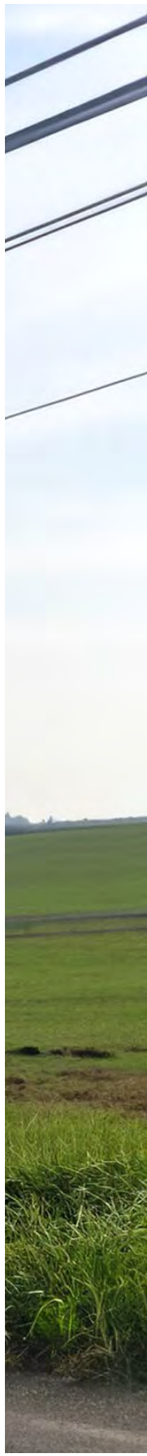


NEW DRIVER WORK ZONE SAFETY COURSE

BROUGHT TO
YOU BY:

PENNA
TURN
PIKE

pennsylvania
DEPARTMENT OF TRANSPORTATION



WORK ZONE SIGNS (WORK AREA AND CONSTRUCTION ZONE SIGNS)

Work Zone Signs are normally diamond shaped, like warning signs, but they are orange with black lettering instead of yellow with black lettering. These signs identify maintenance, construction or utility areas where workers or equipment may be on or near the roadway. Stay alert and slow down when you see these signs.

Turn on your headlights when traveling through a work zone, no matter what time of day. This is the law for **all** posted work zones, not just for active ones. Using your headlights makes your vehicle more visible to other traffic as well as to highway workers. If you are pulled over by police for a traffic violation in a work zone and your vehicle's headlights are not turned on, you will be fined an additional $25.

These **WORK ZONE** signs are placed at the beginning and end of an active work zone. An active work zone is the portion of a work zone where construction, maintenance or utility workers are on the roadway, or on the shoulder of the highway next to an open travel lane.

ROAD WORK AHEAD
This sign informs you there is road work ahead and also cautions you to slow down.

LANE CLOSED AHEAD
This sign tells you a particular lane will be closed at a specified distance ahead.

WORKERS AHEAD
Workers may be on or are very close to the roadway, so take special care when traveling through the area.

FLAGGER AHEAD (ROAD CONSTRUCTION AHEAD)
The sign to the left shows a flagger is controlling traffic ahead. As shown to the right, flaggers use **STOP** and **SLOW** paddles or a red flag to signal you to stop or slow down. Pay special attention to flaggers when approaching and traveling through a work zone.

ROAD CLOSED FLOODING
This sign informs you that the road ahead is closed due to flooding. You must use an alternate route. Refer to Chapter 3 about what to do if you encounter a flooded roadway.

DID YOU KNOW?
Highway workers have forms to report motorists who speed or drive unsafely in work zones to the police, who may then issue a ticket, resulting in fines and points.

ELECTRIC ARROW PANELS

Large electronic flashing arrow panels (move/merge right or left) placed in the roadway or mounted on vehicles advise approaching motorists of lane closures. Begin your merge well in advance of the sign. An arrow panel displaying either of the messages shown in the figure to the far right (caution) indicates there is a work area ahead next to the travel lane. Drive with extra caution.

CHANNELING DEVICES

Barrels, tubes, cones and vertical panels are all devices used in work zones to guide you through changing traffic patterns and keep you away from hazards associated with road work.

GUIDE SIGNS

Guide signs provide information about intersecting roads, help direct you to cities and towns, and show points of interest along the highway. Guide signs also help you find hospitals, service stations, restaurants and motels. Usually these signs are horizontal rectangles.

HIGHWAY/EXPRESSWAY GUIDE SIGNS

The following three signs are examples of highway and expressway guide signs. They are green with white letters. Most highway and expressway signs are posted the same way. For example, there is usually one advance sign which is followed by another advance sign. The third sign then is posted at the exit. Several signs are necessary because the high speed and heavy traffic on highways can cause drivers to miss seeing a single sign. Also, motorists may need to make one or more lane changes to exit.

EXIT NUMBERS

Exit numbers correspond with the mile markers. This change allows motorists to quickly calculate distances between exits, e.g., the distance between Exit 95 and Exit 20 is 75 miles.

If a yellow panel with the message **EXIT ONLY** is on a highway sign, the lane below the sign will not continue through the interchange; instead, the lane will go off of the road to form a ramp. If you are in a lane posted with an **EXIT ONLY**, you may change lanes, or you must exit the highway if you stay in this lane.

SPECIAL CIRCUMSTANCES AND EMERGENCIES

The following pages give you information about how to drive safely and reduce your risk of crashing in these special circumstances – in highway work zones, at railroad crossings, and when you encounter pedestrians, cyclists, trucks, buses or emergency vehicles – and when you must deal with road rage and various driving emergencies.

Information about special events and emergencies is useful for motorists to plan their trip. A motorist may choose to avoid undesirable delays, or even potentially unsafe roadway conditions, by checking media, such as www.511PA.com to see if their trip route is clear before they depart.

WORK ZONES

Work zones are areas with construction, maintenance or utility work activities and are identified with orange channelizing devices, such as cones, or other temporary traffic control devices. You may encounter a flagger directing traffic and wearing reflective clothing. Warning signs, advance warning vehicles, or variable message boards may be placed a minimum of 200 feet approaching a work zone. When you see the first sign, pay strict attention to the road, vehicles, equipment and people you could encounter. Some work zones are accompanied by the Pennsylvania State Police.

Moving operations, such as line painting, crack sealing and mowing sometimes use shadow vehicles at the back of the operation to warn motorists that there is a work zone ahead and also serve as protection to the crew. Do not pass a moving operation unless directed to.

DID YOU KNOW?
Every year in the U.S., about 40,000 people, including highway workers and motorists, are injured or killed as a result of vehicle crashes in work zones. Carelessness and speeding are the main causes of traffic fatalities in work zones.

An **active work zone** is where workers are located on or near the roadway. **Always watch out for construction workers** and be prepared for abnormal conditions such as narrow lanes, rough pavement, uneven lanes and abrupt lane shifts.

Drivers must yield the right-of-way to workers and construction vehicles in work zones. By law, you must turn on your vehicle's headlights, not just the daytime running lights, when driving through these areas. You may be fined for failure to use your headlights in an active work zone. Also, fines are doubled for certain violations in active work zones, including speeding. In addition, certain violations will result in a driver's license suspension.

A new video about safely driving in and near work zones is available at:
https://www.penndot.gov/TravelInPA/Safety/TrafficSafetyAndDriverTopics/WorkZone.
This video is also available to school based Driver Education courses.

Be prepared for slow or stopped traffic as you approach a work zone, and follow these safety rules:

- Plan your trip. You may avoid travel delays if you choose an alternate route around the work zone.
- Do not use your cruise control in work zones.
- Double your following distance; the most common crash type in work zones is the rear-end collision.
- Prepare to change lanes as soon as you see a message telling you your lane is closed ahead.
- DO NOT CROSS a solid white line in a work zone; stay in your lane.
- Proceed cautiously and keep moving at a safe speed as you drive through the work zone; do not slow or stop to watch roadwork.
- Do not stop within a work zone to ask directions from the workers.
- Obey flaggers – their authority overrides conventional traffic control devices.

Remember: Work Zone Flaggers can report unsafe motorists, speeders, and aggressive drivers to the police using a Police Arrest Form!

NEW DRIVER WORK ZONE COURSE

NEW DRIVER

WORK ZONE SAFETY PROGRAM

PENNA TURN PIKE

Pennsylvania
Department of Transportation

VISIT:

PennDOT.pa.gov/WorkZoneSafety

Click New Driver Training
in the blue box.

New Driver Work Zone Safety Training

GREEN LIGHTS LEGISLATION

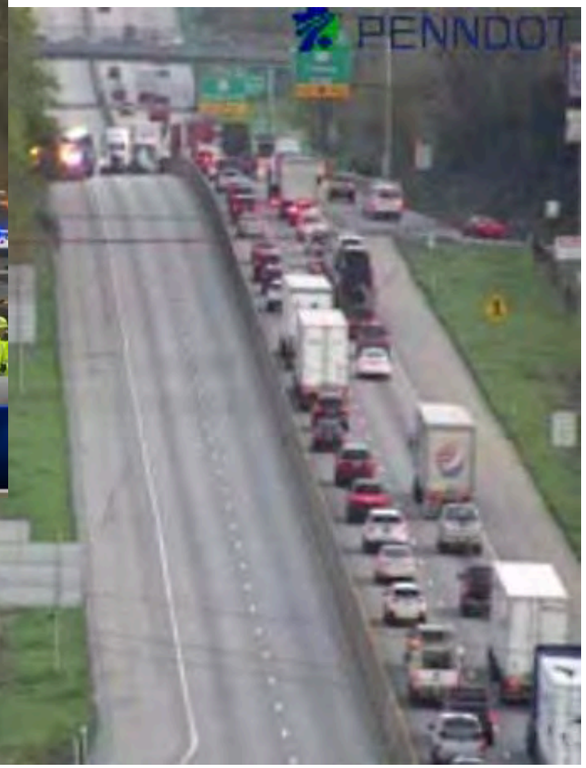
“GREEN LIGHTS” ON WORK VEHICLES

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

MOBILE WORK ZONE PROTECTION (AVL FLEET EXPANSION)

MOBILE WORK ZONES



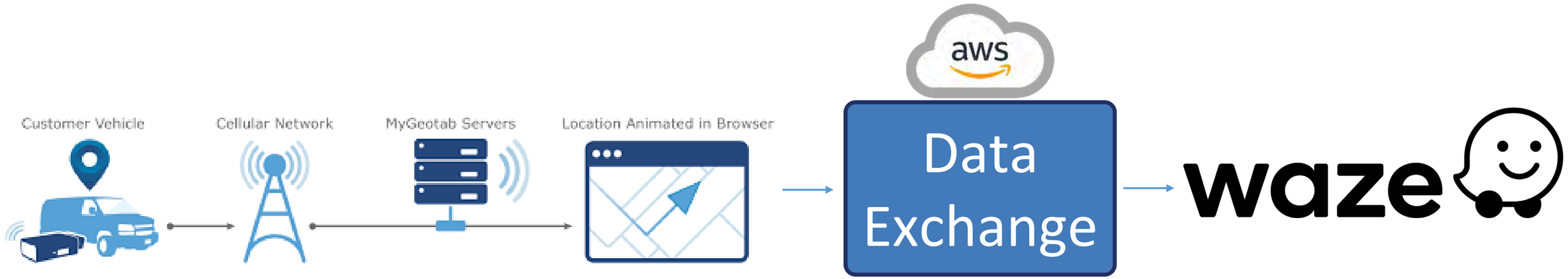
Box truck struck the construction workers in work zone

State police say the crash happened around 3:25 a.m. Wednesday in an active work zone at mile marker 35.5 in Fairview Township.

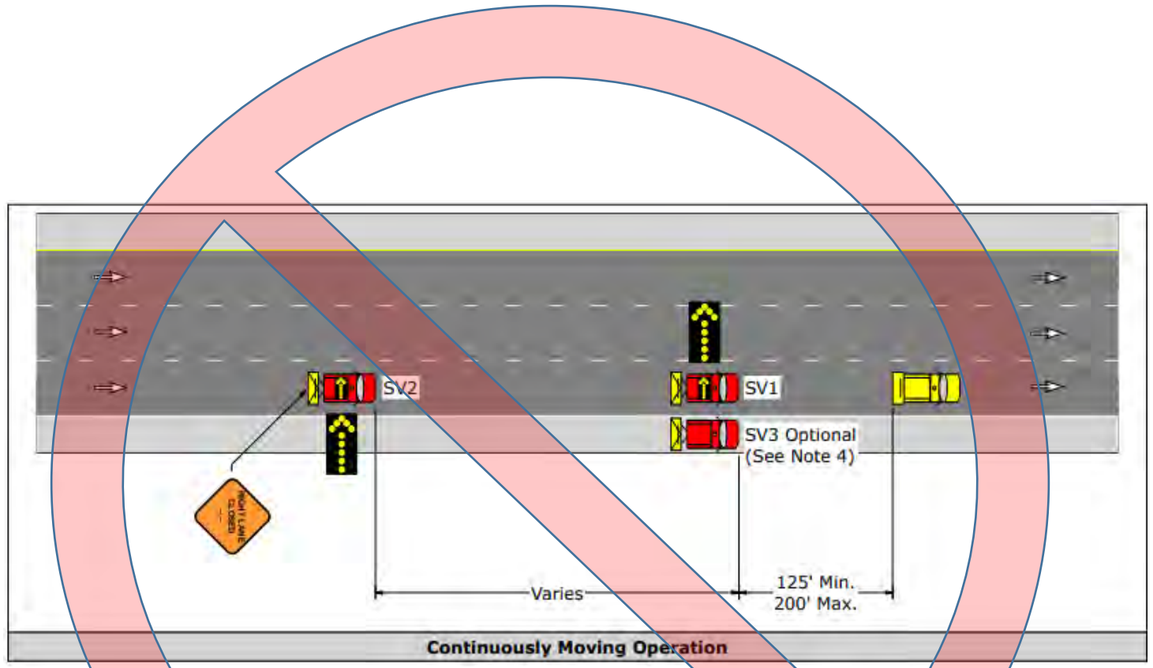
AVL FLEET INTEGRATION

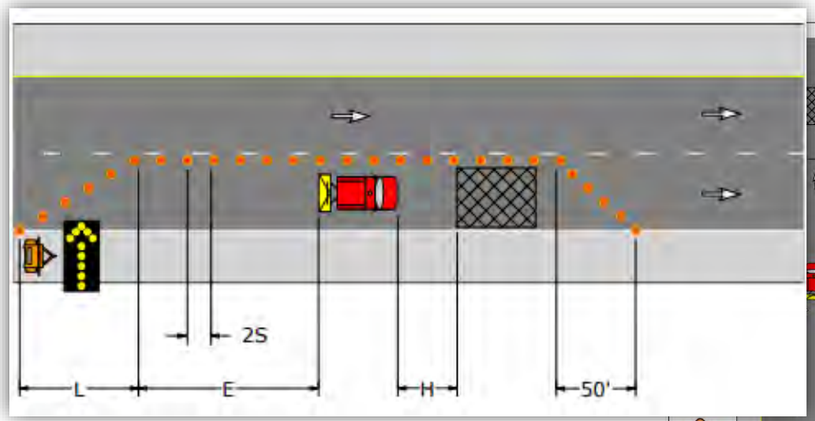
Developing Mobile Work Zone Protection Solutions

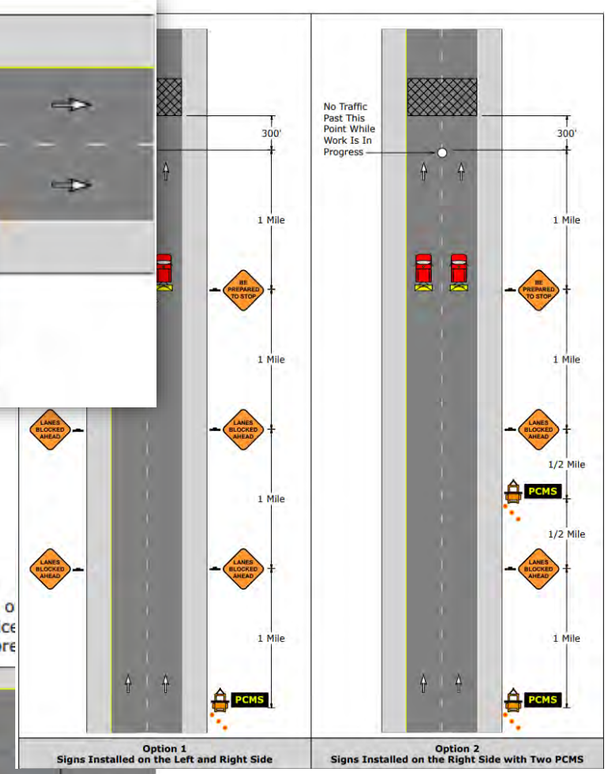
UTILIZING PENNDOT'S VEHICLE TELEMATICS DATA

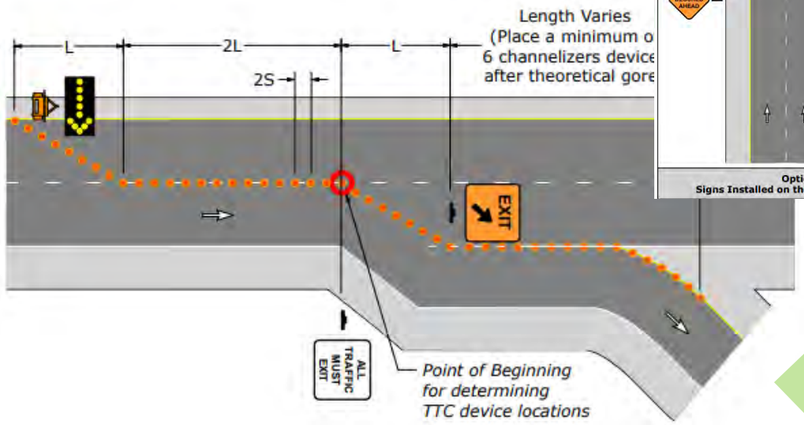


MOBILE WORK ZONE ALTERNATIVES

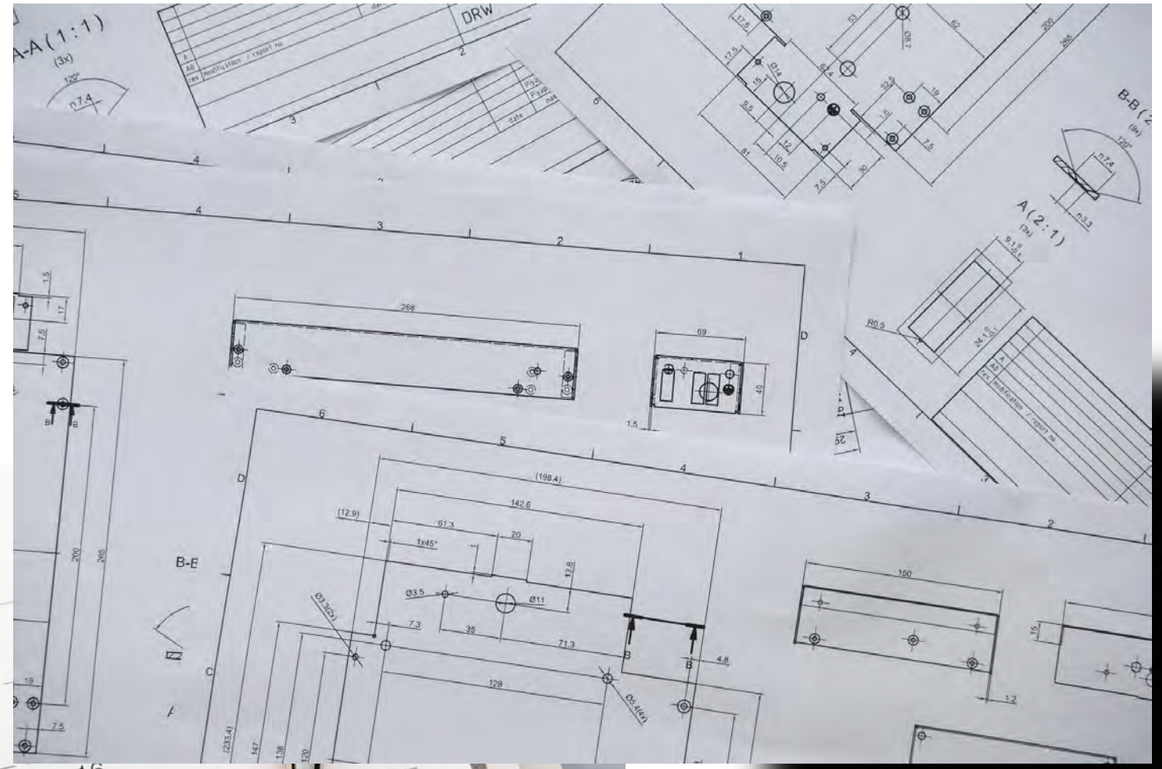








PLANNING NIGHT WORK



OFF-THE-SHELF STRATEGIES

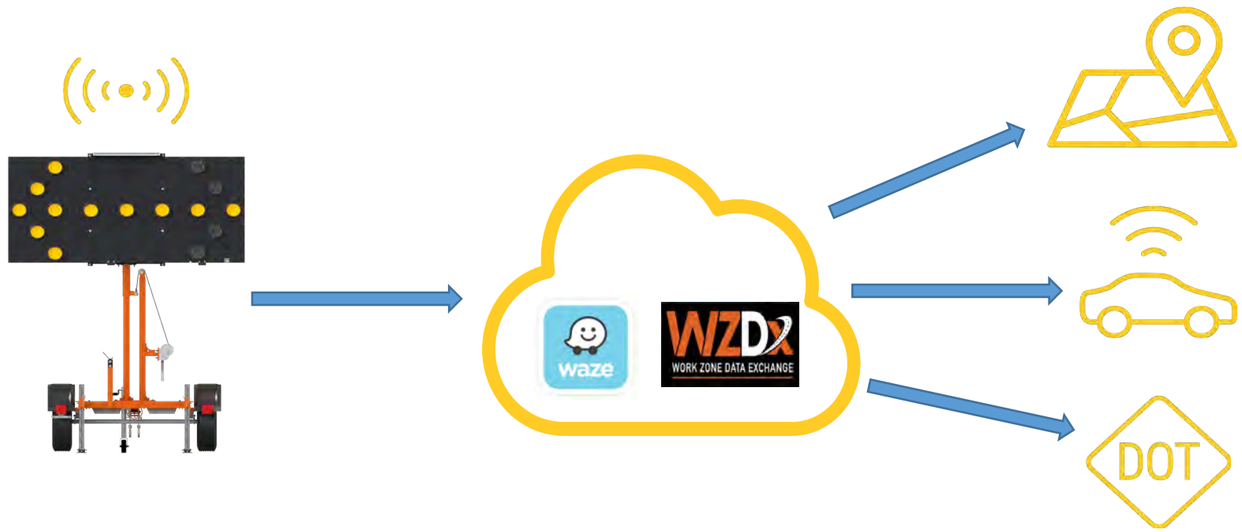
WORKER VISIBILITY

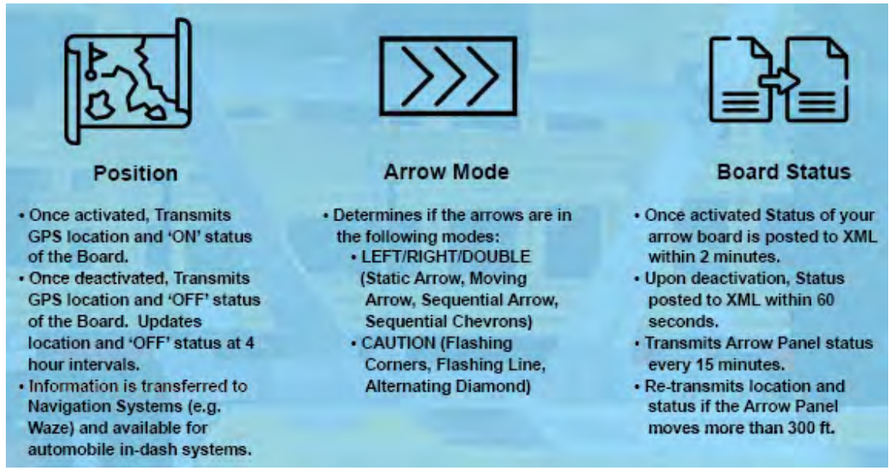
Properly Illuminating to Ensure Effectiveness

INCORRECT LIGHT ANGLE ◀ ▶ CORRECT LIGHT ANGLE

Photos from Flagger Force

SMART ARROW BOARD





<u>Smart Arrow board</u>: The smart arrow board can report GPS field locations and communicate active lane closures to third party data and government agencies.

MOVEABLE BARRIER

[Lycoming County SR 220-193 Movable Barrier System (youtube.com)]

MODULAR WORK ZONE BARRIERS

QUALITY MATTERS

COMMANDING RESPECT

Personal Protective Equipment (Safety Vests)

ACCEPTABLE

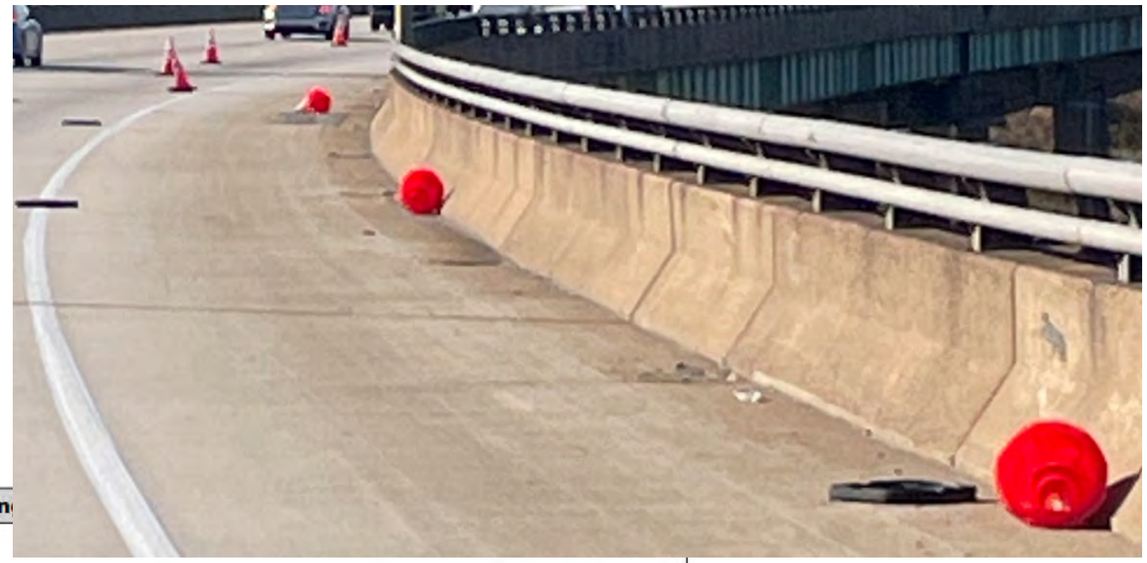
New or like-new high-visibility safety apparel meeting Class 2 or 3 performance requirements found in the ANSI/ISEA 107-2004 or current publication. Safety apparel is not faded or soiled, has excellent color contrast and retroreflectivity.

MARGINAL

Safety apparel has slightly faded colors or is slightly soiled. Retroreflective material is in good condition.

UNACCEPTABLE

Safety apparel is significantly soiled and/or material is badly faded with poor color contrast. Retroreflective material is det
and has little t
qualities.



Channelizin

CCEPTABLE

ce-new cones have the hape and must be g in its normal position. ias no punctures or and has minimal asphalt ement slurry or other terial. Two retroreflective ide high-visibility.

MARGINAL

Cones maintain the conical shape, however the surface has some asphalt splattering or otherwise shows some wear from use. Two retroreflective bands are mainly clear, but may have slight tears or scratches while still providing good visibility.

UNACCEPTABLE

Cones do not give the appearance of a well maintained TTC device. Punctures or a large portion of the cone surface is marred with the presence of asphalt splatter or other foreign material. At least one retroreflective band is missing or badly damaged. Cone may not be able to remain completely upright.

Channelizing Devices - Drums

ACCEPTABLE

Drum is new or in like new condition. Surface has no punctures or abrasions and has minimal asphalt splatter or other foreign material. Four retroreflective bands (two alternating white and orange) provide high-visibility.

MARGINAL

Drum maintains the original shape. It may be dented if dent is repairable or it may be evident that drum was previously dented. A minor percentage of surface area has asphalt splattering or other foreign matter. Four retroreflective bands are mainly clear, but may have slight tears or scratches.

UNACCEPTABLE

Drums do not give the appearance of a well maintained TTC device. At least one retroreflective band is missing or badly damaged. Large areas of the surface are marred with the presence of tar or other splatter. Drum does not have the same shape or color during both daylight and nighttime.

ADDITIONAL RESOURCES

WORK ZONE RESOURCES

PennDOT Work Zone Safety Page:

https://www.penndot.pa.gov/TravelInPA/Safety/TrafficSafetyAndDriverTopics/WorkZone/Pages/default.aspx

National Work Zone Safety Information Clearinghouse:

Home — Work Zone Safety Information Clearinghouse

National Work Zone Awareness Week:

NATIONAL WORK ZONE AWARENESS WEEK - Home (nwzaw.org)

THANK YOU

Ryan McNary
Chief, Operations and TSMO Performance

Brian Crossley
Manager, Temporary Traffic Control Unit

pennsylvania
DEPARTMENT OF TRANSPORTATION