

Advancing Nighttime Work Zone Safety

Paving the way for safer nighttime construction on our roads.



Nighttime work zones create extra challenges for transportation agencies, highway workers, and drivers. As agencies shift more work (construction, maintenance, utility) to nighttime to reduce daytime delays, and with more highway workers on the job than in previous years, safety risks for nighttime crews have increased. In 2023, approximately half of all fatal work zone crashes occurred at night. Nighttime fatigue or impairment in drivers raises the chances of vehicles entering work zones, and lighter traffic volumes can lead to higher speeds, a factor in more than 30% of fatal work zone crashes in 2023. Through the Advancing Nighttime Work Zone Safety initiative, FHWA is helping agencies transform high-hazard work zones into safe, predictable, and efficient workspaces by standardizing how to light and protect them using innovative and effective strategies.

REIMAGINING NIGHTTIME ROADWORK

The Advancing Nighttime Work Zone Safety initiative offers strategies to help transportation agencies adopt safer, more innovative nighttime work zone practices. This effort helps states deploy innovative strategies such as automated intrusion alarms (which alert workers when a vehicle enters a work zone) and anti-glare lighting to prevent crashes and let workers stay focused on the job. Simply put, this initiative provides agencies with the strategies needed to assess risk before the cones go out, ensuring every worker returns home and every project stays on track. These strategies include:

- ▶ **Enforcement:** Active, passive, and tech-based measures all sharply reduce speeds in and near work zones.
- ▶ **Lighting:** Anti-glare lighting not only reduces glare, it improves hazard detection and reaction time, and helps lower speeds.

- ▶ **Positive Protection Devices:** By containing and redirecting vehicles, positive protection devices (e.g., barriers) reduce the risk of vehicle intrusion, improving safety for workers and the traveling public.
- ▶ **Personal Protective Equipment:** Makes workers more visible so drivers can see them from farther away.
- ▶ **Traffic Control Devices:** Rumble strips can lower speeds, boost awareness, and help fight driver fatigue. Pavement markings keep lanes visible, lower driver stress, and reduce lane departures. Sequential lights and high-visibility sheeting make signs easier to see from farther away, encourage earlier merges, and help reduce nighttime fatal crashes.
- ▶ **Coordination:** Managing lane shifts, road closures and working schedules can reduce traffic risks, improve response times, and keep workers safe.

BENEFITS

Increased Safety. Fewer serious crashes due to better visibility, traffic control, and monitoring.

Process Efficiency. Actionable guidance on proven practices and technologies to support agency decision-making.

Operational Efficiency. More efficient nighttime work zones using data-driven planning, smarter equipment, and standardized operations.



STATE OF PRACTICE

Many states have shifted towards nighttime work zone operations to help mitigate mobility issues. As a result, agencies are updating their daytime strategies to best support nighttime work:

- ▶ **Training and Education:** Illinois Department of Transportation (DOT) has worked to increase district staff's awareness of nighttime safety requirements to improve compliance.
- ▶ **Development of Standards:** Michigan DOT developed a standard for measuring lighting levels by inspectors during nighttime operations. Similarly, Illinois DOT developed a detailed specification for construction lighting.
- ▶ **Smart Work Zones:** Pennsylvania DOT partners with Pennsylvania Turnpike and the Pennsylvania State Police to conduct a statewide work zone speed safety camera program. Tennessee DOT requires variable speed limit signs on their interstate resurfacings along with lane closures for nighttime work zones.
- ▶ **Emerging Technologies:** The California Department of Transportation (Caltrans) is exploring the use of tethered unmanned aerial systems (UAS) equipped with powerful lighting systems to enhance worker safety during nighttime operations. Virginia DOT is developing an automated truck mounted attenuator (TMA) and alarm for driver-operated TMAs that uses sirens and lights to warn nearby vehicles. Similarly, Tennessee DOT recently assessed AI powered systems to attach to TMAs to activate horns and lights when vehicles are approaching and in danger of impact.

RESOURCES

[FHWA Work Zone Management Program](#)

[National Work Zone Safety Information Clearinghouse](#)



Except for the statutes and regulations cited, the contents of this document do not have the force and effect of law and are not meant to bind the States or the public in any way. This document is intended only to provide information regarding existing requirements under the law or agency policies. The U.S. Government does not endorse products or manufacturers. Trademarks or manufacturers' names appear in this document only because they are considered essential to the objective of the document. They are included for informational purposes only and are not intended to reflect a preference, approval, or endorsement of any one product or entity.



U.S. Department of Transportation
Federal Highway Administration

Martha Kapitanov
FHWA Office of Operations
(202) 695-0736
martha.kapitanov@dot.gov

Jawad Paracha
FHWA Office of Operations
(202) 366-4628
jawad.paracha@dot.gov