

Work Zone Safety During Paving Operations



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NJDOT

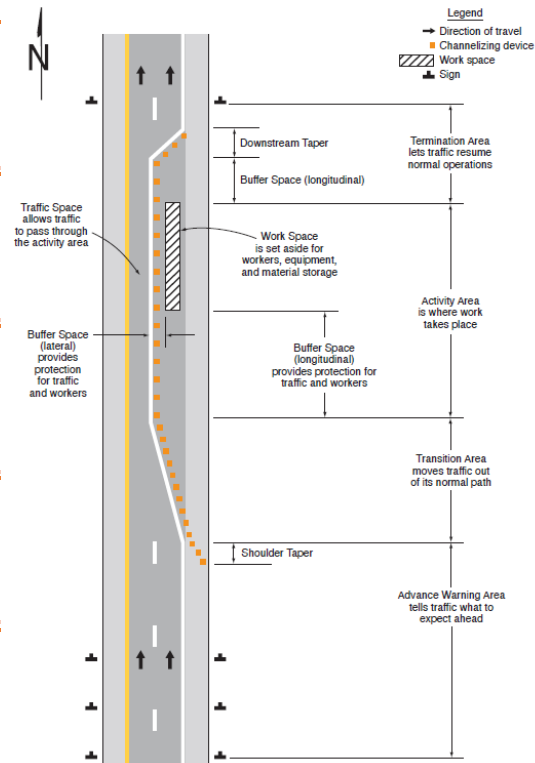
Some of the material shown in this presentation
are obtained from ARTBA, and FHWA

What Is a Work Zone?

- A work zone is an area where construction activities are being conducted and alterations to the existing traffic patterns are necessary. Traffic control devices are used to guide and inform drivers. The Work zone typically extends from the first warning sign to the END ROAD WORK sign.
- The work zone encompasses several distinct areas to ensure safety and efficient traffic flow: Advance warning, Transition, Buffer, Activity, and Termination area.

Work Zone Areas

Advanced Warning Area	Alerts drivers about the upcoming work zone and changes in traffic patterns.
Transition Area	Guides drivers to shift from their normal path to a new path using traffic control devices
Buffer Area	Serves as a safety zone separating the transition area from the activity area, providing a buffer in case of vehicle intrusion.
Work Area	Central zone where construction work occurs. It houses workers, equipment, and materials.
Termination Area	Indicate the end of the work zone and allows traffic to transition back to normal flow.



Types of Work Zone

- Long-term stationary
 - Occupies a location for more than 3 days.
- Intermediate-term Stationary
 - Occupies a location for more than one daylight period up to 3 days, or nighttime work exceeding 1 hour.
- Short-term Stationary
 - Daytime work lasting more than 1 hour within a single daylight period
- Short duration
 - Work lasting up to 1 hour
- Mobile operations
 - Moves intermittently or continuously.

Objective of Work Zones and Traffic Control Plans



Safety: Work zones are designed to ensure safety for both workers and drivers

Manage Traffic Flow: Direct traffic movement by providing lane shifts, lane closures, or detour to allow vehicles to pass through or around the work area safely

Efficiency: Ensuring that the roadwork is done efficiently and with minimal interruption to regular traffic patterns,

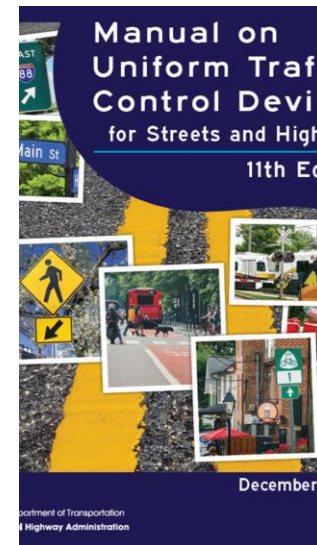
Public awareness : Providing clear advance warning signs, VMS messages and other information to guide motorists safely and ensure they understand the work zone and its associated hazards.

Compliance: Adhere to all relevant safety regulations and standards.

Standards and Regulations on Work Zone

Work zones in road construction are governed by several standards and regulations designed to ensure high-quality work zone setups that protect both workers and drivers while maintaining efficient traffic flow.

- **Manual on Uniform Traffic Control Devices (MUTCD)**
Establishes the uniformity of traffic control devices and Ensures consistency and effectiveness of traffic control devices across the U.S
- **Occupational Safety and Health Administration (OSHA)**
Requires the use of high-visibility safety apparel for workers
- **NJDOT Standard Details and Specifications:**
NJDOT provides detailed specifications for the materials, construction methods, and layout of work zones, ensuring that all aspects meet state and federal safety standards.



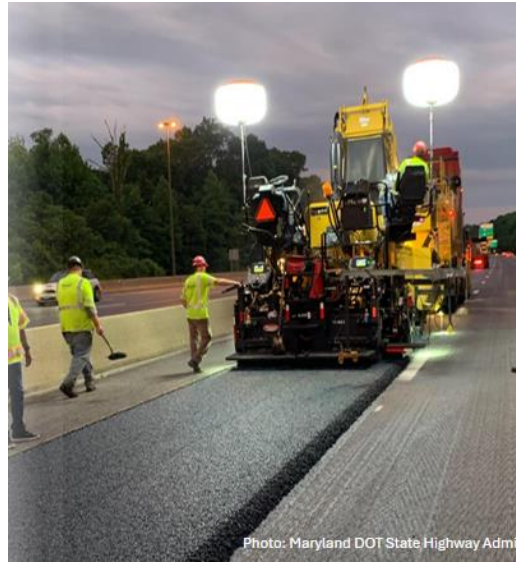
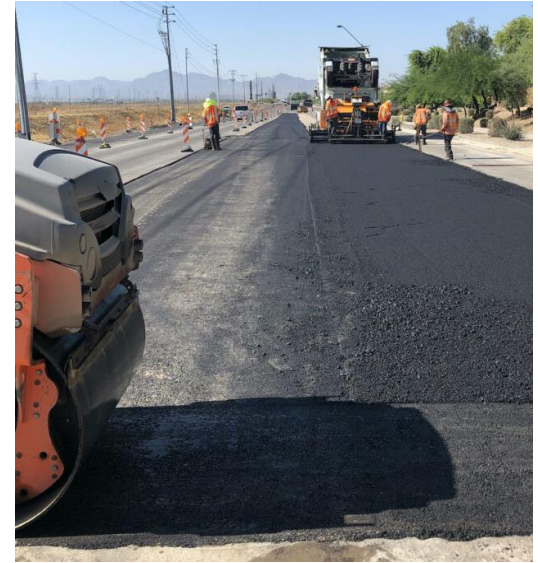


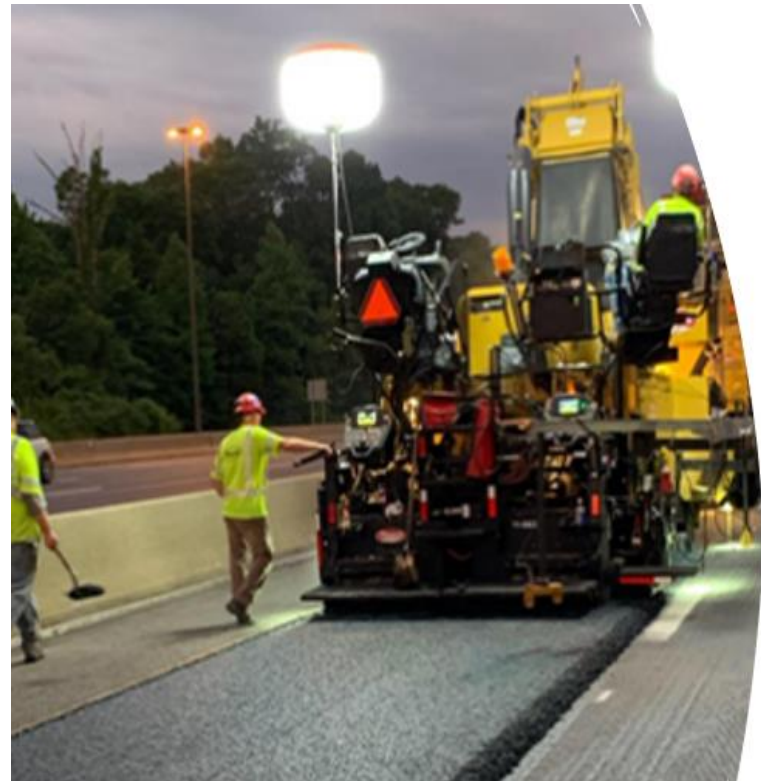
Photo: Maryland DOT State Highway Admin



Work zone safety for asphalt paving projects

Pavement Projects

- **Types of Pavement Operations:**
 - New pavement construction
 - Resurfacing and rehabilitation
 - Road repair and patchwork
 - Roadway widening
- **Key Considerations for Work Zone Setup:**
 - Worker safety
 - Traffic flow management
 - Minimizing disruptions
 - Traffic Volume and speed



Work Zone Setup

- **Initial work zone setup:**
 - Installing advance warning signs
 - Setting up traffic control devices
 - Planning detour routes
- **Active Work Zone Management**
 - Monitoring traffic flow
 - Adjusting safety measures
 - Maintaining clear communication
- **Final Restoration Phase**
 - Gradual lane reopening
 - Removal of barriers and devices
 - Ensuring area is safe for normal traffic

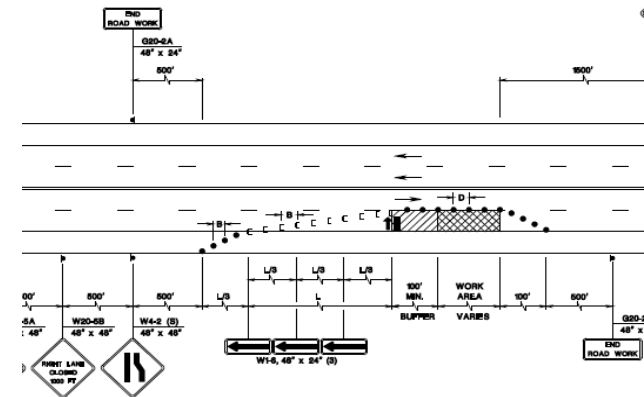
Safer work zone for asphalt paving projects

Consider the following best practices to ensure the safety of both workers and the public:

- Each work zone is unique, requiring thorough preparation to ensure safety.
- Implement clear signage and communication for drivers entering the work zone
- Designate entry and exit points to manage traffic flow and prevent confusion
- Ensure proper Lumination of the work area for nighttime paving
- Enhance worker visibility by using high-visibility apparel and protective equipment
- Assess the size and complexity of work zones to ensure safety, timely completion of work within allowable hours, and efficient traffic flow.
- Ensure all employees have basic training on work zone and traffic control devices.

Design consideration TCP for paving operation

- **Duration of the work**
 - Short duration, less than 3 days wind master signs can be used
 - Longer duration, more than 3 days, use post mounted signs
 - Curing time should be considered in the lane closure hours
- **Work Zone Layout**
 - Follow the NJDOT standard details for developing the TCP
 - Productivity rate to be used to determine the length of the closure per shift
- **Planning for Safety**
 - Proper planning and adherence to NJDOT standards and the MUTCD guidelines is crucial to ensure the safety of both motorists and workers Frequency of access and egress
 - Define and provide proper advance warning signs for work vehicle access



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Design consideration

TCP for paving operation

- Roadway traffic volume
- Roadway speed
- Sight distance
- Requirement for positive protection
- Appropriate signing
- Nighttime activities/ lighting devices to meet required standards
- Proper advance warning signs

Identifying Risks

- Identifying Risks
 - Vehicle intrusions
 - Heavy machinery entering and exiting
 - Uneven surface, weather conditions
 - Driver Behavior and Attitudes
 - Nighttime activities, Reduced Visibility and Confusion

Risk Mitigation Strategies

- Setting up work zone clearly with the use of proper devices and advance warning signs
- Enhance lighting for nighttime activities
- Define access and egress points for work vehicle
- Ongoing monitoring of work zones
- Making necessary adjustments
- Worker training and awareness

Night Work: Benefits and Challenges

Benefits :

- Minimizes traffic disruption: Lower traffic volume compared to daytime operations.
- Safety: Decreased traffic volume at night can result in fewer crashes.
- Easier and safer delivery of materials to work sites with reduced road congestion.
- Faster and safer setup and removal of temporary traffic control devices (TCD) because of lighter traffic.

Night Work: Benefits and Challenges

Challenges:

- **Reduced Visibility:** Limited lighting can make it harder for drivers and workers to see clearly.
- **Distracted Drivers:** Fatigue and distractions can be more common during nighttime hours.
- **Vehicle Intrusion :** The risk of vehicles entering work zones, often due to speeding, distraction, or poor visibility, can lead to severe injuries or fatalities, especially for pedestrian workers.
- **Higher Operating Speeds:** Some drivers may drive faster at night due to lower traffic volumes.
- **Increased Truck Traffic:** There may be more heavy vehicles on the road, posing additional risks.

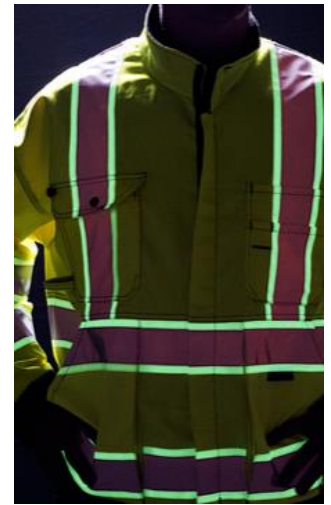
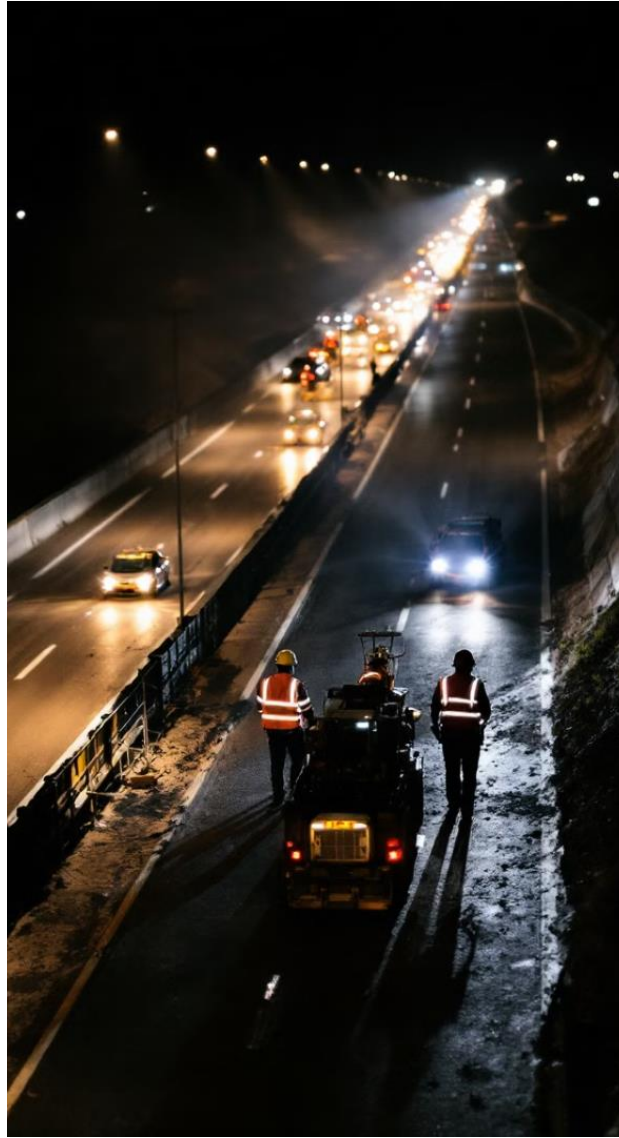
Mitigation strategies for Night work in work zones



- Employ adequate lighting to enhance visibility for workers and drivers and provide proper illumination for work areas and equipment.
- Minimize glare for approaching vehicles.
- Use clear reflective signage and traffic control devices to guide traffic safely through work zones.
- Ensure all workers wear high-visibility safety apparel.
- Adhere to guidelines from the New Jersey Department of Transportation (NJDOT) and the Manual on Uniform Traffic Control Devices (MUTCD) for nighttime construction.

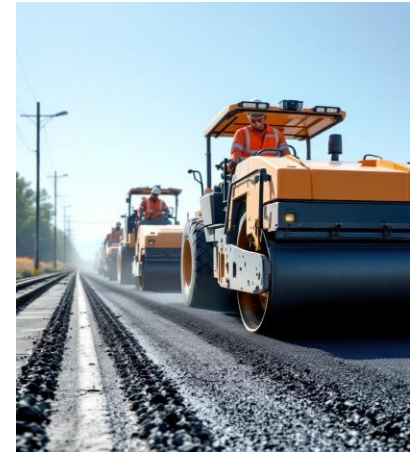
High Visibility Apparel

- High visibility apparel is required for all workers in the public right of way of all roads
- High-visibility class 2 or class 3 ANSI/ISEA Reflective material should be seen 1000 ft away
- NJDOT Flagger required to wear class 3, level 2 orange



Access and Egress

- Since paving operations often involve heavy machinery entering and exiting the site, careful planning of access and egress routes is critical for ensuring road safety.
- In milling and paving projects, materials are consistently delivered and removed throughout the work shift. Establishing clearly defined access and egress points is vital to ensure smooth operations and maintain project efficiency.



Key Takeaways

No two work zones are identical; each requires careful planning.

Establish a safe, controlled environment for both workers and motorists.

Minimize the size and complexity of the work zone to ensure safe and efficient traffic flow.

Identify and assess potential hazards.



Key Takeaways

Follow NJDOT and MUTCD standards.

Ensure adequate lighting for nighttime work.

Remove or cover signs when work is not active.

Establish controlled access and egress points for work vehicles.



Thank you

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