Best Practices for Spotting and Backing Dump Trucks and Other Equipment

Designated Spotter Training

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Why use Spotters?

Electrical Spotters: Spotters focus on safety when working near electrical lines/overhead lines. They must provide warnings to operators about potential encroachments into **"No Go Zones“** and ensure compliance with safety standards.

Construction Spotters: Spotters help guide equipment operators, such as dump trucks, to ensure safe movement of materials. They are essential for preventing accidents between pedestrians and heavy equipment.

Milling and Paving Spotter: Spotters focus on both overhead hazards and movement of equipment and vehicles around the mill and paver.

Deliverables:

- ***Simple*** communication for everyone to use and understand.
- ***Consistency*** - Where, when, and how we are using the Signals.
- ***Consistency*** - Where, when, and how we are using Spotters.
- It needs be communicated to ***EVERYONE.***

So, what are we saying?

- When a truck is dumping or used in conjunction with equipment, there ***will*** be a spotter.
- When equipment needs to operate near any overhead hazards, there ***will*** be a spotter.
- When driver or operator's visibility is low due to the process, or weather, or obstacles, there ***will*** be a spotter.

A *Designated Spotter* – someone assigned to do the job.

Multiple responsibilities:

1. Identify overhead hazards.
2. Communicate with vehicle and equipment operators.
   - Raise the bed to dump product
   - Lower bed and pull forward as directed
3. Monitor clearances under/near overhead hazards.
   - What can operators/driver see? Or, *not* see? Blind spots
4. Stop Work Authority.
5. Observe quantity and flow of material into hopper.
6. Collect and secure load tickets.
7. What to do if an incident happens.

Why use designated spotters?

Just 2 years of stats –

You're welcome.

2025 – 7 Overhead hazard strikes (bridges, overpasses, wires of all kind)

2026 – 1 and that happened just a couple of weeks ago

50% fewer incidents that caused damage to the paving hopper and/or the tailgate of dump truck

Responsibility #1

Identify Overhead Hazards

Minimum Distances for Powerlines:

NO equipment shall operate within 10 feet of any powerline, unless:

1. The Utility owner de-energizes the line and verifies there is no energy.

OR

2. The Utility owner protects the powerline in a way so that energy cannot transfer from the line to the equipment either from contact or if within 10 feet.

"Equipment" - is equipment that raises, lifts or moves laterally to where any piece of that equipment could be operated within 10 feet of powerlines.


Hazard - Wire
Crop
AP1055
RS

That means you can't be closer than 10 feet with…

- The top of the conveyor on the mill.
- The top of the conveyor on the transfer machine.
- The exhaust stack on the paver.
- Any part of a dump truck – the bed, antenna, tarp arm etc.
- The boom of a mechanic's truck crane.
- The bucket of a skid steer.

If there is a possibility of encroachment,
YOU MUST STOP WORK!

Possibility of getting closer than 10 feet you must STOP!















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Responsibility #2

Communicate with Vehicle and Equipment operators

Direct Communication:

Communication by radio, walkie talkie or device that is used by both the spotter and driver or operator is best.

- Cell phones are not communication.
- Yelling is not communication.
- A horn is not good communication.



The field manager should also have open communication with spotter and driver. Listen in, then help and support as needed.

Moving forward, identifying overhead hazards:



IT WILL BE THE SAME EVERYWHERE

Same signs, cones, same color, same verbiage in every region!

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Identifying Overhead Hazards

Option #1



36" hard sided signs to be used with a wind master base stand for stationary use to identify overhead hazards.



36" roll-up signs to be used with a wind master base stand for stationary use to identify overhead hazards.

Identifying Overhead Hazards

Option #2



24x24 Yard sign for grassy or soft ground areas adjacent to work zones.

Identifying Overhead Hazards



Option #3

These cones and cone topper signs should be used where temporary traffic control is being utilized.

These are not for traffic channelization or delineation.

These must be removed at the end of the shift.


CAUTION
OVERHEAD
HAZARD
ZYL•8871

Cleanout and what to do after cleaning out:



Set prior to the cleanout area.

Set after the cleanout area.



Spotter Signals

Back

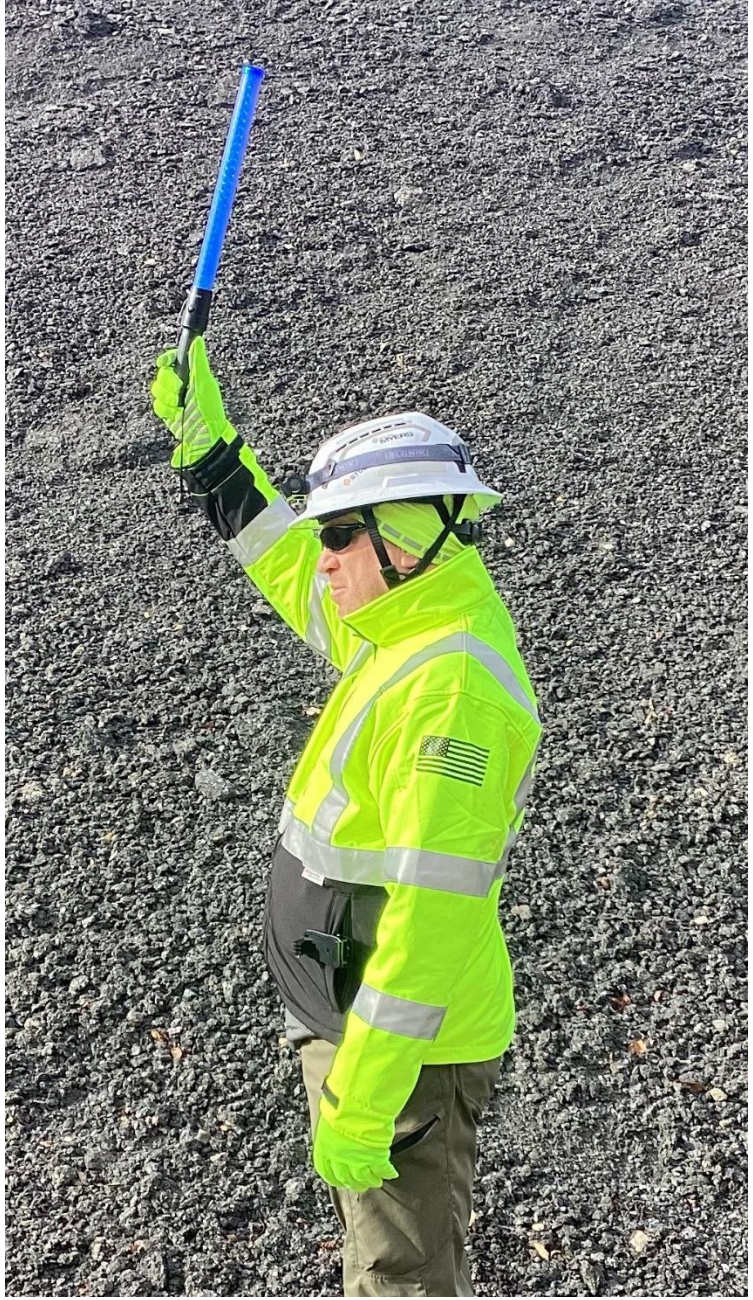


Pull forward





Raise BED





Lower BED







STOP



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Leave



Vibrate the Bed – Wave blue light wand side to side



Responsibility #3

Monitor Clearances and Blind Spots -- Positioning

Positioning:



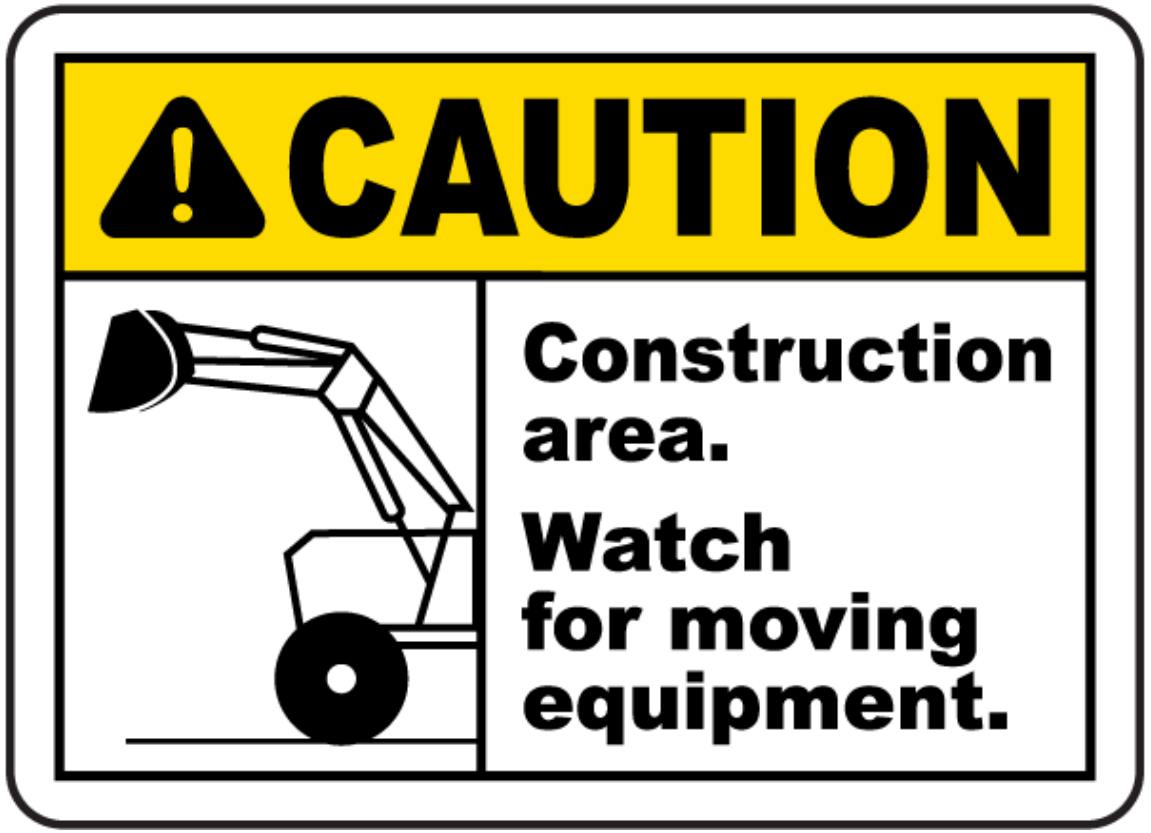
Spotters must be positioned away from equipment where their view is unobstructed to the overhead powerline, utility or hazard as the equipment approaches that hazard.

Positioning:



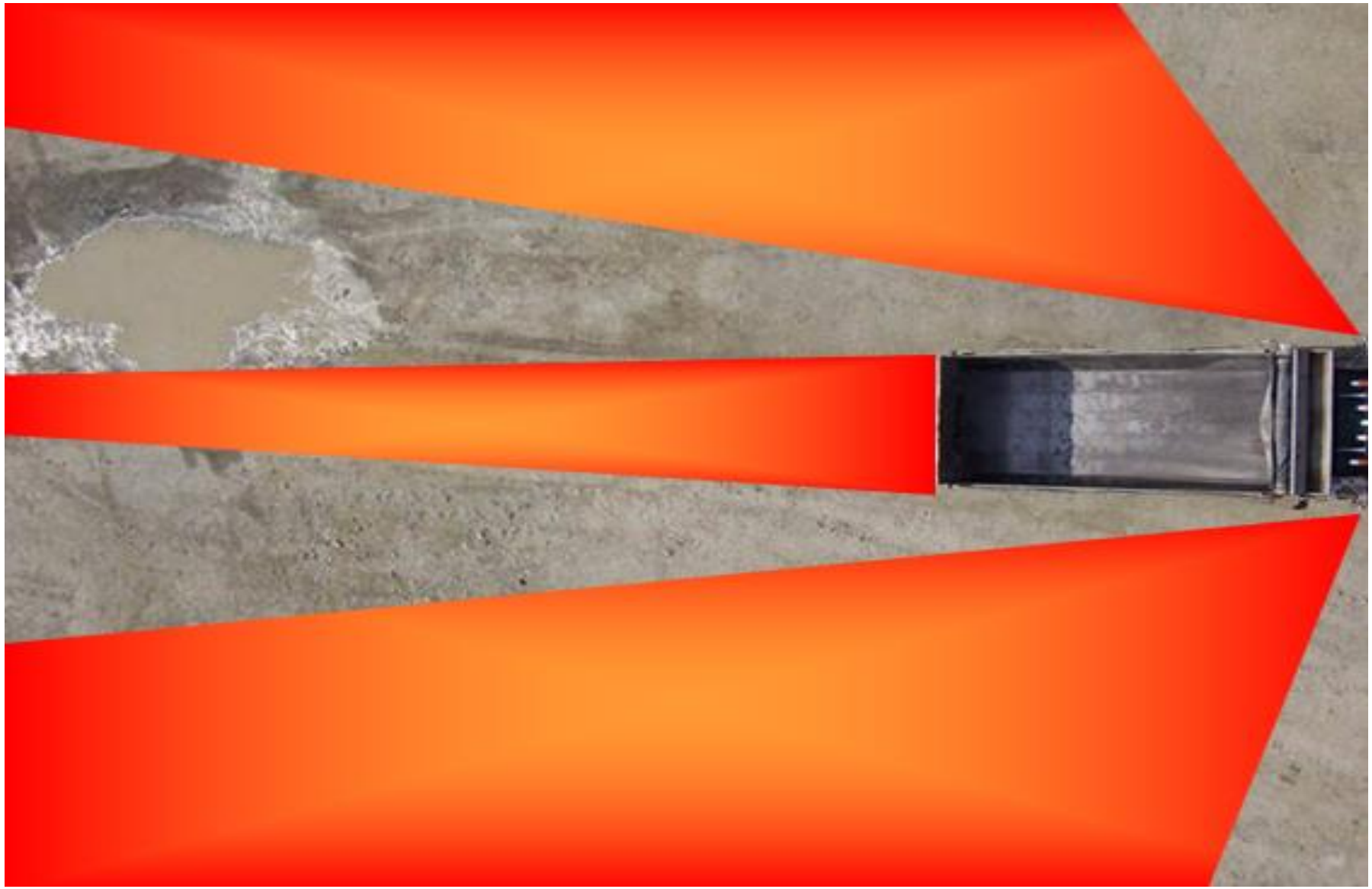
If powerlines are contacted the energy can be transferred from whatever contacted it, to you. You will become part of the circuit.

Positioning:

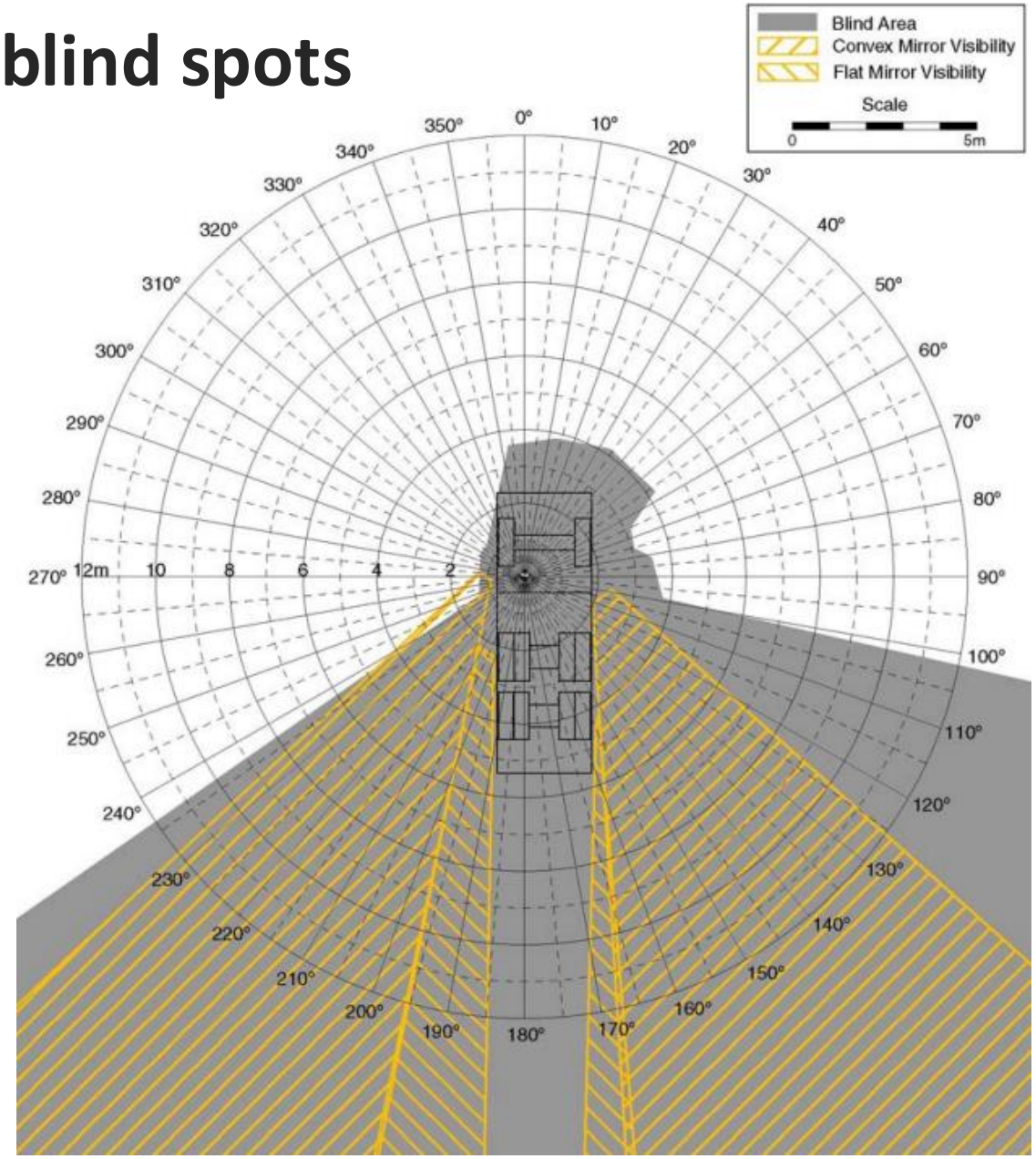


Getting struck by equipment. Know the blind spots.

dump truck blind spots



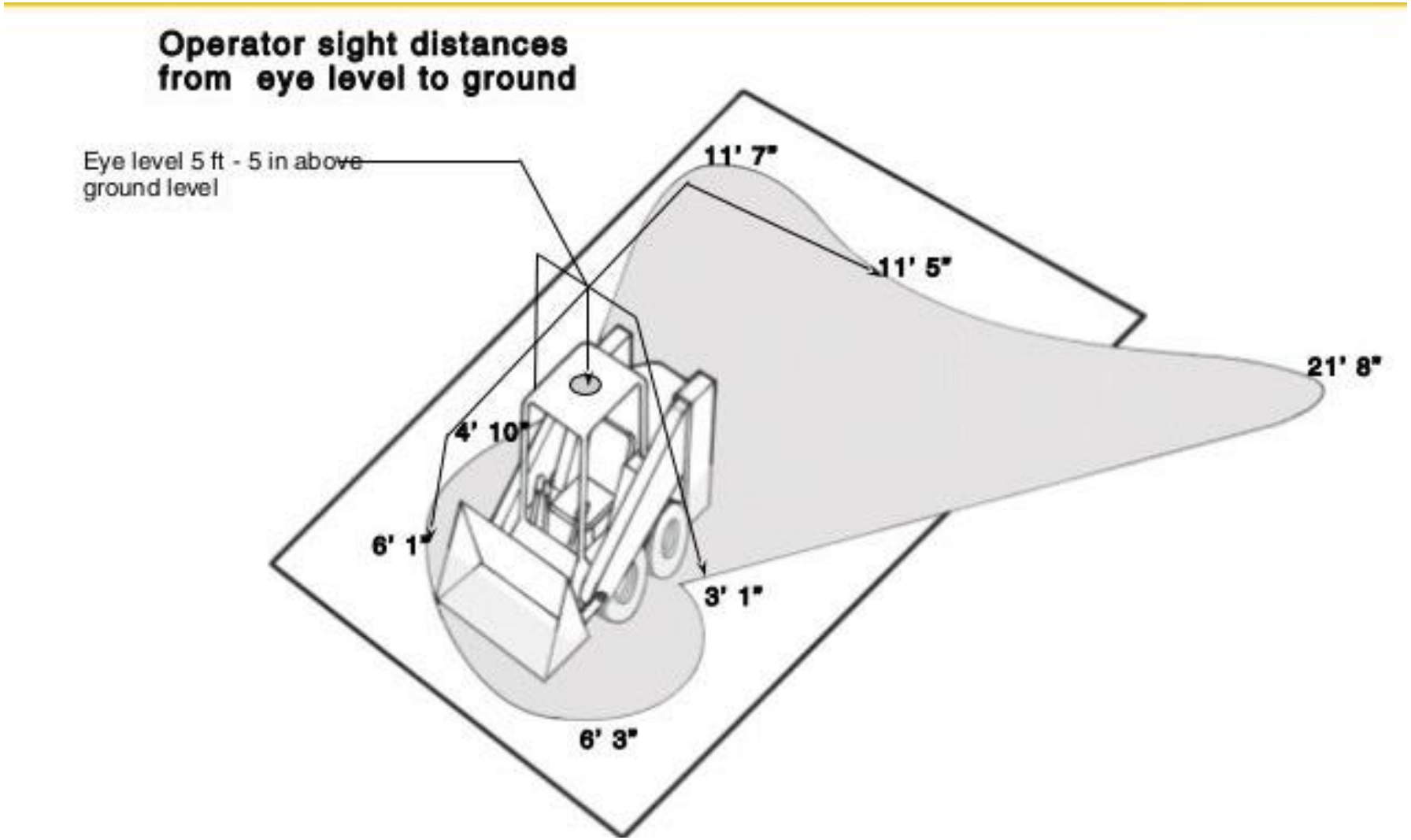
dump truck blind spots



water truck blind spots



skid steer loader blind spots



Stay Visible:

Spotters must have all the normal required PPE:

-Helmets with reflectivity

-Reflective vest

-Safety toe boots

-Gloves





Additionally, spotters must have:

-Blue Wands

-Reflective pants

-Headlamps at night

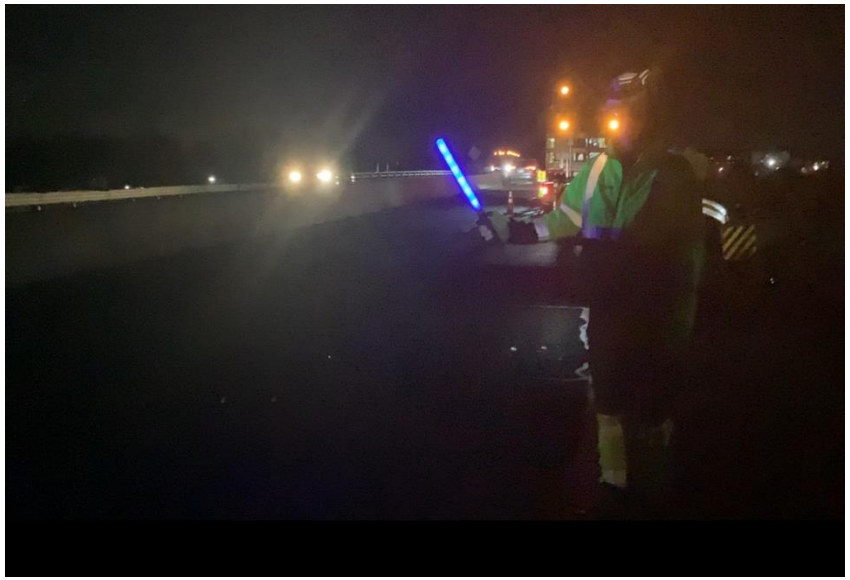


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Why the Blue Wand?

People can see it!!

Drivers can see it!!







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Operator/Driver Responsibilities:



- **STOP** immediately if spotter is out of sight.
- Follow spotter's signals precisely.
- Communicate clearly before and during operations.

SPOTTER Signals

Communication between Spotter and Driver

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Designated Spotters MUST:

- Be focused on the Hazard, concentrate on Spotting.
- Maintain eye contact with the driver/operator before communicating the signal, even if you need to change position.
- Be consistent. Consistent Signals = Consistent Response
- Be visible- use proper PPE, have wands and use personal lighting at night.
- If the Spotter needs to Stop Spotting for any reason, first make sure the driver/operator *STOPS* the truck/equipment.
- Avoid walking backwards. Always walk with eyes on path.
- No use cell phones. They are a distraction, and they are not to be used as communication.



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Safe Backing & Spotting – Best Practices

SB&S Training for Transportation and Maintenance Construction Professionals

Robinson Vasquez LLM, MBA - ARTBA



AI image: Nano Banana

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Some of the content contained in this course is derived from the Manual on Uniform Traffic Control Devices (MUTCD), the National Work Zone Safety Information Clearinghouse, and various State departments of transportation.

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U.S. Department of Transportation
Federal Highway Administration

Learning Objectives

- Identify the hazards of backing operations
- Explain why a standardized backing and spotting program matters
- Communicate clearly between spotters and operators
- Demonstrate the standard hand signals for backing vehicles



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The Backing Problem

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- NIOSH found that **55% of work zone fatality incidents** it investigated involved vehicles and equipment inside the work zone[1]
- Backing vehicles and equipment killed **143 workers** at road construction sites from 2003 to 2010[2]
- **No federal standard** covers backing or spotting in work zones
- Employers fill the gap under OSHA's **General Duty Clause**

1. NIOSH review of 75 FACE reports (78 roadway work zone deaths). Source: NIOSH, Using Internal Traffic Control Plans to Prevent Construction Worker Injuries and Fatalities in Work Zones, 2024.
2. Source: NIOSH Workplace Solutions, Preventing Worker Injuries and Deaths from Backing Construction Vehicles and Equipment, citing BLS 2013.

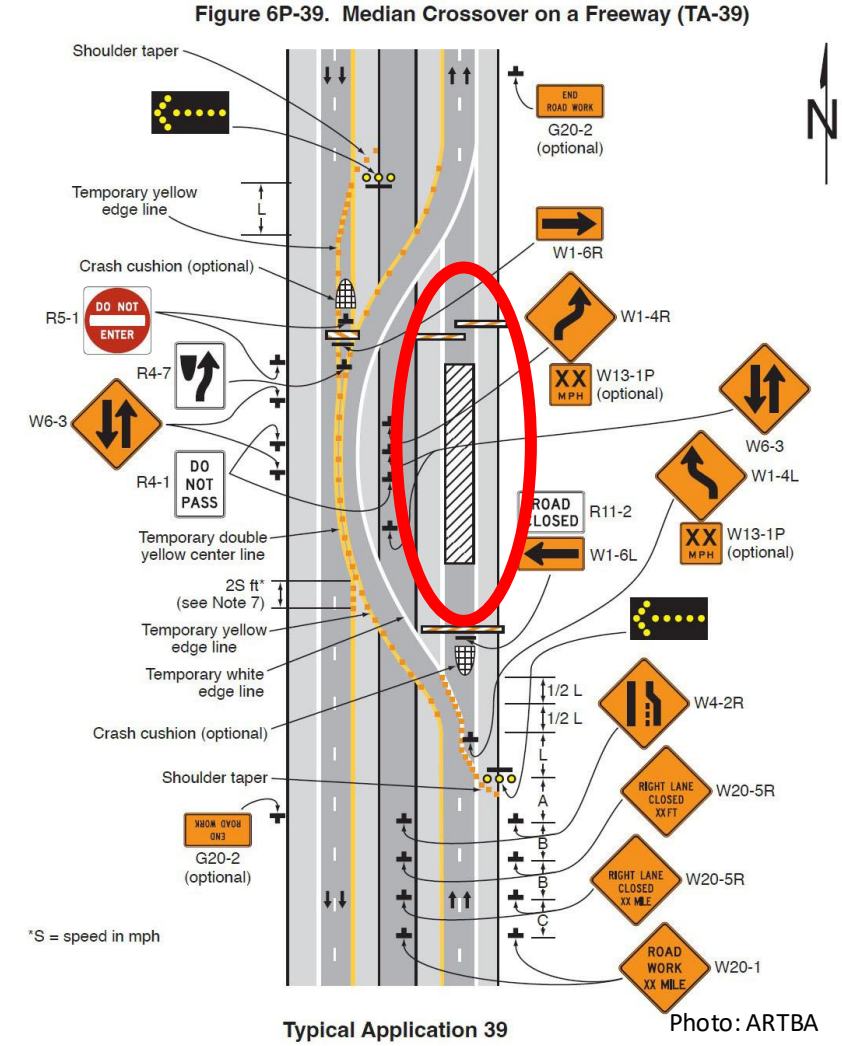


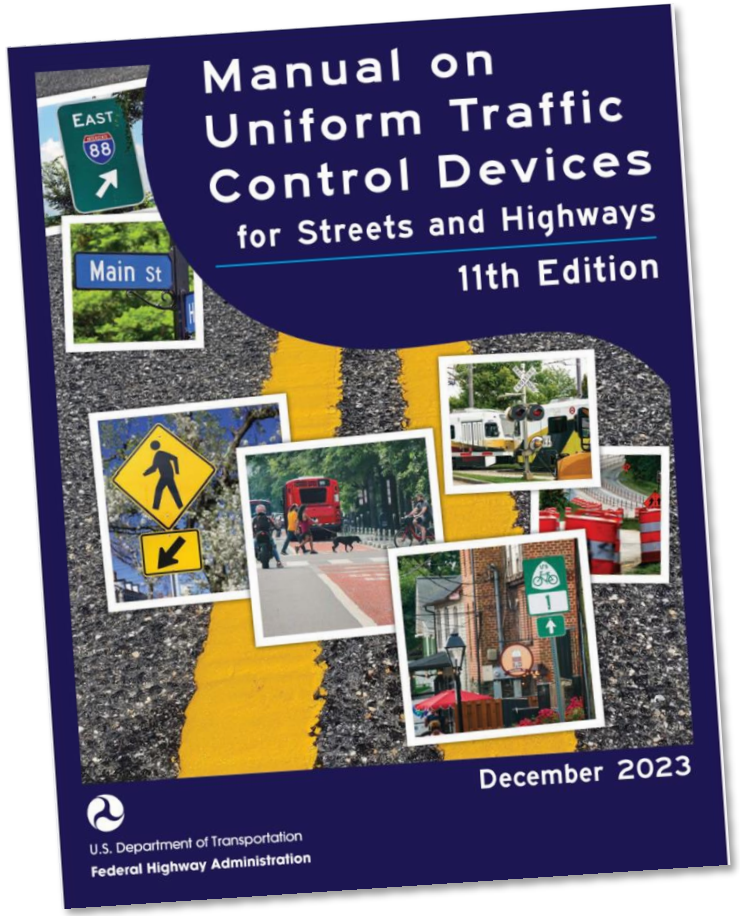
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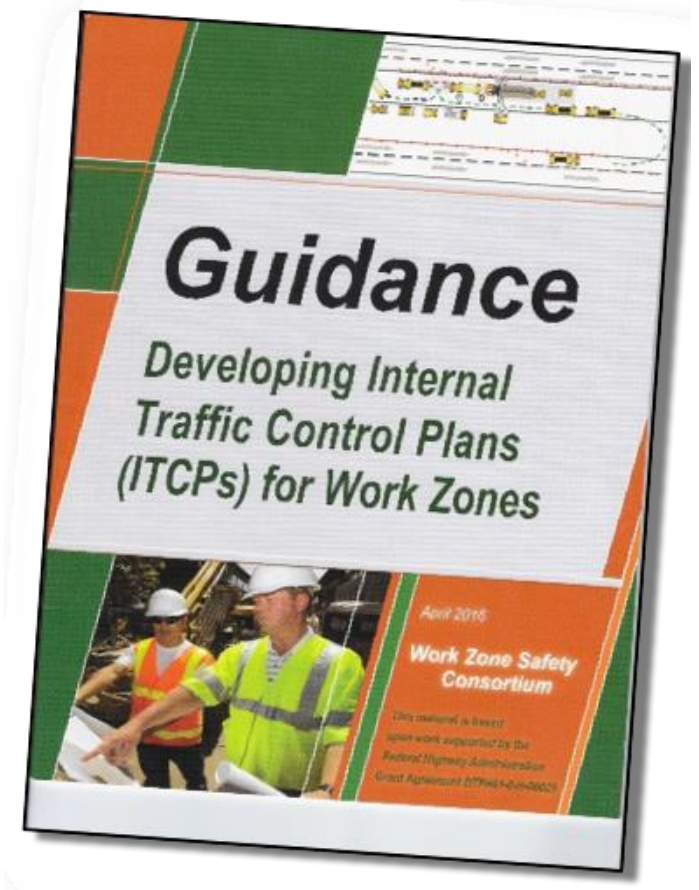
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Differences Between ITC & TTC

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Temporary Traffic Control Plans



Internal Traffic Control Plans

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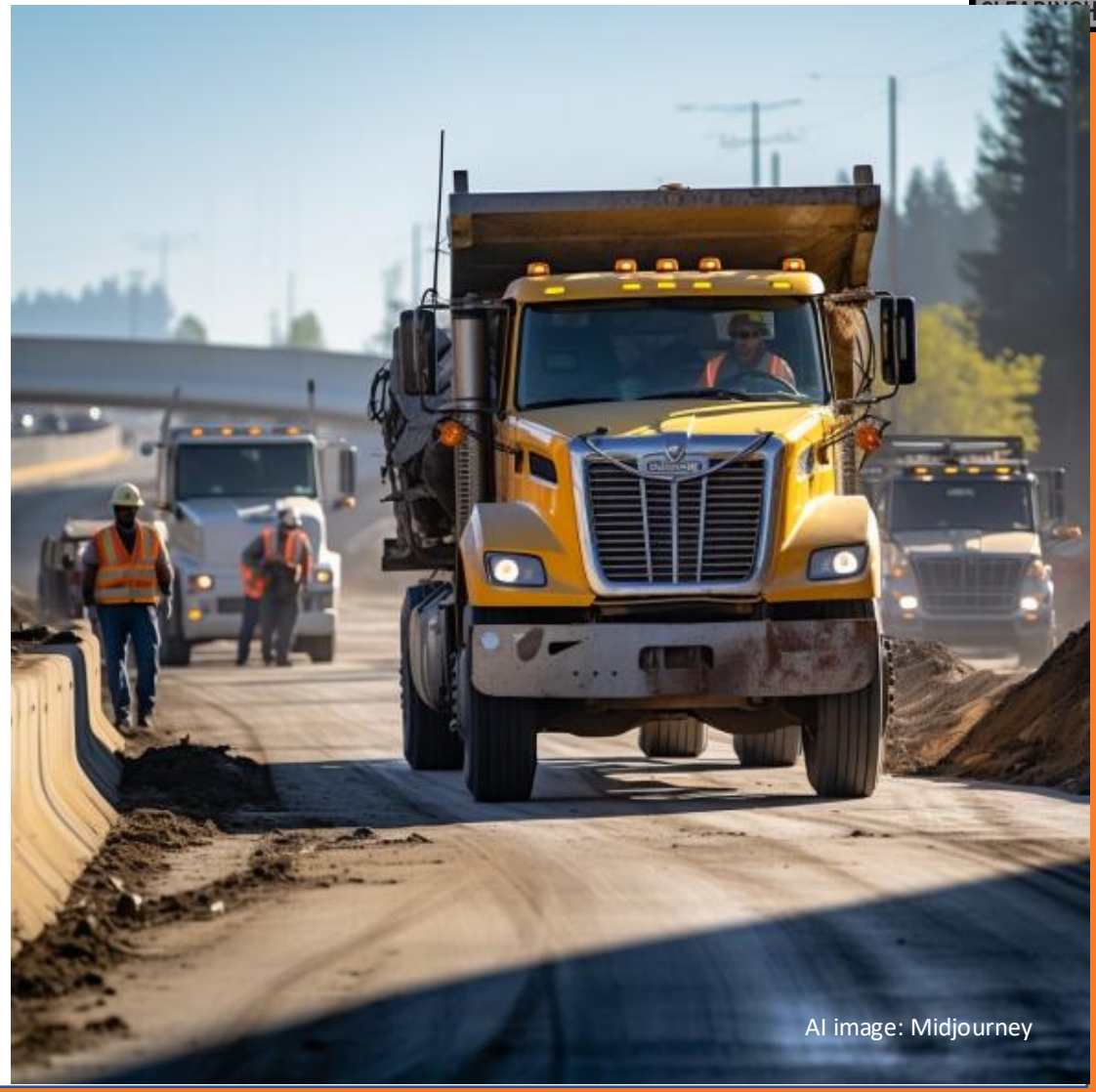
Activity: Hazard Analysis



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ARTBA Video INTERNAL TRAFFIC HAZARDS – BACKING UP OPERATIONS

How can we prevent this incident?



AI image: Midjourney

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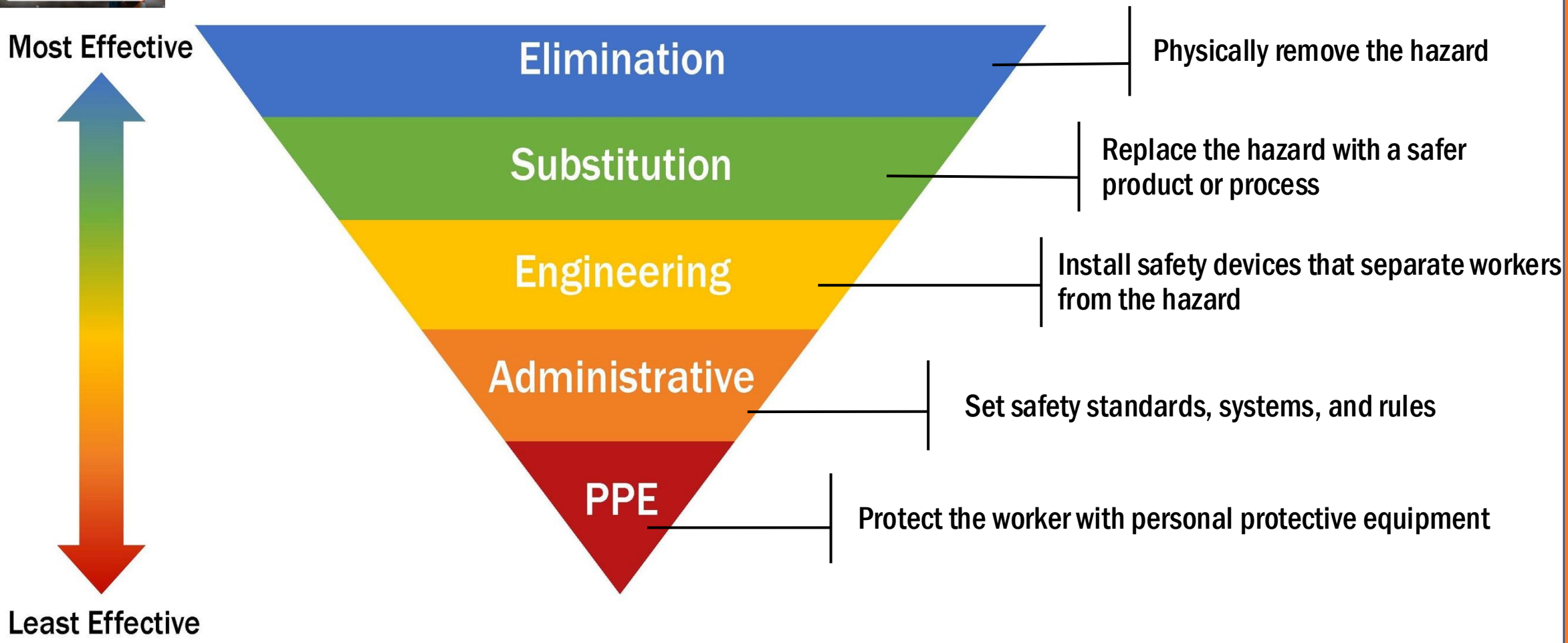


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Hierarchy of Controls

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Elimination and Substitution

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- **Elimination:** Minimize backing. Use an Internal Traffic Control Plan to keep workers on foot away from heavy equipment
- **Substitution:** Use equipment with fewer blind spots, or assign spotters to control backing



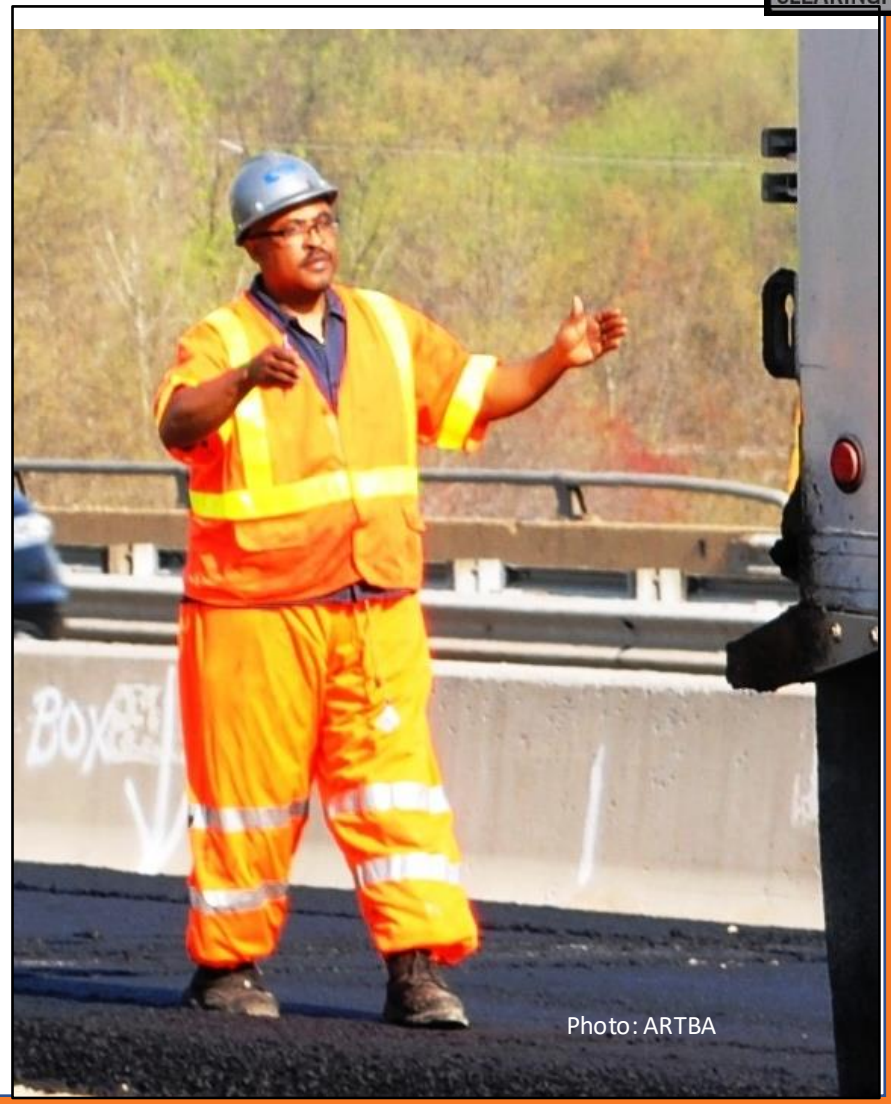
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Engineering, Administrative, and PPE

- **Engineering:** Better lighting, positive separation from workers on foot, backup alarms, strobe lights, and cameras
- **Administrative:** Train spotters, operators, and workers on foot; set internal safety standards
- **PPE:** High-visibility vests and personal lights


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Spotters



Photo: ARTBA

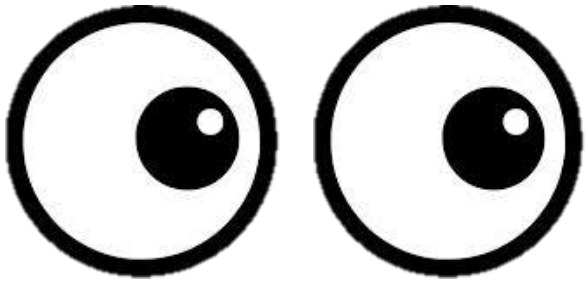
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Who Is a Spotter?

- Spotters are workers who are trained to:
  - Identify hazards to workers on foot from trucks and equipment.
  - Identify hazards to operators from utilities or other obstacles.
  - Direct trucks and equipment when backing or operating near obstacles or workers on foot.
  - Keep workers on foot and other drivers out of the path of working equipment.

SPOTTERS LOOK FOR HAZARDS

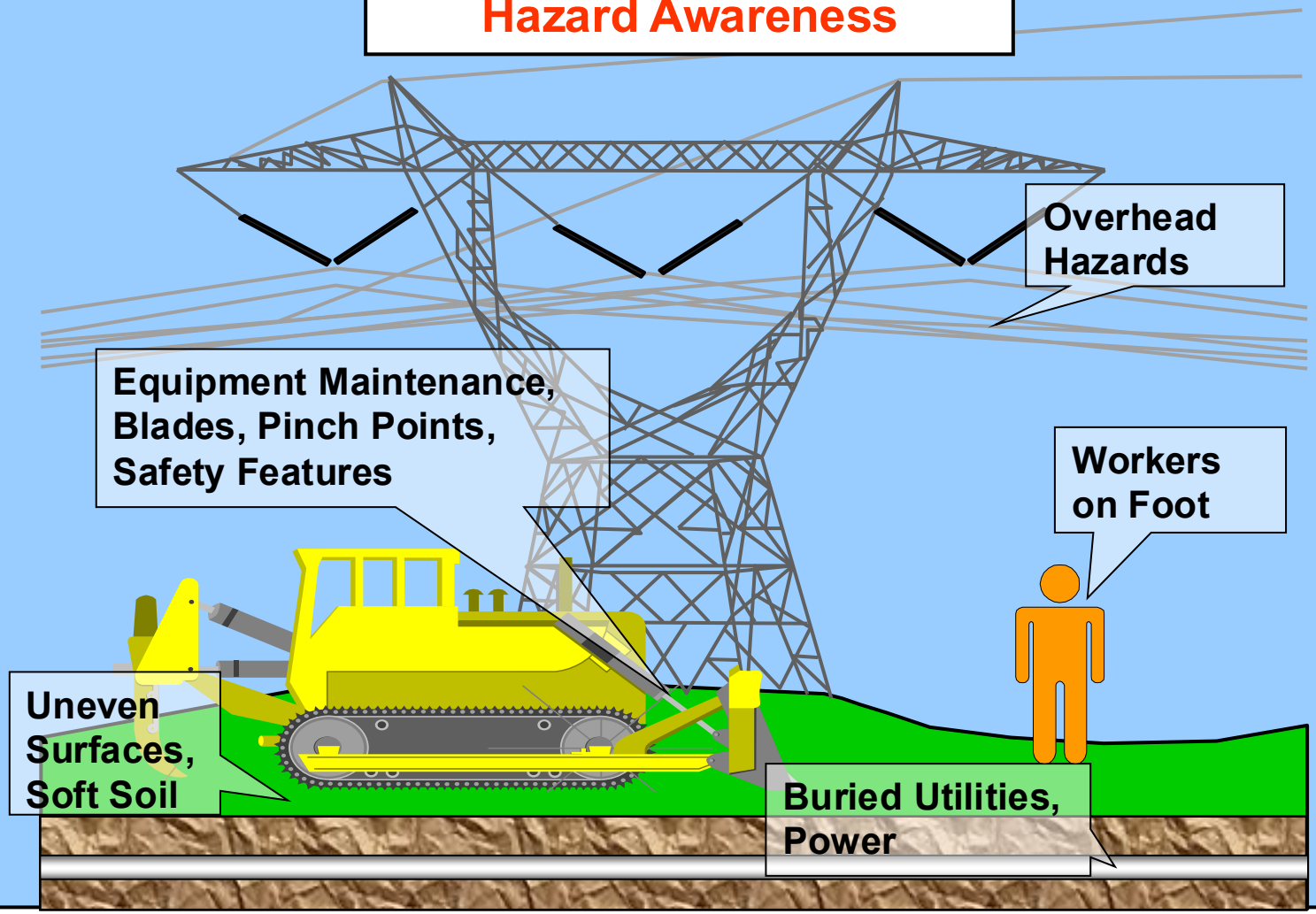


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Spotters and Work Zone Hazards

Safe Equipment Operation Hazard Awareness



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Spotter Standards and Risks

- Recommended in national standards, including the American National Standards Institute (ANSI).
- Required by some states and cities when camera/radar systems are not used.
- Assist when workers have their backs to equipment or traffic.
- Spotters are at risk from vehicles and equipment too:
  - Who is spotting the spotter?
  - What if the spotter trips and falls?



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Regulations

- **OSHA** requires a backup alarm or a spotter for some backing operations
- **Some states**, including Virginia and Washington, have backing rules stricter than federal OSHA



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Classes of High-Visibility Garments

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Type R: roadway work zones

Class 2



Class 3





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Activity: Retroreflectivity Demonstration

1. Get a flashlight and a retroreflective vest
2. Darken the room
3. Shine the light on the vest



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Activity: Read the Labels

XYZ Manufacturer
ANSI/ISEA 107-2020
3M™ Scotchlite™ Reflective Material
Model #: abc
Size: Large



Type R

Class 2

Not FR

This garment is not flame resistant as defined by ANSI/ISEA 107-2015 Section 10.5.

Washing Instructions:



Machine wash warm, 60 °C (140 °F)
Do not bleach
Tumble dry low
Do not iron
Do not dry clean

Example of Non-FR Label

XYZ Manufacturer
ANSI/ISEA 107-2020
3M™ Scotchlite™ Reflective Material
Model #: abc
Size: Large



Type R

Class 2

FR ASTM 1891

Washing Instructions:



Machine wash warm, 60 °C (140 °F)
Do not bleach
Tumble dry low
Do not iron
Do not dry clean

Example of FR Label

XYZ Manufacturer
ANSI/ISEA 107-2020
3M™ Scotchlite™ Reflective Material
Model #: abc
Size: Large



Type R

Class 3

This garment meets the single-use disposable coverall requirements of ANSI/ISEA 107-2020, Section 11.

SINGLE USE ONLY

DO NOT REMOVE THIS LABEL

Example of Disposable Coverall Label

Photos: ARTBA

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Spotter Basics

- Make sure drivers and operators always know where the spotter is.
- Workers must know the spotter's responsibilities and not approach equipment without permission.
- Assign only ONE spotter to each operation.



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How can we prevent this incident?

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What Kind of Person Makes a Good Spotter?


Photo: ARTBA

- Has roadway construction experience
- Gives and receives instructions clearly, firmly, and courteously
- Moves quickly to avoid vehicles and equipment
- Uses signals that give operators clear, positive guidance
- Spots danger and warns workers in time to avoid injury

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Why Are Spotters Important?

- Keep workers away from moving trucks and equipment.
- Improve safety for workers on foot.
- Assist drivers and operators in navigating hazardous conditions.

- Spotters save lives!


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When Is a Spotter Needed?

Assign a spotter around heavy equipment:

- In busy areas with construction traffic
- When the operator cannot see the full travel path
- When backing with limited visibility or space
- When maneuvering or backing trailers



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Activity

Practice ARTBA standard Spotting Signals

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Spotting Signals



Diagram: ARTBA

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Safe Backing and Spotting Summary

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- Vehicles and equipment inside the work zone cause **over half** of investigated work zone deaths
- **Eliminate backing** where you can; use spotters where you can't
- **One trained spotter** per operation, in Class 3 high-visibility clothing
- Spotter and operator **agree on signals** and keep visual contact



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Safe Backing and Spotting

- Questions?

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