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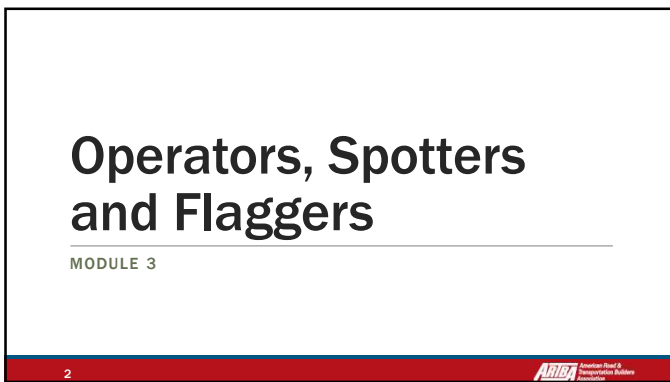
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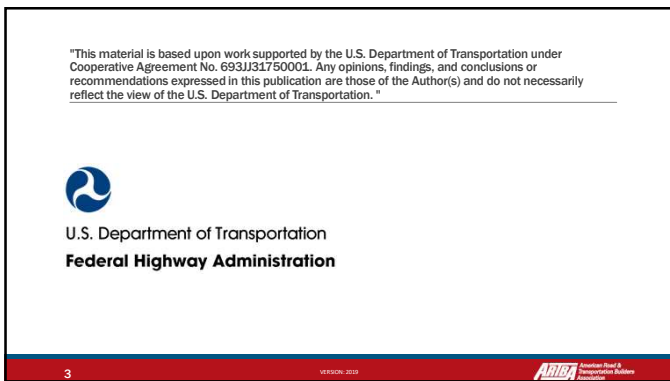
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**Learning Objectives**

- Explain how to prevent incidents from the perspective of an operator
- Explain how to prevent incidents from the perspective of a spotter and a flagger
- Explain how technology can help us to reduce incidents



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**How can we prevent this incident? - Operators' Safety**

- Hazard identification
- Preventive measures
- Spotter
- Operator

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**How can we prevent this incident? - Flaggers' Safety**



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### Backing Safety

There are several key principles to safe backing in work zones:

Backing should be a controlled operation, used only when necessary and then under specified conditions;

There should be clear communication between the operator and workers on foot before backing begins;

Operators and workers should understand the blind areas around the equipment on site.

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### Backing Safety

There are key practices for each type of worker in the construction zone:

- Operators should be certain of their surroundings and the location of workers, equipment and ground obstacles
- Spotters should be designated and used when practical
- All workers should be trained to avoid approaching or working near backing equipment

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### Backing Safety

#### Operators:

- Avoid backing up unless necessary
- Walk around vehicle to check for hazards
- Be aware of blind areas
- Use a spotter whenever possible

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### Know Your Surroundings



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### Designate a Spotter



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### How can we prevent this incident? - Spotters' Safety

- Spotter's location
- High Visibility
- Blind spots



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## Spotters

- Spotters are recommended by ANSI and other agencies;
- They are required by some states when camera/radar systems not used ;
- Spotters can also be in danger from vehicles – who is spotting the spotter?
- Spotters can help when you must work with your back to equipment or traffic;
- If visual contact is lost with the spotter, stop immediately until the spotter is located.

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## Spotters

- Spotters must ensure sure operators know they are present and where they will be standing;
- Near-by workers must know the Spotter's responsibilities and not approach equipment without permission.
- **There should only be ONE spotter** to avoid confusion;
- Spotters need to be trained in safe work procedures, including continuous communication and remaining visible to the operator at all times;
- If spotters are not used, workers must communicate with the operator directly before approaching. Eye contact is not enough.

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## Activity

PRACTICE SPOTTING SIGNALS

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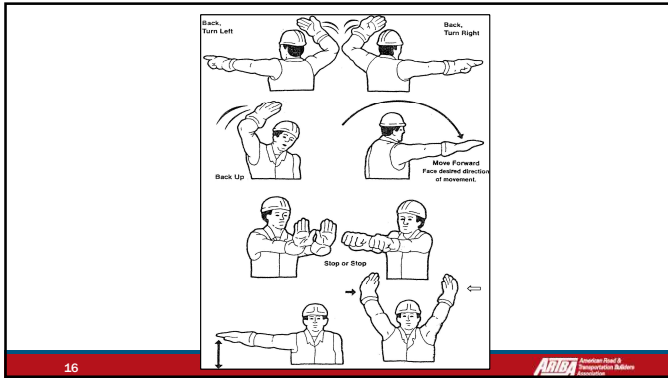
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### Vehicle Pathways

A key element of the Internal Traffic Control Plan is to develop a route plan vehicles will follow when entering, exiting, and traveling through the work space.

The route may be marked with temporary traffic control devices.

The plan must be communicated.

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### Vehicle Pathways

Pathways should be marked when:

- Deliveries of materials are completed by a variety of subcontractors/ independent drivers who are not familiar with the site and procedures;
- Multiple operations occur in close proximity to each other;
- Workers on foot are in the vicinity

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### Vehicle Pathways

The primary concerns are:

- Ensuring the drivers/operators know where they should- and should not go;
- Ensuring workers know the areas to avoid;
- Route planning occurs before vehicles arrive on site to separate operations.

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### Worker Free & Equipment Free Zones

Worker Free Zones are locations from which workers on foot must stay clear. They include:

- Blind areas around equipment
- Equipment travel lanes and queue areas in paving trains
- Moving equipment, including swing radius, pinch points and moving parts
- Other hazardous areas, such as near power lines

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### Worker Free & Equipment Free Zones



= Worker-Free Zone

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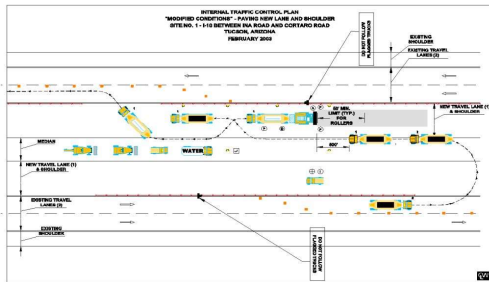
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### Sample ITCP (Equipment Path)



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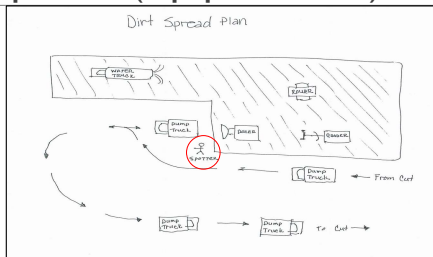
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### Sample ITCP (Equipment Path)



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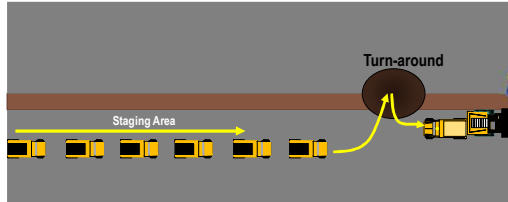
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### Case Study: Concrete Paving Operation



25 Minnesota Face Program (MN9207) Not to Scale ARIBA American Road & Transportation Builders Association

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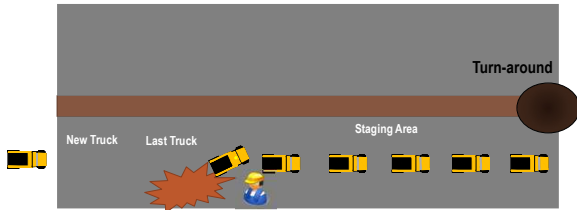
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### Case Study: Concrete Paving Operation



26 Minnesota Face Program (MN9207) Not to Scale ARIBA American Road & Transportation Builders Association

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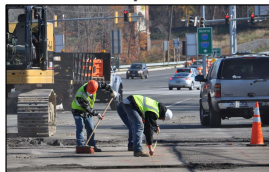
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### Parking and Staging Vehicles

The location where vehicles are staged and parked has a direct impact on safety as workers on foot move around the work area.



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### Parking and Staging Vehicles

Anticipate the locations and routes workers may take:

- Provide safe location for workers to park vehicles and access work space
- Mark crossing points where workers on foot can cross over construction vehicle paths and—only when absolutely necessary—open traffic lanes.
- Ensure rest areas, toilets, water coolers, etc. are in a location allowing workers to safely access them without crossing vehicle paths.

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### Vehicles Entering the Work Space

Plan locations and procedures for assigned workers to approach vehicles (such as taking load tickets and communicating delivery locations and procedures).



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### Truck Queues



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### Can Technology Help?

There are a variety of technologies—old and new—that have been developed to warn drivers and operators when workers on foot are near, including:

- Alarms
- Cameras
- Radar
- Sonar
- Tag Systems

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### Technology Video

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### Additional Work & Considerations

- Reduce nuisance alarms and false stops
- Effective alarm presentation and context considerations
- Operator interfaces and combined displays
- Are systems overloading operators? Are they distractions?
- Behavior changes in operators
- Wearable sensors appropriate for tasks and environment.

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# Discussion and Questions

END MODULE THREE

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