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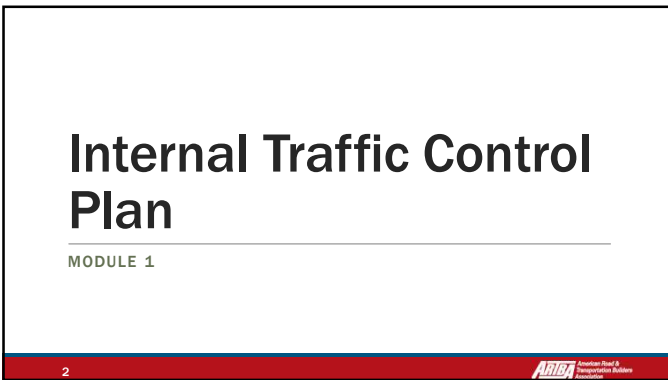
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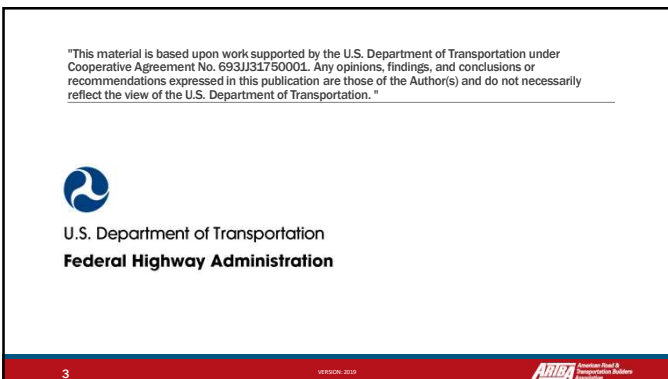
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**Learning Objectives**

- Explain why traffic is the main cause of incidents in the roadway construction industry
- Describe how an internal traffic control plan (ITCP) can help to reduce incidents in the work zone
- Identify the differences between a TTCP and an ITCP
- Identify why motorist intrusion can create incidents



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**How can we prevent this incident?**

Motorist intrusion  
TTCP  
MUTCD



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**How can we prevent this incident?**

Internal Traffic  
ITCP

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# Part 1: Introduction



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## What is "Internal Traffic Control?"

Internal Traffic Control (ITC) is a principle of **construction** traffic coordination **inside** the activity area of a temporary traffic control zone.

The purpose of ITC is to separate – to the extent possible – construction vehicles and equipment from workers on foot.

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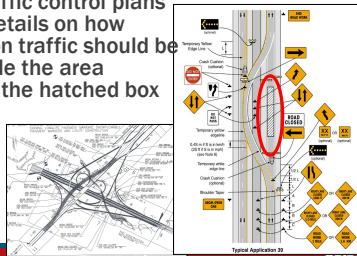
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## Where does the ITCP take place?

Internal traffic control plans fill in the details on how construction traffic should be set up inside the area marked by the hatched box on a TTCP.



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### Internal Traffic Control - Overview

An effective ITC protocol informs all parties operating within the work space about the location of others.

ITC creates "zones" designed to minimize interaction between workers on foot and construction vehicles.



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### Internal Traffic Control - Overview

An ITC plan designates routes and operating procedures for large trucks delivering materials.

The plan creates a traffic pattern to minimize backing.

ITC facilitates communication among key work zone parties in advance of arrival to the construction site.

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### Internal Traffic Control - Overview

- Limits access points to the work zone
- Coordinates truck and equipment movements
- Provides Information on traffic paths and safe/unsafe work areas for workers
- Heightens awareness of workers on foot in relation to vehicle traffic in the work area

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### What is the difference between Internal Traffic Control and a Temporary Traffic Control?



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### Preventing Runovers and Backovers

TEMPORARY TRAFFIC CONTROL PLANS      INTERNAL TRAFFIC CONTROL PLANS



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### Temporary Traffic Control Plans

Temporary Traffic Control Plans are defined and prescribed in the U.S. Federal Highway Administration's "Manual on Uniform Traffic Control Devices" or "MUTCD."

Internal Traffic Control is an industry recommended practice and is not prescribed by law.



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### Temporary Traffic Control Plans

Temporary Traffic Control Plans focus on moving traffic safely through a work zone.



Internal Traffic Control Plans focus on keeping workers on foot from being struck by construction equipment and large trucks within the activity area of a work zone.



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### Comparing Traffic Control Plans and ITCPs

MUTCD Traffic Control Plan	Internal Traffic Control Plan
Motor Vehicles	Construction Equipment
MUTCD	NIOSH Development Guide
Typicals	ITC Diagrams
Typical Application Notes	Internal Traffic Control Notes
Traffic Safety Engineer	Supervisor/Site Superintendent

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### Concepts in Common

While TTCs and ITCPs each have a distinct focus, they carry common themes including:

- Providing clear direction to drivers
- Separating moving vehicles from workers on foot
- Using temporary traffic control devices to mark traffic paths
- Maintaining a smooth traffic flow

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### Primary Differences

As noted, there are significant differences in ITCPs and TTCPs:

- TTCPs do not address traffic in the work space
- ITCPs focus on worker safety; TTCPs focus on motorist safety
- ITCPs focus primarily on directing movement of construction vehicles engaged in construction work

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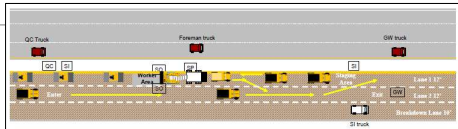
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## Part 2: Why Internal Traffic Control?



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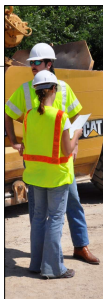
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### ITCPs Protect Workers on Foot

Workers on foot or “pedestrian workers” are those employees who perform most of their duties outside vehicles and equipment. They are particularly vulnerable to being struck by equipment. Every person on the site has the responsibility to be vigilant and work safely.



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## Two "Struck-By" Hazards

Workers Killed by Motorists      Workers Killed by Construction Trucks and Equipment

**MORE WORKERS ARE KILLED BY CONSTRUCTION VEHICLES THAN BY MOTORISTS**

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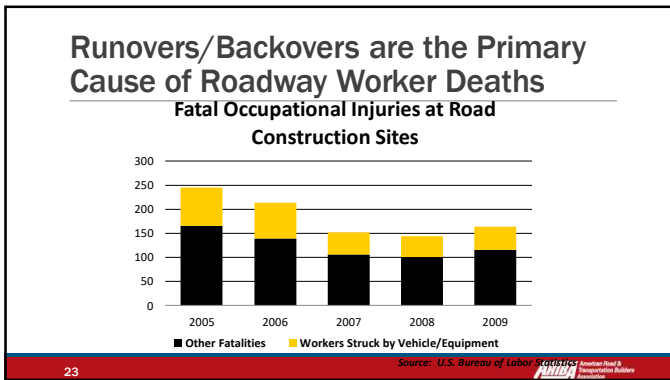
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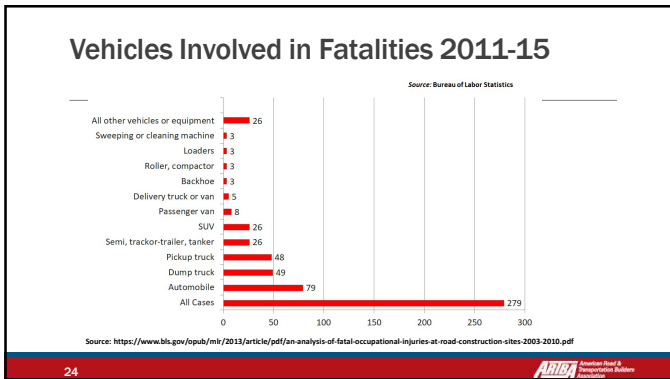
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### Construction Vehicles are the Greatest Hazard



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### Vehicles Frequently Enter and Exit



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### Workers on Foot Labor in Close Proximity to Large Vehicles



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### Blind Spots

Blind Spots are the locations around equipment and vehicles where workers on foot are invisible to the operator through his windows and mirrors.



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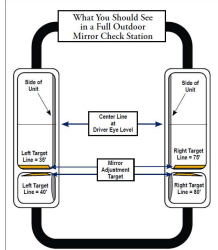
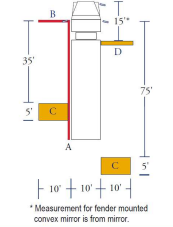
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### Mirror Check Station

Setting up a Mirror Check Station



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### Dump Truck Video

Blind Spots

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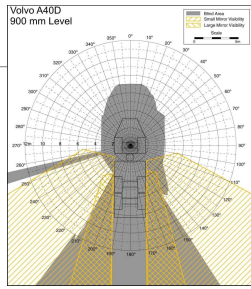
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## Be Familiar with Your Vehicle's Blind Spots



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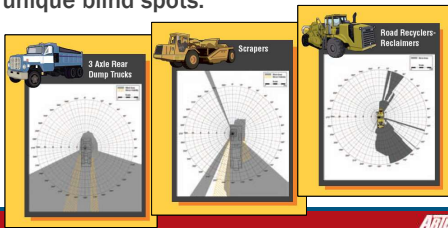
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## Blind Spots

Each type and make of vehicle has its unique blind spots.



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## Workers Are Vulnerable in Blind Spots



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### Workers Killed by Motorists

As noted previously, the primary cause of worker deaths in roadway construction is caused by workers being struck by construction vehicles and equipment.

The second highest cause is workers being struck by motorists or when a vehicle crashes.

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### Two Ways Workers Are Killed

Workers Enter the Traffic Space

Motorists Enter the Work Space



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### Workers Killed by Motorists

Motorists are likely to enter the work space when:

- Workers are not visible to motorists
- Motorists are surprised by the work zone and Temporary Traffic Control set up
- Motorists ignore warnings
- TTCs are confusing/non-compliant



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**How to prevent this incident?**

TTCP

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### Workers Killed by Motorists

Motorists are likely to enter the work space when:

- Drivers are distracted or impaired (phones, food, drugs, alcohol, drowsy, etc.)
- Traffic is traveling at high speed through the work zone



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### Risky Worker Behavior

Workers stray into traffic space

- Preoccupied by work
- Become "comfortable" in dangerous environment
- No convenient access to and from work space
  - rest rooms
  - food and water
  - shade/breaks
- other local work areas
- staging of company and personal vehicles
- Workers cross traffic lanes (especially in high-speed locations)

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### How Can We Prevent Deaths Caused by Motorists?

Temporary Traffic Control Devices Must be Set Up Properly

- Comply with MUTCD or corresponding state document
- Inspect and maintain TTCDs
- Ensure only a qualified engineer makes necessary modifications

Create Safe Procedures for Deployment and Retrieval of TTCDs

Ensure sufficient TTCDs for all parts of the project (ramp geometry, exits, closures, etc.)

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### How Can We Prevent Deaths Caused by Motorists?

Workers Should Be Aware of TTCDs in their work location.

Workers should be trained to notify supervisor immediately if devices are:

- Not in proper position
- Damaged or dirty
- Not being observed or recognized by motorists

Workers may correct misaligned devices if it is safe for them to do so and they understand where the device is supposed to be situated.

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### Struck by a Bus in a Work Zone

Is it enough the TTCP?

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### Use of Law Enforcement Officers



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### Temporary Rumble Strips



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### Workers Should be Aware of Basic TTC Rules



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# Technology



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## Truck Mounted Attenuator - TMA

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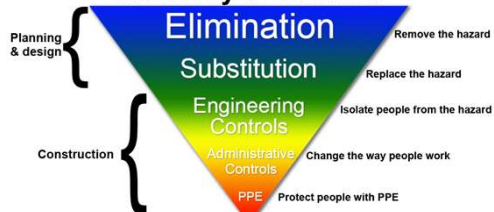
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## Safety Controls

### Hierarchy of Controls



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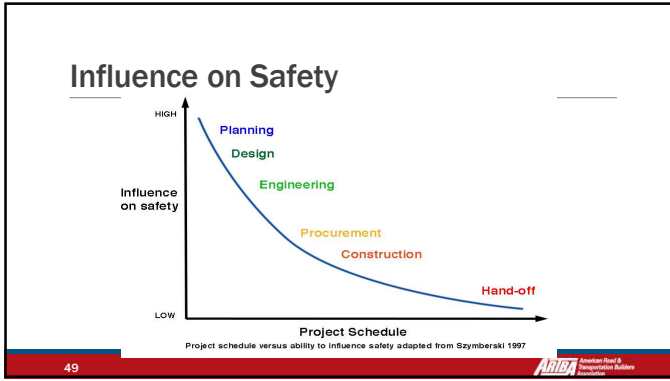
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## Discussion and Questions

END MODULE ONE

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