HIGHWAY WORK ZONE
TRAFFIC INCIDENT MANAGEMENT
(WZ-TIM)

Training for Law Enforcement and Other First Responders
Course Introduction

Dealing with a crash or other traffic incident occurring in a work zone requires the combined skills of many people/disciplines.

Coordinate to improve work zone incident prevention and response

- EMS
- Fire Dept
- Police Safety Patrol Team
- Highway Agency
- Towing Service
- Coroner or Medical Examiner
- Contractor
Media
Formal Definition of “Work Zone”

“An area of a highway with construction, maintenance, or utility work activities...typically marked by signs, channelizing devices, barriers, pavement markings, and/or work vehicles. It extends from the first warning sign...or strobe lights on a vehicle to the END ROAD WORK sign or the last temporary traffic control (TTC) device.”

Source: 2009 Manual on Uniform Traffic Control Devices
What is a “work zone crash”? 

As defined by the Model Minimum Uniform Crash Criteria (MMUCC) standards, a WZ crash:

• *Is any crash that occurs in or is related to a construction, maintenance, or utility work zone, whether or not workers were actually present at the time of the crash*

• *Also includes any crash involving motor vehicles slowed or stopped because of a work zone, even if the first harmful event occurred before the first warning sign*
Work Zone Characteristics

Competing Road Space Demands
- Lane and shoulder closures
- Narrow lanes
- Obstacles near live lanes
- Reduced visibility

Complicated Driving Environment
- Driver comprehension / distraction
- Congestion
- Regular traffic mixing with slow-moving work vehicles

More collision risk than under ordinary conditions.

More hazards than under ordinary conditions.

More crashes than usual per vehicle-mile traveled.
Unique WZ Challenges

Work Zone Traffic Incident Management (WZ-TIM) differs from TIM on ordinary roadways in several ways:

• **Difficult access** to work zone incidents
• **Limited space**: lane restrictions
• **Traffic congestion**: back-ups / queues
• **Many organizations** to coordinate:
  • First responders (police, fire, EMS, towing)
  • Agency traffic operations center
  • Contractor personnel
  • Agency construction management personnel
First Responder Safety

• Almost as many on-duty police officers killed in traffic crashes as by gunfire
• More firefighters killed by motor vehicles than by fires and explosions
• Tow truck operators and EMS personnel also at high risk of being struck by traffic

Source: Bureau of Labor Statistics
We’re In This Together

All work zone partners have shared responsibility to prepare for potential work zone crashes by:

1. Arranging the work zone to minimize the chances of a crash
2. Making efforts to ensure that crash severity and crash consequences are minimized
3. Being ready to respond quickly and efficiently if a crash occurs
Incident Prevention:
3 things first responders can do:

• **1. Participate** in Transportation Management Plan (TMP) development and pre-construction incident management planning.
  • **Identify** threats to responder safety.
  • **Develop** a Plan of Action for work zone incident management.
Transportation Management Plan

• TMP- brings together first responders and construction personnel to plan for and mitigate issues in a work zone prior to the work zone implementation.

• Benefits:
  • Improved travel conditions
  • Creating a better safety environment
  • Reducing complaints from the public.
Should contractors be involved in incident management?

**Pro**
- Typically, the contractor is already on scene
- Some contractor personnel have experience as fire/EMS volunteers
- Contractor assets such as traffic control drums and lifting equipment might be useful for incident response

**Con**
- Contractor could get in the way of first responders
- Contractor personnel might lack relevant training
- Contractors might not understand Integrated Command
- Many times not a contractual bid item
Pre-Project Agenda

• **Prepare** contact lists (including contractor Point of Contact) for routine updates and emergencies
• **Distribute** anticipated project timeline
• **Agree** to periodic evaluations of work zone effectiveness
• **Conduct** training/tabletop exercises to practice and clarify incident management procedures
• **Tactical Pre-plan** for:
  • Pre-staging of TIM equipment
  • Ingress and egress access routes to/from incidents inside the work zone
  • Pre-planned detour routes
Emergency Management
Accommodation Examples

- Emergency parking pullouts (safe space when there is no shoulder)
- Changeable signs (hinged or electronic)
- Traffic control storage caches (traffic cones, drums, signs, etc.)
- Triage areas and landing zones (especially remote/rugged sites)
Incident Prevention:
3 things first responders can do:

• 2. **Stay informed** about lane/ramp closures and “back door” ways to access the work zone as the work progresses.
Getting to the Incident Site

Potential Solution Examples
- Gates in temporary barriers
- Gated “back-door” access to work sites
- Temporary access from overpasses or side roads
- Emergency response vehicles suitable for off-road driving

Congestion caused by incidents often hampers response and recovery
3. **Notify** highway agency or contractor if you observe a problem.
   - Situations that encourage illegal/risky road user behavior.
   - Missing traffic control devices.
   - Improper work practices.

**Set a positive example** by complying with work zone traffic laws, on- and off-duty.
CASE EXAMPLE
Case Study: Emergency Response Through Work Zone

- Wisconsin Sheriff's Deputy
- Sheriff’s deputy is responding during hours of darkness, at high speed, to an emergency call
- Enters a low traffic work zone that had been recently been altered
- Deputy's vehicle strikes a gravel pile that was blocking much of both traffic lanes
- Deputy was killed in the crash
Lessons Learned

• Lack of coordination/communication between the municipality and the signing contractor
• Signing and lighting of the work zone were not in conformity with the MUTCD requirements
• Signs were not properly secured and were moved by high winds which limited their effectiveness
• Signs at the gravel pile were defective and of inferior quality
• Little coordination/communication with law enforcement regarding work zone dynamics and changing conditions
Traffic Control

• FHWA’s *Manual on Uniform Traffic Control Devices* (MUTCD) establishes national standards for traffic control devices, such as signs, lights and traffic cones

• Chapter 6 of the MUTCD includes recommended layouts for work zone traffic control and incident management

• Can be downloaded free of charge at http://mutcd fhwa dot gov

• Printed copies available from online booksellers
The Human Factor
Law Enforcement/ First Responder Strategies

- Stay in Communication
- Be Visible
- Be Alert
- Drive Through
- Monitor traffic control compliance
Incident Prevention: Essential Roles of First Responders

- **Secure** and protect the scene
- **Aid** crash victims
- **Coordinate** the response
- **Protect** the back-of-queue to prevent secondary collisions
- **Manage** traffic and re-route if necessary
- **Ask** for contractor equipment and manpower if it will help expedite response and recovery
Secondary Crashes/ The Queue

• “Secondary crash” is a second (or subsequent) crash that occurs at the incident scene or in a traffic queue resulting from the original incident.
• About 18% of freeway fatalities are the result of secondary crashes.
• Most common scenario: traffic is backed up and a fast-moving vehicle strikes a slowed or stopped vehicle at the back of the queue.
• Less likely to occur if warning is provided at least ¼ mile in advance of the slowed traffic or incident is removed from the roadway/shoulder.
Secondary Crashes
Back-of-Queue Protection Methods

Roll-Up Fabric Signs
- Pro: Easy to set up and remove
- Con: Small, may need to reposition as queue changes

Electronic Signs
- Pro: DMS/VSLs. Easily updated advanced warning
- Con: Queues move, signs don’t. Expensive. Not crash-tested.

Law Enforcement Vehicle
- Pro: Can move as queue grows/shrinks
- Con: Officer not available for other duties

Contractor-Supplied Vehicle
- Pro: Can move as queue grows/shrinks
- Con: Requires special contractual provisions, response time possibly slower than law enforcement
Measuring Success

Three generally accepted performance measures for gauging TIM effectiveness:

• **Roadway Clearance Time** – Interval between first awareness of an incident by a responding agency (detection, notification, or verification) and first confirmation that all lanes are available for traffic flow

• **Incident Clearance Time** – Interval between first awareness of an incident and time the last responder leaves the scene

• **Secondary Incidents** – Number of additional unplanned incidents that occur at the scene (or in the traffic queue approaching the scene) after the original incident is reported
FOR YOU TO DISCUSS