WorkZone Safety: Traffic Control Plans and Intrusion Prevention

• Basic Work Zone Traffic Control Principles
• External Traffic Control
  • Intrusion of the Traveling Population
  • Employees exposed to traffic
• Internal Traffic Control
  • Roadway types
  • Elements needing consideration

Resources
Program References

Bruce W Drewes- 3T Group
• 33 Years in Transportation and Construction
• National Work Zone Safety Clearinghouse
  https://www.workzonesafety.org/
• Road Safety Plus
  https://www.workzonesafety.org/training/courses_programs/rsa_program/overview
In construction, workers are injured or killed most often by

**Workers Struck By Motorists**

**Workers Struck By Equipment**
Job-Related Fatalities in Road Construction

Runovers and backovers are number one cause of death

Source: U.S. Bureau of Labor Statistics
Basic Work Zone Traffic Control Principles

• All Traffic Control “NEEDS TO BE PLANNED”, consider:
  • Roadway Dynamics
    • Roadway geometrics, number of lanes, features
    • Volumes (Peak and Off Peak), and types of vehicles (Cars, Trucks, Buses, Oversized)
    • Pedestrians and Bicyclist
  • Construction Dynamics
    • Duration and Type of Project (Paving, Seal Coating, Reconstruction)
    • Type, Size and Volume of Construction Equipment
    • Access and Egress of Construction Equipment
    • Time of Day
    • Interaction of Construction Equipment and the Worker on Foot
    • Keeping the Worker on Foot in the Work Zone
Special Considerations

- Develop both an External and Internal Traffic Control Plan
- Type of devices used to separate the External Traffic from the Internal Traffic (MUTCD Subpart J and Subpart K)
- Installation, Maintenance and Removal of Traffic Control
- Arrow and Variable Message Boards
- Use of Law Enforcement (Passive and Non Passive Enforcement)
- Use of Nonvariable or Variable Speed Reductions
- Development of Performance Standards for Traffic Control
- Photo Enforcement
Standards

• Federal Standards:
  • Manual of Uniform Traffic Control Devices (Minimums)
  • Subpart J, Work Zone Safety and Mobility, Compliance date Oct. 12, 2007
  • Subpart K, Temporary Traffic Control Devices Rule, Compliance date Dec. 4, 2008

• State and Local Standards
  • Each State DOT has developed additional requirement in Compliance with Subpart J and K.

Resources:
http://mutcd.fhwa.dot.gov/resources/state_info/index.htm
https://www.workzonesafety.org/
http://mutcd.fhwa.dot.gov/
External Traffic Control
Key Elements To Remember

• Your employees’ and company’s welfare is based in how well you deal with Traffic Control.

• The traffic control is how you communicate with the traveling public, insure a clear message. Use advanced items to improve that communication (Flags, flashing warning lights, Rumble strips, Message or Arrow Boards).

• Remove the Traffic Control signs and devices when they are not needed

• Track the performance of your Traffic Control Sub Contractor.

• Insure that everyone is trained.
Contractor Planning Phase

- Negotiation of Responsibilities
- Assignment of Duties
  - Meeting participation
  - Use of law enforcement
  - Location of access/egress points
  - Lane encroachments
Additional Elements

• Use of Law Enforcement
  • Passive Enforcement
  • Aggressive Enforcement
    • Location for officer
    • Location to stop Speeders

• Variable Speed Limits
  • Has to be approved by Highway Agency
  • Static Posting
    • Post mounted signs
  • Electronic Signs
    • In long term operations
    • Currently used with permanent applications

• Resources
  • MUTCD, Section 6G.04 Page 621 and 622
Employee moving outside of the Traffic Control
What Is Internal Traffic Control?

- **ITC** coordinates *construction* traffic inside **ACTIVITY AREA** of a temporary traffic control zone (**TTCP**).

  - **Goal** is a plan to separate construction vehicles/equipment from workers on foot.
  - **ITC** plan fills in details on how construction traffic should flow inside area marked by hatched box on **TTCP**.

**TTCP**
Temporary Traffic Control Plan for facilitating road users through a work zone.
Effective ITC protocol informs all parties operating within the workspace of the locations of others.

Overview of Internal Traffic Control

- ITC creates ‘zones’ to minimize interaction between workers on foot and construction vehicles.
- ITC plan designates routes and operating procedures for large trucks delivering materials.
- ITC plan creates a traffic pattern to minimize backing by construction vehicles/equipment.
- ITC facilitates communication among key work zone parties in advance of arrival to the site.
Construction vehicles are the greatest hazard

- Issues?
- Concrete Barricade
More workers are killed by construction vehicles than by motorists

Source: Bureau of Labor Statistics / Stephen Pegula
What Are Blind Spots?

Workers on foot are vulnerable in blind spots.
Blind Spots

- Be familiar with unique blind spots of each vehicle

EXAMPLES:

Gray areas = blind spots
Yellow hatch lines = visible in mirrors

http://www.cdc.gov/niosh/topics/highwayworkzones/BAD/imagelookup.html
Workers are also struck and killed by motorists

- Workers may stray into traffic when
  - 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)
Safe Practices for Workers on Foot

- **Worker Visibility**
  - Workers must be visible against surroundings
  - Workers must be visible with high visibility garments
  - Workers must be visible in a variety of conditions – especially at night, in other low-light conditions, and in inclement weather
  - Spotters should be used when backing is required near workers on foot
Safe Practices for Drivers and Operators

- **Designate a Spotter**
  - Recommended by ANSI and other agencies
  - Required by some states when camera/radar systems not used
  - Can also be in danger from vehicles – who is spotting the spotter?
  - Can help when you must work with your back to equipment or traffic
  - If visual contact is lost, stop immediately until the spotter is located.

*Federal Highway Administration*
*Brad – if you tell us which states, we can color them for identification!*
Worker-Free and Equipment-Free Zones

- Which Areas Should Be Worker-Free Zones?
Communications

- Management Elements Addressed

- **ITCP operations communication plan should include**
  - Communications regarding changes to the ITCP
  - Means for workers on foot to talk with operators, truck drivers, others coordinating access and egress of vehicles, and the movement of heavy equipment within the work space
  - Means for equipment operators to communicate with each other and with key site personnel
  - Plan for orienting independent truck drivers and subcontractors to the work space and the ITCP
Resources

• MUTCD
  
  http://mutcd fhwa dot gov/

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  https://www.workzonesafety.org/training/courses_programs/rsa_program/overview