Work Zone Safety and Mobility Issues and Mitigation

Module 2

- Why we should care about work zones
- Extent of work zones
- Potential negative consequences of work zones
- General work zone mitigation strategies

Why We Should Care About Work Zones

- Potential economic disruption
- Impair quality of life
- Potential to jeopardize safety
- Problem is not temporary
- New reality: System management & operations
- Growth in capital expenditures
Why We Should Care About Work Zones

Growth in Transportation and Related Indicators

Year (1980)

Travel (VMT)
GDP Adjusted for inflation
Capacity (lane-miles)
Population

Why We Should Care About Work Zones

U.S. Freight Shipment by Mode

Value Tons Ton-miles

Truck (private and for-hire)
Multi-modal
Water
Air (including truck & air)
Rail (including truck & rail)
Pipeline
Other & unknown

Work Zones: Scope and Scale

Work Zone Distribution by Category

Unknown, 7
Utility, 2
Maintenance, 8
Construction, 83
Work Zones: Scope and Scale

- Exposure: Numbers and Mileage from 2001

<table>
<thead>
<tr>
<th>Work zone status, peak activity day (2001)</th>
<th>NHS route</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mileage</td>
</tr>
<tr>
<td>Active</td>
<td>7,880</td>
</tr>
<tr>
<td>Inactive</td>
<td>5,085</td>
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Work Zones: Scope and Scale

- Exposure: NHS estimate from 2003

<table>
<thead>
<tr>
<th>Estimated extent of NHS Work Zones</th>
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<tbody>
<tr>
<td>Number, at some point in peak season</td>
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<tr>
<td>Peak season route miles</td>
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<tr>
<td>Peak season % of route mileage</td>
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</tbody>
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Work Zones: Scope and Scale

- Exposure: Part of the Driving Experience

- Over 11 billion VMT through construction
- One active WZ encountered per 100 miles driven on the NHS, representing over 12 billion hours of vehicle exposure nationally; half involve lane closures
Amount of Activity (1994-2008)

Negative Consequences of Work Zones
- Lost 60 million veh/hr capacity during 2-week period
- Responsible for:
  - 24% of non-recurring freeway delay
  - 10% of all congestion
- 2nd leading cause of public dissatisfaction with transportation (behind poor traffic flow)

Safety
- About 40,000 injuries annually
- 720 fatalities in 2008
  - 667 in 2009
- More than 85% of fatalities are motorists and passengers
Negative Consequences of Work Zones
Highway Worker Safety
- ~ 120 workers killed annually
- Occupational injury rates:
  - 8 times all workers (average)
  - Double (2x) other construction workers


Minnesota Data
- Work Zone Fatalities
  - 2006 – 17 (494 total)
  - 2007 – 20 (510 total)
  - 2008 – 9 (455 total)
  - 2009 – 20 (421 total)
  - 2010 – ?
- Fatality rate is 0.74 compared to national rate of 1.16
Can we do better?

Improvement Strategies

- Meet the challenge systematically
- Improve driver performance
- Reduce work zone risk factors
- Reduce mobility impacts
- Reduce exposure

Strategy: Meet the Challenge Systematically

- Develop/implement policies
- Integrate policies into business process procedures (SMS, design, etc)
- Monitor performance
- Collect & analyze data; make improvements
- Improve human capital
- Forge effective partnerships
Integrate Work Zone Policies into Procedures

Strategy: Meet the Challenge Systematically

Improve Human Capital
- Work zone value chain:
  - Development
  - Design
  - Implementation
  - Operation
  - Inspection
  - Enforcement
- Training geared toward improved decisions

Forge Effective Partnerships
- Advocacy groups
- Business/merchants
- Cities/local government
- Emergency response agencies
- Legislative/political offices
- Major employers
- Neighborhood associations
- Transit agencies
- Transportation management associations
- Utilities
Strategy: Improve Driver Performance

- Driver education
- Compliance

Improve Driver Performance: Driver Education

- Campaigns and Slogans
  - “Give em’ a Brake”
  - “Slow Down, My Daddy Works Here”
  - Newspaper, Radio, Television, PSAs

Improve Driver Performance: Driver Education

Work Zone Awareness Week

- 2010 theme: Work zones need our undivided attention
- Raise awareness
- Provide drivers tips for driving safely through work zones
- Recognize those who have died in work zones
Key messages of "Turning Point" teen driver program:

- Know what work zone signs mean.
- Pay attention to other drivers.
- Stay focused & avoid distractions.
- Expect the unexpected.
- Keep your cool. Be patient.

- Work zone safety info in drivers' manuals
- Introduce work zone TTC devices
- Provide guidance on proper driving techniques

- Display TTC devices visibly
- Improve credibility of signs
- Enforcement of traffic laws in work zones
- Increased penalties in work zones
Improve Driver Performance: Compliance

Example of Increased Fines

- **$375 FINE MINIMUM**
- **$10,000 FINE**
- **14 YRS JAIL**

Improve Driver Performance: Compliance

**Enforcement**
- Officers on general patrol
- Officers dedicated/assigned to project
- Automated speed enforcement

Example: Illinois Photo Speed Enforcement

- Workers present
- Work zone is signed
- No time of day restrictions
- Work zone fine structure applies
Strategy: Reduce Work Zone Risk

Factors

- Confusing Information Sources
- Distractions
- Roadside Hazards
- Lack of Positive Guidance
- Queues
- Conflicts (construction, pedestrians, access)
- Inattentive Driving
- Aggressive Driving

Drivers

Design

Strategy: Reduce Mobility Impacts

- Manage demand (major projects)
- Maintain and augment capacity

Strategy: Reduce Work Zone Exposure

- Reduce duration
- Reduce number
- Reduce traffic volumes

Get In; Get Out; Stay Out!
Summary

- Existing facilities subject to increasingly intense use
- WZs can reduce capacity, access, modal connectivity & safety
- Key customer service factor
- WZ management is a key element in mobility and safety strategies