Work Zone Safety Issues

96th Annual Road School

Driving Indiana’s Economic Growth

Work Zone Safety Review

For 2009 on the state highway system:
- Work zone fatalities: 8 motorist & 2 worker
  - Equal to the average of the past 3 years
  - (1 more fatality than 2009)

- [Graph showing work zone fatalities]
For 2009 on the state highway system:
- 2255 work zone crashes
  - 14.6% above the average of the past 3 years (1967)

<table>
<thead>
<tr>
<th>State Highways, Interstate Routes, and US Highways ONLY - NO Local Roads</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>3 yr Average prior to 2008</th>
<th>Change from 3 yr average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Collisions</td>
<td>2661</td>
<td>1779</td>
<td>1605</td>
<td>1903</td>
<td>2390</td>
<td>2255</td>
<td>1967</td>
</tr>
<tr>
<td>Collisions with property damage only</td>
<td>2128</td>
<td>1431</td>
<td>1240</td>
<td>1561</td>
<td>1928</td>
<td>1841</td>
<td>1576</td>
</tr>
<tr>
<td>Collisions with injury</td>
<td>521</td>
<td>333</td>
<td>354</td>
<td>336</td>
<td>455</td>
<td>406</td>
<td>382</td>
</tr>
<tr>
<td>Total Injuries</td>
<td>790</td>
<td>506</td>
<td>575</td>
<td>515</td>
<td>662</td>
<td>598</td>
<td>584</td>
</tr>
<tr>
<td>Collisions with fatality</td>
<td>12</td>
<td>15</td>
<td>14</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total fatalities</td>
<td>16</td>
<td>18</td>
<td>15</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Indiana Manual on Uniform Traffic control Devices
- Current version adopted in 2008
- New Federal version approved for 2010
- Indiana has 2 years to adopt a new manual that is in compliance
- Work Zones Traffic Control Standards are contained by chapters 1, 5, and 6
Work Zone Issues

Signing issues:

Knocked down

Message
Work Zone Issues

Signing issues:

- Knocked down
- Message

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Work Zone Issues

Signing issues:

- Knocked down
- Message

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Work Zone Issues

Signing issues:

- Knocked down
- Message
- Damage

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Work Zone Issues

Signing issues:
- Knocked down
- Message
- Damage
- Retro-reflectivity
Work Zone Issues

Signing issues:

- Knocked down
- Message
- Damage
- Retro-reflectivity

3/1/2010

Work Zone Issues

Signing issues:

- Knocked down
- Message
- Damage
- Retro-reflectivity
- Placement

3/1/2010

Work Zone Issues

Signing issues:

- Knocked down
- Message
- Damage
- Retro-reflectivity
- Placement

3/1/2010
Work Zone Issues

Signing issues:

- Knocked down
- Message
- Damage
- Retro-reflectivity
- Placement

3/1/2010

Signing issues:

- Missing signs for shifting tapers

3/1/2010
### Work Zone Review Findings

**Changeable Message Signing**

**Improvements found:**

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2008</th>
<th>2009</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>35.7%</td>
<td>5.9%</td>
<td>10.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>21.4%</td>
<td>3.9%</td>
<td>2.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legibility</td>
<td>10.7%</td>
<td>7.8%</td>
<td>4.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td># Screens</td>
<td>32.1%</td>
<td>11.8%</td>
<td>6.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All CMS</td>
<td>16.7%</td>
<td>4.5%</td>
<td>3.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Biggest Issue in 2009:**

Content – Repeats a Static Sign unnecessarily

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**Changeable Message Signs**

**CONTENT**

- Only use two screens
- Eight letters per line
- Three lines per screen
- Use second board for additional information
- Should only display relevant information
- Make sure the default password has been changed
Work Zone Review Findings

Changeable Message Signs

Location
Tended to be found too far in advance of work zone

- Make sure the default password has been changed
Work Zone Review Findings

**Flashlight Arrow Boards**

Problems with legibility due to dimmers

- 0.0% in 2009
- 5.6% in 2008
- 2.2% in 2007

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**Channelizing Devices**

- Still have common problems with:
  - Poor condition

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Work Zone Review Findings

**Channelizing Devices**

- Still have common problems with:
  - Poor condition
  - Moved out of position or knocked down
Work Zone Review Findings

Channelizing Devices

- Still have common problems with:
  - Poor condition
  - Moved out of position or knocked down
  - Improperly placed
  - Spacing (13.1% in 2009)

Work Zone Review Findings

Channelizing Devices

Std Spec 801.03 Requirements

>75% of devices in “acceptable” condition

Reference source:
ATSSA Quality Guidelines for Traffic Control Devices
WWW.ATSSA.COM
Work Zone Review Findings

Barricade Issues
Orientation of the Striping

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Work Zone Review Findings

Barrier Wall Issues

Barrier Wall Issues

Barrier Wall Issues
Work Zone Review Findings

Work Site Speed Limit Assembly

- Flasher activation
  - 2007 rate 8.3%
  - 2008 rate 4.7%
  - 2009 rate 20.5%
- Placement
  - 2007 rate 16.7%
  - 2008 rate 4.6%
  - 2009 rate 0.0%
- Mounting Height
  - 2007 rate 0.0%
  - 2008 rate 4.3%
  - 2009 rate 5.1%
- Improper covering of subsequent Speed Limit signs 10.3%

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Work Site Speed Limit Assembly

- Place the same signs on both sides of the road

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Flagging and Worker Issues

More work zones with flagging were reviewed in 2008

Problems continue to be noted with:

- Attire – improper or absent retro-reflective gear

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Flagging and Worker Issues
More work zones with flagging were reviewed in 2008

Problems continue to be noted with:

- Positioning 2009 rate 25.1%

- Device used – Flags are only for emergency use – Do not use hand signals

“I use this one when it’s raining.”
Work Zone Review Findings

Driver Behavior Problems

- Speeding
  - 2007 – 13.7%
  - 2008 –  6.7%
  - 2009 –  3.5%

- Following too closely