Pedestrian & Bicyclist Accommodation Design for Work Zones
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Can we do better?
The best solutions are likely to be found during the project design phase.

- Ped/Bike Staging Integrated into Overall Project Staging
- Appropriate Bid Items In Contract
- Temporary Easements Obtained
- No Surprises for Adjoining Property Owners
- No Surprises for the Contractor

Source: American Traffic Safety Services Association (ATSSA)
TYPICAL PROBLEMS
No Alternate Route

Source: IRF Webinar

Source: Wisconsin DOT

Source: Wisconsin DOT
Unmarked Closure

Source: San Francisco, CA http://safepathsoftravel.org

Source: Bethesda, MD http://robertdyer.blogspot.com
Insufficient Width
Delineation & Drop-off

Bethesda, MD

http://robertdyer.blogspot.com/2013/07/woodmont-avenue-sidewalk-work-creates.html
Trench


Trench Protection


http://3.bp.blogspot.com/_NRsSmc8gBDg/TRJip2HO8-I/AAAAAAAAI60/yxl2nKSBOvw/s1600/roadwork2.JPG

http://3.bp.blogspot.com/_NRsSmc8gBDg/TRJip2HO8-I/AAAAAAAAI60/yxl2nKSBOvw/s1600/roadwork2.JPG
Tripping Hazards

http://seeclickfix.com/files/comment_images/0001/7818/DSC_0361.JPG

Non-Detectable Barriers

http://robertdyer.blogspot.com/2013/07/sidewalk-closures-at-wisconsin-avenue.html
SAFETY PROBLEM OR MOBILITY PROBLEM?
Fatal Crashes in Work Zones

- About 120 non-motorized road users are killed annually in US work zones.
- 93% are pedestrians.
- Trend not improving.
- 2003: 12% of WZ crashes.
- 2012: 17% of WZ crashes.

Source: NHTSA
Analysis of Wisconsin 2004-13 Bike-Ped Crashes
n=219

- Vehicle Hits Worker: 72%
- Improper Accommodation: 13%
- Obstructed View: 5%
- Work Zone Intrusion: 1%
- Uncertain or Not Construction Related: 9%
### Background – Safety in Work Zones

- **Crash Data Analysis in Wisconsin (2004-2013)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Sum</th>
<th>Pedestrian</th>
<th>Bike</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total accidents</strong></td>
<td>219</td>
<td>154 (70%)</td>
<td>65 (30%)</td>
</tr>
<tr>
<td><strong>Work zone related accidents</strong></td>
<td>62</td>
<td>50 (23%)</td>
<td>12 (5%)</td>
</tr>
<tr>
<td>1. Accidents between vehicles &amp; workers</td>
<td>29</td>
<td>29 (13%)</td>
<td>-</td>
</tr>
<tr>
<td>→ Strategy for workers is necessary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Improper accommodation</td>
<td>20</td>
<td>15 (7%)</td>
<td>5 (2%)</td>
</tr>
<tr>
<td>→ Proper accommodation is necessary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. WZ barriers obstruct driver’s view</td>
<td>10</td>
<td>3 (1%)</td>
<td>7 (3%)</td>
</tr>
<tr>
<td>→ Should be considered View problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Vehicles invade work zone</td>
<td>3</td>
<td>3 (1%)</td>
<td>-</td>
</tr>
<tr>
<td>→ Required proper strength</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Ped/Bike Crash Example 1
Improper Accommodation

• Disorganized work zone; traffic control devices not laid out well
• Pedestrian walked across two closed lanes
• Pedestrian saw her bus arriving and ran to catch it
• Pedestrian’s view partially blocked by vehicle in left-turn bay
• Pedestrian struck by fast-moving vehicle in center lane
Ped/Bike Crash Example 2

Vehicle-Worker Collision

UNIT 2 WAS WORKING CONSTRUCTION ON ATKINSON DR AT I-43. UNIT 1 EXIT I-43 AT ATKINSON DR AND SET UP TO MAKE A LEFT HAND TURN ONTO ATKINSON DR. UNIT 1 NEVER SAW UNIT 2 IN THE ROADWAY. UNIT 1 STRUCK UNIT 2 IN THE MIDDLE OF THE INTERSECTION.
Ped/Bike Crash Example 3

Obstructed Sight Lines

• Vehicle #1 and Bicyclist #2 could not see each other due to construction equipment and barricade blocking sight lines
• Bicyclist attempted to go around skid loader and was struck by Vehicle #1
NATIONAL GUIDANCE
MUTCD: Main Provisions

- Must provide alternate routes when pedestrian routes are closed.
- Must provide “adequate” walkways to access properties adjoining the work.
- Pedestrians must be given notification upstream of sidewalk closures.
- Accessibility and detectability for pedestrians with disabilities must be maintained during construction if the existing facility is accessible or detectable.
- If project affects existing public transit stops, access for pedestrians and transit vehicles must be maintained or relocated.
- People involved in project must be knowledgeable about MUTCD principles and implement them using good engineering judgment.
- Very little discussion of bicycle accommodations.
MUTCD Pedestrian Typical Applications

Figure 6H-26. Sidewalk Detour or Diversion (TA-28)

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in the figure.
Many common situations not addressed by MUTCD Typical Applications
Public Right-of-Way Access Guide (PROWAG)

• “Outdoor” edition of ADA Design Guide
• Draft issued 2011
• Not yet finalized
• Includes:
  • Crosswalks
  • Curb ramps
  • Street furnishings
  • Signs
  • Pedestrian signals
  • Parking
  • Other public right-of-way elements
Public Right-of-Way Access Guide (PROWAG)

• Says it applies to both permanent and temporary situations
• Little clarity on standards for temporary situations
• Discusses the need for flexibility in cases of “facility alteration.”
• Compliance required to the extent practicable within the scope of the project where existing physical constraints make alterations impractical.
Discussion

Comparing PROWAG with other ADA Implementation Issues

The owner of a local retail store located in an 1880s building hires you to design renovations for the building’s entrance and lobby. Currently the store is not very profitable. The owner hopes that by spending $10,000 on renovations she will be able to attract more business.

Currently, the main sales floor can only be accessed by walking up six steps. The building has no passenger elevator and the restrooms (which are for employees only) are not barrier-free.

What ADA accommodations are reasonable and practicable?