

Pedestrian & Bicyclist Accommodation Design for Work Zones

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Can we do better?



Photo: NY State DOT

The best solutions are likely to be found during the project design phase.



Source: American Traffic Safety Services Association (ATSSA)

- 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

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



<http://fotos.ratzekiste.de/baustellen/2010/07/radtour-bodensee/1001-00260.jpg>



http://pedestrianliberation.files.wordpress.com/2012/03/img_2282.jpg

Delineation & Drop-off

Bethesda, MD



Trench



http://www.birchcliffnews.com/wp-content/uploads/2012/08/DSC_0137.jpg



http://www.birchcliffnews.com/wp-content/uploads/2012/08/DSC_0154.jpg

Trench Protection



<http://rooseveltislander.blogspot.com/2010/12/roosevelt-island-water-main-for.html>



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



http://www.hahosting.info/wp-content/uploads/2009/11/5_another_bt_manhole_open.jpg

Non-Detectable Barriers

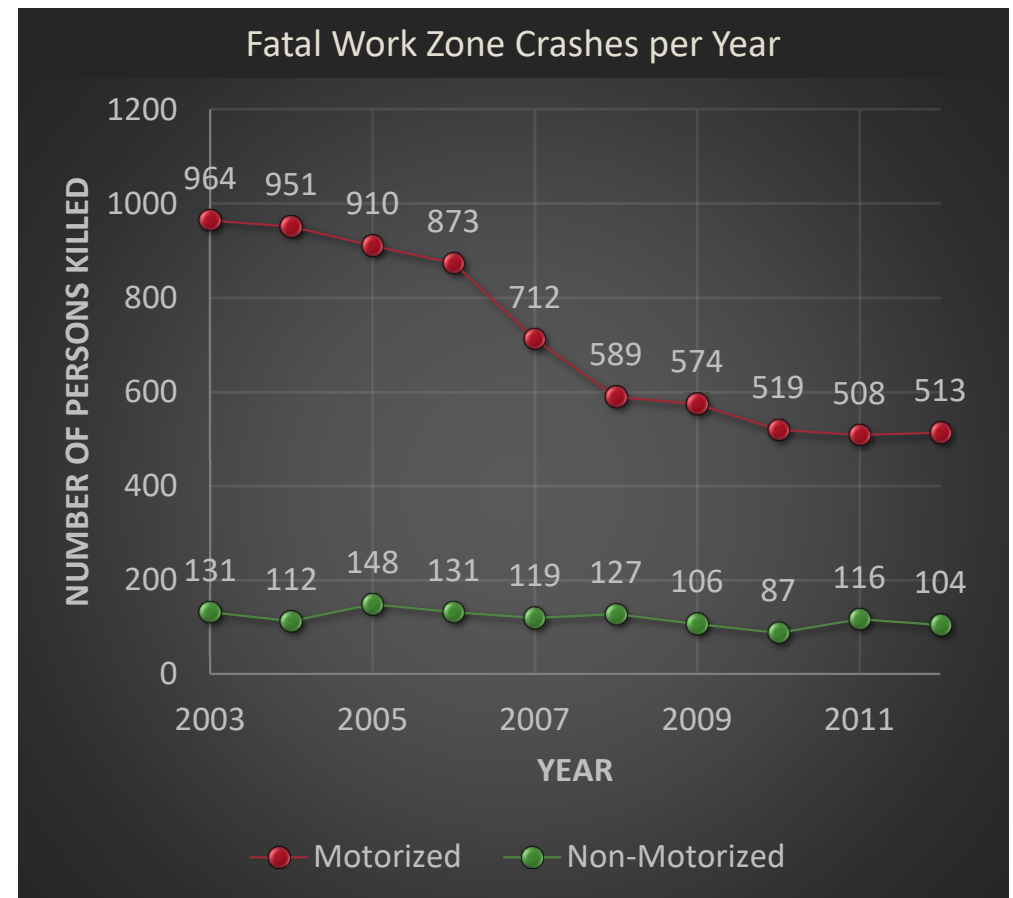


<http://robertdyer.blogspot.com/2013/07/sidewalk-closures-at-wisconsin-avenue.html>

SAFETY PROBLEM OR MOBILITY
PROBLEM?

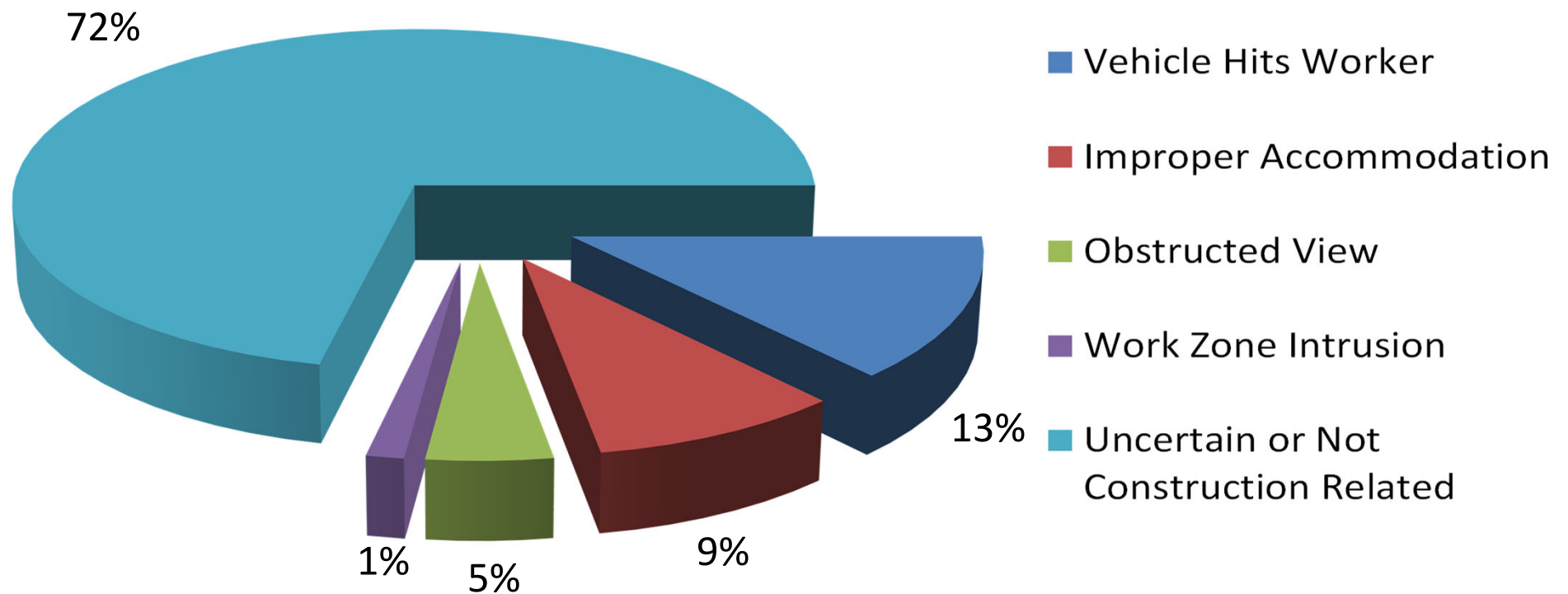
Fatal Crashes in Work Zones

- 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.



Analysis of Wisconsin 2004-13 Bike-Ped Crashes

n=219



Background – Safety in Work Zones

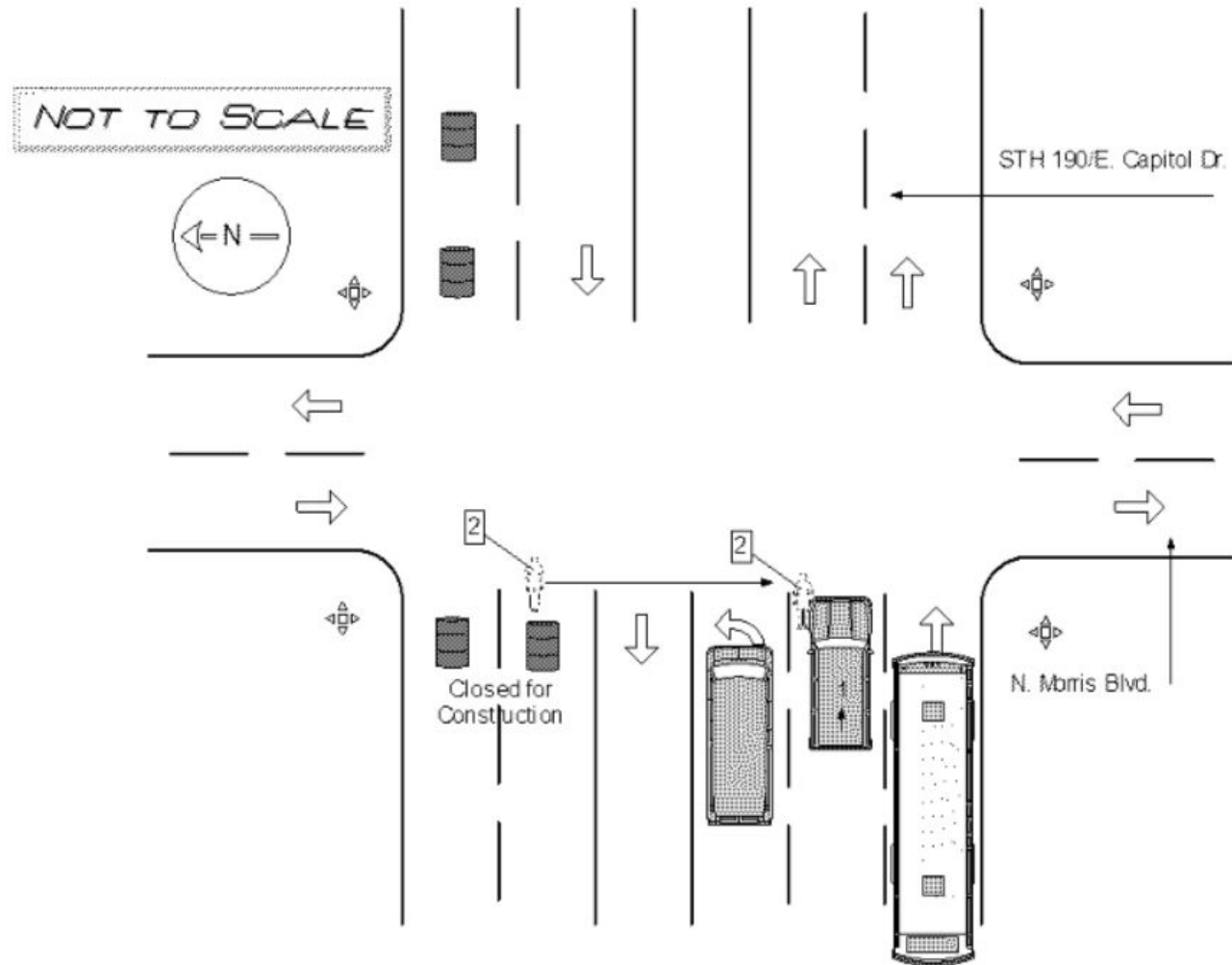
- Crash Data Analysis in Wisconsin (2004-2013)

		Sum		Pedestrian		Bike	
Total accidents		219	(100%)	154	(70%)	65	(30%)
Work zone related accidents		62	(28%)	50	(23%)	12	(5%)
	1. Accidents between vehicles & workers → Strategy for workers is necessary	29	(13%)	29	(13%)	-	-
	2. Improper accommodation → Proper accommodation is necessary	20	(9%)	15	(7%)	5	(2%)
	3. WZ barriers obstruct driver's view → Should be considered View problems	10	(5%)	3	(1%)	7	(3%)
	4. Vehicles invade work zone → Required proper strength	3	(1%)	3	(1%)	-	-

Ped/Bike Crash Example 1

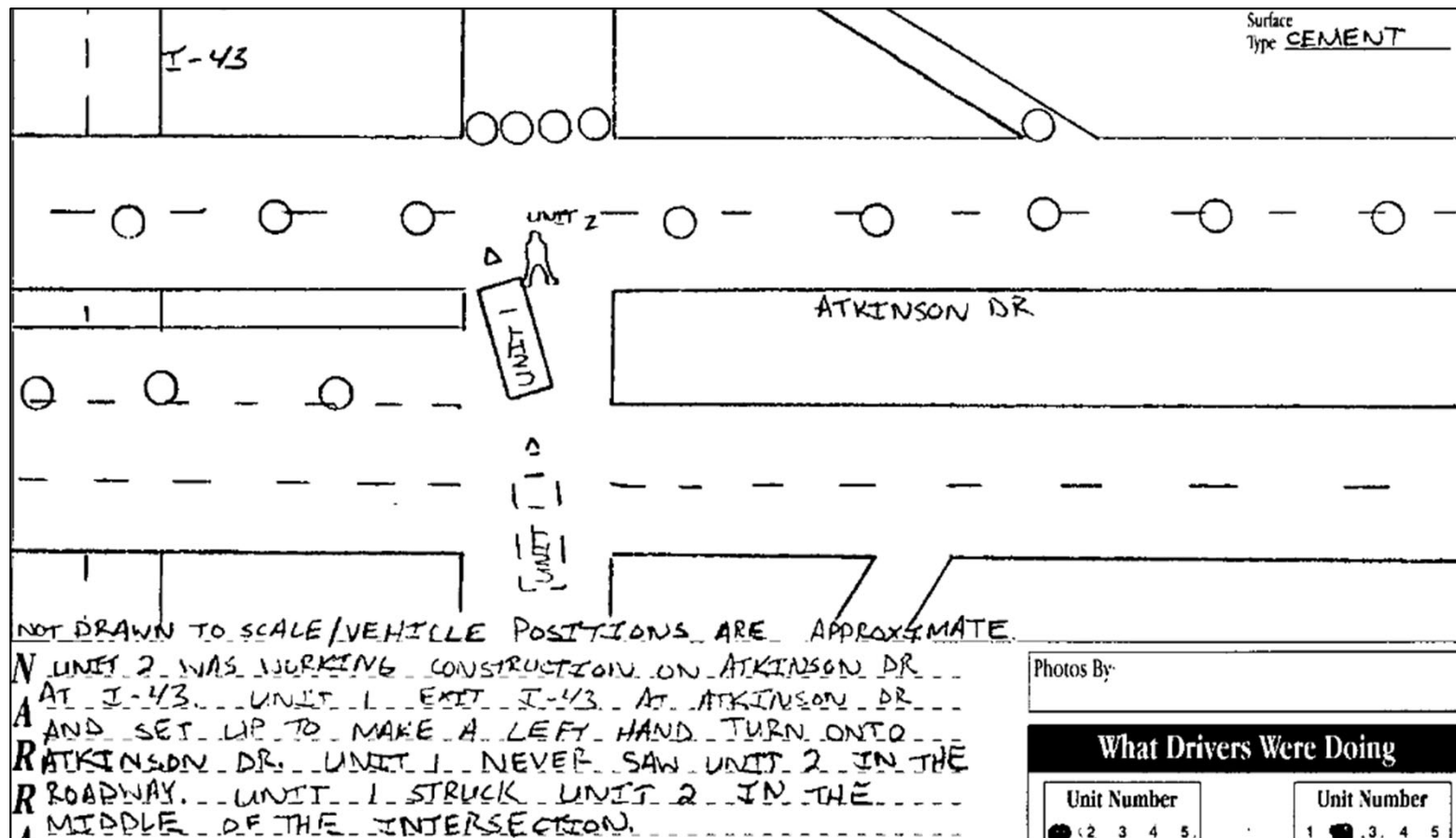
Improper Accommodation

- 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

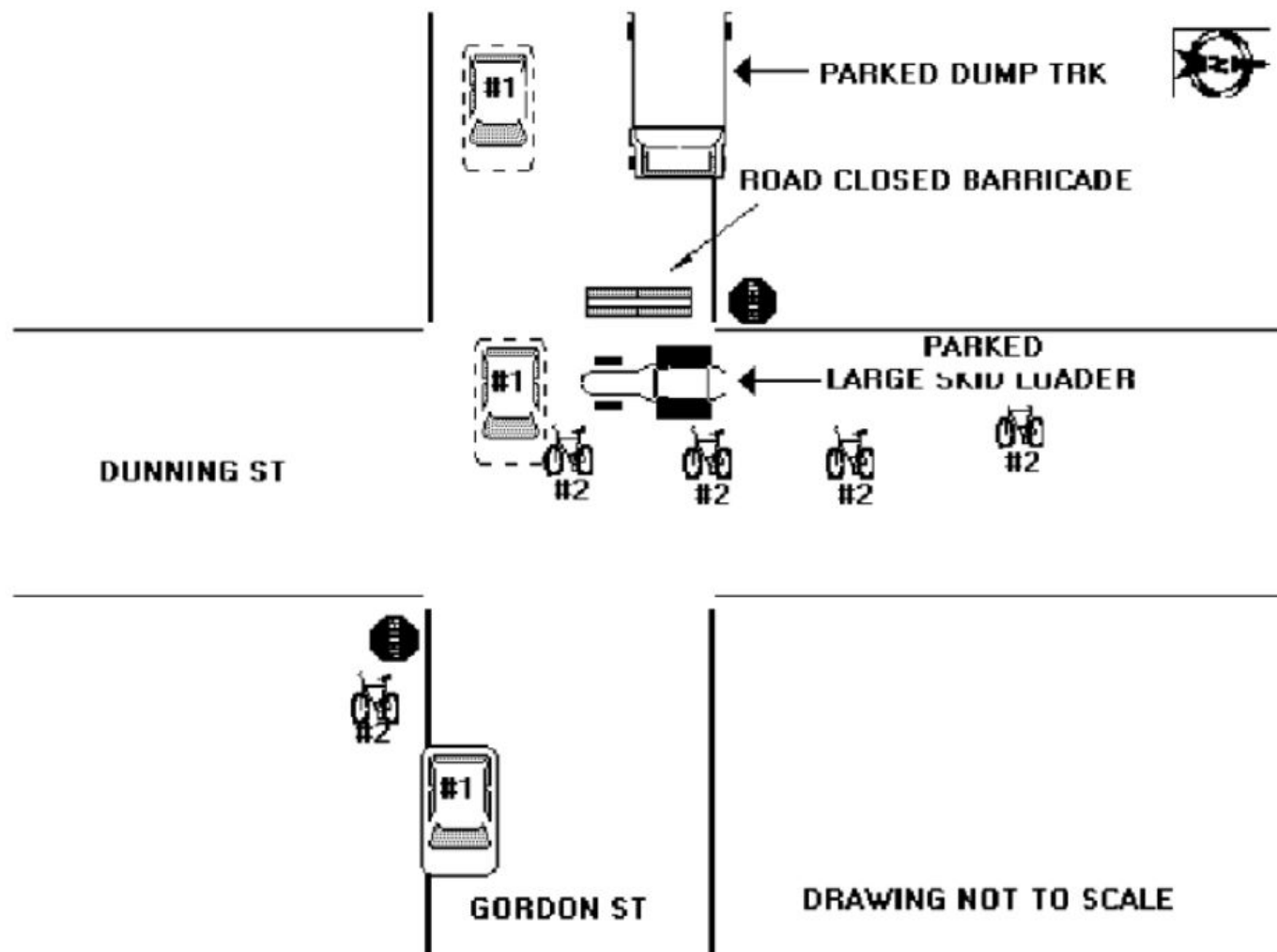
Vehicle-Worker Collision



Ped/Bike Crash Example 3

Obstructed Sight Lines

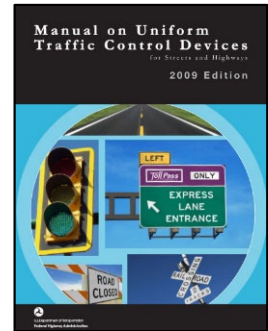
- Vehicle #1 and Bicyclist #2 could not see each other due to construction equipment and barricade blocking sight lines
- Bicyclist attempted to go around skid loader and was struck by Vehicle #1





NATIONAL GUIDANCE

MUTCD: Main Provisions

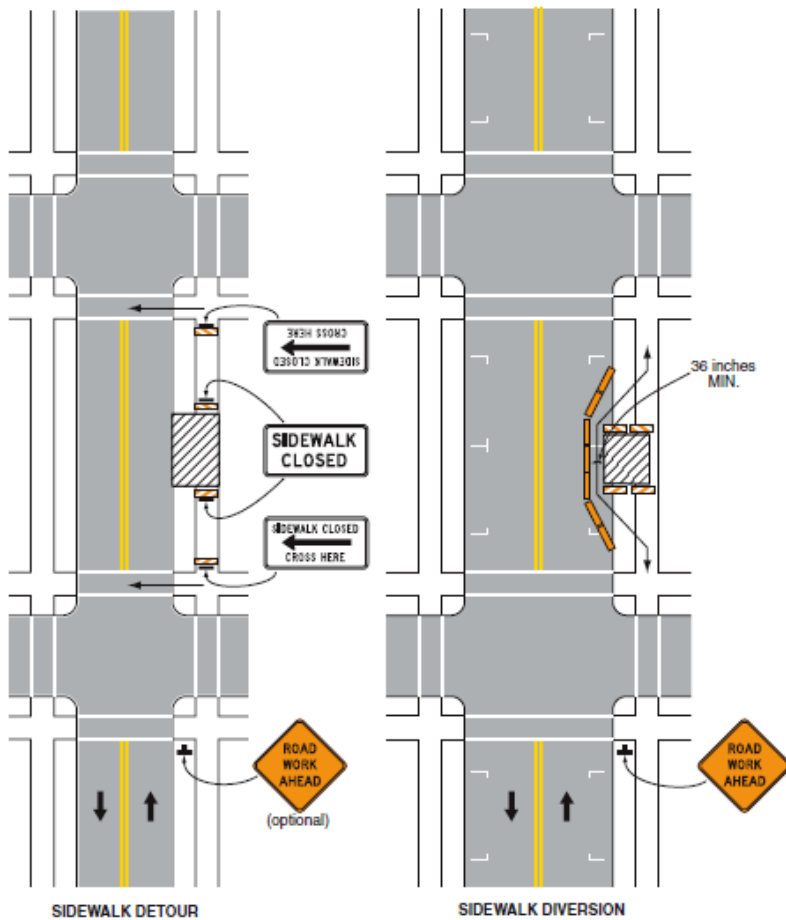


- Must provide alternate routes when pedestrian routes are closed.
- Must provide “adequate” walkways to access properties adjoining the work.
- Pedestrians must be given notification upstream of sidewalk closures.
- Accessibility and detectability for pedestrians with disabilities must be maintained 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

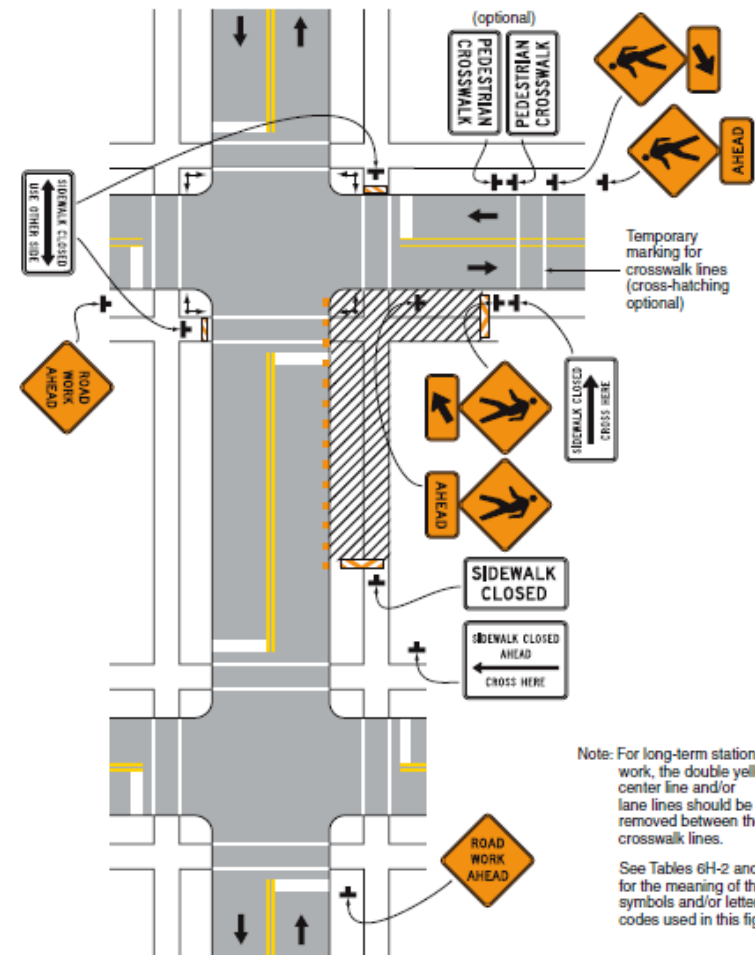
Figure 6H-28. Sidewalk Detour or Diversion (TA-28)



Typical Application 28

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

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



Typical Application 29

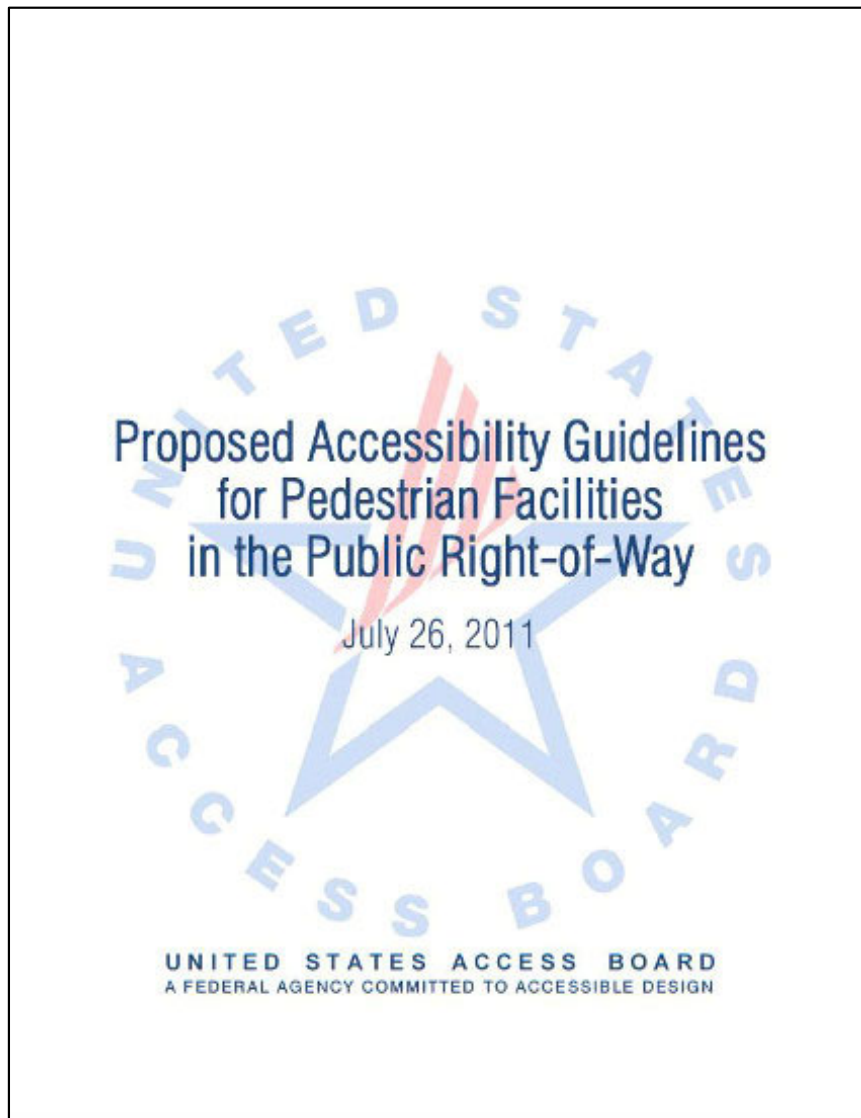
Note: For long-term stationary work, the double yellow center line and/or lane lines should be removed between the crosswalk lines.

See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Many common situations not addressed by MUTCD Typical Applications

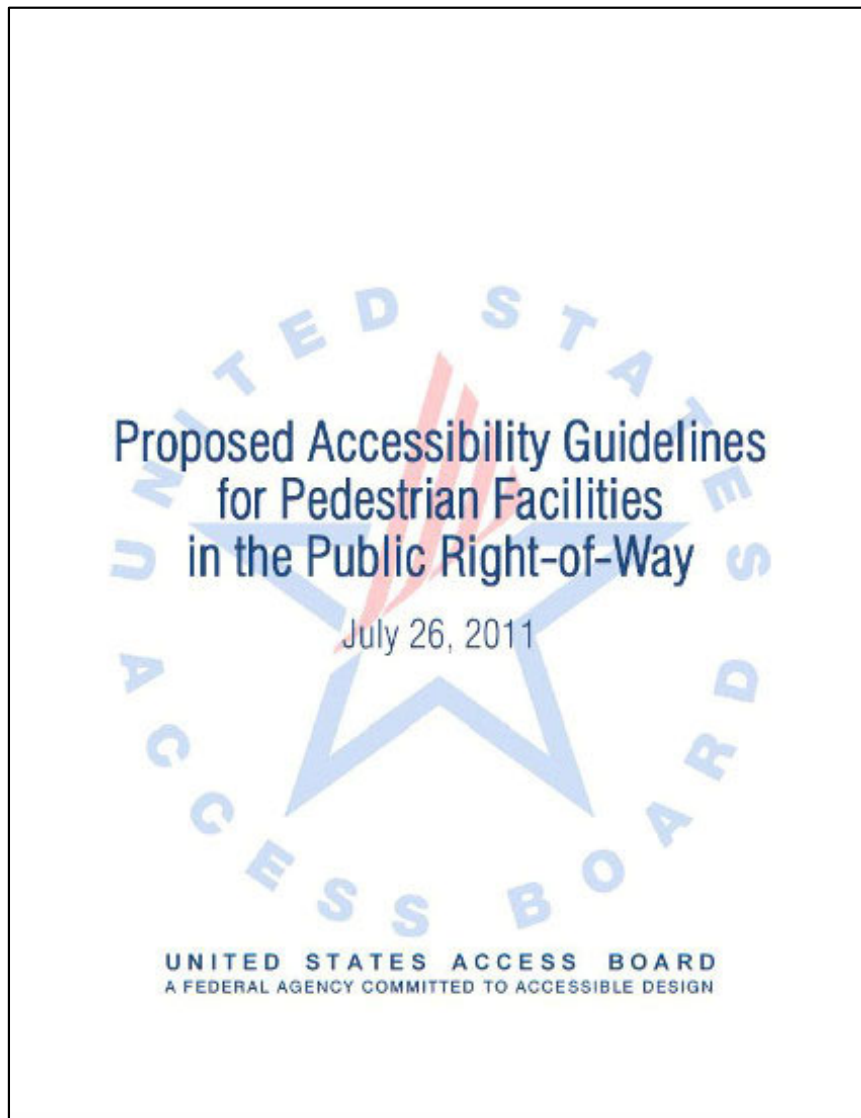


Public Right-of-Way Access Guide (PROWAG)



- “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

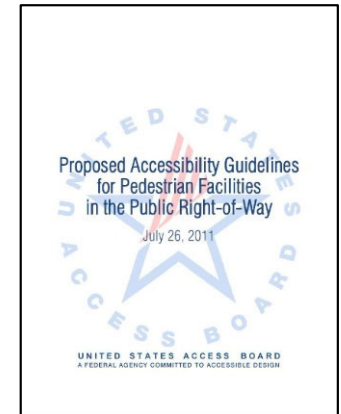
Public Right-of-Way Access Guide (PROWAG)



- 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?