Pedestrian Design for Accessibility Within the Public Right-of-Way

Introduction

The design and operation of intersections often fail to include features for good pedestrian access and safety, including consideration of people with visual and mobility disabilities. The pedestrian system must be usable for pedestrians of all ages and capabilities and must provide safe crossing intersections for older people and young children.

The pedestrian system has traditionally been designed for people who are mentally and physically agile, with good stamina, vision and hearing. However, 20 percent of the U.S. population has a disability and 70 percent of the population will have a permanent or temporary disability in time.

The Americans with Disabilities Act (ADA) has minimum design standards that are to be applied to all public environments and this includes the public right-of-way. These standards, the Americans with Disabilities Act Accessibility Guidelines (ADAAG), are the foundation for designing all pedestrian environments, and better design practices are encouraged to be applied whenever possible. Pedestrian accessibility enhancements will not only benefit people with disabilities; they will benefit able-bodied pedestrians as well. Examples include curb ramp improvements that will assist people pushing carts or strollers and placing the WALK push buttons in a place that is accessible and easily understandable for all intersection users.

Entities are encouraged to design and set codes beyond the minimum standards to facilitate access for a wider spectrum of people—they may not design below the standards. An entity is still responsible for making the features/facility accessible if a specific standard has not been adopted for that feature/facility. The nondiscrimination requirements for usability by people with disabilities in ADA are the overarching regulations that must be applied. It is critical for transportation providers to understand the details and principals for accessible design in order to apply good engineering judgment in difficult design situations. Pedestrian facilities with physical barriers, unusable sign and signal information, gaps in the system and poorly designed features have critical safety implications for people with disabilities and may leave them stranded and unable to get to their destinations.

Challenges for Engineers and Designers

For pedestrians with disabilities, intersections prove a special challenge:

- Often the walking speed (generally set at 4 ft. per second) used for timing clearance phases is not sufficient for people who are elderly or have disabilities, leaving them stranded in the intersection when the traffic signal changes;
- At intersections, turning vehicles and the speed at which they travel pose the greatest threat to pedestrians, and often the motorist's attention is focused on other motorists; and

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- Right-turn-on-red, roundabouts and channelized right-turn lanes and other features designed to move traffic more quickly can be hazardous for people with visual disabilities, who rely on the sounds of traffic stopping and surging to judge adequate gaps in traffic and WALK phases. The surging and stopping cues at traditional intersections are not present at many of the intersection designs that have been installed during the past two to three decades, and if unable to reasonably judge crossing gaps, it is nearly impossible for people with visual disabilities to cross the street with an assured amount of safety.

Questions to Ask During Project Development

Designing for accessibility is largely a matter of common sense on the part of the designer or engineer, once there is awareness and understanding. It means understanding the capabilities of users (children, elderly, people with cognitive, visual and mobility disabilities) and knowing how a facility should perform for all pedestrians.

Some of the questions to ask are:

- Are the sidewalks passable by people using wheelchairs, walkers and strollers?
- Are crosswalks accessible?
- Are there curb ramps (two per corner where practical)?
- Do the ramps comply with ADA specifications (critical design aspects are the presence of a level platform at the top of the ramp, cross-slope of the ramp and wheelchair traps at the base of the ramp)?
- Is the ramp located in the path pedestrian travel (i.e., do people wanting to use the ramp need to divert from the most direct path)?
- Is the push button of an actuated pedestrian traffic signal accessible?
- Does it have a locator tone for people who are blind?
- Is the button proximate to the crosswalk?
- Is it clear which crosswalk the button actuates?
- Is the button located within reach of a wheelchair user or child?
- Are there non-visual cues that alert pedestrians to when they are leaving the sidewalk and entering the street (examples are curb, lip of an ADA ramp, or other tactile surface)?
- Is there an alternate route for pedestrians at construction sites?
- Are there cues at the site giving a person using a white cane the information that is needed to know there is a sidewalk closure or open pit?
- Does the information give cues on how to navigate safely around the site and not into the construction?
- Is there a wheelchair ramp at the site for users to navigate to the alternate route?
- Can pedestrians (especially a person with low vision) see the pedestrian signal across the street?
- Is the pedestrian signal located on the same pole as the vehicle indication for conflicting movements (normally left and right turns) so that pedestrians understand vehicle conflicts and visa versa?
- Is the pedestrian signal located on the inside edge of the crosswalk so that a truck stopped at the intersection will not obstruct it?
- Are pedestrian signs easy to understand and interpret?
- Are there design features that create special challenges for visually impaired pedestrians (examples: right-turns-on-red, right-slip lanes, or roundabouts without controlled crossings)?

References

For more information on the safe accommodation of pedestrians with disabilities, refer to the following publications and Web sites for resources:

1. Accessible Design for the Blind. Research, guidance and instructional materials on the use of Accessible Pedestrian Signals (APS) and detectable warnings, http://www.accessforblind.org

2. Barlow, Janet M., Billie Louise and Lee S. Tabor, AIA. *NCHRP 3-62: Accessible Pedestrian Signals: Synthesis and Guide to Best Practices, Final Report. May 2003.* http://www.walkinginfo.org/aps/pdf/APS-Synthesis.pdf

3. Barlow, Janet, Pat Cannon, Dan Dawson, et. al. *Building a True Community: Final Report:* Public Rights-of-Way Access Advisory Committee, for the U.S. Access Board, February 2001. http://www.access-board.gov

4. Bentzen, Billie Louise and Lee S. Tabor, AIA. *Accessible Pedestrian Signals.* Work performed in support of the U.S. Access Board under Contract No.PD-97-0772, August 1998. http://www.access-board.gov/research&training/pedsignals/pedestrian.htm

5. Bentzen, Billie Louise PhD, Janet M. Barlow, COMS and Lee S. Tabor. *Detectable Warnings: Synthesis Of U.S. And International Practice. May 2000.* http://www.access-board.gov/publications/DW%20Synthesis/report.htm

6. *FHWA. Designing Sidewalks and Trails for Access: Best Practices Guide Part II of II.* http://www.fhwa.dot.gov/environment/sidewalk2/index.htm

7. *FHWA. Manual on Uniform Traffic Control Devices* (MUTCD) provides the standards for traffic control devices and included information on Accessible Pedestrian Signals (APS), Chapter 4E and Temporary Traffic Control Elements, Chapter 6D, http://mutcd.fhwa.dot.gov

8. ITE. *Traffic Control Device Handbook*. Washington, DC: ITE, 2001. Pedestrians, Chapter 13.

9. Noyce, David A. Ph.D., P.E. and Janet M. Barlow, C.O.M.S. *Interfacing Accessible Pedestrian Signals and Traffic Signal Controllers.* April 2003. http://www.access-board.gov/research&training/APS/report.htm