

Coffee and Conversation Speaker Series

Proceedings from “Accommodating all Pedestrians with Design”

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Janet M. Barlow, President
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While vehicle occupant fatalities are declining in the United States, pedestrian fatalities are unfortunately rising. In this session, Janet Barlow, president of Accessible Design for the Blind, discuss how engineers and planners can adequately accommodate pedestrians’ needs—especially those with low vision—in their communities.

Barlow is a certified Orientation and Mobility Specialist. She has worked in the field for decades, mostly in Atlanta, when “actuated signal crossings were not the norm.” Actuated signal crossings are activated by the pedestrian, usually by a button at the crosswalk.

Barlow began by framing the conversation around the Americans with Disabilities Act of 1990 (ADA). However, she said “that is not the first law to cover the issue.”

A brief legal history:

- 1973 Rehabilitation Act (Section 504) was the first civil rights law that prohibited discrimination on the basis of abilities and set the stage for ADA.: This put in for accessible sidewalks.
- 1990 Americans with Disabilities Act. This law was signed by President George H.W. Bush.
- 2011 proposed rules. This set of guidelines further builds on the latest technology to improve pedestrian public rights of way.

It is important to get a sense of what it is like to have low vision or vision loss, said Barlow. There are many apps available that merge technology with empathy.

- Chromatic Vision Simulator (CVSimu): Simulates various color vision.
- Aira Vision Sim: Offers opportunity to view with different levels of vision.

Barlow displayed some slides to show scenes from the perspective of different levels and vision abilities:

- **Overall acuity loss.** In this example, the road user cannot see the signal but can see crosswalk line markings.
- **Central vision loss (macular degeneration).** Crosswalk is blurry, with some dark spots in the center of vision. Crosswalk lines are visible.
- **Peripheral vision loss.** One can see in the center of one’s vision, but not much else on the sides. Oncoming cars could be an issue, especially if there the pedestrian has hearing loss as well.

“Some engineers will say, ‘Tell me where the person [with low vision] lives and I will fix all of the pedestrian crosses around them,’” says Barlow. However, people do travel independently to new places for shopping, errands, visiting friends, just like everyone else. They are not oriented to every place they go.

Barlow notes that blind and low vision pedestrians may or may not have visible aids to help them navigate their environs. These include, but are not limited to the following:

- Human guide
- White cane
- Dog guide
- Telescope or other low-vision devices
- No aid

“Just because the person is not using the cane in a way that you have seen before does not mean that they are not using it correctly,” said Barlow. “The cane’s use is very personal and particular to that person.”

Barlow then discussed the features of ADA-friendly design. The first, she explained, is a clear, detectable path. “This may sound easy,” Barlow said, “but let’s look at a few examples.”

She displayed sidewalks where restaurants covered most of the walkable space. This layout included a tree one would have to navigate. A better way is where the sidewalk is clear and there is grass (detectable) on either side that works as a buffer from the curb and automobile traffic. It does not have to be grass. As long as there is separation between the sidewalk and circulatory roadway between crosswalks, or there is gravel, or other landscaping outside cut-through islands, the design is ADA-friendly.

Some of the latest street designs do not always consider the needs of pedestrians with different abilities. Examples include the shared streets (cars and bicycles); separated bike lanes; and roundabouts. Roundabouts in particular pose a danger to pedestrians with low vision, said Barlow, because the patterns of sound are altered because of the angle pedestrians walk within crosswalks.

Another element includes detectable warning surfaces.

- **Truncated domes.** We see these often at intersections where the curb meets the crosswalk. It serves as a tactile hazard warning for low-vision and blind pedestrians, alerting them to edge of street
 - These are not a wayfinding device, that is, they do not help sidewalk users orient themselves.
 - Color must contrast with the adjoining surface, either light on dark, or dark on light. Because surfaces can be different colors or textures there is not specification. “This is not ideal,” says Barlow. “But it is workable.”
 - The detectable warning surfaces must be a minimum of 24 inches in the direction of pedestrian travel.

- **Accessible Pedestrian Signals (APS).** These provide information to blind or low-vision pedestrians. Push-button integrated type is specified in the 2009 Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD). Standards for APSs include:
 - Locations of push-buttons/devices
 - Walk indications-audible and vibrotactile. “Some early audible indicators were coming from above and therefore sounded like birds, rather than an indication to walk,” said Barlow.
 - Tactile arrow, so that pedestrians know they have hit the right button for the direction they want to travel.
 - Actuation indicator that lets the user know the button has been pressed.
- **Audible Information Devices.** These are similar to APSs. These are often used a work zones.
 - Walk indications can be a rapid tick. “This is preferable to the speech message for a number for reasons,” said Barlow. These include: language barriers, tone, hearing abilities.
 - Features also include a tactile arrow, as well as push-button locator tone, followed by rapid tick walk indication
 - There is no vibrotactile indication

Some have suggested a countdown at crosswalks, and some have them. However, Barlow noted, “One client observed that ‘I cannot see the edge of the street so knowing that it is 4 seconds left does not help me make my way across the street.’”

For crossing decisions at unsignalized crossings such as roundabouts, channelized turn lanes (CTLs), and midblock crossings, Barlow recommends:

- Single lanes slow down vehicles.
- Narrow lane widths to prevent another vehicle passing stopped vehicle
- Pedestrians should avoid multi-lane streets for crossing
- Accessible Pedestrian Signals
- Audible information devices
- Raised crosswalks

The latest project at TRB is TCRP Project B-46, which examines Tactile Warning Surface Indicators (TWSIs). The objective, according to the abstract is to “Produce guidance for transportation planners, engineers and orientation and mobility specialists that will provide for consistency in the design, installation, and usability of TWSIs in multimodal transportation in the United States.”

This is just a beginning, said Barlow. This accessible pedestrian design requires more lab research and field research needed.

Resources

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