Understanding Blind and Visually Impaired Pedestrian Safety

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Simulation of Low Vision

Travelers with low vision may be able to visually detect some details in specific settings or with certain types of environmental conditions.

Many of these components are beyond a person's ability to control and therefore the pedestrian with low vision often needs to rely on non-visual techniques.

Central Field Loss

- Make your hands into fists and put in front of your eyes; this is a simulation of central field loss.

- You can see in the periphery but not in the central field. Many senior citizens experience this with macular degeneration.

- Your central field is where your detail vision comes from.

Central Field Loss

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Peripheral Field Loss

- Make circles with your hands, like binoculars and hold to your eyes.

- People with Retinitis Pigmentosa (RP) and Glaucoma often experience peripheral field loss

- Tunnel vision and “night blindness” may occur due to the loss of retinal cells (rods) in the periphery that typically function in low light conditions.

Peripheral Field Loss

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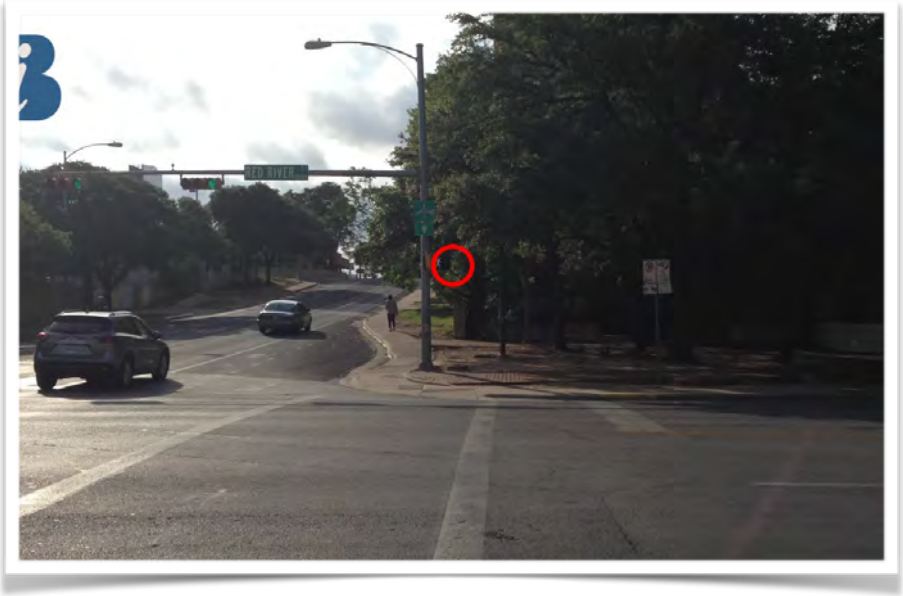
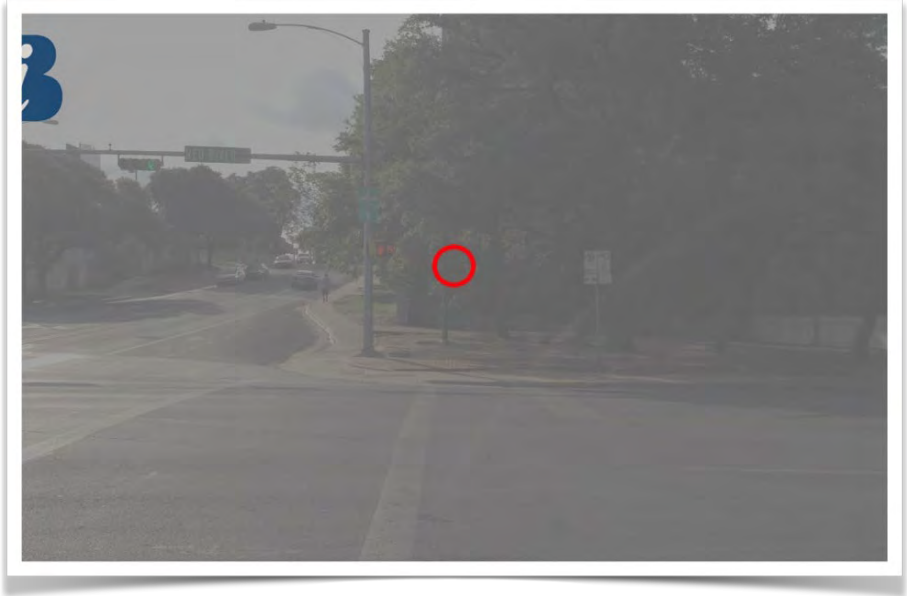
Other Visual Challenges

- Neurological Visual Impairment, could be experienced in lots of different ways. For some it is like “Swiss Cheese” vision; simulate with intertwined fingers in front of eyes

- Photophopia, hypersensitivity to light; challenges with glare that leads to reduced acuity

- Nystagmus, involuntary movement of the eyes





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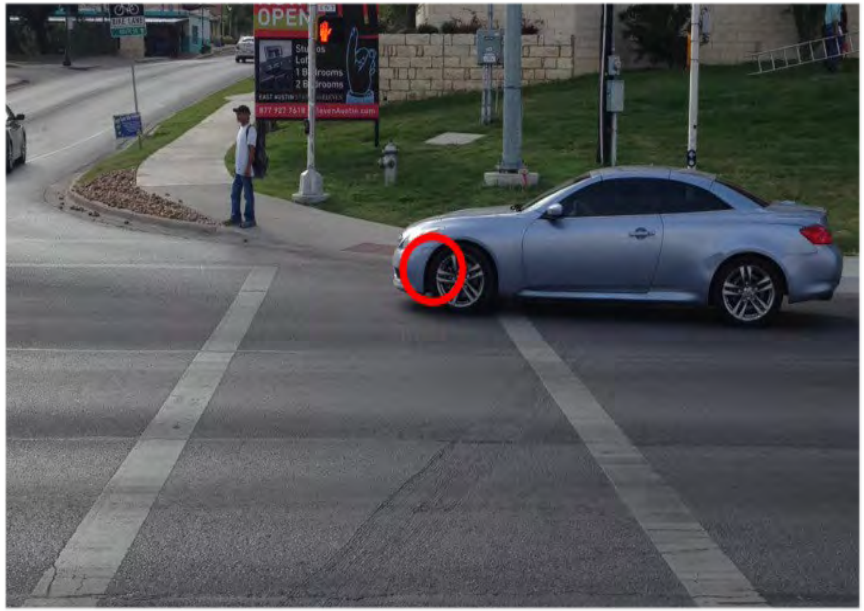

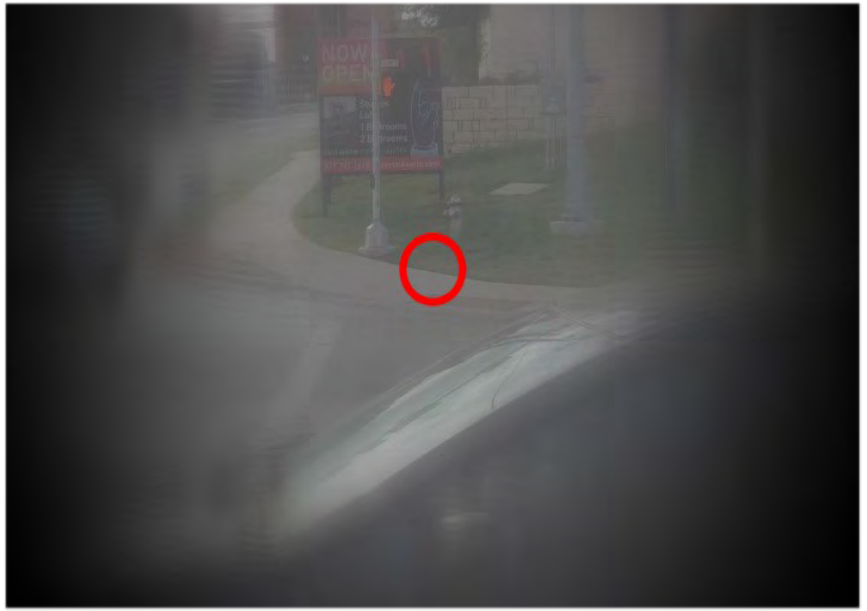

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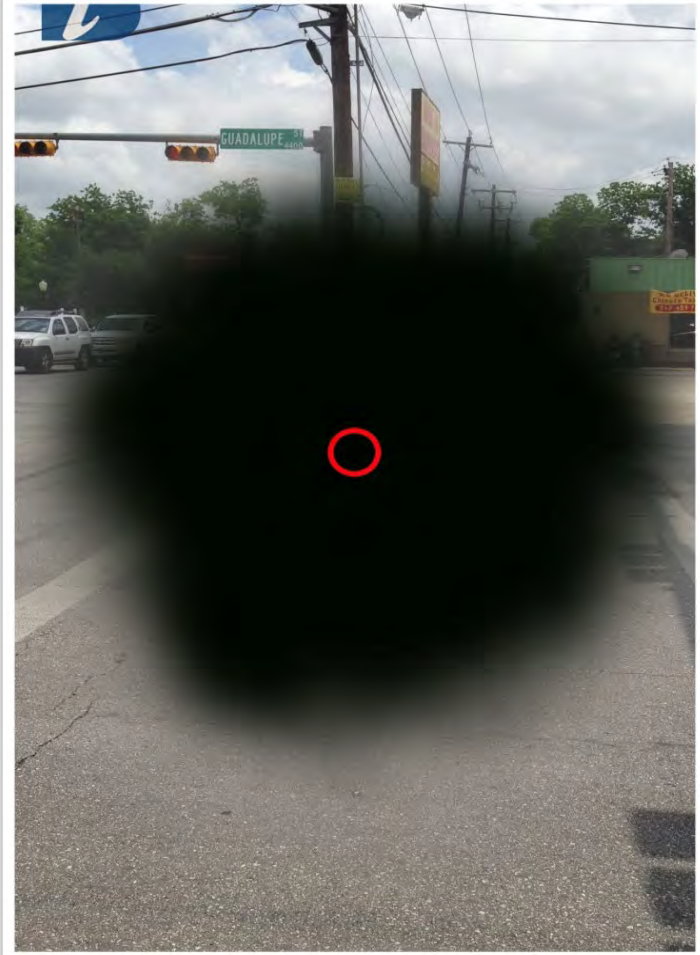
GUADALUPE


45th
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Steps for Street Crossings

1. Locating the street and ramp

2. Confirming the street you want to cross is the one in front of you

3. Analyzing the intersection for presence and type of traffic control, shape or geometry, etc.

4. Determining safe time to begin, and crossing

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Accessible Pedestrian Signals (APS)

- Makes pedestrian signal information accessible or available through audible tones, vibration, voice messages, or combination of those modes

- May require an extended press on the activation button to access these features

- May be combined with audible beaconing to aid orientation for large or skewed crossings

Accessible Pedestrian Signals (APS)

“Too little traffic is as great a problem to pedestrians who are blind, as is too much traffic. In the absence of APS, blind pedestrians must be able to hear a surge of traffic parallel to their direction of travel in order to know when the walk interval begins…

Accessible Pedestrian Signals (APS)

Locations that may need APS include those with:

- intersections with vehicular and/or pedestrian actuation
- very wide crossings
- major streets at intersections with minor streets having very little traffic
- t-shaped intersections
- non-rectangular or skewed crossings
- high volumes of turning vehicles
- split phase signal timing
- exclusive pedestrian phasing, especially where right-turn-on-red is permitted
- a leading pedestrian interval

Accessible Pedestrian Signals (APS)

Where these conditions occur, it may be difficult for pedestrians who are visually impaired or blind to determine the onset of the walk interval by listening for the onset of parallel traffic, or to obtain usable orientation and directional information about the crossing from cues that are available."

NCHRP publication Accessible Pedestrian Signals - A Guide to Best Practices:

Locator Tones Can Help

When a pole has to be located a distance from the ramp, having a locator tone greatly facilitates a traveler knowing that it is an actuated intersection, and in locating the pole to enter a call for a pedestrian phase.

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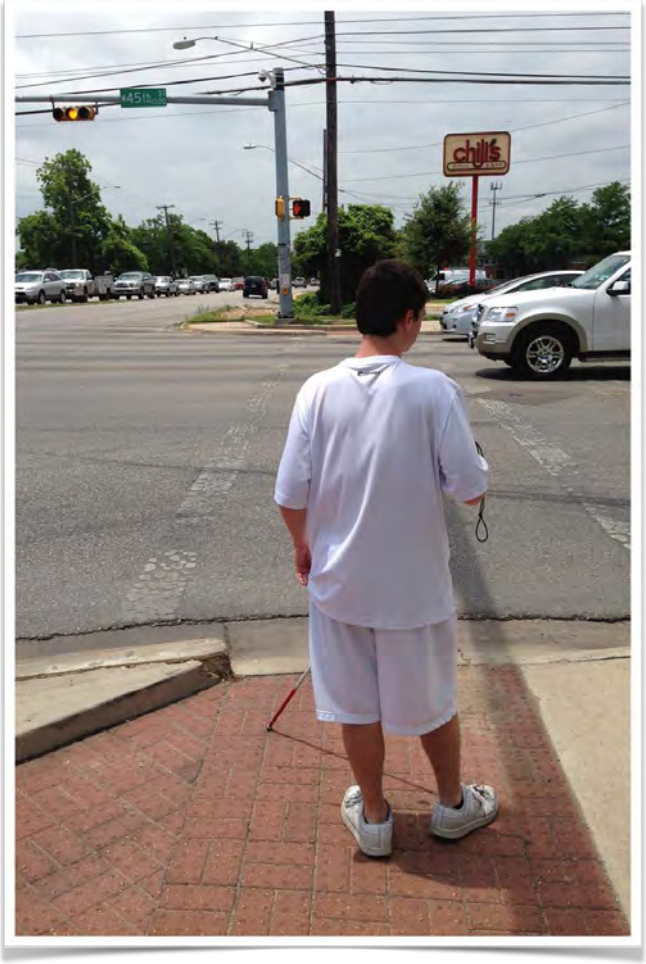
PEDESTRIANS
SHOULD NOT BE
IN CROSSWALK

APS Examples

- APS Mid-block on W. 45th between N. Lamar and Burnet Road 
- Locator tone for APS 
- APS to cross West 45th at N. Lamar with locator tone and countdown timer 
- APS to cross N. Lamar at W. 45th with locator tone wait state and countdown timer 

Aligning for a Crossing

- Sound cues for auditory alignment
- Ramp position and geometry, side of curb edge, etc.
- Position of button and placard on pole or stub post
- Travelers with low vision may also benefit from striping of crosswalk area



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Challenges for Non-Visual Pedestrians

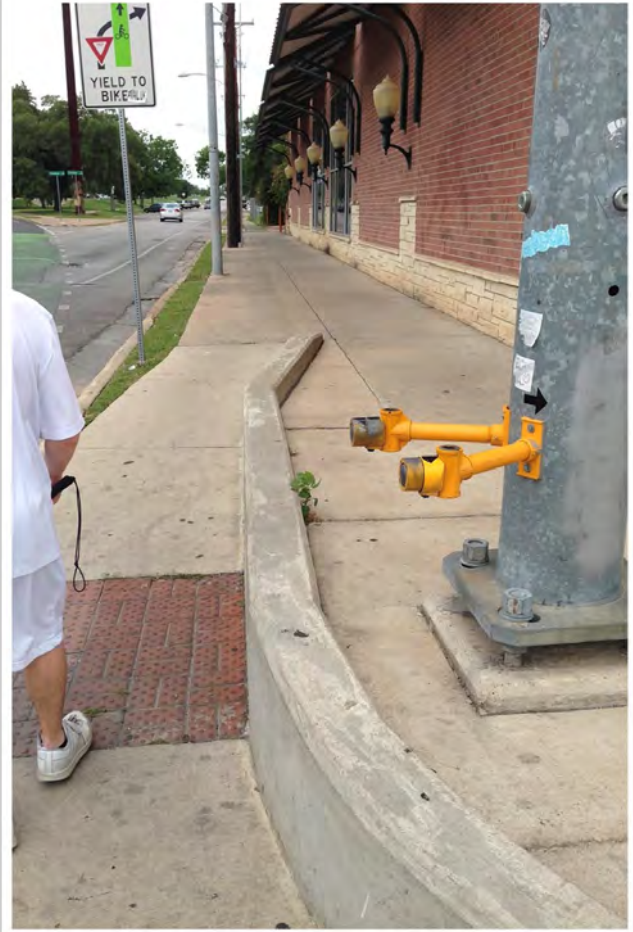
- Exclusive Pedestrian Phase, if no APS and minimal traffic volume, how to tell when safe to cross
- If excluding a street for pedestrian crossing and only visual signage
- Determining which is the correct button for the crossing
- Distance of ramp from pedestrian activation button

Challenges for Non-Visual Pedestrians

- Slip lanes, differentiating sounds of turning traffic and those proceeding straight through intersection. Driver yielding behavior and presumptive “right of way” in turn lane
- Locating pole with pedestrian button, whether on corner or pork chop/pedestrian refuge island
- Determining presence of oncoming, right hand turning traffic when control boxes or other equipment obstructs pedestrian hearing and driver visibility


For Lease


For Lease


YIELD TO
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24th and Guadalupe

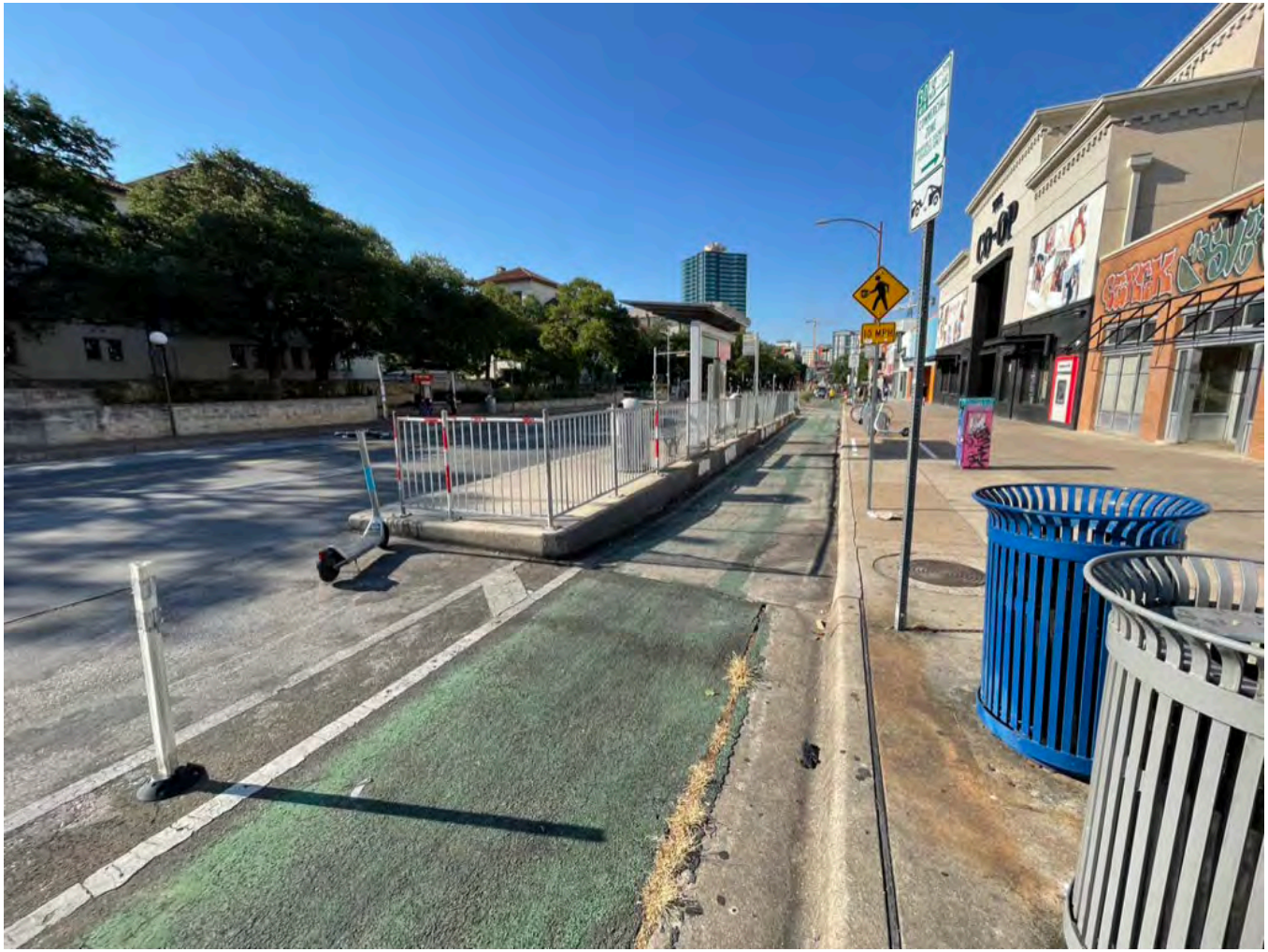
- Pedestrian crossing timed to occur with traffic that is not near lane parallel.

- No Audible Signal to facilitate determining correct crossing time when near lane, parallel surge not available.

Floating Bus Platforms and Shared Use Pathways

Sudden changes in pedestrian areas may come as a surprise and be very confusing unless efforts are made to keep community groups aware of changes.


BigBelly
SOLAR COMPACTOR



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Construction Zones

“The Americans with Disabilities Act (ADA) and the Manual on Uniform Traffic Control Devices (MUTCD) both require accessibility to be maintained for pedestrians with disabilities when construction disrupts a pedestrian walkway.

The MUTCD now clarifies that for pedestrians who are blind, signage, yellow tape and widely spaced cones are not adequate to convey the needed information.”

“Construction areas and pedestrians who are blind or visually impaired”
Association for Education and Rehabilitation of the Blind and Visually Impaired
Orientation and Mobility Division Environmental Access Committee

Workzone Safety

National Work Zone Safety Information Clearinghouse

https://workzonesafety.org/topics-of-interest/accommodating-pedestrians/

Pedestrian Accommodation in Work Zones:

A Field Guide

February 2018

Work Zone Safety Consortium

This material is based upon work supported by the Federal Highway Administration Grant Agreement DTFH61-13-H-00025

https://workzonesafety-media.s3.amazonaws.com/workzonesafety/files/documents/training/fhwa_wz_grant/artba_pedestrian_accommodation_wz.pdf

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Figure 15. Proper separation devices must be used when diverting pedestrians into travel, parking, or bicycle lanes *(Source: J. Barlow, Accessible Design for the Blind; TTI)*

MUTCD

“Individual channelizing devices, tape or rope used to connect individual devices, other discontinuous barriers and devices, and pavement markings are not detectable by persons with visual disabilities and are incapable of providing detectable path guidance on temporary or realigned sidewalks or other pedestrian facilities.”

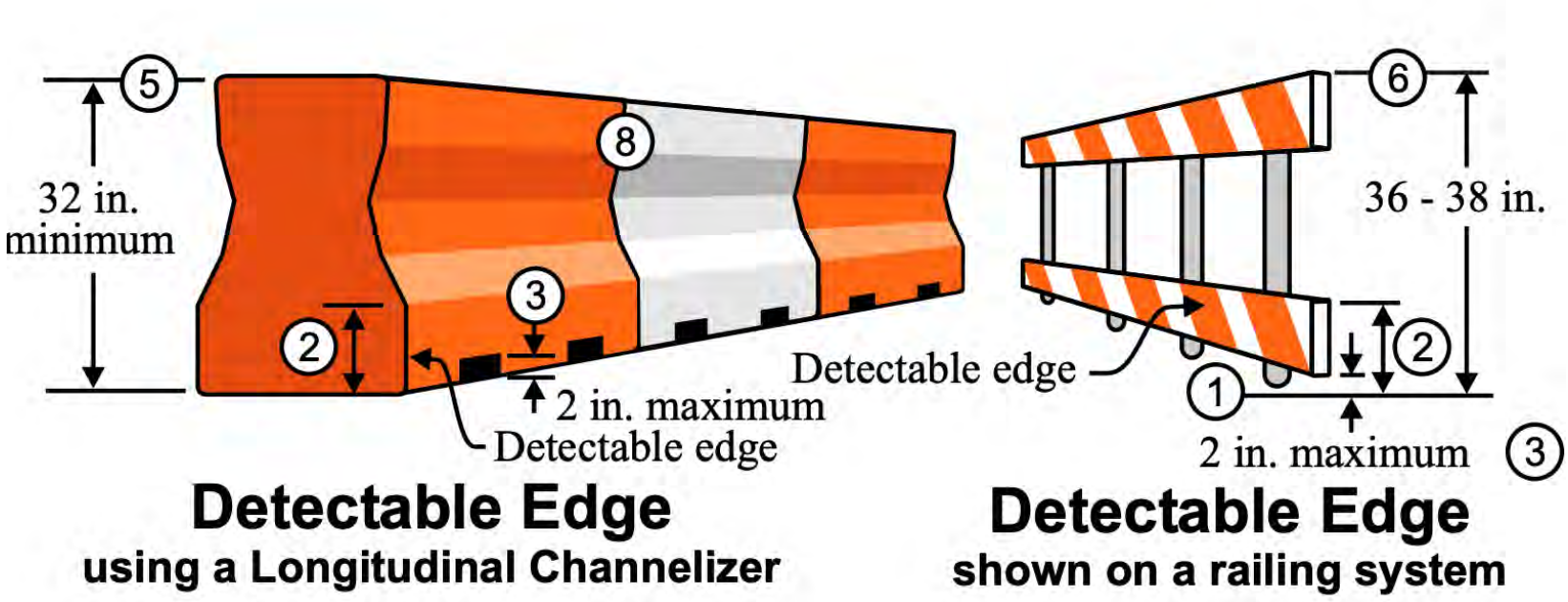
Section 6F.74 Detectable Edging for Pedestrians

MUTCD

“When it is determined that a facility should be accessible to and detectable by pedestrians with visual disabilities, a continuously detectable edging should be provided throughout the length of the facility such that it can be followed by pedestrians using long canes for guidance.”

Section 6F.74 Detectable Edging for Pedestrians

Detectable Edging



Minnesota Department of Transportation – MnDOT,
https://www.dot.state.mn.us/trafficeng/workzone/ADA/DRAFT-2011FieldManualTPARGuidance.pdf

Temporary Traffic Control, TTC

“The most desirable way to provide information to pedestrians with visual disabilities that is equivalent to visual signage for notification of sidewalk closures is a speech message provided by an audible information device. Devices that provide speech messages in response to passive pedestrian actuation are the most desirable…

Temporary Traffic Control, TTC

Other devices that continuously emit a message, or that emit a message in response to use of a pushbutton, are also acceptable…Audible information devices might not be needed if detectable channelizing devices make an alternate route of travel evident to pedestrians with visual disabilities.”

MUTCD Chapter 6D. Pedestrian And Worker Safety, Section 6D.01 Pedestrian Considerations

Questions?

Comments?

Suggestions?

Thank you very much!

Please do reach out via email:
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