

# Pedestrian Safety and Accessibility in Work Zones





# Module Objectives

---

---

---

At the end of this module, you will be able to:

- Describe why pedestrian safety and accessibility must be provided in work zones.
- Describe how pedestrians should be considered and provided for during the development and implementation of the traffic control plan.
- Identify good practices and effective solutions to enhance pedestrian safety and accessibility.



# Why Do We Have To Provide Pedestrian Access?

---

---

---

---

- Safety of pedestrians
- Business impact
- It is the law:
  - ADA compliance
  - MUTCD



# Safety

---

---

---

- In 2007, 4,654 pedestrians died in traffic crashes, representing 11% of all traffic deaths.
- On average from 2002 to 2006, about 15% of the fatalities resulting from crashes in work zones were non-motorists (i.e., pedestrians, workers, and bicyclists).



# It's Good for Business





# Law

---

---

---

---

- 2009 MUTCD
  - If the TTC zone affects the movement of pedestrians, adequate pedestrian access and walkways shall be provided.
- Americans with Disabilities Act of 1990 (ADA)
  - ADA requires that pedestrians with physical and/or mental disabilities be accommodated during times of construction.

**Because it's the LAW !!!**

# AASHTO Standard



AASHTO: “Because of the demands of vehicular traffic in congested areas, it is often extremely difficult to make adequate provisions for pedestrians. Yet this should be done, because pedestrians are the lifeblood of our urban areas...” (*Policy On Geometric Design Of Highways And Streets*, American Association of State Highway and Transportation Officials, 2001, Page 96.)

# We Are All Pedestrians



# Special Consideration Groups

- School children
- Elderly
- Disabled individuals  
(hearing, visually, and/or mobility impaired)





# Fundamental Principles...

---

---

---

---

- Make pedestrian safety an integral and high-priority element in every project, from planning through design and construction.
- Inhibit pedestrian movements as little as practical, and plan work zones to reduce exposure to potential hazards.



# Fundamental Principles (continued)

---

---

---

- Guide pedestrians to, through, and from work sites in a clear and positive manner.
- Perform routine inspection of traffic control devices.
- Use trained personnel who are qualified to make work zone safety decisions about selection, placement, and maintenance of traffic control devices.

# Temporary Traffic Control Considerations

- Three basic pedestrian considerations when designing and implementing temporary traffic control (TTC) plans:



# Consideration 1

1. “Pedestrians should not be led into direct conflicts with work site vehicles, equipment, or operations.”<sup>1</sup>

<sup>1</sup> MUTCD Chapter 6D.01



# Consideration 2

2. “Pedestrians should not be led into direct conflicts with mainline traffic moving through or around the work site.”<sup>1</sup>

<sup>1</sup> MUTCD Chapter 6D.01



# Consideration 3

3. “Pedestrians should be provided with a reasonably safe, convenient, and accessible path that replicates as nearly as practical the most desirable characteristics of the existing sidewalk(s) or footpath(s).”<sup>1</sup>

<sup>1</sup> MUTCD Chapter 6D.01



# When Should You Consider Pedestrian Safety and Accessibility?

- Planning
- Design
- In the field:
  - Construction
  - Maintenance



# Planning

- Plan early with the “end in mind.”
- Identify the need:
  - Assess the impact on significant pedestrian generators.
  - Observe existing pedestrian travel patterns.
  - Conduct public outreach:
    - Meet with local community.



# Impact

- Identify the Impact:
  - Pedestrian origins and destinations
  - Pedestrian travel patterns
  - Transit routes and stops
  - Intermodal transfer points
  - Rail grade crossings





# Assess Impact on Flow

---

---

---

- How is the TTC zone impacting pedestrian flow?
- Are we disrupting, closing, or relocating pedestrian facilities?
  - If so, the temporary facilities need to replicate existing facilities.



# Public Involvement

---

---

---

---

- Pedestrian Concerns:
  - Safe street crossings / intersections
  - Construction blocking sidewalks
  - Motorist behavior
- Pedestrian Involvement Approach:
  - Committee
  - Survey
  - Interviews



# Design

---

---

---

---

- Various designs from MUTCD:
  - Sidewalk detour or diversion
  - Crosswalk closures and pedestrian detours



# Sidewalk Detour or Diversion

---

---

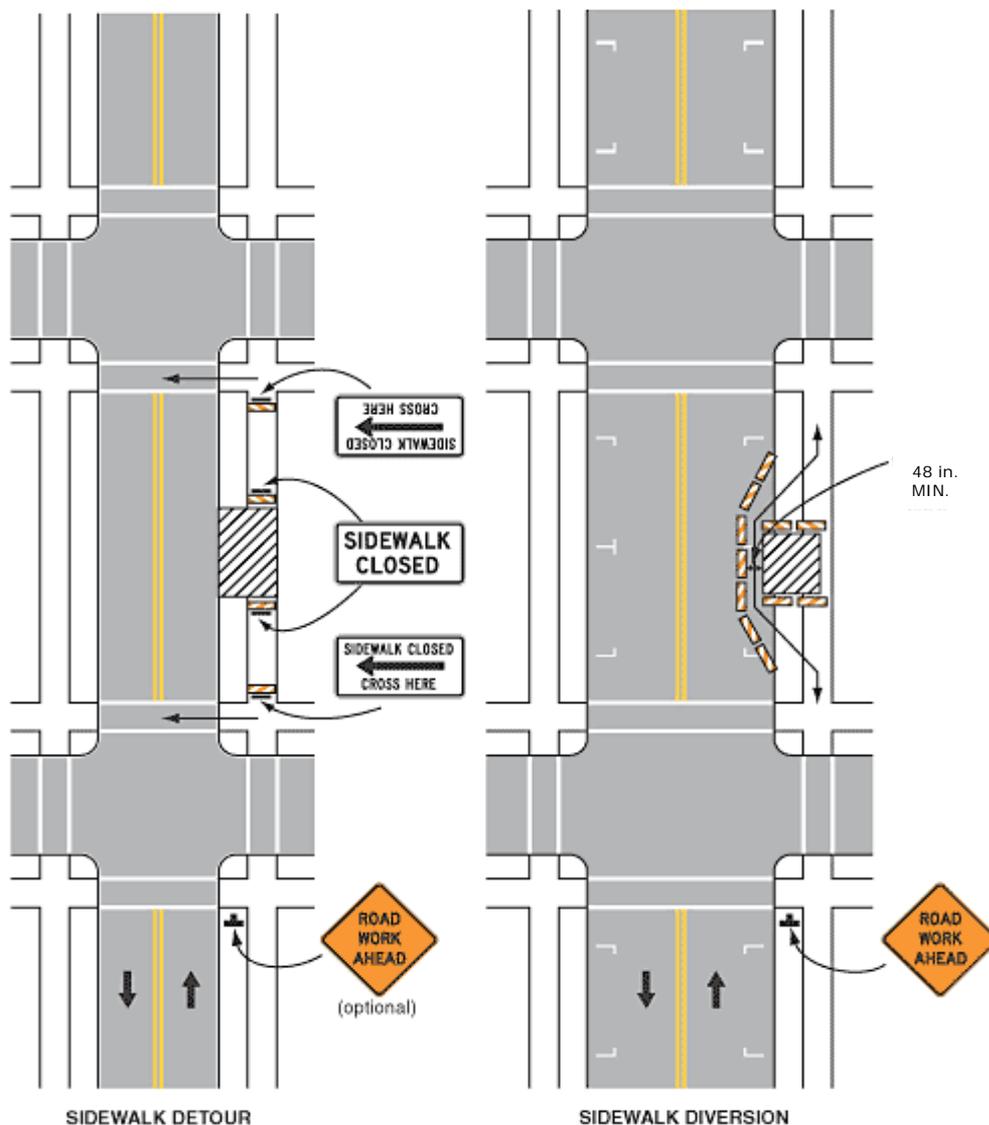
---

---

- Use channelizing devices to delineate a temporary route.
- Minimize any additional time and distance pedestrians must travel.
- Clearly define any detoured routes.
- Place signs at intersections rather than mid-block.
- Provide ADA accommodations.
- Protect pedestrians from hazards.

# Design

- Figure 6H-28 Sidewalk Detour or Diversion



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.

# Crosswalk Closures and Pedestrian Detours

- Provide advance notification of closures:
  - 2009 MUTCD standard.
- Provide audible information devices, where applicable.
- Provide tactile devices.
- Mark temporary crosswalks.
- Provide curb ramps.





# Other Design Considerations

- Pedestrian information:
  - Advance
  - Transition
  - Work area
  - Exit
- Construction practices
- Nighttime illumination



# Construction Phase

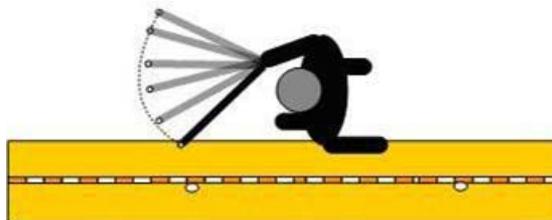
- Physical separation
- Regularly inspect path for debris
- Avoid slippery walkway surfaces

## Overhead Protection



# Inspection and Maintenance

- Check that TTC plan is followed:
  - Including ADA compliance
- Devices in good and safe condition:
  - Sturdy, firm to grip, and smooth
  - No potential for tripping
  - When delineating, provide continuous, detectable edging throughout length



# Construction Example



# Pedestrian Ramp



# Pedestrian Ramp



# Pedestrian Separation



# Devices that Accommodate Visually Impaired Pedestrians

- Devices need to:
  - Provide a continuous, cane-detectable surface within 1.5 inches of the finished grade.
  - Be continuous and smoothly traversable to hand-trailing, cane, or dog travel.
  - Be stable and resists tipping or displacement on contact from cane or body.
  - Be detectable using residual vision by color, contrast, or brightness.
  - Meet ADA provisions for protruding objects (no projection greater than 4 inches).



# Accommodating Visually Impaired Pedestrians Effectively

- Devices should **NOT**:
  - Present a tripping hazard at entry or along a travel route.
  - Present an injury hazard when trailed by hand.
  - Present an entrapment hazard in continuous cane use.
  - Present a hazard to pedestrians with a cane or to dog travel.





# Pedestrians Checklist and Considerations for TTC Zones

---

---

---

## Planning

- Provide a safe, convenient travel path for pedestrians that replicates as nearly as possible the most desirable characteristics of the existing sidewalks or footpaths throughout all phases of construction.
- Avoid creating pedestrian paths that lead pedestrians into direct conflicts with work site vehicles, equipment, operations.
- Avoid creating pedestrian paths that lead pedestrians into direct conflicts with mainline traffic moving through or around the work site.
- Determine the TTC impact on pedestrians, including significant generators such as schools, senior centers, transit stops and shopping areas.
  - Determine the level of accessibility needed for pedestrians in the TTC zone through observing existing pedestrian travel patterns, and make accommodations prior to the start of work. Consider meeting with local community organizations (i.e., local blind organization, city ADA coordinator, etc.) through open houses to address concerns and needs. Develop outreach products available in the appropriate formats for those with special needs.
- Assess the TTC impact on existing pedestrian flow.
  - Ensure that temporary facilities replicate as nearly as practical the accessibility features present in the existing pedestrian facility when the existing facilities are disrupted, closed, or relocated in a TTC zone.



# Pedestrians Checklist and Considerations for TTC Zones

---

---

---

## Design

- Provide pedestrian information throughout the TTC zone.
  - Provide advance information, transition information, work area information, and ingress and egress directions for pedestrians. See *Accommodating Pedestrians in Work Zones* brochure developed by FHWA; FHWA-SA-03-011.
  
- The TTC pedestrian accommodation that utilizes a temporary route does the following:
  - Defines detoured routes clearly.
  - Provides advance signage at intersections rather than mid-block locations.
  - Separates pedestrians from vehicle traffic.
  - Avoids mid-block crossings.
  - Ensures that temporary routes are not much longer than the original route.
  - Provides clear and positive guidance to delineate a temporary route.
  - Provides continuous access to transit stops and/or relocates transit stops.
  
- Maintain a continuous accessible path of travel either around or through the construction site throughout all construction phases.



# Pedestrians Checklist and Considerations for TTC Zones

---

---

---

## Design (cont'd)

- Ensure compliance with Americans with Disabilities Act (ADA) of 1990 requirements.
  - Provide an alternate route when existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone. Temporary facilities should replicate the features present in the existing pedestrian facility.
  - Ensure a minimum sidewalk width of 36" (a 48" width is desirable), erect curb ramps, and provide passing space (minimum 5 foot by 5 foot space every 200 feet).
  - Maintain a minimum width and smooth surface to avoid creating tripping danger and to minimize barriers to wheelchair use. This includes providing ADA compliant facilities.
  - Make all barriers and channelizing devices detectable for pedestrians with visual disabilities. Note that the use of caution tape stretched between traffic control devices is not adequate and not acceptable.
  - Consider using additional devices for visual disabilities, such as audible information devices or accessible pedestrian signal.
  
- Maintain pedestrian access to businesses, residences, transit stops, etc.
  
- Provide temporary nighttime lighting for pedestrian walkways throughout the TTC zone.



# Pedestrians Checklist and Considerations for TTC Zones

---

---

---

## Construction/Maintenance/Utility

- Promote adequate pedestrian safety via physical separation from work space and vehicular traffic, overhead protection, etc.
- Provide adequate and safe detour(s) whenever sidewalks are closed or blocked.
  - Use signs at intersections to give advance notification of closures ahead, and inform pedestrians where to cross.
  - Provide audible signage for pedestrians with visual disabilities.
- Clear the path of debris and other items that may obstruct pedestrians' paths.
  - Avoid pedestrian walkway surfaces that are slippery when wet.
- Consider carefully the placement of intersection crosswalks, implement additional signing/markings, add and/or relocate transit stops, and modify traffic signals (traffic signal timing, pedestrian signals, push buttons) as necessary.
  - Take into account walking speeds and the distance pedestrians travel when traversing travel lanes to determine minimum green time.



# Pedestrians Checklist and Considerations for TTC Zones

---

---

---

## Construction/Maintenance/Utility (cont'd)

- Inspect pedestrian accommodations during construction to ensure that the traffic control plan (TCP) is followed.
- Ensure traffic control devices are in good and safe condition.
  - Devices should be sturdy, firm to the grip, and smooth to the touch (have no rough edges).
  - Devices should not be potential tripping hazards.
  - Provide a continuous, detectable edging throughout the length of the facility such that pedestrians using a long cane can follow it.
- Make pedestrian routes ADA compliant and available to pedestrians during all phases of construction.



# Helpful Resources

---

---

---

- ATSSA Work Zone Safety Grant Web page:  
<http://www.atssa.com/cs/Federal-Highway-Administration-work-zone-safety>
- Access Board
  - [www.access-board.gov](http://www.access-board.gov)
  - Public Rights-of-Way Accessibility Guidelines (PROWAG)
- MUTCD Part 6D



# Helpful Resources

---

---

---

---

- FHWA's pedestrian safety website.  
[http://safety.fhwa.dot.gov/PED\\_BIKE/ped/index.htm](http://safety.fhwa.dot.gov/PED_BIKE/ped/index.htm)
- FHWA's "Pedestrian Road Safety Audit Guidelines and Prompts Lists" FHWA-SA-07-007
- Accessible Design for the Blind.  
<http://www.accessforblind.org/>



# Module Recap

---

---

---

---

- Describe why pedestrian safety and accessibility are important.
- Describe the principles, considerations, and requirements for pedestrian accessibility.
- Describe when and how to consider and provide for pedestrian safety and accessibility.