Crosswalks

Crosswalk Risks

Pedestrian risks encountered depend on:

- Complexity of the vehicular and pedestrian traffic patterns
- Effectiveness of supplementary information provided to both motorists and pedestrians about the crossing location, direction, and duration

Crosswalk Risks

- At street intersections, turning vehicles and the vehicle speed pose the greatest threat to pedestrians

Crosswalk Risks

- Pedestrian chance of death if hit:
  - 15% at 20 mph
  - 45% at 30 mph
  - 85% at 40 mph
- Older people have more severe injuries and are more likely to die from injuries

Movement Barriers at Crosswalks

- A movement barrier is anything that restricts an individual's ability to physically move along or within the sidewalk or crosswalk

Information Barriers at Crosswalks

- Information barriers restrict a pedestrian's ability to use information contained within the sidewalk or crosswalk environment

Crosswalk Recommendations

- The cross slope (which is the road grade) be a maximum of 1:48, 2%
- The running grade (road crown or super-elevation) be a maximum of 5%
- 8 feet, recommended minimum width (Manual of Uniform Traffic Control Devices (MUTCD) minimum 6 feet)

Crosswalk Markings

- Used to define the pedestrian path of travel and alert drivers
- Provides useful information for people with visual disabilities

Crosswalk Markings

- Use slip resistant material
- Should not be placed in bike lanes or where bikes operate
- Marked crosswalks must be designed in accordance with the Manual of Uniform Traffic Control Devices (MUTCD)

Crosswalk Markings

- Although the MUTCD provides for design options, research indicates that the ladder design is most visible to drivers
- Ladder design improves guidance for pedestrians with low vision and cognitive impairments

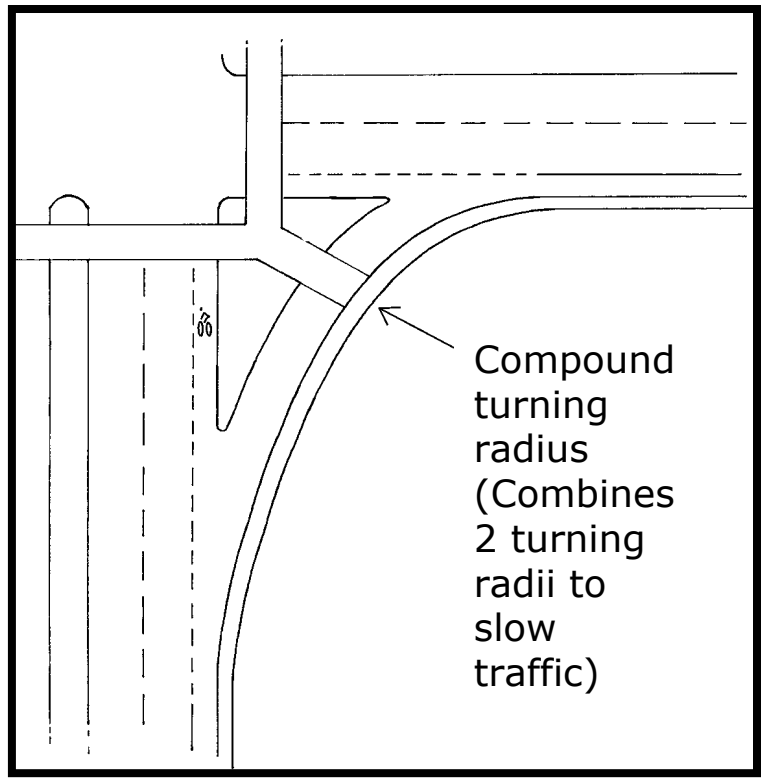
Crosswalk Markings

- MUTCD Ladder design:
  - White longitudinal lines perpendicular to the line of crosswalk
  - Lines 12 to 24 inches wide (305mm to 610 mm) and spaced 12 to 24 inches (305mm to 610 mm) apart
- Can be installed so that primary tire patterns can minimize wearing and maintenance of markings

Crosswalk Markings

- Use consistent design to mark all crosswalks; otherwise the impact of less visible markings may be weakened by comparison

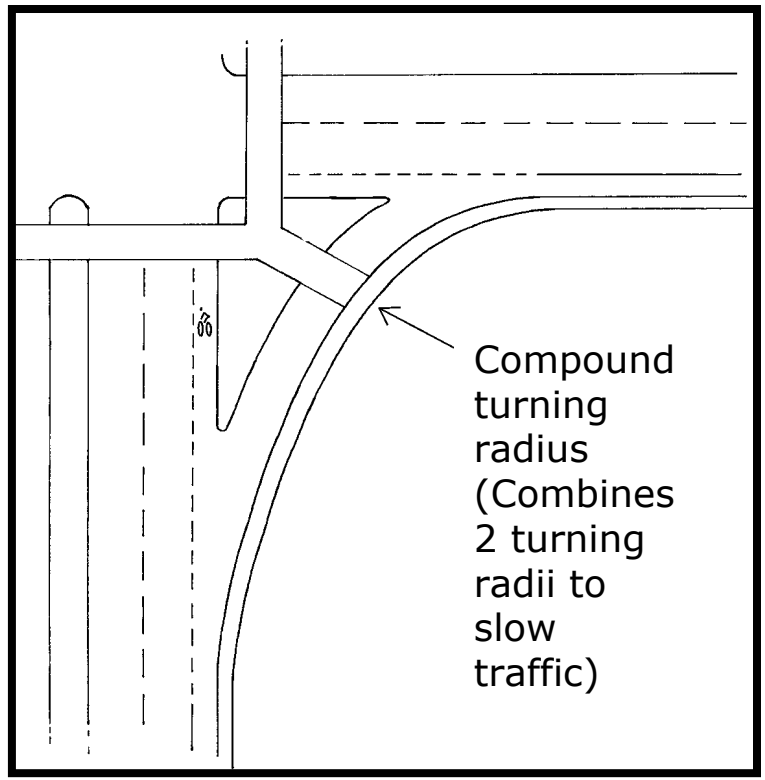
Right or Left Turn Slip Lanes at Intersections



Crossing issues:

- Right turning traffic masks the sounds of stop and go traffic flows at intersection
- Crosswalks at slip lane are not located at apex intersection-pedestrians may fail to cross at crosswalk
- Drivers often fail to yield to pedestrians waiting to cross who don’t make eye contact

Right or Left Turn Slip Lanes at Intersections



Crossing applications:

- An audible cue for locating the pedestrian crossing
- A pedestrian activated traffic signal may be needed at pedestrian crossings if gaps cannot be detected
- Narrow right lane and tighten the turning radius to slow traffic

Midblock Crossings

- Provide signalized mid-block crossings where blocks are long or where pedestrians cross at mid-block
- Use accessible pedestrian signals with a locator tone at the pushbutton at mid-block crossing (so visually impaired pedestrians can find the location)

Crosswalk Problems

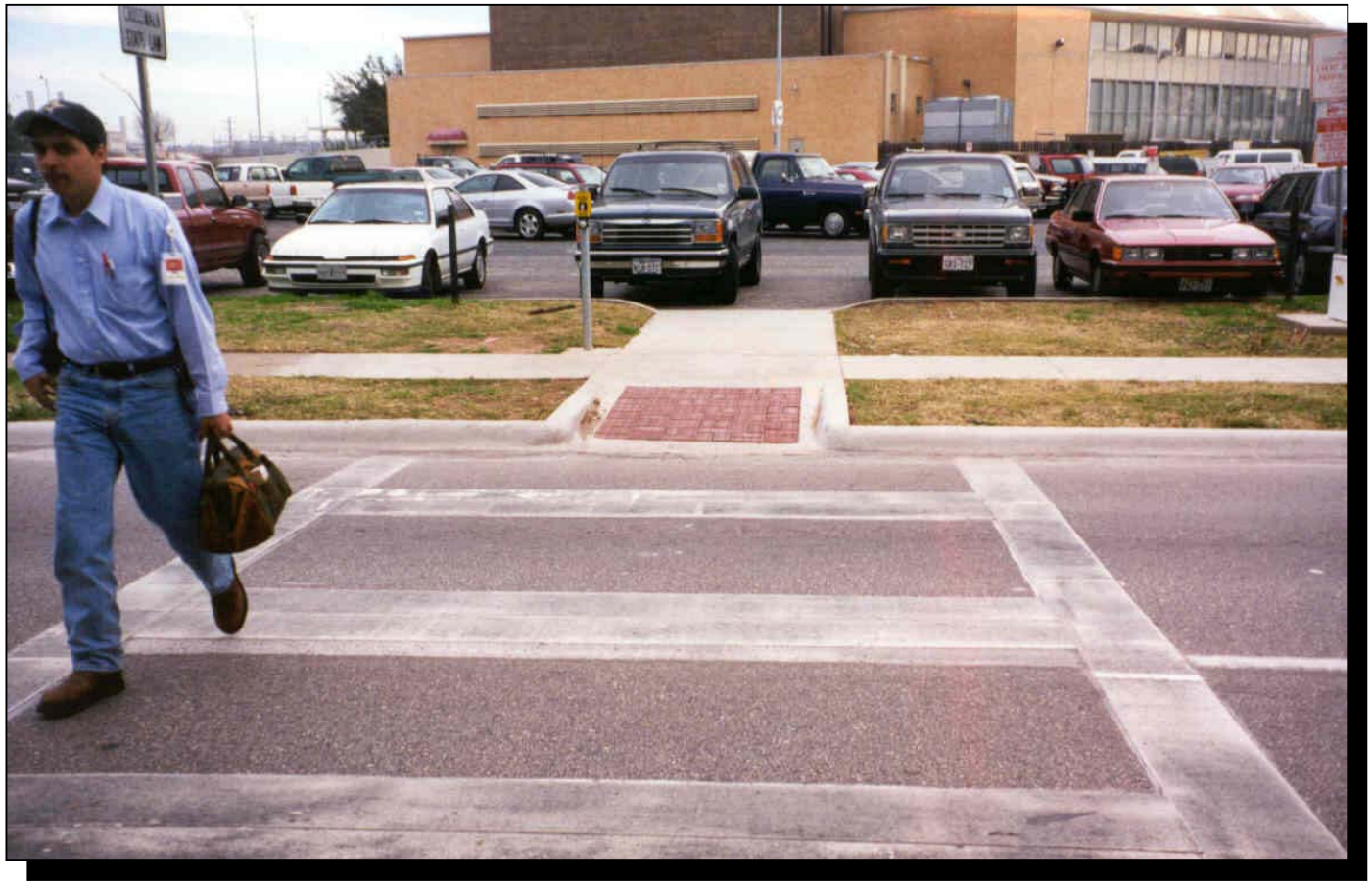
Identify the problems on the following photographs. Specify exactly how they may pose accessibility difficulties to pedestrians with disabilities.

Problem #1

Problem #2

Problem #3

Solution #1



Place an accessible pedestrian signal at a mid-block crossing

Solution #2

Add a vehicle traffic sign that instructs drivers to stop for pedestrians

Solution #3

Provide pedestrian refuge in large intersections

Question

What are some solutions to for making crosswalks more accessible to the variety of pedestrian populations, such as children,elderly, and people with disabilities?

Consider the photograph of the street on the next slide as your starting point.

Question: What can be altered to provide more crossing opportunities and minimize problems created with crossing a wide street?

General Crosswalk Recommendations

- Combine highly visible markings (ladder striping) with additional pedestrian treatments, such as shorter crossing distances, traffic calming, and medians
- Design crosswalks, medians and curb ramps so that all pedestrians can travel within the marked area throughout the entire crossing

Crosswalk Recommendations

- Maintain markings and consider additional treatments whenever a street is resurfaced
- Consider flashing signals and lights and advanced warning signs to increase the visibility of the crosswalk
- Install a center median to provide a refuge for pedestrians at multi-lane roads
- Restrict right turns on red

Crosswalk Recommendations

- Avoid restrictions for pedestrians to cross on only one leg of an intersection (unless a solid barrier and accessible information about the restricted crossing pattern is provided to pedestrians with visual impairments)
- Provide curb extension to decrease pedestrian crossing time and distances vehicle decay and increase pedestrian visibility

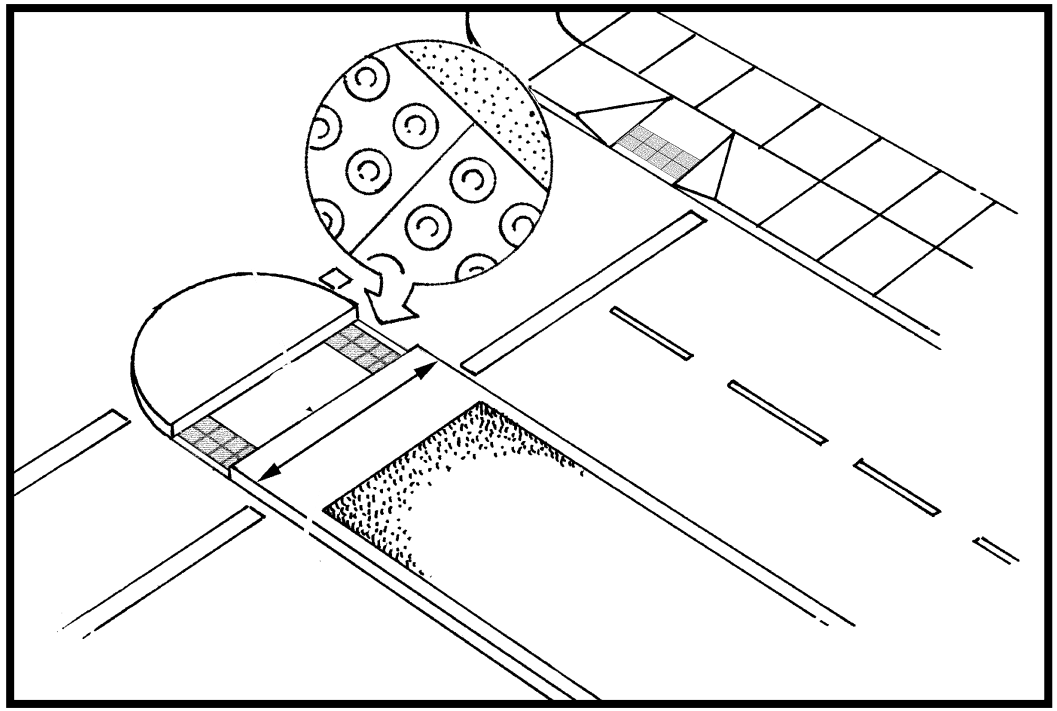
Crosswalk Recommendations

- Consider a raised crosswalk with detectable warnings at both ends
- Reduce traffic speed

Medians and Islands

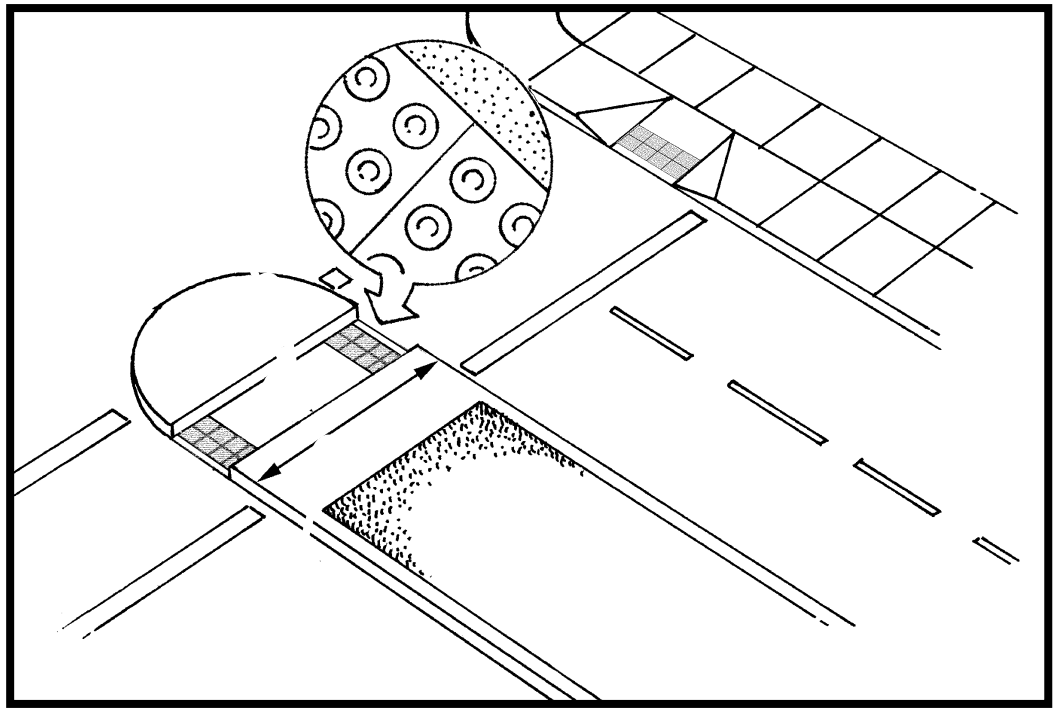
- Help pedestrians cross intersections by reducing the crossing distance from the curb to a protected area
- Allows pedestrians to cross during smaller gaps in traffic
- Helpful to people with slow walking speeds

Medians and Islands



- Raised curb with a cut-through at street level or a ramp
- Make cut through as wide as possible for passing and storage

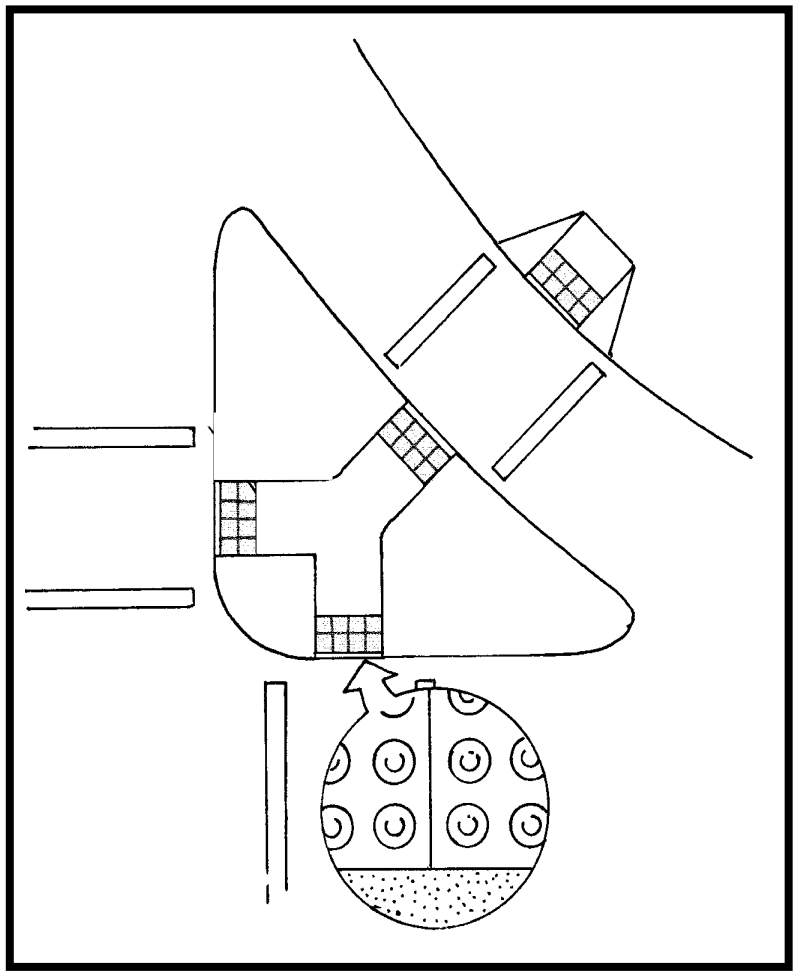
Medians and Islands



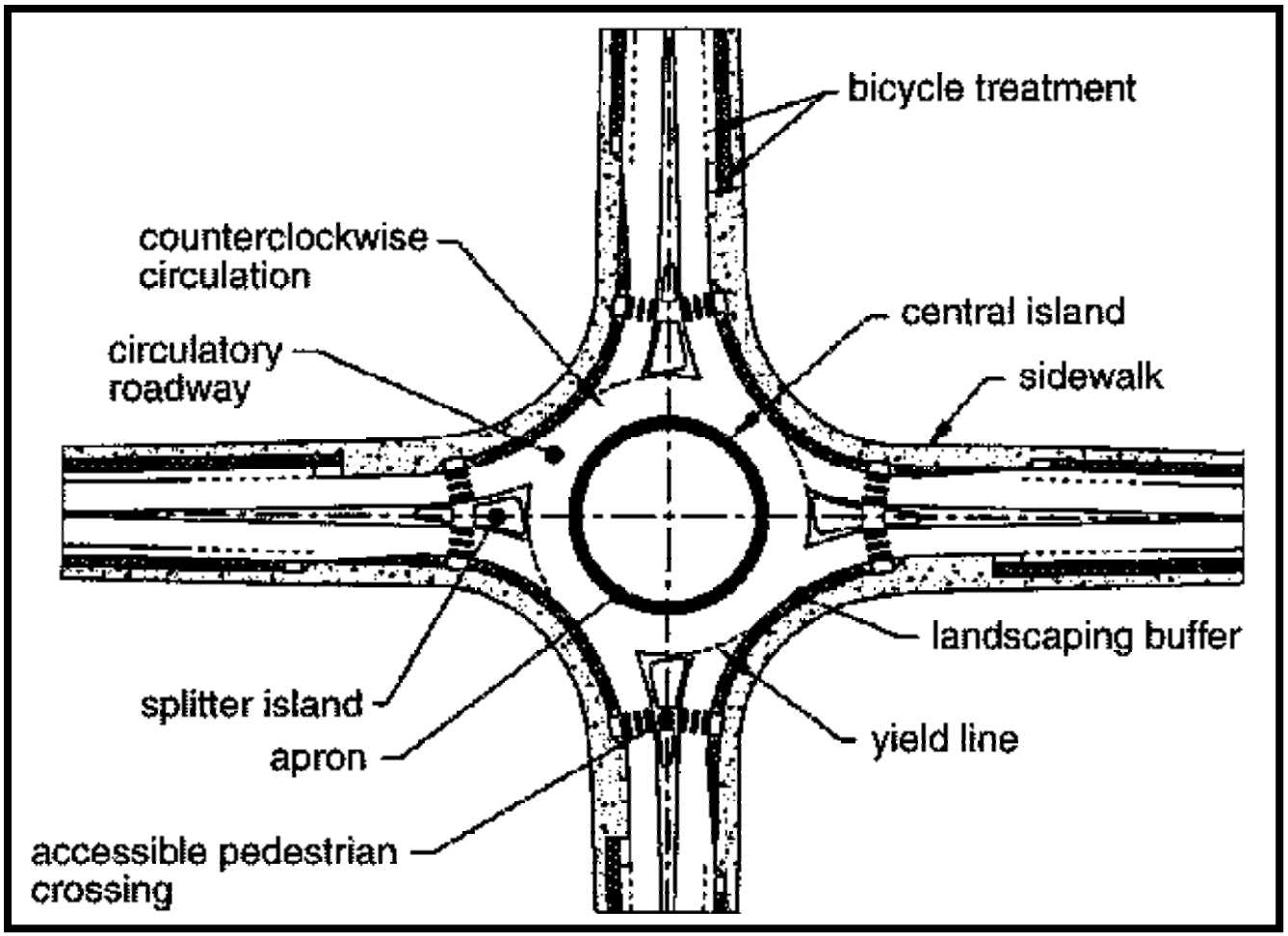
- Provide:
  - 24 inches (0.6m) of detectable warnings at both openings
  - 24 inches (0.6m) of non-textured pavement in the center

Medians and Islands

- 72”x72” (1.83m) refuge will allow for passing side by side and length of bicycle
- Detectable warning surfaces should be placed at the edge of both ends of the median



Roundabouts



Roundabouts

Design Principles:

- Yield at entry
- Deflect traffic to the right
- Exiting speeds are higher than entering speeds

Roundabouts

Access impacts for people with vision and cognitive disabilities:

- Absence of stopped traffic
- Vehicles exiting and circling sound the same
- Determining the “intersection” layout
- Setback crosswalks are difficult to find

Roundabouts

Access impacts for people with vision and cognitive disabilities:

- Busy roundabouts provide few crossing gaps
- Unable to make eye contact with motorists to claim the right of way

Roundabouts

Recommendations:

- A pedestrian-activated traffic signal with locator tone
- Continuous barrier and landscaping to guide to crosswalks and prevent unsafe crossings

Roundabouts

Recommendations:

- An audible cue to indicate where a crossing is, such as a locator tone, should be provided at pedestrian crossings
- Passive pedestrian detectors for halting traffic when pedestrians are in the roadway
- Keep line of vision open around center island for motorists and pedestrian visibility

Pedestrian Overpasses and Underpasses

Pedestrians prefer to cross at grade than above or below grade

Pedestrian Overpasses and Underpasses

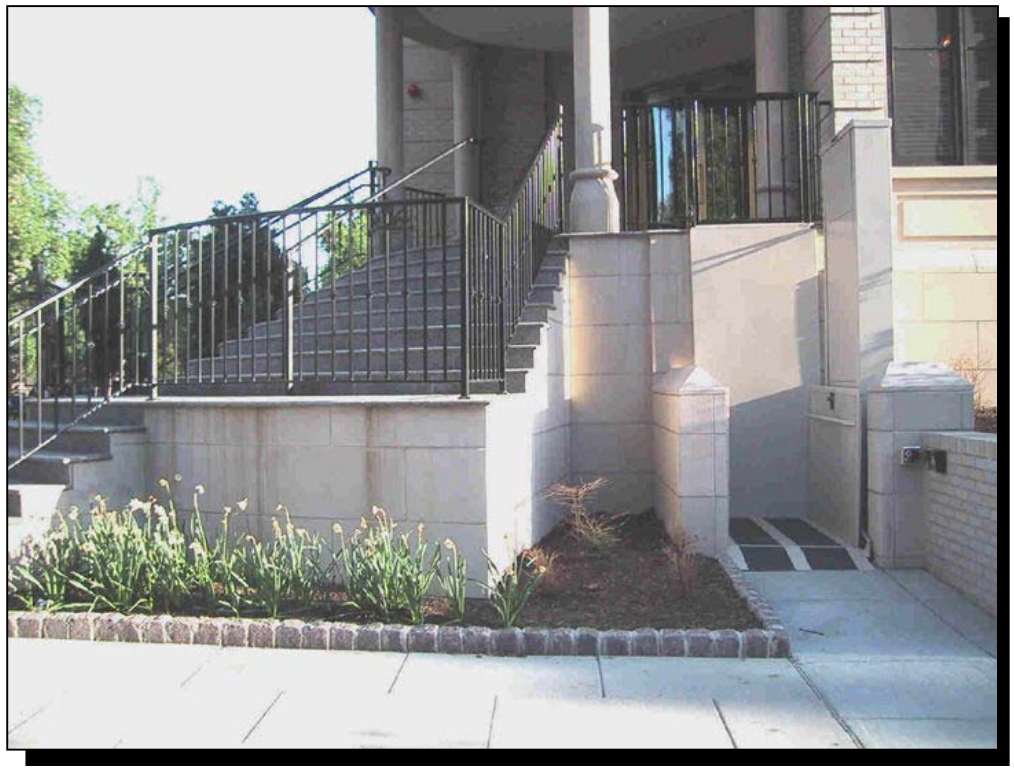
Pedestrians must have a continuous access route and connection with accessible facilities

Impacts:

- Lack of access
- Longer route
- Inconvenient
- Limited connectivity
- Security

Elevator Chair Lifts

- Lengthy travel on ramps results in limited accessibility
- 5 ft. requires over 100 ft. of ramps and landing



Elevator Chair Lifts

- Ramps on overpasses can result in 200 - 300 ft of ramping