Section 5

Accessible Pedestrian Design

What Will Be Covered in Section 5

Design guidelines and suggestions for the following areas of accessibility:

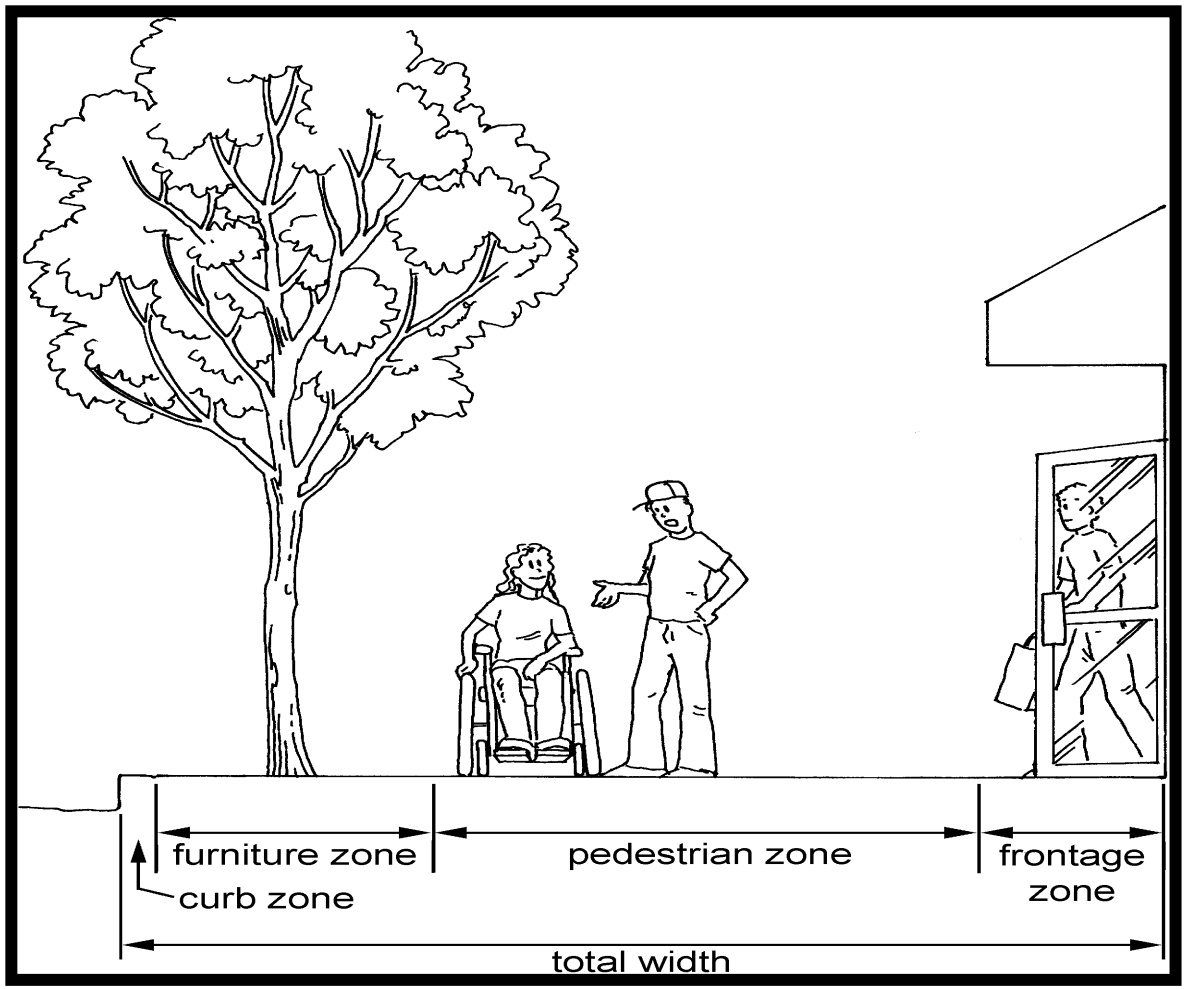
- Sidewalk corridor
- Curb ramps
- Crosswalks
- Pedestrian signs and signals
- Temporary facilities and construction in public right or way

What Will Be Covered in Section 5

Most of the design guidelines contained in:

- FHWA report, *Designing Sidewalks and Trail for Access: Best Practices Design Guide Part 2*
- Access Board's report, *Building a True Community* – Recommendations from the Public Rights-of-Way Access Advisory Committee

Sidewalk Corridor

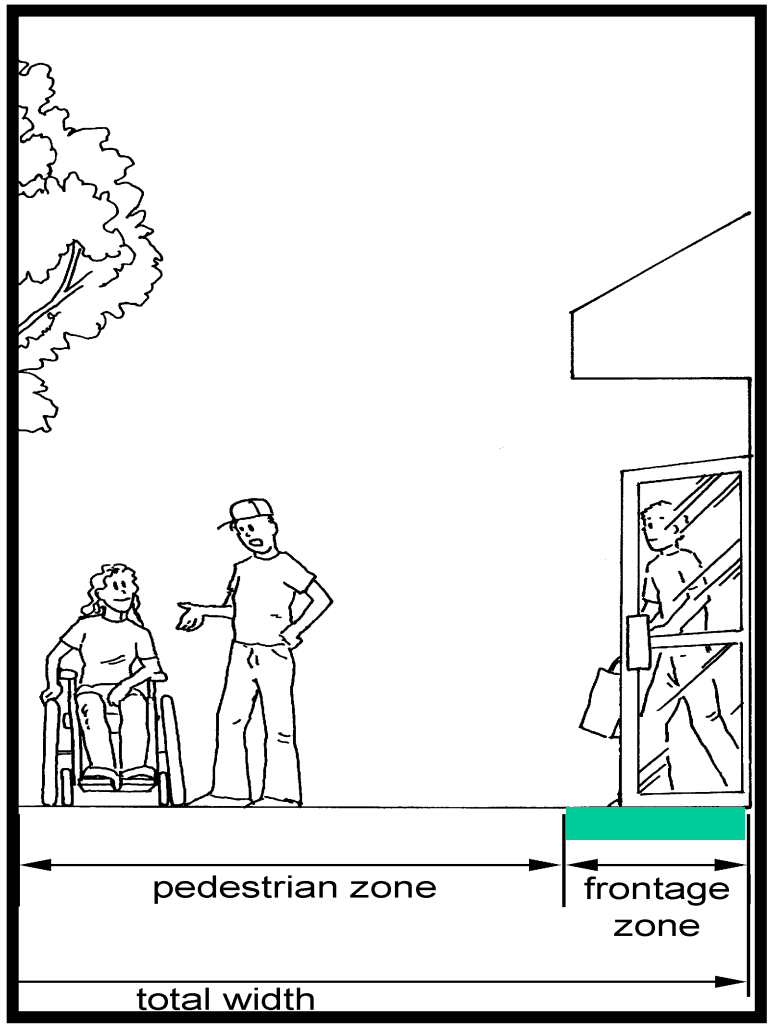


Sidewalk Corridor

Extends from the edge of the right-of-way to the edge of the roadway

- Frontage zone (shoreline)
- Pedestrian zone
- Furniture zone
- Curb zone

Frontage Zone



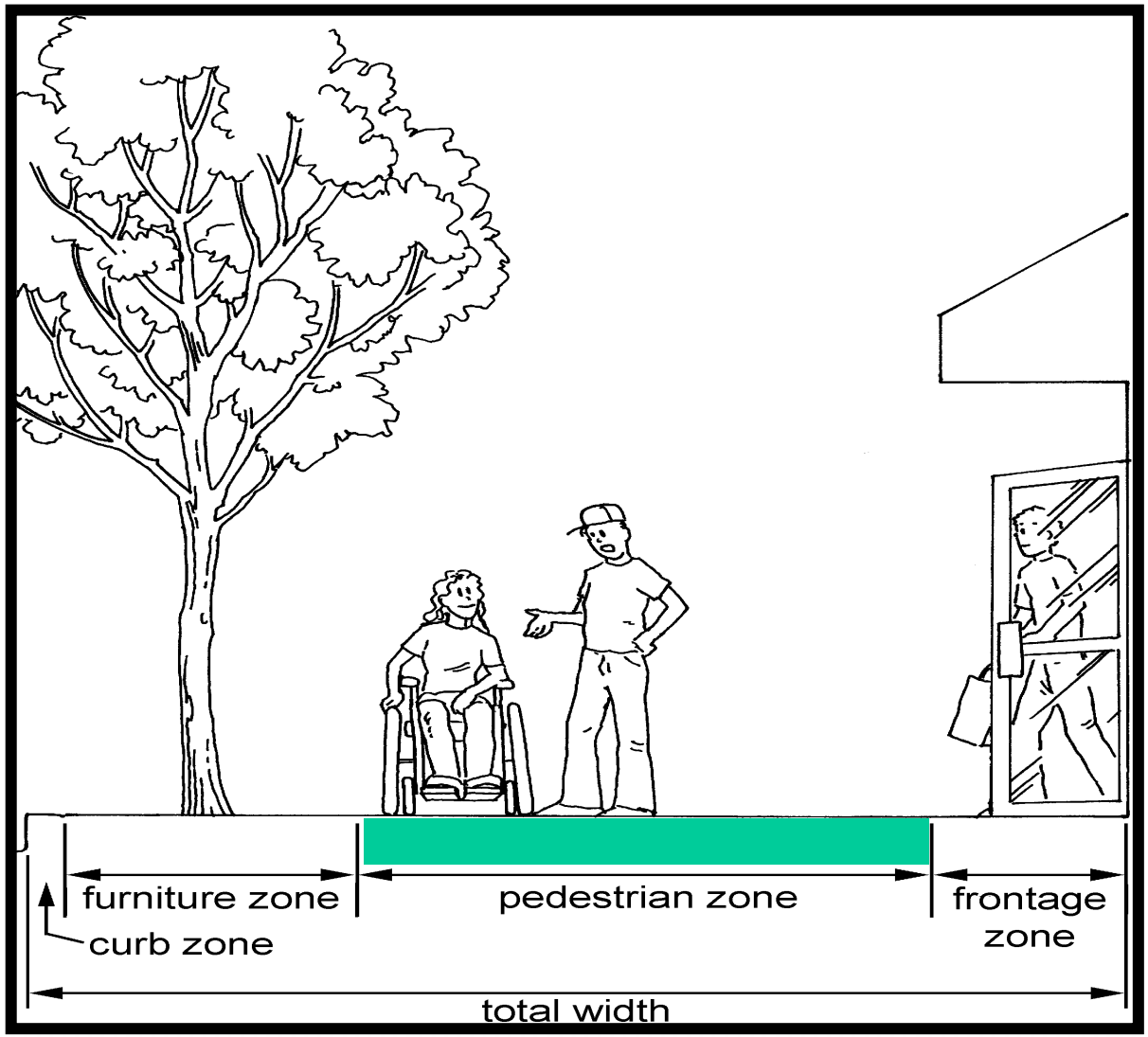
Frontage Zone

- Located between the pedestrian zone and the property line (primarily in urban areas)
- Minimum width 12 inches (305mm);
- Allow up to 60 inches (1.525m) for doorways
- May eliminate frontage zone if property line is wide open or landscaped space

Frontage Zone

- People with vision impairment often travel in this space using sound from adjacent buildings for orientation
- Must be kept free of overhanging and protruding obstacles
- Any obstacles must be detectable by white cane

Pedestrian Zone



Pedestrian Zone

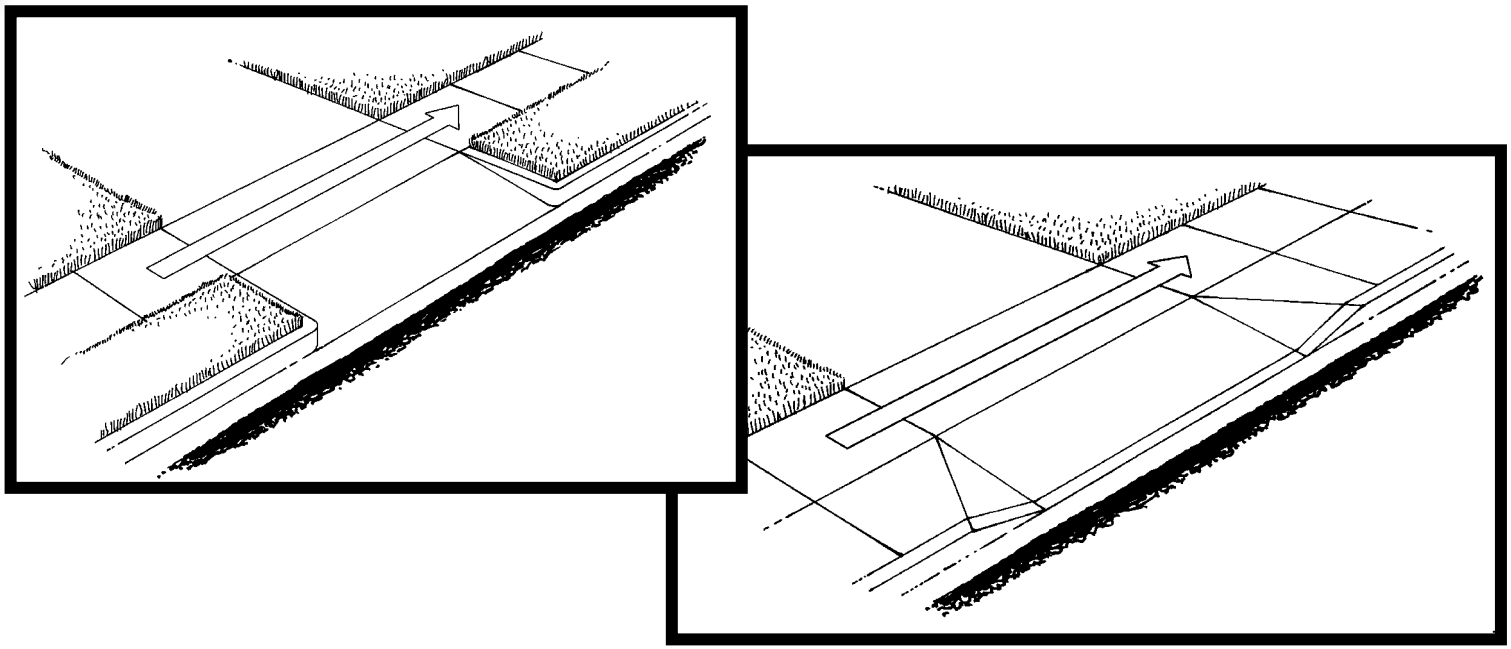
Pedestrian Zone

- Positioned between the frontage and furniture zones
- Specifically reserved for pedestrian travel

Pedestrian Zone

- Completely free of obstacles, protruding objects, and vertical obstructions
- Expanded width in high-volume areas (urban and commercial areas)

Pedestrian Zone



Driveways and alleys encroach into pedestrian right of way and should not compromise safety, comfort, and access of pedestrians

Pedestrian Zone

Operating space for various users:

- 36 inches (915mm) minimum for wheelchair users
- 42 inches (1.068m) minimum for crutch and walker users

Pedestrian Zone

- 48 inches (1.22m) minimum for user with guide dog, sighted guide, or one person assisting another

Pedestrian Zone

- 60 inches (1.525m) minimum width for a turning wheelchair
- 60 inches (1.525m) allows for walking pedestrians to pass each other comfortably

Pedestrian Zone

- 72 inches (1.83m) for two wheelchair users to pass each other comfortably

Pedestrian Zone Width

Minimum standard:

- 36 inches (915mm) (ADAAG – Buildings and Facilities)
- 60 x 60 inches (1.525m) passing space every 200 feet (61m)

Pedestrian Zone Width

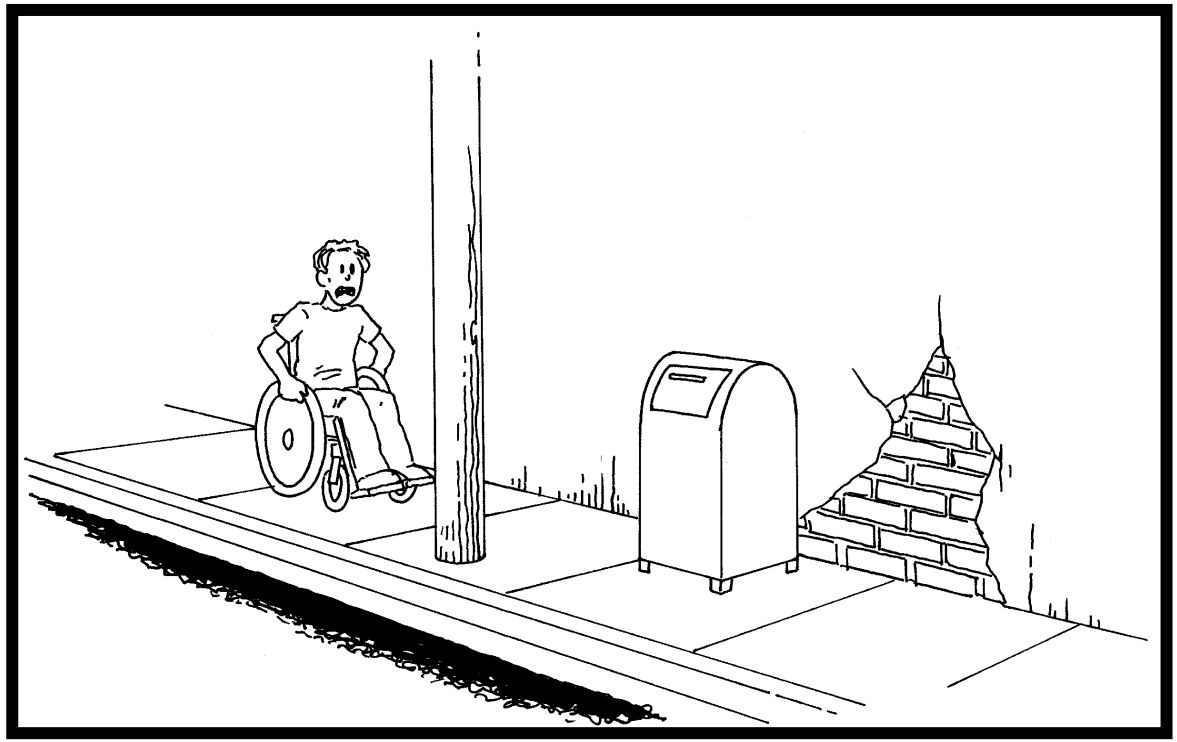
Guideline minimums:

- 60 inches (1.525m) (*Designing Sidewalks and Trails for Access,* FHWA, 2002)
- 60 inches (*Building a True Community,* U.S. Access Board, 2001)
- 48 inches (1.2m) (*A Policy on Geometric Design of Highways and Streets (Green Book),* AASHTO, 2001)

Obstacles in Pedestrian Zone

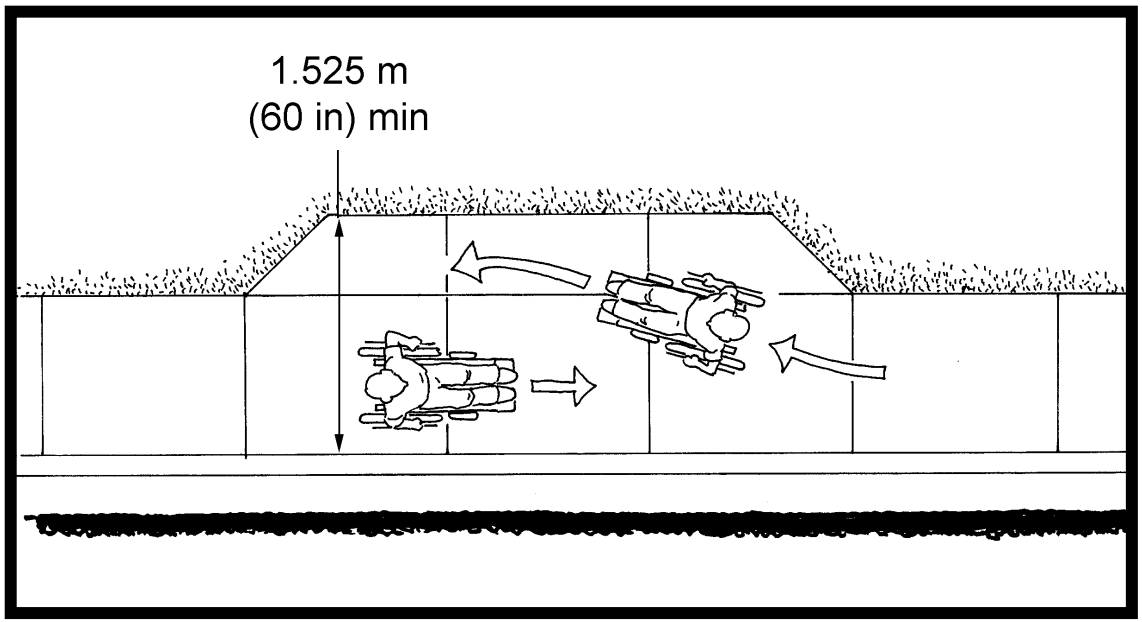
Eliminate objects or provide a pathway around

Removable Objects in the Pedestrian Zone



Eliminate removable and protruding obstacles, such as mailboxes, newspaper stands, tree branches, or hedges

Retrofit Solution for Narrow Pedestrian Zones

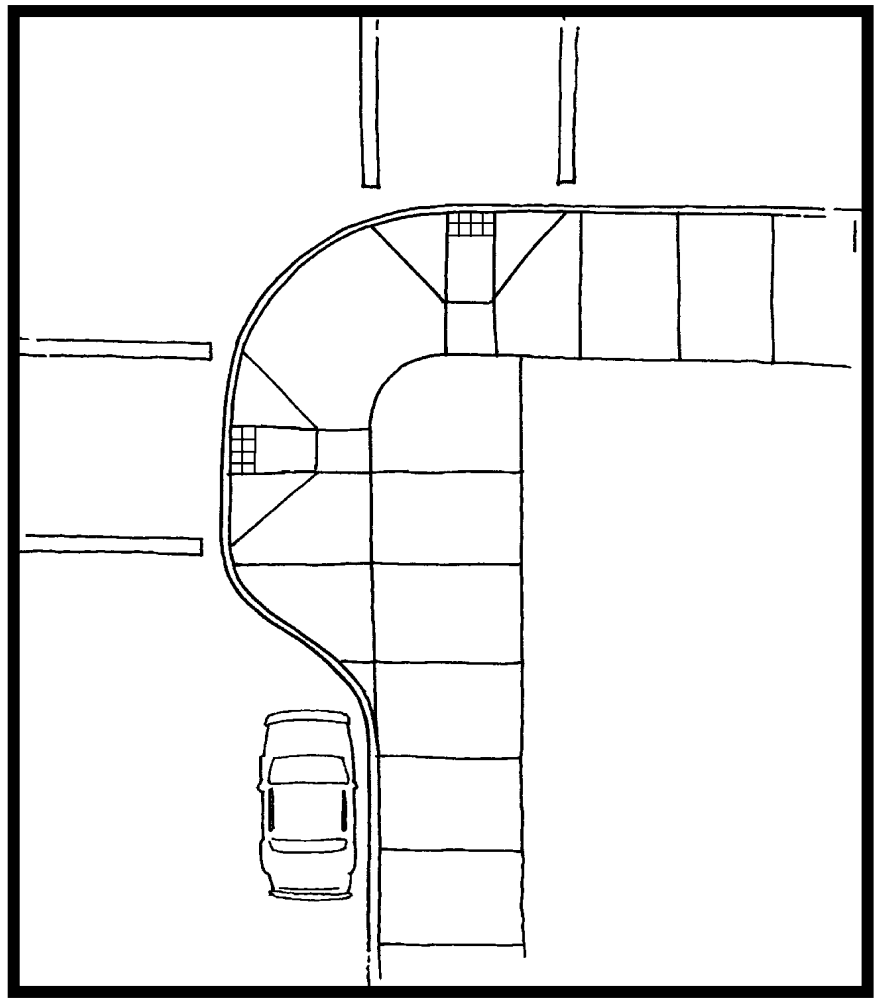


Secure additional right-of-way to create periodic passing spaces that are at least 60 x 60 (1.525m) inches

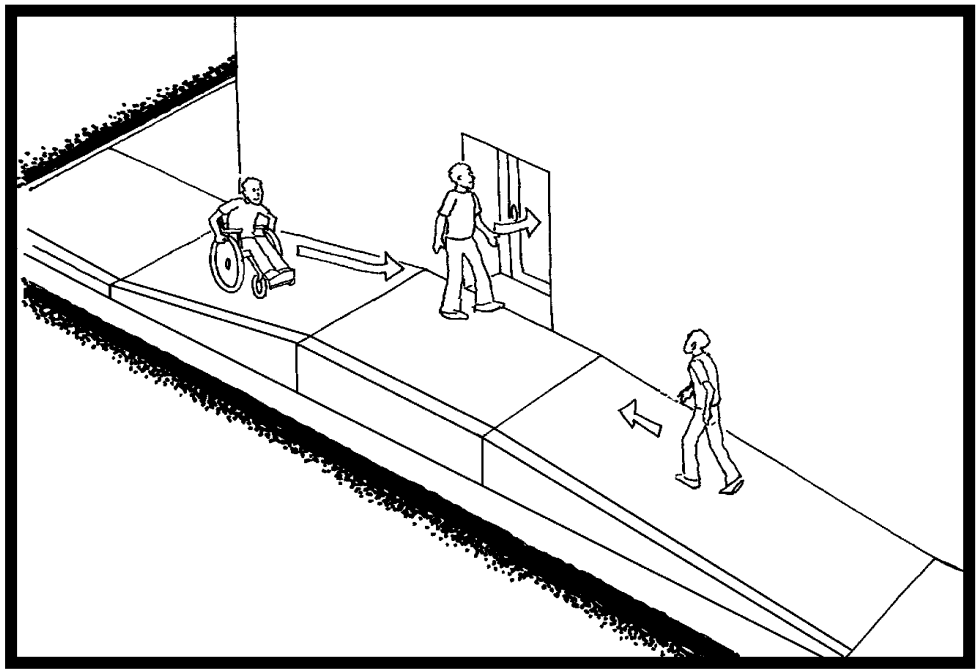
Solutions for Narrow Pedestrian Zones

Curb Extensions

Extend the curb into the parking lane to generate more space for curb ramps and pedestrian storage space.



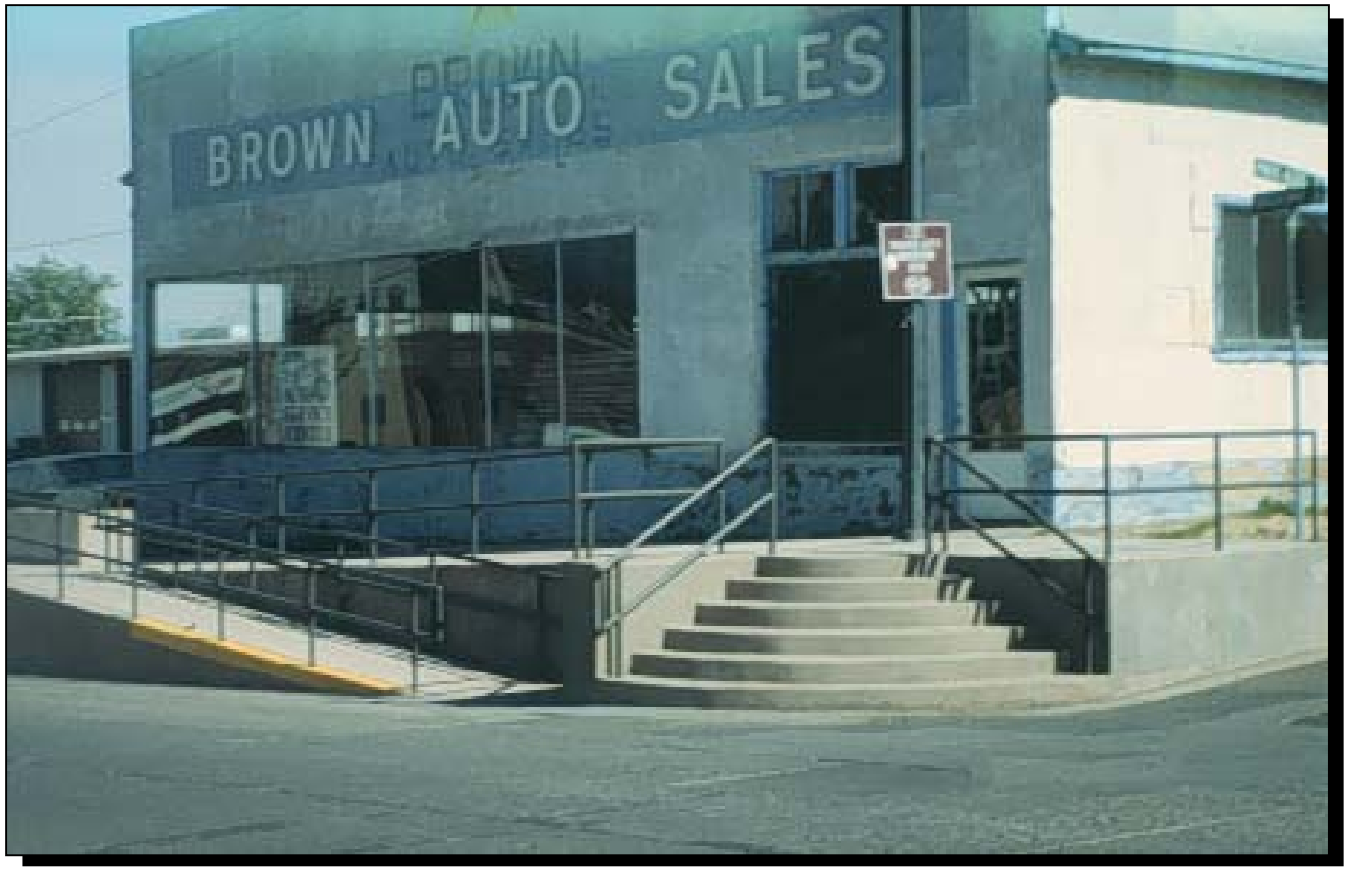
Solutions for Narrow Pedestrian Zones



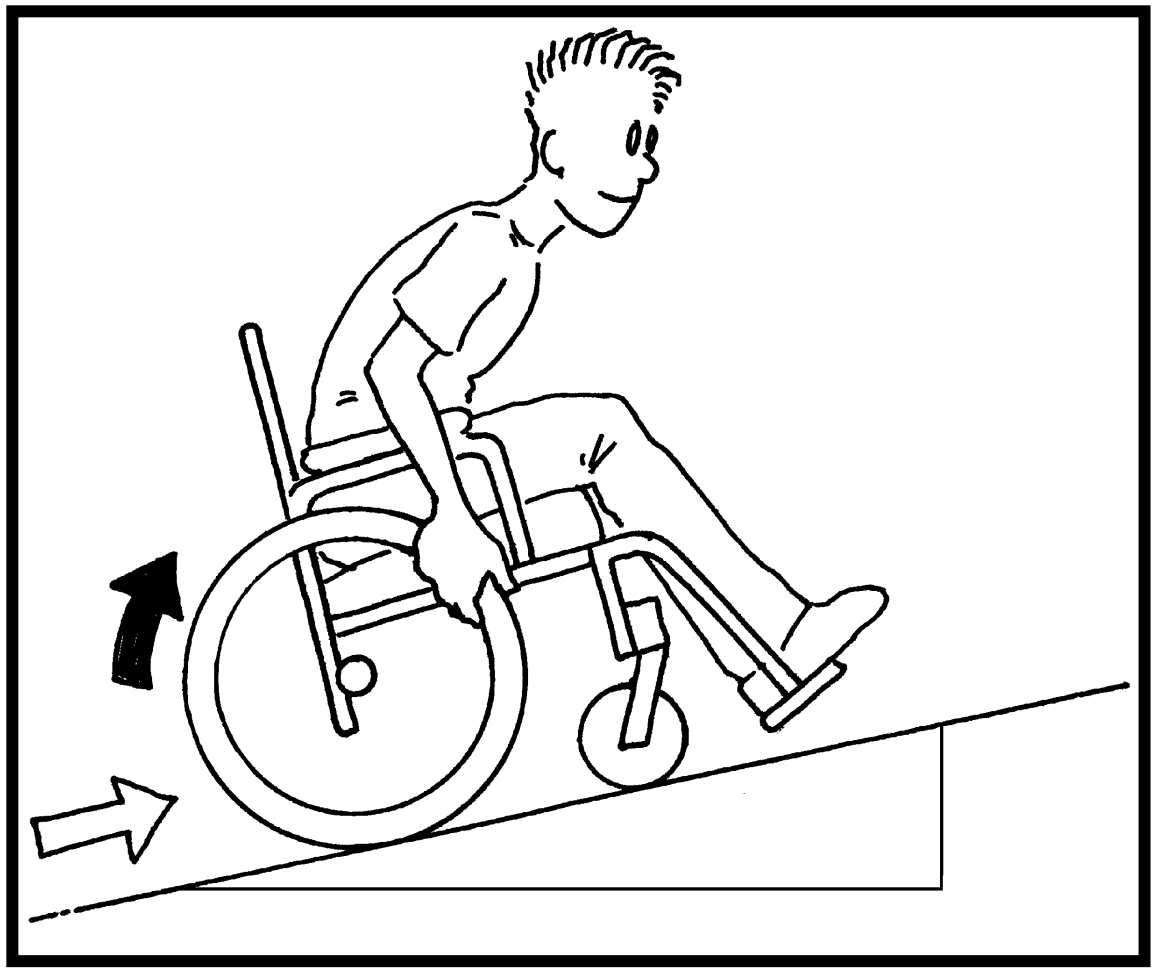
Retrofit the building entrance by replacing the steps with a ramped sidewalk -- may include handrails

Widen sidewalk around utility pole

Solutions for High Curbs and Narrow Pedestrian Widths



Sidewalk Grades



Sidewalk Grades

- Sidewalks adjacent to an existing roadway may follow the running grade of the roadway
- Maximum 5% grade is considered accessible

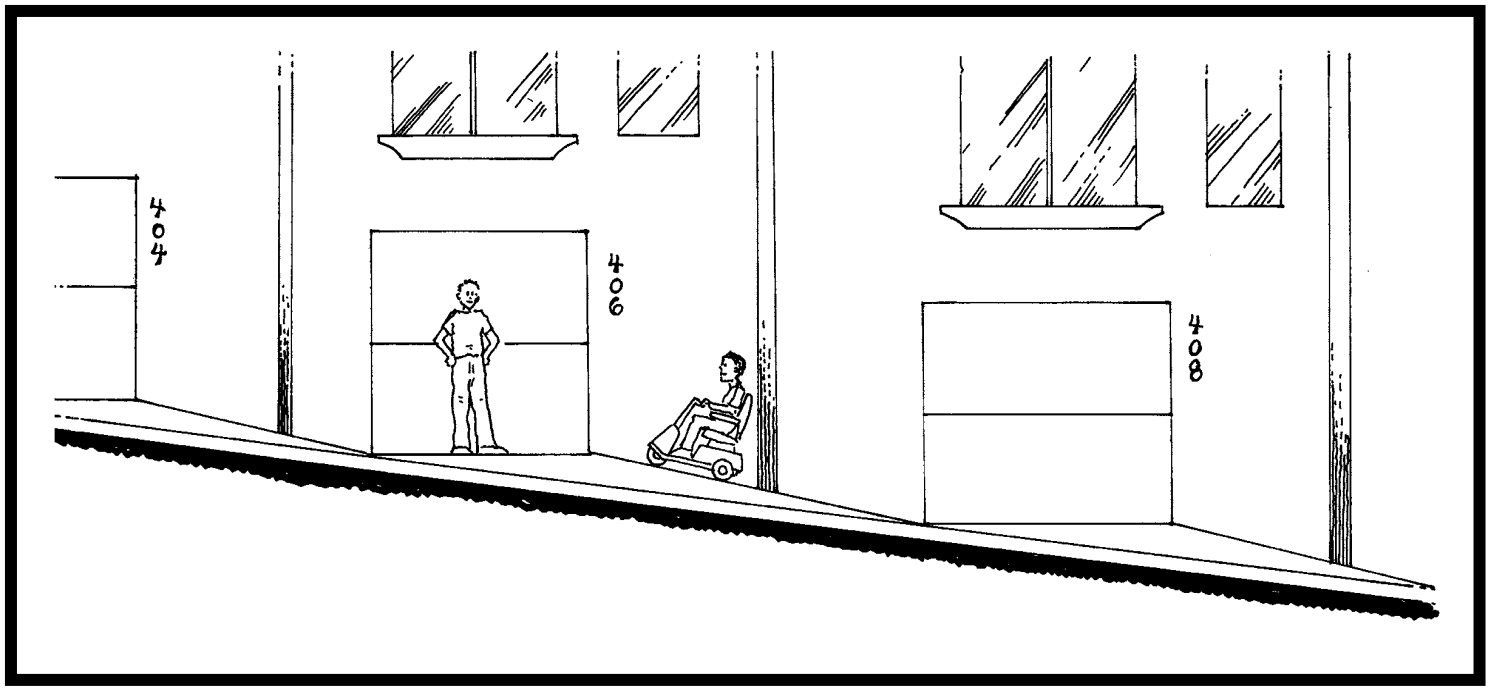
Sidewalk Grade Exceptions

- Facilities not adjacent to or within the roadway right-of-way with grades greater than 5 percent:
  - Must be treated as a ramp
  - Must comply with ADAAG guidelines (8.3% maximum for maximum distance of 30 feet (9.14m) with 60” x 60” (1.53 m x 1.53 m) level landings between segments)

Sidewalk Grades

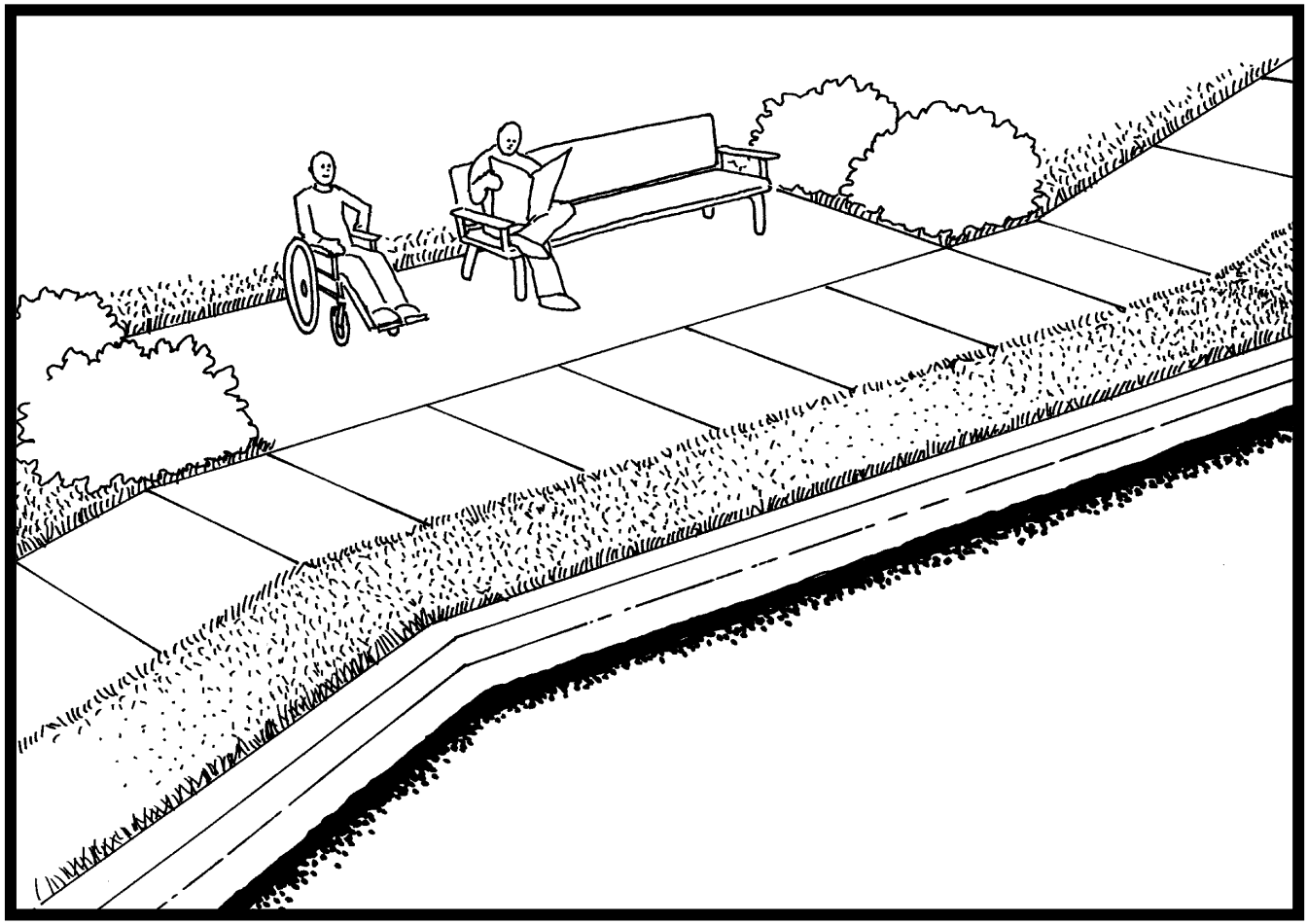
- People with mobility impairments must exert significantly more energy on slopes than those without
- Downhill travel can be as difficult as uphill for wheelchair, walker, cane, crutch, and prosthetic users

Sidewalk Grades

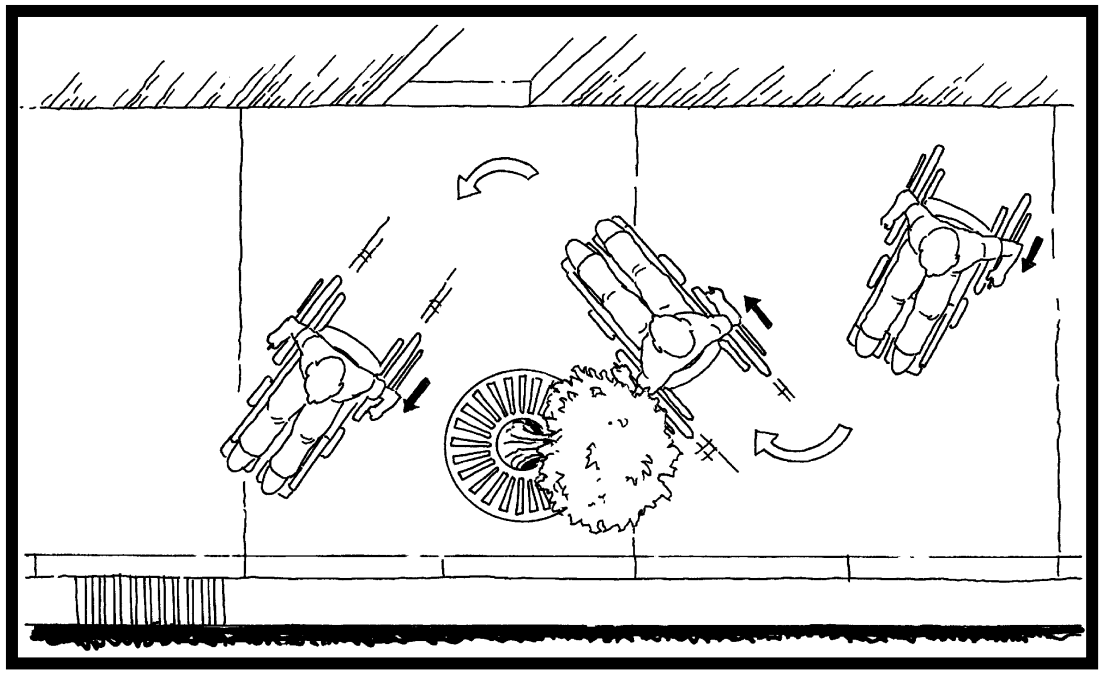


Look for opportunities to provide level rest areas

Provide Benches at Rest Areas



Wide Sidewalk Corridors



Allow people to travel at slower speeds while giving space for others to comfortably pass and allow wheelchair users to travel in a zigzag pattern, reducing the impact of the grade

Sidewalk Grades

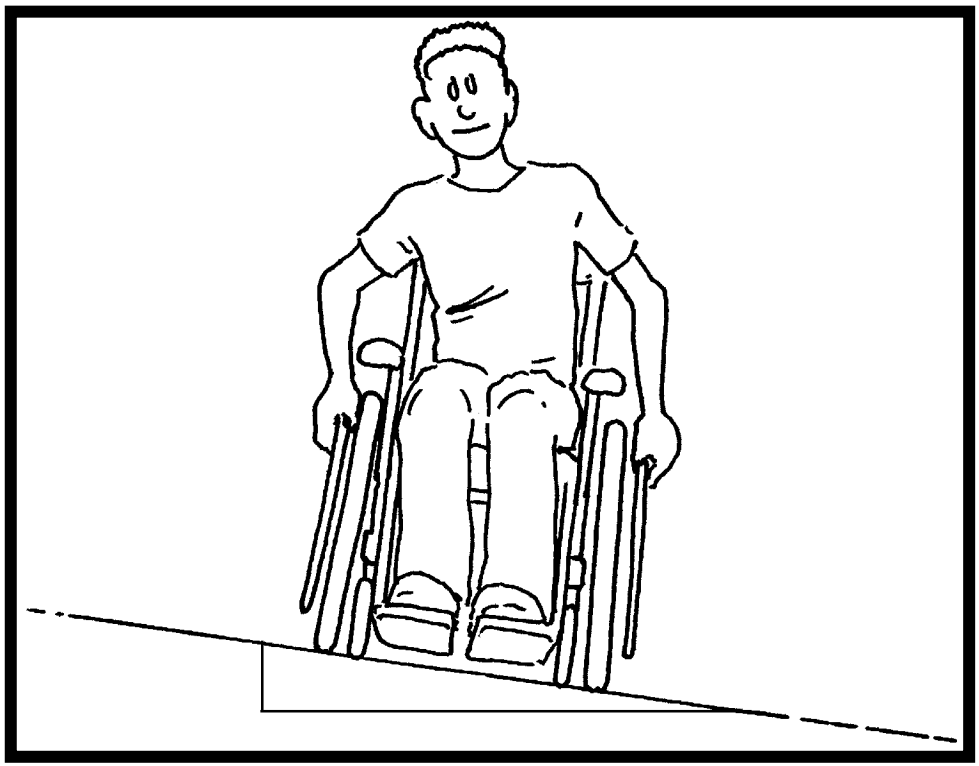
- Minimize Impacts:

  Provide handrails, where possible

  Provide signs that indicate:

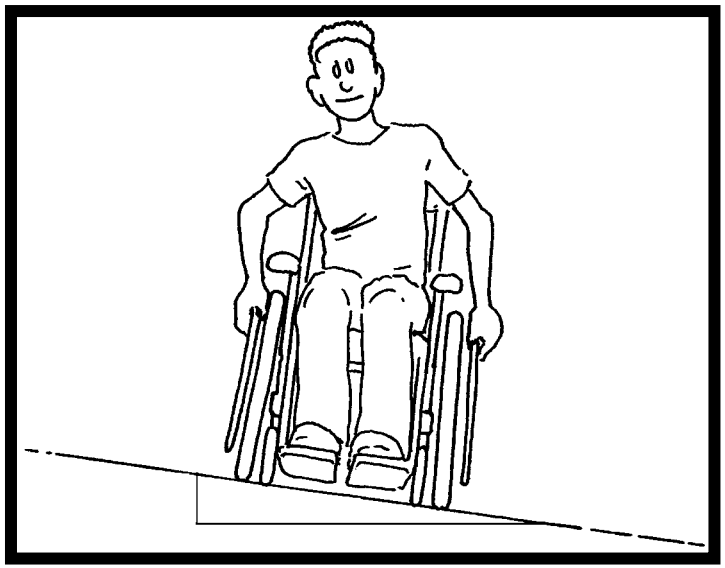
  - grade and length
  - alternative routes with lesser grades

Cross Slopes



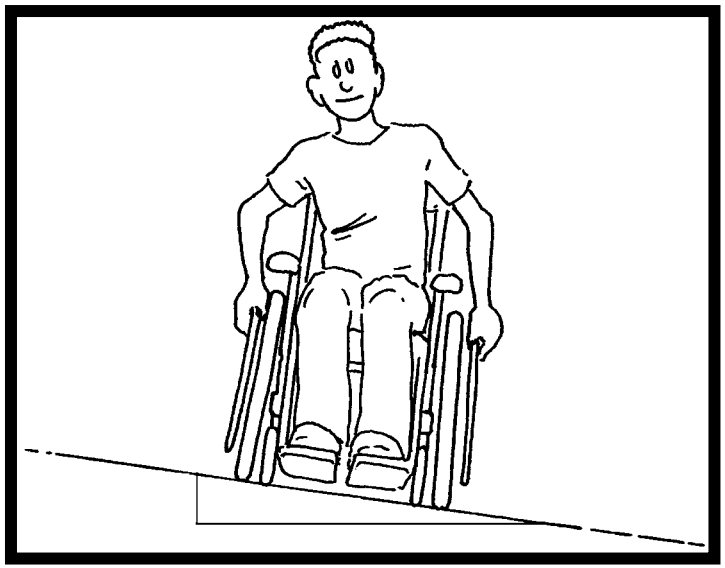
Maximum cross slope for sidewalks:
2.0 percent (1:48)

Increased Cross Slopes



- Pedestrians must work against the force of gravity
- Combined with steep grades, compounds the effort
- Wheelchair users may roll into street

Increased Cross Slopes



- Surfaces more slippery when icy
- Make lateral balance difficult
- Crutch, walker, and prosthesis users may be forced to walk sideways

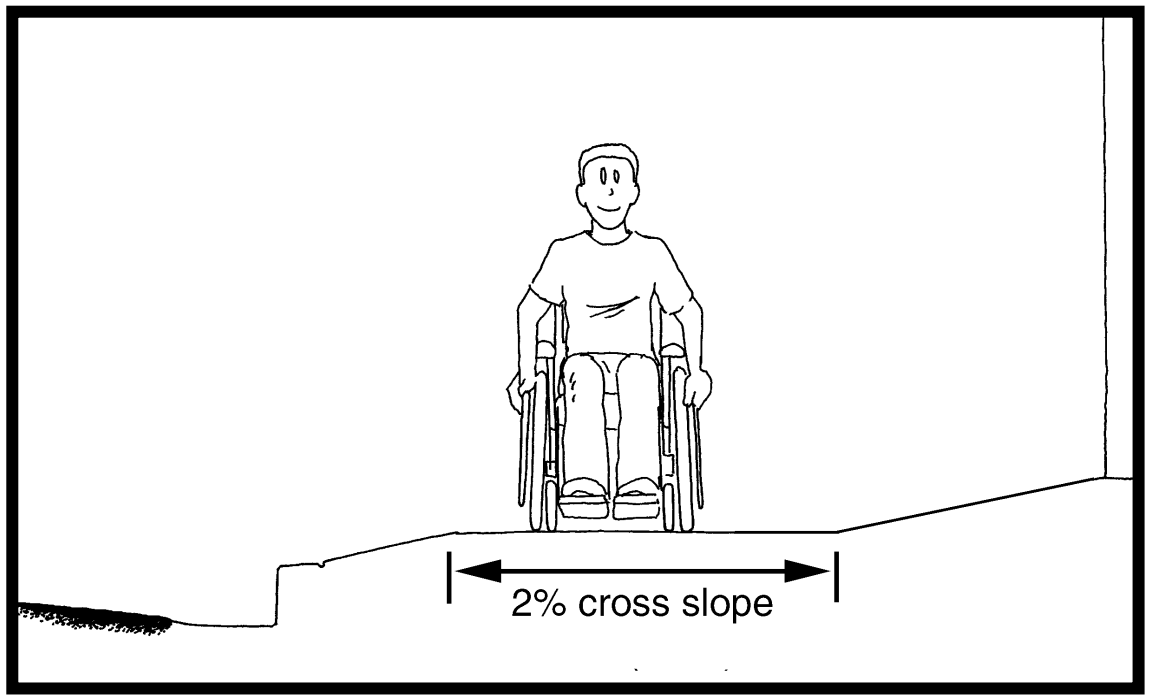
Grade and Cross Slope Combined

Transportation providers must understand the impact of grade and cross slope on people with disabilities and ensure that design guidelines are followed

Quality Control of Grades and Cross Slopes

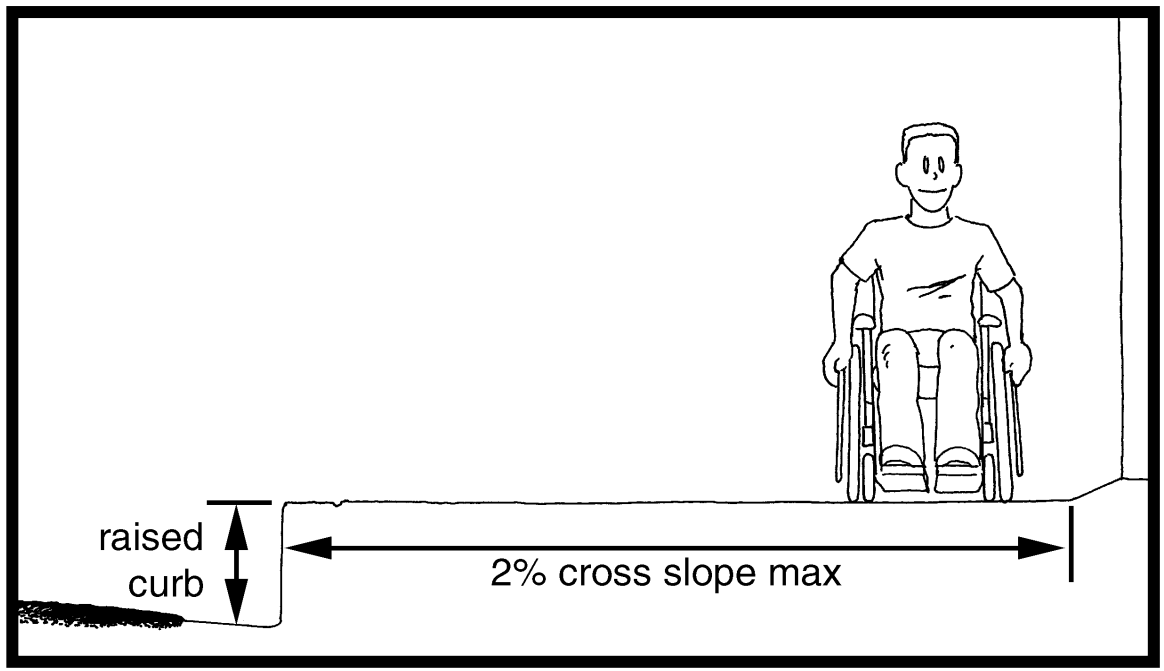
- Actual measuring
- Not visual inspection

Solutions to Cross Slope Problems



Create a level area at least 48-60 inches (1.22 - 1.525m) in the center of the sidewalk and slope in stages to make up the elevation difference

Solutions to Cross Slope Problems



Raise the sidewalk and create a higher curb. Curbs higher than 8 inches (203mm) with on-street parking creates problems for opening car doors.

Driveway Crossings

Driveway crossings should be designed so that both the pedestrians and motorists are able to use them effectively

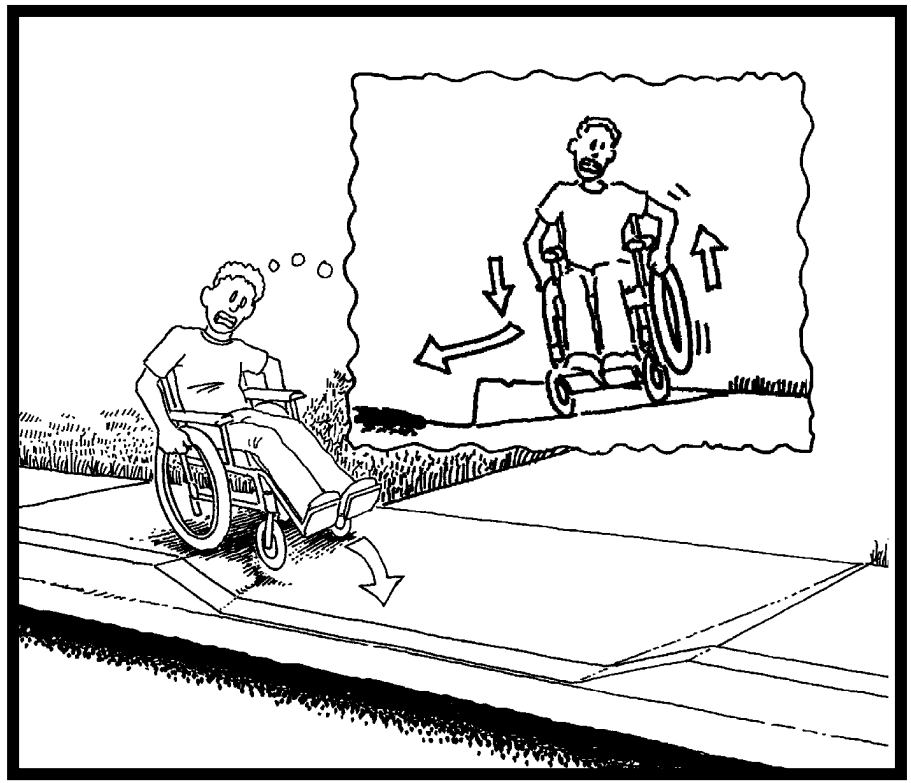
Driveway Crossings

- Cross slopes in the pedestrian zone must not exceed 2 percent (1:48)
- Driveways that do not meet ADAAG requirements should be in the transition plan to be replaced

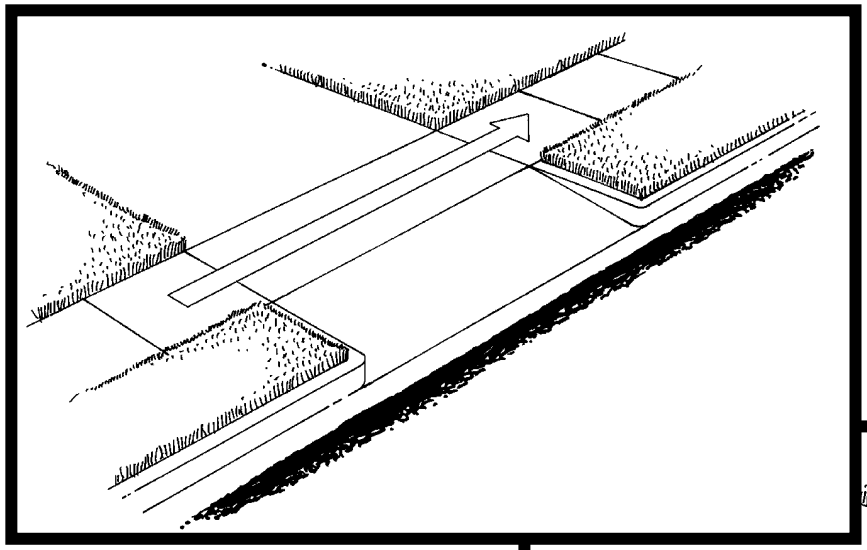
Driveway Crossings

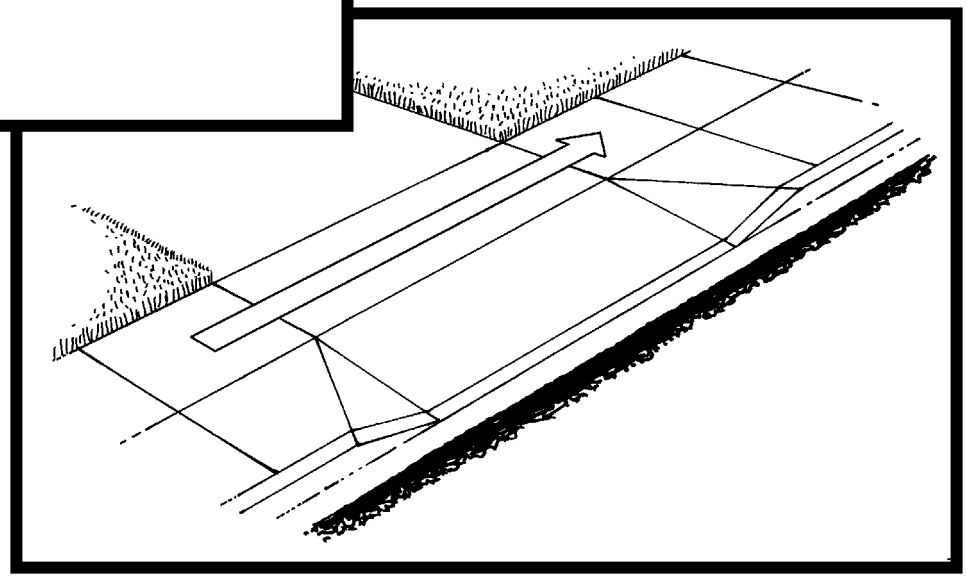
User encounters:

- Rapid change of grade at driveway flare
- Steep cross slope
- All wheels not on the ground - balance and stability compromised

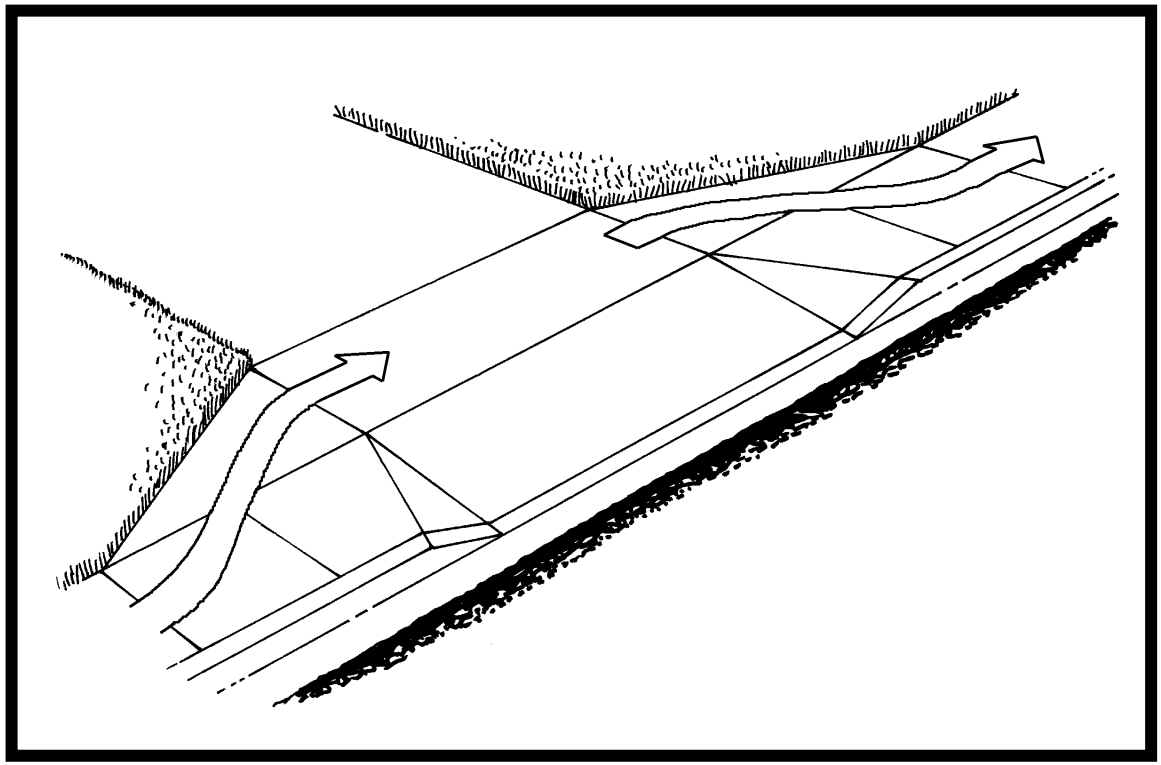


Good Driveway Design



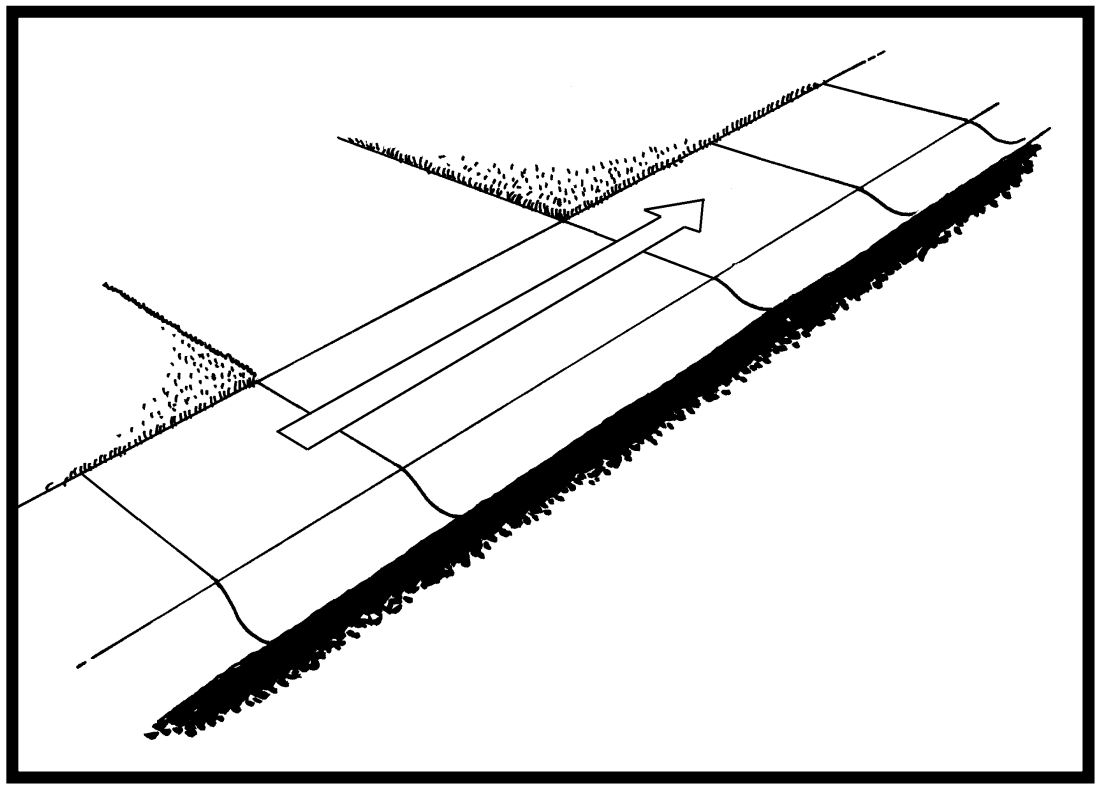


Jogged Driveway Crossing Satisfactory Retrofit



Difficult for people with visual disabilities to follow travel path

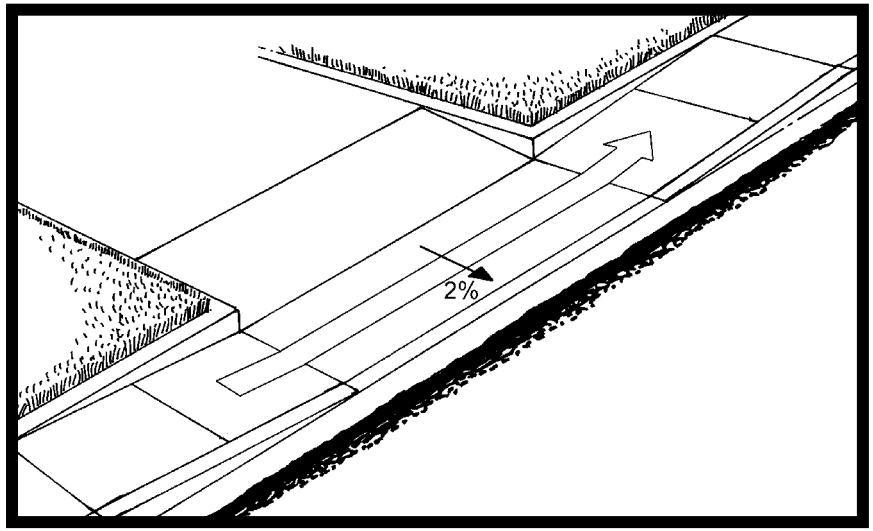
Rolled Curb Driveway Crossing Satisfactory Retrofit



Revert to vertical curbs before and after the driveway to discourage cars parking on sidewalk

Parallel Driveway Crossing:

Satisfactory Retrofit



Possible problems:

- Drainage
- Users must negotiate two ramps
- Allows drivers to enter crossing at higher speed
- People with visual disabilities may veer into street