Applying ADA in Temporary Traffic Control: Building Accessible and Detectable Work Zones

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Session Agenda

- Background and Introduction
- Basics of the Ped Access Route (PAR)
- Accommodating Pedestrians
- Accessible/Detectable Temporary Path
- Best Practices
- Assess Some TTC Situations

Learning Outcomes

- Recognize the difficulties pedestrians with no/limited vision or mobility limitations encounter in sidewalk work zones
- Integrate these pedestrian needs into design of safe and accessible temporary traffic control
- Explain the guidelines and regulations that govern accessible temporary traffic control

Learning Outcomes (cont'd)

- Assess a TTC set-up for safety, accessibility and detectability
- Select and deploy detectable and compliant devices and ramps for an accessible pathway or sidewalk closure. Reconfigure pathway surfaces as necessary.

Americans with Disabilities Act

- Equal opportunity for individuals with disabilities
- Is a civil rights law
- Signed into law July 26, 1990
- USDOJ has ultimate compliance responsibility
- All programs and new and **altered** facilities (regardless of funding) must be accessible

ADA, the Act/Law—Parts

- Title I Employment
- **Title II State and Local Governments**
- Title III Public accommodation, private entities (e.g., retail, commercial, sports complexes, movie theaters)
- Title IV Telecommunications
- Title V Miscellaneous

Title II—State and Local Government

- Subpart A – General
- Subpart B – General Requirements
- Subpart C – Employment
- **Subpart D – Program Accessibility**
- **Subpart E – Communications**
- Subpart F – Compliance Procedures
- Subpart G – Designated Agencies

Subpart D – Program Accessibility

- 35.151 New Construction and Alterations

"each facility … altered by, on behalf of, or for the use of a public entity . . . shall, to the maximum extent feasible, be *altered* in such a manner that the *altered* portion of the facility … is readily accessible to and usable by individuals with disabilities . . ."

Subpart E – Communications

- 35.160 General

"A public entity shall take appropriate steps to ensure that communications with applicants, participants, and members of the public with disabilities are as effective as communications with others."

Americans with Disabilities Act Accessibility Guidelines (ADAAG)

- Also referred to as 2010 ADA Design Standards
- However, intended for buildings and on-site facilities
- Does not address many of the issues in the public right-of-way

Public Right-of-Way Accessibility Guidelines (PROWAG)

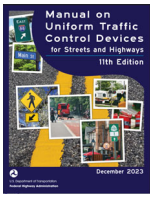
- Stand alone document providing accessibility standards specific to PROW
- Applicable to new construction and alterations (of existing facilities)
- Final Rule was issued August 8, 2023

Scoping Requirements: R201.2

- The requirements in these guidelines shall apply to temporary and permanent pedestrian facilities and elements in the PROW
- Where a pedestrian circulation path is temporarily closed by construction, maintenance operations or similar conditions, an alternate pedestrian access route shall be provided.

2023 MUTCD Section 6A.01—A Standard

- "The needs and control of all road users (motorists, bicyclists and pedestrians within the highway or on a site roadway open to public travel, including persons with disabilities) through a TTC zone shall be an essential part of highway construction, utility work, maintenance operations, and the management of traffic incidents."



Is the TTC Detectable?
Is There an Alternate Pedestrian Access Route?

Scope

- Requirements apply to all TTC zones by state and local road agencies, construction & maintenance contractors (both road and vertical construction), utility companies, landscaping companies, as well as any sidewalk, lane or road closure for vertical construction activities.

Scope Includes

- Closing a sidewalk for repairs/utility work
- Closing a sidewalk for building maintenance
- Small projects like downtown storefront alteration adjacent to PROW
- Major construction projects requiring long-term closure of lanes or sidewalks

Definition (1)

- **Accessible**: describes an alternate ped pathway through a sidewalk work zone that peds can safely reach, enter and travel through to the end of the work zone (e.g., curb ramps, turning spaces and smooth, stable non-slip surface).

Definition (2)

- **Detectable**: a traffic control device placed within a temporary ped pathway that has a continuous edge. Peds with limited vision can safely follow that continuous edge by hand or walking device (e.g., a cane) to the end of the pathway.

Detectable? Accessible?

Detectable? Accessible?

Detectable? Accessible?

Detectable? Accessible?

Why Important?

- Everyone benefits
- United States has 10.4% disability population
- Temporary disabilities
- Encourage visitors/economic development
- It's the law (exposure to civil rights lawsuits)
- Safety implications (exposure to tort claims)

Characteristics of Pedestrians

- People with *mobility disabilities* may have limited agility, speed, endurance
- They benefit from
  - Firm, level surfaces
  - Adequate clear width
  - Curb ramps
  - Limited cross slope

Movement Barriers

Restrict a person's ability to physically move or progress along or within an environment

Characteristics of Pedestrians

- People with *vision disabilities* get information from sounds, textures, contrast
- They benefit from information in non-visual formats:
  - Audible/vibrotactile crossing information
  - Tactile indication of boundary between ped and vehicular way
  - Clearly defined pathways
  - High color contrasts

Information Barriers

Anything that restricts the ability to use information contained in the street and sidewalk environment.

Challenges Faced by Pedestrians with Disabilities in Work Zones

1. Visual Impairments

2. Mobility Impairments

Types of Issues a Blind Ped Will Face

- Not knowing . . .
  - -- the TTC is there until they reach it
  - -- if there is a safe alternative way to proceed
  - -- if they should attempt to cross street and continue by walking on other side or if they should retrace steps and use other route
  - -- if a cane can provide a safe way to continue through detour

Types of Issues a Mobility Impaired Ped Will Face

- Temporary ramps that are too steep, wobble or do not have side guards
- Pathways/turns or turnarounds too narrow for wheelchairs or other assistive devices
- Surfaces that are not firm and stable, have lips or other obstructions or openings

Questions?

Basics of the Pedestrian Access Route

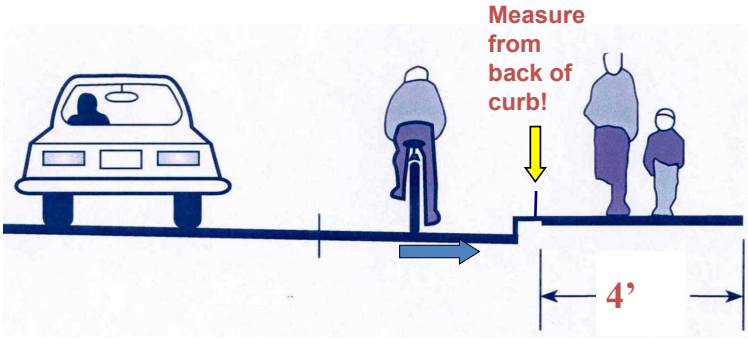
PROWAG R302--Pedestrian Access Route

- R302.2 Continuous Clear Width
- R302.3 Passing Spaces
- R302.4 Grade
- R302.5 Cross Slope
- R302.6 Surfaces
- R402 Protruding Objects

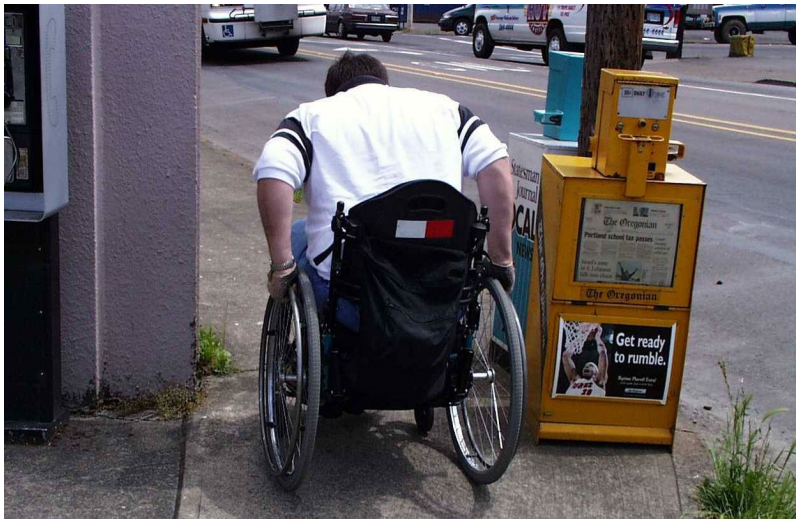
Width

R302.2 Continuous Clear Width

- The continuous clear width of a pedestrian access route shall be 48 inches minimum, exclusive of the width of any curb.



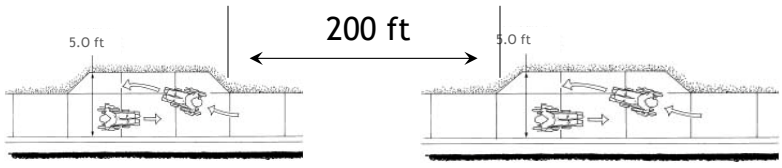
3 Feet for One Wheelchair User



3.5 Feet for A Person Using Crutches

Width—Passing Spaces (R302.3)

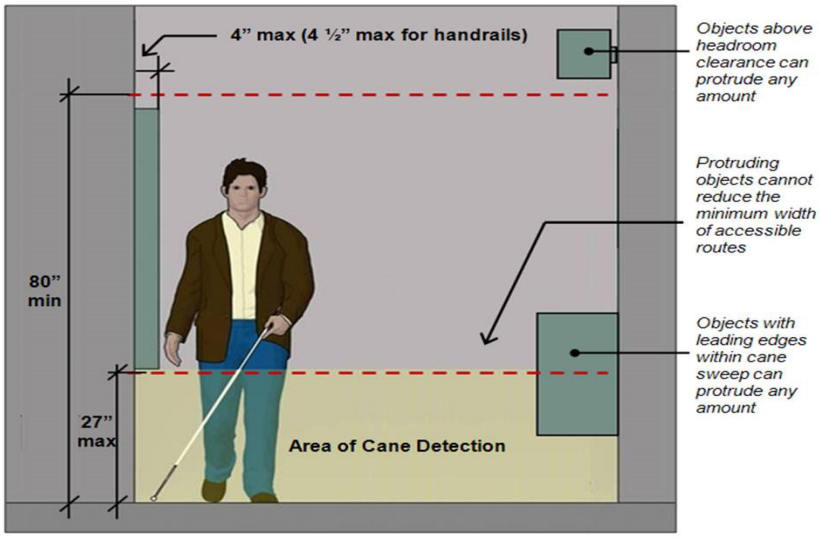
- Walkways in pedestrian access routes that are less than 5.0 ft in clear width shall provide passing spaces (5.0 ft wide for a distance of 5.0 ft) at intervals of 200 ft maximum.



PROWAG R402—Protruding Objects

- Objects with leading edges more than 27 inches and not more than 80 inches above the finish surface shall protrude 4 inches max. horizontally into pedestrian circulation paths.

Protruding Objects in PAR



Protruding Objects

- Protruding objects can be hazardous for all peds, especially peds who are blind or have low vision.
- **Requirements in R402 apply across the entire width of the pedestrian circulation path**, not just the PAR.

Walkway Cross Slope (R302.5)

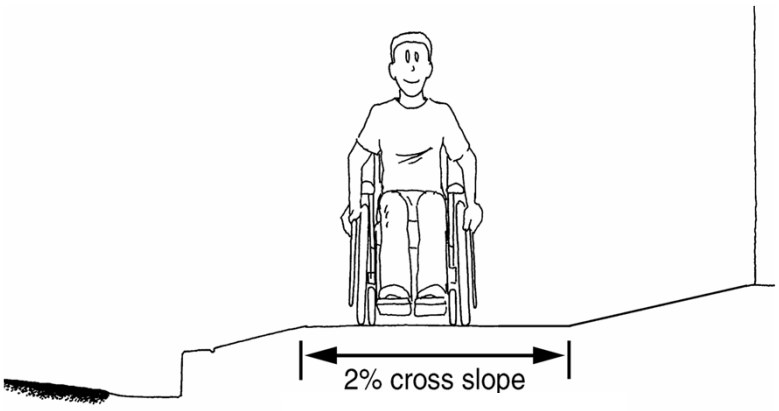
The cross slope of a pedestrian access route not contained within a crosswalk shall be 1:48 (2.1%) maximum.

Challenges Posed by Steep Cross Slopes

- Pedestrians must work against gravity
  - Crutch, walker, and prosthesis users may be forced to walk sideways
- Wheelchair users must make significant efforts just to travel straight

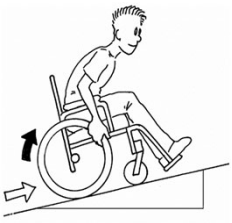
Cross Slope Solutions

Create a level area of preferably 6 ft (4 ft min.)



Walkway Grade (R302.4)

- Where a PAR is contained within a highway ROW, the grade of the PAR shall not exceed 1:20 (5.0%).
- *Exception*—where the grade established for the adjacent street exceeds 5.0%, the grade of the PAR shall not exceed the grade established for the adjacent street.



Walkway Grade (cont'd)

- Where a PAR is not contained within a highway ROW, the grade of the PAR shall not exceed 5.0%.
- Where a PAR is contained within a crosswalk, the grade of the PAR shall be 5.0% maximum.

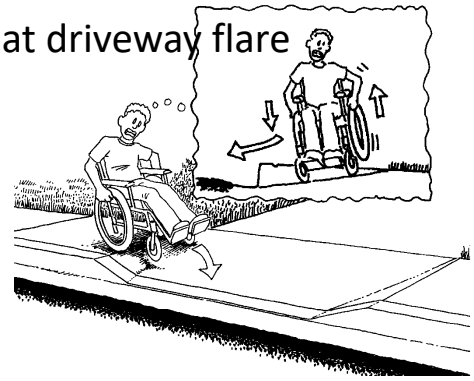
Running Slope Challenges

- Uphill: requires people with mobility impairments to exert more energy
- Downhill: difficult for users of walkers, canes, crutches, prostheses

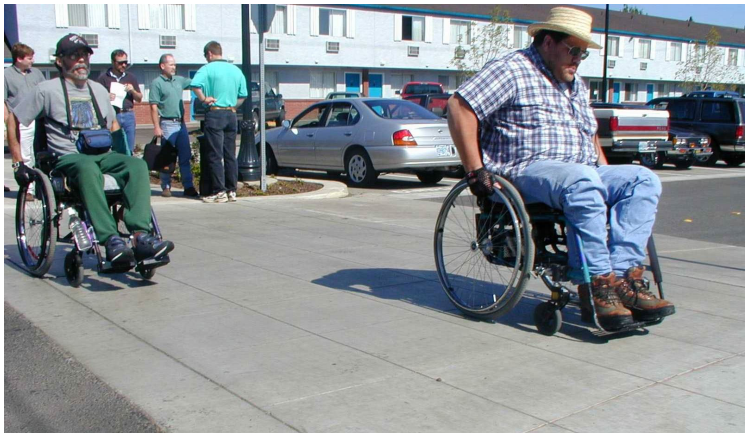
Driveway = Major Cross Slope Challenge

At noncompliant driveways, sidewalk users encounter:

- Steep cross slopes
- Rapid grade change at driveway flare



Surfaces (R302.6)

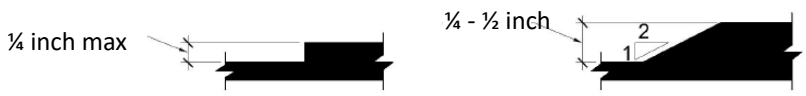


Surfaces must be firm, stable, and slip resistant.

Should be smooth.

Changes in Level (R302.6.2)

- Vertical surface discontinuities shall not exceed ¼ inch maximum
- Those between ¼ and ½ inch shall be beveled with a slope not steeper than 50.0% (bevel across the entire vertical surface discontinuity)



Vertical Alignment

- If changes not addressed, can be tripping hazards
- Can be inaccessible to wheelchair users

Changes in Level (cont'd)

- Changes in level greater than ½-inch up to 6 inches shall have a 1:12 (8.3%) maximum slope.

What Do You Think?

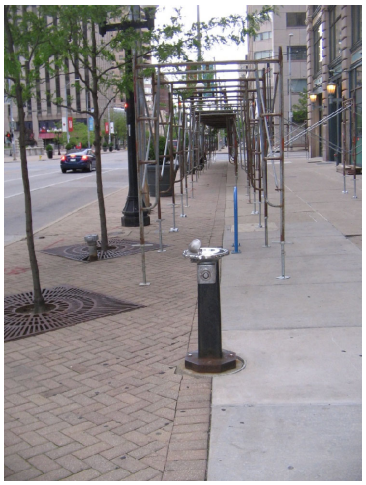
Horizontal Openings (R302.6.3)

Horizontal openings in ground surfaces such as those in joints and gratings, shall not allow passage of a sphere larger than ½-inch in diameter.

Horizontal Openings (cont'd)

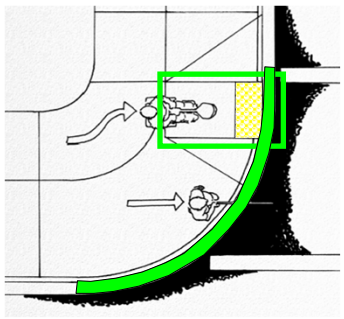
- **Elongated openings** shall be placed so that the long dimension is perpendicular to the main direction of travel.

What Do You Think of This Alternate Pedestrian Access Route?

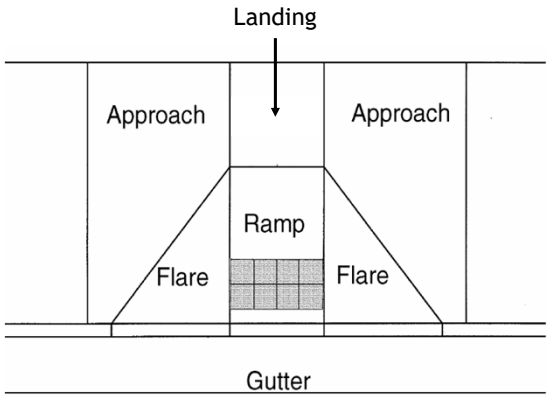


Curb Ramp Conundrum

- Curbs: cue for peds who are blind or with low vision
- Curbs are a barrier for persons in wheelchairs
- Curb ramps remove the barrier for wheelchairs
- Detectable warnings are a “replacement” cue to indicate location of the street

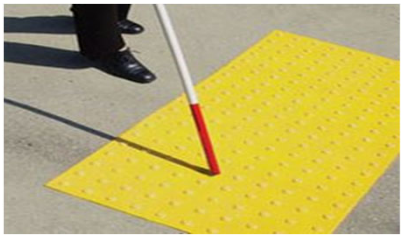


Curb Ramp Components (R304)



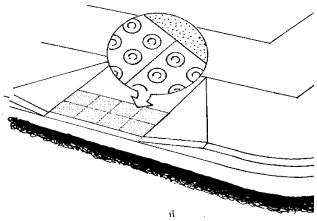
Curb Ramp Components—Visual and Tactile Contrast

- Detectable warnings (truncated domes)
  - Visual (provide high color contrast)
  - Tactile (detectable by cane and under foot)



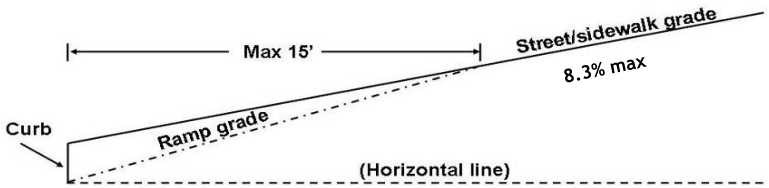
Detectable Warnings

- Alert pedestrians with visual impairments about the sidewalk to street transition
- Use everywhere the curb is missing at a street crossing



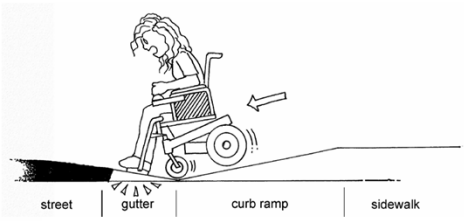
Curb Ramp Grade (Running Slope)

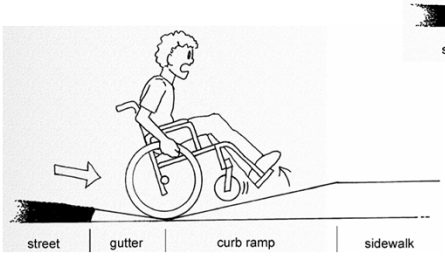
- Recommended maximum grade to allow for construction tolerance – 7.5%
- Maximum grade – 8.3%
- When “chasing grade,” running slope length need not exceed 15’, but slope must be uniform (R304.2.2 and R304.3.2)



Change of Grade or Counterslopes (R304.5.2)

Abrupt changes of grade are difficult to use and can cause wheelchairs to flip over backward or forward



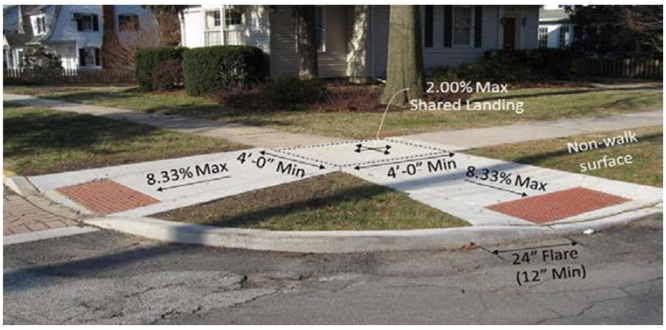


Curb Ramp Width (R 304.5.1)

- PROWAG min: 4’
- Wider ramps are better: full sidewalk width or shared use path

Turning Space (R304.2.5 & R304.3.4)

- Min. 4.0 ft. by 4.0 ft. turning space shall be provided at the top of the curb ramp and shall be permitted to overlap other landings.



Turning Space (cont'd)

- When the turning space is constrained, best practice is a 60-inch turning space in the direction of pedestrian travel.
- At shared use paths, the landing shall be as wide as the shared use path.

Turning Space (cont'd)

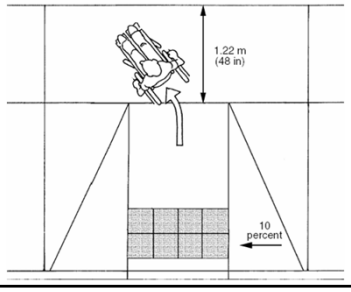
- Perpendicular Curb Ramps
  - Where a landing serves *only one* curb ramp, the landing slope measured perpendicular to the curb ramp run shall be equal to or less than the cross slope of the curb ramp curb ramp run, and the landing slope measured parallel to the curb ramp run shall be 1:48 (2.1%).
  - Where a landing serves two curb ramps, the landing slope in either direction of travel shall not exceed the cross slope of the crosswalk parallel to the direction of travel.

Turning Space (cont'd)

- Parallel Curb Ramps
  -- The slope of the landing, measured parallel to the direction of travel on the curb ramp run, shall be permitted to be equal to or less than the slope of the roadway or the crosswalk as specified in R302.5.
  -- The cross slope of the landing shall be 1:48 (2.1%) maximum measured perpendicular to the direction of travel on the curb ramp run.

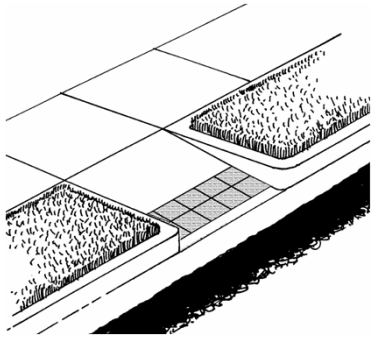
Perpendicular Curb Ramp Flared Sides (R304.2.6)

- Flared sides with a slope of 10 percent maximum, measured parallel to the curb line, shall be provided where a pedestrian circulation path crosses the curb ramp
- Flares are not part of the pedestrian access route.



No Flared Sides

- Returned curbs provide useful directional cues when aligned with the pedestrian street crossing
- Flares are not needed if the sides of the curb ramp are protected from cross travel by landscaping, street furniture, chains, fences or railings



Curb Ramp Surfaces

Best Practice--Curb ramp surface should be smooth; texture makes them hard to climb

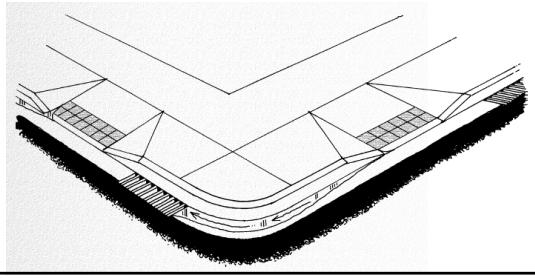
Better Design

Types of Sidewalk-Street Transitions

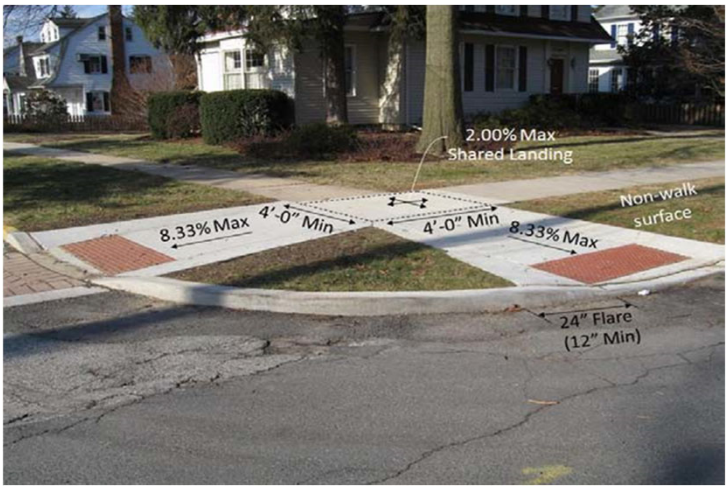
- Curb Ramps
  - -- Perpendicular Ramps
  - -- Parallel Ramps
- Blended Transitions

Perpendicular Curb Ramps (R304.2)

- Shall have a running slope that cuts through or is built up to the curb at right angles or meets the gutter grade break at right angles.
- Min. 4’x4’ turning space at top of ramp
- Flared sides if cross travel permitted

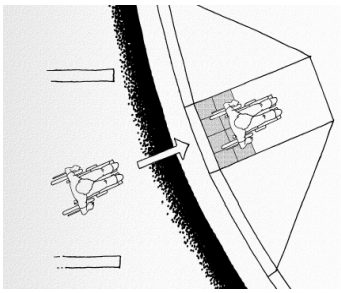


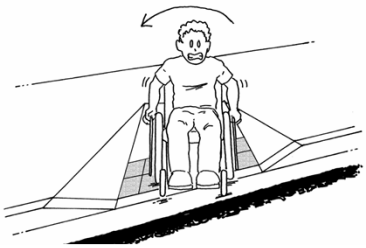
Perpendicular Curb Ramps at Corner



Perpendicular Curb Ramp Alignment

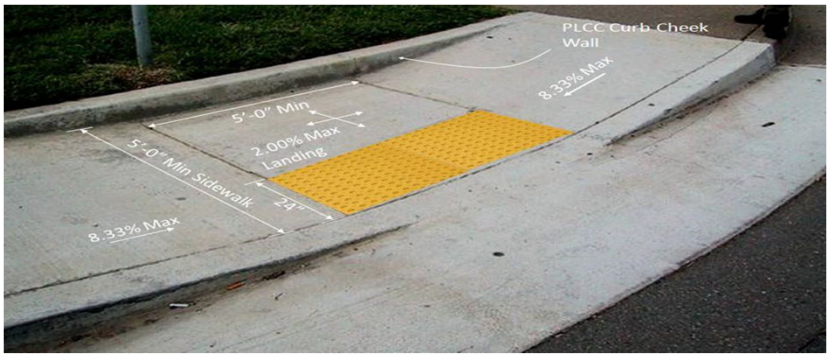
- Ramp must be perpendicular to the curb so both wheels of wheelchair enter/leave ramp at same time





Parallel Curb Ramps (R304.3)

- Parallel curb ramps shall have a running slope that is in-line with the direction of sidewalk travel.
- Min. 4’x4’ turning space at bottom of ramp

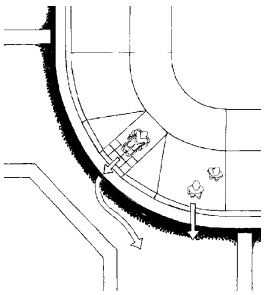


Blended Transitions (R304.4)

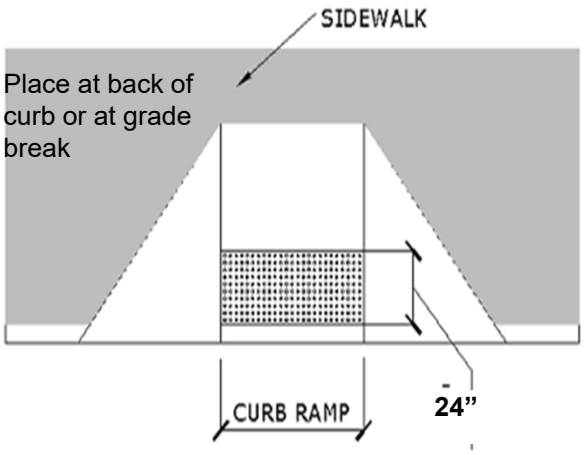
- Curb is missing around corner so need DWS
- Running slope - 5 percent maximum

Diagonal (Single) Curb Ramp

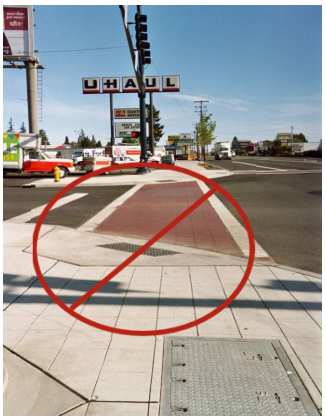
- Diagonal curb ramp is a single ramp located at the apex of the corner that serves both crosswalks
- Unacceptable in new construction
- May be OK for alterations
- Curb ramp must land within the crosswalk that it serves; diagonal curb ramps don't.



Detectable Warning Placement



Visual Contrast (R305.1.3)



Best Practice – avoid using black

Quality Control

- No allowance for construction tolerance so measuring widths, grades and slopes is critical
- Do not merely “eyeball it”
- Use the proper tool for slopes/grades, i.e., 2-foot and 6-inch levels, not your phone!

Questions?

Approaches to Routing Pedestrians

2023 MUTCD

- Section 6N.04--Recommends that, whenever possible, work should be done in a manner that does not create a need to detour peds from existing routes or crossings.
- Section 6C.03--Extra distance and additional ped street crossings add complexity to a trip and increase exposure to risk of accidents.
- Sections 6C.03 and 6N.04 require alternate ped routes to be detectable and include accessibility features consistent with the features present in the existing ped facility.

In Accommodating Pedestrians, Consider

- Type of work being performed
- Duration of the work
- The hazards and impediments the work will create for peds

For TTC zones where work crews are present and work will last only a few hours or less

Need To . . .

- Determine how peds might be affected by work activity
- Establish a plan for how crew will assist any peds (especially those with vision or mobility disabilities) in negotiating the work zone
- Identify someone to watch for peds and initiate the plan if the need arises

What If . . .?

- TTC zone left in place over several days that does not have workers present at all times--will need more extensive effort to accommodate peds.
- Peds will need to be accommodated throughout the entire TTC zone.

Approaches to Routing Pedestrians

Remember--First and foremost consideration for all pedestrians is safety

Three Approaches

1. Maintain existing ped pathways if sidewalks can remain open during construction
2. Develop an alternative pathway that is parallel to or easily reached from current pathway, if current pathway must be closed.
3. If existing ped path must be closed, identify and develop an alternative ped pathway in advance of the TTC that will detour peds around the TTC.

Maintaining Accessibility on Current Pathway

- If current ped pathway can remain safely open to all users during construction, MUTCD states that temporary facilities must include accessibility features consistent with features present in the existing ped facility.

When Planning for Peds in TTC Zones

- MUTCD recommends (Section 6C.02):
  -- peds should not be led into conflicts with vehicles, equipment and operations
  -- peds should not be led into conflicts with vehicles moving through or around worksite
  -- peds should be provided with convenient and accessible path that replicates as nearly as practical the most desirable characteristics of existing facility

In Addition . . .

- Protect peds from trenches/holes adjacent to path (must be detectable and continuous)
- Make sure good sight lines are maintained for peds and drivers at intersections
- Make sure access to transit stops and businesses is provided

Questions?