SECTION 22 – ADA COMPLIANCE FOR SIDEWALK, CURB RAMPS, BLENDED TRANSITIONS, AND PEDESTRIAN FACILITIES

22.1 SIDEWALKS AND CURB RAMPS 22-2
22.2 CURB RAMP BASICS 22-5
22.3 SIDEWALK AND CROSSWALK BASICS 22-12
22.4 PEDESTRIAN PUSHBUTTON BASICS 22-13

Section 22:

ADA Compliance for Sidewalk, Curb Ramps, Blended Transitions, and Pedestrian Facilities

SECTION 22 – ADA COMPLIANCE FOR SIDEWALK, CURB RAMPS, BLENDED TRANSITIONS, AND PEDESTRIAN FACILITIES

22.1 SIDEWALKS AND CURB RAMPS

22.1.1 Regulations

When constructing pedestrian facilities (sidewalk, trail, non-vehicular use facility), the requirements of the Americans with Disabilities Act (ADA) must be met regardless of the contract's funding source. Exceptions to these requirements require a determination of technical infeasibility, issued by the Highway Engineering Division in conjunction with the Department's Title VI Program and FHWA. The intent is that technical infeasibility is determined prior to construction.

If the plans do not accurately reflect the field conditions encountered, particularly when curb ramps are involved, the PEMS should discuss the situations with the AE and the Designer to examine alternative solutions. "Doing the best you can" is not sufficient for ADA compliance. The Department's ADA Technical Advisory Committee, TAC, can provide technical assistance (ADA@indot.in.gov). During the contract, if an alternative that meets the ADA requirements cannot be found, the PEMS should have the Designer document the alternatives considered and request a determination of technical infeasibility from the TAC. The Indiana Design Manual, IDM, describes this process. Work should not continue until a determination has been made.

Indiana Design Manual

IDM Chapter 51 contains information on ADA, curb ramp, sidewalk, and pedestrian pushbutton requirements. IDM Chapter 17 contains information on curb ramp quantities.

Note: Effective with September 2016 lettings, curb ramps are no longer paid for by a type. Designers should be detailing all curb ramps on contract's construction plans.

INDOT Standard Specifications

- 604 Sidewalks, Curb Ramps, Steps, and Handrails
- 805 Traffic Signals
- 905.05 Detectable Warning Surfaces.

INDOT Standard Drawings

- 604-SWCR Sidewalk Curb Ramps
- 604-SDWK Sidewalk Details
- 801-TPAR Temporary Pedestrian Access Routes
- 805-PPBA Pedestrian Pushbutton Assembly.

ADAAG vs. PROWAG

The 2010 ADA Standards for Accessible Design (2010 Standards) is the current standard for providing facilities that are readily accessible and usable by persons with disabilities. However, the guidelines were developed primarily for buildings and facilities outside the ROW. Pedestrian facilities within the public ROW contain elements to which the 2010 Standards cannot be readily applied. For this reason, the U.S. Access Board proposed guidelines specifically for pedestrian facilities in the public ROW denoted as the Public Rights-of-Way Accessibility Guidelines, PROWAG. These guidelines are recommended as best practice by FHWA and are currently being evaluated as part of the federal rulemaking process. Once adopted as a regulation, with or without modifications, the guidelines will be mandatory. The PROWAG has been used to develop the Department's ADA transition plan and should be used as the basis for identifying the required curb ramp, landing (turning space), and sidewalk dimensions and slopes (running slopes and transverse slopes).

Changes from ADAAG to the PROWAG

Very little has changed from the Americans with Disabilities Act Accessibility Guidance, ADAAG, to the PROWAG. The items listed below represent notable differences.

1. The minimum clear width of a curb ramp, turning space, or sidewalk, is 4 feet. A 3-ft pinch point is not acceptable. For sidewalks, where the width is less than 5 ft, a 5 ft by 5 ft passing space is required every 200 ft.

2. The grade (running slope) of the sidewalk shall not exceed the adjacent roadway profile grade.

3. A curb ramp running slope of 10% for a 6-in. rise is not acceptable.

4. A sidewalk adjacent to a roadway does not require a landing or handrail, regardless of the roadway grade.

5. Detectable warning elements must extend the full width of the ramp. Where forming is required, a 2-in. maximum border width may be provided. Only the clarification where a border is necessary is new.

Changes from previous Department practice

Much has changed from previous Department practice. The items listed below represent notable differences.

1. Designers have been directed to fully detail curb ramps on contract construction plans. Simply calling out a ramp by type, e.g. Type A, is not acceptable. Spot elevations, widths, and slopes should be shown or tabulated.

2. **There is no construction tolerance for cross slope.** The maximum cross slope is 2.00%. The PROWAG contains exceptions to cross slope requirements for ramps and turning spaces when matching the grade of the adjacent roadway. Designers have been directed to use no more than 1.5% as a design value. The IDM now states this explicitly. A 2-ft level is also identified for checking compliance. *Note: A 2-ft level is not required by PROWAG but was included so that the expectation was clear. Forms should be checked prior to pour to ensure maximum slopes are not exceeded and minimum dimensions are met.*

3. **There is no construction tolerance for running slope.** The maximum ramp running slope is 8.33%. Designers have been directed to use no more than 8.0% as a design value. The IDM now states this explicitly. *Note: A 2-ft level is not required by PROWAG but was included so that the expectation was clear. Forms should be checked prior to pour to ensure maximum slopes are not exceeded and minimum dimensions are met.*

4. The Standard Drawings identify curb ramps as either perpendicular or parallel.

5. All curb ramps are paid for as a single pay item Curb Ramp, Concrete.

6. Detectable Warning Surfaces, DWS, (truncated domes) are paid for separately. The area of DWS is not subtracted from the Curb Ramp, Concrete quantity.

22.1.2 General Construction Notes

1. Sidewalks are usually replaced when they are disturbed or removed during construction. Sidewalks beyond the construction limits, which are damaged by the Contractor's equipment, must be replaced at no cost to the Department. Sidewalks built adjacent to curbs should be constructed 1/2 in. above the curbs to reduce the potential for ponding on the sidewalk along the top of the curb.

2. Pedestrian accessibility is required to be provided and maintained during the construction of the contract where facilities currently exist. Accessibility consists of signed pedestrian detours utilizing existing and temporary features including curb ramps, DWS, pedestrian signals, pavement markings, pedestrian phasing, or sidewalks, affected by the work zone. The PEMS should review the contract plans to identify the methods to be used for pedestrian access.

3. Sidewalks placed at drives shall be 6 in. thick or the same depth of the existing drive, whichever is greater.

4. When reconstructing portions of sidewalk, the joint pattern of new sidewalk should be similar to sidewalk intended to remain in place.

5. The height of a single two-by-four (3 1/2 in.) is not acceptable as a form.

6. Forms should be checked prior to a pour to ensure maximum slopes are not exceeded and minimum dimensions are met.

7. Construct sidewalks only where indicated on the plans unless a change is authorized.

22.2 CURB RAMP BASICS

Curb ramps and turning spaces are part of the Pedestrian Access Route (PAR) and must meet ADA standards. The Department separates curb ramps into component and design elements.

22.2.1 Components

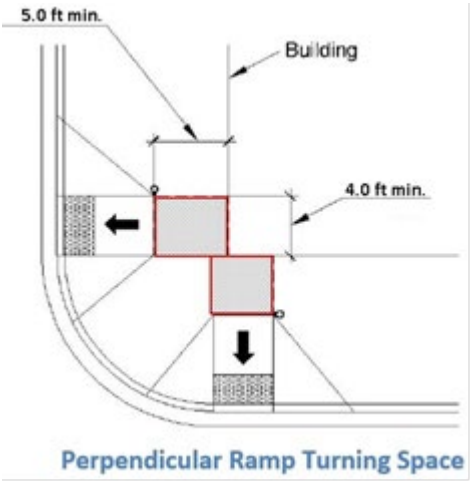
The PROWAG section reference is shown in brackets adjacent the component description below.

1. Ramp or Blended Transition [R304.1]. The ramp or blended transition is the portion of a curb ramp that facilitates the change in elevation from the sidewalk to street level. Typically, the curb ramp cuts through or is built adjacent to the curb. Although similar, ramps leading to or within buildings are subject to separate requirements [R407].

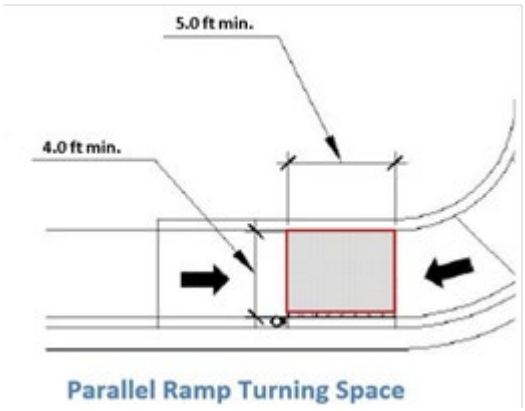
2. Turning Space [R304.2.1]. A turning space or landing area must be provided at the top of a perpendicular curb ramp, the bottom of a parallel curb ramp, and where the pedestrian access route changes direction. It is acceptable for two perpendicular curb ramps to share a common landing.

   Minimum dimensions: 4 ft by 4 ft. Where the turning space is constrained by a curb, building, or other feature at the back of the sidewalk, the minimum required dimensions are 4 ft by 5 ft, with the 5-ft dimension in the direction of the ramp run.

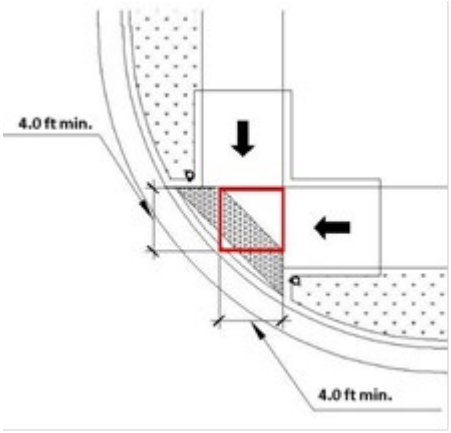
   Quantities: The turning space is included in the SYS cost of the concrete curb ramp. Where turning spaces overlap, the area should only be included once.



Perpendicular Ramp Turning Space



Parallel Ramp Turning Space

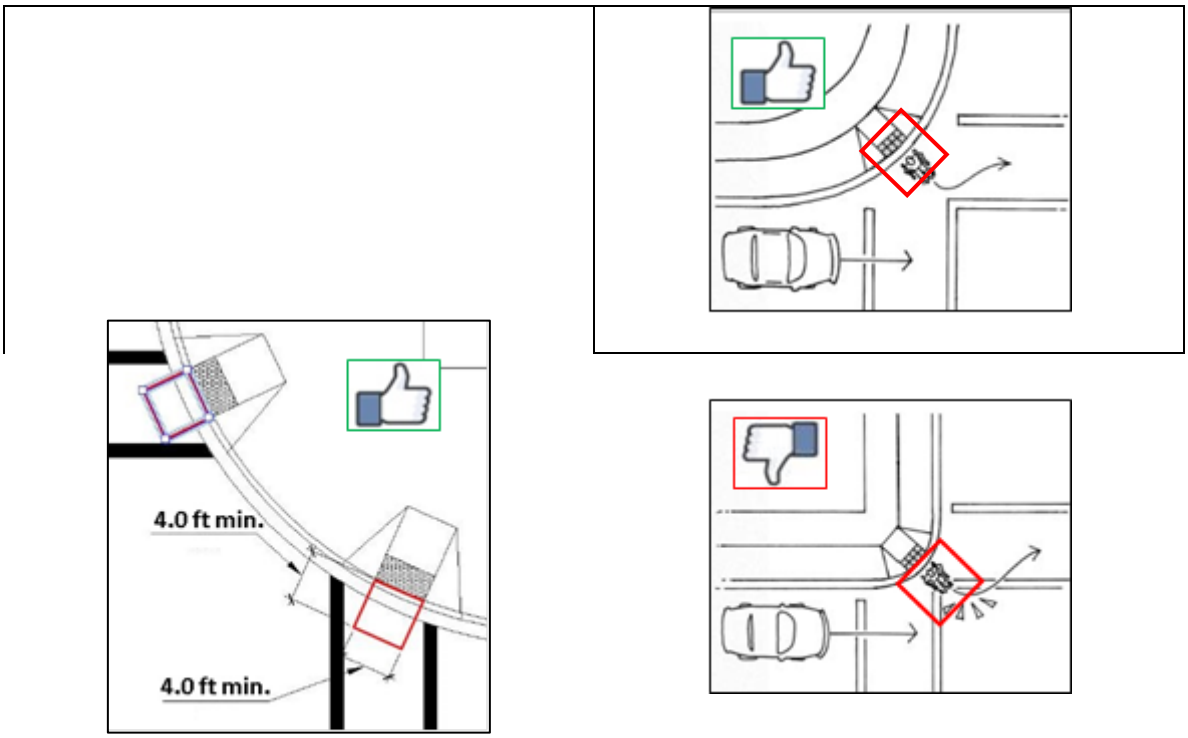


Overlapping Turning Space

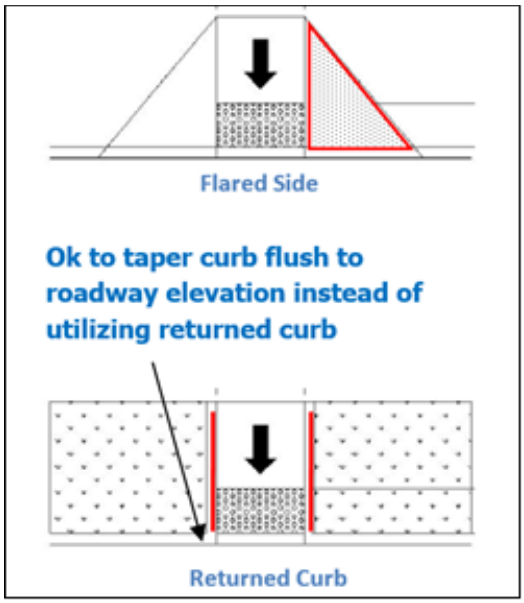
3. Clear Space [R304.5.5]. The clear space is provided beyond the grade break at the bottom of a ramp to allow a wheelchair user to maneuver and align with the crosswalk. The clear space requirement requires particular attention at diagonal ramps and other locations where the ramp run is not in line with the direction of pedestrian travel.

   Minimum dimensions: The minimum required dimensions are 4 ft by 4 ft. The clear space should be within the width of the pedestrian crossing and wholly outside the parallel vehicle travel lane. The parallel vehicle travel lane is the lane where traffic is traveling parallel to the crosswalk.

   Quantities: The clear space is not quantified separately.



4. Flared Sides and Returned Curbs [R304.2.3].



a. Flared Sides. Required where the curb ramp intersects a sidewalk or other walkable surface. The maximum allowable slope is 10.0%.

b. Returned Curbs. May be used instead of flared sides where the curb ramp intersects a buffer, sodded area, or other non-walkable surface or where protected from cross travel by landscaping, street furniture, fencing, or railing. Return curbs assist pedestrians with low vision find their way.

Quantities: Both flared sides and returned curbs are included in the SYS cost of the concrete ramp.

5. Detectable Warning Surfaces, DWS [R305.1]. DWS consist of truncated domes aligned in a square or radial grid pattern and must extend the full

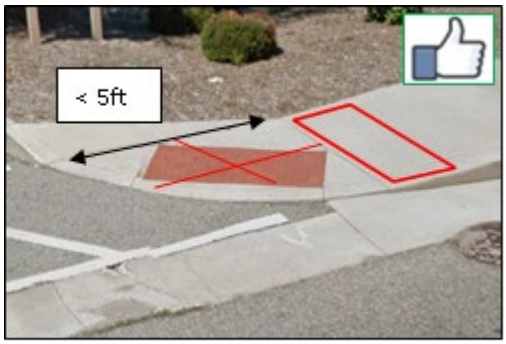
width of the curb ramp. The Designer must show the DWS the full width of the ramp. The Contractor chooses the DWS from the Department's Qualified Products List. Brick DWS will require some type of forming. A 2 in. concrete border can encroach into the ramp width, but any additional width must be outside the ramp. An L-bracket or other means of restraint is also acceptable.

DWS must contrast visually with the adjacent gutter, street, or pedestrian access surface. Each curb ramp must contain a detectable warning surface except as follows.

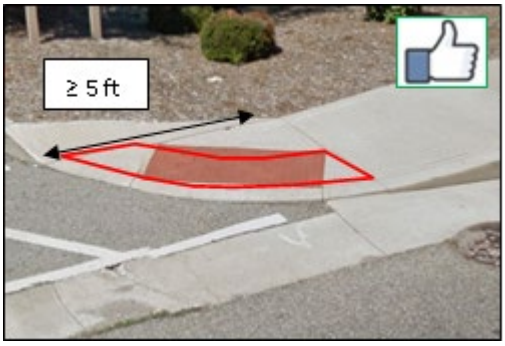
Where the cut through pedestrian refuge island is less than 6 ft in the direction of pedestrian travel, detectable warning surfaces should not be placed as there is not sufficient distance between surfaces to distinguish the boundary between pedestrian and vehicular routes.

Detectable Warning Surface is the full width of the ramp.

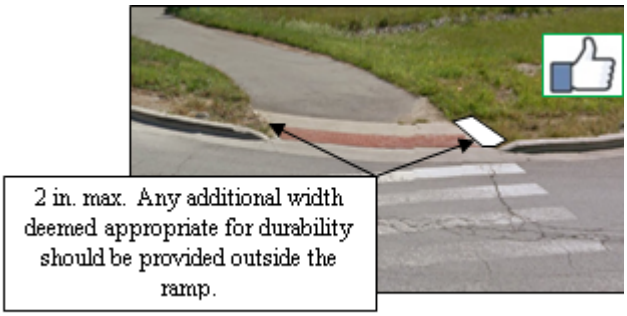
Detectable Warning Surface is not the full width of the ramp. See below for possible solutions.



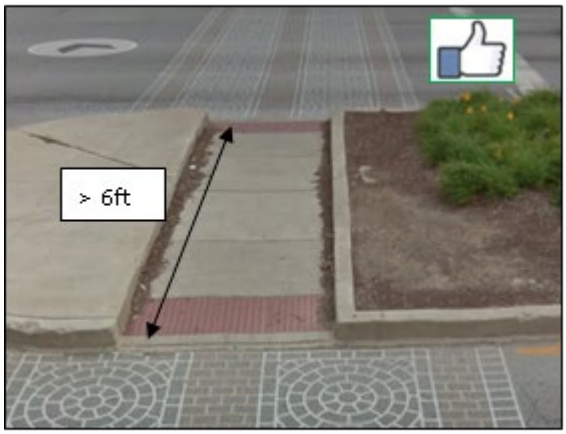
Solution 1. DWS may be located at the bottom of the ramp when located less than 5 ft from back of curb.



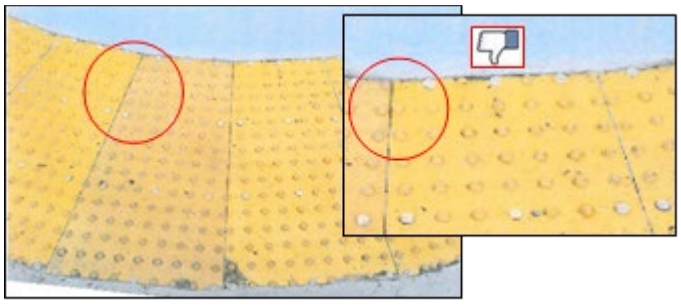
Solution 2. DWS should be in a radial pattern beyond the ramp when the bottom of the ramp is greater than or equal to 5 ft from the back of curb.



For a shared-use path, the DWS should extend the full width of the path, regardless of the inclusion of a ramp.



Use DWS in a median cut-through only when median width is 6 ft or greater. Do not use DWS when width is less than 6 ft. When the width is < 6 ft, there is not enough space between each DWS to distinguish the boundary between pedestrian and vehicular routes.



Where DWS are field cut, particular attention must be paid to ensure the dome spacing is within the allowable range shown on the Standard Drawings.

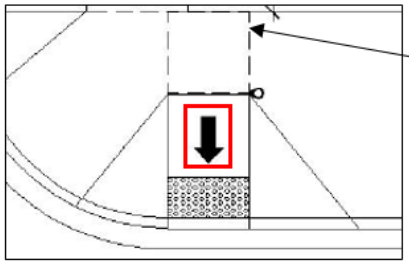
Design Elements. Design elements are characteristics of the various components. The PROWAG section reference is shown in brackets adjacent to the component description below.

6. Width [R304.5.1]. The minimum clear width of a curb ramp (excluding flared sides) or blended transition is 4 ft. The minimum width for a cut through in the median is 5 ft.

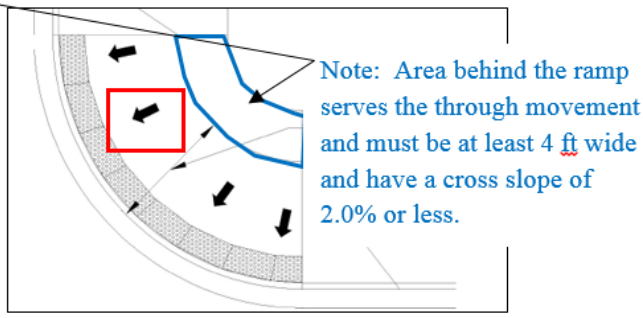
   When ramp or blended transition is used with a shared-use path, it is the width shall match the shared-use path.

7. Running Slope [R304.2.2 and R304.3.2]. The running slope of a ramp is measured parallel to the direction of pedestrian travel. Providing the least slope possible is preferred, and there is no construction tolerance.

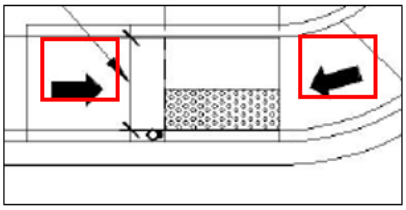
- Curb Ramp. Running slope of 8.33% maximum. 8% should be used for design.
- Blended Transition. Running slope of 5.00% maximum.
- Running slope of 2.00% or less.



Perpendicular Ramp Running Slope



Blended Transition Running Slope

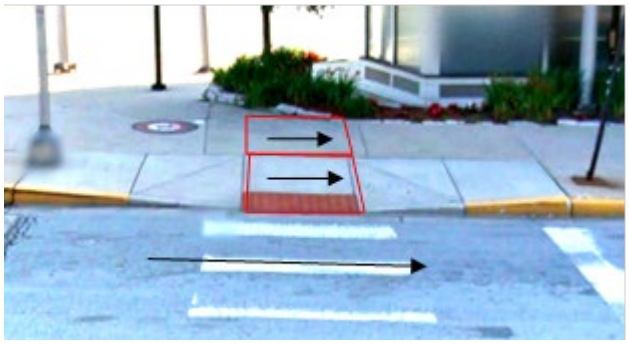


Parallel Ramp Running Slope

8. Grade Break [R304.5.2]. The grade break at the top and bottom of a curb ramp must be perpendicular to the direction of the ramp run. It may be necessary at corner with a larger radius to indent the grade break from the back of the curb meet this requirement. Grade breaks are not permitted on the surface of the ramp run or within the landing area.

9. Cross Slope [R304.5.3]. Cross slope measured perpendicular to the direction of pedestrian travel. The maximum allowable cross slope of a curb ramp, turning space, or clear space is 2.0% with the exceptions below permitted at crosswalks. A slope of 1.5% should be used for design purposes.

   At a crosswalk, it may be acceptable for the cross slope to exceed 2.0% without a determination of technical infeasibility. See Sidewalk and Crosswalk Basics cross slope information.



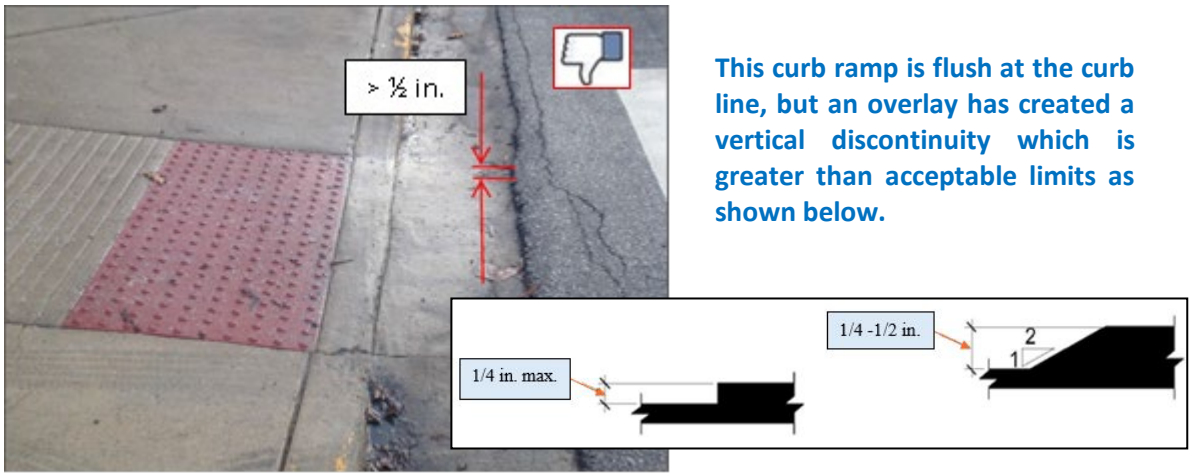
***At a street crossing, cross slope of ramp and turning space may be >2% to meet roadway grade. If crossing is signalized or has no traffic control, max is 5%. If crossing is stopped condition, max is 2%. If crossing is a midblock crossing, max is the roadway grade.**

Roadway grade >2%

10. Counter Slope [R304.5.4]. The counter slope is a slope opposite to the general running slope of the ramp or sidewalk, typically the cross slope of the gutter or roadway at the foot of the curb ramp or blended transition. The counter slope must not exceed 5%. This maximum allows the rate of grade change not to exceed 13% when the maximum ramp running slope is used. Excessive rate of grade change compromise the ground clearance of a wheelchair footrest and may cause a wheelchair to tip.

    Where the rate of grade change exceeds 11% but less than 13.33%, a 2 ft level area (equal to or less than 2.00% slope) should be provided on the ramp, adjacent to the counter slope.

11. Vertical Surface Discontinuities [R302.7.2]. Where a curb ramp meets the roadway, the surface should be flush. Along the Pedestrian Access Route (PAR), surface discontinuities greater than 1/2 in. are not acceptable. Discontinuities of 1/4 in. and less are acceptable with no additional modifications. Discontinuities greater than 1/4 in. to 1/2 in. must be beveled.

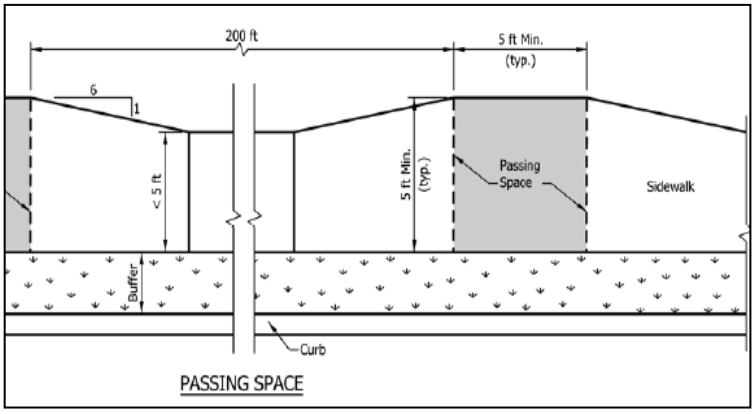


This curb ramp is flush at the curb line, but an overlay has created a vertical discontinuity which is greater than acceptable limits as shown below.

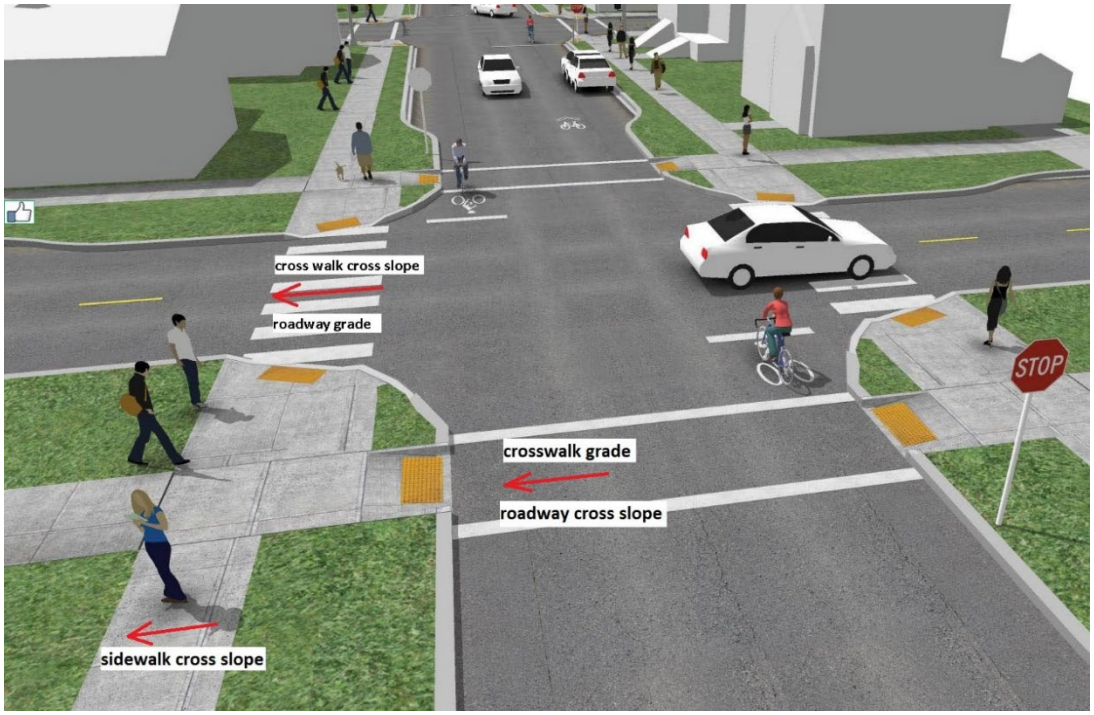
22.3 SIDEWALK AND CROSSWALK BASICS

Sidewalks and crosswalks are part of the Pedestrian Access Route (PAR) and must meet ADA standards.

1. Width. Minimum clear width of 5 ft. Where a 5 ft clear width is not provided, passing spaces of a minimum of 5 ft by 5 ft must be provided every 200 ft.



Where street furniture, utilities, or other obstructions are present on the sidewalk, a clear width (measured between obstructions or from the obstruction to the back of curb or sidewalk) can be 4 ft. The minimum 4 ft dimension is for pinch points only and should not be used as a continuous width.



2. Cross Slope (measured perpendicular to the direction of pedestrian travel).

Sidewalk. Maximum 2.0%. A slope of 1.5% should be used for design. The cross slope requirements still apply where the sidewalk crosses a driveway. The sidewalk cross slope takes precedence over the driveway grade. The driveway approach can be built on a varying grade to ensure the sidewalk cross slope does not exceed 2.0%.

Crosswalk

- Pedestrian street crossings (crosswalks) with stop sign or yield sign = 2.0% maximum.
- Pedestrian street crossings (crosswalks) without yield or stop control, e.g. signalized = 5% maximum.
- Midblock crossing only = Maximum of grade of street or highway being crossed.

3. Grade (measured parallel to the direction of pedestrian travel).

   Sidewalk. Maximum grade cannot exceed the grade of the adjacent roadway.

   Crosswalk. Matches the cross slope of the roadway.

22.4 PEDESTRIAN PUSHBUTTON BASICS

The placement and configuration of the pedestrian pushbutton assembly is critical to proper function. Criteria for pushbutton placement are listed below. If these criteria cannot be met, a Technical Inquiry must be sent to the ADA TAC for review. Variations in curb radius, available right of way, presence of a buffer or curb ramp, and existing infrastructure make each crossing unique.

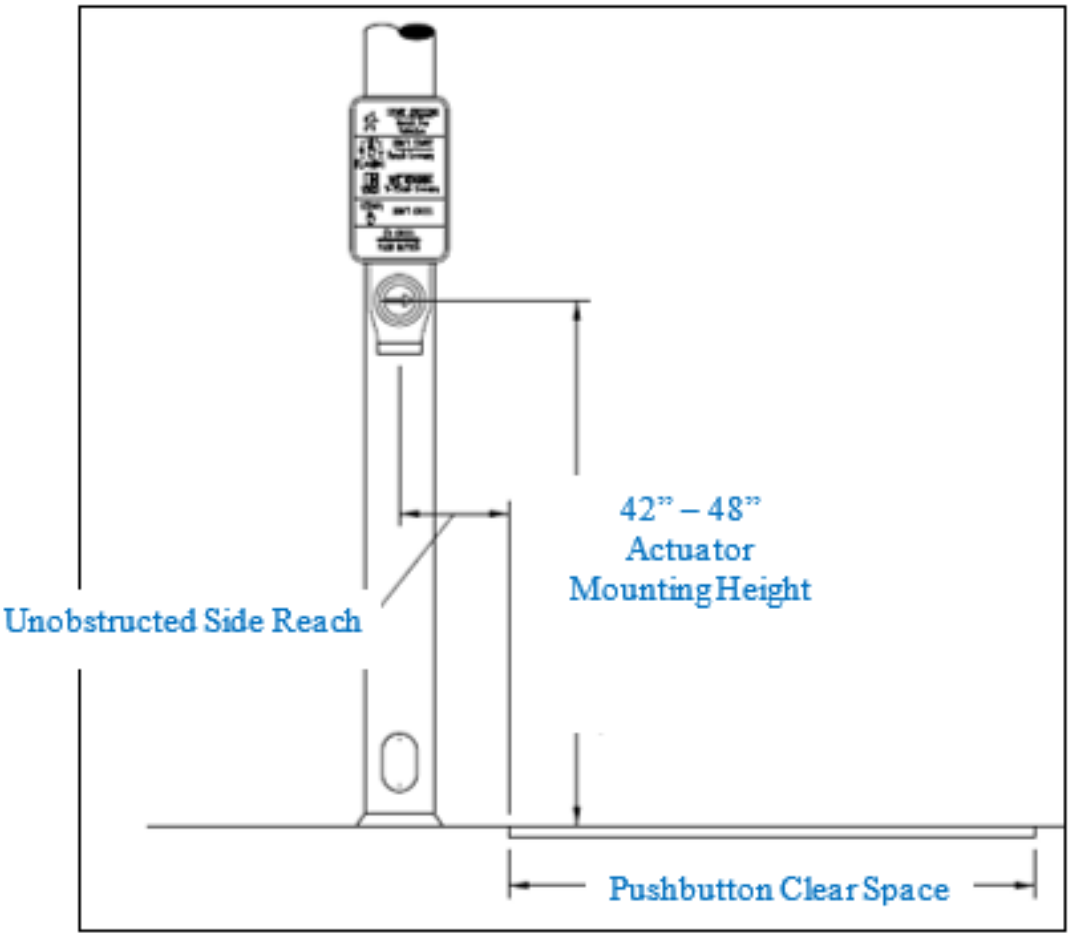
1. Placement. The MUTCD 4E.10 provides guidance on the location of pedestrian pushbuttons. The distance from the nearest face of a pushbutton assembly to face of the curb or edge of pavement should be between 1.5 ft and 6 ft and should not be greater than 10 ft. Placement that falls outside these guidelines should be documented as a Technical Inquiry with the ADA TAC.

   Placement of push buttons should be adjacent to the clear space and within reach requirements discussed below.

   Where two APS pushbutton assemblies are closer than 10 ft., special features must be included in accordance with IMUTCD 4E.10 and sections 805 and 922.04(b) of the SS.

2. Side Reach. The maximum unobstructed side reach distance is 10 in. Designers should be mindful of guardrail, curb, or other obstructions that may affect the available side reach. Pushbutton extensions up to 12 in. may be used to meet the side reach requirements.

3. Mounting Height. The actuator must be mounted between 42 and 48 inches above the Pedestrian Access Route.

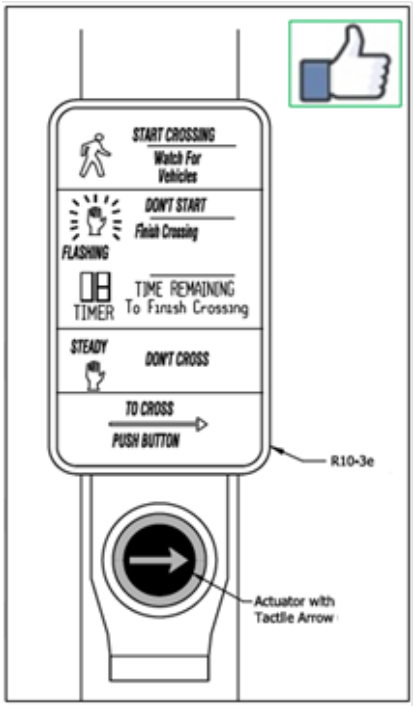


4. Pushbutton Clear Space. A clear space, similar to a curb ramp turning space must be provided adjacent to the pushbutton assembly.

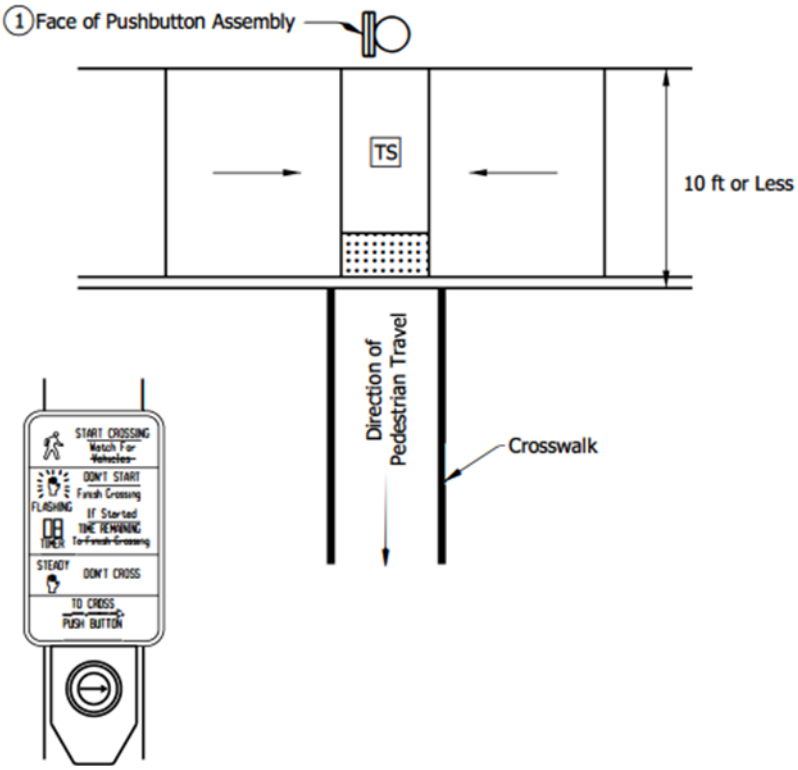
   Minimum dimensions are 4 ft by 4 ft. The pushbutton clear space may overlap a curb ramp turning space. ***Look for obstructions such as curb, slopes, guardrail, or unimproved surfaces that may obstruct access to the pushbutton assembly. Both photos below are examples of non-compliant push button installation.***

Photo: FHWA

5. Actuator. The actuator must be at least 2 in. in diameter with a tactile arrow and contrast with the housing. Fingertip pushbuttons are not acceptable.



6. Orientation of Pushbutton. The face of a pedestrian pushbutton assembly must be aligned parallel to the direction of pedestrian travel on the associated crosswalk or as close as practical.



FACE OF PEDESTRIAN PUSHBUTTON

1 The face of a pedestrian pushbutton assembly must be aligned parallel to the direction of pedestrian travel on the associated crosswalk.

LEGEND:

- Detectable Warning Surface
- Ramp
- Pedestrian Pushbutton Assembly
- TS Turning Space

ORIENTATION OF PEDESTRIAN PUSHBUTTON ASSEMBLY