



January 2015 

Sidewalks & Pathways

Definitions and Overview 

Sidewalks are dedicated space within the right-of-way for pedestrians to travel. A number of resources exist that provide basic guidance for the design of sidewalks and are referenced throughout this bulletin. For guidance on a particular application, please contact the SDDCTEA Traffic Engineering Branch for assistance and visit the SDDCTEA website for additional information.

The Manual on Uniform Traffic Control Devices (MUTCD) defines sidewalks and pathways as follows:

Definitions	
Sidewalk	That portion of a street between the curb line, or the lateral line of a roadway, and the adjacent property line or on easements of private property that is paved or improved and intended for use by pedestrians.
Pathway	A general term denoting a public way for purposes of travel by authorized users outside the traveled way and physically separated from the roadway by an open space or barrier and either within the highway right-of-way or within an independent alignment. Pathways include shared use paths, but do not include sidewalks.

Most trips, even those made by car or transit, begin with walking. Sidewalks and pathways therefore serve as critical links in the transportation network, and keeping them well maintained encourages more people to walk and bicycle. The value of walking and biking has numerous benefits, including:

- [Personal benefits](#) — cardiovascular fitness and cost savings
- [Societal benefits](#) — reduced vehicle miles of travel, improved public health through a cleaner environment and healthier citizens, and improved mobility for those without access to private automobiles
- [Social benefits](#) — walkable communities tend to result in places where individuals know and interact more with nearby neighbors
- [Environmental benefits](#) — reduced air and noise pollution and fewer parking lots/spaces/structures
- [Safety benefits](#) — pedestrian-friendly communities become safer because there are more people on the street, and children can learn independence



*Sidewalk on Naval Support Activity
Hampton Roads, Norfolk, Virginia*

In This Issue

Definitions and Overview	1	Best Engineering Practices for Design	4
Federal Laws and Standards	2	Potential Challenges.....	8
Streetside Zone System	2	Grade-Separated Crossings	9
Planning Considerations.....	3	Other Pathways.....	10

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Federal Laws and Standards ✓

National standards for pedestrian facilities are documented in the following sources, with numerous other documents providing additional design guidance:

- AASHTO's *Policy on Geometric Design of Highways and Streets* ("Green Book")
- AASHTO's *Guide for the Planning, Design, and Operations of Pedestrian Facilities*
- *Manual on Uniform Traffic Control Devices (MUTCD)*

Federal accessibility legislation also influences the design of pedestrian facilities. Typically, the Americans with Disabilities Act (ADA) defines requirements for pedestrian facilities throughout the United States; however, the Department of Defense (DOD) has adopted the Architectural Barriers Act (ABA) Accessibility Standards (2004), which covers facilities designed, built, or altered with Federal funds or leased by Federal agencies. Roadway projects receiving Federal funds through the Department of Transportation (DOT) must comply with ADA standards per the DOT's current regulations.

In an effort to address design elements found in public rights-of-way and not covered by the ADA and ABA guidelines, the United States Access Board published "Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way" (PROWAG) in July 2011 and provided a public comment period. SDDCTEA recommends that DOD installations utilize the PROWAG for transportation elements (such as sidewalks along roadways and parking lots), in addition to Unified Facilities Criteria (UFC) 3-201-01 Civil Engineering.

Streetside Zone System ✓

The streetside is the area between the curb or edge of the roadway and the adjacent property line, also referred to as the "border area" in the AASHTO Green Book. In the absence of distinct property lines, it may be defined by a building façade, landscaping, fence, or screened parking area. At a minimum, the streetside should be of sufficient width to accommodate the clear zone, which in no case is less than 7 feet. Minimum clear zone width varies based on traffic volumes and speed, but for the majority of installation roadways will be 12–14 feet. This space should be reserved for pedestrian use and other streetside elements and should not be built upon.

The streetside can be further divided into zones that address different functions, which can vary based on the level of pedestrian use of the street and the adjacent context of the built and natural environment. The following zones are contained within the streetside:

Streetside Zone System Definitions

Curb Zone	The curb zone, sometimes referred to as the "edge zone," is the first 6 inches of the streetside immediately adjacent to the travel lanes, which typically consists of a 6-inch vertical curb. It serves a key purpose of discouraging motor vehicles from driving onto the sidewalk and preventing excess water from collecting in the sidewalk corridor.
Furnishings Zone	The furnishings zone, sometimes referred to as a "buffer zone," is located immediately adjacent to the curb and provides a key buffer between pedestrians and moving vehicular traffic. It may be planted or paved, and is often an extension of the sidewalk in urban areas. The furnishings zone is meant to keep the pedestrian zone free of obstacles and provides space for streetside elements such as street trees, planting strips, lamp posts, street furniture, utility poles, sidewalk cafés, sign poles, signal and electrical cabinets, phone booths, fire hydrants, bicycle racks, and bus shelters.
Pedestrian Zone	The pedestrian zone is the area within which pedestrians travel and is sometimes referred to as the pedestrian "through zone" or "clear width." This zone must provide a minimum horizontal and vertical clear area for unobstructed passage of pedestrians along the sidewalk, in compliance with PROWAG accessible route requirements. Generally, this zone refers to all or part of the sidewalk, although it can take the form of a pedestrian-only or shared use path.
Frontage Zone	The frontage zone is the space between the sidewalk and building façades or private property. Its width and function vary with the street type and context, but the frontage zone generally provides a buffer distance that allows people to access adjacent land uses without interfering with moving pedestrians. Additionally, this zone can accommodate potential window shoppers, stairs, stoops, planters, marquees, outdoor displays, awnings, or café tables.



Planning Considerations ✓

[“Complete Streets” Concepts](#)

“Complete streets” is a term used nationally to describe the transformation of vehicle-dominated thoroughfares in urban and suburban areas into community-oriented streets that safely and conveniently accommodate users of all ages and abilities, regardless of their mode of transportation. Within the finite right-of-way, all transportation modes must be considered and space allocated appropriately.

More space for one element—travel lanes, sidewalks, parking lanes, bicycle facilities, landscaping, transit, etc.—means less space for another element. A “road diet” is one potential solution for converting existing streets into complete streets. The classic example involves the reconfiguration of a four-lane, undivided roadway into a three-lane street with a center two-way left-turn lane and additional space that can be allocated for bicycle lanes, pedestrian crossing islands, and/or parking. However, this is simply one tool in the toolbox to implement complete streets concepts, which aim to balance the needs of all users.

Complete streets are not “one size fits all,” and each street does not need to be made perfect for every traveler. Instead, communities can focus on creating an interconnected network of streets that emphasize different modes along different streets.

[Network Connectivity](#)

Transportation systems work better for all modal users when there is redundancy and connectivity. Interconnected transportation networks, including pedestrian and bicycle facilities, have a greater ability to move people efficiently than those that are less connected due to their ability to spread demand across many types of facilities in many locations. When they have a comprehensive level of connectivity, these systems become more attractive and usable by offering pedestrians and bicyclists a variety of routes and shorter travel distances.

Having a continuous network that allows pedestrians to get from point A to point B is essential to encouraging walking as a viable mode of transportation. Gaps and barriers (such as missing segments in the sidewalk system) hinder connectivity and continuity in the pedestrian network and should be priority locations for improvements and repair. In general, sidewalks or appropriate pathways should be provided on both sides of all major and minor streets within an installation. Improvements that create continuous corridors and connect the densest residential and employment centers will have the biggest impact on users.

Additional Resources !

Two documents that provide detailed guidance for planning, designing, and implementing complete streets are:

Institute of Transportation Engineers (ITE)

- *Recommended Practice, Designing Walkable Urban Thoroughfares: A Context-Sensitive Approach*



National Association of City Transportation Officials (NACTO)

- *Urban Street Design Guide*



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Best Engineering Practices for Design ✓

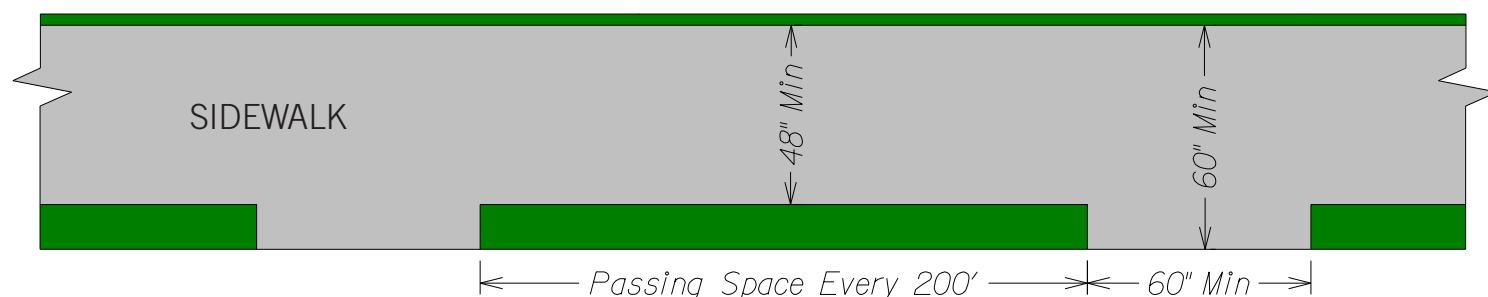
Design Elements

Various accessibility guidelines including the PROWAG, UFC 3-201-01 Civil Engineering, and FHWA's "Designing Sidewalks and Trails for Access—Part II of II: Best Practices Design Guide" provide best practices for design of sidewalks and pathways. The minimum and maximum design requirements to provide an accessible route with sufficient space for wheelchair users are outlined below.

Minimum and Maximum Design Requirements for Accessibility	
Design Element	Requirement
Width (minimum)	48 inches continuous width
Passing Space (minimum)	60-inch x 60-inch space provided every 200 feet
Grade/Running Slope (maximum)	<ul style="list-style-type: none">• Adjacent to street: same as general grade established for adjacent street• Within separate corridor: 5 percent
Cross Slope (maximum)	2 percent

Source: PROWAG Section R302

The values in this table represent only the minimum accessibility requirements. Multiple design guidelines and best practices recommend that sidewalks should be a minimum of 5 feet (60 inches) in width to allow for two pedestrians to walk side-by-side comfortably and for two wheelchair users to pass each other (negating the passing space requirement). Where 4-foot (48-inch) sidewalks exist, they should be widened to 5 feet where possible. If sidewalks cannot be widened, paved passing areas should be provided consistent with the PROWAG. Wider sidewalks should be provided based on the context of the adjacent roadway and surrounding community and land uses. The *Highway Capacity Manual* (Chapter 18) provides methodology to evaluate sidewalk width based on the anticipated pedestrian volume and desired level of service.



! Sidewalks should be designed to meet minimum accessibility requirements.



Recommended Placement within Streetside Corridor

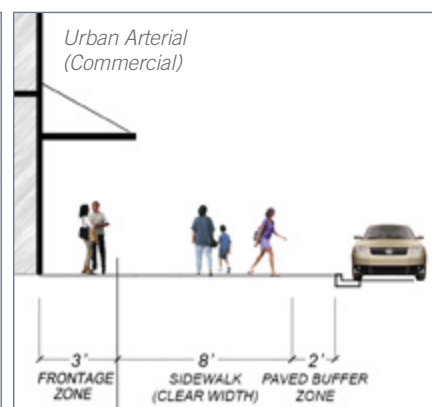
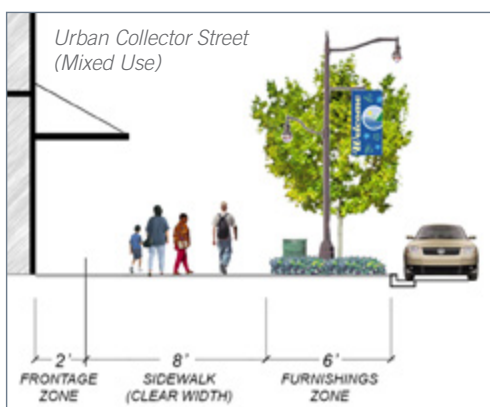
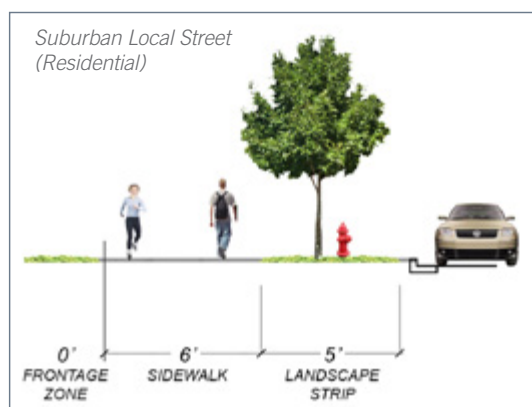
Placement and width of the sidewalk within the streetside corridor should vary based on the adjacent street context. The following sources provide recommendations for sidewalk configurations, which are outlined in the table below. Several example sidewalk configurations are provided.

- AASHTO's *A Policy on Geometric Design of Highways and Streets* (AASHTO Green Book)
- AASHTO's *Guide for the Planning, Design, and Operation of Pedestrian Facilities* (AASHTO Peds)
- ITE's Recommended Practice "Designing Walkable Urban Thoroughfares: A Context Sensitive Approach" (ITE)
- NACTO's *Urban Street Design Guide* (NACTO)

Sidewalks should be separated from travel lanes by a barrier such as a curb or other fixed obstruction such as guardrail. In the absence of a barrier, the distance measured from the edge of the outside travel lane to the nearest sidewalk edge should meet minimum clear zone requirements.

Recommended Streetside Dimensions

Zone	Recommended Widths	Source (see labels above)
Furnishings (Buffer/Landscape) Zone	2 feet minimum (paved or planted)	AASHTO Green Book
	6 feet desirable	
	2 to 4 feet for local/collector streets	AASHTO Peds
	5 to 6 feet for arterial/major streets	
	5 to 8 feet depending on context	ITE
Pedestrian (Through) Zone (or clear width for unobstructed travel)	4 feet minimum (with passing spaces or 2-foot paved buffer)	AASHTO Green Book
	4 to 8 feet in residential areas	
	4 feet minimum (with passing spaces or 2-foot paved buffer)	AASHTO Peds
	6 to 8 feet for arterials not in Central Business District (CBD)	
	10 to 15 feet in CBD	
	6 to 10 feet depending on context	ITE
	6 feet desired	
	5 feet minimum	NACTO
Frontage (Shy) Zone	2 feet adjacent to storefronts	AASHTO Peds
	0 feet adjacent to lawns or open space	
	1 foot along residential frontage	
	2 to 3 feet along commercial frontage	ITE



Example Sidewalk Configurations. Source: Kimley-Horn

Surface Materials

Sidewalks are generally constructed of concrete (either Portland cement concrete or bituminous concrete), though materials such as bricks, pavers, or slate can be used to improve the visual quality of the streetscape. Stamping molds also may be used on concrete or asphalt to create the appearance of bricks or pavers, and crushed aggregate may be used for pathways in park settings or rural areas.

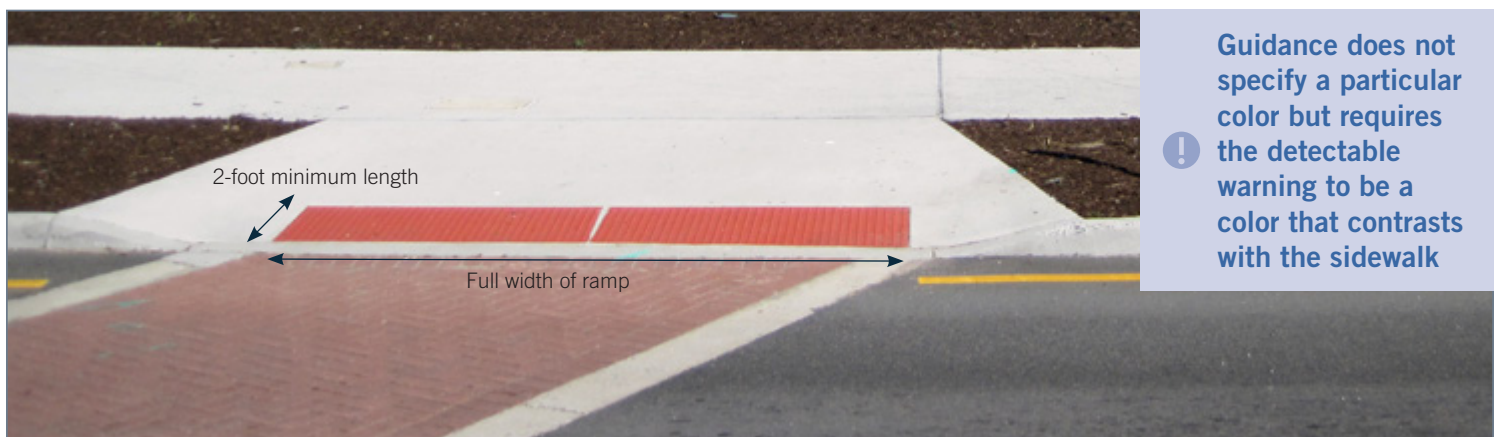
The sidewalk should provide a firm, stable, and slip-resistant walking surface compliant with the PROWAG and be maintained as such. Sidewalk material and aesthetics should be determined based on local context and desire, as well as maintenance considerations. The PROWAG also notes that surfaces should be chosen for easy rollability; heavily textured or rough surfaces and paving systems should be reserved for borders and decorative accents due to the increased vibration for wheelchair users. Advantages and disadvantages of various surface materials are summarized in AASHTO's *Guide for the Planning, Design, and Operation of Pedestrian Facilities*.

Curb Ramps and Detectable Surfaces

Curb ramps are required at all pedestrian street crossings per the PROWAG:

- A curb ramp is defined by the PROWAG as “a ramp that cuts through or is built up to the curb.”
- According to the PROWAG, curb ramps must be provided at pedestrian street crossings where walkways intersect a curb to allow people with disabilities to cross streets safely. Curb ramps must meet specific PROWAG standards for width, slope, cross slope, placement, and other features. A turning space must be provided at the top of the curb ramp, and a clear space must be provided at the bottom, within the pedestrian street crossing and outside of the parallel vehicular travel lane. The PROWAG also provides minimum dimensions for each of these spaces.
- Under the PROWAG, curb ramps are required to have detectable warning surfaces that extend the full width of the ramp and for a minimum length of 2 feet in the direction of pedestrian travel.

When marking a crosswalk, it is important that crosswalk markings be located such that the curb ramps are wholly within the extension of the crosswalk markings. Guidance for curb ramp design and placement can be found in Section R304 of the PROWAG while guidance for detectable warning surfaces can be found in Section R305. Detectable warning surfaces (raised truncated domes in a square or radial array) are used to mark boundaries between pedestrian and vehicular routes where there is no raised curb; therefore, these surfaces are installed within the curb ramps. Detectable warning surfaces are required at all pedestrian street crossings (whether marked or unmarked), pedestrian refuge islands, pedestrian at-grade rail crossings, and public transit stops.





Lighting

According to AASHTO's *Guide for Planning, Design, and Operation of Pedestrian Facilities*, two-thirds of pedestrian fatalities occur during low-light conditions (dusk, dawn, or dark). Personnel in military uniforms can be particularly difficult to see.

Street lighting is desirable along both sides of the roadway and should be strategically located to illuminate sidewalks and pathways, transit stops, crosswalks, and intersections. Lighting should be evenly distributed to provide a uniform level of light. Installing pedestrian-level street lighting not only enhances the streetscape but also promotes a safe environment for pedestrians and cyclists. For technical guidance on roadway lighting levels, refer to AASHTO's *Informational Guide for Roadway Lighting*. Additional guidance is provided in SDDCTEA pamphlets 55-15 and 55-17.

Landscaping

Landscaping or street trees may be considered within the furnishings zone of the streetside based on local context and desire. Some of the benefits of street trees are described in FHWA's "Designing Sidewalks and Trails for Access—Part II of II: Best Practices Design Guide":

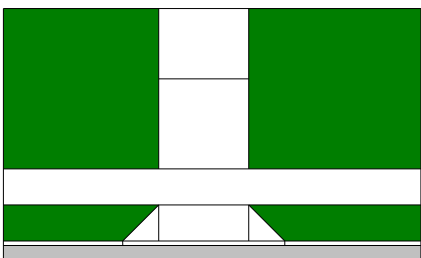
- Improve pedestrian experience
- Improve aesthetic appearance of street
- Provide shade or shelter
- Provide traffic calming effect by creating sense of enclosure

However, tree roots can create sidewalk cracks and changes in level if not properly designed for and planted appropriately. In addition, street trees should not be planted near intersections, where they can limit the sight distance between pedestrians and drivers. Any vegetation located near intersections should be kept trimmed and well-maintained to maximize visibility between pedestrians and motorists. FHWA's "Designing Sidewalks and Trails for Access—Part II of II: Best Practices Design Guide" provides some additional guidance on street tree selection and placement.

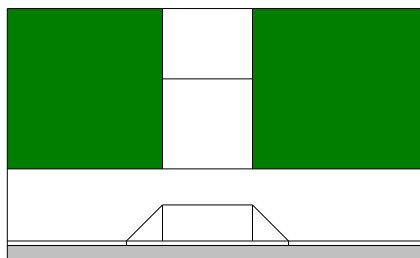
Driveway Crossings

Driveways are areas of potential conflict for pedestrians and vehicles and, like all complete street elements, need to be designed to safely serve all users. The number and design of curb cuts or driveway crossings over the sidewalk greatly influences walking.

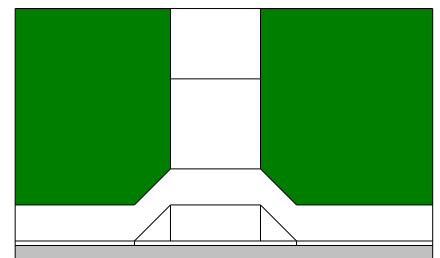
Driveway crossings must meet the same design requirements as sidewalks for accessibility in terms of width, cross slope, and grade. Unramped curb returns are not permitted. Because side flares and cross slopes at driveway aprons are problematic for wheelchair users and the visually impaired, driveway aprons should not extend into the pedestrian travelway zone. The appearance of the sidewalk also should be maintained across the driveway to indicate that pedestrians have priority. AASHTO's *Guide for the Planning, Design and Operation of Pedestrian Facilities* and Chapter 5 of FHWA's "Designing Sidewalks and Trails for Access—Part II of II: Best Practices Design Guide" provide detailed guidance for driveway crossings, examples of which are shown below.



Best Design: Driveway with level sidewalk and planting strip



Good Design: Driveway with level landing on wide sidewalk



Acceptable Design (where necessary): Driveway with level landing jogged behind existing narrow sidewalk

Potential Challenges ✓

Barriers and Obstacles

In order to encourage walking as a viable mode of transportation and provide pedestrian facilities suitable for all users, barriers and obstacles should be eliminated or minimized. The following are some of the most common barriers and obstacles that pedestrians may experience:

- Lack of network connectivity and missing sidewalk links
- Lack of pedestrian crossing or long crossing distances at intersections
- Inadequate pedestrian timings at traffic signals
- Major roadways with high traffic volumes and speeds
- Narrow sidewalk widths
- Frequent driveways
- Furniture or protruding objects
- Severe changes in level along a sidewalk
- Poorly maintained surface
- Tree roots creating uneven surface

Maintenance Considerations

Pedestrian routes must be maintained in good condition if they are to remain safe and pleasant to use. Required maintenance activities include keeping sidewalks in good repair, crosswalks clearly marked, and all pedestrian routes free of blockages and debris. Sidewalks take wear and tear every day, and issues such as sidewalk heaving, root ruptures, erosion, and damage from construction can create situations that make them difficult or even impossible for pedestrians to navigate. Installations should regularly monitor sidewalk and path conditions and make repairs as necessary. Chapter 10 of FHWA's "Designing Sidewalks and Trails for Access—Part II of II: Best Practices Design Guide" provides guidance for sidewalk assessment maintenance strategies.

Work Zone Traffic Control

Roadway and sidewalk maintenance and construction activities can present potential hazards and dangers to pedestrians and adversely affect pedestrian access. Part 6 of the *MUTCD* provides guidance and typical applications for maintaining pedestrian access through or around construction sites.

"If the TTC [temporary traffic control] zone affects the movement of pedestrians, adequate pedestrian access and walkways shall be provided. If the TTC zone affects an accessible and detectable pedestrian facility, the accessibility and detectability shall be maintained along the alternate pedestrian route."

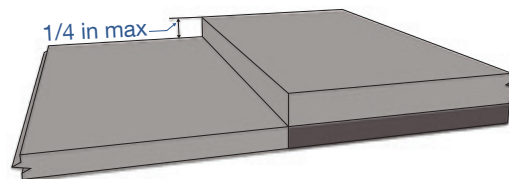
— Part 6 of the *MUTCD*

Changes in Level !

Changes in level are vertical surface discontinuities. Changes in level are relatively common on sidewalks and are often caused by tree roots, settling, and uneven transitions. PROWAG Section R302 provides maximum requirements for changes in level as follows:

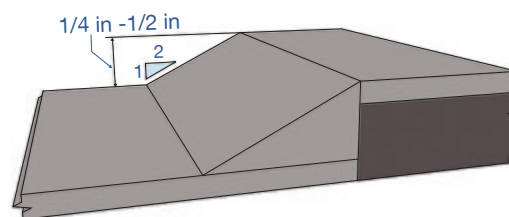
Up to 0.25 in

- *No treatment*



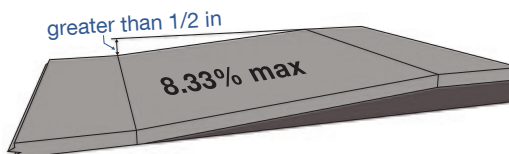
0.25 to 0.5 in

- *Bevel the surface with a maximum grade of 50 percent*



Greater than 0.5 in

- *Install a ramp with a maximum grade of 8.3 percent*





Grade-Separated Crossings ✓

Grade-separated crossings are facilities that allow pedestrians and motor vehicles to cross at different levels. Examples of grade-separated crossings include:

Overpasses	Bridges, elevated walkways, and skywalks/skyways
Underpasses	Pedestrian tunnels and below-grade pedestrian networks

When properly designed and located, grade-separated crossings can maintain network connectivity across major barriers such as freeways and railroads and can improve pedestrian safety by reducing pedestrian-vehicle conflicts and the likelihood of collisions; however, these crossings must meet PROWAG requirements and therefore can be very large structures with significant construction costs. Depending on their design and location, grade-separated crossings can have additional drawbacks including potential for increased crime and vandalism as well as lack of utilization due to perceived inconvenience. Grade-separated crossings are most efficiently utilized in areas where pedestrian attractors and generators such as shopping centers, large schools, recreational facilities, parking garages, transit stops, and other activity centers are separated by freeways or major arterials with high volumes and speed.



Pedestrian overpass in Portland, Oregon

ITE's *Design and Safety of Pedestrian Facilities* describes warrants for the consideration of pedestrian overpasses and underpasses from FHWA Report Number RD-84-082. Pedestrian and vehicular volume warrants are provided based on speed and location, in addition to more general criteria. AASHTO's *Guide for the Planning, Design and Operation of Pedestrian Facilities* and Chapter 4 of FHWA's "Designing Sidewalks and Trails for Access—Part II of II: Best Practices Design Guide" provide planning and design guidance for these facilities.

The following are best practices to maximize the use of and increase pedestrian safety at grade-separated crossings:

- Provide pedestrian facilities on existing grade-separated roadway crossings where possible. Install barrier between vehicular travel lanes and sidewalks.
- Minimize the change in the pedestrians' path to allow the most direct route of travel.
- Minimize the change in elevation and provide elevators or ramps that meet PROWAG requirements with level landings.
- Provide minimum inside clear width of 8 feet on overpasses, and increase to 14 feet if the facility is shared with bicycles.
- Provide handrails on overpasses.
- Create adequate level areas at base of overpasses, particularly prior to intersections.
- Install barriers or landscaping to prevent pedestrians from making at-grade and at-risk crossings.
- Provide minimum vertical clearance of 10 feet in underpasses, with good sight distances, lighting, and ventilation as well as proper drainage.
- Provide minimum inside clear width of 12 feet in underpasses for rural areas or 14 to 16 feet in urban areas.



Recreational Trails

Pathways that are designed primarily to provide a recreational experience are known as recreational trails. They connect recreational and environmental features of a community and can be formal or informal, attracting off-road cyclists, pedestrians, hikers, and joggers/runners. Trails are commonly made of dirt, mulch, or pea gravel but can also be paved with concrete or asphalt. Typical widths are 5 to 8 feet for foot paths and 8 to 10 feet for bike trails. Chapter 15 of FHWA's "Designing Sidewalks and Trails for Access—Part II of II: Best Practices Design Guide" provides guidance for designing recreational trails and providing access to people with disabilities.



Recreational trail in Hampton, Virginia



Shared use path in Virginia Beach, Virginia

Shared Use/Multiuse Paths

Shared use paths—also known as multiuse paths—are wide facilities, typically physically separated from the vehicular travelway by an open space or barrier, that are designed to provide a transportation function while supporting multiple users including bicyclists, pedestrians, joggers/runners, and other non-motorized users. This type of facility is typically a paved path that runs parallel to a street with more setback and width than sidewalks, but they also may follow another major feature (natural or man-made). They offer a high degree of physical protection from motor vehicles and are ideal for physical training, safe routes to school, and recreational use. Shared use paths also can be used as troopwalks, provided they are built with sufficient width to accommodate personnel marching four abreast in formation. Because shared use paths also provide a transportation function, they should be accessible for people with disabilities.



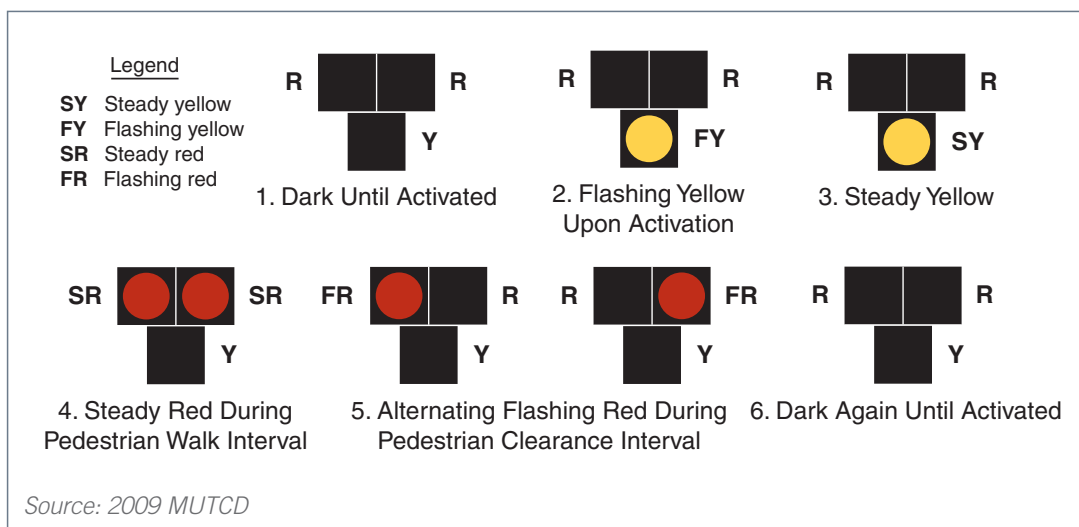
The Architectural and Transportation Barriers Compliance Board (Access Board) has announced its intention to develop accessibility guidelines for shared use paths as part of the PROWAG. The Access Board has developed draft technical provisions for shared use paths which include width, grade, cross slope, surface, changes in level, curb ramps, and other features. Because many of these provisions are the same as for pedestrian facilities outlined in the PROWAG, the Access Board is considering including the shared use path provisions within the PROWAG. AASHTO's *Guide for the Development of Bicycle Facilities* and *Guide for the Planning, Design and Operation of Pedestrian Facilities*, as well as Chapter 14 of FHWA's "Designing Sidewalks and Trails for Access—Part II of II: Best Practices Design Guide," currently provide design guidance for shared use paths including the following key considerations:

- The recommended width for a shared use path is 10 feet, with 12 feet preferred in areas anticipated to have high volumes of cyclists and pedestrians. A minimum width of 8 feet may be used in constrained areas for paths that will have limited use.
- Shared use paths should be separated from roadways by a minimum of 5 feet. In addition, a graded shoulder area at least 2 feet wide should be provided on both sides of a shared use path when right-of-way is available.
- Shared use paths approaching intersections should curve toward the street, connecting close to the intersection, to improve the visibility of both path users and motorists such that they can recognize each other as intersecting traffic. Curb ramps or blended transitions with detectable warning surfaces should be provided for accessibility.
- It is generally not appropriate to construct this type of facility where there are frequent driveways and intersections because of the increased potential for conflicts between pedestrians, cyclists, and vehicles.
- Shared use paths can be marked for all users to share the same space like a two-lane road. Alternately, designated spaces for pedestrians and bicyclists can be marked where high user volumes are expected. The latter option usually requires the construction of a wider path.

Bulletin 14-01 Correction



Bulletin 14-01 (Crosswalks) had a misprint on page 7. The corrected color version of the pedestrian hybrid beacon exhibit is shown below.



TRAFFIC ENGINEERING & HIGHWAY SAFETY BULLETIN



Mr. Bruce A. Busler, SES

Director, Transportation Engineering Agency

DEPARTMENT OF THE ARMY

Military Surface Deployment and Distribution Command

Transportation Engineering Agency

1 Soldier Way

Scott Air Force Base, Illinois 62225-5006

Fax: 618-220-5125

E-mail: army.sddc.safb.traffic@mail.mil

Website: <http://www.tea.army.mil>

for pamphlets, bulletins, and studies

Contact Us

Darren J. Guttman, P.E.

E-mail: darren.j.guttman.civ@mail.mil

Phone: 618-220-5218

David G. Kirkpatrick

E-mail: david.g.kirkpatrick6.civ@mail.mil

Phone: 618-220-5252

Thomas J. Mannino, P.E., PTOE

E-mail: thomas.j.mannino12.civ@mail.mil

Phone: 618-220-5249

Brenda K. Roth, P.E., PTOE

E-mail: brenda.k.roth.civ@mail.mil

Phone: 618-220-5290

Mickeal D. Carda, P.E.

E-mail: mickeal.d.carda.civ@mail.mil

Phone: 618-220-5450

David F. Clark, Jr.

E-mail: david.f.clark20.civ@mail.mil

Phone: 618-220-7747

Sources



- American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets* ("Green Book"), 6th Edition, 2011
- American Association of State Highway and Transportation Officials, *Guide for Planning, Designing, and Operating Pedestrian Facilities*, 2004
- American Association of State Highway and Transportation Officials, *Guide for the Development of Bicycle Facilities*, 4th Edition, 2012
- Institute of Transportation Engineers, *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*, <http://www.ite.org/css/RP-036A-E.pdf>
- Institute of Transportation Engineers, *Design and Safety of Pedestrian Facilities*, <http://www.ite.org/decade/pubs/rp-026a-e.pdf>
- National Association of City Transportation Officials, *Urban Street Design Guide*, 2013
- National Association of City Transportation Officials, *Urban Bikeway Design Guide, Second Edition*, 2014
- United States Access Board, "Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way," <http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines/>
- United States Access Board, "Shared Use Paths Supplemental Notice," <http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/shared-use-paths/supplemental-notice>
- Active Transportation Policy, "Complete Streets Complete Networks: A Manual for the Design of Active Transportation," <http://www.atpolicy.org/design>
- Smart Growth America, "National Complete Streets Coalition - Complete Streets: A to Z," www.smartgrowthamerica.org/complete-streets/a-to-z
- SDDCTEA, DOD Programs for National Defense, "Pamphlets, Manuals, and Directories," https://www.tea.army.mil/pubs/nr/DynaListDOD.asp?Cat_id=4&Sub_id=14&Topic_id=0&Cat_Name=DOD%20Programs%20for%20National%20Defense&Topic_Name=Pamphlets,%20Manuals,%20and%20Directories
- DoD Unified Facilities Criteria, UFC 3-201-01, http://www.wbdg.org/ccb/DOD/UFC/ufc_3_201_01.pdf
- U.S. Department of Transportation, Federal Highway Administration, "Designing Sidewalks and Trails for Access - Part II of II: Best Practices Design Guide," http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/pdf.cfm