Chapter 8

Pedestrian Facilities

Figures

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8 Pedestrian Facilities

8.1 Introduction

Pedestrian facilities shall be given full consideration in the planning and development of transportation facilities, including the incorporation of such facilities into state, regional, and local transportation plans and programs under the assumption that transportation facilities will be used by pedestrians. Pedestrian facilities should be considered in conjunction with the construction, reconstruction, or other significant improvement of any transportation facility. Special emphasis should be given to projects in or within 1-mile of an urban area. Examples of pedestrian facilities include sidewalks, shared use paths, over and under passes, curb ramps, median refuges, and crosswalks.

In addition to the design criteria provided in this manual, the following documents provide criteria and guidance in the design of pedestrian facilities:

- ***United States Department of Transportation ADA Standards for Transportation Facilities (2006)*** and as required by ***49 C.F.R 37.41 or 37.43***.
- ***United States Department of Justice ADA Standards (2010) as required by 28 C.F.R 35 (title II) and 36 (title III)***.
- ***Public Rights-of-Way Accessibility Guidelines (PROWAG)*** provides additional information for the design of pedestrian facilities.

The ~~***2020 Florida Building Code, Accessibility, 7th Edition***~~***2023 Florida Building Code, Accessibility, 8th Edition*** as required by ***61G20-4.002*** contains ADA requirements for accessibility to sites, facilities, buildings, and elements by people with disabilities

Each transportation agency responsible for a system of streets and highways should establish and maintain a program for implementing pedestrian facilities, and for maintaining existing pedestrian facilities.

8.2 Types of Pedestrian Facilities

There are several ways in which pedestrians can be accommodated in the public right of way.

8.2.1 Sidewalks

Sidewalks are walkways parallel to the roadway and designed for use by pedestrians. Sidewalks should be provided along both sides of roadways that are in or within ~~one~~ 1-mile of

an urban area. If sidewalks are constructed on the approaches to bridges, they should be continued across the structure. If continuous sidewalks are constructed on only one side of the street, pedestrians should be provided access to facilities and services located on the opposite side of the street. Newly constructed, reconstructed, or altered sidewalks shall be accessible to and usable by persons with disabilities.

The minimum width of a sidewalk shall be 5 feet on both curb and gutter, and flush shoulder roadways. The minimum separation for a 5-foot sidewalk from the back of curb is 2 feet. If the sidewalk is located adjacent to the curb, the minimum width of sidewalk is 6 feet. Provide a minimum 1-foot wide level graded area with a maximum slope of 1:6 along both sides of the sidewalk. This would not apply to the side of the sidewalk located immediately adjacent to a curb, structure or the right of way line. Wider sidewalks should be considered in Central Business Districts and in areas where heavy two-way pedestrian traffic is expected.

A 5-foot wide (minimum) sidewalk that connects a transit stop or facility with an existing sidewalk or shared use path shall be included to comply with ADA accessibility standards. **Chapter 13 – Transit** provides illustrations of the connection between the sidewalk and transit facility.

Particular attention shall be given to pedestrian accommodations at the termini of each project. If full accommodations cannot be provided due to the limited scope or phasing of a roadway project or an existing sidewalk is not present at the termini, an extension of the sidewalk to the next appropriate pedestrian crossing or access point should be considered. If pedestrian facilities are provided, they shall be connected with facilities (e.g., sidewalks, shared use path, and crosswalks on the adjoining projects).

For new construction and reconstructed roadways, grades on sidewalks or shared use paths shall not exceed 5%, unless accessible ramps and landings are provided. However, in a roadway right of way, the grade of sidewalks or shared use paths is permitted to equal the general grade established for the adjacent street or highway. There should be enough sidewalk or path cross slope to allow for adequate drainage, however the maximum shall be no more than 2% to comply with ADA requirements.

Where existing physical constraints make it impracticable for altered elements, spaces, or facilities to fully comply with the requirements for new construction, compliance is required to the extent practicable within the scope of the project. Existing physical constraints include, but are not limited to, underlying terrain, right-of-way availability, underground structures, adjacent developed facilities, drainage, or the presence of a notable natural or historic feature.

The location of new poles or relocated poles shall provide at least 48” minimum unobstructed sidewalk width.

Evaluate existing driveways and turnouts for compliance to ADA requirements. Nonconforming driveways are not required to be upgraded if it is not feasible within the scope of the project.

Edge drop-offs should be avoided. When drop-offs cannot be avoided, they should be shielded as discussed in Section F, Drop-Off Hazards for Pedestrians.

For additional information concerning the design of sidewalks, refer to **Section 3.3.7.4** of **Chapter 3 – Geometric Design**.

8.2.2 Shared Use Paths

Paths are usually set back from the roadway and separated by a green area, ditch, swales, or trees. Shared use paths are intended for the use by both pedestrians and bicyclists and shall be accessible. For additional information concerning the design of shared-use paths, refer to **Chapter 9 – Bicycle Facilities**.

8.2.3 Shared Streets

Shared uses of a street for people walking, bicycling, and driving are referred to as shared streets. These are usually specially designed spaces such as pedestrian streets which are local urban streets with extremely low vehicle speed.

8.2.4 Shoulders

Highway shoulders are not intended for frequent use by pedestrians, but do accommodate occasional pedestrian traffic. Highway shoulders often have cross slopes which exceed 2%; consequently, they are not considered or expected to fully meet ADA criteria.

8.3 Minimizing Conflicts

The planning and design of new streets and highways shall include provisions that support pedestrian travel and minimize vehicle-pedestrian conflicts. These may include:

- Sidewalks and/or shared use paths parallel to the roadway
- Marked pedestrian crossings
- Raised median or refuge islands
- Pedestrian signal features such as pedestrian signal heads and detectors
- Transit stops and shelters

In some situations, it may be possible to eliminate a vehicle-pedestrian conflict through close coordination with the planning of pedestrian facilities and activity outside of the highway right of way. Care should be exercised to ensure the elimination of a given conflict point does not transfer the problem to a different location. Any effort to minimize or eliminate conflict points must consider the mobility needs of the pedestrian. The desired travel path should not be severed and the number of required crossing points and/or walking distances should not be significantly increased. Some crossings should be redesigned rather than eliminated or relocated.

8.3.1 General Needs

Minimizing vehicle-pedestrian conflicts can be accomplished by providing adequate horizontal, physical, or vertical (primarily for crossings) separation between the roadway and the pedestrian facility.

8.3.2 Horizontal Separation

The development of independent systems for pedestrian and motor vehicular traffic is the preferred method for providing adequate horizontal separation.

8.3.2.1 General Criteria

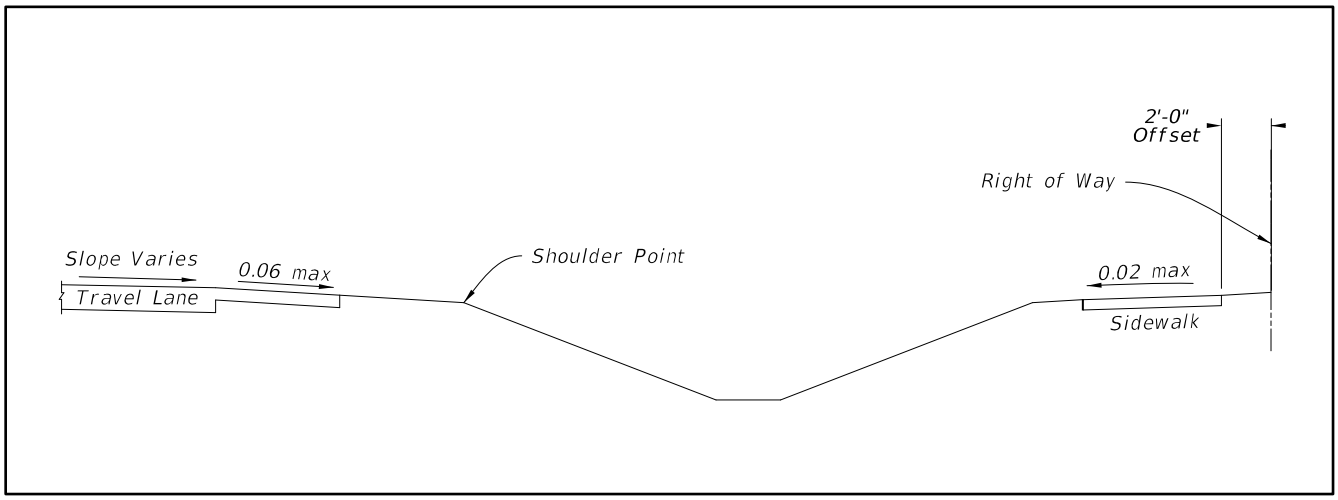
New sidewalks should be placed as far from the roadway as practical in the following sequence of desirability:

1. As near the right of way line as possible. (Ideally, 3 feet of width should be provided behind the sidewalk for above ground utilities.)
2. Outside of the clear zone.
3. Sufficiently off-set from the curb to allow for the placement of street trees, signs, utilities, parking meters, benches, or other street furniture outside of the sidewalk in urban locations (e.g., town center, business, or entertainment district).
4. Five feet from the shoulder point on flush shoulder roadways.
5. At the grass shoulder point of flush shoulder roadways.
6. **Figure 8 – 1 Shoulder Point with Sidewalk** provides an illustration of the location of the shoulder point.

On arterial or collector roadways, sidewalks shall not be constructed contiguous to the roadway pavement, unless a curb or other barrier is provided. Nearing intersections, the sidewalk should be transitioned as necessary to provide a more functional crossing location

that also meets driver expectation. Further guidance on the placement of stop or yield lines and crosswalks is provided in the ***MUTCD, Part 3***.

Figure 8-1 Shoulder Point with Sidewalk



8.3.2.2 Buffer Widths

Providing a buffer can improve pedestrian safety and enhance the overall walking experience. Buffer width is defined as the space between the sidewalk and the edge of traveled way. On-street parking or bike lanes can also act as an additional buffer. The planting strip or buffer strip should be 6 feet where practical to eliminate the need to narrow or reroute sidewalks around driveways. With this wider buffer strip, the sidewalk is placed far enough back so that the driveway slope does not have to encroach into the sidewalk.

8.3.3 Other Considerations

When designing urban highways, the following measures may be considered to help increase the safe and efficient operation of the highway for pedestrians:

- Use narrower lanes and introduce raised medians to provide pedestrian refuge areas
- Provide pedestrian signal features and detectors
- Prohibit right turn on red
- Control, reduce, or eliminate left and/or right turns
- Prohibit free flow right turn movements
- Reduce the number of lanes

8.4 Barrier Separation

Barriers may be used to assist in the separation of motor vehicular and pedestrian traffic.

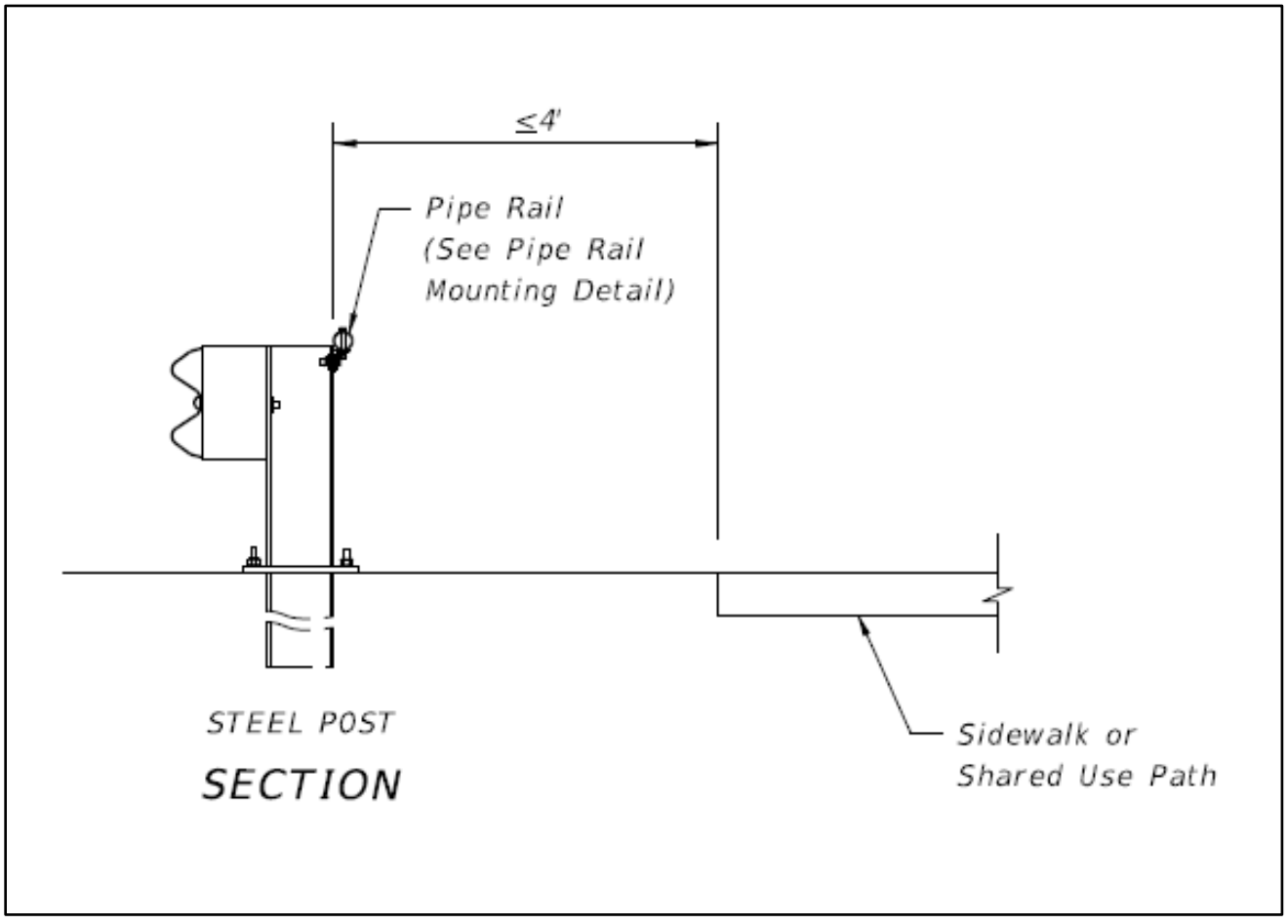
8.4.1 Longitudinal Barriers

Longitudinal barriers such as guardrails, rigid barriers, and bridge railings are designed primarily to redirect errant vehicles away from roadside hazards. These barriers can also be used to provide valuable protection of pedestrian facilities from out-of-control vehicles.

Where adequate horizontal separation is not feasible, or where there is a significant hazard from out-of-control vehicles, longitudinal barriers may be utilized. If electing to use barriers, special consideration should be made to ensure proper sight distance near driveways and intersections is maintained. See **Chapter 4, Figure 4 – 8 Location of Guardrail** for information on the correct placement of a sidewalk in conjunction with a guardrail.

When a new sidewalk or shared use path is within 4 feet of the back of a guardrail with steel posts, a pipe rail shall be installed on the back of the post. For a guardrail with timber posts, the bolt ends shall be trimmed flush with the post or recessed. See **Figure 8 – 2 Guardrail with Pipe Rail Detail** for an illustration of when a pipe rail is needed. Additional information on the design of guardrails adjacent to a sidewalk or shared use path can be found in the FDOT ***Standard Plans***.

Figure 8-2 Guardrail with Pipe Rail Detail



8.4.2 Fencing, Pedestrian Channelization Devices or Landscaping

Fencing, pedestrian channelization devices or landscaping may be used to discourage pedestrian access to the roadway and aid in channeling pedestrian traffic to the proper crossing points. These should not be considered a substitute for longitudinal barriers, but may be used in conjunction with redirection devices.

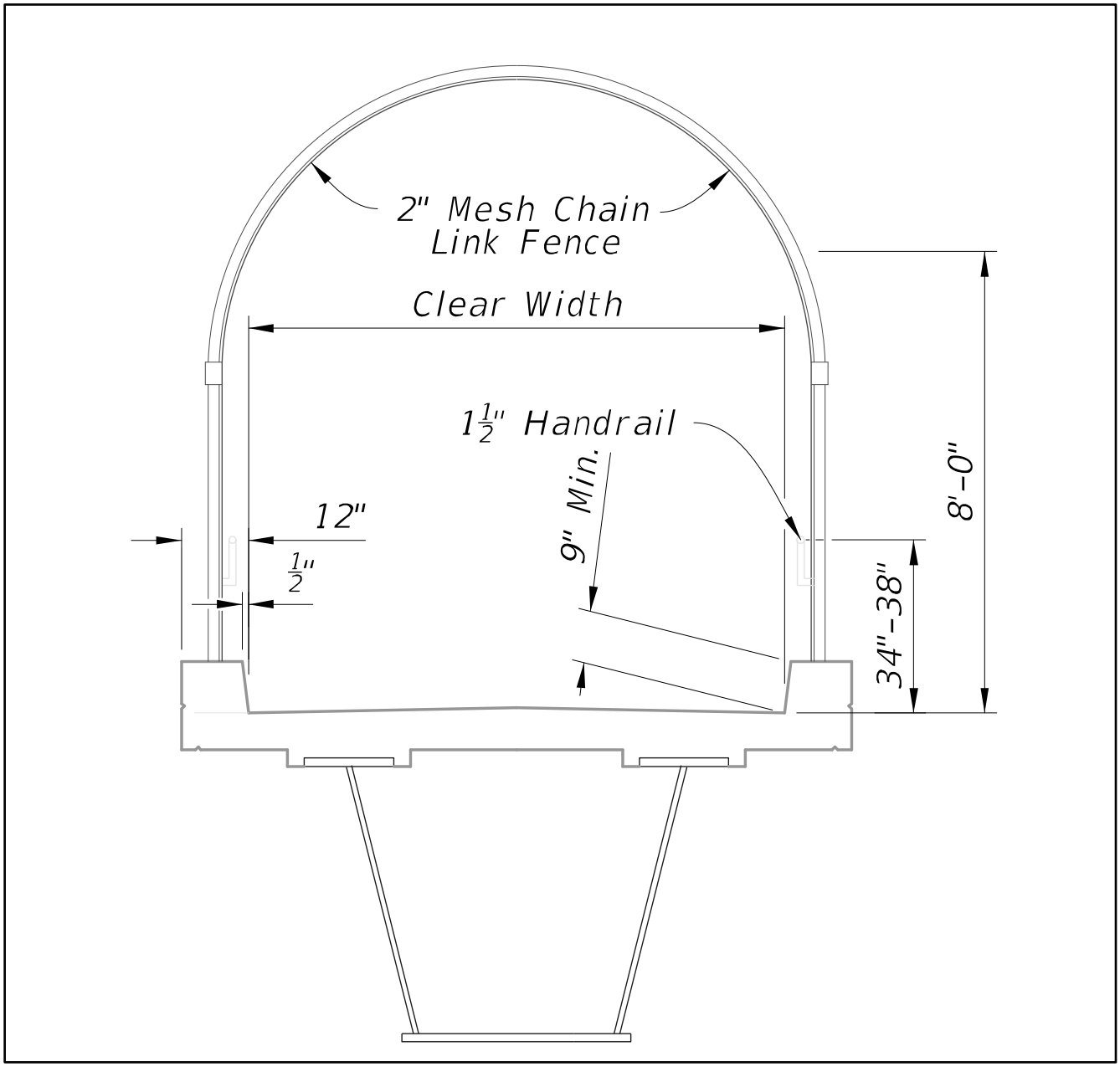
8.5 Grade Separation

Grade separation may be selectively utilized to support the crossing of large pedestrian volumes across highways where the traffic volume on the roadway is at or near capacity or where speeds are high. Overpasses or underpasses may be justified at major pedestrian generators such as schools, shopping centers, sports and amusement facilities, transit centers, commercial buildings, parks and playgrounds, hospitals, and parking facilities.

The minimum clear width of any stand-alone pedestrian overpass or underpass on a pedestrian accessible route is 8 feet. However, if the contiguous sidewalk or path is greater than 8 feet wide, the clear width of the overpass or underpass should match that width. The minimum clear height of a pedestrian overpass or underpass is 8 feet. See **Figure 8 – 3 Pedestrian Bridge Typical Section** for an example of a pedestrian bridge typical section.

The FDOT ***Structures Manual - Volume 1 - Structures Design Guidelines (SDG), Section 10*** provide additional guidance on engineered steel and concrete pedestrian bridges.

Figure 8-3 Pedestrian Bridge Typical Section



Notes:

1. Pedestrian handrails may be required. See the ***2006 Americans with Disabilities Act Standards for Transportation Facilities***.
2. Other superstructure configurations may be used provided an 8 ft. minimum headroom is maintained.

8.5.1 Overpasses

Pedestrian overpasses are typically bridge structures over major roadways or railroads. Overpasses should provide elevator access if they are not designed to provide accessible ramps with compliant slopes, level landings, and handrails on both sides. Bridges over roadways should be covered or screened to reduce the likelihood of objects being dropped or

thrown below. The area adjacent to overpasses may be fenced to prevent unsafe crossings and to channel pedestrians to the overpass structure.

8.5.2 Underpasses

Pedestrian underpasses or tunnels perform the same function as overpasses. Their use is convenient when the roadway is elevated above the surrounding terrain.

Underpasses should be adequately maintained to reduce potential problems in lighting, cleaning, policing, and flooding and to maximize safety. The area adjacent to underpasses may be fenced to prevent unsafe crossings and to channel pedestrians to the underpass structure.

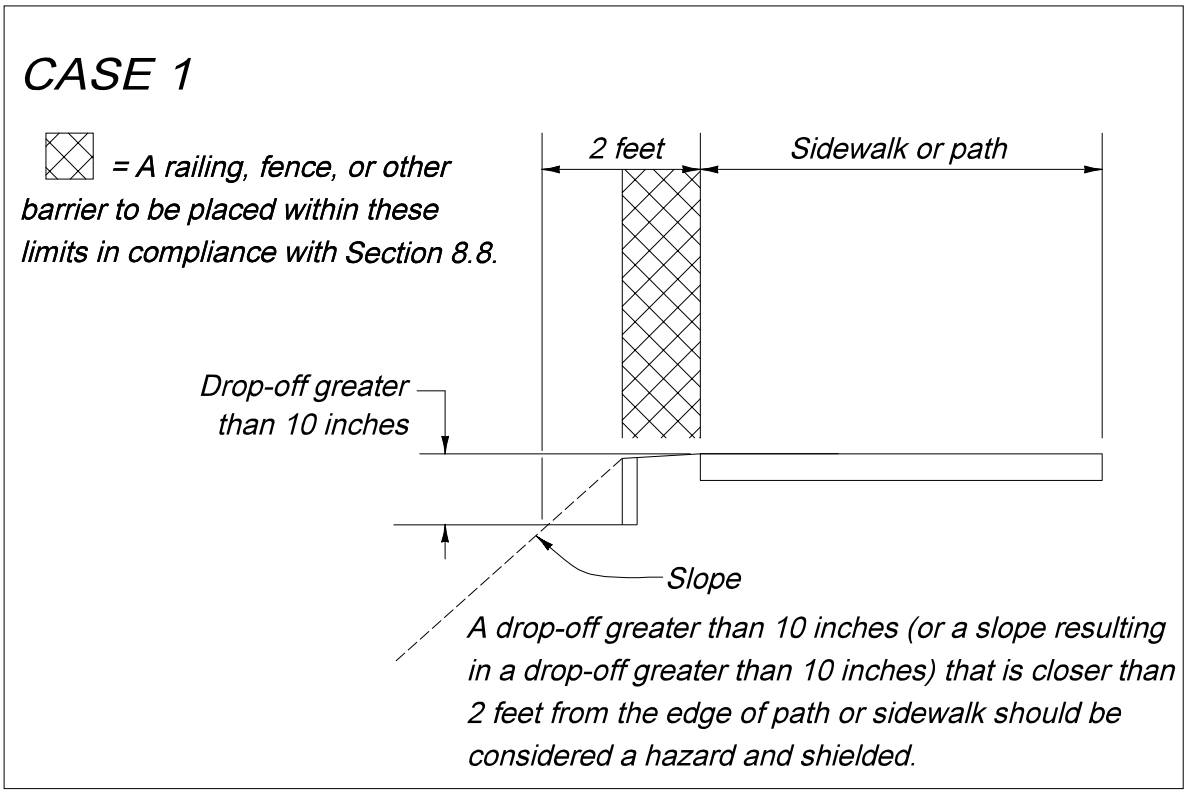
8.6 Drop-Off Hazards for Pedestrians

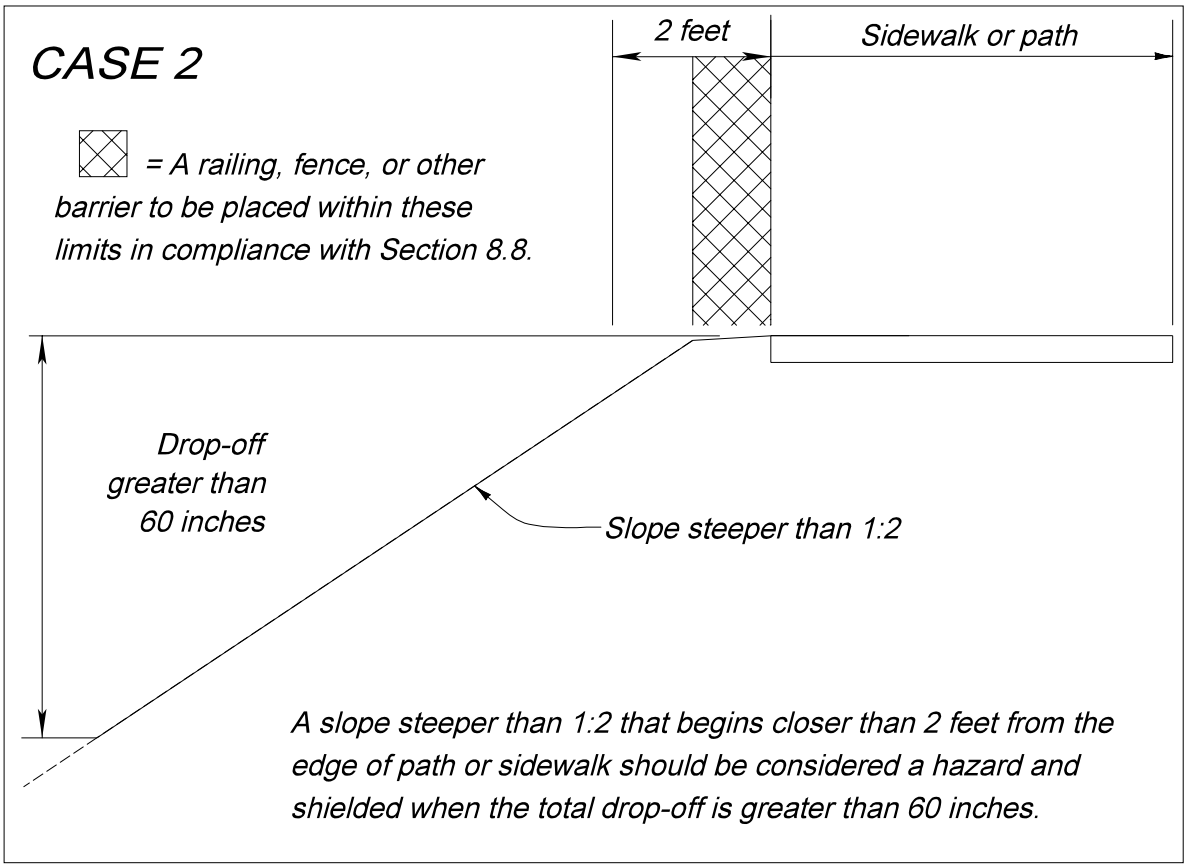
Drop-off hazards are defined as steep or abrupt downward slopes that can be perilous to pedestrians and bicyclists. Consider shielding any drop-off determined to be a hazard. Care should be taken when using Pedestrian/Bicycle Railings or fencing near intersections or driveways as they could obstruct the driver's line of sight. To reduce the need for railings as a sidewalk or shared use path approaches an intersection, consider extending cross drains and side drains to minimize drop-offs.

There are two cases that require shielding as shown in **Figure 8 – 4 Drop-Off Hazards for Pedestrians and Bicyclists**. Depending on the depth of the drop-off and severity of the conditions below, shielding may be necessary for cases other than described above.

Railings or fences should be provided for vertical drop-off hazards or where shielding is required. The standard height for a pedestrian/bicycle railing is 42 inches. A 48 inch tall pedestrian/bicycle railing should be used when sidewalk grades are steeper than 5% and bicycle travel is expected. A standard railing is generally intended for urbanized areas, locations attaching to bridge rail or along concrete walkways. Fencing is generally intended for use in rural areas along paths and trails.

Figure 8-4 Drop-Off Hazards for Pedestrians and Bicyclists





8.7 Pedestrian Crossings

The design of pedestrian crossings and parallel pathways within the right of way shall be considered an integral part of the overall design of a street or highway.

The development of protection at any remaining crossings or conflict points must be adequate to achieve a total pedestrian transportation mode that is reasonably safe.

8.7.1 Crosswalks

The design of pedestrian crosswalks shall be based on the following requirements:

- Crosswalks should be placed at locations with sufficient sight distances
- At crossings, the roadway should be free from changes in alignment or cross section
- The entire length of crosswalk shall be visible to drivers at a sufficient distance to allow a stopping maneuver
- Stop bars or yield markings, in conjunction with the appropriate signing, shall be provided at all marked crosswalks
- Crosswalks shall be easily identified and clearly delineated, in accordance with the ***Manual on Uniform Traffic Control Devices (MUTCD)*** and ***Rule 14-15.010, F.A.C***.

8.7.1.1 Marked Crosswalks

Marked crosswalks are one tool to allow pedestrians to cross the roadway safely. They are often used in combination with other treatments (signs, flashing beacons, curb extensions, pedestrian signals, raised median or refuge islands, and enhanced overhead lighting). Marked crosswalks serve two purposes: 1) to inform motorists of the location of a pedestrian crossing so that they have time to lawfully yield to or stop for a crossing pedestrian; and 2) to assure the pedestrian that a legal crosswalk exists at a particular location. See **Figure 8 – 5 Pedestrian Median Refuge with Curb Extensions** for an example of a pedestrian median refuge with a curb extension.

Figure 8-5 Pedestrian Median Refuge with Curb Extension

Source: Urban Street Design Guide, National Association of City Transportation Officials (NACTO)

Marked crosswalks on an uncontrolled leg of an intersection or a mid-block location shall be supplemented with other treatments (such as signing, beacons, curb extensions, raised medians, raised traffic islands, or enhanced overhead lighting) when any of the following conditions exist:

1. Where posted speeds are greater than 40 mph.
2. On a roadway with 4 or more lanes without a raised median or raised traffic island that has an ADT of 12,000 or greater.
3. On a roadway with 4 or more lanes with a raised median or raised traffic island that has or is projected to have (within 5 years) an ADT of 15,000 or greater.

See **Chapter 6 – Lighting** for information on illuminating crosswalks and pedestrian facilities.

Additional guidance on marked crosswalks can be found in the ***AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities*** and ***FHWA's Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines***.

Marked crosswalks can also be used to create midblock crossings.

8.7.1.2 Midblock Crosswalks

Midblock crosswalks facilitate crossings to places that people want to go but that are not well served by the existing sidewalk or path network. These pedestrian crossings commonly occur at schools, parks, museums, waterfronts, and other destinations. Designers should study both existing and projected pedestrian volumes in assessing warrants for midblock crossings to account for latent demand.

Midblock crossings are located according to a number of factors including pedestrian volume, traffic volume, roadway width, traffic speed and type, desired paths for pedestrians, land use, and to accommodate transit connectivity. Midblock crossings should not be installed where sight distance or sight lines are limited for either the motorist or pedestrian.

Midblock crossings should be marked and signed in accordance with the ***MUTCD***. See **Figure 8 – 6 Raised Midblock Crosswalks** for an example of a midblock crosswalk.

Figure 8-6 Raised Midblock Crosswalk

Suwannee Street, Tallahassee, Florida

Crosswalks may be supplemented with Pedestrian Hybrid Beacons (PHB) or Rectangular Rapid Flashing Beacons (RRFBs). Illumination should be evaluated if night-time pedestrian activity is expected. See **Chapter 6 – Lighting** for further information.

A PHB is a special type of beacon used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk. ~~***Chapter 4F. Pedestrian Hybrid Beacons, MUTCD***~~***MUTCD Chapter 4J*** provides additional information regarding their installation. See **Figure 8 – 7 Pedestrian Hybrid Beacon** for an example of a pedestrian hybrid beacon.

Figure 8-7 Pedestrian Hybrid Beacon (PHB)

16th Street South, St. Petersburg, Florida

The RRFB uses rectangular-shaped high-intensity LED-based indications, flashes rapidly in a wig-wag "flickering" flash pattern, and is mounted immediately between the crossing sign and the sign's supplemental arrow plaque. Use of PHBs should be limited to locations with the most critical safety concerns, such as pedestrian and school crosswalks across uncontrolled approaches.

~~The use of RRFBs requires interim approval from FHWA. The ***MUTCD*** provides further information on obtaining ***interim approval*** for the use of ***RRFBs***.~~ See **Figure 8 – 8**

Pedestrian Median Refuge with Rectangular Rapid Flashing Beacon for an example of a Rectangular Rapid Flashing Beacon (RRFB).

Figure 8-8 Pedestrian Median Refuge with Rectangular Rapid Flashing Beacons (RRFB)

4th Street North, St. Petersburg, Florida

8.7.2 Curb Ramps and Blended Transitions

A continuous accessible pedestrian route, including curb ramps and blended transitions is needed along pedestrian networks. Blended transitions are raised pedestrian street crossings, depressed corners, or similar connections between pedestrian access routes at the level of the sidewalk or shared use path and level of the pedestrian street crossing that have a grade of 5% or less. Blended transitions can be used when geometrics and allocated space ~~doesn't~~ does not allow for separated curb ramps.

Curb ramps shall be provided at all intersections with curb (**Section 336.045 (3), Florida Statutes**). Each crossing should have separate curb ramps, perpendicular with the curb, and landing within the crosswalk. Include sidewalk curb ramps at the following locations:

- At curbed returns for intersections and turnouts.

- On curbed roadways between intersections where a crosswalk has been established, such as midblock crossings and side streets.

Relocate or adjust pull boxes, manholes and other types of existing surface features to meet the ADA requirements for nonslip top surfaces, ¼ inch height protrusion, and slopes flush with the surrounding surface.

On sidewalks, the curb ramp width shall be a minimum of 4 feet; curb ramp widths equal to crosswalk widths are encouraged. For shared use paths, the curb ramp shall be at least as wide as the approaching width of the path. Curb ramp slopes shall not exceed 1:12 and shall have a firm, stable, slip resistant surface texture.

Curb ramps should be in line with the crossing. At intersections where more than one road is crossed, provide separate curb ramps at both ends of each crossing. Two ramps per corner are preferred to minimize the problems with entry angle and to decrease the delay to pedestrians entering and exiting the roadway.

Crossings are required to meet the same grade and cross slope requirements as sidewalks. Where criteria for maximum cross slope of the crossing cannot be met, provide the minimum attainable cross slope. When following the profile grade of the roadway, curb ramps are not required to exceed 15 feet in length.

Curb ramps whose sides have returned curbs on the outside edges provide useful directional cues when they are aligned with the pedestrian street crossing and are protected from cross travel by a buffer area or landscaping.

Provide transition slopes (flared sides) where a pedestrian circulation path crosses the curb ramp. The maximum slope of transition slopes is 1:10, measured parallel with and adjacent to the curb line.

A turning space at least 4 feet by 4 feet wide shall be provided at the top of the curb ramp and shall be permitted to overlap other turning spaces and clear spaces. Where the turning space is constrained at the back-of-sidewalk, the turning space shall be at least 4 feet by 5 feet. The 5-foot dimension shall be provided in the direction of the ramp run.

When altering an existing pedestrian facility and conditions preclude the accommodation of a curb ramp slope of 1:12, provide a slope from 1:12 to 1:10 with a maximum rise of 6 inches.

Further information on curb ramps, landings and blended transitions is provided in the FDOT ***Standard Plans***.

8.7.3 Detectable Warnings

Install detectable warnings to cover the full width of the walking surface and 2 feet in length. They are required on sidewalks and shared use paths at the following locations:

- Curb ramps and blended transitions at street crossings
- Cut-through pedestrian refuge islands or medians six feet wide or greater
- Pedestrian at-grade rail crossings
- Commercial driveways with a stop sign, yield sign or traffic signal
- Boarding and alighting areas adjacent to the roadway at bus stops where there is an at-grade connection to the roadway
- Edges of rail boarding platforms not protected by screens or guards

Detectable warnings are not required where sidewalk intersects urban flared turnouts or sidewalks that run continuously through driveways. Do not place detectable warnings on transition slopes or over grade breaks.

The detectable warning systems on the Department's **Approved Product List (APL)** are designed to work with concrete surfaces. In areas where the pedestrian facility has an asphalt surface, such as a shared use path, specify an appropriate detectable warning system. In these cases, consider including a short section of concrete that will accommodate any system.

Further information on detectable warnings are provided in the FDOT ***Standard Plans***.

8.7.4 Curb Extensions

Curb extensions (a.k.a., bulb-outs) may be used in conjunction with on-street parking at intersections or midblock locations where there is a crosswalk, provided there is adequate width for existing traffic movements. Curb extensions shorten the crossing distance, and provide additional space at intersections, allowing pedestrians to see and be seen before entering a crosswalk. The design of curb extensions must take into consideration the needs of transit vehicles, drainage, and bicyclists.

8.7.5 Pedestrian Signals

Signs, signals, and markings should be utilized to provide the necessary information and direction for pedestrians. All directions and regulations should be clear, consistent, and logical, and should, at a minimum, conform to the requirements given in the ***MUTCD***. The installation of accessible pedestrian signals that include audible and/or vibro-tactile, and visual signals should be considered.

Where pedestrian facilities are provided or planned, include provisions (e.g., conduit, conductors, signal cables, push button pedestals, curb ramps) needed for future installation of Accessible Pedestrian Signal (APS) devices on all new and reconstructed signalized intersections and signalized crossing locations.

Provide a level landing at the base of all pedestrian pushbutton locations. The landing must provide a clear area of 30 inches by 48 inches (in either direction) directly in front of and centered on, the pedestrian pushbutton to allow persons using a wheeled mobility device to actuate the button while remaining stationary.

8.7.6 Sight Distance

The general requirements for sight distances for the driver are given **in Chapter 3 - Geometric Design**.

Stopping sight distances greater than the minimum should be provided at all pedestrian crossings. These sight distances should include a clear view of the pedestrian approach pathway. Where parallel pedestrian pathways are within the roadside recovery area, or where casual pedestrian crossings are likely, the normal required stopping sight distance should also include a clear view of the entire roadside recovery area.

Sight distances shall be based upon a driver's eye and object height as discussed in **Chapter 3 – Geometric Design**. Due to the small size of some pedestrians (particularly children), they are generally easy to confuse with other background objects.

Parking shall be prohibited where it would interfere with the required sight distance. Particular care should be exercised to ensure ample mutual sight distances are provided at all intersections and driveways.

8.7.7 Rail Crossings

Roadways, sidewalks, and shared use paths at grade may cross light rail, street car rail, passenger rail, and freight railroads. Special design considerations are needed for these pedestrian intersections so that pedestrians are warned of the crossing and potential presence of a train. In addition, these crossings have specific accessibility requirements relating to surface continuity which must be met. See **Chapter 7 – Rail-Highway Crossings** for further information. The ***Federal Railroad Administration*** may impose additional requirements for the design and construction of rail crossings.

8.8 Lighting

Lighting of the roadway itself is not only important for the safety of vehicular traffic, but also valuable for the protection of pedestrians. Vehicle headlamps often do not provide sufficient lighting to achieve the required stopping sight distance. Since this requirement is of vital importance at any potential pedestrian crossing point, lighting of the crossing should be considered. Lighting a street or highway is also valuable in improving the pedestrian's view of oncoming vehicles. At intersections or other locations with vehicle turning maneuvers, vehicle headlights may not be readily visible to the pedestrian.

Lighting shall be provided in pedestrian underpasses and should be considered on pedestrian overpasses. All pedestrian lighting shall be vandal resistant. The installation of daytime lighting is warranted when underpass user visibility requirements are not met with sunlight. Pedestrian underpass and overpass lighting should conform to the general lighting requirements given in the American Association of State Highway and Transportation Officials (AASHTO) Roadway Lighting Design Guide.

The general requirements for lighting on streets and highways are given in **Chapter 6 – Lighting**. Pathways adjacent to a street or highway should not be illuminated to a level more than twice that of the roadway itself.

In general, lighting should be considered as warranted when it is necessary, at night, to provide the mutual sight distance capabilities described in the preceding **Chapter 3 – Geometric Design**. Locations with significant night time pedestrian traffic that should be considered for lighting of the roadway and adjacent pedestrian facilities include the following:

- Any street or highway that meets the warranting criteria given in **Chapter 6 – Lighting**
- Streets and highways with speed limits more than 40 mph that do not have adequate pedestrian conflict elimination
- Sections of highway with minimal separation of parallel pedestrian pathways
- Intersections, access and decision points, and areas adjacent to changes in alignment or cross sections
- Areas adjacent to pedestrian generators
- Transit stops and other mass transit transfer locations
- Parking facilities
- Entertainment districts, sports/recreation complexes, schools, and other activity centers generating night travel

- Pedestrian crossings
- Any location where improvement of night time sight distance will reduce the hazard of vehicle-pedestrian conflicts

See **Chapter 6 – Lighting** for further information on lighting of pedestrian facilities and shared use paths.

8.9 References for Informational Purposes

- Florida Department of Transportation Transit Facility Design

  https://www.fdot.gov/fdottransit/transitofficehome/transitplanning.shtm/newtransitfacilitiesdesign.shtm
- USDOT/FHWA ADA Standards for Accessible Design (ADAAG)

  http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/ada-standards
- 2006 Americans with Disabilities Act Standards for Transportation Facilities

  https://www.access-board.gov/files/ada/ADAdotstandards.pdf
- ~~2012~~ 2023 Florida Accessibility Code for Building Construction

  https://codes.iccsafe.org/content/FLAC2023P1
- AASHTO – Guide for the Planning, Design, and Operation of Pedestrian Facilities

  https://store.transportation.org/
- AASHTO – Roadway Lighting Design Guide

  https://store.transportation.org/
- NACTO Urban Streets Design Guide

  https://nacto.org/publication/urban-street-design-guide/
- Designing Walkable Urban Thoroughfares (CNU and ITE)

  https://www.cnu.org/our-projects/cnu-ite-manual
- FHWA Policy Memo for Flexibility in Pedestrian and Bicycle Facility Design

  https://nacto.org/wp-content/uploads/2013/09/design_flexibility_memorandum_092013.pdf
- AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications, 6h Edition, (2012) with 2013 Interim Revisions

  https://store.transportation.org/
- Federal Railroad Administration General Manual - Policies, Procedures, and General Technical Bulletins (July 2014)

  https://railroads.dot.gov/about-fra/about-fra