

# CHAPTER 16 – PEDESTRIAN FACILITIES DESIGN AND TECHNICAL CRITERIA

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## CHAPTER 16 – PEDESTRIAN FACILITIES DESIGN AND TECHNICAL CRITERIA

### 16.1 GENERAL

This chapter sets forth the minimum criteria to be used in the design of all sidewalks, access ramps, and other pedestrian facilities within the right-of-way, or other public easements.

#### 16.1.1 AASHTO Reference

Within this chapter, AASHTO’s “**A Policy on Geometric Design of Highways and Streets**”, as published by the American Association of State Highway and Transportation Officials, was used as a reference. It is also commonly called the AASHTO “**Green Book**.”

#### 16.1.2 ADA Requirements

All pedestrian facilities shall be designed in accordance with American Disabilities Act (ADA) regulations and the requirements of these Standards; whichever is safer for pedestrians.

### 16.2 SIDEWALKS

#### 16.2.1 General Layout and Design Criteria

##### A. Sidewalk Widths

Minimum sidewalk widths for the various street classifications shall be as specified in **Table 7-1** or **7-2** and on **Figures 7-1F** through **7-13F** and **Figures 7-1L** through **7-11L**.

The Local Entity Engineer may require additional width for activity areas and routes leading to and from these areas. The final sidewalk width shall be determined through additional study of higher pedestrian traffic areas.

##### B. Sidewalk Crossings of Driveways and Alleys

All sidewalks that cross driveways and alleys shall be designed in accordance with **Construction Drawing 1601**.

##### C. Sidewalk Both Sides of Street

All street designs shall include sidewalks on both sides of the street. Rural roads or qualified affordable housing projects in Loveland (GMA and city limits) are the only exceptions (see **Section 16.2.1 J**).

#### **D. In-Fill Sidewalk, Curb, and Gutter**

In all existing areas previously developed, sidewalks, curbs, and gutters may be required to match existing conditions or Standards, as determined by the Local Entity Engineer.

1. Sidewalk Upgrades Required in Loveland (GMA and city limits). When redevelopment is proposed on in-fill parcels, the redevelopment plans shall show the location of all existing and proposed sidewalk improvements. The installation of sidewalks is required where no sidewalk exists (except in Industrial areas as described in **Section 16.2.1.N**). Widening of the existing sidewalks should occur whenever the addition of 2' or more is needed to comply with **Section 16.2.1.A** and proposed redevelopment of the site will cause an increase in the number of pedestrian trips on the sidewalk. In Loveland (GMA and city limits), the upgrading of sidewalk adjacent to redeveloped sites may be postponed up to three years when the existing sidewalk is in good repair and a satisfactory financial guarantee has been provided to the Local Entity.
2. Sidewalk Upgrades Not Required in Loveland (GMA and city limits). When redevelopment is proposed that is not expected to cause an increase in the number of pedestrian trips on the sidewalk, no sidewalk widening is required. In such situations, the redevelopment plans shall still identify and preserve a sidewalk corridor that will accommodate the future widening of the sidewalk in full compliance with these standards for such time that the sidewalk widening is deemed necessary.

#### **E. Sidewalk Widening**

When a sidewalk must be widened, the widening shall only be allowed for an increased width of 4 feet or more. If the added width needed is less than 4 feet, the existing walk shall be removed and reconstructed to the new required width.

#### **F. Storm Water Runoff at Curb Cuts**

Drainage shall meet the requirements specified in **Chapter 7**, in the section/subsection titled **Drainage Systems/Sidewalk Culvert (Chases)**.

#### **G. Concrete Thickness**

All detached sidewalks less than 8 feet in width and not within driveways shall be a minimum of 4-inch thick concrete. All detached sidewalks 8 feet and greater in width shall be 6 inches thick. All sidewalks within a driveway shall be a minimum of 6 inches thick. All attached sidewalks shall be a minimum of 6 inches thick. Sidewalks shall be a minimum of 8 inches thick where crossed by commercial traffic. See **Construction Drawing 1601**.

#### **H. Slope**

1. Cross Slope. Maximum cross slope for sidewalks shall be 1/4 inch per foot (1:48).

2. Longitudinal Slope. Longitudinal slope of attached sidewalks shall be consistent with the street slopes.
3. ADA Requirements for Steeper Slopes. Sidewalks detached from the curb, with greater than 5 percent longitudinal slope, shall be constructed to meet ADA requirements.

#### **I. Pedestrian Underpasses and Overpasses**

On major Collectors and Arterials, where required by the Local Entity Engineer, underpass or overpass (grade separated) pedestrian crossings shall be provided for regional/neighborhood paths and trails. These pedestrian crossings shall be coordinated with the appropriate department.

#### **J. Rural Roads**

Rural road sections shall provide sufficient shoulder width for pedestrian travel. Refer to **Table 7-1** or **7-2** for rural road widths.

#### **K. Horizontal/Vertical Curves**

Horizontal/vertical curves on all sidewalks shall follow the design criteria for bikeways. Refer to **Chapter 17, Bicycle Facilities**.

#### **L. Vertical Clearance**

Sidewalk vertical clearance shall be 8 feet in accordance with **Figure 16-1**.

#### **M. Horizontal Clearance**

Sidewalk horizontal clearance shall be in accordance with **Figure 16-1**.

#### **N. Off-Site Connections**

The Local Entity Engineer may require off-site sidewalk extensions to provide pedestrian connectivity to destinations within ¼ mile of the project as identified in the Transportation Impact Study. Additional offsite sidewalk construction extending greater than ¼ mile from the project may also be required in some circumstances such as when the project is within a school walking area boundary.

Industrial Area Sidewalks in Loveland (GMA and city limits) the installation of sidewalks along public streets in industrial zoned areas may be postponed when primarily industrial types of uses (i.e. NOT retail or office uses) are proposed. When sidewalks are not installed with new industrial development, they must still be designed, located, and noted on the plans in accordance with these standards. They should be noted as future potential sidewalk locations with indication that the Local Entity Engineer reserves the right to require installation of sidewalks by the property owner in accordance with Title 12 of the Loveland Municipal Code at such time as they may be deemed necessary.

## 16.3 ACCESS RAMPS

### 16.3.1 Ramp Requirements

Access ramps shall be installed at all intersections and at certain mid-block locations for all new construction or reconstruction of curb and sidewalk, as follows:

#### A. Locations

1. 4-Way Intersections. Access ramps shall be included at all intersection corners. Access ramps shall be constructed in accordance with **Construction Drawings 1603 through 1607**.
2. “T”-Intersections. All “T” intersections shall have a minimum of 3 access ramps as shown in **Figure 16-2**.
3. Local Streets/Mid-Block. Local streets longer than 600 feet will require additional accesses, which should be spaced approximately 300 feet apart. Driveways or mid-block ramps may be used for these access points. If mid-block ramps are used, pavement markings and signing in accordance with **Chapter 14, Traffic Signals, signing and Striping**, shall be provided.
4. Cul-de-Sacs. Either an access ramp or a driveway that meets access ramp requirements shall be provided in all cul-de-sacs. If a public walkway or bikeway intersects the street, a ramp shall be provided to connect the walkway or bikeway to the street. The ramp must line up with the walkway.
5. Detached Sidewalks. Where sidewalks are detached from the curb, directional ramps should be used in accordance with **Construction Drawing 1606**. On arterial streets with detached sidewalks and corner radii greater than or equal to 35 feet, directional ramps shall be installed in accordance with **Construction Drawing 1604**.

### 16.3.2 Use of Standard Details

Project drawings shall call out the specific Construction Drawing from these Standards to be used in construction for each access ramp.

## 16.4 UNDERWALK DRAINS (CHASES)

Underwalk drains shall not interfere with the pedestrian’s use of the sidewalk. The chase plate shall be flush with the sidewalk surface and be securely fastened as specified. See **Construction Drawing 709**. Underwalk drains shall not be located within an access ramp, curb cut, or driveway.

## 16.5 CURB RETURNS

In certain cases, to be determined by the Local Entity Engineer, the Local Entity may require the radius of the curb return to be reduced from the values given in **Tables 8-2 and 8-3**, to reduce pedestrian travel time and distance. The curb return radius shall not be less than 20 feet.

## **16.6 PEDESTRIAN CROSSINGS**

All crosswalks shall be marked in accordance with **Chapter 14, Traffic Control Devices**. Crosswalks will be required at all signalized intersections, school areas, and high pedestrian areas as designated by the Local Entity Engineer.

### **16.6.1 Enhanced Crosswalks.**

In Fort Collins (GMA and city limits), Enhanced Crosswalks may be required by the Local Entity, and at a minimum, they shall be used at mid-block crossings in neighborhoods, activity centers, trail or path crossings, school crossings and at signalized Arterial-Collector and Arterial-Arterial intersections.

Enhanced crosswalks shall be constructed of Portland Cement concrete. Stamped-colored asphalt pavement is not acceptable. Larimer County will not maintain enhanced crosswalks.

### **16.6.2 Cross Slope**

Sidewalk cross slope shall be maintained at 2% across driveways

### **16.6.3 Crosspans**

Crosswalks shall not be located in crosspans.

### **16.6.4 Maximum Crosswalk Length Fort Collins (GMA and City Limits)**

In Fort Collins (GMA and city limits), the maximum length for any crosswalk shall be 56 feet. Any street crossing longer than 56 feet shall be provided with pedestrian refuge such that the longest length of any crosswalk segment shall be 56 feet. See **Section 16.8**.

## **16.7 TRAFFIC SIGNALS**

All pedestrian traffic signals shall be in accordance with **Chapter 14, Traffic Control Devices**.

## **16.8 PEDESTRIAN REFUGE AREAS**

For Arterials with raised medians and on splitter islands for roundabouts, a pedestrian refuge area shall be created in the median to increase pedestrian safety. See **Figure 8-18 and Figure 8-19 and Construction Drawings 801 and 802**. The vehicle turning radii must be taken into account with the specific design of islands. Fort Collins (city limits only) requires delineation of the pedestrian crossing by using a different surface material or texture in the roadway. This guides the sight-impaired to the refuge area.

## **16.9 MULTI-USE PATHS**

Where a single, multi-use path is used to serve both pedestrians and bicyclists, the minimum path width shall be 10 feet.

## **16.10 PEDESTRIAN MINIMUM CLEAR PATH**

The minimum clear path around utility structures, street furniture and other encroachments shall be greater or equal to the sidewalk widths listed in **Tables 7-1** and **7-2** for the applicable street classification. For any private improvements within the right-of-way, the Designer will be required to obtain an encroachment (Revocable) permit from the Local Entity. Refer to **Chapter 6, Permits**.

## **16.11 BUS SHELTERS**

### **16.11.1 Location**

The location of a bus shelter shall be determined by the Local Entity Transit Provider.

### **16.11.2 Visibility**

Bus shelters shall have maximum transparency, and be highly visible from the surrounding area to assure the users' safety. The shelter may not be located within sight distance triangles as specified in **Chapter 8, Intersections**.

### **16.11.3 Minimum Size and Capacity**

#### **A. Opening Size**

Openings shall be at least 36 inches wide and shall meet the requirements of ADA.

#### **B. Capacity and Size**

Capacity shall be based on maximum passenger accumulation at the stop. The shelter size shall be based on approximately 5 square feet per person.

#### **C. Placement**

Shelters shall not obstruct pedestrian flow or motorist's sight distance. The minimum pedestrian clear path width given in **Section 16.10** shall be maintained at bus shelters.

### **16.11.4 Pad Requirements**

#### **A. Under Shelters**

The design shall include a 6-inch thick concrete pad under all bus shelters. The pad shall extend at least 6 inches past each edge of the shelter.

#### **B. Passenger Loading Area**

Any shelters next to detached sidewalks shall include a minimum 15-foot wide concrete area between the sidewalk and the curb for passenger loading and unloading. Fort Collins requirements for pad sizes are incorporated in their Bus Stop Design Standards and Guidelines.

#### **16.11.5 Relocation of Shelters**

The Local Entity Engineer may require a shelter to be relocated or removed in the future to accommodate other needs within the street right-of-way.

#### **16.11.6 Bicycle Racks and Trash Containers**

All shelters are required to provide one trash container and one bicycle rack. The bicycle racks shall be in accordance with **Chapter 17, Bicycle Facilities**.

#### **16.11.7 Shelters on State Highways**

Approval for installations of all bus shelters proposed in state highway rights-of-way shall be obtained from CDOT prior to any construction of the shelters.

#### **16.11.8 Sidewalk Connections**

A sidewalk connection shall be provided between the bus shelter and the existing sidewalk or nearby pedestrian destinations. The minimum width shall be as required in **Section 16.2.1**.