

48-2 GENERAL DESIGN ELEMENTS

48-2.01 Design Speed

The most common design speed for urban streets is 30 mph (50 km/h). In relatively undeveloped locations in urban or closed suburban areas and where economics, environmental conditions, and signal spacing permits, consider using a minimum design speed of 40 mph (60 km/h). Design speeds of 45 mph to 50 mph (70 km/h to 80 km/h) are common in open suburban areas.

48-2.02 Median Types

Section 34-3 discusses the various medians that are used in urban and suburban areas and guidelines for selecting medians and widths. In addition, for medians in suburban and urban arterials, the designer should consider the following:

1. Flush/Traversable Medians. These median types may be used in both the urban and suburban areas in conjunction with curb and gutter along the outside edges of the traveled way. For most applications, the flush TWLTL should be used. However, in larger metropolitan areas, a traversable TWLTL may be used. Section 48-4 further discusses the use of both types of TWLTL.
2. Depressed Medians. In open suburban areas, a depressed median may be used. This design is typically used with left shoulders and where the design speed is 50 mph (80 km/h). Section 34-3.03 and Chapter 47 provide further guidance on depressed medians.
3. Raised-Curb Medians. Usually, a raised-curb median is proposed in suburban and urban areas where managed access to the street and control of left-turn movements are desired. Section 34-3.03 provides guidance on the selection and design of raised-curb medians. Figure 48-3A discusses the advantages and disadvantages of raised-curb medians as compared to TWLTL medians. Chapter 36 illustrates typical treatments for left-turn lanes within raised-curb medians.

48-2.03 Typical Sections

Figures 48-2A through 48-2H present the typical cross sections for the various urban facilities. For a typical six-lane urban arterial with a raised-curb median, see Figure 34-3B. Give consideration to safe accommodation of pedestrians and bicyclists during the development of the project. Chapter 17 provides detailed guidelines for these issues.

Summary of Comments on Chapter_48_080624.pdf

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, and pedestrian refuge area
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Safe
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also must be included

48-2.04 Sidewalks

Sidewalks are considered integral parts of the urban environment. In these areas, travelers frequently choose to make their trip on foot, and pedestrians desire to use a paved surface for the trip. When constructing sidewalks, the designer should consider the following:

- 1. **Warrants.** In general, if pedestrian activity is anticipated, provide sidewalks along all curbed suburban and urban facilities. Extend all sidewalks to logical termini. If sidewalks are not provided in the initial design, grading should be completed so that sidewalks can be added in the future. If sidewalks will not be installed, the designer should confer with local officials to ensure that sidewalks are not required or desired.

New sidewalks or sidewalks replaced because of deterioration which meet these warrants, will only be constructed if the local agency is willing to participate financially and assume the maintenance responsibility for the sidewalk in accordance with the criteria in Chapter 5.

- 2. **Widths.** A typical sidewalk is 5 ft (1.5 m) wide. If no buffer area is provided, the sidewalk should be 7 ft (2.0 m) wide to accommodate any appurtenances which may be included in the sidewalk; see Item #4 below. High pedestrian volumes may warrant greater widths in business areas and school zones. In these cases, a detailed capacity analysis may be required to determine the sidewalk width. Use the *Highway Capacity Manual* for this analysis.

- 3. **Buffer Areas.** If the available right-of-way is sufficient, provide a buffer area between the back of curb and sidewalk. These areas provide space for snow storage, utilities, and allow a greater separation between vehicles and pedestrians. The buffer area should be 2 ft to 3 ft (600 mm to 900 mm) wide to be effective and wider if practical. Buffer areas may also be used for the placement of roadside appurtenances.

- 4. **Appurtenances.** Where a buffer area cannot be provided, the designer should consider the impact of roadside appurtenances within the sidewalk (e.g., mailboxes, fire hydrants, parking meters, utility poles). These elements may reduce the effective usable width because they interfere with pedestrian activity. Typically, a 1 ft (300 mm) minimum width is provided between the sidewalk and right-of-way line. Utility poles usually can be located behind the sidewalk in this area providing a clear sidewalk width of 5 ft (1.5 m).

- 5. **CBD Areas.** In central business districts, the entire area between the back of curb and the front of buildings is fully paved as a sidewalk.

- 6. **Disabled Accessibility.** Wherever a sidewalk is designated as an accessible route, sidewalk widths, cross slopes, longitudinal grades, curb ramps, etc., along public rights-of-way must meet the ADA criteria presented in Chapter 58.

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Author: Lkirchler Subject: Replacement Text Date: 6/24/2008 10:48:11 AM in accordance with guidelines in Section 17-1.

Author: Lkirchler Subject: Replacement Text Date: 6/24/2008 10:48:23 AM document and confirm

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Author: Lkirchler Subject: Inserted Text Date: 6/24/2008 10:48:53 AM a minimum of

Author: Lkirchler Subject: Replacement Text Date: 6/24/2008 10:49:01 AM will

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Author: Lkirchler Subject: Inserted Text Date: 6/24/2008 10:49:22 AM s should be provided

Author: Lkirchler Subject: Inserted Text Date: 6/24/2008 10:49:43 AM necessary

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(table)	
2'	Signs
4'	Trees
6'	Street Furniture and Snow Storage
8'	Perpendicular Curb Ramps

*Source: Public Right of Way Access Guidelines (PROWAG) Course.

Author: Lkirchler Subject: Inserted Text Date: 6/24/2008 10:51:43 AM If buffer areas cannot be provided, include justification as part of the variance process.

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New sidewalks or sidewalks replaced because of deterioration which meet these warrants, will only be constructed if the local agency is willing to participate financially and assume the maintenance responsibility for the sidewalk in accordance with the criteria in Chapter 5.

2. Widths. A typical sidewalk is 5 ft (1.5 m) wide. If no buffer area is provided, the sidewalk should be 7 ft (2.0 m) wide to accommodate any appurtenances which may be included in the sidewalk; see Item #4 below. High pedestrian volumes may warrant greater widths in business areas and school zones. In these cases, a detailed capacity analysis may be required to determine the sidewalk width. Use the *Highway Capacity Manual* for this analysis.
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and an accessible route for the disabled

7. Bridges. In general, if there is or expected to be pedestrian activity across a bridge, include sidewalks on both sides of the bridge. On long bridges, it may be more cost effective to provide a single sidewalk on one side. However, a safe crossing must be provided in advance of the bridge if there is evidence of pedestrian activity on both sides of the roadway. See Chapter 39 for typical sections.

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side, but this option only should be pursued after thorough analysis of the feasibility of whether one side only will satisfy the current and future travel demand. The analysis also must consider safety and convenience factors of forcing pedestrians to cross the roadway twice. If the one side only option is pursued,

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48-2.05 Parking

For most urban projects, the designer must evaluate the demand for parking. Desirably, these parking needs will be accommodated by providing off-street parking facilities. Chapter 58 provides information on the design and layout of off-street parking facilities. When providing on-street parking along urban streets, the designer should evaluate the following:

1. Warrants. ~~Do not introduce any new parking lanes along State highways. On-street parking reduces capacity, impedes traffic flow, and may produce undesirable traffic operations or may increase the crash potential. On State reconstruction projects, consider removing parking lanes. Removal of existing or revising existing on-street parking configurations will require coordination and concurrence with local officials and adjacent businesses. Chapter 58 discusses the procedures and guidelines for replacing on-street parking with off-street parking.~~
2. Local Agreements. ~~Prior to implementation of parking on a project, the State will enter into a joint agreement with the municipality; see Chapter 5. The municipality will be required to maintain the parking lane and adopt and enforce an appropriate parking ordinance or provide copies of an existing ordinance in effect. Attach the ordinance to the joint improvement agreement as an exhibit and make a part thereof prior to execution of the agreement on behalf of the State. Enforcement of the ordinance is understood to include erection and maintenance of any necessary NO PARKING or PARALLEL PARKING ONLY signs.~~
3. Configurations. ~~There are two basic types of on-street parking—parallel and angle parking. These are illustrated in Figure 48-2f.~~

Advantages	Disadvantages
1. Provides an area for left-turn maneuvers.	1. Increases travel time and delay for many left-turning vehicles.
2. Discourages arbitrary crossings of the median.	2. Restricts direct access to adjoining properties.
3. Reduces the number of vehicular conflict points.	3. Installation and maintenance costs are higher.
4. Allows for better access management along the street.	4. Can create an over concentration of turns at median openings.
5. Provides a positive separation between opposing traffic flows.	5. Indirect routing may be required.
6. Provides a median refuge area for pedestrians.	6. May restrict access for emergency vehicles (e.g., fire, police, ambulance).
7. Provides a location for traffic control devices (e.g., signs, signals, lighting).	7. Lack of operational flexibility.
8. Provides an open space for aesthetic considerations and stormwater management.	8. When accidentally struck, curb may cause a driver to lose control of the vehicle.
9. Provides for enhanced traffic flow and reduces conflicts.	9. A minimum median width of 22 ft (7 m) is needed to accommodate U-turns or to shadow stopped passenger cars in the median when turning left or crossing through a median opening from a side street.

ADVANTAGES AND DISADVANTAGES OF RAISED-CURB MEDIANS

Figure 48-3A

- d. **Pedestrians.** Pedestrian crossing volumes are also a consideration because of the large paved area that must be traversed when a TWLTL is present (i.e., no pedestrian refuge exists). There may be significant delays for vehicles at signalized intersections to accommodate pedestrians having to cross the highway in one movement. A raised-curb median may provide a refuge area for pedestrians to cross the highway in two movements.
4. **Speed.** The design speed of an urban street is a major factor in TWLTL applications. Experience indicates that design speeds from 25 mph to 45 mph (40 km/h to 70 km/h) will properly accommodate TWLTL operations. For design speeds higher than 45 mph (70 km/h), the use of TWLTL is not recommended.
5. **Crash History.** On urban or suburban arterials without medians, traffic conflicts often result because of a significant number of mid-block left turns combined with significant opposing traffic volumes. This may lead to a disproportionate number of mid-block, rear-end, and/or sideswipe crashes. The inclusion of a median for left turns is likely to reduce these types of crashes. Review and evaluate the available crash data to determine if disproportionately high numbers of these crashes are occurring.
6. **Advantages and Disadvantages.** Figure 48-4A summarizes some of the advantages and disadvantages of a TWLTL median design.

48-4.02 Design Criteria

48-4.02(a) Median Width

Existing highways that warrant the installation of a TWLTL are often located in areas of restricted right-of-way, and conversion of the existing cross section may be difficult. To obtain the TWLTL width, the designer may have to consider the following:

- reducing the width of existing through lanes and analyzing side/road radius returns,
- eliminating existing parking lanes and reconstructing curb and gutter and sidewalks,
- eliminating existing shoulders and ditches,
- eliminating existing buffer areas behind curbs and reconstructing curb and gutter and existing sidewalks,
- acquiring additional right-of-way to expand the pavement width by the amount needed for the TWLTL and sidewalks, and/or
- removing an existing raised-curb median.

48-4(2)

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See Chapter 17 for additional guidance.

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the resulting impact on all users of the corridor including disabled users and pedestrians and

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(which may currently provide a pedestrian refuge area)

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48-6B

Design Element		Manual Section	One-Way DHV >1850 (1)	One-Way DHV 1850-1300 (1)	One-Way/DHV <1300 (1)	
Design Criteria	Highway Type		OWS-4	OWS-3	OWS-2	
	Design Forecast Year	31-4.02	20 Years	20 Years	20 Years	
	Design Speed (2)	48-2.01	30 mph – 40 mph	30 mph – 40 mph	30 mph – 40 mph	
	Access Control	35-1	Consider Managed Access	Consider Managed Access	Consider Managed Access	
	Level of Service	31-4.04	C	C	C	
	On-Street Parking	48-2.05	Not Recommended	Not Recommended	Not Recommended	
Cross Section Elements	*Surface Width	Without Parking	52' f-f	40' f-f	30' f-f (3)	
		With Parking - 1 Side (4)	60' f-f	48' f-f	39' f-f	
		With Parking - 2 Sides (4)	68' f-f	56' f-f	44' f-f	
	Auxiliary Lanes	Lane Width	34-2.03	Des: 12' Min: 11'	Des: 12' Min: 11'	Des: 12' Min: 11'
		Curb Type and Width (5)		B-6.12 or B-6.24 CC&G	B-6.12 or B-6.24 CC&G	B-6.12 or B-6.24 CC&G
	Bicycle Lane Width (Shared) (6)	Chp. 17	Min.: 13'	Min.: 13'	Min.: 13'	
	Cross Slope	*Travel Lanes (7)	34-2.01	3/16"/ft for Lanes Adjacent to Crown	3/16"/ft for Lanes Adjacent to Crown	1/4"/ft for Lanes Adjacent to Crown
		Auxiliary Lanes	34-2.03	—	—	—
	Outside Curb Type & Width	34-2.04	B-6.24 CC&G	B-6.24 CC&G	B-6.24 CC&G	
	Sidewalk Width	48-2.04	5' with Buffer Strip Behind Curb	5' with Buffer Strip Behind Curb	5' with Buffer Strip Behind Curb	
Clear Zone	38-3	(8)	(8)	(8)		
Roadway Shapes	Side Slopes	Cut Section (Curbed)	34-4.04	—	—	
		Rock Cut	34-4.05	—	—	
		Fill Section (Curbed)	34-4.02	—	—	

OWS = One-Way Street, f-f = face of curb to face of curb
 * Controlling design criteria (see Section 31-8).

GEOMETRIC DESIGN CRITERIA FOR SUBURBAN/URBAN ONE-WAY ARTERIALS
 (New Construction/Reconstruction)
 (US Customary)
 Figure 48-6B

Illinois

URBAN HIGHWAYS AND STREETS

December 2002

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minimum

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See 48-2.04(7).

48-6(12)

- (1) **Traffic Volumes.** The design hourly volumes (DHV) are calculated using a PHF = 1.0; adjust these values using local peak-hour factors.
- (2) **Design Speed.** Consider using a minimum 40 mph (60 km/h) design speed in relatively undeveloped areas where economics, environmental conditions, and signal spacing permit. The statutory speed limits in urbanized areas is 30 mph. Before the posted speed limit can be increased, complete an engineering study (Phase I report) and a speed study.
- (3) **Minimum Street Width.** The minimum width of a two-lane street is set at 30 ft (9.2 m) f-f which allows two lanes of traffic to pass a stalled vehicle.
- (4) **Parking Lane Width.** The desirable width of the parking lane is 10 ft (3.0 m) and includes the 2 ft (600 mm) gutter width. The minimum width is 8 ft (2.4 m) e-f.
- (5) **Gutter Width.** Under restricted conditions, the gutter width adjacent to the edge of the turn lane may be narrowed or eliminated adjacent to a 12 ft (3.6 m) lane and narrowed adjacent to a 11 ft (3.3 m) lane.
- (6) **Bicycle Lane Width.** Width of a shared bicycle lane is dependent on the posted speed of the street. For a posted speed of 45 mph, use a 14 ft (4.2 m) width, and for posted speeds less than 45 mph, use a 13 ft (4.0 m) width.
- (7) **Cross Slope.** For each additional lane away from the crown lanes, including auxiliary lanes, increase the cross slopes by 1/16"/ft (0.5%) up to a maximum of 3/16"/ft (2.5%).
- (8) **Clear Zone.** For curbed facilities, the minimum horizontal clearance to an obstruction is 1.5 ft (500 mm), measured from the face of curb.
- (9) **New and Reconstructed Bridge Widths.** Clear roadway bridge widths are measured from face to face of outside curbs or parapet walls. Urban bridge widths are defined as the sum of the approach traveled way widths and width of the gutters. A sidewalk or bikeway will result in additional bridge width. For sidewalks on a bridge, add 5 ft (1.5 m) to each side of the bridge. Parking is prohibited on bridges.
- (10) **Existing Bridge Widths to Remain in Place.** Clear roadway bridge widths are measured from face to face of outside curbs or parapet walls. At least one sidewalk must be carried across the bridge, and a minimum 5 ft (1.5 m) for the sidewalk width.
- (11) **Vertical Clearance (Arterial Under).**
 - a. The clearance must be available over the traveled way.
 - b. Table value includes allowance for future overlays.
 - c. A 14 ft 0 in (4.3 m) clearance may be allowed to remain in place with consideration for reconstruction to a clearance of 15 ft 0 in (4.5 m).

Illinois

URBAN HIGHWAYS AND STREETS

December 2002

**GEOMETRIC DESIGN CRITERIA FOR SUBURBAN/URBAN ONE-WAY ARTERIALS
(New Construction/Reconstruction)**

Footnotes for Figure 48-6B