

Design Standards and Guidelines For Eugene Streets, Sidewalks, Bikeways and Accessways

November 1999

INTRODUCTION

Within a city, a large share of the public right-of-way is devoted to transportation facilities. A facility may be a street, sidewalk, bikeway, or access way which is used by automobiles, trucks, transit vehicles, bicycles, or pedestrians.

This document contains design standards for arterial, collector and local streets to ensure the safe and efficient operation of each facility type for all users and judicious use of the public space. The standards contained in this document apply to new construction, reconstruction, and improvements to existing unimproved streets, except as specified in this document. The standards apply to both public and private streets unless specified otherwise.

Situations may arise where the design standards cannot be rigidly applied. Under special circumstances, some flexibility of the standards will be necessary to create a design that is sensitive to the specific needs and features of the location. For example, reconstructions of existing streets may be difficult due to the limitations of existing right-of-way. There may be trees, buildings, or other features which result in the need for a narrower street cross-section.

Street designs must consider the needs of people with disabilities, such as visually impaired pedestrians and pedestrians in wheelchairs. Every effort should be made to locate street hardware away from pedestrian locations and provide a surface free of bumps and cracks which create safety and

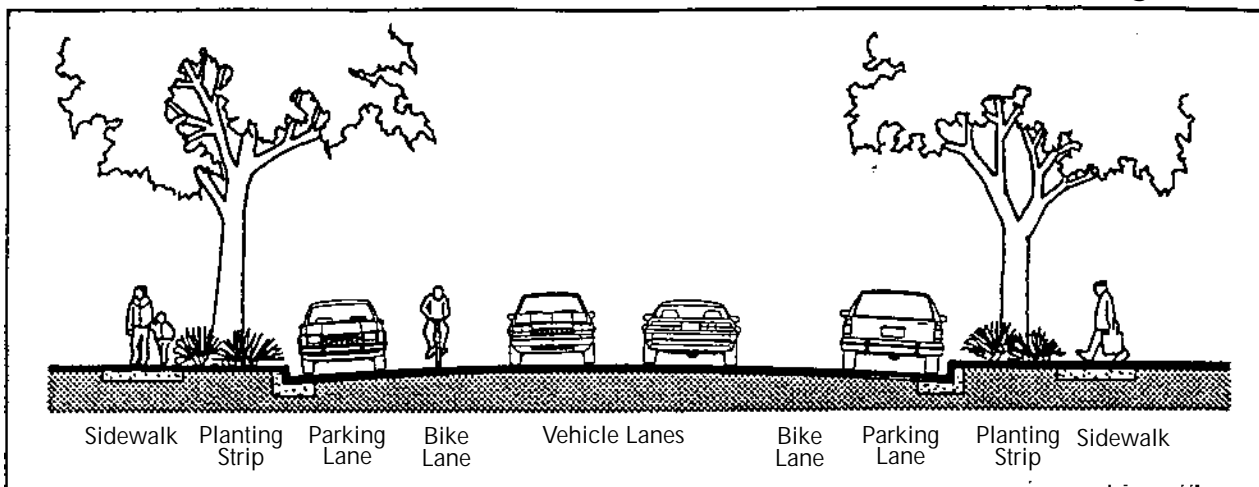
mobility problems. Smooth access ramps shall be provided where required.

The determination of the pavement width and total right-of-way shall be based on the operational needs for each street as determined by a technical analysis. The technical analysis shall use forecasted demand volumes that reflect the maximum number of pedestrians, bicyclists, parked vehicles and traffic expected when the area using the street is fully developed. As the analysis identifies specific needs such as bike lanes, parking or turn lanes, the width of the street can be established.

Figure 1 illustrates elements which are typically incorporated in the transportation right-of-way such as sidewalks, planting strips, parking spaces, on-street bicycle lanes, and vehicle travel space, which may include left-turn lanes and/or median islands

The width, size, and/or design of the elements frequently differ depending on whether the roadway is classified as a local, neighborhood collector, major collector, minor arterial, or major arterial street. In the functional hierarchy of streets, collector and arterial streets are considered to be major streets. Local street types are considered to be minor streets and are further divided into sub-classifications depending on the function and location of the street.

Figure 1



ARTERIAL AND COLLECTOR STREETS

This section identifies standards for the design of Eugene’s major streets; that is, those streets that function as arterials or collectors. Typically, arterial and collector streets carry significant amounts of traffic, much of it having longer trip distances and requiring somewhat higher speeds and less land use access than local streets. Arterials and collectors carry higher volumes of traffic than local streets, and require special design considerations and a high degree of inter-connectivity. At the same time, arterials and collectors must provide for public

transit, bicycle, and pedestrian travel, usually at a higher level than local streets. Arterials and collectors must be designed to accommodate these users, and to provide for their safety, comfort, and convenience.

Table 1 contains a summary of typical widths for arterial and collector street elements such as right-of-way, pavement, sidewalk, bicycle lanes, and planting strip areas.

Arterial and Collector Street Standards

Table 1

| Street Type | R.O.W. Width | Paving Width | | | Setback [Ⓢ] Sidewalks | Planting [Ⓢ] Strips | Bicycle Lanes |
|---|--------------|--------------|-------------------------------|--------------------------------|--------------------------------|------------------------------|---------------|
| | | No Parking | Parking One Side [Ⓐ] | Parking Two Sides [Ⓐ] | | | |
| Major Arterial | 100'-120' | 68'-94' | 68'-94' | 68'-94' | 2 @ 6' Min. | 2 @ 9'-6" Min. | 2 @ 5' |
| Minor Arterial | 65'-100' | 34'-70' | 34'-70' | 34'-70' | 2 @ 6' Min. | 2 @ 8'-6" Min. | 2 @ 5' |
| Major Collector | 60'-75' | 32'-44' | 32'-44' | 32'-44' | 2 @ 6' Min. | 2 @ 8' Min. | 2 @ 5' |
| Neighborhood Collector with no Bike or Transit Facilities | 40' | 20'(10/10) | | | 1 @ 6' [Ⓢ] | 2 @ 7' | None |
| | 40' | | 27'(7/10/10) | | 1 @ 6' [Ⓢ] | 2 @ 7' | |
| | 45' | | 27'(7/10/10) | | 2 @ 6' | 1 @ 6'/1 @ 7' | |
| | 46' | | | 34'(7/10/10/7) | 2 @ 6' | 2 @ 7' | |
| Neighborhood Collector with Bike Routes Only | 45' | 24'(12/12) | | | 1 @ 6' [Ⓢ] | 2 @ 7'-6" | None |
| | 45' | | 31'(7/12/12) | | 1 @ 6' [Ⓢ] | 1 @ 7'/1 @ 8' | |
| | 50' | 24'(12/12) | | | 2 @ 6' | 2 @ 7' | |
| | 50' | | 31'(7/12/12) | | 2 @ 6' | 2 @ 7' | |
| | 50' | | | 38'(7/12/12/7) | 2 @ 6' | 2 @ 7' | |
| Neighborhood Collector with Bike Routes & Transit | 55' | 28'(14/14) | | | 2 @ 6' | 2 @ 7'-6" | None |
| | 55' | | 35'(7/14/14) | | 2 @ 6' | 1 @ 7'/1 @ 8' | |
| | 55' | | | 43'(7/14/14/7) | 2 @ 6' | 2 @ 7'-6" | |

- A. Parking bays alternate with planting strip on Neighborhood Collectors.
- B. Sidewalks on one side of the street are allowed only if the design qualifies as an exception.
- C. Setback sidewalk dimension includes 5' paved sidewalk and 1' reserve strip behind the walk.
- D. Planting strip dimension includes 6" curbs.

Arterial and Collector Street Types and Functions

In general, the primary function of arterial streets is to provide a high degree of vehicular mobility; however they also serve a secondary role to provide land access. Arterial streets are used as primary bicycle, pedestrian, emergency response routes, and transit routes.

Some major arterials are freeways or expressways, which have unique geometric criteria for their design and function. Because their characteristics necessitate separate design standards, they are not addressed in this document.

In general, the primary function of collector streets is to assemble traffic from the interior of an area and deliver it to the closest arterial street. Collectors provide for both mobility and access to property and are designed to fulfill both functions. They usually serve shorter trip lengths and have lower traffic volumes than arterial streets. Collector streets are also used as important emergency response routes and are frequently used as transit routes.

Arterials and collectors are divided into several sub-classifications:

- Major Arterials
- Minor Arterials
- Major Collectors
- Neighborhood Collectors

Major Arterials: Major arterials are the primary “arteries” for intra-urban travel. They provide for through travel movements and for travel from the city to outside destinations. One of the key characteristics of urban major arterials is the high degree of connectivity they provide within the urban area. These streets and highways connect various parts of the region with one another and with the “outside world”, and serve as major access routes to various regional destinations. The design of major arterials typically limit property access and on-street parking to improve traffic capacity for through traffic. In Eugene, major arterials typically have four or more lanes, sidewalks and planting strips, striped bicycle lanes, and raised median islands or two-way left turn lanes.

Minor Arterials: Minor arterials also provide a high degree of vehicular mobility in that they connect nearby rural areas to cities and function within

cities as conduits for a large proportion of intra-urban trips. They provide the next level of urban connectivity below major arterials. Minor arterials sometimes provide intra-regional connectivity; in most cases their main role tends to be serving intra-city mobility. In Eugene, a typical minor arterial contains two lanes plus a center turn lane, bike lanes, planting strips, and sidewalks. Some minor arterials are only two lanes wide, while others contain up to 4 lanes plus turn lanes or median islands. On-street parking is provided on some minor arterials.

Major Collectors: Major collectors assemble traffic from the interior of an area and deliver it to the closest arterial street. These streets provide for both mobility and land access to property and are designed to fulfill both functions. Major collectors are found in residential, commercial and industrial areas. Major collectors frequently have continuous left turn lanes and are normally provided with sidewalks, planting strips, and striped bike lanes; provision for on-street parking varies by location. Major collectors may be designed with raised medians to reduce conflicts, provide a pedestrian refuge, restrict turning movements, limit land access, or to furnish an aesthetic separation between traffic lanes.

Neighborhood Collectors: Neighborhood collectors are found only in residential neighborhoods and provide a high degree of access to individual properties. This street type does not apply to commercial and industrial areas, nor to most multifamily residential areas. As a rule, both right-of-way and paving widths are narrower than major collectors. Left turn lanes are only infrequently used on neighborhood collectors, and then only at intersections with higher volume streets. Neighborhood collectors are required to have sidewalks and planting strips. A great deal of flexibility exists for on-street parking on this street type. On most neighborhood collectors, bicycles share the travel lane with other motor vehicles, eliminating the need for striped bicycle lanes. Exceptions to this can occur in situations where traffic volumes or speeds, roadway geometry, or other factors suggest that striped lanes will provide a safer design.

Arterial and Collector Street Design Standards and Guidelines

The typical design elements found within the right-of-way for arterial and collector streets are: vehicle lanes, bicycle lanes (with some exceptions), drainage and curbs, planting strips, street lighting, sidewalks, and utilities. Optional features include median islands and on-street parking. All of these design elements are specified within a designated paving width and right-of-way width for each particular street, based on the specific needs and setting of that street.

Design Standards

Design standards in this document are required for the following types of street improvement projects in Eugene (unless otherwise specified in the wording of the particular standard):

- Newly constructed arterial and collector streets.
- Major reconstruction of existing arterial and collector streets, to upgrade the street to urban standards through reconstruction of the roadbed and addition of curbs, gutters and sidewalks.
- Major widening of existing improved arterial and collector streets that results in adding one or more through vehicular travel lanes.

For all other types of street improvement projects, these standards are to be considered as desirable design guidelines but are not mandatory.



The standards are not intended to apply to construction of or improvements to freeways and expressways.

Design Guidelines

In addition to spelling out the minimum design standards for arterial and collector streets, this plan also provides a set of Design Guidelines to help design professionals and the general public reach a consensus on the best possible design for any particular street improvement project. While the Design Standards can be regarded as specifying a set of “minimum tolerable” conditions for certain attributes of arterial and collector streets, the Design Guidelines found in this chapter are to be used as a working manual of best design practices for constructing, reconstructing, and improving Eugene’s major street network.

Criteria for Exceptions

Design standards in this chapter must be met except when an exception can be justified through consideration of the following:

- 1) Topography or slope constraints;
- 2) Significant trees or other vegetation;
- 3) Other natural resource constraints, including wetlands, wildlife habitat, etc.;
- 4) Historic resources;
- 5) Insufficient right-of-way, and inability to obtain additional right-of-way at reasonable cost and within a reasonable time frame for the project;
- 6) Adopted Council policies, including those found in neighborhood plans.

Design exceptions might be considered for streets with topographic, vegetation, or right-of-way constraints like this street in the South Hills

Pavement and Right-of-Way Widths

Design Guidelines

- 1) Determination of total pavement width should balance consideration of the available right-of-way; pedestrian, transit, emergency responder, and bicyclist needs; overall street function, and traffic capacity needs.
- 2) Wide streets can present an impediment to pedestrian crossings. Pedestrian refuge medians and/or landscaped medians with pedestrian refuges should be designed into arterial and collector street intersections with more than three travel lanes, whenever possible, to reduce crossing distances and improve safety and comfort for pedestrians and motorists.
- 3) As an alternative to widening streets in built-up areas with right-of-way constrictions, consider creating paired, one-way street designs where the street layout permits.
- 4) Where needed, right-of-way width may be increased to accommodate high-occupancy-vehicle (HOV) lanes or exclusive transit lanes, as indicated in adopted plans.
- 5) Utility manhole covers and other infrastructure access elements should not be placed within bicycle lanes on new streets.

6) An initial determination of required Right-of-Way and pavement widths for new street construction and street reconstruction projects will be made by City of Eugene staff.

Pavement and Right-of-Way Width Design Standards

- 1) Depending on the projected traffic volumes and any circumstances unique to the location, curb-to-curb pavement widths for major arterial streets typically range from 68' to 94' with total right-of-way widths ranging from 100' to 120'.
- 2) Curb-to-curb pavement widths for minor arterial streets typically range from 34' to 70' with total right-of-way widths ranging from 65' to 100'.
- 3) Pavement widths on major collector streets typically range between 32' and 44' with total right-of-way widths ranging between 60' and 75'.
- 4) Pavement widths for Neighborhood Collector streets range from 20' to 43' with total right-of-way widths ranging from 40' to 55' depending on a number of factors, including availability of on-street parking, need for shared use of travel lanes with bicycles, and use of the street by transit vehicles.
- 5) Utility placement and design of curbs and drainage facilities shall be in accordance with adopted Local Street Design Standards.



Wide streets can present an impediment to pedestrian crossings

Vehicle Travel Lane Widths

Design Guidelines

1) Travel lane width is a function of the use of the lane, the type of vehicle served, and the speed of the vehicle. All of these factors, as well as whether the lane is an “inside” lane or an “outside” lane should be considered in determining travel lane width.

2) Lane widths should be wider on higher-speed streets than on lower-speed streets.

3) Outside lanes may require a wider width to accommodate turning trucks and buses, and to reduce the effects of adjacent obstructions like parked cars. If a bicycle lane is present, outside lanes need to be wide enough to provide for safety and comfort of bicyclists adjacent to those lanes.

4) Typical travel lane widths:

a) Major Arterials. Travel lanes are typically 12' wide on major arterial streets.

b) Minor Arterials. Travel lanes are typically 11' wide on minor arterial streets.

c) Major Collectors. Travel lane widths are typically 11' wide on Major Collector streets, although wider lane widths may be required for industrial areas or other areas with significant amounts of large truck traffic.

d) Neighborhood Collectors. Typical travel lane widths on Neighborhood Collector streets range from 10' to 14'. The design width shall be determined by the use of the street: narrower lane widths are

permitted on streets used only by motor vehicles; wider lane widths may be needed on streets which are used by a mix of motor vehicles, bicycles, and/or transit vehicles.

Vehicle Travel Lane Width Design Standards

1) The minimum travel lane width on Major and Minor Arterial streets is 11'.

2) The minimum travel lane width on Major Collector and Neighborhood Collector streets is 10'.



Sidewalks

Design Guidelines

1) Sidewalks and other pedestrian improvements are vital to the function of arterial and collector streets designed for multi-modal use. Walking can serve as a sole transportation mode or function as a link in a multi-modal trip. Sidewalks promote transit use by providing the link from home to bus (and vice versa). Sidewalks provide critical access to all properties; commercial, residential, industrial and public.

2) Sidewalks and other pedestrian improvements are essential components of all new street projects as well as major reconstruction projects.

3) Setback sidewalks on both sides of the street are the preferred pedestrian design choice for arterial and collector streets. Setback sidewalks:

- a) provide for physical separation of pedestrians from vehicle traffic, an important consideration where pedestrians must walk next to higher speed traffic,
- b) provide a safe and comfortable environment for pedestrians,
- c) provide a safe and comfortable environment for motorists by fully separating pedestrians from vehicles,
- d) provide for compatibility with Americans with Disability Act requirements for curb ramps and driveway aprons,
- e) provide space between the sidewalk and the curb for street trees, and landscaping plantings,
- f) provide a distinct green edge to the street, further distinguishing the different uses of the street and contributing to traffic calming by presenting a more attractive area of travel,

4) Alternating setback and curbside sidewalks or meandering sidewalks are an acceptable design alternative in areas where constraints (like significant trees and other natural features) and right-of-way limitations exist. In such places, on-street parking or bicycle lanes mitigate the negative impacts of curbside sidewalks.

5) Sidewalks should be located on both sides of arterial and collector streets. Where sidewalks exist on only one side of the street, access to transit is difficult and pedestrian safety as well as motorist comfort is compromised by requiring the pedestrian to cross the street to gain access to a sidewalk. This is particularly true on arterial and collector streets that have higher traffic volumes that move at higher speeds.



Missing sidewalk segment makes access to transit difficult

6) To promote pedestrian use and access to transit, sidewalks should be continuous along all arterial and collector streets. Existing gaps in the pedestrian system should be closed.

7) Sidewalks should be designed with adequate width to accommodate all existing or anticipated uses, including loading and unloading of people from on-street parking, walking traffic, window shopping traffic, bicycle parking, and use of street furniture.



Wider sidewalks accommodate more intensive pedestrian traffic in areas where pedestrian volumes are higher

Sidewalk Design Standards

1) Setback sidewalks with a minimum width of 5 feet (see Figure 2) are the standard except for the following situations:

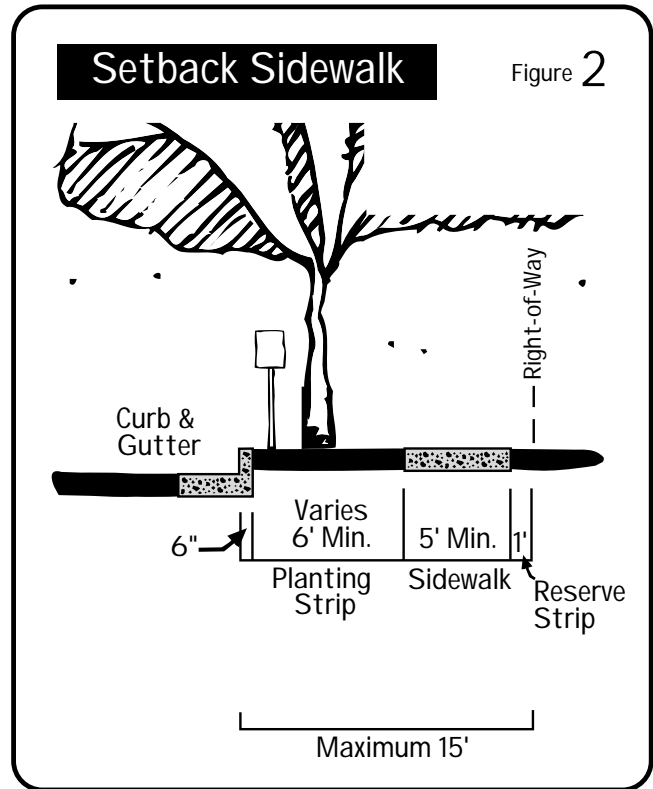
a) Alternating setback and curbside or meandering sidewalks shall be permitted in areas where constraints (like significant trees and other natural features) and right-of-way limitations exist.

b) Sidewalks in commercial areas shall be designed to provide adequate space for pedestrian travel, street furniture, and related uses. Curbside sidewalks in pedestrian-oriented commercial areas shall be a minimum of 10 feet wide, and shall incorporate tree wells in lieu of landscaped planter strips.

2) Sidewalks shall not have obstructions such as mailboxes, signs or utilities that reduce the usable width of the sidewalk below 5'.

3) Sidewalks shall be continuous along the full frontage of a development.

4) All driveway entrances and other curb cuts shall be constructed flush with the adjacent street surface.



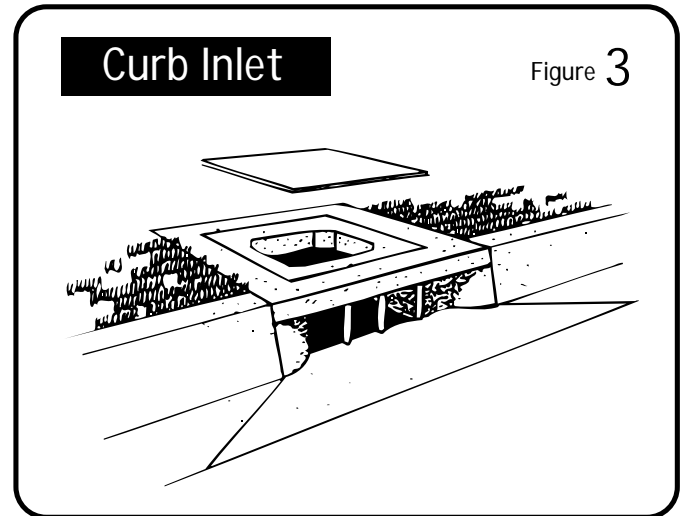
Setback sidewalks are the preferred pedestrian design choice for Eugene's streets

Bikeways

These standards address on-street bicycle facilities. See separate standards at end of document for off-street bicycle path and accessway facility requirements.

Design Guidelines

- 1) Striped bicycle lanes are the preferred bikeway design choice for arterial and major collector streets to provide a high level of mobility for bicyclists. A shared roadway generally is sufficient for Neighborhood Collector streets.
- 2) An interconnected street system is an important factor in providing convenience and continuity of travel for bicyclists.
- 3) On-street bicycle lanes and off-street paths will be constructed in those locations indicated in adopted plans.*
- 4) Bicycle signing and pavement markings should be consistent throughout the bikeway system per the 1995 Oregon Bicycle and Pedestrian Plan guidelines.
- 5) Curb inlets are the preferred design option for storm water facilities. Where installation of curb inlets is not possible, catch basins with approved bike-proof covers are an acceptable alternative. (See Figure 3)



- 6) Avoid designing continuous right turn lanes on major streets with bicycle lanes.

* *Striped bicycle lanes will be added to existing arterial and major collector streets which are already improved to urban standards only in cases where such bike lane projects on specific streets are included in the adopted TransPlan.*



On-street bike lanes provide a high level of mobility for bicyclists

Bicycle Lane Design Standards

1) Striped bicycle lanes are required on Major and Minor Arterial streets and Major Collector streets when those streets are newly constructed, are constructed to urban standards, or are widened for major vehicular capacity increases.* (These situations are defined elsewhere in this document as Major Projects, and are considered projects which may be initiated by the City if they have been included in the adopted TransPlan.)

2) Bicycle lanes shall be a minimum of 5' wide and shall be free from obstacles such as drainage grates and utility covers.

** On Neighborhood Collector streets, bicycles generally share the travel lane with motor vehicles, therefore, striped bicycle lanes are not usually required on these streets. Exceptions to this standard may occur on particular Neighborhood Collector streets, if specified in city-adopted plans or policies.*

On-Street Parking

Design Guidelines

- 1) Appropriate levels of on-street parking should be provided on certain streets to:
 - a) increase pedestrian comfort and safety by buffering pedestrians from automobile traffic;
 - b) support increased economic activity by increasing the visibility of storefronts and signage to motorists parking on the street;
 - c) support increases in development density and reduction of development costs for small business by reducing the need for on-site parking;
 - d) support traffic calming efforts on a street by introducing “friction” and narrowing the perceived width of the street;
 - e) provide spaces for on-street passenger and freight loading and unloading in intensively developed areas;
 - f) provide space for visitor parking in residential areas; and
 - g) reduce speeding by reducing the width of overly-wide streets.
- 2) On-street parking decreases the capacity of the adjacent travel lanes between 3% and 30% depending on the number of lanes and the frequency of parking maneuvers. Balance the demand for through-traffic movements, with local access requirements, and with the attributes listed in On-Street Parking Guideline #1, when deciding where to provide on-street parking.
- 3) Parallel parking is the preferred parking layout for on-street parking on Eugene’s streets. On-street diagonal parking can be considered as an option in certain circumstances and on a case-by-case basis. Optimal circumstances for provision of diagonal parking include adequate overall street width and low volume, low speed vehicular traffic.
- 4) To avoid expensive retrofits, provide for on-street parking based on the planned, rather than the existing, land use pattern and densities.
- 5) Parking lanes on arterial streets may need to be wider than other streets to provide an extra margin of safety between parked cars and adjacent bicycle lanes or vehicle travel lanes.
- 6) On-street parking may be provided on major arterial streets only after a parking demand and supply study has been completed and the desirability and feasibility of on-street parking has been verified. A parking study shall



Parking bays, like this one on 5th Avenue, allow on-street parking while reducing overall street width

consider, among other factors, the nature of adjacent land uses, the degree to which the street is nearing design capacity, and the presence of bicycle lanes on the street.

7) As a general rule, parking lanes should be marked at 7' to encourage motorists to park closer to the curb.

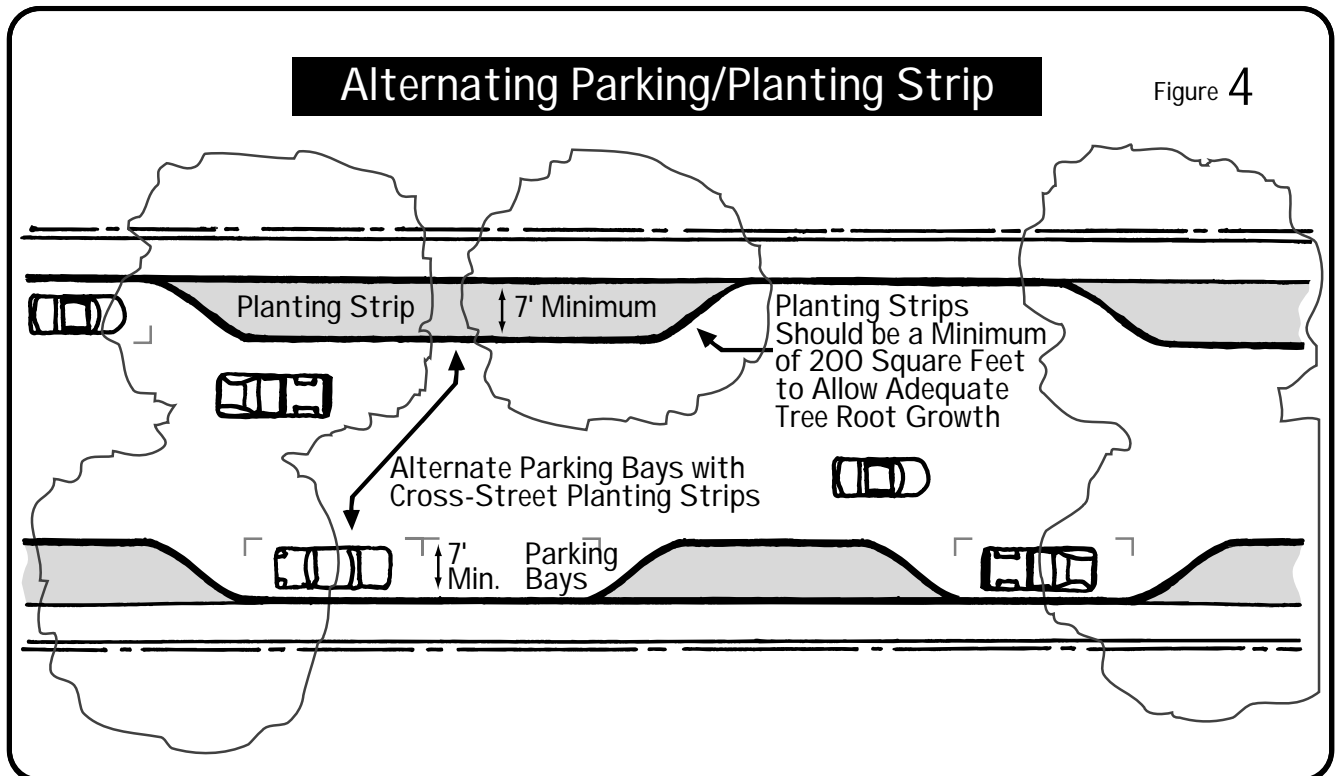
8) When parking is permitted on arterial or collector streets, it may be provided in parking bays which are interspersed with curb extensions and planting strips. The parking areas shall alternate with the planting strip areas as shown in Figure 4.

On-Street Parking Standards

- 1) Parking lane widths on arterial and collector streets shall be a minimum of 7' in width.



Major arterial streets, like Coburg Road, are designed with no on-street parking



Planting Strips and Street Trees

Design Guidelines

- 1) Street trees should be provided along all arterial and collector streets to:
 - a) Separate and define the boundaries between pedestrian areas and vehicle use areas. This separation reduces the impacts of traffic volumes and speeds on pedestrians and adjacent land uses;
 - b) Provide tranquility on the street, slowing the pace and intensity of street activity and enhancing the well being of pedestrians and motorists;
 - c) Provide shade in the summer and allow sunlight in the winter;
 - d) Reduce the automobile scale of major streets to human scale;
 - e) Provide the motorist with a vertical wall, helping motorists to gauge their speed;

- f) Create an outdoor room which helps provide a sense of enclosure and security;
 - g) Reduce air pollution;
 - h) Provide identity to the street, orientation of the street within the system of streets within a city, and provide a status and prestige to addresses along the street;
 - i) Reinforce the design and hierarchy of the arterial and collector street system; and
 - j) Intercept rainfall and absorb stormwater runoff.
- 2) Provide continuous, uniformly and closely spaced tree plantings to create a continuous canopy along the length of and across the width of the street. Tree spacing should connect to form a continuous tree canopy over the street. A minimum spacing as low as 10 feet is possible depending on the tree species. Closer tree plantings can be achieved when the diameter of the tree trunk will remain relatively narrow.



Planting strips allow for planting of large-scale, high-canopy street trees on major streets

Motorists and bicyclists on the approach to a street must be able to clearly see between trees.

3) Street trees should be planted within center medians. Trees planted within the median reduce the perceived width of the street. This guideline does not apply when there is a strong terminating view, or in downtowns areas where strong architectural features should be allowed to dominate the streetscape.

4) Plant street trees in planting strips in areas with less intensive pedestrian and commercial activity, or in tree wells with or without tree grates in areas with more intensive pedestrian and commercial activity.

5) Street trees should be of mixed rather than uniform species to reduce the potential for disease killing off whole populations of trees along a street.



Trees planted within median islands reduce the perceived width of the street.



Tree grates are sometimes used in more urban settings

- 6) Large-scale, deciduous, canopy trees are preferred for street tree plantings
- 7) Select tree species whose canopies do not encroach into pedestrian headroom or into tall curbside vehicles such as buses.
- 8) Preserve existing mature trees through flexible street designs, where possible.
- 9) Encourage agreements with private developers and landowners to plant and maintain trees and other right-of-way plantings.
- 10) Ensure proper sight distance and other safety considerations in designing and landscaping planting strips. Maintenance of street trees within planting strips and medians should be ensured to avoid reduction of sight distance. Certain trees with small trunk diameters can be brought forward, especially in conjunction with the use of curb extensions.
- 11) Consider the potential for utilizing planting strips and medians for stormwater treatment purposes.
- 12) The width of a planting strip between curb and sidewalk should be based on the figures in Table 1. The minimum planting strip widths shown in Table 1 shall be regarded as strongly preferred. Total width will be determined by available (or obtainable) right-of-way, other design features, and site-specific constraints.
- 13) Generally, street trees shall be spaced at intervals between 10 and 50', depending on the species. The average spacing of street trees is 30'.
- 14) Trees at the ends of medians should be maintained with a high canopy to maintain sight distance and permit space for traffic control devices on the median nose. Median tree planting should be extended to the intersection if median widths permits and the median is not required for traffic control devices.



Routine tree maintenance is necessary to ensure healthy street trees

- 15) Along Minor Arterial, Major Collector and Neighborhood Collector streets, planting strips and parking lanes may be constructed within the same area, as depicted in Figure 4.
- 16) Street trees should be planted a minimum of 35' from the midpoint of the tangent of the curb radius at any intersection.

Planting Strip and Street Tree Design Standards

- 1) Planting strips at least 6 feet wide, measured from face of curb to near edge of sidewalk, are required on both sides of arterial and collector streets.
- 2) Planting strips shall be used for the placement of street trees, signs, street furniture, and, to a limited degree, utilities.
- 3) Street trees shall be planted within the planting strip on arterial and collector streets. The planting of street trees is governed by standards and specifications in Public Works Administrative Rule R-7.280 which:
 - a) establishes policies and requirements for planting and establishment of street trees;
 - b) establishes application procedures;
 - c) establishes Street Tree Plan requirements;
 - d) establishes standards and procedures to be utilized in development of a Street Tree Plan, including standards for tree selection; tree quality; tree size; tree condition; planting location; planting procedures; establishment requirements; and tree trimming, pruning and removal; and
 - e) identifies trees that are permitted to be planted within the street right-of-way.

Raised Medians

Design Guidelines

1) Arterial and collector streets may have a raised median area to decrease the potential for accidents, restrict turning movements, limit land access, furnish an aesthetic separation between opposing traffic, encourage lower vehicle speeds, provide a refuge area for pedestrians or vehicles, increase the efficiency and capacity of the street, and provide space for tree and landscape plantings.

2) Medians can be used as part of an overall corridor access management strategy to reduce vehicle conflicts, increase capacity, and reduce accidents.

3) Ensure that U-turns can be negotiated at downstream intersections or median breaks when medians are used for access management.

4) Wide streets can present an impediment to pedestrian crossings. Pedestrian refuge medians and/or landscaped medians with pedestrian refuges should be designed into arterial and collector street intersections with more than three lanes, whenever possible, to reduce crossing distances and improve safety and comfort for pedestrians.

5) Medians that function to limit turns, limit land access, or reduce mid-block accidents can be relatively narrow and still provide the necessary channelization.

6) On streets with constrained right-of-way where it is desirable to provide a median for access management, pedestrian refuge, or

aesthetic purposes, consider reducing the number of travel lanes in each direction, or the width of the lanes.

7) Medians should be used in conjunction with



Medians can be relatively narrow and still provide their intended function

major driveway consolidations.

8) Medians should be used for access management on main corridors and on streets with heavy traffic volumes to improve capacity and distribute traffic to side streets and to parking.

9) Coordinate placement and design of medians to accommodate maintenance operations (such as street light maintenance, utility work, etc.) and to insure adequate operating space for fire and emergency medical equipment.

10) Medians at critical intersections can have a specialized dropped, low curb where emergency responders require specialized access.

11) Landscaped medians are used to provide an aesthetic separation between travel lanes and must provide adequate room for tree root growth. The width of landscape medians is variable, depending on the varieties of trees and shrubs planted in the median. (See Figure 7)

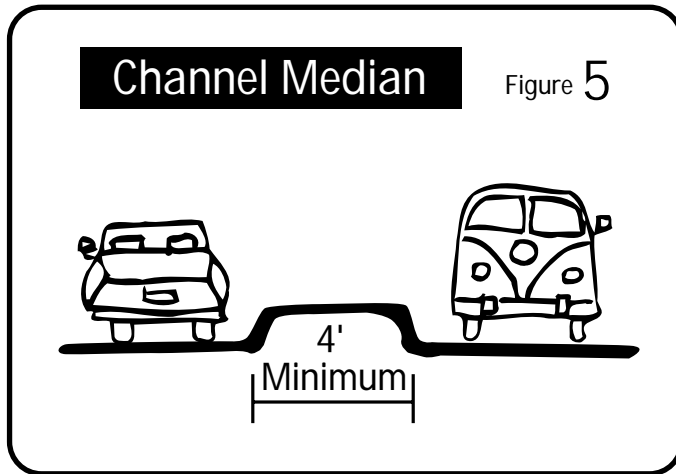


A landscaped median on Terry Street

Raised Median Design Standards

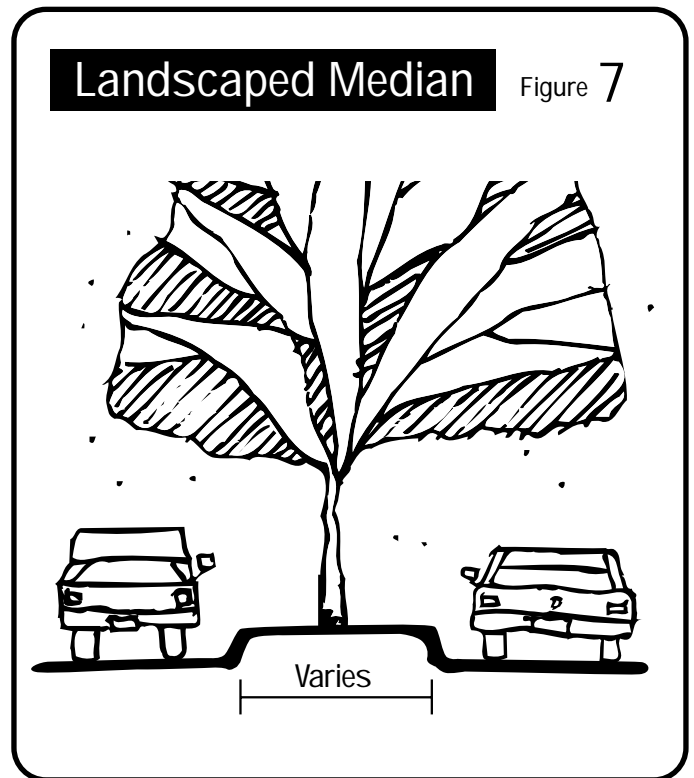
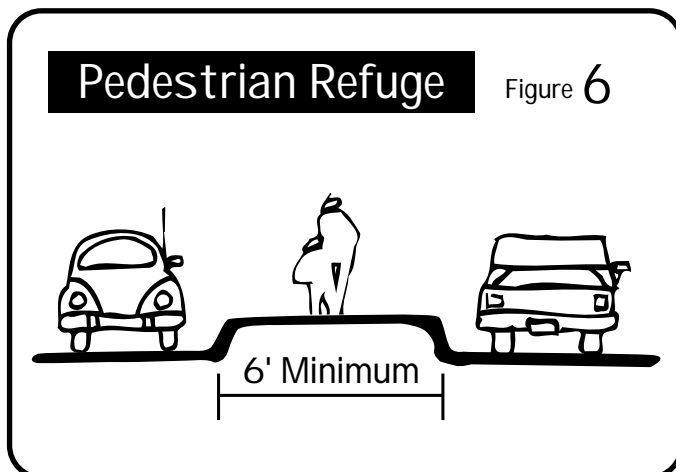
- 1) Standards for raised medians are the same for both arterial and collector streets.
- 2) The preferred raised median width is 10' when used to limit land access or control turning

- 4) The preferred raised median width for provision of turning bays is 14'; the minimum width for this type of median is 12'.
- 5) Raised medians shall be designed at standard (6") curb height.



movements. The minimum width of medians used for this purpose shall be 4'. (See Figure 5).

3) Medians used as a pedestrian refuge shall be a minimum of 6' in width to enhance pedestrian safety. (See Figure 6). Medians used as a pedestrian refuge or to facilitate pedestrian and bicycle movements shall be designed with at-grade cuts at all intersections.



Left Turn Lanes

Design Guidelines

- 1) Arterial and collector streets may have a continuous two-way left turn lane to channelize and remove turning traffic from through traffic lanes, or to provide additional separation between traffic moving in opposite directions.
- 2) Continuous two-way left turn lanes are most useful on streets where driveways and intersections are frequent.
- 3) The preferred width for provision of a painted continuous two-way left turn lane is 12 feet.
- 4) Left turn lanes at intersections and continuous left turn lanes may be required on major collector streets in commercial, industrial, and multi-family residential areas.
- 5) Neighborhood collector streets shall not be designed with continuous left-turn lanes but left turn lanes at intersections with higher volume streets may be required.

Left Turn Lane Design Standards

- 1) All left turn lanes on collector and arterial streets shall be a minimum of 10' in width.



A center turn lane on River Road

Mid-block Crossings

Design Guidelines

1) The preferred location for pedestrian crossings is at intersections. However, mid-block pedestrian crossings can be considered and installed under certain conditions. Decisions to install mid-block crosswalks and refuges should be based on appropriate traffic "warrants" to minimize potential adverse effects of inappropriately placed crossings.

b) provide pedestrians reasonable crossing places when there are long distances between signalized intersections;

c) meet the needs of pedestrians crossing between high pedestrian generators, such as a parking lot on one side of the street serving an office complex or hospital on the other side of the street;

d) provide visual cues that allow approaching motorists to anticipate pedestrian activity and unexpected stopped vehicles;

e) help channel pedestrians to the nearest available crossing point;

f) help facilitate access to and use of public transit;

g) help motorists identify important school crossings; and

h) make pedestrian behavior more predictable.

4) Generally, an engineering evaluation will be used



This mid-block crossing improves pedestrian safety on Willakenzie Road near Sheldon High School

to determine the need for mid-block crossings on major streets where one or more of the following conditions exist:

2) Mid-block crossings may be used to provide street-crossing points for pedestrians on major streets in areas with infrequent intersection crossings or where the nearest intersection crossing creates substantial out-of-direction travel.

a) protected intersection crossings are spaced greater than 600 feet, or so that crosswalks are located more than 400 feet apart in high pedestrian volume locations, or areas with frequent elderly and school pedestrian traffic, and

3) Where warrants are met, mid-block crossings can be used to:

a) provide pedestrians with reasonable opportunities to cross streets during periods of heavy traffic, and when there are few naturally occurring gaps in the approaching traffic streams;

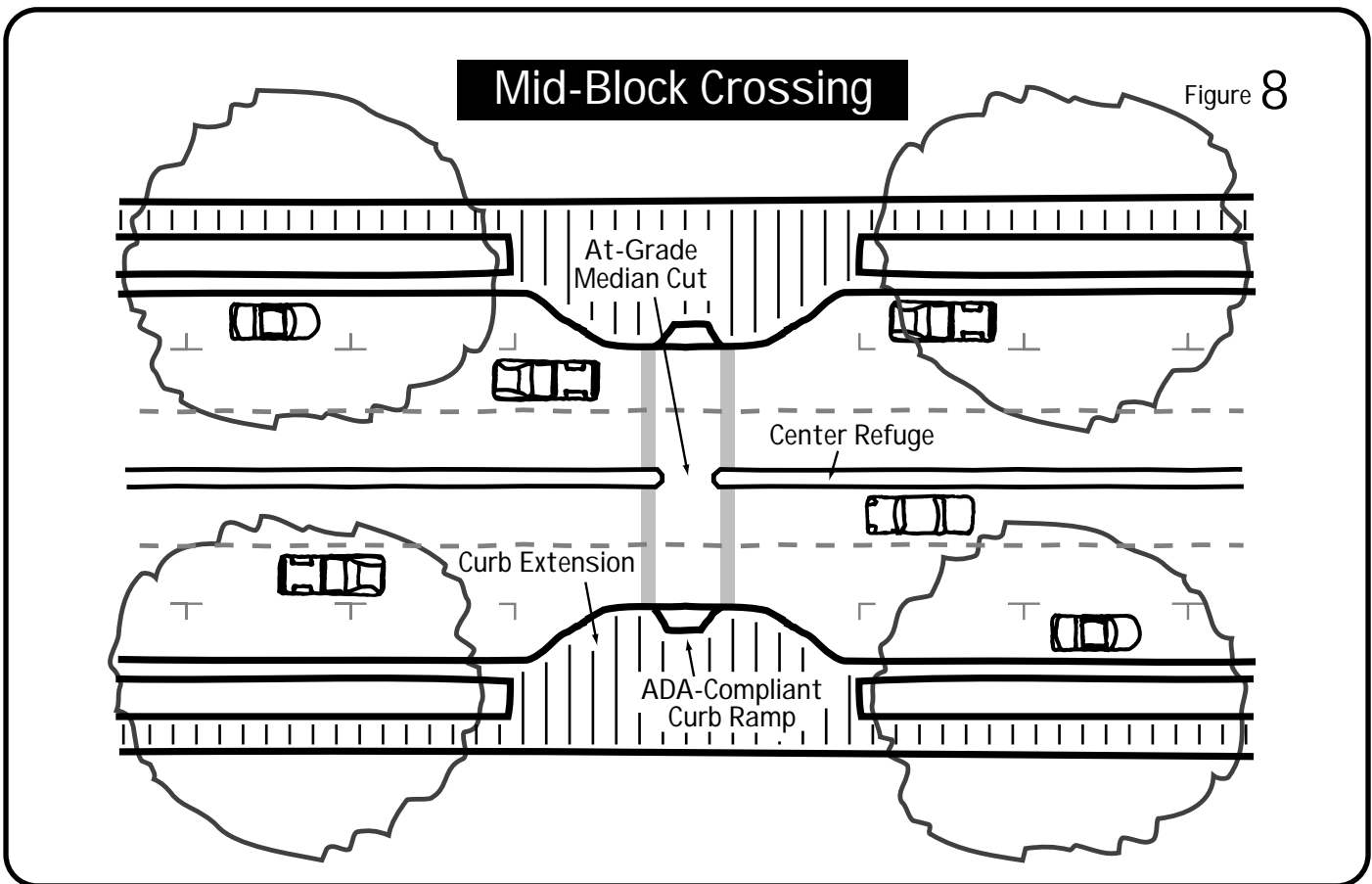
b) speeds on the roadway are 40 m.p.h. or less with pedestrian crossing volumes (for peak four hours) exceeding 25 on streets with average daily traffic (ADT) volumes exceeding 10,000. At locations where significant numbers of pedestrians are children, elderly, or disabled, minimum crossing thresholds are 10 pedestrians per hour (peak four hours) on streets with average daily traffic (ADT)

volumes exceeding 10,000. An engineering investigation to determine adequate sight distance, traffic speeds, gap availability and pedestrian volumes shall determine the applicability of the above criteria.

5) Where right-of-way, travel lane, and bike lane configuration allow for their construction, curb extensions and/or raised median islands should be provided at mid-block crossings to increase pedestrian and driver visibility, and to reduce pedestrian crossing distances. (See Figure 8).

6) Mid-block crossings should be marked with ladder-style (continental) markings to increase visibility.

7) The need for mid-block pedestrian crossings will be evaluated by the City of Eugene Public Works Transportation Division. A determination of the need for a mid-block crossing will be issued by the Division and will be based on relevant factors established by the Manual on Uniform Traffic Control Devices (MUTCD) including sight distance, vehicle speed, accident records, illumination, traffic volumes, type of pedestrian, nearby pedestrian generators, and other factors that are used to satisfy a warrant. Mid-block crossings may be provided with pedestrian-activated signals and appropriate advance warning devices upon a finding, based on traffic engineering study, that the location satisfies warrants established in the Manual for Uniform Traffic Control Devices. Established school crossings are high-priority locations for such studies.



8) Mid-block crossings will be illuminated.

9) Where mid-block crossings penetrate raised medians, the median will be provided with at-grade cuts or with Americans with Disabilities Act ADA-compliant wheelchair ramps. (See Figure 8)

10) Crossing points shall be supplemented with advance crosswalk warning signs for vehicle traffic.



Ladder-style markings increase driver awareness of pedestrian crossing areas

Intersections

Design Guidelines

- 1) Intersection design should consider the trade-offs between increasing vehicle capacity, transit needs, and improving pedestrian and bicycle mobility and safety in situations where conflicts are evident.
- 2) Multi-modal intersection design should consider and accommodate appropriate level of service, design speed, and types of traffic.
- 3) All modes of travel should be accommodated in multi-modal intersections. Intersection widening for additional turn lanes to relieve congestion should provide for and encourage transit movements, as well as safe pedestrian and bicycle movements.
- 4) The preferred location for pedestrian crossings is at intersections. However, mid-block pedestrian crossings can be installed if warrants are met. (See Mid-Block Crossing Standards).
- 5) Wide streets can present an impediment to pedestrian crossings. Pedestrian refuge medians and/or landscaped medians with pedestrian

refuges should be designed into arterial and collector street intersections with more than three lanes, whenever possible, to reduce crossing distances and improve safety and comfort for pedestrians.

6) Generally, provide striped crosswalks at stop controlled intersections when the minimum hourly pedestrian crossing volume (for peak four hours) exceeds 25 on streets with average daily traffic (ADT) At locations where a significant number of pedestrians are children, elderly, or disabled, minimum crossing thresholds are 10 pedestrians per hour on streets with average daily traffic (ADT) identified in the above cited references. Use this guideline as long as the basic criteria governing sight distance speeds, etc. are met. For details regarding this guideline, see references cited in the Mid-Block Crossing section.

7) Median signal heads and pushbuttons should be considered for placement on unusually wide intersections.

8) Provide right lanes at intersections for buses to use for "queue jump" operations. The lane may be exclusive to transit or could include other vehicles sharing the right turn lane. Additional widening on the far side of the intersection should be considered for far-side bus stops and bus merge areas.

9) Avoid intersection designs with dual right-turn lanes, particularly with one of the lanes being a shared through-right turn lane.



Areas with multiple curb cuts increase accident potential and reduce the efficiency of the street

10) Reduce crossing widths at intersections by either providing curb extensions into the street equal to the width of on-street parking (but not interfering with bicycle lanes) or reduce curb return radius to the maximums stated under the curb return radius section. Exceptions include narrow streets with short crossings, intersections with exclusive right turn lanes, or intersections with a high volume of right turning trucks and buses. (See Figure 9).

11) Extend bicycle lanes up to intersection stop bars or crosswalks. Where bicycle lanes cross through intersections, "skip" markings shall be used to delineate the lane.

12) At intersections with exclusive right-turn lanes, the bicycle lane should be placed to the left of the right-turn lane.

13) Provide bicycle crossing intervals at signalized intersections to accommodate a 10 m.p.h. crossing.

14) Design of any curb return should consider its "effective" radius provided by the presence of bicycle lanes, parking, and other details before

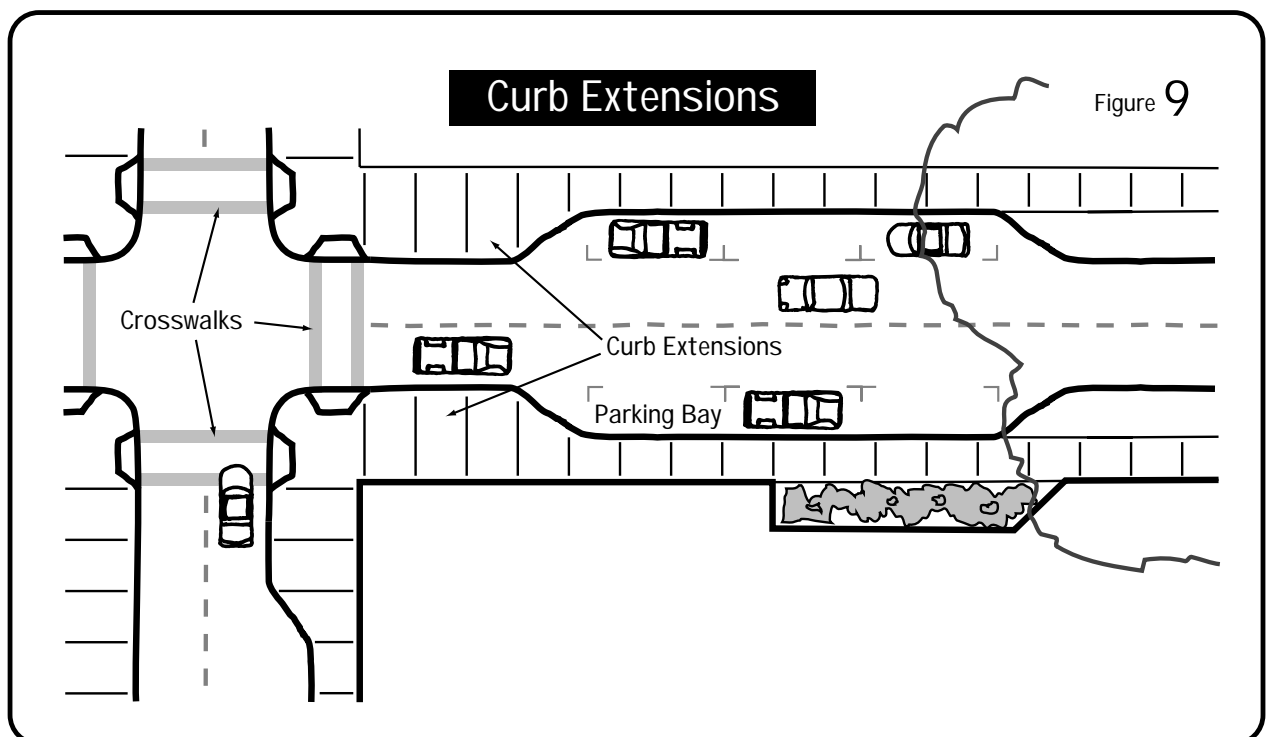
increasing radius size to accommodate bus or truck use.

15) The design of curb return radii should take into account the width of the two intersecting streets, the design vehicle (such as an LTD bus), lane widths, presence of bicycle lanes or on-street parking, etc. In each case, LTD staff and Transportation Division staff shall be consulted to determine the smallest acceptable radius for the benefit of pedestrian and bicycle movement, that adequately provides for bus and truck turns at the intersection. (See Figure 26 in Transit Facilities section of Design Standards and Guidelines).

16) Design of channelized right turn islands (slip lanes) can be considered in locations where street crossing distances, traffic volumes or traffic speeds jeopardize pedestrian safety or comfort. (See Figure 11).

17) Striped crosswalks are to be used:

- a) at all signalized pedestrian crossings
- b) at all intersections on designated school routes



18) Avoid striping crosswalks at unsignalized intersections with inadequate sight distance. Either mitigate the inadequate sight distance or direct pedestrians to alternative crossing locations. Minimum intersection sight distance is based on local, state, or AASHTO guidelines.

19) If a raised median nose extends into the crosswalk, provide an ADA-compliant channel through the median.

20) Use local, state, or AASHTO guidelines to determine decision and stopping sight distance triangles at uncontrolled and stop controlled intersections before striping a crosswalk.

21) Provide illumination for intersections with striped crosswalks.

22) Signal timing for pedestrians shall be based on MUTCD standards.

23) Provide signal heads (Walk/Don't Walk) at all signalized intersections, except where pedestrian movements are prohibited.



Curb ramps improve street access for those who use wheelchairs

24) Provide pedestrian pushbuttons at all vehicle activated signals except where pedestrian movements are prohibited.

25) Provide pedestrian pushbuttons and signal heads on median refuges at signalized intersections where median refuges are used.

26) Provide ADA-compliant wheelchair ramps (two per corner) at all intersections.



Push buttons at signalized crossings improve conditions for pedestrians

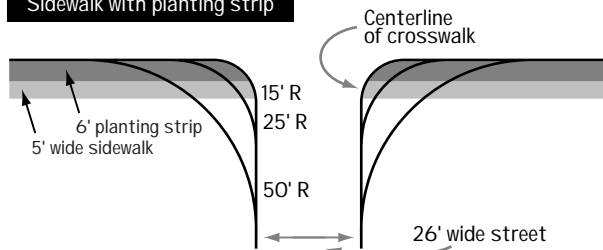
Curb Return Radii Design

Effect of Corner Radii on Pedestrian Crossing Distances

Figure 10

Setback Sidewalk

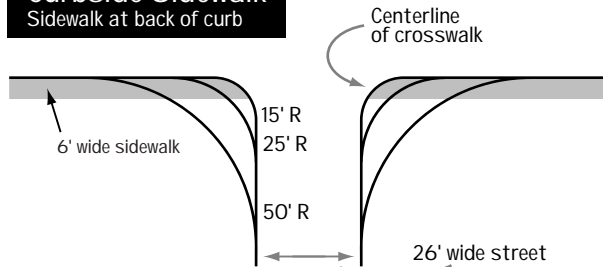
Sidewalk with planting strip



| Radius | Crossing Distance | Increase Crossing | Percent Increase |
|---------|-------------------|-------------------|------------------|
| 15 feet | 26 feet | +0 feet | 0% |
| 25 feet | 36 feet | +10 feet | 38% |
| 50 feet | 65 feet | +39 feet | 150% |

Curbside Sidewalk

Sidewalk at back of curb



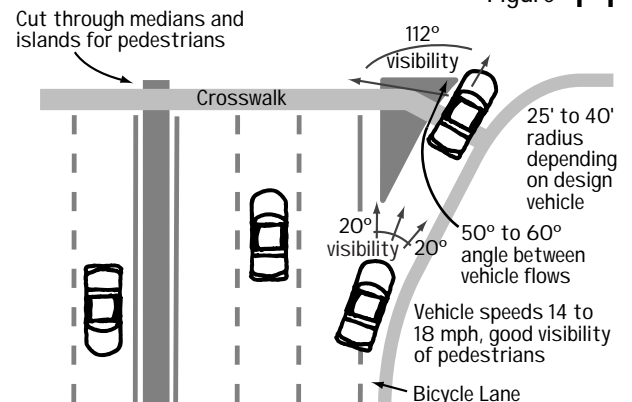
| Radius | Crossing Distance | Increase Crossing | Percent Increase |
|---------|-------------------|-------------------|------------------|
| 15 feet | 37 feet | +11 feet | 42% |
| 25 feet | 50 feet | +24 feet | 92% |
| 50 feet | 89 feet | +53 feet | 203% |

27) Install bicycle detectors at traffic-actuated intersections. Provide pavement markings identifying the location of the detector. If bicycle detectors cannot be installed, provide pedestrian pushbuttons accessible from bicycle lanes.

28) Curb return radii and the configuration of medians must be designed to facilitate pedestrian crossings, while accommodating bus and major freight movement. Primary design consideration shall be for pedestrian movements. (See Figure 10).

Right Turn Slip Lane Design

Figure 11



Adjacent Land Use

Design Guidelines

1) Site planning and design of buildings adjacent to arterial and collector streets can significantly contribute to the creation of environments that support walking, bicycling, and transit use. Site and building design is an opportunity to redirect private investment to support multi-modal transportation and increase transit ridership.

2) Buildings should face the street in all transit oriented development and nodal development areas within the city. Orienting the front entrance of buildings to the street is fundamental to increasing regional and local accessibility to transit, walking and bicycling. It also facilitates pedestrian access and supports pedestrian activity on the street.

3) Discourage residential fencing along arterial and collector streets that isolates the development from the street. Encourage residential building orientation to the street by providing for on-street parking wherever possible, and by encouraging on-site parking access via alleys.

4) Attempts should be made, wherever possible, to consolidate multiple driveways on arterial streets into single access points.

Design Standards

1) To minimize the visual and circulation impacts of extensive sections of fencing along major streets, bicycle and pedestrian accessways or street connections shall be provided at intervals not to exceed 600 feet.



Residential fencing that isolates development from the street is discouraged in the plan

Traffic Calming

Design Guidelines

1) Traffic calming techniques should be applied on selected arterial and collector streets throughout the city, as funding and opportunity permits, to address a variety of quality of life and traffic operations concerns. Traffic calming devices can be used on major streets to:

- a) Keep traffic flowing at a reasonable level of service;
- b) Reduce traffic speeds;
- c) Reduce traffic-related noise levels;
- d) Reduce traffic volumes in selected areas;
- e) Ensure fair and appropriate distribution of traffic throughout a neighborhood;
- f) Improve safety and travel conditions for motorists, pedestrians and bicyclists;
- g) Improve traffic circulation;
- h) Reduce the need for traffic regulation and heightened law enforcement in problem area;

- i) Reduce air pollution levels; and
- j) Provide increased opportunities for neighborhood revitalization.

2) Traffic calming techniques should not be applied in isolation. Neighborhood-wide traffic calming studies should guide the placement and choice of traffic calming devices.

3) Traffic calming devices used on major streets should not significantly reduce emergency response times or impede delivery of transit services.

4) All new major street projects and major street reconstruction projects should be evaluated for potential application of traffic calming devices and techniques to those streets.

5) All traffic calming devices should be planned and designed in keeping with sound engineering and planning practices, and with careful consideration of long-term, cost-effective maintenance.

6) All traffic calming devices should be planned and designed with significant input by residents and businesses in the affected areas.

A narrow median, curb extensions, and recessed parking calm traffic on E. Broadway, a downtown collector street



7) The following table (Figure 12) should be used as a guideline for initial evaluation of appropriate traffic calming strategies for various types of streets.

Traffic Calming on Major Streets

Figure 12

| Traffic Calming Device | Major Arterial | Minor Arterial | Major Collector | Neighborhood Collector |
|-------------------------------|----------------|----------------|-----------------|------------------------|
| Roundabouts | Yes | Yes | Yes | Yes |
| Traffic Circles | No | No | No | Yes |
| Raised Crosswalks | No | No | Yes | Yes |
| Curb Extensions | No | Yes | Yes | Yes |
| Parking Bays | Yes | Yes | Yes | Yes |
| Chicanes | No | Yes | Yes | Yes |
| Street Closure | No | No | No | No |
| Half Diverter | No | No | No | No |
| Diagonal Diverter | No | No | No | No |
| Star Diverter | No | No | No | No |
| Raised Median | Yes | Yes | Yes | Yes |
| Pavement Surface Modification | Yes | Yes | Yes | Yes |
| Speed Actuated Signing | No | No | No | No |
| Speed Humps | No | No | No | No |
| Speed Tables | No | No | No | Yes |
| Landscaped Roadway | Yes | Yes | Yes | Yes |
| Midblock Neckdown | No | No | Yes | Yes |
| Angled Slow Point with Median | No | No | Yes | Yes |

Street Lighting and Streetscape Features

Design Guidelines

1) The streetscape is defined as the built and planted elements of a street which define the street's character.



Street design features such as these light fixtures along 5th Ave. help define the street's character

2) Provide continuity of streetscape features along the length of any street identified as a specific district or area.

3) Provide street lighting on arterial and collector streets to:

a) Enhance safety for all modes of travel.

b) Illuminate the street and sidewalks but minimize unwanted spillover light.

c) Enhance the overall safety and appearance of the street and its immediate environment.

4) Provide pedestrian-scale lighting, where appropriate, to provide a separation from street traffic and spatial definition that is human scale. Pedestrian-scale street lights should be lower than conventional street lights, should be spaced more closely, and should provide more illumination of the sidewalk. To provide identity to certain districts, consider special light standards such as antique replicas.

5) Provide kiosks, benches, newspaper racks, trash cans, bus shelters, cafe tables, hanging flower baskets and chairs to increase the number of opportunities for people to socialize and spend leisure time outdoors along public streets.

6) Provide opportunities for "stationary" pedestrian activities. Stationary activities are either standing or sitting, where people choose to stay in a place to observe or participate in public outdoor activities. Seating can be either primary (chairs and benches, such as those found at a cafe or transit stop), or secondary seating (low walls, steps, or fountain edges, where people spontaneously collect).

Design Standards

1) Street lighting shall be provided on arterial and collector streets, in accordance with standards of the Illumination engineering Society of North America (IES).

Streetscape Features

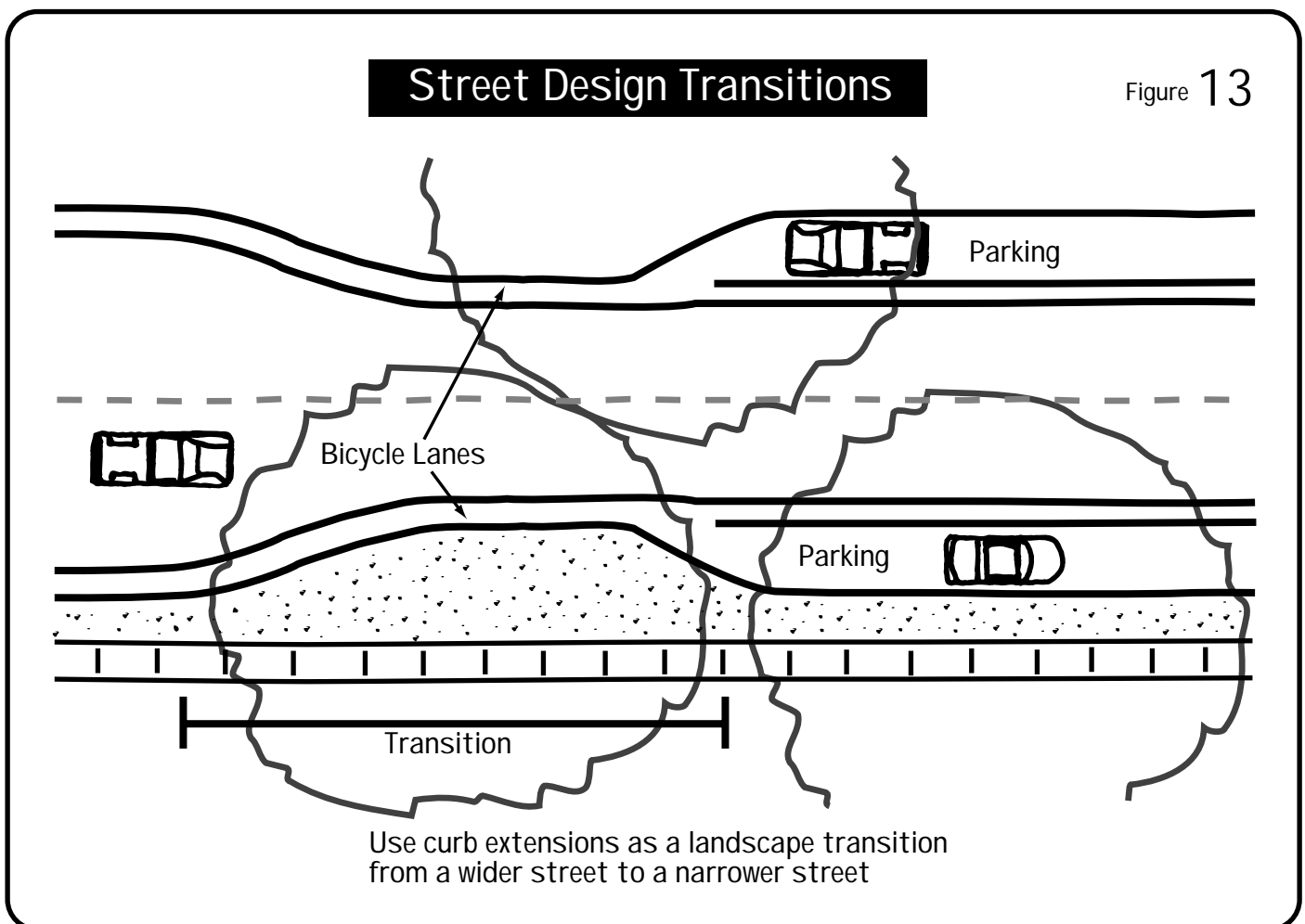
Design Guidelines

1) Transitions occur in areas where land use type, right-of-way width, or street type change. Transitional areas provide opportunities for gateways or other design treatments that mark or signify change.

2) Street transition treatments should be located at intersections or at the boundaries of significant changes in land use.

3) Use transitional treatments to improve unattractive "leftover" areas, and to provide identity and continuity to street design.

4) Use curb extensions as a landscaped transition from wider streets to narrower streets. (See Figure 13).



LOCAL STREETS

Local streets are the framework around which communities are built. Although the primary function of local streets is to provide access to properties fronting on the street, to a great extent, they also determine the form and character of cities and neighborhoods. The pattern and design of local streets help shape neighborhood image and identity, and can influence whether or not an area feels safe. Local streets can also influence the degree of communication neighbors have with one another, the extent to which residents use alternate modes of transportation, and the population's general feelings of well-being and comfort related to their immediate environment.

The design and appearance of local streets should convey this purpose through the use of relatively narrow widths, short lengths, frequent connections with other streets, and alignments which encourage slow traffic speeds and discourage through traffic.

Table 2 contains a summary of typical widths for local street elements such as right-of-way, pavement, sidewalks and plant strip areas, and traffic volume thresholds.

Local Street Standards

Table 2

| Type of Street | R.O.W. Width | Paving Width | | | (Setback) [Ⓐ] Sidewalks | Planting [Ⓑ] Strips | Average Daily Traffic (ADT) |
|-------------------------------|--------------|--------------|------------------|-------------------|----------------------------------|------------------------------|-----------------------------|
| | | No Parking | Parking One Side | Parking Two Sides | | | |
| 1-way Alley [Ⓒ] | 20' | 12' | | | None | None | NA |
| 2-way Alley [Ⓒ] | 20' | 16' | | | None | None | |
| Access Lane [Ⓓ] | 40' | | 21' (7/14) | | 1 @ 6' | 7' and 6' | <250 |
| Access Lane [Ⓓ] | 55' | | | 28' (7/14/7) | 2 @ 6' | 2 @ 7'-6" | ADT |
| Low-Volume Res. [Ⓓ] | 45' | 20'(10/10) | | | 2 @ 6' | 2 @ 6'-6" | 250 |
| Low-Volume Res. [Ⓓ] | 45' | | 21'(7/14) | | 2 @ 6' | 2 @ 6'-0" | to 750 |
| Low-Volume Res. [Ⓓ] | 55' | | | 28'(7/14/7) | 2 @ 6' | 2 @ 7'-6" | ADT |
| Med.-Volume Res. [Ⓓ] | 50' | 20'(10/10) | | | 2 @ 6' | 2 @ 9'-0" | >750 |
| Med.-Volume Res. [Ⓓ] | 55' | | 27'(7/10/10) | | 2 @ 6' | 2 @ 8'-0" | ADT |
| Med.-Volume Res. [Ⓓ] | 60' | | | 34'(7/10/10/7) | 2 @ 6' | 2 @ 7'0" | |
| Commercial/ Industrial | 55'-70' | | 30'-44' | | Curbside/ Setback | 2 @ 6'-0" Min. | NA |

A. Setback sidewalk dimension includes a 5' paved walk and 1' strip behind the walk. For curbside sidewalks, the sidewalk dimension includes a 5' paved walk and 6" curb (5'-6" total); the 1' strip behind the walk is added to the planting strip dimension.

B. Planting strip dimension includes 6" curb. For curbside sidewalks, an additional 6" would be added to the planting strip dimension.

C. In addition to the ROW width, alleys require a minimum setback of 2' on each side for a minimum 24' backup distance.

D. Additional parking to accommodate occasional high parking demand may be provided in congregate parking areas such as parking bays.

Local Street Sub-Classifications

Local streets are divided into several sub-classifications:

- Alleys
- Access Lanes
- Low Volume Residential Streets
- Medium-Volume Residential Streets
- Commercial-Industrial Streets

Alleys: Alleys are streets that provide secondary access to residential properties where street frontages are narrow, where the street is designed with a narrow width to provide limited on-street parking, or where alley access development is desired to increase residential densities.

Access Lanes: These streets are designed for primary access to a limited number of properties. On this street type, the residential environment is dominant and traffic is subservient. Access Lanes can be constructed as cul-de-sacs, loop streets, or short streets connecting two other streets. Access lanes generally serve 25 or fewer homes and traffic volumes are less than 250 Average Daily Traffic (ADT).

Low-Volume Residential Streets: These streets are designed for primary access to individual residential property as well as access to adjacent streets. As with the Access Lane, the residential environment is dominant. Traffic volumes are relatively low (250-750 ADT).

Medium-Volume Residential Streets: These streets are designed for primary access to individual residential property and to connect streets of lower and higher function and access the major street network. These streets are designed to accommodate higher traffic volumes (750-1,500 ADT).

Commercial/Industrial Streets: These streets are designed for primary access to commercial and industrial properties and to connect to the major street network. They are designed to accommodate higher traffic volumes and freight.

Local Street Design Standards

The typical design elements found in a local street right-of-way are: sidewalk and planting strip areas, parking lanes, vehicle traffic lanes, parking lanes, drainage and curbs, planting strips, sidewalks, utilities, street lighting, and occasionally a center median. The standards in paragraphs A-M below apply to both new and existing unimproved local streets, unless otherwise stated.

A. Vehicle Lanes

- 1) Two 10' vehicle traffic lanes are required on local residential streets when traffic volumes are expected to exceed 750 vehicles per day.
- 2) On local residential streets with traffic volumes less than 750 vehicles per day, a single 14' traffic lane may be permitted for both directions of vehicular travel. The single traffic lane is intended to create a "queuing street", such that when opposing vehicles meet, one of the vehicles must yield by pulling into a vacant portion of the adjacent parking lane. This queuing effect has been found to be an effective and safe method to reduce speeds and non-local traffic.
- 3) Two 12' wide vehicle traffic lanes are required on local commercial and industrial streets.
- 4) In special circumstances, such as where a local street intersects with a collector or arterial street, additional width may be required for safe turning movements.

B. Medians

- 1) Center medians are a design option for Low-Volume and Medium-Volume Residential Streets, but the street design must ensure the minimum 14' clear lane needed for fire apparatus.
- 2) Medians shall be landscaped with groundcover, trees, and shrubs less than 3' in height.

C. Parking Lanes

- 1) Parking lanes are 7' wide on local streets.
- 2) Additional parking to accommodate occasionally high parking demands may be provided in congregate parking areas, such as parking bays.

D. Bike Lanes

- 1) Because of the low projected traffic volume and speed, striped bicycle lanes are not required on local streets. However, the design shall comfortably accommodate the shared use of the roadway by bicyclists and motorized traffic.

E. Drainage and Curbs

- 1) Drainage inlets shall be bicycle-safe as required by ORS 810.150. Curb inlets as shown in Figure 14 shall be used unless alternate style is required or approved by the City Engineer.
- 2) Combined vertical curb and gutter shall be used on all streets with an enclosed drainage system.
- 3) A modified rolled curb with a slightly rounded top and bottom may also be used as shown in Figure 15; however, no other rolled curb designs are permitted. Gutter width shall be 18" wide measured from the face of the curb.
- 4) In private alleys paved with asphalt, inverted concrete curbs as illustrated in Figure 16 are required to prevent the pavement edge from breaking down. Inverted curbs are also required in Access Lanes that utilize grassed swales for drainage.

F. Sidewalks

Note: the following standards are required for newly constructed local streets, and recommended guidelines for existing local streets.

- 1) Sidewalks are required along all new local streets and shall be a minimum of 5' wide.
- 2) Generally, setback sidewalks are required along both sides of the street.

Figure 14

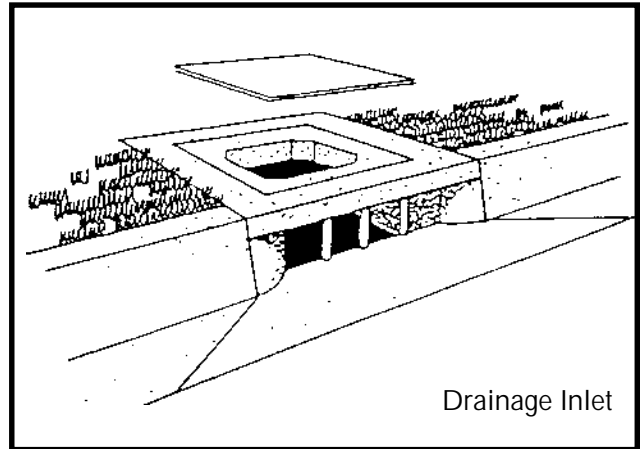


Figure 15

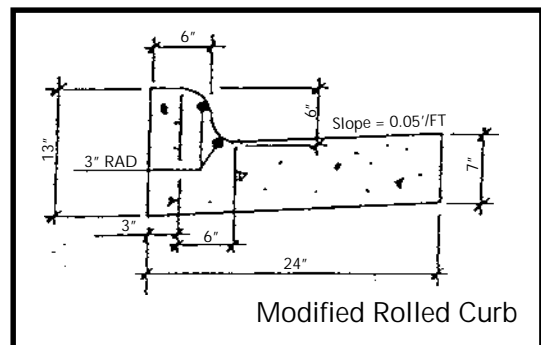
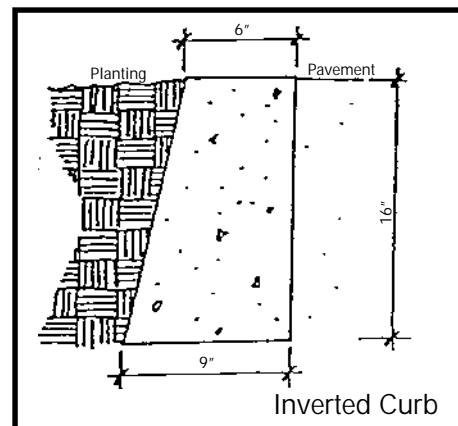


Figure 16



- 3) Setback sidewalks shall be set back from the street by a planting strip not less than 6' wide.
- 4) Sidewalks shall not have obstructions such as mailboxes, utility poles, or signs that reduce the usable width of the sidewalk below 5'.
- 5) Curbside sidewalks and sidewalks on one side of the street are permitted for Access Lanes, in special circumstances, such as to reduce excessive impacts to topography, wetlands, drainageways, and other natural features; in infill situations to match existing configurations; or on existing unimproved streets. In these situations, the sidewalk may be placed adjacent to the street to reduce overall right-of-way. Curbside sidewalks are also permitted for Commercial/Industrial Streets.

G. Utilities

- 1) The primary location for utilities is in a public utility easement (PUE) adjacent to the right-of-way.
- 2) Utility facilities such as electric transformers, hydrants and junction boxes may be located in the planting strip, but should be sited as close to the property line as possible to avoid conflicts with street trees.
- 3) Utilities are required to avoid conflicts with stormwater-related conveyance and treatment facilities.

H. Street Lighting

- 1) Street lighting shall be provided on local streets in accordance with IES standards.

I. Pavement and Right-of-Way Widths

- 1) Depending on the projected traffic volumes and any circumstances unique to the location, pavement widths for local residential streets (not including alleys) range from 20' to 34', with total right-of-way widths ranging from 40' to 60'.
- 2) Pavement widths for local commercial and industrial streets range from 30' to 44', with total right-of-way widths ranging from 55' to 70'.

J. Cul-de-sacs

- 1) Maximum length for a cul-de-sac is 400 feet, measured from the centerline of the intersecting street to the radius point of the cul-de-sac bulb.
- 2) A cul-de-sac will normally terminate in a standard cul-de-sac bulb. In the event that a standard bulb is not feasible, a "Y" or "T" turnaround may be used.
- 3) Cul-de-sacs constructed with 20' of paving and more than 150 feet in length must provide a 12' emergency vehicle, bicycle, and pedestrian accessway from the bulb to an adjacent street.

K. Traffic Calming Devices

1) Occasionally it is necessary to employ various techniques to reduce vehicle speeds and/or shift traffic to more appropriate routes. These techniques are commonly referred to as “traffic calming” measures. Traffic calming measures can also be incorporated in the construction of new streets to prevent problems from developing in newly constructed or future residential areas. Traffic calming devices are intended for use on local streets but may be used on collector streets. The application of these techniques is based on a case-by-case basis using engineering judgement. Planning and design should be coordinated with nearby residents as well as emergency and other service providers who will be affected by their use. Table 3 indicates which techniques are suitable for existing and new streets.

L. Grade

1) New street grades in excess of 20% are prohibited. Maximum grade of 15% with up to 200' lengths of grade up to 20% is allowed, but there shall be no intersections or driveway access in areas with grades above 15%.

M. Private Streets and Alleys

1) Private local streets are required to be designed to the same standards as public streets in the following categories:

- a) Intersection configuration (spacing and intersection angles).
- b) Minimum centerline radius length (American Association of State Highway and Transportation Officials (AASHTO) standard).

Traffic Calming Device Locations

Table 3

| Traffic Calming Device | Existing Street | New Streets |
|---|-----------------|-------------|
| Traffic Circles | ■ | ■ |
| Speed Hump * | ■ | ■ |
| Raised Crosswalks | ■ | ■ |
| Curb Extensions | ■ | ■ |
| Chicanes | ■ | ■ |
| Traffic Diverters ** Full Diverters - Street Closure Half Diverter Diagonal Diverter | ■ | |
| Median Barrier | ■ | ■ |
| Forced Turn Channelization | ■ | ■ |
| Parking Bays | ■ | ■ |
| Pavement Surface Modifications | ■ | ■ |
| Speed Actuated Signing | ■ | ■ |

* New speed humps are to be installed only at the direction of the City Traffic Engineer.

** Installation of diverters or street closures is subject to provisions of Chapter 5 of the Eugene Code, 1971.

c) Grade: Maximum grade of 15% with up to 200' lengths of grades up to 20%, but no intersections or driveway access in areas with grades above 15%.

d) Sight distance.

e) Width: Minimum 20 feet

f) Curb height where necessary for roof drains, safety or ADA requirements

g) Street alignments in relation to natural resource sites and water-related features.

2) Sidewalks are required, but reduced sidewalk width is allowed, curbside or meandering sidewalks that don't parallel the street are allowed, and sidewalks are allowed on one side of the street. Sidewalks must meet ADA requirements, which allows a minimum width of 3' provided that "passing space" is provided at reasonable intervals, not to exceed 200 feet.

3) Private alleys are required to comply with the standards for public alleys in the following categories:

a) Intersection configuration

b) Grade

c) Width and setback requirements

d) Curb requirements (if asphalt)

4) The structural design and construction inspection for private streets and alleys shall remain the developers responsibility. Certification by a licensed engineer that a structural design meeting the public design standards outlined above has been completed shall be submitted with the land use application.

Exceptions to Address Topography and Natural Resources

Occasionally, streets are constructed in locations which require special accommodations such as in hilly areas, or near wetlands, canals, dense vegetation, or sensitive plants and animals. In these cases, specific considerations should be made to minimize negative impacts. For example, wide streets along steep slopes require much larger hillside cuts than narrow streets.

Generally, the range of local street types make it possible to construct or improve local streets in accordance with the design standards. In certain situations, however, exceptions should be made. Exceptions could result in construction of meandering sidewalks, sidewalks on only one side of the street, or curbside sidewalk segments instead of setback walks. Exceptions are allowed when one or more of the following conditions exist.

1) Physical conditions that preclude development of a public street. Such conditions may include, but are not limited to, topography or the existence of natural resource areas such as wetlands, ponds, streams, channels, rivers, lakes or upland wildlife habitat areas, or a resource on the National Wetland Inventory or under protection by State or Federal law; or

2) Buildings or other existing development on adjacent lands, including previously subdivided but vacant lots or parcels, physically preclude a connection now or in the future, considering the potential for redevelopment.

BICYCLE/PEDESTRIAN PATHS

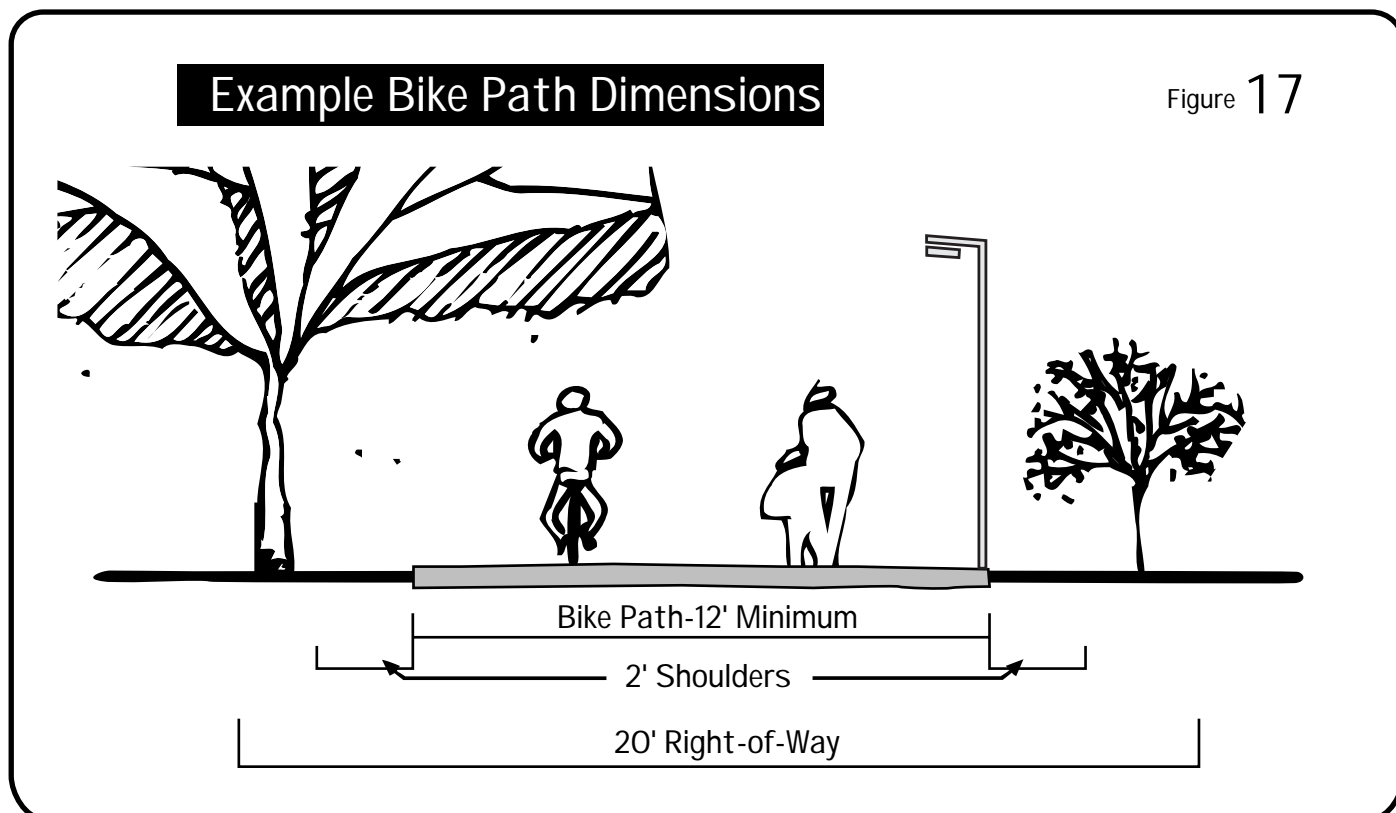
Bicycle/pedestrian paths are facilities that are physically separated from motorized traffic by an open space or barrier and serve a mixture of users such as cyclists and pedestrians as shown in Figure 17. Paths shall be a minimum of 12' wide with 2' wide unpaved shoulders on each side.

Concrete is the preferred surfacing, with saw cuts for expansion. Asphaltic concrete may be used, depending on soil or other conditions, such as projected use by maintenance or emergency vehicles. Pavement, sub-base and shoulder design shall be determined following an engineering analysis of the design variables and shall meet design criteria established by the City Engineer. Paths should have 3' of shy distance from the edge of the path to any fixed object.

Paths shall be lit and shall comply with IES standards.

Paths shall be designed to minimize motorized traffic. Bollards are not the preferred option and should be used only if warranted. If used, bollards should be painted with white reflective paint, and should be placed in the center of the path and pavement guide separators shall be placed a minimum of 20' in front of the bollards.

The AASHTO Guide for Development of Bicycle Facilities shall be followed for other standards for bicycle path construction such as super-elevation, overhead clearance, minimum radii, lighting and sight distances.



PEDESTRIAN AND BICYCLE ACCESS WAYS

Access ways are interconnecting paved walkways which provide pedestrian and bicycle passage such as between two cul-de-sacs or between subdivision plats. Access ways shall be a minimum of 10' wide on a 10' right-of-way. They shall be constructed of Portland cement concrete with a typical depth of 5" concrete over a 1" base of crushed rock. The dimensions for the pavement and crushed rock are based upon the heaviest vehicle which will use the access way and the native soil conditions. Final pavement and base design shall be determined following an engineering analysis of the design variables.

Access ways which function as a secondary fire access shall be constructed to support 55,000 pound vehicles. Fire access ways shall be paved a minimum of 20' wide on a 20' right-of-way unless a narrower width is approved by the City Manager or designee.

Access ways shall be designed to minimize motorized traffic. Bollards are not the preferred option and should be used only if warranted. If used, bollards should be painted with white reflective paint, and should be placed in the center of the path.

Access Way Dimensions Figure 18

| Type | Description | Pavement Width | Total Right-of-Way |
|------------|-------------------|----------------|--------------------|
| Access Way | Not a Fire Access | 10' | 10' |
| Access Way | Fire Access | 20' | 20' |

Access way surfaces shall be designed to drain water to the side or sides of the access way. Drainage systems which collect surface water along the centerline of the access way (similar to paved alleys) are not permitted.

Adequate vision clearance shall be provided at the ends of public access ways as required in Chapter 9 of the Eugene Code. Access ways shall be as straight as possible between connecting streets.

Example Access Ways for Pedestrians and Bikes

Figure 19

