

§4-2 ALTERNATIVE STREET AND PEDESTRIAN SYSTEM STANDARDS

- §4-2-1 PURPOSE
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[See Commentary]

§4-2-1 PURPOSE

The purpose of this Code section is to provide for alternative street specifications that will reduce construction costs to developers, provide flexibility to developers and minimize right-of-way widths, pavement widths, turnaround dimensions and intersection curb radii. It is also the intent of this Code section to maintain safety standards, provide for more pedestrian-friendly street environments, afford appropriate access for bicyclists, facilitate implementation of the county's [city's] multi-modal transportation element of its comprehensive plan and in general provide for more healthy neighborhoods and commercial areas.

§4-2-2 DEFINITIONS

Americans with Disabilities Act (ADA): Federal civil rights legislation passed in 1990, which requires accessibility for disabled persons.

Alley: A slow-speed service road running behind and sometimes between rows of houses, which provides public service and utility access and secondary or primary access to off-street parking for residences or businesses.

Arterial street: Unless otherwise specifically defined in the transportation element of the comprehensive plan, arterial streets are roads designed to carry traffic through an area rather than to local destinations.

Avenue or main street: A two-lane road, classified as a collector street, with or without a raised center island median, that provides for on-street parking and bicycle lanes in both directions of flow.

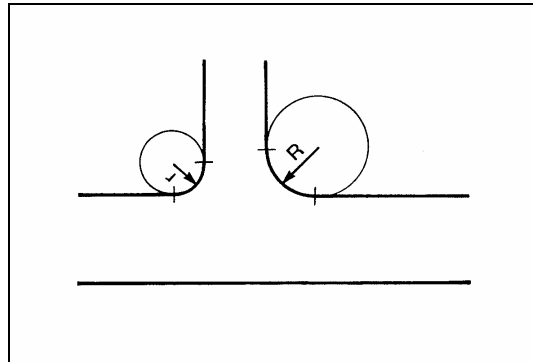
Average Daily Traffic (ADT): The measurement of the average number of vehicles passing a certain point each day, for both directions of travel though directional counts may be provided.

Boulevard: A multi-lane access road, classified as an arterial street, which carries regional traffic and provides access to commercial and mixed-use buildings. Travel lanes of different directions are separated by a raised center island. Boulevards provide for bicycle lanes and on-street parking alongside the travel lanes in both directions of flow.

Collector street: Unless otherwise specifically defined in the transportation element of the comprehensive plan, collector streets are roads designed to carry traffic between local streets and arterials, or from local street to local street.

Crosswalk: A portion of a roadway designated for pedestrian crossing, marked or unmarked. Unmarked crosswalks are the natural extension of the shoulder, curb line or sidewalk.

Curb radius: The curved edge joining the intersecting street curbs at a street corner, also known as curb-return radius and intersection curb radius.



Curb Radius

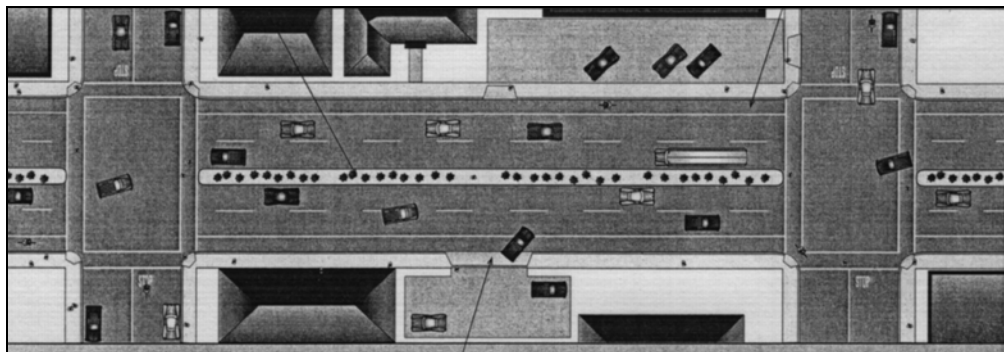
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Lane: A street designed for primary access to no more than 25 residential dwelling units, where the residential environment is dominant and traffic is completely subservient.

Local street: In the context of this Code section only, local streets are designed for primary access to individual residential property, where traffic volumes are relative low (250 - 750 Average Daily Traffic).

Median: The portion of a roadway which separates opposing traffic streams.

Median, raised: A non-traversable median where curbs are used to elevate the surface of the median above the surface of the adjacent travel lane. Pedestrians may normally cross a raised median but vehicles may not.



Source: Oregon Transportation and Growth Management Program. 1998. *Main Street...When a Highway Runs Through It: A Handbook for Oregon Communities*. Salem, OR: Transportation and Growth Management Program.

Parkway: A multi-lane access road, classified as an arterial street, which carries regional traffic but does not provide access to abutting properties. Travel lanes of different directions are separated by a wide, raised center island. Pedestrian and bicycle access is provided via a multi-use trail or path separated from the travel lanes by a wide landscape strip.

Pavement width: The width of a given lane, street or other road pavement width, measured from back-of-curb to back-of-curb, or to the edge of pavement where no curbs are required or exist.

Pedestrian friendly: Design qualities that make walking attractive, including places people want to go and desirable facilities on which to get there.

Planting strip: That portion of a road or street cross-section which accommodates street trees, shrubs and/or ground cover, depending on width.

Refuge island: A non-traversable section of median or channelization device on which pedestrians can take refuge while crossing a highway, street or road.

Right-of-way: The composite public area dedicated exclusively to circulation, including the travel way, and, if provided, medians, planting strips, bicycle lanes, and parking lanes, along with any accompanying shoulders or utility corridors held in fee-simple title by the public.

§4-2-3 STREET STANDARDS

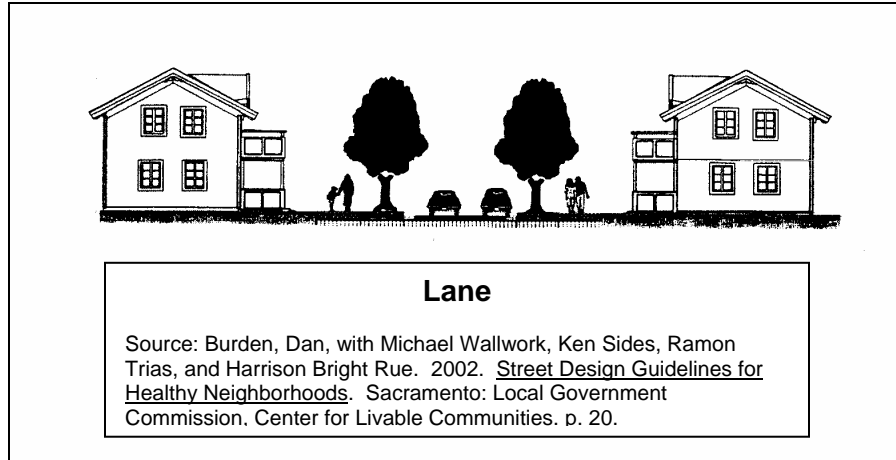
§4-2-3.1 **Alleys.** Alleys may be provided, in accordance with the following specifications.

Total Pavement (Width in Feet)	Travel Lane(s) (Width in Feet)	Parking Lane (Width in Feet)	Sidewalk(s) (Width in Feet)	Shoulder (Width in Feet)	Total Right-of-Way Required (Width in Feet)
12'	One 12' (one-way only)	None	None	3'	15'
16'	One 9' (one-way only)	One 7'	None	4'	20'
20'	Two 10'	None	None	5'	25'

[See Commentary]

§4-2-3.2 **Lanes.** Lanes, as defined, may be used for principal access to residential dwellings, provided that any individual lane shall provide access to no more than 25 dwellings. The subdivider may choose from one of the following design options and shall construct the lane or lanes in a manner consistent with one the design specifications of this subsection:

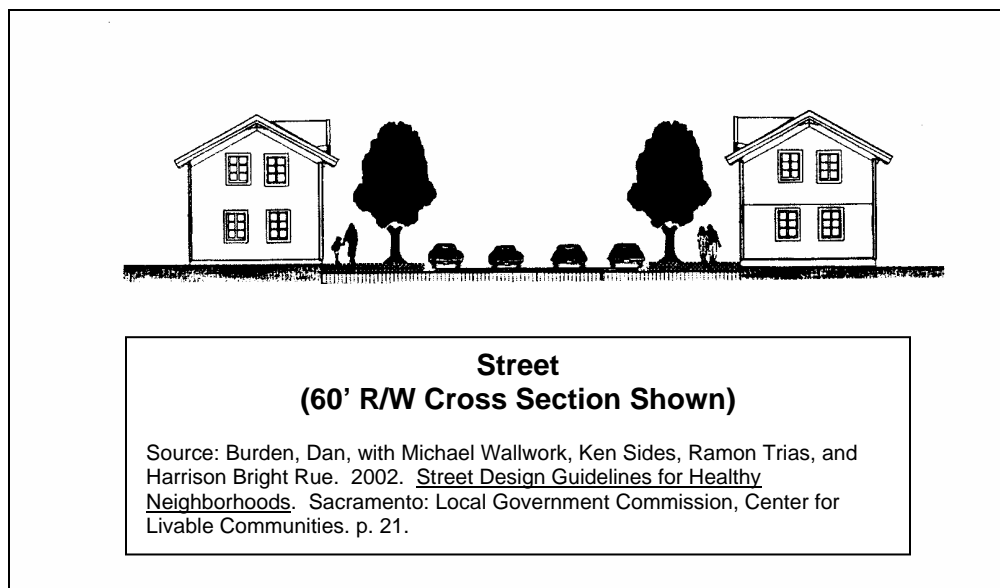
**§4-2 Alternative Street Standards and §4-3 Bicycle Facility Specifications
Model Land Use Management Code**



Total Pavement (Width in Feet)	Travel Lane(s) (Width in Feet)	Parking Lane (Width in Feet)	Sidewalk(s) (Width in Feet)	Planting Strip (Width in Feet)	Total Right-of-Way Required (Width in Feet)
21'	One 14'	One, 7'	One side, 7'	Two, 6' each	40'
28'	One 14'	Two, 7' each	Two, 6' each	Two, 6' each	45'
27'	Two, 10' each	One, 7'	Two, 5' each	One 6', one 7'	50'

[See Commentary]

§4-2-3.3 Local Streets. Local streets, as defined, may be used for principal access to residential dwellings, and they are normally not expected to exceed 750 ADT as estimated by the County [City] Engineer. For individual streets with ADT of more than 750 as estimated by the County [City] Engineer, the subdivider shall provide a local street meeting the 60-foot right-of-way (34-foot pavement width). The subdivider shall construct the street or streets in a manner consistent with one of the alternative design specifications of this subsection, as approved:

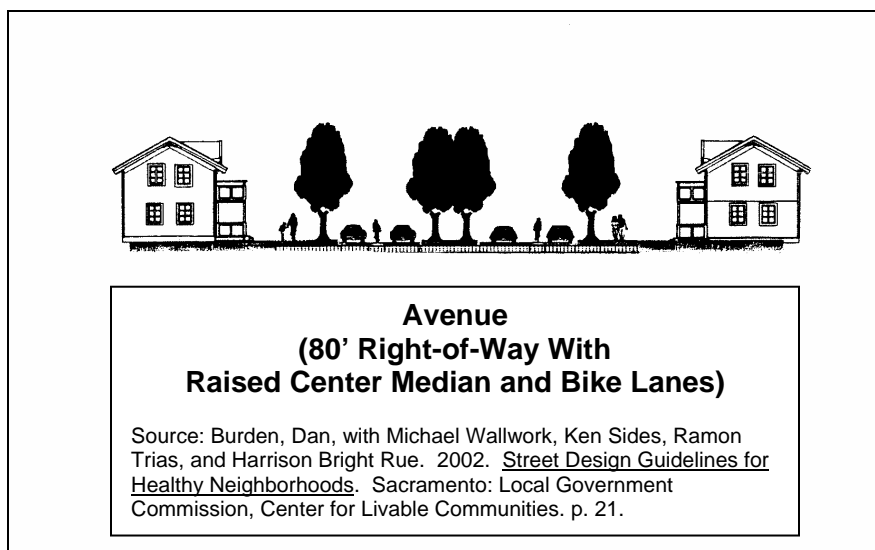


**§4-2 Alternative Street Standards and §4-3 Bicycle Facility Specifications
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Pavement (Width in Feet)	Travel lane(s) (Width in Feet)	Parking Lane (Width in Feet)	Sidewalk(s) (Width in Feet)	Planting Strip (Width in Feet)	Total Right-of-Way Required (Width in Feet)
20'	Two, 10' each	None	One 5'	One 7', one 8'	40'
20'	Two, 10' each	None	Two, 5' each	One 7', one 8'	45'
27'	Two, 10' each	One 7'	Two, 5' each	One 6', one 7'	50'
27'	Two, 10' each	One 7'	Two, 6' each	Two, 8' each	55'
34'	Two, 10' each	Two, 7' each	Two, 6' each	Two, 7' each	60'

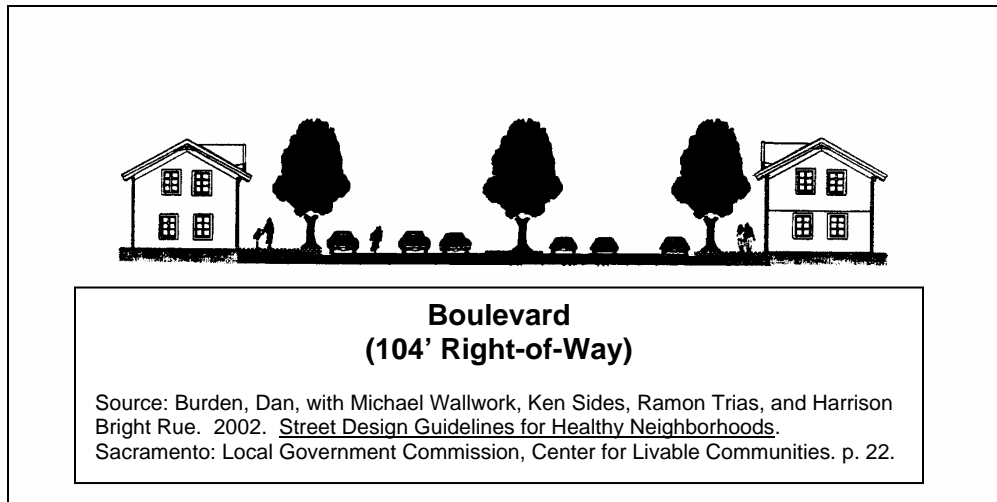
[See Commentary]

§4-2-3.4 Avenues and Main Streets. Where a collector street is called for in the transportation element of the county's [city's] comprehensive plan, the subdivider or developer shall construct the collector street or streets in a manner consistent with the design specifications of this subsection for avenues and main streets. If bicycle routes are called for in the transportation element of the comprehensive plan, the avenue or main street shall include bicycle lanes and the subdivider or developer shall utilize one of the 46-foot total pavement options that includes bicycle lanes as specified below.



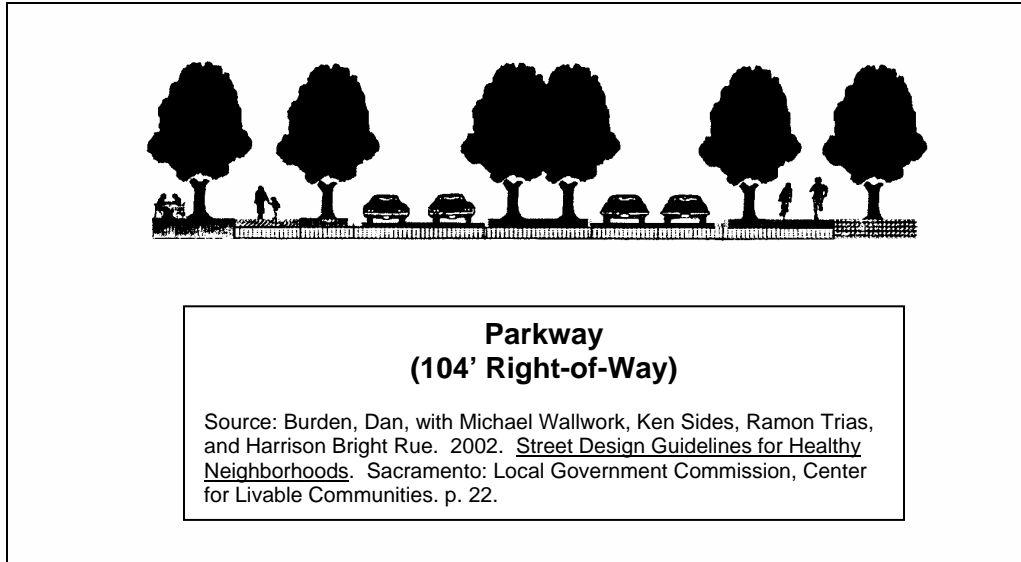
Total Pavement (Width in Feet)	Travel Lane(s) (Width in Feet)	Parking Lane (Width in Feet)	Bicycle Lane (Width in Feet)	Center Island Median (Width in Feet)	Sidewalks (Width in Feet)	Planting Strip (Width in Feet)	Total Right-of- Way Required (Width in Feet)
36'	Two, 11' each	Two, 7' each	None	12'	Two, 5' each	Two, 6' each	70'
46'	Two, 11' each	Two, 7' each	Two, 5' each	None	Two, 6' each	Two, 6' each	70'
46'	Two, 11' each	Two, 7' each	Two, 5' each	12'	Two, 5' each	Two, 6' each	80'
46'	Two, 11' each	Two, 7' each	Two, 5' each	None	Two, 6' each	Two, 6' each	70'

§4-2-3.5 Boulevards. Where an arterial street is called for in the transportation element of the comprehensive plan, the subdivider or developer shall construct the arterial street or streets in a manner consistent with one of the design specifications of this subsection for boulevards, as approved, unless a parkway cross-section is called for, in which case the specifications for parkways shall be followed.



Total Pavement (Width in Feet)	Travel Lane(s) (Width in Feet)	Parking Lane (Width in Feet)	Bicycle Lane (Width in Feet)	Center Island Median (Width in Feet)	Sidewalks (Width in Feet)	Planting Strip (Width in Feet)	Total Right-of-Way Required (Width in Feet)
70'	Four, 11' each	Two, 7' each	Two, 6' each	12'	Two, 5' each	Two, 6' each	104'

§4-2-3.6 Parkways. Where a restricted-access arterial street is called for in the transportation element of the comprehensive plan, the subdivider or developer shall construct the arterial street or streets in a manner consistent with one of the design specifications of this subsection for parkways, as approved, unless a boulevard cross-section is called for, in which case the specifications for boulevards shall be followed and access to individual properties abutting the boulevard shall be prohibited.

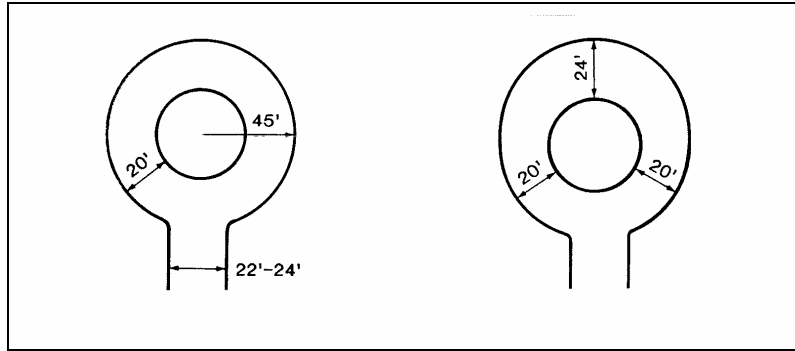


Total Pavement (Width in Feet)	Travel Lane(s) (Width in Feet)	Parking Lane (Width in Feet)	Bicycle Lane (Width in Feet)	Center Island Median (Width in Feet)	Multi-use Paths (Width in Feet)	Planting Strip (Width in Feet)	Total Right-of-Way Required (Width in Feet)
44'	Four, 11' each	None	None	20'	Two, 10' each	Two, 10' each	104'

§4-2-3.7 Turnarounds. Alleys, lanes, and local streets that dead-end and which require a turnaround may be equipped with one of the following types of turnarounds; provided, however, that “T-shaped” or “Y-shaped” turnarounds (also called “hammerheads”) and cul-de-sacs with 30-foot pavement radii shall be permitted only for lanes serving ten (10) residences or less.

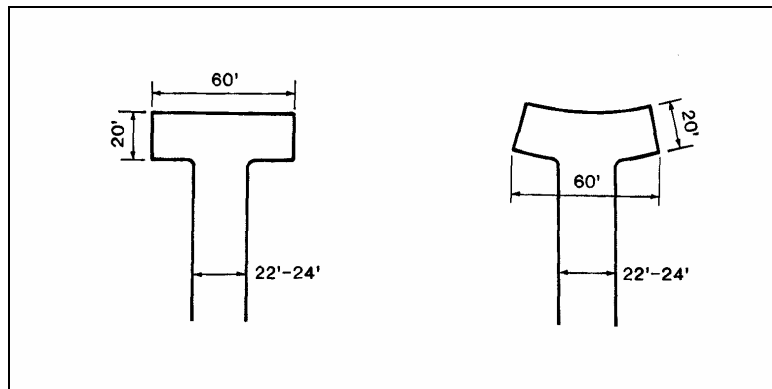
Type of Turnaround	Required Pavement (Feet)	Required Right-of-Way (Feet)
Cul-de-sac, no center island	30' radius	40' radius
Cul-de-sac, no center island	40' radius	50' radius
Cul-de-sac with center island	45' radius, 20' travel way except 24' at end of circle opposite the street connection	55' radius
“T-shaped”	60' length by 20' width	70' length by 30' width
“Y-shaped”	60' length by 20' width	70' length by 30' width

**§4-2 Alternative Street Standards and §4-3 Bicycle Facility Specifications
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Specifications for Cul-de-sac with Center Island

Source: Kulash, Walter M. 2001. *Residential Streets*, 3rd Ed. Washington, DC: Urban Land Institute, National Association of Home Builders, American Society of Civil Engineers, and Institute of Transportation Engineers. p. 35. Reproduced with permission of the Urban Land Institute. (www.uli.org)



Specifications for Hammerheads

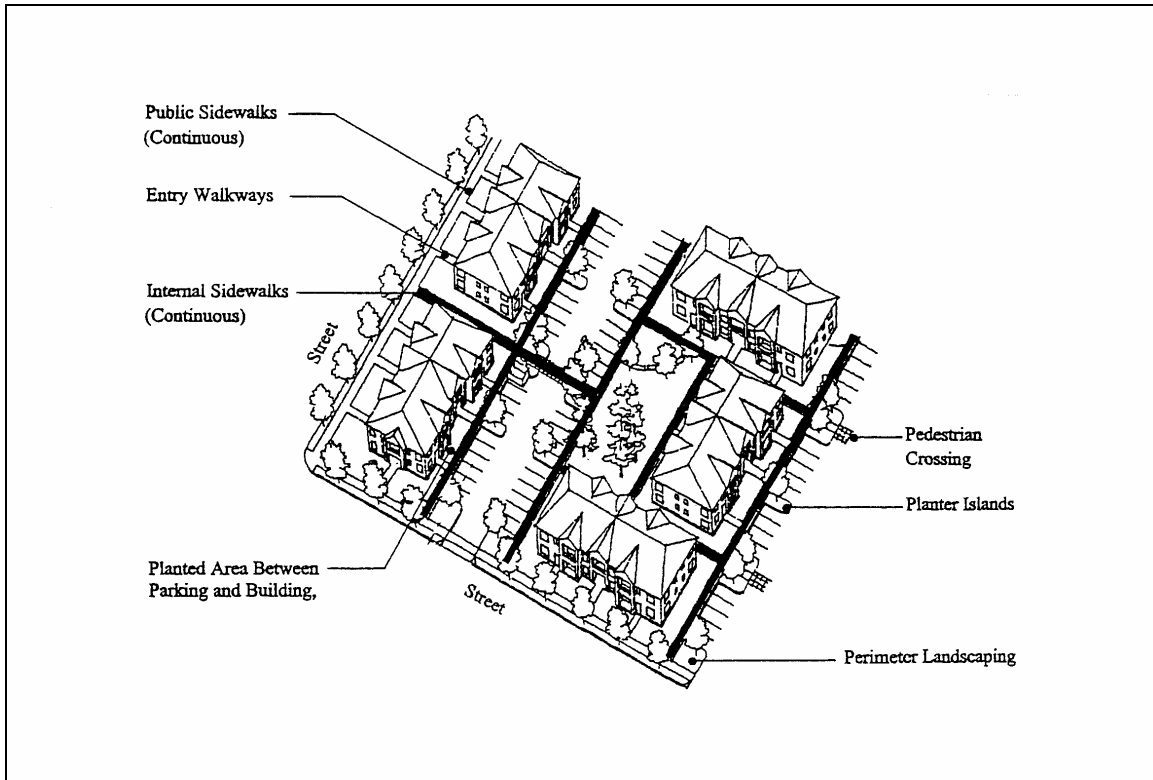
Source: Kulash, Walter M. 2001. *Residential Streets*, 3rd Ed. Washington, DC: Urban Land Institute, National Association of Home Builders, American Society of Civil Engineers, and Institute of Transportation Engineers. p. 35. Reproduced with permission of the Urban Land Institute. (www.uli.org)

§4-2-3.8 Curb radii. The curb radius at intersecting streets required depends on the type of street intersection. The following curb-radii specifications shall be met. For streets serving primarily commercial traffic, or for streets within industrial parks, the County [City] Engineer may require larger curb radii.

Type of Intersection	Curb Radius (Feet)
Lanes and Streets	15'
Avenues and Main Streets	25'
Boulevards and Parkways	Not to exceed 30' except with the approval of the County [City] Engineer where necessitated by large truck movements

§4-2-4 PEDESTRIAN SYSTEM STANDARDS

§4-2-4.1 Pedestrian Connections from Development to Street. Individual developments, except for detached, single-family lots, shall provide direct pedestrian access ways to all public sidewalks or multi-use trails when located adjacent to a public street abutting the property to be developed.



Source: OTAK. 1999. Model Development Code and User's Guide for Small Cities. Salem: Oregon Transportation and Growth Management Program.

§4-2-4.2 Americans With Disabilities Act (ADA) Compliance. Sidewalk systems and multi-use trails shall be constructed in accordance with requirements of ADA.

§4-3 BICYCLE FACILITY SPECIFICATIONS

- §4-3-1 PURPOSE
- §4-3-2 DEFINITIONS
- §4-3-3 PROVISION OF BICYCLE FACILITIES
- §4-3-4 DESIGN REQUIREMENTS FOR ALL BICYCLE FACILITIES
- §4-3-5 DESIGN REQUIREMENTS FOR BICYCLE PATHS
- §4-3-6 DESIGN REQUIREMENTS FOR BICYCLE LANES
- §4-3-7 DESIGN REQUIREMENTS FOR BICYCLING ON SHARED ROADWAYS
- §4-3-8 BICYCLE FACILITIES ON RURAL ROAD SHOULDERS
- §4-3-9 AUTHORITY OF COUNTY [CITY] ENGINEER

§4-3-1 PURPOSE

The purpose of these regulations is to implement the provisions of the county's [city's] multi-modal transportation plan [transportation element of the comprehensive plan]. The bike facility specifications are intended to ensure that safe, adequate and well-designed facilities are provided for bicyclists. Implementation of these specifications allows more people to ride bicycles for short-distance personal, business, social and recreational trips.

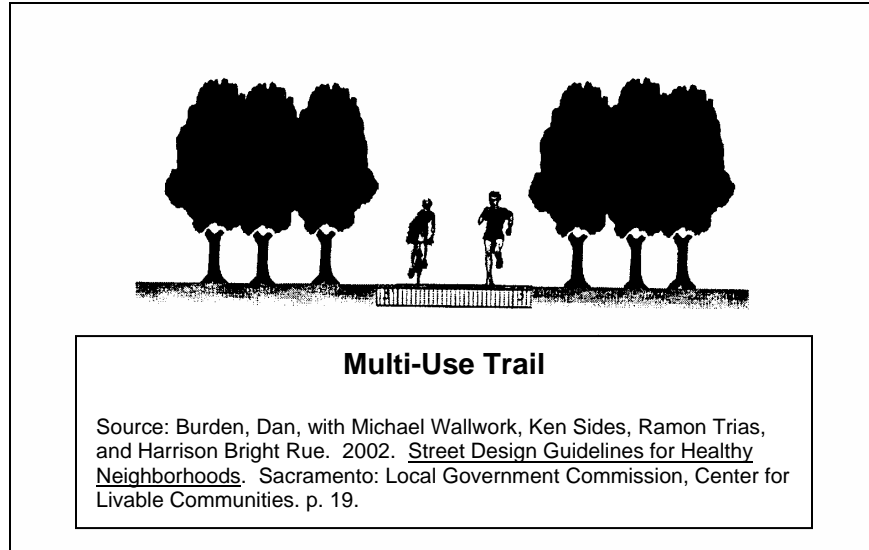
§4-3-2 DEFINITIONS

Bicycle lane: A portion of the roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Bicycle path: A bikeway physically separated from motor vehicle traffic by an open space or barrier and within the highway or road right-of-way or within an independent right-of-way.

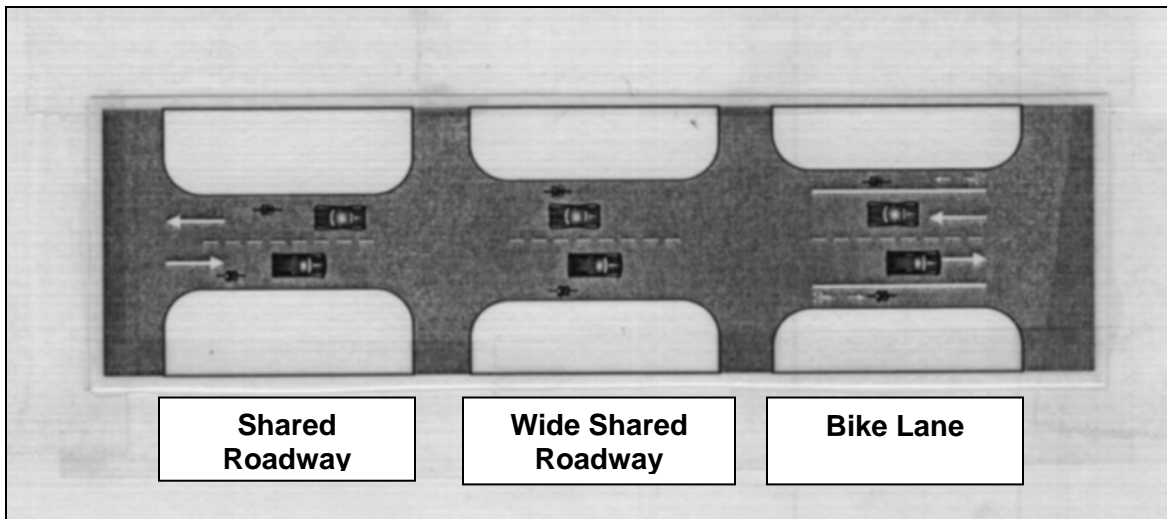
Grade: A measure of the steepness of a bikeway or other way, expressed in a ratio of vertical rise per horizontal distance, usually in percent.

Multi-use trail: A path that does not permit motorized vehicles (except for publicly authorized emergency and service vehicles) and which may accommodate multiple nonmotorized uses, including bicyclists, pedestrians, wheelchair users, joggers, pet owners, roller bladers, skateboarders, etc.).



Pavement markings: Painted or applied lines or legends placed on a roadway surface for regulating, guiding or warning traffic.

Shared roadway facilities: Streets and highways where bicycle use is legally permitted along with vehicular use, but where there are no special provisions (signs, striping, etc.) for bicycle travel.



Source: Oregon Transportation and Growth Management Program. 1998. *Main Street...When a Highway Runs Through It: A Handbook for Oregon Communities*. Salem, OR: Transportation and Growth Management Program.

Shoulder: The portion of a roadway contiguous with the travel way for accommodation of stopped vehicles, for emergency use and for lateral support of the subbase, base and surface courses.

§4-3-3 PROVISION OF BICYCLE FACILITIES

When the county's [city's] comprehensive plan designates a bike facility to be provided within or abutting a proposed development, the county [city] should review the proposed development to determine the extent to which the proposed bicycle facility can be accommodated.

- (a) Such bicycle facilities may be provided by the private developer via incorporation of bicycle paths and/or bicycle lanes internal to the development.
- (b) Such bicycle facilities may be provided by public or private, or combination public-private funding as a bicycle path. Alternatively, subject to the approval of the County [City] Engineer, a bicycle lane may be incorporated within the right-of-way of a public road abutting the proposed development. Furthermore, a bicycle path may be provided in its own dedicated right-of-way.
- (c) A multi-use trail shall be considered a bicycle path for purposes of this section.

§4-3-4 DESIGN REQUIREMENTS FOR ALL BICYCLE FACILITIES

The provisions of this section shall apply to all types of bicycle facilities:

§4-3-4.1 Intersection Crossings. When a bicycle lane, bicycle path, or multi-use trail crosses a road intersection or a railroad, ramps and adequate warning and safety signing and striping must be provided, subject to the approval of the County [City] Engineer.

§4-3-4.2 Markers and Signage. Designated bicycle routes shall be equipped with bicycle route markers, mile markers (for routes more than two miles) and other appropriate signs and markers as determined by the County [City] Engineer and consistent with the Manual on Uniform Traffic Control Devices or other specifications accepted by the County [City] Engineer.

§4-3-4.3 Drainage Grates. Grates comprised of bars running parallel to the direction of travel shall not be used.

§4-3-5 DESIGN REQUIREMENTS FOR BICYCLE PATHS

The provisions of this section shall apply to bicycle paths, as defined.

§4-3-5.1 When Appropriate. Along major and minor arterial streets, bicycle paths are the appropriate type of bicycle facility. If adequate right-of-way is not present or cannot be acquired, the County [City] Engineer may approve another bicycle facility type be installed along said arterial street.

§4-3-5.2 Minimum Bicycle Path Width. The minimum width for a bicycle path shall be ten (10) feet; provided, however, that the County [City] Engineer may reduce this required width to eight (8) feet, in instances where he or she finds bicycle traffic and pedestrian use will be light, and where the path presents a satisfactory and safe alignment vertically and horizontally. The County [City] Engineer may also authorize a reduction of the ten-foot minimum width for short sections of the bicycle path where necessary to preserve trees, move the bicycle path alignment to avoid hazards, at narrow bridge crossings, or other places as may be appropriate.

When a bicycle path is incorporated into a multi-use trail, the multi-use trail shall be wider than ten (10) feet (e.g., either constructed to a width of twelve feet, or provided with pull-

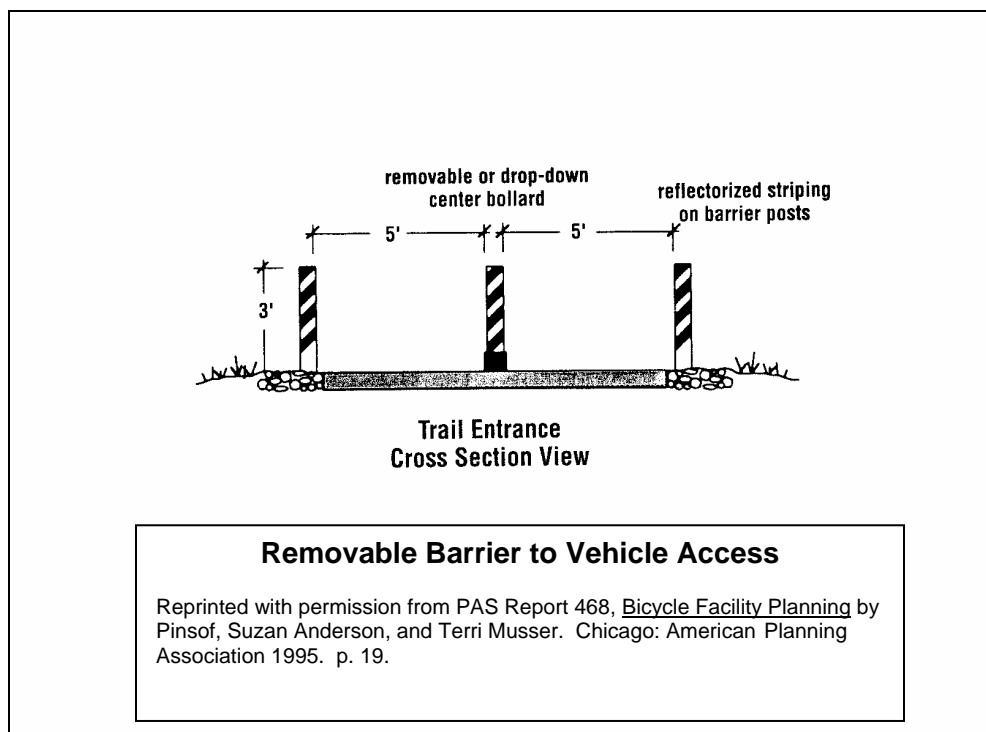
outs or passing areas in frequent places along the length of the multi-use trail) to accommodate passing situations for different users traveling at different speeds.

§4-3-5.3 Clearances and Shoulders. Bicycle paths shall have a minimum two-foot wide graded shoulder area on at least one side of the bicycle path. Bicycle paths shall have a minimum three-foot clearance from trees, poles, and other obstructions unless this requirement presents practical difficulty, in which case the County [City] Engineer may approve a deviation if adequate warning signage is provided. Vertical clearance shall be eight (8)-foot minimum with ten (10) feet desirable.

§4-3-5.4 Grade. The maximum grade of a bicycle path, except for those paths designated for mountain biking or otherwise provided with notice of difficult grade, shall be five (5) percent. The County [City] Engineer may permit a bicycle path to exceed the maximum five (5) percent grade for short sections of the path, in cases where topographic conditions present practical difficulties in achieving that grade. If difficult grade problems cannot be overcome, measures should include the provision of rest stops or lower grade “switchbacks.”

§4-3-5.5 Grade Separation. Where possible, bicycle paths should be constructed or provided at a grade that is separate from the grade of motorized travel (i.e., “grade separated”). A grade separation may be required where a bicycle path crosses a railroad track.

§4-3-5.6 Barriers to Unauthorized Motor Vehicle Traffic. Entrances to bicycle paths shall provide a physical barrier as approved by the County [City] Engineer to prevent unauthorized motor vehicles from using the facility. A removable post or other removable barrier may be provided to allow entrance by authorized emergency and maintenance vehicles.



§4-3-6 DESIGN REQUIREMENTS FOR BICYCLE LANES

The provisions of this section shall apply to bicycle lanes, as defined.

§4-3-6.1 Bicycle Lane Minimum Lane Width, Use and Location. Bicycle lanes shall be a minimum of four (4) feet in width on collector and local streets and a minimum of five (5) feet on

arterial streets. The horizontal part of a vertical curb shall not be counted in meeting the minimum bicycle path width. Bicycle lanes shall be limited in their use to bicyclists traveling in the same direction as the motor vehicle lane.

Where a bicycle lane is to be provided on a road that also provides for on-street parking (i.e., a parking lane), the bicycle lane shall be placed between the parking lane and the motor vehicle lane, and said bicycle lane shall be a minimum of five (5) feet in width. Parking lanes may be seven (7) feet, excluding the horizontal part of a vertical curb, adjacent to a bike lane in areas with low truck-parking volumes. Bike lanes on one-way streets shall be placed on the right-hand side of the street.

§4-3-6.2 Pavement Markings. Pavement markings shall be provided for all bicycle lanes, and said pavement markings shall contain word symbols and messages as appropriate and consistent with the Manual on Uniform Traffic Control Devices for Streets and Highways (Federal Highway Administration 1988).

§4-3-7 DESIGN REQUIREMENTS FOR BICYCLING ON SHARED ROADWAYS

§4-3-7.1 When Appropriate. Bicycling shall not be accommodated on roadways with on-street parking, except on local residential subdivision streets with low traffic volumes as determined by the County [City] Engineer. Where on-street parking is allowed and traffic volumes are moderate or heavy, a bicycle path (i.e., a striped facility) is the appropriate facility type.

§4-3-7.2 Minimum width. Bicycle use may be authorized on any roadway without striping and markings, provided that the following standards are met:

- (a) Where bicycles are to be accommodated on arterial, collector or local streets with one motor vehicle lane only per direction, and no on-street parking, each travel lane accommodating bicycle use shall be a minimum of sixteen (16) feet in width, excluding the horizontal part of the vertical curb if present.
- (b) Where bicycles are to be accommodated on arterial, collector or local streets with two motor vehicle lanes per direction, and no on-street parking, the minimum pavement width for each direction of travel to accommodate bicycle use shall be twenty-eight (28) feet, excluding the horizontal part of the vertical curb if present.

§4-3-8 BICYCLE FACILITIES ON RURAL ROAD SHOULDERS

On rural state highways or rural arterial roads (i.e., without curbs and gutters), the shoulders of roads may be paved, designated and maintained for bicycle travel. In such cases, the portion of the shoulder for use as a bicycle path shall be no less than four (4) feet wide. A minimum two-foot shoulder shall be provided in addition to the paved shoulder on all state highways. No additional shoulder is required when a minimum four-foot paved shoulder is designated for bicycle travel on a rural county roadway.

§4-3-9 AUTHORITY OF COUNTY [CITY] ENGINEER

The County [City] Engineer is hereby authorized to review and approve plans for subdivisions and land developments involving bicycle facilities to ensure compliance with the requirements of this Code. The County [City] Engineer is further authorized to prepare and promulgate standards, standard drawings and specifications to more specifically implement the intent of this code.