

# A Handbook for Planning and Designing Streets



City of Ashland  
Department of Community  
Development  
Planning Division

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# City of Ashland



## Street Standards Handbook

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## INTRODUCTION

Ashland's streets are some of the most important public spaces in the community. This handbook outlines the art and science of developing healthy, livable streets. It is intended to illustrate current standards for planning and designing the streets of Ashland. The standards are to be used in the development of new streets, and reconstruction of existing streets or portions thereof (i.e. improving a paved local street by adding sidewalks).

The handbook contains standards for street connectivity and design as well as cross sections for a series of street types. Each cross section provides a model for building streets the traditional way. As the term handbook suggests, it is intended as a resource for use by home builders, developers and community members in the pursuit of quality development practices.

A series of street types is offered including the multi-use path, alley, neighborhood street, commercial neighborhood street, neighborhood collector, commercial neighborhood collector, avenue and boulevard. Variations can be made from these basic types to fit the particular site and situation. However, the measurements of each street component must be used to create and maintain the desired low-speed environment where people feel comfortable and the maximum number of people walk, bicycle and use transit.

All streets in Ashland shall be designed using the following assumptions.

- All designs encourage pedestrian and bicycle travel.
- Neighborhood streets (Neighborhood Collectors and Neighborhood Streets) are designed for 20 mile-per-hour (mph).
- All new streets and alleys are paved.
- All streets have standard vertical, non-mountable curbs.
- Gutter widths are included as part of the curb-to-curb street width.
- New avenues and boulevards have bicycle lanes.
- Parkrow and sidewalk widths do not include the curb.
- Sidewalks are shaded by trees for pedestrian comfort.
- All streets have parkrows and sidewalks on both sides. In certain situations where the physical features of the land create severe constraints, or natural features should be preserved, exceptions may 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 should be allowed when physical conditions exist that preclude development of a public street, or components of the street. Such conditions may include, but are not limited to, topography, wetlands, mature trees, creeks, drainages, rock outcroppings, and limited right-of-way when improving streets through a local improvement district (LID).
- Parkrows and medians are usually landscaped.
- Garages are set back from the sidewalk so parked vehicles are clear of sidewalks.
- Building set backs and heights create a sense of enclosure.

The street connectivity and design standards are part of the *Ashland Land Use Ordinance* and are approval standards that will be used in land use decisions and for street construction projects. While much of this handbook is a “user-friendly” version of what is in the *Ashland Land Use Ordinance*, the entire document is a supporting document to the City’s *Comprehensive Plan*.

Section I outlines the basic traditional street design principles for planning and designing new and reconstructed streets. Section II specifies the street connectivity standards which must be used in laying out and locating new streets. Section III contains cross sections and describes the design requirements for new and reconstructed streets. Section IV specifies curb return radius standards. Section V outlines additional standards for hillside streets. Finally, Section VI defines standards for driveway apron and curb cut standards.

## **BACKGROUND**

In December 1996, the City of Ashland adopted an updated *Transportation Element* of the *Comprehensive Plan*. Many of the policies of the *Transportation Element* require the City use traditional street design for the planning and design of new and reconstructed streets (Street System Policies 2, 3, 5, 6 on page 33, Pedestrian and Bicycle Goal 1, Policies 2, 6, 7, 9, 10, 11, 12, 13 on page 50). Subsequently, the City of Ashland updated the street design standards, as part of the *Transportation System Plan* and *Local Street Plan*, to reflect traditional street design principles and implement the goals and policies of the *Transportation Element* of the *Comprehensive Plan*.

## SECTION I: BASIC PRINCIPLES OF TRADITIONAL STREET DESIGN

Traditional neighborhood design is used as the basis for the City of Ashland street layout, design and connectivity standards. This planning and design concept is used because it creates streets that provide multiple transportation options, focuses on a safe environment for all users, treats streets as public spaces and enhances the livability of the neighborhoods.

Traditional or “neo-traditional” neighborhood design is a planning and design concept that revisits many of the features of urban neighborhoods developed prior to World War II. Neighborhoods were designed to be easily used by pedestrians, bicyclists and transit riders. Several areas including the Railroad District, the Downtown, the Briscoe School neighborhood and the Gresham-Sherman Street neighborhood are examples of traditional neighborhood design.

The single most distinguishing feature of traditional neighborhood design is the continuous fabric of intimately blended land uses, arranged so that travel between them can be made by walking, bicycling, and transit in addition to the privately-operated auto. Streets are small, and connected into grid networks which provide multiple available routes for a given trip.

The following definition of a traditional neighborhood is based on the work of Elizabeth Plater-Zyberk, Andres Duany and Randall Arendt. Although streets are just one element of neighborhoods, the description of a traditional neighborhood is given for the purpose of placing traditional street design in the proper context.

- The traditional neighborhood has a center and an edge. Development is compact in the center and density decreases as one moves towards the edge.
- The center includes a public space, such as a square, a green, or an important street intersection. The center is the focus of the neighborhood’s public buildings.
- It is compact, usually one-quarter of a mile from the center to the edge.
- It gives priority to public space. Streets are designed to be part of the public realm. Civic buildings are located in prominent locations. Open space is provided in the form of squares, parks and plazas.
- Neighborhood architecture is of human scale and proportions. Buildings are close to the street.
- It includes a mix of activities such as residences, shops, schools, workplaces and parks. Commercial activities meet everyday needs such as grocery, newsagent, drugstore, hardware, etc.
- The area is walkable and pedestrian friendly, but also auto-accessible. Routine activities such as schools, shops and playgrounds are within walking distance.

- There are a variety of housing types - single-family homes, town homes, apartments, etc.
- It consists of interconnected network of small streets and blocks, generally laid out in a grid or modified grid pattern. Block lengths are under 600 feet. Streets have sidewalks and large parkrows with street trees.
- Streets are scaled for typical uses rather than being oversized to accommodate worst-case scenarios.
- There are opportunities for casual socializing at gathering places such as cafes, neighborhood parks, soda fountains and taverns. These gathering places provide people locations other than one's home or workplace where informal public life may be experienced.

Narrower streets are one of the primary characteristics of traditional neighborhood design. Narrower streets have several benefits. Currently, it is not uncommon for 25 percent or more of a proposed development's land area to be set aside for required rights-of-way. Using narrower streets can reduce this percentage and free up the land for open space, or more intense development. Narrower streets reduce street development costs. Narrower streets have been found to slow down traffic and reduce accident potential. Narrower street also have a more intimate feel, and contribute to neighborhood livability.

Traditional neighborhood design streets and networks achieve a balance between the different modes of transportation that is lacking in conventional suburban development. Furthermore, the street is treated as a public space and is considered a key element of the neighborhood. The following list of "pros" of traditional neighborhood design streets is based on the work of Walter Kulash, P.E., a nationally recognized traffic engineer specializing in livable traffic design and traffic calming.

- A network of small interconnected streets has more traffic capacity than the same street area arranged in a sparse hierarchy of large streets. According to Kulash, this is because intersections control the capacity of any network, and there are more intersections to disperse the turning movements.
- In the traditional neighborhood street network, the traveler can choose from many routes available on the basis of what they see out on the street. People can take alternative routes in the full confidence that the network is complete. The multiplicity of routes available also lets the walker/cyclist match the route to their particular skills. For example, expert cyclists can choose to take their place in traffic as a fully-vested vehicle, while low-skill cyclists can travel on small, possibly more circuitous routes.
- The geometry of a dense network of small streets provides shorter travel distance between any two points. Overall, even though trip lengths are shorter, travel time is comparable to conventional suburban development. This is because travel speeds are lower in traditional neighborhoods. Shorter trip lengths encourage walking and

bicycling. In traditional neighborhoods a dense network of small streets is combined with a mix of land uses places a large number of origins and destinations within walking or bicycling distance.

- Motor vehicle travel speeds are lower on traditional neighborhood streets which directly affects overall safety, the non-automotive traveling environment and the livability of neighborhoods. See Section Designing for *20mph in Section III: Design Standards*. The conventional suburban development automobile trip, made mainly on arterial streets is typified by a pattern of high speeds for short segments of road, interspersed with long traffic signal delays. In contrast, the traditional neighborhood automobile trip with its greater use of collector and local streets is characterized by low maximum speed, more frequent short delays at intersections and a greater number of turning.
- The overall trip quality for people using all of the different modes of transportation is superior in a traditional neighborhood street network. What we have long felt intuitively, but are only starting to appreciate, is that our perception of travel is not one-dimensional at all, but rather considers a host of factors along with the “hard” measures of time and speed. There is a degree of goodness or badness felt by the traveler, and though difficult to quantify, we know it directly affects how people travel and human behavior while traveling.
- A series of small streets yields a better bicycle and pedestrian environment than a hierarchy of a few larger streets. Specific problems with larger arterials are large-radius corners, shallow-angle crossing as ramps and turn-lanes, monstrous pavement expanses to be crossed, dual left turn-lanes, long traffic signals, short walk signals and generally competitive and aggressive driving. Kulash describes the general feeling walkers and bicyclists experience on high-speed, large arterials as “being in an alien moonscape.”
- The traditional neighborhood provides a depth of texture and richness of detail along the street that is interesting to one traveling at the pedestrian speed.

It is important to note that traditional neighborhood design, as used in current times and in this handbook, does not exclude or prohibit automobiles. Rather, it accommodates driving just as it provides for other forms of transportation. The purpose of the street design standards in this handbook is to create streets which afford people the equal opportunity to walk, bicycle, use the bus or drive. Traditional neighborhood design is used because this approach creates streets which are able to obtain the balance between providing transportation options and maintaining livability in adjacent streets and neighborhoods.

## Required Street Layout and Design Principles

The following basic principles shall be used for the planning and designing of new streets.

### 1. Neighborhood Form and Character

Streets are important elements of the form and character of neighborhoods. Street layout and design are an integral part of neighborhood design.

### 2. Neighborhood Identity

Neighborhood identity is largely influenced by the streets in the area.

### 3. Emergency Vehicles

Streets should be designed to efficiently and safely accommodate emergency fire and medical services vehicles. The effects of decisions concerning turning radii and paths must be made with a full understanding of the implications of such decisions on the other users of the street.

### 4. Specificity

Each street should be designed individually and molded to the particular situation at hand by a multi-disciplinary team. Planners, engineers, architects, emergency responders, utility providers, landscape architects as well as the developer and neighborhood or homeowners association groups should be included in street design teams.

The following conditions (existing and projected) must be considered in order to design each street.

- the volume of pedestrian, bicycle and motor vehicle traffic each day and at peak hours;
- the speeds of motor vehicles, bicycles and pedestrians along the street as designed or redesigned;
- the mix of pedestrian, bicycle and motor vehicle traffic (including percentage of large trucks);
- the zoning and surrounding future land uses (assess pedestrian, bicycle and transit generators and attractors such as schools, shopping areas, community buildings, parks, churches and gathering places);
- the natural features of the area such as slope, mature trees, creeks, wetlands, etc.;
- the adjacent building setbacks with respect to the street;
- whether adjacent properties will be serviced directly from the street, or from alleys; and
- the function of the street and relation to the surrounding street network.

## **5. Shared Street Space**

On neighborhood streets with relatively low average daily traffic (ADT), the curb to curb area on neighborhood streets shall be used as a shared space by moving automobiles, parked cars and bicycles.

**Discussion:** A principle central to the design and sizing of neighborhood level streets in traditional street design is the use of shared street space where ADT is relatively low. Rather than having separate lanes of traffic or parking, the curb-to-curb area is narrow and drivers may be required to slow down or pull over to let an oncoming vehicle pass before proceeding. On neighborhood streets serving 25 dwelling units or less, research has shown that the chances of meeting another car where two cars are parked opposite each other will occur only about once a month for an average driver.

## **6. Human Scale**

Streets should be designed at the human scale. Human scale is the relationship between the dimensions of the human body and the proportion of the spaces which people use. Those areas that provide visually interesting details, create opportunities for interactions and feel comfortable to pedestrians moving at slow travel speed are designed at a “human scale.”

**Discussion:** The scale of a street design is of paramount importance. The design scale of a traditional street is that of the pedestrian, sometimes referred to as “human scale.” Describing what is of a “human scale” is perhaps best described by noting that which is not. A highway billboard beside a 55mph highway is a good example of vehicular scale. In order to be noticed, the sign must be very large with lettering large enough to be noticed and read by a motorist passing by at 81 feet per second (55mph). In contrast, a pedestrian typically walks at 3.5 to 4 feet per second. Moving at a much slower pace enables pedestrians to take in much smaller signs and lettering.

## **8. Streetscape**

Street design should consider the entire area from building face to building face, or the “streetscape.” The streetscape begins at the front of a vertical element, such as a building or fence on one side of a street and runs to the front of a building on the other side of the street. It is a three dimensional area running the length of the street.

**Discussion:** The level of integration of land use and transportation is readily apparent by viewing the streetscape. The designer must consider the scale of the buildings, the form of development expected to occur and the expected level of motor vehicle, pedestrian and bicycle volumes when designing or redesigning a particular street. In addition, the function and ambience of the street must be considered and the needs of vehicular and nonvehicular users addressed.

## **9. Connectivity**

Streets should be interconnected. See *Section II: Connectivity Standards*.

**Discussion:** Traditional neighborhood streets are interconnected.

Cul-de-sacs and other dead-end streets are not typical of traditional neighborhood design except in areas where topographic, wetland and other physical features preclude connection. Where extreme conditions preclude a street connection, a continuous nonautomotive connection in the form of a multi-use path or trail shall be provided.

## **10. Multiple Routes**

Streets shall be laid out using a grid or modified grid network pattern to provide multiple routes. See *Section II: Connectivity Standards*.

## **11. Pedestrians, Bicyclists and Public Transportation Users**

Pedestrians, bicyclists and bus riders are considered primary users of all streets. Streets should be designed to meet the needs of pedestrians and bicyclists, thus encouraging walking, bicycling and riding the bus as transportation modes. Pedestrian, bicycle and public transportation considerations should be integrated from the beginning of the design process.

## **12. Driveway Aprons and Curb Cuts**

The number of driveway aprons and curb cuts along streets should be minimized to enhance the pedestrian environment and maintain vehicular, pedestrian and bicycle capacity. See *Section VI for Driveway Apron and Curb Cuts*.

## **13. Access to Activity Centers**

Neighborhood streets should provide convenient access to and from activity centers such as schools, commercial areas, parks, employment centers, and other major attractors.

## **14. Vista Terminations**

Street design should always consider important sites at the end of streets and should seek to learn what civic buildings, or public spaces may be needed for a particular area. The focus of vista terminations may include buildings, plazas, parks, or a notable view. New subdivision design should provide consideration for vista termination in street layout.

## **15. Pavement Area**

The pavement area of neighborhood streets should be minimized, consistent with efforts to reduce street construction and maintenance costs, storm water runoff, and negative environmental impacts. Narrower streets also distinguish neighborhood streets from boulevards and avenues, and enhance neighborhood character.

**16. Peak Run-Off**

Where appropriate, the local street system and its infrastructure should reduce peak storm water run-off into the City’s storm drain system and natural water systems downstream, and provide biological and mechanical treatment of storm water runoff whenever possible.

**17. Preservation of Natural Features**

Neighborhood street design should be responsive to physical features, and should avoid or minimize impacts to natural features and water-related resources. Street layout standards should allow street alignments to follow natural contours and preserve natural features. See *Standard 5 in Section II: Connectivity Standards*.

**18. Neighborhood Street Volumes**

Neighborhood streets should be designed to carry traffic volumes at low speeds. They should function safely while reducing the need for extensive traffic regulations, control devices and enforcement.

**19. Cut-Through Traffic**

The neighborhood street should be designed to reduce continuous cut-through, non-local traffic on neighborhood streets.

**20. Street Trees**

Street trees should be planted on neighborhood streets to create attractive and healthy neighborhood environments, and to enhance the image of a street as a place with which residents can identify. Trees planted in the parkrow, along the sidewalk, or anywhere in the public right-of-way must be from the City of Ashland *“Recommended Street Trees: A Guide to Selection, Planting and Maintenance.”*

*Discussion:* Trees and landscaping form an essential element of the traditional neighborhood streets. The relationship of vertical height to horizontal width of the street is an important part of creating an inviting public space or “outdoor room.” Large stature trees form an especially important part in creating the outdoor room when buildings are setback from the street and are relatively low in height (i.e. single-family residential neighborhoods). For further discussion, see *Elements of the Street in Section III: Design Standards*.

**21. Street Lights and Furniture**

Light poles should be pedestrian scale and styles of poles should match the neighborhood. Spacing of light poles should be determined by the adjacent land uses. Lighting should be placed at frequent intervals in busy retail and commercial areas, but may be limited to intersections in residential areas. In some instances, building or fence-mounted lighting may replace the need for additional street lighting. Lighting elements should provide full-spectrum light so that colors at night are realistic.

Street furniture includes pedestrian amenities such as benches, flower pots, sculptures and other public art, low walls for sitting and drinking fountains. Benches should be provided in retail and commercial areas, along frequently used pedestrian corridors (routes over one-quarter of a mile to schools, parks, shopping, etc.) and at all bus stops. Trash receptacles should be provided in all pedestrian sitting areas.

## **22. Curbs**

Curbs should be a standard, vertical 6" high curb on all improved streets. Rolled or mountable curbs should not be used because they do not create an effective safety barrier, channel storm water, or prevent automobiles from parking on the parkrow and sidewalk. The horizontal curb surface is not included in the parkrow, or sidewalk width.

## **23. Transit Routes and Stops**

Streets identified as future transit routes should be designed to safely and efficiently accommodate transit vehicles, thus encouraging the use of public transit as a transportation mode. Transit stops should include amenities, such as but not limited to a bench, shelter from the elements, a posted schedule, bicycle parking, and water fountains. Such amenities encourage combination trips such as walking or bicycling to the bus stop and vice-versa at the destination.

## SECTION II: CONNECTIVITY STANDARDS

In traditional neighborhood areas, the street networks are laid out in a grid network. The grid or modified grid network provides interconnected streets and multiple travel route options for pedestrians, bicyclists and drivers. The grid network has several benefits. Grid-patterned streets provide many connections and route options for short trips. Many connections and route options disperses traffic and increases safety. The grid pattern uses land efficiently and allows a greater number of lots on a site. Cul-de-sacs and other dead-end streets are not typical of traditional neighborhood design except in areas where extreme topographic or wetland conditions preclude connection (See *Section V: Hillside Streets and Natural Areas*).

### Street Connectivity Approval Standards

New and reconstructed streets shall conform to the following connectivity standards, and the City of Ashland Street Dedication Map.

#### 1. Interconnection

Streets shall be interconnected to reduce travel distance, promote the use of alternative modes, provide for efficient provision of utilities and emergency services and provide multiple travel routes. In certain situations where the physical features of the land create severe constraints, or natural features should be preserved, exceptions may be made. Such conditions may include, but are not limited to, topography, wetlands, mature trees, creeks, drainages, and rock outcroppings (See *Section V: Hillside Streets and Natural Areas*).

#### 2. Efficient Land Use

Street layout shall permit and encourage efficient lot layout and attainment of planned densities.

#### 3. Integration With Major Streets

Neighborhood circulation systems and land development patterns shall effectively integrate with boulevards and avenues, which are designed to accommodate heavier traffic volumes.

#### 4. Alleys

The use of the alley is recommended, where possible. The alley can contribute positively to the form of the street and has many advantages. First, it allows the most positive streetscape because it eliminates the need for driveways and the visual intrusion of garages. Secondly, the alley can create a positive neighborhood space where the sidewalk feels more safe and inviting for pedestrians, neighbors socializing and children playing. Third, when the garage is located in rear yards off the alley, interesting opportunities arise for creating inviting exterior rooms using the garage as a privacy wall and divider of space. Finally, the alley enhances the grid street network and provides midblock connections for nonmotorists.

## 5. Preserving Natural Features

Streets shall be located in a manner which preserves natural features to the greatest extent feasible.

1. Whenever possible, street alignments shall follow natural contours and features so that visual and physical access to the natural feature is possible.
2. Streets shall be situated between natural features, such as creeks, mature trees, drainages, open spaces and individual parcels in order to appropriately incorporate such significant neighborhood features.

## 6. Walkable Neighborhoods

Neighborhoods shall be sized in walkable increments, with block lengths as defined in *Standard II. 8. Block Length*.

## 7. Off-Street Connections

Off-street pathways shall be connected to the street network and used to provide pedestrian and bicycle access in situations where a street is not feasible. In cases where a street is feasible, off-street pathways shall not be permitted in lieu of a traditional streets with sidewalks. However, off-street pathways are permitted in addition to traditional streets with sidewalks in any situation.

## 8. Block Length

- A. The layout of streets shall not create excessive travel lengths. Block lengths shall be a maximum of 300 to 400 feet and block perimeters shall be a maximum of 1,200 to 1,600 feet.

*Block length is defined as the distance along a street between the centerline of two intersecting through streets. Block perimeter is defined as the sum of the block lengths of all sides of a block.*

- B. An exception to the block length standard may be permitted when one or more of the following conditions exist.
  1. Physical conditions that preclude development of a public street. In certain situations where the physical features of the land create severe constraints, or natural features should be preserved, exceptions may be made. Such conditions may include, but are not limited to, topography, wetlands, mature trees, creeks, drainages, and rock outcroppings (See *Section V: Hillside Streets and Natural Areas*).

2. Buildings or other existing development on adjacent lands, including previously subdivided but vacant lots or parcels, which preclude a connection now or in the future considering the potential for redevelopment.
  3. Where an existing public street or streets terminating at the boundary of the development site have a block length exceeding 600 feet, or are situated such that the extension of the street(s) into the development site would create a block length exceeding 600 feet. In such cases, the block length shall be as close to 600 feet as practical.
- C. When block lengths exceed 400 feet, the following measures shall be used to provide many connections and route options for short trips.
1. Where extreme conditions preclude street connections, continuous nonautomotive connection shall be provided with a multi-use path. In no cases shall off-street pathways be used in lieu of a traditional street with sidewalks in cases where extreme conditions do not exist.
  2. Introduce a pocket park, or plaza area with the street diverted around it.
  3. At the mid-block point, create a short median with trees or use other traffic calming devices to slow traffic, break up street lengths and provide pedestrian refuge.

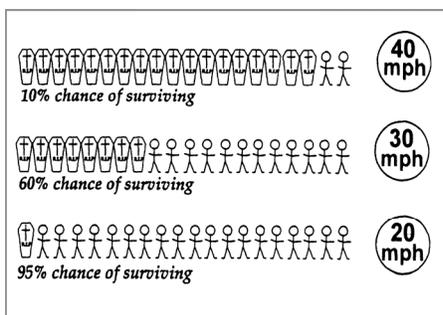


## SECTION III: DESIGN STANDARDS

### Safety

In any design situation, no topic is more important than human safety. Street design situations require the consideration of many, sometimes competing elements to make the street safe for all modes of travel. In street design, the standards that should be applied and questions that should be asked include the following.

- What actions may reasonably be expected of motorists and nonmotorists along the street?
- Given a foreseeable but infrequent problem, what are the ramifications on other users of the street if the problem is specially addressed in the design?
- When balancing conflicting matters, the frequency of conflict between the two or more competing elements and the resulting frequency of difficulties that will be experienced should be documented.
- What are the physical consequences of a particular design element or decision?
- If in doubt, favor the nonmotorist and accommodate the motorist.



*Chances of a Pedestrian  
Surviving a Traffic Accident*

### Designing for 20mph

High-speed roads have a place between cities, but not through the heart of the community. Relatively low actual travel speeds, a maximum of 20 mph, for motor vehicles is a critical concept in traditional street design. Low motor vehicle travel speeds positively affect safety, the non-automotive travel environment and the livability of neighborhood.

As motor vehicle speed increases, the perception and comfort of pedestrians and bicyclists is negatively impacted and the number of motor vehicle/pedestrian accidents increases. In general, streets with motor vehicles traveling at high speeds are unwelcoming to pedestrians and bicyclists because the impact of motor vehicles kinetic energy and loud sound.

Neighborhood streets (neighborhood streets, neighborhood collectors and some avenues) should be designed for motor vehicle travel speeds of 20 mph or less. When a question exists concerning a particular design detail, the conflict should be resolved in favor of the nonvehicular users, unless the public safety will truly be jeopardized by the decision. Favoring the nonmotorist will usually result in the correct decision because motorists have the benefit of traveling in a device designed to enclose, protect and support the human(s) inside. An inconvenienced motor vehicle will seldom result in a modal shift, but an inconvenienced nonmotorist will often become a motorist resulting in a modal shift.

A survey by the Federal Highway Administration found that by a wide margin, residents find traffic moving at 20 mph through their neighborhoods acceptable; by an equally side margin they find traffic at 30 mph unacceptable. At 20 mph, drivers can anticipate conflicts and have time to

stop for pedestrian at crosswalks. Pedestrian-vehicle accidents are less frequent and, when they occur, much less severe.

Traditional neighborhood streets are designed to create an environment where drivers will realize that driving fast and aggressively is inappropriate. In other words, neighborhood streets are designed so the speed limits are self-enforcing. Narrow streets with street trees in parkrows between the curb and sidewalk and on-street parking calm traffic. In some cases, further traffic calming treatments such as curb extensions at sidewalks, textured, raised crosswalks, medians, and other tools are needed.

Research has shown operating speeds decline somewhat as individual lanes and street sections are narrowed. Conversely, studies by the Institute of Transportation Engineers has shown posted speed limits are regularly exceeded if streets have “gun barrel” designs, or even gentle curves with wide cross-sections. Speed zones, “go slow” signs and lane restriping cannot compensate for the effect on drivers of the physical environment of streets designed to make driving comfortable at travel speeds above 20 mph.

### **Elements of the Street**

Street design involves the creation of some of the most important and frequently used public spaces. In addition to the very important function of providing a travel corridor, streets provide critical public spaces which shape the character of Ashland’s neighborhoods. Because streets serve a variety of users, street design must address the divergent needs of pedestrians, bicyclists, transit, motor vehicles, adjacent land uses and neighborhood character.

There are, generally speaking, a dozen or so elements that make up a street. However, the design and assembly of those elements and the determination of the sizes and locations are individual to each street and of lasting importance.

Street, public right-of-way and street right-of-way are used interchangeably throughout this document. The term street refers to more than the paved, curb-to-curb roadway surface. It includes the sidewalk, parkrow, street trees, lighting and street furniture, bike lanes, on-street parking lanes and motor vehicle travel lanes. Right-of-way measurements include the area needed to locate all of the street ingredients. A description of the elements that comprise a street follows.

### **Motor Vehicle Travel Lanes**

The width of a particular street seems to be a simple topic, but this is actually a complicated subject that requires considerable thought and attention. Auto-oriented development focuses on motor vehicles traveling safely and efficiently. This translates into designing streets so that motor vehicles are interrupted as little as possible so that continuous speeds can be maintained. To design for the continuous opportunities for free-flowing vehicles creates situations where passenger cars, the predominant vehicle most of the time, will travel at speeds greater than are desirable for pedestrians and bicyclists.

Streets in Ashland must be designed to a different end so that the overall function, comfort, safety and aesthetics of a street are designed for all users and are more important than vehicular efficiency.

Travel lanes of 8 to 10 feet in width are adequate for all types of vehicles that enter a neighborhood. An average car ranges from 5.5 to 6.5 feet in width. Fire trucks, large buses, RV's and semi-trucks measure 9 feet from mirror to mirror.

### **Curbs**

Typically, standard vertical curbs are used on all traditional neighborhood streets. The standard vertical curb serves a number of purposes. Curbs:

- act as a safety barrier for pedestrians;
- channel storm water into the storm drainage system;
- prevent automobiles from parking in parkrows or on sidewalks;
- keep the edges of the pavement from breaking down; and
- facilitate street sweeping.

### **Bicycles**

A separate, striped bicycle lane is required on both sides of new boulevards and avenues because travel speeds and volumes are high. Typically, the travel speeds and motor vehicle traffic volumes associated with neighborhood streets do not necessitate a separate, striped bicycle lane. The *Oregon Bicycle and Pedestrian Plan* recommends bike lanes when projected Average Daily Traffic (ADT) exceeds 3,000 trips per day, and/or actual travel speeds exceed 25mph.

### **Parking**

Most neighborhood streets allow on-street parking. Parallel parking is the recommended method for on-street parking, but other on-street parking methods, including diagonal and head-in, may be appropriate under certain circumstances. Diagonal and head-in parking must be carefully evaluated before implementing because it requires an additional 11 feet of street width.

### **Parkrow and Street Trees**

Parkrows with street trees are a basic design feature of traditional neighborhoods. Street trees are the trees planted in the parkrow or anywhere else in the public right-of-way. The parkrow is the planting area between the curb and sidewalk. The parkrow is for the most part landscaped in residential areas. In commercial areas, the street trees should be planted in tree wells and the remaining parkrow should be paved to match the sidewalk.

Nothing humanizes a street more than a row of trees shading the sidewalk. Street trees provide a buffer to pedestrians and adjacent land uses from the vehicles on the street. Street trees help calm motor vehicle traffic speeds. Street trees can enhance street image and are an important part of neighborhood character. Large trees provide leafy canopies and welcome shade, buffer pedestrians, screen parked cars and traffic, break visual continuity, soften the character of the street and enhance property values. Economic benefits are reflected in the increased values of properties on streets with well-established trees.

Trees are perhaps one of the very few elements of a street, along with well-designed buildings, that can be large and yet still effectively be of human scale. In addition to their naturalization of the street, trees can serve to create a frame around a street and are recognized as being very conducive to enhancing the nonmotorist environment. In most situations, street trees should line the street and be located in the parkrow.

Large-scale, high canopy trees are preferred over smaller-scale trees for street tree use, whenever they can be used. Among the reasons for this are:

- Use of larger trees with high canopies allows fewer trees to be used to achieve a reasonable amount of shading.
- Large trees provide a canopy over the paved area of the street reducing the air temperature near the ground. Depending on the species of tree planted, research has shown that the temperature difference can range between 5 to 8 degrees Fahrenheit.
- Large-scale trees are more effective in removing pollutants from the air because they provide more leaf surface per tree than small trees. A single, large, free-standing tree with a height of 75 feet and a crown width of 45 feet will absorb the carbon dioxide output of 800 homes in a year's time.
- When large trees with high canopies are planted along streets serving commercial uses, conflicts with store signs are minimized because the tree canopy is above the sign.

Large-scale trees require an adequate planting area. For this reason, parkrows must be at least 6 feet wide. Smaller parkrows may be permitted to respond to the characteristics of individual developments or street reconstruction projects such as insufficient public right-of-way, steep slopes or other physical conditions. However, the street trees must be planted properly and carefully chosen to ensure healthy growth and root control. The placement, types of trees and planting methods are addressed in the *Street Tree Standards* of the *Site Design and Use Standards* of the *Ashland Land Use Ordinance*.

Trees require maintenance and funding to support watering, pruning, disease, pest control and other items of standard tree care. They can cause varying amounts of leaf litter. The maintenance and care of the parkrow and street trees is the responsibility of the property owner abutting the parkrow (*Ashland Municipal Code 9.08.130*). The placement, types of trees and planting methods are addressed in the *Street Tree Standards* of the *Site Design and Use Standards* of the *Ashland Land Use Ordinance*.

### **Sidewalks and Crosswalks**

An interlinked network of sidewalks is a basic design feature of traditional neighborhoods. Sidewalks must be continuous. The walking experience must be pleasurable if people are to choose walking as a mode of transportation. Continuity, texture and richness of detail is essential to absorbing the pedestrians attention for large amounts of time at a slow speed. Interesting pavement, architectural details, placement of street trees, the width of the parkrow,

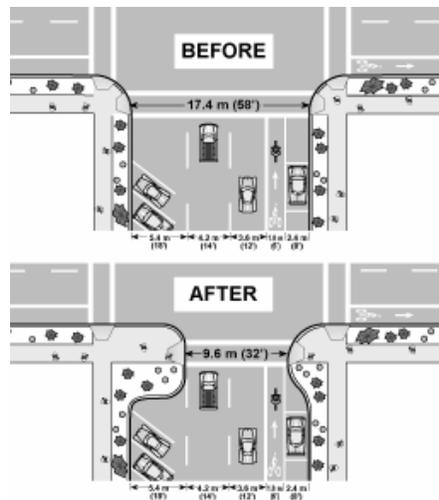
the treatment of building facades, and other visual details enhance the walking experience. In contrast, this continuity can be destroyed by treeless expanses of sidewalks, open edged parking lots and blank walls.

In addition to sidewalks, pedestrian networks can be formed with walkway connections to existing development and across wetlands and slopes that may not be crossed by streets without difficulty. In the center of neighborhoods, pedestrian networks may also be formed by additional walks between buildings, but not at the expense of maintaining the continuity of the pedestrian network adjacent to the streets.

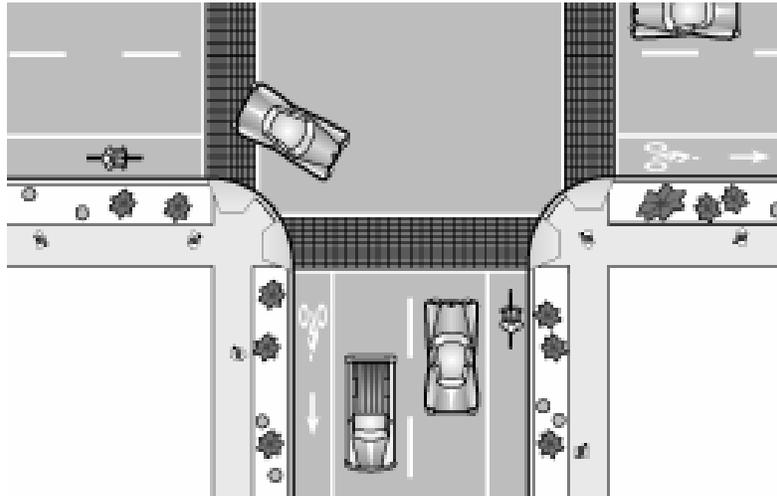
The treatment of intersections is especially important in determining if street crossings are convenient for pedestrians. The continuity of the sidewalks should continue across the street and be defined by a change of texture in the street. A pavement change indicates that at this point drivers must yield the road to pedestrians. Handicap access ramps should be located behind the corner and at the narrowest part of the street.

Pedestrians must be provided with the shortest possible route across street intersections. This is accomplished by using small curb radii and curb extensions. As corner radius increases, the pedestrian crossing distance increases. Sight triangles should be free of street trees so that pedestrians and drivers can see each other.

#### *Curb Extensions Reduce Crossing Distance*



## Colored and Textured Crosswalk



### **Application of Standards**

On streets classified as boulevards and avenues, which have high volumes, higher travel speeds and a larger percentage of large vehicles, the street function and average daily traffic (ADT) will necessitate adherence to the street standards outlined below. At the neighborhood collector and neighborhood street level, design must follow the standards, but be flexible enough to accommodate varying situations.

One of the basic aspects of traditional street design is that the design must be very specific for the particular street at hand. When determining how to classify a new street for the purpose of design, careful attention should be given to considering the street as a whole in the context of the neighborhood, of the underlying zoning and land uses, and the future amount of traffic, rather than strict adherence to using projected average daily traffic (ADT) figures alone. Care must be taken not to focus on efficiency and worst case scenarios. The end goal should be to balance creating a notable, livable, functional street for the neighborhood, and providing a variety of transportation options for residents.

**Table 1: City of Ashland Street Design Standards**

TYPE OF STREET	ADT	R.O.W. WIDTH	CURB-TO-CURB PAVEMENT WIDTH	WITHIN CURB-TO-CURB AREA				CURB on both sides	PARK-ROW on both sides	SIDE-WALKS on both sides
				MOTOR VEHICLE TRAVEL LANES	MEDIAN AND/OR CENTER TURN LANE	BIKE LANES on both sides	PARK-ING in 8' bays			
2-Lane Boulevard	8,000 to	61'-87'	34'	11'	none	2 at 6' each	in 8' bays	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
3-Lane Boulevard	30,000	73'-99'	46'	11'	12'	2 at 6' each	in 8' bays	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
5-Lane Boulevard	ADT	95'-121'	68'	11'	12'	2 at 6' each	in 8' bays	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
2-Lane Avenue	3,000 to	59'-86'	32'-33'	10'-10.5'	none	2 at 6' each	in 8' bays	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
3-Lane Avenue	10,000 ADT	70.5'-97.5'	43.5'-44.5'	10'-10.5'	11.5'	2 at 6' each	in 8' bays	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
Neighborhood Collector, Residential	1,500 to				NA	NA <sup>3</sup>				
No Parking	5,000	49'-51'	22'	11'			none	6"	8'	5'-6'
Parking One Side	ADT	50'-56'	25'-27'	9'-10'			one 7' lane	6"	7'-8'	5'-6'
Parking Both Sides		57'-63'	32'-34'	9'-10'			two 7' lanes	6"	7'-8'	5'-6'
Neighborhood Collector, Commercial										
Parallel Parking One Side		55'-65'	28'	10'			one 8' lane	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
Parallel Parking Both Sides		63'-73'	36'	10'			two 8' lanes	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
Diagonal Parking One Side		65'-74'	37'	10'			one 17' lane	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
Diagonal Parking Both Sides		81'-91'	54'	10'			two 17' lanes	6"	5'-8' <sup>1</sup>	6'-10' <sup>2</sup>
Neighborhood Street, Residential	less than				NA	NA <sup>3</sup>				
Parking One Side	1,500	47'-51'	22'	15' Queuing			one 7' lane	6"	7'-8'	5'-6'
Parking Both Sides	ADT	50'-57'	25'-28'	11'-14' Queuing			two 7' lanes	6"	7'-8'	5'-6'
Alley	NA	16'	12' paved width, 2' strips on both sides	NA	NA	NA	none	none	none	none
Multi-Use Path	NA	10'-18'	6'-10' paved width, 2'-4' strips on both sides	NA	NA	NA	none	none	none	none

<sup>1</sup> 7' – 8' landscape parkrow shall be installed in residential areas, a 5' hardscape parkrow with tree wells shall be installed in commercial areas.

<sup>2</sup> 6' sidewalk shall be installed in residential areas, 8'-10' sidewalk shall be installed in commercial areas. A 10' sidewalk shall be required on Boulevards (arterial) streets in the Downtown Design Standards Zone.

<sup>3</sup> Bike lanes are generally not needed on low volume (less than 3,000 ADT) and/or low travel speed (Less than 25mph) streets

<sup>4</sup> All dimensions and ranges in the City of Ashland Street Design Standards represent minimum standards or ranges for the improvements shown. The approval authority may require a dimension within a specific range based upon intensity of land use, existing and projected traffic and pedestrian volumes or when supported through other applicable standards. The approval authority may approve dimensions and ranges greater than those shown when volunteered by the applicant.

## **Street Design Standards**

A description of street design standards for each street classification follows. For an abbreviated presentation of the street right-of-way standards, see Table 1. All elements listed are required unless specifically noted. All dimensions and ranges in the City of Ashland Street Design Standards represent minimum standard or ranges for the improvements shown. The approval authority may require a dimension within a specified range based upon intensity of land use, existing and projected traffic and pedestrian volumes or when supported through other applicable approval standards. The approval authority may approve dimensions and ranges greater than those shown when volunteered by the applicant.

**Approval Standards:** New and reconstructed streets shall conform to the following design standards.

### **Boulevard**

Boulevards are major thoroughfares filled with both human and vehicular activity. Design should provide an environment where walking, bicycling, using transit and driving are equally convenient and should facilitate the boulevard's use as a public space. Design should start with the assumption that the busy nature of a boulevard is a positive factor and incorporate it to enhance the street scape and setting. A 2-lane, 3-lane, or 5-lane configuration can be used depending on the number of trips generated by surrounding existing and future land uses.

**Street Function:** Provide access to major urban activity centers and provide connections to regional traffic ways such as Interstate 5. Traffic without a destination in Ashland should be encouraged to use regional traffic ways and discouraged from using boulevards.

**Connectivity:** Connects neighborhoods to urban activity centers and to regional traffic ways such as Interstate 5.

**Average Daily Traffic:** 8,000 - 30,000 motor vehicle trips per day

**Managed Speed:** 25 mph - 35 mph

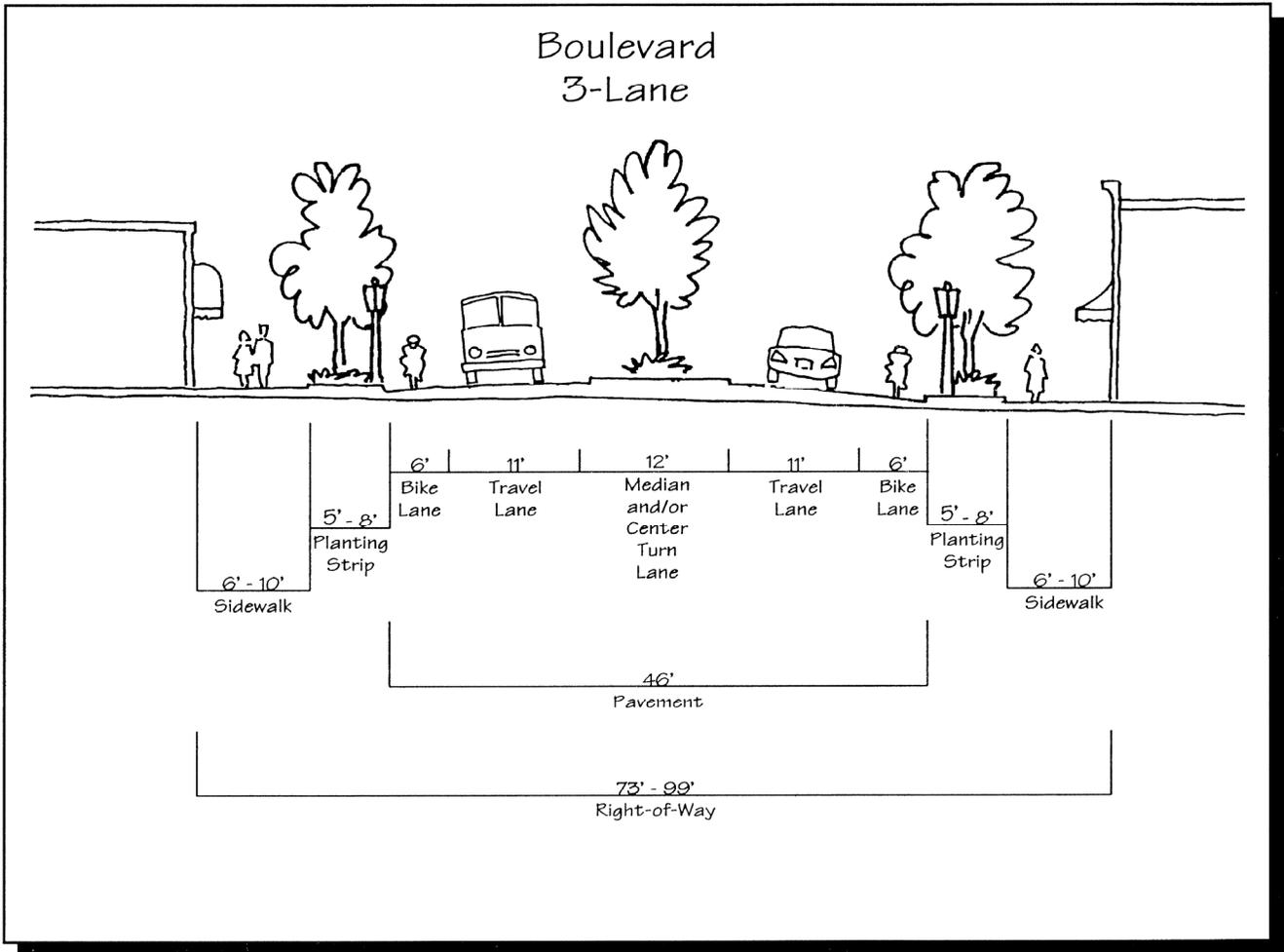
**Right-of-Way Width:**

- 61' - 87' for 2-Lane
- 73' - 99' for 3-Lane
- 95' - 121' for 5-Lane

**Curb-to-Curb Width:**

- 34' for 2-Lane
- 46' for 3-Lane
- 68' for 5-Lane

- Motor Vehicle Travel Lanes:**
- Two 11' travel lanes for 2-Lane
  - Two 11' travel lanes, one 12' median/center turn lane for 3-Lane
  - Four 11' travel lanes, one 12' median/center turn lane for 5-Lane
- Bike Lanes:** Two 6' bike lanes, one on each side of the street moving in the same direction as motor vehicle traffic
- Parking:** In 8' - 9' bays
- Curb and Gutter:** Yes 6" vertical/barrier curb
- Parkrow:**
- 7' - 8' landscape parkrow shall be installed in residential areas. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.
  - 5' hardscape parkrow shall be used in commercial areas with on-street parking and where the street corridor has or will have a hardscape parkrow in place. Landscape parkrows may be appropriate in some commercial areas without on-street parking, or where the overall design concept for the street corridor includes a landscape parkrow. The minimum width of a landscape parkrow in commercial areas shall be 7'. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.
- Sidewalks:**
- 6' on both sides in residential areas.
  - 8' – 10' on both sides in commercial areas. A 10' sidewalk shall be required on Boulevards in the Downtown Design Standards Zone.



## **Avenue**

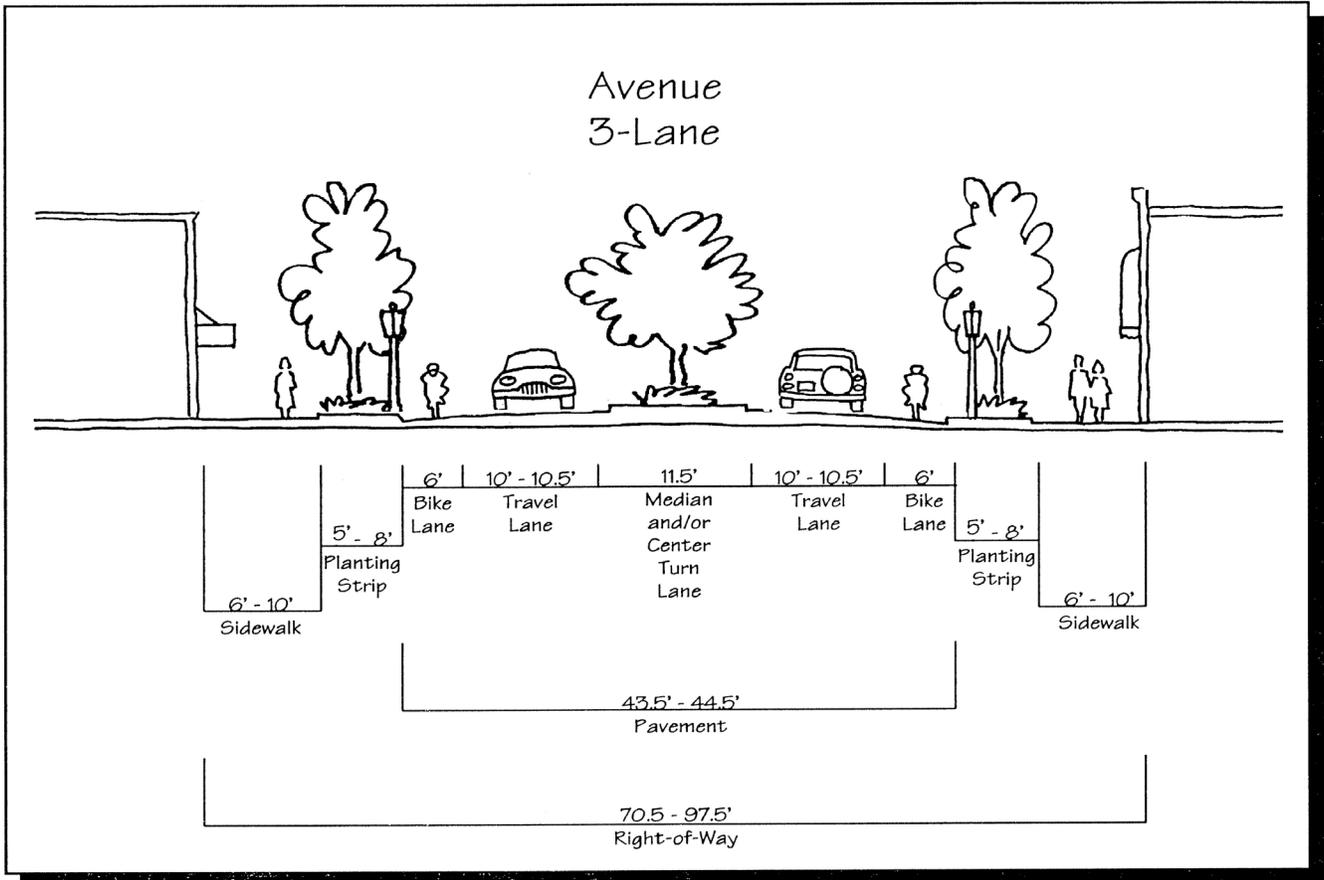
Avenues provide concentrated pedestrian, bicycle, transit and motor vehicle access from neighborhoods to neighborhood activity centers and boulevards. Avenues are similar to boulevards, but are designed on a smaller scale. Design should provide an environment where walking, bicycling, using transit and driving are equally convenient and should facilitate the avenue's use as a public space. A 2-lane, or 3-lane configuration can be used depending on the number of trips generated by surrounding existing and future land uses.

**Street Function:** Provide access from neighborhoods to neighborhood activity centers and boulevards.

**Connectivity:** Connects neighborhoods to neighborhood activity centers and boulevards.

**Average Daily Traffic:** 3,000 - 10,000 motor vehicle trips per day

<b>Managed Speed:</b>	20 mph - 25 mph
<b>Right-of-Way Width:</b>	<ul style="list-style-type: none"> <li>• 59' - 86' for 2-Lane</li> <li>• 70.5' - 97.5' for 3-Lane</li> </ul>
<b>Curb-to-Curb Width:</b>	<ul style="list-style-type: none"> <li>• 32' - 33' for 2-Lane</li> <li>• 43.5' - 44.5' for 3-Lane</li> </ul>
<b>Motor Vehicle Travel Lanes:</b>	<ul style="list-style-type: none"> <li>• Two 10' - 10.5' travel lanes for 2-Lane</li> <li>• Two 10' - 10.5' travel lanes, one 11.5' median/center turn lane for 3-Lane</li> </ul>
<b>Bike Lanes:</b>	Two 6' bike lanes, one on each side of the street moving in the same direction as motor vehicle traffic
<b>Parking:</b>	In 8' - 9' bays
<b>Curb and Gutter:</b>	Yes, 6" vertical/barrier curb
<b>Parkrow:</b>	<ul style="list-style-type: none"> <li>• 7' – 8' landscape parkrow shall be installed in residential areas. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.</li> <li>• 5' hardscape parkrows shall be used in commercial areas with on-street parking and where the street corridor has or will have a hardscape parkrow in place. Landscape parkrows may be appropriate in some commercial areas without on-street parking, or where the overall design concept for the street corridor includes a landscape parkrow. The minimum width of a landscaped parkrow in commercial areas shall be 7'. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.</li> </ul>
<b>Sidewalks:</b>	<ul style="list-style-type: none"> <li>• 6' on both sides in residential areas.</li> <li>• 8' – 10' on both sides in commercial areas.</li> </ul>



### **Neighborhood Collector**

Neighborhood Collectors provide access to neighborhood cores and gather traffic from various parts of the neighborhood and distribute it to the major street system. Different configurations with several on-street parking options are provided for residential and commercial areas.

#### ***Residential Neighborhood Collector***

**Street Function:** Provide access in and out of the neighborhood.

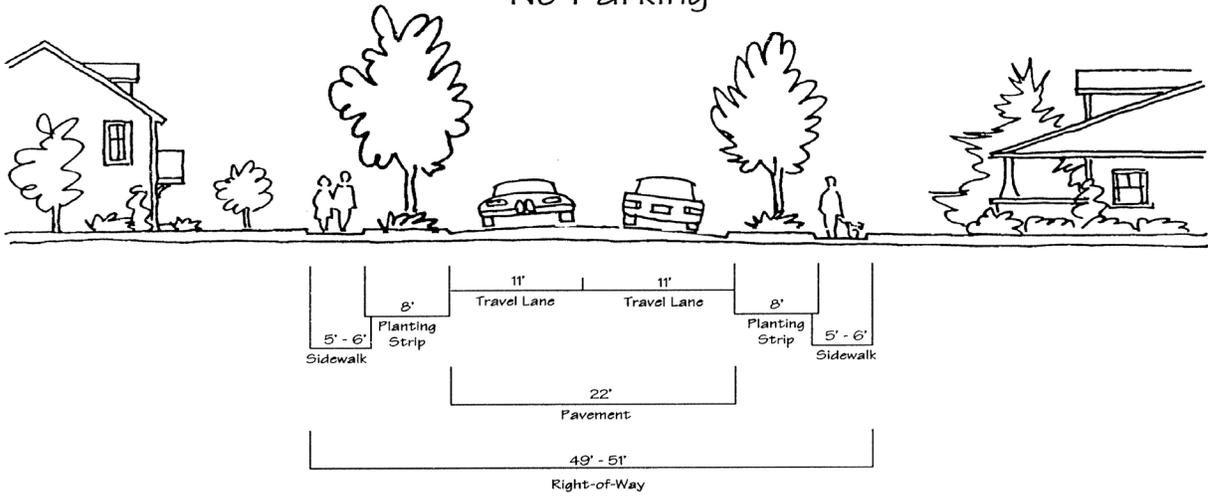
**Connectivity:** Collects traffic from within residential areas and connects these areas with the major street network.

**Average Daily Traffic:** 1,500 to 5,000 motor vehicle trips per day

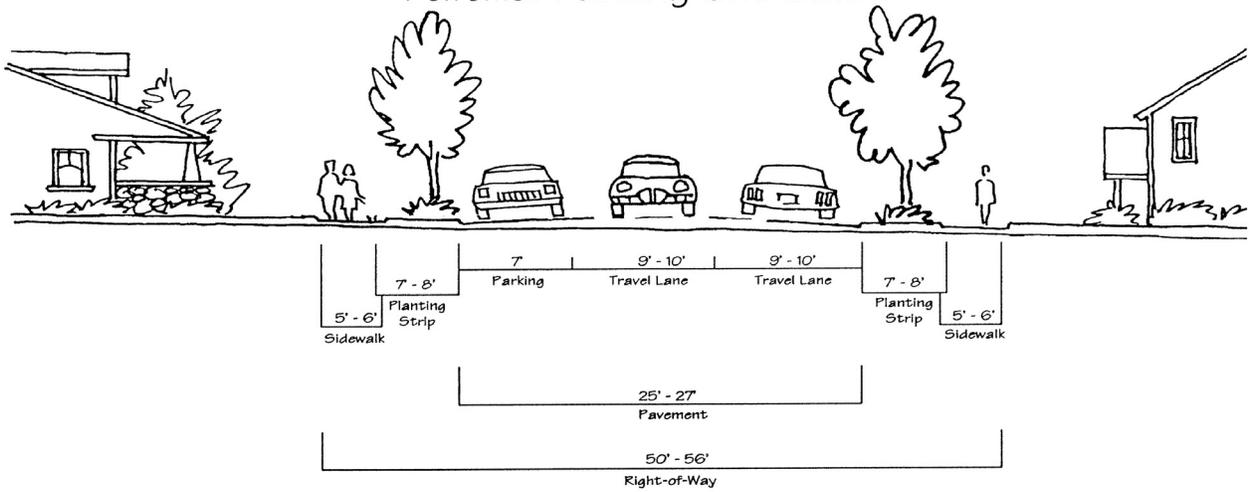
**Managed Speed:** 15 mph - 20 mph

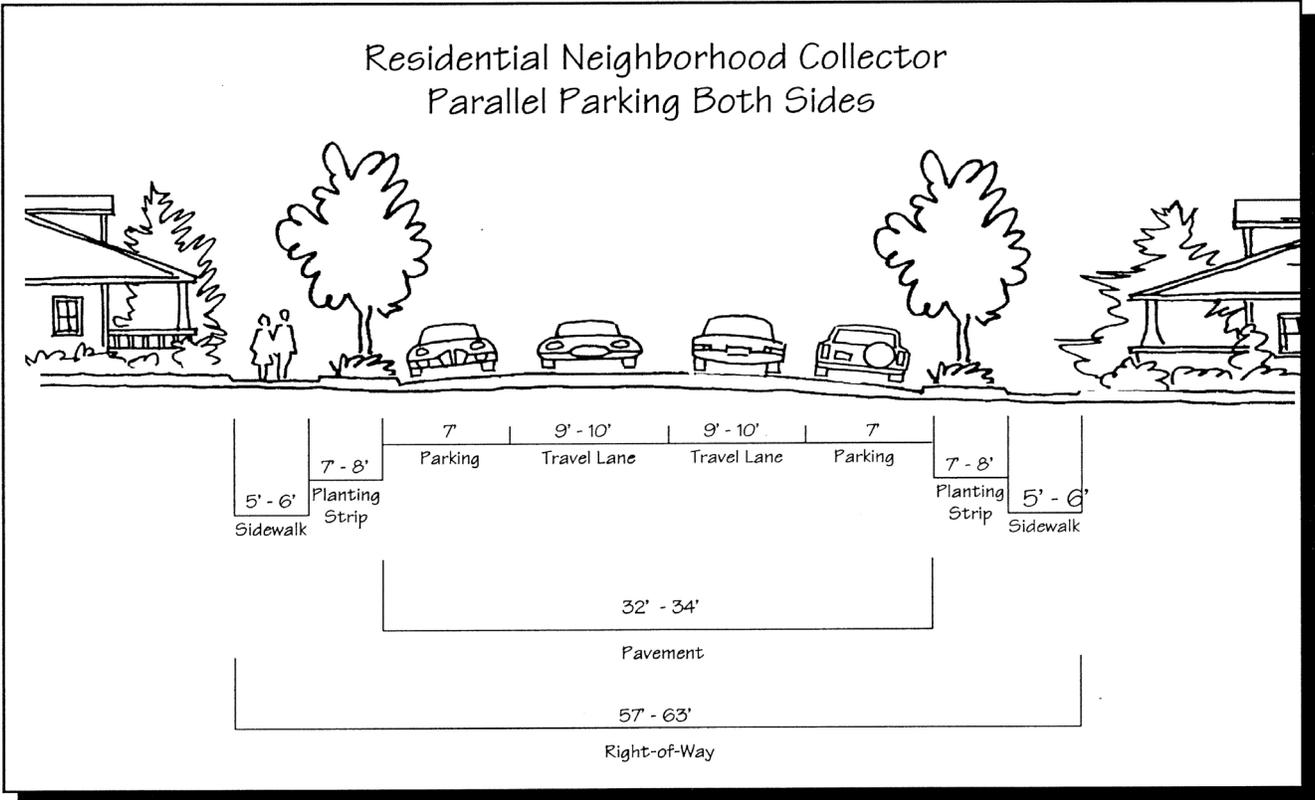
<b>Right-of-Way Width:</b>	<ul style="list-style-type: none"> <li>• 49' - 51' for No On-Street Parking</li> <li>• 50' - 56' for Parking One Side</li> <li>• 57' - 63' for Parking Both Sides</li> </ul>
<b>Curb-to-Curb Width:</b>	<ul style="list-style-type: none"> <li>• 22' for No On-Street Parking</li> <li>• 25' - 27' for Parking One Side</li> <li>• 32' - 34' for Parking Both Sides</li> </ul>
<b>Motor Vehicle Travel Lanes:</b>	<ul style="list-style-type: none"> <li>• Two 11' travel lanes for No On-Street Parking</li> <li>• Two 9' - 10' travel lanes' for Parking One Side and Parking Both Sides</li> </ul>
<b>Bike Lanes:</b>	Generally not needed on low volume/low travel speed streets. If motor vehicle trips per day exceed 3,000, and/or actual motor vehicle travel speeds exceed 25 mph, a bike lane shall be required.
<b>Parking:</b>	<ul style="list-style-type: none"> <li>• One 7' lane for Parking One Side</li> <li>• Two 7' lanes for Parking Both Sides</li> </ul> <p>Parking may be provided in 7' bays rather than a continuous on-street parking lane.</p>
<b>Curb and Gutter:</b>	Yes, 6" vertical/barrier curb
<b>Parkrow:</b>	<ul style="list-style-type: none"> <li>• 8' parkrow on both sides for No On-Street Parking</li> <li>• 7' - 8' parkrows on both sides for Parking One and Both Sides</li> </ul>
<b>Sidewalks:</b>	5' - 6' on both sides, use 6' in high pedestrian volume areas with frequent 2-way foot traffic

## Residential Neighborhood Collector No Parking



## Residential Neighborhood Collector Parallel Parking One Side





**Commercial Neighborhood Collector**

**Street Function:** Provide access in and out of neighborhoods and to neighborhood core with shopping and services.

**Connectivity:** Collects traffic from within residential areas. Provides neighborhood shopping opportunities and connects these areas with the major street network.

**Average Daily Traffic:** 1,500 to 5,000 motor vehicle trips per day

**Managed Speed:** 15 mph - 20 mph

- Right-of-Way Width:**
- 55' - 65' for Parallel Parking One Side
  - 63' - 73' for Parallel Parking Both Sides
  - 65' - 74' for Diagonal Parking One Side
  - 81' - 91' for Diagonal Parking Both Sides

**Curb-to-Curb Width:**

- 28' for Parallel Parking One Side
- 36' for Parallel Parking Both Sides
- 37' for Diagonal Parking One Side
- 54' for Diagonal Parking Both Sides

**Motor Vehicle Travel Lanes:** Two 10' travel lanes

**Bike Lanes:** Generally not needed on low volume/low travel speed streets. If motor vehicle trips per day exceed 3,000, and/or actual motor vehicle travel speeds exceed 25 mph, a bike lane may be needed.

**Parking:**

- One 8' lane for Parallel Parking One Side
- Two 8' lanes for Parallel Parking Both Sides
- One 17' lanes for Diagonal Parking One Side
- Two 17' lanes for Diagonal Parking Both Sides

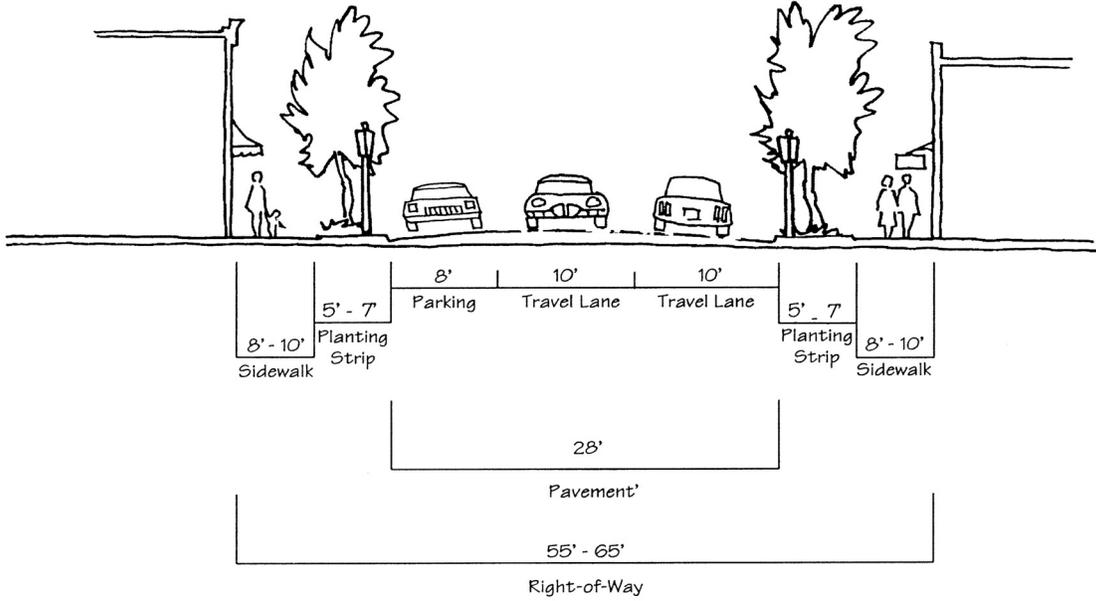
Parking may be provided in 7' bays rather than a continuous on-street parking lane.

**Curb and Gutter:** Yes, 6" vertical/barrier curb

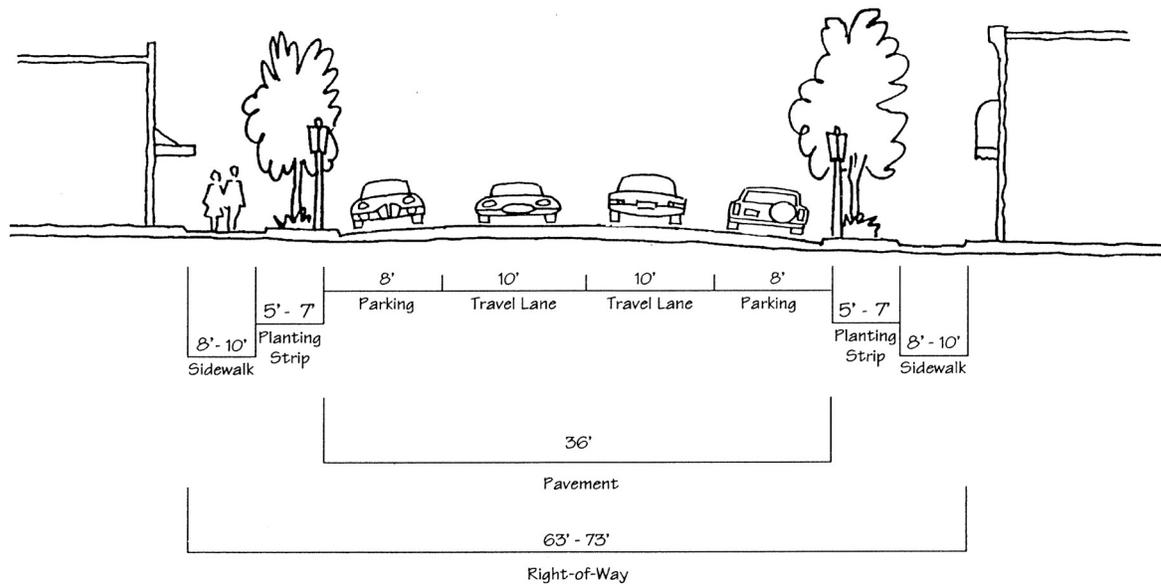
**Parkrow:** 5' hardscape parkrow shall be used in commercial areas with on-street parking and where the street corridor has or will have a hardscape parkrow in place. Landscape parkrows may be appropriate in some commercial areas without on-street parking, or where the overall design concept for the street corridor includes a landscape parkrow. The minimum width of a landscaped parkrow in commercial areas shall be 7'. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

**Sidewalks:** 8' - 10' on both sides

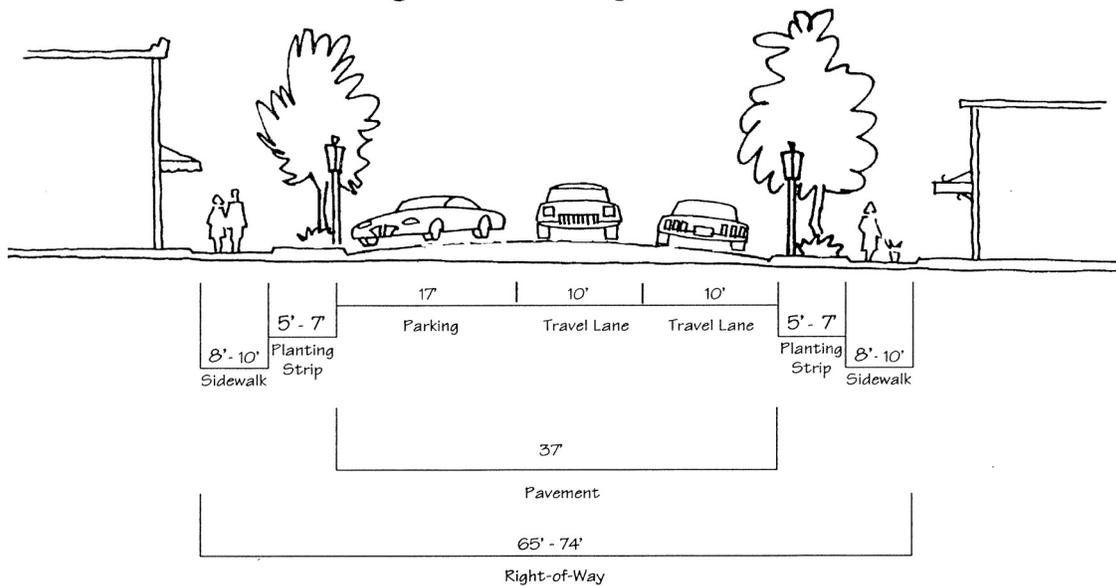
### Commercial Neighborhood Collector Parallel Parking One Side



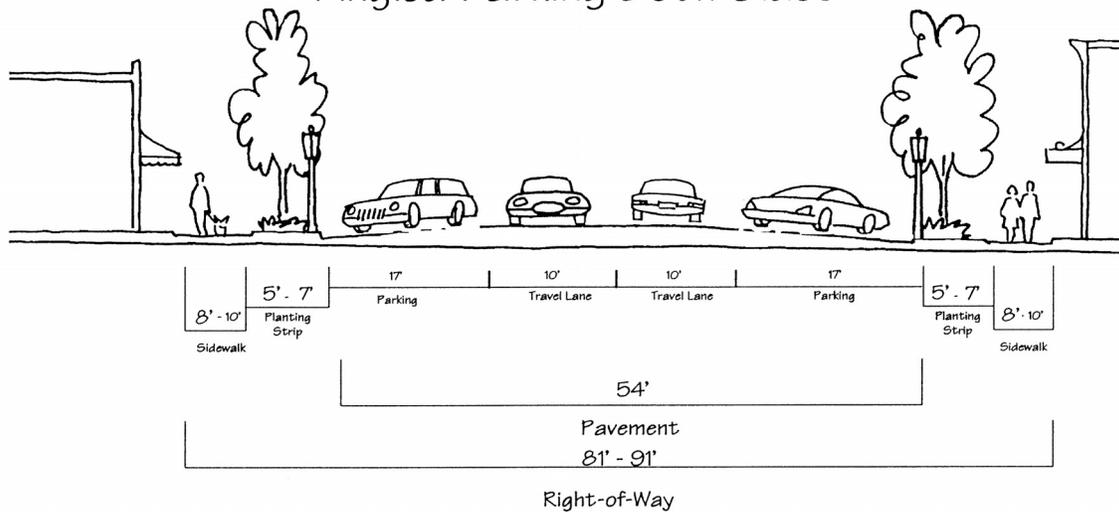
### Commercial Neighborhood Collector Parallel Parking Both Sides



## Commercial Neighborhood Collector Angled Parking One Side



## Commercial Neighborhood Collector Angled Parking Both Sides



### **Neighborhood Street**

Neighborhood Streets provide access to individual residential units and neighborhood commercial areas. Different configurations with several on-street parking options are provided for residential and commercial areas.

**Neighborhood Street:** For use in the following single-family residential zones - WR (Woodland Residential), RR - 1 and RR - .5 (Low Density Residential, and R-1-3.5, R-1-5, R-1-7.5 and R-1-10 (Single-Family Residential) unless specifically noted.

**Street Function:** Provide access to individual residential units and commercial areas.

**Connectivity:** Connects to higher order streets.

**Average Daily Traffic:** 1,500 or less motor vehicle trips per day

**Managed Speed:** 10 mph - 20 mph

**Right-of-Way Width:**

- 47' - 51' for Parking One Side
- 50' - 57' for Parking Both Sides

**Curb-to-Curb Width:**

- 22' for Parking One Side
- 25' - 28' for Parking Both Sides

**Motor Vehicle Travel Lanes:**

- One 15' queuing lane for Parking One Side
- One 11' queuing lane for Parking Both Sides in the R-1 zone,
- One 14' queuing lane for Parking Both Sides in higher density residential areas (i.e. R-1-3.5, R-2 and R-3)

On local residential streets with adequate off-street parking, a single 14' wide traffic lane may be permitted for both directions of vehicle traffic. 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.

**Bike Lanes:** Generally not needed on low volume/low travel speed streets.

**Parking:**

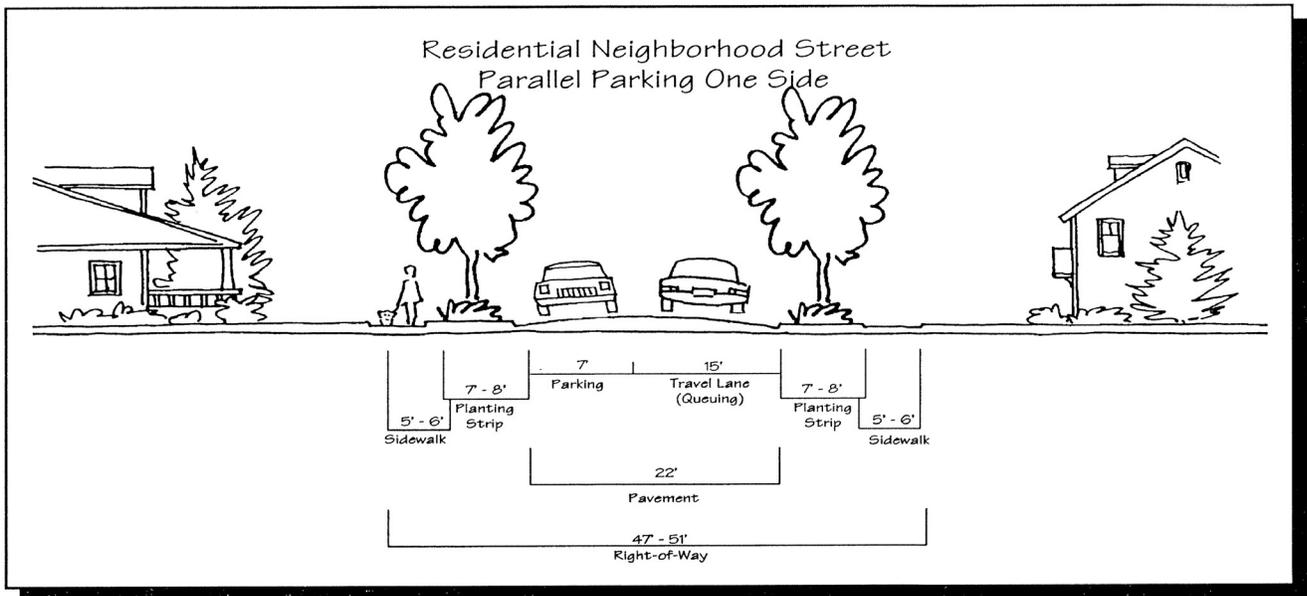
- One 7' lane for Parking One Side
- Two 7' lanes for Parking Both Sides

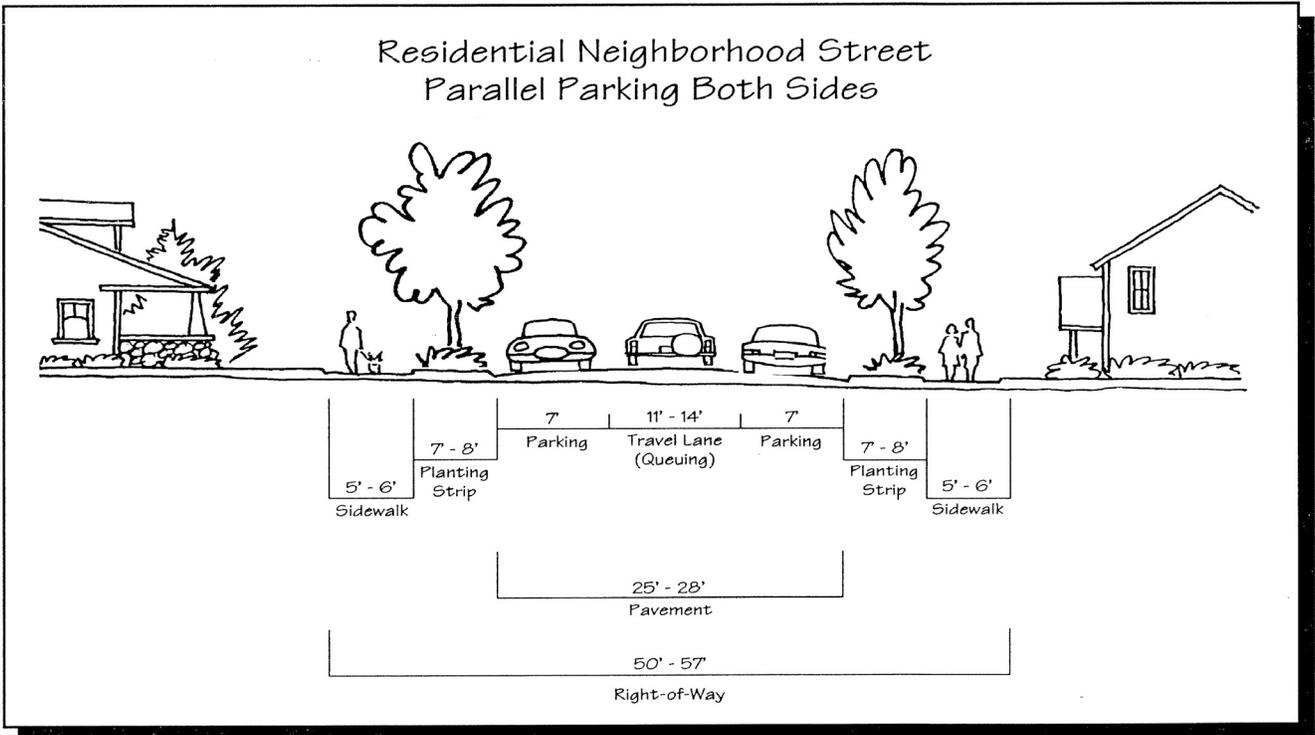
Parking may be provided in 7' bays rather than a continuous on-street parking lane.

**Curb and Gutter:** Yes, 6" vertical/barrier curb

- Parkrow:**
- 8' parkrow in residential areas on both sides for No On-Street Parking. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.
  - 7' - 8' parkrows in residential areas on both sides for Parking One and Both Sides. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.
  - 5' hardscape parkrow shall be used in commercial areas with on-street parking and where the street corridor has or will have a hardscape parkrow in place. Landscape parkrows may be appropriate in some commercial areas without on-street parking, or where the overall design concept for the street corridor includes a landscape parkrow. The minimum width of a landscaped parkrow in commercial areas shall be 7'. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

**Sidewalks:** 5' - 6' on both sides, use 6' in high pedestrian volume areas with frequent 2-way foot traffic



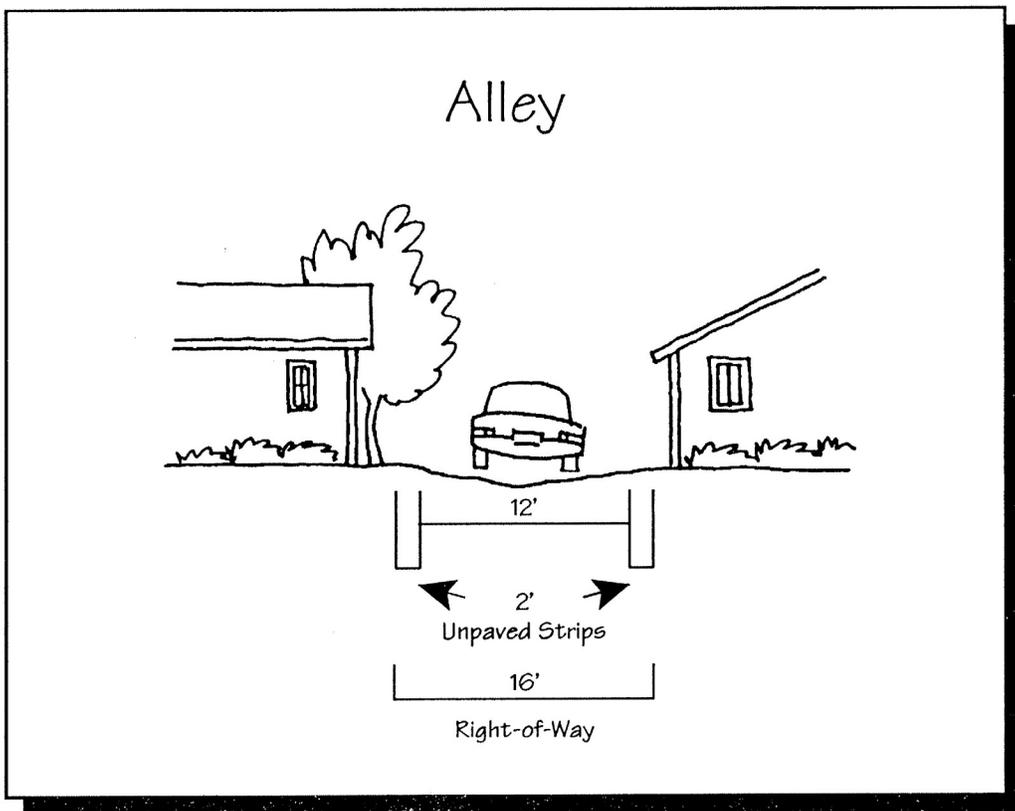


### Alley

The alley is a semi-public neighborhood space that provides access via the rear of the property. The use of alleys eliminates the need for front yard driveways and provides the opportunity for a more positive front yard street scape, allows the street located adjacent to the front of properties to be designed using a narrow width with limited on-street parking, and creates the opportunity for the use of narrower lots to increase residential densities. Alleys are appropriate in all residential areas and in some commercial areas for business frontage. Alleys provide access and delivery depending on the circulation pattern of the area.

<b>Street Function:</b>	Provide rear yard access and delivery to individual residential and commercial properties, and an alternative utility placement area.
<b>Connectivity:</b>	Connects to all types of streets.
<b>Average Daily Traffic:</b>	Not applicable
<b>Managed Speed:</b>	Not applicable, motor vehicle travel speeds should be below 10 mph
<b>Right-of-Way Width:</b>	16'

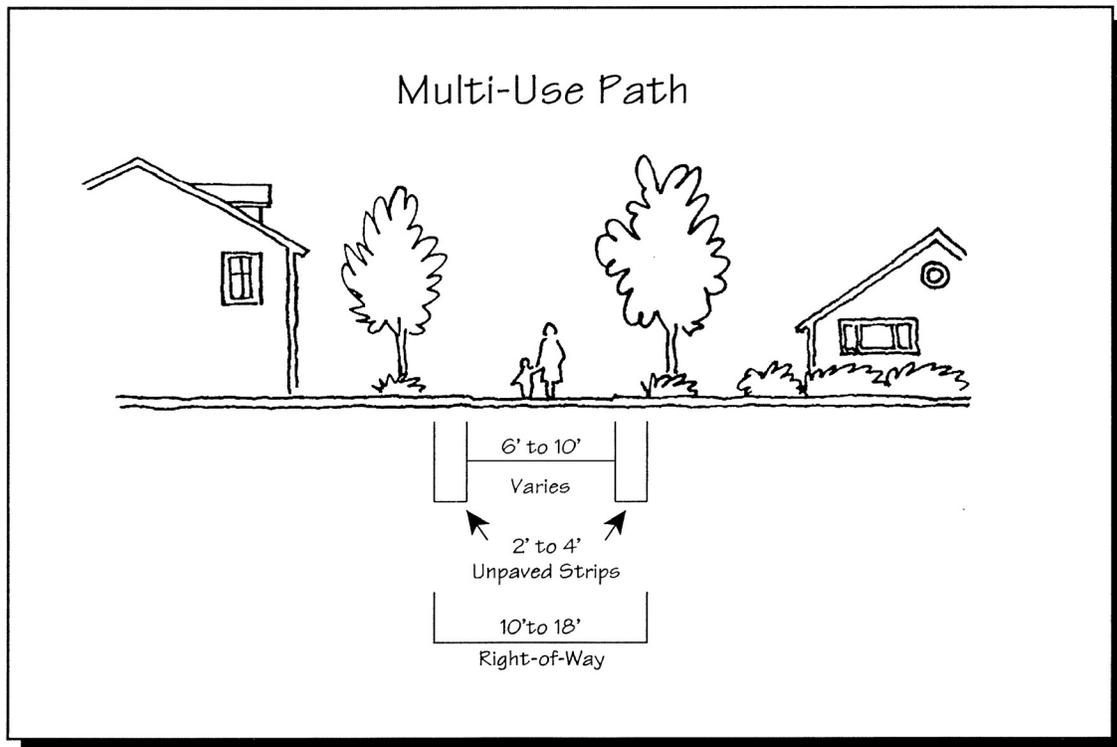
<b>Pavement Width:</b>	12' with 2' graveled or planted strips on side
<b>Motor Vehicle Travel Lanes:</b>	Not applicable
<b>Bike Lanes:</b>	Not applicable, bicyclists can easily negotiate these low use areas
<b>Parking:</b>	No parking within the right of way
<b>Curb and Gutter:</b>	No curb, use inverse crown
<b>Parkrow:</b>	Not applicable
<b>Sidewalks:</b>	Not applicable, pedestrians can easily negotiate these low use areas



## **Multi-use Path**

Multi-use paths are off-street facilities used primarily for walking and bicycling. These paths can be relatively short connections between neighborhoods (neighborhood connections), or longer paths adjacent to rivers, creeks, railroad tracks and open space.

<b>Function:</b>	For pedestrians and bicyclists, provide short connections between destinations and longer paths in situations where a similar route is not provided on the street network.
<b>Connectivity:</b>	Enhances route options and shorten distances traveled for pedestrians and bicyclists.
<b>Right-of-Way Width:</b>	12' – 18'
<b>Pavement Width:</b>	6' – 10' with 2' – 4' graveled or planted strips on side
<b>Curb and Gutter:</b>	No curb

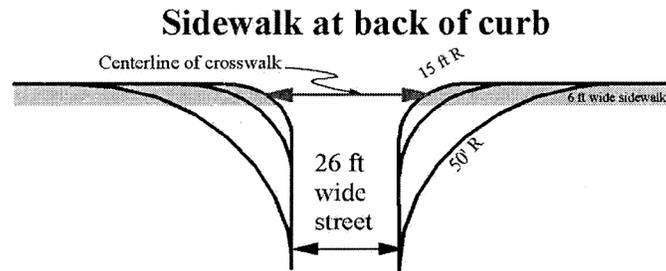




## SECTION IV: CROSSWALKS AND STREET CORNER RADIUS

Pedestrians must be provided with the shortest possible route across street intersections. This is accomplished by using small curb radii and curb extensions. At the street corner, where one curbed street meets another is known as the curb return. The measure of the sharpness of the corner, or curb return is known as the curb return radius (Crr).

### *Effect of Corner Turning Radii on Pedestrian Crossing Distances*



Radius	Crossing Distance	Increased Crossing	Percent Increase
15'	37'	+11'	42%
25'	50'	+24'	92%
50'	89'	+53'	203%

Michael Wallwork, 1999

With a larger Crr, turning movements of right-turning vehicles are easier and possible at faster speeds, but the length of the crosswalk needed to cross the street for pedestrians at that point is also increased. As the Crr increases, the distance the pedestrian must cross increases, and the time it takes for the pedestrian to cross the intersection increases. Higher turning vehicular speeds are encouraged and dangerous "rolling stops" become more frequent. Table 2 exemplifies the affect on intersection crossings as Crr increases from 15 feet to 35 feet.

<b>Table 2: Affect on Pedestrian Crossing of Curb Radius</b>										
<b>SIDEWALK WIDTH</b>	6'	6'	6'	8'	8'	8'	10'	10'	10'	10'
<b>PARKROW WIDTH</b>	6'	6'	6'	6'	6'	6'	6'	6'	6'	6'
<b>CURB RETURN RADIUS</b>	15'	25'	30'	15'	25'	30'	15'	25'	30'	35'
<b>CROSSING DISTANCE ADDED TO STREET WIDTH</b>	2.5'	11.6'	17.2'	1.7'	10.0'	15.3'	1.1'	8.6'	13.6'	19.0'
<b>CROSSING TIME ADDED WITH ADDITIONAL STREET WIDTH (SECONDS)</b>	0.7	3.3	4.9	0.5	2.9	4.4	0.3	2.5	3.9	5.4

from *Traditional Neighborhood Development Street Design Guidelines*, Institute of Transportation Engineers

## **Crosswalk and Curb Return Radius Standards**

**Approval Standards:** New and reconstructed crosswalks and corners shall conform to the following curb return radius standards.

### **1. Crr Selection**

Crr shall be selected based on reasonable anticipated vehicular and pedestrian traffic volumes, traffic types and intersection control devices.

### **2. Recommended Range for Neighborhoods**

The Crr shall be between 10 to 15 feet in neighborhoods, excluding intersections involving boulevards.

### **3. Design for Large Vehicles**

When designing Crr, allow for large vehicles to swing across the centerline of the street as per AASHTO standards.

### **4. On-Street Parking**

On-street parking shall begin a minimum of 20 feet from any intersection involving boulevards and avenues to provide clear vision for pedestrians, bicyclists and drivers. This setback will also assist larger vehicles to turn.

### **5. Large Crr Mitigation**

At intersections with Crr 15 feet or larger with high pedestrian traffic volumes, paver bulb outs, textured crossings and other appropriate traffic calming treatments shall be used to facilitate pedestrian travel.

### **6. Historic District**

The Crr for newly constructed or reconstructed street corners in the Historic District shall match and in not exceed what historically has been used in the remainder of the Historic District.

### **7. Vision Clearance Area**

No obstructions greater than 2.5 feet high, nor any landscaping which will grow greater than 2.5 feet high, with the exception of trees whose canopy heights are at all time greater than 8 feet, shall be placed in a vision clearance so that pedestrians and drivers can see each other. See 18.72.120 of the *Ashland Land Use Ordinance* for the vision clearance standards.

## SECTION V: HILLSIDE STREETS AND NATURAL AREAS

Occasionally, streets are constructed in locations with significant natural features which require special accommodations such as in hilly areas, near creeks, rock outcroppings, drainages, or wetlands. 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. Streets constructed in hillside areas or natural resource areas should minimize negative impacts and use minimal cut and fill slopes.

Generally, the range of street types make it possible to construct or improve 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.

### **Hillside Lands and Natural Area Street Standards**

**Approval Standards:** Hillside Lands is defined in Chapter 18.62, *Physical and Environmental Constraints*, of the *Ashland Land Use Ordinance*. Development of streets in Hillside Lands must be done in accordance with the standards in Chapter 18.62. Streets in Hillside Lands may require the following special accommodations.

#### **1. Clear Travel Lane**

New streets shall provide a 20 feet clear travel lane area in areas designated Hillside Lands.

#### **2. On-Street Parking At Foot Steep Hills**

Ample on-street or bay parking shall be provided at the foot of steep hills, especially those prone to snow and/or ice build up.

#### **3. Preserving Natural Features**

Streets shall be located in a manner which preserves natural features to the greatest extent feasible.

1. Whenever possible, street alignments shall follow natural contours and features so that visual and physical access to the natural feature is possible.
2. Streets shall be situated between natural features, such as creeks, mature trees, drainages, open spaces and individual parcels in order to appropriately incorporate such significant neighborhood features.

#### **4. Exceptions to Street Design Standards**

Generally, the range of local street types makes it possible to construct or improve local streets in accordance with the street design standards. In certain situations where the physical features of the land create constraints, or natural features should be preserved, exceptions may 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. In limited situations where topography or natural features preclude the construction of a sidewalk, a pedestrian path may be substituted on one side of the street at the discretion of the Planning Commission. A pedestrian path is an area designated for walking which is constructed to a lesser standard than the standard concrete sidewalk (i.e. asphalt, crushed granite). Exceptions shall be allowed when physical conditions preclude development of a public street, or components of the street. Such conditions may include, but are not limited to, topography, wetlands, mature trees, creeks, drainages, and rock outcroppings. Exceptions to the Street Design Standards shall be limited to situations where there is demonstrable difficulty in meeting the specific requirements due to a unique or unusual aspect of the site.

#### **5. Dead End Streets**

Generally, the range of local street types make it possible to construct or improve local streets in accordance with the street design standards. In certain situations where the physical features of the land create severe constraints, or natural features should be preserved, exceptions may be made. Dead-end streets may be permitted in areas where topographic, wetland, creeks or other physical features of the land preclude street connections. Only neighborhood streets may be dead end roads. No dead end street shall exceed 500 feet in length, not including the turnaround.

## SECTION VI: DRIVEWAY APRON AND CURB CUTS

Driveway aprons, often referred to as private accesses, affect the safety, capacity and character of a street. Motorists turning into and out of private driveways or parking lots can be the source of potential conflicts with pedestrians, bicyclists and motor vehicles. In addition, motorists entering and exiting the street system slow down traffic and thereby reduce the traffic flow and street capacity.

In Ashland, the Railroad District is well used by pedestrians. There are many factors which affect the large amount of foot traffic such as interesting architecture, relatively flat terrain, large parkrows with many trees, and the close proximity to the downtown. However, one of the street design elements which makes the pedestrian environment convenient, safe and inviting is the minimal amount of automobile traffic pulling in and backing out of driveways which cross the sidewalk.

Every driveway apron is a challenge for pedestrians. As the number of private accesses increases, the sidewalk loses continuity as the surface dips up and down with the driveway curb cuts. Even able-bodied pedestrians can have trouble negotiating excessive dips and cross-slopes. The combination of an uneven surface and the continuous potential threat of a motor vehicle impeding on the sidewalk negatively affects the pedestrian environment and the character of the street

Public accesses, meaning public streets, can have the same affect on safety and capacity of the street system. However, as long as streets are spaced at reasonable distances, the potential impact is not as great as having numerous driveway curb cuts within one block length.

The *Driveway Apron and Curb Cut Standards* apply to private accesses on neighborhood collector and neighborhood streets. *Chapter 8, Access Management*, of the *Transportation System Plan* is the ruling document concerning the spacing of private and public accesses on boulevards and avenues.

### **Driveway Apron and Curb Cut Standards**

**Approval Standards:** New, reconstructed streets, curb cuts and driveway aprons shall conform to the following driveway apron and curb cut standards.

#### **1. Spacing**

Driveway curb cuts shall be spaced at least 24 feet apart as measured between the bottoms of the existing or proposed apron wings of the driveway approaches.

#### **2. Width**

The width of driveway curb cuts and aprons shall be minimized in the parkrow and sidewalk area. The driveway width may be increased in the private yard area.

**3. Shared Driveways**

The number of driveway intersections with streets shall be minimized by the use of shared driveways with adjoining lots where feasible.

**4. Number of Driveway Curb Cuts Per Lot**

For single-family and multi-family developments, one driveway curb cut is permitted per lot. Larger multi-family developments may require more than one driveway curb cut. For commercial and industrial developments, driveway curb cuts shall be minimized where feasible.

**5. Alley Access**

If a property has alley access, a curb cut for a driveway apron is not permitted.

## **SECTION VII: LOCAL IMPROVEMENT DISTRICTS AND STREET RIGHT-OF-WAY IMPROVEMENTS**

A local improvement district (LID) is a district formed for the purpose of carrying out local improvements (i.e. paving of streets, construction of storm sewers). Property owners within the LID are assessed for the cost of the improvements. In Ashland, LID's are used to improve streets, and are used in a variety of situations. In some cases, development has preceded the street improvement with property owners signing in favor of participating in the cost at a later date. In these situations, the unpaved road must be designed to fit within the public right-of-way and the surrounding development. In other cases, the street is built prior to any adjacent development and the street design process tends to be more flexible.

Generally, the range of street types make it possible to construct or improve streets in accordance with the design standards. In certain situations where adjacent development has occurred prior to the street improvement, constraints may occur due to natural features or the built environment, and exceptions to the street design standards may be made. For example, exceptions could result in construction of a narrower curb-to-curb width, meandering sidewalks, sidewalks on only one side of the street, or curbside sidewalk segments instead of setback walks.

### **Local Improvement District (LID) Standards**

**Approval Standards:** Streets built and funded using a local improvement district (LID) may be constrained by natural features and/or the built environment, and as a result, shall be allowed the exceptions to the street design standards as described below.

#### **1. Curb-to-Curb Width**

Street improvements constructed through a LID shall be permitted to reduce the required curb-to-curb width to preserve significant natural features, to accommodate existing structures and to ensure compatibility with the surrounding neighborhood. A reduction in the required curb-to-curb width shall require the approval of the Ashland Planning, Engineering, Police and Fire Departments.

#### **2. Exceptions to Street Design Standards**

Generally, the range of local street types make it possible to construct or improve local streets in accordance with the street design standards. In certain situations where the physical features of the land or existing neighborhood create constraints, or natural features should be preserved, exceptions may 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. In limited situations where topography or natural features preclude the construction of a sidewalk, a pedestrian path may be substituted on one side of the street at the discretion of the City Council. A pedestrian path is an area designated

for walking which is constructed to a lesser standard than the standard concrete sidewalk (i.e. asphalt, crushed granite). Exceptions to the Street Design Standards shall be limited to situations where there is demonstrable difficulty in meeting the specific requirements due to a unique or unusual aspect of the site.

### **3. Retrofitting Existing Paved Streets With Sidewalks and Parkrows**

In some cases, streets have wider curb-to-curb widths than is currently required. When retrofitting existing paved streets with sidewalks and/or parkrows, constructing sidewalks and/or parkrows from the curb line in towards the centerline (on top of existing pavement) may be permitted in certain situations. Building sidewalks and/or parkrows in place of existing pavement is generally limited to situations where a sidewalk and/or parkrow will be continuous along the entire side of the street.

### **4. Preserving Natural Features**

- A. Streets shall be located in a manner which preserves natural features to the greatest extent feasible.
  - 1. Whenever possible, street alignments shall follow natural contours and features so that visual and physical access to the natural feature is possible.
  - 2. Streets shall be situated between natural features, such as creeks, mature trees, drainages, open spaces and individual parcels in order to appropriately incorporate such significant neighborhood features.