Ada County Highway District

LIVABLE STREET DESIGN GUIDE

ADOPTED MAY 27, 2009

ACHD
Committed to Service

This page is intentionally left blank.

TABLE OF **CONTENTS**

1.0 Basics of the Livable Street Design Guide (LSDG)

1.1 Basics of the Livable Street Design Guide
1.2 Layout of the Livable Street Design Guide
1.3 Street Design Fundamentals
1.4 References and Standards

2.0 Street Design Cross Sections

2.1 Transitional / Commercial Arterial
2.2 Planned Commercial Arterial
2.3 Commercial Collector
2.4 Commercial Local
2.5 Town Center Arterial (Single-Lane and Multi-Lane)
2.6 Town Center Collector
2.7 Town Center Local
2.8 Residential Arterial
2.9 Residential Neighborhood Arterial (Single-Lane and Multi-Lane)
2.10 Residential Collector
2.11 Residential Collector for Traditional Neighborhoods
2.12 Residential Local
2.13 Industrial Arterial
2.14 Industrial Collector/Local
2.15 Rural Arterial
2.16 Rural Road
2.17 Mobility Arterial
2.18 Residential Mobility Arterial
2.19 Guidelines for Placement of Utility Infrastructure

This page is intentionally left blank.

The design parameters for streets and roads in Ada County define how the transportation system fits into the communities which it is built to serve. In defining the individual and shared responsibilities of both ACHD and the local governments of Ada County, transportation decisions that follow a one-size-fits-all program of design do not always respond to the needs of their environments and consequently may not function according to their design.

The recommended street design parameters presented here are based on the primary built environments found in Ada County— commercial corridors, downtowns and town centers, residential neighborhoods, industrial districts and rural areas. Based on the role each of these types plays in accommodating a community's needs, each shows different patterns of travel and accordingly has different priorities that are reflected in street design. They should be thought of as the guidelines to consult once planning for a transportation project has identified the street and associated contextual factors.

When using these guidelines, technical and policy stakeholders should be mindful of a few guiding principles:

LIVABLE STREET DESIGN GUIDE (LSDG) BASIC PRINCIPLES

1. **The local street typology sections shown in this Design Guide are guidelines and not final designs.**
   - Final designs for ACHD Capitol Projects will be determined through a cooperative process between ACHD and the local jurisdiction.
   - Designs for developer projects will be determined during the entitlement process by ACHD and the local jurisdiction. Final designs will be reviewed and approved by ACHD.
2. **Actual project designs derived from these guidelines should be based on the specific and unique project circumstances.**
3. **This document must be coordinated with other ACHD plans and policies, for example:**
   - Access Management Policy (driveway spacing, parking, etc.).
   - Roadways to Bikeways Plan.
4. **Treatment of utilities in the right-of-way is discussed independently of particular street sections at the end of the LSDG.**
   - The location of utilities will be determined during concept design.
5. **ACHD and the cities, county and developers all have a role in paying for elements of the typologies in this Design Guide.**
   - ACHD will generally be responsible for acquiring appropriate rights-of-way to accommodate the minimum pedestrian zone (see diagram Page 5).
   - Buffer zones may be expanded at the option of the land-use agency and/or developer, for instance to provide additional room for larger trees, provided the additional costs are borne by others than ACHD.
   - The local jurisdiction and/or private development are responsible for the installation and maintenance of landscaping and for providing right-of-way for on-street parking on local roads and collectors.
   - ACHD's Interagency Cost Share Policy further delineates these assumptions.
6. **The cities/county may opt to use these design guidelines or other approved cross-sections.**

Layout

The street sections of the LSDG are organized around two different views: a left-hand page based on an understanding of the implications that context may have on street design needs, and a right-hand page that details the typical section design elements. The figures to the right display this layout organization in greater detail.

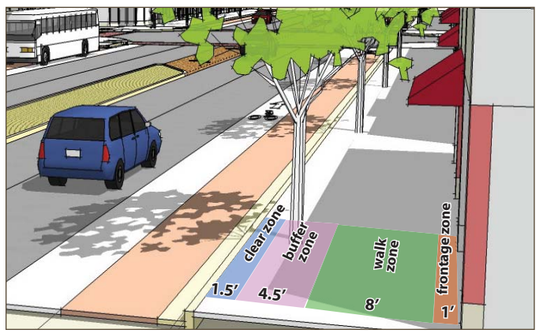
Cross Sections

The following are basic principles used consistently in the cross sections presented on the following pages:

1. Roadway dimensions are given from back of curb to back of curb, as per ACHD policy.

2. The width of any on-street parking areas includes through to the back of curb to avoid confusion between those parts of the section in the roadway and those parts outside of it.

3. Each section (excluding the rural and industrial sections) includes a detailed diagram separating the pedestrian zone into its four components and provides accompanying dimensions: the **clear zone**, the **buffer zone**, the **walk zone** and the **frontage zone** (see the diagram below for a sample illustration). These are consistent with the definitions provided in the *Designing Sidewalks and Trails for Access Best Practices Design Guide* sponsored by the U.S. Department of Transportation.

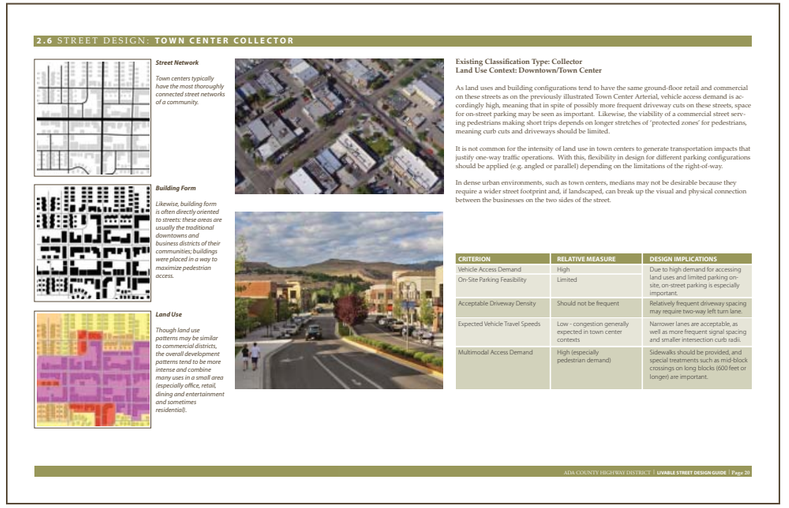


Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

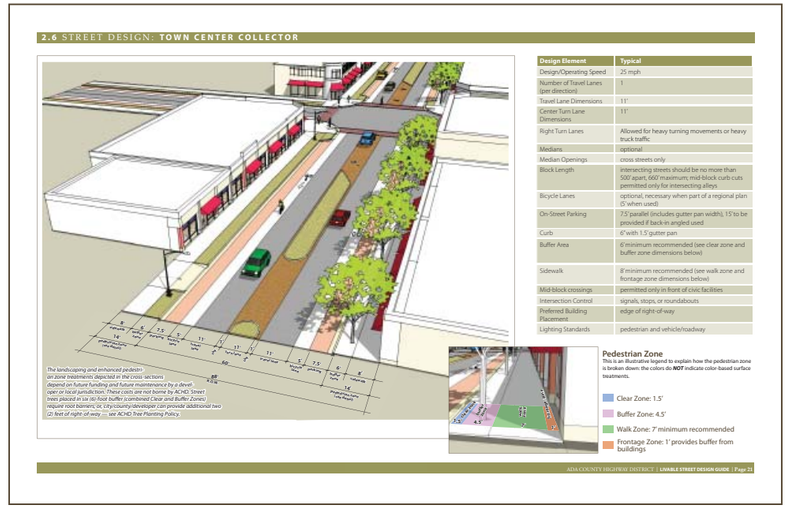
- Clear Zone: 1.5'
- Buffer Zone: 4.5'
- Walk Zone: 8' recommended
- Frontage Zone: 1' provides buffer from buildings

PEDESTRIAN ZONE DETAIL ILLUSTRATION. *A diagram similar to the one shown here appears in each of the cross-sections to illustrate how the dimensions of the pedestrian zone are to be understood. As the diagram indicates, the colors are for explanatory purposes only and are not indicative of surface treatments.*



Left Page: Context and Design Needs for the Street

On this page, planners and design engineers alike can better understand the context in which the roadway is expected to be found. On the left, diagrams demonstrate how the context can be understood in terms of typical street network, built form and land use patterns— emphasizing that context is multi-dimensional and not necessarily tied exclusively to one indicator of the roadway's surroundings. Picture examples illustrate the general look and feel of the road in its environment, and the table on the right outlines typical needs of the users of a roadway with the consequences these needs may be expected to have on the roadway design.



Right Page: Cross Section and Recommended Street Design Dimensions

This page details the recommended street design dimensions for meeting the needs of the context and provides a perspective illustration of how this suggested design would fit into its surroundings. On sections with complex treatments outside of the moving way of the road, particular attention is given to these design elements, including clear zones, amenity zones and pedestrian zones. Some treatments may require a funding partnership.

General Design Parameters of the LSDG

In applying these recommendations to actual street design, the recommendations of the LSDG are presented in the context of the following general provisions.

1. Some typologies will require internal discussion within the cities/county, for example, coordination with their fire service and parks requirements.

2. Alleys can be an option to minimize access to arterials; these have not been addressed here as they are generally done through the development application process.

3. Rural cross-sections show a buffer zone and no sidewalk; within city areas of impact, sidewalks are required and the required right-of-way will be adjusted accordingly.

4. Dimensions, number of lanes, medians, speeds etc. shown are "Typical" or "General" and may vary once project specific conditions are determined. For example, number of travel lanes typically would not exceed 2 lanes per direction unless level of service is severely degraded and a determination to add capacity is made by ACHD and the city.

Treatment for the Pedestrian Zone

The Design Guide contains street cross sections and treatments that show a wide range of possibilities for the pedestrian zone. The pedestrian zone dimensions portrayed in the guide often show amenities beyond what is required for safety purposes and compliance with the Americans with Disabilities Act (ADA). The additional amenities such as wider sidewalks and buffer areas and landscaping depend on funding partnerships and future maintenance by a developer or local jurisdiction.

In the absence of a funding partnership ACHD will design roadways with the "curb to curb" dimensions outlined in the Design Guide (e.g. travel lane widths, bike lane widths etc.) and a pedestrian zone which includes a minimum two and half foot combined clear and buffer zone and five foot side walk. The combined clear and buffer zone may be distinguished from the sidewalk by material, color, or texture.

The diagrams to the right illustrate the basic pedestrian zone, and the pedestrian zone with a partnership for up to six feet of landscaping.

Constrained Corridors

Constrained conditions may dictate the use of industry accepted minimum dimensions for design elements such as bike lanes, buffer zones, sidewalks and travel lanes. Examples of constrained conditions are in built up areas where infill projects or ACHD capital road projects are proposed. Environmental conditions or the configuration of existing development may also be considered as constraints. In these areas, limited right-of-way and finances may dictate the use of minimum dimensions for design elements, unless outside funds can be secured to exceed the minimums.

The analysis of dimensional trade-offs and any decisions to reduce the road section to minimum standards will be determined during the design process in consultation with affected jurisdictions.

Bicycle Lanes

The following bike lane widths will be constructed on area roads:

1. Where parking lanes exist, 5′ bike lanes will be designated between parking and travel lanes. If no parking, 5′ bike lane plus gutter pan or 6.5′ total.

2. A minimum of 4′ smooth surface will be provided in retrofit situations.

On-Street Parking

Parking throughout Ada County is important in certain instances, but potentially a conflict in others. If for example, an arterial critical to regional traffic circulation has on-street parking added vehicular mobility and safety may be compromised. Where safety allows, ACHD will work with Cities to provide on-street parking in appropriate land use contexts and where particular land conditions otherwise limit on site parking.

Parking should be allowed in downtown commercial districts and on some other arterials with concurrence from both ACHD and the land use agencies. Additionally, in appropriate land use contexts such as town centers and on lower volume collectors in residential areas, ACHD will work with the Cities to identify areas suitable for parking on collectors. Parking is more easily accommodated in locations with fewer access points, especially driveways.

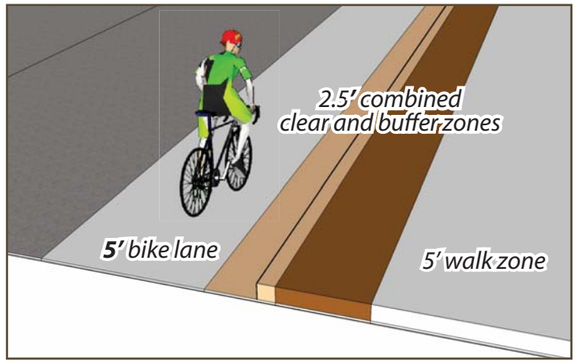
Situations where on-street parking is common include:

- In downtown areas
- On all local streets
- In retrofit situations where on-street parking currently exists and can be safely accommodated

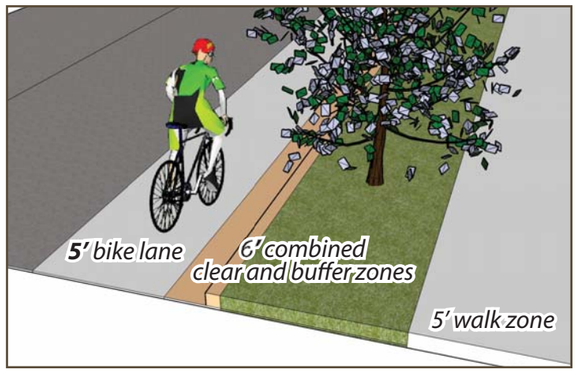
Medians

Medians can be provided for operational advantages and aesthetics. The decision to install medians for either purpose will be made based on the context of the

Basic Pedestrian Zone



Pedestrian Zone with Landscaping Partnership



ABOVE: PEDESTRIAN ZONE DIMENSIONS. *These illustrations detail dimensions for the elements of the pedestrian zone and of bicycle lanes. Note that the dimensions for bicycle lanes* **do not include gutter pan dimensions** *and reflect a smooth riding surface. On any streets with typically higher speeds and/or heavy truck traffic, bicycle lanes should be a minimum width of 5′ plus 1.5′ of gutter pan or 6.5′.*

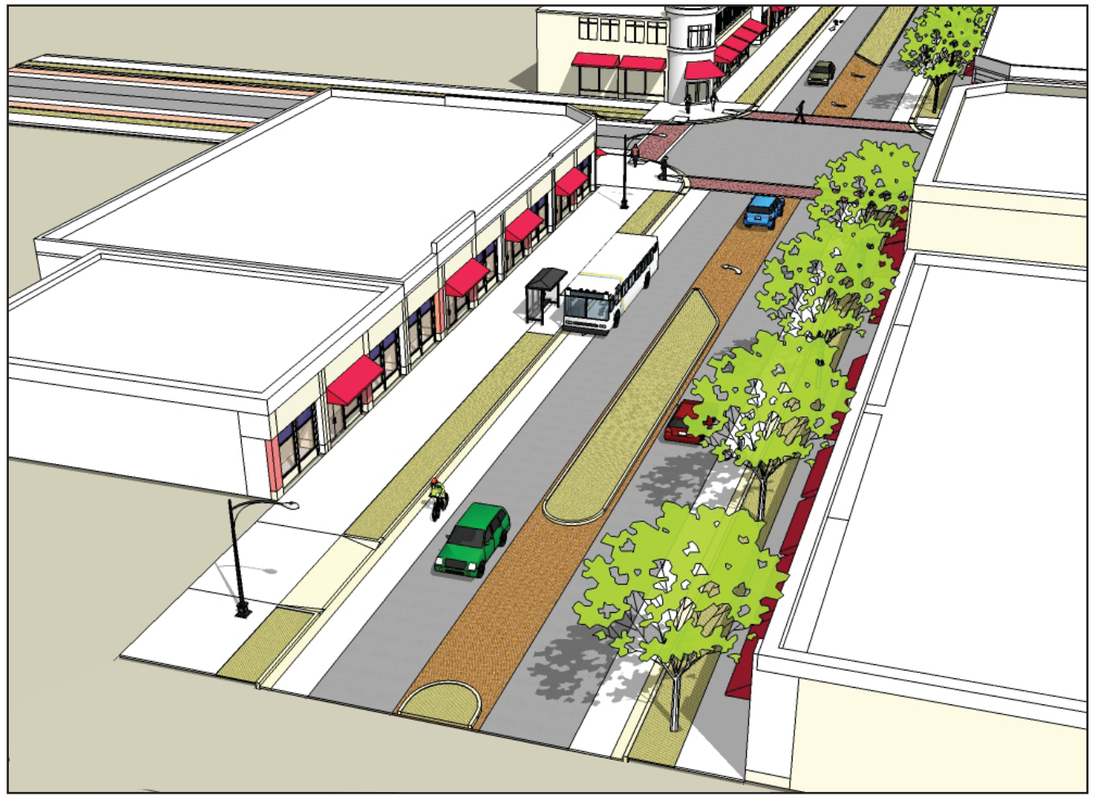
roadway and surrounding land uses. ACHD will install and maintain hardscape medians for safety and access control in locations consistent with ACHD policy and Transportation Research Board guidelines. Landscaping within medians will depend on funding partnerships and future maintenance by a developer or local jurisdiction. In some areas, such as town centers, medians may not be desirable because they require a wider street footprint and can break up the visual connectivity of a dense urban environment.

Transit

The LSDG street typologies are ready-made for bus transit, providing for optimum operations without special rights-of-way or unique street design considerations. There must be careful consideration in the placements of bus stops balancing transit operations and vehicular, pedestrian and bicycle traffic needs along the arterials and at major intersections.

Local traffic operation policies, rules and regulations are likely to change as bus transit becomes more of a significant factor in meeting the region's mobility needs. Depending on the arterial street typology, bus operations are likely to retain operational right-of-way within the arterial as it stops to unload and load passengers. Where bike lanes separate the outside travel lane from the curb, buses will stop within the outside travel lane and bike lane, and cyclists and motorists will either yield to the stopped bus or swing around the stopped bus (on multi-lane arterials). For those selective typologies with on-street parking special curb extensions can be placed at major bus stops to extend the pedestrian access to the bus stopped in the outside lane.

In the future, ValleyRide expects to increase its bus operations on many routes in the region to meet growing demand. Even the doubling of peak hour service from 60- to 30-minute headways on major arterial routes will not significantly impact vehicular capacity and operations. The street-side pedestrian space and features contained in the LSDG typologies provide sufficient space to appropriately accommodate the minimum dimensions required for bus stops and their amenities.

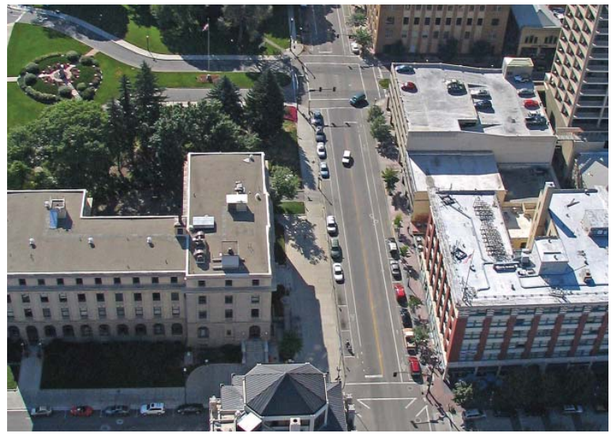


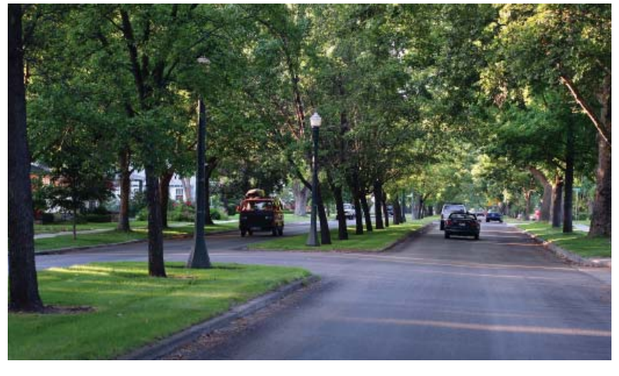
BUS TRANSIT ILLUSTRATION. *As bus transit plays a more significant role in meeting Ada County's mobility needs, the street typologies in the LSDG reflect the needs of transit vehicles for efficient operations.*

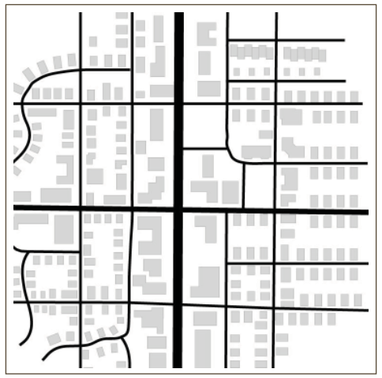
A Guide for Achieving Flexibility in Highway Design. (May, 2004). Washington, DC: American Association of State Highway and Transportation Officials.

A Policy on Geometric Design of Highways and Streets. (2004). Washington, DC: American Association of State Highway and Transportation Officials.

Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities. (2006). Washington, DC: Institute of Transportation Engineers.





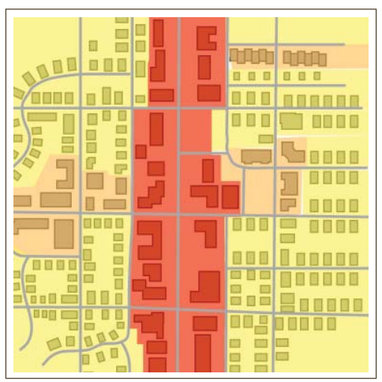


Street Network

The arterial is the primary street in the area, with most principal commercial streets oriented to it.

Building Form

Many buildings in typical commercial context are not fully oriented to the street: they may face it, but parking demand often influences their form and placement relative to the street.



Land Use

It is often the case in these contexts that commercial land use is just along the main street, though the nature of this land use will have implications on the design of the roadway.

Land Use

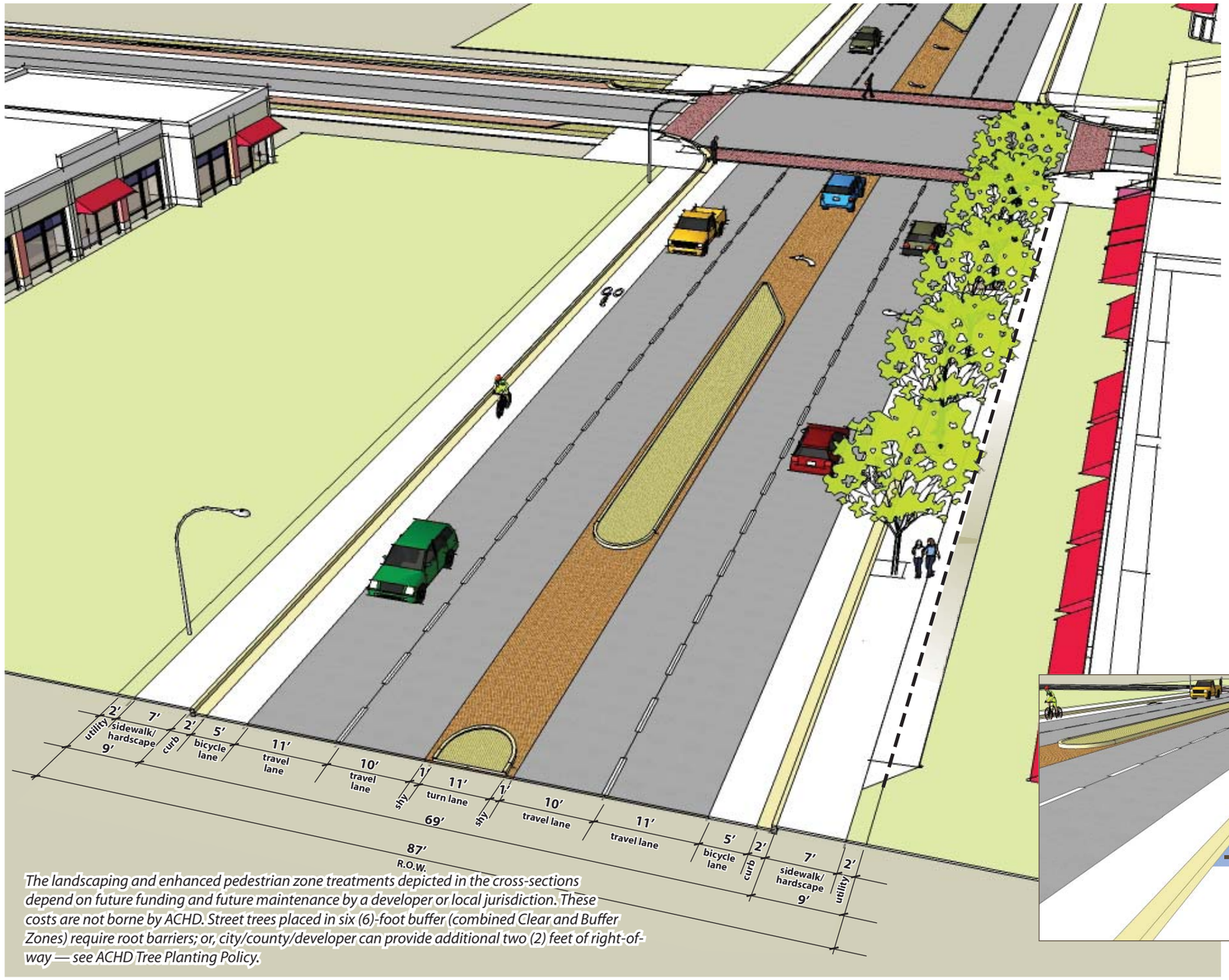
The transitional commercial arterial represents a roadway design for commercial corridors planned for redevelopment or where land values have caused new development patterns to come into use.

Existing Classification Type: Arterial
Land Use Context: Conventional Commercial Area

Arterials are designed to move vehicles over long distances. As many arterials in Ada County readily suggest, commercial destinations drawing primarily local trips locate along these facilities, driven by zoning that seeks to locate commercial districts in areas with the greatest access. These roads, however, are primarily designed to provide regional travel. The mixing of local and regional traffic in these corridors frequently dictates the need for wide, multilane regional highways.

Commercial arterials can be modified within existing right-of-way dimensions to provide a more livable streetscape. This kind of transition represents first steps that can be taken in transforming roadways that bear a double burden of mobility and access (which is contrary to their intended purpose as mobility roadways) into livable streets that still provide a mobility function.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Very high	High turning movements may prompt consideration of a center turn lane to accommodate expected volumes.
On-Site Parking Feasibility	High	Expectation of on-street parking is probably low.
Acceptable Driveway Density	Moderately frequent	Relatively frequent access may require left turns: two-way left turn lanes that control speed and driver behavior should be considered.
Expected Vehicle Travel Speeds	Moderate to High	Turning movements in outer lanes create potential conflicts; narrower lanes may help to control travel speeds
Multimodal Access Demand	Low	Special treatments such as mid-block crossings not needed

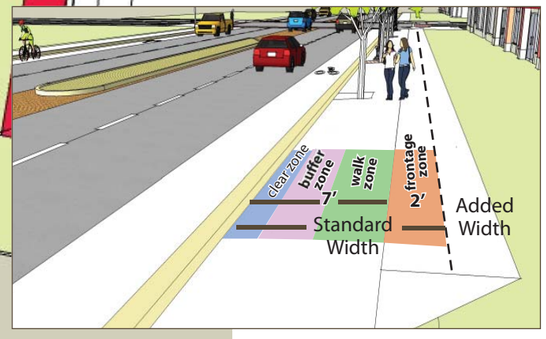


The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Design Element	Typical
Design/Operating Speed	35 mph
Number of Travel Lanes (per direction)	2
Lane Dimensions	10′ inner*, 11′ outer
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Bicycle Lanes	5′
On-Street Parking	none
Curb	6″ with 1.5′ gutter pan
Sidewalk	See details below on clear/buffer/walk zone
Frontage Zone	see details below
Intersection Control	signals or stops (cross streets only)
Lighting Standards	vehicles/roadway

** Generally, ACHD allows lanes no smaller than 10.5′ to 11′ wide on arterials but may consider 10′ lanes in the following circumstances:*

- *Low traffic volumes*
- *LIttle or no truck volume*
- *Speed 30 mph or less*
- *In Town Centers*
- *In retrofit situations where constraints prohibit wider lanes*



Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

Clear/Buffer/Walk Zone: 7′ total; includes walk area and space for future tree plantings with private development

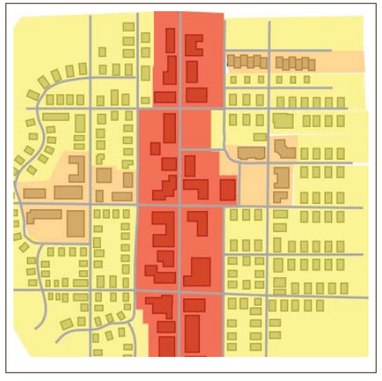
Frontage Zone: 2′ space for utilities; to be hard-scaped when utilities are placed underground from private development. Any added width through either easement or right-of-way dedicated by private development.

Street Network

The street network is similar to that of commercial strips.

Building Form

Unlike commercial strips, though, the placement of buildings is typically closer to the street through redevelopment.



Land Use

Land use patterns are similar to the transitioning areas: commercial corridors surrounded by residential neighborhoods.

At their heart these are still commercial strips, though access management through driveway consolidation may reduce the need for left turns mid-block.

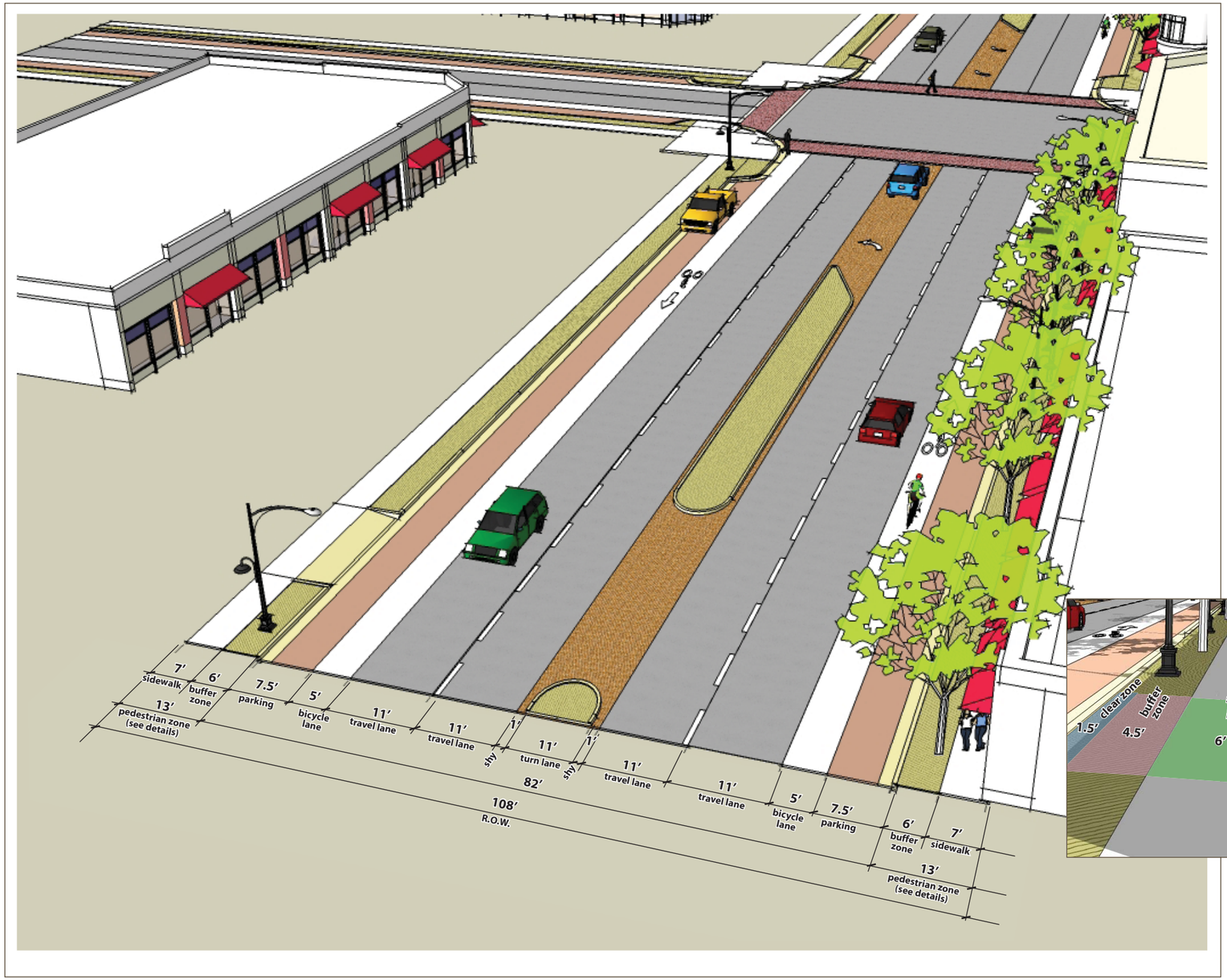
Land development standards, whether historic or a more recent effort, can improve pedestrian access to buildings by locating them adjacent to streets.

Roadway Classification Type: Arterial
Land Use Context: Commercial/Emerging Mixed-Use

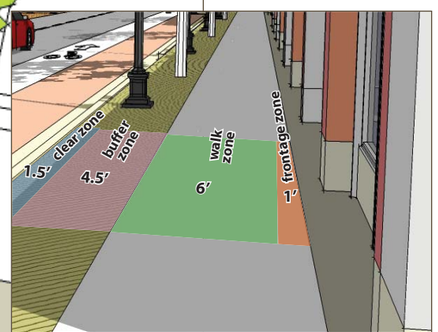
Arterials are designed to move vehicles over long distances. Commercial destinations draw primarily local trips because zoning seeks to locate commercial districts in areas with the greatest access. These areas also may attract higher density mixed-use development and/or commercial areas that may develop into neighborhood centers over time. Redevelopment along these corridors can change the character of an existing area and necessitate flexibility in the design of the roadway. These roads, however, are primarily designed to provide regional travel. The mixing of local and regional traffic in these corridors frequently dictates the need for multilane regional arterials.

To support the land use context, parking may be necessary. Parking should be allowed in downtown commercial districts and perhaps other arterials with concurrence from both ACHD and the land use agencies.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	High	On-street parking may be important.
On-Site Parking Feasibility	Often limited	
Acceptable Driveway Density	Driveways allowed for shared parking or structured parking only	Turning movements are more consequential for intersections and not as important mid-block, though driveways should still have left-in access.
Expected Vehicle Travel Speeds	Moderate to high	Longer signal spacing may be required.
Multimodal Access Demand	Moderate to high	Demand for pedestrian circulation is higher with more urban land development standards; this suggests attention to sidewalks, additional right-of-way for landscaping area can improve pedestrian environment further for future, more livable designs



Design Element	Typical
Design/Operating Speed	35 mph without parking; 30 mph with parking
Number of Travel Lanes (per direction)	2
Travel Lane Dimensions	11′
Center Turn Lane Dimensions	11′
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Median Openings	every cross street and/or spaced every 300-500 feet to correspond with driveways
Bicycle Lanes	5′
On-Street Parking	7.5′ preferred, may vary (8′) based on project-specific conditions; 2′ shy distance from travel lane may be added if no bike lane is included
Curb	6″ with 1.5′ gutter pan
Buffer Area	see details below on clear and buffer zone
Sidewalk	see details on walk/frontage zone
Intersection Control	signals or stops (cross streets only)
Lighting Standards	vehicles/roadway



Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear Zone: 1.5′ for vertical clearance
- Buffer Zone: 4.5′ for tree planting area and street furniture (benches, kiosks)
- Walk Zone: 6′ minimum recommended
- Frontage Zone: 1′ provides buffer from buildings, can be hardscaped

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Street Network

The collector is typically a secondary street in these areas, though they may define principal intersections along a commercial corridor.

Building Form

In 'strip' commercial areas, typically intersecting collector roadways will carry more of an access responsibility and will quickly transition to other land uses away from the commercial area.

Land Use

These collectors often move into areas of other land uses.

Existing Classification Type: Collector
Land Use Context: Commercial Area

Serving as a 'bridge' between the mobility function of arterials and the access function of local streets, collectors in a commercial context usually connect commercial corridors and nodes of concentration to the residential areas that surround them.

In larger commercial areas, the collectors provide an important access function and allow development to be focused away from arterials. These types of contexts are often found in regional retail centers, usually near malls and other large-scale shopping facilities that are adjacent to commercial outparcels. When they occur in these contexts, they should be the focus streets for driveways and access to development before the arterial streets are.

To support the land use context, parking may be necessary. Parking should be allowed in downtown commercial districts and perhaps other arterials with concurrence from both ACHD and the land use agencies.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	High	On-street parking is important, especially near main commercial streets.
On-Site Parking Feasibility	May be limited	
Acceptable Driveway Density	Driveways allowed for shared parking or structured parking only	Turning movements are more consequential for intersections and not as important mid-block, though driveways should still have left-in access.
Expected Vehicle Travel Speeds	Moderate to low	Signal spacing and mid-block pedestrian crossings more frequent than in arterials are acceptable.
Multimodal Access Demand	High	Sidewalks in particular should be addressed to allow sufficient room for circulation, though depending on the nature of the commercial district they may not need to be the same dimensions as on the main arterials.

Design Element	Typical
Design/Operating Speed	25 mph
Number of Travel Lanes (per direction)	1
Travel Lane Dimensions	11′
Center Turn Lane Dimensions	11′
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	optional, when left turns not needed
Median Openings	every cross street and/or spaced every 300-500 feet to correspond with driveways
Bicycle Lanes	optional, if right-of-way permits (5′ when used)
On-Street Parking	optional (7.5′)
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ minimum (see details below on clear and buffer zones)
Sidewalk	6′ (see details below on walk and frontage zones)
Intersection Control	signals, stops, or roundabouts
Lighting Standards	roadway only

Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear Zone: 1′
- Buffer Zone: 5′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: 1′ provides buffer from buildings

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Street Network

Local streets in commercial areas are usually part of an established street grid, though they may be uncommon in newer commercial districts.

Building Form

Where buildings along main streets in commercial districts are sometimes separated from the street by parking, they do face the street: on local streets, commercial buildings are usually not oriented to the main street and provide more of a service function to rear and side entries to buildings.

Land Use

These locals often function as a transition street between commercial areas and neighboring land use types (usually residential).

Existing Classification Type: Local
Land Use Context: Commercial Area

Local streets in a commercial context assist the arterial and, to a lesser degree, the collector roadways in serving land uses. With this access function, driveways and entrances are expected to be more frequent and accordingly wider lanes are recommended to accommodate turning movements. Designs should take into account the nature of the land use and what kind of 'operating contingencies' this kind of street will have to accommodate (e.g. impromptu delivery parking, turns into narrow driveways and alleys) These streets are thought of as the 'side streets' where the primary pedestrian access (and visual presentation) of commercial land uses would not be oriented.

Given that typical commercial contexts are 'strip-based' with most commercial land use directly fronting onto a major road, the local street in this context is not likely to be commonly used. The greatest opportunity for its use is from redevelopment, where commercial properties change their access patterns to make greater use of side streets and when redevelopment of conventional suburban land uses (especially big boxes and strip malls) into a more structured urban form occurs. In many cases, multiple ownership of these commercial centers makes full-scale redevelopment difficult, and land use change comes from development of outparcels that are closer to the major roadway. The commercial local street becomes more of an option when primary drive aisles through large parking lots are transitioned into these kinds of streets, with the side of the street that is redeveloping into a programmed land use following the roadside dimensions recommended on the opposite page.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	High	On-street parking may be important but may not facilitate deliveries.
On-Site Parking Feasibility	Usually serving parking areas of developed properties	
Acceptable Driveway Density	Driveways allowed as needed, typically to support parking for commercial uses built to higher-class streets	Turning movements more frequent, wider lanes can help to accommodate these movements and account for contingencies
Expected Vehicle Travel Speeds	Moderately low	Frequent signal spacing, intersection control and mid-block pedestrian crossings are acceptable.
Multimodal Access Demand	High	Sidewalks in particular should be addressed to allow sufficient room for circulation. Sidewalks needed principally for access to parking areas and side/rear entrances, width equal to that of main streets not necessary.

Design Element	Typical
Design/Operating Speed	25 mph
Number of Travel Lanes (per direction)	1
Travel Lane Dimensions	up to 14′ as right-of-way permits (to include gutter pan in this lane dimension)
Center Turn Lane Dimensions	center lane not used
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	none
Median Openings	none
Bicycle Lanes	none
On-Street Parking	Permitted, 7.5′ if needed
Curb	6″ with 1.5′ gutter pan desired
Buffer Area	6′ minimum (see details below on clear and buffer zones)
Sidewalk	6′ (see details below on walk and frontage zones)
Intersection Control	signals, stops or roundabouts
Lighting Standards	roadway only

Pedestrian Zone

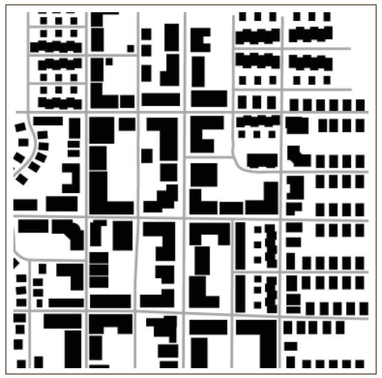
This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear zone: 1′
- Buffer Zone: 5′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: 1′ provides buffer from buildings

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

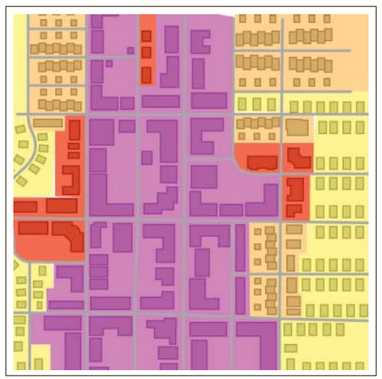
Street Network

Town centers typically have the most thoroughly connected street networks of a community.



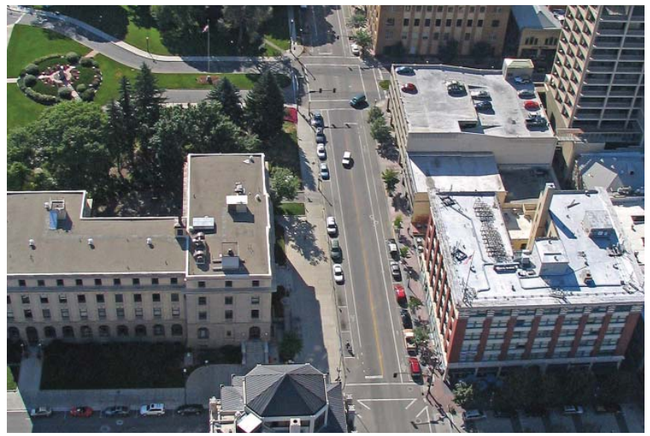
Building Form

Likewise, building form is often directly oriented to streets: these areas are usually the traditional downtowns and business districts of their communities; buildings were placed in a way to maximize pedestrian access.



Land Use

Though land use patterns may be similar to commercial districts, the overall development patterns tend to be more intense and combine many uses in a small area (especially office, retail, dining and entertainment and sometimes residential).



Existing Classification Type: Arterial
Land Use Context: Downtown/Town Center

Downtown streets, perhaps more than any other streets in the regional system, play all at once the roles of vehicle thoroughfare, bike route, pedestrian zone, convenient parking area and public space.

The needs of downtown businesses and establishments have led to the creation of streets that provide ample sidewalk space for short pedestrian trips; loading/unloading and general service areas for deliveries and functional needs, and on-street parking for immediate access to customers and users arriving by motor vehicle.

The focus of downtown streets is meeting the multiple needs of the centers of cities. In this particular classification, the street design recognizes that downtown is a destination for drivers and that consequently, vehicle capacity is important. It also acknowledges that pedestrians and cyclists use the streets and need both ample sidewalk space and dedicated bicycle lanes with a safe and comfortable separation from vehicle travel lanes.

In certain cases one way streets may be desirable. If a city and ACHD agree a Town Center Arterial may be constructed with one way travel lanes with the same considerations for parking, bicycle and pedestrian facilities.

In dense urban environments, such as town centers, medians may not be desirable because they require a wider street footprint and, if landscaped, can break up the visual and physical connection between the businesses on the two sides of the street.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	High	On-street parking is important.
On-Site Parking Feasibility	Very limited	
Acceptable Driveway Density	Driveways allowed for shared parking or structured parking only	Turning movements are only consequential for intersections and not as important mid-block.
Expected Vehicle Travel Speeds	Low to moderate, though congestion is often expected	Frequent signal spacing and mid-block pedestrian crossings are acceptable.
Multimodal Access Demand	Very high	Sidewalks in particular should be addressed to allow sufficient room for circulation.

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Design Element	Typical
Design/Operating Speed	30 mph
Number of Travel Lanes (per direction)	1 (2 if one-way street is used)
Travel Lane Dimensions	11′
Left Turn Lane Dimensions	11′
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	optional, when left turns not needed
Median Openings	when medians are used, openings for cross streets only
Block length	intersecting streets should be no more than 500′ apart; 660′ maximum mid-block curb cuts permitted only for intersecting alleys
Bicycle Lanes	5′
On-Street Parking	7.5′ maximum (includes gutter pan width)
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ minimum recommended (see clear zone and buffer zone dimensions below)
Sidewalk	9′ minimum recommended (see walk zone and frontage zone dimensions below)
Mid-block crossings	permitted only in front of civic facilities
Intersection Control	signal or stop (cross streets only)
Preferred Building Placement	edge of right-of-way
Lighting Standards	pedestrian and vehicle/roadway

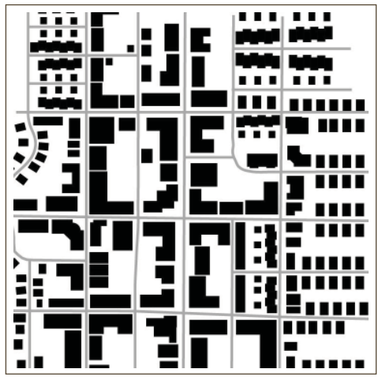
Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear Zone: 1.5′
- Buffer Zone: 4.5′
- Walk Zone: 8′ minimum recommended
- Frontage Zone: 1′ provides buffer from buildings

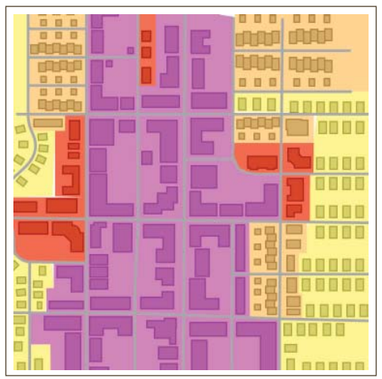
Street Network

Town centers typically have the most thoroughly connected street networks of a community.



Building Form

Likewise, building form is often directly oriented to streets: these areas are usually the traditional downtowns and business districts of their communities; buildings were placed in a way to maximize pedestrian access.



Land Use

Though land use patterns may be similar to commercial districts, the overall development patterns tend to be more intense and combine many uses in a small area (especially office, retail, dining and entertainment and sometimes residential).

Existing Classification Type: Arterial
Land Use Context: Downtown/Town Center

Downtown streets, perhaps more than any other streets in the regional system, play all at once the roles of vehicle thoroughfare, bike route, pedestrian zone, convenient parking area and, most importantly, public space.

The needs of downtown businesses and establishments have led to the creation of streets that provide ample sidewalk space for short pedestrian trips; loading/unloading and general service areas for deliveries and functional needs, and on-street parking for immediate access to customers and users arriving by motor vehicle. However, the draw of downtown as an employment center has created a legacy of traffic engineering that favors large systems of one-way operations designed to move traffic in and out.

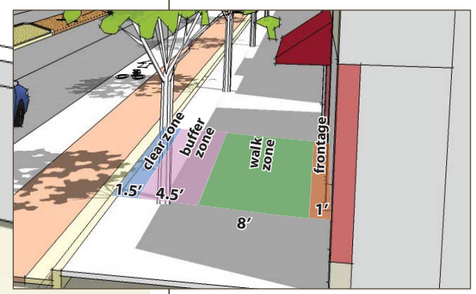
The focus of downtown streets is meeting the multiple needs of the centers of cities. In this particular classification, the street design recognizes that downtown is a destination for drivers and that consequently, vehicle capacity is important. It also acknowledges that pedestrians and cyclists use the streets and need both ample sidewalk space and dedicated bicycle lanes with a safe and comfortable separation from vehicle travel lanes.

In dense urban environments, such as town centers, medians may not be desirable because they require a wider street footprint and, if landscaped, can break up the visual and physical connection between the businesses on the two sides of the street.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	High	On-street parking is important.
On-Site Parking Feasibility	Very limited	
Acceptable Driveway Density	Driveways allowed for shared parking or structured parking only	Turning movements are only consequential for intersections and not as important mid-block.
Expected Vehicle Travel Speeds	Low to moderate, though congestion is often expected	Shorter signal spacing may be required and mid-block pedestrian crossings are acceptable.
Multimodal Access Demand	Very high	Sidewalks in particular should be addressed to allow sufficient room for circulation.

2.5 STREET DESIGN: **TOWN CENTER ARTERIAL (MULTI-LANE)**

Design Element	Typical
Design/Operating Speed	30 mph
Number of Travel Lanes (per direction)	2
Travel Lane Dimensions	10 - 11′
Left Turn Lane Dimensions	11′
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	optional
Median Openings	when medians are used, openings for cross streets only
Block length	intersecting streets should be no more than 500′ apart, 660′ maximum; mid-block curb cuts permitted only for intersecting alleys
Bicycle Lanes	5′
On-Street Parking	7.5′ maximum (includes gutter pan width)
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ minimum recommended (see clear zone and buffer zone dimensions below)
Sidewalk	9′ minimum recommended (see walk zone and frontage zone dimensions below)
Mid-block crossings	permitted only in front of civic facilities
Intersection Control	signal or stop (cross streets only)
Preferred Building Placement	Edge of right-of-way
Lighting Standards	pedestrian and vehicle/roadway



Pedestrian Zone

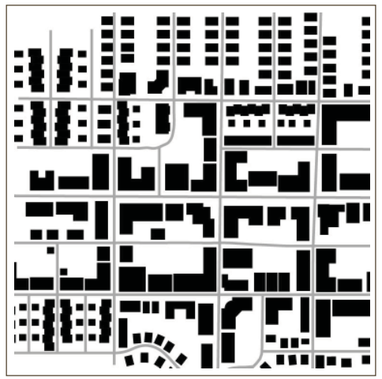
This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear zone: 1.5′
- Buffer Zone: 4.5′
- Walk Zone: 8′ minimum recommended
- Frontage Zone: 1′ provides buffer from buildings

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Street Network

Town centers typically have the most thoroughly connected street networks of a community.

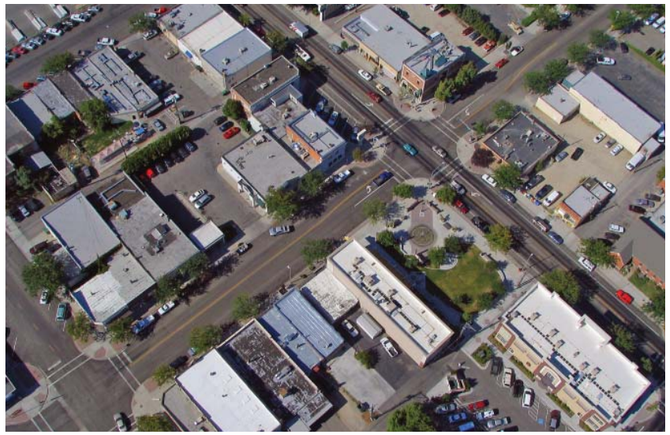


Building Form

Likewise, building form is often directly oriented to streets: these areas are usually the traditional downtowns and business districts of their communities; buildings were placed in a way to maximize pedestrian access.

Land Use

Though land use patterns may be similar to commercial districts, the overall development patterns tend to be more intense and combine many uses in a small area (especially office, retail, dining and entertainment and sometimes residential).



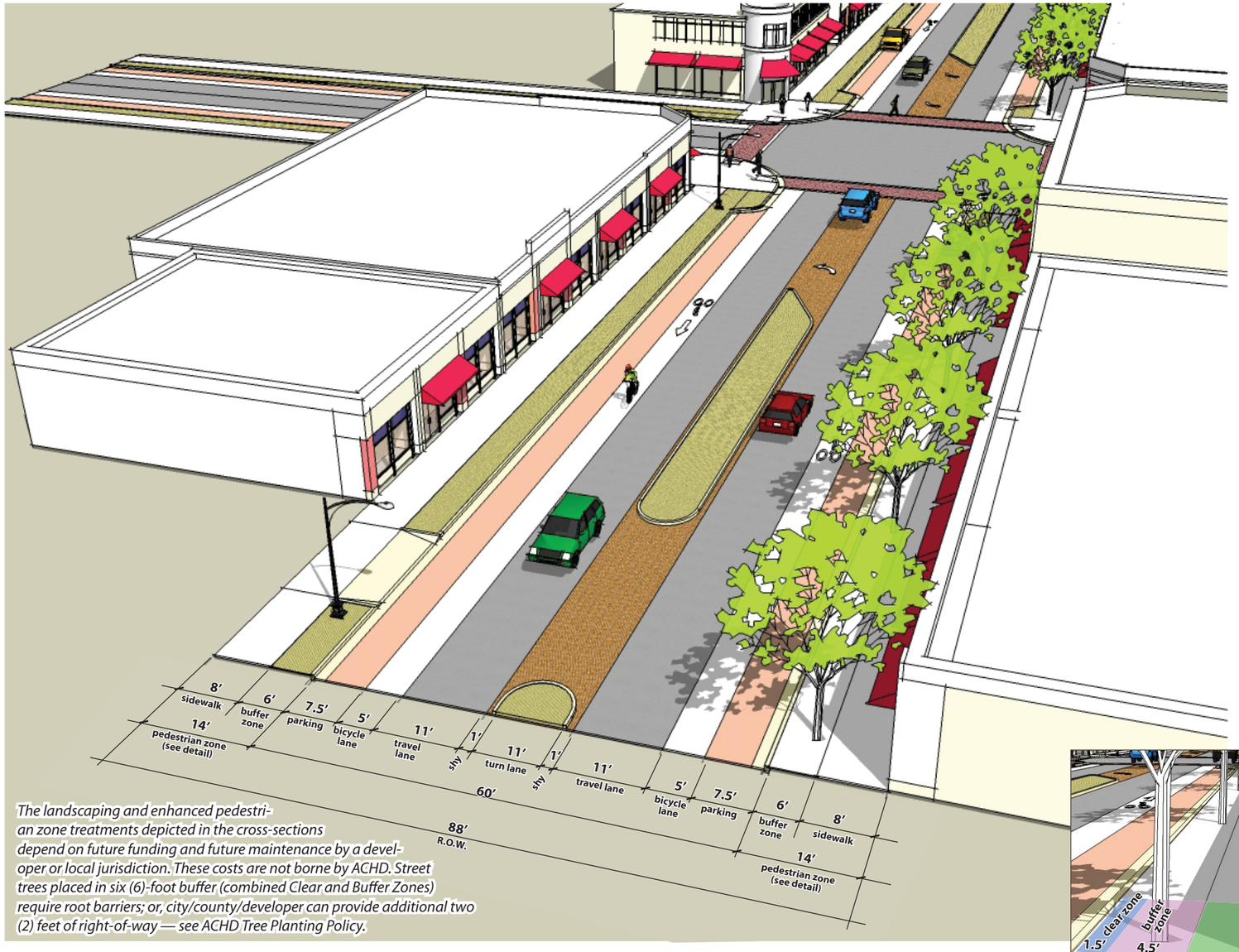
Existing Classification Type: Collector
Land Use Context: Downtown/Town Center

As land uses and building configurations tend to have the same ground-floor retail and commercial on these streets as on the previously illustrated Town Center Arterial, vehicle access demand is accordingly high, meaning that in spite of possibly more frequent driveway cuts on these streets, space for on-street parking may be seen as important. Likewise, the viability of a commercial street serving pedestrians making short trips depends on longer stretches of 'protected zones' for pedestrians, meaning curb cuts and driveways should be limited.

It is not common for the intensity of land use in town centers to generate transportation impacts that justify one-way traffic operations. With this, flexibility in design for different parking configurations should be applied (e.g. angled or parallel) depending on the limitations of the right-of-way.

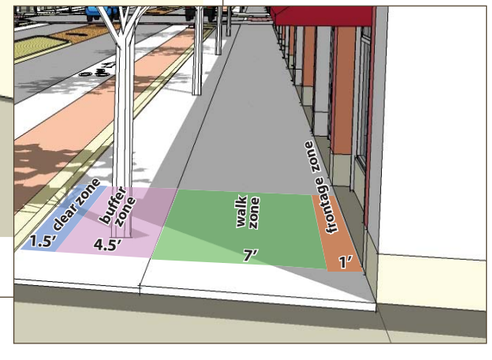
In dense urban environments, such as town centers, medians may not be desirable because they require a wider street footprint and, if landscaped, can break up the visual and physical connection between the businesses on the two sides of the street.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	High	Due to high demand for accessing land uses and limited parking on-site, on-street parking is especially important.
On-Site Parking Feasibility	Limited	
Acceptable Driveway Density	Should not be frequent	Relatively frequent driveway spacing may require two-way left turn lane.
Expected Vehicle Travel Speeds	Low - congestion generally expected in town center contexts	Narrower lanes are acceptable, as well as more frequent signal spacing and smaller intersection curb radii.
Multimodal Access Demand	High (especially pedestrian demand)	Sidewalks should be provided, and special treatments such as mid-block crossings on long blocks (600 feet or longer) are important.



The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

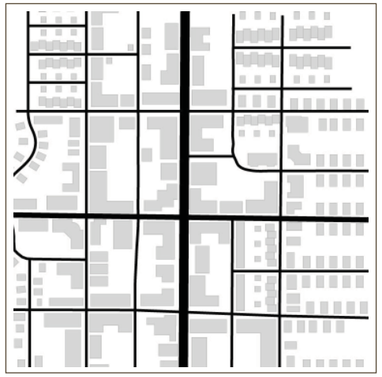
Design Element	Typical
Design/Operating Speed	25 mph
Number of Travel Lanes (per direction)	1
Travel Lane Dimensions	11′
Center Turn Lane Dimensions	11′
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	optional
Median Openings	cross streets only
Block Length	intersecting streets should be no more than 500′ apart, 660′ maximum; mid-block curb cuts permitted only for intersecting alleys
Bicycle Lanes	optional, necessary when part of a regional plan (5′ when used)
On-Street Parking	7.5′ parallel (includes gutter pan width), 15′ to be provided if back-in angled used
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ minimum recommended (see clear zone and buffer zone dimensions below)
Sidewalk	8′ minimum recommended (see walk zone and frontage zone dimensions below)
Mid-block crossings	permitted only in front of civic facilities
Intersection Control	signals, stops, or roundabouts
Preferred Building Placement	edge of right-of-way
Lighting Standards	pedestrian and vehicle/roadway



Pedestrian Zone

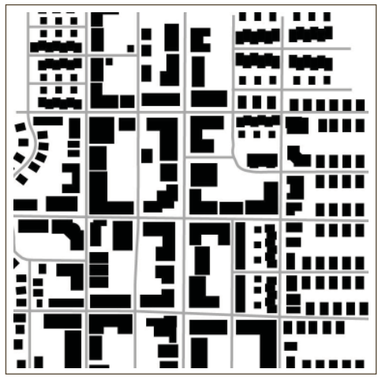
This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear Zone: 1.5′
- Buffer Zone: 4.5′
- Walk Zone: 7′ minimum recommended
- Frontage Zone: 1′ provides buffer from buildings



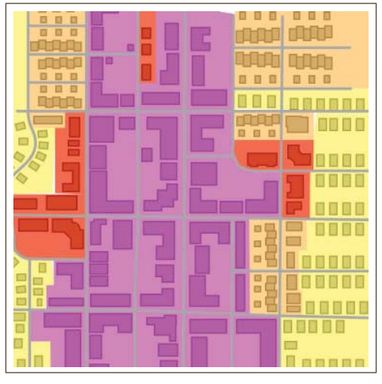
Street Network

Town centers typically have the most thoroughly connected street networks of a community.



Building Form

Building form is often directly oriented to streets, though sometimes local streets carry more of a service and access role and development patterns have used these streets to access parking and rear building entrances.



Land Use

The overall development patterns tend to be more intense and combine many uses in a small area (especially office, retail, dining and entertainment and sometimes residential).

Existing Classification Type: Local
Land Use Context: Downtown/Town Center

Similar in function to the local streets in more purely commercial contexts, the local streets of downtowns and town centers provide the most prominent access function, giving access to driveways when they are needed and allowing a level of circulation in the roadway network that frees arterial roadways from needing to accommodate service trips and related turning movements.

If a city and ACHD agree to use one-way streets in downtown environments, Town Center typologies will be the base for such an option.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	High	On-street parking is important.
On-Site Parking Feasibility	Limited	
Acceptable Driveway Density	Driveways allowed for shared parking or structured parking only	Turning movements are only consequential for intersections and not as important mid-block.
Expected Vehicle Travel Speeds	Moderately low	Frequent signal spacing and mid-block pedestrian crossings are acceptable.
Multimodal Access Demand	Very high	Sidewalks in particular should be addressed to allow sufficient room for circulation.

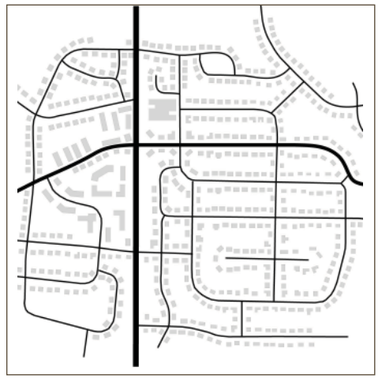
Design Element	Typical
Design/Operating Speed	20 mph
Number of Travel Lanes (per direction)	1 or 2
Travel Lane Dimensions	11′
Center Turn Lane Dimensions	center lane not used
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	none
Median Openings	none
Block Length	intersecting streets should be no more than 500′ apart, 660′ maximum; mid-block curb cuts permitted only for intersecting alleys
Bicycle Lanes	none
On-Street Parking	7.5′ parallel (includes gutter pan width), 15′ if back-in angled is to be used
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ minimum recommended (see clear zone and buffer zone dimensions below)
Sidewalk	6′ (see walk zone and frontage zone below)
Mid-block crossings	not needed
Intersection Control	signals, stops or roundabouts
Preferred Building Placement	no standard
Lighting Standards	pedestrian and vehicle/roadway

Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

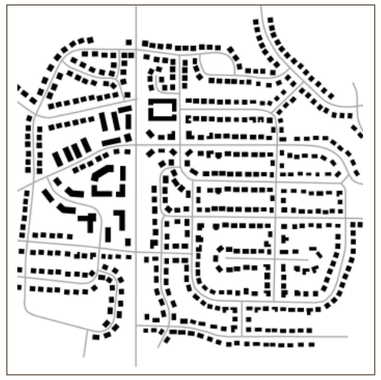
- Clear zone: 1.5′
- Buffer Zone: 4.5′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: 1′ provides buffer from buildings

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.



Street Network

Street networks are often well-connected in older residential areas, where newer development patterns have favored cul-de-sacs and dead-end streets.



Building Form

Buildings are typically detached and though they face streets, there is not the same street orientation as in town center areas.

Land Use

Along regional arterials, more recent development patterns have favored inward-facing subdivisions, often surrounded by walls to separate the rear side of residential lots from the arterial roadway.

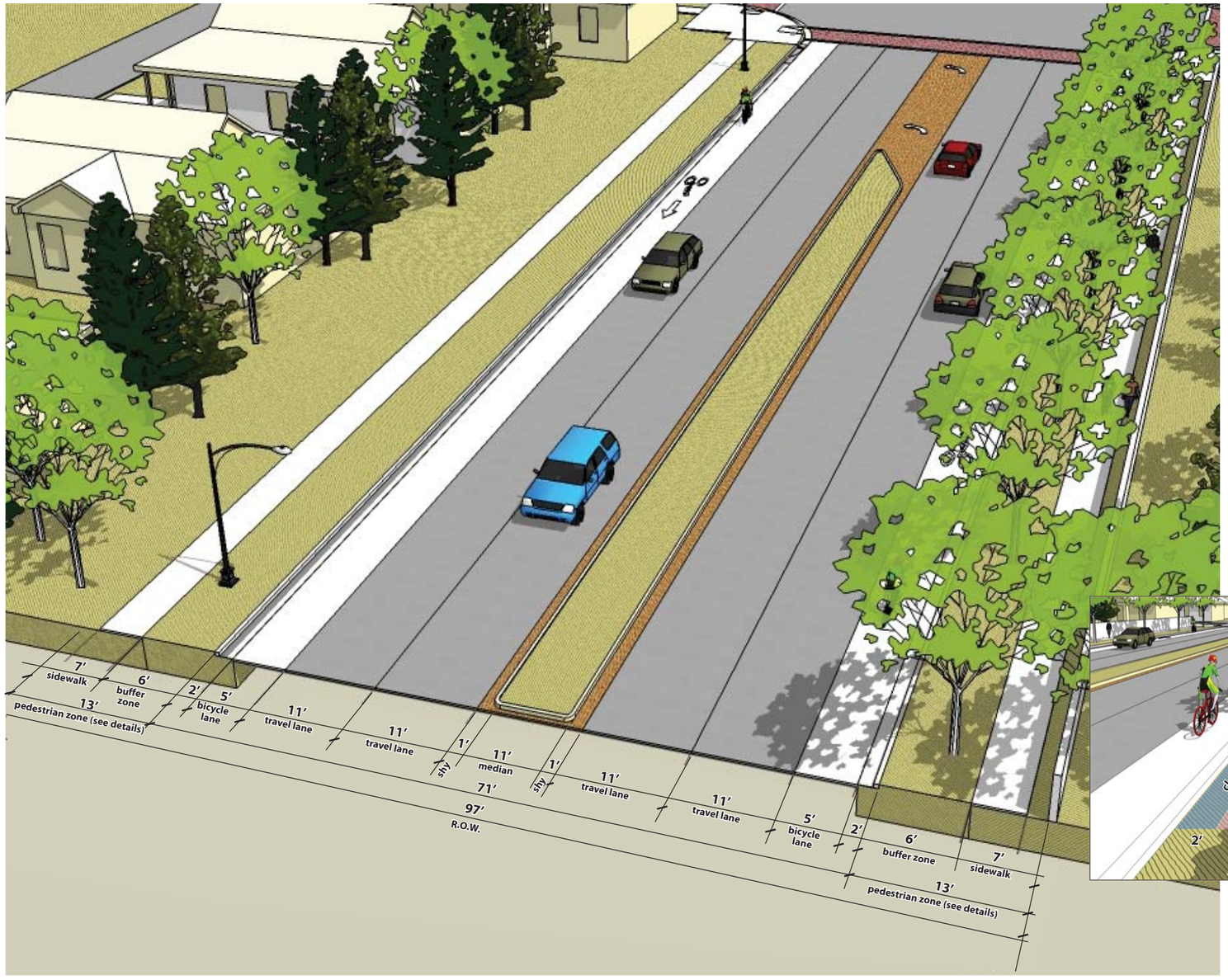
Existing Classification Type: Arterial
Land Use Context: Suburban Residential

Many newer residential areas have been designed with orientation to the local street and do not feature direct property access from main arterials. This is driven both by access permitting from road agencies and by a consumer preference for living on lower-speed, lower-volume local streets. The consequence has been that an internal street network has been built to accommodate all parts of new residential subdivisions and the arterials connecting subdivisions abut rear lot lines from residential properties.

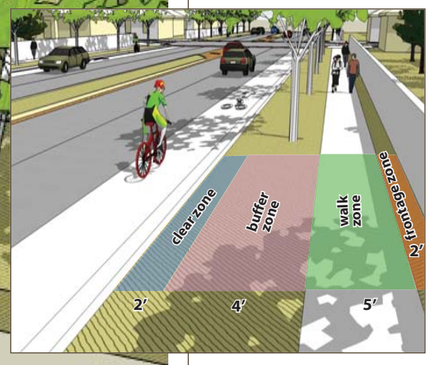
Though decisions on this form of development are the responsibility of the land use agency, these roads can be designed to serve a mobility role more clearly. As they do not face the same conditions of driveway access, left turns and access can be controlled to cross streets.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Low, most access from internal local streets	Left turn opportunities should not be limited to intersections unless block sizes are small enough to allow turns without greatly increased trip length.
On-Site Parking Feasibility	High	On-street parking is not as important as in traditional neighborhood contexts
Acceptable Driveway Density	Less frequent than in traditional neighborhood contexts	Left turn opportunities do not need to be frequent throughout a block length, depending on driveway spacing they could be limited to intersections.
Expected Vehicle Travel Speeds	Moderate	Narrower lanes are acceptable, especially in multi-lane roadways.
Multimodal Access Demand	Moderate	Sidewalks and shared-use trails help to provide connectivity between different contexts; bicycle lanes are useful given the larger nature of the road.

2.8 STREET DESIGN: **RESIDENTIAL ARTERIAL**



Design Element	Typical
Design/Operating Speed	35 mph
Number of Travel Lanes (per direction)	2
Travel Lane Dimensions	11′
Center Turn Lane Dimensions	11′
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	11′, to be substituted with turn lanes at intersections
Median Openings	for cross streets only when medians used
Bicycle Lanes	5′
On-Street Parking	Permitted, not typical; but possible 7′ parallel when used (includes gutter pan width)
Drainage	curb and gutter
Buffer Area	6′ (see clear zone and buffer zone below)
Sidewalk	5′ minimum recommended (see walk zone dimension below; frontage zone allows shy area from sidewalk as needed)
Intersection Control	signals or stops (stops on cross streets only)
Lighting Standards	vehicle/roadway only

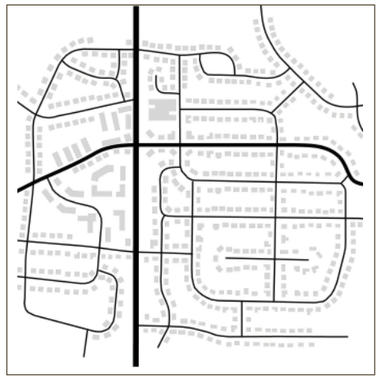


Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

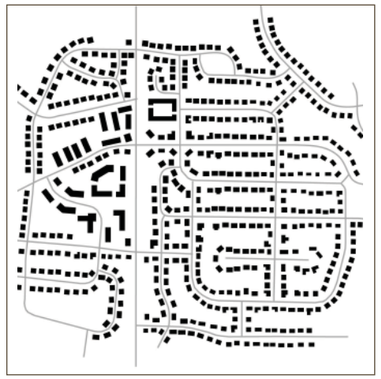
- Clear zone: 2′
- Buffer Zone: 4′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: 2′ for utility placement and buffer from walls

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.



Street Network

Street networks are often well-connected in older residential areas, where newer development patterns have favored cul-de-sacs and dead-end streets.

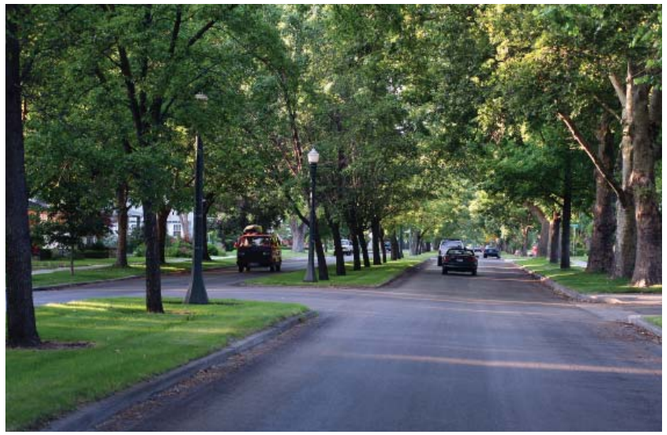


Building Form

Buildings are typically detached and though they face streets, there is not the same street orientation as in town center areas.

Land Use

Land use patterns along residential arterial streets may include corner commercial districts. Arterials and collectors will be the most likely locations for multi-family residential land uses.



Existing Classification Type: Arterial
Land Use Context: Neighborhood Residential

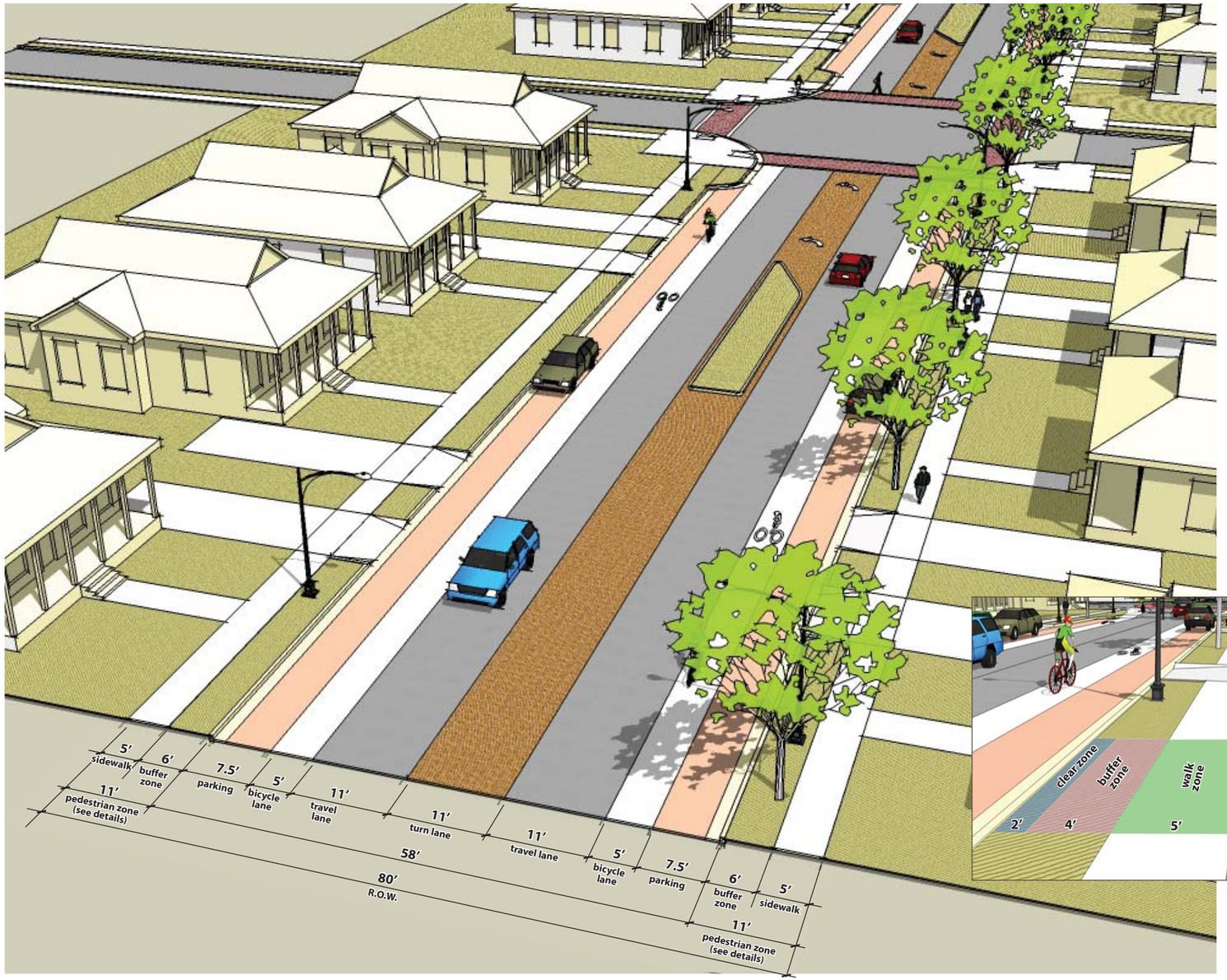
Residential areas, especially in traditional urban neighborhoods, often have a 'signature street' that defines the neighborhood's character. While landscaped medians are not a necessary design component, they increase the stature of the street and can be used to provide left turn opportunities in median breaks that would normally occupy a travel lane.

Depending on the nature of the residential environment, arterial streets may also pass through areas where subdivisions with limited arterial access 'turn their backs' to the street, implying that the purpose of the arterial will more purely reflect a mobility function.

Greenfield development should be permitted to accommodate front on housing as long as the housing units are serviced by alleys or local roads to the rear. Residential driveway access in Greenfield conditions is not premitted on arterials. Future consolidation of driveways as redevelopment occurs is the goal in the existing corridors currently having direct driveway access.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Moderate to low, depends on nature of residential development.	Left turn opportunities should not be limited to intersections unless block sizes are small enough to allow turns without greatly increased trip length.
On-Site Parking Feasibility	Moderate to high, depends on nature of residential development	On-street parking is not important if right-of-way limitations are a concern.
Acceptable Driveway Density	Frequent, though less so than on smaller streets	Though they should not be limited to intersections when driveways are present, left turn opportunities do not need to be frequent throughout a block length.
Expected Vehicle Travel Speeds	Moderate	Narrower lanes are acceptable, especially in multi-lane roadways.
Multimodal Access Demand	Moderate	Sidewalks needed, bicycle lanes are useful given the larger nature of the road.

2.9 STREET DESIGN: **RESIDENTIAL NEIGHBORHOOD ARTERIAL**



Design Element	Typical
Design/Operating Speed	25-30 mph
Number of Travel Lanes (per direction)	1
Travel Lane Dimensions	11′
Center Turn Lane Dimensions	11′
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	as right-of-way permits and when driveway spacing does not require left turns
Median Openings	for cross streets only when medians used
Bicycle Lanes	5′
On-Street Parking	optional, not common, 7.5′ parallel when used (includes gutter pan width)
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ (see clear zone and buffer zone below); this dimension can accommodate utilities
Sidewalk	5′ minimum recommended (see walk zone dimension below)
Intersection Control	signals or stops (stops on cross streets only)
Lighting Standards	vehicle/roadway

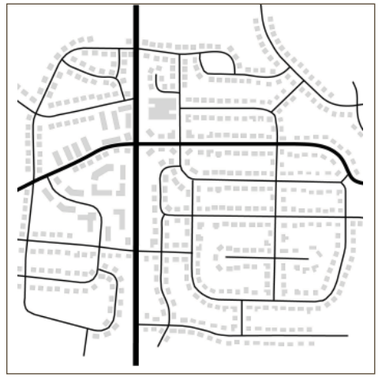
Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear zone: 2′
- Buffer Zone: 4′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: not needed; utility placement in Buffer Zone acceptable

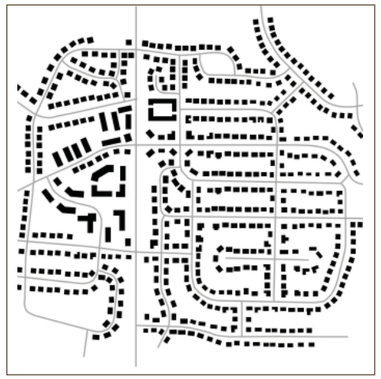
The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

2.9 STREET DESIGN: RESIDENTIAL NEIGHBORHOOD ARTERIAL (Multi-Lane)



Street Network

Street networks are often well-connected in older residential areas, where newer development patterns have favored cul-de-sacs and dead-end streets.

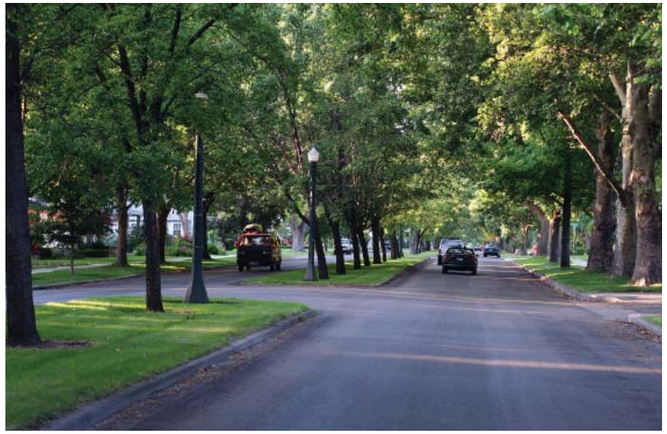


Building Form

Buildings are typically detached and though they face streets, there is not the same street orientation as in town center areas. Road widening shortens front setbacks and brings the road closer to buildings, though this is not a consequence of a 'build to street' approach seen in town centers.

Land Use

Land use patterns along residential arterial streets may include corner commercial districts. Arterials and collectors will be the most likely locations for multi-family residential land uses.



Existing Classification Type: Arterial
Land Use Context: Neighborhood Residential

Sometimes widenings are called for on arterials that move through residential areas. The impact that these projects have on the neighborhoods can be very strong; they are often politically controversial and require careful consideration of design elements.

In particular, when widenings must occur it is important to locate and add rear access opportunities as part of the planning and construction. Greenfield development should be permitted to accommodate front on housing as long as the housing units are serviced by alleys or local roads to the rear. The arterial function is automatically compromised if the roadway is constructed with frequent driveway access typical of residential contexts.

Residential driveway access in Greenfield conditions is not permitted on arterials. Future consolidation of driveways as redevelopment occurs is the goal in the existing corridors currently having direct driveway access.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Moderate to low, depends on nature of residential development.	Left turn opportunities should not be limited to intersections unless block sizes are small enough to allow turns without greatly increased trip length.
On-Site Parking Feasibility	Moderate to high, depends on nature of residential development	On-street parking is not important if right-of-way limitations are a concern.
Acceptable Driveway Density	Frequent, though less so than on smaller streets	Though they should not be limited to intersections when driveways are present, left turn opportunities do not need to be frequent throughout a block length.
Expected Vehicle Travel Speeds	Moderate	Narrower lanes are acceptable, especially in multi-lane roadways.
Multimodal Access Demand	Moderate	Sidewalks needed, bicycle lanes are useful given the larger nature of the road.

2.9 STREET DESIGN: **RESIDENTIAL NEIGHBORHOOD ARTERIAL (Multi-Lane)**

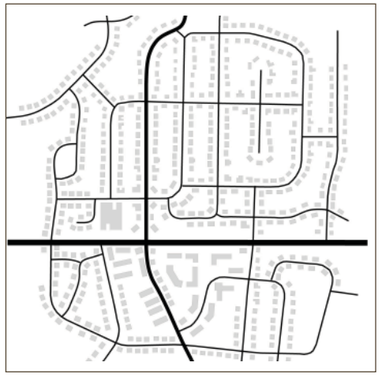
Design Element	Typical
Design/Operating Speed	30 mph
Number of Travel Lanes (per direction)	2
Travel Lane Dimensions	11′
Center Turn Lane Dimensions	10′
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	as right-of-way permits and when driveway spacing does not require left turns
Median Openings	for cross streets only when medians used
Bicycle Lanes	5′
On-Street Parking	optional, not common, 7.5′ parallel when used (includes gutter pan width)
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ (see clear zone and buffer zone below); this dimension can accommodate utilities. Reference ACHD Tree Policy.
Sidewalk	5′ minimum recommended (see walk zone dimension below)
Intersection Control	signals or stops (stops on cross streets only)
Lighting Standards	vehicle/roadway only

Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

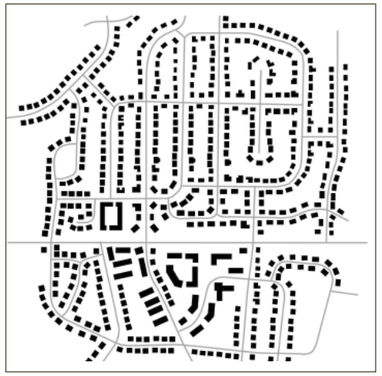
- Clear zone: 2′
- Buffer Zone: 6′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: not needed; utility placement in Buffer Zone acceptable

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.



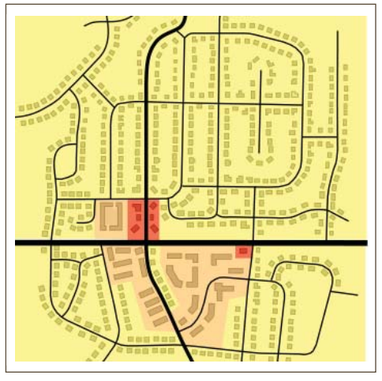
Street Network

Street networks are often well-connected in older residential areas, where newer development patterns have favored cul-de-sac and dead-end streets.



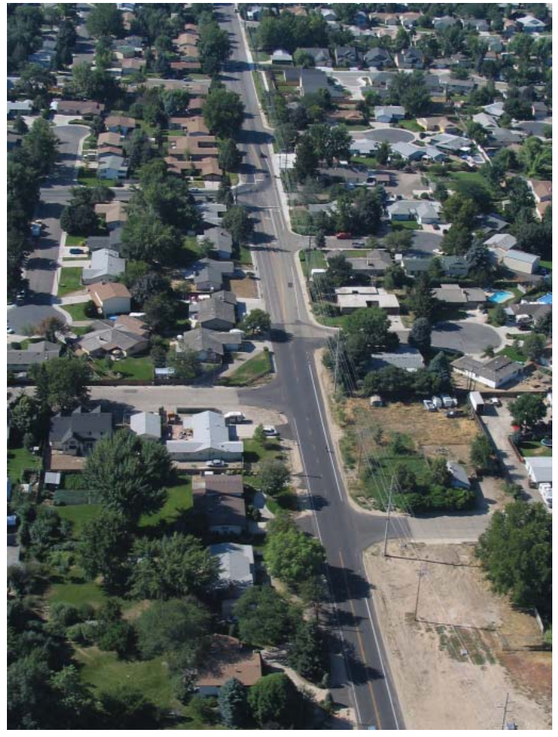
Building Form

Buildings are typically detached and though they face streets, there is not the same street orientation as in town center areas.



Land Use

Land use patterns along residential arterial streets may include corner commercial districts. Arterials and collectors will be the most likely locations for multi-family residential land uses.



Existing Classification Type: Collector
Land Use Context: Residential

Collectors help to balance the street network in residential areas by providing the bulk of the connections to local streets and allowing arterials to have less frequently spaced intersections. Though development patterns may orient lots not to access the collector (especially if frequent spacing of local cross-streets orients lots to these streets alone), driveways in retrofit situations in built environments are acceptable on streets with existing direct driveway access. In Greenfield situations alley loaded residential units will be required.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Moderate	Not as high as commercial access; additional lanes not needed for through movements.
On-Site Parking Feasibility	High	On-street parking may not be needed in abundance but should be considered depending on nature of residential development and what in the neighborhood complements it.
Acceptable Driveway Density	Frequent	Regularity of on-street parking may be limited by driveways if they occur frequently.
Expected Vehicle Travel Speeds	Low	Lanes can be narrow. Curb extensions are acceptable, as are small curb radii at corners.
Multimodal Access Demand	Moderate	Sidewalks are desirable for pedestrian safety on narrower streets, though dedicated bike lanes are more important than on low-volume local streets

2.10 STREET DESIGN: **RESIDENTIAL COLLECTOR**

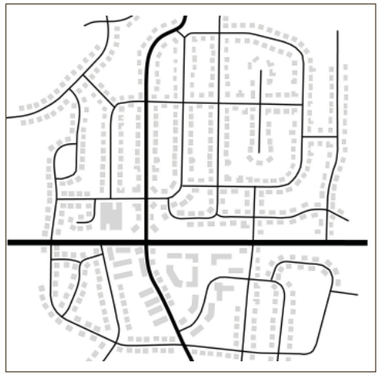
Design Element	Typical
Design/Operating Speed	25-30 mph
Number of Travel Lanes (per direction)	1
Travel Lane Dimensions	11′ next to bike or parking lanes and 14′ preferred if no bike lanes exist.
Center Turn Lane Dimensions	center lane not used
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	none
Median Openings	none
Bicycle Lanes	optional (5′ if used); necessary if part of a regional plan
On-Street Parking	optional, 7′ parallel when used (includes gutter pan width); when used, one or both sides may be applied (as needed)
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ (see clear zone and buffer zone below); this dimension can accommodate utilities
Sidewalk	5′ minimum (see walk zone below)
Intersection Control	signal, stop or roundabout
Lighting Standards	vehicle/roadway only

Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

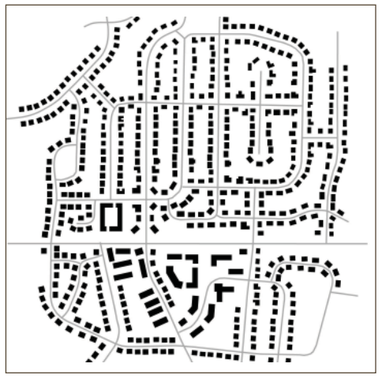
- Clear zone: 2′
- Buffer Zone: 4′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: not needed; utility placement in Buffer Zone acceptable

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.



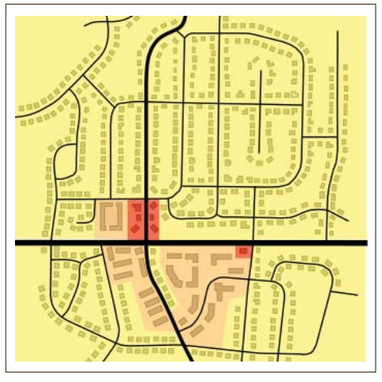
Street Network

Street networks are often well-connected in older residential areas, where newer development patterns have favored cul-de-sac and dead-end streets.



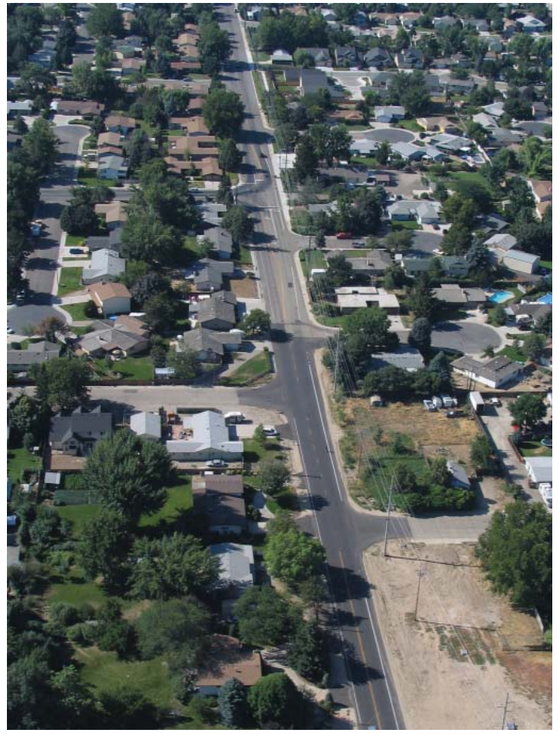
Building Form

Buildings are typically detached and though they face streets, there is not the same street orientation as in town center areas.



Land Use

In traditional neighborhood areas, collectors may have the same land uses as local streets, though due to their historic importance (in some cases as former streetcar routes) they may support a greater variety of neighborhood-supporting land uses (especially small-scale commercial).



Existing Classification Type: Collector
Land Use Context: Residential

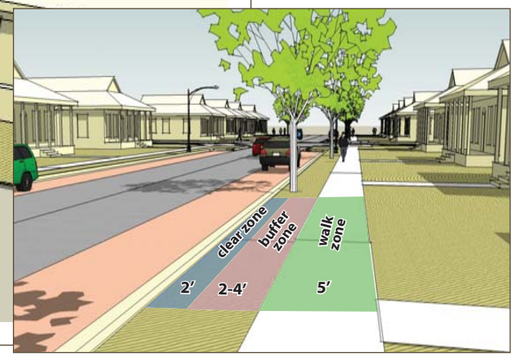
This typology is similar in design to the Residential Collector (see 2.10), but it is intended to recognize the generally narrower streets of existing traditional neighborhoods of Ada County. The North End of Boise is one example of this kind of neighborhood. The cross-section is intended to preserve existing curb dimensions (the cross-section on the opposite page is based on existing North End curb-to-curb width) but allows ACHD to formally define space for parking and travel lanes.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Moderate	Not as high as commercial access; additional lanes not needed for through movements.
On-Site Parking Feasibility	High	Existing land use and development patterns of traditional neighborhoods likely have limited parking capacity on site; many houses in older neighborhoods may not even have driveways. On-street parking should be maintained on these streets, particularly in areas around community-serving facilities.
Acceptable Driveway Density	Moderate to Frequent	Regular on-street parking may be limited with frequent driveways, though in most cases of this type of street driveways are not a feature of the development.
Expected Vehicle Travel Speeds	Low	Lanes can be narrow. Curb extensions are acceptable as a traffic calming and landscaping feature, as are small curb radii at corners.
Multimodal Access Demand	Moderate to High	Sidewalks are desirable for pedestrian safety on narrower streets, slower speeds should allow safe sharing of lanes between bicycles and vehicles

2.11 STREET DESIGN: **RESIDENTIAL COLLECTOR FOR TRADITIONAL NEIGHBORHOODS**

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

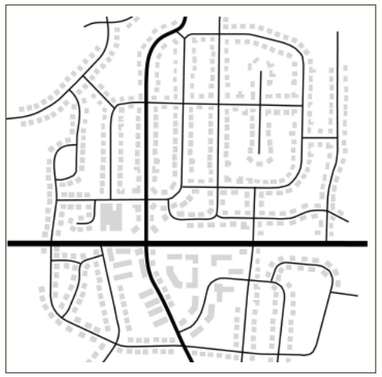
Design Element	Typical
Design/Operating Speed	25-30 mph
Number of Travel Lanes (per direction)	1
Travel Lane Dimensions	11′ next to bike or parking lanes and 14′ if there are no bike and parking lanes.
Center Turn Lane Dimensions	center lane not used
Right Turn Lanes	Not appropriate to context, can be used for heavy turning movements but should not be needed based on surrounding street network
Medians	none
Median Openings	none
Bicycle Lanes	generally do not fit within existing curb dimensions if parking is retained; 5′ if parking is not used
On-Street Parking	optional, 8.5′ parallel when used (includes gutter pan width); when used, one or both sides may be applied (as needed)
Curb	6″ vertical with 1.5′ gutter pan
Buffer Area	varies according to existing right-of-way, typically 4-6′ (see clear zone and buffer zone below); this dimension can accommodate utilities
Sidewalk	5′ minimum (see walk zone below)
Intersection Control	signal, stop or roundabout
Lighting Standards	vehicle/roadway only



Pedestrian Zone

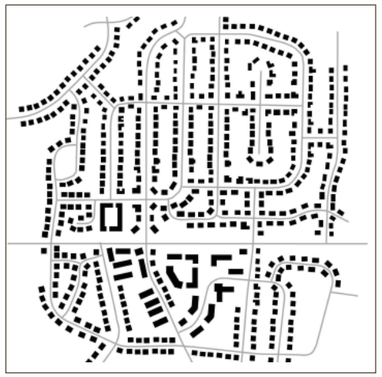
This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear zone: 2′
- Buffer Zone: 2-4′; range is specified to recognize pre-existing dimensions on some streets
- Walk Zone: 5′ minimum recommended
- Frontage Zone: not needed; utility placement in Buffer Zone acceptable



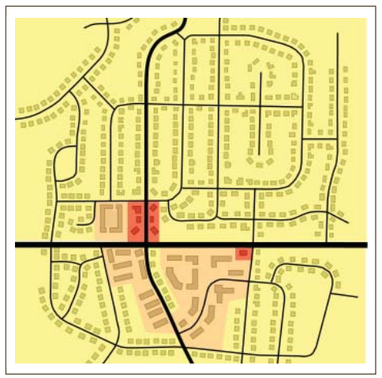
Street Network

Street networks are often well-connected in older residential areas, where newer development patterns have favored cul-de-sacs and dead-end streets.



Building Form

Buildings are typically detached and though they face streets, there is not the same street orientation as in town center areas.



Land Use

Land use patterns along residential local streets are typically exclusively residential and commonly detached, single-family structures.

Existing Classification Type: Local
Land Use Context: Residential

Local streets in residential areas are among the most access-oriented of any streets in the transportation network and travel speed expectations are usually low. While land development standards may require on-site parking and it is generally considered vital, local residential streets should still have flexibility to accommodate parking on at least one side of the street.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Moderate	Not as high as commercial access; additional lanes not needed for through movements.
On-Site Parking Feasibility	High	On-street parking may be needed in abundance.
Acceptable Driveway Density	Frequent (typically every 50 feet)	
Expected Vehicle Travel Speeds	Low	Lanes can be narrow. Curb extensions are acceptable, as are small curb radii at corners.
Multimodal Access Demand	Moderate to High	Sidewalks are desirable for pedestrian safety on narrower streets, though dedicated bike lanes are not as important due to lower vehicular volumes.

Design Element	Typical
Design/Operating Speed	20 - 25 mph
Number of Travel Lanes (per direction)	1 (lanes not striped)
Travel Lane Dimensions*	25′ for total roadway, not striped
Center Turn Lane Dimensions	center lane not used
Right Turn Lanes	Allowed for heavy turning movements or heavy truck traffic
Medians	none
Median Openings	none
Bicycle Lanes	none
On-Street Parking*	permitted, intended for one side of street only (included in total pavement width)
Curb	6″ with 1.5′ gutter pan
Buffer Area	6′ (see clear zone and buffer zone below); this dimension can accommodate utilities
Sidewalk	5′ minimum (see walk zone below)
Intersection Control	signal, stop or roundabouts
Lighting Standards	vehicle/roadway; additional pedestrian-level lighting acceptable

* Other street sections are described in ACHD's policy for Minor Residential Local Streets and parking on both sides of the street.

Pedestrian Zone

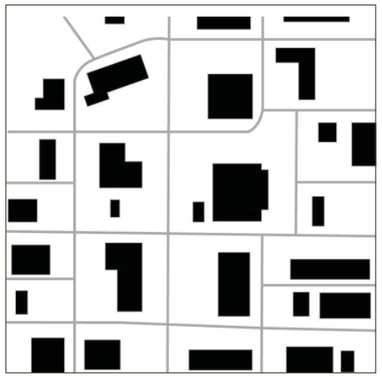
This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear zone: 2′
- Buffer Zone: 4′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: not needed; utility placement in Buffer Zone acceptable

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Street Network

Partly due to the size of many industrial properties, network connectivity varies in industrial areas, typically focused on main streets and cross streets providing additional access.



Building Form

Newer industrial areas have a service function that often requires significant vehicle circulation space in front of buildings; this leaves buildings separated from streets.

Land Use

Industrial areas tend to be larger in their extent than 'strip commercial' corridors: many have evolved from being oriented to a railroad facility to having adjacency to principal roads as well.

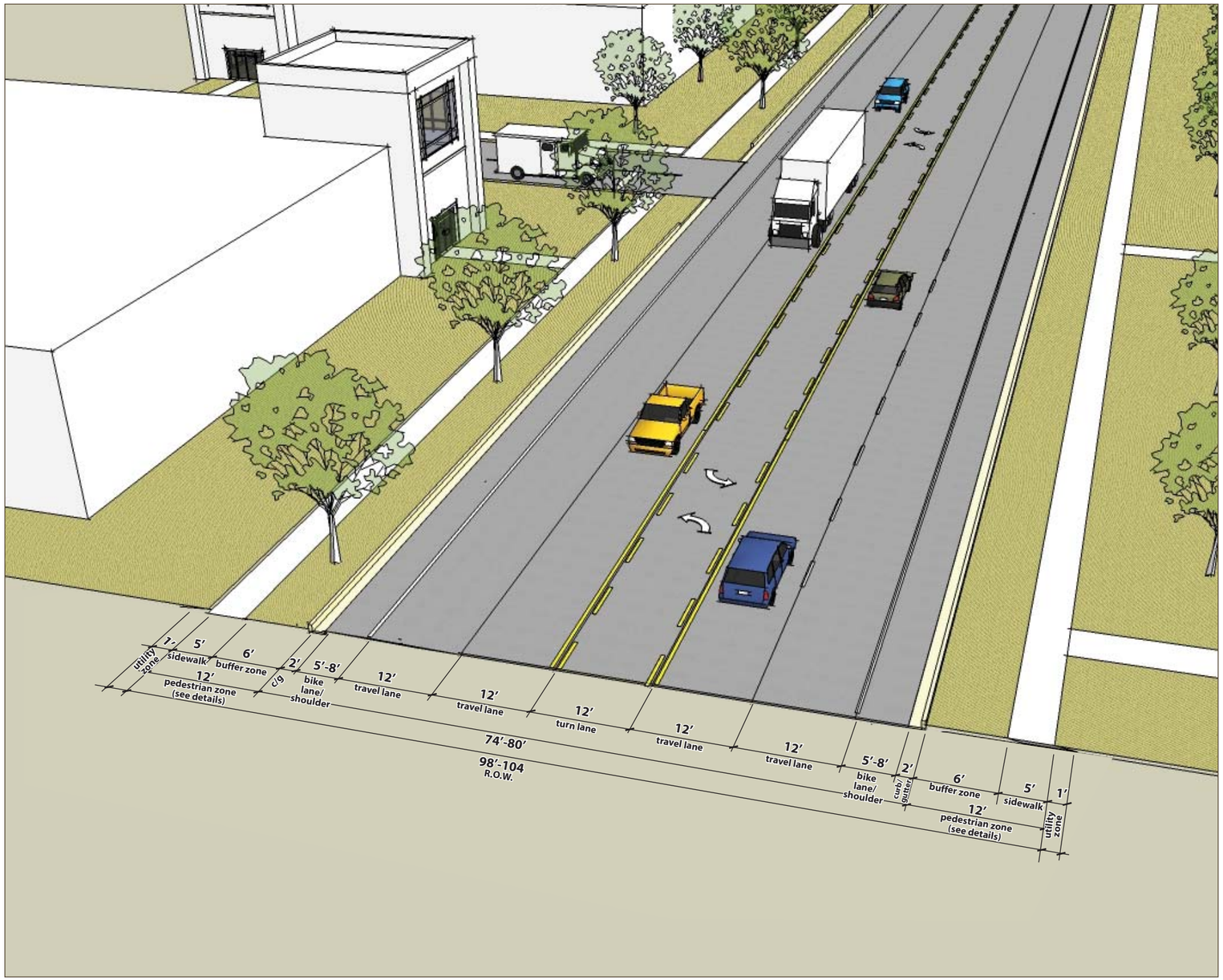
Existing Classification Type: Arterial
Land Use Context: Industrial

Industrial areas often present a challenging situation: industrial land uses are zoned adjacent to roads that provide direct connection to other parts of the region to expedite the distribution function that industrial establishments rely on. As a result, these regional roads, often arterials, are burdened with higher truck volumes and turning movements than other comparable roadways in different land use areas.

These are one context where additional right-of-way to accommodate right turn lanes may be justified to preserve mobility along the road.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Moderate to High	Comparable to commercial access; additional lanes may not be needed for through movements though heavy truck traffic should be expected.
On-Site Parking Feasibility	High	On-street parking is not needed. Truck traffic and other service vehicles are accommodated on-site as a part of development standards.
Acceptable Driveway Density	Low to Moderate	
Expected Vehicle Travel Speeds	Moderate to High	Higher speeds and truck turning movements imply that full lane widths (12') may be needed.
Multimodal Access Demand	Low	Sidewalks are desirable for pedestrian safety on narrower streets, though dedicated bike lanes are not as important due to lower vehicular volumes.

2.13 STREET DESIGN: **INDUSTRIAL ARTERIAL**

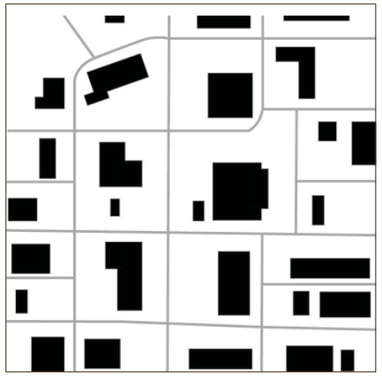


Design Element	Typical
Design/Operating Speed	45 mph
Number of Travel Lanes (per direction)	2
Travel Lane Dimensions	12′
Paved Shoulders	6′
Center Turn Lane Dimensions	12′
Right Turn Lanes	allowed for heavy turning movements or heavy truck traffic
Medians	not typically needed, permitted to bifurcate roadway before transition to center turn lane
Median Openings	medians for transition into three- or five-lane section not needed
Bicycle Lanes	bike lane appropriate for lower speeds, 5′ minimum
On-Street Parking	none
Curb	6″ with 1.5′ gutter pan
Sidewalk	5′ sidewalk on at least one side of the street; in certain cases both sides are desirable
Intersection Control	signal or stop
Lighting	vehicles/roadway
Utility Zone	1′

The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Street Network

Partly due to the size of many industrial properties, network connectivity varies in industrial areas, typically focused on main streets and cross streets providing additional access.

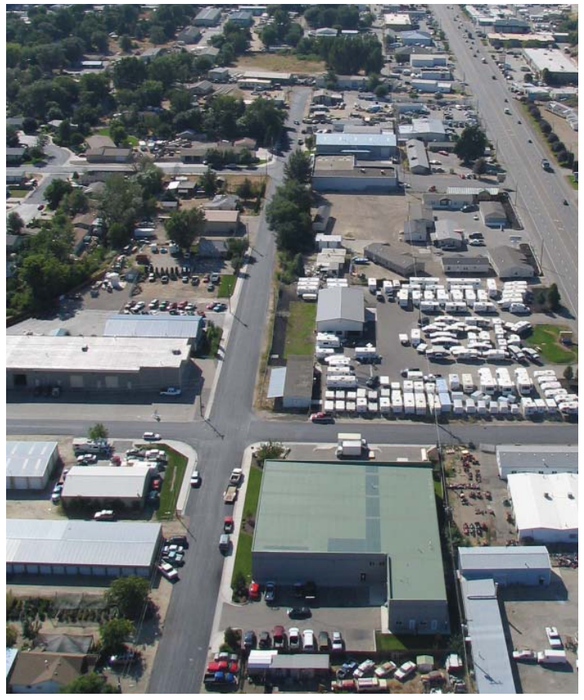


Building Form

Newer industrial areas have a service function that often requires significant vehicle circulation space in front of buildings; this leaves buildings separated from streets.

Land Use

Industrial areas tend to be larger in their extent than 'strip commercial' corridors: many have evolved from being oriented to a railroad facility to having adjacency to principal roads as well.



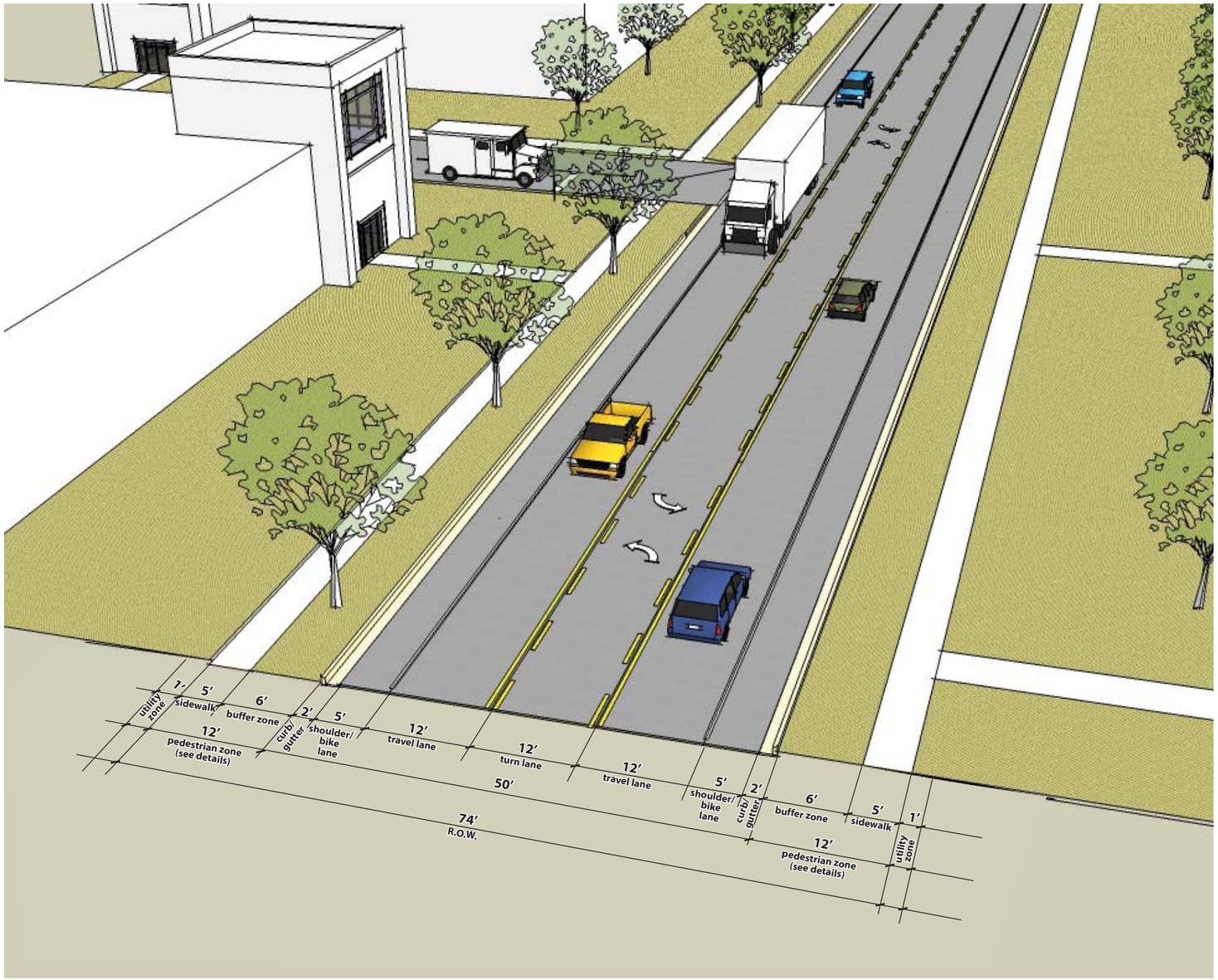
Existing Classification Type: Local
Land Use Context: Industrial

Local streets in industrial areas are providing a clearer access function and may be designed with characteristics similar to rural roads. What is important is that roadway design decisions factor in heavy turning movements from trucks and that curb or corner radii are designed accordingly.

This is one context where additional right-of-way to accommodate right turn lanes may be justified to preserve mobility along the road.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Moderate to High	Comparable to commercial access; additional lanes may not be needed for through movements though heavy truck traffic should be expected.
On-Site Parking Feasibility	High	On-street parking is normally needed, but optional. Truck traffic and other service vehicles are accommodated on-site as a part of development standards.
Acceptable Driveway Density	Moderate	Not featured.
Expected Vehicle Travel Speeds	Low to moderate	Though truck turning movements and acceleration may keep overall speeds low, the nature of land use suggests full lane widths and ample turn radii at intersections.
Multimodal Access Demand	Low	Sidewalks are desirable for pedestrian safety on narrower streets, though dedicated bike lanes are not as important due to lower vehicular volumes.

2.14 STREET DESIGN: **INDUSTRIAL COLLECTOR/LOCAL**



Design Element	Typical
Design/Operating Speed	35 mph
Number of Travel Lanes (per direction)	1
Travel Lane Dimensions	11-12′, speed permitting
Shoulders	5′
Center Turn Lane Dimensions	12′; typically not needed on local streets
Right Turn Lanes	allowed for heavy turning movements or heavy truck traffic
Medians	none
Median Openings	N/A
Bicycle Lanes	5′ required if used
On-Street Parking	optional; 7.5′ parallel
Curb	6″ with 1.5′ gutter pan
Utility Zone	1′
Sidewalk	5′ sidewalk on at least one side of the street; in certain cases both sides are desirable
Intersection Control	signal or stop
Lighting Standards	vehicles/roadway only

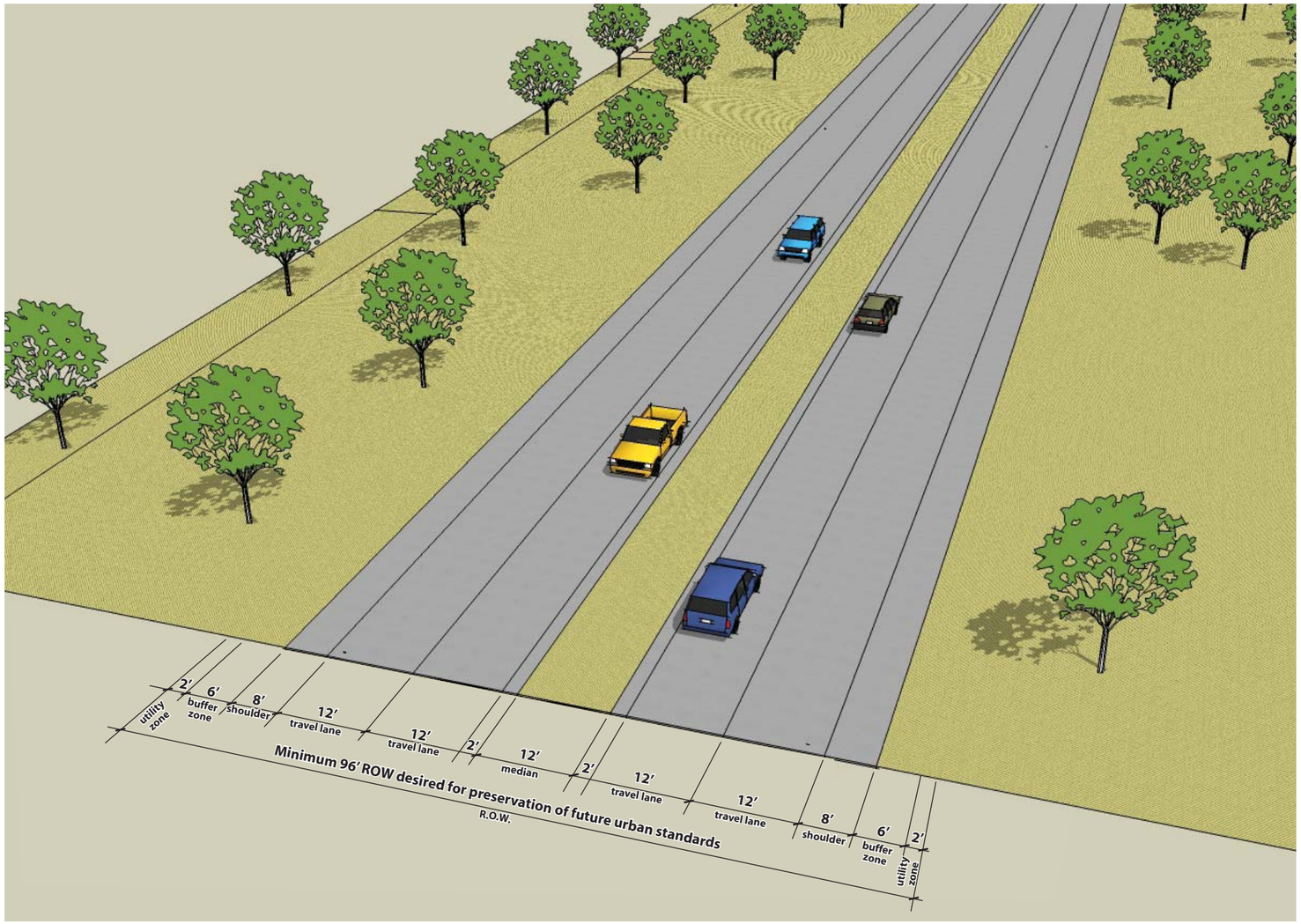
The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Existing Classification Type: Arterial
Land Use Context: Rural

Rural arterial highways may have the mobility characteristics of arterials in other parts of the county, but their context implies that there will be fewer constraints in their design.

Though the case can be made for multi-lane rural arterial highways in connecting distinct developed parts of the county, a true rural context should not have the kind of development that would call for the addition of a center turn lane or frequent median breaks.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Low	Few driveway cuts expected, consequently, if medians are used in multi-lane sections, few median breaks are needed.
On-Site Parking Feasibility	High	On-street parking is not needed. Vehicles are accommodated on-site.
Acceptable Driveway Density	Infrequent	Few median breaks are needed and center turn lanes should not be needed.
Expected Vehicle Travel Speeds	High	Wider lanes and sufficient clear space should be included in design.
Multimodal Access Demand	Low	Shoulders should be of sufficient width to serve as bicycle facilities.



Design Element	Typical
Design/Operating Speed	50 mph
Number of Travel Lanes (per direction)	up to 2
Travel Lane Dimensions	12′
Center Turn Lane Dimensions	center turn lanes not to be used in rural contexts, turn storage lanes acceptable at intersections only
Right Turn Lanes	allowed for heavy turning movements or heavy truck traffic
Medians	To plan for future potential turning movements, 12′ minimum, raised medians not used. 2′ paved inner shoulder to be used between median and travel lanes
Median Openings	for intersecting streets and driveways only
Bicycle Lanes	Shoulders should be of sufficient width to serve as bicycle facilities.
Side Treatment	6′ shoulders
Sidewalk	if in the area of city impact, 5′; otherwise not needed. Refer to Bicycle Master Plan standards for dimensions of off-street trails to be included if roadway is in regional plan
Utility Zone	2′
Intersection Control	signal, stop on cross streets only
Lighting Standards	none needed
Buffer Zone	Preserved for future use

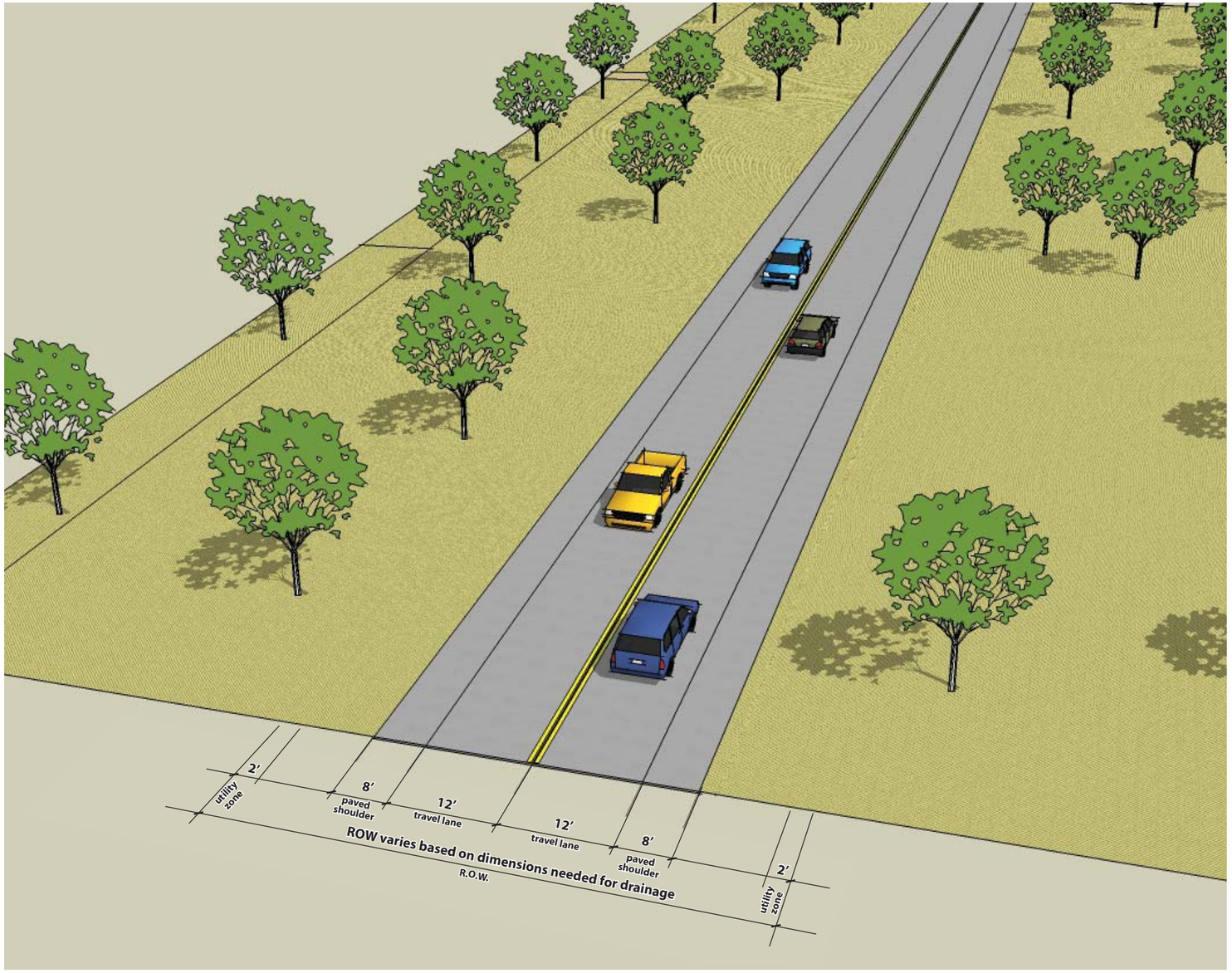
The landscaping treatments depicted in the cross-sections are dependent upon construction funding and future maintenance by the appropriate developer or local jurisdiction. These costs are not borne by ACHD.

Existing Classification Type: Local/Collector
Land Use Context: Rural

Rural roads may have the mobility characteristics of roads in other parts of the county, but their context implies that there will be fewer constraints in their design.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Low	Few driveway cuts expected, though medians are not expected (typical section is two lanes), median breaks are not frequent.
On-Site Parking Feasibility	High	On-street parking is not needed.
Acceptable Driveway Density	Infrequent	Center turn lanes should not be needed.
Expected Vehicle Travel Speeds	Moderately High	Wider lanes and sufficient clear space should be included in design.
Multimodal Access Demand	Low	Sidewalks are not needed; shoulders should be of sufficient width to serve as bicycle facilities.

2.16 STREET DESIGN: **RURAL ROAD**



Design Element	Typical
Design/Operating Speed	45 mph
Number of Travel Lanes (per direction)	1
Travel Lane Dimensions	12′
Center Turn Lane Dimensions	not needed
Right Turn Lanes	allowed for heavy turning movements or heavy truck traffic
Medians	none
Bicycle Lanes	none required
On-Street Parking	none
Side treatment	6′ shoulders
Sidewalk	if in the area of city impact, 5′; otherwise not needed. Refer to Bicycle Master Plan standards for dimensions of off-street trails to be included if roadway is in regional plan
Utility Zone	2′
Intersection Control	signal, stop or roundabout
Lighting Standards	none needed

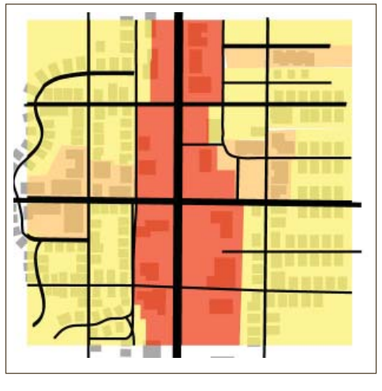
The landscaping treatments depicted in the cross-sections are dependent upon construction funding and future maintenance by the appropriate developer or local jurisdiction. These costs are not borne by ACHD.

Street Network

The arterial is the primary street in the area, serving mainly commercial or industrial land uses. Street connections may be limited due to cross-street requirements for this kind of road design.

Building Form

Many buildings in this context are not fully oriented to the street: they may face it, but parking demand often influences their form and placement relative to the street.



Land Use

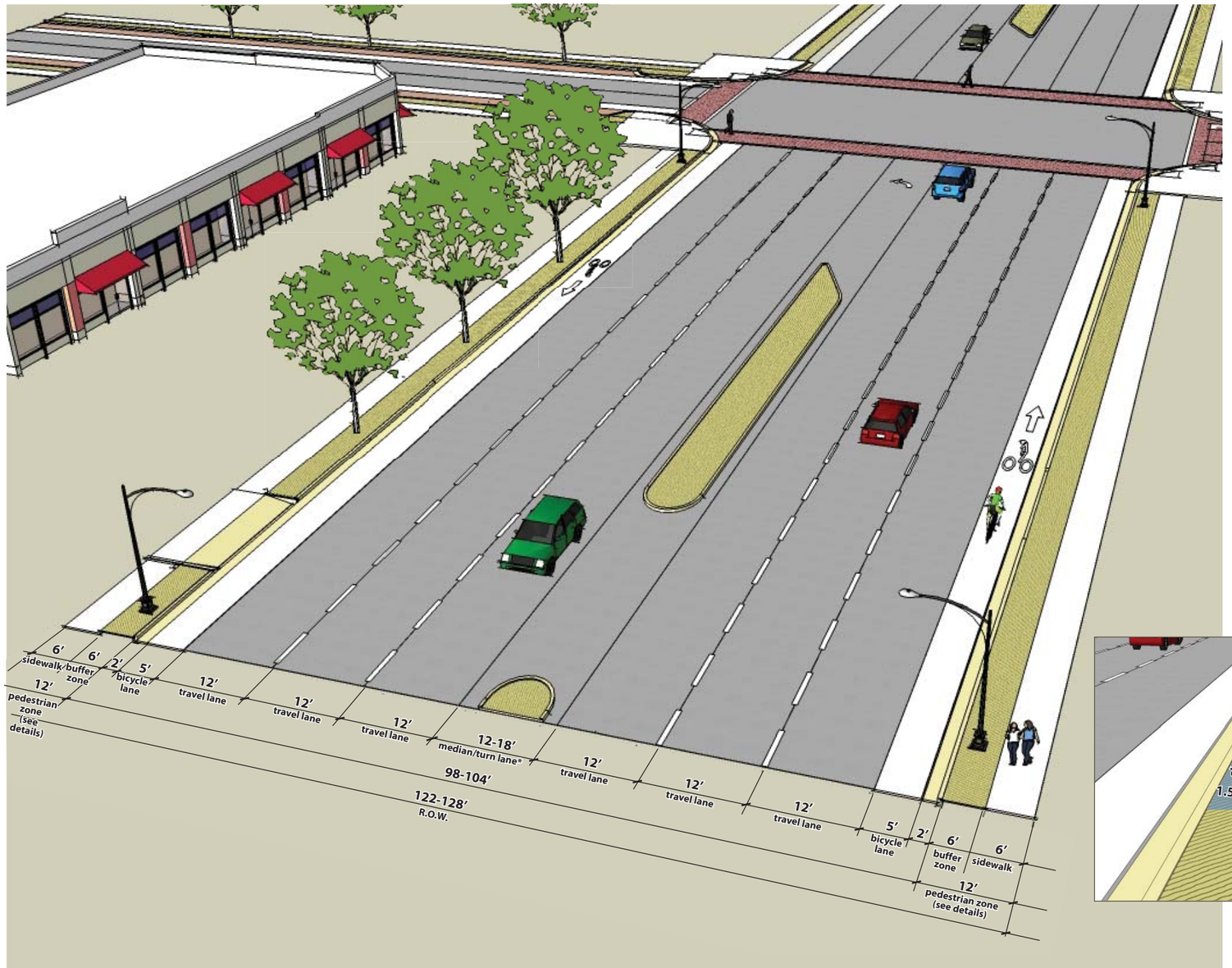
Land use patterns, as stated in the Street Network description, are primarily commercial or industrial.

Existing Classification Type: Arterial
Land Use Context: Commercial or Industrial

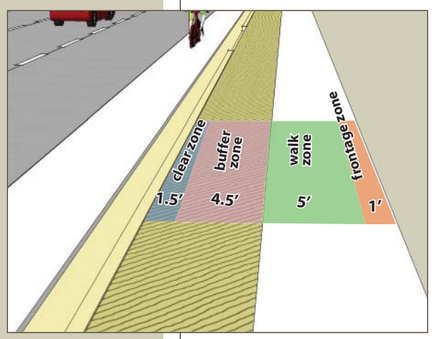
Mobility arterials are designed for high volumes and intended for regional movements. While the number of lanes may vary, these roadways may have more than two travel lanes per direction.

CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Varies (typically low in new construction)	Driveways may need to be preserved for preexisting development if arterial widenings occur; typically less access in greenfield conditions
On-Site Parking Feasibility	High	On-street parking is not appropriate. Truck traffic and other service vehicles are accommodated on-site.
Acceptable Driveway/ Cross Street Density	Varies (typically low in new construction	Median breaks, crossing and turning may be limited. In driveway areas, center left turn lane may be provided.
Expected Vehicle Travel Speeds	High	Though truck turning movements and acceleration may interfere with outer travel lane speeds; higher vehicle speeds will likely call for wider travel lanes.
Multimodal Access Demand	Low	Sidewalks are desirable for pedestrian safety, especially as commercial land uses are likely; bicycle lanes should be considered at lower speeds.

From top: Fort Myers, Florida; Arlington Heights, Illinois; Federal Way - Boise, Idaho



Design Element	Typical
Design/Operating Speed	40-45 mph
Number of Travel Lanes (per direction)	up to 3
Travel Lane Dimensions	12′
Center Turn Lane Dimensions	12′ when center turn lane used; when median used, allow 18′ for 12′ left turn storage bay and 6′ pedestrian crossing refuge area at intersections
Right Turn Lanes	allowed for heavy turning movements or heavy truck traffic
Block Length	In mobility arterials where pedestrian activity is likely reduced, 600-800′ block lengths acceptable to preserve mobility function
Bicycle Lanes	Bicycle lanes considered at lower speeds, 5′ minimum
On-Street Parking	none
Curb	6″ with 1.5′ gutter pan
Buffer Area	see details below on clear and buffer zone
Sidewalk	see details on walk/frontage zone
Intersection Control	signals or stops (cross streets only)
Lighting Standards	vehicles/roadway



Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear Zone: 1.5′ for vertical clearance
- Buffer Zone: 4.5′ for tree planting area and street furniture (benches, kiosks)
- Walk Zone: 5′ minimum recommended
- Frontage Zone: 1′ provides buffer from buildings as needed, can be hardscaped

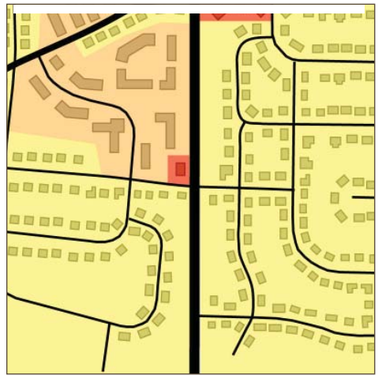
The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Street Network

Though they may pass through residential areas, primary street network that supports residential land use is likely to provide few connections to main arterials.

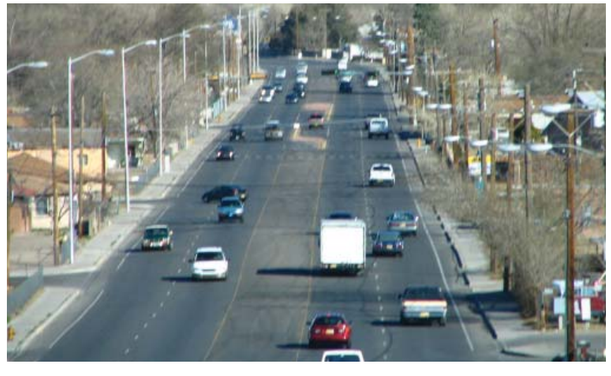
Building Form

In residential contexts with mobility arterials, newer buildings tend to be in inward-facing subdivisions. If the arterial is constructed from a pre-existing road that provided direct access to land uses, some of these land uses may remain and face this street.



Land Use

Land uses, as implied in the cross-section title, are primarily residential, though small-scale commercial uses may be located at key intersections.

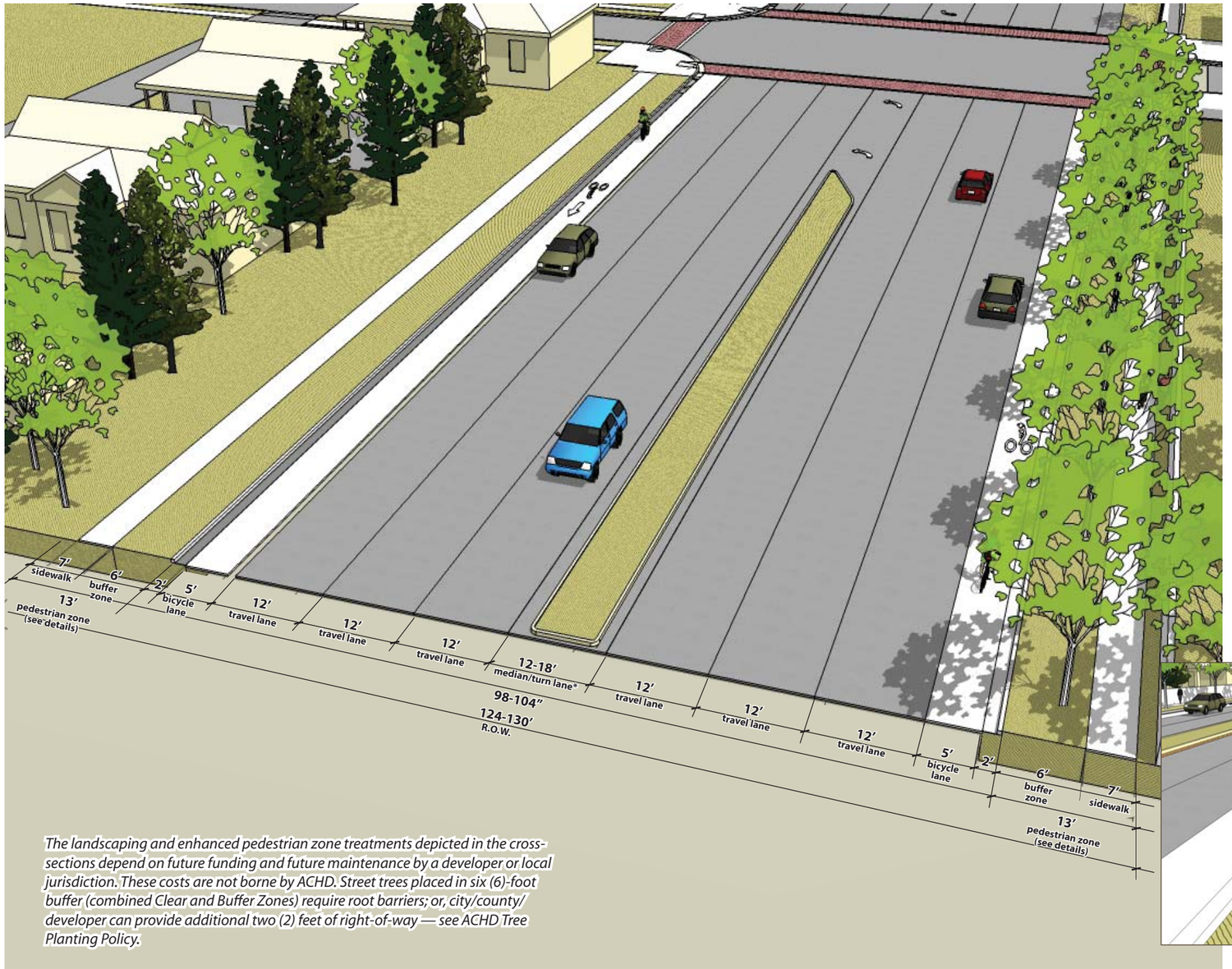


Existing Classification Type: Arterial
Land Use Context: Residential

Mobility arterials are designed for high volumes and intended for regional movements. While the number of lanes may vary, these roadways may have more than two travel lanes per direction.

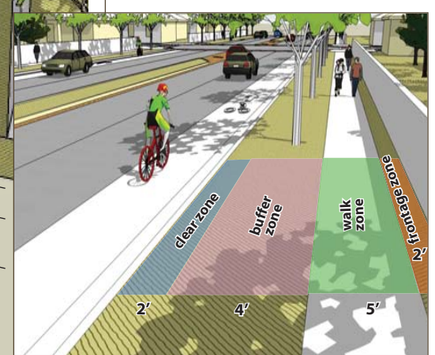
CRITERION	RELATIVE MEASURE	DESIGN IMPLICATIONS
Vehicle Access Demand	Varies (typically low in new construction)	Driveways may need to be preserved for preexisting development if arterial widenings occur; typically less access in greenfield conditions
On-Site Parking Feasibility	High	On-street parking is not appropriate. Vehicles are accommodated on-site.
Acceptable Driveway/ Cross Street Density	Varies (typically low in new construction	Median breaks, crossing and turning may be limited. In driveway areas, center left turn lane may be provided.
Expected Vehicle Travel Speeds	High	Though truck turning movements and acceleration may interfere with outer travel lane speeds; higher vehicle speeds will likely call for wider travel lanes.
Multimodal Access Demand	Low	Sidewalks are desirable for pedestrian safety, especially as commercial land uses are likely; bicycle lanes should be considered.

The examples of mobility arterials shown here are not in Ada County. From top: Fort Myers, Florida; Atlanta, Georgia; Albuquerque, New Mexico.



The landscaping and enhanced pedestrian zone treatments depicted in the cross-sections depend on future funding and future maintenance by a developer or local jurisdiction. These costs are not borne by ACHD. Street trees placed in six (6)-foot buffer (combined Clear and Buffer Zones) require root barriers; or, city/county/developer can provide additional two (2) feet of right-of-way — see ACHD Tree Planting Policy.

Design Element	Typical
Design/Operating Speed	40-45 mph
Number of Travel Lanes (per direction)	up to 3
Travel Lane Dimensions	12′
Center Turn Lane Dimensions	12′ when center turn lane used; when median used, allow 18′ for 12′ left turn storage bay and 6′ pedestrian crossing refuge area at intersections
Right Turn Lanes	allowed for heavy turning movements or heavy truck traffic
Block Length	In mobility arterials where pedestrian activity is likely reduced, 600-800′ block lengths acceptable to preserve mobility function
Bicycle Lanes	5′
On-Street Parking	none
Curb	6″ with 1.5′ gutter pan
Buffer Area	see details below on clear and buffer zones
Sidewalk	see details on walk/frontage zone
Intersection Control	signals or stops (cross streets only)
Lighting Standards	vehicles/roadway



Pedestrian Zone

This is an illustrative legend to explain how the pedestrian zone is broken down: the colors do ***NOT*** indicate color-based surface treatments.

- Clear Zone: 2′
- Buffer Zone: 4′
- Walk Zone: 5′ minimum recommended
- Frontage Zone: 2′ for utility placement and buffer from walls

This page is intentionally left blank.

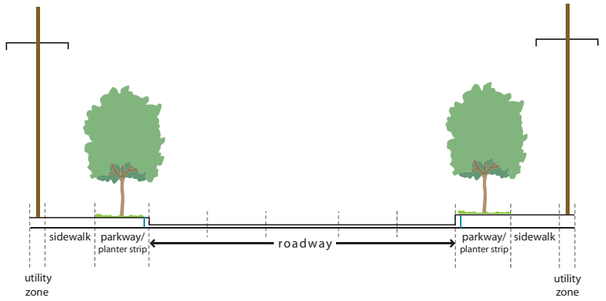
As street designs follow land use context, the placement of utilities should be considered in a way that does not impede the needs of buildings and their users or that complicates maintenance of the utility infrastructure itself. ACHD's default is to establish a utility zone at the outside edge of the right-of-way. The diagram here shows a series of options that roadway designers can use in working with the utility providers on placement of infrastructure. These are intended to suggest ways to place utilities on streets in urban areas that allow land development patterns to bring buildings to the street without requiring additional right-of-way.

In the case of rural and industrial roads using swale drainage, overhead utilities placed in the utility buffer at the right-of-way edge will generally not see change. The recommended street sections in rural and industrial contexts in particular do not suggest contexts where building placement would be directly adjacent to the street.

DEFAULT CASE
Utility zone at outside edge of right-of-way

DESIGN IMPLICATIONS: *Utilities are placed at the edge of right-of-way. Individual pole placement needs to be coordinated with access points and other roadway design features.*

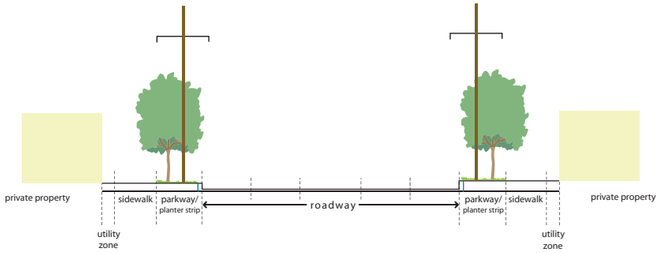
As local governments redefine land development standards that engage pedestrians along the street, transportation projects will need to reconsider utility placement.



Land development regulations change and bring building placement to right-of-way edge

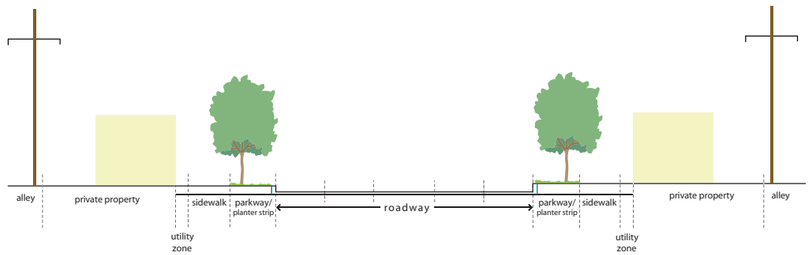
OPTION 1
Overhead utilities placed in planter strip

DESIGN IMPLICATIONS: *Tree placement and selection must keep in mind typical utility vertical clearance to avoid damage to trees from utility provider maintenance. Utility buffer can be hardscaped to add to pedestrian area as 'shy zone' against buildings (see Sections 2.5 and 2.6).*



OPTION 2
Overhead utilities placed alley behind private property

DESIGN IMPLICATIONS: *Occurs when alleys added as part of a street design or other easements are secured for utility placement behind buildings. Utility buffer can be hardscaped to add to pedestrian area as 'shy zone' against buildings (see Sections 2.5 and 2.6).*



OPTION 3
Utilities placed underground in right of way, either in planter strip or in designated utility buffer

DESIGN IMPLICATIONS: *Though hardscaping is optional, utility buffer can remain grass or ground cover if utilities are placed there.*