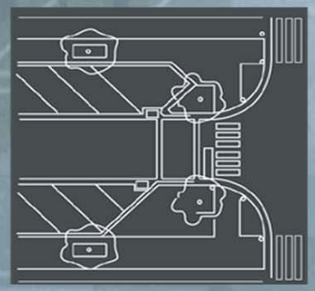
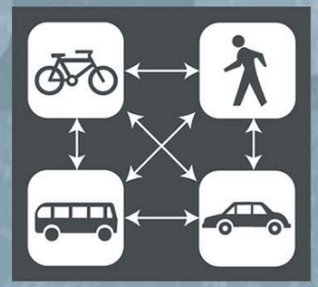




Alachua County

Corridor Design Manual

November 2002

Foreword

This Manual is intended to communicate the County's vision for the design of its streets and pathways. The Manual builds upon our adopted ideal of a sustainable community as expressed in both the County's *Comprehensive Plan* and the Metropolitan Transportation Planning Organization's *Livable Communities Reinvestment Plan*.

The manual is intended to serve as a guide for developers and public officials that build and design our streets. Corridor design is just one part of the growth and development puzzle. Therefore, the manual begins by summarizing principles associated with integrating land use and transportation planning. The Design Guidelines illustrate geometric characteristics and design elements associated with roads and pathways serving the range of transportation and land development context found in Alachua County. The manual concludes with a recommended process for developing corridor master plans that respect the local context.

Our wish is that the manual becomes a tool that provides a framework for the development of roadways serving new communities and well as new or revitalized municipal streets and pathways. In addition to providing this design framework, the manual is intended to serve as a resource for influencing updates to the county's current land development regulations and as a resource for the land development approval process.

Our streets and pathways represent important community investments that not only connect us but also provide the windows by which our community is viewed. Alachua County is committed to enhancing its unique character through the intelligent integration of sound design fundamentals and innovative planning.

We are pleased to offer the *Corridor Design Manual* to the citizens of Alachua County.

Alachua County Department of Public Works

Table of Contents

Introduction

This manual provides a framework to guide future roadway design and corridor development in Alachua County to support the goals of the Comprehensive Plan. The Corridor Design Manual takes a broad view of transportation investments, providing tools by which to develop a safe, reliable multimodal transportation network that supports the character of the community.

The Corridor Design Manual is designed to be used by all individuals who influence transportation investments, including policy makers, engineers and citizens. Therefore, the document provides guidance on all elements of the corridor master planning process, including a general overview of transportation policy and design principles, specific recommendations on geometric design, and a process by which to implement design. The manual recognizes the significance of context-sensitive design, providing a framework by which to refine and improve upon the design guidelines. Design enhancements that reduce the impact of vehicular travel on a community, such as streetscaping and traffic calming, are encouraged where such enhancements are needed and supported by the community. This manual will be updated and refined based on experience, community goals, and best practices in design.

The manual is organized into three sections that cover (1) policy and design principles, (2) design guidelines, and (3) design process. Section One provides an overview of transportation concepts and the interaction between transportation investments, land use decisions and community building. Corridor Design Guidelines, recommended corridor designs linked to land use contexts served by the corridor, are presented in Section Two. Section Three outlines a process intended to refine the Corridor Design Guidelines to support the local context, community character, and future vision for the County, at specific sites.

Goals of the Transportation System

Provide for the needs of pedestrians, bicyclists, transit users, motorized-vehicle users, and users of rail and aviation facilities in a manner that is sensitive to the cultural and environmental amenities of Alachua County and supportive of the vision of the Comprehensive Plan.

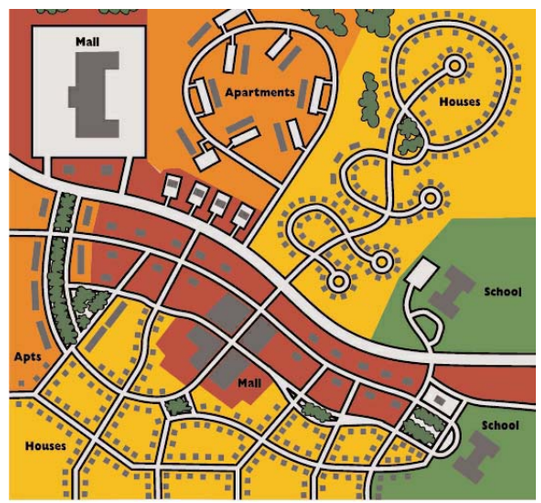
- Enhance mobility
- Support growth management and land development objectives
- Promote walking, bicycling, and use of public transit
- Maintain high quality new and established neighborhoods
- Facilitate the preservation of natural resources
- Make efficient use of public infrastructure

Intended Audience

- Local government officials
- Private land development community
- FDOT
- Regional Transit System (RTS)
- Fire and Rescue Service Providers
- Gainesville Regional Utilities & Other Utilities
- The University of Florida
- School Board of Alachua County
- MTPO and its committees
- Community organizations
- Media
- General public
- Professional associations
- GBA, ASCE, ITE, APA, ASLA, APWA, FES, etc

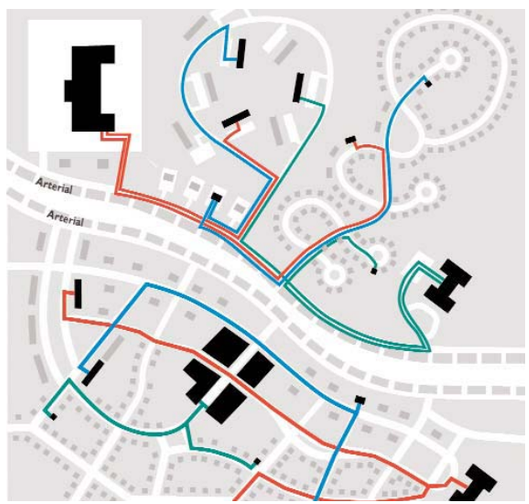
Section 1: Transportation, Land Use, and Design - Page 3-18

This section provides a general overview of transportation terminology and concepts, and describes the relationship between transportation infrastructure, land use patterns, and urban design.



Top:
- Sparse Roadway Network
- Separation of uses

Bottom:
- Roadway network with multiple connections
- Proximity of uses
- Public spaces link community

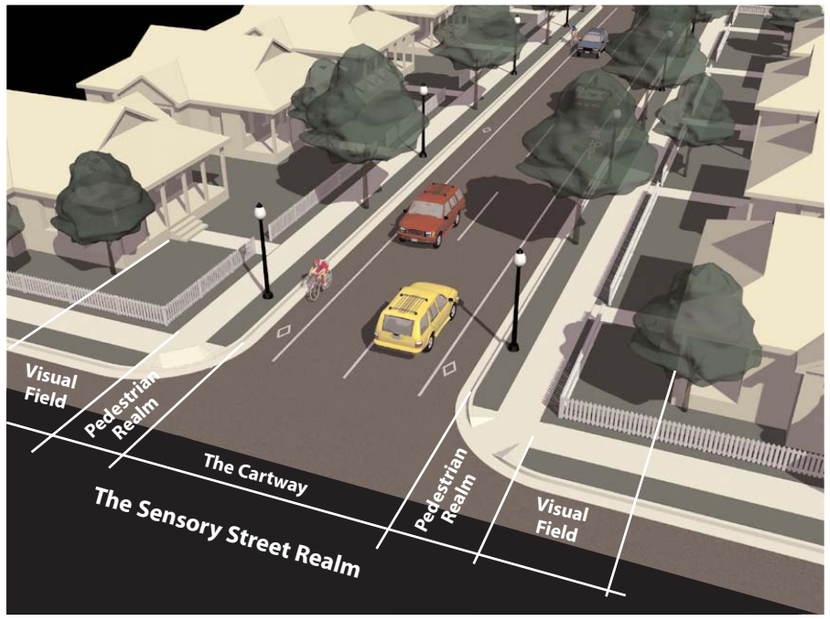


Top:
- Promotes vehicular travel
- Long trip lengths
- Trips concentrated on one major roadway

Bottom:
- Promotes walking and biking
- Shorter trip lengths
- Dispersion of trips on multiple roadways

SECTION 2: ELEMENTS OF DESIGN GUIDELINES

PAGES 19-45



The Design Guidelines recommend design elements that support safe, convenient travel by all modes and are compatible with the surrounding uses.

DEFINITIONS

The Sensory Street Realm - the space experienced by a motorist, bicyclist, or pedestrian

Cartway Realm - the physical space devoted to vehicular and/or bicycle travel

Pedestrian Realm - area where pedestrian travel is a priority

Visual Field - private or public uses abutting the street

ELEMENTS OF THE CARTWAY REALM

- Vehicular travel lanes
- Medians
- Bicycle lanes
- Pavement type
- Parking
- Transit stops
- Traffic calming measures
- Pedestrian crossings
- Intersection design
- Gutter

ELEMENTS OF THE PEDESTRIAN REALM

- Curb
- Landscaping
- Streetscaping
- Signs
- Lighting
- Sidewalks
- Transit amenities
- Utility
- Open Drainage System

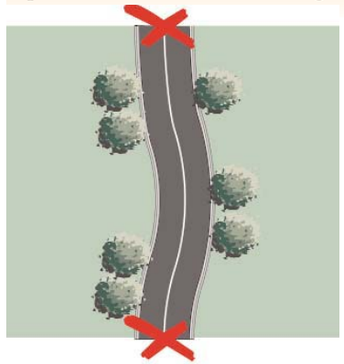
ELEMENTS OF THE VISUAL FIELD

- Pedestrian access
- Vehicular access
- Setbacks
- Building massing
- Bicycle facilities
- Open spaces
- Signage
- Landscaping

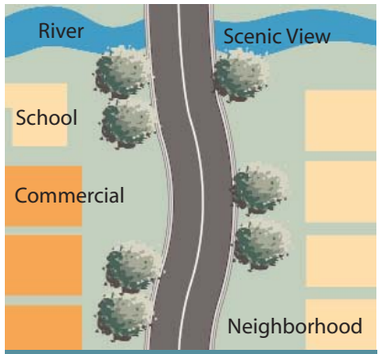
SECTION 3: CORRIDOR MASTER PLANNING PROCESS

PAGES 46-53

The Corridor Master Planning Process outlines a process by which to evaluate the compatibility of transportation investments within broader community goals of livability, economic growth, and environmental preservation as defined through the Comprehensive Plan, the Livable Community Reinvestment Plan, and community input.



STEP 1: DEFINE STUDY

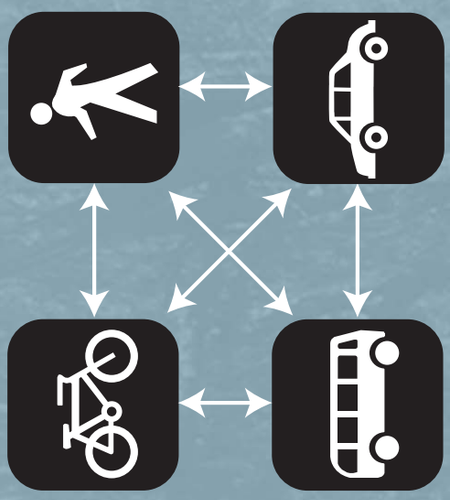


STEP 2: DEFINE CONTEXT

STEP 3: VISIONING

STEP 4: DESIGN

STEP 5: IMPLEMENTATION



The concepts of transportation, land use, and design are interrelated. Understanding this interaction is necessary to evaluate impacts and potential solutions to traffic congestion and environmental degradation that often accompany growth. Furthermore, recognition of this interaction allows policy makers, developers, and citizens to evaluate transportation investments in terms of broader community goals.

Highway systems of the past half-century were planned primarily in reaction to urban growth. Recently, it has become standard practice in environmentally sensitive regions to allocate and shape growth with an understanding of the implications on travel and transportation infrastructure. Likewise, regional transportation plans are now being generated to help direct growth to optimal target areas. This is a proactive approach to transportation and land use planning, and represents the best available method of preserving the environment while maintaining an efficient circulation system.

In Alachua County, the Comprehensive Plan outlines a vision for future growth, through the land use and transportation elements. The Corridor Design Manual supports the vision of the community as defined through the Comprehensive Plan.

This section provides a brief introduction to transportation terminology and concepts, and describes the direct relationships between transportation, land use, and design. Important definitions and concepts related to the subjects of transportation, land use, and design are introduced. Each concept is integral to understanding how transportation, land use, and design principles interact with one another. These ideas are then applied to the six distinct corridor types present in Alachua County. General recommendations are made regarding how best to ensure optimal integration of these principles for future transportation investments, given various land use and design parameters.

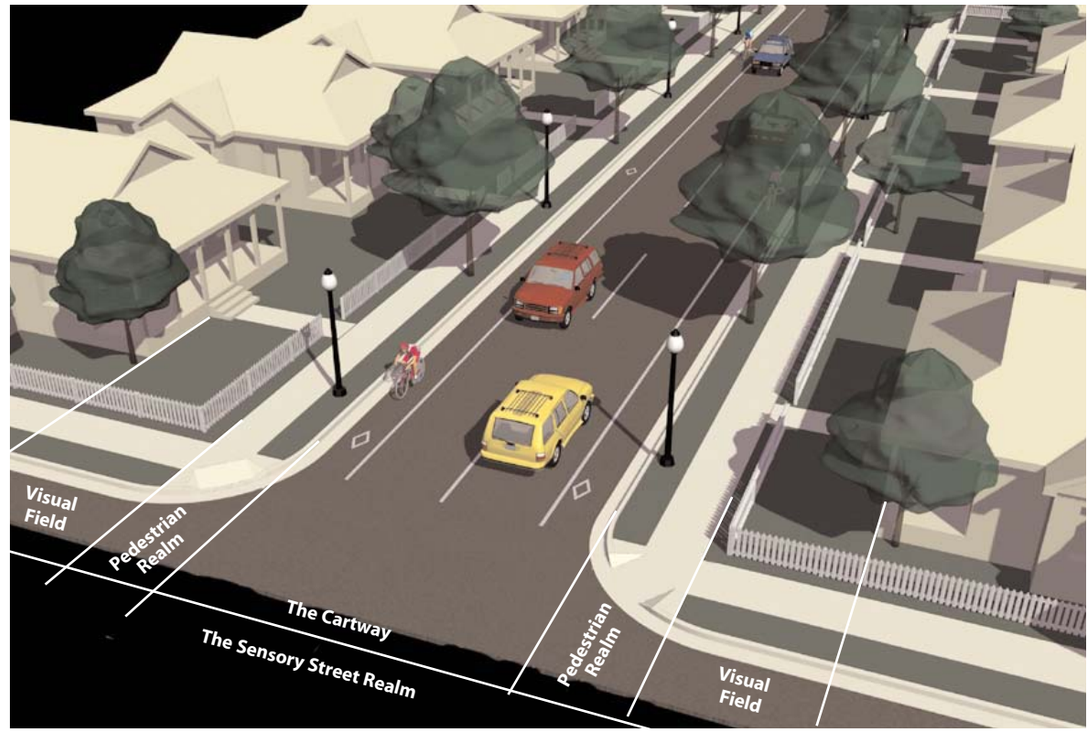
TRANSPORTATION

Although the scope of the field of transportation planning is large, several distinct terms and concepts are critical to understanding the role of transportation in regional planning. These concepts are described below, beginning with basic definitions and progressing to emerging trends and practices.

Corridor

The corridor is the basic element of transportation planning. Most transportation projects are undertaken on a "corridor" basis. In essence, a corridor is the general path of travel between two endpoints. The endpoints are usually represented by major activity centers (central business districts, shopping districts, employment centers, etc.), political boundaries (municipal boundaries), natural features (rivers, ocean, etc.), or intersections of major transportation facilities. Along the length of the corridor between these endpoints, there are additional employment areas, shopping centers, residential developments, and institutional uses, each of which generates their own share of travel on the corridor.

Roadway Corridor



Corridors are generally composed of a single roadway or several parallel transportation facilities. Each roadway itself is defined primarily by its cartway and right-of-way. The cartway is the paved surface of the roadway, while the right-of-way is the legal "boundary" of the roadway facility. Within the right-of-way are the cartway, sidewalks, landscaping, drainage facilities, utilities, street lamps, and, often, a "reserve" area for the future expansion of the cartway.

What is Right-of-Way?

Right-of-way is the strip of land occupied or intended to be occupied by a road, railroad, utilities, walkways, bikeways, bus turnouts, street trees, or other special uses.

Origins and Destinations

Every corridor serves local, regional, and through traffic, the specific proportions of which are determined by the distribution of origins and destinations in and around the corridor.

An origin represents a "residential" use that can be thought of as a "home-base" for all trips. In other words, origins are locations, usually coinciding with houses, apartments, and condominiums, where most people begin and end their days. Hotels and campgrounds also qualify as origins because they represent additional locations where people "reside," at least on a temporary basis.

Destinations are places that "attract" people during the course of a day, such as offices, shops, restaurants, entertainment venues, cultural and recreational facilities, and schools. Up until the mid-twentieth century, most destinations were clustered in central areas so as to be accessible to the greatest number of people by requiring the least amount of total travel. As we evolved into a fully-mobile society, however, destinations have become scattered and hence reliant on a more dispersed transportation network.

Origin, single-family residence

Destination, town center

Trip Types

There are three types of trips that characterize all corridors: internal trips, external trips, and internal/external trips. These trip types are defined by their interaction with the boundaries of the "study area," a specified portion of a town or region which typically includes all or part of the target corridor.

Internal: Internal trips have both their origins and destinations within the study area. In other words, an internal trip is one that is entirely contained within the study area and never crosses its boundaries. These are sometimes referred to as "local" trips.

External: External trips are the opposite of internal trips. In other words, neither the origin nor the destination of an external trip is contained within the study area. Resultantly, external trips are simply "passing through" the study area, generally on main thoroughfares. These are sometimes referred to as either “through” trips or “external” trips.

Internal/External: The third category of trips has either its origin or destination, but not both, within the study area. For example, a resident of a neighboring county (not in the study area) who travels to an office complex within the study area engages in an internal/external trip. Likewise, a resident of a subdivision within the study area who travels to an entertainment destination on the other side of town engages in an internal/external trip.

Mode Split

Mode split addresses the degree to which different modes of travel, that is, automobiles, transit, bicycles, walking, are used to make trips.

In corridors where environmental concerns and traffic congestion are significant, a common goal is often to adjust the mode split in favor of transit, bicycles, and walking. The strategy for achieving this entails increasing the attractiveness of "alternate modes" (non automobile), by increasing transit service, creating bicycle lanes, completing the sidewalk network, or decreasing the attractiveness of driving, usually by raising parking fees or tolls.

The most appropriate method of adjusting mode split is best selected by first determining the targeted trip type. For internal trips of a local nature, such as that between stores in a commercial area, enhancements to sidewalk facilities or improvements to pedestrian crossings can succeed in removing very short trips from the roadways. For longer internal trips, such as those between two non-adjacent major destinations within the same study area, small transit shuttles or circulators would be more appropriate. Bicycle lanes often capture trips between home and local commercial establishments, i.e., distances that are too far to walk but that do not really require a car. For internal/external and external trips, longer-distance transit services are often employed such as buses, light rail systems, or other forms of transit service.

Capacity

Capacity is a measure of the total number of elements (vehicles or people) that can be carried by a certain transportation mode in a given period of time. This measure is mostly used when referring to automobiles or transit, though it is also relevant with regards to heavily-used multi-use trails and bicycle and pedestrian facilities.

Vehicular capacity has two main categories: roadway capacity and parking capacity. Roadway capacity is typically the largest constraint of a regional transportation system, as the demand for automobile travel has quickly outstripped the available capacity on American roadways. While building more and more roadway capacity has been the preferred solution to traffic congestion for several decades now, limited overall available space, together with community concerns, now often require the exploration of alternatives to the expansion of roadway capacity. Shifting the mode split, getting people out of cars, to "free" capacity rather than "creating" capacity is the most common of these alternative methods.

Parking capacity is an additional constraint because it addresses the number of vehicles that can be accommodated at the destination. Parking capacity limitations can be addressed in the same ways as roadway capacity, i.e., expansion or mode shift. Expansion deals with the provision of additional parking spaces, whether in a garage, on a lot, and/or along the street. Mode shifting measures, such as sidewalk and bicycle lane improvements, reduce the need for parking spaces.

Widening - expanding roadway capacity

On-street Parking - one component of total parking capacity

Sidewalk Improvements - can “free” roadway capacity

Vehicular Level-of-Service

Vehicular roadway capacity, the most common measure of roadway conditions, is a key factor in determining roadway level of service. The level of service of a roadway is an assessment of the relationship between total roadway capacity and the volume of vehicles using the roadway at a given time, usually the peak morning and evening rush hours. Level of service is measured on a scale of A through F, with A being the best (unconstrained) condition and F being the worst (constrained) condition.

In urban areas, level of service D is often regarded as the minimum acceptable vehicular level of service. In lightly-developed fringe and rural areas, level of service D often serves as the minimum standard, but LOS C is strived for.

Vehicular level-of-service focuses on the comfort of vehicular travel on a corridor. Often, a good vehicular level-of-service is inversely related to the quality of travel for non-motorized travel. An analysis focused solely on vehicular level-of-service tends to produce investments that cater solely to vehicular travel, such as widening and grade separation. Broadening the tools of analysis to include other modes is one important step towards developing a multi-modal transportation network.

Order of Magnitude for Roadway Levels of Service

Example: State Road 121 from NW 142nd Ave. to NW 156th Ave.

LOS	Average M.P.H	Travel Time
A	35	4 min. 54 sec.
B	28	6 min. 12 sec.
C	22	7 min. 55 sec.
D	17	10 min. 14 sec.
E	13	13 min. 22 sec.
F	<13	>13 min. 22 sec.

Source: Highway Capacity Manual: Table 7-1

Vehicular Level of Service

LOS A - Free Flow
Users unaffected by other in the traffic system.

LOS B - Stable Flow
Slight decline in the freedom to maneuver from "LOS A."

LOS C - Stable Flow
Operation of the vehicle becomes significantly affected by the interaction of others in the traffic system.

LOS D - Approaching Unstable Flow
High volumes of traffic, speeds adversely affected, and freedom to maneuver is severely restricted.

LOS E - Unstable Flow
Operating conditions are at, or very near capacity. All speeds are low and the freedom to maneuver is extremely impaired.

LOS F - Exceeding Capacity Point at which arrival flows exceed discharge flows causing queuing delays. Stoppages may occur for long periods of time because of the downstream congestion. Travel times are also substantially increased.

While methods for calculating vehicle level of service are well documented, methods have recently been developed to measure quality of service for other modes of travel. Quality of service measures extend beyond volume vs. capacity to evaluating safety, accessibility, and interest of travel for the pedestrian, bicyclists, and transit users. Alachua County recently adopted a Bicycle Quality of Service (QOS) Standard in the Comprehensive Plan (see Section 2, p.28).

Speed vs. Capacity

Contrary to common intuition, an increase in speed does not necessarily dictate an increase in capacity or an improvement in level of service. Similarly, a decrease in speed does not dictate a decrease in capacity. This is explained by the following truths about vehicular travel flow:

a. The Highway Capacity Manual produced by the Transportation Research Board postulates that, under most circumstances, the hourly flow of vehicles per lane is maximized at a speed of 25-30 MPH. At higher speeds, the number of vehicles that can be carried in a lane per hour goes down, due to the natural inclination of motorists to increase spacing between vehicles which off sets the potential capacity advantages of higher speeds.

b. For multi-lane roads, higher speeds dictate a larger gradient in the different flow speeds per lane. This gradient leads to many "weaving" movements as motorists struggle to find the fastest lane, decreasing the overall capacity of the roadway. The more lanes there are, the greater the effect of weaving on capacity per lane.

c. Intersections are the main determinants of capacity and level-of-service. Implementing coordinated signal systems and maintaining steady flows are simpler to accomplish at lower rather than higher speeds.

Narrowing the Street

Stripe Lanes

Parking

Rebuild Street

Bulbout

Deflecting the Vehicle Path Vertically

Speed Hump

Speed Table

Textured Crosswalk

Platform Intersection

Deflecting the Vehicle Path Horizontally

Chicane

Modified Intersection

Knockdown

Roundabout

Traffic Calming

Given that reductions in vehicular speed do not necessarily dictate lower capacities, traffic-calming programs are becoming very commonplace as a means to re-create safe, slow neighborhood and commercial streets. Generally, the purpose of traffic calming is to control the speed of traffic while not restricting mobility.

Traffic calming is a comprehensive set of design elements that reinforce the appropriate driving behavior. The appropriate traffic calming techniques and roadway design speed are dependent on the context. Generally, traffic calming techniques generally fall into three categories: narrowing the street; deflecting the vehicle path vertically; and deflecting the vehicle path horizontally. In addition to these changes to the cartway, changes to the pedestrian realm and to the visual field can also slow drives. 'Visual Friction', elements that create a sense of enclosure or elements that break up views, serve to slow drivers. Landscaping and building placement can be used in conjunction with, or independent of, physical changes to the cartway to slow travel speeds.

The purpose of traffic calming is to retrofit existing streets for slower traffic speeds. Where new streets are to be built, however, they can be planned for slow speeds at the outset. The general principles are the same as for traffic calming, with an emphasis on narrow street widths.

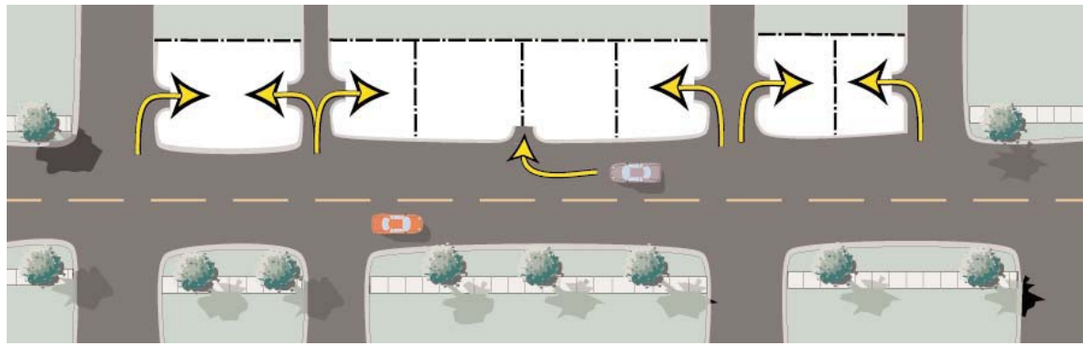
Access Management

Access management is one of the tools recommended in this handbook to manage transportation and land use. Access management is defined as a process that provides or manages access between development and surrounding roadways. As development occurs along highly traveled commercial roadways, certain policies and guidelines need to be in place to manage access within the corridor.

What is Traffic Calming?

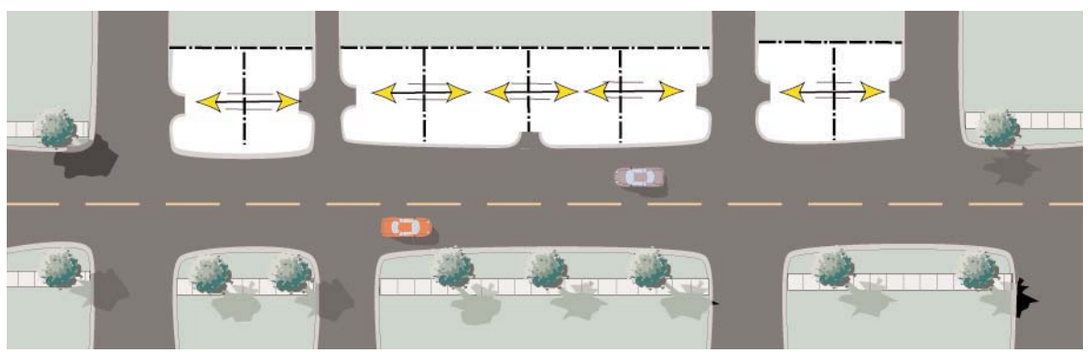
Traffic calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users.

Source: Institute of Transportation Engineers



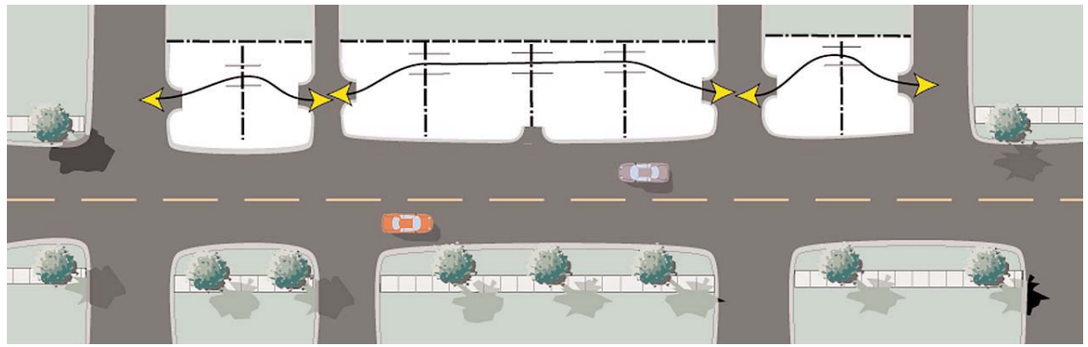
Shared driveways

Shared Driveways
The concept of shared driveways encourages access along the side street for corner parcels and joint access driveways when side street access is not available.



Cross-access connections

Cross-Access Connections
Cross-access connections allow motorists to complete short trips between adjacent uses without having to return to the primary arterial. Connections are provided through aisles and alleys that connect adjacent parcels and parking lots to one another. By minimizing the number of vehicles turning off and onto the arterial, through traffic is able to flow in a more efficient manner. In addition, cross-access connections that are coordinated and well planned may begin to form a second parallel roadway.



Reverse "frontage roads"

Reverse "Frontage Road"
Reverse "frontage road" provides cross access easements in the rear of the parcels, creating a second parallel roadway. Wherever possible, access is provided from the side street instead of the primary arterial. By encouraging driveway access from the side street, the number of "friction points" along the primary arterial is drastically reduced.

Context Sensitive Design

The Federal Highway Administration (FHWA) and State Departments of Transportation are retooling their approach to highway design and development in this post-Interstate era to create context-sensitive designs that fit better with a community's character and are respectful of special resources. This effective approach to highway and development design with stakeholders results in the optimal solution for all parties involved.

Context sensitive design is another way of saying "to think beyond the pavement" about the impact a roadway will have on the area it traverses, including the people who live, work, or pass through the area. Context sensitive design asks questions first about the need and purpose of the transportation project, and then addresses equally: safety, mobility, and the preservation of scenic, aesthetic, historic, environmental, and other community values. This requires a collaborative, interdisciplinary approach in which citizens are part of the design team.

"In the beginning of the interstate era, we built the greatest freeway system in the world; but aesthetics and preserving the environment weren't part of that mission. Now we need another transformation. We're here to define a new vision, to change how we do business."

-- Tom Warne, President, American Society of State Highway and Transportation Officials

Land Use

Land use refers to the types of activities that take place within a given area. Land use controls are a major part of most city and county development codes. The distribution of land uses influences the number of trips made, the length of trips, and the mode of travel. The following are specific types of land uses that have varying effects on the transportation system.

Residential

Residential land uses refer to homes, apartments, condominiums, townhouses, and, sometimes hotels. In other words, residential districts usually contain many trip origins within their boundaries, and few, if any, destinations.

Trip generation refers to the number of times that people arrive at and leave from certain locations during the course of a specific time period. In terms of residential development, a subdivision of single family homes will generate more trips than a small cluster of apartment buildings given the same number of living units, due to the larger family size (and hence more trip needs) of larger living spaces. For purely residential districts, very few internal trips are observed, as almost all destinations are located outside the district.

Residential

Commercial Use

Commercial

Commercial districts contain stores, restaurants, offices, banks, and other places of business. Each of these uses generates a different number of trips per day (or per peak period), so the total number of trips attracted to the district depends on the specific allotment of uses at the site. Commercial districts mainly contain destinations.

Industrial

Industrial districts also consist almost exclusively of employment-based destinations. Notable exceptions are restaurant/retail establishments located in industrial districts specifically to serve the large concentration of employment and "undesirable" businesses (i.e., adult entertainment establishments) which are often limited to industrial zones.

Other

Other land uses include institutional uses, civic uses, recreational uses (i.e., parks and ballfields), and conservation areas. These are less prevalent than residential, commercial, and industrial districts, and are often mixed in with these other uses. For example, schools ("institutional") are often intermingled with residential areas, while government buildings ("civic") are often located in central business districts. Many recreational areas border or are integrated with commercial or residential districts, but conservation areas are, in general, spatially separate from the main areas of activity because of their large sizes and characteristic natural qualities.

University - Institutional Use

Mixed-Use

Mixed-use areas are exactly what the name implies, areas where two or more major types of uses are intermingled with each other. The most common mixed-use district contains both residential and commercial development, since these are generally very compatible uses. In fact, up until the onset of zoning codes in the early twentieth century, most cities developed in this manner, as is evident in older North American cities such as New York, Boston, Philadelphia, and New Orleans. Most small towns also developed in this manner, as limited transportation systems dictated that commercial and residential development needed to be as close together as possible.

Nearly all newer cities are now actively encouraging downtown residential development to create mixed-use environments that are freer from crimes often associated with lack of people on the sidewalks after the close of the business day. Today, mixed-use development is also very prevalent in smaller-scale projects such as new "town centers," which generally contain a mixture of office, retail, and residential uses. Haile Plantation and the Town of Tioga are examples of such development.

The most common configuration of mixed-use buildings consists of retail on the ground floor and offices and apartments above. The transportation benefits of this type of development are numerous and are based generally on the drastic reduction of trip distance between origins and destinations, which are mixed together rather than spread apart in separate designated districts.

Mixed-use small town, Haile Plantation

Design

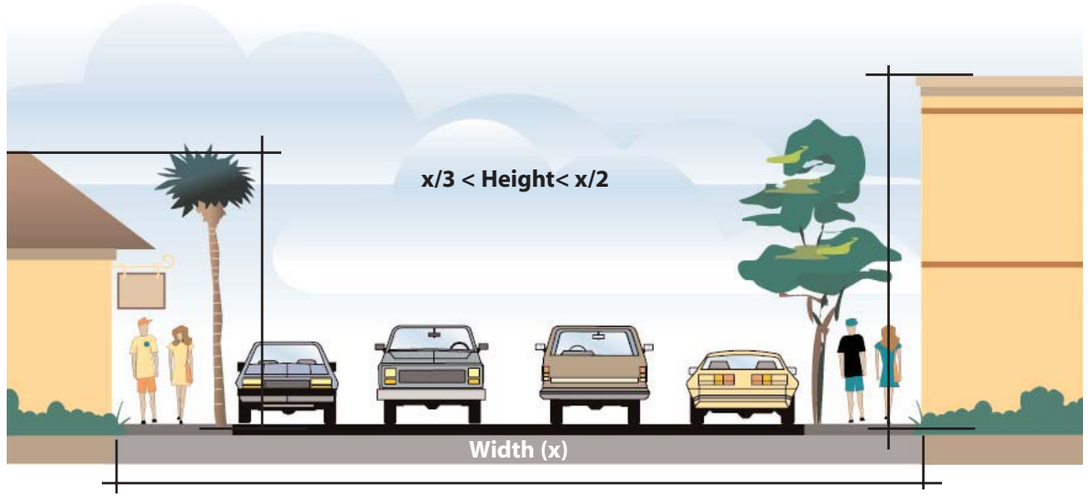
Design is also integral to travel choice within a corridor. Design consists of specific fields such as urban design, town design, and site design, but their general principles and their effects on transportation are consistent. While there are many design elements and concepts that are involved in the creation of buildings and development sites, the specific elements that are described below have direct effects on transportation.

Scale

Scale refers to the size and orientation of buildings with respect to their users. More useful than the terms large-scale and small-scale are the parallel terms automobile-scale and pedestrian scale.

Automobile-scale refers to the condition where buildings are sized and oriented in a manner that caters to passing motorists. Such buildings are generally large and loosely spaced. While appropriate for motorists viewing them at speeds of 30-50 MPH, they create an unpleasant environment for people on foot moving at much slower speeds.

Pedestrian-scale refers to development that is built to be viewed and accessed by people traveling at very low speeds, i.e., on foot. Generally, buildings are small (or have varied facades) and close together, meaning that the pedestrian's view is constantly changing. Moreover, pedestrian-scale development is more clustered than automobile-scale development, so more buildings are accessible within a given walking distance.



Pedestrian scale height-to-width ratio falls between 1:3 and 1:2 as measured from building fronts or "wall" of trees.

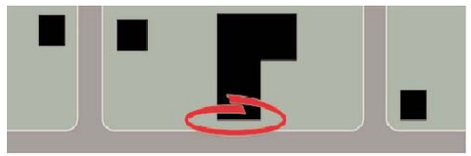
Setback

Setback is another design element that has significant implications for travel behavior. Large setbacks are often indicative of automobile-scale development, as street-front space is reserved for parking and/or landscaping. Such large setbacks are inconvenient for pedestrians, since the total walking distance between buildings increases as setbacks increase.

In pedestrian-scale developments, there are usually no (or very small) setbacks, with each building right up to the sidewalk. This is the optimal condition for pedestrians because the distance between the storefronts and the main walking corridor is minimized.

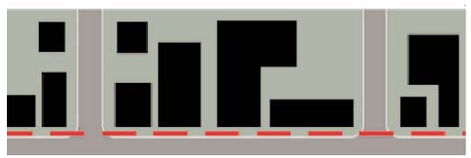
In instances where strip corridors are redeveloped as pedestrian-oriented districts, new buildings are often constructed in a manner that creates a desirable consistent street frontage by minimizing setback.

Evolution of Commercial Strip



The first pedestrian-friendly buildings are "stepping stones" in a street still dominated by vehicles. The walking experience improves, owing to the occasional "oasis" along the sidewalk.

More pedestrian-friendly development begins to form a continuous street front. Walking becomes interesting.



Finally, a solid pedestrian-friendly zone evolves. People come just to walk and enjoy the scene.

Primary Interrelationships

Travel choice is very much influenced by both land use and design, each of which has implications for overall traffic, mode split, and parking requirements. The following sections assess the relationships between transportation and land use and between transportation and design.

Transportation and Land Use

The organization and distribution of land uses are the primary determinants of travel patterns. While a reactive transportation plan simply accepts the distribution of origins and destinations as given and directs transportation investment to serve them, a proactive transportation plan examines the effects of better organizing these origins and destinations. The desired result is that the optimum arrangement of land uses can reduce the demand for scarce transportation resources.

Traffic and Travel

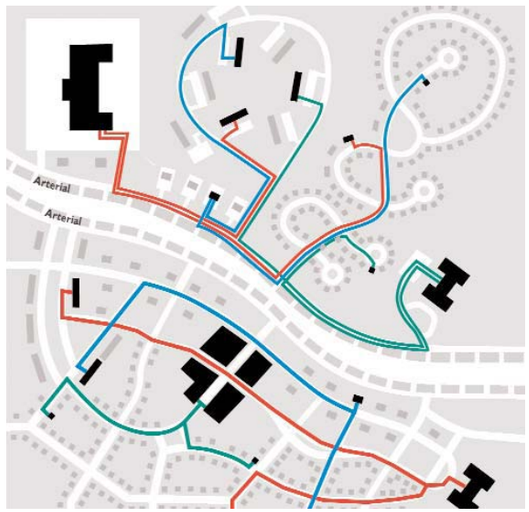
While the reorganization of origins and destinations can help reduce overall trip length, especially in total mixed-use environments, they also have very direct implications on the physical form of the roadway system.

When land uses are functionally and physically separated, there is still a need for travel between them. Typically, these separate land uses are connected via major thoroughfares with a limited number of interconnected supporting roadways. In the worst-case scenario, all local travelers must use the same roadway to shuttle between adjacent land uses as regional travelers use to travel to, through, and out of the study area. This creates a large degree of traffic friction along the corridor and usually leads to the need to widen the roadway. In other words, all trips, local and regional, are "assigned" to the main roadway. The usual result of this type of trip assignment is a system of wide, heavily traveled main roadways feeding into local roadways that are lightly utilized.

Alternatively, consider the example of a mix of uses organized along a dense, interconnected local street network. The presence of multiple route options between different uses prevents any one thoroughfare from shouldering an unreasonable burden. Local trips are distributed along the roadway network, leaving the main regional thoroughfare to carry external and internal/external trips, without the traffic friction otherwise caused by short internal trips.

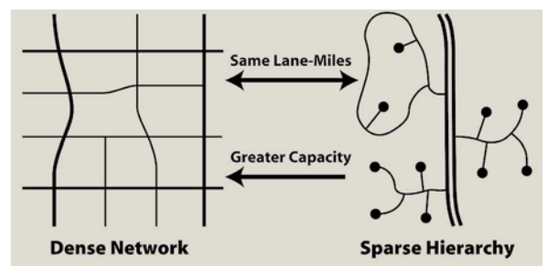
Top:
- Sparse Roadway Network
- Separation of uses

Bottom:
- Roadway network with multiple connections
- Proximity of uses
- Public spaces link community



Top:
- Promotes vehicular travel
- Long trip lengths
- Trips concentrated on one major roadway

Bottom:
- Promotes walking and biking
- Shorter trip lengths
- Dispersion of trips on multiple roadways



Benefits of the Network

The key element of these two scenarios is the organization of land use. The spreading and isolation of different land uses requires significant main roadway capacity to serve local and regional trips alike. Conversely, the tightening and mixing of land uses increases the financial feasibility of connecting the different uses by multiple routes, and reduces the overall distances that need to be traveled to shuttle between them.

Mode Split

The organization of land use also has considerable implications on mode split. When different land uses are separated and widely distributed, the private automobile is by far the most efficient means of transportation available to travelers. For instance, few people walk due to the fact that origins and destinations are so widespread. Bicycling is a viable option but would entail long trips. Efficient transit service is difficult because land uses, in this scenario, are not organized around natural activity centers or a consistent pedestrian framework.

On the other hand, when land uses are mixed and tightly woven, mode split shifts toward walking, biking, and transit. Walking and biking become feasible options because many origins and destinations are within close proximity of one another. This leads to the creation of a consistent pedestrian and bicycle framework, generating an identifiable "activity center" and, hence, a focal point for transit.

Widespread uses and uninviting pedestrian environment

Parking

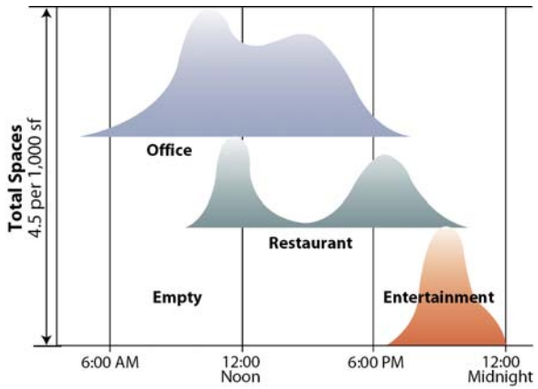
When land uses are separated physically and functionally, each use requires its own dedicated parking supply. In other words, there is no opportunity for "shared" parking because the walk between isolated uses is generally large and/or non-enticing.

Conversely, when different land uses are in close proximity to one another, their varying parking demand profiles lead to shared parking opportunities. For example, imagine that the peak parking period for a certain large church is Sunday morning. An adjacent office development has a peak parking period of roughly 8 AM

Large, mostly-empty, single-use parking lot

Shared parking facility

to 5 PM Monday through Friday, while a nearby cinema complex experiences its peaks on evenings and weekends. Using these three uses as examples, it is evident that proper management of a shared parking resource can reduce the total number of spaces needed, provided that the three uses are in close proximity and connected by attractive pedestrian facilities. In other words, since each of the three uses would fill up parking spaces at different times, a well-managed, well-located shared parking resource would be able to handle each use's peak and eliminate the need for three separate, often empty, parking supplies.



Parking demand between contemporary uses allows for shared facilities

In instances where different land uses are isolated and widely-separated, however, the temporal differences between peak periods are irrelevant. In such cases, each specific use would have to maintain its own dedicated parking supply that is empty much of the time. There is therefore an inherent cost savings for developers of mixed-use areas, as they can take advantage of parking demands that are "out of phase" to build and maintain fewer overall parking spaces.

Transportation and Urban Design

The transportation implications of design are very similar in magnitude to those of land use. In particular, scale and setback have considerable effects on travel patterns, mode split, and parking.

Traffic and Travel

The travel implications of design are threefold:

a. The compactness associated with smaller scales implies that origins and destinations are closer together, shortening overall trip lengths.

b. Convenient pedestrian connections between origins and destinations reduce the total number of automobile trips by shifting the mode split.

c. Smaller scales have the desirable side effect of decreasing vehicular speeds and hence reinforcing pedestrian oriented areas as pleasant walking environments. A pedestrian-scale rather than automobile-scale arrangement of storefronts leads to motorists' perception that buildings are passing by more rapidly, often leading to a reduction in speed.

So the overall effect of pedestrian-scale design on travel patterns is that traffic is lighter, slower, and more acceptable for areas of high pedestrian and bicycle activity.

Mode Split

Pedestrian-scale design is targeted at exactly what its name implies, pedestrians. For a given amount of development, an increase in pedestrian travel implies a decrease in automobile travel. Because the very objective of designing at a pedestrian scale is to attract pedestrians, such design has very significant traffic benefits.

Pedestrian-scale design also increases the mode share of transit. The reason for this is that every transit rider is a pedestrian at the beginning and end of his trip. Therefore, improvements to the pedestrian environment at these locations will increase the attractiveness of using transit.

Example of an unattractive pedestrian hostile urban highway

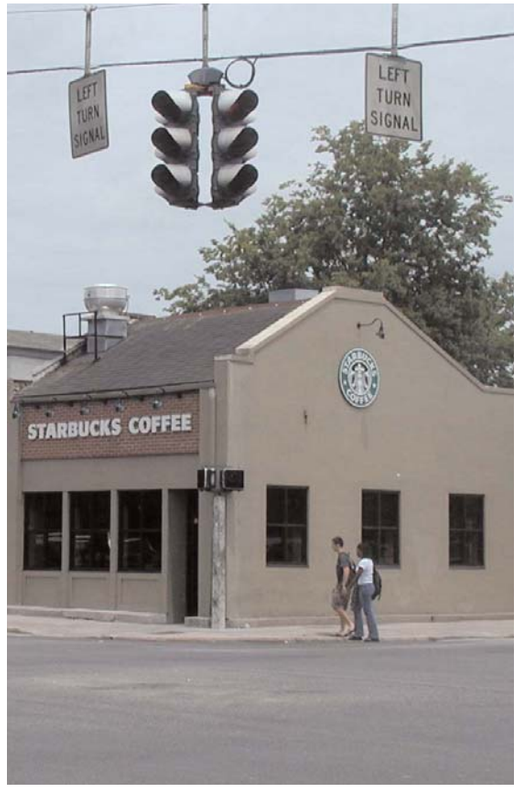
Pedestrian-scale design reduces local trips and vehicular speeds

Parking

The creation of a good pedestrian environment can generate a "park-once" environment, meaning that patrons to local establishments have the propensity to park once and subsequently walk between all their destinations. The impacts on overall parking requirements are profound.

In park-once districts, each specific use does not need its own separate parking supply because it is accepted that a large portion of the patron base is made up of "walk-up" (as opposed to "drive-up") customers. For example, imagine a trip "chain" that includes a visit to the drug store, a restaurant, and the post office. In the model where land uses are widely separated, three separate parking spaces are needed to accommodate this single person because the walk between the drug store, restaurant, and post office is lengthy and/or unpleasant. In contrast, in a park-once district, only a single parking space is needed to serve this particular customer.

Isolated, stand-alone convenience store



Walk-up coffee shop

Corridor Types as Defined by Transportation, Land Use, and Design Characteristics

The transportation, land use, and design characteristics of a corridor will differ according to the context of the surrounding environment. This section evaluates the six corridor types found in Alachua County in terms of their transportation, land use, and design characteristics.

Arterial

Arterials

Arterials are designed to move vehicles over long distances. Through time, dispersed single access destinations locate along these facilities designed to provide regional travel. The mixing of local and regional traffic in these corridors frequently dictates the need for wide, multilane regional highways.

In most instances, the design guidelines presented in the document for arterial streets will be applied to modifications of existing arterial streets.To begin to address transportation challenges in urban developed corridors, it is important to examine how the principles described in this chapter can be applied in a "retroactive" manner to balance the needs of regional and local travels.

In the short term, pedestrian conditions and local circulation can be improved through sidewalk enhancements and cross-access, respectively.

Intermediate solutions might entail the creation of an alternative street network behind and between properties, so that internal and some internal/external trips can be accommodated without the need for travel on the main regional thoroughfare.

In the long term, a rearrangement of uses and structures along the corridor can begin to better approximate a sustainable, mixed-use development pattern. The addition of buildings along the strip, and the complementary establishment of shared parking facilities, can begin to cause certain focal points along the corridor to "evolve" into pedestrian-oriented districts. When this happens, traffic will become tamer, short trips will take place on foot rather than by car, and natural nodes for a regional transit system will be created.

Collectors

Collectors provide comparably short distance connections from neighborhoods to local uses and to arterials. Located in, or on the periphery of neighborhoods, these roads play a role in the overall character of the community. The design of collector streets should balance the quality of travel for all modes. The roadway design should promote slow, steady vehicular travel, supporting travel by other modes to local destinations.

Collector

Main Streets

Main streets are those roadways serving mixed use centers. Mixed use centers often contain one or more public elements, such as civic or recreational activities. The design of main streets should highlight the role of the mixed use center as a focal point for the community. To efficiently provide access to the many uses located in mixed use centers, the scale and orientation of buildings should be developed to support a park-once, pedestrian friendly environment.

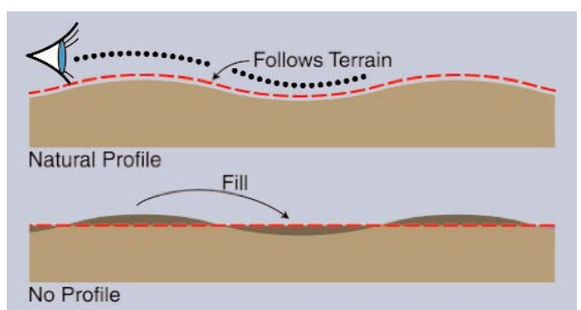
Example of a pedestrian friendly main street.

Farm-to-Market Corridors

Farm-to-market corridors require the utmost attention to the interactions among transportation, land use, and design, because these corridors are the most fragile and easiest to disrupt. The character of farm-to-market corridors depends upon the clustering of development in order to preserve the "rural" spaces in between. Continuous, automobile-scale strip development causes rural scenic corridors to cease to exist.

The most essential land use/design control along farm-to-market corridors is the clustering of development. It is nearly impossible to stop growth into rural areas, but it is very possible to organize this growth into a series of pedestrian-scale nodes rather than continuous strips. Because of the inherent opportunities for shared parking, pedestrian trip-chaining, and focused transit service, the same total amount of development can be

Farm-to-market road



Maintenance of natural profile preserves the scenic qualities of Farm-to-Market roads

absorbed using much less total land area than the "strip" model. More importantly, the nodal organization of this development allows the preservation of contiguous tracts of pristine landscapes and critical wildlife habitat, the very essence of the rural scenic corridor.

The design can reinforce landscape and habitat preservation by limiting access and roadway intersections. The design should incorporate signage and design features to accommodate wildlife crossings near wildlife habitat areas. While providing incentives for compact development in rural areas, land develop regulations should also emphasize the preservation of views from the roadway.

Neighborhood street

Bicycle Trail

Neighborhood Streets

The primary role of the neighborhood street as part of the transportation system is access to adjacent uses. In a broader context, neighborhood streets make up a large share of the public space in neighborhoods. Safety is the principal design element on neighborhood streets. Therefore, the roadway design should reinforce slow vehicular travel speeds.

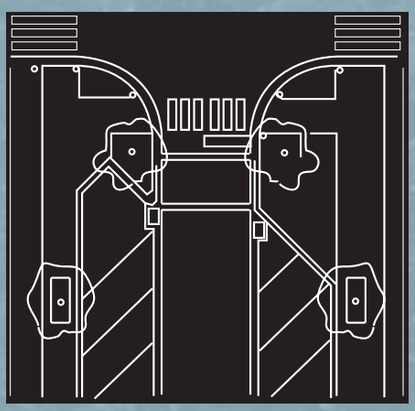
Bicycle and Pedestrian Trails

To increase the percent of trips made by non-auto modes of travel, it is necessary to insure the safety and comfort of all user types, from novice to experienced. A system of bicycle and pedestrian trails should be developed to connect residential areas to mixed use centers and community amenities.

Alachua County has developed a Quality of Service (QOS) measure to evaluate the quality of travel on roadway links for bicyclists. Refer to Section 2, page 28, for more information on the QOS and the Bicycle Master Plan.

Conclusion: Coordinated Regional Approach

In order to fully realize the potential positive benefits of roadway design, land use, and urban design on transportation and environmental preservation, it is essential that each of these subjects be addressed holistically. Roadway design must support the surrounding land uses and influence desired urban form to achieve a balance between mobility and community building. A process for achieving this balance is described in Section 3.



Corridor Design Guidelines

This section presents guidelines for designing the six different transportation corridor types found in Alachua County.

Corridor Design Guidelines provide the criteria for roadway and trail design in Alachua County. Corridor Design Guidelines are not standards, they are recommendations intended to guide enhancements to existing facilities and the design of new roadways and trails. The Design Guidelines recommend design elements that support safe, convenient travel by all modes and are compatible with surrounding uses. Within the six corridors types, Corridor Design Guidelines are specified based on the land use context served by the roadway.

The Design Guidelines expand upon design standards provided by the American Association of State Highway and Transportation Officials (AASHTO), the Manual for Uniform Traffic Control Devices (MUTCD), Florida Department of Transportation (FDOT), and local governments.

The Design Guidelines are based on the concepts of community building and context sensitive design. The Design Guidelines emphasize traffic calming and proper design speed as part of the overall geometric design of the roadway as a way to insure safety for all roadway users.

The Design Guidelines are a significant piece of the Corridor Master Planning Process. While developed to support specific land use contexts, the flexibility provided by these design guidelines promotes context sensitive design which respects the unique character of each individual corridor. Section 3 outlines a process by which to refine the Corridor Design Guidelines to promote community building and environmentally sensitive design. A licensed engineer must refine the design guidelines based upon site specific information to provide a safe facility that meets the vision set forth by the community.

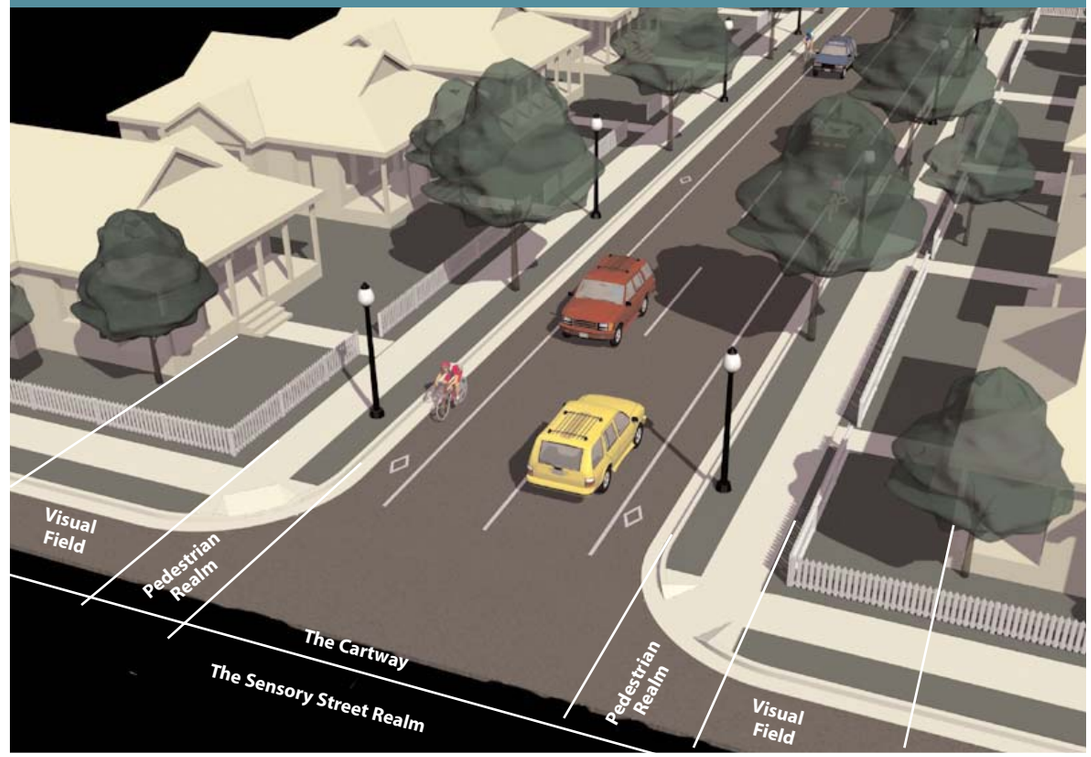
Definitions

The Sensory Street Realm - the space experienced by a motorist, bicyclist, or pedestrian
Cartway Realm - the physical space devoted to vehicular and/or bicycle travel
Pedestrian Realm - area where pedestrian travel is a priority
Visual Field - private or public uses abutting the street

How to Use the Corridor Design Guidelines

Step 1 - Define corridor type (p. 21)
Step 2 - Define corridor context (p. 22)
Step 3 - Select alternatives combination of design elements from range defined by corridor design guidelines (p. 29-45)
Step 4 - Refine design guidelines to meet site specific need, community goals, and county vision - Corridor Master Planning Process *(see Section 3 of this report)*

Elements of Design Guidelines



Elements of the Cartway Realm

- Vehicular travel lanes
- Medians
- Bicycle lanes
- Pavement type
- Parking
- Transit stops
- Traffic calming measures
- Pedestrian crossings
- Intersection design
- Gutter

Elements of the Pedestrian Realm

- Curb
- Landscaping
- Streetscaping
- Signs
- Lighting
- Sidewalks
- Transit amenities
- Utility
- Open Drainage System

Elements of the Visual Field

- Pedestrian access
- Vehicular access
- Setbacks
- Building massing
- Bicycle facilities
- Open Spaces
- Signage
- Landscaping

For the safety of all roadway uses and to reduce the negative impacts of vehicular travel through communities, the Corridor Design Guidelines outline appropriate design speeds for each corridor. The design speeds defined in the Corridor Design Guidelines set both a minimum and a maximum allowable design speed for individual elements along the corridor. The corridor design, as a whole, should reinforce the desired operating speed.

TRAFFIC CALMING

Traditionally, the design speed sets the minimum geometric design for features such as curvature, grade, length of grade, superelevation, and sight distance. Many, or most, features of a corridor are designed to be safely negotiable at higher speeds, to provide a level of 'safety'. Yet, over design invariably leads to higher operating speeds.

Vehicle operating speeds directly influence the number of crashes on a roadway and the severity of injury due to crashes in two ways.

(1) Studies have shown that the speed variation, or the vehicle's deviation from the mean speed of free-flowing traffic, is directly linked to the incidence of crashes.

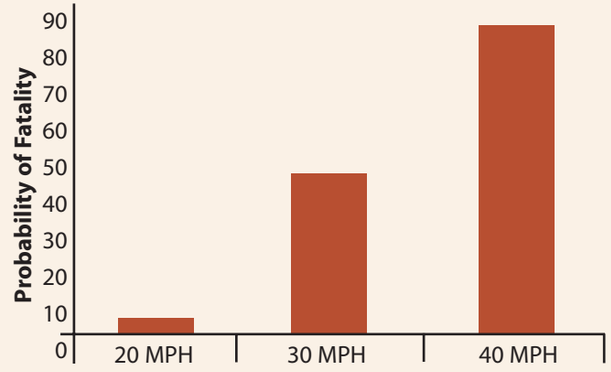
(2) Due to the amount of energy released during a crash, the severity of injuries increase exponentially with vehicle speed.

The speed at which drivers choose to drive is related to driver attitude, environmental conditions, and geometric design. While the first two cannot be controlled through design, the third is. Curvature, grade, length of grade, number of lanes, width of travel lanes, surface conditions, sight distance, lateral clearances, number of intersections, and number of access points all influence the speed at which drivers feel comfortable maneuvering. As a standard, roadways will be designed to reinforce the desired travel speed through the use of physical measures (traffic calming).

The design guidelines outline appropriate design speeds for each corridor. The corridor design speed sets both a minimum and maximum geometric design for features such as curvature, grade, length of grade, superelevation, and sight distance. For neighborhood and collector streets, it is recommended that the design speed be set to the intended posted speed and that geometric design features be designed at the design speed. For arterials and farm-to-market roads, it is recommended that the design speed be set for 5 mph greater than the intended posted speed, and that the geometric design features be designed within 5 mph of the design speed.

	RELATIONSHIP BETWEEN DESIGN SPEED AND POSTED SPEED	MAXIMUM DESIGN SPEED FOR GEOMETRIC ELEMENTS
Arterial	**Design Speed = Posted Speed + 5 mph**	**Design Speed + 5 mph**
Collector	**Design Speed = Posted Speed**	**Design Speed**
Main Street	**Design Speed = Posted Speed**	**Design Speed**
Neighborhood Street	**Design Speed = Posted Speed**	**Design Speed**
Farm-to-Market Road	**Design Speed = Posted Speed + 5 mph**	**Design Speed + 5 mph**

Pedestrian Fatality Based on Vehicle Speed at Impact



Source: **Pedestrian Facilities Users Guide - Providing Safety and Mobility**. Publication No. FHWA-RD-01-102. U.S. Department of Transportation. Federal Highway Administration.

The "Safe Ways to School" tool kit, administered by the Florida Traffic and Bicycle Safety Education Program, outlines a step by step process by which to improve safety conditions for children walking and biking to and from school. The recommendations, tools, and techniques presented in the "Safe Ways to School" tool kit are supported by Alachua County and adopted as part of the Corridor Design Manual through this reference. The Traffic Calming Techniques presented in the "Safe Ways to School" are included in the appendix for easy reference.

Operating Speed, Posted Speed and Design Speed

Operating Speed: The speed at which drivers operate their vehicles during free-flow conditions.

Posted Speed: The legally enforceable travel speeds.

Design Speed: The selected speed used to determine the various geometric design features of the roadway, such as curvature, grade, length of grade, superelevation, and sight distance. Design speed establishes the minimum values for these features. In this manual, the design speed also sets a maximum value for these features.

Other elements, such as lane widths, number of lanes, number of intersections, shoulders, and lateral clearance are linked to, but not defined by, design speed.

Where flexibility is provided in the Design Guidelines, the design speed will be determined through the Corridor Master Planning Process (see Section 3). The safety of all users is the principal concern in roadway design. The number and character of bicyclist and pedestrians using a facility should play a large role in defining the design speed.

What is Traffic Calming?

Traffic calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users.

Source: Institute of Transportation Engineers

Corridor Design Guidelines

Design guidelines are provided for six corridor types: Arterials, Collectors, Main Streets, Farm-to-Market Roads, Neighborhood Streets, and Bicycle and Pedestrian Trails.

Corridor Types

For the purpose of the Corridor Design Manual, transportation corridor types are defined by the role of the corridor in the transportation system, role of the corridor in the community, and the relationship between the corridor and adjacent land uses.

The corridor types presented here and discussed throughout the Corridor Design Manual are ***NOT SYNONYMOUS*** with the standard functional classifications used by American Association of State Highway & Transportation Officials (AASHTO's) "A Policy on Geometric Design of Highways and Streets" or by FDOT. Refer to the roles outlined below when defining a transportation corridor type.

US 301

Arterials:

Role

Provide mobility
Facilitate regional commerce
Provide controlled access
Serve as Premium transit corridor
Facilitate pedestrian/bicycle activity with facilities in separate, defined space

Geometric Design Characteristics

Design Speed: 35-60 MPH
Vehicular Travel Lanes: 2-6

SW 16th St

Collectors:

Role

Reinforce the character of a district
Provide access
Facilitate pedestrian/bicycle activity with facilities in separate, defined space
Support neighborhood/district commerce

Geometric Design Characteristics

Design Speed: 30-35 MPH
Vehicular Travel Lanes: 2-4

CR 234

Farm to Market Roads:

Role

Provide mobility
Provide scenic views
Provide safe vehicular and bicycle travel
Serve as recreational pathways

Geometric Design Characteristics

Design Speed: 45 - 50 MPH
Vehicular Travel Lanes: 2

Downtown Micanopy

Main Street:

Role

Serve as focal point for a community
Facilitate commerce
Form part of the public realm
Reinforce the local identity

Geometric Design Characteristics

Design Speed: 25 - 30 MPH
Vehicular Travel Lanes: 2-4

Neighborhood Street off Newberry Road

Neighborhood Street:

Role

Safety first
Provide access to adjacent uses
Function as part of the public space
Support recreational activities/extension of front yards

Geometric Design Characteristics

Design Speed: 20 - 25 MPH
Vehicular Travel Lanes: 2

Trail located between CR 234 and CR 2082

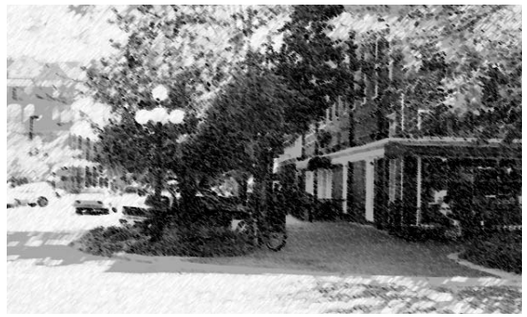
Bicycle and Pedestrian Trails:

Role

Provide mobility
Provide access to adjacent uses; connectivity
Serve as recreational pathways
Serve specific user group

Corridor Design Guidelines

Design guidelines for each corridor type were developed to support the types of land uses served by the corridor. Therefore, design guidelines are presented for the land use context in which the corridor is located.



Urban Activity Center

Village Center

Neighborhood Center

Neighborhood

Industrial

Rural Cluster

Rural Agricultural Area

Urban Activity Center

Urban Activity Centers are compact, multi-purpose, mixed use centers that include commercial development, residences, civic buildings, and open space. Urban activity centers are designed as pedestrian-friendly, compact centers connected to a multi-modal transportation system and integrated with surrounding uses in the urban area.

Industrial

Industrial land use categories allow for a range of industrial activities including fabrication, manufacturing, transportation, warehousing, and distribution of goods. Industrial land uses are often found in urban clusters, but can be located outside of urban clusters, and are also found in rural areas.

Village Center

Village Centers are neighborhood scale, compact, mixed use areas, integrated into residential areas within Urban Clusters through specific site and design standards.

Neighborhood Center

Neighborhood Centers consist of community facilities, such as schools, parks or libraries, accessible or integrated into neighborhoods.

Neighborhood

Neighborhoods are generally defined as areas that meet a balanced range of human needs. They are the basic components of community design.

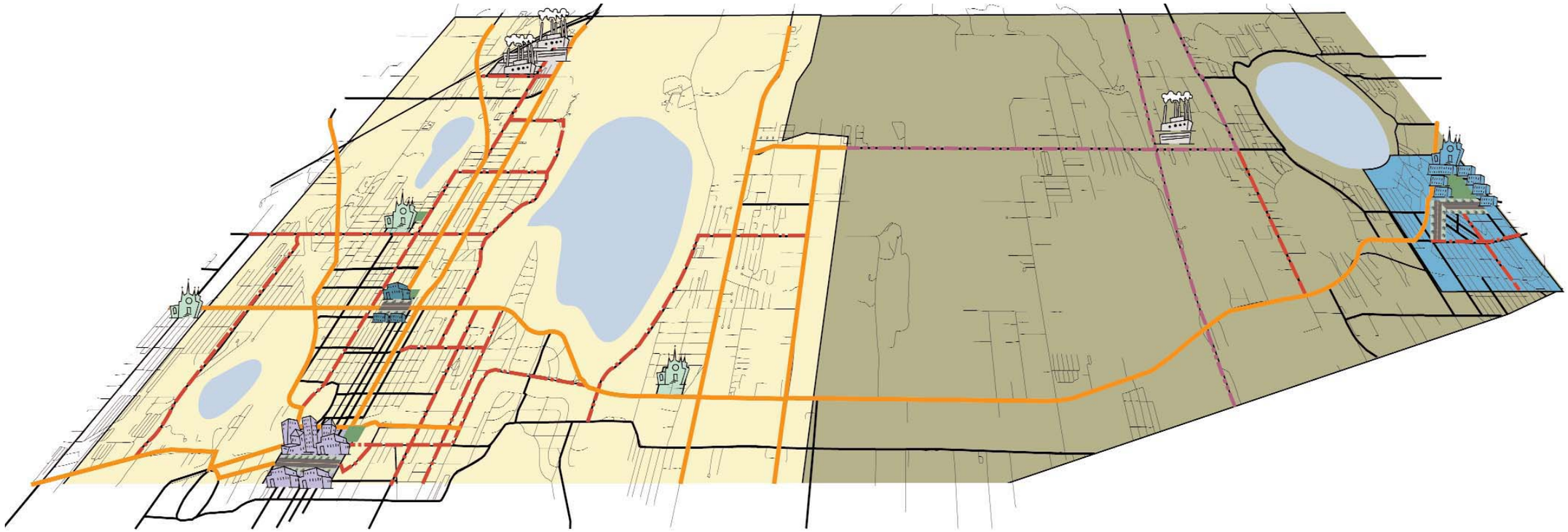
Rural Cluster

Rural Clusters are small settlements located outside of an urban cluster. These clusters serve as the focal point for an existing rural community. Rural Clusters generally include areas within 1/2 mile of a focal point. The focal point is usually located at the intersection of two rural roads.

Rural Agricultural Area

Rural Agricultural Areas include uses such as row crops, grazing land, orchards, and smaller tree farms; and associated uses, such as farm equipment or supplies, local produce sales, or agricultural products distribution. These areas also include clustered residential development designed to preserve open space, and ranchettes (1unit : 5 acre residential lots).

Conceptual View of land Uses and Roadway Types



Legend

- Urban Activity Center
- Industrial
- Village Center
- Neighborhood Center
- Neighborhood
- Rural Cluster
- Rural Agricultural
- Arterial
- Collectors
- Main Streets
- Neighborhood Streets
- Farm-to-Market Roads

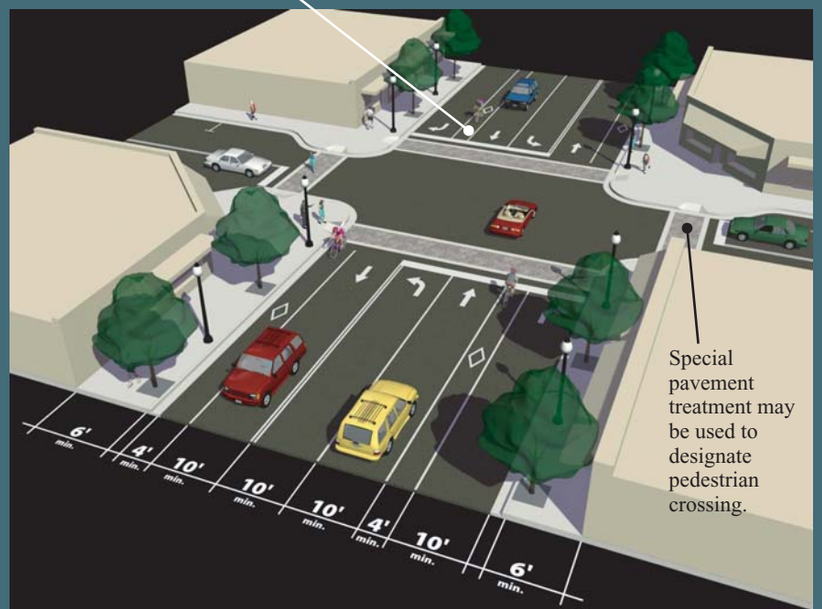
CORRIDOR TYPES

LAND USE CONTEXT	Arterials	Collectors	Main Streets	Neighborhood Streets	Farm-to-Market Roads	Bicycle and Pedestrian Trails
Urban Activity Center	Page 29	Page 33	Page 36	Page 38		Page 44
Industrial	Page 30	Page 34				
Village Center			Page 36	Page 38		Page 44
Neighborhood Center				Page 39		Page 44
Neighborhood				Page 39		Page 44
Rural Cluster	Page 31	Page 35	Page 36	Page 40		Page 44
Rural Agricultural Area	Page 32	Page 34		Page 41	Page 42	Page 45

ROADWAY DESIGN ELEMENTS

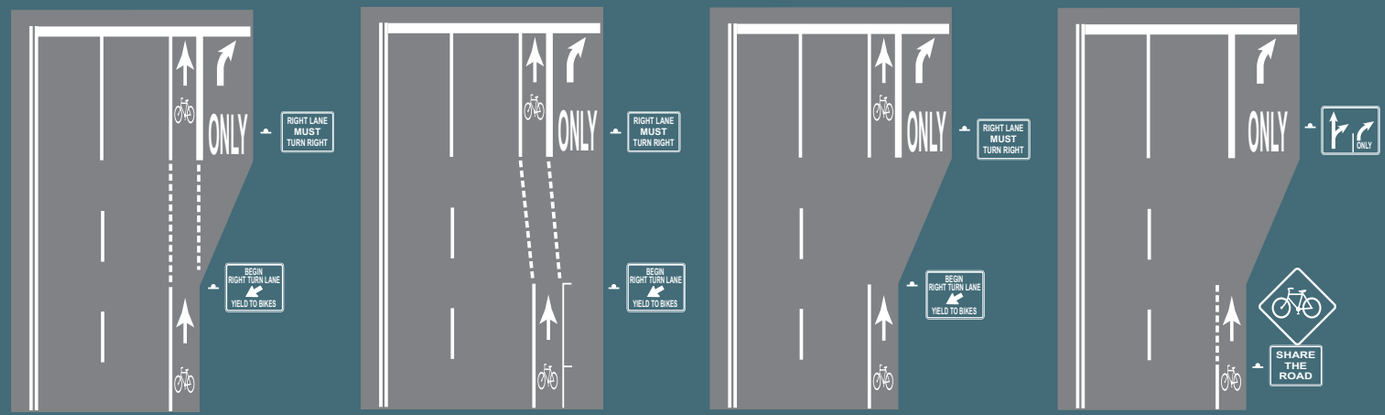
Intersections

Where ROW permits, bike lane should terminate at stop bar or crosswalk.



Example: Intersection of Arterial Street with Collector Street

Bicycle Lane at Intersection



A. Right-turn-only lane

B. Parking lane into right-turn-only lane

C. Right-turn-only lane

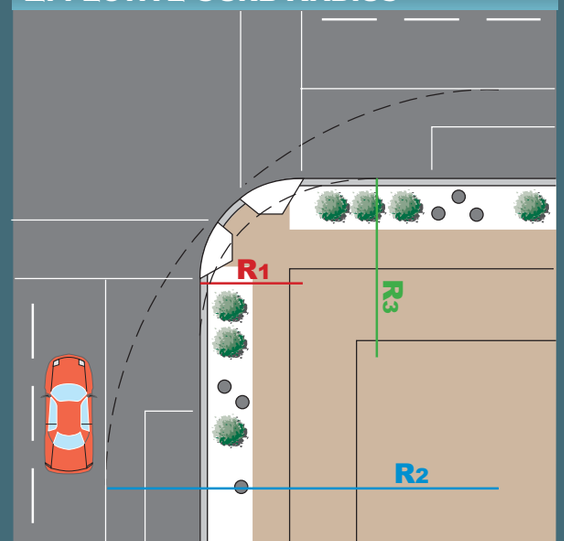
D. Optional right/straight and right-turn only

Note: The dotted lines in cases "A" and "B" are optional (see case "C".) *Source:* AASHTO Guide for the Development of Bicycle Facilities

Curb Return Radius	Min.	Max.
Local - Local	10'	25'
Local - Collector	15'	25'
Collector - Collector	15'	25'
Collector - Arterial	20'	50'
Arterial - Arterial	20'	50'
Arterial - Farm-to-Market	25'	50'

** Allow encroachment into adjacent lane by design vehicles when turning on low volume streets.*

Effective Curb Radius



Source: Main Street...When a Highway Runs Through It: A Handbook for Oregon Communities

Intersection design should safely accommodate both vehicles and pedestrians.

To comfortably accommodate pedestrians, minimize the curb return radius and intersection pavement width to the greatest extent possible.

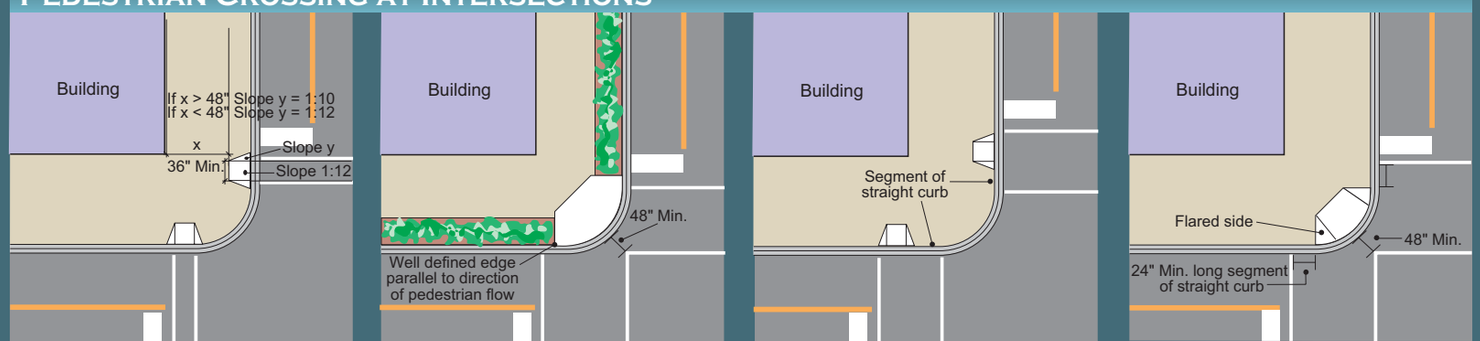
KEY

R1 = Actual Curb Radius

R2 = Effective Radius

R3 = Curb radius needed without bike lane and parking

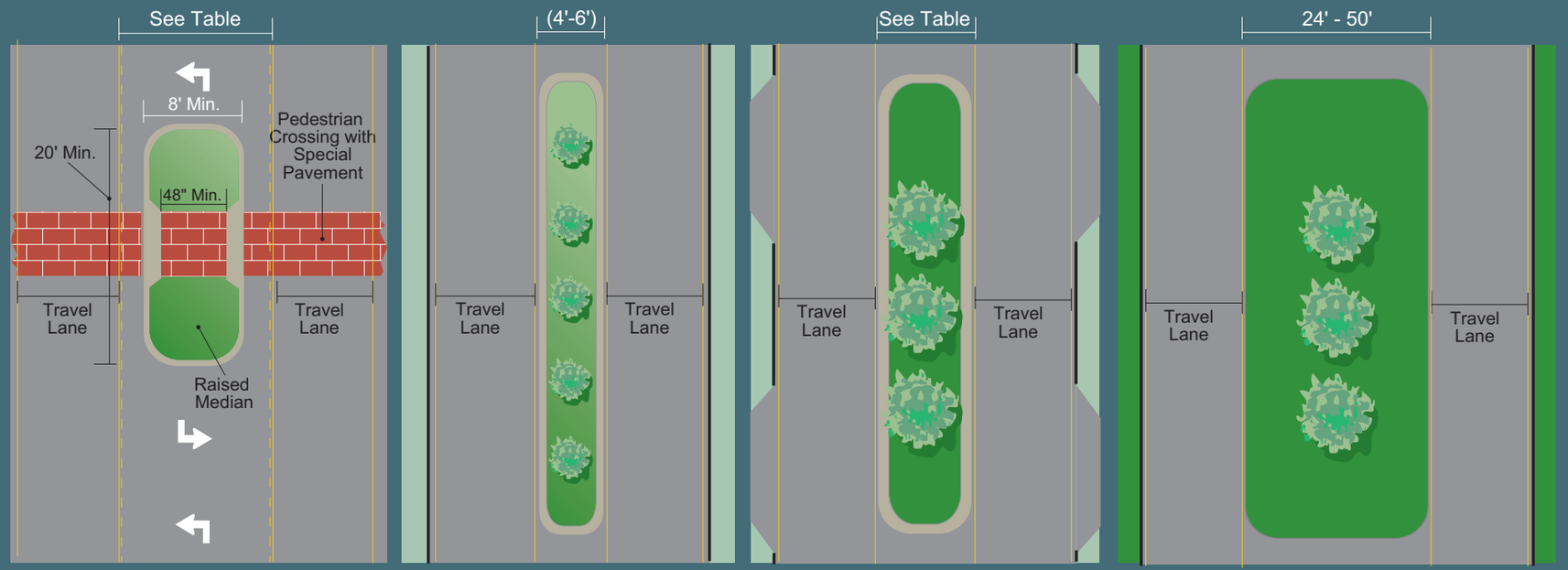
Pedestrian Crossing at Intersections



Source: ADA Standards for Accessible Design

ROADWAY DESIGN ELEMENTS

Medians



Continuous Left-turn
Used on arterial streets in commercial areas with frequent driveway. If blocks are larger than 600', place pedestrian crossing with special treatment as well as pedestrian refuge island at intervals of 600' to 1420' (where possible).

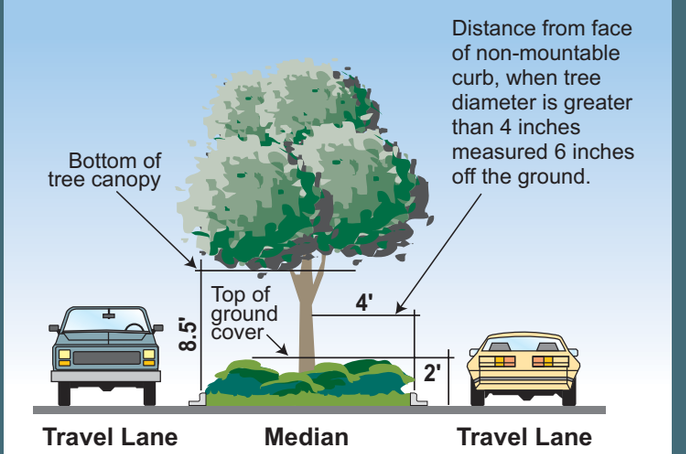
Narrow Median
Use on collector and arterial streets with infrequent driveways and intersections. Most commonly used for retrofit project where there is limited ROW. Landscape where feasible.

Wide Median
Use on arterial streets with less frequent driveways and intersections.

Rural Median

Optional In	Continuous Left-Turn	Narrow Median	Wide Median	Rural Median
Arterials				
Urban Activity Center	11' - 14'	4' - 6'	12' - 30'	
Industrial	12' - 14'		12' - 30'	24' - 50'
Rural Cluster				
Rural Agricultural				24' - 50'
Collectors				
Urban Activity Center	10' - 12'	4' - 6'	10' - 16'	
Rural Cluster	10' - 12'		10' - 16'	

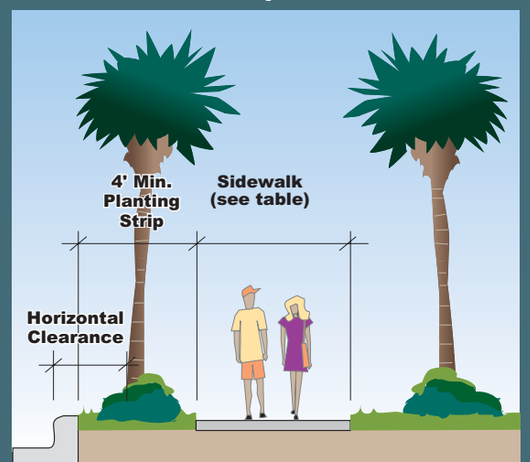
Planting in Medians



ROADWAY DESIGN ELEMENTS

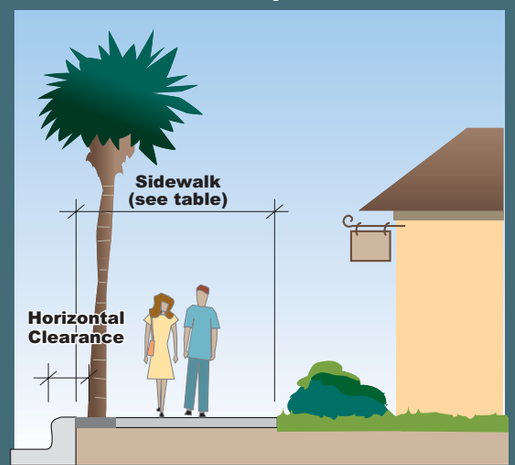
Width of Sidewalks

Less Intense Development



Off Curb

More Intense Development

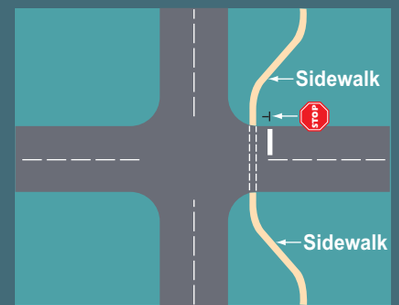


On Curb

Location and Design of Sidewalks

On arterial and collector streets, sidewalks should be located at the outside edge of the road right-of-way, except at intersections where they should be located as shown in the adjacent graphic.

The sidewalk grade should remain consistent along a roadway corridor. At locations where a driveway crosses a sidewalk, the grade of the driveway shall match that of the sidewalk.



Offset Sidewalk Intersection Treatment

Sidewalk Width	Off Curb		On Curb	
	Min. (feet)	Max. (feet)	Min. (feet)	Max. (feet)
Arterials				
Urban Activity Center	6	10	8	12
Rural Cluster	6	10	8	12
Industrial	6	8	6	8
Collector Street	6	8	6	8
Main Street	8	12	8	15
Neighborhood Streets				
Urban Activity Center	5	8		
Village Center	5	8		
Neighborhood	5	8		
Neighborhood Center	5	8		
Rural Cluster	5	8	6	8
Rural Agriculture	5	6	6	6

Minimum Horizontal Clearance Width

Posted Speed < 25 mph: 1.5 feet from face of curb

Posted Speed ≥ 25 mph: 4 feet* from face of curb

* 1.5 feet under constrained conditions

Roadway Reconstruction

Provide sidewalk on both sides of the roadway for:

- Arterial in Urban Activity Centers and Rural Clusters
- Collectors in Urban Activity Centers, Village Centers, and Rural Clusters
- Neighborhood streets in Urban Activity Centers, Village Centers, and Neighborhood Centers

If ROW is constrained, may provide sidewalks on only one side of the roadway for:

- Arterials in Industrial land use type
- Collectors in Industrial land use type
- Neighborhood streets in Neighborhoods, Rural Clusters, and Rural Agricultural land use types

ROADWAY DESIGN ELEMENTS

Tree Spacing in Sight Triangle

Description **Speed (mph)**

	30		35		40		45		50		55		60	
Maximum caliper (diameter) within limits of sight window (mm)	> 4" ≤ 11"	> 11" ≤ 18"	> 4" ≤ 11"	> 11" ≤ 18"	> 4" ≤ 11"	> 11" ≤ 18"	> 4" ≤ 11"	> 11" ≤ 18"	> 4" ≤ 11"	> 11" ≤ 18"	> 4" ≤ 11"	> 11" ≤ 18"	> 4" ≤ 11"	> 11" ≤ 18"
Minimum spacing (c. to c. of trunk) (ft)	22	91	27	108	33	126	40	146	45	165	52	173	60	193

Source: FDOT

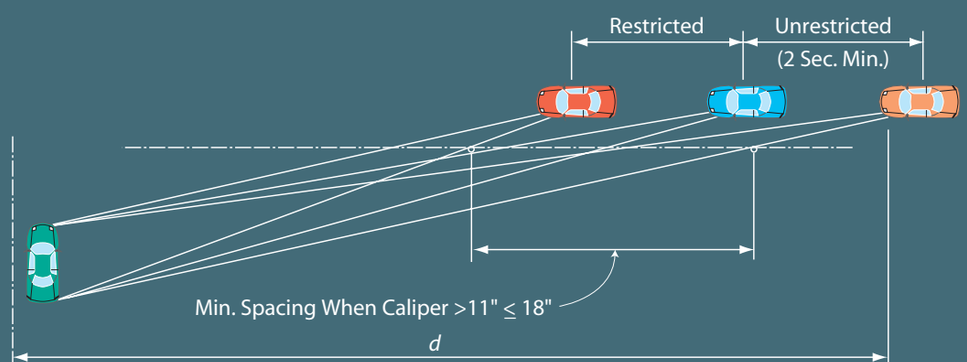
Sizes and spacing are based on the following conditions:

A. A single line of trees in the median parallel to but not necessarily colinear with the centerline.

B. A straight approaching mainline within skew limits.

C. 1. Trees and palms ≤ 11" in diameter casting a vertical 6' wide shadow band on a vehicle entering at stop bar location when viewed by mainline driver beginning at distance 'd.'

2. Sabal palms with diameters ≥ 11" - < 18" spaced at intervals providing a 2 second full view of entering vehicle at stop bar location when viewed by mainline driver beginning at distance 'd' (see perception diagram).
See FDOT 2002 Design Standards, Index No. 546, for further information.



Perception Diagram

Location of Shade Trees

Shade trees shall be located to provide shade to users of the sidewalks and multi-use trails. On arterial and collector roadways, shade trees should be located between the travel lane and the sidewalk. To provide personal security, users of the sidewalks must be visible from vehicles in the travel lane. Landscaping located between the travel lanes and the sidewalk must not block these views. Therefore, shrubs and tree canopies should be pruned to allow visibility from vehicles in the travel lane to users of the sidewalk.

Location of Traffic Control Devices, Light Poles, and Above Ground Utilities

Traffic Control Devices will be designed and located in accordance with the Manual of Uniform Traffic Control Devices and Roadway and Traffic Design Standards

Light Poles and Utilities if not Placed Underground:

No Curb - Outside of Clear Zone

Curb Present - Outside of Horizontal Clearance area. If placed in sidewalk, must maintain 4 feet of unobstructed sidewalk area.

BICYCLE SERVICE ON ROADWAYS

Bicycle Quality of Service (QOS) Model

For local and regional travel, bicyclist rely on both designated bicycle facilities, such as bicycle trails, bike lanes, and multi-use bike paths, and roadways that are not specifically designated for bicycle travel. When evaluating an existing roadway element or constructing a new facility, the safety and comfort of bicyclist should be considered principle in the design.

To evaluate the quality of bicycle travel on roadways, Alachua County has adopted a bicycle Quality of Service (QOS) standard in the Comprehensive Plan. The standard is based on a statistically reliable model that evaluates the bicycle conditions of a shared roadway element. The Model reflects the effects of factors such as roadway width, bicycle lane widths, striping conditions, traffic volumes, pavement surface conditions, motor vehicles speed and type, and on-street parking on bicycle suitability.

For more information on the bicycle QOS, see the Alachua County Bicycle Master Plan (2001).

Bicycle QOS Categories

Description	Quality of Service	Bicycle QOS Score
Best Conditions	A	≤ 1.5
	B	> 1.5 and ≤ 2.5
Average Conditions	C	> 2.5 and ≤ 3.5
Poor Conditions	D	> 3.5 and ≤ 4.5
	E	> 4.5 and ≤ 5.5
Worst Conditions	F	> 5.5

Target QOS

Road Type	QOS
Non State Roads	B
State Roads	C

QOS = A
CR 234 from NW Bay Street to Seminary Street

QOS = B
SW 16th Street, between Archer Road and SW 16th Avenue

QOS = D
SR 24/Archer Road, between 75th Street and Tower Road

QOS = E
University Avenue, between NW 13th Street and Main Street

CORRIDOR TYPE: ARTERIAL

Urban Activity Center

Land Use Classification: Urban Activity Center

Required	Optional
• Curb and gutter • Street and pedestrian scale lighting • Shade trees • Sidewalks • Transit stops with benches (if service is provided) • Pedestrian activated crossing signal at signalized intersections • Bicycle lane or wide outside travel lane	• On-street parking • Planting strip • Mid block pedestrian crossing • Raised median • Continuous left turn lane • Bus Shelters

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lanes (when bicycle lane is present)	10	12
• Outside vehicle lane (no bicycle lane present)	14	14
• Raised median		
- infrequent driveways and intersections	4	6
- short blocks, left turn lanes	12	30
• Continuous left turn lanes	11	14
• Bicycle lane	4	5
• Parking lane		
- with bicycle lane	7	7
- no bicycle lane	8	10
• Planting strip	4	8
• Sidewalk		
- on curb	8	12
- off curb	6	10
• ROW width	80	130

Design Speed: 35 mph - 45 mph

Continuous left turn line/bicycle lane

Note: *Where ROW permits, it is always preferred to provide a bicycle lane.*

Design Speed: 35 mph - 45 mph

Raised median/wide outside travel lane

CORRIDOR TYPE: ARTERIAL

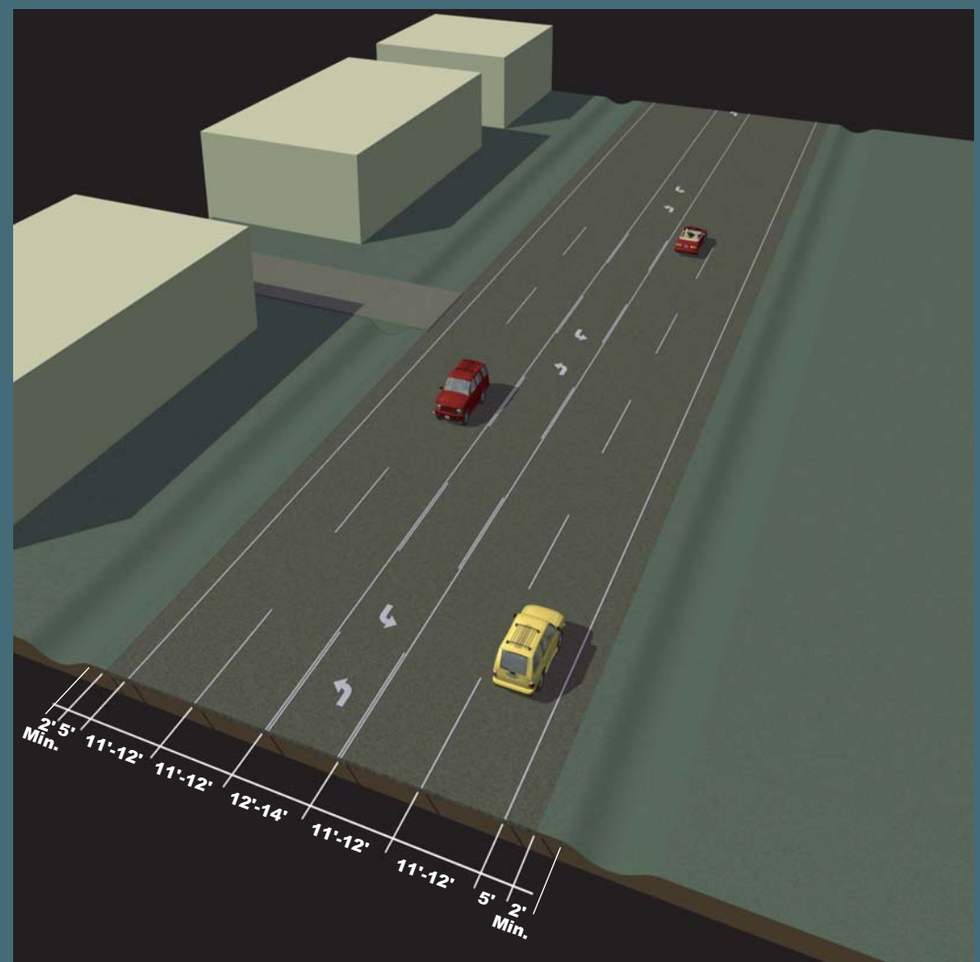
Industrial

Land Use Classification: Industrial

Required	Optional
• If transit service is provided - Transit stops with benches - Sidewalks	• Bicycle lanes • Curb and gutter • Planting Strip • Lighting • Sidewalks • Medians • Continuous left turn lane • Bus Shelter

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lanes	11	12
• Bicycle lane		
- curb and gutter	4	6
- no curb present	5	6
• Median	12	50
• Continuous left turn lane	12	14
• Sidewalk	6	8
• Planting strip	4	8
• ROW width	50	130

Design Speed: 45-55 mph



Continuous left turn with wide outside lane open drainage

CORRIDOR TYPE: ARTERIAL

Rural Cluster

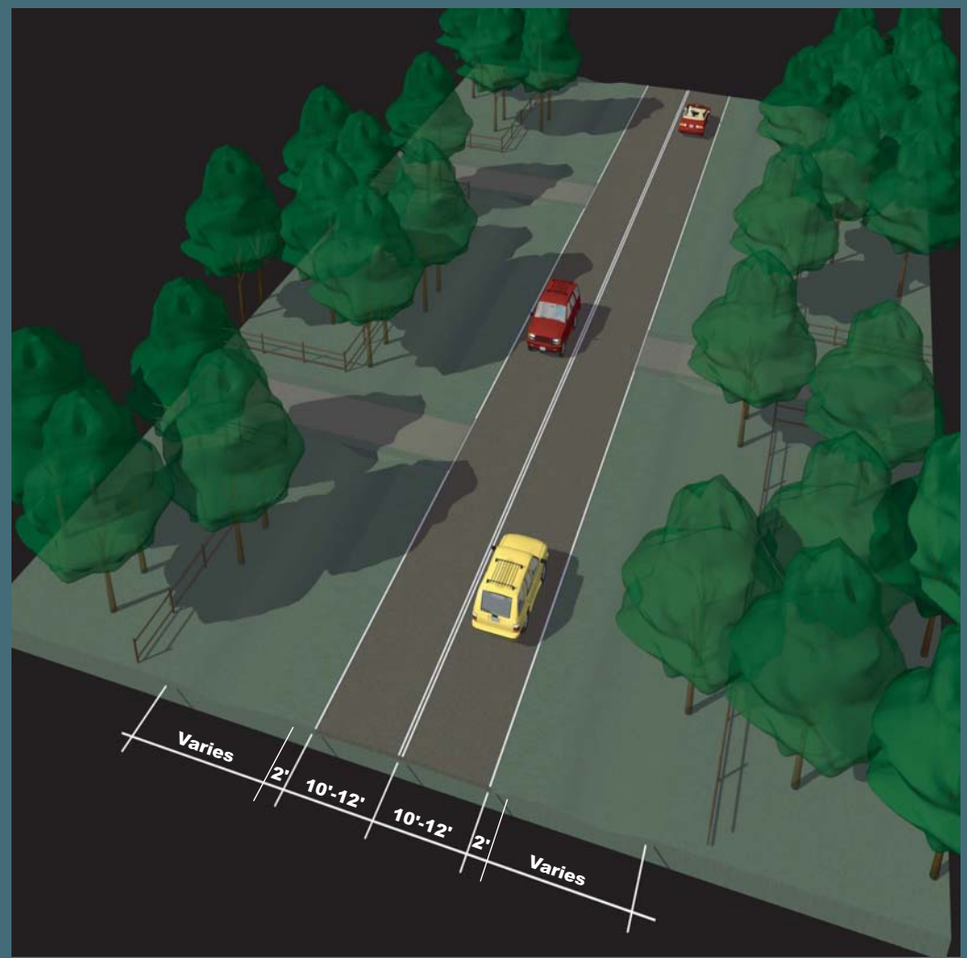
Land Use Classification: Rural Cluster

Optional

- Bicycle lane
- Curb and gutter
- Planting Strip
- Sidewalk

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lanes	10	12
• Bicycle lane		
- curb	4	4
- no curb	5	5
• Planting Strip	4	8
• Sidewalk	6	12
- on curb	8	12
- off curb	6	10
• ROW width	50	70

Design Speed: 30-35 mph



CORRIDOR TYPE: ARTERIAL

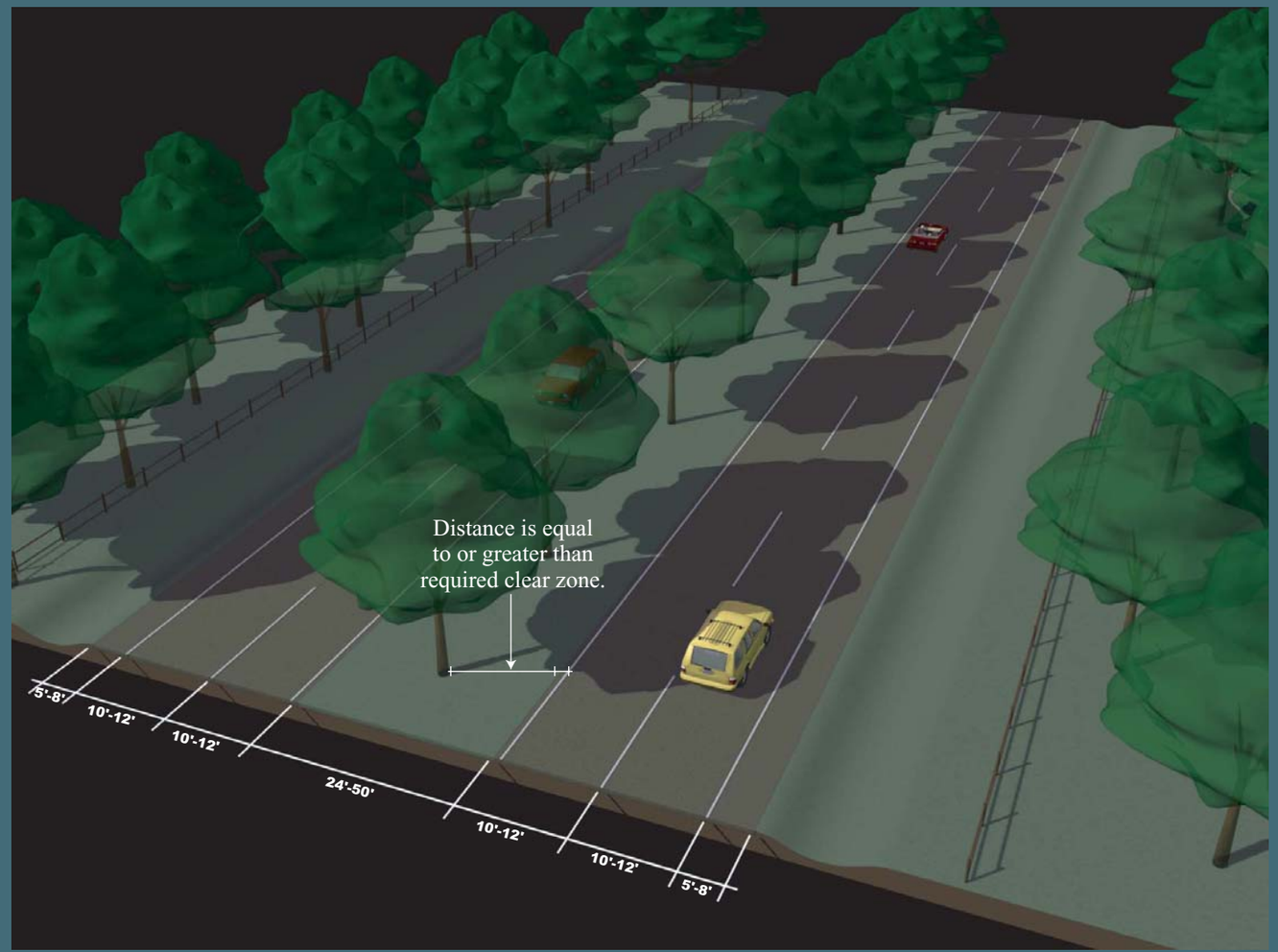
Rural Agricultural

Land Use Classification: Rural Agricultural

Required	Optional
• Grass median • Paved shoulder	• Striped bicycle lane

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lanes	10	12
• Paved shoulder/Bicycle lane		
speed ≤ 45 mph	5	8
speed > 45 mph	6	8
• Median	24	50
• ROW width	100	140

Design Speed: 45-60 mph



CORRIDOR TYPE: COLLECTOR STREET

Urban Activity Center

Land Use Context: Urban Activity Center

Required	Optional
• Bike lanes • Curb and gutter • Planting strip • Pedestrian scale lighting • Shade trees • Sidewalks • Transit stop with benches, where transit service is provided	• Median • Parking • Bulbouts and neckdowns (when parking is provided) • Bus Shelter

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lanes	10	11
• Bike lanes (without parking)	4	-
• Bike lanes (with parking)	5	-
• Narrow Median	4	6
• Continuous left turn lane	10	12
• Raised Median	10	16
• Parking	7	-
• Planting strip	4	8
• Sidewalk	6	8
• ROW Width	40	80

Design Speed: 30-35 mph

CORRIDOR TYPE: COLLECTOR STREET

Rural Agricultural

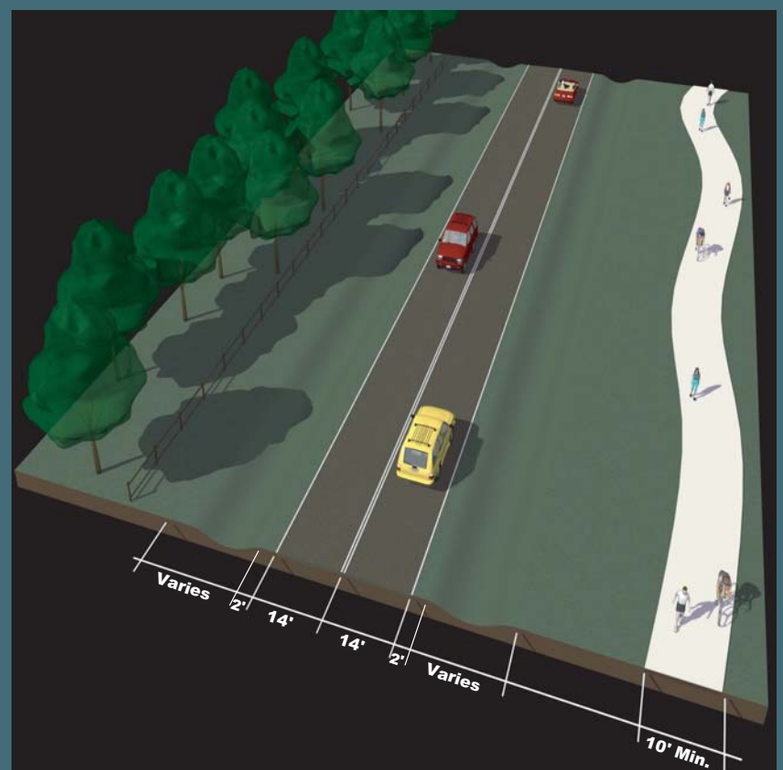
Industrial

Land Use Context: Rural Agricultural/Industrial

Required	Optional
• Bike lanes or bikeway	• Curb and gutter • Planting strip • Lighting • Shade trees • Sidewalk

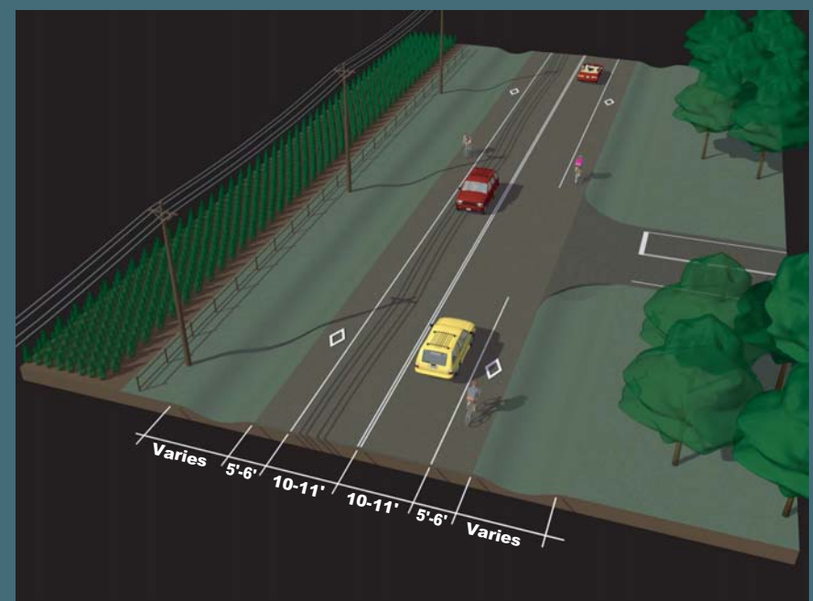
Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lane		
- bike lane in travelway	10	11
- outside lane, no bike lane in travelway	14	14
• Bike lane (curb)	4	5
• Bike lane (no curb)	5	6
• Sidewalk	6	8
• Multiuse trail	10	
• ROW	50	80

Bikeway (Separate Multiuse Trail Optional)
Design Speed: 30- 35 mph
Design Volume: Less Than 1500 vpd



Parallel Bicycle Facility to Roadway

Bicycle Lane
Design Speed: 30- 35 mph
Design Volume: Less Than 1500 vpd



Bicycle Facility in Roadway

Rural Agricultural Area - Collector Street

CORRIDOR TYPE: COLLECTOR STREET

Rural Cluster

Land Use Context: Rural Cluster

Required	Optional
• Bike lanes • Planting strip • Shade trees • Sidewalks	• Median • Parking • Curb and gutter • Bulbouts and neckdowns (When parking is provided) • Pedestrian scale lighting at intersections

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lanes	10	11
• Median (continuous left turn lane)	10	12
• Raised Median	10	16
• Bike lanes (without parking)	4	-
• Bike lanes (with parking)	5	-
• Parking	7	-
• Planting strip	4	8
• Sidewalk	6	8
• ROW Width	50	80

Design Speed: 30-35 mph

CORRIDOR TYPE: MAIN STREET

Urban Activity Center

Village Center

Rural Cluster

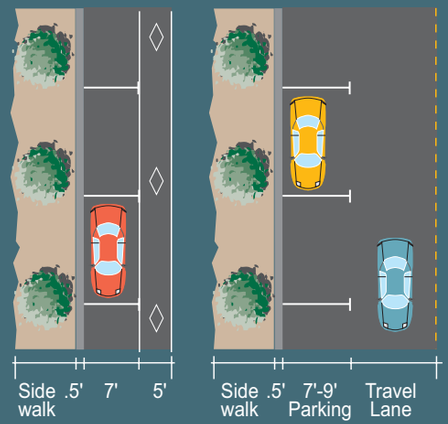
Land Use Context: Urban Activity Center/ Village Center/Rural Cluster

Required	Optional
• On-street parking	• Bicycle lane
• Bulb-outs with landscaping	• Curb
• Gutter	
• Shade trees	
• Pedestrian scale lighting	
• Shelter at bus stop (if served by transit)	
• Pedestrian crosswalk treatment	

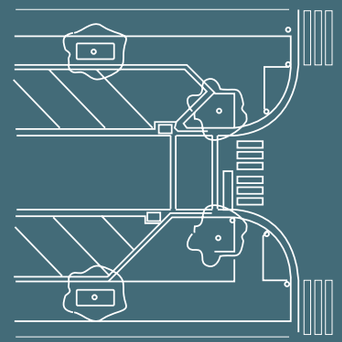
Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lane width	10	11
• Bicycle lane	5	5
• Parallel parking		
- with bike lane	7	7
- without bike lane	7	9
• Angled parking		
- length	19	20
- width	9	11
• Sidewalk	8	15
• ROW width	56	82

Parking Options

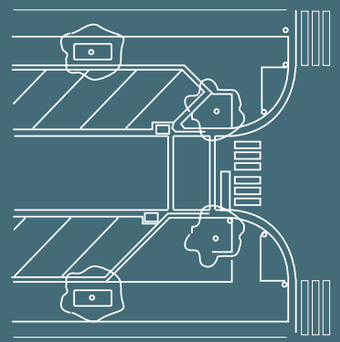
Parallel Parking



Front End Angled Parking



Rear End Angled Parking

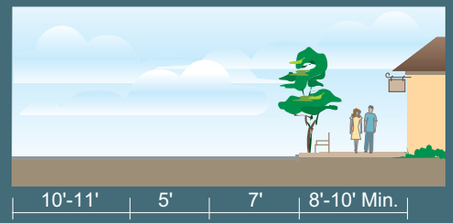


Note: Width of parking lane may be measured from face of curb, and may include all or a portion of the gutter.

Sidewalk Options

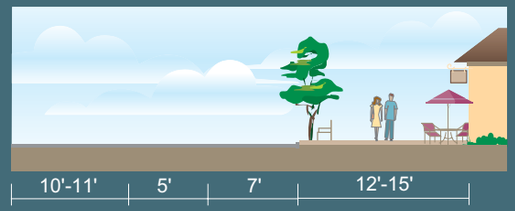
Stroll

Allows for 2 way pedestrian travel and amenities such as benches and trash receptacles.



Plaza

Provides space for outdoor dining or cafe.



Design Speed: 25-30 mph

Design Speed: 25-30 mph

Design Speed: 25-30 mph

CORRIDOR TYPE: NEIGHBORHOOD STREETS

DESIGN PRINCIPLES

- Safety first
- Provide access to adjacent uses
- Function as part of the public space
- Support recreational activities/extension of front yards

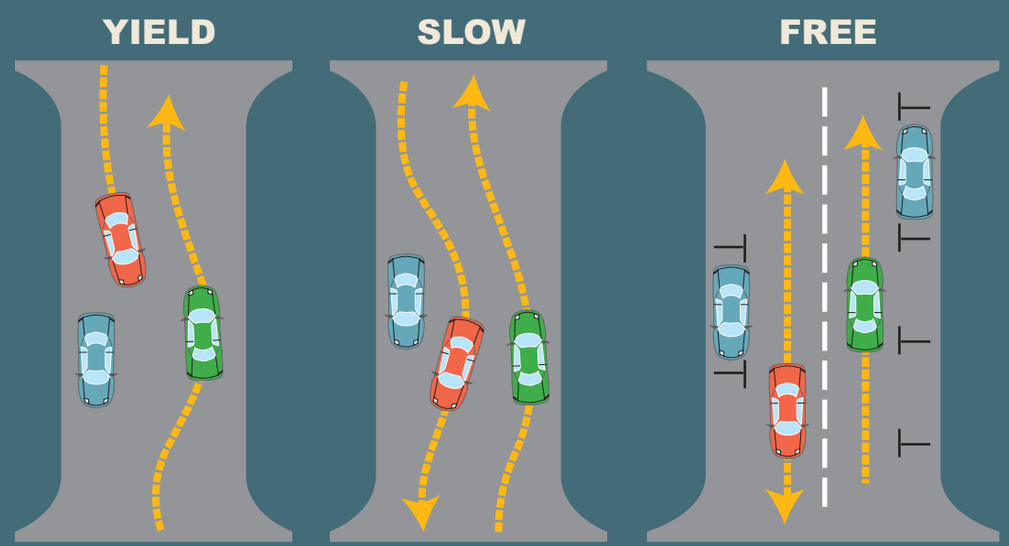
Neighborhoods streets serve as both part of the transportation network and parks/open space system. The design focus is on safety. The physical design should reinforce the design speed and emphasize the comfort of pedestrians. For existing, and in some cases new roadways, traffic calming measures may be used to reinforce the desired travel speed. In all cases, physical measures should be used to show vehicular travel.

Three Categories of Traffic Flow on Neighborhood Streets

Yield - vehicles traveling in the opposite direction are not able to pass in the vicinity of a parked car. Neither center line nor parking lanes are marked. The full width of the pavement is used by various activities.

Slow - vehicles traveling in opposite directions are compelled to reduce their travel speed when passing in the vicinity of a parked car.

Free Flow - assures each direction of traffic has its own separate traffic lane, always free of encroachment by vehicles moving in the other direction and by parked vehicles. Appropriate near activity centers, where the traffic volumes of the street is above 3,500 vehicles per day.



Corridor Type: Neighborhood Street

Urban Activity Center

Village Center

Land Use Context: Urban Activity Center/ Village Center

Required	Optional
• Curb and gutter • On-street parking • Pedestrian scale lighting • Planting strip • Shade trees • Sidewalks • Transit stops with benches, where transit service is provided	• Brick pavement • Neckdowns at intersections • Bulbouts spaced approximately every 200' • Bus Shelter

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lane	10	11
• Parking lane	6	7
• Cartway (includes gutter)	32	36
• Planting strip	5	8
• Sidewalk	5	8
• ROW Width	54	70

Flow Street - Parking on both sides
Design Speed: 25 mph

Corridor Type: Neighborhood Street

Neighborhood Center

Neighborhoods

Land Use Context: Neighborhood/ Neighborhood Center

Required	Optional
• Curb and gutter	• Brick pavement
• On-street parking	• Neckdowns at intersections
• Pedestrian scale lighting	• Bulbouts
• Planting strip	
• Shade trees	
• Sidewalks	

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Cartway (includes gutter)	16	26
• Planting strip	4	8
• Sidewalk	5	8
• ROW Width	36	58

Note: *In neighborhood centers with big activity uses such as schools, parks, and churches, 6' sidewalks are required.*

Slow Street - Parking on both sides
Design Speed: 20 mph

Yield Flow Street - Parking on both sides
Design Speed: 20 mph

Yield Flow Street - Parking on one side
Design Speed: 20 mph

Corridor Type: Neighborhood Street

Rural Cluster

Land Use Context: Rural Cluster

Required	Optional
• On-Street Parking (permitted/ not striped)	• Brick pavement • Bulbouts • Curb and gutter • Sidewalks • Planting strip • Shade trees • Pedestrian scale lighting

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Cartway (including gutter)	16	26
• Planting strip	4	8
• Sidewalk		
- on curb	6	8
- off curb	5	8
• ROW Width	36	58

Slow Street - Parking on both sides
Design Speed: 20 mph

Yield Flow Street - Parking on one side
Design Speed: 20 mph

Yield Street - Parking on Both Sides
Design Speed: 20 mph

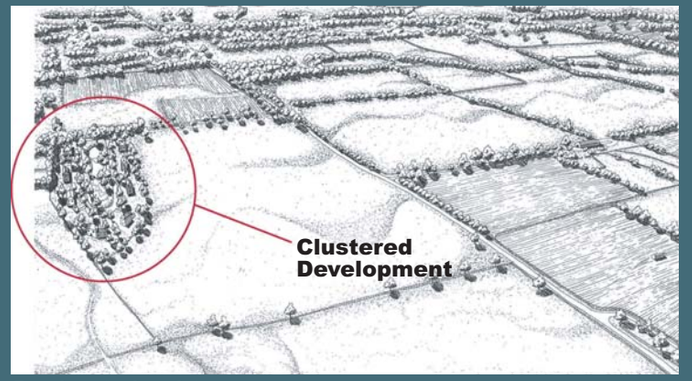
Corridor Type: Neighborhood Street

Rural Agricultural

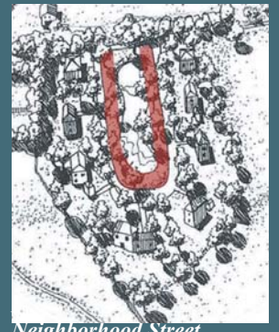
Land Use Context: Rural Agricultural

Optional

- Sidewalks
- Pedestrian scale lighting
- Curb and gutter



Rural Agricultural Area



Neighborhood Street

Slow Street
Design Speed: 20 mph

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Cartway	20	24
• Sidewalk	5	6
• ROW Width	34	40

Yield Street
Design Speed: 20 mph

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Cartway	16	18
• Cartway (Roadway serving less than 12 non-industrial parcels)	12	18
• Sidewalk	5	6
• ROW Width	30	40

CORRIDOR TYPE: FARM-TO-MARKET ROAD

Rural Agricultural

Land Use Classification: Rural Agricultural

Alignment Considerations

Where possible:

- Preserve natural topography; follow natural terrain
- Maintain natural hydrology and water quality
- Avoid wetlands
- Avoid impacts to critical wildlife habitat
- Consider viewsheds and scenic character
- Preserve or enhance natural vegetation/tree canopy

Design Element	Minimum Width (feet)	Maximum Width (feet)
• Vehicle lanes	10	12
• Shoulder	6	8
• ROW Width	60	100

Design Speed: 45-50 mph

Rural Agricultural Farm-to-Market Road

Potential Impacts to Habitat

- Fragmentation of wildlife habitat
- Barriers to wildlife movement and dispersal
- Increased mortality of species attempting to cross the road

Techniques for Mitigating Transportation Impacts on Wildlife Movement

- Shift alignment to avoid wetlands and critical wildlife habitat
- Provide safe crossing of roadway corridor
- Modified drainage culverts that provide dry passage to small animals
- Culverts used to convey water intermittently
- Upland culverts
- Oversized stream culverts
- Wildlife overpasses/ underpasses
- Fencing to direct wildlife to crossing
- Vegetation to direct wildlife to crossings

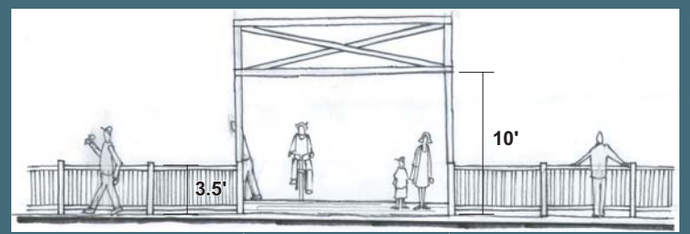
Connectivity Zones

It may be economically infeasible to provide safe crossings along the length of rural corridors. Information on the surrounding areas can be used to connect areas of significant habitat. Priority sites include:

- Riparian corridors
- Hot spots identified by the Florida Fish and Wildlife Conservation Commission
- Greenway linkages (The Florida Statewide Greenway System Project)
- Existing and proposed conservation lands
- Known migration routes
- Sites with high recorded number of road kill

CORRIDOR CONTEXT: BICYCLE AND PEDESTRIAN TRAILS

Trail Crossing of Freeway



Trail Crossing

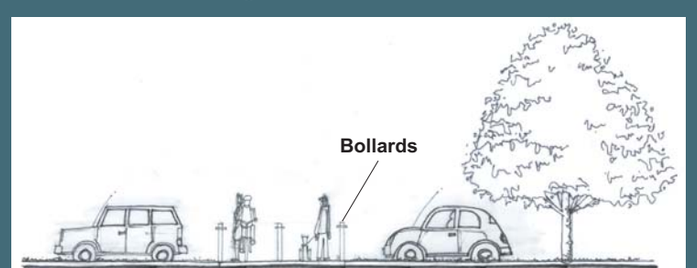
- A grade separated crossing is required at freeways.
- This may be accommodated as part of a vehicular crossing by incorporating bicycle lanes and sidewalks or a multi-use trail on a bridge.
- Maximum ramp: 1:12
  A level area 5 feet long must be provided every 30 feet. *See ADA regulations for details.*

Trail Crossing of Low Volume Residential Street

Raised Pedestrian crossing

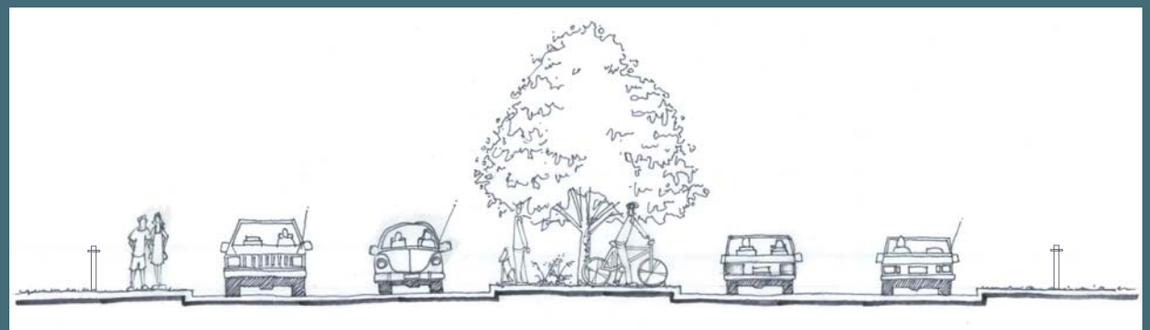
- At roadway crossings, priority should be given to the major movement
- For paths with daily trips exceeding 1,000 users crossing a residential roadway, the vehicles on the roadway could be required to yield or stop at the trail.

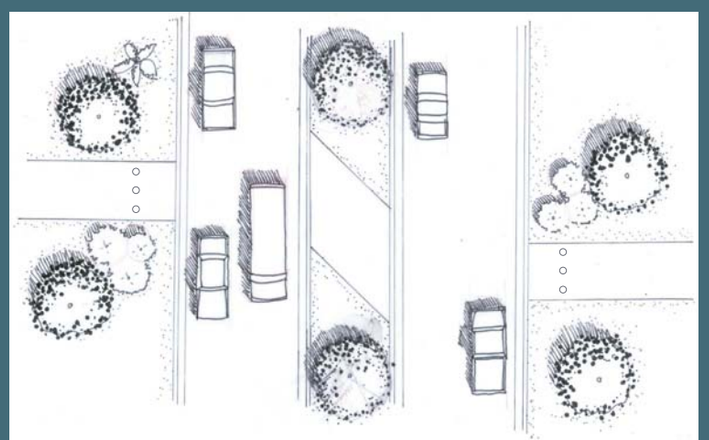
  In such cases, a raised pedestrian crossing should be used to draw attention to the trail crossing.
- Refer to MUTCD for details on design of traffic control devices.



Roadway Crossing

Trail Crossing High Volume Roadway



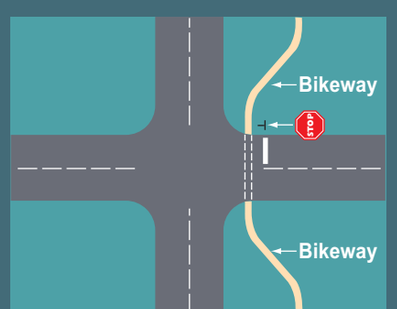


Source: Florida Bicycle Facilities Planning and Design Handbook

Where signal warrant can be met, pedestrian activated signal should be provided when the pedestrian trail crosses a collector, arterial, or farm-to-market roadway.

If no traffic signal is provided, a minimum of 10 foot wide medians should be provided at unsignalized crossings of a multi-lane roadway. The crossing may be angled at 45 degrees towards approach traffic.

Refer to MUTCD for details on design of traffic control devices.



Offset Bikeways Intersection Treatment

Source: Minnesota Bikeway Design Manual

Corridor Type: Bicycle and Pedestrian Trails

Land Use Context:


Urban Activity Center

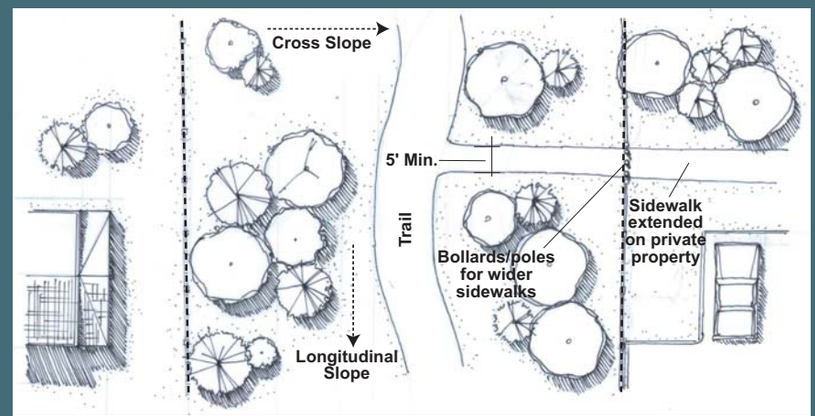

Village Center


Neighborhood Center

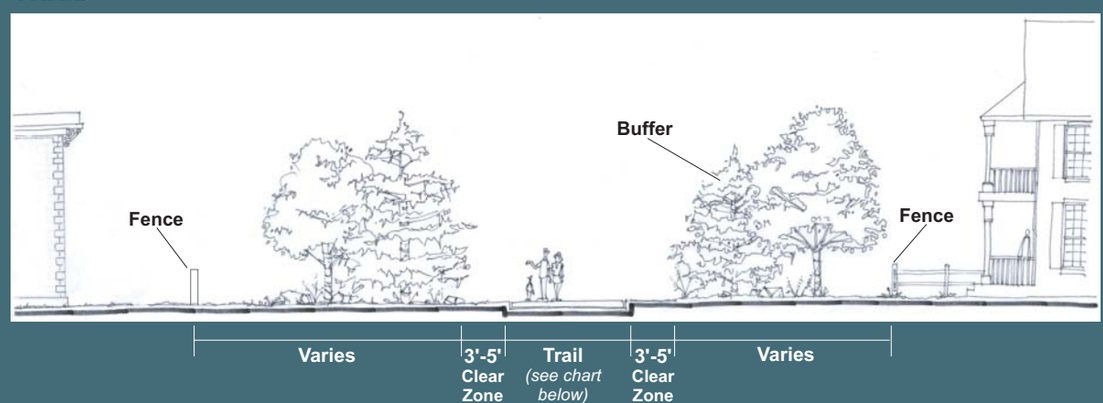

Neighborhoods


Rural Cluster

Connections to Adjacent Uses



Trail



Design Principles

- Provide mobility
- Serve as recreational pathways
- Provide links to natural areas
- Facilitate in habitat preservation
- Design for specific user types

Design Elements

Required

- Trail
- Buffer
- Signage
- Connections to public and private commercial uses

Recommended

- Lighting
- Rest areas
- Trail head

Trail Users Type	Travel Speeds (mph)	Longitudinal Slopes (Maximum)	Cross Slope	Recommended Minimum Tread Width (two-way travel)	Typical Tread Width (two-way travel)	Surface Type
Pedestrian trail users walkers, hikers, joggers, runners, persons confined to a wheelchair, bird-watchers, nature lovers, picnickers, etc.	0 to 5 mph	8%	1% prefered	8 ft	10 ft	Concrete
Nonmotorized travel bicyclist, rollerbladers, skaters, skateboarders	5 to 20 mph	8%	1 - 4%	10 ft	14 ft -16 ft	Type 3 Asphalt
Pedestrian/ Nonmotorized travel	0 to 20 mph	8%	1% prefer	12 ft	14 ft -16 ft	Type 3 Asphalt

Source: Greenways "A Guide to Planning, Design, and Development", The Conservation Fund, Island Press, Washington, D.C.

Tree Preservation

Wherever possible large established trees should be preserved. To preserve a large tree located in the clear zone:

- narrow trail,
- shift trail, or
- locate a railing between the trail and the tree

When a trail is located in close proximity to a tree, it may be necessary to provide special treatment to the subgrade to protect the root system of a tree. A clear zone may not be needed on hiking trails.

Trail Head

Trail Head may be incorporated into commercial centers, public buildings, or parks.

Features

- Parking (paved or unpaved)
- Paved handicapped parking space near trail head
- Bicycle parking
- Trail head sign
- Trash receptacles
- Information station with map
- Restrooms
- Chilled drinking fountains
- Lighting
- Air pump
- Vending machine
- Play equipment
- Pet amenities
- Picnic tables
- Pavilions

Lighting

Lighting may be desirable for trails accessing major activity centers.

Activity or Use	Recommended Footcandles
Bikeways	0.9
Walkways	1
Pedestrian Underpasses	4
Parking lots	1

Source: IES Lighting Handbook, Illuminating Engineering Society of North America, Chicago, 1981

Rest Areas

Space rest areas at appropriate intervals, and include:

- Bench,
- Shade, and
- Paved platform (3 ft wide x 8 ft long).

Weather shelters should be provide every 2 miles, and should include:

- 2 to 3 benches
- Covered shelter,
- Paved platform (10 ft wide x 10 ft long).

Corridor Type: Bicycle and Pedestrian Trails

Land Use Context:

Rural Agricultural Areas

Design Principles

- Provide mobility
- Serve as recreational pathways
- Provide links to natural areas
- Facilitate in habitat preservation
- Design for specific user types
- Provide shade

Design Elements

Required

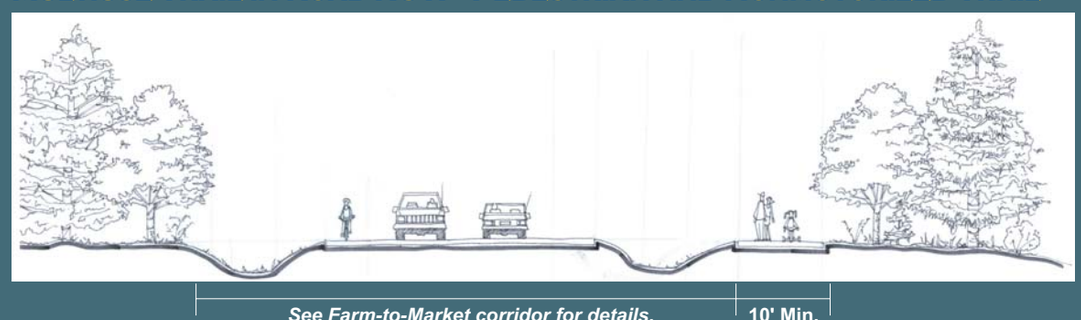
- Trail
- Buffer
- Signage

Recommended

- Rest areas
- Connections to adjacent uses
- Trail head

Trail in Exclusive ROW

Multiuse Trail in Road ROW - Pedestrian and Nonmotorized Trail



Trail Head

Features

- Parking (paved or unpaved)
- Paved handicapped parking space near trail head
- Bicycle racks
- Trail head sign
- Trash receptacles
- Information station with map
- Restrooms
- Chilled drinking fountains
- Parking for equestrian vehicles (WB 40 design vehicle)
- Air pump
- Vending machine
- Play equipment
- Pet amenities
- Picnic tables
- Pavilions
- Lighting

Lighting

May be needed at roadway intersections if trail is used as a commuter transportation corridor.

Rest Areas

Rest areas should be located in areas that provide scenic views.

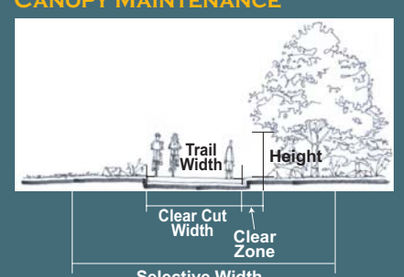
Space rest areas at appropriate intervals, and include:
- Bench,
- Shade, and
- Paved platform (3 ft wide x 8 ft long).

Weather shelters should be provide every at appropriate intervals, and include:
- 2 to 3 benches
- Covered shelter,
- Paved platform (10 ft wide x 10 ft long).

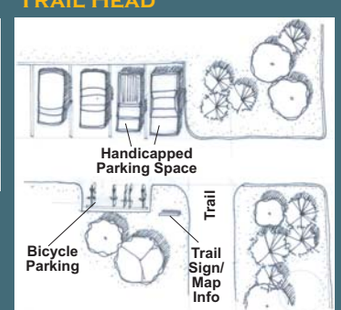
Trail User Type	Travel Speeds (mph)	Longitudinal Slopes (Maximum)	Cross Slope	Minimum Tread Width (two-way travel)	Clearing and Grubbing Width (min)	Selective Thinning Width (min)	Clearing Height (min)
Hiker	0 to 5 mph	No Restriction	4% max.	6 ft	10 ft	20 ft	8 ft
Multiuse trail walkers, hikers, joggers, runners, persons confined to a wheelchair, bird-watchers, nature lovers, picnickers, bicyclist, rollerbladers, skateboarders, mountain bikers	0 to 20 mph	8%	1% preferred	12 ft (10 ft limit ROW)	18 ft	28 ft	10 ft
Horseback rider	5 to 15 mph	10%	4% max	4 ft	8 ft	20 ft	12 ft
Multiuse trail with horseback rider	0 to 15 mph	8%	1% preferred	10 ft (paved) 4 ft (unpaved)	25 ft	35 ft	12 ft

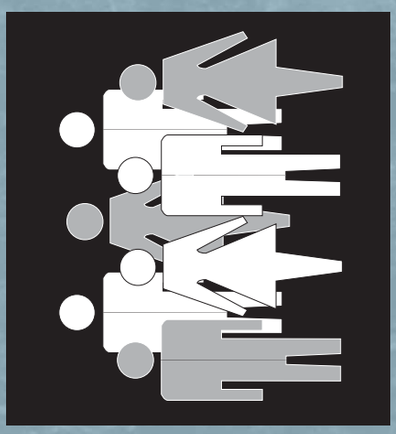
Source: Greenways "A Guide to Planning, Design, and Development", The Conservation Fund, Island Press, Washington, D.C.

Canopy Maintenance



Trail Head





Corridor Master Planning Process

This section is intended to guide community leaders, planners, developers and transportation officials in the design, modification, or maintenance of a corridor. The corridor master planning process assures that the design of a specific facility is compatible with the local context, community character, and future vision for the County. Central to the Corridor Master Planning Process is community involvement and ownership in both corridor development and final design.

Guidelines for Initiating Corridor Master Planning Process

- Use as proactive planning tool in transitioning or redevelopment area
- Guide the design of a new collector, arterial, main street, or farm-to- market road.
- Guide the design of a reconstruction of a collector, arterial, main street, or farm-to-market road that involves the substantial purchase of ROW or the reconfiguration of access to the roadway.

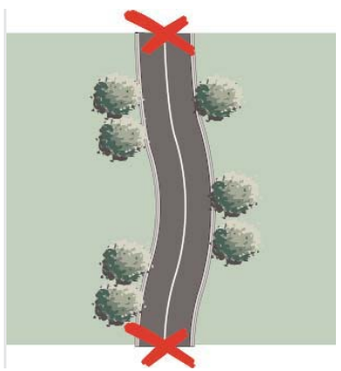
The Corridor Master Planning Process outlines a process by which the Corridor Design Guidelines are refined to support existing community amenities, reflect the community character, and/or advance the future vision for the community. The Corridor Master Planning Process serves as a visioning tool for the community, allowing communities to identify opportunities for corridor enhancements. A successful Corridor Master Planning Process looks beyond the pavement to identify investment options that support the character and vision for the community.

This comprehensive planning tool should be used to guide long-range invest program in a corridor. Alachua County may wish to initiate the Process in an area in transition or a redevelopment area to develop a long range plan for public and private investments in the area. The Process should be initiated whenever a public or private agency undertakes the construction of a collector, arterial, main street or farm-to-market roadway or the reconstruction of such a facility that involves the purchase of ROW or the reconfiguration of access to a roadway.

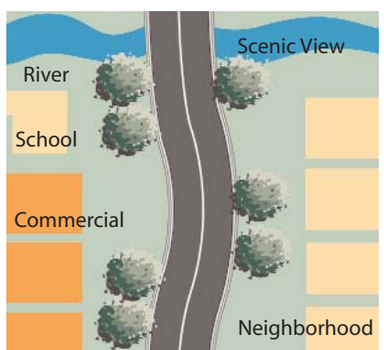
The final product of the Corridor Master Plan Process is a physical plan, the *Corridor Management Plan*, which outlines recommendations for roadway design, land uses, and private development design. Investments within the corridor right-of-way may include sidewalk enhancements, landscaping, lighting, transit facilities, utilities, drainage, and other investments that support the vision of the community, enhance the character of the corridor and support travel by multiple modes. Recommendations that guide future private development to support public infrastructure investments and community goals, such as access management, signage, lighting and landscape standards, and land development guidelines and incentives should be addressed. Recommendations for public investments may extend beyond the corridor to include local and regional connections to the corridor by all modes, and to mitigate secondary impacts of travel along the corridor.

The process is meant to be iterative and flexible. The Corridor Management Plan will outline design enhancements and development opportunities for a twenty-year time frame. As conditions change, so will the needs of the community. The Plan should be continuously reevaluated and amended through a public process to assure the Plan continues to reflect the needs and goals of the community.

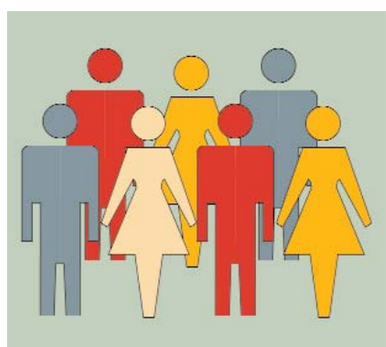
Corridor Master Planning Process



Step 1: Define Study



Step 2: Define Context



Step 3: Visioning

Step 4: Design

Step 5: Implementation

Corridor Master Planning Process

Step One: Define Study

To find the right answers, it is necessary to ask the right questions. For a project to effectively involve the community, it is important to involve community representatives when defining the goals of the project and the process that will be used to reach those goals. The following steps should assist the project initiator in defining the parameters of a new Corridor Master Planning Process.

Define the Corridor: The sponsoring agency should determine preliminary corridor study limits.

Form a Corridor Advisory Group: A group of representatives should be organized to work with planners and engineers in defining the study, developing alternatives, and selecting recommendations. These individuals represent the community, speaking with residents and business owners to acknowledge and voice their concerns.

Members of a Corridor Advisory Group (CAG) should include representatives from local and state government, environmental interest groups, civic groups, developers, citizen activists and major stakeholders.

Define Study Goals: The sponsoring agency should work with the CAG to develop goals and objectives for the study. The goals will guide the study determining the type of data needed and the framework for the analysis.

Define Study Area: The study area includes, at a minimum, the corridor; adjacent land uses, neighborhoods and commercial areas; and public amenities served by or impacted by the corridor. Physical barriers, land-use patterns, political areas of responsibility, neighborhood boundaries, and other considerations may delineate the boundaries of the study area.

Organize Public Involvement Process: To assure an open, organized public process, the sponsoring agency should outline the process that will be used to relay information to and receive feedback from the community.

Identify Stakeholders - Work with the CAG to develop a list of individuals that may have a stake in the project.
Develop Project Schedule - Define milestone dates.
Schedule Public Meetings - Determine number and dates of public meetings/charrettes/workshops.
Get the Word Out - Determine which medium will be used to communicate with the community. Alternatives include developing a web site, distributing newsletters, publishing ads in the newspaper, requesting and/or writing editorials in the newspaper.

Step Two: Define Context

The Corridor Master Planning Process documents the existing context of a corridor, allowing the community to evaluate opportunities for enhancements. The study area extends beyond the right-of-way, incorporating land uses, environmental elements, and neighborhoods impacted or served by the corridor. Critical elements of the context that should be evaluated are identified on the following pages.

Land Use Context: Determine the future land use context based on the definitions below. The land use context is used to determine the appropriate Corridor Design Guidelines *(see section 2)* which will set the appropriate design characteristics, including design speed.

Village Center

Neighborhood Center

Neighborhood

Urban Activity Center

Industrial

Rural Cluster

Rural Agricultural Area

Urban Activity Center

Urban Activity Centers are compact, multi-purpose, mixed use centers that include commercial development, residences, civic buildings, and open space. Urban activity centers are designed as pedestrian-friendly, compact centers connected to a multi-modal transportation system and integrated with surrounding uses in the urban area.

Industrial

Industrial land use categories allow for a range of industrial activities including fabrication, manufacturing, transportation, warehousing, and distribution of goods. Industrial land uses are often found in urban clusters, but can be located outside of urban clusters, and are also found in rural areas.

Village Center

Village Centers are neighborhood scale, compact, mixed use areas, integrated into residential areas within Urban Clusters through specific site and design standards.

Neighborhood Center

Neighborhood Centers consist of community facilities, such as schools, parks or libraries, accessible or integrated into neighborhoods.

Neighborhood

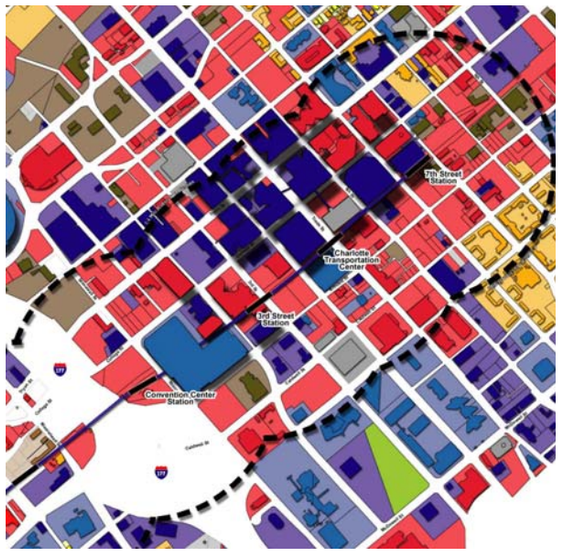
Neighborhoods are generally defined as areas that meet a balanced range of human needs. They are the basic components of community design.

Rural Cluster

Rural Clusters are small settlements located outside of an urban cluster. These clusters serve as the focal point for an existing rural community. Rural Clusters generally include areas within 1/2 mile of a focal point. The focal point is usually located at the intersection of two rural roads.

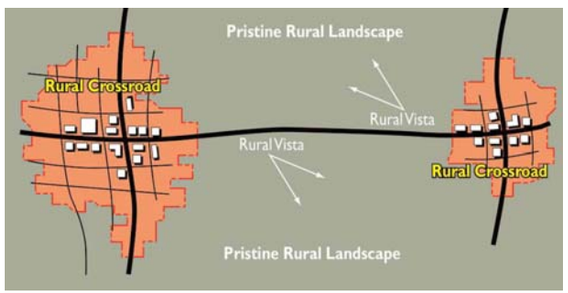
Rural Agricultural Area

Rural Agricultural Areas include uses such as row crops, grazing land, orchards, and smaller tree farms; and associated uses, such as farm equipment or supplies, local produce sales, or agricultural products distribution. These areas also include clustered residential development designed to preserve open space, and ranchettes (1unit : 5 acre residential lots).

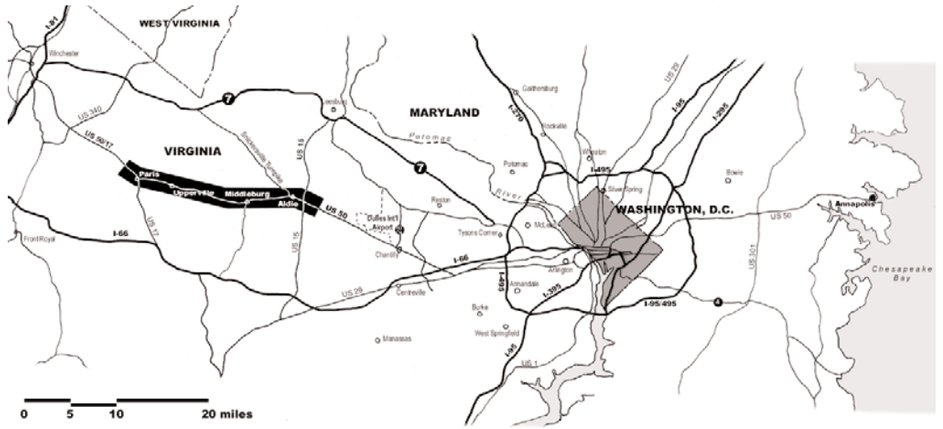


Charlotte LRT Station Area Design

Existing Zoning and Land Uses: Map existing zoning and land uses in the study area.

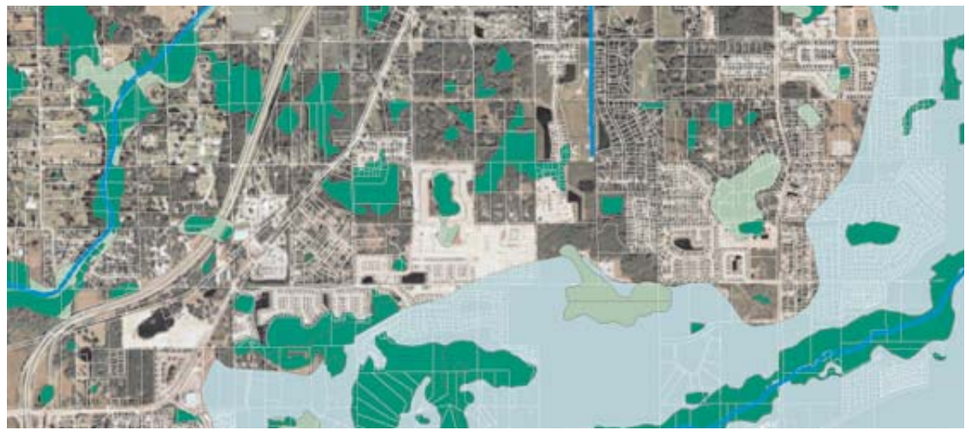


Viewshed Mapping: Map scenic views from the roadway that should be preserved or enhanced by the roadway or by private development.



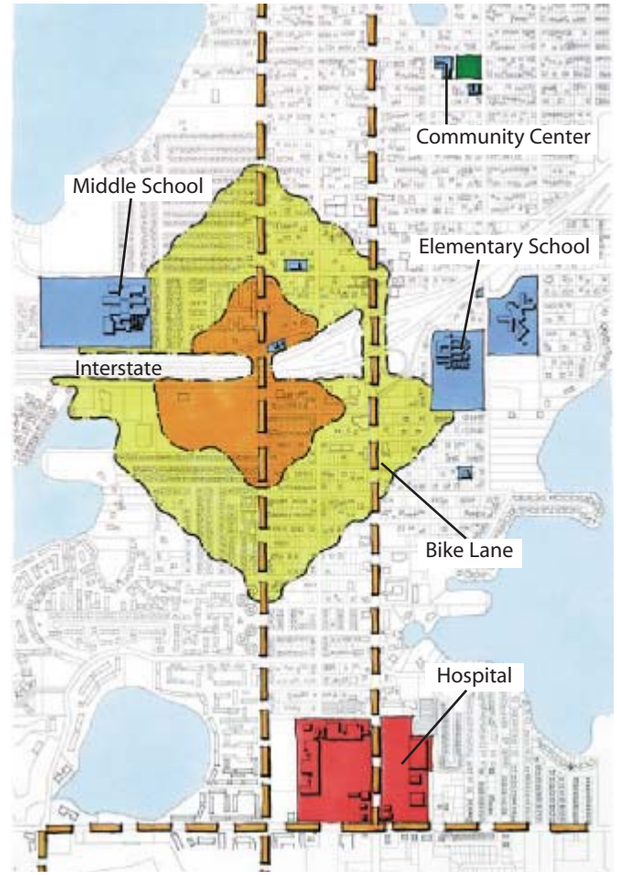
Route 50, Virginia

Regional Context: Map location of the study area on a regional map, relationship with major commercial or cultural centers, and relationship to major transportation facilities.



Map of rivers, wetlands, floodplains, and protected lands. Orange County, Florida

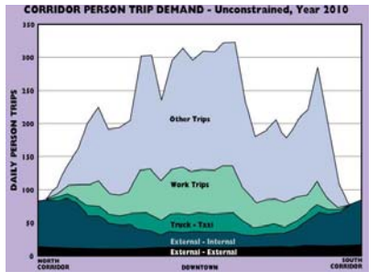
Environmental Elements: Map environmental elements such as topography, soils, waterways, lakes, wetlands, floodplains, conservation areas, endangered habitat areas.



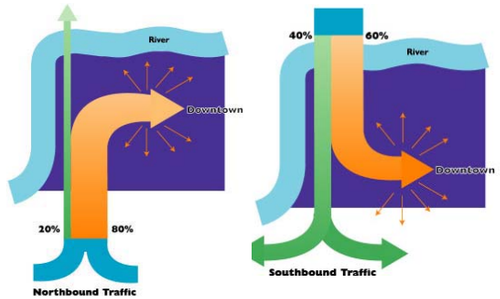
Map of community amenities Light Rail study, Orlando

Community amenities: Map community facilities such as schools, community centers, libraries, day care centers, parks, recreation areas, archaeological and historic resources, religious institutions, and government facilities.

Step Two: Define Context



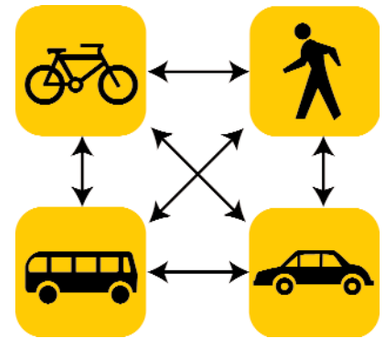
Trip type



Trip distribution

Gainesville Metropolitan Area - The Livable Communities Reinvestment Plan

Elements of Multimodal System



Elements of a Bicycle System

Bike Paths *- Bike out of street*

Bike Lane *- Part of Street reserved for bikes*

Bike Route *- Entire street shared with bicyclists*

Transit service

Bicycle Parking *- Public or private*

Transportation Characteristics

- Existing Corridor characteristics such as length, posted speed, number of lanes, right-of-way, functional classification;
- Traffic volumes, trip distribution, level of service, travel speeds, trip type, crash data;
- Existing roadway network;
- Transit service and facilities;
- Bicycle facilities;
- Lighting, sidewalk/ pedestrian amenities;
- Users of the Corridor;
- County Comprehensive Plan, the Livable Communities Reinvestment Plan, the FDOT five year work program, transit providers plan.

Step Three: Visioning

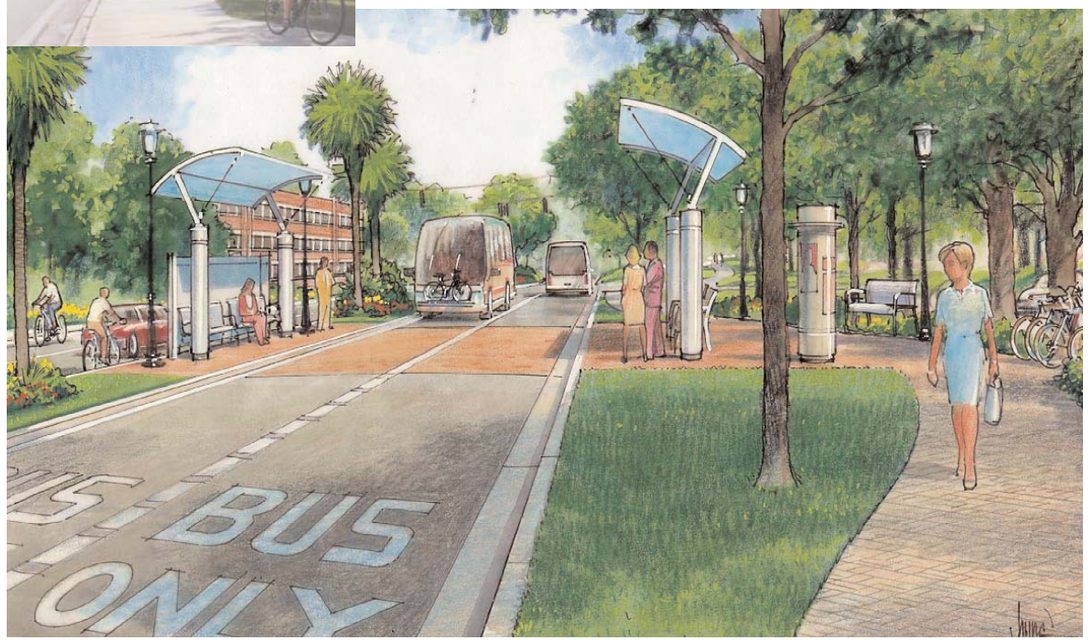
Use data collected and maps prepared through Step 2 as a foundation to engage stakeholders in an interactive design process (charrette or workshop) in which they develop a vision for the corridor and identify specific opportunities to implement the vision.

Vision: The Corridor Vision should be a concise statement that explains the broad community aspirations for the corridor. The Corridor Vision should give a perception of how the corridor looks twenty years into the future. It should not list specific improvements, or how the improvements are to be achieved, but simply present the overall character of the corridor. It should be written in the present tense.

Opportunities: Specific recommendations that pertain to redevelopment opportunities, conservation opportunities, and transportation investments should be mapped.

Urban Design Sketches: Artistic renderings of the corridor showing the relationship of public and private investments should be developed to depict the vision and opportunities as voiced by the community.

Archer Road, Gainesville



Westgate Plaza, Gainesville

STEP FOUR: DESIGN

The Corridor Design Guidelines, presented in Section 2, provide design recommendations for corridors based on land use context. The guidelines provide a foundation for corridor design, detailing the type of facilities that should be provided and the acceptable geometric design for such elements. The design guidelines must be evaluated and engineered to assure that the final corridor design supports the character and goals of the community. A licensed engineer should evaluate the design guidelines based on the vision and opportunities identified by the community.

Review Design Guidelines: To begin to develop alternatives, review the recommended corridor design guidelines shown in Section 3 of this report relevant to the land use and corridor type.

Develop Alternatives: Planners and engineers should use the input received through a charrette or workshop to develop a range of alternative corridors. Where projects are being considered to increase roadway capacity, alternatives should include a no build scenario, capacity enhancements to other corridors, investments in alternative modes, and/or corridor management. Corridor alternatives should include investments outside the ROW that enhance or protect natural, cultural and/or scenic resources.

Hold Public Meeting: Public meetings should be held to allow the community to review the proposed alternative.

Refine Alternative: The selected alternative must be further developed to detail specific geometric design, land acquisition, access, materials, construction phasing, etc.

Additional Small Group meetings and/or Public Meeting: Meetings should be held to discuss impacts to specific parcels or environmental amenities and discuss mitigation measures.

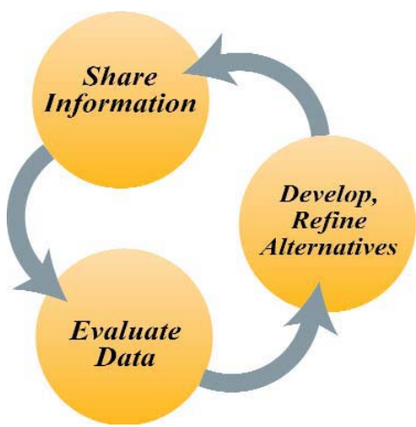
HOW TO USE THE CORRIDOR DESIGN GUIDELINES

Step 1 - Define corridor type (p. 21)

Step 2 - Define corridor context (p. 22)

Step 3 - Select alternative combination of design elements from range defined by corridor design guidelines (p. 29-45)

Step 4 - Refine design guidelines to meet site specific need, community goals, and county vision

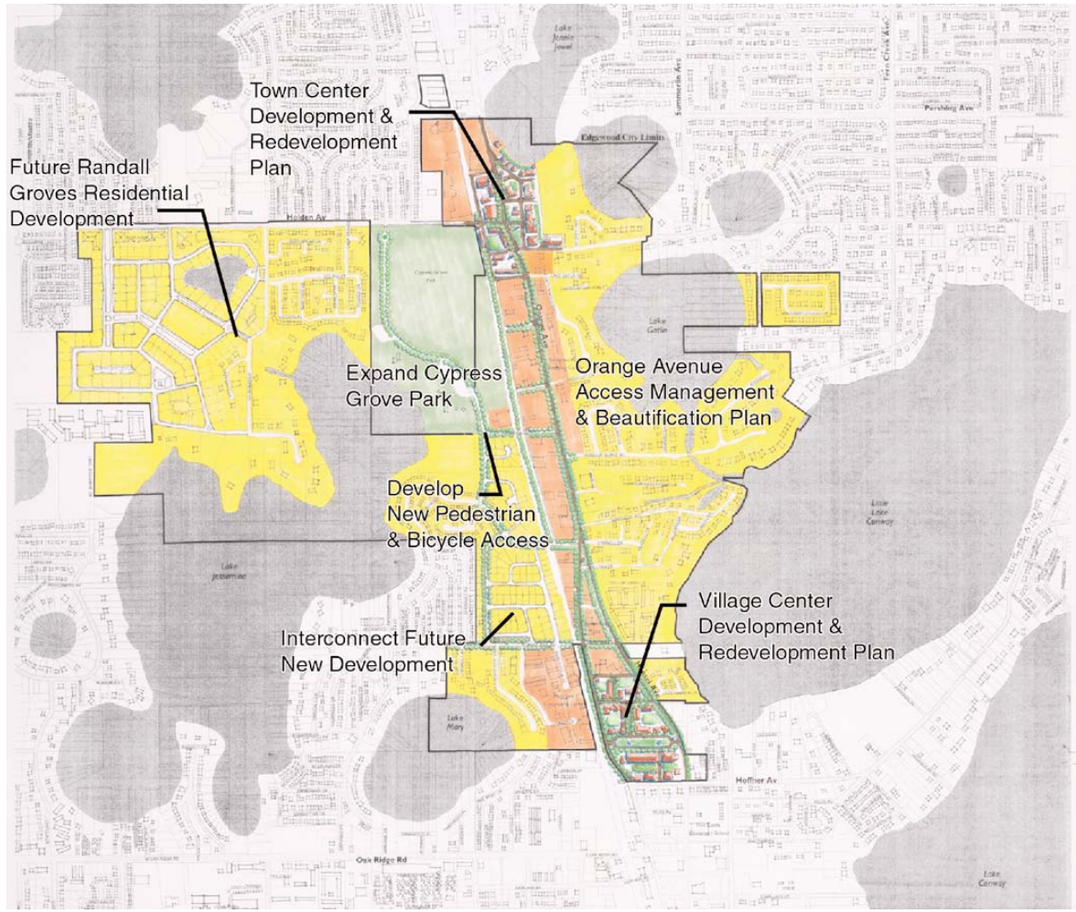


Corridor Master Planning Process

Step Five: Implementation

The recommended corridor modifications must be documented in context with other investments identified through the visioning process.

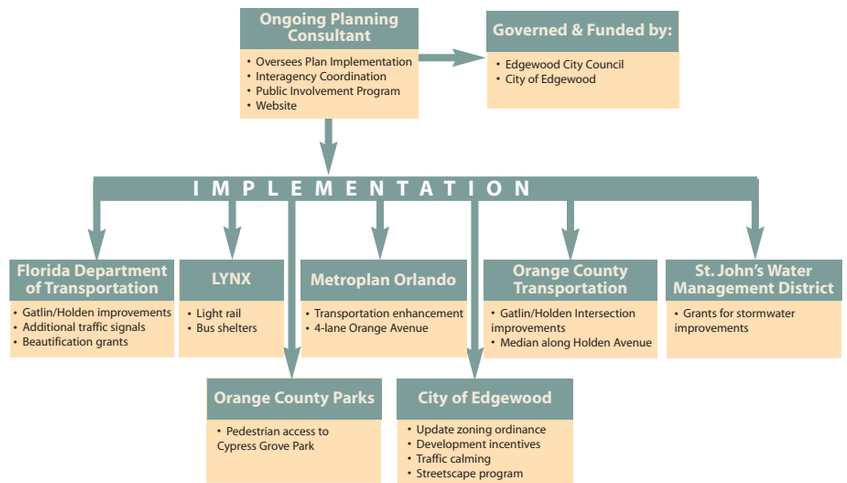
Master Plan: The Master Plan is a complete summary of the Corridor Master Plan Process, including maps, diagrams, and text detailing the corridor context, public involvement, vision and investment opportunities, urban design sketches that represent the future vision, selected corridor design, and Action Plan.



Master Plan overview map - Edgewood, Florida

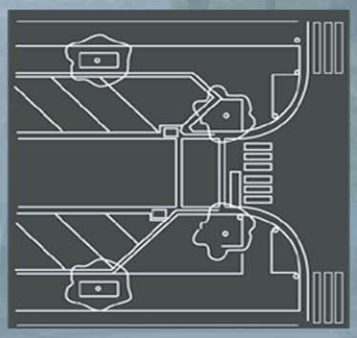
Action Plan: Action Plan contains short and long term implementation strategies such as land development regulations, guidelines and incentives for private development, access management plans, capital improvement programs, funding programs, and monitoring programs to ensure successful achievement of the plan's vision.

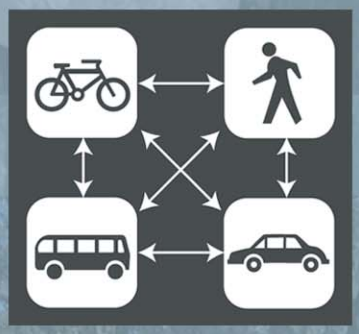
Agency/Group	Updated site/ building design standards	Mixed use development incentives	Public/private redevelopment	Airport Light Rail along Orange Avenue	Maintain Orange Avenue as a four-lane facility	Gatlin/Holden intersection improvements	Improvements to Holden Avenue	Access management along Orange Avenue	Traffic calming	Pedestrian connections to Cypress Grove Park	Orange Avenue streetscape improvements	Tree preservation	Stormwater improvements
City of Edgewood	X	X	X	X	X	X	X	X	X	X	X	X	X
Residents, Landowners, Merchants, Developers,	X	X	X	X		X		X		X	X	X	
City of Orlando				X	X								X
Orange County				X		X	X		X	X			X
Metroplan Orlando				X	X	X	X	X			X		
LYNX				X									
St. John's Water Management District													X
Florida DOT				X	X	X		X			X		X



Sample action plan - Edgewood, Florida

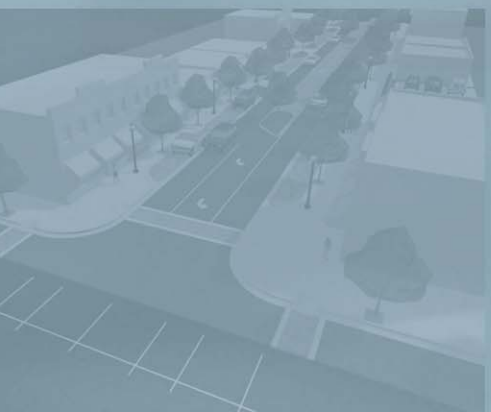
SUPPLEMENTAL APPENDIX





ALACHUA COUNTY
CORRIDOR DESIGN MANUAL

OCTOBER 2002



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Outline for Developing a Canopy Roads Program

Canopy roads both exhibit and preserve the rural character and charm found in Alachua County. The purpose of this program is to preserve the existing Canopy Roads as well as increase the number of Canopy Roads found in Alachua County.

Definition of Canopy Roads

A Canopy Road is a roadway where the limbs of trees extend over the cartway, creating a natural canopy. The trees create the effect of being in a calm, quiet outdoor room. The trees provide shade as well as visual interest for travelers, and reinforce the rural character of the surroundings.

Preserving Existing Canopy Roads

Alachua County values the beauty and character of our existing Canopy Roads. Therefore, Alachua County will take measures to preserve their integrity. The County will identify those roads that possess the unique qualities and character that define a Canopy Road, and will officially designate specific corridors as Canopy Roads - a designation that provides special care to the corridor.

Criteria For Identifying Canopy Roads

Canopy Roads may be a two-lane arterial, collector, or farm-to-market road as defined in the Alachua County Corridor Design Manual. Criteria for identifying existing Canopy Roads include the following:

a. Two-lane arterials, collectors, or farm-to-market roads;

b. The branches of trees located within or adjacent to the roadway extend over the cartway;

c. Segment of a roadway meeting criteria a. and b. above are greater than 1/2 mile in length;

d. Roadway segments with gaps in the canopy greater than 1 mile will not be considered as part of the designated Canopy Road.

Inventory Existing Roads

A visual survey will be conducted by Alachua County staff to identify roads eligible for designation as a Canopy Road based on the above criteria.

Outline for Developing a Canopy Roads Program

Designating Canopy Roads

To preserve and enhance the quality and integrity of Canopy Roads, certain restrictions will apply to both public investment and private development along roads designated as such. The designation of Canopy Roads will be determined by the following:

- Technical analysis: Assure the designation is consistent with the Comprehensive Plan, the MTPO Livable Community Reinvestment Plan, existing and future land use plans, and the County's TIP.

- Public involvement: Input from adjacent property owners, local residents, and the general public will be solicited in this process.

The Board of County Commissioners must approve the designation of any Canopy Roads.

A map of designated Canopy Roads will be maintained by Alachua County and updated as needed.

Protection Techniques

The roadway viewshed is what defines a Canopy Road and must be protected. The viewshed is defined as the area outside of the travelway and clear zone, and within 100 feet of the right-of-way of the Canopy Roadway.

- Private development standards within the viewshed:
    - All structures shall be set back a minimum of 100 feet from the right-of-way of the canopy road;
    - Any structure which exceeds 35 feet in height must be set back an additional 3 feet for every 1 foot in excess of 35 feet in height;
    - No clearing of trees with greater than a 4-inch diameter may occur 100 feet from the right-of-way of the road unless authorized for health, safety or welfare of the public;
    - A full analysis of the impacts of a development on the affected Canopy Road shall be submitted by the applicant at the time of development review. The impact on the viewshed, and potential mitigation measures, should be addressed by the applicant;
    - Joint access to Canopy Roads shall be required unless there is no other alternative;
    - If the site is accessible by roads other than the Canopy Road, it shall not have direct vehicular access to the canopy road.
- Public maintenance within the viewshed:
    - Canopy Roads are policy constrained to two lanes.
    - Dying or fallen trees will be replaced with a tree of the same type. The replacement tree must be a minimum of 2 inch diameter;
    - Trimming trees for utility maintenance will occur in a manner that preserves the visual integrity of the tree canopy. Alachua County will work with utility provides to develop tree trimming and utility location standards appropriate along Canopy Roads.

DEVELOPING NEW CANOPY ROADS

Beyond preserving the beauty of existing Canopy Roads, Alachua County would like to develop new Canopy Roads by making investments in existing and future roadway right-of-way.

A program to develop new Canopy Roads will involve the following elements:

- Select Corridors
- Select Design Year
- Develop Standard for Canopy Roads
- Develop Implementation Schedule

Select Corridors

Alachua County will identify those roadways that will be developed as new Canopy Roads based on a set of criteria and program goals. (The following are a list of potential criteria/goal, and represent only a starting point for discussion)

- Criteria:
    - Two-lane arterials, collectors, and farm-to-market roads in rural agricultural or rural cluster.
    - Consistent with the Comprehensive Plan, the Livable Community Reinvestment Plan, existing and future land use plans, and the County's TIP.
- Goal:
    - Develop system that permits residents and guests to explore Alachua County along a system of Canopy Roads.
    - Develop system that connects rural clusters and connects rural clusters to urban service area.
    - Focus on filling in 'gaps' to connect segments of existing Canopy Roads along an alignment.

Based on selected criteria/goals, Alachua County staff will develop a preliminary list of roads eligible for future Canopy Road designation. Input from adjacent property owners, local residents, and other interested groups will be obtained.

Based on selection criteria and input from the community, Alachua County staff will make a recommendation to the Board of County Commissioners.

The Board of County Commissioners must approve the designation of any roadway as a Canopy Road.

A map of designated Canopy Roads will be maintained by Alachua County and updated as needed.

Select Design Year

Great canopy trees develop over decades, not in just a few years. The design year for future canopy trees will be 20 years from the designation of the future Canopy Road. The design year will play a role in defining the type, diameter, and spacing of new trees.

Outline for Developing a Canopy Roads Program

Develop Standards for Canopy Roads

Based on the characteristics of existing Canopy Roads and engineering requirements for safe clear zones and sight distances, Alachua County will develop visual standards for future Canopy Roads. The standards will outline, at a minimum, the types of trees that may be used, the spacing requirements for healthy trees, the desired visual impact, and maintenance requirements.

Develop Implementation Schedule

- Develop cost estimates based on the selected type, diameter, and spacing of new trees.
- Develop a funding strategy/estimate the amount of funding available each year.
- Estimate the cost of maintaining exiting canopy roads per year.
- Prioritize enhancements to the future Canopy Roads designated by Alachua County.
- Develop an implementation schedule and adopt into the Capital Improvements Element.

Protection Techniques

The viewshed protection standards for new Canopy Roads are consistent with those for existing Canopy Roads.

Rural Street Lighting Guidelines

Good visibility is fundamental for roadway safety. In urban areas, where roadway lighting may be a small part of the overall lighting scheme, consistency and uniformity of lighting, achieved by applying the AASHTO street and roadway lighting warrants and guidelines provided in IESNA RP-8 (Recommended Practices for Roadway Lighting), assures safe driving conditions. With attention paid to the type of fixtures and lamps, the negative impacts of roadway lighting in urban areas can be mitigated. Conversely, rural areas are known for their calm, majestic, dark night skies. In rural agricultural areas, roadway lighting may add significantly to the overall appearance of light pollution.

This memo outlines the instances in which lighting may be required, the concerns posed by roadway lighting, and design measures by which to mitigate the negative impact of lighting in rural agricultural areas.

This memo is designed to complement the Alachua County Public Works Street Lighting Procedure.

Goal

Minimize light pollution, glare, light trespass and sky glow and conserve energy while maintaining safe nighttime travel in rural agricultural areas in Alachua County.

Definitions

Full Cutoff: A luminaire light distribution where zero candela intensity occurs at or above an angle of 90 degrees above nadir. Additionally the candela per 1000 lamp lumens does not numerically exceed 100 (10 percent) at or above a vertical angle of 80 degrees above nadir. This applies to all lateral angles around the luminaire. *From IESNA RP-8 (Recommended Practices for Roadway Lighting)*

Cutoff: A luminaire light distribution where the candela per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at or above an angle of 90 degrees above nadir. Additionally the candela per 1000 lamp lumens does not numerically exceed 100 (10 percent) at or above a vertical angle of 80 degrees above nadir. This applies to all lateral angles around the luminaire. *From IESNA RP-8 (Recommended Practices for Roadway Lighting)*

Light pollution: The upward and outward distribution of light, either directly from fixtures or from reflection off the ground or other surfaces.

Glare: Direct light shining from a fixture (luminaire) that makes it difficult to see or causes discomfort, which is especially a problem for motorists.

Light trespass: Describes the shining of light onto neighboring properties that is considered to be intrusive or objectionable.

Sky glow: The composite illumination coming from towns, cities, and other developed areas.

Rural Agricultural Area: Rural Agricultural areas include uses such as row crops, grazing land, orchards, and smaller tree farms; and associated uses such as farm equipment or supplies, local produce sales, or agricultural products distribution. These areas also include clustered residential development designed to preserve open space and ranchettes (1 unit: 5 acres residential lots)

Rural Street Lighting Guidelines

Need for Lighting in Rural Areas

The objective of providing roadway lighting is to increase safety by alerting drivers of potential hazards. While there are no stringent criteria or warrants for the lighting of new facilities, the following guidelines should be used in selecting locations where lighting is appropriate for existing facilities in rural agricultural areas (criteria based on information included in the *FDOT Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways, 2002*):

- High crash locations
- Locations were the night/day ratio of serious crashes is higher than the average for similar locations,
- Specific locations that have a significant number of night time crashes and where a large percentage of these night time crashes result in injuries or fatalities,
- Temporary lighting during police, emergency maintenance, and construction operations,
- Transit stops,
- Multi-use trail crossing, for trails used for commuting.

Guidelines for selecting the location for lighting new facilities in rural areas:

- Locations requiring a rapid sequence of decisions by the driver.
- Locations having discomforting or disabling glare.
- Locations where background lighting exists.

For locations that may require lighting, alternative safety enhancements may be provided by the geometric design of the roadway, reflectors, or special paint.

For locations where lighting is deemed necessary, the lighting system must be designed to meet the recommended lighting criteria defined in the *American National Standard Prance for Roadway Lighting* (ANSI/IESNA RP-8-00) and the guidelines established by *AASHTO – An Informational Guide for Roadway Lighting*. Design of a lighting system must be provided by a qualified engineer or lighting hardware supplier. Lighting will be installed by the appropriate utility provider in accordance with applicable agreements.

In all cases, a gradual lighting transition from dark to light to dark should be provided so that drivers may have time to adapt their vision. FDOT recommends the ratio of the average to the minimum initial illumination on the roadway be between 3:1 to 4:1 and that a maximum to minimum uniformity ratio of 10:1 not be exceeded (*FDOT Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways, 2002)*.

Mitigating Light Pollution, Light Trespass, Sky Glow

In rural areas, full cutoff fixtures shall be required for all new light fixtures. As existing fixtures are replaced, full cutoff fixtures shall be installed. The lighting fixtures shall be installed and aimed in such a way so that no light is emitted above the horizon. The use of low or high-pressure sodium or metal halide light sources is recommended. Low and high-pressure sodium lamps have a very high efficiency. High pressure sodium lamps also have good luminaire control, resulting in high luminaire effectiveness. Metal halide lamps also have high lamp efficacy and good luminaire light control. In addition, metal halide lamps have improved color which may positively influence the eye's performance for some tasks at the light levels used in roadway lighting.

In certain cases, additional shielding may be necessary to mitigate glare or light trespass onto adjacent properties.

Maximum levels of illumination shall not exceed illumination levels as recommended by the most recent edition of IESNA RP-8 (Recommended Practices for Roadway Lighting).

Outline for Developing a Traffic Calming Program for Existing Roads

Traffic calming programs are becoming commonplace as a means by which to retrofit streets in existing neighborhoods where speeding vehicles create an unsafe environment, degrading the character and livability of those neighborhoods. Traffic calming helps to alleviate the negative impacts of vehicular traffic by increasing the safety of all users of the road, and if properly designed, improving the quality of our communities by enhancing the visual appearance of the street realm.

Definition of Traffic Calming

The Institute of Transportation Engineers defines traffic calming as:

> "...the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users."

Generally, the purpose of traffic calming is to retrofit existing streets to control the speed of traffic while maintaining the mobility of the users. Traffic calming techniques are self-enforcing measures that rely on the laws of physics and human perception.

Intent of Traffic Calming Program

The intent of the traffic calming program is to improve safety for all users of a roadway by lowering the speeds of vehicular traffic, and where appropriate, by reducing the problem of cut-through traffic in neighborhoods.

Traffic Calming Measures

Traffic calming measures generally fall into three categories: narrowing the street, deflecting the vehicle path vertically, and deflecting the vehicle path horizontally. In addition to these changes to the cartway, changes to the pedestrian realm and to the visual field ('Visual Friction') may also be implemented to slow drivers. 'Visual Friction' is the perception of enclosure which influences drivers to slow down. This is accomplished by the use of design features or elements along a roadway. Visual Friction, such as the use of landscaping and the location of future buildings, may be used either in conjunction with the changes to the cartway or as independent elements to slow travel speeds.

Menu of Traffic Calming Measures

Traffic Calming Measure	Neighborhood Street	Collector Street	Main Street
Narrowing the Street			
Narrow Travel Lanes through restriping	x	x	x
Parking	x		x
Rebuild Street	x	x	x
Bulbouts	x	x	x
Vertical Deflection*			
Speed Hump	x		
Speed Table	x	x	x
Raised Pedestrian Crossing	x	x	x
Textured Crosswalk	x	x	x
Platform Intersection	x	x	x
Horizontal Deflection			
Chicane	x		
Modified Intersection	x		
Knockdown	x	x	x
Roundabout		x	x
Mini-Traffic Circle	x	x	
Visual Friction			
Street Trees	x	x	x
Entrance Feature	x	x	x
Textured Pavement	x		x

* May not be appropriate for emergency vehicle response route

PROGRAM IMPLEMENTATION

Alternative Initiation Mechanisms

a. The Alachua County Public Works Department will be the lead agency in the identification of areas which may warrant further study. The identification of these areas would be based on accident data, speed studies, and public input.

b. The request for traffic calming will be initiated by neighborhood organizations, homeowners associations or business groups with the submission of a Traffic Calming Request Form to the Public Works Department. If a homeowners association or neighborhood organization does not exist, a petition will be accepted if signed by a minimum of 10% of the property owners and/or residents of non-owner occupied property on the street, street segment, or blocks in question.

Traffic Calming Warrants

Three of the four traffic calming warrants should be met to implement traffic calming design process.

TRAFFIC CALMING WARRANTS	NEIGHBORHOOD STREET	COLLECTOR OR MAIN STREET
Minimum traffic volumes	>1,000 vpd* or 100 vph*	> 3,200 vpd or 400 vph
Percentage of cut through traffic	>25%	>40%
85th percentile speed	10 mph > speed limit	10 mph > speed limit
Accidents per year	3	6

* VPD = vehicle per day; VPH = vehicle per hour

The Public Works Department may also petition the Board of County Commissioners to allow for the implementation of a traffic calming plan to address hazardous and/or unique conditions.

Prioritization

Alachua County Public Works should develop a prioritization rating system. The prioritization rating system may include some or all of the following criteria:

- Number of accidents per year for the past 3 years
- Average daily volume
- 85th percentile speed
- Schools, parks and other institutions within ½ mile
- Pedestrian generators within 1,000 feet
- Pedestrian and bicycle traffic
- Availability of sidewalks

Outline for Developing a Traffic Calming Program for Existing Roads

Design Process

Successful traffic calming programs implement traffic calming measures as part of an overall traffic calming system for a neighborhood and rely heavily on neighborhood input.

Preliminary Public Survey

The first step in the request for traffic calming will be for the Public Works Department to conduct a mail-out survey, as outlined in procedure ETR-4 (Neighborhood Speed Control Measures – Speed Hump Requirements). An affirmative vote (greater than 50%) of the responses received is required to initiate the design process.

Steering Committee

It is usually advantageous to have three to six local residents or business representatives to serve on a steering committee. The committee will work with Alachua County Public Works to develop a draft traffic calming plan.

Draft Traffic Calming Plan

A preliminary traffic calming plan will be developed based on the initial concerns voiced by residents and technical evaluation of travel patterns and existing roadway characteristics.

Traffic calming measures should not be designed or selected as a stand-alone strategy, but must be developed and implemented as part of an overall traffic calming program. An evaluation of the neighborhood context and community concerns is required to develop a comprehensive traffic calming program.

Study Area Selection

While the problem of speeding may impact the residents of individual streets, measures implemented to slow traffic must be applied holistically at a neighborhood or district level. The implementation of traffic calming measures must be done in such a way that vehicles are not deflected onto adjacent neighborhood streets, but are accommodated along the existing roadway at appropriate operating speeds and/or are diverted onto appropriate arterial and collector streets.

Selection of Traffic Calming Measures

Traffic calming measures should be designed to both address safety concerns and to reinforce or enhance the character and design of the surrounding area. Traffic calming measures must be compatible with the scale and function of the road as well as with the land use context.

The following factors will influence the type of traffic calming measures selected as part of a neighborhood traffic calming program:

- Context
- Character of the neighborhood
- Emergency vehicle response routes
- Transit routes

The following factors will influence the type of traffic calming measures selected for specific roadways and specific locations:

- Roadway classification – neighborhood street, main street, and collector street
- Horizontal and vertical roadway alignment
- Right-of-Way constraints
- Sight distances
- Traffic volumes
- Access to adjacent properties
- Emergency vehicle response routes

- Transit routes
- Location of community amenities, such as schools, parks, community centers, and bicycle and pedestrian trails

Public Workshops

One workshop will be held to refine the preliminary traffic calming plan based on citizen input.

Develop Final Traffic Calming Plan

A final traffic calming plan will be developed based on citizen input.

Final Public Survey

Before construction of any traffic calming measures is approved, the Public Works Department will conduct a mail-out survey, as outlined in procedure ETR-4 (Neighborhood Speed Control Measures – Speed Hump Requirements). An affirmative vote of 50% of the responses received is required to initiate the construction of the traffic calming plan.

Removal of Traffic Calming Devices

In order to remove a traffic calming measure, the following criteria must be adhered to:

a. A traffic calming measure must have been in place for a minimum of two years before it can be considered for removal.
b. The removal of any one traffic control measure must be evaluated as part of a system of measures. If the removal of one measure will compromise the system, the measure should be replaced with an alternate measure or the entire system of measures should be removed.
c. A written request from a local homeowners association on their letterhead or, if a homeowners association does not exist, a petition signed by a minimum of 10% of the property owners and/or residents of non-owner occupied property on the street, street segment, or blocks in question, is required.
d. The area that initially voted on the traffic calming plan would be the area that votes on the removal of one measure, a series of measures, or the entire traffic calming plan.
e. An affirmative vote by greater than 50% of responses received is required for removal of one measure, a series of measures, or the entire traffic calming plan. A mail-out ballot, as outlined in procedure ETR-4, Neighborhood Speed Control Measures – Speed Hump Requirements, will be conducted by the Public Works Department.