Creating a Multi-Modal Region

INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA
MULTI-MODAL CORRIDOR AND PUBLIC SPACE DESIGN GUIDELINES
AUGUST 2008
These Design Guidelines establish a common family of elements to assist the Indianapolis Regional Center and Metropolitan Planning Area in becoming a regional network of diverse, walkable, bikeable, and transit-friendly communities. It is envisioned that these communities will be linked by a comprehensive multi-modal transportation system that provides access to home, work, education, commerce, and recreation.

This vision recognizes the importance of balance among all transportation modes, connects transportation and land use, and understands that economic and community development is sustained by the region’s quality of life and environmental health.
EXECUTIVE SUMMARY

A balanced transportation system and quality of life in the Indianapolis region are linked. The needs of pedestrians, bicyclists, transit users and automobile operators are valued equally. Providing transportation choice will enhance both the function and aesthetics of the region’s land uses and transportation system.

These Design Guidelines establish a common family of elements to assist the Central Indiana Region in becoming a network of diverse, walkable, bikeable, and transit-friendly communities. Establishing guidelines for a balanced transportation system promotes safety and accessibility throughout the region. Ultimately, a balanced transportation system will provide access to home, work, education, commerce, and recreation through transportation choice.

BASIC CONCEPTS OF MULTI-MODAL CORRIDORS AND DISTRICTS

The Guidelines are organized around Multi-Modal Districts and Corridors. These districts and corridor guidelines:

- Are identified based on land use character and transportation function.
- Explain connectivity requirements for a balanced transportation system.
- Leverage transportation infrastructure to concentrate land use intensity and economic development opportunities.

Districts are walkable and highly connected places. Nodes are hubs of intense activity and the most accessible place for people, goods, jobs and services. A transit hub, parking resources, and land use intensity are keys to district node success.

Corridors define the center and edges of districts. Placemaking Corridors support intense commercial and residential nodes at the center of the district with many people and modes converging on traffic-calmed streets. Thru Corridors form district edges and connect districts. Connector Corridors convey travelers from district edge to district center. Local corridors provide connectivity within the district.

These guidelines aspire to make the Central Indiana Region a series of connected roads and a mosaic of connected places where people want to live, work, learn, play, and invest.
MULTI-MODAL CORRIDORS AND PUBLIC SPACE GUIDELINES - OVERVIEW OF DOCUMENT

As a companion document to the Multi-Modal System Plan, the design guidelines describe the relationship between corridors and districts and what elements make up each. Examples of many recommended multi-modal districts and corridors and their component elements are provided along with performance indicators. An overview of the methodology for how to apply the guidelines is shown on the following pages.

INTRODUCTION (SECTION I)

This section provides the background of the process and context for the multi-modal guidelines, organization and principles. A glossary of terms is also provided. For those unfamiliar with related planning efforts conducted by the MPO, this section will be a useful introduction to multi-modal transportation planning and what Indianapolis hopes to gain from implementing the guidelines.

PLANNING GUIDELINES (SECTION II)

This section describes the planning concepts behind the development of the guidelines. The guidelines describe multi-modal district types and their proposed locations in the Metropolitan Planning Area. Then, a number of corridor typologies that serve the needs of the districts are described, corridor overlays (or special characteristics pertaining to certain districts or corridors) and some recommended transitions between multi-modal corridors. Summary tables are found on foldout pages 63,64. This section will be useful to those interested in transportation planning and engineering, as well as those interested in particular applications in their region, area or neighborhood.

DESIGNING GUIDELINES (SECTION III)

This section describes the concepts behind public, quasi-public and private spaces and the elements of the streetscape (called component zones) that constitute the public and quasi-public space and streetscape. Summary tables are found on foldout pages 227,228. This section should be especially useful for those who must implement guidelines, including those in transportation management, design, engineering, and construction, as well as those who are facility

FOLDOUT SUMMARIES

These provide quick summaries of the key features in the design guidelines (as shown below) and they also can provide schematic descriptions of key concepts. Each summary has a description on the far right of the front foldout page.

QUICK LINKS:

Planning Guidelines Summary  Pages 63,64

Designing Guidelines Summary  Pages 227,228

Component Zone Introduction  Pages 137-138
Regions can be composed of walkable districts around a central node of highest activity or intensity, not-so-coincidentally corresponding to the highest buildings of the area. These districts are framed and connected by a network of multi-modal corridors.

Walking forms the basis of our places and transportation - all trips begin and end on foot. Walking determines the scale on which we live. Our perception of a neighborhood is predicated on what we can walk to. Thus arranging our networks to serve our walkable places caters not only to making places accessible to all ages in all ways, it enhances our quality of life.

The network is defined for the Indianapolis Metropolitan Planning Area in a separate but related document, the Multi-Modal System Plan. Using the Multi-Modal System Plan, corridors and districts are identified, along with their context in the region.
 Once the corridor and district have been determined, the next step enables the user to understand their function, performance, typology (characteristics and layout) and how they relate to each other and to their modal networks.

The basic corridor framework of the district is composed of placemaking corridors at the center containing the district node, thru corridors at the district edge and connector corridors connecting the two. Local corridors access the balance of the district.

Figure ES.6 Schematic of the relationship between corridors and districts.

Figure ES.4 Corridor Functions and Typologies - corridor concepts.

Figure ES.5 District Typologies - shown in both planning diagrams and images. Shown here is an image representing the Multi-Modal Campus District.

Figure ES.6 Schematic of the relationship between corridors and districts.
STEP 3. IMPLEMENT DESIGNING GUIDELINES

Once the user has an understanding of the districts and corridors, the corridor can be broken down into component elements of the streetscape from the Designing Guidelines section. Each component is either classified as a “way”, i.e. that continues beyond the area without interruption, or a “zone” which is an element that may be discontinuous. Each zone and way has a full description that enables the user to understand and design a functional and safe component of the corridor as a place for people in whatever mode they choose.
For more information and to download a copy of the full document go to:
http://www.indympo.org/Plans/multi-modal.htm
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I. INTRODUCTION

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INTRODUCTION

A balanced transportation system and quality of life in the Indianapolis region are linked. A balanced transportation system values the needs of pedestrians, bicyclists, transit users and automobile operators equally. Providing transportation choice will enhance both the function and aesthetics of the region’s transportation system.

Benefits of alternative transportation systems are abundant and have been documented in numerous studies. The Indianapolis Metropolitan Planning Organization’s (MPO) Regional Pedestrian Plan outlines several benefits including: improved mobility, reduced congestion, economic development, smart growth, increased property values, and healthy lifestyles through walkability between schools, parks, and other public facilities. These benefits add up to an enhanced quality of life.

A multi-modal transportation system is defined as a network of facilities designed for joint use with connections between two or more modes of transportation. This manual proposes recommendations for development of multi-modal facilities in order to realize the vision of a balanced transportation system. This study's recommendations are developed with the intent of implementation over time, as new streets are constructed, as existing streets are reconstructed, and as land is developed or redeveloped.

Both the public and private sectors should use this manual. The development of an efficient, functional multi-modal transportation system is dependent upon the integration of facilities designed within their environmental context and corridor character. The context and character are defined by adjacent land uses. Where possible, it is preferred that multi-modal facilities be installed by developers as part of the overall development site plan. This not only integrates the transportation system with adjacent land uses, it also shifts some of the financial responsibility for infrastructure away from the local government.

The design guidelines outlined in this manual may be applied when engaging in new development and redevelopment activities. This manual is a tool for the region’s jurisdictions to guide implementation of public improvements within the right-of-way, where balanced transportation and thoroughfare character are the dominant considerations.

These design guidelines are intended to provide a community standard for balanced transportation design throughout the Indianapolis Metropolitan Planning Organization’s (MPO) Metropolitan Planning Area (MPA). They have been developed to encourage the implementation of a comprehensive and effective multi-modal transportation network that builds upon local heritage and character. These guidelines will develop and maintain places as efficient, sustainable, and
vital communities in which to live, work, learn, and spend leisure time.

The guiding document for these MPA design guidelines is the MPO’s Indianapolis Regional Pedestrian Plan. Its vision statement provides the basis for these Multi-modal Corridor and Public Space Design Guidelines.

The design guidelines have been developed through two collaborative processes. Originally, the design guideline development initiative was a product of a partnership among the City of Indianapolis, Historic Landmarks Foundation of Indiana (HLFI), Urban Design Oversight Committee (UDOC), and Ball State University’s College of Architecture & Planning Indianapolis Center (CAP:IC). Funding for the initiative has come from both public and private sources, with substantial in-kind support from all primary partners. This original initiative focused on design guidelines for the Indianapolis Regional Center as follow-up to the Indianapolis Regional Center Plan 2020. The effort was expanded by the Indianapolis MPO, which provided funds for the development of design guidelines for public rights-of-way for its entire MPA. The development of the public right-of-way design guidelines is follow-up to, and a section of, the MPO’s Indianapolis Regional Pedestrian Plan.

Each of these two parallel initiatives has its respective district development process with an advisory and working sub-committee structure. However, the creation of the overall complementary design guidelines has been a continuous collaborative endeavor among all participants.

This plan has separate vision statements, but the design guidelines share a common purpose statement, set of five design principles, and terminology. The development of this common purpose statement, design principles, and terminology was completed through both processes’ respective advisory and working committees.

**PROCESS**

The MPO’s design guideline development effort included the involvement of an Agency Steering Committee comprised of City of Indianapolis staff representing the Metropolitan Planning Organization (MPO), and the Departments of Metropolitan Development (DMD), Public Works (DPW), Parks and Recreation (Parks), as well as representatives from IndyGo, Indiana Department of Transportation (INDOT), and the Federal Highway Administration (FHWA).

Additional working committees included:

- Critical Connectors Sub-Committee, a sub-committee of the UDOC, comprised of representatives from City of Indianapolis staff representing MPO, DMD, and DPW as well as representatives from CAP:IC and the private sector.
INTRODUCTION

SECTION I.

Indianapolis Regional Pedestrian Plan Steering Committee comprised of representatives from Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, and Shelby counties, as well as representatives from Indianapolis Metropolitan Planning Organization, Indiana Department of Environmental Management (IDEM), Indiana Department of Natural Resources (IDNR), Indiana Department of Transportation (INDOT), and the Federal Highway Administration (FHWA).

Multi-Modal Task Force comprised of representatives from City of Indianapolis, Marion County Health Department, Indiana Department of Environmental Management (IDEM), Indiana Department of Natural Resources (IDNR), Indiana Department of Transportation (INDOT), and several citizens’ group and not-for-profit organizations.

And, via regular update presentations, the MPO’s Indianapolis Regional Transportation Council and its sub-committees.

PURPOSE AND CONTEXT

GUIDING VISION STATEMENT

The Indianapolis Metropolitan Planning Area will be a regional network of diverse, walkable, bikeable, and transit-friendly communities linked by a comprehensive multi-modal system that provides access to home, work, education, commerce, and recreation.

This vision recognizes the importance of balance among all transportation modes, connects transportation and land use, and understands that economic and community development is sustained by the region’s quality of life and environmental health. This vision statement is the basis of these design guidelines.

NATIONAL TRENDS IN MULTI-MODAL PLANNING

The Multi-modal & Public Space Design Guidelines for the Indianapolis Metropolitan Planning Area (MPA) are guided by national transportation goals, standards and policies, and the positive experience of leading American cities.

General planning and design standards for transportation are established at a national level for development and maintenance of a safe and efficient transportation system that is consistent and uniform across an interconnected and interdependent web of states, regions, and communities. These standards are based on “best practices” that evolve from theoretical and empirical research. Federal transportation policy for the development and application of design standards is derived from a cumulative expression of need from a host of governmental units, advisory groups,
and constituencies through a federal legislative process.

Planning and design guidance is derived from a complex array of issues and considerations related to commerce, safety, environment, health, community development, social justice, universal accessibility, and quality of life, as well as national defense and security (the Interstate system was based on a national defense premise).

Planning and design standards evolve from theories of economics, demographics, community development, and engineering theory and application. More recent initiatives (which have actually developed over the decades since publication of Jane Jacobs’ transformative *Death and Life of Great American Cities* in 1961 [112]) seek to redress the real and perceived impacts of traffic management-based transportation planning and design, i.e., urban sprawl, dysfunctional disconnected communities, air quality and their relationship to runaway energy consumption.

These quality of life-based initiatives have formed a powerful block of public interest. Complete Streets, Transit-Oriented Development (TOD), New Urbanism, Walkable Communities, Safe Routes to School, and Context Sensitive Design are interrelated concepts. They have influenced the form, policy, and expenditures of the last several Federal Transportation Acts and the related missions of both the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). The American Association of State Transportation Officials (AASHTO) has just released guidance to context sensitive design as a set of alternative design standards. The current governing AASHTO standards, often cited as limiting creative community-based transportation system development, are now being supplemented by a draft Proposed Recommended Practice for Context Sensitive Thoroughfares, prepared by the Institute of Transportation Engineers (ITE) under the sponsorship of FHWA and EPA.

The theories and best practices that are the basis for this important publication are also the ones that have informed the Indianapolis MPA Multi-modal & Public Space Design Guidelines.

The landmark ITE publication’s recommendations have been guided by a growing body of research and by observation of European experience in places such as the Netherlands, Great Britain, and Denmark. Additionally, it has been informed by observation of pioneering work by several American cities, including San Francisco, Seattle, Portland, and Boulder, and even Chicago and New York City, places associated with congestion but also with urban vitality. These cities demonstrate that concepts such as traffic calming, shared and/or living streets, and pedestrian/bicycle networks integrated with modern transit systems have proven to be...
extremely effective for safety, quality of life, and economic development “smart growth”.

NEED FOR IMPROVEMENT

Although transportation congestion is still moderate in the Indianapolis region compared to other metropolitan areas, continuing suburbanization of undeveloped areas as well as traffic projections suggest that without comprehensive development of balanced transportation and a related smart growth land use approach, the cycle of highway capacity expansion fostering increased demand will accelerate, as will sprawl, congestion, and air quality issues. While the Regional Center’s urban core is compact and still quite walkable, its commuter route congestion is beginning to impact walkability and limit choices for reallocation of limited right-of-way resources for alternative transportation.

While the region is developing a notable greenway system, and is making progress on threading greenways into the urban core, the overall transportation system is still not considered “bicycle friendly”. Bicycle connectivity necessary to achieve well-distributed bicycle lanes is constrained by peak hour traffic levels that burden available right-of-way. Furthermore, public transit has not been able to achieve funding levels sufficient to develop as a true alternative to the automobile.

There is growing belief that the region must develop a community-integrated, balanced, and accessible multi-modal transportation system to sustain its competitive stance and to enhance its quality of life standard. There is growing recognition that adding highway capacity for conventional transportation is a short-term remedy that leads to long term congestion and sprawl impacts. Just as there are models of successful systems contributing to vibrant cities, there are equally persuasive models of out-of-control growth and congestion related to unbalanced and incomplete transportation systems.

BENEFITS OF A MULTI-MODAL SYSTEM

- **Healthy Lifestyles** - The Center for Disease Control has determined that automobile-reliant communities have led to epidemic levels of obesity and diabetes. Walkable and bikeable communities reverse that trend.

- **Increased Property Values** - A multi-modal transportation system increases property value. For instance, homes within a half-mile of the Monon Trail in Indianapolis command a sales premium of $13,059 [110]. Street trees and multi-modal connections to parks similarly increase property values[98].

- **Smart Growth** - Inclusive transportation systems encourage less dependence on the personal automobile and allow a community to grow in an economically,
environmentally, and socially responsible way.

- **Reduced Congestion** - Progressive communities are realizing that the way to alleviate congestion and gridlock is not to build more roads, but to reduce the number of vehicles on the street, by promoting multi-modal forms of transportation.

- **Quality of Life** - Multi-modal transportation systems contribute to a community's amenities and assets, which are used to determine its desirability. Improving a community's quality of life increases the ability to retain and attract residents and commerce.

- **Economic Development** - Multi-modal transportation systems spur economic development in response to user demographics. Six Indiana communities were studied to determine that, on average, 47 percent of trail users earn $40,000 to $80,000 per year and 20 percent earn more than $80,000 per year [111].

- **Links to Public Gathering Places** - Multi-modal transportation systems connect districts (or concentrated land uses), provide a stage for public activities, and create community.

- **Improved Mobility** - Multi-modal transportation systems create independence and transportation options for those who do not drive.

- **Safe Routes to School (SR2S)** - If children walk to school, they become familiar with their neighborhoods and a healthy lifestyle is instilled as a way-of-life. Newly passed federal legislation creates a funding source for SR2S efforts.

- **Neighborhood Organizing Element** - A pedestrian system provides a physical infrastructure that encourages social interaction.

**GRADUAL VERSUS RAPID IMPLEMENTATION**

While effective alternative transportation systems are complex networks that work best as continuous complete systems, the reality of regional infrastructure change is that development of such a system will occur incrementally over a range of time spans, from a current five year capital improvement plan, to a 20-year transportation plan period.

Copenhagen, considered a model for pedestrian-friendly streets, developed its plan over a 30-year period. It built consensus for significant change in its urban form and its citizens' lifestyles by demonstrating the benefits of that change over time.

Chicago, on the other hand, has initiated a bike lane policy intended to achieve system-wide continuity and visibility in a
little more than five years.

Case Study: The Copenhagen Experience
Gradual change made the process politically feasible and gave people the opportunity to incrementally adjust their behavior. Lanes of car traffic and parking spaces in the city center were eliminated slowly, at two to three percent per year. The freed up space was put to new uses, including bicycle and bus lanes. One third of Copenhagen commuters now travel by bicycle, with 60 to 70 percent of cyclists choosing to pedal even through rain and winter cold. Four times as many people come to the city center now than 30 years ago. Traffic jams are a thing of the past. Throughout Copenhagen, parking lots were converted from places to store cars into places to enjoy life – places with public squares and markets. Although the Danish had little tradition of using outdoor public spaces, pedestrian-friendly changes proved to be very popular [113].

Case Study: The Chicago Experience
Chicago initiated a bike lane program in 2000 that has resulted in 100 miles of on-street bike lanes to date. The program’s aggressive schedule was established with the belief that to function as a system that generates wide usage and modifies motorist awareness and behavior, it needs to be a pervasive, visible part of a comprehensive network that provides bicycle access to all land uses [16].

INTERSTATE IMPACT
The interstate system introduced a new element in the 1960s and 1970s that encouraged, by default, large-scale, unplanned commercial development at its exits and parallel, massive residential exodus that caused disinvestment and abandonment of traditional neighborhoods. The interstate diminished the viability of earlier strip and node development, and encouraged rapid outer ring residential development. It also greatly diminished the viability of public transit which lost its urban ridership, while unable to economically serve the dispersed suburban population. The interstate corridors became a new geographical constraint against closely spaced thoroughfare grid continuity and connectivity even as they fueled rapid suburbanization. The system’s development was largely done without parallel urban planning which spawned backlash regarding its community development and environmental impacts. Current federal programs mandate context sensitive approach to expansion or reconstruction of the system in response to that backlash resulting in new opportunities for multi-modal transportation.

APPLICABILITY
These guidelines are created for the Indianapolis Metropolitan Planning Area.

A system for design guideline adoption will be created through a separate process. Adoption of design guidelines will be at the discretion of the jurisdictions in the Indianapolis Metropolitan Planning Area.

Currently, the City of Indianapolis has the ability to approve and enforce the design guidelines within the Regional Center. High impact projects that trigger the guidelines will be defined by the Regional Center review process.

A Multi-Modal System Plan for the Regional Center is currently in the planning and public participation process. The plan is based on previous recommendations from multi-modal transportation studies such as the Rapid Transit Study DiRecTionS; the Regional Bicycle Plan, the IndyGo Comprehensive Operational Analysis, and the Regional Pedestrian Plan. Plan development will occur concurrent with an update to the Long Range Transportation Plan and the Marion County Thoroughfare Plan. Extensions of the System Plan to the areas surrounding the Regional Center will commence in 2008.

Given the context and need, this Multi-Modal & Public Space Design Guidelines document is intended to assist planners and implementers in adapting the existing transportation network, over time, to multi-modal integration, and in leveraging expansion of the system to incorporate multi-modal transportation principles. The Guidelines are an additional tool and are not intended to limit the creativity of the design professional or the identity of each community within the MPA. These guidelines are a reference with the fundamental purpose of ensuring a balanced transportation system, facility continuity, and linking transportation and land use to encourage economic development.

It is not intended that all corridors or places within the Indianapolis region be initially multi-modal, but it is anticipated that, over time, and as the region’s transportation network develops, all corridors and places will evolve and become multi-modal friendly.

THE INDIANAPOLIS REGION - STREET NETWORK PATTERNS
Development of multi-modal transportation must be based on an understanding of the network dynamics of the Indianapolis region’s existing thoroughfare system within which it is to be integrated. It is not a neat, orderly system with a concise set of conditions to which guidelines can be easily applied.

This region exhibits the variety of street network patterns that reflects concentric expansion over its history of changing demographics and transportation technology. The center of the system is the historic “Mile Square” core of the Regional Center. It is a rectilinear grid pattern of streets arranged in short blocks with alleys and intersected with diagonal avenues. Monument Circle is the center of the system and of Marion County. This core is inherently walkable and transit
accessible because of its compactness and density of uses. The patterns beyond this core exhibit the planning theories and plating conventions of each subsequent development era, with density decreasing with distance from the historic center. Plat blocks range from “traditional neighborhood” street and alley patterns aligned with a regional thoroughfare grid, to unplanned small subdivision plats that are “off the grid” and often constrained by rail or stream corridors. Outer rings reflect later recent subdivision practice of large blocks of discontinuous curvilinear streets, but still bounded by the larger arterial grid or other corridor or geographical constraints.

The arterial grid has been sustained north into Hamilton County, but is more fragmented in the other directions, other than the principal axes of Meridian and Washington streets, because of rail and stream corridor constraints. The northward grid and axes have formed the principal pre-Interstate commuter corridors.

The arterial grid has historically supported four distinct eras of land use practice, with the result that multi-modal system development must address a variety of street corridor conditions:

1. Nodes of convenience retail and commercial services activity at former streetcar-stop spacing (~1/2 mi) within relatively dense interconnected residential districts (a walkable scale, while capable of accommodating bicycles and transit).

2. Superimposition of a park and boulevard system that threaded along principal stream corridors and later became the basis for the Indianapolis greenway system (providing walkability across multiple districts, while accommodating automobiles in a parkway setting and potentially serving as a transit arterial).

3. Continuous strip retail development reflecting automobile access along commuter routes (automobile dependent, not currently but capable of accommodating walking, biking and transit).

4. Large tracts of low density suburban residential development that have merged without connecting. Intermittent industrial or office park tracts, with concentrations of commercial activity at roughly mile intervals on arterial intersections, that often merge with aging and under-utilized strip commercial development (highly automobile dependent, and consequently walking, biking and transit are a challenge to accommodate because of low density and cross commuter patterns).

### Interstate Corridor Opportunity

While the interstate fragmented the fine-grain collector continuity, encouraged suburbanization, and supplanted viable mass transit, it also created patterns that are now being recognized as opportunities.

1. The interstate spawned and continues to foster edge-city development as a market-driven push to capture the outer ring population. Current planning theory now recognizes this as a potential component for transit oriented development of higher density sufficient to create rapid transit nodes around mixed-use concentrations.

2. The interstate corridor provides an opportunity for sharing its relatively uninterrupted right-of-way with off-road bikeways, as well as with rapid transit modes including bus/high occupancy vehicle (HOV) lanes.

3. As the interstate undergoes inevitable life-cycle renewal and upgrading, opportunities will occur to adapt under and overpasses to accommodate bike and pedestrian passage across the corridor and connect to similar facilities along the corridor. This redresses the original grid and neighborhood disruptions it had created and has happened in several recent corridor reconstruction projects.

### Current Land Use Trends as Indicators

The current draft comprehensive plan for Marion County, and planning in perimeter communities within the region, encourages land use patterns supportive of walkability and public transit. “Village Mixed-Use” is a proposed zoning designation that has current examples and is being embraced by planners and some developers in new developments. The supplanting of early generation malls and even of later big box retail by lifestyle centers points to the market readiness for compact, mixed-use districts that also support alternative transportation, and that make rapid transit viable. Greenways have proven to be attractive amenities, adding market value in residential development, concurrent with core city and regional “village” pocket reinvestment and repopulating. These trends are evidence that adaptation of the thoroughfare system to accommodate multi-modal transportation is supportable and arguably imperative.

### How the Guidelines Are Organized

#### 1 - Introduction

This section introduces the purpose, context and need for multi-modal corridor and public space design guidelines. It also establishes the principles on which the guidelines are based and their applicability. (See Executive Summary and the design principles on the following pages).
2- PLANNING GUIDELINES
The “Guidelines for Planners” are intended to guide agencies and developers in planning new construction, redevelopment, and maintenance projects. This section establishes the methodology for applying district and corridor typologies and their criteria.

Multi-modal Pedestrian District Typologies
The Regional Pedestrian Plan identified six types of pedestrian districts that represent areas characterized by a density of mixed uses and clustered pedestrian destinations within a 5-minute walk (1/4 mile) supporting central or multiple transit nodes. These pedestrian districts were mapped in the Regional Pedestrian Plan.

Multi-modal Corridor Typologies
Multi-modal Corridors are public rights-of-way or thoroughfares that accommodate two or more alternative transportation modes, defined as pedestrians, bicycles, or transit. These corridors are located based on similarities in current or intended land use character and transportation function.

The multi-modal corridors prioritize transportation use or activity within the corridor, and recommend how current or future right-of-way space should be organized or reorganized to become multi-modal.

3 - DESIGNING GUIDELINES
The “Guidelines for Designers” are intended to guide agencies and developers in designing new construction, redevelopment, and reconstruction projects. This section provides guidelines for the components that make up multi-modal corridors and public spaces.

Component zones refer to pieces, or components of the right-of-way or public environment, such as the bicycle way or pedestrian activity zone.

Component zones determine the appearance, operation, and character for the proposed project based on the district and corridor in which it is located.

The precise location and delineation of the component zones will vary for each project based on which district and corridor in which it is located.

BIBLIOGRAPHY
The bibliography is organized by subject matter and, for key references, a brief description of how its information was used in the guidelines is also included.
DESIGN PRINCIPLES

Listed below are the five principles of the design guidelines. These principles are the result of several months of research, coordination, presentations and meetings, revisions, consensus building, and, overall, acceptance and approval. These principles support the design guidelines document purpose.

1. MOBILITY

Places promote and facilitate a variety of mobility options. Emphasis is placed on the coordination among these options to form connected, functional, efficient, and integrated mobility options.

2. HEALTH, SAFETY & OPPORTUNITY

Safe and accessible places allow all individuals to participate regardless of social or economic resources, or physical or mental ability. They promote health and well-being and create opportunities for people to thrive.

3. ADAPTABILITY & SUSTAINABILITY

Physical design anticipates and provides flexibility for the inevitable change that places undergo. Places are sustainable economically, socially, physically, and ecologically.
4. PUBLIC REALM

A community’s shared spaces, whether publicly or privately owned, provide the setting for everyday life as well as more formal civic occasions. These social gathering places include a community’s natural features, parks and recreational facilities, and streetscapes as well as everyday shopping, dining, and entertainment opportunities. These areas, whether bustling with activity or providing quiet repose, promote a dynamic social and civic experience, enhance the livability of a place, and provide diverse settings for community interaction.

5. CHARACTER & VITALITY

Places have a story, which is manifested through their physical design. Elements are authentic, rich in detail and diversity, and express their unique personality. They form a hub of activity in which economic, social, cultural and functional elements come together.
INTRODUCTION

MULTI-MODAL GLOSSARY OF TERMS

Accessibility: 1) physical access to goods, services and destinations. 2) accommodation of people with disabilities and other special needs.

Alignment: An overarching route or swath of corridors that generally follow a path between destinations without determining which particular corridor or series of corridors constitute the best path to get between the destinations.

Alternative Transportation: Types of travel other than private automobile, such as walking, biking, or public transit. Also see Sustainable transportation.

Americans with Disabilities Act (ADA): Federal civil rights law, enacted in 1990, mandating the provision of access to public facilities and within public right of way for persons with disabilities. Title 2 of the law applies to transportation facilities and transit vehicles.

BikePort: BikePort is a public-private partnership unique to Indiana that creates bicycle facility solutions to encourage bicycling and is part of a state-wide initiative to support and create bicycle friendly communities. www.inbikeport.org

Bio-Retention Area: Alternative stormwater treatment techniques, including rain gardens.

Bus Bay: A specially designed or designated location at a transit stop, station, terminal, or transit center at which a bus stops to allow passengers to board and deboard.

Bus Transit: Public transit using buses usually as a part of a larger transit system for areas with larger populations.

- Circulator: one or two cabin bus that runs a regular route within the normal vehicle travel way.

- Shuttle: smaller capacity bus or van that may run special routes (e.g. to airport, senior day trips) and/or at irregular schedules within the normal travel way.

- Rapid Transit (BRT): potentially multi-cabin bus that acts like a light rail or subway with an exclusive lane out of normal traffic and with at grade boarding and deboarding stops.

Component Zones: The categorization of public and semi-public spaces within a multi-modal corridor.

- Bicycle Way (BW): area where bicycles travel.

- Bus Transit Way (BTW): area where bus transit vehicles travel or stop to load and unload.

- Crossing Zone (CZ): area where pedestrians or other non-motorized modes interface with and traverse through motorized transportation zones.

Clear Height Zone (CHZ): vertical distance between a transportation facility surface and the lowest overhead obstruction.

Frontage Zone (FZ): area of interaction between the pedestrian way and grade-level uses.

Multi-Use Way (MUW): area for shared use between multiple alternative transportation users, usually pedestrians and bicyclists.

Pedestrian Activity Zone (PAZ): area for public gathering in both the public and private spheres.

Pedestrian Way (PW): area where pedestrians travel.

Rapid Transit Way (RTW): area where rapid transit vehicles travel or stop to load and unload.

Street Parking Zone (SPZ): area within the roadway where vehicles are permitted to stop, stand, or park, with various levels of permission and/or restriction.

Separation Zone (SZ): area of protection between the roadway and the pedestrian way that contains various utilities, signs, and streetscaping elements.

Vehicle Travel Way (VTW): area where motorized vehicles (automobiles, trucks, buses) travel.

Comprehensive Plan: A city, county, or region’s plan for the integration of all issues affecting its physical development including land use, housing, transportation, public facilities, and open space. It establishes the basis for policy decisions thus requiring periodic updates.

Connectivity: The amount of possible connections or choice of connections to get to a destination or the density of connections in path or road networks.

Convergence: The nature of ways, modes or routes coming together or closing in on a particular place. Triple Convergence is the convergence of pedestrian, bicycle and transit modes on a given corridor or alignment.

Corridor: A way that leads to or through a destination.

Curb Extensions: A concrete barrier between the sidewalk and the roadway that protrudes into the roadway at intersections to reduce the crossing distance for pedestrians.
and force drivers to make turns more slowly and carefully.

**Density:** The number of dwelling units or population within a unit of land area, expressed as residential units or households per acre, or population per square mile.

**Destinations:** Places people want to go. In these guidelines they have been equated to the pedestrian districts defined in the Regional Pedestrian Plan.

**Directness:** A measure of the shortest route between two destinations.

**FAR:** Floor-to-area ratio or the square footage of floorspace on a given lot divided by the lot area - often a measure of building height or intensity.

**Fixed-Route Service:** Bus service over a set route on a regular schedule.

**Functional Classification (see Thoroughfare Classification):** Classes of corridors by functional types or the functions they serve in the street hierarchy.

- **Placemaking:** corridors that generally have the highest number of destinations in a given district, usually located at the center of a district.
- **Thru:** higher speed corridors that usually run along the edge of a district that conduct travelers between districts.
- **Connector:** corridors that bring travelers from the edge of the district to the center.
- **Locals:** corridors that serve quarters of districts or subdistricts.
- **Off Street:** ways that do not allow automobiles.
- **Service:** corridors that serve other corridors.

**Generator:** See Trip Generation.

**Intensity:** The amount of space dedicated to commercial, retail and residential land uses in a given area, usually measured by floor-to-area ratio or building height.

**Intermodal Transfer:** The ability to move from one type of transportation to another during travel (e.g. from car to transit).

**Intramodal Transfer:** The ability to move within a given mode of transportation (e.g. changing transit lines).

**Land Use:** Buildings or activities that occupy a given piece of land, typically residential, commercial, industrial, public, agricultural, or open space.

**Level of Service (LOS):** LOS is a qualitative term based on quantitative analysis of vehicular facilities, describing the density of traffic, and relating travel speeds, delays, and other measures to performance or congestion.

**Looping:** See Connectivity.

**Mass/Rapid Transit:** Bus, rail, or other types of transportation service moving large numbers of passengers.

**Master Plan:** A comprehensive long-range plan intended to guide the growth and development of a community and its infrastructure. Sometimes synonymous with Comprehensive Plan, more often an illustrative, form-based document that communicates the community’s desires.

**Mixed Use or Mixed Land Use:** Multiple compatible land uses arranged vertically within a single structure or in close walkable proximity, such as residences and/or offices above shops, and services.

**Mode:** A type of transportation such as rail, bus, vanpool, automobile, bicycle, pedestrian. Most transportation modes have additional subsets such as Single or High Occupancy Vehicle, Bus or Bus Rapid Transit, etc.

**Modal Hierarchy:** Certain transportation modes are given priority over other modes based on the function of the corridor. Automobiles are not specifically shown in the graphic below, but are assumed in all corridors except Off Street. In instances where accommodation of all modes is not possible, a mode hierarchy is identified to guide the user in giving priority to certain modes over others to develop a multi-modal corridor within the existing right-of-way framework.

**Multi-Modal:** Transportation facilities designed for joint use by different modes, with interconnectivity to achieve flexibility in scale and travel distance.

**Multi-Modal Corridor:** A public right-of-way or thoroughfare that accommodates two or more alternative transportation modes.

**Multi-Modal District:** An area that provides a population with needed amenities within walking distance, also known as a pedestrian district or a neighborhood.

**Node:** The center of a district or area within walking distance of a district that has the highest intensity and is
usually the best choice for a transit stop or hub.

**Peak Periods:** The hours when traffic is greatest. Generally, during the work week, there is a morning peak from 6:30am to 9:00am and an afternoon peak from 3:30pm to 6:30pm. Facility capacity is often defined by performance during peak periods.

**Pedestrian District:** Areas characterized by a density of mixed uses and clustered pedestrian destination within a five-minute walk, supporting central or multiple transit noted. These areas are intended to have high pedestrian activity and priority is given to make walking the transportation mode of choice within the area.

**Pedestrian Friendly:** Designed to accommodate pedestrians. Priorities are safety, minimized walking distance, comfort, and pedestrian-oriented destinations.

**Pedestrian Scaled:** Land uses characterized by narrow streets, small blocks, and an absence of large parking lots, and arranged so that walking distances are short.

**Public Transportation:** A general system of passenger transportation services of various modes.

**Rapid Transit:** see Mass/Rapid Transit

**Ridership:** The number of people using a public transportation system or mode in a given period of time.

**Right-of-Way:** A corridor of land acquired by reservation, dedication, prescription, or condemnation, and intended to be utilized as a road, rail line, sidewalk, multi-use path, bike lane, utility service, buffer, in various combinations.

**Service Area:** A geographic area where transit service is provided.

**Signal Platooning:** Coordinated traffic signal controls that group vehicles together to increase road capacity without building additional traffic lanes. The timing of lights to allow groups of vehicles to travel through multiple intersections at a given legal speed.

**Spacing:** The distance between important spots, stops, corridors or ways. Too much spacing and access is limited and too little spacing and objectionable congestion can result.

**Station Area:** An area surrounding a transit center containing transit-related activities and designed to accommodate large numbers of people. Station areas are generally defined as the area within a ¼ mile radius of the station, a reasonable walking distance.

**Streetscape:** The character, design, and physical elements within and bordering the public right-of-way. Streetscape elements include street and sidewalk paving, curbs, trees, lighting, benches, signage and wayfinding, as well as defining facades of bordering buildings or their setback spaces.

**Strip Mall:** Any auto-oriented shopping center located along a major arterial road. Strip malls usually have large amounts of parking between the building and the street.

**Subdestinations:** Buildings or places that people visit within a destination area (see Destination)

**Sustainable Transportation:** A comprehensive approach to transportation planning intended to achieve a combination of economic, environmental and social objectives. It manages demand and improves accessibility rather than responding to demand through increasing supply of facilities and mobility in a way that is not sustainable. Sustainable transportation is a response to transportation planning practices that expand highway facilities to meet projections of future demand.

**Thoroughfare Classification Systems (See Functional Classification):**

- **Principal Arterial:** Street carrying high volumes of traffic (vehicular, pedestrian and bicycle) across multiple districts.
- **Minor Arterial:** Street carrying lesser volumes of traffic at more frequent intervals, or that direct traffic to the principal arterials.
- **Collector:** Street usually confined within a district or neighborhood boundary and connecting specific land uses, and local streets to the arterial network.
- **Local Street:** Minor street providing access to abutting properties and protection from through direct traffic.
- **Alley:** Minor street used primarily for vehicular service access to the back side of properties. In residential blocks, an alley provides access to garages allowing narrower lots with sidewalks uninterrupted by driveways, higher density, and a more walkable scale along the street.

**Transit Center:** A facility providing transfer connections between bus routes, and/or between different transportation modes, such as bus and rail, regional bus (bus rapid transit) and local bus (shuttle bus), etc.
Figure 15.1 Monument Circle is the center of downtown Indianapolis and of Marion County. This core is inherently walkable because of its traffic-calmed environment, compactness and density of pedestrian destinations.

**Transit-Compatible Land Use**: Land use of sufficient density, proximity and mix of uses, and with design characteristics that support pedestrian travel to make provision of convenient public transit service viable. Also see Transit-Oriented Development.

**Transit Corridor**: A right-of-way with contiguous transit-compatible land uses and/or connectivity between transit-oriented development centers such that efficient high volume transit is viable.

**Transit-Oriented Development (TOD)**: A residential, commercial, or more usually mixed-use development designed to maximize access to public transport, incorporating features to encourage transit ridership, and providing less private automobile parking than typically required by other single-use zones.

**Traffic Calming**: A range of street design measures to reduce speed and volume of vehicular traffic to levels appropriate to safe interaction between automobiles, pedestrians and bicyclists. This may include narrower travel lanes, curb extensions, reduced radius corners, medians as crosswalk refuges, raised intersections and crosswalks. These measures are specific to street and district type and designed to accommodate emergency vehicles.

**Travel Time**: The overall time spent traveling from an origin to a destination.

**Trip**: A one-way journey to or from a destination.

**Trip Ends**: The total number of trips entering and leaving a land use over a designated period of time.

**Trip Generation**: The total number of trip ends produced by a specific land use. Distributed generators refers to land uses that generate trips that are not clustered in the main area, i.e. away from the principal destination (placemaking) street.

**Trip Linking**: The ability to visit several destinations during one journey.

**Urban Centers**: Downtown, town center, and higher density mixed use districts designed for walkability and high levels of public transportation service.

**Visual Friction**: A traffic calming technique that uses elements such as shrubs, trees, and general landscaping to make the street seem narrower than it really is, thus encouraging drivers to slow down.

**Walkability**: A broad range of community design features that support walking: mix of land uses, attractions and services of higher density and proximity, road design that does not create barriers or disincentives to walking, sidewalks and crosswalks that form a continuous network linking multiple destinations, and environmental design for interest and comfort.

**Walkable Community**: A place where people of all ages and abilities feel that it is safe, comfortable, efficient, and welcoming to walk, not only for recreation but also for utility and transportation. Characterized by proximity between land uses and destinations, access to public transportation, and neighborhood activity.

**Zoning Ordinance**: A municipal ordinance dividing a municipality into districts that prescribe land use type, land use relationships, densities, height and setback, bulk distribution, required parking, loading and servicing requirements, and performance standards within a defined boundary.
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## II. PLANNING GUIDELINES

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**PLANNING GUIDELINES INTRODUCTION**

This section of the manual guides agencies and developers in planning new construction, redevelopment, and maintenance projects. Parallel activities that support the application of these guidelines are the Rapid Transit Study, DiRecTionS, Regional Pedestrian Plan, Regional Bicycle Plan, and the IndyGo Comprehensive Operational Analysis. These guidelines are proposed to be applied to develop a Multi-modal System Plan for the Regional Center to be concurrent with the Indianapolis Regional Center Urban Design Guidelines initiative.

**CONCEPTS**

**MULTI-MODAL CHARACTERISTICS**

Pedestrian Districts, Multi-Modal Corridors and their interactions are a means of managing multi-modal development and thus organizing guideline recommendations. An understanding of districts, corridors, and their interactions and characteristics is described, followed by a discussion of performance measures.

**District (the Destination) and Nodes**

Inevitably, travelers become pedestrians no matter the destination, because they typically do not enter buildings in a vehicle. A common misconception about pedestrian ways is that “if you build it, they will come”. In fact, walkability requires places to walk to. Transit only becomes viable when places become destinations for many people. If there are any breaks in the way to get to a destination, then the trip may become longer, and the destination may no longer be viable. The principal objective of a multi-modal system is to reduce travel time to destination for the minimum cost, maximum safety and highest quality of life.

As defined by the Regional Pedestrian Plan, there are six types of pedestrian districts that focus their design and functionality on the pedestrian. It has been agreed that the pedestrian districts are to be designated multi-modal districts. District characteristics include a well-defined edge and core, the latter usually the most frequented destination of the district as a whole. The center of this district core area is referred to as a “Node”. For a district to be truly viable, it needs a sense of community coalesced around activities located in the district core. This core may have many subdestinations, buildings or places that people visit within the destination area: offices, stores, restaurants, stations, transit hubs. The node is recommended as the locus for the transit stop or hub. Different districts have characteristics that distinguish one from the other.

District characteristics differ in their organization in terms of walking zones. The core walking zone of a district has characteristics distinct from surrounding areas, usually
including higher intensity and placemaking corridors. By intensity, it is meant a higher number of people working, shopping, living and doing activities in a given area. The core should have a greater concentration of subdestinations, creating this higher intensity. The node, nucleating at a transit stop, allows the whole district to become walkable. The critical radii for pedestrian districts are usually 1/4 (5 minute) and 1/2 mile (10 minute) walk. A 5 minute walk is typically the largest distance a person is likely to walk for frequent trips or on a regular basis to a local transit route. A 10 minute walk is reasonable for an express route.

**Corridor (Way to the Destination)**

Just as understanding the nature of a district is critical in bringing about district design, understanding the nature of the corridor is key to designing the corridor. It has component parts, accommodates multiple transportation modes (hence multi-modal), and has a relationship(s) to the district(s).

Certain types of corridors lend themselves to different relationships within and around a district and often end up defining a district. Placemaking corridors often form the core of the district, with thru corridors establishing an edge because their higher speed creates a walking barrier in the middle of a district. Connector corridors serve to bring multi-modal traffic from the edge of the district to the placemaking corridor at the core. A node is usually located on the placemaking corridor. Local corridors serve the rest of the district, while service corridors support placemaking and local corridors. Off-street corridors, as well as special overlays like City Beautiful or Cultural Trail, offer special characteristics predicated on natural topography and designed features, but are also instrumental in defining the character of a district. Corridor characteristics may change, e.g. from connector to placemaking corridor, along its length depending on location within a district, district size, and functional needs.

A viable district and corridor, i.e. ones that have vitality in terms of usage, must encourage multiple modes of access and traversing.

**Mode (Travel Means to the Destination)**

In addition to cars and trucks, modes of travel can include walking, biking, bus, rapid transit bus (BRT), light rail, rail, horses and more. For the purposes of these guidelines, considerations principally focus on walking, biking, traffic-dependent transit like buses and shuttles, and consideration of non-traffic-dependent transit like BRT, light rail, and rail.

Just as highways act as arterials for cars, transit acts as arterials for pedestrians and bikes. To move pedestrians from destination to destination (i.e. district to district), they walk on local streets to collectors where they access buses and shuttles, and then to arterials where they access BRTs, light rail, and rail to travel larger distances. This leads to interaction between transit modes, pedestrians, and bicycles, as well as with vehicular modes such as cars and trucks.

**Mode Routes, Stations and Stops**

Each mode has its individual characteristics, including spacing of routes and stops, and balancing accessibility within the district with mobility between districts. Each mode must work together in order to make a system that is affordable and useful.

Though the physical location of stations and stops is part of a larger public decision process, these guidelines must be sensitive to larger system issues. Pedestrians, bicycles, and cars must be able to access transit stations and stops. Stations and stops must be safe and dignified places to wait for transit, or ridership will be limited only to those with no other choice, marginalizing transportation alternatives.

In short, the multi-modal system must perform well, have its performance measured to facilitate decision-making and be sensitive to its customer base. Consequently, these guidelines are the basis of a Multi-Modal System Plan for the Indianapolis Metropolitan Planning Area. The System Plan is a separate process that is being produced independently and will contain additional performance parameters and measurements based on the design principles from these guidelines.

**District and Corridor Characteristics, Measurements, and Interactions**

**District Size, Development Pattern, and Walking Zones**

Districts may be defined by history, geography, location within a region, but as mentioned earlier, they are also defined with a core and an edge established by street patterns. If, however, a district is larger than a 1/2 mile radius, it will likely be composed of smaller subdistricts based on the walking zones described earlier, which determine the destination and development/land use intensity patterns applicable to the type of district. Connectivity between subdistricts, within a district and between districts then become critical factors.

**Node, Mode and Scale of Connection**

The goal is to bring travelers into the the district node as directly as possible, from which they can access the entire district by walking. All modes should converge upon the node, allowing all modes to similarly access the district in the most efficient and cost-effective manner.
This leads to judgement of proper scale (e.g. regional, neighborhood) for the corridor and the mode as a function of the district’s size and character. Measurements of these efficiencies may include convergence (by number of modes and directness), capacity of each mode, and the time to destination by route choice and mode.

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<tr>
<td>Inter-City (rail)</td>
<td>Nodes where needed</td>
<td>Interurban station or major MM crossing</td>
<td>Key destinations or at least 1/city</td>
<td>As viable and &gt; 4 mi</td>
<td>NA</td>
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<tr>
<td>Intra-City (fixed/ light rail)</td>
<td>&lt;10sqmi</td>
<td>Change lines</td>
<td>Key destinations or ~ 4 mi</td>
<td>As viable and &lt; 4 mi</td>
<td>At least 1/city</td>
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<td>Intra-City (unfixed/ BRT)</td>
<td>Destination lacking transit or &lt;8sqmi</td>
<td>Crosses fixed rail transit</td>
<td>1-3 mi</td>
<td>0.5-1 mi as per demand</td>
<td>4/sqmi</td>
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<tr>
<td>Local (bus)</td>
<td>&lt;2sqmi</td>
<td>Crosses transit or BRT</td>
<td>.25 mi</td>
<td>1-3 blocks for 4000-2000 people/sqmi resp.</td>
<td>40/sqmi</td>
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<td>Bike</td>
<td>Bike Port at major bike destination</td>
<td>Connects to bus</td>
<td>1-2 mi</td>
<td>&lt;0.5mi</td>
<td>50/sqmi</td>
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<tr>
<td>Ped</td>
<td>1/4 mi for major hub 1/4 mi for minor</td>
<td>Placemaking crossing</td>
<td>1/2 mi for fixed transit stop</td>
<td>1/4 mi for bus</td>
<td>50/sqmi</td>
</tr>
</tbody>
</table>

Figure 19.1 Spacing and Connectivity Guidelines adapted from APA Planning and Urban Design Standards [93].

Connectivity and Spacing

Multiple, connected options are critical to getting people to utilize other forms of transportation. The system must allow a person to travel to places where they work, live and play, in a convenient way. If the transit system can only get a person to one place conveniently, they will not likely use the transit system. On the other hand, there is a cost associated with providing many choices of access, in terms of cross traffic slowing routes as well as cost to provide the connections.

Thus, there needs to be a minimum spacing of corridors and stops to provide a certain minimum performance. The table above shows suggested minimum spacing for modal connections and stops. This needs to be balanced against a number of possible connections to provide sufficient route choice, alleviating congestion and avoiding isolation of a place.

A measure of connectivity is to measure closed multi-modal loops or connections. A recommended number of closed loops for a given area or loop density (also shown in the Connectivity Indices figure 33.2) and will be the same for all pedestrian districts unless specifically shown otherwise. In the next section, an exercise is also provided to better demonstrate this concept for a given district.

Intensity and Land Use

Intensity, or the amount of activity in a given area, is usually, roughly, a function of building height or more technically floor-to-area ratio, FAR. FAR, or the measure of floor space per lot area, though a traditional measure of intensity, quickly becomes complicated with newer, better building techniques and definition of activity space such as park space. Also, what may be intense for Manhattan may not apply to Indianapolis. Furthermore, intense residential differs structurally from intense commercial or even intense city park. Consequently, the relative values of Low-High are more important than a numeric absolute for these guidelines and comprise a difference between areas of lesser or greater intensities - rather than a FAR requirement for buildings in an area.

Traffic Management

Managing vehicular traffic is critical for the safety and function of a multi-modal system. Vehicular traffic in pedestrian districts should be slowed to promote walkability. Cut-through vehicular traffic should be discouraged. Signal timing, intersection controls and traffic management should be utilized on a system-wide basis to create predictability and comfort for motorists. Traffic is best managed when it moves target capacities of multi-modal traffic at target speeds safely. More specific information on traffic management techniques can be found in the component zone section under crossing zones.

Character and Vitality

The character of a district is dependent on its unique aspects and any recommendations for new developments must be sensitive to this character. A context sensitive multi-modal facility fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. Context sensitivity can be “measured” by determining whether a project establishes a unique identity for an area or strays from the letter of the guidelines while still meeting the goals for the area.
Urban Forest, Planting Systems and Green Infrastructure

For multi-modal systems to work, they need to entice users to use them. A key component of making these places inviting is an effective and functional urban forest and planting system.

An urban forest consists of the trees within an urban area and includes tree-lined roadways, open green spaces, undeveloped forests, parks, along with other public and private spaces. The Urban Forest System is a tool that promotes walkability and district identity by making walking more safe and comfortable. Distances are perceived to be shorter when the pedestrians attention is focused on scenic views and routes are clearly perceived as safe, convenient, and attractive. The planting structure should also be designed to make the system safer, more attractive, cooler in the summer, shielded from wind in the winter, and better able to handle stormwater.

There are thus different elements of the streetscape that serve the green infrastructure in different ways. These include, clear zone height, separation zone width (to allow room for the roots and their sustenance), the nature of the plant/tree roots (e.g. will they destroy sewage pipes in search of water), tree canopy (rainwater and CO2 capture, sunlight filtering, etc.). Additionally, there is a certain performance that each element of the streetscape can serve: whether or not the plants require more maintenance in terms of dropping their leaves or whether they will help buffer noise, absorb CO2 and rainwater, allow light through the canopy and so forth. Any choice of planting should avoid non-native invasive selections. Some of these elements of the streetscape include:

Small Trees may be used in alleys, off-street corridors and parks. They have mostly an aesthetic appeal, but can also be used for functional/edible landscaping for an area, provided someone or some group takes on the task of maintaining and using the “fruits” of the trees.

Medium Trees constitute the bulk of the street trees within the Regional Center, mostly because of the space requirements for larger trees.

Large Trees should be planted wherever possible as they are critical to the performance of the green infrastructure system, consuming nearly twice the stormwater and CO2 that medium trees do. Furthermore, they add icon status to streets graced with them and the associated wayfinding, legibility and placemaking qualities.

Understory elements can include hedges and shrubs. These are good for buffering or low-screening (e.g. a parking lot), provided they do not exceed a height that screens view over them. Visibility across buffer areas is critical to maintaining safety. Planting boxes can be used to separate neighboring Pedestrian Activity Zones. In the public realm, they should never screen eye view from the street or the building.

Groundcover and Swales serve many functions including slowing of rainwater absorption, maintaining cleanliness and cooling of the street as well as being a repository for snow in winter. As a result, plant choice should be tolerant to salt, sand and waste including animal waste.
DISTRICT CONNECTIVITY EXERCISE

The following exercise gives step by step instructions intended to assist agencies and developers in identifying and selecting a pedestrian district designation within their communities and to determine the connectivity needs of the district. The example used in this exercise was developed based on an earlier Indianapolis MPO study, the Glendale Special Neighborhood Study. Recommendations from that study were used to determine the following example diagrams (figures 22.1 to 28.1).

This district connectivity exercise helps to identify deficiencies in pedestrian, bicycle, or through vehicle connections. Complete and multiple connections make it more convenient and encourage the use of alternate transportation such as walking, biking, and transit. The type and size of the district determines the number of connections needed.

INVENTORY

1. Establish the Boundaries of the District
The boundaries are determined by identifying areas that have a concentration of related or supporting uses, activity destinations, or development patterns that are within a walkable distance from each other, supporting central or multiple transit nodes.

These are areas that have, or are intended to have, high pedestrian activity where walking is the transportation mode of choice and is given priority over other modes of transportation. The district boundary is drawn where there is a separation from the related uses and unrelated uses, and the size of the district is determined by the extent of those uses and activities. Pedestrian districts are selected based on the following criteria:
- Cluster of related or complementary uses within a 1/4 mile (or 5-minute) walk.
- Distance between sub-destinations does not exceed a 1/4 mile (or 5-minute) walk.
- Linked by a recommended pedestrian facility in the Regional Pedestrian Plan.

2. Determine the Size of the District
Determine the size of the district in square miles.

3. Determine the Type of District
Refer to the following section for more information about District Typologies.

4. Determine Characteristics of Existing Facilities
Map existing streets, sidewalks, bicycle lanes, multi-use paths, sidewalks, alleyways, and transit facilities. If possible determine if there are any traffic calming devices and types of intersections within the district. Map the existing urban forest and existing trees.

ANALYSIS

5. Connectivity Analysis
Alternative Transportation Connectivity is measured by the number of closed “loops” created by a given area (See loop density fig. 19.1 or Connectivity Index fig. 33.2). A loop is created by a continuous multi-modal facility that circles a particular land use. The illustrations on the following pages demonstrate a continuous sidewalk surrounding a residential block and is therefore considered a complete pedestrian loop. The street surrounding that same residential block creates a vehicle loop and if the street features bike lanes, it would also be considered a bicycle loop. If the sidewalk does not create a closed loop, then the connectivity is not complete. This connectivity analysis is completed for vehicle and bicycle facilities.

PROPOSED FACILITIES

6. Proposed Connectivity
The closed “loops” are then counted for each mode (pedestrian, bicycle, transit) and compared with the required number of connections for the particular district. For example, a transit-oriented district with a size of one square mile, 50 pedestrian loops, 50 bicycle loops, and 40 vehicle loops are recommended for optimal connectivity. If there are fewer loops than recommended then additional pedestrian, bicycle, or vehicle connections should be considered.

Transit is not part of the connectivity “loop” measurement. Transit is part of a regional network that is larger than a district. However the district should feature one or more transit stops, shelters and other features. Pedestrian and bicycle connections support transit links.

1/4 Mile Influence Zone
Connections, particularly bicycle routes (such as bicycle boulevards) outside of the district can be utilized to complete bicycle loops when they are within a 1/4 mile distance of the district. Additionally connections to the larger area need to be considered and utilized when appropriate.

7. Traffic Management Systems
Traffic in pedestrian districts should be managed to promote walkability.

8. Urban Forest System
Using the Urban Forest System effectively promotes walkability and district identity by making walking more safe and comfortable.
Steps

1 - Establish Boundaries of the District

2 - Determine Size of the District

3 - Determine Type of District and Connectivity Requirements

4 - Determine Characteristics of Existing Facilities

In the above example, the existing sidewalks and bike routes have been identified. Referencing the Transit Oriented Pedestrian District guidelines, this example district is 1.9 square miles and therefore recommends 95 pedestrian connections, 95 bicycle connections, and 76 vehicle connections.
In the above example, 17 closed pedestrian loops can be made and no bicycle loops can be made. This indicates a need to provide additional sidewalks and bicycle routes within the district.
6 - Proposed Pedestrian Connectivity

With proposed new pedestrian routes identified, 124 pedestrian loops are able to be created. This is achieved primarily by filling in gaps within the existing sidewalk system. This exceeds the recommended 95 pedestrian loops.

### Legend

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Proposed sidewalk</td>
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<tr>
<td>Existing bike route</td>
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</tr>
<tr>
<td>Existing transit</td>
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<tr>
<td>District boundary</td>
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<tr>
<td>Closed pedestrian loop</td>
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### District Size

<table>
<thead>
<tr>
<th>District Size</th>
<th>Recommended number of closed loops</th>
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<tr>
<td>1272 acres</td>
<td>95 Pedestrian</td>
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<tr>
<td>1.9 square miles</td>
<td>95 Bicycle</td>
</tr>
<tr>
<td></td>
<td>76 Vehicle</td>
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</table>
7 - Proposed Bicycle Connectivity

With new bicycle facilities identified, and utilizing existing non-thoroughfare streets, 104 bicycle loops are able to be created. This exceeds the recommended 95 pedestrian loops.
8 - Proposed Transit Connectivity

Public transit can be a safe, convenient and enjoyable alternative to driving but it also must be accessible, and more efficient than the private automobile. This exercise suggests several enhancements to public transit that can contribute to an increase in ridership.

Transit Oriented District guidelines suggest a transit station associated with park and ride facilities and the means to live in the district and access transit service without the use of a car.

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Legend

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<td>District boundary</td>
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<tr>
<td><img src="#" alt="Color" /></td>
<td>Proposed transit station</td>
</tr>
</tbody>
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**GLENDALE TRANSIT-ORIENTED DISTRICT EXAMPLE - TRANSIT SYSTEM**

**STEPS (CONTINUED)**
Multi-modal crossings provide safer access and crossings for pedestrians and bicyclists. With the addition of improved intersections, intersection devices, and traffic management design elements, traffic speeds are reduced, therefore improving the safety to the pedestrian and bicyclist.
10 - Urban Forest

Tree lined streets make a buffer between traffic and pedestrians, and create a microclimate that makes a more attractive place for pedestrians to walk. Several corridors have been identified for reforestation to replace trees that have been lost and to enhance the overall function and appearance of the corridors.
PEDESTRIAN DISTRICT GUIDELINES

PEDESTRIAN FACILITIES

1.0 Develop a pedestrian network per District Typology requirements. See pedestrian way or multi-use way component zone guidelines.

1.1 Provide pedestrian connections to multi-modal corridors at each urban block interface, usually 350 to 400 foot intervals. This may be accomplished by connector paths, in addition to sidewalks and multi-use paths. See pedestrian way (pg. 201) or multi-use way component zone guidelines (pg.183).

1.2 Provide pedestrian street crossings within urban block connections, or 350 to 400 feet from each other. See crossing zone component zone guidelines.

BICYCLE FACILITIES

2.0 Develop a bicycle network per District Typology requirements. See bicycle way or multi-use way component zone guidelines.

2.1 Provide bicycle connections to multi-modal corridors at 400 to 600 foot intervals. This may be accomplished by bicycle lanes, multi-use paths, or shared road facilities. See bicycle way or multi-use way component zone guidelines.

2.2 Provide bicycle street crossings 350 to 400 feet from each other. See crossing zone component zone guidelines.

STREETS

3.0 Develop a multi-modal street network that accommodates alternative transportation modes (e.g. pedestrian, bicycle, transit) in addition to automobiles.

3.1 Provide street intersections every 300 to 400 feet within pedestrian districts.

3.2 Maintain existing rights-of-ways even when not developed into vehicular streets. Utilize these rights-of-ways where possible to provide pedestrian, bicycle, and transit connections.

3.3 Develop a grid street pattern in pedestrian districts to offer multiple access points for all multi-modal transportation uses.

3.4 Where possible, new streets should incorporate traffic management design elements.

3.5 Multi-modal corridors within pedestrian districts should limit lanes of vehicular traffic to minimize pedestrian crossing distances and balance the right-of-way uses to accommodate all transportation modes.

3.6 Multi-modal street corridors should meet vehicle travel way component zone guidelines.

3.7 Limit or discourage continuous turning movements for vehicles like “right-on-red” or free left turns on multi-modal corridors to maintain a desired two-lane pedestrian crosswalk distance and reduce pedestrian/vehicle conflicts.

3.8 Limit or discourage drive-through site development such as restaurant pick-up windows or bank service lanes that require new curb cuts to the street. Utilize existing alleys or side streets.

3.9 Limit or discourage curb cuts or driveways to preserve on-street parking and minimize pedestrian crossings. Utilize alleys or side streets for access to lots.

3.10 Locate truck loading zones in alleys on side streets to preserve on-street parking in front of pedestrian destinations.

TRANSIT

4.0 Transit service should be provided, or committed, both internally within the pedestrian district, and externally with regional connectivity per District Typology requirements.

4.1 Refer to bus transit way and rapid transit way component zone design guidelines.

PARKING

5.0 Parking should be provided for automobiles and bicycles in pedestrian districts.

5.1 Reduce the amount of parking needs through increased transit ridership, encouraging reduced residential vehicle ownership, and access to shared off-peak parking at park and ride sites.

5.2 Structured parking is preferred over surface parking lots. Surface parking tends to spread apart destinations diminishing the ability to walk.

5.2.1 When parking structures are located along multi-modal corridors, enhance the public environment with pedestrian-friendly uses and facades on the ground floor.
5.2.2 Locate parking structures in the interior of the block, where possible.

5.2.3 Locate access to off-street parking structures from shared, well-lit, pedestrian-friendly alleys, where possible. Minimize new curb cuts on existing streets.

5.3 Parking zones consisting of surface parking lots are discouraged.

5.3.1 Should surface parking be absolutely necessary, utilize alley access and locate parking in the interior of the block. Minimize new curb cuts on existing streets.

5.3.2 Should surface parking be absolutely necessary, divide larger parking lots into smaller lots separated by landscaped pedestrian ways that link to the district pedestrian network system.

5.4 Parking must be easily located but not detract from the district environment.

5.4.1 De-emphasizing parking with partial screening is recommended if parking is visible from a public street or pedestrian way, but the parking area should maintain visibility for safety purposes.

5.4.2 Provide attractive wayfinding and minimal, coordinated signage to locate public parking.

5.5 Provide on-street parking within pedestrian districts, where possible, especially in close proximity to pedestrian destinations. See street parking zone component zone guidelines for additional information.

5.6 Provide convenient and secured bicycle parking and storage locations. See bicycle way component zone guidelines for additional information.

6.1 Vehicular traffic in pedestrian districts should be slowed to promote walkability when the pedestrian mode is the priority. It is important to consider traffic management within the context of the district.

6.2 Intersection controls or changes in road elevation or alignment may be used to slow vehicular traffic. See the Crossing Zone section for additional traffic calming techniques.

6.3 Cut-through vehicular traffic in pedestrian districts should be discouraged to promote walkability. This is achieved by discouraging or eliminating through non-local traffic. Examples include barrier medians, diagonal semi-diverters, corner semi-diverters. See the Crossing Zone section for additional techniques to control the volume of vehicular traffic.

6.4 Where possible, provide street trees and landscape with living plant material all medians, circles, and curb extensions.

COMPACT DEVELOPMENT PATTERNS

7.1 Cluster buildings to provide convenient pedestrian access to a variety of destinations and frame distinct character areas.

7.2 Orient buildings to the street to create a visually interesting and safer pedestrian environment. Refer to pedestrian activity zone component zone guidelines.

7.3 Site buildings to accommodate future infill and increased density. Place structures on one side of a parcel instead of the center.

CHARACTER & VITALITY

8.1 Create each district as a “place” with consistent identity features, furnishings, and treatment for the district. Refer to frontage zone and separation zone component zone guidelines.

8.2 Develop a landscape palette to provide unique district identity.

8.3 Extend the urban forest to every street to provide comfort to the pedestrian way and shade pavement areas.
PEDESTRIAN DISTRICT TYPOLOGIES

Guidelines for the pedestrian districts are organized by typologies or “types.” These idealized district descriptions are shown as plan graphics to broadly illustrate a district concept. Guidelines for development of the “Component Zones” of the idealized district are then described in greater detail in Section III, while still recognizing the range of opportunities and constraints represented by existing land use and circulation conditions. Criteria specific to each district establish the framework for its guidelines and a checklist to ensure that multi-modal objectives are accommodated.

Figures 50.1 through 58.1 identify proposed pedestrian districts and corridors for the Metropolitan Planning Area (MPA). These districts and corridors were identified as a part of the in the Metropolitan Planning Organization’s (MPO) Regional Pedestrian Plan and are intended to create an interconnected multi-modal system throughout the region. With the help of these guidelines, each community can transform the pedestrian districts and corridors into reality. Additional districts can occur as future development investment is directed towards multi-modal suitability based on these principles and guidelines.

Pedestrian districts are areas characterized by a walkable scale as determined by considerations of distance, connectivity, density, diversity, and proximity. Walkable distances, and hence district size, are extended by appropriate facilities, frequency of interest, and environmental quality. The critical mass of economic viability and social synergy to support an effective district and its multi-modal infrastructure is achieved by an interdependent balance between those physical considerations and a user/visitor population of sufficient density.

Density and diversity of land uses and proximity of inter-related pedestrian destinations, closely clustered within a quarter-mile or greater walkable radius, support the concept of a pedestrian district, and the development of one or more transit facilities to serve it. A viable pedestrian district has sufficient user population density and walkable proximity of destinations to create a high level of pedestrian activity. A pedestrian district’s land use, spatial characteristics, and its alternative transportation facilities provide incentives that encourage walking and bicycling as the transportation modes of choice for trips within the district and transit as a significant mode to and from the district. All corridors within a pedestrian district contribute towards a closely coupled network of connectivity to provide balanced access and movement to an array of destinations.

1. Central Business Pedestrian District (CBPD)

A central business pedestrian district is an area, often referenced as “downtown,” that is characterized by a dense and closely coupled mix of land uses.

2. Village Mixed-Use Pedestrian District (VMUPD)

Smaller than a central business pedestrian district, a village mixed-use pedestrian district is an area characterized by a dense clustering of various types of destinations and activities surrounded by residential.

3. Cultural Pedestrian District (CUPD)

A cultural pedestrian district is designated by local jurisdictions as a special area offering a concentration and unique mix of arts, cultural, and hospitality activities.

4. Campus Pedestrian District (CAPD)

A campus pedestrian district is an area characterized by a concentration of similar or related non-retail, non-residential uses such as a cluster of education, corporate, governmental, or institutional uses.

5. Transit-Oriented Pedestrian District (TOPD)

A transit-oriented pedestrian district is an area of dense mixed-use development oriented around a central transit node with a high concentration of residential development within walking distance of the transit station.

6. Village Residential Pedestrian District (VRPD)

A village residential pedestrian district is an area characterized by a clustering of residences, both single and multi-family.
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Figure 33.1 A Central Business Pedestrian District is an area, often referenced as “downtown,” that is characterized by a dense and close-coupled mix of land uses including commercial, retail, cultural, hospitality, governmental, educational, institutional, a strong residential component, and remainder historic industrial uses that are often adapted to more urban center uses.

CENTRAL BUSINESS PEDESTRIAN DISTRICT

A Central Business Pedestrian District (CBPD) is an area, often referenced as “downtown,” that is characterized by a dense and closely coupled mix of land uses including commercial, retail, cultural, hospitality, governmental, educational, institutional, a strong residential component, and frequently some historic industrial uses that are often adapted to more urban center uses. This mix and density of uses creates the economic and user population base imperative for multi-modal transportation and walkability. The district is bounded and bisected by several multi-modal corridors, where transit and pedestrian activity are prevalent.

A healthy and vital Central Business Pedestrian District has extended hours and weekend pedestrian presence based on quality of life characteristics achieved through a rich mix of uses and a walkable environment.

A Central Business Pedestrian District is considerably larger in area and user/visitor population than the Village Mixed-Use Pedestrian District. It is a regional destination. Indianapolis' Regional Center is identified as a Central Business Pedestrian District. A Central Business Pedestrian District may have sub-districts with additional guidelines, depending on the jurisdiction. For example the Indianapolis Regional Center has eight sub-districts: Urban Core, New Town Center, Transit-Oriented, Village Mixed-Use, Historic Residential, Entertainment Mixed-Use, Campus, and Utility and Industrial.

Figure 34.1 shows a schematic street grid for the CBPD. Within a Central Business Pedestrian District, the land use intensity increases towards the center of the district and is centered on a transit hub, so its scale is a half mile radius. The hub is served by multiple modes of transit and is easily accessible to the pedestrian. Frequent trips are preferably within a quarter mile radius, so the inner quarter mile radius has a particularly high intensity (see photo figure 34.2), including more retail and office space. Multi-modal corridors are of higher intensity and more numerous within this quarter mile. Non multi-modal corridors tend to alternate with multi-modal ones, especially at greater distances from the district's core.

The district core is also centered around its placemaking corridors, often the social street, boulevard and urban pedestrian corridors. Since a half mile is typically the largest walkable scale, the district borders are often less permeable. Consequently, the district has less pedestrian crossings at its limits, instead having higher speed corridors, parks and parkways at its borders.
Figure 34.1 The district diagram above shows the relationship between multi-modal corridors, land use and the district. The District is based on a half mile scale, or the distance served by a major transit hub as shown at center. At such scale, obstacles like rivers and railroads form obstacles that define the edges of districts. A Thru Corridor runs along the edge of the district. A grid of spaced multi-modal connections form a network that facilitates transport to the placemaking nodes - areas of intensity at placemaking crossroads and their coalignment with transit stops and hubs. Land use in the Central Business Pedestrian District is organized to promote a dense core served by transit. Inner quarter mile radius shows the highest intensity of activity as shown by greater concentration of high intensity multi-modal corridors, more intense transit activity and built environment with high rises and abundant retail and office space (see Figure 34.2 at right. Photo courtesy of BBC - Education Scotland website).
CHARACTERISTICS

A Central Business Pedestrian District is an area, often referenced as “downtown,” that is characterized by a dense and closely coupled mix of land uses.

Essential principles of a Central Business Pedestrian District include:

1. Established district edges.
2. Centrally accessible transit.
3. Convergence of two or more multi-modal corridors and regional inter-modal transportation hub.
4. Slower vehicular traffic.
5. Sense of identity throughout district.
6. Programmable community gathering space available for public use.
7. Region’s most valuable real estate.
8. Regional destination.
9. Building design and site development that considers the needs of pedestrians, bicyclists, and transit users first in terms of aesthetics, form, and function.
10. Inclusion of government institutions and services (e.g. library, community center, etc.) to support retail and commercial destinations.
11. First floor uses that generate foot traffic 18 hours a day and visual interest to passersby.
12. Residential base that generates 24 hour activity.

DISTRICT CHARACTERISTICS

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<tr>
<th>Unique Quality</th>
<th>Hub, Mixed Use</th>
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<tr>
<td>District Scale</td>
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<tr>
<td>Core Corridor</td>
<td>Social Street, Boulevard, City Beautiful</td>
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<tr>
<td>Within Core 1/4 mi</td>
<td>Intense commercial and retail, less residential, light rail, 10K population, 1 M sqft Retail, over 5M sqft Office</td>
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<tr>
<td>Outside Core</td>
<td>Med-High to High Density Residential, Mixed Use, High School, 23K population, BRT/Bus Service, Add 800K sqft Retail, Add 1M sqft Office</td>
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<td>Rail, Light Rail, BRT</td>
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VILLAGE MIXED-USE PEDESTRIAN DISTRICT

The Village Mixed-Use Pedestrian District (VMUPD) is an area characterized by a dense clustering of various types of destinations and activities. This pedestrian district is typically located along or bounded by a multi-modal corridor where building ground floor uses are primarily oriented to pedestrian interest, access, and services such as commercial retail, entertainment, and hospitality. Contiguous or adjacent dense residential development is served by, and economically supports, the non-residential land uses. Its residential population proximity justifies optimization of pedestrian facilities, links to the regional alternative transportation network, and is supported by a larger demographic including the automobile user.

A Village Mixed-Use Pedestrian District is a historic downtown, smaller in scale than a Central Business Pedestrian District, or a neighborhood commercial area adjacent to dense residential neighborhoods. Newer town center and lifestyle center developments, with adjacent residences, are also considered Village Mixed-Use Pedestrian Districts. A visible pedestrian presence is essential to the social appeal of the district and its economic viability.

Figure 38.1 shows a schematic street grid for the VMUPD. As mentioned earlier, the district is often found as a subdistrict of other districts and consequently tends to have...
D.2 VILLAGE MIXED USE PEDESTRIAN DISTRICT

Figure 38.1 Village Mixed Use District showing a quarter mile radius from the center of the district and the relative intensity from district center outward nucleating specifically along placemaking corridors. A grid of spaced multi-modal connections form a network that facilitates transport to the placemaking nodes at walkable, mixed use centers each spaced at walkable connections from each other. These areas of intensity at placemaking crossroads coalign with transit stops. The thru corridor runs along the edge of the district.

Figure 38.2 The Village Mixed-Use Pedestrian District is an area characterized by a relatively high intensity clustering of various types of subdestinations and activities at its core and surrounded by medium to high density residential. (Photo taken from Calthorpe, Fulton,The Regional City [83])
a much more rectilinear street grid. It is centered on its “Main Street” or mixed use placemaking streets with a good deal of retail and restaurant activity, so its scale is a quarter mile radius to enable the neighborhood to walk there. The district is served by multiple modes of less intense transit, but it is not centered on transit, though transit is easily accessible to the pedestrian. Its intensity is less than that of the CBPD (see photo figure 34.2), but does have retail and office space.

The district core is centered around its placemaking streets, often the boulevard and urban and suburban pedestrian corridors. The surrounding streets are much more residential and of lower intensity, but preferably of sufficient population to support a middle school within easy walking distance of its pupils. Since the district is designed around a walkable quarter mile scale, the district borders are often highly permeable. Consequently, the district has many pedestrian crossings at its limits and fewer higher speed corridors at its borders.

**CHARACTERISTICS**

A Village Mixed-Use Pedestrian District is a complementary, transit-oriented mix of land uses, including residential, commercial retail, governmental, institutional, educational, recreational, and cultural.

Essential principles of a Village Mixed-Use Pedestrian District include:

1.1 Predominantly residential with a retail component.
1.2 First floor uses that generate foot traffic 16 hours a day and visual interest to passersby.
1.3 Established district edges.
1.4 Centrally accessible transit.
1.5 At least one multi-modal corridor through or along one edge of the district.
1.6 Slower vehicular traffic.
1.7 Sense of identity throughout district.
1.8 Building design and site development that considers the needs of pedestrians, bicyclists, and transit users first in terms of aesthetics, form, and function.
1.9 Inclusion of government institutions and services (e.g. library, community center, etc.) to support retail and commercial destinations.

<table>
<thead>
<tr>
<th>DISTRICT CHARACTERISTICS</th>
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</thead>
<tbody>
<tr>
<td>Unique Quality</td>
</tr>
<tr>
<td>District Scale</td>
</tr>
<tr>
<td>Core Corridor</td>
</tr>
<tr>
<td>Within Core 1/4 mi</td>
</tr>
<tr>
<td>Outside Core</td>
</tr>
<tr>
<td>Main Transit at Core</td>
</tr>
<tr>
<td>Intensity</td>
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</tbody>
</table>
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CULTURAL PEDESTRIAN DISTRICT

The Cultural Pedestrian District is designated by local jurisdictions as a special area offering a concentration and unique mix of arts, cultural, entertainment and hospitality activities. This pedestrian district is typically an overlay of another pedestrian district, most often a Central Business or Village Mixed-Use Pedestrian District.

Special gateways and recurring identity features that reflect the unique nature of the district can be expressed as public art and as unique design expression of infrastructure and street furnishings. A visible pedestrian presence is essential to the social appeal of the district and its economic viability. Examples might include art districts, restaurant/entertainment districts, and craft districts.

CHARACTERISTICS

1.0 Use public art as both an image enhancement and economic development tool in the Cultural Pedestrian District.

1.1 Heart or core of the district should consist of a social street or other heavily pedestrian corridor.

1.2 Connect public art to the pedestrian way through paths, gathering spaces, or views.

1.3 Public art shall meet or exceed all ADA design criteria for movement through and around the space and pertinent jurisdiction requirements.

1.4 Developers are encouraged to incorporate art into new project design.

1.5 Public art should be incorporated into public infrastructure projects such as bridges and transit systems.

1.6 Any built element is an opportunity for art. Public art should be an integral part of infrastructure improvements and new construction.

1.7 Public art should communicate a relationship to the place, create a sense of joy and delight, and stimulate play and creativity.

1.8 Public art shall be subordinate when related to a significant landmark building or landscape.

1.9 Public art shall be relevant to its location and not convey a false sense of history that can overshadow or detract from adjacent resources or districts.

1.10 Public art shall be of durable materials, have a maintenance plan, and have criteria for removal should its upkeep or program become unsatisfactory to the local jurisdiction.

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<tr>
<th>DISTRICT CHARACTERISTICS</th>
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<tbody>
<tr>
<td>Unique Quality</td>
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<tr>
<td>District Scale</td>
</tr>
<tr>
<td>Core Corridor</td>
</tr>
<tr>
<td>Within Core 1/4 mi</td>
</tr>
<tr>
<td>Outside Core</td>
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<tr>
<td>Main Transit at Core</td>
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<tr>
<td>Intensity</td>
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</tbody>
</table>
This page was intentionally left blank.
A Campus Pedestrian District is an area characterized by a concentration of similar or related non-retail, non-residential uses such as a cluster of education, corporate, governmental, or institutional uses. A growing trend within campus environments is the provision of closely linked day care, restaurant, and convenience retail uses, as well as adjacent residential (see Figure 44.1). Such inclusion becomes more viable along a contiguous accessible multi-modal corridor.

This pedestrian district is typically located along or bounded by a multi-modal placemaking corridor and is organized around a central open space, plaza, or shared recreational/athletic resources, which precludes through vehicles (Figure 43.2). The environment is pedestrian in nature (quarter mile scale) with the ability to circulate within the campus by alternative transportation modes that reduce the need for short automobile trips within the district, as well as provide mid-day recreational walking. The adjacent multi-modal corridor provides an external link to the regional alternative transportation network.

**CHARACTERISTICS**

Essential principles of a Village Mixed-Use Pedestrian District include:

1.1 Established district edges.
1.2 Centrally accessible transit.
1.3 At least one multi-modal corridor through or along one edge of the district.
1.4 Slower vehicular traffic.
1.5 Sense of identity throughout district.
1.6 Building design and site development that considers the needs of pedestrians, bicyclists, and transit users first in terms of aesthetics, form, and function.
1.7 Uses and structures organized around a central open/green space.
1.8 Inclusion of retail and commercial services (e.g. day care, restaurants, convenience retail, etc.) that support primary campus uses and users.

**THROUGH-VEHICLE CONNECTIVITY INDEX**

<table>
<thead>
<tr>
<th>District Size (square miles)</th>
<th>No. of Closed Loops</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>5</td>
</tr>
<tr>
<td>0.8</td>
<td>4</td>
</tr>
<tr>
<td>0.6</td>
<td>3</td>
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<tr>
<td>0.4</td>
<td>2</td>
</tr>
<tr>
<td>0.2</td>
<td>1</td>
</tr>
</tbody>
</table>

**DISTRICT CHARACTERISTICS**

- Unique Quality: Open Space Centered, Common Resources
- District Scale: 1/4 mile radius
- Core Corridor: Off Street, Social Street
- Within Core 1/4 mi: Walking core and buildings, e.g. school, business/industrial park, hospital center
- Outside Core: Building service, parking, residential
- Main Transit at Core: Rail, Light Rail, BRT
- Intensity: Medium
Figure 44.1 Campus Pedestrian District showing a quarter mile radius from the open space-centered district. Highly walkable and focused on meeting pedestrian needs, off street corridors are frequent and pedestrian-friendly destination streets serving the campus they surround. The campus could be a university, an industrial or business park, a hospital center or similar facility. Placemaking corridors and consequently transit stops nucleate around the campus.

Figure 44.2 The Campus Pedestrian District is an area characterized by a concentration of similar or related non-retail, non-residential uses such as a cluster of education, corporate, governmental, or institutional uses.
TRANSPORTATION PEDESTRIAN

A Transit-Oriented Pedestrian District is an area of dense mixed-use development oriented around a central transit node with a high concentration of residential development within walking distance of the transit station.

This pedestrian district is typically located along or bounded by a multi-modal placemaking corridor. Street patterns may even form a more radial pattern converging on the transit station. The retail and services component of the transit-based development also serves and is supported by commuter automobile users and the adjacent residential population. The transit station serves not only the walkable zone but is supported by additional transportation modes. Transit-Oriented Pedestrian District development is a key element of a comprehensive multi-modal transportation network, particularly one that incorporates fixed route segments that links high-density transit nodes.

Future Studies will expand and develop TOPD concepts.

DISTRICT CHARACTERISTICS

<table>
<thead>
<tr>
<th>Unique Quality</th>
<th>Transit Nucleus</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Scale</td>
<td>1/2 mile radius</td>
</tr>
<tr>
<td>Core Corridor</td>
<td>Boulevard, Social Street</td>
</tr>
<tr>
<td>Within Core 1/4 mi</td>
<td>3500 population, Mixed Use, high school, 380K sqft Retail, 720K sqft Office</td>
</tr>
<tr>
<td>Outside Core</td>
<td>Medium High Density Residential, 12K population</td>
</tr>
<tr>
<td>Main Transit at Core</td>
<td>Rail, Light Rail, BRT</td>
</tr>
<tr>
<td>Intensity</td>
<td>Medium - High</td>
</tr>
</tbody>
</table>
Figure 46.1 Transit Oriented Pedestrian District is based on a half mile scale typical of a major transit stop. At such scale, it is likely that an impediment will form an edge to the district, in this case a railroad line. The grid of spaced multi-modal connections form a network that facilitates transport to the placemaking nodes - areas of intensity at placemaking crossroads and their co-alignment with transit stops. The district is walkable centered on the transit station and a half mile radius scale, with higher intensity of multi-modal corridors and built space within the inner quarter mile radius.

Figure 46.2 Transit Oriented Pedestrian District in Portland, OR showing a light rail station that acts as a relatively high intensity core for mixed-use commercial, retail, and residential land uses while maintaining a pedestrian scale. (Webphoto collected by Amy Inman)
VILLAGE RESIDENTIAL PEDESTRIAN DISTRICT

The Village Residential Pedestrian District is an area characterized by a clustering of residences, both single and multi-family. It is often a subdistrict of larger pedestrian districts, such that transit and other destinations with greater than neighborhood-scale intensity are found at the edge of the Village Residential Pedestrian District rather than the core, as are placemaking streets like urban and suburban pedestrian corridors where neighborhood scale retail and restaurants can be found. Subdestinations like community facilities, parks, pools and elementary schools are more typically encouraged at this district’s core. As the scale is a quarter mile radius, high permeability is encouraged at the district border.

Walking and biking links are encouraged between residential clusters to reduce the number of short automobile trips within the district. The environment is pedestrian and bicycle in nature with links to internal destinations within the district and the adjacent multi-modal corridor. Traffic calming slows automobile traffic to facilitate pedestrian and bicyclist safety. Overnight parking is provided at each residence, with on-street parking accommodated to facilitate short-term access to nearby homes. Commuters can choose to use an automobile, or the adjacent multi-modal corridor can also provide a link to the regional alternative transportation network.

CHARACTERISTICS

A Village Residential Pedestrian District is an area characterized by a clustering of residences, both single and multi-family.

Essential principles of a Village Residential Pedestrian District include:

1.0 Established district edges.
1.2 Accessible transit at edge of district, if not in the district core, but no more than a quarter mile away for bus or half mile away for transit from anywhere within district.
1.3 At least one multi-modal corridor through or along one edge of the district.
1.4 Slower vehicular traffic.
1.5 Building design and site development that considers the needs of pedestrians, bicyclists, and transit users first in terms of aesthetics, form, and function.

DISTRICT CHARACTERISTICS

<table>
<thead>
<tr>
<th>Unique Quality</th>
<th>Residential Centered</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Scale</td>
<td>1/4 mile radius</td>
</tr>
<tr>
<td>Core Corridor</td>
<td>Pedestrian, Quiet Street</td>
</tr>
<tr>
<td>Within Core 1/4 mi</td>
<td>1600 population, elementary school, pool, community center, park</td>
</tr>
<tr>
<td>Outside Core</td>
<td>5K population, mixed use at edge, middle school</td>
</tr>
<tr>
<td>Main Transit at Core</td>
<td>Bus at corner edge of district</td>
</tr>
<tr>
<td>Intensity</td>
<td>Medium - low</td>
</tr>
</tbody>
</table>
Figure 48.1 Village Residential District is a low to medium-low intensity area based on a quarter-mile radius scale centered on a greenspace and/or an elementary school or other community facility. The district has more local and quiet streets with few connector corridors running through and placemaking corridors and transit stops primarily at the edge.

Figure 48.2 Village Residential District in Savannah, GA showing an open space centered residential district of sufficient density to handle transit at the district edge and theoretically an elementary school. (Photo courtesy of Payton Chung, CNU website.)
**NETWORK DIAGRAM**

**LAYING OUT THE NETWORK**

When districts, corridors and the interactions between the two are organized schematically, a network diagram is created. The idealized diagram (Figure 49.1) illustrates a multi-modal community and is intended to show how the districts and corridors form an interconnected, multi-modal region. The diagram is applicable at a regional and local scale and to an urban or suburban community.

The diagram illustrates that the multi-modal corridors form a higher percentage of the street pattern within pedestrian districts, but extend beyond the districts to form a network throughout the region, connecting the pedestrian districts. Not all corridors are intended to be multi-modal.

Some corridors may have special characteristics, for example City Beautiful qualities can overlay a Commuter Corridor.

Pedestrian districts may abut one other, overlay, or may be isolated, depending on density and character of land use. They are connected to each other by the multi-modal corridors that span the region.

Together, the corridors and districts create a balanced transportation system that enhances land use quality and efficiency.

For the Indianapolis Region, as determined by the process described in the Introduction, the district network is proposed as shown on the following maps shown in larger scale focusing on each county in the region.

*Figure 49.1 The network diagram schematically shows the relationship between corridors and districts in a theoretical network. The CBPD shows rings of increasing intensity the closer to the center of the district.*
Figure 50.1 Overview map of the county maps showing the proposed Pedestrian Districts and Corridors

Vision Plan - Indianapolis MPA
MPO Regional Pedestrian Plan
October 19, 2006
Figure 51.1 Boone County proposed pedestrian districts and corridors.
Figure 52.1 Hamilton County proposed pedestrian districts and corridors.
Figure 53.1 Hancock County proposed pedestrian districts and corridors.
Hendricks County
Proposed Pedestrian Districts & Corridors
Indianapolis MPO Regional Pedestrian Plan

Figure 54.1 Hendricks County proposed pedestrian districts and corridors.
Figure 55.1 Johnson County proposed pedestrian districts and corridors.
Figure 56.1 Marion County proposed pedestrian districts and corridors.
Figure 57.1 Morgan County proposed pedestrian districts and corridors.
Figure 58.1 Shelby County proposed pedestrian districts and corridors.
INTRODUCTION

This section presents the guidelines for Multi-Modal Corridors for the Indianapolis Metropolitan Planning Area. Guidelines are organized by corridor typologies, or types. A multi-modal corridor is a public right-of-way or thoroughfare that accommodates two or more alternative transportation modes (defined as pedestrians, bicycles, or transit). This contrasts with more conventional approaches to thoroughfares as arterials, collectors and locals. Arterial thoroughfares, such as interstates and divided highways, do not accommodate pedestrians or other modes. Furthermore, a new local street may not have a sidewalk or may have a sidewalk that does not go anywhere.

Additionally, certain special characteristics may be applied to a given corridor or network of corridors and are referred to as overlays. One that has been identified is the City Beautiful overlay, which designates corridors that are part of the Indianapolis Historic Park and Boulevard System on the National Historic Register. Finally, understanding and managing the transition between corridors within a working network is critical to its operation. This section also provides information on these transitions.

It is understood that the Central Indiana region is in transition to becoming multi-modal. Refer to the Multi-Modal System Plan for recommended multi-modal corridors. It is anticipated that, over time, and as the Indianapolis regional transportation network is modified and developed, the region will evolve and become as envisioned by these multi-modal design guidelines.

The Multi-Modal System Plan has identified locations for proposed multi-modal corridor typologies in the Regional Center and the process is continuing for the surrounding regions. Many of the study area’s potential multi-modal corridors are existing thoroughfares with vehicular traffic; however, automobiles and trucks are not considered an alternative transportation mode. Therefore, further study will be needed to locate and designate multi-modal corridors within the region.

CORRIDOR TYPOLOGIES

<table>
<thead>
<tr>
<th>Placemaking Corridors</th>
<th>T.1 MM MODERN BOULEVARD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T.2 MM PEDESTRIAN</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td></td>
<td>Suburban Pedestrian</td>
</tr>
<tr>
<td></td>
<td>T.3 MM SOCIAL STREET</td>
</tr>
<tr>
<td>Thru Corridors</td>
<td>T.4 MM MODERN PARKWAY</td>
</tr>
<tr>
<td>Connector Corridors</td>
<td>T.5 MM COMMUTER</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td></td>
<td>Urban one way</td>
</tr>
<tr>
<td></td>
<td>Suburban</td>
</tr>
<tr>
<td></td>
<td>T.6 MM CONNECTOR</td>
</tr>
<tr>
<td>Local Corridors</td>
<td>T.7 MM LINKS</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
</tr>
<tr>
<td></td>
<td>Suburban</td>
</tr>
<tr>
<td></td>
<td>Rural Roads</td>
</tr>
<tr>
<td></td>
<td>T.8 MM QUIET STREET</td>
</tr>
<tr>
<td></td>
<td>T.9 MM BICYCLE BOULEVARD</td>
</tr>
<tr>
<td>Off-Street Corridors</td>
<td>T.10 MM OFF-STREET</td>
</tr>
<tr>
<td></td>
<td>Off-Street Transit</td>
</tr>
<tr>
<td>Service Corridors</td>
<td>T.11 MM SERVICE</td>
</tr>
<tr>
<td></td>
<td>Commercial</td>
</tr>
<tr>
<td></td>
<td>Residential</td>
</tr>
<tr>
<td>Overlays</td>
<td>CITY BEAUTIFUL</td>
</tr>
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<td></td>
<td>CULTURAL TRAIL</td>
</tr>
<tr>
<td>Multi-Modal Transitions</td>
<td>PORTALS</td>
</tr>
<tr>
<td></td>
<td>ROUNDBOUTS</td>
</tr>
<tr>
<td></td>
<td>HUBS, STATIONS AND STOPS</td>
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</table>
COMMON MULTI-MODAL CORRIDOR CHARACTERISTICS

This section describes how each guideline is structured and the various corridor characteristics common to each corridor. Figure 64.1 identifies the characteristics specific to each corridor.

MMC 1.0 FUNCTIONAL CLASSIFICATION AND LOCATION WITHIN DISTRICT

The multi-modal functional classification establishes the transportation use and importance within a transportation network hierarchy given to a roadway, based on location within a district, accessibility, land use intensity, traffic volume, system continuity, facility spacing, design speeds, and other criteria, as described in the last chapter. Corridors can act as placemaking streets or as the core of a district (e.g., Boulevard), act as through corridors along the border or edge of a district (e.g., Parkway), often defining the edge of the district, or as connectors between district edge and center (e.g., Urban Connector). Sometimes, these corridors can be the same street, but if so, they should have a transition (see Transitions section) when their function changes. Other classes include off-street and service corridors.

MMC 2.0 RIGHT-OF-WAY (ROW) WIDTH

An important characteristic in determining the appropriate guidelines for a corridor is the right-of-way width. The right-of-way width refers to the width (given in feet) of the corridor necessary to accommodate the multi-modal facilities within publicly owned property. In existing corridors where right-of-way is limited, the preferred option to accommodate all modes is to acquire additional right-of-way. However, modified typologies are possible, though not the preference. For instance, a half boulevard/half urban pedestrian typology could be applied where conditions warrant and the necessary multi-modality is accommodated (e.g., sacrificing some parking and some VTW to accommodate the necessary other modes within a limited ROW).

MMC 3.0 STREET GEOMETRICS AND METRICS

Street geometrics identify the physical layout of a street, which affects the performance, or metrics, for modes in each corridor. In these guidelines, the metrics are principally speed and traffic management strategies including cross traffic. Block length is an important element in managing cross traffic. Long blocks mean few crossings of the corridor enabling greater speed and commute or directional efficiency, but naturally limit the cross traffic that make the corridor compatible with other uses. Short blocks limit the speed and increase the cross traffic critical for an area’s vitality. Other important considerations are necessary for corridor design and include capacity, pedestrian accessibility and cost. Additionally, guidelines are provided for medians, driveways, turn controls and curb cuts to provide additional safety for pedestrians and bicyclists, as well as improved traffic flow for vehicles.

MMC 4.0 MODES ACCOMMODATED & MODES DISCOURAGED

The modes accommodated and modes discouraged refer to the types of facilities included or that should not be included on a corridor. Certain modes are given priority over other modes based on the function of the corridor. Standard automobiles are not specifically mentioned in the text but are assumed in all corridors, except Off-Street Corridors. However, they should be given the lowest priority in a multi-modal corridor. In instances where accommodation of all modes is not possible, a mode hierarchy is identified to guide the user in giving priority to certain modes over others to develop a multi-modal corridor within the existing right-of-way framework.

To show the modes accommodated and their priorities, a modal hierarchy is shown for each corridor. The hierarchy demonstrates which modes (by symbols) are targeted and in what priority (1-5) to provide flexibility to the implementing agency in case there are right-of-way or other limitations.

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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td><img src="image" alt="Pedestrian" /></td>
<td><img src="image" alt="Bicyclist" /></td>
<td><img src="image" alt="C/S Circulator/Shuttle" /></td>
<td><img src="image" alt="R/B Rapid Bus Transit" /></td>
<td><img src="image" alt="P" /></td>
</tr>
<tr>
<td>Pedestrian Activity</td>
<td>On-Street Parking</td>
<td>Recreation</td>
<td>Farm Vehicles</td>
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</table>

On certain multi-modal corridors, particular modes of transportation are discouraged. By utilizing the discouraged transportation mode on a multi-modal corridor, the performance of other higher priority transportation modes would be diminished.
MMC 5.0 DOMINANT LAND USE PATTERN

Land use refers to the way land is developed and the types of activities occurring on the land, such as residential, industrial, agricultural, commercial, etc. Each corridor type details the types of land use best suited for the corridor in addition to the level of intensity (combination of residential and commercial densities) that best supports the corridor facilities. The corridor recommendations also address overlay regulations, access controls, on-site parking, setbacks, landscape treatment, and natural resource protection.

MMC 6.0 FACILITY DETERMINATION: PEDESTRIAN, BICYCLE AND TRANSIT

The size and type of pedestrian facility is determined by the adjacent land use. Corridors with greater densities of pedestrian destinations warrant wider pedestrian facilities.

The size and type of bike facility provided is determined by the travel speed of the roadway, the traffic volume of the roadway, and the bicycle network needs of the area. Higher volume roadways with higher travel speeds require bike lanes with greater separation from the vehicle travel lanes or a separated multi-use path. Lower volume roadways with low travel speeds can be accommodated as a shared roadway.

The size and type of transit facility provided is determined by existing transit routes in the area and may be a rapid transit route, circulator bus routes, high occupancy vehicles, and local bus routes. Additional amenities include transit shelters, stop locations, and transit center locations.

MMC 7.0 TYPICAL THOROUGHFARE CLASSIFICATION

The typical thoroughfare classification is a hierarchal designation given to a roadway, based on trip length, traffic volume, system continuity, facility spacing, design speeds, and other criteria. The Marion County Thoroughfare Plan provided the foundation for these guidelines by providing the classification type terminology, which include arterial, collector and local. Arterial streets function as the principal conduit between places, collector streets channel traffic from local feeder street to the higher speed arterials. The hierarchical classification can also be applied to truck, transit, bus, bicycle and pedestrian routes.

This traditional thoroughfare classification, while useful in describing movement misses some critical needs for multi-modal corridors. Furthermore, it implies that high capacity streets must also be high speed, which is counterproductive on most multi-modal corridors. The guidelines list the thoroughfare classification as additional information for the reader as a bridge between traditional methodology and the additional concepts for multi-modal systems.

MMC 8.0 STREETSCAPE AND GREEN INFRASTRUCTURE

Streetscape describes the landscaping (including plantings, drainage, way management and so forth) of the corridor to facilitate use of the corridor and provide important visual cues to wayfinding and corridor function and indications of traveler behavior, including signage. It can create a sense of importance or place to the corridor. It also serves critical environmental performance of a corridor, or green infrastructure, of the district, providing natural cooling, air cleansing and stormwater management and in less urban places, can include wildlife management corridors and functions.

MMC 9.0 SPECIAL DESIGN GUIDELINES

Special design guidelines apply to all multi-modal corridors to minimize or mitigate negative impacts upon the environment and other sensitive resources, as well as enhance the design to fit the context of the project site.

When historic or archaeological resources, natural resources, recreational resources, scenic resources, pedestrian district considerations, mode accommodation, or economic vitality considerations are not adequately addressed, consider the following measures:

9.1 Modification of the roadway alignment, including adjustment of horizontal and vertical curves to avoid sensitive areas, fit topographical features and protect scenic and visual qualities.

9.2 Reduction of the clear zone requirements by installation of a guard rail and/or other means which do not reduce the integrity and safety of the corridor.

9.3 Alteration of the typical roadway cross section. Consider sideslopes steeper than normal in combination with additional guardrail, use of curb and closed drainage systems to eliminate roadside ditching, and retaining walls.

9.4 Enhancement of views and scenic qualities through vegetation management and sideslope grading.
9.5 Selection of a guard rail or other roadside barrier that allow visibility through, or blend with foreground views, and allow preservation of significant features including existing and proposed plantings and separation of bicycle and pedestrian facilities.

9.6 Integrate historic features in interpretive facilities, overlooks, and wayfinding systems.

9.7 Light poles and fixtures with down-shielded, full-cut luminaires.

9.8 Provide street trees using native materials along pedestrian ways and transit facilities.

9.9 Utilize existing historic or culturally significant bridges and retrofit them where possible when they are of acceptable structural capacity and meet minimum dimensional criteria. Where historic or culturally significant bridges do not meet these requirements, consider using them for a single lane accompanied by a new bridge to serve opposing traffic, or for exclusively pedestrian and bicycle facilities.

9.10 Develop a balance between the mobility of through-traffic and pedestrian district historic/community values.

9.11 Utilize traffic management tools to slow down speeds and reduce conflict.

9.12 Use landscape and streetscape elements in the separation zone and frontage zone to define public spaces and accommodate pedestrians, bicycles, and transit.

9.13 Reduce luminaire height from roadway to a lower more appropriate scale to the pedestrian district.

9.14 Treat bridges, abutments, and retaining walls aesthetically through the use of architectural features and native materials.

9.15 Retain existing on-street parking where possible.
The District Summary Chart (Fig. 63.1) summarizes key information on each Multi-Modal District. Greater detail can be found in the corresponding District Typology Sections. The chart describes the characteristics of each Multi-Modal District type, including the district’s intensity, scale and the critical size requiring subdivision into Subdistricts. The scale of the transportation mode preferred at the District Node is also listed. The type of corridor that should be located in the District Center, District Edge, Edge to Center and Edge to Edge are also identified.

The Corridor Capacity Relationship to Vehicle Speed chart (Fig. 63.3) shows how the corridor typologies relate to the Highway Capacity Manual. This chart illustrates that traffic volumes will stay the same as traditional roadway classifications.

The Transition Summary chart (Fig. 63.4) provides guidelines for transitions that might suit the intersection of two corridor typologies. The Corridor Guidelines Chart (Fig. 64.1, next page) summarizes key information on each typology, including the Multi-Modal Classification, location in district, minimum right-of-way width and typical block length, and street metrics in target speed and level of cross traffic. The chart also summarizes the hierarchy of modes accommodated along the corridor and indicates those modes that are discouraged. The land use and development normally found along these corridor types and the streetscape plantings that would normally be included are also described. Overlays indicate the corridor typologies where the overlay of City Beautiful (CB) or Cultural Trail (CT) can be applied. More description and detail can be found in the corridor typology descriptions and the overlay descriptions in the text.

LIST OF ABBREVIATIONS AND SYMBOLS

Multi-Modal District Summary Chart (Fig. 63.1)

| BRT | Bus Rapid Transit |
| K, M | thousand, million |
| ms, sf | miles, square feet |
| pop | population |

Transition Summary Chart (Fig. 63.9)

| H | Hub, implies intermodal capability |
| R/B | Roundabout/ Bike Roundabout |
| P | Portal (either gateway, wayfinding or traffic calming) |
| Y | Yield (either stop or some other ceding of way) |
| TC | Traffic Calming |
| Mt | Monument |

Multi-Modal Corridor Typologies Table (Fig. 64.1)

| CB | City Beautiful Overlay |
| CT | Cultural Trail Overlay |
### Multi-Modal Corridor Typologies Table

<table>
<thead>
<tr>
<th>Key</th>
<th>Corridor Typology</th>
<th>MM Classification / Location in District</th>
<th>Corridor Width / Block Length (right-of-way &amp; intersected/adjacent)</th>
<th>Street Metrics</th>
<th>Corridor / Traffic Management Tools</th>
<th>Modes Accommodated (Priority)</th>
<th>Modes Discouraged</th>
<th>Dominant Land Use</th>
<th>Streetscape Green Infrastructure</th>
<th>Overlays Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.1</td>
<td>MM Modern Boulevard</td>
<td>Paving/border/District Center</td>
<td>120'-140' min., (as low as 100' for small elements) Blocks preferably between 200' and 250'</td>
<td>25 mph posted speed, Heavy Cross traffic</td>
<td>Commercial traffic is restricted (turning/biking); parking wires allowed; local access curb cuts unless grouped</td>
<td>Medium-high to high intensity mixed use encouraged; Pedestrian/low traffic; high intensity residential needs to be pedestrian friendly</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high to high intensity mixed use encouraged; Pedestrian/low traffic; high intensity residential needs to be pedestrian friendly</td>
<td>3, 2, 1, 4 medium/low traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.2a</td>
<td>MM Pedestrian/Urban</td>
<td>Paving/border/District of town or city within larger city; Mixed use existence of Eid</td>
<td>90' minimum, Blocks preferably between 200' and 250'</td>
<td>15 mph posted speed w/ speed control traffic; heavy cross traffic</td>
<td>Regional transit or high volume commuter traffic; thru-traffic; if available, local access curb cuts unless grouped</td>
<td>Medium-high intensity mixed use-commercial, retail with adjacent medium intensity residential</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use-commercial; local access curb cuts unless grouped</td>
<td>3, 2, 1 medium/low traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.2b</td>
<td>MM Pedestrian/Suburb</td>
<td>Paving/border/District of Edge City or village district of larger concentration.</td>
<td>120' minimum, Blocks preferably less than 100'</td>
<td>15 mph posted speed w/ speed control traffic; heavy cross traffic</td>
<td>Regional transit or high volume commuter traffic; thru-traffic; if available, local access curb cuts unless grouped</td>
<td>Medium-high intensity mixed use-commercial, retail with adjacent low to medium intensity residential</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use-commercial; local access curb cuts unless grouped</td>
<td>3, 2, 1, 4 large/medium traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.3</td>
<td>MM Island Street</td>
<td>Paving</td>
<td>Varies per existing district conditions. Blocks between 200' to 350'</td>
<td>&gt;10 mph, speed limits self regulating on access design parameters, light cross traffic; heavy post traffic</td>
<td>Through transit or vehicles based on access constraints &amp; speed control traffic management, commercial service traffic</td>
<td>Through transit or vehicles based on access constraints &amp; speed control traffic management, commercial service traffic</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.4</td>
<td>MM Modern Parkway</td>
<td>Thru Corridor / Along edge of district</td>
<td>110' min variable width discourage park and open space one or both sides, depends on district. Blocks follow existing standards, otherwise over 100'</td>
<td>45 mph posted speed; Paving/address design parameters, green cross traffic</td>
<td>Through transit or vehicles based on access constraints &amp; speed control traffic management, commercial service traffic</td>
<td>Through transit or vehicles based on access constraints &amp; speed control traffic management, commercial service traffic</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.5a</td>
<td>MM Connector/Urban (Urban One-way)</td>
<td>Connector / Paving between districts to commuter center or secondary arterial between districts</td>
<td>80' min., 70' for I-495, Blocks greater than or equal to 100'</td>
<td>30 mph posted speed; Paving/address design parameters, reduced cross traffic</td>
<td>Through transit or vehicles based on access constraints &amp; speed control traffic management, commercial service traffic</td>
<td>Through transit or vehicles based on access constraints &amp; speed control traffic management, commercial service traffic</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.5b</td>
<td>MM Connector/Suburb</td>
<td>Connector / Paving between districts to commuter center or secondary arterial between districts</td>
<td>120' minimum 130 minimum for new development. Blocks greater than or equal to 100'</td>
<td>35 (40) mph posted speed; Paving/address design parameters, reduced cross traffic</td>
<td>Through transit or vehicles based on access constraints &amp; speed control traffic management, commercial service traffic</td>
<td>Through transit or vehicles based on access constraints &amp; speed control traffic management, commercial service traffic</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.6a</td>
<td>MM Connector/Urban (Urban One-way)</td>
<td>Connector / Paving between districts to commuter center or secondary arterial between districts</td>
<td>80' min., 70' for I-495, Blocks greater than or equal to 100'</td>
<td>30 mph posted speed w/ speed control</td>
<td>Through transit or commuter traffic; local access curb cuts unless grouped</td>
<td>Through transit or commuter traffic; local access curb cuts unless grouped</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.6b</td>
<td>MM Connector/Suburb</td>
<td>Connector / Paving between districts to commuter center or secondary arterial between districts</td>
<td>90 min., 85 min for new development. Blocks greater than or equal to 100'</td>
<td>30 mph posted speed w/ speed control</td>
<td>Through transit or commuter traffic; local access curb cuts unless grouped</td>
<td>Through transit or commuter traffic; local access curb cuts unless grouped</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.7a</td>
<td>MM Urban Link</td>
<td>Local accesses to districts, parking facilities or between districts</td>
<td>60 minimum 55 minimum new development. Blocks less than or equal to 200'</td>
<td>30 mph posted speed w/ speed control</td>
<td>Regional transit or commuter traffic, local access curb cuts unless grouped</td>
<td>Regional transit or commuter traffic, local access curb cuts unless grouped</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.7b</td>
<td>MM Suburban Link</td>
<td>Local accesses to districts, parking facilities or between districts</td>
<td>55 minimum, 50 minimum new development. Blocks less than or equal to 200'</td>
<td>20 mph posted speed w/ speed control</td>
<td>Regional transit or commuter traffic, local access curb cuts unless grouped</td>
<td>Regional transit or commuter traffic, local access curb cuts unless grouped</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.7c</td>
<td>MM Rural Link</td>
<td>Local accesses to districts, farm and rural districts</td>
<td>55 minimum, 50 minimum new development. Blocks less than or equal to 200'</td>
<td>25 mph posted speed w/ speed control</td>
<td>Regional transit or commuter traffic, local access curb cuts unless grouped</td>
<td>Regional transit or commuter traffic, local access curb cuts unless grouped</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential</td>
<td>3, 2, 4 rows large/medium traffic; 1, 5 small traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.8</td>
<td>MM Quiet Street</td>
<td>Local / Thruout residential quarters</td>
<td>Varies per existing district conditions. Blocks less than 600'</td>
<td>15-20 mph posted speed w/ shared use design parameters, light cross traffic</td>
<td>Transit, commercial or through vehicles based on access constraints &amp; speed control traffic management</td>
<td>Transit, commercial or through vehicles based on access constraints &amp; speed control traffic management</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential, low-traffic units on access constraints &amp; speed control traffic management</td>
<td>3, 2, 4 rows medium/low traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.9</td>
<td>MM Bicycle Boulevard</td>
<td>Local / Main arterial for bikes, minimum along edge of bike district</td>
<td>Varies by existing conditions of multiple districts comprising corridor</td>
<td>15-20 mph posted speed w/ speed control</td>
<td>Transit, commercial or through vehicles based on access constraints &amp; speed control traffic management</td>
<td>Transit, commercial or through vehicles based on access constraints &amp; speed control traffic management</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential, small-scale village on access constraints &amp; speed control traffic management</td>
<td>3, 2, 4 rows medium/low traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.10a</td>
<td>MM Off-Street</td>
<td>Off-street arterial for gods and blues</td>
<td>24-40 minimum according to land use buffer requirements plus contiguous open space</td>
<td>30 mph posted speed w/ speed control</td>
<td>Through transit or commuter traffic, local access curb cuts unless grouped</td>
<td>Through transit or commuter traffic, local access curb cuts unless grouped</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential, small-scale village on access constraints &amp; speed control traffic management</td>
<td>3, 2, 4 rows medium/low traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.10b</td>
<td>MM Downtown Off-Street</td>
<td>Off-street arterial along edge of district, co-location bike arterial</td>
<td>Per combined requirements of specific transit made</td>
<td>access control at pedestrian and street design parameters</td>
<td>Non-transit limited vehicles</td>
<td>Non-transit limited vehicles</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential, small-scale village on access constraints &amp; speed control traffic management</td>
<td>3, 2, 4 rows medium/low traffic</td>
<td>X X X</td>
</tr>
<tr>
<td>T.11a</td>
<td>Service Commercial</td>
<td>Local Service Perpendicular to commercial street to blvd</td>
<td>30-40 minimum Based on existing contextual and added services to existing streets</td>
<td>15 mph posted speed w/ shared use design parameters, restricted turning lanes</td>
<td>Transit, commercial or through vehicles based on access constraints &amp; speed control traffic management</td>
<td>Transit, commercial or through vehicles based on access constraints &amp; speed control traffic management</td>
<td>5 Zone medium/low traffic</td>
<td>Medium-high intensity mixed use; medium to high density residential, small-scale village on access constraints &amp; speed control traffic management</td>
<td>3, 2, 4 rows medium/low traffic</td>
<td>X X X</td>
</tr>
</tbody>
</table>
MULTI-MODAL MODERN BOULEVARD

A Multi-Modal Modern Boulevard is an extensively landscaped corridor with vehicle travel lanes separated by a planted median. The Multi-Modal Modern Boulevard Corridor has features of the historic City Beautiful boulevards. A Multi-Modal Boulevard Corridor is primarily used as the location of grand, mixed-use employment centers and other high intensity uses - most famous of which is the Avenue Champs-Élysées or, on a smaller scale, “a grand mainstreet”. Consequently, the corridor is often used as a placemaking corridor for larger pedestrian districts and is located at the center or heart of the district with restaurants and retail. It may terminate in a grand vista like a scenic roundabout, building or a social street area if the street does not go through.

CORRIDOR CHARACTERISTICS

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Placemaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>Core</td>
</tr>
<tr>
<td>Land Use Intensity</td>
<td>High</td>
</tr>
<tr>
<td>Cross Traffic</td>
<td>Heavy</td>
</tr>
<tr>
<td>Block length</td>
<td>200'-250'</td>
</tr>
<tr>
<td>Speed</td>
<td>25 mph</td>
</tr>
<tr>
<td>Right-of-Way Width</td>
<td>120-140 feet</td>
</tr>
<tr>
<td>Green Infrastructure</td>
<td>Lg. Tree median</td>
</tr>
<tr>
<td></td>
<td>4 rows med trees SZ</td>
</tr>
</tbody>
</table>

FUNCTION

The Multi-Modal Boulevard Corridor usually forms the placemaking center or heart of a district and in particular a walkable district. It should accommodate all modes and be highly accessible to pedestrians. It should be coupled with a parallel service corridor for truck (un)loading to service the local commerce.

As the district center, cross traffic should be heavily accommodated. Intersections should be frequent, aligning with short sides of blocks or a denser block structure. Traffic signals are arranged to maximize pedestrian traffic flow while allowing for automobile and transit traffic to bring pedestrians to the area. The Boulevard can have only traffic dependent transit (e.g. bus) or can have independent transit (e.g. light rail). These corridors accommodate a high volume of all modes of traffic at peak rush hour periods in an efficient manner. This corridor is common in both residential and commercial areas, but services more retail and commercial needs on the corridor and more residential on cross streets. Generally, service corridors and driveway
entries and exits are directed into parking lanes. Curb cuts are limited, and, by design, left turns are limited.

Commercial vehicle restrictions are often based on weight limits, which allows incidental service access while discouraging heavy vehicle through traffic. Within a pedestrian district, commuter transit trips along Multi-Modal Modern Boulevard Corridors are encouraged to terminate at a transit center and commuter automobile trips are encouraged to terminate at long-term parking structures.

Separated pedestrian and bicycle facilities are preferred as the supporting infrastructure for transit. In some cases, multi-use paths can be utilized to provide shared accommodation of pedestrian and bicycle facilities, where appropriate depending on adjacent land uses.

A separation zone between vehicle travel lanes and the pedestrian way is utilized for transit shelters, continuous street tree plantings, furnishings, and utilities.

On-street parking accessed via a parking lane can be accommodated to facilitate short-term access to adjacent land uses. Curb cuts and driveways are discouraged, but a parking lane is encouraged. Generally, pedestrian activity areas such as sidewalk cafés or plazas are encouraged as well. A separation zone between vehicle travel lanes and the street parking zone is utilized for bus shelters (if transit is not otherwise provided), street trees, furnishings, and utilities. The median can be large enough to accommodate transit. Separation zones should be included between the vehicle travel way and the rapid transit way if applicable and between directional traffic if not - or at least have sufficient pedestrian refuge islands with landscaping. If there is a rapid transit way the shelters should be within the walkable separation zone [205].

**GUIDELINES**

1.0 **FUNCTIONAL CLASSIFICATION**

1.1 Placemaking Corridor

1.2 District Center

2.0 **RIGHT OF WAY WIDTH**

2.1 120’ minimum corridor (100’ with some sacrifices of performance), occasionally with contiguous linear park/open space on one side [58].

3.0 **STREET METRICS AND GEOMETRICS**

3.1 Short blocks or blocks between 200-250’ in length should face corridor to allow cross traffic.

3.2 Posted Speed: 25 mph. Traffic management design elements should be utilized to control potentially excessive speeds:

3.3 Medians and parking lanes should be provided to enhance pedestrian and placemaking qualities.

3.4 Provide innovative turn controls at intersections to minimize crosswalk conflicts.

3.5 Driveways and other curb cuts are discouraged.

3.6 Where necessary for land use access, curb cuts should be placed at crossing streets, along alleys, or consolidated.
A Modern Boulevard Corridor is an extensively-landscaped, mixed-use destination street with vehicle travel lanes and parking lanes separated by a planted median. Generally, serviced by alleys, curb cuts are limited, and by design left turns are limited. This corridor may accommodate a high volume of all modes of traffic at peak rush hour periods, but at lower speeds.

**T.1**

**MM MODERN BOULEVARD**
4.0 **MODES ACCOMMODATED**

(in addition to standard automobiles)

4.1 Accommodate Regional Transit (Rapid or Bus). Refer to rapid transit way and/or bus transit way guidelines.

4.2 Accommodate bicycle and pedestrian modes by bike lanes, preferably within the parking lane, and collector sidewalks, both sides. Refer to Bicycle Way, Pedestrian Way, and Multi-Use Way guidelines.

4.3 Accommodate Pedestrian Activity Zones.

**MODES DISCOURAGED**

4.4 Trucks traffic is allowed, but not favored. Boulevards should have parallel service corridors (T.11a) for trucks to load and unload commercial buildings. Discourage heavy commercial truck traffic by enforcing weight limit controls.

5.0 **DOMINANT LAND USE PATTERN**

5.1 Accommodates most land uses. Typically high intensity mixed use dominated by retail and commercial uses, with most of the dependent residential on cross streets.

6.0 **FACILITY DETERMINATION**

**PEDESTRIAN**

6.1 A 7-12 foot wide collector sidewalk is recommended for the Multi-Modal Modern Boulevard Corridor.

6.2 Occasionally a Multi-Use Way may be used instead of separate sidewalks and bike lanes if sufficient median width allows or if there are parks along the Boulevard.

6.2.1 The Collector Sidewalk or Multi-Use Path may meander into adjacent and contiguous park and open space.

6.2.2 Reference the Pedestrian Way or the Multi-Use Way sections for additional guidelines.

**BICYCLE**

6.3 If bike lanes are not placed adjacent to the parking lane, but in the principle VTW and 85% of actual travel speeds exceed 40 mph, then additional spatial separation between vehicle travel lanes and bike lane or multi-use way, perhaps in the median, should be provided.

6.4 Should traffic volume exceed 10,000 vehicles per lane daily (average daily traffic - ADT) and the peak period of travel is greater than 10% of ADT, then bicyclists should be placed adjacent to the parking lane (as shown) or provided an off-street and/or parallel and connected bicycle facility.

Reference the Bicycle Way section for additional guidelines on bicycle facilities.

**TRANSIT**

Within a pedestrian district, commuter transit trips are encouraged to terminate at a transit center and commuter automobile trips are encouraged to terminate at long-term parking structures.

Utilize a separation zone between vehicle travel lanes and the pedestrian way for transit shelter and stop locations. Refer to bus transit way and separation zone guidelines.

If rapid transit is proposed, it is advisable to place it in the median and if possible move the bus loading and unloading to the median to ensure that an intermodal transfer can be seamlessly effected without forcing users to have to cross traffic or re-enter the transit system when changing modes.

Reference the Bus Transit Way and Rapid Transit Way sections for additional guidelines.

**STREETSCAPE AND GREEN INFRASTRUCTURE**

Streetscape includes extensive landscaping to create a sense of importance or place to the corridor and also defines a key corridor in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management.

Large street trees should be planted down the median.

Medium street trees should be planted down the four separation zones. If a “City Beautiful” overlay is applied (pg. 123), then these should also be large trees.

Provide street trees and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”.

**TRADITIONAL THOROUGHFARE CLASSIFICATION**

Usually classed as an arterial based on capacity, but speed does not correspond.

**SPECIAL DESIGN GUIDELINES**

Follow the general design guidelines on page 61.
A Multi-Modal Pedestrian Corridor is characterized, primarily, by its adjacent land uses, a clustering of mixed-use pedestrian destinations and activities.

**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Placemaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>Center</td>
</tr>
<tr>
<td>Land Use Intensity</td>
<td>Medium to high</td>
</tr>
<tr>
<td>Cross Traffic</td>
<td>Heavy</td>
</tr>
<tr>
<td>Block length</td>
<td>200'-250'</td>
</tr>
<tr>
<td>Speed</td>
<td>25 mph</td>
</tr>
<tr>
<td>Right-of-Way Width</td>
<td>90-120 feet</td>
</tr>
<tr>
<td>Green Infrastructure</td>
<td>2 rows med trees</td>
</tr>
</tbody>
</table>

**FUNCTION**

The Multi-Modal Pedestrian Corridor provides multi-modal connectivity across a district while directly accessing mixed-use residential and retail adjacencies, and local transit routes. It also acts as principal bicycle and pedestrian connector.

Vehicular traffic speed is slow and calmed to allow optimization of pedestrian activity and bicycle facilities. An environment conducive to lively pedestrian activities, such as sidewalk cafes and plaza gathering spaces, is encouraged. Driveway entries and exits are controlled and curb cuts are limited. On-street parking is encouraged to facilitate short-term access to adjacent land uses. Larger parking lots and structures may be consolidated behind the street frontage with rear pedestrian access ways.

Within a pedestrian district, commuter transit trips are encouraged to terminate at a transit center and commuter automobile trips are encouraged to terminate at long-term parking lots or structures. A Multi-Modal Pedestrian Corridor may be closed to vehicular traffic for festivals and other public events. Parallel service corridors, e.g. alleys, provide truck and service access. A separation zone between vehicle travel lanes and the pedestrian way is utilized for transit shelters, street trees, furnishings, and utilities. A visible pedestrian presence is essential to the social appeal of the corridor and its economic viability. A Multi-Modal Pedestrian Corridor exists in both urban and suburban conditions.

In addition to multi-modal transportation and related uses, it is assumed that automobile and truck traffic will be accommodated on this multi-modal corridor.
1.0 FUNCTIONAL CLASSIFICATION

1.1 Placemaking Corridor

1.2 District Center

2.0 RIGHT OF WAY WIDTH

2.1 MM Urban Pedestrian Corridor: 90 foot minimum corridor.

2.2 MM Suburban Pedestrian Corridor: 130 foot minimum corridor.

3.0 STREET METRICS AND GEOMETRICS

3.1 Short blocks or blocks between 200-250’ in length should face corridor to allow cross traffic.

3.2 Posted Speed: 25 mph. Traffic management design elements should be utilized to control potentially excessive speeds.

3.2.1 Provide traffic calming or all way stops at intersections.

3.2.2 Provide curb extensions at intersections.

3.2.3 Provide median refuges at crosswalks for multiple lane streets.

3.3 Driveways and other curb cuts are discouraged.

3.3.1 Where necessary for land use access, curb cuts should be placed at crossing streets, along alleys, or consolidated.

4.0 MODES ACCOMMODATED

4.1 Accommodate local transit (shuttle or circulator). Refer to bus transit way guidelines.

4.2 Accommodate bicycle and pedestrian modes by multi-use paths or bike lanes and collector sidewalks, both sides. Refer to bicycle way and pedestrian way guidelines.

4.3 Accommodate pedestrian activity zones.

4.4 Accommodate on-street parking.

MODES DISCOURAGED

4.5 High volume commuter traffic if alternative routes available.

5.0 DOMINANT LAND USE PATTERN

Accommodates most land uses. Typically medium-high intensity mixed use dominated by retail and commercial uses, with most of the dependent residential on cross streets.

6.0 FACILITY DETERMINATION PEDESTRIAN

Urban Pedestrian Corridor: a minimum width for an eight foot wide collector sidewalk for pedestrians is recommended.

Suburban Pedestrian Corridor: an eight foot wide collector sidewalk for pedestrians is recommended. Optionally a twelve-foot wide multi-use way may be used on both sides of the corridor in lieu of the separate sidewalk and bicycle lanes.
Pedestrian Corridors occur along streets with transit routes, high incidence of mixed uses in linear clusters, and adjacent residential density. This combination creates destination and generator demand for both pedestrian and bicycle accommodation, access to local shopping, employment, and transit. Therefore, transit, bicycle lanes, wide sidewalks, and curbside parking are near equal priorities.

**T.2a**

**URBAN PEDESTRIAN**
6.3 As the Suburban Pedestrian Corridor becomes urbanized and pedestrian destinations become more frequent, it is recommended that a multi-use way be converted to separate collector sidewalk and bike lane facilities.

6.4 Reference the Pedestrian Way or the Multi-Use Way sections for additional guidelines.

**BICYCLE**

6.5 If bike lanes are placed adjacent to the principle VTW and 85% of actual travel speeds exceed 40 mph, then additional spatial separation between vehicle travel lanes and bike lane or multi-use way, perhaps in the median, should be provided.

6.6 Should 85% of actual travel speeds exceed 40 mph, then additional spatial separation between vehicle travel lanes and bike lane or multi-use path should be provided.

6.7 If there are more than eight crossings per mile, then bike lanes should be considered rather than a MUW for the Suburban Pedestrian Corridor.

6.8 Reference the Bicycle Way section for additional guidelines on bicycle facilities.

**TRANSIT**

6.8 Within a pedestrian district, local transit trips are encouraged to stop to load and unload passengers at bus stops and shelters.

6.9 Utilize a separation zone between vehicle travel lanes and the pedestrian way for transit shelter and stop locations. Refer to bus transit way and separation zone guidelines.

Reference the Bus Transit Way and Rapid Transit Way sections for additional guidelines.

**STREETSCAPE AND GREEN INFRASTRUCTURE**

Streetscape includes unique landscaping to create a sense of place to the corridor and also defines an important corridor in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management.

Medium street trees should be planted down the two separation zones. If a “City Beautiful” overlay is applied (pg. 123), then these should be large trees.

Provide street trees and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”.

**TRADITIONAL THOROUGHFARE CLASSIFICATION**

Usually classed as a secondary arterial or collector based on capacity, but speed may not correspond.

**SPECIAL DESIGN GUIDELINES**

Follow the general design guidelines on page 61.
A Pedestrian Corridor is characterized, primarily, by its adjacent land uses, a clustering of mixed-use pedestrian destinations and activities. Vehicular traffic speed is slow and calmed to allow optimization of pedestrian activity and bicycle facilities. An environment conducive to lively pedestrian activities, such as sidewalk cafes and plaza gathering spaces, is encouraged.
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A Multi-Modal Social Street Corridor is characterized by dense, mixed-use pedestrian destinations and activities, with buildings located on or near the street right-of-way. Pedestrians dominate the Multi-Modal Social Street Corridor with lively activity areas such as sidewalk cafes and plaza gathering spaces. Paving materials, furnishings, public art, and landscape enhancements are prevailing, pedestrian in scale, and rich in detail, creating a corridor that is a pedestrian place, rather than a vehicular throughway. Social controls, e.g. eye contact and observation, rather than regulatory controls, e.g. stop signs or signals, govern how all users behave.

**FUNCTION**

The Multi-Modal Social Street Corridor provides multi-modal convergence within the overall street right-of-way to form a pedestrian priority zone with very low vehicular volume and speed, high density of pedestrian attractions and amenities. Example: Monument Circle in downtown Indianapolis, which exemplifies the Dutch and Danish concepts of shared streets with minimal expression of regulatory constraints, but with urban design details that direct appropriate user behavior.

Pedestrians and bicyclists are given priority with automobiles yielding. Traffic is slow and calmed, with low volumes. Transit circulators serve the corridor as supporting infrastructure. Driveway entries and exits are controlled and curb cuts are limited. On-street parking is encouraged to facilitate short-term access to adjacent land uses. Nearby parking resources are consolidated behind the street frontage with rear pedestrian access ways.

A Multi-Modal Social Street Corridor may be closed to vehicular traffic for festivals and other public events. Parallel service corridors, e.g. alleys, provide truck and service access. A dominant pedestrian presence is essential to the social appeal of the corridor and its economic viability.

In addition to multi-modal transportation and related uses, it is assumed that automobile and limited truck traffic will be accommodated on this multi-modal corridor.

**GUIDELINES**

1.0  **FUNCTIONAL CLASSIFICATION**
1.1  Placemaking Corridor
1.2  District Center

2.0  **RIGHT OF WAY WIDTH**
2.1  Varies.

3.0  **STREET METRICS AND GEOMETRICS**
3.1  Short blocks or blocks between 200-250' in length should face corridor to allow cross traffic.
INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA
MULTI-MODAL CORRIDORS TYPLOGIES & GUIDELINES
T.3 MULTI-MODAL SOCIAL STREET CORRIDOR

3.2 No Posted Speed: should be under 10 mph. Traffic management design elements should be utilized to control potentially excessive speeds.

3.3 Amenities should be provided to enhance pedestrian and placemaking qualities.

3.4 Special paving, bollards, and other furnishings.

3.5 Provide curb extensions and raised table at entry points to establish motorist behavior through social interaction with pedestrians (eye contact negotiation of right-of-way).

3.6 Measures to create space for shared multi-modal space include lane width reduction to a minimum 10-foot width, and elimination of on-street parking.

3.7 Driveways and other curb cuts are discouraged.

4.0 MODES ACCOMMODATED
(in addition to standard automobiles)

4.1 Accommodate Regional Transit (Rapid or Bus). Refer to rapid transit way and/or bus transit way guidelines.

4.2 Accommodate bicycle and pedestrian modes by bike lanes, preferably within the parking lane, and collector sidewalks, both sides. Refer to Bicycle Way, Pedestrian Way, and Multi-Use Way guidelines.

4.3 Accommodate Pedestrian Activity Zones.

MODES DISCOURAGED

4.4 Truck traffic is allowed, but not favored. Social streets should have parallel service corridors (T.11a) for trucks to load and unload commercial buildings. Discourage heavy commercial truck traffic by enforcing weight limit controls.

5.0 DOMINANT LAND USE PATTERN

Accommodates most land uses. Typically high intensity mixed use dominated by retail and commercial uses, with most of the dependent residential on cross streets.

6.0 FACILITY DETERMINATION
PEDESTRIAN, BICYCLE AND TRANSIT

6.1 Accommodate bicycle and pedestrian modes as primary mode by multi-use paths or bike lanes and collector sidewalks, both sides. Refer to bicycle way and pedestrian way guidelines.

6.2 Accommodate pedestrian activity zones and special event street closures.

6.3 Accommodate automobiles as lesser mode. Refer to vehicular travel way guidelines.

6.4 Accommodate local/circulator transit modes. Refer to bus transit way guidelines.

6.5 Discourage through traffic, regional transit and commercial vehicles other than delivery.

Figure 76.1 Cross Section of Multi-Modal Social Street Corridor. Includes recommended widths of component zones.
A Social Street is characterized by dense concentration of mixed-use pedestrian destinations and activities, low vehicular volume and speed, and a physical structure that results in pedestrian priority over all other modes. Social controls establish negotiation of right-of-way through eye-contact and environmental clues rather than through regulatory restrictive measures such as signs and signals.
7.0 **STREETSCAPE AND GREEN INFRASTRUCTURE**

7.1 Streetscape includes extensive landscaping to create a sense of importance or place to the corridor and also defines a key corridor in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management, especially in an area that would normally have little greenspace.

7.2 Medium street trees should be planted down the separation zones. If a “City Beautiful” overlay is applied (which see), then these should also be large trees.

7.3 Provide street trees, landscaping, lighting and other amenities, which should provide a great deal of visual “friction”.

8.0 **TRADITIONAL THOROUGHFARE CLASSIFICATION**

8.1 Usually classed as a local based on capacity and speed.

9.0 **SPECIAL DESIGN GUIDELINES**

Follow the general design guidelines on page 61.
A Multi-Modal Modern Parkway is used to move traffic with little impediment. A Multi-Modal Modern Parkway Corridor is an extensively landscaped, often curvilinear corridor designed to move traffic at higher speeds. In addition to residential land use, commercial, institutional, or mixed-use nodes can occur along a parkway if served by other crossing thoroughfares, and with preservation of the parkway’s visual continuity.

**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Thru</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>District edge</td>
</tr>
<tr>
<td>Land Use Intensity</td>
<td>Low to Medium</td>
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<td>Cross Traffic</td>
<td>Reduced</td>
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<tr>
<td>Block length</td>
<td>over 1000’</td>
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<td>Speed</td>
<td>45 mph</td>
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<tr>
<td>Right-of-Way Width</td>
<td>110 feet</td>
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<tr>
<td>Green Infrastructure</td>
<td>Lg. Tree median</td>
</tr>
<tr>
<td></td>
<td>2 rows med trees SZ</td>
</tr>
</tbody>
</table>

**FUNCTION**

The Multi-Modal Modern Parkway Corridor provides multi-modal connectivity across multiple districts with potentially regional extents, but along the edge of and defining the edge of a district. The parkway usually has few crossways often limited to the location of bridges or to adjacent park limitations, but these crossings should allow ample accommodation for pedestrians and recreational traffic using park facilities. It is a good candidate for high speed transit having few impediments to flow. Large distances covered by the modern parkway limit its pedestrian accessibility and hence the corridor should not cross through pedestrian districts if possible.

**GUIDELINES**

1.0 **FUNCTIONAL CLASSIFICATION**

1.1 Thru Corridor

1.2 District Edge

2.0 **RIGHT OF WAY WIDTH**

2.1 110 foot minimum corridor, plus contiguous linear park/open space on one side.

3.0 **STREET METRICS AND GEOMETRICS**

3.1 Truck traffic is allowed, but not favored.

3.2 Posted Speed: 45 mph. Traffic management design elements should be utilized to control potentially...
3.2.1 Provide signal platooning or all way stops at intersections.

3.2.2 Flare at intersections to maintain pedestrian refuge median and turn lane.

3.2.3 Provide median refuges at crosswalks for multiple lane parkways. Generally a minimum of one median refuge for every five lanes of traffic, dependent on the length of the traffic signal.

3.2.4 Provide innovative turn controls at intersections to minimize crosswalk conflicts.

3.2.5 Provide street trees and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”.

3.2.6 Design a curvilinear roadway.

3.3 Driveways and other curb cuts are discouraged.

3.3.1 Where necessary for land use access, curb cuts should be placed at crossing streets, along alleys, or consolidated.

4.0 MODES ACCOMMODATED

4.1 Accommodate Regional Transit (Rapid or Bus). Refer to rapid transit way and/or bus transit way guidelines.

4.2 Accommodate bicycle and pedestrian modes by multi-use paths or bike lanes and collector sidewalks, both sides. Refer to Bicycle Way, pedestrian way, and Multi-Use Way guidelines.

4.3 Accommodate pedestrian activity zones.

4.4 High Occupancy Vehicles (HOV) are accommodated on longer stretches of a parkway, but are removed at approaches to intersections to allow for proper turning.

5.0 DOMINANT LAND USE PATTERN

Medium-Low to Medium-High residential intensity, with buffers and setbacks to offset noise, but can accommodate most land uses other than retail. Common services like restaurants are preferably at intersections. Can accommodate industrial parks if properly zoned and executed.

5.2 Setbacks and bufferyards are generally wide to offset noise and to provide a more scenic experience.

5.2 Develop parkway development or overlay regulations to address access controls, on-site parking, setbacks, landscape treatment, and natural resource protection.
A Modern Parkway corridor is an extensively landscaped, often curvilinear corridor with moderately high vehicular traffic speed, that offers the user a scenic experience. It is generally characterized by a border of street trees within wide tree lawns that provide continuity as it passes through multiple districts. The open space is essentially a linear park or trail in which automobile use is a parallel activity.
6.0 FACILITY DETERMINATION

6.1 PEDESTRIAN
A twelve-foot wide Multi-Use Path for shared pedestrian and bicycle use is recommended for the Modern Parkway.

6.2 Option ally separate bike lanes and collector sidewalks may be used on both sides of the parkway in lieu of the Multi-Use Way.

6.3 The Multi-Use Way may meander into adjacent and contiguous park and open space.

6.4 Reference the Pedestrian Way or the Multi-Use Way sections for additional guidelines.

6.5 BICYCLE
Should separate bike lanes be used, and 85% of actual travel speeds exceed 40 mph, then additional spatial separation between vehicle travel lanes and bike lane or multi-use path should be provided.

6.6 Should traffic volume exceed 10,000 vehicles per lane daily (average daily traffic - ADT) and the peak period of travel is greater than 10% of ADT, then bicyclists should be provided an off-street and/or parallel and connected bicycle facility.

6.7 If there are more than eight crossings per mile, then bike lanes should be considered rather than a MUW or care should be taken to move the MUW away from the parkway and transition bicyclists across intersections to a safer pattern with auto traffic.

6.8 Reference the Bicycle Way section for additional guidelines on bicycle facilities.

6.9 TRANSIT
Within a pedestrian district, and preferably along a key connecting cross street that leads to the center of the district, commuter transit trips are encouraged to terminate at a transit center and commuter automobile trips are encouraged to terminate at long-term parking structures.

6.10 Utilize a separation zone between vehicle travel lanes and the pedestrian way for transit shelter and stop locations. Refer to bus transit way and separation zone guidelines.

6.11 Reference the Bus Transit Way and Rapid Transit Way sections for additional guidelines.

7.0 STREETSCAPE AND GREEN INFRASTRUCTURE

7.1 Streetscape includes extensive landscaping to create a sense of being in a park and also defines a key corridor in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management and the principal access to greenspace for residents of adjacent areas.

7.2 Large street trees should be planted down the median.

7.3 Medium street trees should be planted down the four separation zones. If a “City Beautiful” overlay is applied (pg. 123), then these should also be large trees.

7.4 Provide lighting to clearly illuminate MUW and provide clear visibility of the MUW to ensure safety, but shield upward light to diminish light pollution.

8.0 TRADITIONAL THOROUGHFARE CLASSIFICATION
Usually classed as a primary arterial based on capacity and speed.

9.0 SPECIAL DESIGN GUIDELINES
Follow the general design guidelines on page 61.
A Multi-Modal Commuter Corridor is primarily used for travel to and from employment centers. These corridors accommodate a high volume of traffic at peak rush hour periods in an efficient manner. Traffic signals are typically synchronized to maximize travel flow and minimize interruptions. Commuter use is dominant during morning and evening rush hours, Monday through Friday, but Multi-Modal Commuter Corridors are also primary thoroughfares throughout a community or region.

**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>District edge to center, crosses districts</td>
</tr>
<tr>
<td>Land Use Intensity</td>
<td>Med-Low to Med-High</td>
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<tr>
<td>Cross Traffic</td>
<td>Reduced</td>
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<tr>
<td>Block length</td>
<td>long side or &gt;600’</td>
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<td>Speed</td>
<td>35 mph</td>
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<tr>
<td>Right-of-Way Width</td>
<td>100-130 feet min</td>
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<tr>
<td>Green Infrastructure</td>
<td>2 rows med trees SZ</td>
</tr>
</tbody>
</table>

**FUNCTION**

The Multi-Modal Commuter Corridor provides multi-modal connectivity across multiple districts with potentially regional extents, either along the borders of the pedestrian district or, if necessary, through the district. If it runs through a district, the streetscape should be sensitive to the district and pedestrian context.

Within pedestrian districts, commuter transit trips are encouraged to terminate at a transit center and commuter automobile trips are encouraged to terminate at long-term parking structures. During off-peak commuter use, on-street parking can be accommodated to facilitate short-term access to adjacent land uses. Curb cuts and driveways are discouraged. Generally, pedestrian activity areas such as sidewalk cafés or plazas are infrequent, but if present will tend to be located at key cross streets. A separation zone between vehicle travel lanes and the pedestrian way is utilized for transit shelters, street trees, furnishings, and utilities. A Multi-Modal Commuter Corridor exists in both urban and suburban conditions.

In addition to multi-modal transportation and related uses, it is assumed that automobile and truck traffic will be accommodated on this multi-modal corridor.
Figure 84.1 Cross Section of Typical Multi-Modal Urban Commuter Corridor. Includes recommended widths of component zones.

**GUIDELINES**

1.0 **FUNCTIONAL CLASSIFICATION**

1.1 Connector Corridor

1.2 District Edge to District Center

2.0 **RIGHT OF WAY WIDTH**

2.1 T.5a 90 foot, T.5b 70 foot minimum corridor (i.e. for 1-way), T.5c 100 foot minimum corridor.

1.2 T.5c for new development: 130 foot minimum corridor.

3.0 **STREET METRICS AND GEOMETRICS**

3.1 Long blocks or blocks at least 600’ in length should face corridor to reduce cross traffic and facilitate directional commute.

3.2 Posted Speed: 35 mph. Traffic management design elements should be utilized to control potentially excessive speeds.

3.3 Provide signal platooning or all way stops at intersections.

5.2.2 Providing median crosswalk refuge at multi-lane streets is recommended.

5.3 Driveways and other curb cuts are discouraged.

5.3.1 Where necessary for land use access, curb cuts should be placed at crossing streets, along alleys, or consolidated.

4.0 **MODES ACCOMMODATED**

(in addition to standard automobiles)

4.1 Accommodate Regional Transit (Rapid or Bus). Refer to rapid transit way and/or bus transit way guidelines.

4.2 Accommodate bicycle and pedestrian modes by multi-use paths or bike lanes and collector sidewalks, both sides. Refer to bicycle way and pedestrian way guidelines.

4.3 Accommodate on-street parking. Refer to street parking zone guidelines. May be eliminated if not required for adjacent land use.

4.4 Parking lanes that are used as vehicle travel ways during peak hours are discouraged when a bicycle way is present.

4.5 Bicycle lanes if off-street multi-use way option is available, or provide parallel bicycle route with equivalent accessibility and connectivity.

5.0 **DOMINANT LAND USE PATTERN**

A higher intensity of land use with mixed use, preferably small to medium building setbacks, but can vary greatly. A good location for light industrial facilities if properly managed.
A Commuter Corridor is used for travel to and from employment centers. It accommodates a high volume of traffic efficiently. Traffic signals are synchronized. Curb cuts and driveways are discouraged.

A separation zone is utilized for transit shelters, trees, furnishings, and utilities. During off-peak use, on-street parking can allow access to adjacent land uses.

**T.5a**

**MM URBAN COMMUTER**
6.0 FACILITY DETERMINATION

PEDESTRIAN

6.1 T.5a and b MM Urban Commuter and 1-Way Commuter: a six-foot wide collector sidewalk for pedestrians is recommended.

6.2 T.5c MM Suburban Commuter: a twelve-foot wide multi-use way is recommended. Optionally separate bike lanes and collector sidewalks may be used on both sides of the parkway in lieu of the multi-use way.

6.3 If the T.5c MM Suburban Commuter becomes urbanized and pedestrian destinations become more frequent, it is recommended that the multi-use way be converted to separate collector sidewalk and bike lane facilities.

6.4 Reference the Pedestrian Way or the Multi-Use Way sections for additional guidelines.

BICYCLE

6.5 If bike lanes are placed adjacent to the principle VTW and 85% of actual travel speeds exceed 40 mph, then additional spatial separation between vehicle travel lanes and bike lane or multi-use way, perhaps in the median, should be provided.

6.6 Should traffic volume exceed 10,000 vehicles per lane daily (average daily traffic - ADT) and the peak period of travel is greater than 10% of ADT, then bicyclists should be placed adjacent to the parking lane (as shown) or provided an off-street and/or parallel and connected bicycle facility.

6.7 Bicycle lanes are discouraged when parking lanes that are used as vehicle multi-use ways during peak hours. An off-street multi-use path option presents an alternative, or provide parallel bicycle route with equivalent accessibility and connectivity.

If there are more than eight crossings per mile on a Suburban Commuter, then bike lanes should be considered rather than a MUW.

Reference the Bicycle Way section for additional guidelines on bicycle facilities.

TRANSIT

Within a pedestrian district, commuter transit trips are encouraged to terminate at a transit center and commuter automobile trips are encouraged to terminate at long-term parking structures.

The commuter is good location for transit and can have a lane dedicated to rapid bus transit, especially in the case of T.5b 1-Way Commuter, but in such an instance, the bus way should take the opposite side of the street from a bike lane, if possible, to allow bicycle and transit modes a privileged access to the street edge.

Utilize a separation zone between vehicle travel lanes and the pedestrian way for transit shelter and stop locations. Refer to bus transit way and separation zone guidelines.

Reference the Bus Transit Way section for additional guidelines.
A Commuter Corridor is used for travel to and from employment centers. It accommodates a high volume of traffic efficiently. Traffic signals are synchronized. Curb cuts and driveways are discouraged. A separation zone is utilized for transit shelters, trees, furnishings, and utilities. During off-peak use, on-street parking can allow access to adjacent land uses.
7.0  STREETSCAPE AND GREEN INFRASTRUCTURE

7.1  Streetscape includes landscaping to create a sense of function of the corridor and also defines an important corridor in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management.

7.2  Medium street trees should be planted down the two separation zones. If a “City Beautiful” overlay is applied (which see), then these should also be large trees.

7.4  Provide street trees and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”.

8.0  TRADITIONAL THOROUGHFARE CLASSIFICATION

8.1  Usually classed as an arterial based on capacity, but speed does not correspond.

9.0  SPECIAL DESIGN GUIDELINES

Follow the general design guidelines on page 61.
Commuter Corridors accommodate higher volume traffic to and from employment centers. Synchronized signals optimize flow and speed. Curb cuts and driveways are discouraged. A separation zone is utilized for transit shelters, trees, furnishings, utilities and sidewalk buffer. During off-peak use, on-street parking can allow access to adjacent land uses.
A Multi-Modal Connector Corridor is a short (quarter- to half-mile) link primarily used to connect with other longer multi-modal corridors. A Connector Corridor has a slower traffic speed and volume and usually has stops at each intersection.

**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>District edge to center, connects important corridors</td>
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<tr>
<td>Land Use Intensity</td>
<td>Med-Low to Med-High</td>
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<tr>
<td>Cross Traffic</td>
<td>Heavy</td>
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<td>Block length</td>
<td>Short side or &lt;600'</td>
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<td>Speed</td>
<td>30 mph</td>
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<td>Right-of-Way Width</td>
<td>60-90 feet min</td>
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<tr>
<td>Green Infrastructure</td>
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</tbody>
</table>

**FUNCTION**

The Multi-Modal Connector Corridor provides multi-modal linkage between principal corridors and cross network continuity. The Connectors do not usually define pedestrian district borders, but often cross them linking districts and areas of distinction to local streets and to each other. On-street parking is encouraged and curb cuts are discouraged. Pedestrian activity areas such as sidewalk cafés or plazas are encouraged. A separation zone between vehicle travel lanes and the pedestrian way is utilized for transit stops, street trees, furnishings, and utilities. A Multi-Modal Connector Corridor exists in both urban and suburban conditions.

In addition to multi-modal transportation and related uses, it is assumed that automobile and truck traffic will be accommodated on this multi-modal corridor.

**GUIDELINES**

1.0 FUNCTIONAL CLASSIFICATION

1.1 Connector Corridor

1.2 District Edge to District Center

2.0 RIGHT OF WAY WIDTH

2.1 T.6a Urban Connector Corridor width 60 feet minimum; 90 feet recommended for new development.

2.2 T.6b Suburban Connector Corridor width 90 feet minimum; 105 feet recommended for new development.
SECTION II.

T.6 MULTI-MODAL CONNECTOR CORRIDOR

4.3 Accommodate pedestrian activity zones.

4.4 On-street parking is encouraged.

MODES DISCOURAGED

Discourage regional transit and regional commuter traffic.

DOMINANT LAND USE PATTERN

Variable land uses, mixed use near district cores, with distributed generators and destinations

FACILITY DETERMINATION

PEDESTRIAN

T.6a MM Urban Connector Corridor: a six foot wide collector sidewalk for pedestrians is recommended with parallel and separate bike lanes.

T.6b MM Suburban Connector Corridor: a twelve-foot wide multi-use path is recommended. Optionally a twelve foot wide multi-use path may be used on both sides of the corridor in lieu of the separate sidewalk and bicycle lanes.

As the T.6b MM Suburban Connector becomes urbanized and pedestrian destinations become more frequent, it is recommended that a multi-use way be converted to separate collector sidewalk and bike lane facilities.

Reference the Pedestrian Way or the Multi-Use

Figure 92.1 Cross Section of Typical Multi-Modal Urban Connector Corridor. Includes recommended widths of component zones.
T.6a

URBAN CONNECTOR

MODAL HIERARCHY

Connector Corridors provide connections to longer multi-modal corridors. It has lower traffic speed and volume and usually has stops at each intersection. On-street parking and pedestrian activity areas such as sidewalk cafes or plazas are encouraged if sufficient right-of-way. Curb cuts are discouraged. The separation zone is used for transit stops, street trees, furnishings, and utilities.
T.6 MULTI-MODAL CONNECTOR CORRIDOR

6.5 Should 85% of actual travel speeds exceed 40 mph, then additional spatial separation between vehicle travel lanes and bike lane or multi-use path should be provided.

6.6 Should traffic volume exceed 10,000 vehicles per lane daily (average daily traffic - ADT) and the peak period of travel is greater than 10% of ADT, then bicyclists should be provided an off-street and/or parallel and connected bicycle facility.

6.7 If there are more than eight crossings per mile, then bike lanes should be considered rather than a MUW.

6.8 Consider vehicular lane width reduction to 10-feet to create space for pedestrian and bicycle facilities.

6.9 Eliminate parking to accommodate pedestrian and bicycle facilities.

6.10 Reference the Bicycle Way section for additional guidelines on bicycle facilities.

TRANSIT

6.11 Within a pedestrian district, transit trips on Connector Corridors are encouraged to load and unload passengers at transit shelters or stops.

6.12 Utilize a separation zone between vehicle travel lanes and the pedestrian way for transit shelter and stop locations. Refer to bus transit way and separation zone guidelines.

6.13 Reference the Bus Transit Way section for additional guidelines.

STREETSCAPE AND GREEN INFRASTRUCTURE

Medium street trees should be planted down the two separation zones. If a "City Beautiful" overlay is applied (pg. 123), then these should also be large trees.

Provide street trees and lighting at minimum allowable clear-zone offset from travel lane to provide visual "friction".

TRADITIONAL THOROUGHFARE CLASSIFICATION

Usually classed as a collector based on capacity and speed.

SPECIAL DESIGN GUIDELINES

Follow the general design guidelines on page 61.
A Connector Corridor is a link used to connect with other longer corridors. It has a lower traffic speed and volume and usually has stops at each intersection. On-street parking is encouraged and curb cuts are discouraged. Pedestrian activity areas such as sidewalk cafes or plazas are encouraged. A separation zone is utilized for transit stops, trees, furnishings, and utilities.

**T.6b**

**SUBURBAN CONNECTOR**
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A Multi-Modal Link Corridor is a short (quarter- to half-mile) link primarily used to connect with other longer multi-modal corridors. A Link Corridor has a slower traffic speed and volume and usually has stops at each intersection.

**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Local</th>
</tr>
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<tbody>
<tr>
<td>Location in District</td>
<td>Across districts, connects subdistricts</td>
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<td>Land Use Intensity</td>
<td>Low to Med</td>
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<tr>
<td>Cross Traffic</td>
<td>Medium</td>
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<td>Block length</td>
<td>Short side or &lt;600’</td>
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<td>Speed</td>
<td>20-25 mph</td>
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<td>Right-of-Way Width</td>
<td>50-80 feet min</td>
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<td>Green Infrastructure</td>
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**FUNCTION**

The Multi-Modal Link Corridor provides smaller scale connections than multi-modal connector corridors. Links do not usually define pedestrian district borders, but often cross them linking subdistricts and areas of distinction to local streets and to each other.

On-street parking is encouraged and curb cuts are encouraged. Pedestrian activity areas such as sidewalk cafés or plazas are encouraged. A separation zone between vehicle travel lanes and the pedestrian way is utilized for transit stops, street trees, furnishings, and utilities. A Multi-Modal Link Corridor exists in both urban and suburban conditions.

In addition to multi-modal transportation and related uses, it is assumed that automobile and truck traffic will be accommodated on this multi-modal corridor.

**GUIDELINES**

1.0 **FUNCTIONAL CLASSIFICATION**

1.1 Local Corridor

1.2 District Center

2.0 **RIGHT OF WAY WIDTH**

2.1 50-80 foot minimum corridor

3.0 **STREET METRICS AND GEOMETRICS**

3.1 Short blocks or blocks less than 600’ in length should face corridor to allow cross traffic.
T.7 MULTI-MODAL LINK CORRIDOR

6.1 A 6-8 foot wide collector sidewalk is recommended for the Multi-Modal Urban Link, and Multi-Use Ways are recommended for Rural Links, preferably connected to road to allow for slow rural vehicles to overlap. Suburban Links can use either depending on local intensity.

6.2 Reference the Pedestrian Way or the Multi-Use Way sections for additional guidelines.

BICYCLE

6.3 Should 85% of actual travel speeds exceed 40 mph, then additional spatial separation between vehicle travel lanes and bike lane or multi-use way should be provided.

6.6 Should traffic volume exceed 10,000 vehicles per lane daily (average daily traffic - ADT) and the peak period of travel is greater than 10% of ADT, then bicyclists should be provided an off-street and/or parallel and connected bicycle facility.

6.7 Consider vehicular lane width reduction to 8 or 9 feet to create space for pedestrian and bicycle facilities and keep speeds slow.

6.8 Reduce on-street parking to accommodate pedestrian and bicycle facilities if needed.

6.9 Reference the Bicycle Way section for additional guidelines on bicycle facilities.

TRANSIT

within a pedestrian district, transit trips on Connector Corridors are encouraged to load and
Link Corridors provide connections within districts and across subdistricts, between longer multi-modal corridors, and to the residential quarters. It has lower traffic speed and volume and usually has stops at each intersection. On-street parking, pedestrian activity areas and live-work units are encouraged.

1.7a

URBAN LINK

MODAL HIERARCHY
unload passengers at transit shelters or stops.

6.11 Utilize a separation zone between vehicle travel lanes and the pedestrian way for transit shelter and stop locations. Refer to bus transit way and separation zone guidelines.

6.12 Reference the Bus Transit Way section for additional guidelines.

7.0 **STREETSCAPE AND GREEN INFRASTRUCTURE**

7.1 Streetscape includes landscaping to create a sense of connection to the surrounding district and also defines an important corridor in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management.

7.2 Medium street trees should be planted down the two separation zones.

7.4 Provide street trees and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”

8.0 **TRADITIONAL THOROUGHFARE CLASSIFICATION**

8.1 Usually classed as a local or collector based on capacity and speed.

9.0 **SPECIAL DESIGN GUIDELINES**

Follow the general design guidelines on page 61.
SUBURBAN LINK CORRIDOR MODAL HIERARCHY

T.7b SUBURBAN LINK

Link Corridors provide connections within districts and across subdistricts, between longer multi-modal corridors, and to the residential quarters. It has lower traffic speed and volume and usually has stops at each intersection. On-street parking, pedestrian activity areas and live-work units are encouraged.
RURAL LINKS

Rural roads are experiencing traffic and development pressure. This poses difficulties for vehicles that have formerly used them without conflict with urban-like traffic, including tractors and other farm vehicles. Furthermore, bicycling in the country used to be a relaxing pastime, but, with high speed automobile traffic, can now be a harrowing experience.

Consequently, the evolution of a rural road into multi-modality is demonstrated in the figures at the left.

Figure 102.1 and 2. 1) A traditional rural road with drainage swales. 2) The same traditional rural road adding a Multi-Use Way (MUW) as colored pavement delineation allows for pedestrians, bicyclists and farm vehicles (but not automobiles and trucks) to be accommodated and allowing other traffic safe passing of the slower moving vehicles. MUW bicycle and rural vehicle traffic should follow the road directions.
A Multi-Modal Quiet Street Corridor is a traffic calming local street serving residential areas. It is modeled after Dutch *Woonerf* and British *Home Zone* concepts.

**FUNCTION**

The Multi-Modal Quiet Street Corridor provides village residential or village mixed-use pedestrian districts a right-of-way shared between pedestrians, bicycles, and local access vehicles, in that order. The Quiet Street corridor is similar to the Social Street, see Corridor T.3, but at a neighborhood scale. The Quiet Street Corridor can provide bicycle route continuity across and through neighborhoods as part of a bicycle boulevard system. A Multi-Modal Quiet Street Corridor is part of an area-wide traffic-calming program serving core residential areas bounded by multimodal commuter, connector, or pedestrian corridors. System-wide application is important so that the impact is evenly distributed throughout the residential area. Typically, a Multi-Modal Quiet Street Corridor is a popular walking and biking route, where pedestrians and bicyclists use the roadway with automobiles yielding. Multi-Modal Quiet Street Corridor designation provides signage and maintains existing street pavement to pedestrian way standards. No through automobile or truck traffic is accommodated.

The corridor is used primarily by local vehicular traffic, has slow vehicular traffic speed and volumes, and usually has stops or traffic calming techniques at each intersection. Driveway entries and exits are limited because the dominant land use frontage is residential side yards. Limited parking indents can be provided. Transit is not accommodated.

---

**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>Residential quarters of districts</td>
</tr>
<tr>
<td>Land Use Intensity</td>
<td>Low to Med</td>
</tr>
<tr>
<td>Cross Traffic</td>
<td>light</td>
</tr>
<tr>
<td>Block length</td>
<td>Short side or $&lt;600'$</td>
</tr>
<tr>
<td>Speed</td>
<td>15-20 mph</td>
</tr>
<tr>
<td>Right-of-Way Width</td>
<td>Varies</td>
</tr>
<tr>
<td>Green Infrastructure</td>
<td>2 rows med trees SZ</td>
</tr>
</tbody>
</table>

---

**GUIDELINES**

1.0 **FUNCTIONAL CLASSIFICATION**

1.1 Local Corridor

1.2 Residential quarters of districts

2.0 **RIGHT OF WAY WIDTH**

2.1 Varies, but should limit VTW to no more than two lane, two way traffic.

3.0 **STREET METRICS AND GEOMETRICS**

3.1 Short blocks or no more than 600' between cross streets

3.2 Posted Speed: 15-20 mph. Traffic management design elements should be utilized to control speeds.

3.3 Consider special paving and landscape elements at entry points.
3.4 Consider all way stops, one-way diverters or chokers, curb extensions, raised intersection tables and other vehicle traffic calming measures to limit speed and through traffic.

3.5 Traffic volume should not exceed 200 vehicles per day after traffic calming interventions.

3.6 Crossings at arterial streets should be protected (see transitions).

4.0 Modes accommodated
(in addition to standard automobiles)

4.1 Accommodate local access vehicles, bicycle and pedestrian modes, indent on-street parking, and emergency vehicle access.

4.2 Accommodate local transit (shuttle or circulator). Refer to bus transit way guidelines.

4.3 Accommodate pedestrian activity zones and special event street closures.

4.4 Driveways and other curb cuts are encouraged. Accommodate parking on either one or both sides depending on available space.

4.5 Accommodate automobiles as a lesser mode. Refer to vehicular travel way guidelines

MODES DISCOURAGED

4.6 Discourage through traffic, commercial vehicles, and public transit (except at cross street intersections).

5.0 DOMINANT LAND USE PATTERN

5.1 Low to medium density residential or small-scale village mixed use districts.

6.0 FACILITY DETERMINATION

6.1 PEDESTRIAN
Reference the Pedestrian Way or the Multi-Use Way sections for guidelines.

6.2 BICYCLE
No bike lanes, VTW is shared among permitted modes.

7.0 STREETSCAPE AND GREEN INFRASTRUCTURE

7.1 Streetscape includes landscaping to create a sense of home space to the corridor and also defines a key greening pattern in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management.

7.2 Medium street trees should be planted down the separation zones. If a “City Beautiful” overlay is applied (pg. 123), then these should also be large trees.

8.0 MODES ACCOMMODATED

8.1 Accommodate local access vehicles, bicycle and pedestrian modes, indent on-street parking, and emergency vehicle access.

8.2 Accommodate local transit (shuttle or circulator). Refer to bus transit way guidelines.

8.3 Accommodate pedestrian activity zones and special event street closures.

8.4 Driveways and other curb cuts are encouraged. Accommodate parking on either one or both sides depending on available space.

8.5 Accommodate automobiles as a lesser mode. Refer to vehicular travel way guidelines

9.0 SPECIAL DESIGN GUIDELINES
Follow the general design guidelines on page 61.
A Quiet Street Corridor is part of an area wide traffic-calming program serving core residential areas bounded by commuter, connector, or pedestrian corridors. The application is important so that the impact is evenly distributed throughout the area. This corridor is a popular walking and biking route, where pedestrians and bicyclists use the roadway with automobiles yielding.
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**MULTI-MODAL BICYCLE BOULEVARD CORRIDOR**

A Multi-Modal Bicycle Boulevard Corridor is a non-thoroughfare roadway, often a local street that has been modified to enhance bicycle travel continuity and bicyclist safety and convenience across multiple districts.

**FUNCTION**

The Multi-Modal Bicycle Boulevard Corridor provides bicycle route continuity within low volume local streets shared with local traffic as an alternative to high volume or high speed arterial streets. Traffic constraints are introduced at intersections with collector or arterial streets. The Bicycle Boulevard Corridor can provide bicycle route continuity across and through neighborhoods in combination with sections of Quiet Streets as well as multi-use paths sections to maintain route continuity.

This corridor facilitates bicycle circulation and commuting with periodic restrictions to through vehicular access. Assigning the right-of-way to the Multi-Modal Bicycle Boulevard Corridor at intersections encourages free-flow travel for bicycles. Traffic control by stop signs and traffic calming devices is utilized to assist bicycles in crossing major vehicular arterials.

A distinctive identity and ambiance is established through signage and design detail, so cyclists become aware of the Bicycle Boulevard status and motorists are alerted to the bicycle mode priority.

In addition to multi-modal transportation and related uses, it is assumed that limited automobile and truck traffic will be accommodated on this multi-modal corridor.

**GUIDELINES**

**1.0 FUNCTIONAL CLASSIFICATION**

1.1 Local Corridor

1.2 Location varies, but usually not along the edge of districts or too far from users (commuting bicyclists).

**2.0 RIGHT OF WAY WIDTH**

2.1 Varies, but should limit VTW to no more than two lane, two way traffic.

**3.0 STREET METRICS AND GEOMETRICS**

3.1 Short blocks or no more than 600’ between cross streets

3.2 Posted Speed: 15-20 mph. Traffic management design elements should be utilized to control automotive speeds

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**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>Varies, but usually not edge</td>
</tr>
<tr>
<td>Land Use Intensity</td>
<td>low to medium</td>
</tr>
<tr>
<td>Cross Traffic</td>
<td>light</td>
</tr>
<tr>
<td>Block length</td>
<td>Varies, but &lt;600’</td>
</tr>
<tr>
<td>Speed</td>
<td>15-20 mph</td>
</tr>
<tr>
<td>Right-of-Way Width</td>
<td>Varies</td>
</tr>
<tr>
<td>Green Infrastructure</td>
<td>2 rows med trees SZ</td>
</tr>
</tbody>
</table>

---

*Figure 107.1 A Multi-Modal Bicycle Boulevard Corridor is a non-thoroughfare roadway, often a local street that has been modified to enhance bicycle travel and convenience across multiple districts.*
INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA
MULTI-MODAL CORRIDORS TYPOLOGIES & GUIDELINES
T.9 MULTI-MODAL BICYCLE BOULEVARD CORRIDOR

Figure 108.1 Cross Section of Multi-Modal Bicycle Boulevard Corridor. Includes recommended widths of component zones.

3.3 Consider all way stops, one-way diverters or chokers, curb extensions, raised intersection tables and other vehicle traffic calming measures to limit speed and through traffic.

3.3.3 Consider special paving and landscape elements at entry points.

3.4 Traffic volume should not exceed 200 automobiles per day after traffic calming interventions.

3.4 Crossings at arterial streets should be protected (see transitions).

4.0 MODES ACCOMMODATED (in addition to standard automobiles)

4.1 Accommodate local access vehicles, bicycle and pedestrian modes, indent on-street parking, and emergency vehicle access.

4.2 Accommodate pedestrian activity zones and special event street closures.

4.3 Accommodate parking on either one or both sides depending on available space.

4.4 Accommodate automobiles as a lesser mode. Refer to vehicular travel way guidelines.

4.6 Discourage through traffic, commercial vehicles, and public transit (except at cross street intersections).

5.0 DOMINANT LAND USE PATTERN

5.1 Low to medium density residential or small-scale village mixed use districts.

6.0 FACILITY DETERMINATION

6.1 PEDESTRIAN

Reference the Pedestrian Way or the Multi-Use Way sections for guidelines.

6.2 BICYCLE

No bike lanes, VTW is shared among permitted modes.

Reference the Bicycle Way section for additional guidelines on bicycle facilities.

7.0 STREETSCAPE AND GREEN INFRASTRUCTURE

Streetscape includes landscaping to create a sense of home space to the corridor and also defines a key greening pattern in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management.

Medium street trees should be planted down the separation zones.

8.0 TRADITIONAL THOROUGHFARE CLASSIFICATION

Usually classed as a local or special route based on capacity and speed.

9.0 SPECIAL DESIGN GUIDELINES

Follow the general design guidelines on page 61.
A Bicycle Boulevard Corridor is a non-throughfare roadway, often a local street that has been modified to enhance bicycle travel continuity and bicyclist safety and convenience across multiple districts. This corridor facilitates bicycle circulation and commuting with periodic restrictions to through vehicular access.
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A Multi-Modal Off-Street Corridor is a corridor that caters to all modes of transportation other than automobile and truck. It is a principal corridor for pedestrians and bicyclists.

**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Off Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>Varies</td>
</tr>
<tr>
<td>Land Use Intensity</td>
<td>Linear Park</td>
</tr>
<tr>
<td>Cross Traffic</td>
<td>Light</td>
</tr>
<tr>
<td>Block length</td>
<td>Varies</td>
</tr>
<tr>
<td>Speed</td>
<td>&lt;15 mph</td>
</tr>
<tr>
<td>Right-of-Way Width</td>
<td>Varies, but &gt;24 feet</td>
</tr>
<tr>
<td>Green Infrastructure</td>
<td>range depending on ROW</td>
</tr>
</tbody>
</table>

**FUNCTION**

A Multi-Modal Off-Street Corridor is not accessible to automobiles or trucks. This corridor may be along an active and/or former rail line, utility line, waterway, or other non-vehicular route. It may be publicly owned, such as greenway corridors developed as multi-use trails, or privately owned, such as a railroad right-of-way. A Multi-Modal Off-Street Corridor creates, shares, and preserves continuous linkages that provide regional and area-wide connectivity.

A Multi-Modal Off-Street Corridor may accommodate underground utilities, transportation needs, as well as parallel recreational and open space benefits, by providing access to a vehicular-free linear green space. Automobiles and trucks are prohibited except those necessary for emergency or maintenance access.

Automobile and truck traffic are not accommodated on this corridor. The corridor provides cross-district and regional connectivity options. There are two types of Off-Street Corridors, each with its own recommended mode and use hierarchy.

A. Off-Street: Does not accommodate transit, is oftentimes found in more natural environments, and can feature a multi-use path with a parallel facility for other transportation modes or recreation opportunities, e.g. horses, boats, and other non-motorized modes, etc.

B. Off-Street with Transit: Can accommodate transit with a parallel multi-use path or “rail with trail”.

---

**Figure 111.1** A Multi-Modal Off-Street Corridor is a corridor that is not accessible to vehicles. This corridor may be along an active and/or former rail line, utility line, waterway, or other non-vehicular route.

**Figure 111.2** A Multi-Modal Off-Street Corridor creates, shares, and preserves continuous linkages that provide regional and area-wide connectivity.

**Figure 111.3** An Off-Street Corridor may accommodate underground utilities, transportation needs, as well as parallel recreational and open space benefits, by providing access to a vehicular-free linear green space.
1.0 FUNCTIONAL CLASSIFICATION

1.1 Off Street Corridor

1.2 Varies in location

2.0 RIGHT OF WAY WIDTH

2.1 Varies, but should be at least 24 feet.

3.0 STREET METRICS AND GEOMETRICS

3.1 Speed usually not posted, but should follow bike/pedestrian shared use parameters

CROSSINGS

3.2 Consider vehicle traffic calming measures at crossings, including all-way stops, one-way diverters or chokers, curb extensions, raised intersections, special paving, and landscape elements at entry points.

3.3 Crossings of arterials protected by either all way stops, signals, flashers, or median refuge (for multi-lane streets) dependent on cross street speed and volume characteristics.

3.4 Consider, for urban areas, maintaining clear visibility across the corridor from neighboring land uses to ensure the safety of the corridor.

4.0 MODES ACCOMMODATED

4.1 Accommodates bicycle and pedestrian modes, emergency vehicle access, utility service vehicle access, and utilities in Off-Street Corridors. Refer to pedestrian way and bicycle way guidelines. The Off-Street Corridor may also provide opportunities for parallel other transportation modes or recreational uses such as equestrian and water travel in the open space along corridors.

4.2 Rapid transit can be accommodated in Off-Street Transit Corridors. Refer to rapid transit way guidelines.

4.3 Accommodate parking on either both or one sides, depending on available space.

5.0 DOMINANT LAND USE PATTERN

5.1 Open space, rail, or natural feature, or utility corridors.

6.0 FACILITY DETERMINATION

6.1 Reference the Pedestrian Way or the Multi-Use Way sections for guidelines.

6.2 No bike lanes, VTW is shared among permitted modes.

6.3 Reference the Bicycle Way section for additional guidelines on bicycle facilities.

7.0 STREETSCAPE AND GREEN INFRASTRUCTURE

7.1 Streetscape includes landscaping to create a sense of park space to the corridor and also defines a key corridor in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management and often water cleansing area.
A Non-Vehicular Off-Street Corridor does not accommodate transit, is oftentimes found in more natural environments, and can feature a multi-use path with a parallel facility for other transportation modes or recreation opportunities, e.g. horses, boats, and other non-motorized modes, etc.

An Off-Street Corridor is a transportation route that is not associated with an active street right-of-way. It may be along an active or former (but not abandoned) rail or utility line, platted but not utilized street, waterway, or other natural feature to provide regional and area-wide connectivity. The corridor is not accessible to automobiles except emergency and maintenance vehicles. It may also accommodate underground utilities.
7.2 As many and as large a tree corridor as can be accommodated is suggested to furnish critical green infrastructure for the area, provided they do not inhibit visibility of the corridor.

8.0 **TRADITIONAL THOROUGHFARE CLASSIFICATION**

8.1 Not applicable

9.0 **SPECIAL DESIGN GUIDELINES**

Follow the general design guidelines on page 61.
An Off-Road Transit Corridor can accommodate transit with a parallel multi-use path, a rail with trail.

Parallel transit corridor (bus rapid transit, light rail transit, or automated guideway transit; specific technology to be determined; light rail transit depicted for illustrative purposes)

Perpendicular multi-modal corridor with pedestrian and bicycle facilities

Multi-use path for pedestrian and bicycle use; provides regional and area-wide connectivity

Fence for user safety

Accommodates underground utilities

Bicycle/pedestrian node for corridor identity and wayfinding elements

Intersection crossing at grade (shown) or grade-separated

An Off-Street Corridor with Transit is a transportation route that is not associated with an active street right-of-way. It may be along an active or former (but not abandoned) rail or utility line, platted but not utilized street, waterway, or other natural feature to provide regional and area-wide connectivity. The corridor is not accessible to automobiles except emergency and maintenance vehicles. It may also accommodate underground utilities.

**T.10b**

**MM OFF-STREET TRANSIT**
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MULTI-MODAL SERVICE CORRIDOR

A Multi-Modal Service Corridor is primarily used for deliveries, loading/unloading, passenger drop-off, trash pick-up, short-term parking, and access to long-term parking lots. This corridor accommodates vehicles, transit, and bicycles with a supporting infrastructure for pedestrians to reach final destinations. An alley is an example of a Service Corridor. A Multi-Modal Service Corridor exists in both commercial and residential areas.

**CORRIDOR CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in District</td>
<td>Parallel to other streets</td>
</tr>
<tr>
<td>Land Use Intensity</td>
<td>Varies, but Med-low to High</td>
</tr>
<tr>
<td>Cross Traffic</td>
<td>Light</td>
</tr>
<tr>
<td>Block length</td>
<td>Varies</td>
</tr>
<tr>
<td>Speed</td>
<td>&lt;15 mph</td>
</tr>
<tr>
<td>Right-of-Way Width</td>
<td>20 feet</td>
</tr>
<tr>
<td>Green Infrastructure</td>
<td>Small trees and shrubs, if any</td>
</tr>
</tbody>
</table>

**FUNCTION**

The Multi-Modal Service Corridor is generally referred to as an “alley”, or back-door service entry for utilities, refuse pick-up, loading/delivery, and other service functions in urbanized areas, including emergency service access. Ancillary uses can include mid-block pedestrian crossings, employee entrances (including bicycle entrance), and in some cases public entrances. Air rights should be considered for mid-block elevated walkways or for elevated guideway transit mode with upper floor stations.

**GUIDELINES**

1.0 **FUNCTIONAL CLASSIFICATION**
1.1 Service Corridor
1.2 Varies in location
2.0 **RIGHT OF WAY WIDTH**
2.1 At least 20 feet.
3.0 **STREET METRICS AND GEOMETRICS**
3.1 Posted Speed: 15 mph. Traffic management design elements should be utilized to control potentially excessive speeds.
A Service Corridor is primarily used for deliveries, loading/unloading, passenger drop-off, trash pick-up, short-term parking, and access to long-term parking lots. The corridor accommodates delivery vehicles, bus transit or taxis, and bicycles, with supporting infrastructures for pedestrians to reach their final destinations. Examples: alleys, loading zones.

**T.11 Multi-modal service corridor**

**Commercial service corridor modal hierarchy**
A Residential Service Corridor is primarily used for loading/unloading, passenger drop-off, trash pick-up, short-term parking, and access to garages. The corridor accommodates delivery vehicles, taxis, and bicycles, with supporting infrastructures for pedestrians to reach their final destinations. Examples: alleys, loading zones.
3.2 Consider curb extensions for defining entry/exit turning radii.

3.3 Consider pull-off areas for frequent loading-unloading stations.

3.4 Exits onto service corridors from zero setback buildings may require warning devices for intersecting modes.

3.5 Consider, for urban areas, maintaining clear visibility across the corridor from neighboring land uses to ensure the safety of the corridor.

4.0 MODES ACCOMMODATED
(in addition to standard automobiles)

4.1 Accommodate delivery and refuse vehicles.

Accommodate bicycle and pedestrian modes, and potential elevated walkway or guideway transit modes as upper floor lobby/station. A single building user can distribute service functions and public functions to allow second front door use.

Some corridors may have insufficient width to accommodate passing commercial vehicles. Refer to vehicular travel way guidelines.

**MODES DISCOURAGED**

Discourage through traffic, parking within right-of-way, and ground-floor transit.

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**Figure 120.1** Cross Section of Multi-Modal Commercial Service Corridor. Includes recommended widths of component zones.

**Figure 120.2** Cross Section of Multi-Modal Residential Service Corridor. Includes recommended widths of component zones.
5.0 **DOMINANT LAND USE PATTERN**

5.1 T.11a Medium to High density central business district and transit-oriented district.

5.2 T.11b Low to medium density residential or small-scale village mixed use districts.

6.0 **FACILITY DETERMINATION**

**PEDESTRIAN**

6.1 Consider overhead canopies for weather protection.

6.2 Reference the Pedestrian Way or the Multi-Use Way sections for guidelines.

**BICYCLE**

6.3 No bike lanes, VTW is shared among permitted modes.

6.4 Reference the Bicycle Way section for additional guidelines on bicycle facilities.

7.0 **STREETSCAPE AND GREEN INFRASTRUCTURE**

7.1 Streetscape includes landscaping to create a sense of caring for the corridor (not a trash dump) and can also provides an important corridor in the green infrastructure of the district, providing natural cooling, air cleansing and stormwater management.

7.2 Small trees and hedges should be used, if possible, provided they do not inhibit visibility of the corridor.

8.0 **TRADITIONAL THOROUGHFARE CLASSIFICATION**

8.1 Alley

9.0 **SPECIAL DESIGN GUIDELINES**

Follow the general design guidelines on page 61.

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The *Multi-Modal Corridor and Public Space Design Guidelines* are just a beginning in the process of actually achieving a truly multi-modal system. One of the many excellent comments from the public underscored the need for more guidelines. In particular, rural roads that have been recently incorporated into more suburban-type development have created the need for some guidance in transitioning these corridors to become more multi-modal.
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Additionally, certain special characteristics may be applied to a given corridor or network of corridors and are referred to as overlays. One that has been identified is the City Beautiful overlay, which designates corridors that are part of the Indianapolis Historic Park and Boulevard System on the National Historic Register. Another is the Cultural Trail which apart from making a link between important places within Indianapolis has the design impact of transforming a sidewalk into a Multi-Use Way with specialized wayfinding and other amenities [134].

**MULTI-MODAL CITY BEAUTIFUL**

Multi-Modal City Beautiful Corridors are associated with historic and cultural landscapes, districts, monuments, and civic buildings representing the City Beautiful era of the late 1800s and early 1900s. Many of the City Beautiful Corridors originally designed as parkways or boulevards, are now designated as the Indianapolis Historic Park and Boulevard System and listed on the National Register of Historic Places. These historic corridors are identified in figure 127.1. Other City Beautiful corridors could include the War Memorial Mall and Capitol Grounds in the Indianapolis Regional Center. City Beautiful Corridors are considered cultural landscapes, which are defined by the National Park Service as a “geographic area, including both cultural and natural resources . . . associated with an historic event, activity, or person or exhibiting other cultural or aesthetic values”. There is a National Register Nomination document available on file with the Indianapolis Department of Parks and Recreation and the State Historic Preservation Officer for the Indianapolis Historic Park and Boulevard System.

Developed by George E. Kessler during the City Beautiful movement, the City Beautiful Corridors historically is composed of roads laid out in wide sweeping curves, whose water-side edge consists of a variety of open, green spaces, that include shade trees and shrubs that channeled views, and sometimes recreational facilities and pedestrian walks. The land-side of the City Beautiful Corridor typically includes sidewalks separated from the road by tree-lawns, and wide set-backs for buildings, when land was available. The roadway separates the building from the open space along the waterway. The open space becomes a continuous park of varying widths, facilities, and character. To provide even more variety in City Beautiful Corridor layout, the open spaces varied in size and shape, and the land on one bank typically did not mirror the layout of the corridor on the opposite bank. Where driving lanes were constructed on both sides of the waterway, they rarely paralleled each other. Linking these roadways with natural features is the landscaped parkway.
Based on the platted grid system, the Indianapolis Historic Boulevards formed a network of transportation corridors for all modes of travel. Pedestrians were accommodated on broad sidewalks on either side of the travel lanes that were typically shaded by one to three rows of shade trees. When electric trains traveled the same route, they were located in the middle of the roadbed. The typical City Beautiful Corridor contained a 100-foot right-of-way, with 40 feet being designated for four lanes of automobile traffic. A variable width tree lawn and sidewalks measuring at least five feet wide were included on both sides of the roadway. The tree lawns separated the pedestrian from automobiles, and provided a pleasing environment for all users. The types of buildings along the route also defined the character of the corridor. A mix of residences and commercial buildings provided a neighborhood unity to the street, and uniform building setbacks ensured continuity of view and unity in the spatial arrangement of the corridors. The commercial buildings were typically only located at the intersections of the boulevard with arterial streets. Site furnishings included specially designed street lighting.

It is recommended that a Cultural Landscape Report (CLR) be undertaken before major work that could impact the Indianapolis Historic Park and City Beautiful resources. A CLR serves the purpose of providing a comprehensive study of the historically significant property and creating a sound basis for treatment that addresses contemporary needs while preserving the resource’s cultural heritage. Many historic bridges, views and other resources are still inherent in the system. As the system is modernized, the intended views, experiential character, historic bridges, and unique features of the City Beautiful corridors should be recognized, restored, or respected. Furthermore, City Beautiful overlays could be applied to new corridors.

**FUNCTION**

The Multi-Modal City Beautiful Overlay establishes a unique network of a historic setting with land use protection and access controls. The network is defined by stream corridors, historic parkways, historic boulevards, or multiple historic resources from the City Beautiful era (late 1800s - early 1900s) as adjacencies, with National Register listing or local jurisdiction controls. The Overlay, furthermore, creates a critical green infrastructure to the central Indianapolis region by providing extensive landscaping and a mature large tree canopy. The network enables visitors access to green and open space and preserve cherished distinctive places. This green infrastructure also helps reduce the heat island effect, create cooling corridors, cleanse and manage stormwater and clean the air.

**GUIDELINES**

1.0 **FUNCTIONAL CLASSIFICATION**

1.1 Depends on underlying corridor type.

1.2 Located at prominent centers, axes and edges of districts.

2.0 **CORRIDOR WIDTH**

Varies, according to historic resource.
A City Beautiful Corridor is associated with historic landscapes, districts, monuments, and civic buildings representing the City Beautiful era. Corridor alignments create a dynamic sequence of views. Generally, driveways, entries, and exits are controlled and curb cuts are limited. The design eliminates inconveniences to driving and commercial traffic is controlled by weight limits.
3.0 STREET GEOMETRICS

3.1 Traffic management design elements should be utilized to control potentially excessive speeds.

3.2 Provide planted boulevard medians at intersection approaches.

3.3 Provide median refuges at crosswalks for multiple lane parkways.

3.4 Provide innovative turn controls at intersections to minimize crosswalk conflicts.

3.5 Provide street trees and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”.

3.6 Design a curvilinear roadway geometric.

3.7 Driveways and other curb cuts are discouraged.

3.8 Where necessary for land use access, curb cuts should be placed at crossing streets, along alleys, or consolidated.

4.0 MODES ACCOMMODATED

(in addition to standard automobiles)

4.1 Accommodate Regional Transit (Rapid or Bus). Refer to rapid transit way and/or bus transit way guidelines.

4.2 Parking is encouraged on Placemaking Corridor Overlays

4.3 Accommodate bicycle and pedestrian modes by multi-use paths or bike lanes and collector sidewalks, both sides. Bike lanes are preferable if there are more than 8 street crossings per mile. Bicycles should follow auto traffic directions if on the MUW. Refer to bicycle way and pedestrian way guidelines.

4.4 Accommodate pedestrian activity zones.

MODES DISCOURAGED

4.5 Discourage commercial traffic by enforcing weight limit controls.

4.6 Parking is discouraged on a Parkway Overlay unless in groups of defined parking indents not exceeding 100 foot length, and bracketed by landscaped curb extensions. Parking groups to alternate with street tree border groups in 100 feet minimum blocks along roadway edge.

5.0 DOMINANT LAND USE PATTERN

5.1 Encourage medium to high density residential along or perpendicular to overlay corridor if at the district core, but overlay caters to placemaking land uses.

Encourage landmark and public buildings along overlay corridors in the district core.

Develop parkway development or overlay regulations to address access controls, on-site parking, setbacks, landscape treatment, and natural resource protection.

FACILITY DETERMINATION

PEDESTRIAN

The City Beautiful Overlay on a MM Placemaking Corridor: a ten-foot wide Collector Sidewalk for pedestrian and bicycle lanes are recommended.

The City Beautiful Overlay on a MM Parkway: a twelve-foot wide Multi-Use Path for shared pedestrian and bicycle use is recommended.

Optionally separate bike lanes and collector sidewalks may be used on both sides of the corridor in lieu of the multi-use path.

The multi-use path or sidewalk may meander into adjacent and contiguous park and open space.

Reference the Pedestrian Way or the Multi-Use Way sections for additional guidelines.

BICYCLE

Should 85% of actual travel speeds exceed 40 mph, then additional spatial separation between vehicle travel lanes and bike lane or multi-use path should be provided.

Should traffic volume exceed 10,000 vehicles per lane daily (average daily traffic - ADT) and the peak period of travel greater than 10% of ADT, then bicyclists should be provided an off-street and/or parallel and connected bicycle facility.

Reference the Bicycle Way section for additional guidelines on bicycle facilities.

TRANSIT

Within a pedestrian district, local transit trips are encouraged to stop to load and unload passengers at bus stops and shelters, and commuter automobile trips are encouraged to terminate at long-term parking structures.

Utilize a separation zone between vehicle travel lanes and the pedestrian way for transit shelter...
Figure 127.1 The National Register of Historic Places lists Historic Parks and Boulevards of Indianapolis, originally designed by George Kessler during the City Beautiful Movement.

- **Parkways**
  1. Brookside Parkway
  2. Burdsal Parkway
  3. Ellenberger Parkway
  4. Fall Creek Parkway
  5. Pleasant Run Parkway
  6. White River Parkway

- **Boulevards**
  7. Kessler Boulevard
  8. Maple Road (38th Street)
6.10 Reference the Bus Transit Way section for additional guidelines.

7.0 STREETSCAPE AND GREEN INFRASTRUCTURE

7.1 Streetscape includes extensive landscaping to create a sense of importance or place to the corridor, perhaps even a grandiose sense, and also defines a key corridor in the green infrastructure of the district, providing natural cooling, air and water cleansing and stormwater management.

7.2 Large street trees should be planted down the median.

7.3 Large street trees should be planted down the separation zones.

7.4 Provide street trees and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”.

7.5 Innovative understory landscaping is encouraged to enhance green infrastructure performance, e.g. bioswales, reed pool filters.

8.0 TYPICAL THOROUGHFARE CLASSIFICATION

8.1 Varies

9.0 SPECIAL DESIGN GUIDELINES

Follow the general design guidelines on page 61.

**GUIDELINES**

<table>
<thead>
<tr>
<th>SECTION</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1.0</td>
<td>FUNCTIONAL CLASSIFICATION</td>
</tr>
<tr>
<td>1.1</td>
<td>Depends on underlying corridor type</td>
</tr>
<tr>
<td>1.2</td>
<td>Located in the Regional Center connecting a number of downtown cultural sites and other places of interest.</td>
</tr>
<tr>
<td>2.0</td>
<td>CORRIDOR WIDTH</td>
</tr>
<tr>
<td>2.1</td>
<td>Varies, according to typology.</td>
</tr>
<tr>
<td>3.0</td>
<td>STREET GEOMETRICS</td>
</tr>
<tr>
<td>3.1</td>
<td>Traffic management design elements should be utilized to protect the trail users.</td>
</tr>
<tr>
<td>3.2</td>
<td>Provide plantings</td>
</tr>
<tr>
<td>3.3</td>
<td>Provide a multi-use way in lieu of a sidewalk.</td>
</tr>
<tr>
<td>4.0</td>
<td>MODES ACCOMMODATED</td>
</tr>
<tr>
<td>4.1</td>
<td>(in addition to standard automobiles) On the trail, accommodate bicycle and pedestrian modes by multi-use path in lieu of a sidewalk and bike lane. Refer to bicycle way and pedestrian way guidelines.</td>
</tr>
<tr>
<td>4.2</td>
<td>Accommodate pedestrian activity zones.</td>
</tr>
<tr>
<td>4.3</td>
<td>Modes discouraged</td>
</tr>
<tr>
<td>4.4</td>
<td>Discourage commercial traffic by enforcing weight limit controls.</td>
</tr>
<tr>
<td>4.5</td>
<td>Parking is discouraged on the overlay.</td>
</tr>
<tr>
<td>5.0</td>
<td>DOMINANT LAND USE PATTERN</td>
</tr>
<tr>
<td>5.1</td>
<td>Varies, but normally adds placemaking and more intensity than the surroundings by the nature of the added interest from the trail.</td>
</tr>
<tr>
<td>6.0</td>
<td>FACILITY DETERMINATION</td>
</tr>
<tr>
<td>6.1</td>
<td>PEDESTRIAN</td>
</tr>
<tr>
<td>6.2</td>
<td>The Overlay on a MM Placemaking Corridor: a ten-foot wide Collector Sidewalk and MUW are combined.</td>
</tr>
<tr>
<td>6.3</td>
<td>Reference the Bicycle Way section for additional guidelines.</td>
</tr>
</tbody>
</table>

**INDIANAPOLIS CULTURAL TRAIL**

The Indianapolis Cultural Trail overlays an urban greenway onto other Multi-Modal Corridors linking many cultural sites with special wayfinding and streetscape elements.

**FUNCTION**

An urban greenway creates a wide shared bike/pedestrian facility in lieu of a more traditional pedestrian way. This green infrastructure also helps reduce the heat island effect, create cooling corridors, cleanse and manage stormwater and clean the air.
Figure 129.1 Cross Section of Cultural Trail Overlay on an Urban Pedestrian Corridor. Includes recommended widths of component zones.

**TRANSLIT**

6.4 Within a pedestrian district, local transit trips are encouraged to stop to load and unload passengers at bus stops and shelters, and commuter automobile trips are encouraged to terminate at long-term parking structures.

6.5 Reference the Bus Transit Way section for additional guidelines.

**STREETSCAPE AND GREEN INFRASTRUCTURE**

7.1 Streetscape includes landscaping to create a sense of interest or uniqueness to the corridor.

**TYPICAL THOROUGHFARE CLASSIFICATION**

8.1 Varies

**SPECIAL DESIGN GUIDELINES**

Follow the general design guidelines on page 61.
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MULTI-MODAL TRANSITIONS

It is possible for a street corridor to change along the course it follows. It may change from rural to urban or it may change from one district to another. The type of corridor may change in how it functions, such as a boulevard to a commuter corridor. The points of change on these corridors are known as transitions. These transitions become important to signal a change in function, change in speed or to announce the entrance into a different district (see Figure 131.2 for a summary).

Transitions include: Portals, Roundabouts, Multi-Modal Hubs. Each will be described separately below - from a planning standpoint. Design considerations are found in the crossing zone heading in the Component Zones Section.

MULTI-MODAL PORTAL

A Multi-Modal Portal penetrates the edge of a neighborhood or district and provides an entry or transitional experience that reflects the identity of the adjacent land uses. A Multi-Modal Portal generally includes a landmark, unique entry elements, or special landscape development that differentiates this location from adjacent areas. For example, a Portal could be an entry gateway or transition from an interstate into a neighborhood or business district, a transition from one district to another, or a transition from one neighborhood to another. A change in vehicle speed is common at a gateway corridor, for instance as a vehicle approaches a destination district along a commuter corridor.

In addition to multi-modal transportation and related uses, it is assumed that automobile and truck traffic will be accommodated in this multi-modal transition.

FUNCTION

A multi-modal portal provides a transition experience between corridor types or between districts. It uses roadway geometrics, materials, signage, edge landscape and/or hardcape treatments, and in some cases iconic elements or public art, to identify specific places and to affect motorist behavior (speed, focus) appropriate to the place being approached. Portals also help create mental maps and awareness of the unique places that comprise a region, and thus create an intuitive wayfinding sense for all users.

PORTAL GUIDELINES

3.0 STREET GEOMETRICS AND METRICS

Provide vehicle traffic calming within gateway/portal influence area to slow down travel speeds and condition motorist behavior appropriate to district conditions.
6.0 FACILITY DETERMINATION
PEDESTRIAN AND BICYCLE

6.1 The Multi-Modal Portal provides a transition opportunity to shift from multi-use path facilities to separate collector sidewalks and bike lanes at district entries and from one multi-modal corridor to another. MUW should be avoided if there are more than 8 crossings per mile, as well as frequent changes from MUW to bike lanes and back for safety reasons (See diagram on facing page).

6.2 Opportunities for observation points or viewing stations of the gateway may be desirable.

6.3 Reference the Pedestrian Way or the Multi-Use Way sections for additional guidelines.

MULTI-MODAL ROUNDABOUTS

The modern urban roundabout is a relatively new form (in North America) of arterial intersection control that has become an alternative to signalized intersections for a range of conditions. It has an impressive record for improved traffic flow, increased capacity, traffic calming, and improved vehicular safety. A multi-modal roundabout is a modern roundabout with specific design features that address bicycle and pedestrian usability and safety as well. Multi-Modal Roundabouts represent both a high performance intersection for motorized vehicles but can also act as portals to districts or as locations for features of interest like monuments.

FUNCTION

A roundabout intersection provides near-continuous traffic flow at reduced speed, a reduction in vehicular conflict points, and hence crashes are generally less severe and less frequent than at a conventional intersection. The speed reduction can affect overall corridor traffic calming in the roundabout vicinity, and is one of the few tools available to do so along arterials. It can be applied to multi-leg intersections in which signalization can introduce significant delays and high conflict counts. Roundabouts achieve operational efficiency, reduce emissions associated with stopping and accelerating at signals, and eliminate signal installation and maintenance costs. Roundabouts can improve bicycle and pedestrian safety if certain criteria are met, but if not, they can create accessibility and safety issues, particularly on multi-lane roundabouts. Roundabouts can be effective portals through their distinctive geometrics, landscape opportunities at the center and approach islands, and because of their inherent traffic calming.

ROUNDABOUT GUIDELINES

2.0 CORRIDOR WIDTH

Generally require additional corridor right-of-way at the intersection and its tapered approaches, in proportion to size of vehicle accommodated.

3.0 STREET GEOMETRICS AND METRICS

3.1 Offset approach angles and “splitter islands to reduce entry speed, and to meter entering and circulating traffic.
A Transition Portal is a transition or gateway from one corridor or district type to another. It orients the user by landmarks, markers or signage. It establishes motorist behavior appropriate to the approaching district by traffic calming, wayfinding and other interventions.

**Transition Portal**
3.2 Single lane approach and exit lanes separated by a splitter island pedestrian refuge to maximize crosswalk safety at yield rather than stop-protected crosswalks.

3.3 Bicycle ramps into perimeter walkways as an option to riding within circulating travel lanes, particularly at multi-lane roundabouts.

3.4 Alternative walk and bikeway grade separation into and through center island at multiple lane roundabouts.

3.5 On-demand crosswalk signalization at multi-lane approaches and exits, although this reduces operational efficiency of the roundabout.

3.6 Arterial and/or collector intersection: maximum total ADT: 20,000 entering vehicles for preferred single lane configuration (24,000 if equal volumes on both streets).

3.7 Maximum total ADT: 40,000 entering vehicles for double lane configuration, which is not recommended for bicycle pedestrian use unless design mitigations are introduced (see 3.4 above).

4.0 MODES ACCOMMODATED
(in addition to standard automobiles)

4.1 Same as coincident corridor, but require specific design considerations to safely accommodate bicycles and pedestrians.

MODES DISCOURAGED

4.2 On-street parking within and near approaches

4.3 Bicycle and pedestrian at high capacity multi-lane roundabouts, unless mitigating design features are introduced (see 3.4 above).

5.0 DOMINANT LAND USE PATTERN
Varies, but tend to lower density uses and/or developing area applications because of right-of-way requirements.

6.0 FACILITY DETERMINATION

PEDESTRIAN AND BICYCLE

6.1 If Street geometrics indicated above cannot be provided, bicycle and pedestrian facilities should be provided at conveniently nearby parallel corridors.

6.2 Bicyclists should have the choice to come out of the bike lane and use the street, but this should occur prior to entry into the roundabout and not during, for safety reasons.

TRANSIT

Figure 134.2 (above - from Bill Baranowski, PE Design). Single Lane Roundabout with pedestrian crossings set back from intersection for pedestrian safety. Design shows a solid bike lane that changes to a dashed line 50-65' before the roundabout yield, allowing a safe choice for using the lane or the street.

Figure 134.3 (below - photo courtesy of Greg Midgley). For multi-lane roundabouts, separated grades are better for pedestrian safety.
6.2 Accommodates most transit modes though on-grade rail modes require signals and/or gates, reducing roundabout efficiency.

6.3 Transit stops or pull-offs occur beyond approach-exit flares, away from intersection.

7.0 STREETSCAPE AND GREEN INFRASTRUCTURE

7.1 Roundabouts center islands should not be visitable by pedestrians or bicyclists. Attractive landscape elements and monuments can be placed therein, but should consist of elements appreciated at a distance.

7.2 Where possible provide trees, hedges and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”.

7.3 Innovative understory landscaping is encouraged to enhance green infrastructure performance. Examples include bioswales, reed pool filters, etc. particularly at center islands as they are a good place to store shoveled snow, which often contains salt and sand.

MULTI-MODAL STOPS, STATIONS & HUBS

Stops, stations and hubs all form multi-modal transitions. Stations and stops are handled in detail in the corresponding mode in the component zone section. Hubs, however, need a few additional guidelines. A Multi-Modal Hub describes a transition where multiple modes meet. Often these are as simple as a transition between a multi-use way and a bike lane/sidewalk split, but they can be as complex as a transit hub that connects many modes. As an example of the latter, bike parking, loading and off-loading a bike off a bus all at a light rail station where the rider will take the light rail to another destination may combine to form the most efficient path to a destination.

FUNCTION

The Multi-Modal Hub can act as the core of a district or as a portal, and as an intersection of modes. See component zones for details.

GUIDELINES

3.0 STREET GEOMETRICS

3.1 Provide vehicle traffic calming within near modal hub influence area to slow down travel speeds and condition motorist behavior appropriate to district conditions.

4.0 MODES ACCOMMODATED

(in addition to standard automobiles)
4.1 Same as coincident mode and corridor.

**MODES DISCOURAGED**

4.2 Truck traffic and automobiles being given privileged access or passage.

5.0 **DOMINANT LAND USE PATTERN**

Varies, but mixed use is often encouraged.

6.0 **FACILITY DETERMINATION**

6.1 The Multi-Modal Hub should accommodate pedestrians at highest priority - transit is afterall the arterial for pedestrians. Multi-Modal Hubs are consequently the portal to other modes for pedestrians. Facilities should follow portal guidelines as well.

**BICYCLE**

6.2 Should come second only to pedestrians

**TRANSIT**

6.3 Within a pedestrian district, commuter transit trips are encouraged to terminate at a transit facility that is within a quarter mile walk for traffic dependent transit like a bus and a half mile walk for non-traffic dependent transit like light rail.

7.0 **STREETSCAPE AND GREEN INFRASTRUCTURE**

7.1 Distinctive landscaping is critical as these often form the center or node of district or subdistrict placemaking.

7.2 Where possible provide trees, hedges and lighting at minimum allowable clear-zone offset from travel lane to provide visual “friction”.

7.3 Reference the appropriate component zones for additional guidelines

9.0 **SPECIAL DESIGN GUIDELINES**

9.1 Within a hub, a pedestrian or bicyclist should be able to transition from one mode to another seamlessly, without crossing automobile traffic to allow for more efficient time to destination and to facilitate ticket taking and other transit management issues.
III. DESIGNING GUIDELINES

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   PW  Pedestrian Way ......................... 201
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   SPZ Street Parking Zone .................. 219
   VTW Vehicle Travel Way ................... 225

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Figure 137.1 Built Environment Sphere Diagram. This figure is for illustrative purposes only. The diagram demonstrates the concept of spheres of the built environment and does not represent application of design guidelines nor preferred development arrangement. Locations of spheres will vary by district, corridor and use.

**HOW THE GUIDELINES ARE ORGANIZED**

The *Indianapolis Regional Pedestrian Plan* is organized around district and corridor concepts, which form the governing framework for these Multi-Modal Corridor & Public Space Design Guidelines. Guidelines have been developed for and apply to the multi-modal and public spaces of the Metropolitan Planning Area (MPA). It is not intended that all corridors or places within the Indianapolis region be multi-modal initially. However, it is anticipated that, over time, and as the region’s transportation network develops, all corridors and places will evolve and become multi-modal friendly.

**Built Environment Spheres**

Guideline descriptions for both district and corridor typologies are categorized into the “Built Environment Sphere” diagram. This idealized diagram illustrates the urban environment as a continuum from the public facilities in the right-of-way to the private uses located on the property. The most important component of design is the interaction between the public and private realms. These transitional areas consist of both public and privately owned land and are the area for which the design guidelines will be the most instructive.

**Public Sphere**

The public sphere consists of the vehicle travel lanes, parking lanes, sidewalk, and any transit, bicycle, or landscape facilities.

**Quasi-Public Sphere**

The quasi-public sphere consists of the transition area between the public and private, including the public sidewalk, building facade, the first level building uses, and any parking or open space available to public users.

**Private Sphere**

The private sphere consists of portions of the building and site with access restricted to building occupants or other authorized users. The *Multi-Modal Corridor & Public Space Design Guidelines* do not apply to this sphere; consult local ordinances.
Component Zones

Within the guideline descriptions for both district and corridor typologies, additional detailed guidelines are further categorized into “Component Zones.” These components fit into the “Built Environment Spheres” and are a way to abstractly apply design guidelines to both public and private development based on a “menu” of components that reflect real-world scenarios. It is possible that certain zones may be addressed differently depending upon the relevant district or corridor. For example, bike facilities can either be provided as a multi-use path to serve both pedestrians and bicyclists, or may be provided as a combination of on-street bike lanes and collector sidewalks. The component zones, classified as either a continuous “way” or as discontinuous “zones”, are defined below and represent toolkit options in realizing the district and corridor typologies.

Zone Diagram Definitions

<table>
<thead>
<tr>
<th>Component</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BW</td>
<td>Bicycle Way: area where bicycles travel.</td>
</tr>
<tr>
<td>BTW</td>
<td>Bus Transit Way: area where bus transit vehicles travel or stop to load and unload.</td>
</tr>
<tr>
<td>CZ</td>
<td>Crossing Zone: area where pedestrians or other non-motorized modes interface with and traverse through motorized transportation zones.</td>
</tr>
<tr>
<td>CHZ</td>
<td>Clear Height Zone: vertical distance between a transportation facility and the lowest overhead obstruction. <em>Note: There is not a separate design guideline for the CHZ, rather, its requirements are addressed in all other zones.</em></td>
</tr>
<tr>
<td>FZ</td>
<td>Frontage Zone: area of interaction between the pedestrian way and grade-level uses.</td>
</tr>
<tr>
<td>MUW</td>
<td>Multi-Use Way: area for shared use between multiple alternative transportation users.</td>
</tr>
<tr>
<td>PAZ</td>
<td>Pedestrian Activity Zone: area for public gathering in both the public, quasi-public, and private spheres.</td>
</tr>
<tr>
<td>PW</td>
<td>Pedestrian Way: area where pedestrians travel.</td>
</tr>
<tr>
<td>RTW</td>
<td>Rapid Transit Way: area where rapid transit vehicles travel or stop to load and unload.</td>
</tr>
<tr>
<td>SPZ</td>
<td>Street Parking Zone: area within the roadway where vehicles are permitted to stop, stand, or park, with various levels of permission and/or restriction.</td>
</tr>
<tr>
<td>SZ</td>
<td>Separation Zone: area of protection between the roadway and the pedestrian way that contains various utilities, signs, and streetscaping elements.</td>
</tr>
<tr>
<td>VTW</td>
<td>Vehicle Travel Way: area where motorized vehicles (automobiles, trucks, buses) travel.</td>
</tr>
</tbody>
</table>

Figure 138.1 Component Zone Diagram. Definitions are provided in the table below.
Given adequate, safe, and convenient facilities, bicycle use can become a viable alternative to automobile transportation both for commuting and recreational purposes. Bicycle facilities provide accessibility and mobility to a population that does not or chooses not to drive, and interfaces with public transportation for longer trips. Bicycle transportation, as with walking, provides active living health benefits in addition to its potential to influence modal shift and relieve congestion.

The Indianapolis region is striving to provide a comprehensive bicycle network through a bicycle master plan process. For more information see www.indympo.org.

The intent is to develop a regional network of dedicated, highly visible, and continuous bicycle facilities, in addition to route mapping and signage. This may happen incrementally over time as projects are implemented.

An effective bicycle system must become pervasive to provide the same level of access to destinations as is enjoyed by automobile travel, as well as to create a culture of mutual accommodation between bicycles, pedestrians, and vehicles.

Incrementally develop and extend the bicycle network by leveraging private development to include bicycle facilities as a required mode of access for all multi-modal corridors.

Bike lanes, and advanced system features such as bicycle boxes at intersections, and bicycle signals can heighten driver and cyclist awareness, cyclist confidence, and facilitate optimum travel paths through complex intersections.

**DESIGN PRINCIPLES SUPPORTED**

1. Mobility
2. Health, Safety and Opportunity
3. Adaptability and Sustainability
4. Public Realm
5. Character and Vitality

---

**Figure 139.1** Given adequate, safe, and convenient facilities, bicycle use can become a viable alternative to automobile transportation both for commuting, as well as for access to recreation.

**Figure 139.2** An effective bicycle system must become pervasive to provide the same level of access to destinations as is enjoyed by vehicle travel.

**Figure 139.3** Apply appropriate interventions to enhance bicyclist safety in dense pedestrian districts.
GUIDELINES

BW 1.0  GENERAL

Bicycle facility type may vary depending on the specific corridor’s traffic volumes and speed. Previous planning studies have made preliminary determination of bike lane and multi-use path locations.

Locations of multi-use paths have been identified on the Indianapolis Regional Pedestrian Plan and bike routes have been identified on the Marion County and Surrounding Area Bike Routes Map.

In cases where a multi-modal corridor is not able to accommodate bicycle facilities, establish connections to parallel facilities that connect to the multi-modal corridor.

BW 1.1 Consider traffic calming standards and apply appropriate traffic calming interventions to reduce vehicular speeds and enhance bicycle safety.

BW 1.2 Provide safe and recognizable connections from corridor bicycle facilities to multi-use paths, connector paths, and district bicycle facilities.

BW 1.3 Bike lanes should be made of concrete or asphalt to provide a smooth riding surface. Avoid gravel, brick, cobble or other unit paving.

BW 1.4 Ensure safe crossings. See crossing zone for more information on bike lane intersections and crossings.

BW 1.5 The bicycle way should be swept periodically to keep debris to a minimum and maintain safe operating conditions.

BW 1.6 When parallel to a street, bike travel should be in the direction of the automobile traffic and on the right side of traffic if possible, even if it is on a Multi-Use Way.

Figure 140.1

Figure 140.2 Bicycle way dimensions adjacent to curb -two-way street - no parking.
BW 2.0 BICYCLE WAY ALONG CURBS

A bicycle way is a portion of the roadway that has been designated and designed for the exclusive use of bicycles with distinct signage and pavement markings. Bicycle ways have a channelizing effect on traffic and allow for predictable movement of vehicles and bicycles.

BW 2.1 Along curbs, provide a bicycle way with a minimum width of five-feet.

BW 2.2 Curb and gutter should be maintained in good condition.

BW 2.2.1 Provide a minimum three and a half feet of clear width for bike lanes when drainage inlets occur in the bike lane.

BW 2.2.2 Use bicycle-safe inlet grates when inlets are located in the bike lane.

BW 2.2.3 Provide curb turnouts to drainage inlets to remove drainage inlets from bike lanes whenever possible, since cyclists will avoid riding over curb structures in the bike lane, causing them to swerve into traffic.

BW 2.3 If truck/bus traffic volumes and speed are high, provide a wider separation zone for the bicycle way through the use of painted separation lines.

BW 2.4 Bike lanes should be swept periodically to keep debris to a minimum.

Figure 141.1 Bicycle way along curbs

Figure 141.2 Bicycle way buffered by a separation zone of painted lines when truck/bus volumes and speeds are high.

Bike lane with buffer on a busy New York City street.
BW 3.0 BICYCLE WAYS ON NON-CURBED ROADS

BW 3.1 Along non-curbed roads (shoulders), provide a bicycle way with a minimum width of five-feet.

BW 3.2 Bicycle ways along non-curbed roads (shoulders) may share the vehicular pull-off lane.

BW 3.3 On grades that are greater than 5%, widen bicycle ways to provide a safety zone for the bicyclist.

BW 3.4 If truck/bus traffic volumes and speed are high, provide a wider separation zone for the bicycle way through the use of painted separation lines.

Figure 142.1 Bicycle way along a street without curb

Figure 142.2 Bicycle way with buffer on a busy New York City street
Figure 143.1 Bicycle way along non-curbed roads

Figure 143.2 Bicycle way along non-curbed roads with a separation zone of painted lines when traffic volumes and speeds are high

Figure 143.3 Dimensions of bicycle ways along non-curbed roads

Figure 143.4 Dimensions of bicycle ways along non-curbed roads with a separation zone of painted lines when traffic volumes and speeds are high
BW 6.0 COLORED BIKE LANES AT HIGH-CONFLICT AREAS

BW 6.1 The bicycle way defines a space for cyclists to ride, eliminating the need to weave in and out of traffic or parked cars. Motorists, however, are often unaware that they must yield to cyclists when crossing a bicycle lane. At these high-conflict areas, many cyclists are concerned about their safety.

Many cities use colored markings at bicycle-motor vehicle crossings to reduce conflicts. Portland, Oregon has been experimenting with blue pavement markings to delineate selected conflict areas and the University of North Carolina Highway Research Center is under contract to the Federal Highway Administration (FHWA) to analyze the project data [47].

BW 6.2 Provide colored pavement to the bicycle ways to reduce bicyclist-motorist conflicts at potentially confusing or dangerous crossing areas. It is recommended that the color green be used since that is the current trend in FHWA studies.

BW 6.3 Colored marking materials can range from paint, thermoplastic, methyl methacrylate, inlay cold plastic (apply in fresh asphalt), imprinted and sealed asphalt (apply in fresh asphalt), and colored acrylic coating. Local jurisdictions should determine their preferred material based on cost, durability, and ease of application.

BW 6.4 Potentially confusing or dangerous crossing areas include exit ramps, right-turn lanes, and entrance ramps as examples. Local jurisdictions shall determine applicability.

BW 6.5 Provide signage to clarify the pavement markings at high-conflict areas.

Figure 144.1 Colored bicycle way examples at exit ramp configurations. Motorists can either turn right as they exit the roadway or continue straight from the right lane. Right-turn existing vehicles cross the bicycle way [47].
Figure 145.1 Pavement markings provide visual clues to the motorist and increased safety for the cyclist at this right-turn lane condition. In this photo from Portland, Oregon the pavement markings are in blue. These guidelines recommend using the color green.

Figure 145.2 Colored bike lane examples at entrance ramp configurations. Motorists cross the bicycle lane as they turn right to enter the roadway from a ramp [47].

Figure 145.3 Colored bike lane example at right-turn lanes. Motorists cross the bicycle lane as they turn to enter the right-turn only lane. The bicyclist proceeds straight in the bicycle lane, to the left of the right-turn lane [47].

Figure 145.4 Signage examples adapted from [47].
BW 7.0 BIKE LANE PAVEMENT MARKINGS AND SIGNAGE

Bicycle way pavement markings and signage should meet jurisdictional standards for regional consistency.

BW 7.1 Provide bicycle way symbols and arrows.

BW 7.2 Provide bicycle way signs.

Figure 146.1 Bike lane pavement markings.
SECTION III.  BICYCLE WAY - 147

BW 8.0 WIDE CURB LANE

A wide curb lane is a shared roadway on a street that is safe for use by both vehicles and bicycles without a designated bicycle facility. It works well as a short (three blocks or less) transition facility to connect discontinuous segments of bicycle ways, multi-use paths, and multi-use trails. This option is preferable only when existing right-of-way is limited.

BW 8.1 Vehicle travel lanes on a wide curb lane with a signed bike route should be a minimum of 14-feet wide.

BW 8.2 Is suitable for streets with low to moderate traffic volumes and vehicle speeds.

BW 8.3 Is suitable for experienced bicyclists who are comfortable riding with traffic; not suitable for inexperienced bicyclists.

BW 8.4 Requires the roadway to be swept periodically to keep debris to a minimum.

BW 8.5 Signage should meet jurisdictional standards for regional consistency.

Figure 147.1 A wide curb lane works well on a signed bike route as a short transition facility to connect discontinuous segments of bike lanes, multi-use paths, and connector paths.

Figure 147.2 A wide curb lane accommodates the experienced cyclist. It is recommended that wide curb lanes be at least 14-feet wide. Photo courtesy Dan Burden.
**BW 9.0  SHARED LOCAL STREET**

A shared local street is a shared roadway that is safe for use by both vehicles and bicycles without a designated bicycle facility and works well on local neighborhood streets to connect with the larger bicycle system network.

**BW 9.1** Vehicle travel lanes on a signed shared local street should be a minimum of 11.5 feet wide.

**BW 9.2** Is suitable for streets with low traffic volumes and vehicle speeds.

**BW 9.3** Is suitable for inexperienced bicyclists because of the low traffic volumes.

**BW 9.4** Requires the roadway to be swept periodically to keep debris to a minimum.

**BW 9.5** Signage should meet jurisdictional standards for regional consistency.

*Figure 148.1* A shared local street works well on local neighborhood streets to connect with the larger bicycle system network.

*Figure 148.2* It is recommended that shared local streets have a minimum eleven-feet, six-inch wide vehicle travel lane and bike route sign where intended to be shared with bicycles on low volume streets. Note this cyclist is swerving to avoid the drainage inlet. Photo courtesy Dan Burden.

*Figure 148.3* Indianapolis bike route sign.
BW 10.0 BICYCLE PARKING

Bicycle parking should not obstruct the pedestrian way, should be separated from vehicle parking, and should be clearly visible from the pedestrian way, building entrances, and drives. Bicycle parking can be located in the frontage zone, separation zone, pedestrian activity zones, and as part of private property site development.

BW 10.1 Connect bicycle parking facilities with a pedestrian way to the main entrance(s) of use being served.

BW 10.2 Provide at least one covered, short-term bicycle parking space per 10,000 square feet of building for commercial and institutional developments of more than 50,000 square feet of building.

BW 10.3 Provide one covered, long-term bicycle storage unit per four residential units in residential development of 20 or more units.

BW 10.4 Incorporate both day-use, short-term and long-term covered bicycle parking facilities for all transit stations and hubs.

BW 10.5 Day-use bicycle parking: a bicycle is allowed to park up to 24 hours.

BW 10.6 Short-term bicycle parking: a bicycle is allowed to park up to four days, allowing commuters to leave bikes over a weekend. It is recommended that short-term bicycle parking be covered, and/or bike lockers be provided.

BW 10.7 Long-term bicycle parking: a bicycle is allowed to park indefinitely. It is recommended that long term bicycle parking be covered and/or bike lockers be provided.

BW 10.8 It is recommended that shower and changing facilities be provided for employees commuting by bicycle or walking.

BW 10.9 Where possible, provide bicycle ramps in conjunction with outdoor stairs to facilitate bicycle movement.

BW 10.10 When automobile parking is provided in a structure, all bicycle spaces should be located inside that structure or should be located in another area protected from the weather. Bicycle parking spaces in parking structures should be clearly identified, and separated from auto parking by a barrier to minimize the possibility of a parked bicycle being hit by an automobile.
BW 10.10 Off-street bicycle parking facilities used at night should provide with adequate lighting.

BW 10.11 Separate bicycle parking spaces by a distance of thirty-inches with a four-foot corridor space to allow adequate and convenient access to every bike when the bicycle parking facility is full.

BW 10.12 Locate bicycle parking near the entrance(s), within view of pedestrian traffic if possible, and sufficiently secure to reasonably reduce the likelihood of bicycle theft.

BW 10.13 Bike rack sculpture or unique configurations for bike parking are encouraged as long as the elements meet or exceed the functional guidelines.

Figure 150.1 It is recommended that parking be covered or bike lockers be provided.

Figure 150.2 Bike lockers are recommended at transit stations and employment centers.

Figure 150.3 Bike rack sculpture is encouraged as long as it meets functional guidelines.
BW 10.14 Design each bicycle parking space to accommodate a bicycle six-feet in length and two-feet wide, and provided with a stable frame permanently anchored to a foundation to which the bicycle frame and both wheels may be conveniently secured, or other storage facility providing the same level of security, to reasonably prevent the bicycle from theft and vandalism. Design exits and entrances to minimize pedestrian conflicts. Access from alleys and parking areas located in the interior of the block are encouraged.

BW 10.15 The bicycle rack elements should:

BW 10.15.1 Support the bicycle upright by its frame in two places.

BW 10.15.2 Prevent the wheel of the bicycle from tipping over.

BW 10.15.3 Enable the frame and one or both wheels to be secured.

BW 10.15.4 Allow front-in parking; a U-lock should be able to lock the front wheel and the down tube of an upright bicycle.

BW 10.15.5 Allow back-in parking: a U-lock should be able to lock the rear wheel and seat tube of the bicycle.

BW 10.15.6 Comb, toast, schoolyard and other wheelbending racks that provide no support for the bicycle frame are discouraged.

BW 10.15.7 The rack element should be reasonably resistant to being cut or detached using common hand tools, such as bolt cutters, pipe cutters, wrenches, and pry bars.
 BW II.0 INBIKEPORT

INBikePort is a public-private partnership creating bicycle facility solutions to encourage bicycling as a transportation choice.

INBikePort is part of a state-wide initiative to support and create bicycle friendly communities.

Indiana BikePort works with local organizations and businesses to provide the most suitable bicycle solutions. This includes first-class bicycle facilities, such as secure short-term and long-term parking, access to changing rooms, showers and other amenities.

Indiana BikePort enhances communities by expanding transportation choices and encouraging bicycling as part of a healthy lifestyle.

Figure 152.2 Bike Port near Government Center (Photo taken from INBikePort website)
Bus service is the foundation for dense, walkable pedestrian districts. In addition, bus transit will interface and support the region’s future rapid transit. New and existing transit-supportive land uses should be encouraged in pedestrian districts and on multi-modal corridors. Increased densities, reduced parking requirements, curb cut restrictions and other transit-oriented land use policies should be encouraged. Land uses such as big box retail development, auto malls, low-density industrial uses, and similar traditionally auto-dependent developments should be adapted to accommodate multiple modes, taking advantage of the multi-modal network.

**Design Principles Supported**

1. Mobility
2. Health, Safety and Opportunity
3. Adaptability and Sustainability
4. Public Realm

**Figure 153.1** The bus travel way serves as an interface at virtually every thoroughfare block that is characterized by employment, residential, or convenience retail activities.

**Figure 153.2** Bus transit way guidelines include both the travel lane and bus stop characteristics in the separation zone.
GUIDELINES

BTW 1.0 TRANSIT FRIENDLY STREETS

A multi-modal approach to designing streets requires trade-offs. Pedestrian, transit, and vehicle needs require balance and compromise to develop a street that serves diverse multi-modal transportation needs.

BTW 1.1 Traffic management strategies, such as signalization changes, restricted turning movements, and reduced traffic speeds should favor transit vehicles rather than privately operated vehicles on multi-modal corridors. Otherwise, a signal system that provides for good progressive movement of privately operated vehicles may result in a reverse progression for buses who make frequent stops to pick up and discharge passengers. The resulting slow travel speed for buses discourages patronage, and further adds to automobile traffic congestion and volume.

BTW 1.2 Public transit users are essentially pedestrians and therefore transit and pedestrian travel must be highly integrated. Safe and convenient pedestrian access is one of many factors in developing and maintaining public transit ridership.

BTW 1.3 Scale of operations range from local circulator/shuttle service through commuter and express routes, each forming distinct parts of a service hierarchy of physical transit infrastructure. The bus transit way interfaces with the pedestrian system at virtually every thoroughfare block that is characterized by dense employment, residential, or convenience retail activities.

BTW 1.4 Transit gains are the highest priority on multi-modal corridors since transit is key to achieving a regional scale of walkability. Pedestrian and transit systems must be integrated at stations, shelters, and stops. Transit stop configurations should be tailored to corridor type and characteristics, with bias towards the spatial needs of pedestrians.

BTW 2.0 SHUTTLE BUSES AND CIRCULATORS (S/C)

BTW 2.1 Shuttle buses provide a specialized service that links specific destinations and generators, such as between transit centers, or between satellite parking areas and related destinations.
Figure 155.1 Far-side bus stop on a multi-modal commuter corridor.
Figure 156.1 Far-side bus stop on a multi-modal commuter corridor with median.
Section III.

Bus Transit Way - 157

Figure 157.2 A mid-block bus stop and pedestrian crossing in dense pedestrian districts - local jurisdiction requirements should be consulted.
BTW 2.2 Circulator buses link sub-areas within contiguous pedestrian districts that extend beyond comfortable walking distance (1,200 feet). Circulator buses provide transit commuters and tourism/convention visitors extended mobility within their destination districts, reduce disincentives to transit use and reduce the need for personal transportation with its associated congestion. Circulator buses also allow more efficient routing of long-haul transit vehicles by providing "infill" service.

BTW 2.3 Both shuttle buses and circulators are smaller vehicles that can share long-haul stops.

BTW 2.4 Shuttle buses and circulator buses can serve pedestrian districts at smaller bus stop configurations than the long-haul bus stop.

BTW 2.5 Consider site-specific design considerations that could include off-street loading and transfer areas on private property.

BTW 2.6 Include distinctive signage and information at stops that are correlated with vehicle graphics to differentiate the shuttles and circulators from long-haul buses. The signage should also help to identify routes and promote ridership.

**BTW 3.0 LOCAL BUSES AND RAPID TRANSIT BUSES (R/B)**

Local and rapid transit buses run on fixed routes within a district or region. Larger vehicles are used.

BTW 3.1 Local and rapid transit buses generally have end-of-line layover or turnaround at a transit center, park-and-ride location, or other off-street facility.

BTW 3.2 Include distinctive signage and information at stops that are correlated with vehicle graphics to differentiate the local and paid transit buses from shuttles and circulators. Identify their routes to promote ridership.

BTW 3.3 Design pavements to accommodate heavy vehicle loads.

BTW 3.4 Design drainage gradients to allow smooth through travel.

BTW 3.5 Design the bus travel lane to be non-coincident with bicycle lanes and spatially buffered from pedestrian ways.

BTW 3.6 Where spatially possible, continue a separate bike
BTW 3.7 Where insufficient space exists for a separate bike lane, indicate shared space by distinct dash-patterned bike lane striping.

BTW 3.8 Provide bus operator training for presence of cyclists.

BTW 4.0 HIGH OCCUPANCY VEHICLE (HOV)

This specialized application is usually associated with multi-lane limited access corridors rather than the multi-modal street network. It is usually the innermost lane into which transit and multiple-occupant ride-share passenger cars and vans merge to and from spaced entry and exit points. The HOV lane is part of a strategic balance of volume and capacity calculated to optimize resource utilization and transit ridership. HOV lanes can facilitate future conversion to other transit modes such as light rail or bus rapid transit along these corridors.

BTW 5.0 BUS STOPS

A bus stop is a designated place on a transit route where buses stop to load and unload passengers. It is designated with signs and/or by bus shelters.

BTW 5.1 Generally locate bus stops at intersections (either far-side or near-side of the intersection).

BTW 5.2 Locate bus stops at midblock locations when automobile traffic is slow and pedestrian bumpouts at all four corners of an intersection are desirable, preempting a bus stop at the intersection.

BTW 5.3 When locating bus stops, consider bus routing, turning movements, obstructions in the separation zone, connections to the pedestrian way, and the volume and speed of traffic.

BTW 5.4 Bus stops should meet all ADA criteria.

BTW 5.5 Frequency and spacing of bus stops should be based on population density and/or major passenger generators and destinations.

BTW 5.6 Clearly identify bus stop locations with signs and route information.
BTW 5.7 Consider incorporating public art into bus stops.

**BTW 6.0 FAR-SIDE BUS STOP (A BUS STOP AFTER [OR ON THE “FAR SIDE” OF] THE INTERSECTION):**

Provide far-side bus bays along commuter corridors for full clearing of active travel lanes; optimum curbside alignment; easy bus approach from the intersection space; easy re-entry for the bus in traffic stream with signal phases; and better sightlines at pedestrian crosswalks.

**BTW 7.0 BUS TRANSIT “QUEUE JUMPING” LANE:**

In advance of far-side bus stops, provide right turn only (RTO) lanes that also permit buses to advance to the head of the queue at signalized intersections before proceeding to a far-side bus stop.

**BTW 8.0 MID-BLOCK CURB EXTENSION BUS TRANSIT STOP AND SHELTER CONFIGURATION:**

At multi-modal corridors with low to moderate traffic volume and/or a passing lane, provide mid-block bus stops with curb extensions, especially on placemaking corridors placing priority on serving pedestrians. This location minimizes intersection crosswalk conflicts while the curb extension allows generous space for shelter, bike racks and other associated amenities, without impacting pedestrian way.

**BTW 9.0 BUS SHELTERS**

A bus shelter is a designated stop on a transit route where buses load and unload passengers that provides cover and protection from the weather. Bus shelters are designated with signs.

BTW 9.1 Provide shelters at significant pedestrian generators, such as shopping and employment centers, schools, libraries, recreational and cultural destinations, and transit route intersections.

BTW 9.2 Locate shelters within the separation zone to maintain a clear pedestrian way.

BTW 9.3 Meet all ADA criteria for placement of bus shelters.

BTW 9.4 Place a screen on the side of bus shelters along the curb to minimize road spray and noise impact on users. Consider cantilevered bus shelter roof to minimize post obstructions in the pedestrian way.
BTW 9.5 Provide a minimum of two bike racks at each bus stop aligned for quick transfer to bus mounted rack.

BTW 9.6 At bus shelters that support more than 20 riders, consider providing kiosks with pop-out ends to support entrepreneurs who could offer a coffee bar, newspapers, flowers, or other services.

BTW 9.7 Consider incorporating public art into the bus shelter design and stop.

**BTW 10.0 TRANSIT CENTERS**

A transit center provides a centralized location to catch rapid transit, catch a bus, or make a transfer to a circulator. It may also provide passenger amenities such as weather protection, route and schedule information, convenience retail and services, restrooms, and staffed passenger assistance.

BTW 10.1 Provide parking, a taxi stand, and proximity to long-range bus, rail and future rapid transit connections to allow people to move around the city and region seamlessly.

BTW 10.2 Provide bicycle and pedestrian connections and bike parking facilities.

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Figure 161.1 Transit centers can be located in the public right-of-way, such as this one in Denver, Colorado.

Figure 161.2 Proposed transit center for Columbus, Ohio will incorporate both bus transit and commuter rail.

Figure 161.3 A transit center in High Point, North Carolina that also serves as a public space and concert venue.
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CZ: CROSSING ZONE

The crossing zone is the area where pedestrians and other non-motorized users interface with and traverse through motorized transportation zones via pedestrian markings, signage, and signalization. Multi-modal crossing activities are concentrated at street corners and under certain conditions at mid-block. These are places where the modes converge and the design of the crossing affects the speed of travel through an intersection. Visibility and safety are critical criteria for all users of the multi-modal transportation system.

A crossing is a critical point of intersection, where two or more facilities meet or a facility meets a physical or natural barrier, such as a vehicular thoroughfare or stream. It is a link that connects all other facility classifications, extending the network and limiting obstructions.

DESIGN PRINCIPLES SUPPORTED

1. Mobility
2. Health, Safety and Opportunity
4. Public Realm
5. Character and Vitality

Figure 163.1 Pedestrians interface with vehicles in the crossing zone.

Figure 163.2 Multi-modal crossing activities are concentrated at street corners and mid-block. Image courtesy: Dan Burden.

Figure 163.3 Plant material or furnishings not greater that 30 inches in height may occupy the clear sight triangle area in the crossing zone to distinguish the corner for vehicles and direct pedestrians to the crosswalk.
GUIDELINES

CZ 1.0 GENERAL

CZ 1.1 All crossings should be in compliance with the Manual of Uniform Traffic Control Devices (MUTCD) and the American Disabilities Act (ADA) standards and accessible to all users. In addition, all ramps should meet ADA and local jurisdiction requirements.

CZ 1.2 Clear street corners of all obstructions and allow enough space to accommodate pedestrians crossing all motorized transportation lanes. The crossing zone should also accommodate curb ramps, transit stops, and space for interaction among pedestrians, where appropriate.

CZ 1.3 The obstruction free area of a street corner, also known as the “clear sight triangle,” is the space between the curb and the line created by extending the property or right-of-way line to the curb face. Signal poles, street lights, telephone poles, hydrants, trees, benches, signs, controller boxes, private uses, and other vertical elements should not be located in this area. The exception is low bollards or planters to separate pedestrians from traffic or low posts for pedestrian call buttons. These exceptions should be either less than two-and-one-half-feet in height or taller than nine feet to allow the “clear sight triangle.” It is critical that pedestrians on the corner have an unobstructed view of bicyclists and vehicles, and that motorists in the vehicle travel way can easily see waiting bikes and pedestrians.

CZ 1.4 Utility poles are frequently located at street corners. When a utility pole within a crossing zone is to be replaced, ideally, it should be placed outside the crossing zone. In the cases where one utility pole obstructs the crossing zone and hosts the crossing signal for both intersecting streets, the single pole should be replaced with two poles, if possible.

CZ 1.5 In general, the smaller the curb radius, the better for pedestrians. A tight curb radius provides more room for pedestrians at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crosswalk, and requires vehicles to slow as they turn the corner.

CZ 1.6 The presence of a parking or bicycle lane creates an effective radius for the curb that is smaller than the turning radius required by the design vehicle.

Figure 164.1 Utilize consistent crossing standards appropriate to facility type.
CZ 1.7 The designer must balance all factors, keeping in mind that the chosen radius should be the smallest possible for the circumstances. The radius may be as small as three-feet where there are no turning movements, or five-feet where there are turning movements and adequate street width and a larger effective curb radius created by parking or bicycle lanes.

CZ 1.8 Provide curb ramps to accommodate the grade transition from the street to the raised pedestrian way.

CZ 1.9 Design all ramps to meet ADA and local jurisdiction requirements.

CZ 1.10 Design all ramps to prevent water from ponding at the base.

CZ 1.11 Construct a separate curb ramp for each crossing at a corner. This results in two ramps at most corners.

CZ 1.12 Where possible, create curb extensions to shorten the crossing distance, provide additional space at the corner, and allow pedestrians to see and be seen before entering the crosswalk.

CZ 1.13 Employ curb extensions in all Pedestrian Districts and along the Connector, Modern Parkway, Modern Boulevard, Pedestrian, Social Street, Quiet Street, and City Beautiful Corridors, except where there are extenuating design considerations such as the turning radius required for vehicles using the street.

CZ 1.14 Provide curb extensions into one or both sides of a corner, where space allows.

CZ 1.15 Utilize special paving at crossings to highlight an important street or pedestrian connection. Public art may be incorporated into the surface design. Other options include: the use of brick or interlocking concrete pavers, a special border consistent with adjacent pedestrian way features, a unique paving pattern or design within the area to highlight an intersection.

CZ 1.16 Provide countdown crosswalk signals.

CZ 1.17 Indicate mid-block crossings with pavement markings and warning signs. Local jurisdictional review is required.

CZ 1.18 Utilize unique pavement striping for multiple mode crossings (pedestrian, bicycle, etc.) rather than typical pedestrian-only crosswalk striping. (fig. 164.1) This is particularly relevant in multi-
use way or greenway crossings of roadways.

CZ 1.19 Consider four-way stops for all modes in instances where multi-use paths or greenways cross roadways.

CZ 1.20 Provide street signs and wayfinding systems that are legible and visible for all users, including pedestrians and bicyclists, in addition to motorized vehicles.

CZ 1.21 Provide crosswalks at locations where crossing demand is high (retail, transit stops, etc.) at intervals that result in a distance that is comfortable for pedestrians to cross a street.

CZ 1.22 Areas with many activity generators, such as pedestrian districts, should employ frequent crossing opportunities (ideally every 200 to 300 feet).

CZ 1.23 Areas with fewer activity generators can employ less frequent crossing opportunities.

CZ 1.24 Locate refuge islands along corridors where traffic signals are infrequent to allow pedestrians opportunity to cross one segment of the street to a relatively safe location, out of the vehicle travel way, and then continue across the next segment in a separate traffic gap.

CZ 1.25 Use grade separated crossings (e.g. skywalk, tunnel, etc.) only where it is not possible to provide an at-grade facility, such as crossing a freeway, major highway, or waterway, taking precautions to make sure are safe, well-lit and visible.

Figure 166.1 The urban greenway should have parallel and separated crossings for bicycle and pedestrian paths like this example in New York City.

Figure 166.2 Splitter islands provide a pedestrian refuge in long crossings.
Figure 167.1 Pedestrian crossing with no curb extensions.
Figure 168.1 Pedestrian crossing with curb extensions on both sides of a two-way street.
Figure 169.1 Pedestrian crossing with a curb extension on one side.
Figure 170.1 Mid-block crossings in pedestrian districts allow pedestrians more convenient access to adjacent land uses. This type of crossing is discouraged on busy streets and requires review by the local jurisdiction.
Figure 171.1 Multi-use way crossing at unsignalized roadway. This type of crossing is discouraged unless there are no other options. Local jurisdiction review is required.
Figure 172.1 Where the multi-use way crosses a multi-modal corridor, provide an appropriate crossing design that allows the pedestrian the opportunity to cross one segment of the street safely. Local jurisdiction review is required.
Figure 173.1 A splitter island is used to create safe pedestrian crossings at complicated intersections.

Figure 173.2 Curb extensions shorten the crossing distance and allow pedestrians to see and to be seen before entering the crosswalk at this Urban Greenway crossing. Curb extensions are particularly desirable in pedestrian districts.
**CZ 2.0 BIKE LANE INTERSECTIONS AND CROSSINGS**

A “bike box” is a term used in the United States for a European treatment known as an “advanced stop bar”. The bike box is placed at signalized intersections or is identified by colored markings at bicycle-motor vehicle crossings to reduce conflicts. Bicyclists in bike boxes are more visible to motorists and the side benefit to the bicyclists is reduced exposure to pollutants emitted by stopped vehicles waiting at the intersection.

**CZ 2.1** Provide a bike box as a right-angle extension to a bike lane at the head of an intersection.

**CZ 2.2** A bike box permits bicyclists to wait for a traffic signal at the front of the vehicle queue when the light is red, giving bicyclists preferential treatment in proceeding through an intersection.

**CZ 2.4** On one-way streets, provide a bike box that spans the entire width of all regular vehicle travel lanes to encourage bicyclists proceeding along a one-way street to move from one side of the street to the other at a specific location.

**CZ 2.5** Prohibit motor vehicle right-turns on red at bike box intersections.

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**Figure 174.1 Example of a “bike box”.

Figure 174.2 This European bike box illustrates the safety zone for bicyclists to make a turning movement at a signalized intersection. Note the pavement color shown here differs from these recommendations.**
CZ 3.0 BRIDGES AND UNDERPASSES

CZ 3.1 Incorporate multi-use ways into the design and layouts of roads, bridges, and underpasses to create a safe, connected, and uninterrupted system.

CZ 3.2 Provide a clear height zone of 10-feet at underpasses. These are often less expensive than that required for crossing over a roadway, since the clear height zone is less than that required for crossing over a roadway.

Figure 175.1 Underpasses should accommodate alternative modes of transportation to ensure a complete multi-modal network.

Figure 175.2 Underpass Guideline for the pedestrian way.

Figure 175.3 Underpass Guideline for the multi-use way.
Figure 176.1 Creating places to pause on bridges or along multi-use paths that are out of the main traffic flow at points of local interest promotes safety and features the unique heritage of the region.

Figure 176.2 Underpass guideline for the urban greenway.
CZ 4.0 TRAFFIC MANAGEMENT AND CALMING

Figure 177.1 illustrates techniques that are designed to reduce speed and volume of vehicular traffic to levels appropriate to safe interaction between automobiles, pedestrians and bicyclists. This may include narrower travel lanes, curb extensions, reduced radius corners, medians as crosswalk refuges, raised intersections and crosswalks.

CZ 4.1 Traffic calming measures should be designed to accommodate emergency vehicles, school buses, and fire department vehicles according to local jurisdiction requirements and snow removal requirements.

CZ 4.2 Cul-de-sacs limit vehicular connectivity and should be limited in use. When cul-de-sacs are utilized, connector paths for bicyclists and pedestrians should be provided.

CZ 4.3 Temporary street closings can be utilized for special events on social street corridors. Permanent street closings should be limited in use to preserve vehicle connectivity.
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The frontage zone is the area between the pedestrian way and the building or property line. The zone allows pedestrians a comfortable “shy” distance from building fronts, fences, hedges, railings, or other property line indicators while maintaining a clear pedestrian way.

As an exception, the frontage zone may house elements that would typically be located in the separation zone, should a separation zone not be present. Elements and fixtures may include transit shelters, utility poles, controller boxes, and traffic and parking signs. Locating of these items should not impede on future building opportunities; items in the frontage zone should be moveable or temporary. In some cases, acquisition of additional right-of-way or provision of permanent easements may be required.

**FZ: FRONTAGE ZONE**

**DESIGN PRINCIPLES SUPPORTED**

2. Health, Safety and Opportunity
4. Public Realm
5. Character and Vitality

*Figure 179.1* Plantings in the frontage zone protect the pedestrian from the building edge and offer aesthetic enhancement to the streetscape.

*Figure 179.2* A line in the concrete demarcates the frontage zone and provides an organizing element for items such as planters and furniture. The pedestrian way remains clear.

*Figure 179.3* The frontage zone may be an outdoor plaza that serves as a public activity zone.
GUIDELINES

FZ 1.0 GENERAL

FZ 1.1 Maintain a clear pedestrian way.

FZ 1.2 The minimum frontage zone width recommended adjacent to the pedestrian way is six-inches. The minimum width recommended adjacent to a multi-use way is two-feet.

FZ 1.3 Placing utilities in the frontage zone, within a utility easement either within or outside of the right of way allows room for trees and other amenities in the separation zone.

FZ 1.4 Accommodate elements such as stairs, stoops, rails, bay windows, awnings, canopies, overhangs, signs, flags, banners, marquees, cornices, brackets, fences, walls, and planters by varying the frontage zone widths and complying with jurisdictional requirements and building codes.

FZ 1.5 If the frontage zone is paved, demarcate it with a continuous score line in the concrete or with a pavement band. This provides a clear and recognizable pavement delineation of the pedestrian way and the frontage zone and its appurtenances.

FZ 1.6 Use vegetative or hard surface ground covering in the frontage zone; no gravel, dirt, or other loose materials that may drift into the pedestrian way are permitted.

FZ 1.7 Ensure that all projecting signs, awnings, and other overhead objects that may encroach on the pedestrian way, from the frontage zone, meet the minimum clear height zone requirement in the pedestrian way.

FZ 1.8 Locate overhead covering (e.g. awning) in the frontage zone at building entrances, where it meets the pedestrian way, to offer the pedestrian protection from sun and rain.

FZ 1.9 Prevent automobile, truck, and transit stopping and parking in the frontage zone.

FZ 1.10 Light the permeable, lower level building uses in the frontage zone and adjacent to the pedestrian activity zone at night. Light level can be reduced in the later evening hours until dawn.

FZ 1.11 Utilize fixtures attached to the face of buildings, or indirect illumination from and/or within buildings, as part of the district or corridor lighting plan.

Figure 180.1 A suburban example of a frontage zone that is comprised of a landscape buffer that is four-feet wide along the adjacent parking lot.

Figure 180.2 Permeable, lower level building uses activate the pedestrian activity zone and can coexist with the frontage zone to maintain a clear pedestrian way.

Figure 180.3 The frontage zone along a City Beautiful Corridor, in this case Brookside Parkway, may be open space and tree groupings.
SECTION III.
FRONTAGE ZONE - 181

INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA
MULTI-MODAL COMPONENT ZONE DESCRIPTIONS DESIGN GUIDELINES
FZ: FRONTAGE ZONE

Figure 181.1 Frontage zone in an urban context.

Figure 181.2 Frontage zone in a suburban context.
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Within a multi-use way, there are two types that differ by their environment and context. Both are a hard surface way for shared use by multiple alternative transportation users, such as pedestrians, bicyclists, and other non-motorized users.

a. **Multi-Use Way within road right-of-way.** This way is a hard surface way along, but separated, from a street or active vehicle thoroughfare. The way is designed for two-way pedestrian, bicycle, and non-motorized traffic and may be located on one or both sides of the street. This type of facility is commonly found along streets adjacent to non-pedestrian oriented land uses, such as industrial, and with limited access to an interior vehicular or pedestrian network. They are also commonly found in areas that are transitioning in land use from rural to suburban or suburban to urban, and adjacent to new residential developments in rural and suburban communities.

b. **Off-Street Multi-Use Way.** A hard surface way that forms the highway of the pedestrian system, this multi-use way is located along a corridor that is not associated with an active vehicular thoroughfare. Examples include ways along natural features, utility lines, or rail lines (active or abandoned). The way is designed for two-way pedestrian, bicycle, and non-motorized traffic, and may co-locate with a separate, parallel facility offering opportunity for other types of alternative transportation uses, such as boats or horses.

**DESIGN PRINCIPLES SUPPORTED**

2. Health, Safety and Opportunity
4. Public Realm
5. Character and Vitality

*Figure 183.1 Multi-use ways are the preferred facility in many areas of the Metropolitan Planning Area (MPA).*

*Figure 183.2 Maintain separation from traffic and through, easy connections within line-of-sight for multi-use ways.*

*Figure 183.3 Places to pause should be incorporated at crossings and at regular intervals along the way where sitting, views, and activities can result.*
GUIDELINES

MUW 1.0 GENERAL

Consider requiring dedication of public right-of-way or easement in order to obtain a building permit or land use approval, if existing right-of-way is insufficient. Should meet jurisdictional standards for regionally consistent identity and wayfinding systems.

MUW 1.1 Multi-use ways are preferable when right-of-way is wide and on-street bicycle ways are not provided, as in many suburban settings.

MUW 1.2 A multi-use way should be a minimum of ten feet wide, although 12-feet is desirable. Wider ways allow for greater pedestrian and bicycle traffic.

MUW 1.3 The multi-use way should be made of durable materials consistent with those used by the associated jurisdiction.

MUW 1.4 A multi-use way is preferred over on-street bicycle facilities by less experienced or recreational bicyclists due to the physical separation from vehicular traffic.

MUW 1.5 As suburban multi-modal corridors transition to urban multi-modal corridors, usually when crossings exceed 8 per mile, the space utilized for the multi-use ways should be converted to bike lanes with a parallel and separate pedestrian way.

MUW 1.6 Meet all ADA requirements in the design and construction of multi-use ways, including slopes and cross-gradients.

MUW 1.7 Provide center line/marker delineation for two-way travel.

MUW 1.8 An additional two-feet of clear zone or shoulder is required on each side of the pavement.

MUW 1.9 A clear height zone of nine-feet should be maintained.

MUW 1.10 Multi-use ways should have sufficient structural depth for the pavement to support maintenance and emergency vehicles.

MUW 1.11 Require new utility easements to share right-of-way with bicycle and pedestrian ways. Amend development commitments to existing utility easements to allow shared use.

MUW 1.12 Provide frequent and convenient access to destinations within line-of-sight and the overall multi-modal network.
Figure 185.1 Multi-use way layout along a suburban pedestrian corridor. This suburban site is in transition to becoming more urban with pedestrian-friendly businesses along the right-of-way line. Connector ways create pedestrian entrances to both sides of the buildings, and break up large, internal parking lots. Both cyclists and walkers/runners are able to easily access the pedestrian activity areas as local destinations.
MUW 1.13 Provide a bridge, tunnel, or other separation from vehicular traffic at busy intersections as most way users expect continued separation from traffic. Do not add substantial out-of-direction travel at crossings as way users will then bypass the safe crossing. See crossing zone guidelines for more information.

MUW 1.14 Where grade separation structures cannot be justified, signalization or other measures should be provided to reduce conflicts. Where possible, provide a median island on multi-lane roadways as a refuge.

MUW 1.15 Incorporate places to pause at crossings, and at regular intervals along the way for sitting, views and activities.

MUW 1.16 Where a multi-use way crosses a roadway at a grade-level intersection, the alignment should curve, so it is not parallel to the roadway and/or a circular place to pause should be provided. This improves the visibility for approaching users.

MUW 1.17 Provide lighting in secluded areas along multi-use ways to improve security.

MUW 1.18 Provide fences or railings along high-speed highways or as needed to provide protection along steep side slopes and waterways.

MUW 1.19 Only provide fences or barriers where needed for safety reasons. Place as far away from the way as possible.

MUW 1.20 Avoid duplication of fences, such as a fence on the right-of-way and a fence to keep pedestrians off freeways.

MUW 1.21 Avoid the “cattle-chute” effect caused by placing high chain-link fence on each side of a way. This effect reduces user comfort and therefore discourages use of the facility.

MUW 1.22 Utilize consistent identity and wayfinding systems across jurisdictional boundaries.

MUW 1.23 Incorporate multi-use ways into the design and layouts of roads, bridges, and underpasses to create a safe, connected, and uninterrupted system.

MUW 1.24 Terminate multi-use ways at controlled intersections or dead-end streets that connect to the multi-modal network.

MUW 1.25 Encourage the use of sustainable, high performance, efficient, and environmentally responsible construction materials.
Figure 187.1 A multi-use way facility in a suburban setting.

**MUW 2.0 MULTI-USE WAYS WITHIN ROAD RIGHT-OF-WAY**

Where a multi-use way is parallel and adjacent to a roadway, there should be five-feet or greater width separating the way from the edge of the roadway, or a safe physical barrier should be provided.

**MUW 2.1** As the multi-modal network becomes more complete, recreational uses often transition to become transportation uses. Planning should anticipate the need for future lighting and way widening to accommodate extended hours for commuting and increased use.
MUW 3.0 MULTI-USE WAYS WITHIN OFF-STREET RIGHT-OF-WAY

Multi-use ways within off-street right-of-way can be described as linear open space not associated with a vehicular roadway used to create a network that connects parks and natural areas. Typically multi-use ways are located along creeks, streams, rivers, or utility corridors and are managed as natural environments.

MUW 3.1 Rail bank all inactive rail corridors.

MUW 3.2 Multi-use ways within off-street rights-of-way protect natural corridors and environmentally sensitive areas, provide continuous wildlife ways, create, share or preserve continuous corridors that provide regional/area wide connectivity, utilize off-road corridors that may otherwise experience dumping and illicit activity, and provide access to and a sense of traffic-free open space or “green space”, while providing an opportunity for multiple constituencies to become engaged with development and management.

MUW 3.3 Colocating transit within a multi-use way:

a. Transit is a parallel use that can be accommodated within multi-use way corridors. Space requirements will vary according to the transit mode.

b. Separate the multi-use way component from the transit component with either a fence, spatial distance, landscape, or other aesthetic barrier to maintain safety.

MUW 3.4 As the multi-modal network becomes more complete, recreational uses often transition to become transportation uses. Planning should anticipate the need for future lighting and way widening to accommodate extended hours for commuting and increased use.

Figure 188.1 Multi-use way within off-street right-of-way with parallel excursion train.
SECTION III.  MULTI-USE WAY

Figure 189.1 Multi-use way within off-street right-of-way with parallel transit corridor.

| SZ  | Separation Zone - 15' min. width between transit zone and adjacent land use |
| MUW | Multi-Use Way - see design guideline for detail |
| TW  | Transit Way - specific transit type to be determined - automated guideway depicted for illustrative purposes |
MUW 4.0 MULTI-USE WAYS WITHIN OFF-STREET RIGHT-OF-WAY WITH PARALLEL RECREATION

Parallel recreational modes can be accommodated when there is space available and appropriate natural features are available. Examples include water trails for canoeing or boating, walking trails, and/or equestrian trails. Park features such as open space, playgrounds, recreational fields, swimming pools, and other like facilities are often connected with multi-use ways.

MUW 4.1 Where appropriate, equestrian trailheads and equestrian ways are encouraged to be located parallel to multi-use ways.

   a. Equestrian trails should be composed of materials other than asphalt, concrete, or gravel.

   b. Provide two (one for each direction) horse dismount blocks at all bridge and road crossings.

   c. Provide equestrian hitching posts at key locations.

   d. Provide alternate equestrian crossings at bridge locations.

   e. Provide appropriate signage and wayfinding along the way.
**Figure 191.1** Typical multi-use way within off-street right-of-way with parallel equestrian way (EW).

**Figure 191.2** Multi-use way within off-street right-of-way.
MUW 5.0 URBAN GREENWAY

An urban greenway is a multi-use way, in which the pedestrian facilities and bicycle facilities are separated, but parallel to each other, along streets where vehicle travel lanes can be removed and the resulting right-of-way dedicated to the exclusive use of the pedestrian and bicycle facilities.

MUW 5.1 Urban greenways should have consistent paving and furnishings to identify the trail as a distinct corridor with a unique sense of place.

MUW 5.2 Urban greenways should have a lush and well-maintained landscape component to provide shade and seasonal visual interest, mitigate traffic noise, repel street debris, and further reinforce that the trail is a visually distinct and identifiable corridor.

MUW 5.3 Urban greenways should be lit at comfortable, glare-free levels for safe nighttime use, and in a style that provides continuity and identity.

MUW 5.4 Urban greenways should provide pedestrian priority curb extensions into parking lanes (where present) to shorten crosswalk travel times, to place waiting pedestrians in improved sight-line position relative to parked cars, and to create pedestrian queuing pockets out of bicycle way traffic.

MUW 5.5 Urban greenways should provide dedicated signal phases for parallel bike/pedestrian crosswalks to eliminate crossing conflicts with turning vehicles.

MUW 5.6 Urban greenways should provide places to pause where sitting, views and pedestrian activities are accommodated.

MUW 5.7 Urban greenways should be designed to instill a comfort level to users of all ages and abilities by having clear segregation of pedestrian, bicycle, and vehicular traffic, through distance or physical barrier such as a landscape zone or bollards.

MUW 5.8 A minimum of three-feet should separate uses along an urban greenway. Greater bicycle/vehicular separation is desired where spatially possible.
Figure 193.2 Multi-Use Way as an Urban Greenway - Cross Section.
MUW 6.0 MULTI-USE CONNECTOR WAY

A multi-use connector way is a hard-surface bicycle and pedestrian link between key destinations, not accessible by automobile.

MUW 6.1 Multi-use connector ways should be a minimum of eight-feet wide for pedestrians only. If bicycles are accommodated, a minimum way width of 10-feet is recommended. A minimum right-of-way or easement of 20-feet is recommended to accommodate landscape plantings and amenities.

MUW 6.2 Bollards or physical barriers may be necessary to restrict vehicular traffic access to the way.

MUW 6.3 Consider bridges and other structures as “connectors”.

MUW 6.4 Connector ways within pedestrian districts can also link destinations within the district, such as athletic fields, neighborhoods and parks.

Figure 194.2 Connector way between two homes on a cul-de-sac.

Figure 194.2 Connector ways allow neighborhoods to connect without the usual vehicular traffic, promoting walkability, healthy living, and better communities.
PAZ: PEDESTRIAN ACTIVITY ZONE

The pedestrian activity zone creates outdoor living spaces in the built environment. The zone is a planned or impromptu destination along the pedestrian way and can contribute to an area’s economic vitality, provide respite from urban activity, and create a sense of community. The activities in the zone generate interest along the streetscape and adjacent land uses, where walking and social gathering are encouraged and appealing. Examples of activity zone elements include sidewalk cafes, public art, seating areas, plazas, and street retail.

DESIGN PRINCIPLES SUPPORTED

1. Mobility
2. Health, Safety and Opportunity
3. Adaptability and Sustainability
4. Public Realm
5. Character and Vitality
GUIDELINES

PAZ 1.0 GENERAL

PAZ 1.1 Create a pedestrian oriented environment at the street level that is safe, accessible, visually pleasing, and comfortable.

PAZ 1.2 Build projects to connect with the pedestrian way.

PAZ 1.3 Ensure that lower level of building façades has abundant windows and doors, i.e. no blank walls.

PAZ 1.4 Place the front door where it is visible from, and directly facing, the pedestrian way.

PAZ 1.5 Provide interesting displays, or showcase the interior activities in building windows visible to passersby.

PAZ 1.6 Allow acceptable uses such as: food and drink purchase, outdoor recreation, public art display, and pedestrian resting places in the pedestrian activity zone.

PAZ 1.7 Locate all furniture, canopies, railings, and other accessories used in pedestrian activity zone outside of the pedestrian way.
PAZ 1.9 Where permitted by the local jurisdiction, locate opportunities for additional outdoor retail space (e.g. outdoor seating for restaurants, temporary vendors, seasonal pushcarts, etc.) in the pedestrian activity zone or frontage zone, along, but not interrupting, the pedestrian way.

PAZ 1.10 Meet or exceed all ADA design criteria and jurisdiction requirements pertaining to temporary and permanent sidewalk retail.

PAZ 2.0 PUBLIC ART

PAZ 2.1 Use public art as both an image enhancement and an economic development tool in districts.

PAZ 2.2 Connect public art to the pedestrian way through paths, gathering spaces, or views.

PAZ 2.3 Public art can include stand-alone pieces such as sculpture and fountains; artisan-crafted details in the environment such as unique paving, railings, or architectural details; and programmed events such as performances, interactive street theater, temporary installations, projected images, and soundscapes.

PAZ 2.4 Public art should promote interaction and communication among people who use the pedestrian activity zone. Interaction can be by means of touch, movement, and play that offer different day and night experiences.

PAZ 2.5 Public art should reflect the unique character, heritage, and place of the Indianapolis region and the specific location of the project.

PAZ 2.6 Public art should meet or exceed all ADA design criteria for movement through and around the space and pertinent jurisdiction requirements.

PAZ 2.7 Public art proposals should consider existing art master plans and the context of the site within that master plan, if applicable.

PAZ 2.8 Developers are encouraged to incorporate art into new project design.

PAZ 2.9 Public art should be incorporated into public infrastructure projects such as bridges and transit systems.

PAZ 2.10 Any built element is an opportunity for art.

PAZ 2.11 Public art should communicate a relationship to the place, create a sense of joy and delight, and stimulate play and creativity.
PAZ 2.12 Public art should be subordinate when related to a significant landmark building or landscape.

PAZ 2.13 Public art should be relevant to its location and not convey a false sense of history that can overshadow or detract from adjacent resources or districts.

PAZ 2.14 Public art should be of durable materials, have a maintenance plan, and have criteria for removal should its upkeep or program become unsatisfactory to the local jurisdiction.

PAZ 3.0 PLAZAS, OPEN SPACES AND RESTING AREAS

PAZ 3.1 Create views, variety of seating options, and landscape development in plazas, open spaces, and resting areas.

PAZ 3.2 Place plazas, open spaces, and sitting areas in easily accessible locations.

PAZ 3.3 Provide a continuous edge of permeable pedestrian activity along the building edge of a plaza.

PAZ 3.4 Frame views to visually link the plaza with its context, where appropriate.

PAZ 3.5 Provide one linear foot of seating per each perimeter linear foot of the plaza.

PAZ 3.6 At least 50 percent of recommended seating may be secondary, i.e. in the form of steps, wide planter walls, retaining walls, or turf mounds (a seat is usually figured at 2.5 feet in width).

PAZ 3.7 Position seating and railings to accommodate people watching.

PAZ 3.8 Provide for a variety of seating locations to accommodate the needs of various users and abilities.

PAZ 3.9 Include circular seating to encourage interaction.

PAZ 3.10 Provide a variety of seating options, including backless benches, single seat benches, right angle arrangements, or moveable chairs and tables to accommodate groups. Seats longer than five feet should have arms or interruptions at regular intervals to minimize skateboard attractions and provide pedestrian supports.
PAZ 3.11 Design spaces to include the abilities and interests of diverse user groups.

PAZ 3.12 Provide seating in both shaded and sunny areas. Shade is created by trees, trellises, canopies, umbrellas, or building walls.

PAZ 3.13 Locate sitting areas, plazas, and small open spaces where they will get the most use without compromising the transportation function of the pedestrian way.

PAZ 3.14 Include water and/or fountains for visual attraction, traffic noise screening, and microclimate cooling.

Figure 199.1 Fountains provide visual attraction, traffic noise screening, and microclimate cooling.

Figure 199.2 A roll out volleyball court pad and moveable net create an instant activity feature for this pedestrian activity zone in New York City.
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PW: PEDESTRIAN WAY

The pedestrian way is an area where pedestrians travel within a continuous, clear pathway. The pedestrian way is intended to provide safe, convenient, and comfortable pedestrian access to activities and destinations along major streets, connections between and among neighborhoods, and links to transit, recreational, and institutional uses. The pedestrian way is accommodated in the form of a sidewalk, multi-use path, or urban greenway.

Most of the street system in the MPA's urbanized area has already been built and, in many cases, the existing pedestrian way is too narrow to accommodate the recommended widths. Competing needs for space in a constrained multi-modal corridor can be resolved by compromising on the minimum required clearance for some or all of the zones, acquiring additional right-of-way, reducing vehicular travel lanes, or granting of easement on private property. The resolution of such conflicts in any given circumstance must be balanced between the conflicting uses and adjusting the magnitude of the solution to fit the magnitude of the project.

DESIGN PRINCIPLES SUPPORTED

1. Mobility
2. Health, Safety and Opportunity
4. Public Realm
5. Character and Vitality

Figure 201.1 The pedestrian way is intended to provide safe, convenient, and comfortable pedestrian access to activities and destinations along major streets, connections between and among neighborhoods, and links to transit, recreational, and institutional uses.

Figure 201.2 Pedestrian way in an urban context.
Figure 202.1 Pedestrian way in a suburban context, shown as a ten-foot wide multi-use way.

**Local Pedestrian Way.** A local pedestrian way (sidewalk) is a hard surface walkway, for exclusive pedestrian use, along the side of a street, within the right-of-way. It is fundamental to the regional pedestrian system and is found in residential neighborhoods and commercial areas. It is intended to provide safe, convenient access for area residents and visitors and provides connection to a larger pedestrian system. Typically, the inclusion of local pedestrian ways is determined on a case-by-case basis.

**Collector Pedestrian Way.** A collector pedestrian way (sidewalk) is a hard surface walkway, for exclusive pedestrian use, along the side of a street, within the right-of-way. It forms the primary grid of pedestrian facilities that provides access to destinations. In comparison to the local pedestrian way following local streets, a collector pedestrian way follows primary and secondary streets, streets with transit, and streets that complete the pedestrian network.

**GUIDELINES**

**PW 1.0  GENERAL**

**PW 1.1** Pedestrian ways are preferable to multi-use ways when the right-of-way is narrow and on-street bike ways are provided, as in many urban settings.

**PW 1.2** Local Sidewalks should be a minimum width of four-feet, with five-feet in width recommended. Each neighborhood need and preferences vary due to the wide variety of street functions in neighborhoods.

Figure 202.2 Pedestrian walking routes should be continuous, obvious, and not require pedestrians to travel out of their way unnecessarily.
SECTION III. PEDESTRIAN WAY - 203

INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA

MULTI-MODAL COMPONENT ZONE DESCRIPTIONS DESIGN GUIDELINES

PW: PEDESTRIAN WAY

PW 1.3 Collector Sidewalks should be a minimum width of five-feet, with eight-feet in width recommended. In dense pedestrian districts, 12 to 14-feet wide is recommended.

PW 1.4 Sidewalks are hard surface paths for pedestrian use that is physically separated from the roadway by a curb or a minimum distance of three-feet.

PW 1.5 Sidewalks are incorporated into the design and layout of roads.

PW 1.6 Sidewalks can utilize the existing corridor if the right-of-way is sufficiently wide, or may require agreements with adjoining property owners.

PW 1.7 Exits and entrances should be designed to minimize pedestrian conflicts. Alley access and parking structures located in the interior of the block are encouraged.

PW 1.8 Decorative paving such as brick and/or patterned concrete is encouraged in pedestrian districts. It is recommended that decorative paving be installed as part of an overall plan in order to encourage a coordinated appearance within the district.

PW 1.9 Consider the dedication of public right-of-way or easement for the pedestrian way as a requirement for obtaining a building permit or land use approval.

PW 1.10 Competing needs for space within a corridor can be resolved by acquisition of additional right-of-way, public walkway easements, narrowing of vehicular lanes, or reducing the number of vehicular lanes.

PW 1.11 All pedestrian ways should be in compliance with American Disabilities Act (ADA) standards and accessible to all users.

PW 1.12 The pedestrian walking route should be continuous, obvious, and not require pedestrians to travel out of their way unnecessarily.

PW 1.13 The primary pedestrian way should be located along building fronts.

PW 1.14 Demarcate the pedestrian way with a six-inch, minimum, contrasting material frame (pavement band, where appropriate) along its outside edges to provide pavement delineation of the pedestrian space and clear, recognizable boundaries for the frontage and separation zones and appurtenances.

PW 1.15 Connect the primary pedestrian way to parking

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Figure 203.1 Decorative paving should be installed as part of an overall plan in order to encourage a coordinated appearance.

Figure 203.2 The Pedestrian Way should be a level, firm, and stable surface resistant to slipping, and kept in good repair.

Figure 203.3 In pedestrian districts or areas where pedestrian traffic is high, a width of 12 or more feet is desirable to accommodate groups of pedestrians passing each other.
Figure 204.1 Local Sidewalk Guideline - urban context

Figure 204.2 Local Sidewalk Guideline - suburban context

Figure 204.3 Collector Sidewalk Guideline - urban context

Figure 204.4 Collector Sidewalk Guideline - suburban context
PW 1.16 Pedestrian way should be, at a minimum, five-feet wide, with a preferred width of six-feet. In pedestrian districts or areas where pedestrian traffic is high, a width of 12-feet or greater is desirable to accommodate two groups of pedestrians passing each other.

PW 1.17 If the facility is shared with other uses, such as bicycles, the pedestrian way should be a minimum of 10-feet wide.

PW 1.18 Pedestrian way should be clear of all obstructions, including furniture, trees, utility poles, street vendors, door swings, etc.

PW 1.19 Pedestrian way should be a level, firm, and stable surface resistant to slipping and kept in good repair.

PW 1.20 Pedestrian way should be provided along both sides of multi-modal corridors.

PW 1.21 Provide railings, barriers, curbs, and a clear pedestrian way on both sides of vehicular bridges in multi-modal corridors and pedestrian districts.

PW 1.22 Adjacent to the pedestrian way there should be places for adjacent pedestrian activity zones for standing, visiting, and sitting.

PW 1.23 Pedestrian way should have a desirable microclimate and have a sense of psychological and visual comfort for its users.

PW 1.24 Provide plantings and street trees in the adjacent separation zone, wherever possible.

PW 1.25 Encourage awnings, at a height greater than nine-feet, but generally lower than 12 feet to protect pedestrians from sun, rain, and snow.

PW 1.26 Buffer the pedestrian way from vehicles, and provide safe pedestrian crossings.

PW 1.27 The pedestrian way should connect to other pedestrian ways or complete a pedestrian way loop.

PW 1.28 The pedestrian way should contribute to the character of neighborhoods and pedestrian districts and strengthen their identities. Encourage the inclusion of local character and identity in the design of the pedestrian way.
PW 1.29 Maintain a clear height zone throughout the pedestrian way to keep it free of signs, awnings, tree branches, or other obstructions.

- Local Sidewalk clear height zone: eight-feet minimum
- Collector Sidewalk CHZ: nine-feet minimum

PW 1.30 Encourage pedestrian scale paving patterns and materials, for example brick or patterned and scored concrete, in pedestrian districts. All design elements should conform to local plans, codes, and ordinances.

PW 1.31 Move and/or minimize unsightly or obtrusive equipment such as trash dumpsters, heating/air conditioning equipment, etc., to the back of buildings and away from the pedestrian way.

PW 1.32 Minimize or discourage surface parking lots and auto-oriented businesses along pedestrian ways in pedestrian districts.

PW 1.33 All grates within the pedestrian way should meet all ADA standards and should be flush with the level of the surrounding pavement. Where possible, grates should be located outside the effective walkway width of the pedestrian way.

PW 1.34 Accentuate primary entrances to buildings from the pedestrian way to provide indications of entrance locations.

PW 1.35 Large buildings, which front multiple corridors, should provide multiple entrances. Building entrances that connect to a central lobby should be distributed on different facing façades to connect directly with the pedestrian way.

PW 1.36 Public art and artistic crafting of building materials can help distinguish building entrances.

Figure 206.1 Multi-use paths are preferred by recreational bicyclists since there is physical separation from vehicular traffic.

Figure 206.2 A multi-use path is a hard surface path for two-way shared use by bicycles and pedestrians.
Figure 207.1 Multi-use path, a facility option for the pedestrian way. Multi-use paths are a transition from suburban to urban development.
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The rapid transit way is the area where rapid transit vehicles travel or stop to load and unload passengers. Rapid transit technology includes bus rapid transit, light rail transit, and automated guideway transit. Transit can operate on exclusive right-of-way, semi-exclusive right-of-way, or a shared right-of-way in mixed traffic, bus lanes, or on reserved lanes. Regardless of the mode, rapid transit should share the following primary features:

- Dedicated travel ways allowing rapid movement with minimal interference from general vehicular traffic, bicyclists, and pedestrians.
- Accessible, safe, secure, attractive stations.
- Easy-to-board, attractive, environmentally friendly vehicles.
- Intelligent transportation system applications to provide real-time passenger information, signal priority, and service command/control.
- Frequent, all-day service.
- Efficient (i.e. off-vehicle) fare collection.

**RTW: RAPID TRANSIT WAY**

**DESIGN PRINCIPLES SUPPORTED**

1. Mobility
2. Health, Safety and Opportunity
3. Adaptability and Sustainability
4. Public Realm
GUIDELINES

RTW 1.0 GENERAL

Minimize conflicts between rapid transit travel lanes and other transportation modes.

RTW 1.1 Give transit vehicles priority at stop lights, particularly in the case of bus rapid transit.

RTW 1.2 Transit travel lanes will vary based on technology.

RTW 2.0 TRANSIT STOPS AND STATIONS

Stops and stations should offer convenience, comfort, and safe access for passengers and transit vehicles.

RTW 2.1 Structures should be permanent, weather-protected, well-lit, and secure facilities.

RTW 2.2 Coordinate station platform design with vehicle technology and the method of fare collection.

RTW 2.3 Provide convenient transfers, and supporting facilities, between all transportation modes for seamless intermodal transfers allowing for simple fare collection and traveler management.

RTW 2.4 Provide recognizable system identity and route information at all stops.

RTW 2.5 Include public art and landscaping in station design.

RTW 2.6 Create and maintain a convenient, pedestrian-friendly environment near stops and stations.

RTW 2.7 Provide access to parking facilities and park-and-ride lots adjacent to transit stops and stations.

Figure 210.1 Provide recognizable system identity and route information at all stops.

Figure 210.2 Transit stop example. Create and maintain a convenient, pedestrian-friendly environment near stops and stations.
The separation zone protects pedestrians from vehicle traffic in the adjacent roadway. It is also the area where elements such as street trees, signal poles, utility poles, street lights, controller boxes, hydrants, signs, parking meters, driveway aprons, grates, hatch covers, and street furniture are properly located and where people alight from parked cars.

The protection function of the separation zone is an important safety feature for pedestrians, especially along corridors with high volumes of vehicular traffic. In addition, the separation zone allows adequate room for ramps and crossings.

**PRINCIPLES SUPPORTED**

1. Mobility
2. Health, Safety and Opportunity
4. Public Realm
5. Character and Vitality

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*Figure 211.1 The separation zone’s primary function is to protect pedestrians in the pedestrian way from the vehicles in the street parking zone and the vehicle travel way.*

*Figure 211.2 Separation zone in an urban context.*
GUIDELINES

SZ 1.0 GENERAL

When designing a separation zone, existing and new corridors have different design implications. In new construction, a designer would examine the functional classification of the corridor and transit network needs first, then add drainage considerations to determine what kind of separation zone width should be used. In existing thoroughfares, width is usually restricted, so that a designer has limited drainage and design options.

SZ 1.1 Items located in a separation zone should not interfere with the pedestrian way, block the entrances to buildings, and inhibit visibility.

SZ 1.2 Construct the separation zone as the area of protection between the pedestrian way and the vehicle travel way.

SZ 1.3 In an urban setting where there are no elements located in the separation zone, the minimum width should be six inches. In a suburban setting the minimum separation zone should be five feet for drainage considerations.

SZ 1.4 Provide a wide curb in placemaking corridors and pedestrian districts for passenger exit from parked cars. Minimum width: 12 inches; recommended width: 16 inches.

SZ 1.5 When the separation zone is adjacent to a multi-use way the minimum width should be two-feet.
SECTION III. SEPARATION ZONE - 213

INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA
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DESIGN GUIDELINES

SZ: SEPARATION ZONE

SZ 1.6 Demarcate the separation zone with a continuous score line in the concrete or pavement band, where appropriate, along its edge to provide pavement delineation of the pedestrian way and clear, recognizable boundaries for the zone and its appurtenances.

SZ 1.7 Locate all street furniture, including trees, signal poles, utility poles, lights, controller boxes, hydrants, signs, parking meters, driveway aprons, grates, hatch covers, and newspaper boxes within the separation zone, outside of the pedestrian way. Minimum widths in urban and suburban settings follow MUTCD guidelines [161]. Examples are as follow:

- Minimum five-feet wide for trees (seven-feet preferred).
- Minimum seven-feet wide for transit shelters (eight-feet preferred) and minimum five-feet wide for transit stops.
- Street signs, lighting, benches, and parking meters should have a minimum distance of two-feet from the farthest projecting portion of the object and the adjacent way (fig. 204.1) where possible [161].
- Utility equipment should have a minimum of three feet for maintenance.
- First flush stormwater impact can be assisted by a well designed separation zone.

Minimum Recommended SZ Width & Its Accommodations

<table>
<thead>
<tr>
<th>Width</th>
<th>Content</th>
<th>Transit Accom.</th>
<th>Drainage Accom.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6”-1’</td>
<td>demarcation only</td>
<td>If contiguous w/ PW, stop</td>
<td>Storm drain, sewer</td>
</tr>
<tr>
<td>3’</td>
<td>groundcover</td>
<td>Non-sheltered stop</td>
<td>PW drainage swale</td>
</tr>
<tr>
<td>5’</td>
<td>Medium tree</td>
<td>If contiguous w/ PW, shelter w/ side, or shelter w/o side</td>
<td>PW/1 lane VTW drainage swale</td>
</tr>
<tr>
<td>7’</td>
<td>Large tree</td>
<td>Shelter w/ side</td>
<td>PW/2 lane VTW drainage swale</td>
</tr>
<tr>
<td>10’</td>
<td>City Beautiful tree</td>
<td>Shelter w/ ramps for at-grade entry</td>
<td>Bio-retention area</td>
</tr>
</tbody>
</table>

SZ 1.8 Utility equipment located in the separation zone should not obscure vehicular sight lines.

SZ 1.9 Locate utilities underground where possible.

Figure 213.1 Provide adequate clearance to accommodate fixtures and signs.

Figure 213.2 Provide adequate clearance to accommodate perpendicular bike parking in the separation zone.

Figure 213.3 Provide adequate clearance to accommodate bus shelter in the separation zone.
SZ 2.0 TREES AND LANDSCAPING

SZ 2.1 A combination of trees, shrubs, perennials, ground cover, lawn, or other living and growing vegetation should be planted in the separation zone to enhance the public experience.

SZ 2.2 Choose street trees that can accommodate the branching clear height zone, are low maintenance, have low water requirements, are disease resistant, tolerant of urban conditions, and have seasonal interest. This follows the “Right Tree, Right Place” approach to urban forestry [159].

SZ 2.3 Create visual continuity by planting trees of the same form and character along particular blocks or streets. Trees on adjacent streets or blocks may be a different species to avoid monoculture plantings. Specific locations such as pedestrian activity zones and significant building entrances may use different species to distinguish from the street tree in the separation zone.

SZ 2.4 Locate large canopy trees, or trees that grow larger than 50-60 feet in height, along corridors wider than 90 feet. Large canopy trees should also be used to highlight corners, provide shade and cover for large pedestrian activity zones, or as accents against the skyline. However, trees should not interfere with visibility of public or traffic signs. Select a size and canopy type to correspond depending on available space and lighting. For instance, a continuous street wall (e.g. townhouses) would limit light and air so that a sparse tree canopy would be preferable.

<table>
<thead>
<tr>
<th>Adjacent Building Type</th>
<th>Tree Size and Canopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street wall w/ lawn &lt;10'</td>
<td>Medium, sparse</td>
</tr>
<tr>
<td>Street wall w/ lawn &gt;10'</td>
<td>Large, sparse</td>
</tr>
<tr>
<td>Detached w/ lawn &lt;10'</td>
<td>Medium, full</td>
</tr>
<tr>
<td>Detached w/ lawn &gt;10'</td>
<td>Large, full</td>
</tr>
</tbody>
</table>

SZ 2.5 Locate medium shade trees, or trees that grow up to a height of 50-60 feet along corridors less than 90 feet wide. Planting space and availability of light should dictate species selection.

SZ 2.6 Give preference to native plants, as appropriate. No evergreens that exceed 30” calipers mature size should be used. Avoid exotic, invasive and/ or prohibited species. Avoid thorn or fruit-bearing plants, unless a part of a functional or edible landscaping program, and then a continuing maintenance program should be in place prior to planting.

Figure 214.1 Provide adequate clearance from face of curb to center of tree trunk.

Figure 214.2 Provide adequate clear zones around trees.
 SECTION III. SEPARATION ZONE - 215

INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA
MULTI-MODAL COMPONENT ZONE DESCRIPTIONS DESIGN GUIDELINES

SZ 2.7 The minimum recommended tree size for the separation zone is two-inch caliper or 12 to 14 feet in height, whichever is greater. Branching should start no lower than seven feet with the ability of the tree form to accommodate an nine-foot clear height zone for the pedestrian way and 14 feet over the vehicle travel lane as it grows.

SZ 2.8 In the presence of overhead utility lines, offset tree plantings and/or adjust tree species for height, and provide a wider separation zone, so the tree canopy will avoid conflicts with the overhead utility lines.

SZ 2.9 Maintain view requirements to avoid blocking sight lines at intersections. Consider mature height and mass of plants to meet this requirement.

SZ 2.10 Place street trees a minimum distance of three-feet from the back of the curb to the center line of the trunk.

SZ 2.11 Maintain a minimum of five-feet between the tree trunk and vehicle travel lane, plant in raised planters protected by a curb, or plant behind a highway barrier, where adjacent to a vehicle travel way.

SZ 2.12 Maintain a minimum of three-feet between the tree trunk and multi-use way, or place a barrier or grate to create a recovery zone for bicyclists.

SZ 2.13 Maintain at least ten-feet between the tree trunk and the building face and where adjacent to a building overhang/awning or other protrusion.

SZ 2.14 Plant trees in common beds rather than planting pockets if space allows, with the allowance of a minimum five foot width. Trees should be planted so that the portion of the tree where the base of trunk flares and becomes roots is at the same level as the surrounding soil.

SZ 2.15 Meet standards outlined in the American Association of Nurserymen’s “American Standard for Nursery Stock” publication regarding tree root balls and sizing [160].

SZ 2.16 Vary the separation zone width to avoid disturbing the root systems of existing trees when installing new pedestrian facilities. This may require an easement for the pedestrian way if avoidance of existing trees causes the pedestrian way to be located outside of the public right-of-way.

Figure 215.1 Meet planting requirements for trees in the urban condition.

Figure 215.2 Bike parking options in the separation zone.

Figure 215.3 Maintain a clear pedestrian way.
SZ 2.17 Accommodate trees and landscaping through planting pockets in pedestrian districts. If there is more room available, vary the separation zone as follows:

<table>
<thead>
<tr>
<th>Corridor Class</th>
<th>Add width to</th>
<th>Possible SZ form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placemaking</td>
<td>PW</td>
<td>planting pockets</td>
</tr>
<tr>
<td>Connector</td>
<td>PW</td>
<td>continuous SZ</td>
</tr>
<tr>
<td>Thru</td>
<td>SZ</td>
<td>continuous SZ</td>
</tr>
<tr>
<td>Local</td>
<td>SZ</td>
<td>planting pockets</td>
</tr>
</tbody>
</table>

SZ 2.18 Where the tree planting area will be walked on, it may need grates that meet ADA requirements and align with paving pattern score lines.

SZ 2.19 Adjacent property owners shall maintain plantings in the separation zone. Maintenance includes:

a. Watering for the first year.

b. Pruning as set by standards published by the American National Standards Institute (ANSI) A300 Pruning Standards [152].

c. Fertilization for trees based upon soil testing.

d. Mulch the drip line to a depth of three inches. Mounding mulch or over mulching is harmful to trees and may cause disease, nesting for harmful pests, or rot in the roots and/or trunk.

e. Topping trees is not allowed. A topped tree loses its natural shape, thus decreasing the amount of cooling and air cleaning it provides. Topping also starves the tree and makes it more prone to insects and disease. New growth is commonly weak-wooded, and may be hazardous to people and property nearby.

f. Consult with local jurisdiction for additional requirements, procedures, and permits.

SZ 2.20 Select ground level plants that suit the location and function. Maintain visibility between pedestrians and vehicles.

SZ 2.21 Use annual, perennial, or arrangements with natural grasses, ground covers, shrubs, and vines to provide visual and seasonal interest within the overall design of tree rows and separation zones.

SZ 2.22 Use vegetation, plant-based mulches or hard surface ground covering in the separation zone; no gravel, dirt, or other loose materials that may drift into the pedestrian way are permitted.
SECTION III.  SEPARATION ZONE - 217

INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA
MULTI-MODAL COMPONENT ZONE DESCRIPTIONS DESIGN GUIDELINES
SZ: SEPARATION ZONE

**SZ 3.0 DRIVEWAYS**

**SZ 3.1** Locate driveway aprons outside of the pedestrian way, with the sloped portion entirely within the separation zone.

**SZ 3.2** Maintain the pedestrian way pavement and pattern at a cross slope of 1:50 (one foot high, 50 feet long) across the driveway.

**SZ 3.3** Where necessary to keep the driveway slope from exceeding 1:10 (one foot high, ten feet long), the sidewalk may be partially dropped to meet the grade at the top of the apron. This is preferred to extending the sloped apron into the pedestrian way.

![Figure 217.1](image1) It is recommended that new driveway cuts in the pedestrian way be discouraged and that access be from alleys and side streets. Where a new driveway cut is necessary, use tight radii and meet ADA slope standards.

![Figure 217.2](image2) If a new curb cut is necessary, and though it is not preferred, the driveway may intrude on the pedestrian way if there is not sufficient space for a separation zone. Use tight radii and meet ADA slope standards.

![Figure 217.3](image3) Maintain the pedestrian way across vehicle access points, preferably at top of curb elevation, making vehicles ramp up as seen in Fall Creek Place, Indianapolis.
**SZ 4.0 LIGHTING**

**SZ 4.1** Provide appropriately scaled lighting for pedestrian, bicyclist, and transit user safety in respective zones and facilities. Meet local jurisdiction requirements for illuminance levels.

**SZ 4.2** Direct light downward (i.e. full cut-off) to avoid light pollution.

**SZ 4.3** Choose light pole color that is consistent with overall district plan.

**SZ 4.4** Choose light fixture type and design consistent with overall district plan, along a single block, and jurisdiction requirements.

*Figure 218.2 Between the pedestrian way and the street parking zone, the separation zone allows space for a tree lawn, bicycle parking, and other street furnishings as seen in the photos above.*
SPZ: STREET PARKING ZONE

The street parking zone is the area within the roadway where vehicles are permitted to stop, stand, or park, with various levels of permission and/or restriction.

As land use density increases in pedestrian districts and along multi-modal corridors, street parking is encouraged. Stop and go parking is essential to support ground-floor business and shopping districts. The street parking zone also provides traffic calming and protects pedestrians from moving traffic in the vehicle travel way.

DESIGN PRINCIPLES SUPPORTED

1. Mobility
2. Adaptability and Sustainability
3. Public Realm

Figure 219.1 The street parking zone is the area within the roadway where vehicles are permitted to stop, stand, or park, with various levels of permission and/or restriction.

Figure 219.2 The street parking zone is desirable to support pedestrian-friendly store fronts.
INDIANAPOLIS REGIONAL CENTER & METROPOLITAN PLANNING AREA
MULTI-MODAL COMPONENT ZONE DESCRIPTIONS DESIGN GUIDELINES

SPZ: STREET PARKING ZONE

GUIDELINES

SPZ 1.0 GENERAL

On-street parking is encouraged in pedestrian districts and along multi-modal corridors.

SPZ 1.1 On-street parking is encouraged in pedestrian districts and along multi-modal corridors.

SPZ 1.2 On-site parking lots are discouraged in front of buildings in pedestrian districts and along multi-modal corridors. On-site parking lots are encouraged to be above, below, or behind the building street wall, or concealed by being located in the interior of the block and surrounded by a row of buildings with retail, offices, and housing. This encourages a pedestrian-friendly streetscape.

SPZ 1.3 For parking structures with frontage along multi-modal corridors or that are located within pedestrian districts, retail and commercial uses are encouraged along the pedestrian way to enhance the pedestrian experience and foster street level activity.

SPZ 1.4 Limit curb cuts to encourage pedestrian and bicycle safety, while promoting access at pedestrian-friendly alley locations to serve shared parking resources behind the building street wall.

SPZ 1.5 Provide supplemental signs to identify available off-street parking.

SPZ 1.6 On-street parking should be timed to encourage short-term parking in pedestrian districts. In particular, busy pedestrian districts, such as village mixed-use, central business, or campus districts, metered parking is encouraged with continuous monitoring (e.g. tire chalking) to discourage “meter feeding.”

SPZ 1.7 Corner clearance: vehicles should not park closer than 15-feet of the inside edge of the closest intersecting sidewalk to provide clear visibility and ease of traffic flow at intersections.

SPZ 1.8 Lane clearance: vehicles should not park or stop within five-feet of an intersection.

Figure 220.1 On-street parking is encouraged in pedestrian districts and along multi-modal corridors.

Figure 220.2 A pedestrian friendly streetscape is encouraged by locating parking lots out of sight, connected to the PW via a pedestrian-friendly alley or way, and surrounding them with retail, offices and housing.

Figure 220.3 On-street parking is timed to encourage short-term parking in pedestrian districts.
SPZ 1.9 Driveway and alley clearance: vehicles should not block, stop, or park within five-feet of a private driveway or public alley.

SPZ 1.10 To encourage reduced automobile parking demand within pedestrian districts, incentives should be provided.

SPZ 2.0 LOADING/STANDING ZONES

SPZ 2.1 Taxi and carriage stands are encouraged to share space with on-street loading bays.

SPZ 2.2 It is recommended that taxis and carriage stands be located in high-traffic locations such as near major transit stations and hubs, hotels, office and retail centers, hospitals, and at the intersections of two multi-modal corridors.

SPZ 2.3 Automobiles and glare from headlights should be screened from the public right-of-way.

SPZ 2.4 The separation zone between the pedestrian way and the loading/standing zone should be paved parallel to the vehicle pull-up space. This access area should be at least five-feet wide by 20-feet long with a clear height zone of nine-feet.
- This access area should meet ADA standards.
- A curb ramp should be provided if there is a curb between the access area and vehicle pull-up space.

SPZ 2.5 The stands should work as a “first-in, first-out” queue so that the first taxi or carriage to arrive on the stand serves the first passenger to arrive, and as the first taxi or carriage leaves, each taxi moves ahead one spot.

SPZ 2.6 Signs indicating taxi, carriage stand and loading zones should be provided as appropriate and as the jurisdiction allows.
SPZ 3.0 ON-STREET PARALLEL PARKING ADJACENT TO BICYCLE Lanes

SPZ 3.1 Provide bike lanes along the parallel street parking zone with a minimum width of five-feet.

SPZ 3.2 Widen bike lanes to six-feet if space is available.

SPZ 3.3 Provide additional separation for bike lanes if truck/bus traffic volumes and speeds are high through the use of painted separation lines.

Figure 222.1 When perpendicular and diagonal parking configurations are necessary, back-in parking is recommended to increase bicyclist safety. Photo courtesy Nelson/Nygaard Memo, February 1, 2005.

Figure 222.2 Parallel parking adjacent to a bike lane.

Figure 222.3 Bike lane, Bloomington, Indiana between the vehicular travel lane and on-street, parallel parking.
SPZ 4.0  ON-STREET DIAGONAL PARKING
ADJACENT TO BIKE LANES

SPZ 4.1 Perpendicular and front-in diagonal parking configurations should not be adjacent to bike lanes. Vehicular movements in and out of these parking configurations present hazards to bicyclists.

SPZ 4.2 At locations where perpendicular or diagonal parking configurations must be used, diagonal configurations are a safer option. Where diagonal parking is necessary, back-in-parking should be used.

Back-in parking requires drivers to pull in front of a vacant space and reverse into the parking space. Backing into a parking space forces drivers to look behind the vehicle before crossing the path of oncoming bicyclists and improves the driver’s sight lines of oncoming bicycle and vehicular traffic while exiting the parking space [165].

Figure 223.1 Bike lanes should be a minimum of five feet wide along on-street parallel parking lanes.

Figure 223.2 Back-in parking helps establish eye contact between the cyclist and automobile driver to create a safer biking condition.

Figure 223.3 Signage provides directions for both cyclists and automobile drivers in New York City.
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VTW: VEHICLE TRAVEL WAY

The vehicle travel way is the area where vehicles travel. This way comprises the central portion of a corridor and, depending on the number of travel lanes, utilizes the largest portion of the right-of-way for non-placemaking corridors.

Along with adjacent zones, the vehicle travel way contributes to the creation of a multi-modal corridor. Multi-modal corridors provide opportunity for a balanced transportation system, rather than having any single mode dominate. Context is the most important variable in determining the design of the vehicle travel way. The dimensions of this zone will depend on several factors, including, but not limited to:

- Street classification and traffic volume.
- Adjacent land use and character.
- Degree and type of non-motorist activity.
- Amount of truck traffic.
- Transit use.
- Parking configuration.

DESIGN PRINCIPLES SUPPORTED

1. Mobility
2. Health, Safety and Opportunity
3. Adaptability and Sustainability
4. Public Realm

Figure 225.1 The vehicle travel way is the area where vehicles travel. This way comprises the central portion of a corridor and, depending on the number of travel lanes, utilizes the largest portion of the right-of-way for non-placemaking corridors.

Figure 225.2 Avoid combining minimum widths for vehicle travel way and minimum dimensions on adjacent zones, where it could affect the safety of users by reducing the separations between users.
GUIDELINES

VTW 1.0 GENERAL

VTW 1.1 Avoid combining minimum widths for vehicle travel way and minimum dimensions on adjacent zones, where it could affect the safety of users by reducing the separation between users.

VTW 1.2 Apply medians as part of a corridor access management strategy to improve safety and multi-modal operational efficiency, in situations where traffic volumes and speeds are high.

VTW 1.3 Avoid changes in median width along corridors. A uniform median width minimizes the need for shifting tapers in the through lanes.

VTW 1.4 Medians in urban areas should only be as wide as necessary to provide the desired function, such as left turns or pedestrian refuge (e.g. six to eight feet wide).

VTW 1.5 Landscape medians with plant material or use pavers, colored stamped concrete, stone, or other contrasting material to create visual interest.

VTW 1.6 Landscaping on medians should be designed in a manner that does not obstruct sight distance safety triangles.

VTW 1.7 Plants should be trimmed to allow visibility over 2.5 feet (maximum height), while trees should have no branches in sight lines lower than eight-feet from the ground.

VTW 1.8 Geometric transitions should occur where there is a change in corridor or district type and associated change in width, particularly where functional classification and speed changes and where a change in the width of the travel lanes or an increase or decrease in the number of travel lanes, is introduced.
## Green Infrastructure Elements

Some of the green infrastructure elements of the streetscape include:

### Small Trees
May be used in alleys, off-street corridors and parks. They have mostly an aesthetic appeal, but can also be used for functional/edible landscaping for an area, provided someone or some group takes on the task of maintaining and using the “fruits” of the trees.

### Medium Trees
Constitute the bulk of the street trees within the Regional Center, mostly because of the space requirements for larger trees.

### Large Trees
Should be planted wherever possible as they are critical to the performance of the green infrastructure system, consuming nearly twice the stormwater and CO₂ that medium trees do. Furthermore, they add icon status to streets graced with them and the associated wayfinding, legibility and placemaking qualities.

### Sub-Elements

#### Urban Forest, Planting Systems and Green Infrastructure

- **Background Information**: Small Trees may be used in alleys, off-street corridors and parks. They have mostly an aesthetic appeal, but can also be used for functional/edible landscaping for an area, provided someone or some group takes on the task of maintaining and using the “fruits” of the trees.

#### Plants in Alleys, Off-street Corridors and Parks

- **Small Trees**: Mostly for aesthetic appeal, but can also be used for functional/edible landscaping for an area.
- **Medium Trees**: Mostly for aesthetic appeal, but can also be used for functional/edible landscaping for an area.
- **Large Trees**: Critical to the performance of the green infrastructure system.

#### Urban Forest and Planting Systems

- **Purpose**: To create inviting and functional urban forest and planting systems.
- **Benefits**: Canopy: Greening, cooling, and protection from wind and sun. Edible: Providing food for humans and wildlife.

#### Green Infrastructure System

- **Components**: Water Seeking, Water Taking, Native, Non-Native, Deciduous, Evergreen, CO₂ Annual Capture.
- **Key Components**: Tree Canopy, Green Infrastructure, Urban Forest, Planting Systems.

#### Stormwater Management

- **Components**: Groundcover and Swales, Rainfall, Captured Partially, Captured Partially by canopies, Part shares to trees, part falls thru to SW.
- **Benefits**: Cleanliness, cooling, and protection from wind and sun.

### Legacy/Non-Native Trees

- **Benefits**: Canopy, Greening, cooling, and protection from wind and sun.

#### Invasive Species

- **Benefits**: Canopy, Greening, cooling, and protection from wind and sun.

### Groundcover and Swales

- **Components**: Tree Canopy, Greening, cooling, and protection from wind and sun.

#### Tree Selection

- **Guideline**: Trees should be selected to ensure the height and species are appropriate for the environment.

### List of Abbreviations

<table>
<thead>
<tr>
<th>CHZ</th>
<th>Clear Height Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Water Seeking</td>
</tr>
<tr>
<td>T</td>
<td>Water Taking</td>
</tr>
<tr>
<td>Y/N</td>
<td>Native/Non-Native</td>
</tr>
<tr>
<td>Y/E</td>
<td>Deciduous/Evergreen</td>
</tr>
<tr>
<td>CO₂</td>
<td>Annual Carbon Dioxide Capture per annum</td>
</tr>
<tr>
<td>SZ</td>
<td>Minimum Separation Zone</td>
</tr>
<tr>
<td>R/B</td>
<td>Regional/Bus Rapid Transit</td>
</tr>
<tr>
<td>C/S</td>
<td>Circulator/Shuttle/Van</td>
</tr>
</tbody>
</table>

---

**Urban Forest, Planting Systems and Green Infrastructure**

For multi-modal systems to work, they need to entice users to use them. A key component of making these places inviting is an effective and functional urban forest and planting system.

An urban forest consists of the trees within an urban area and includes tree-lined roadways, open green spaces, undeveloped forests, parks, along with other public and private spaces. The Urban Forest System is a tool that promotes walkability and district identity by making walking more safe and comfortable. Distances are perceived to be shorter when the pedestrians attention is focused on scenic views and routes are clearly perceived as safe, convenient, and attractive. The planting structure should also be designed to make the system safer, more attractive, cooler in the summer, shielded from wind in the winter, and better able to handle stormwater.

There are thus different elements of the streetscape that serve the green infrastructure in different ways. These include, clear zone height, separation zone width (to allow room for the trees), root zone (e.g. will they destroy sewage pipes in search of water, tree canopy (rainwater and CO₂ capture, sunlight filtering, etc.). Additionally, there is a certain performance that each element of the streetscape can serve: whether or not the plants require more maintenance or less, how much shade they provide, how much they allow light through the canopy and so forth. Any choice of planting should avoid non-native invasive selections.

### Discussion of Component Zones

The Component Zone Summary Table (recto verso) lists minimum component zone dimensions applicable to the Multi Modal Districts and Multi-Modal Corridors. Please refer to the full guidelines for recommendations, clarifications and exceptions. Note that guidelines are offered, even if the minimum option does not show the guideline in the text.

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**SECTION III STREETSCAPE SUMMARY CHART - 227**

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**Greenc Infrastructure Table**

<table>
<thead>
<tr>
<th>Green Infrastructure</th>
<th>CHZ, low branches</th>
<th>Water- seeking</th>
<th>Native</th>
<th>Canopy</th>
<th>Deciduous</th>
<th>CO₂ (lbs)</th>
<th>Storm water (gal)</th>
<th>Cooling (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Tree Canopy</td>
<td>12’ &gt;7ft T Y Hi Med</td>
<td>Y</td>
<td>Y</td>
<td>Med Med</td>
<td>Y</td>
<td>553</td>
<td>273</td>
<td>56</td>
</tr>
<tr>
<td>Full Canopy</td>
<td>12’ &gt;7ft T Y Hi Med</td>
<td>Y</td>
<td>Y</td>
<td>Hi Med</td>
<td>Y</td>
<td>553</td>
<td>273</td>
<td>56</td>
</tr>
<tr>
<td>Understory</td>
<td>12’ &gt;7ft T Y Hi Med</td>
<td>Y</td>
<td>Y</td>
<td>Hi Med</td>
<td>Y</td>
<td>553</td>
<td>273</td>
<td>56</td>
</tr>
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<td>Y</td>
<td>Hi Med</td>
<td>Y</td>
<td>553</td>
<td>273</td>
<td>56</td>
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<tr>
<td>Full Canopy</td>
<td>12’ &gt;7ft T Y Hi Med</td>
<td>Y</td>
<td>Y</td>
<td>Hi Med</td>
<td>Y</td>
<td>553</td>
<td>273</td>
<td>56</td>
</tr>
</tbody>
</table>

**Green Infrastructure Elements**

Some of the green infrastructure elements of the streetscape include:

- **Small Trees**: May be used in alleys, off-street corridors and parks. They have mostly an aesthetic appeal, but can also be used for functional/edible landscaping for an area, provided someone or some group takes on the task of maintaining and using the “fruits” of the trees.
- **Medium Trees**: Constitute the bulk of the street trees within the Regional Center, mostly because of the space requirements for larger trees.
- **Large Trees**: Should be planted wherever possible as they are critical to the performance of the green infrastructure system, consuming nearly twice the stormwater and CO₂ that medium trees do. Furthermore, they add icon status to streets graced with them and the associated wayfinding, legibility and placemaking qualities.

#### Understory Elements

- **Includes hedgerows and shrubs**: These are good for buffering or low-screening (e.g. a parking lot), provided they do not exceed a height that screens view over them. Visibility across buffer areas is critical to maintaining safety. Planting boxes can be used to separate neighboring Pedestrian Activity Zones. In the public realm, they should never screen eye view from the street or the building.

#### Groundcover and Swales

- **Functions**: Slowing of rainwater absorption, maintaining cleanliness and cooling of the street as well as being a repository for snow in winter. As a result, plant choice should be tolerant to salt, sand and waste including animal waste.
## Component Zone Summary Table

Please note the following table indicates minimum component zone dimensions applicable to the Pedestrian Districts and Multi-Modal Corridors. Please refer to the full guidelines for recommendations, clarifications and exceptions. Note that guidelines are offered, even if the minimum option does not show the guideline in the text.

<table>
<thead>
<tr>
<th>Key</th>
<th>Typology</th>
<th>BW</th>
<th>BTW</th>
<th>CHZ</th>
<th>FZ</th>
<th>MUW</th>
<th>PAZ</th>
<th>PW</th>
<th>SPZ</th>
<th>SZ</th>
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<td></td>
<td><strong>MULTI-MODAL PEDESTRIAN</strong></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>DISTRICTS</strong></td>
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<td></td>
<td></td>
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<tr>
<td>MMD1.CBD</td>
<td>Central Business</td>
<td>5'-0&quot;</td>
<td>11'-0&quot;</td>
<td>10'-6&quot;</td>
<td>9'-0&quot;</td>
<td>9'-0&quot;</td>
<td>0'-6&quot;</td>
<td>2'-0&quot;</td>
<td>12'-0&quot;</td>
<td>encoureged</td>
<td>10'-0&quot;</td>
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<tr>
<td>MMD2.VMU</td>
<td>Village Mixed-Use</td>
<td>5'-0&quot;</td>
<td>11'-0&quot;</td>
<td>10'-6&quot;</td>
<td>9'-0&quot;</td>
<td>9'-0&quot;</td>
<td>0'-6&quot;</td>
<td>2'-0&quot;</td>
<td>12'-0&quot;</td>
<td>encouraged</td>
<td>6'-0&quot;</td>
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<tr>
<td>MMD3.CUL</td>
<td>Cultural</td>
<td>5'-0&quot;</td>
<td>11'-0&quot;</td>
<td>10'-6&quot;</td>
<td>9'-0&quot;</td>
<td>9'-0&quot;</td>
<td>0'-6&quot;</td>
<td>2'-0&quot;</td>
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<td>6'-0&quot;</td>
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<td>5'-0&quot;</td>
<td>11'-0&quot;</td>
<td>10'-6&quot;</td>
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<td>MMD5.TOD</td>
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<td>5'-0&quot;</td>
<td>11'-0&quot;</td>
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<td>9'-0&quot;</td>
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<td>MMT.1</td>
<td>MM Modern Boulevard</td>
<td>5'-0&quot;</td>
<td>11'-0&quot;</td>
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<td>MM Pedestrian/Urbam</td>
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<td>N/A</td>
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<td>9'-0&quot;</td>
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<td>MM Connector/Urbam</td>
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<td>N/A</td>
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BIBLIOGRAPHY
BIBLIOGRAPHY

The following references are organized by section and followed with a brief description of each reference.

ALLEYS/SERVICE

   These various articles discuss limiting closing down streets, alleys or walkways between buildings. Increases pedestrian traffic and limits the ‘alley’ as an unpleasant place to travel, park or view.

   These various pages describe ways to improve alley ways from simply places to put refuge to alternative walking areas, to main street access points to areas that can be visually pleasing and not areas to avoid whenever possible.

BICYCLE

   This article discusses the problem of ‘sprawl’, suburbanization and its’ effects on the environment and how to design with nature.

   This document describes why ‘advanced stop lines’ (ASL)/’bike boxes’.are so valuable to cyclists, and discusses a number of design issues which should be taken into consideration when they are planned

   This document gives the zoning ordinances for bicycle parking requirements in various places around the country.

   These guidelines are a supplement to the 2003 San Francisco Bike Plan and are meant to clarify not replace material from the HDM, AASHTO, and MUTCD guidelines.

   This is the APA’s guide to designing bicycle facilities. It focuses on six elements to help plan for cyclists: planning and regulation, hazard removal, traffic calming, additional roadway width, designated bicycle facilities, and bicycle parking.

   This is a ‘draft’ copy of the bicycle parking design guidelines that layout the amount of bicycle parking, type of racks and the parking area layout. These guidelines are very thorough and also gives examples of unacceptable bike rack examples. Also refer to the abpb ‘Bicycle Parking Guidelines’

   Discusses best practices for bicycle parking which will in turn decrease barriers to bicycle usage.


   This page of the website has design and reference information for ‘on-street bicycle facilities’. It references other websites, the AASHTO guide, various studies, etc and has Q&A for many of the topics.

   This document gives the zoning ordinances for bicycle parking requirements in various places around the country.

   Press release for the implementation of new bike box at Seventh and High St.

org/bikelaw/pcamb.htm
This document gives the zoning ordinances for bicycle parking requirements in Cambridge, Massachusetts.

A pamphlet that informs and educates both motorists and cyclists regarding the use of bike boxes and ASL's.

A “best practices” manual on how to integrate bicycles into an urban environment. Contains bicycle facility designs and engineering standards. Very comprehensive.

Document lays out objectives and standards for bicycle parking in the City of Denver, including preferred types of racks.

This work deals with bike/ped/auto traffic conflicts in the central business district. It covers common conflicts and how to avoid through design, enforcement, education and infrastructure improvements. It also covers ways to grow non-motorized transportation in the area by improving bike parking an d pedestrian right of way.


The results of this study found that the ‘bike box’ is beneficial to cyclists in that it helps them avoid conflicts in certain types of intersection movements but there were issues with automobile encroachment. More bike boxes need to be installed and evaluated to further determine their effectiveness.

Comprehensive trail plan for the state of Indiana.

Detailed preliminary description of Cultural Trail route, infrastructure and streetscapes.

The system plan contains information on all aspects of bicycle infrastructure from design of on and off street facilities to signage and from bike parking to traffic calming methods.

This letter discusses the use of 'blue bike boxes' and 'blue bike lanes' in certain areas and includes an abstract on writings on each topic.

This report is a comprehensive look at national complete streets policies. We primarily reviewed the information regarding funding mechanisms across the country and how the report addresses ‘Pedestrian Policies’.

In this article, the author, Mr. Moeur questions whether the ‘bike box’ is truly a ‘bicycle friendly’ design. He questions whether driver’s habitual behavior and certain traffic laws may cause problems with this particular design feature.

This webpage explains the MUTCD process on amending their standards.


30. Oakland, CA. Metropolitan Transportation Commission
Design guidelines in addition to advantages and disadvantages to the ‘bicycle box’ in Oakland, CA.


BICYCLE FACILITIES


This report was the precursor to the Downtown Austin Design Guidelines and it was Austin’s first attempt to ‘improve the quality of downtown streets and sidewalks, aiming ultimately to transform the public right-of-ways into great public spaces’.


This article explains how we define, how we measure and where air pollution originates.


This article defines and explains air sheds.


Definitions of ‘component zones’


This email discusses the definition of TOD, discussed using definition supplied by TOD Association from the State of California.


This article outlines how to do a thorough ‘environmental impact assessment’. According to the article it is important to identify, evaluate, discuss and document the potential benefits and consequences of the project.

BIKE LANE EXAMPLES AND IMAGES.


This article looks at the ‘environmental planning’ process holistically. He points out that the term ‘environmental’ means not only ecology but also landscape. So, we need to look at the physical, biological and built environments when completing an environmental plan.


This page of the website has design and reference information for ‘on-street bicycle facilities’. It references other websites, the AASHTO guide, various studies, etc and has Q&A for many of the topics.


Summarized the ‘blue bike lanes’ study done with City of Portland, Or. The study found that motorists were much more likely to yield to cyclists with the colored bike lanes.


Referenced chapter 11.6, which discusses where multi-use paths should be installed, important considerations (i.e. road crossings, access security, maintenance), design and standards.


This paper discusses the dangers of AASHTO designed bike lanes when placed next to on street parking.


This is the entire study done in conjunction with the University of North Carolina’s, Highway Safety Research Center in regards to the use of colored lanes in high bicycle/motorist

BIBLIOGRAPHY - 3
conflict areas.


This reference was for funding of project, which was a 2 year ODOT grant (80% state and 20% local match).


Power Point presentation of the City of Portland & University of North Carolina’s, Highway Safety Research Center.


Article discusses what actions could or should be taken in NYC to make the city as pedestrian safe as European cities. The actions range from passing laws to allow speed and red light cameras to design of the roadway and public space.


Descriptions of different federal transportation funding programs (i.e. CMAQ, JARC, etc) and how to access funds. It gives details on funds (i.e. are matching funds needed, what are the permissible use of funds, etc).


Summarizes ‘bike box’ study findings, which provides basic design and placement details and possible further developments.


This section of the guide describes the physical attributes of a AASHTO approved bicycle lane.


This section covers barriers and improvements to increase ridership for pedestrians and cyclists on transit. The improvements range from adding bicycle parking facilities at stations/stops, streetscape improvements around stations to improve pedestrian accessibility to including ways to carry bicycles on busses and trains.


This manual gives detailed descriptions of federal requirements when it comes to bicycle infrastructure. Including markings, signage, bicycle lanes and path information.


Report discusses implementation of various bicycle boulevards located in Berkley, CA. and some of the traffic calming and other measures utilized to maintain low traffic speeds and volumes.

BOULEVARDS


The definitive source on Boulevards.


BUS TRANSIT BTZ


This article debates the superiority of ‘queue jumping’ lanes as opposed to ‘transit signal priority’ turn lanes. The first is a lane on the right side of traffic, at intersections, that is dedicated to transit only and than gives a early green to the bus. TSP would keep the light green in order to let a bus through. This may have the result of backing up traffic on intersecting roads.

61. Austin. Texas Design Commission. Downtown Austin Design Guidelines, Enhance Key Transit Stops. Austin, TX. City of
Issues and recommendations for improving transit stops in Austin.


Design guidelines for building transit facilities, transit related infrastructure and streetscape projects that can effect transit usage.


Presentation presents ‘best practices’ on IndyGo bus shelter design, placement and access for potential riders.


This section covers barriers and improvements to increase ridership for pedestrians and cyclists on transit. The improvements range from adding bicycle parking facilities at stations/stops, streetscape improvements around stations to improve pedestrian accessibility to including ways to carry bicycles on busses and trains.


Case Study 3-1 discusses the use of bulb-outs/curb extensions. These extensions were added to deal with waiting transit riders conflicting with traveling pedestrians. The end result was that the bulb outs were a positive fix to this problem with out too much added problems to street users.


Case Study 3-1 discusses the use of bulb-outs/curb extensions. These extensions were added to deal with waiting transit riders conflicting with traveling pedestrians. The end result was that the bulb outs were a positive fix to this problem with out too much added problems to street users.

CORRIDOR CRITERIA


The USDG allows CDOT to design and implant better street design within Charlotte. The guidelines incorporate different transportation mode types, i.e. bicycling, pedestrian and transit. Part of the way it does this is by classifying streets by different types of mode orientation.


This is the summary of aforementioned forum held to discuss sustainable streets. These notes discuss important information regarding projects from design to public involvement and some of the pitfalls from funding of projects to on going maintenance


This article defines and describes various public spaces, street typologies and special elements (i.e. civic structures and public art).


This chapter discusses improving on some the current deficiencies we have in the central Indiana regional transportation system. They discuss several strategies from Intelligent Transportation Systems to improving infrastructure for alternatives to driving (i.e. biking and walking).


Tables/ Matrices that include traffic speeds & car counts to determine the type of bicycle facility which should be used. The information to tabulated from various cities around the world.


This article covers how to design pedestrian friendly streets and what makes a street pedestrian friendly.

CROSSING ZONE CZ


These sections discuss the guidelines that should dictate all pedestrian sidewalks and street crossings in the downtown areas in Boulder, Co.


These sections cover the best practices for crosswalks as
well as design guides for certain types of pedestrian/crossing infrastructure (i.e. bulb-outs, islands, etc), part B deals with the guideline for corners and how they should be designed to be pedestrian friendly.

**DISTRICTS**


This publication covers what are seen at the ‘best practices’ for dealing with parking issues in urbanized areas. These strategies vary from ‘shared parking’ to parking maximums, land use changes (i.e. TODS, smart growth) and increasing transit options.


This section discusses site/building designs that can help reduce the chances of criminal activity. These can include lighting, window installations and types of plantings, just to name a few.


Describes what is essential to supporting a 24 hour/mixed used downtown. What is needed is a good mix of services to support the inhabitants of the area. Encourage the inclusion of local character by having special places, building types and details that are unique to the geographic area. Last but not least, the street level should be oriented towards pedestrians, not automobiles. Store/shop fronts can be smaller and more detailed than auto oriented store fronts. Peds. move at much slower pace


This is a prototype for a mixed use development, maybe in Tucson, AZ. It outlines all the guidelines in which to make this development mixed use and part of a walkable community, it also addresses some of the issues that the developer will face when it comes zoning.


This section discusses infill development, especially as it relates to appropriate massing and articulation. They also cover density, transit and scale under this topic and planning for infill by including the public, phasing the project and utilizing design guidelines.


This section of the Boulder design guidelines discusses building frontage and how it meets the street. It illustrates how building frontage is important to continuity on the street and it also talks about how important it is that storefronts open onto the street.


Publication defines street typologies with design guidelines on the street layout and the buildings and land use for each type.


Mr. Dixon discusses attributes that make an area pedestrian friendly. He discusses the context of a building and how it should take cues from the buildings in the area also how certain buildings like courthouses or municipal buildings may warrant a more palatial feel that would not be appropriate for other buildings.


We referenced the sections on ‘Land Uses that Promote Walking and Transit Use’ and ‘Appropriate Density and Intensity of Land Uses’ which helped to determine how to classify each particular district. People will walk if they have someplace to walk to and the distance isn’t too great.


This section of the guidelines refer primarily to architectural issues such as building designs (i.e. height, form and scale) while explaining the importance of façade treatments and building material. Also, there are two sections referring to public spaces and public art, especially as a transition to larger facilities.

87. Hannum, Wagle & Cline Engineering and Storrow Kinsella
Design guidelines for the city of French Lick, IN. In the earlier part of the 1900’s, French Lick was a resort town and would like to become a resort town again by opening a casino and keeping with the character of a small ‘resort’ town feel. These guidelines are meant to help them keep/regain that ‘feel’.


These sections are meant to cover the district typologies described in this writing.


This section contains information on site planning and other infrastructure improvements to enhance new developments walkability and liveability. This particular writing seems to be more directed at suburban development instead of denser infill or urban living.


The writings discuss street connectivity standards and the techniques cities use to determine that standard. In the past cities discouraged connectivity but more and more municipalities have found that they need to improve connectivity to improve traffic problems. These cities use either ‘block length standards’ or ‘connectivity index’ to improve traffic mobility. Block length standards allow cities to control spacing between streets and can take the form of maximum block lengths. Connectivity index is the ratio of streets to intersections.


These pages discuss the appropriate densities and infrastructure to help promote a walkable transit oriented development or area.


Discusses the issues with design guidelines as they relate to aesthetic controls instead of addressing the systemic problem of bad building design.


Discusses feasibility of adaptive reuse of historical buildings.


Growth and development guidelines for Rappahannock area. These guidelines include expected growth and expected developments that will come with that growth. Very detailed plans.


This section covers how Portland handles the design and use of the ‘frontage zone’ or the area between the front of the store and the pedestrian area.


benefits including property values of 5-20%.

Some useful websites for trees and related:
100.http://www.epa.gov/hiri/about/energysavings.html

kWh savings were derived from this source


CO2 and kWh savings were derived from this source.


103.http://www.fs.fed.us/psw/program/cufr

104.Sherford Town Code, Prince’s Foundation, B. Bolger, pp
37-49.


Discussion of the relative costs and benefits of trees in greenscape and green infrastructure.

GREEN INFRASTRUCTURE - BUFFERS AND NOISE REDUCTION

106. Agroforestry: http://www.agroforestry.net/overstory/overstory60.html

Trees and landscaping as noise buffers

107. Cowen, James: This Quiet House: Noise Control for the Home - Reducing the Intrusion of Outdoor Sources, NPC Special Report, Summer 2005


Highway barriers as noise buffers

109. Tennessee, University of; Agricultural Extension Service; Fare, Clatterbuck, “Evergreen Trees for Screens and Hedges in the Landscape”, SP517.

Trees and landscaping as noise buffers

INTRODUCTION

110. IUPUI. Indiana Center for Urban Policy and the Environment impacts of the Monon Trail. 2003 (www.urbancenter.iupui.iupui.edu)

111. IUPUI. Indiana Center for Urban Policy and the Environment impacts of the Pennsy Trail. 2006 (www.urbancenter.iupui.iupui.edu jacob)


113. NYC Streets Renaissance (http://www.nycsr.org/lessons/copenhagen.php)

LANDSCAPE


These sections of the design guidelines from Boulder, Co., cover streetscape topics. They cover furniture, railings, trash receptacles and bike racks found in the ‘pedestrian way’, ‘pedestrian activity zone’ and ‘separation zone’, from placement to design. There is a guide for recommended tree plantings and recommendations for ground level plants.


These sections cover the ‘pedestrian way’, ‘pedestrian activity zone’ and ‘separation zone’ and discuss topics such as safety with lighting to plantings to furniture, railings, trash receptacles and bike racks. There is also a section that covers future care and maintenance of these areas and points out that this is often overlooked in municipalities.


These pages contain all the pertinent information when it comes to placing elements in the pedestrian right-of-way. Who is responsible for installing and maintaining, what can be placed in the area, where it should be placed, etc.


This paper discusses the different types of light pollution and points out that a large percentage of light pollution comes from roadway lighting. This puts the problem on the backs of roadway engineers. Mr. Shaflik does offer some solutions through new light designs.


This document contains the accepted or preferred ‘street furniture’ list for the city.


Mr. Vaskovic and Mr. Zoll lead a group of people through the exercise of redesigning an intersection in Tucson at the APBP conference. The group broke into smaller groups and redesigned the corridor with different groups in mind (i.e. transit riders, disabled & pedestrians).

120. http://www.arborday.org/trees/rightTreeAndPlace

Right tree, right place approach.

PEDESTRIAN ACTIVITY ZONE PAZ

These pages discuss the various topics from the visual and spatial layout of public spaces to the type of art that should be recommended for the space. It also states how public spaces can have a negative effect on the pedestrian environment.


This section discusses the use of public art and what to consider when considering pieces.

PEDESTRIAN WAY PW


The sections referenced, discuss ways in which to make the street a pleasant place to be. From building to the street to making areas for pedestrians to gather, these pages include the essentials to an active street life.


These three sections focus on detailed information that is no less important than some of the large infrastructure issues. Designing for public safety, including handicap accessibility and preserve historic features.


Guidelines for improving pedestrian safety at unsignalized and midblock crossings.


These sections cover public right of way improvements from fencing, signage and awnings in the ‘pedestrian way’ to streetscape issues like street furniture and the placement of street amenities.


This article discusses the use of ‘Shared Streets’, ‘Social Streets’ or ‘Legible Streets’ as they are sometimes called. These streets eliminate regulatory controls (i.e. signs, lights, etc) and let the users negotiate right of way. By slowing down automobiles to safe speeds (<20mph) pedestrians and cyclists are on equal footing and social negotiation with eye contact.


The system plan contains information on all aspects of bicycle infrastructure from design of on and off street facilities to signage and from bike parking to traffic calming methods.

129. Institute of Transportation Engineers. 2006 Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities. Federal Highway Administration. Washington, DC.

This report outlines the use of context sensitive solutions in the planning and design of arterial and collector thoroughfares in urban areas to improve transportation for all users (pedestrian & bicycling).


This report is a comprehensive look at national complete streets policies. We primarily reviewed the information regarding funding mechanisms across the country and how the report addresses ‘Pedestrian Policies’.


This article outlines factors that make streets walkable, friendly and memorable. It looks at densities, human scaled dimensions, active & diverse retail, traffic calming, sidewalk widths and block lengths.


This section of the Portland Pedestrian Design Guide discusses in great detail how the pedestrian area should be designed and when and where the various designs should be implemented.


Referenced information regarding ‘user’ controlled traffic signals.


The publication attempts to define ‘mixed use’ and outline the benefits and pitfalls involved with this type of development. Offers very good generic guidelines and types of commercial development that one would want to attract.


This manual was designed to give guidance to private sector planners, architects and builders wishing to develop within the cities Traditional Neighborhood Districts (TND). It offers basic design outlines of the public and private space, in order to enhance and maintain the character of certain neighborhoods in the City of Austin.


139. Discusses current and future transportation issues, which will effect the Columbus, IN region. Plan also covers automobile traffic mitigation procedures through various TDM programs and mode shifts.


This publication was created to guide Cincinnati, OH in looking at ways to reverse the decline of their population, especially their young educated citizens. This work describes was to nurture the young creative class and to foster the growth of a modern work force.


This guide is used by the City of Indianapolis to develop values and goals for future growth. These guidelines are evaluated every 7 to 10 years during the update of the Comprehensive Plan.


A 100 year vision for public spaces in Center City Seattle. This publication was designed to coordinate and shape future public & private developments to ensure a quality public realm.


Comprehensive look at pedestrian information from accident rates and causes to design considerations of roadway and pedestrian facilities.


These sections discuss the development ingress and egress and to ensure that they are designed to operate for future street patterns (i.e. the conversion of one way street to two way) and minimizing curb cuts.


Publication defines, with detail, street types and neighborhood layouts.


This article discusses the conundrum between safe streets for drivers and livable streets for residents/pedestrians. He takes on the issue that traffic engineers without good data to prove otherwise, depend on the highway theory of fixed object hazards and therefore attempt to dissuade the use of street trees on some city/urban roadways by designing to the 85th/90th percentile for speed.


It recommends a process for the development of safe street standards and discusses some of the issues that raise concerns with emergency service providers in regards to narrow streets.


This article describes the benefits to using Bus Rapid Transit (BRT) over different mass transit modes in particular geographic areas. The article gives examples in LA, Hartford and gives numbers from various other cities.


These writings cover ‘Transit-Friendly Streets’ and how to accomplish them successfully. Traffic calming is discussed in detail also transit malls and transit-preferential streets with details on implementing all of these techniques correctly. It sites several examples from various cities and what they did correctly and why some projects failed.


This document provides communities with the tools to help recreate their neighborhoods by redesigning their streets. There is information on right-of-way widths, street types, traffic calming, etc…

**SEPARATION ZONE SZ**

151. ANSI, American National Standards Institute A300 Pruning Standards


These pages discuss the varied but important aspects of the ‘separation zone’. The topics range from plantings to lighting and everything in between.


These sections go into great detail regarding the ‘separation zone’. There is quite a bit of information regarding plantings with a recommended tree plantings section and how to promote good growth and continued health of the plantings. There is also a section regarding ‘furnishings’ (seating, railings, & trash receptacles).


These sections cover curb usage, furnishing zone, grates and hatch covers. A14 through A21 contain tables for ‘Elements in the Right-of-Way’


This document contains the accepted or preferred ‘street furniture’ list for the city.


This paper discusses the different types of light pollution and points out that a large percentage of light pollution comes from roadway lighting. This puts the problem on the backs of roadway engineers. Mr. Shaflik does offer some solutions through new light designs.


The ‘separation zone’ section provides ‘best practices’ guidelines to create a safe, comfortable and successful pedestrian environment.

158. http://www.arborday.org/trees/rightTreeAndPlace

Right tree, right place approach.


Root balls and sizing.

160. MUTCD, Indiana Manual for Traffic Control Devices

Lateral offsets of objects in the separation zone are defined by MUTCD guidelines and not these design guidelines.

**STREET PARKING ZONE SPZ**


This publication covers what are seen at the ‘best practices’ for dealing with parking issues in urbanized areas. These strategies vary from ‘shared parking’ to parking maximums, land use changes (i.e. TODS, smart growth) and increasing transit options.


This section discusses the use of parking and the transition to a pedestrian oriented downtown. Parking must be taken into consideration, especially during the beginning of this design shift. It is important to remember that parking is both expensive to build and takes away from usable land for other purposes. This section also discusses the need for pedestrian to feel protected from automobile traffic and how that can be accomplished by curb parking, planters or bollards between the walk and the road.

This section discusses ways in which to limit the detrimental
effect of parking on an area through the use of facades, lot
placement and landscaping.

164. Nelson/Nygaard Memo, February 1, 2005

SYSTEM PLAN CITY SURVEY

165. ACS: American Community Survey
Raw data for mode splits for 2005

166. US Census 1990, 2000
Raw data for mode splits

167. Austin, TX: Austin Texas Design Commission. Downtown
Austin Design Guidelines. Austin, TX. City of Austin. May

Publication defines, with detail, street types and neighborhood
layouts.


Metropolitan Transportation Plan.

172. Madison, WI: Regional Transportation Plan, US Census


SYSTEM PLAN CONCEPTS

176. 29Sep07MORPCPedPlanPres03v.pdf
These various articles discuss limiting closing down streets,
alleys or walkways between buildings. Increases pedestrian
traffic and limits the ‘alley’ as an unpleasant place to travel,
park or view.

177. Anderson, Larz: Planning and the Built Environment,
Planners Press, 2000. particularly Ch8-10,12.
Transport Engineering Data, adapted graphics.

178. Planning and Urban Design Standards – American Planning
Association, John Wiley & Sons, Inc., pp. 259-86. AND
Used heavily mode capacities and design considerations

179. Barnett, Jonathon: Redesigning Cities, Principles, Practice,
Implementation, Planners Press, 2003, particularly Chs. 1-3

43, 58, 69 & 70.
These various pages describe ways to improve alley ways
from simply places to put refuge to alternative walking areas,
to main street access points to areas that can be visually
pleasing and not areas to avoid whenever possible.

181. Calthorpe, Fulton: The Regional City: Planning for the End of
Provides information about the distribution of districts and
node and their patterns, walkable access.

Calthorpe, for spacing and transit boulevard

Charlottesville VA
Policy Document, Models Discussion


185. “Portland’s Green Dividend”, White Paper from CEO’s for
Cities, Cortright, Joe, jcortright@impresaconsulting.com, July
2007

186. “LUCI Model Aids Planning for Transportation and
Other Infrastructure”, Center for Urban Policy and the
Environment

187. Farr, Douglas: Sustainable Urbanism, John Wiley & Sons,
Inc., 2008.
Concepts of defining center and edge of districts, sustainable
neighborhoods and corridors and high performance
infrastructure

188. Florida ArtPlan www.dot.state.fl.us/planning/systems/sm/
los/

Multi-modal level of service metrics.

189. Hamilton-Baillie, Jones: Proceedings of ICE 158 May 2005
pp. 39-47, Improving traffic behaviour and safety through
urban design.
Particularly the simplification of streets to enforce traffic
behavior rather than relying on signage (which is shown to
be ineffective).

190. Highway Guidance for Estate Roads, Dorset County Council,
Winter 2002

191. Trip Generation Handbook, RP-028, Kevin Hooper, editor,

192. Hudnut, William: Halfway to Everywhere: A Portrait of America’s First Tier Suburbs

193. Idaho DOT materials; www.dot.state.id.us


195. 2002 Official Thoroughfare Plan for Marion County, IN, Indianapolis Department of Metropolitan Development.


197. Liveable Neighbourhoods: Street Layout, Design and Traffic Management Guidelines (Ed. 3), Western Australian Planning Commission, June 2006, in particular elements 1, 2, and 7


203. Potts, Harwood and Richard, “Relationship of Lane Width to Safety for Urban and Suburban Arterials”, TRB 2007 Annual Meeting CD-ROM,


206. Shoup, Donald: High Cost of Free Parking, Planners Press, 2005 particularly Ch. 6


210. Publication defines, with detail, street types and neighborhood layouts.