

RESOLUTION NO. 20-56

A RESOLUTION ADOPTING COMPLETE STREET POLICY
FOR THE CITY OF DELAWARE.

WHEREAS, Complete Streets are designed and operated to assure safety and accessibility for all users of our roads, trails, and transit systems, including pedestrians, bicyclists, transit riders, motorists, commercial and emergency vehicles and for people of all ages and of all abilities; and

WHEREAS, Complete Streets reduce congestion by providing safe travel choices that encourage non-motorized transportation options, increasing the overall capacity of the transportation network as well as decreasing consumer transportation costs; and

WHEREAS, Complete Streets support economic growth and community stability by providing accessible and efficient connections between home, work, school, recreation and retail destinations by improving the pedestrian, cyclist, and vehicular environments throughout communities; and

WHEREAS, the City of Delaware has shown strong commitment to the concepts of sustainability and to improving quality of life for its residents; and

WHEREAS, developing a context-sensitive Complete Streets Policy is an opportunity to expand on these efforts and reaffirm the city's commitment to incorporating sustainable practices where appropriate and navigating the evolving transportation technology landscape in a way that prioritizes residents' needs; and

WHEREAS, staff received Council approval to apply for and accept a Mid-Ohio Planning Commission (MORPC) Technical Assistance Program (TAP) grant to complete a Complete Streets Policy document; and

WHEREAS, MORPC, Delaware General Health District, and City staff have completed an evaluation and determination of context sensitive applications for implementation of Complete Streets concepts, and developed a Complete Streets Policy document; and

WHEREAS, the Complete Streets Policy will provide guidance to staff to plan, build, maintain, operate, and redevelop streets that safely and comfortably accommodate users of all modes, ages, and abilities.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF DELAWARE, OHIO THAT:

SECTION 1. That the Delaware City Council adopts the attached Complete Streets Policy for the City of Delaware as an expression of aspirations and not as a commitment to proceed with any specific project.

SECTION 2. That the City Manager and designees will utilize the Complete Streets Policy to include feasibility consideration for Complete Streets principles into future infrastructure or transportation projects.

SECTION 3. That this resolution shall be in force and effect immediately upon its passage.

PASSED: September 28, 2020

YEAS 7 NAYS 0
ABSTAIN 0

ATTEST: Elaine McCuskey
CITY CLERK

Andy Kasper
MAYOR



Complete Streets Policy

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INTRODUCTION



Source: City of Delaware

Central Ohio is quickly growing; over the next 30 years, the population is expected to increase by up to 1 million people, bringing the region to a total population of 3 million. In order to manage the projected growth, communities like Delaware will have to develop and retrofit a sustainable transportation system that can meet current needs as well as future demand. Complete Streets are a valuable tool that the City of Delaware can use to prepare for growth while improving safety and quality of life for current Delaware residents. Complete Streets are roadways designed to safely and comfortably accommodate all roadway users, including pedestrians, cyclists, motorists, and transit riders of all ages and abilities. There is no single design prescription for Complete Streets—each one is unique and responsive to community context. Land use, population size, demographics, and density are all part of Complete Streets considerations.

Complete Streets began as a grassroots movement in 2005, but it is now a national initiative led by the National Complete Streets Coalition (NCSC). NCSC advocates for local jurisdictions to pass Complete Streets policies as a way to formalize their intent to plan, design, and maintain streets that are safe and comfortable for roadway users of all ages and abilities. As part of the 2017 insight2050 Technical Assistance Program pilot, the City of Delaware began working towards its own Complete Streets policy. The information compiled in this report is intended to be a resource for City of Delaware staff, community stakeholders, elected officials, and residents as they work towards a Complete Streets policy that supports a sustainable transportation system that works for all people regardless of mode, age, or ability.

ELEMENTS OF A COMPLETE STREETS POLICY

In order to develop a comprehensive Complete Streets policy, the City of Delaware should aim to include the following 10 elements identified by the NCSC:

1. **Vision and Intent:** Includes an equitable vision for how and why the community wants to complete its streets. Specifies need to create complete and connected networks and specifies at least four modes, two of which must be biking or walking.
2. **Diverse Users:** Benefits all users equitably, particularly vulnerable users and the most underinvested and underserved communities.
3. **Commitment in all projects and phases:** Applies to new, retrofit/reconstruction, maintenance, and ongoing projects.
4. **Clear, accountable expectations:** Makes any exceptions specific and sets a clear procedure that requires high-level approval and public notice prior to exceptions being granted.
5. **Jurisdiction:** Requires interagency coordination between government departments and partner agencies on Complete Streets.
6. **Design:** Directs the use of the latest and best design criteria and guidelines and sets a time frame for their implementation.
7. **Land use and context sensitivity:** Considers the surrounding community's current and expected land use and transportation needs.
8. **Performance measures:** Establishes performance standards that are specific, equitable, and available to the public.
9. **Project selection criteria:** Provides specific criteria to encourage funding prioritization for Complete Streets implementation.
10. **Implementation steps:** Includes specific next steps for implementation of the policy.

POLICY GOALS & OBJECTIVES

Complete Streets are roadways designed to safely and comfortably accommodate all roadway users, including but not limited to pedestrians, cyclists, motorists, transit and school bus riders, delivery and service personnel, freight haulers, and emergency responders. "All roadway users" includes people of all ages and abilities. Incorporating Complete Streets principles into project design, construction and maintenance such as resurfacing and reconstruction can improve transportation system safety, accessibility, efficiency, and capacity.

Embracing Complete Streets principles will create a balanced transportation system by providing accessible, safe, and efficient connections between destinations. It will bolster economic growth and stability while increasing property values. It will ensure job growth, reduce crashes through safety improvements, improve public health and fitness, reduce harmful emissions, and reduce the overall demand on our roadways by providing safe, convenient, reliable, and affordable active transportation options.

Additionally, integrating sidewalks, bike facilities, transit amenities, or safe crossings into the initial design of a project spares the expense and complications of retrofits later. The safe use of public space by a greater variety of users can make roadways more efficient, with more people able to comfortably use different parts of the right-of-way. As a result, building Complete Streets can provide many benefits to residents, business owners, developers, and communities as a whole.

Policy Goals:

The purpose of this policy is not to be prescriptive but rather to promote development and redevelopment of public right-of-way within the City of Delaware that welcomes pedestrians, cyclists, and transit users of all ages and abilities, while accommodating motorized vehicle access. The goals include:

- To create a safe, multimodal transportation network for all City of Delaware residents and visitors regardless of age, gender, ability, or status. The City recognizes that a safe and equitable transportation network is one that accommodates pedestrians, cyclists, transit users, automobile drivers, commercial vehicles, emergency responders, and others with appropriate infrastructure, with access to work, school, worship, and play.
- To create a transportation network that contributes to neighborhoods' sustainability and all residents' quality of life. The City recognizes that Complete Streets roadways are context-sensitive and well-integrated with adjacent land uses. The City recognizes that Complete Streets roadways can improve roadway safety, enhance the livability of the built environment, reduce municipal and household costs, maximize roadway capacity, support economic development, and promote good health.

Policy Objectives:

In accordance with nationally adopted Complete Streets principles and the City's goals to accommodate population growth anticipated by insight2050 and create an interconnected network of pedestrian and bike facilities, the City will:

- Identify opportunities and funding sources to improve non-motorized facility connections from residential neighborhoods to local parks, schools, civic spaces, commercial centers, regional trails, and other residential neighborhoods.
- Solicit funding sources for street improvements which will enhance the safety of the City's multimodal network.
- Integrate sustainable design treatments including incorporation of Green Stormwater Infrastructure and Low Impact Development wherever financially and logistically feasible in order to improve water and air quality, reduce flooding risks, and enhance community livability.
- Partner with private, public, and nonprofit entities to leverage new and emerging transportation technologies in a way that maximizes safety, health, equity, sustainability, and affordability for the City and its residents.
- Collaborate with state, regional, and neighboring jurisdictions to promote the City's multimodal network connectivity to the surrounding region.
- Enhance coordination between relevant City departments and agencies in order to maximize fiscal resources.

Policy Requirements:

Feasibility consideration for Complete Streets elements and facilities should be made at each phase of all infrastructure or transportation projects including planning, design, construction, and reconstruction. Consideration for Complete Streets principles—including equity, sustainability, and accessibility—will be incorporated into the maintenance phase of every infrastructure or transportation project. The City will assess projects' impacts on pedestrians, cyclists, and transit users of all ages and abilities, as well as motorists, emergency services, and commercial vehicles. Exceptions from feasibility consideration will be made for infrastructure and transportation projects only in the following cases:

- Specific users are legally prohibited on the roadway (such as expressways or pedestrian malls)
- The costs of identified Complete Streets facilities will be excessive when compared to the determined existing and future need or expected use of the facilities
- Justification for complete street improvements is not met based on projections involving population, employment, and/or traffic volumes

If the City makes exceptions from feasibility consideration, it will make an explanation of the reason(s) for the exception available to the public for review and comment.

The City will establish and monitor performance standards that assess the transportation network's impact on accessibility, safety, multimodal mobility, sense of place, health equity, economic development, and the natural environment.

The City will consider national and regional best practices in design when developing or redeveloping roadways. Design standards will be based on roadways' safety performance, land use characteristics, functional classification, and requirements set forth by the City Codified Ordinances and the Manual of Uniform Traffic Safety Devices.

The City will incorporate Complete Streets principles into all future plans, manuals, policies, and programs that are relevant to transportation or infrastructure.

Implementation Guidelines, Performance Standards and Best Practices

The document contains implementation guidelines, specifically engineering and enforcement strategies as they relate to pedestrians, cyclists, transit users, and motorists. The content for these sections was composed from [MORPC's Complete Streets Toolkit](#) and brought up to date with new standards developed since publication of the Toolkit.

There are performance standards that support pedestrian activity and active transportation as well as vehicular access. Also included are best practices for Complete Streets policy implementation. These components of transportation—arts & culture, user-based mobility strategies, and shared-use mobility—should be kept in mind by staff and decision-makers throughout the process of implementing the city's Complete Streets policy and transportation projects. This resource also contains an extensive list of external Complete Streets resources, categorized by the specific topic.

ENGINEERING STRATEGIES

Engineering is among the most important aspects of Complete Streets. The design and implementation of the transportation system affects whether an individual feels safe using non-motorized modes, and whether such choices are a convenient and comfortable alternative to automobile use. There are various plans and policies that address transportation issues at federal, statewide, regional, and local levels. While these documents are important for planning purposes, adopted standards and guidelines for engineering proper facilities take a higher precedence during project implementation as they provide the technical details necessary for good design.

Using design elements in an innovative way can create a cost-efficient complete streets project that enhances safety for all users and results in a greener infrastructure. Allowing flexibility when writing and applying standards or guidelines can ensure that the context is carefully considered. As always, good engineering judgment is necessary when designing facilities. This section describes many important engineering elements related to pedestrians, bicyclists, motorists, transit facilities, and green infrastructure. For more engineering standards for pedestrian, bicycle, and traffic calming, see Implementation Toolkit Part II: Roadway Classifications, Design Guidelines, & Land Use Considerations.

Pedestrian Facilities:

Pedestrian facilities support the most basic form of human transportation: walking. Depending on the context (such as width, allowable uses, etc.) they also allow for a wide range of other activities, including jogging, roller skating, or other emerging mobility technologies such as Segways and motorized scooters. All pedestrian facilities should accommodate people with disabilities. Settings like town squares or sidewalks with outdoor seating areas function as community gathering places in addition to accommodating pedestrians. In residential areas, pedestrian facilities often function as play areas for children. In order to develop and maintain an equitable transportation system, and to promote healthy and happy places, communities need to pay particular attention to safety and ease of use for the very old, the very young, and the disabled. New developments should always include pedestrian facilities and associated ADA elements.

The pavement area in the road, from curb-to-curb in urban areas, is often the focus of building or retrofitting a complete street — but the area between the road and the property line also can be important. Everyone is a pedestrian at some point in their journey, and street furniture can play an important role in making pedestrians safer and more comfortable. In an urban area there may be a lawn or tree buffer, a sidewalk, and even outdoor seating for a restaurant. “Street furniture” includes bike parking, benches, light poles, transit shelters, parking meters, planters, and garbage containers, among others. As with all components of Complete Streets, context-sensitivity is paramount. Bike racks, water fountains, benches, and garbage containers may not be appropriate alongside a rural or suburban street that only has a few people walking on it. The frequency of street furniture should be adjusted, with denser areas having a higher frequency of street

Bicycle Facilities:

Bicycle facilities range from separated bike paths to marked on-street bike routes. Each type can influence the extent to which bicycling is used in a given community. The benefits of bicycling include reduced traffic congestion and pollution, and improved health of riders. Some bicyclists are comfortable only with certain conditions. Roads with shared lane markings, or sharrows, for example, may appeal only to more experienced bicyclists, while shared-use trails and barrier-separated cycle tracks may attract novice bicyclists, but not those who are more-advanced. In general, places with good bicycle facilities have more bicycle traffic than places without proper facilities. The city can seek a range of well- marked bicycling options that will make all riders feel comfortable. The [Central Ohio Greenways design guidelines](#) are a helpful resource.

Transit Facilities:

Buses and other transit are important components of Complete Streets. The Delaware Area Transit Agency (DATA) operates throughout Delaware County and connects with the Central Ohio Transit Authority. Fixed-route bus service is the mainstay of transit systems in Central Ohio and most other U.S. cities. It operates on a repetitive, fixed schedule basis along specific routes. Each fixed-route trip serves the same origins and destinations, with designated stops along the way. Demand-responsive transit is a federally mandated extension of fixed-route service for individuals with disabilities. The Americans with Disabilities Act (ADA) of 1990 requires comparable transportation services to be offered for individuals with disabilities who are unable to use fixed-route systems.

The type of bus stop, its location, and the surrounding infrastructure should be carefully considered. There are near-side bus stops, far-side bus stops, and mid-block stops. Other bus stops may include passenger shelters; access ramps for people with disabilities and those using strollers; lighting, signage, and landscaping. Because transit always involves a multi-modal trip, sidewalks and street furniture must be part of the plan. Many riders walk to transit stops, while others ride a bike or drive a car to a Park & Ride facility.

Not only do these decisions affect whether people use transit, but they can also have an effect on the safety of transit users before and after they ride the bus. For instance, poorly sited bus stops encourage unsafe mid-block crossings or walking along roads without sidewalks. Safe and convenient access to a transit facility is a critical element in ensuring high transit ridership.

Traffic Calming:

Well-designed traffic calming projects reduce the speed and/or volume of cars on a roadway and can lead to a variety of benefits, including: increased road safety; increased comfort and mobility for non-motorized travel; reduced automobile impacts such as congestion, expenses, and pollution; increased neighborhood interaction through more hospitable streets; increased property values; and improved public health due to more opportunities for walking and other physical activity. The costs of traffic calming can vary considerably depending upon the treatment chosen and the characteristics of the site.

The Institute of Transportation Engineers organizes traffic calming into four categories: vertical deflections, horizontal shifts, roadway narrowings, and closures. Vertical deflection, such as speed humps, refers to up-and-down features to calm traffic. Horizontal shift refers to features such as chicanes or curb extensions, which require zig-zagging.

Roadway narrowing seeks to slow speeds by reducing or eliminating excess roadway width. Motorists tend to drive more slowly on narrower roads that have less margin of error.

Green Infrastructure:

Construction of complete streets offers a creative opportunity to incorporate “green infrastructure” and achieve other goals and benefits in a cost-effective way. Several technologies and strategies are available to improve the environmental performance of newly constructed and rehabilitated roadways. In general, more-sustainable pavement practices improve over their conventional counterparts in terms of stormwater runoff, materials, and construction practices. These approaches may require decision makers to be flexible and make non-traditional decisions.

Greenroads is a rating system that gives credits to projects where sustainable pavement practices are applied to new, reconstructed, or rehabilitated roads. The certification is based on a total point value similar to the LEED certification. A Greenroad is defined as “a roadway project that has been designed and constructed to a level of sustainability that is substantially higher than current common practice”. The Greenroads process may result in lower construction costs, as existing asphalt can be recycled and reused on-site — thus reducing the cost of transporting materials. The on-site process may also allow projects to be completed more quickly.

Permeable pavement refers to a range of materials and techniques for paving roads, bike paths, parking lots, and pavements that allow the movement of water and air around the paving materials. Types of permeable pavement include: pervious concrete, porous asphalt, single-sized aggregate, porous turf, open-jointed blocks, resin bound, and bound recycled glass porous pavement. Permeable pavement reduces the need for retention ponds, swales, and other stormwater management devices and is thus more sustainable and cost effective. The use of permeable pervious pavement is among the Best Management Practices recommended by the Environmental Protection Agency.

In many cases, innovative approaches to stormwater management are complementary to complete streets concepts. A rain garden, for example, can be used as a corner extension to reduce the pedestrian crossing distance at an intersection and to slow vehicular traffic. Similarly, vegetated swales offer a buffer between pedestrians and vehicles — allowing pedestrians to feel more comfortable. In general, innovative stormwater management practices seek to reduce the volume and speed of runoff through a variety of on-site treatments. As with other elements of Complete Streets, context is very important. In particular, constrained rights-of-way may present an obstacle to the implementation of innovative practices in some areas.

ENFORCEMENT STRATEGIES

This section describes Ohio laws and common sense rules for pedestrians, bicyclists, transit users, and motorists. Following these rules ensures that transportation-related fatalities and injuries are minimized. Additionally, a safer and more orderly transportation system encourages walking and bicycling.

Pedestrian-Related Enforcement:

In general, laws related to walking and the walking environment are intended to protect pedestrians from harm that would result from crashes with motor vehicles. As a result, many pedestrian-related laws actually regulate the actions of motorists. Enforcement should emphasize that motorists must yield to pedestrians in any crosswalks, even those that are unmarked. Nonetheless, pedestrians themselves also have certain responsibilities to maintain their own safety. As in other areas of the law, common sense should also be applied.

According to the Ohio Revised Code §4511.46, the right-of-way for pedestrians in crosswalks is upheld in the following ways:

- Motorists are required to yield to pedestrians in marked mid-block crosswalks.
- Pedestrians may legally cross at any Intersection — marked or unmarked.
- Drivers turning right across a crosswalk must yield, even if they have a green light, per Ohio Revised Code §4511.13. However, drivers have the right of-way if the green light is a green turning arrow.
- Drivers must yield at “Walk” signals per Ohio Revised Code §4511.14.

Pedestrians have to follow these rules:

- If the “Don’t Walk” signal is flashing, pedestrians should not start crossing, but may continue across if they’ve already started.
- Pedestrians should not walk in prohibited areas, such as limited-access highways and railroad tracks.
- If there is no sidewalk, pedestrians may walk on the side of the road, facing traffic.
- If a sidewalk is available, pedestrians must use the sidewalk and not the roadway.
- Pedestrians are allowed to travel in both directions on sidewalks.

Bicycle-Related Enforcement:

According to the Ohio Bicycle Federation’s Digest of Ohio Bicycle Traffic Laws, people who follow the rules of the road and recommended techniques can reduce their crash risk by 80 percent. Ohio law states that a bicycle is considered a “vehicle” and therefore must follow the same laws that apply to cars and trucks, which especially means not to ride against traffic and to ride predictably (Ohio Revised Code §4501.01). In addition, many Ohio localities require children and other bicyclists to wear helmets.

Bicyclists are generally prohibited from riding in crosswalks and sidewalks. However, exceptions are often made for child bicyclists. While municipalities may allow (or prohibit) bicycles to use the sidewalk, they cannot require bicyclists to use the sidewalk (Ohio Revised Code §4511.711). Riding a bicycle on the sidewalk reduces the cyclist’s visibility to motor vehicles and increases their risk of getting in a crash in some situations. When bicyclists ride on the sidewalk or multi-use paths, extra caution at driveways and intersections should be exercised.

Transit-Related Enforcement :

It is important that transit operators respect the rights of all users of the road, especially pedestrians and bicyclists, as they are particularly vulnerable if they are in a crash with a motorized vehicle. Similarly, other roadway users should understand and respect the limitations and requirements of transit vehicles. For example, they have slower acceleration, longer braking distances, and wider turning radii compared to ordinary vehicles. Education of transit drivers and the public is needed to improve the interaction of transit and other modes.

Motorist-Related Enforcement:

Enforcement efforts to promote complete streets should include substantial efforts directed toward motorists. In almost all areas, motorists comprise the majority of road users, and the vast majority of trips in Central Ohio are currently taken by motor vehicle. Motorists are less vulnerable to injury and death in crashes than non-motorized users, such as pedestrians and bicyclists. Therefore, safe driving behavior on the part of motorists is essential in order to reduce the number of vehicle-related injuries and deaths.

Pedestrians have the legal right-of-way at marked mid-block crosswalks, and motorists must yield to pedestrians in unmarked crosswalks at intersections, “Walk” signals, and at right turn intersections unless there is a green turning arrow. Enforcement is a useful strategy to ensure that people follow these regulations and that both motorists and pedestrians are safe.

Bicycles are particularly prone to crashes at intersections, just as motor vehicles are more likely to crash into other motor vehicles at intersections. Bicyclists are allowed to use the full lane on most roadways. An Ohio law requiring at least 3 feet of space when passing bicyclists on the road went into effect in early 2017. It is important to ensure that motorists respect bicyclists and interact safely on the road with them. Law enforcement officers should also be familiar with bicyclists' rights and educate other roadway users.

PERFORMANCE STANDARDS

As the FHWA writes in its [Guidebook for Developing Pedestrian and Bicycle Performance Measures](#), "performance management techniques promote informed decision-making by relating community goals to the measurable effects of transportation investments. Key steps in performance management are to decide what to measure in order to capture the current state of the system, to set targets to improve those measures, and to use the measures to evaluate and compare the effects of proposed projects and policies." Since each transportation project is different, the performance measures on the following pages do not specify precise numbers to target. However, they demonstrate the types of performance measures that the City of Delaware can use to monitor the progress towards the multimodal, safety, environmental, equity, and economic goals of the city as they relate to transportation.

Local community groups, community leaders, and relevant government agencies can bring creative ideas to the table as the City of Delaware continues to develop and refine its performance standards. Additionally, the city should work with the appropriate agencies to ensure that any data associated with the chosen performance measures is shared appropriately and available to use for benchmarking throughout the process of implementing the city's Complete Streets Policy.

Performance Measures

Multimodal Mobility	Access	Safety
Linear feet of new sidewalk or MUP created	Auto trips along project	Number of fatal crashes
Square footage of pedestrian-only public spaces created (e.g. plaza)	Bicycle trips along project	Number of crashes involving serious injury
Number of enhanced crosswalks	Freight trips along project	Number of impaired driving arrests
Miles of on-street bicycle routes created	Walk trips along project	Number of crashes involving pedestrians or cyclists
Number of bicycle facilities installed (e.g. bike racks, air pumps)	On-street parking spots established	Percent of vehicles exceeding speed limit
Number of transit trips generated		Emergency vehicle response time
Frequency of transit vehicles		Number of ADA/AASHTO compliant fixtures
Average speed of transit vehicles		
Mode shift from single-occupancy vehicle to walking, bicycling, or transit		
Average distance between signalized and/or protected crosswalks		

Performance Measures

Place	Environmental	Equity	Economic
Number of placemaking projects that embrace local and historical arts and culture	Number of new street trees	Mode shift by age group, gender, income, disability status, race, and/or ethnicity	Number of temporary/permanent jobs created
Number of temporary/permanent public art installations	Number of Green Stormwater Infrastructure (GSI) projects	Number of crashes involving pedestrians or cyclists by age, gender, income, disability status, race, and/or ethnicity	Changes in property value
Percent of shaded public spaces and travel areas	Stormwater quality impacts of GSI	Number of ADA compliant ramps	Changes in vacancy rates
Presence of bicycle and pedestrian wayfinding signs and/or maps	Percentage of recycled materials used in construction	Number of ADA compliant Accessible Pedestrian Signals for visually impaired pedestrians	Amount of private investment generated
Number of temporary activities or installations	Number of energy efficient lighting fixtures	Linear feed of "first and last mile" transportation connections added	Retail/restaurant sales at businesses adjacent to project
Number of resident-led placemaking initiatives		Diversity of labor force used for construction projects	Customer experience surveys
		Non-single-occupancy vehicle access to amenities by age, gender, income, disability status, race, and/or ethnicity	

BEST PRACTICES: ARTS & CULTURE

Delaware is a historic city with strong values and heritage. Transportation for America defines creative placemaking as, “an approach that deeply engages the arts, culture, and creativity in planning and designing transportation projects to better reflect and celebrate local culture, heritage and values.”³ By nature, public roads are a community space. They not only present the opportunity to provide mobility options for people, but also to engage the community through social interaction and economic activity. Bringing arts and culture to appropriate streets through creative placemaking is just another way to make a street more complete.

As the [Land Policy Institute](#) acknowledges, “quality places rarely occur accidentally.” They have to be planned for. Coordinating transportation and land use planning is a valuable focused growth strategy to promote cohesive, efficient, and quality development. Mobility and place are inextricably linked, which gives us the opportunity to think creatively about how the streets function and how people interact with them. A complete street is one that can accommodate the different functions a community may need in a manner that is still safe and equitable. For example, City of Delaware’s downtown street network provides vehicle access to jobs during the week, but in the evening and on weekends it functions as the location of pedestrian-oriented farmers’ markets and street festivals. Another example: a bus stop can be just a bus stop, or it can serve as a canvas to display local community art or history.



Bringing arts and culture to the roads through creative placemaking can help build the community’s support for transportation and development projects. It can also be a useful economic development tool that fosters economic vitality. The City of Delaware should seek out opportunities for collaboration between transportation, development, parks and recreation, and public service officials and local arts and culture groups to brainstorm how the city can ensure safe, accessible, and attractive roads and public spaces that feature local art and reflect neighborhood values.

BEST PRACTICES: USER-BASED MOBILITY

People have varying mobility patterns and transportation needs. It is important to remember that we cannot design roads as if they affect all people in the same way. Through efforts such as Celebrating Seniors, the City of Delaware has already shown an interagency commitment to thinking about the transportation needs of traditionally underserved residents. The idea behind user-based mobility strategies is that by acknowledging how different groups of people use the transportation system in different ways, we can begin to retrofit and design a network that maximizes efficiency for everyone.



User-based mobility strategies aim to help road designers consider the mobility of all users equally. For a road to be safe and efficient for all people – men, women, disabled, elderly, parents, children, low-income, and so on – the mobility patterns of everyone must be considered throughout the entire design process from conception to construction. This is particularly important for traditionally underserved groups, who may not have proper representation in the decision-making, design, or review processes. As planners, engineers, and decision-makers, we must familiarize ourselves with the people and resources that will help us create a network that is safe, equitable, and offers accessible transportation options for residents of all travel habits and mobility needs.



For example, people with caregiving responsibilities often travel with dependents, which can often entail equipment like strollers or wheelchairs. And compared to men, women are more likely to “trip-chain” – combining domestic, personal, and work responsibilities into one trip with a series of tasks and locations. Couple this knowledge with an understanding of local demographics, and we can now make more informed decisions about sidewalk width, utilities placement, pedestrian signal timing, municipal service prioritization, transit stop placement, and more.

Ultimately, user-based mobility strategies are not for one particular group, or meant to prioritize one group over another – they’re for everybody. Considering the mobility of all people throughout the design process can maximize efficiency and increase quality of service for everyone, often with minimal costs. For public agencies and municipalities that serve all types of people, the resources below offer insight and guidance on how to incorporate mobility for users of all ages, abilities, and travel habits into the decision-making process.

BEST PRACTICES: SHARED-USE MOBILITY



Shared-use mobility can be defined as “transportation services that are shared among users.” This can include a wide range of familiar and new modes of transportation from public transit to ride hailing. These types of services – carpooling, vanpooling, bike-sharing, car-sharing, and even scooter-sharing – are a continually growing part of the “shared economy” which has increased mobility for many people in urban, suburban, and rural communities across the country. As the City of Delaware works towards a transportation network that embraces Complete Streets ideals, these newer forms of mobility will need to be part of the conversation.

Like most things, there are positive, negative, and yet to be determined impacts associated with shared-use mobility. While the city may not be able to predict how shared-use mobility will evolve as transportation technology advances, there are steps that can be taken to help the city leverage the technology and maximize benefits for the shared-use mobility users and workers who call City of Delaware home.

When it comes to ride hailing services in particular (i.e. Uber and Lyft), there is the possibility that in some cities, widespread adoption can lead to decreases in transit ridership and increases in vehicle miles traveled (VMT), traffic congestion, and emissions.⁶ It is not easy to predict which cities will face these issues because it can be difficult to get the detailed data needed to fully understand the effects of ridesharing in smaller cities and suburban areas. At the same time, increased use of ride-hailing can provide first-mile/last-mile service to transit stops, potentially reducing personal-vehicle use.

That said, cities like Delaware can simultaneously embrace shared-use mobility companies that want to enter the market *and* highlight the existing transit services that the city has to offer through DATA. And while ride hailing services can enhance mobility and access to amenities for many people, they can also be prohibitive due to cost or inaccessibility. City of Delaware residents – particularly those who are disabled, elderly, and/or low-income – have access to a range of fixed and on-demand transportation services, which are detailed

in the Delaware and Franklin County Coordinated Public Transit Human Services Plan. The city should continue efforts to widely promote these services, especially those that are free or subsidized for disabled, elderly, and/or low-income residents.

Since 2016, ride hailing in the state of Ohio has been regulated by the Public Utilities Commission of Ohio (PUCO) as required in House Bill 237. PUCO has set statewide stipulations regarding drivers' insurance, background checks, age, and criminal history. The bill also details protections for customers against discrimination, data collection obligations for rideshare companies, and permit requirements for legal operation within the state.

The National Complete Streets Coalition encourages local governments to avoid a "wait and see" approach when it comes to emerging technologies. Although the City of Delaware may not be able to predict exactly what or how transportation technology will evolve in the coming years, the city can still take an active leadership role in public-private partnerships. When it comes to local regulations for shared-use mobility modes, cities must navigate carefully. "For their part, many urban experts and economists agree that any regulation beyond basic safety is too much regulation." Aggressive regulations can lead to missed opportunities or costly battles with national companies, while too few regulations can lead to unsafe conditions for local riders and drivers. Additionally, responsible regulation of these industries requires data collection, analysis, and management that may be unsustainable at the local level.

City of Delaware can work to avoid these issues by pursuing partnerships with companies that align with the community's goals and embrace transparency. The city can vigilantly enforce the existing state laws that protect local riders and drivers, and frequently assess local policies that are relevant to shared-use mobility modes. The city should listen to the public's concerns around these types of transportation services, and work with the appropriate agencies and community stakeholders to identify gaps in safety regulations that the city can address (e.g. seatbelt or helmet policies).

COMPLETE STREETS RESOURCES

Planning for pedestrians

- Institute for Transportation and Development Policy – [Pedestrians First: Tools for a Walkable City](#)
- Institute for Transportation Engineers & CNU – [Designing Walkable Urban Thoroughfares: A Context Sensitive Approach](#)
- Jeff Speck (TED talk) – [4 Ways to Make a City More Walkable](#)
- MORPC – [Active Transportation Plan Cost Estimator Tool](#)
- PEDSAFE – [Street Furniture/Walking Improvements](#)

Planning for bicyclists

- NACTO – [Designing for All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities](#)
- BIKESAFE – [Selecting Improvements for Bicyclists](#)
- Portland Office of Transportation – [Four Types of Cyclists](#)

Planning for transit

- COTA – [Bus Stop Design Guide](#)
- Federal Transit Administration – [Planning for Transit-Supportive Development: A Practitioner's Guide](#)
- MORPC – [Delaware and Franklin Counties Coordinated Plan](#)

Mobility for users of all ages & abilities

- National Center for Mobility Management – [Expanding Access to Our Communities: A Guide to Successful Mobility Management Practices in Small Urban and Rural Areas](#)
- FHWA – [Accessible Shared Streets: Notable Practices and Considerations for Accommodating Pedestrians with Vision Disabilities](#)
- FHWA – [How to Develop an ADA Self-Evaluation & Transition Plan](#)
- Transportation for America – [Aging in Place: Stuck without Options](#)
- American Public Transportation Association – [The Business Case for Mobility Management](#)
- Age-Friendly Columbus – [A Day in the Life of Karen video](#)
- Swedish Association of Local Authorities and Regions – [Sustainable Gender Equality Video](#)
- ODOT – [Safe Routes to School Infrastructure Toolkit](#)
- ODOT – [Safe Routes to School Non-Infrastructure Toolkit](#)

Facility maintenance

- FHWA – [A Guide for Maintaining Pedestrian Facilities for Enhanced Safety](#)
- Pedestrian and Bicycle Information Center – [Pedestrian Facility Maintenance webinar](#)
- NACTO – [Performance Measures](#)

Evaluation & performance standards

- FHWA – [Guidebook for Developing Pedestrian & Bicycle Performance Measures](#)
- National Complete Streets Coalition – [Evaluating Complete Streets Projects](#)
- Frederick C. Dock and Ellen Greenberg (ITE Journal) – [Multimodal and Complete Streets Performance Measures in Pasadena, California](#)

- Victoria Transport Policy Institute – [Evaluating Complete Streets: The Value of Designing Roads for Diverse Modes, Users and Activities](#)

Networks & connectivity

- National Complete Streets Coalition – [Networks of Complete Streets](#)
- CNU – [Sustainable Street Network Principles](#)
- FHWA – [Small Town and Rural Multimodal Networks](#)

Green stormwater infrastructure

- National Complete Streets Coalition – [Greening the Streetscape: Complete Streets & Stormwater Management Webinar](#)
- MORPC – [Green Infrastructure Best Management Practices](#)
- MORPC – [Regional Sustainability Agenda](#)

Arts & culture

- National Complete Streets Coalition – [Promoting Equitable Change through Creative Placemaking and Complete Streets webinar](#)
- Transportation for America – [Eight Approaches to Creative Placemaking](#)
- Transportation for America – [Arts, Culture and Transportation: A Creative Placemaking Field Scan](#)

Technology

- National Complete Streets Coalition – [Impact of Emerging Technologies on Complete Streets Webinar](#)
- American Public Transportation Association – [Shared Mobility and the Transformation of Public Transit](#)
- NACTO – [Bike Share in the U.S. 2017](#)

Parking

- NJ Economic Development Authority – [Parking Matters: Designing, Operating, and Financing Structured Parking in Smart Growth Communities](#)
- Pedestrian and Bicycle Information Center – [What are Park Once and Walk Policies or Programs?](#)
- EPA – [Parking Cash Out: Implementing Commuter Benefits as One of the Nation's Best Workplaces for Commuters](#)

Miscellaneous resources

- National Complete Streets Coalition – [Safe Streets, Stronger Economies: Complete Streets project outcomes from across the country](#)
- National Complete Streets Coalition – [Complete Streets: Guide to Answering the Cost Question](#)
- Mick Cornett (TED talk) – [How an Obese Town Lost a Million Pounds](#)
- ODOT – [Retrofitting for Complete Streets](#)

Roadway Classifications, Land Use Considerations, & Design Guidelines

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Roadway Classifications

As the City of Delaware strives for a focused growth approach to development and a transportation network that follows the ideals of Complete Streets, it is important to highlight the inherent connection between movement and place. The Federal Highway Administration (FHWA) Functional Classification system assigns typologies based on a roadway's role in providing access and mobility in the region. A roadway's FHWA Federal Classification is closely connected to eligibility for federal funds. The typologies within the FHWA Functional Classification system reflect a hierarchy of vehicle capacity, which means they may not fully capture the relationship between movement and place.

When designing roads, we can take into account their capacity to move pedestrians, cyclists, transit riders, emergency vehicles, and various other non-vehicle roadway users that rely on a safe and connected transportation network. We can also consider how contextual changes in land use, multimodal capacity, and/or other community initiatives (such as sustainability) impact roadway design and function. All of these considerations should be included in the way roads are classified as well. This document aims to be a holistic resource by integrating FHWA Functional Classifications, land use considerations, and street design guidelines.

Expressway

Expressways offer a high level of vehicle mobility, typically on roadways with a physical barrier between directional travel lanes. Expressways do not allow access to adjoining land uses.¹

Principal Arterial

Principal Arterial roads also provide a high level of vehicle mobility in both rural and urban areas. Unlike expressways, Principal Arterials provide access to adjacent land uses.¹

Minor Arterial

Minor arterial roads provide connectivity between the Principal Arterial system and provide vehicle mobility for moderate length trips. Minor arterials in rural contexts tend to have higher travel speeds and minimum interference.¹

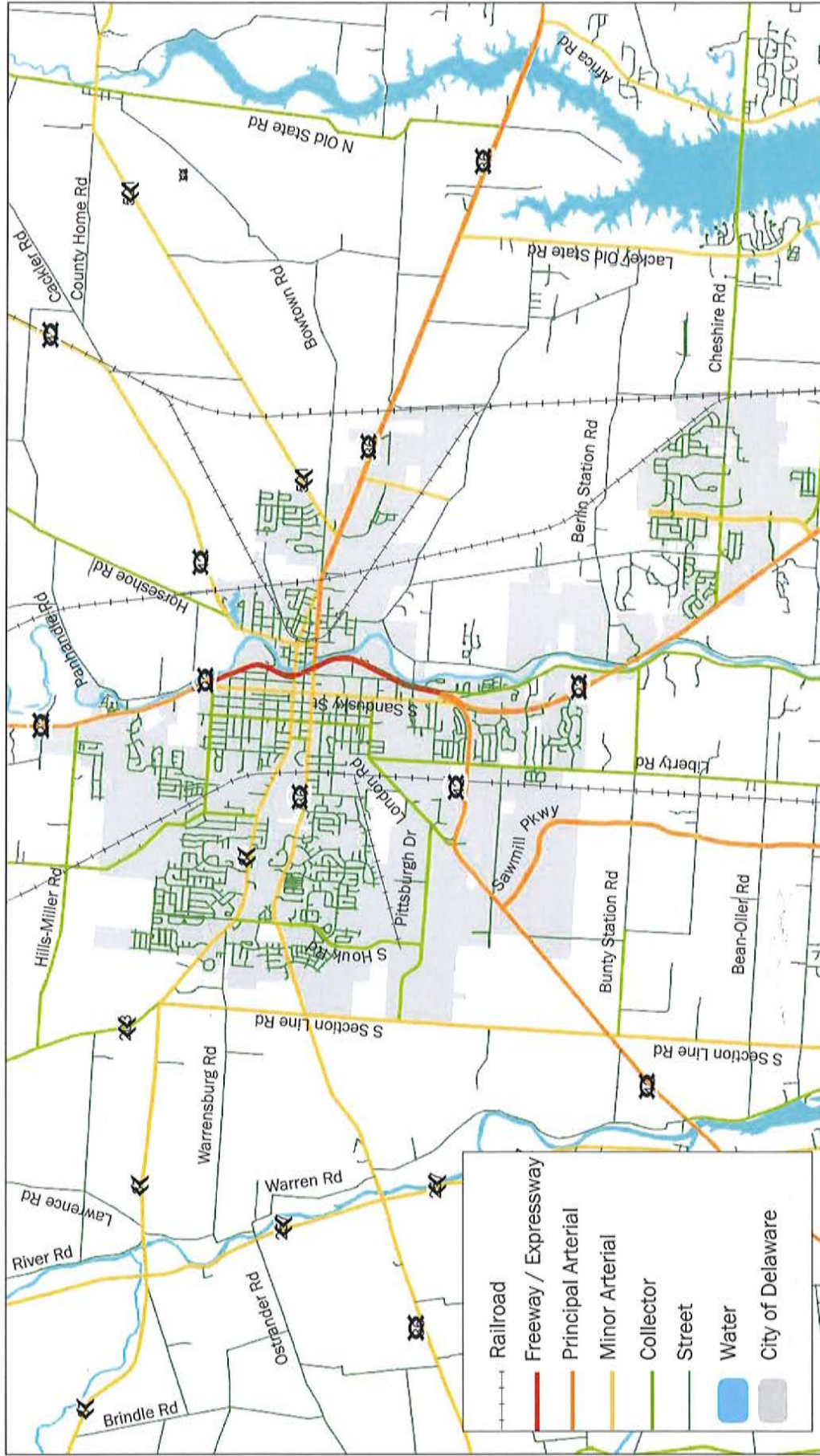
Collector

Collector roads provide connections between the arterial network and local roads. Subtle differences between Major and Minor collector roads generally involve speed limit, traffic volumes, travel lanes, and curb cuts.¹

Local

Local roads provide direct access to abutting land uses, typically local residences and businesses. The majority of roadways in the United States are classified as local.

City of Delaware Functional Roadway Classifications



Land Use Considerations

Based on the 2014 insight2050 report, we expect the City of Delaware to see population growth and demographic shifts over the next 30 years. That growth will be accompanied by shifting demands in housing and transportation—people will want more walkable communities with affordable transportation options, compact housing choices, and mixed-use environments where they can live, work, and play. Transportation and land use are inherently linked; mode choice is influenced not only by transportation infrastructure, but land use characteristics as well. Both transportation and land use have implications for density, public health, the environment, and economic development. A comprehensive, focused growth approach is one that integrates land use and transportation planning. From a Complete Streets perspective, supporting safe and equitable transportation options within any land use requires a balance between “Pedestrian Priority” and “Vehicle Priority”.

In a collaborative report meant to guide cities working towards a more active transportation-friendly network, ITE and CNU defined the range of Pedestrian Priority as:

- Pedestrian Places—mixed-use areas with a significant pedestrian presence, not dominated by, and sometimes prohibiting, vehicles

- Pedestrian Supportive—mixed-use areas with moderate to significant pedestrian presence

- Pedestrian Tolerant—areas that minimally accommodate pedestrians but do not support a high level of pedestrian activity and are usually vehicle dominant

- Pedestrian Intolerant—areas with little support for walking or that prohibit pedestrians are vehicle dominant

Opposite to the Pedestrian Priority range is Vehicle Priority, defined as:

- Vehicle Place—roadways that prioritize vehicle movement with little to no consideration for multimodal mobility

- Vehicle Supportive—roadways that still primarily prioritize vehicle movement, but with appropriate infrastructure to support multimodal transportation options

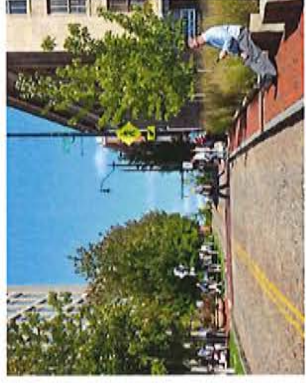
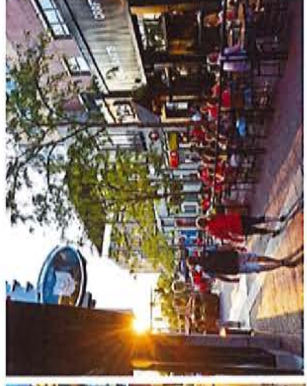
- Vehicle Tolerant—areas that accommodate vehicle traffic, but have a well-connected multimodal network that encourages active transportation through street design and compatible land use

- Vehicle Intolerant—areas that are primarily for pedestrians and may prohibit vehicle traffic altogether for special events or permanently

Pedestrian Places

Pedestrian Places prioritize pedestrians and cyclists and should support a wide range of land uses. In these spaces, mixed-use, commercial retail, and commercial office land uses should be prioritized. Compact residential and civic land uses are also encouraged. Street design and land use for Pedestrian Places should provide opportunity for social and economic activity through flexible and [design-oriented zoning codes](#), [placemaking](#), and [street furniture](#).

Pedestrian Places can range from vehicle supportive to vehicle intolerant. It is important that regardless of the level of vehicle capacity, pedestrian places provide infrastructure for safe and affordable multimodal transportation options that are accessible and inviting for all people.



Pedestrian Supportive Places

The infrastructure needed for a road to be Pedestrian Supportive will be different based on the road classification and adjacent land use. Regardless of vehicle capacity, Pedestrian Supportive roads require a well-connected active transportation network that gives users safe access to destinations and recreational amenities. Higher vehicle-capacity roads can support mixed-use, commercial retail, and commercial office land uses. Lower vehicle-capacity roads can support mixed-use, neighborhood commercial, compact residential, civic, and institutional land uses.

Flexible zoning practices, "[Park Once and Walk](#)" parking policies, [placemaking](#), and [design guidelines](#) are useful tools for creating roads that support active transportation options while still accommodating vehicle traffic.



Pedestrian Tolerant Places

Pedestrian Tolerant roads prioritize vehicle movement over multimodal transportation. They are often characterized by wide travel lanes, wide intersections, frequent curb cuts, dispersed land uses, large setbacks, and large amounts of surface parking. Low population density and development intensity are indications that Pedestrian Tolerant infrastructure may be sufficient to meet residents' multimodal needs. When striving for a focused growth approach to new development, Pedestrian Tolerant roads are suitable along industrial, low density residential, and agricultural land uses.

Pedestrian Tolerant roads may not encourage mode shift from single-occupancy vehicles to walking or cycling, but they do provide essential connections to jobs and other key services, particularly for low-income people. Pedestrian Tolerant roads must still be safe and accessible to all users. Where appropriate, principal arterials and minor collectors should prioritize additional intersection infrastructure and signage in order to increase pedestrian and cyclist safety, visibility, and comfort.



Pedestrian Intolerant Places

Pedestrian Intolerant roads are not just those without any multimodal infrastructure – inadequate facilities can also render a street functionally Pedestrian Intolerant. Sidewalks that are not wide enough, lacking ADA ramps, or that are obstructed can create mobility challenges. Bike lanes on high speed, high vehicle capacity roads may intimidate all cyclists but the most experienced and confident (less than 1% of riders). Pedestrian Intolerant roads can encourage unsafe behavior that leads to collisions and injuries.

When coupled with dispersed commercial retail or commercial office uses, roads without sufficient multimodal infrastructure can encourage single-occupancy vehicle trips due to concerns about safety, inconvenience, and access to desired destinations. For those whose mobility options may be limited, Pedestrian Intolerant roads deny them the opportunity to safely get to the amenities they need and/or want. Aside from expressways or other roads where pedestrians are legally prohibited, it is almost never appropriate to completely exclude pedestrian infrastructure as doing so can disproportionately impact low-income families, the elderly, new Americans, people with disabilities, women, and/or people of color.



Street Design Guidelines & Cross-Sections

The street design guideline matrices on the following pages aim to be holistic by integrating context-sensitive roadway classifications and land use characteristics. They are not meant to be prescriptive, but rather to offer a “menu of options” for developing or redeveloping a roadway into a Complete Street. The accompanying cross-sections are also not meant to be prescriptive, but to visualize the different ways Complete Streets design can be implemented on a roadway with a particular land use, roadway classification, and right-of-way width.

MORPC and the City of Delaware have developed the matrices and cross-sections to be context-sensitive for the City’s needs and community vision. The content in the matrices has been refined to reflect how the City of Delaware designs, develops, maintains, and redevelops its roadways. There are a total of three matrices, one for each type of land use within the city: Mixed-Use, Residential, and Industrial. The matrices contain Complete Streets design elements that have been compiled from MORPC’s Complete Streets Toolkit, ITE and CNU’s Designing Walkable Urban Thoroughfare report, and the NACTO website. For more information about a particular Complete Streets element within a matrix, see the glossary on page 24.

Mixed-Use & Commercial Street Design Guidelines

	Principal Arterial	Minor Arterial	Collector	Street
Vehicle Zone Design				
Number of Lanes	2-5	2-5	2-4	2-3
Width of Lanes	10' - 12'	10' - 12'	10' - 12'	9' - 12'
Design Speed (mph)	30-50	30-50	30-40	30
Traffic calming	Textured pavement (low impact)	Textured pavement (low impact)	Textured pavement (low impact)	Striped bump out Traffic circles
	Striped bump out	Striped bump out	Striped bump out	
	Roundabouts	Roundabouts	Roundabouts	
	Raised / landscaped / striped medians	Raised / landscaped / striped medians	Raised / landscaped / striped medians	
Transit Considerations	Bus bulbs	Bus bulbs	Bus bulbs	
	Express	Express	Express	
Freight Movement	Regional truck route	Regional truck route	Local	Local and none
			Local deliveries only	Local deliveries only
Pedestrian Zone Design				
Curb Zone	0.5' - 2.5'	1.5' - 2.5'	1.5' - 2.5'	1.5' - 2.5'
Buffer / Furnishings Zone	8' - 12'	4' - 12'	4' - 8'	4' - 8'
	Grass / trees / landscaping / GSI	Grass / trees / landscaping / GSI	Grass / trees / landscaping / GSI	Grass / trees / landscaping / GSI
	Street lights / signage	Street lights / signage	Street lights / signage	Street lights / signage
	Bike racks	Bike racks	Bike racks	Bike racks
Pedestrian Through Zone	Bus shelters / bus stops	Bus shelters / bus stops	Bus stops	Bus stops
Frontage Zone	5' - 12'	5' - 12'	5' - 12'	5' - 8'
Pedestrian Crossing	0' - 6'	Planters / landscaping	Planters / landscaping	Planters / landscaping
		Outdoor seating	Outdoor seating	Outdoor seating
		Cafe seating	Cafe seating	Moveable signage
	Moveable signage	Moveable signage	Moveable signage	
Pedestrian Crossing	Signalized crosswalks	Striped curb extensions	Striped curb extensions	Striped curb extensions
	Pedestrian refuge areas	Signalized crosswalks	Signalized crosswalks	Signalized crosswalks
	Bump out	Mid-block signalized crosswalks (RRFB)	Mid-block signalized crosswalks (RRFB)	Mid-block signalized crosswalks
		Pedestrian refuge areas	Pedestrian refuge areas	Bump out
Bicycle Zone Design				
Bicycle Zone	MUP ≥ 8'	Bike lane 5' - 6'	Bike boulevard	Bike boulevard
	Buffered bike lane 5' - 8'	MUP ≥ 8'	Sharrows	Sharrows
	Barrier-separated bike lane 5' - 10'	Buffered bike lane 5' - 8'	Bike lane 5' - 6'	Bike lane 5' - 6'
		Barrier-separated bike lane 5' - 10'	MUP ≥ 8'	MUP ≥ 8'
Bicycle Crossing		Buffered bike lane 5' - 8'	Buffered bike lane 5' - 8'	Buffered bike lane 5' - 8'
Bicycle Crossing	Bike boxes	Bike boxes	Intersection crossing marking	Intersection crossing markings
	Bicycle refuge areas	Bicycle refuge areas	Bike boxes	Bike boxes
Parking Design				
Parking facilities	On-street parking	On-street parking	On-street parking	On-street parking
	Structured parking	Structured parking	Screening	Screening
	Screening	Screening	Rear / alley-access surface lots	Rear / alley-access surface lots
	Rear / alley-access surface lots	Rear / alley-access surface lots	Shared surface lots	Shared surface lots

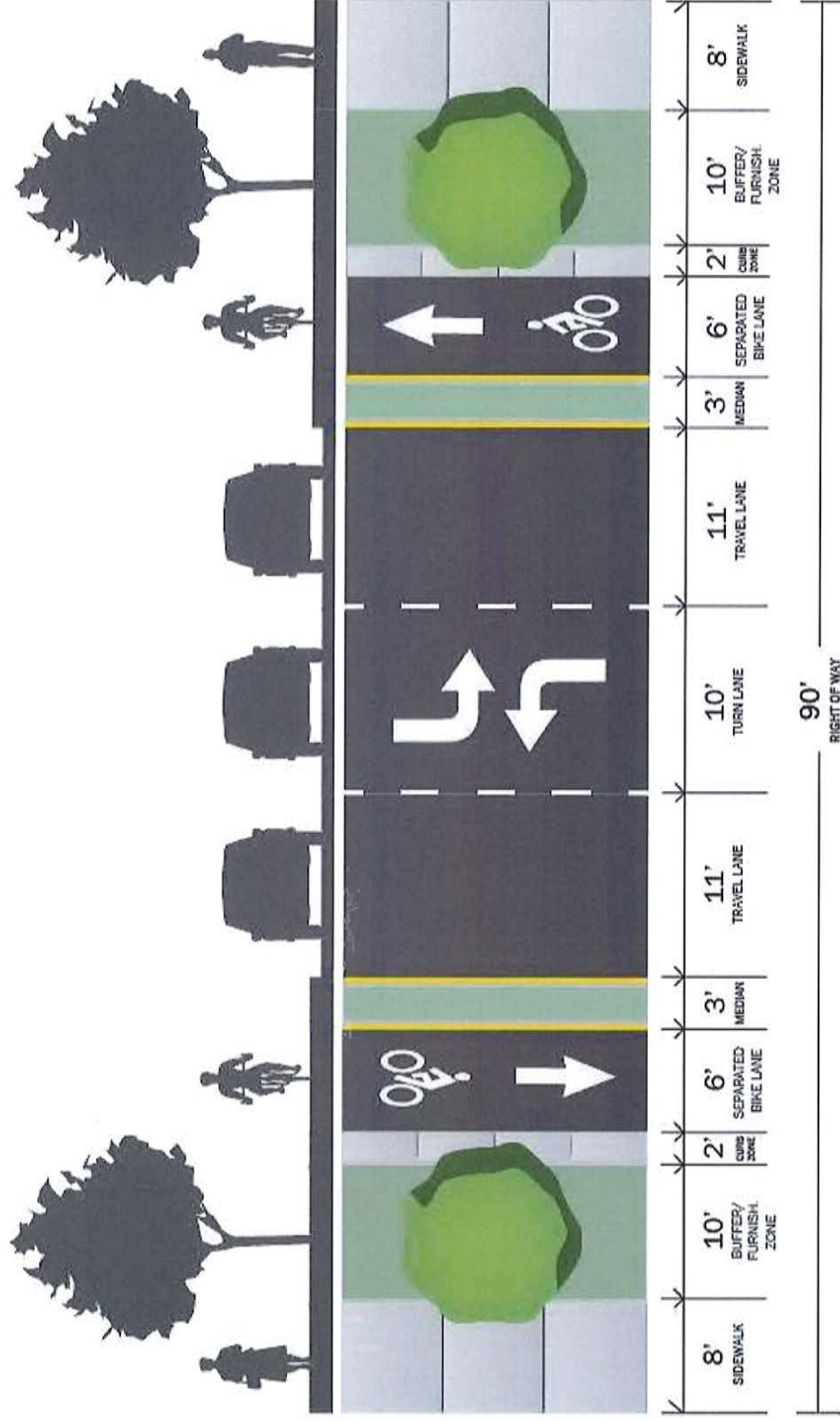
Note: The Minor Arterial and Collector functional roadway typologies can consist of roadways with a wide range of speeds. Within the matrix categories of Traffic Calming, Pedestrian Crossing, Bicycle Zone Design, and Bicycle Crossing, the boxes shaded grey indicate Complete Streets elements within those categories that are appropriate for roadways with posted speeds above 30 mph. Unshaded boxes indicate the Complete Streets elements within those categories that are appropriate for roadways with speeds 30 mph or below.

Mixed-Use & Commercial Flex Zone Design Guidelines

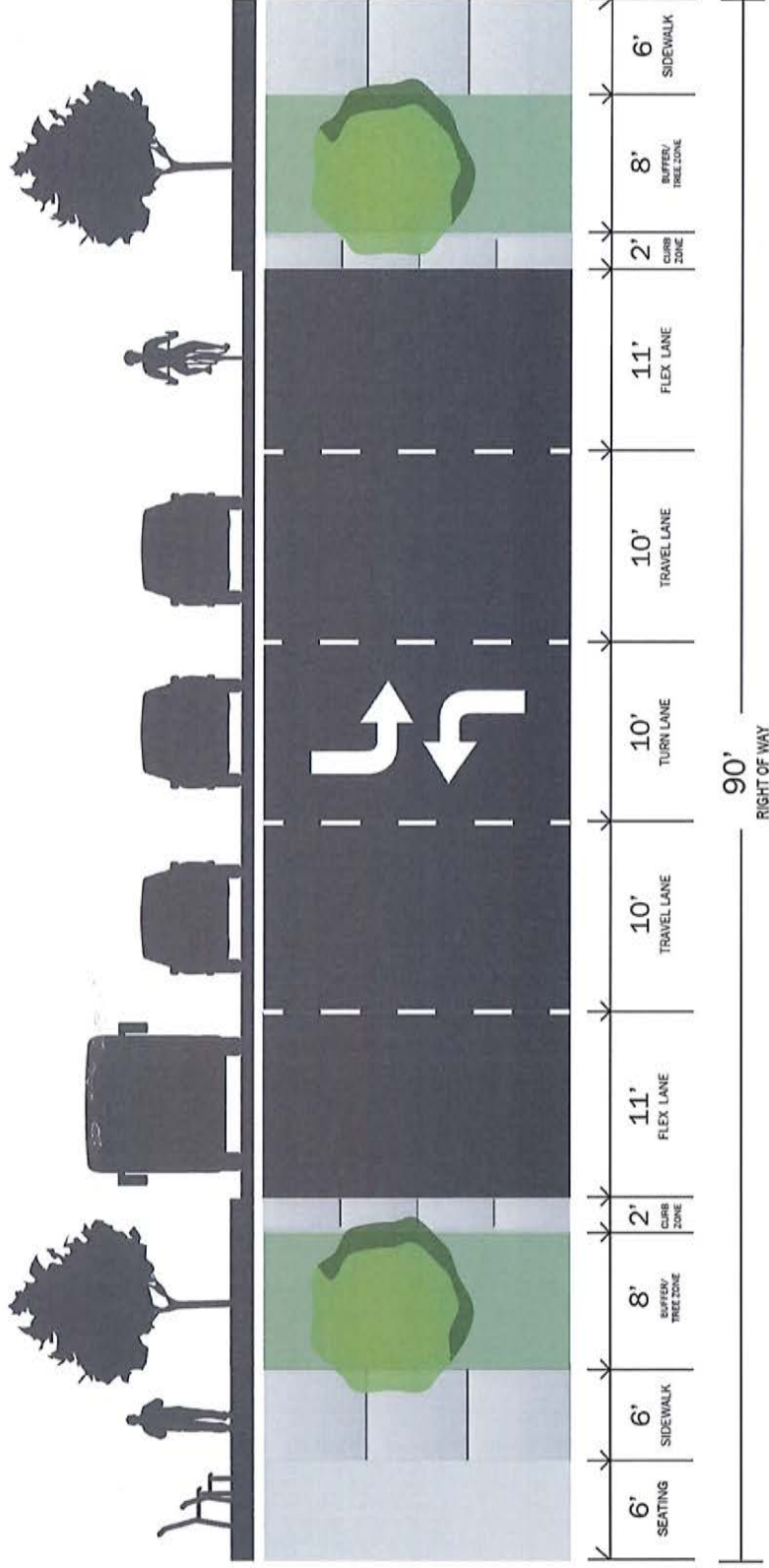
Flex Zone Design	Principal Arterial & Minor Arterial	Collector & Street
Early Morning (12 a.m. - 6 a.m.)	Commercial vehicle loading / drop-off Passenger loading / unloading	Commercial vehicle loading / drop-off Passenger loading / unloading
Morning (6 a.m. - 12 p.m.)	Low-speed motorized/non-motorized lane General purpose travel lane Passenger loading / unloading	Low-speed motorized/non-motorized lane Food trucks / parklet Short-term parking
Mid-Day (12 p.m. - 6 p.m.)	Food trucks Low-speed motorized/non-motorized lane Short-term parking	Food trucks / parklet Low-speed motorized/non-motorized lane Short-term parking
Evening (6 p.m. - 12 a.m.)	Low-speed motorized/non-motorized lane General purpose travel lane Short-term parking	Low-speed motorized/non-motorized lane General purpose travel lane Short-term parking

Note: The Minor Arterial and Collector functional roadway typologies can consist of roadways with a wide range of speeds. Within the matrix categories of Traffic Calming, Pedestrian Crossing, Bicycle Zone Design, and Bicycle Crossing, the boxes shaded grey indicate Complete Streets elements within those categories that are appropriate for roadways with posted speeds above 30 mph. Unshaded boxes indicate the Complete Streets elements within those categories that are appropriate for roadways with speeds 30 mph or below.

Mixed-Use/Commercial Minor Collector Example 1



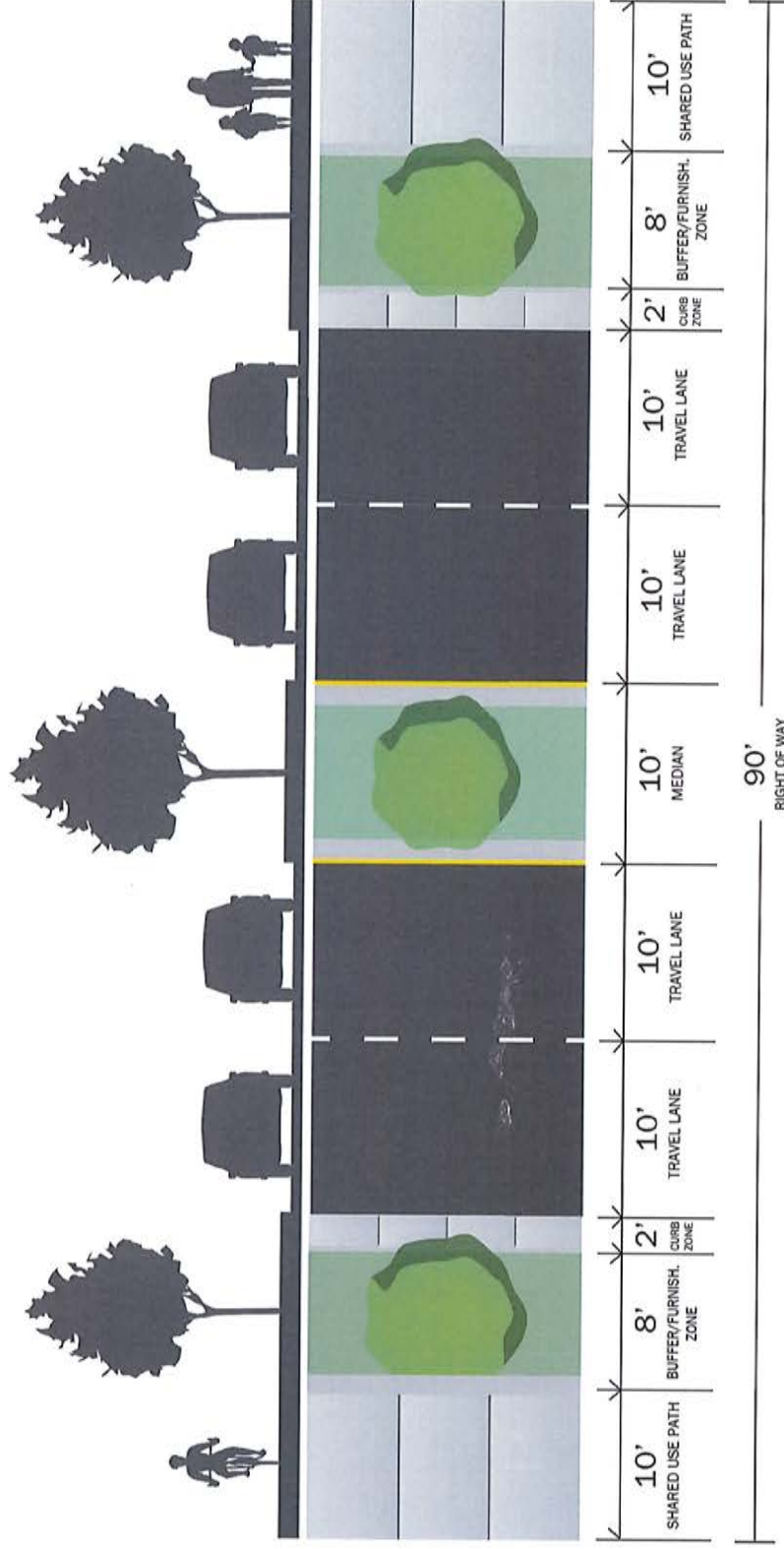
Mixed-Use/Commercial Minor Collector Example 2



Flex lanes manage sought-after curbside space by accommodating multiple functions throughout the day. For a roadway like the one shown above, this could include:

- On-street parking lane
- Bus-only lane
- Through bicycle traffic lane
- Through vehicle traffic lane

Mixed-Use/Commercial Minor Collector Example 3

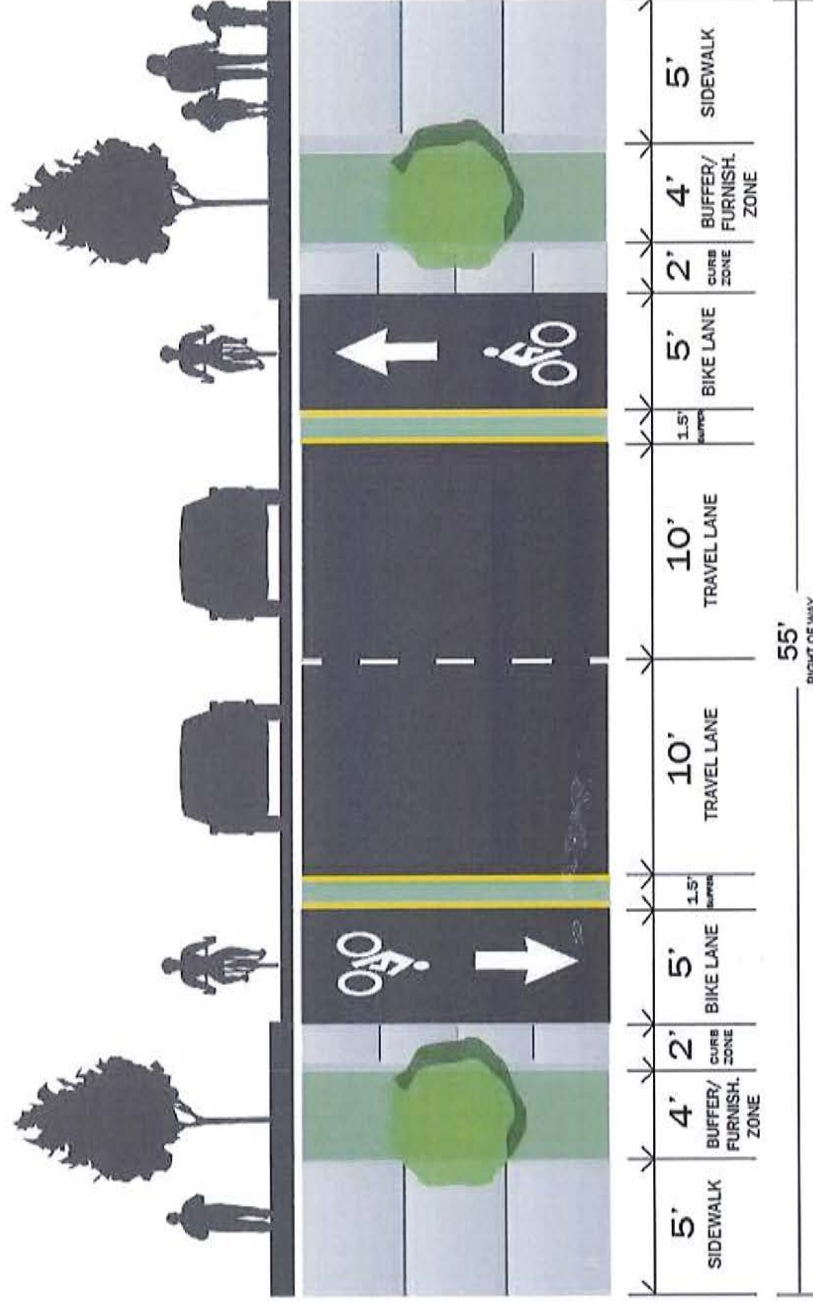


Residential Street Design Guidelines

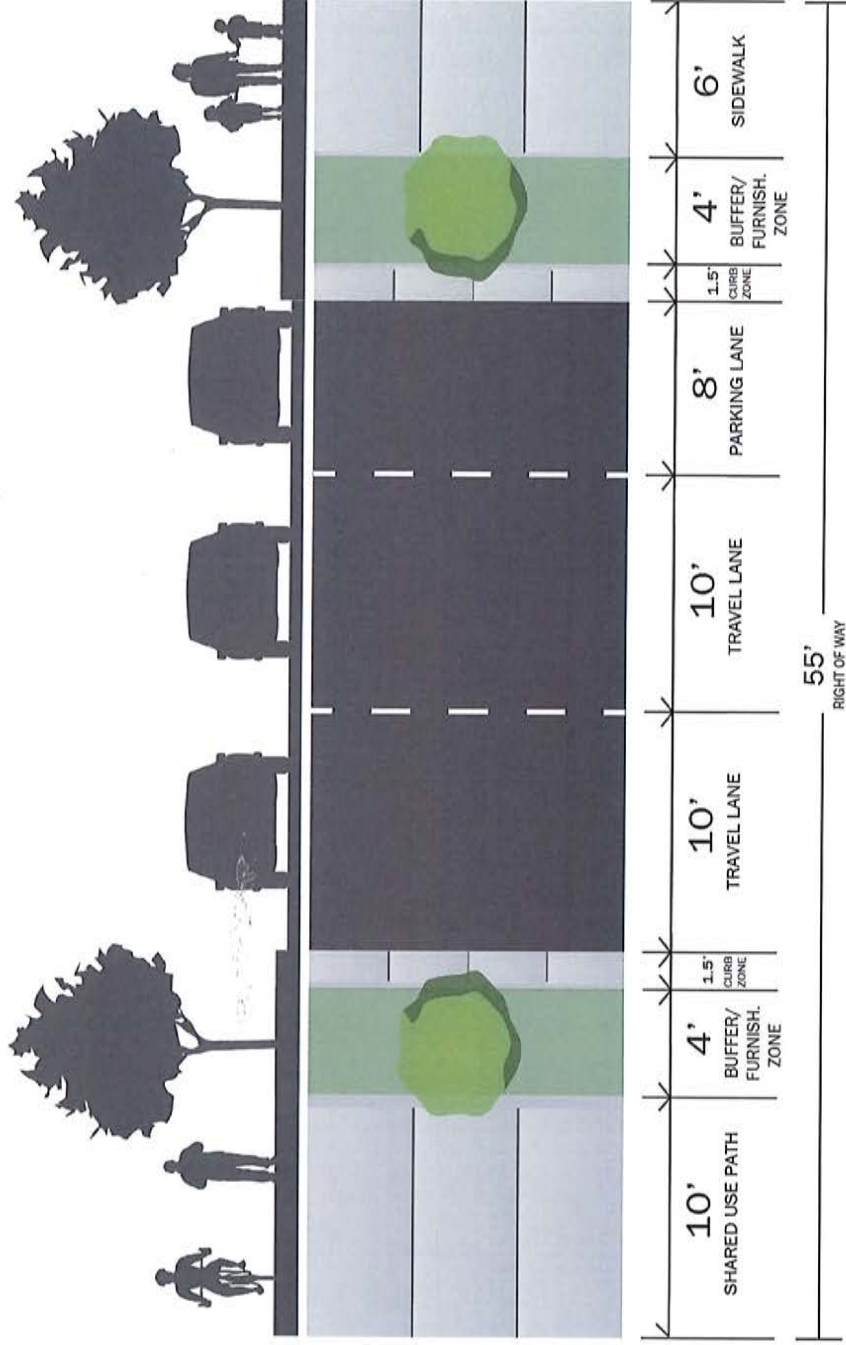
	Principal Arterial	Minor Arterial	Collector	Street
Vehicle Zone Design				
Number of Lanes	2-5	2-5	2-4	2-3
Width of Lanes	10' - 12'	10' - 12'	10' - 12'	9 - 12'
Design Speed (mph)	30-50	30-50	30-40	30
Traffic calming	Roundabouts Raised / landscaped / striped medians	Pavement narrowing (striping) Striped bump out Roundabouts Raised / landscaped / striped medians	Pavement narrowing (striping) Striped bump out Roundabouts Raised / landscaped / striped medians	Striped bump out Traffic circles
Transit Considerations	Local and express	Local	Local	Local
Freight Movement	Regional and local truck route	Local deliveries only	Local deliveries only	Local deliveries only
Pedestrian Zone Design				
Curb Zone	0.5' - 2.5'	1.5' - 2.5'	1.5' - 2.5'	1.5' - 2.5'
Buffer / Furnishings Zone	4' - 12' Grass / trees / landscaping / GSI Street lights / signage Bus stops	7' - 12' Grass / trees / landscaping / GSI Street lights / signage Bus stops	7' - 10' Grass / trees / landscaping / GSI Street lights / signage Bus stops	7' - 8' Grass / trees / landscaping / GSI Street lights / signage
Pedestrian Through Zone	5' - 8'	5' - 8'	5' - 8'	5' - 6'
Frontage Zone				
Pedestrian Crossing	Signalized crosswalks Pedestrian refuge areas Bump out	Striped curb extensions Signalized crosswalks Mid-block signalized crosswalks (RRFB) Pedestrian refuge areas Bump out	Striped curb extensions Mid-block unsignalized crosswalks Signalized crosswalks Mid-block signalized crosswalks (RRFB) Pedestrian refuge areas Bump out	Striped curb extensions Signalized crosswalks Mid-block unsignalized crosswalks Bump out
Bicycle Zone Design				
Bicycle Zone	MUP ≥ 8' Buffered bike lane 5' - 8' Barrier-separated bike lane 5' - 12'	Bike lane 5' - 6' MUP ≥ 8' Buffered bike lane 5' - 8' Barrier-separated bike lane 5' - 12'	Bike boulevard Sharrows Bike lane 5' - 6' MUP ≥ 8' Buffered bike lane 5' - 8'	Bike boulevard Sharrows Bike lane 5' - 6' MUP ≥ 8' Buffered bike lane 5' - 8'
Bicycle Crossing	Bike boxes Bicycle refuge areas	Intersection crossing markings Bike boxes	Intersection crossing markings Bike boxes	Intersection crossing markings
Parking Design				
Parking facilities	On-street parking (speed < MPH) Screening (multifamily housing)	On-street parking (speed < 40 MPH) Screening (multifamily housing)	On-street parking Screening (multifamily housing)	On-street parking Screening (multifamily housing)

Note: The Minor Arterial and Collector functional roadway typologies can consist of roadways with a wide range of speeds. Within the matrix categories of Traffic Calming, Pedestrian Crossing, Bicycle Zone Design, and Bicycle Crossing, the boxes shaded grey indicate Complete Streets elements within those categories that are appropriate for roadways with posted speeds above 30 mph. Unshaded boxes indicate the Complete Streets elements within those categories that are appropriate for roadways with speeds 30 mph or below

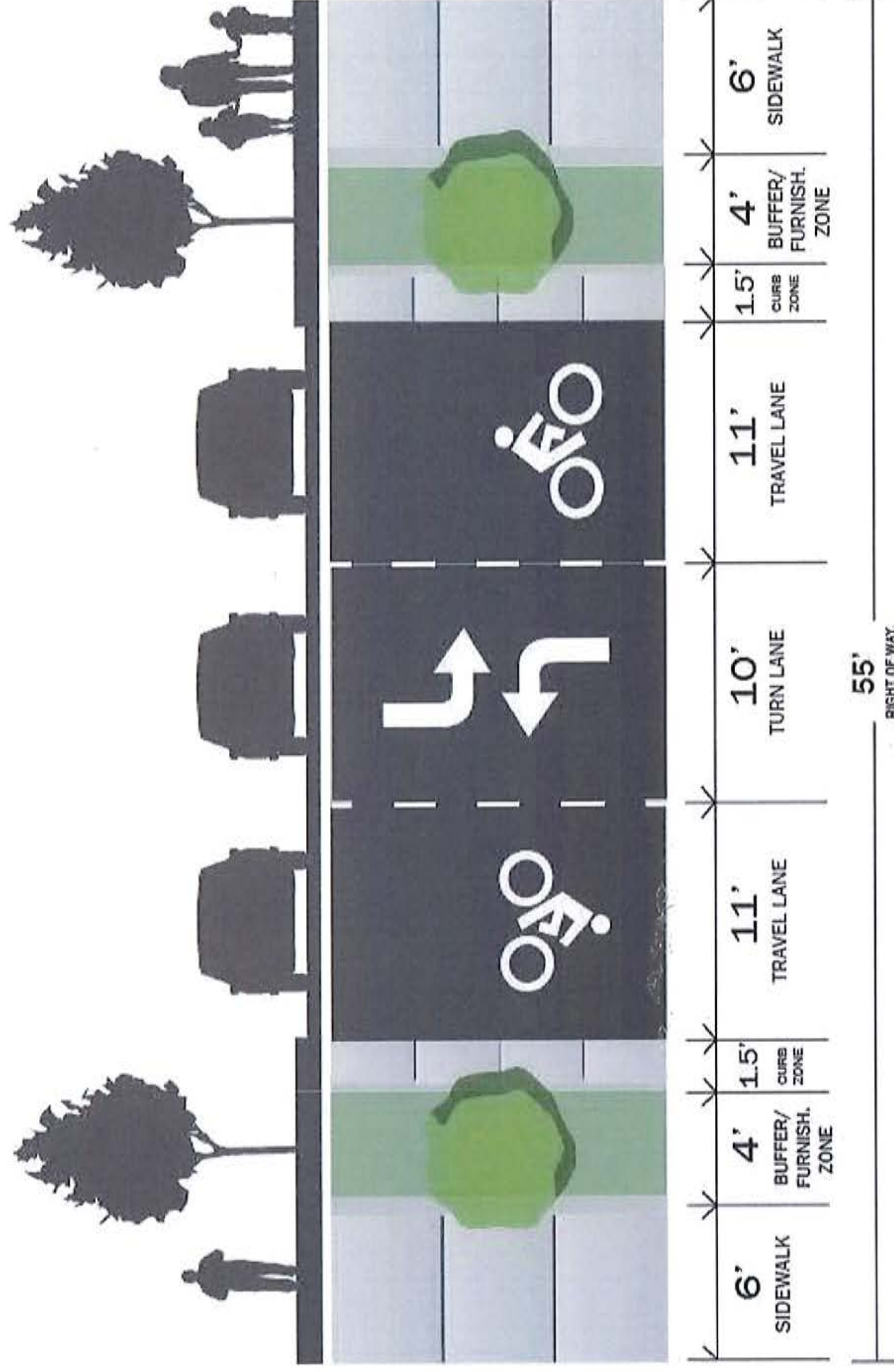
Residential Collector Example 1



Residential Collector Example 2



Residential Collector Example 3

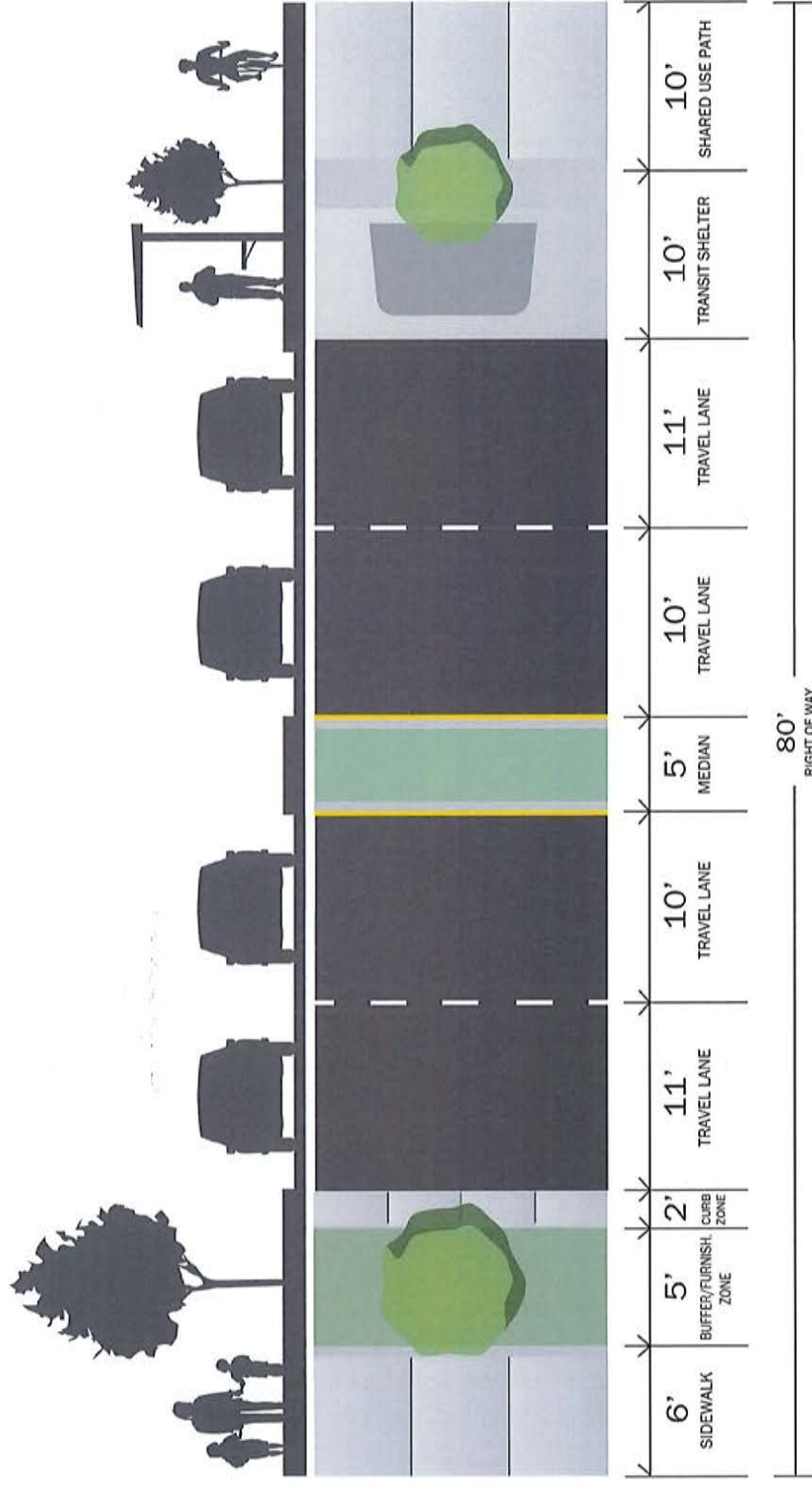


Industrial & Rural Street Design Guidelines

	Principal Arterial	Minor Arterial	Collector
Vehicle Zone Design			
Number of Lanes	2 - 5	2 - 5	2 - 3
Width of Lanes	10' - 12'	10' - 12'	10' - 12'
Design Speed (mph)	30 - 50	30 - 50	30 - 50
Traffic calming	Raised / landscaped / striped medians	Striped bumpout Raised / landscaped / striped medians	Striped bumpout Raised / landscaped / striped medians
Transit Considerations	Express and local	Local	None
Freight Movement	Regional truck route	Regional and local truck route	Regional and local truck route
Pedestrian Zone Design			
Curb Zone	0.5' - 2.5'	1.5' - 2.5'	1.5' - 2.5'
Buffer / Furnishings Zone	15' - 20' Grass / trees / landscaping / GSI Street lights / signage Bus stops Bike racks	10' - 15' Grass / trees / landscaping / GSI Street lights / signage Bus stops	7' - 10' Grass / trees / landscaping / GSI Street lights / signage Bus stops
Pedestrian Through Zone	5' - 8'	5' - 8'	5' - 8'
Frontage Zone			
Pedestrian Crossing	Signalized crosswalks Mid-block signalized crosswalks Pedestrian refuge areas bump out	Signalized crosswalks Mid-block signalized crosswalks (RRFB) Pedestrian refuge areas bump out	Mid-block unsignalized crosswalks Mid-block signalized crosswalks (RRFB) Signalized crosswalks Pedestrian refuge areas bump out
Bicycle Zone Design			
Bicycle Zone	MUP ≥ 8' Buffered bike lane 5' - 8' Barrier-separated bike lane 5' - 10' Bike boxes Bicycle refuge areas	MUP ≥ 8' Buffered bike lane 5' - 8' Barrier-separated bike lane 5' - 10' Bike boxes Bicycle refuge areas	MUP ≥ 8' Buffered bike lane 5' - 8' Barrier-separated bike lane 5' - 10' Bike boxes Bicycle refuge areas
Parking Design			
Parking facilities	Screening Shared surface lots	Screening Shared surface lots	Screening Shared surface lots

Note: The Minor Arterial and Collector functional roadway typologies can consist of roadways with a wide range of speeds. Within the matrix categories of Traffic Calming, Pedestrian Crossing, Bicycle Zone Design, and Bicycle Crossing, the boxes shaded grey indicate Complete Streets elements within those categories that are appropriate for roadways with posted speeds above 30 mph. Unshaded boxes indicate the Complete Streets elements within those categories that are appropriate for roadways with speeds 30 mph or below.

Industrial/Rural Principal Arterial Example 1



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Complete Streets Elements Glossary



Barrier-Separated Bike Lanes: Barrier-separated bike lanes are separated from the lanes of motorized traffic by a physical barrier, such as flexible delineator posts, bollards, raised curbs, or planters. These bike lanes can encourage bicycling by providing additional protection.



Bicycle Refuge Area: Median refuge islands are protected spaces placed in the center of the street to facilitate bicycle and pedestrian crossings. When implemented on two-way streets, cyclists in the bicycle refuge area only have to navigate one direction of traffic at a time, creating a safer and more comfortable experience, especially for cyclists of different ages and abilities.



Bike Boulevard: Bicycle boulevards are streets with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority. Bicycle Boulevards use signs, pavement markings, and speed and volume management measures to discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets.



Bike Lane: A Bike lane is defined as a portion of the roadway that has been designated by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists. A bike lane is distinguished from a cycle track in that it has no physical barrier (bollards, medians, raised curbs, etc.) that restricts the encroachment of motorized traffic.



Buffered Bike Lane: Buffered bike lanes are conventional bicycle lanes paired with a striped buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.



Bus Bulb: Bus bulbs are curb extensions that align the bus stop with the parking lane, allowing buses to stop and board passengers without ever leaving the travel lane. Bus bulbs help buses move faster and more reliably by decreasing the amount of time lost when merging in and out of traffic.



Bus Shelter: The provision of comfortable shelter and seating can significantly improve perception of wait time and rider satisfaction. In addition to stops with a moderate number of boardings, shelters should be provided at transfer points, at stops in weather-exposed locations, and at stops with a relatively high use by senior and/or child passengers. At low-volume stops basic shelters can provide passengers with comfortable seating and vital information.



Bus Stop: At major bus stops, cities may enhance the experience of passengers and passers-by through the addition of shelters, benches, area maps, plantings, vendors, or artworks.

Complete Streets Elements Glossary



Choker/Curb Extension: Curb extensions visually and physically narrow the roadway, creating safer and shorter crossings for pedestrians while increasing the available space for street furniture, benches, plantings, and street trees.



Curb Cuts: Curb cuts are points at which the curb and sidewalk are interrupted for a vehicular entrance or exit point, such as a driveway. To ensure a safe and pleasant walking experience, the number of curb cuts should be kept to a minimum.



Curb Zone: The curb zone (or simply, the curb) of the sidewalk creates a border between the paved roadway and the sidewalk corridor. Curbs make routine maintenance of roads easier as they provide the operators with a solid edge. They also discourage motor vehicles from driving into the pedestrian area and can be helpful for pedestrians navigating with a cane.



Flex Lane: Curbside flex zones transform a lane of traffic or parking into a multifunctional piece of infrastructure. They can play many roles, from public space to loading zones. They could change use over the course of the year, week, or even the day.



Frontage Zone: The frontage zone of the sidewalk is the space between the property line (typically a building in dense urban areas) and the pedestrian zone. By giving appropriate space for the frontage zone, pedestrians can avoid getting hit by doors opening into the sidewalk. In residential areas

the frontage zone may be eliminated, because buildings are set back from the property line.



Furniture Zone: The furniture zone is located between the curb zone and the pedestrian zone. This zone provides space for obstacles, which keeps them out of the way of pedestrians traveling in the pedestrian zone. The proper width can range from two feet to eight feet depending on the presence of transit shelters or large snow accumulations during winter.



Green Stormwater Infrastructure (GSI): Green stormwater infrastructure, like flow-through planters, pervious pavements, and bioswales, captures water runoff closer to the source, reducing combined sewer overflows (CSOs), ponding, and roadway flooding.



Intersection Crossing Markings (Bike): Intersection crossing markings indicate the intended path of bicyclists. They guide bicyclists on a safe and direct path through intersections, including driveways and ramps. They provide a clear boundary between the paths of bicyclists and motor vehicles in the adjacent lane.

Lane Width: Wider travel lanes are correlated with higher vehicle speeds.

Restrictive policies that favor the use of wider travel lanes have no place in constrained urban settings, where every foot counts. Research has shown that narrower lane widths can effectively manage speeds without decreasing safety,

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and that wider lanes do not correlate to safer streets. In fact, wider travel lanes are correlated with higher vehicle speeds. Lane widths of 10 feet are appropriate in urban areas.

Metered On-Street Parking: Metering on-street spaces encourages turnover in the most convenient and visible locations. An effective way to reduce demand for parking is to charge users based on time parked.



Mid-Block Signalized Crosswalk: Adding signals to mid-block crosswalks – such as a Pedestrian Hybrid Beacon (also known as a HAWK signal) – is a popular way to improve pedestrian safety, comfort, and visibility.



Mini-Traffic Circle: Mini roundabouts and neighborhood traffic circles lower speeds at minor intersection crossings and are an ideal treatment for uncontrolled intersections.

Mini roundabouts may be installed using simple markings or raised islands but are best applied in conjunction with plantings that beautify the street and the surrounding neighborhood.

On-Street Parking: On-street parking refers to the space for parked vehicles that is permitted as a part of the public right-of-way at curb. In addition to tradition parallel parking, angled curb parking, back-in angles parking, and striped parallel parking are other options that provide their own sets of benefits and drawbacks.



Outdoor Seating: Outdoor seating increases the comfort of public spaces and fosters sociability. Special attention should be paid to keeping the pedestrian zone of the sidewalk five feet wide to accommodate all users. For areas with limited sidewalk space, parklets offer a unique solution. These involve taking at least one parking space and converting it to an area with outdoor seating and protection from the adjacent traffic.



Pedestrian Refuge Area: A pedestrian safety island reduces the exposure time experienced by a pedestrian in the intersection. While safety islands may be used on both wide and narrow streets, they are generally applied at locations where speeds and volumes make crossings prohibitive, or where three or more lanes of traffic make pedestrians feel exposed or unsafe in the intersection.



Pedestrian Through Zone: The pedestrian zone of the sidewalk is the clear space for pedestrians located between the furniture zone and the frontage zone. It is important to keep this area free of protruding objects and vertical obstructions. Individuals with visual, physical, or cognitive

impairments can be particularly at risk from such objects. The minimum width of the pedestrian zone is five feet. This allows a wheelchair user to travel comfortably and allows two pedestrians to walk side by side.

Planters: Sidewalk planters are an easy way to add green space to a wide sidewalk or other area where pavement can be replaced with landscaping. Sidewalk planters can be found on the side of a road, next to a wide sidewalk, or

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in the median of a street. Their main purpose is to improve the aesthetics of a neighborhood, but they can also buffer pedestrians from vehicles while filtering and detaining stormwater.



Raised Median: Raised medians are curbed sections that generally appear in the center of roadways. Raised medians can increase safety by separating opposing streams of traffic and restricting vehicle turning movements. Raised medians can give the appearance of a narrowed lane which can have a traffic calming effect. Raised medians can also have landscaping or GSI, so long as it does not impact visibility. Raised medians with cut-throughs for pedestrians or cyclists are referred to as Pedestrian Refuge Islands in this document.



Roundabout: A roundabout is a circular intersection in which vehicles travel in one direction around a central island. When a traditional signalized intersection is replaced by a roundabout, there is typically a large improvement in traffic safety. However, roundabouts create unique concerns for pedestrians. Most roundabouts serve as unsignalized crossings and simply have crosswalks where motorists are required to yield to pedestrians. Creating high-visibility crosswalks, clear signage, and yield lines will increase pedestrian safety.



Screening: The landscape treatment between the parking lot edge and the sidewalk/street right-of-way can be an environmental asset and visual amenity. This area should screen parked vehicles but not completely obstruct views into and out of the parking lot for the purpose of pedestrian safety. (Montgomery County Planning Commission)

Shared Parking: Parking demand for different land uses peaks during different periods of the day. This can allow neighboring uses to pool their parking supply, requiring less than the sum of the others in isolation. Where parking is not immediately adjacent to the destination, clear signage is important to ease wayfinding. Maps and online information can also prepare area visitors for their parking options.



Shared Use Path or Multi Use Path (SUP or MUP): Physically separated from roads, trails or greenways are accessible two-way paths designated for use by both bicyclists and pedestrians. Shared use paths can be on-street and parallel to the roadway, or they can be off-street facilities that provide active transportation access through natural landscapes or recreation facilities.



Sharrows: Shared Lane Markings (SLMs), or "sharrows," are road markings used to indicate a shared lane environment for bicycles and automobiles. Shared lane markings are only appropriate for roadways with low vehicle volumes and speeds. They reinforce the legitimacy of bicycle traffic on the street, recommend proper bicyclist positioning, and may be configured to offer directional and wayfinding guidance.

Signage: Signage should be visible and clear to all users of the street, bike lane, and sidewalk. Pedestrian, bicyclist, and vehicular safety can be increased by a well-placed network of signage.

Signalized Crosswalks: Signalized crosswalks afford pedestrians with an opportunity to stop the traffic to safely cross the street at intersections (marked or unmarked). They typically have electronic push buttons that pedestrians can

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use to activate the signal.



Speed Hump: Speed humps are vertical traffic calming devices intended to slow traffic speeds on low volume, low speed roads. Speed humps can reduce speeds to 15-20 mph and are often referred to as "bumps" on signage and by the general public.

Street Furniture: Street furniture can include bike parking, benches, water fountains, signage, utility poles or boxes, news kiosks, light poles, transit shelters, fire hydrants, grates and hatch covers, parking meters, public telephones, mailboxes, and garbage containers.



Structured Parking: Structured parking refers to multi-level above or below ground structures that allow more vehicle parking on-site than would be possible at the surface. While such structures are often cost-prohibitive, they allow for the integration of parking into a more compact land use pattern that supports a mix of residential and business units.



Textured Pavement: Textured pavement is a method of traffic calming. For example, brick can be used to reduce the speed of traffic or to make crosswalks more decorative and visible. It can also refer to pervious pavements that allow stormwater infiltration.



Trees: Street trees and landscaping provide many benefits to people in terms of air quality, water quality, and energy savings. They should always be considered as part of the planning and design process for any roadway project and where appropriate, preference should be given to native species.