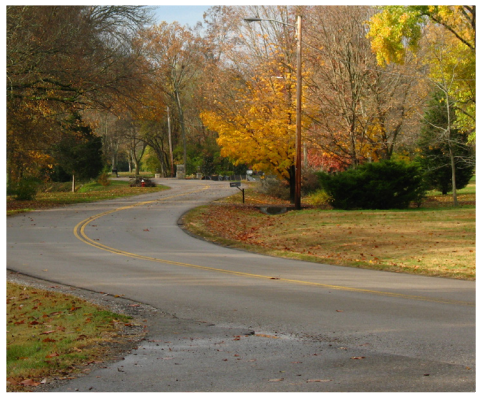
nashvillenext

A General Plan for Nashville & Davidson County

Volume V: Access Nashville 2040



Mission Statements

The Planning Commission guides growth and development as Nashville and Davidson County evolve into a more socially, economically and environmentally sustainable community, with a commitment to preservation of important assets, efficient use of public infrastructure, distinctive and diverse neighborhood character, free and open civic life, and choices in housing and transportation.

The Planning Department helps Nashville and Davidson County evolve into a more sustainable community, guided by a commitment to efficient use of infrastructure, distinctive and diverse community character, open and vibrant civic life, and choices in housing and transportation focused on improving the quality of life.

METROPOLITAN PLANNING COMMISSION
OF NASHVILLE AND DAVIDSON COUNTY, TENNESSEE

Resolution No. RS2015-256

"BE IT RESOLVED by The Metropolitan Planning Commission that NashvilleNext is approved in accordance with the staff report and recommendations in the staff report with the following amendments: 2; 3; 4; 5; 14; 15; 16; 18; 20; 22a, 22c; 23; 24; 25; 31; 32; and the deferral of 11 areas identified in the Whites Creek area until the August 13, 2015 Planning Commission meeting with the Public Hearing closed. (9-0)"

Resolution No. RS2015-256

WHEREAS, Section 13-4-203 of the Tennessee Code, Annotated, authorizes a General Plan "with the general purpose of guiding and accomplishing a coordinated, adjusted and harmonious development of the municipality which will, in accordance with existing and future needs, best promote public health, safety, morals, order, convenience, prosperity and the general welfare, as well as efficiency and economy in the process of development, and identify areas where there are inadequate or nonexistent publicly or privately owned and maintained services and facilities when the planning commission has determined the services are necessary in order for development to occur;" and

WHEREAS, Chapter 5, section 11.504 (c) of the Metro Nashville Charter gives the Metro Planning Commission the power to "Make, amend and add to the master or general plan for the physical development of the entire metropolitan government area;" and

WHEREAS, Section 18.02 of the Charter of the Metropolitan Government of Nashville and Davidson County requires that zoning regulations be enacted by the Council "only on the basis of a comprehensive plan prepared by the Metropolitan Planning Commission;" and

WHEREAS, the last General Plan, *Concept 2010, A General Plan for Nashville/Davidson County* was adopted in 1992; and

WHEREAS, Mayor Karl Dean, seeing fit to update the General Plan, announced on May 22, 2012 that the General Plan would be updated, assigning the task to the Metro Planning Department; and

WHEREAS, under the leadership of the *NashvilleNext* Steering Committee and the Community Engagement Committee, the staff of the Metropolitan Planning Commission worked with stakeholders in Nashville/Davidson County, holding over 420 public meetings and events and soliciting input through online forums, engaging over 18,500 participants in providing public input to update the General Plan;

WHEREAS, the Metropolitan Planning Commission, empowered under state statute and the Charter of the Metropolitan Government of Nashville and Davidson County to adopt master or general plans for smaller areas of the county, finds that the process followed to develop the *NashvilleNext* General Plan included diverse, widespread, and meaningful community participation and substantial research and analysis and therefore finds that replacing the *Concept 2010* General Plan with *the NashvilleNext* General Plan is warranted; and

NOW, THEREFORE, BE IT RESOLVED that the Metropolitan Planning Commission hereby ADOPTS *NashvilleNext, A General Plan for Nashville/Davidson County* in accordance with sections 11.504 (e), (j), and 18.02 of the charter of the Metropolitan Government of Nashville, and Davidson County as the basis for the Commission's development decisions in the county.

James McLean, Chairman
Adoption Date: June 22, 2015

Attest:

J. Douglas Sloan, III, Secretary and Executive Director

THE METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

KARL F. DEAN, MAYOR

EXECUTIVE ORDER NO. 40

SUBJECT: Complete Streets Policy.

I, Karl Dean, Mayor of the Metropolitan Government of Nashville and Davidson County, by virtue of the power and authority vested in me, do hereby find, direct, and order the following:

I. The Metropolitan Government desires to support and encourage a transportation system that is safe and convenient for all users, regardless of age, ability, or mode of transportation through the development of Complete Streets.

II. Public Ways are public streets, roads, alleys, sidewalks, greenways and similar infrastructure.

III. Complete Streets are Public Ways that include some combination of appropriate facilities, as determined by the surrounding context, that accommodate all modes of transportation, including private vehicles, mass transit, walking, and bicycling.

IV. The Bicycle and Pedestrian Advisory Committee, Green Ribbon Report on Environmental Sustainability, the Nashville Livability Project Report, and the Healthy Nashville Leadership Council have all endorsed or recommended Complete Streets because of their mitigating impact on air pollution, greenhouse gas emissions, and public health problems such as obesity and asthma, and traffic hazards for pedestrians and bicyclists.

1. Policy. In conjunction with projects relating to the design, planning, construction, reconstruction, rehabilitation, or maintenance of Public Ways, departments, boards and commissions of the Metropolitan Government shall:

    a. Give full consideration to the accommodation of the transportation needs of all users, regardless of age or ability, including those traveling by private vehicle, mass transit, foot, and bicycle;

    b. Review all current Public Way plans, guides, regulations and standard drawings to comply with this Executive Order.

2. Exclusions. Appropriate justifications for excluding accommodations for specific transportation needs include, but are not limited to, findings that:

    a. Specific Complete Streets principles are prohibited by law, such as bicycle and pedestrian facilities within interstate highway corridors;

    b. The cost of complying with this Policy on a particular project would substantially exceed the public value to be realized, taking into consideration the need and probable use of the project;

    c. A scarcity of population or other factors such as the physical character or context of the built environment surrounding the Public Way area indicates an absence of current or future need; or

    d. Compliance with this Policy would substantially impair unique characteristics of great public value, such as historical importance.

3. Implementation. A decision to exclude accommodations for specific transportation needs made after appropriate consideration under this Policy shall be documented with supporting data that indicate the basis for the decision.

ORDERED, EFFECTIVE AND ISSUED:

Karl F. Dean
Metropolitan Mayor

Date: Oct. 6, 2010

Table of Contents

As Nashville continues to grow and reinvest in its walkable centers, policies related to the entire right-of-way of streets are needed to ensure people can walk, bike, and access transit as needed.

Chapter 1
Introduction

Metro Transit Authority (MTA) successes: Music City Star becomes Tennessee's first commuter rail service. MTA adds new hybrid buses to the fleet and places them in service on the Gallatin Road Bus Rapid Transit route.

PURPOSE OF THE MAJOR AND COLLECTOR STREET PLAN

The Major and Collector Street Plan (MCSP) is a comprehensive plan and implementation tool for guiding public and private investment in the major streets (Arterial-Boulevards, Arterial-Parkways and Collector-Avenues) that make up the backbone of the city's transportation system. It is a part of, and implements, Access Nashville 2040, which is a functional plan component of the General Plan called NashvilleNext.

Access Nashville 2040 outlines Accessiblity Principles and ties together these four elements:

1. The MCSP prepared by the Metro Planning Department and adopted by the Metro Planning Commission;
2. The Strategic Transit Master Plan prepared by the Metro Transit Authority (MTA), which is currently being updated;
3. The Strategic Plan for Sidewalks and Bikeways prepared by the Metro Public Works Department (MPW) in 2003 and updated in 2008; and
4. The Metro Parks and Greenways Master Plan, which will be updated in 2016.

The MCSP implements the Accessibility Principles of Access Nashville 2040 by mapping the vision for Nashville's major and collector streets and ensuring that this vision is fully integrated with the city's land use, mass transit, and bicycle and pedestrian planning efforts. The MCSP aims to help Nashvillians "complete the trip" by increasing the quality of streets in Nashville, meeting the needs of all users, people who walk, bike, take transit, move goods, and drive cars, in a manner that respects the context and users of the street.

The MCSP contains guidance for two related components of the street network: character and function. The two approaches used to provide guidance for street character are called "Context Sensitive Solutions"(CSS) and "Complete Streets." These character guidelines apply to the planning, construction and redevelopment of streets. Street function is defined by the degree of mobility, including the number of travel lanes needed during the period covered by the MCSP (20-25years); the degree of accessibility the street provides, as well as its role in the larger network of streets. Major and collector streets are two separate functional classifications of streets that form an interrelated network, which is why they are presented together in this document.

In addition to the detailed analysis of all the major streets within Davidson County, the MCSP also provides basic information on right-of-way widths for local streets.

Second Avenue in downtown Nashville was designed with wide sidewalks and on-street parking due to high pedestrian and commercial activity.

21st Avenue in Hillsboro Village has been designed to complement its urban character, including on-street parking, access management, and wide sidewalks.

The 28th/31st Avenue Connector includes Context Sensitive Solutions, including protected bikeways, sidewalks, public art elements, transit shelters, and low impact stormwater solutions.

Context Sensitive Solutions

The Federal Highway Administration defines Context Sensitive Solutions (CSS) as a collaborative, interdisciplinary approach involving all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist. Where prior versions of the MCSP have addressed "context" in terms of only rural or urban and focused solely on functional classification, this update of the MCSP introduces the idea of CSS to begin to create new streets and improve existing streets to be more responsive to their context, potential future users, and development changes. CSS is described in greater detail in Chapter 2.

Complete Streets

This update of the MCSP also reaffirms Metro's commitment to utilizing a "Complete Streets" approach to street design. Complete Streets is an initiative by which cities, states, and other jurisdictions adopt policies to ensure future roadway projects will attempt to accommodate all users who walk, bike, take transit, move goods, or drive cars.

This MCSP advances the concept of Complete Streets by developing a thoroughfare system that provides for safe and effective access for all users in completing their trips, while addressing streetscape design in context with the existing or envisioned character of the community. This philosophy in design of transportation corridors emerged in response to a changing culture and demographics which demand more transportation choices. The emphasis on active lifestyles, energy conservation, and the importance of accommodating users of all ages and abilities illustrates that a street can no longer be designed just for the automobile.

Complete Street design should be understood as a process, not a specific product. For that reason, not all "Complete Streets" will look the same. Complete Street design is both an art and a science. As such, good design standards balance engineering judgment and user needs within the context of the street. Roadway design must rely on the design professional's knowledge of elements such as travel speeds, volumes, horizontal and vertical alignments and sight lines. User needs also influence the design of the Complete Street. Many of the facilities contained within the right-of-way are uniquely associated with the needs of people of all ages and abilities. Character, or the physical context in which the street resides, is another factor considered in Complete Street design. Character influences the form and function of the roadway and its associated streetscape all of which are designed to complement and enhance the surrounding character.

CSS and Complete Streets approaches support the development of healthy and sustainable communities in keeping with local and national policies and initiatives. A national example is the Centers for Disease Control and Prevention's *Healthy Community Design Initiative*. This initiative promotes the integration of evidence-based health strategies into community planning, transportation, and land use decisions. Providing opportunities for people to incorporate physical activity into their daily lives is an example of one of these strategies and can be accomplished by facilitating activities such as walking to transit, biking to work, or walking to nearby shopping destinations. A transportation system that allows the healthy choice to be the easy choice will contribute to healthier life styles within the community.

Locally, Mayor Karl Dean's Complete Streets executive order, "Together Making Nashville Green" initiative, the NashVitality campaign, Moving in Harmony campaign, and Access Nashville 2040, along with NashvilleNext inform the direction of this MCSP. The Complete Streets Executive Order, issued on October 6, 2010, directs Metro Departments to "Give full consideration to the accommodation of the transportation needs of all users, regardless of age or ability…" We anticipate future mayoral administrations to reaffirm this commitment. "Together Making Nashville Green" involves citywide efforts to advance environmental sustainability and community health throughout Nashville. Nashviltality promotes a healthy, active and green city. Moving in Harmony promotes sharing the road among all street users–bikes, pedestrians, and cars. NashvilleNext

Bike lanes along Demonbreun Street have been implemented as redevelopment occurs.

Music City Central is strategically located on Charlotte Pike and 4th Avenue North, which are both major downtown streets providing regional access. The facility provides a safe and attractive transit facility for MTA riders.

reinforces sustainability efforts, smart land use decisions, and a multimodal transportation network. CSS and Complete Streets further these initiatives by supporting active transportation choices and also by complementing a compact and sustainable urban form that emphasizes investment in the central city and centers where infrastructure is in place and where active transportation choices are relatively easy and convenient to make as part of day-to-day life.

THE NEED TO UPDATE THE MAJOR AND COLLECTOR STREET PLAN

As a functional component of the General Plan or NashvilleNext's Access Nashville 2040 (Volume V), the MCSP should be updated regularly and as needed to reflect changes that have occurred and to respond to future planned growth, development and preservation.

Access Nashville 2040's Accessibility Principles respond to these key issues in Nashville:

1. Nashville's street network is mostly built. Acquiring new right-of-way is very challenging.
2. The city's transportation network must reflect what is appropriate for Nashville.
3. Nashville is the region's population and employment hub, so Middle Tennessee residents need to connect to Nashville and get around in multiple ways as part of the regional transportation network.
4. Nashville's street network is evolving into a multimodal transportation network and should accommodate all modes and people.
5. Nashville's multimodal transportation network evolves as walkable centers grow.

HOW THE MAJOR AND COLLECTOR STREET PLAN WAS UPDATED

The 2015 update of the MCSP involved the following steps:

1. Review of the plans referenced below,
2. Analysis of the existing conditions of all the Major and Collector streets in Davidson County, review of local transportation plans, and assessment of the role of each street in light of Access Nashville's Accessibility Principles,
3. Update the Environment based upon the transect category, Street Context, and Functional Design Type for each applicable street, to align with land use policies in the Community Plans (Volume III) of NashvilleNext,
4. Input and feedback from other Metro and state of Tennessee Agencies during the process of creating NashvilleNext, and
5. Input from the public at organized community meetings and discussion of issues with planning staff during the three-year NashvilleNext process.

Plans Reviewed

A comprehensive review of the following local planning documents influenced this update of the MCSP as NashvilleNext was adopted.

Community Plans Major and Collector Street Plan (MCSP)—This plan includes recommendations for improvements to existing streets and the creation of new streets. It is created through the Community Planning process, led by Metro Planning staff and community members in the fourteen planning communities in Nashville. This plan has historically reflected community objectives, but has often downgraded or removed connections or collectors at the request of Council Members, community members or developers that may have been legitimately warranted for transportation network connectivity.

Because the MCSP is informed by the Community Plan Updates, the MCSP is sometimes amended following a community planning process to reflect the specific changes applicable to that community. These now align with NashvilleNext.

2040 Update and 2035 Nashville Area MPO Regional Transportation Plan—Adopted by the regional transportation planning agency, the Nashville Area MPO, the network is a reflection of all planned Regional Transportation Plan (RTP) projects for travel demand modeling purposes. It establishes a 25 year vision for transportation in Middle Tennessee. In 2015, the MPO is updating the Regional Transportation Plan.

2008 Update and 2003 Strategic Plan for Sidewalks and Bikeways—Adopted by the Metro Planning Commission in 2003 and updated in July, 2008, this plan addresses all aspects of pedestrian and bicycle planning, and specifically outlines the streets that need bicycle facilities and what type of facility is warranted. NashvilleNext identifies that the Strategic Plan for Sidewalks and Bikeways needs to be updated.

nMotion 2015 and 2009 Nashville Strategic Transit Master Plan—Adopted by the Nashville Metro Transit Authority in 2009, this plan sets forth guiding principles and policies for improving public transportation in Nashville, as well as describes actions and projects for the future. MTA will update the Strategic Plan in 2015-2016 called nMotion and utilize the High Capacity Transit Corridors identified in NashvilleNext Growth and Preservation Concept Plan as a starting point. The MCSP will need to be amended once the nMotion Strategic Plan is finalized.

2008 Update to the Metropolitan Parks and Greenways Master Plan—The Master Plan outlines a vision for the parks and greenways systems . Residents increasingly use the extensive greenways network for transportation purposes and should be encouraged. NashvilleNext outlines the need to update the plan, and Metro Parks anticipates updating the Master Plan in 2015-2016.

Deaderick Street, a public sector project, incorporates sustainable design features including street trees, a vegetated median, pedestrian scale lighting, and adequate sidewalk widths.

2014 Downtown Multimodal Mobility Study—The Multimodal Mobility Study was completed by Metro Public Works to estalblish a mobility action plan for all mosdes of transportation in downtown Nashville for the next 10 years.

2014 Pedestrian and Bicycle Safety Pilot Project Report—A report completed by Metro Public Works that identifies high crash locations for pedestrians and bicyclists and potential countermeasures to improve safety.

2010 Metro Nashville Multimodal Connectivity Study—This study was initiated by the Mayor's Office and the Bicycle and Pedestrian Advisory Committee to identify recommendations for improved connections between existing bicycle,

pedestrian, and transit facilities and between trip attractors and generators. This includes multi-use paths, restriping roads for bike lanes, right-sizing streets, and construction of sidewalk segments.

2015 Northwest Corridor Transit Study and 2009 Northwest Corridor Conceptual Feasibility Study—An initial feasibility study was undertaken in 2009 to look at the corridor between the cities of Clarksville and Nashville to determine if commuter rail is feasible in this corridor, determine the most likely alignment, develop a preliminary capital cost estimate, and a potential operating schedule and budget. In 2015, this study builds upon and expands on the 2009 findings and recommendations to determine a combination of alternatives that can be integrated and phased into Middle Tennessee's regional transit plan.

2015 Southeast Area Transportation and Lands Use Study and 2007 Southeast Corridor Alternatives Analysis—The Southeast Corridor High-Performance Transit Alternatives Study looked at potential transit systems that could be built in the corridor between the cities of Nashville and Murfreesboro. The study considered several high performance transit alternatives and compared the cost and benefits of those alternatives to determine a transit solution that includes both short-term and long-term recommendations. The Locally Preferred Alternative selected was a combination of phased bus service enhancements, including development of express bus and skip stop bus services on I-24 and Murfreesboro Road (US 41/70S), and extended local bus service on Murfreesboro. In 2014, the Nashville Area MPO kicked off a more comprehensive study to look at a range of alternatives involving all transportation modes and the integration of land use decisions in Middle Tennessee in the area.

2011 Northeast Corridor Mobility Study—Initiated by the Nashville Area MPO, this study develops a regional transportation investment strategy for the 30-mile corridor between downtown Nashville and Gallatin.

Music Row—17th Avenue South is part of a one-way pair that serves a District Office Concentration with Context Sensitive features that include bike lanes and on-street parking.

2015 Update and 2009 Regional Bicycle & Pedestrian Study—The Nashville Area MPO updated the findings of the 2009 study in 2015 to establish a strategic vision for improving walking and bicycling opportunities in the greater Nashville region.

Regional Freight and Goods Movement Study, Phases I, II, and III—The Nashville Area MPO completed the third phase of the study in 2015 to align economic development, land use decisions, and urban design considerations with freight and local delivery needs while minimizing conflicts with quality of life principles.

The Code of the Metropolitan Government of Nashville and Davidson County, Tennessee—Including Title 12, Vehicles and Traffic; Title 13, Streets, Sidewalks, and Public Places; and Title 17, Zoning.

The Subdivision Regulations of the Metropolitan Government of Nashville and Davidson County, Tennessee—Adopted by the Metropolitan Planning Commission on March 9, 2006 and as amended through January 9, 2014.

The Accessibility Principles of Access Nashville 2040—Also adopted by the Metro Planning Commission on June 22, 2015, Access Nashville 2040(Volume V of NashvilleNext) sets Accessibility Principles for future transportation decisions, which are to be implemented through the MCSP.

FY 2013-2014 Capital Improvements Budget—The fiscal year 2013 through 2014 CIB is the latest plan of proposed expenditures for Metro capital projects and the means of financing them over a five-year horizon.

2015 Update to TDOT's 25-Year Long Range Transportation Plan—TDOT is currently finalizing its update to the state's long range transportation plan. This plan creates a new long-term vision for transportation and provides guidance for priortizing transportation investments across the state.

Magnolia Boulevard is a classic urban boulevard with a vegetated median, bike lanes, and areas of on-street parking that serves a variety of urban areas ranging from Major Institutional District to Urban Neighborhoods, Corridors, and Centers.

USERS OF THE MAJOR AND COLLECTOR STREET PLAN

In addition to this document, the MCSP also includes a map and electronic database of every Major and Collector street in Nashville. The designation of the street is labeled in the map and defined in this document through a series of tables and diagrams that explain how each street should be designed (See Chapters 2 and 3). The plan is intended to be used by the public and private sectors in planning, designing, budgeting, and constructing new streets and making improvements to existing streets.

Public Investment and Development

Metro Government, including Planning, Public Works, Finace, Metro Transit Authority (MTA), Metro Parks, and Nashville Electric Service (NES) must consult the MCSP:

1. To assess proposed street improvements and new streets to be built through private sector development (through rezoning or subdivision) as well as with private sector redevelopment where additional right of way or reallocation of existing right of way may be required;

2. For proposing street improvements and new streets as part of the land development process when Metro government is acting as a public sector developer through the Capital Improvements Budget; and,

3. For proposing street improvements and new streets as part of the local and regional transportation planning and budgeting processes, as part of Metro's Capital Improvement Budget and the Nashville Area MPO's Transportation Improvement Program.

In making these decisions, Metro staff will make a determination of whether a Major or Collector street is a constrained or unconstrained facility in terms of having substantial right-of-way limitations (a "constrained" facility) and will take that status into account when assessing proposed street improvements. Constrained facilities will be less likely to gain the standard amount of right-of-way, thus requiring thoughtful consideration of how to use the constrained right-of-way to provide for all modes of transportation.

Metro Planning Commission members will use the MCSP to assess the streets proposed in zoning and subdivision cases and to develop a recommended annual Capital Improvements Budget and Program that includes proposed new streets and street improvements that carry forward the priorities identified in NashvilleNext.

Citizens will use the MCSP to gain a better understanding of each street's role in Metro Nashville's transportation network.

Private Investment and Development

The private sector will use the MCSP when proposing new development to determine if any major or collector streets are to be provided or upgraded in the proposed development area and what the street cross section should look like. The private sector will then design the new street or improve the existing street accordingly.

The private sector will also use the MCSP when proposing redevelopment to determine if any additional right-of-way and/or facilities need to be provided to meet the future vision for the street.

In both cases, Metro government will review proposed new streets and improvements to existing streets against the guidelines in the MCSP.

Murphy Road is an Arterial-Boulevard with a buffered bike lane.

Chapter 2
Using the Major and Collector Street Plan

CONTEXT SENSITIVE SOLUTIONS AND COMPLETE STREETS FOR NASHVILLE

Past iterations of the Major and Collector Street Plan (MCSP) have addressed Nashville's planning for major streets in terms of functional classification, which is a process where streets are grouped into classes according to the type of vehicular service they are intended to provide, channeling traffic through a network of smaller and larger streets in a logical and efficient manner. Consideration of the overall network and its efficiency is important, but a model based solely on functional classification tends to lack guidance on developing the character of streets and on creating streets that serve all modes of transportation.

This earlier approach to street design overlooks the fact that streets are the most prevalent public spaces in the community and, as such, merit attention to their character as well as their vehicular function. Across the country, cities and states now utilize models for considering the character of prominent streets in light of the street's context as well as models for providing real transportation choice. Two planning philosophies, called "Context Sensitive Solutions" (CSS) and "Complete Streets," are reaffirmed in this update of the MCSP.

Nashville's Street Network is Mostly Built

The conventional development of a street system has two basic levels of planning and design. The first is network design, which addresses the layout, spacing and general size of major streets. The second is street design, which covers the geometric design of streets. Although most of Nashville's major and collector streets are built, many are not complete because they do not comfortably serve all people. The MCSP guides how these streets can be redesigned as complete streets. This chapter addresses two of the key aspects of street design— integrating the street with the character of development that surrounds it while meeting the needs of all likely users.

Deaderick Street and Church Street complement and support the urban form of the downtown environment with appropriate scale and pedestrian sensitive design.

The Context Sensitive Solutions Approach

A street's "character" refers to the different elements included in a street (sidewalks versus multi-use paths, bike lanes versus protected bikeways, curb and gutter versus swale, etc.) and how they are designed to complement the existing or proposed context of the area through which they are passing. The determination of street character must take into account the adjacent land use and context. 20th century street planning typically only allowed two levels of sensitivity to the surrounding land use and context—streets were either rural or urban—resulting in street designs with limited relation to their surroundings.

T2 Rural streets in Whites Creek accommodate high levels of automobile and pedestrian traffic while retaining a rural character through the incorporation of elements such as a soft shoulder and an appropriately narrow width.

Context Sensitive Solutions (CSS) is a practical approach to transportation decision-making and design that takes into consideration the communities and lands through which streets, roads, and highways pass – the context. The CSS approach can be thought of as evolving from the National Environmental Policy Act (NEPA) of 1969, which established the Environmental Impact Statement (EIS) process for judging large-scale infrastructure projects. The EIS process was among the first to consider the impact of infrastructure projects—including road construction—on the surrounding community.

Most recently, two prominent and influential professional organizations representing urban planning professionals and transportation engineers have issued the 2010 document Designing Walkable Urban Thoroughfares: A Context Sensitive Approach. The document was issued by the Institute of Transportation Engineers (ITE) and the Congress for the New Urbanism (CNU). Designing Walkable Urban Thoroughfares applies the CSS approach and principles to urban street design. It has been designated an ITE Recommended Practice, formally adopted by the ITE after a thorough development and review process.

CSS has the following attributes:

- CSS addresses transportation needs in a financially feasible manner by matching the street to the setting that ensures safety for all users of an end-product;
- CSS involves stakeholders in the design process, balancing various stakeholders' needs to produce a solution that is an asset of lasting value to a community. In the case of CSS in the MCSP, most of the community's involvement took place during the community plan update. These ideas were then incorporated into the MCSP;
- CSS allows flexibility in design guidelines, particularly in constrained conditions;
- CSS designs a transportation system and individual roads that serve multiple users regardless of travel mode; and
- CSS incorporates aesthetics as an integral part of good design.

Additionally, the National Association of City Transportation Officials (NATCO) has developed two guides that provide cities with state of the art solutions for 21st century transportation infrastructure. The Urban Street Design Guide and Urban Bikeway Design Guide provide a

21st Avenue in Hillsboro Village also has high levels of automobile and pedestrian traffic. It has curb, gutter, wide sidewalks, and formal on-street parking. It provides mobility while being kept at a narrow scale to support the T4 Urban mixed use environment.

blueprint for complete streets that are safe and enjoyable for everyone. With this update to the MCSP, Nashville joins local, state, and federal governments across the country in endorsing the NACTO guidelines as a recommended best practice.

Relationship between Conventional Street Planning and CSS

The main difference between conventional street planning and CSS street planning is in the flexibility provided by CSS to create a new street (or redesign an existing street) that meets the needs of its context – whether it is a rural, suburban, urban or downtown setting.

The MCSP incorporates CSS thinking by following the *Community Transect*, which is a system for categorizing, understanding, and designing the various levels of development within a region, from the most rural to the most urban. The Community Transect is the basis for Metro's land use planning system. The Transect recognizes the full spectrum of development in a region while CSS provides variation in street character to complement changes in the context.

As an example, Table 1 shows the limited context designations in 21st century street planning model (which only recognized rural or urban settings) as compared to the additional, tailored street designations available under a CSS approach. Table 1 also shows what criteria are used to design streets utilizing the conventional model versus through a CSS approach. The CSS approach weighs more criteria as it links community context and street design to produce streets that serve a broader array of community needs.

Conventional Street Design	**CSS Street Design**
Possible Context Designations:	**Possible Context Designations:**
Rural **Urban**	**Rural** Residential (i.e. Whites Creek Pk., Joelton) Mixed-Use (ex. Ashland City Hwy. & Old Hickory Blvd.)
	Suburban Mixed-Use (ex. Old Hickory Blvd. & Edmondson Pk.) Residential (ex. Harding Pl. between I-65 and Nolensville Pk.)
	Urban Mixed-Use (ex. Woodland St. between 5th and 11th St.) Residential (ex. West End Ave. between I-440 and St. Thomas Hospital)
	Center (ex. Rivergate area streets)
	Downtown (ex. James Robertson Pkwy.)
Street design criteria primarily based on:	**Street design criteria primarily based on:**
Vehicle Level of Service Vehicle Design Speed Vehicle Travel Demand Functional Class	Context/Adjacent Land Use Adopted Community Objectives Multiple Travel Modes and Users Demand Functional Class

Table 1: 20th century street design factors compared with CSS street design factors.

The Complete Streets Approach

The Context Sensitive Solutions (CSS) approach and the Complete Streets approach work hand-in-glove in the MCSP. The Complete Streets approach requires that the needs of all users be considered on each street. While it may not be necessary or viable to provide facilities for all users on every street based on context, the Complete Streets approach guides the conversation about multimodal transportation. The combined approach asks designers to think about each segment of a street, what its context is, and what its resulting needs are for multimodal options. For example, consider an Arterial-Boulevard in a *rural* setting. Are sidewalks with curb and gutter appropriate in a rural setting? Likely they are not, but there may still be community members and visitors that want to travel by bike or on foot. Therefore, a multi-use path on one side of the street may be the best solution to provide a meaningful transportation option in a rural setting.

THE ELEMENTS OF EACH STREET SEGMENT

The MCSP places emphasis on designing streets that serve all people and reflect the character of the neighborhoods and centers through users pass. Therefore, this update of the MCSP continues to categorize each street segment in a manner that provides greater guidance as to the purpose and goals of each street segment.

The defining elements of each street segment include **Environment**, **Street Context**, and **Functional Design Type.** In some cases there is a fourth element, which represents a **Multimodal and/or Scenic Overlay**.

Every Major and Collector street is identified with a specific label string comprised of the elements appropriate for that street segment. An overview of these elements is provided below, with more detailed explanations of each element in the following pages.

T2 - R - CA# - (O)

Environment

The Transect is the central organizing tool for Nashville's land use planning and policies. The Transect is a tool for categorizing a community's natural and built environment from rural to downtown. Just as Nashville has a diversity of development and preservation areas, its streets should reflect the same diversity. Transect Categories indicate an area's general character and are therefore listed first in defining a street's character. This designation influences the scale, location, and orientation of development in a given area (i.e. T2 Rural ranging to T6 Downtown). The Transect is aligned with land use policies contained in the Community Plans of NashvilleNext.

Street Context

The Street Context adds to the understanding of context by defining the predominant existing or intended development pattern flanking a given street section. This designation influences design elements like setbacks and sidewalk widths. The street context aligns with land use properties included in the Community Plans of NashvilleNext. The three Street Context designations used in this document are Residential, Mixed Use, and Industrial.

Functional Design Type

The purpose of the Functional Design Type is to classify streets according to the character of service they are intended to provide and to design those streets so that they fit their context and serve all users. Each street is labeled, in this document and in mapped form, with one of the three Street Types – Collector-Avenue, Arterial-Boulevard, and Arterial-Parkway. Guidelines are laid out in tables and diagrammed in illustrative cross-sections, both found in Chapter 3. Since most streets are built, this element informs how Metro can remedy street design that has mostly privileged people driving.

Multimodal or Scenic Overlay

Multimodal Corridors may be Immediate Needs (IM) or Long Term Needs (LM). Multimodal Corridors are anticipated to serve a greater role in providing local and regional transit and align with the High Capacity Transit Corridors identified in the NashvilleNext Growth and Preservation Concept Map. Accommodating transit and support for bike/pedestrian access is critical. Streets designated as Scenic connect areas of scenic and cultural significance and call for enhancement or preservation of existing natural areas on private property just outside the right-of-way. The Metro Zoning Code also prohibits new billboard signage on Scenic roads.

ENVIRONMENT

(**T2**-L-L#)

The first defining element for each street segment is its Environment based upon the Transect, which is a combination of a letter and a number. The Transect is a system for categorizing, understanding and guiding the various development patterns of a region, from the most rural to the most urban environments. The Transect calls for all elements of the natural and built environment to be consistent with the character of the Transect Category within which they are located.

The Transect is the central organizing tool for future growth and preservation planning in Nashville and Davidson County. The Nashville Transect consists of seven categories of natural and built environments:

- T1 Natural
- T2 Rural
- T3 Suburban
- T4 Urban
- T5 Center
- T6 Downtown
- D District

Determining the Transect Category for each area in Nashville is the first step in creating Community Plans that are part of NashvilleNext. Then Community Character Policies—Nashville's land use policies—are applied to an area based on its Transect Category. Community Character Policies are used in all Community Plans to guide future growth, development, and preservation. In working with the community, Planning staff determines which areas of a community are considered to be T1 Natural, T2 Rural, T3 Suburban, T4 Urban, T5 Centers, T6 Downtown, and D Districts. The Context Sensitive Solutions approach calls for stakeholder involvement and the Community Plan Update Process is one way that involvement is achieved. The results of the Community Plan Updates are folded into this document. Likewise, when Community Plans are updated in the future, those updates may reveal recommendations and amendments that need to be made to the street classifications in the MCSP.

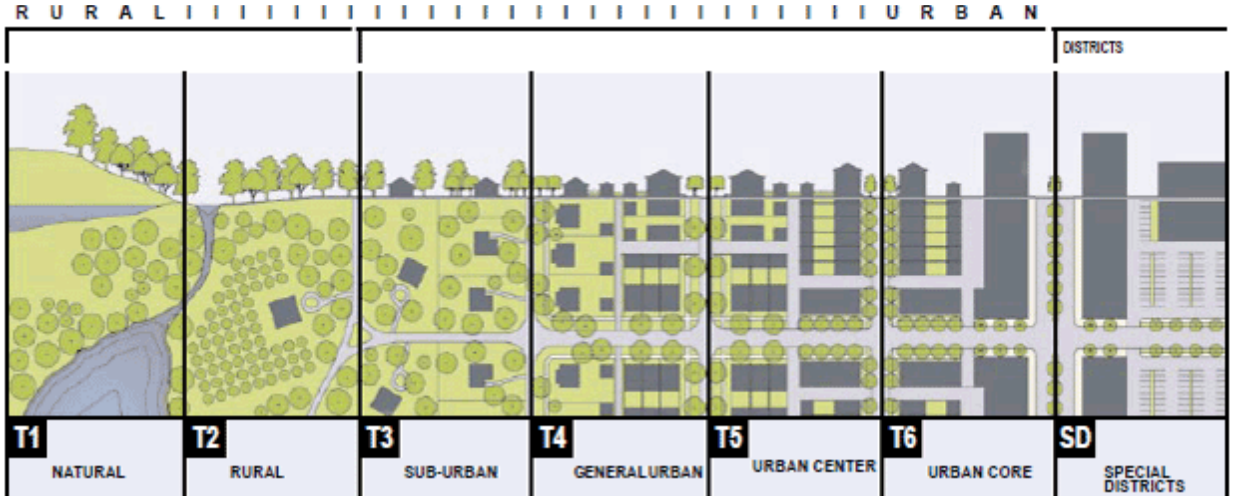


Figure 1: Transect Category Diagram: Courtesy of DPZ.

The MCSP includes six Transect categories; it does not include T1 Natural areas. T1 Natural areas have roads, but they are typically local roads which are not addressed by the MCSP.

While different Transect categories can sit side-by-side, it is crucial that within each Transect category, each element of development should be harmonious within that category. Just as a curb, gutter and sidewalk would look out of place in a rural setting, similarly, having rural spacing and setbacks for housing in urban neighborhoods would be inappropriate.

Transect Category Descriptions

T2 Rural Transect areas have very low density residential and agricultural development. T2 Rural Transect areas are characterized by a sparse street network of narrow, rural roads with shoulder and ditch. Buildings in the T2 Rural Transect area are often located and oriented on the land to reflect the natural features of the land, and not a standardized streetscape. Buildings may have very deep setbacks and wide side yards.

T3 Suburban Transect areas have a variety of uses, including residential, civic and public benefit, and mixed uses, that are generally separated from one another, with residential as the predominant use. Building patterns vary, but T3 Suburban Transect residential areas are generally characterized by moderate to deep setbacks and side yards, curvilinear streets, and informal landscaping. Residential building types include single- and two-family structures as well as multifamily structures.

T4 Urban Transect areas also have a mixture of uses—residential, civic and public benefit, and mixed use—but these are more likely to be found in closer proximity. Mixed use and commercial buildings are characterized by shallow setbacks where buildings may be built to the back edge of sidewalks. Residential buildings generally have shallow setbacks and spacing. Streets are linear with a higher level of connectivity, and landscaping is more formal with street trees and other formal plantings. T4 Urban Transect areas generally contain a greater mixture of housing as well. Single- and two-family homes may be located in close proximity to multi-family, and ideally building types are mixed creating a cohesive development pattern.

T5 Center Transect areas include large concentrated areas of mixed use development. T5 Centers are unique in that they serve either the entire county or multiple neighborhoods and communities. T5 Centers are areas where residents and visitors may live, work, and recreate and thus are intended to be high density and intensity mixed use, commercial, and residential areas.

The **T6 Downtown Transect** area covers the east and west bank of the Cumberland River bound by the Inner Loop of interstates and Jefferson Street. Downtown neighborhoods vary in scale and mass of development ranging from neighborhoods featuring single-family homes, low-rise townhomes to neighborhoods with skyscrapers. Buildings are placed close to the street with shallow setbacks or built to the edge of sidewalk. Downtown is inherently a mixed use setting, with commercial, office and residential uses often located within the same block or building.

D District Transect areas are generally large geographic areas within Nashville that accommodate a single land use. Within the Nashville Transect there are six types of Districts: Destination Retail, Employment Center, Impact, Industrial, Major Institutional (ex. universities or medical complexes), and

T-3 Suburban

T-6, Downtown

Figure ground diagrams showing building footprints and streets illustrates how the street network differs between Transect categories.

Office Concentration. Each District has its own built character as well as its own operational and land use needs. Each interacts differently with the surrounding neighborhoods, centers, corridors and open space.

For the MCSP, in the cases of the Major Institutional and Office Concentration Districts, major streets within them are assigned to the most logical adjacent Transect category. The roads in a suburban office park will be labeled T3 Suburban, for example, while the roads adjacent to Vanderbilt University would be labeled T5 Center.

To plan for streets in Industrial and Impact District areas, these areas were researched to identify the specific characteristics for areas that were anticipated to be the most viable over the long term and to generate the greatest amount of large truck traffic. The major streets in these areas need specific treatments such as large turning radii and wide lanes and are also areas where such infrastructure investment is warranted over the long term. The major street segments that were so identified were assigned the “D” Transect designation.

In T6 Downtown, Korean Veterans Boulevard incorporates Complete Streets elements in its design by including a vegetated median that serves as a pedestrian refuge and as access management along with parking bays, bike racks, benches, and pedestrian bulb-outs.

(L#-**R**-L#)

Another defining element for each street segment is the Street Context, depicted as a letter. As noted above, one street can run through several Transect Categories, and even within one Transect Category, a street may pass through both residential and mixed use areas. Therefore, after finding a given street segment's Transect Category, its intended Street Context is labeled as one of three types in this document and in mapped form. Street Context refers to the predominant development pattern or intended development pattern flanking the street whether residential, mixed use (commercial) or industrial, that influences design elements like building setbacks, sidewalk widths, landscaping and on-street parking. These are closely aligned with the land use policies in the Community Plans of NashvilleNext.

The following are the principal features that create street context:

- Land use or proposed land use
- Site design and urban form
- Building orientation and setback
- Parking type and orientation
- Block length
- Building design
- Building height and thoroughfare enclosure
- Building width
- Building scale and variety
- Building entries

The Street Context types are listed below:

R = Residential

Street segments with this Street Context are flanked primarily with residential development and have a character to fit that development type. Housing types can vary along these streets, ranging from mostly single family-homes to mixed housing with flats and townhouses.

M = Mixed Use

Street segments with this Street Context are designed to complement the mixture of uses along them. Development type can vary along these streets from vertical mixed use to commercial, office, or even small areas of light industrial development.

In cases where one side of a street is mostly residential and the other side has mixed uses, the street segment's Street Context type defaults to Mixed Use. By using a default Mixed Use Street Context designation, public and private entities are required to design streets to accommodate more users as is likely in a mixed use setting.

I = Industrial

Street segments with this Street Context are designed to facilitate industrial freight and goods movement in large trucks. Unlike small light industrial areas that might be found within larger areas where a more mixed use pattern predominates, these are larger more intense industrial areas. Development types along these streets include manufacturing, warehousing, distribution, major transportation and utilities, and especially impactful uses such as quarries. The primary concerns in this street context are to accommodate the turning movements, length, width, and weights of large trucks. In most other regards these streets will share the characteristics of Mixed Use street segments.

T3 Suburban streets have not kept pace with development and need additional investment such as sidewalks to handle today's mobility needs.

FUNCTIONAL DESIGN TYPE

(L#-L-**AB**#)

The third defining element for each street segment is the Functional Design Type. This element combines the functional classification, traditionally focused solely on vehicle level of service, with a new street classification that informs the design and function of the street for multiple users.

The purpose of the Functional Design Type is to classify streets according to the character of service they are intended to provide and to design those streets so that they fit their context and serve all users. Each street is labeled, in this document and in mapped form, with one of the three Street Types: Collector -Avenue, Arterial-Boulevard, and Arterial-Parkway; and some streets have an additional piece of information which is the Multimodal or Scenic Overlay.

The MCSP provides guidelines for the design of the street and its features per its Functional Design Type. These guidelines are laid out in tables and diagrammed in illustrative cross-sections found in Chapter 3. Representative cross-sections are shown in the examples. Standard cross-sections are most appropriate for new construction and undeveloped areas while other cross-sections may be more appropriate for existing/constrained right-of-way in developed areas. Proposed cross sections will be judged on their abilities to meet CSS and Complete Streets goals. Included with the Functional Design Type category label is the planned number of lanes (#) that a street segment is intended to have including continuous, but not intermittent, turn lanes.

Major streets in the Gulch in downtown Nashville are designed to function in this highly urban mixed use community by accommodating all modes of travel and providing design elements that support the surrounding urban form.

CA = Collector-Avenue

Collector-Avenues (CA) are relatively low-speed, low- to medium-volume streets that provide circulation within and between neighborhoods. Collector-Avenues usually serve short trips and are intended for collecting trips from local streets and distributing them to the Arterial-Boulevard network. Collector -Avenues privilege access (the ability to get vehicles in and out of surrounding properties) over mobility (the ability to move cyclists, pedestrians and vehicles through the area). They are present in both residential and mixed-use areas.

AB = Arterial-Boulevard

Arterial-Boulevards are medium- to high-speed, high-volume streets that serve longer trips within and between different communities within the city, with access provided by driveways, alleys or frontage roads.

While the public may generally think of a boulevard as having a median, in Nashville, Arterial-Boulevards range from three-lane, one-way streets downtown to five-lane suburban streets. They are designated Arterial-Boulevards because of the function they serve—to balance access and mobility equally. The balance of moving people through the area while providing access to property results in a different design for the Arterial-Boulevard than that of the Collector-Avenue.

AP= Arterial-Parkway

Arterial-Parkways are typically at-grade, limited-access roadways which provide mobility for cross-town trips while also acting as linear green spaces with landscaping along them. They serve both residential and mixed use areas. In prioritizing mobility over access, Arterial-Parkways have a different design that accommodates higher traffic speeds and keeps pedestrians and cyclists further away from vehicles to increase safety.

Other functional classifications that are not addressed by the MCSP are listed below.

E = Expressway

Expressways are high-speed, high-volume roadways, that may include state highways, which interconnect freeway and arterial streets, with access only at interchanges or signalized intersections.

F = Freeway

Freeways are grade-separated, high-speed, high-volume roadways, including Interstate highways that provide a high degree of mobility, with access only at spaced interchanges.

R = Ramp

Ramps are one-way road sections which provide entering and exiting access onto freeways and expressways.

OVERLAYS

IM and LM = Multimodal Corridors

Multimodal Corridors are roadways that provide the highest level of multimodal mobility - with an emphasis on transit service and linking to walking and biking infrastructure.They serve both residential and mixed-use areas.

Within the MCSP some routes are designated with a Multimodal Overlay to align with the High Capacity Transit Corridors identified on the NashvilleNext Growth and Preservation Concept Map. These corridors are anticipated to have more frequent transit service in the future, which will be prioritized by the Metropolitan Transit Authority Strategic Transit Master Plan or in the MPO's Regional Transportation Plan. While transit may be provided on other streets, these corridors are anticipated to serve a greater role in providing higher capacity, more frequent transit service in the future. Because these streets are envisioned to play a prominent role in transit, the study of each street, and their design to accommodate transit and support people walking and biking to transit, is critical.

There are two sub-types of Multimodal Corridors: Immediate Need Multimodal Corridors (IM) and Long Term Need Multimodal Corridors (LM). Immediate Needs tend to coincide with the arterial pikes that connect people into and out of downtown. They mostly have regular local bus service, and MTA has plans to upgrade service to BRT Lite. Long Term Needs may or may not have existing bus service, but there is a desire to establish service and/or upgrade to higher capacity service over time. In both instances, these corridors are anticipated to experience more housing and employment intensity in the future.

S = Scenic

Scenic roads, typically Arterial-Boulevards or Arterial-Parkways, are streets and highways which pass through or connect areas of particular scenic significance or provide linkages between areas of historic, natural, cultural or recreational importance. Scenic roads call for preservation or enhancement of existing natural areas within easements on private property adjacent to the edge of the right-of-way, beyond the minimum functional right-of-way, and planting of new landscaped areas. The Metro Zoning Code prohibits new billboard signage on Scenic roads.

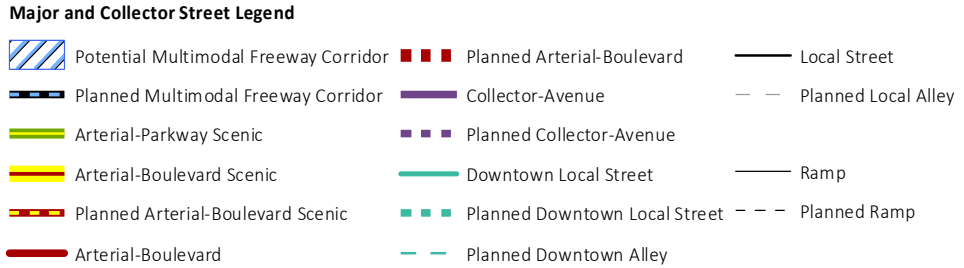
MCSP MAPPING

The MCSP map (found online at www.nashville.gov/mpc) indicates each street segment's designation through the three primary elements – Environment, Street Context, and Functional Design Type. Each street has a unique symbol that is a combination of a color, pattern, and label. The color indicates the Functional Design Type and the pattern indicates whether the street exists or is planned.

The dashed lines on the MCSP map represent the general alignments of *proposed* streets. The exact alignments of these streets will be determined during the design and engineering phases of their construction in accordance with the MCSP. The solid lines on the MCSP map represent the centerlines of existing major streets. The exact extent of any future changes made to the rights-of-way of these streets will also be determined during the design and engineering phases of their construction in accordance with the MCSP.

The MCSP map is a dynamic GIS (geographic information systems) database containing information about each of the thousands of major street segments in Nashville.

The color and pattern scheme for the MCSP map is as follows:



A mid-block crossing along Belmont Boulevard encourages people to cross at safe locations. A bike lane and bike parking are elements that support bicycling within the neighborhood.

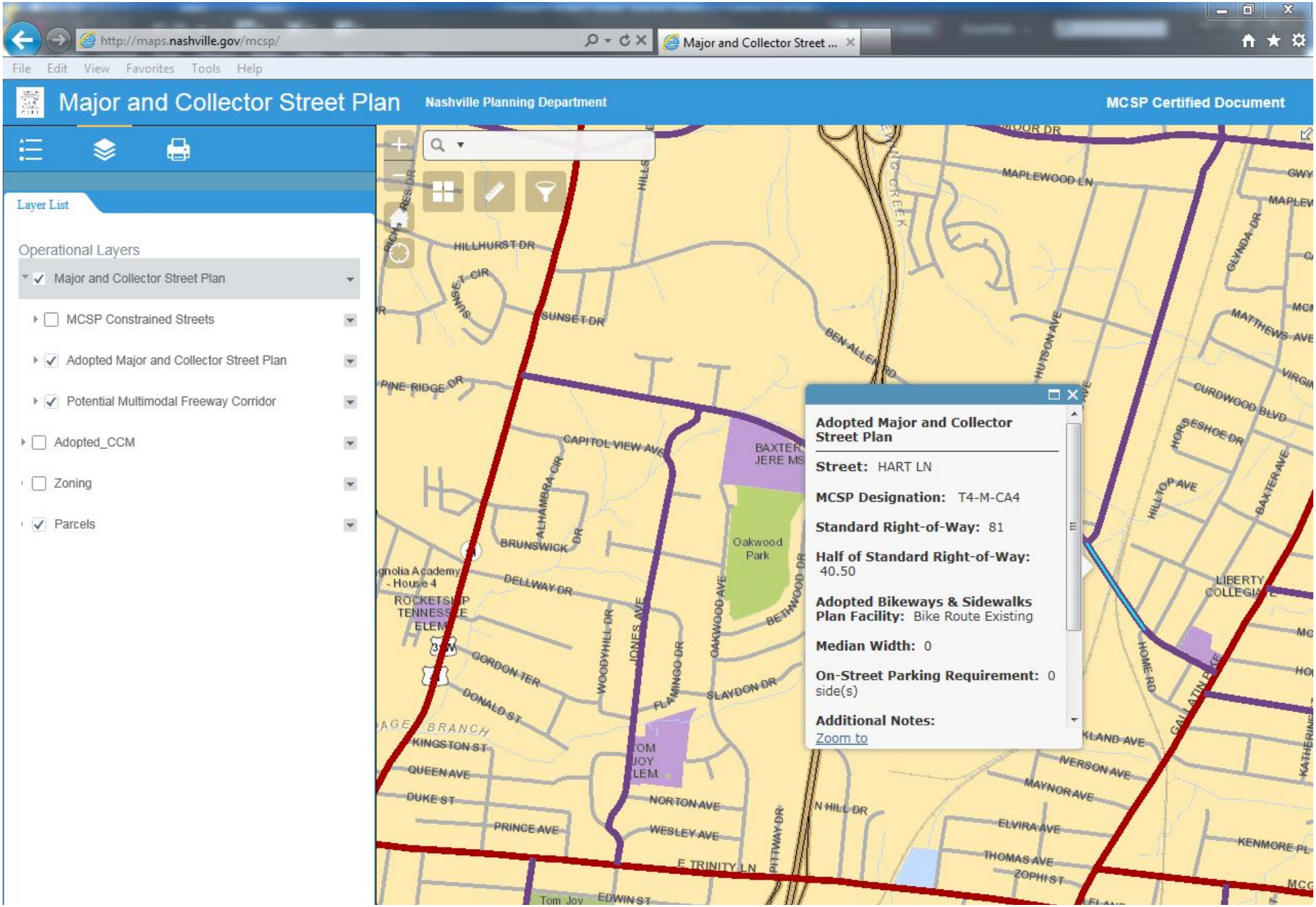


Figure 2: Example of Major and Collector Street Plan Map, found online at www.nashville.gov/mpc

Greenways and multi-use paths provide opportunities for recreation and transportation. The trailhead for the Mill Creek Greenway along Old Glenrose Road near East Thompson Lane has a mid-block crossing and flashing pedestrian sign.

Chapter 3
Context Sensitive Solutions
Design Guidelines

FUNCTIONAL DESIGN TYPE GUIDELINES

How to Use the Guidelines

Chapter three explores more fully the third element of the street's text string, the Functional Design Type: Collector-Avenue (CA), Arterial-Boulevard (AB), and Arterial-Parkway (AP) in order to provide specific design criteria for each.

The MCSP analyzes the function of the street and then provides detailed design guidelines based on the Environment (transect category) and Street Context (mixed use, residential or industrial) in order to achieve the functional and design goals of the street.

The guidelines consist of design recommendations for both the Travelway and Streetside elements of the right-of-way. This chapter details how the right-of-way for each Functional Design Type should be developed.

(Please note that the District Street Context is not denoted separately in the tables, rather it follows the design guidelines for the T3-Suburban Environment and the Mixed Use Street Context with variations for wider turning radii and travel lanes to accommodate large trucks.)

The Standard right-of-way widths, delineating the ultimate right-of-way for each street designation, can be found in Appendix A.

A Standard right-of-way for local streets shall be set at fifty feet for all existing streets. The fifty foot right-of-way shall be used to determine the appropriate building placement in conjunction with the Metro Zoning Code. Construction of new local streets and the acquisition of right-of-way on existing local streets shall be considered on a case by case basis with regard to environment and context.

Multimodal Overlay

In addition to the Functional Design Types—that specifically outline the multiple functions of a street and the design needed to implement the objectives, this chapter addresses the need for more in-depth study of corridors with high mass transit potential.

The Multimodal Overlay is a designation that is applied to specific routes that align with the NashvilleNext Growth and Preservation Concept Map. See page 64 for more specific information on Multimodal corridors.

Scenic Overlay

The Scenic Overlay designation is applied to streets that pass through or connect areas of particular scenic significance or provide linkages between areas of historic, natural, cultural or recreational importance. Scenic Arterial-Boulevards and Scenic Arterial-Parkways call for preservation or enhancement of existing natural areas within a dedicated landscaped easement outside of the public right-of-way. See the Metro Zoning Code 17.24.070 for specific regulations.

Lane Designations

The MCSP street designations and subsequent right-of-way widths provide the intended maximum number of travel lanes within each roadway in the city. There can be two or more travel lanes designated per roadway section depending on the context of the roadway. If the designation number is an odd number, then the roadway is typically planned for a continuous left turn lane to allow access to adjacent properties, although access management should still be utilized for efficient and safe vehicular, transit, pedestrian, and bicycle travel. Even number lane designations do not include a continuous turn lane within the roadway section. ***At roadway intersections, additional left and right turn lanes may be required when warranted, exceeding the lane number designation and overall right-of-way width identified for the Standard segment of the roadway.***

Nashville B-cycle was launched in 2011 and provides short-term bicycle rentals in the more urbanized areas of the city.

Constrained Roadways

In most cases the ultimate right-of-way that most fully implements the MCSP will be established as the "Standard" right-of-way for a given facility. In some instances a particular street or street segment may be deemed "Constrained" by the Planning Department and Public Works Department Directors following a study by Planning and Public Works staff. The rights-of-way along Constrained Facilities are established as the particular street segment is studied. Such studies may be initiated by either the Directors of the Metro Departments of Planning and Public Works or at the request of a property owner or developer. If a right-of-way is unable to be successfully established through this departmental review process, or the applicant wishes to appeal the decision of the department Directors, an appeal may be made to the Metropolitan Planning Commission.

Constrained Facilities are defined as:

- Those Collector-Avenues and Arterial -Boulevards in T4 Urban, T5 Center, and T6 Downtown environments where the building placement restricts full implementation of the Standard Right-of-Way and redevelopment with deeper setbacks is not expected or desired as determined by the area's community plan; or
- Those Collector-Avenues and Arterial-Boulevards in T5 Center and T6 Downtown environments where, even when redevelopment is expected or desired, all possible building mass and setback opportunities are needed due to typical lot sizes and block patterns and therefore additional right-of-way is unlikely to be gained. This specifically includes all streets in the Downtown Community Plan; or,
- Those Collector-Avenues and Arterial -Boulevards in any transect environment where roadways pass through historically significant areas that would be impacted by widening the corridor; or,
- Those portions of any Collector-Avenue or Arterial-Boulevard on any bridge or bridge approach not planned for dimensional increase in vehicular transportation capacity; or,
- Those Collector-Avenues and Arterial -Boulevards in any transect environment except for T5 Center and T6 Downtown where roadways pass through environmentally sensitive areas that have been identified for preservation, which is the default condition for such areas. Exceptions could be found in situations where a community plan or its component has identified such an environmentally sensitive area as subject to alteration due to a trade-off being made for an important community benefit; or,
- Those Collector-Avenues and Arterial-Boulevards where a determination is made and documented by the Metro Departments of Planning and Public Works that development conditions along the facility in question warrant its classification as a Constrained Facility; or,
- Those Collector-Avenues and Arterial-Boulevards where a determination has been made and documented by the Planning Department that they are Constrained Facilities through an appeal process to their classification in the MCSP.

All streets in downtown are considered constrained roadways because of the existing built environment and need to secure wider sidewalks as new buildings are constructed.

Eastland Avenue, an Arterial-Boulevard, travels through a T4 Urban Neighborhood Center where new buildings should contribute to a more walkable environment.

HOW TO READ THE TABLES

The guideline tables are organized according to the three elements discussed in Chapter 2: Environment, Street Context, and the Functional Design Type.

Look for the organizing label string to identify the major or collector street. For example, the street segment is designated: T3 Suburban– Residential – Collector-Avenue 2 lanes (T3-R-CA2)

Look for the corresponding table first by going to "Section I: Collector-Avenue" and then looking for the rest of the text string as shown in Figure 3:

Environment:

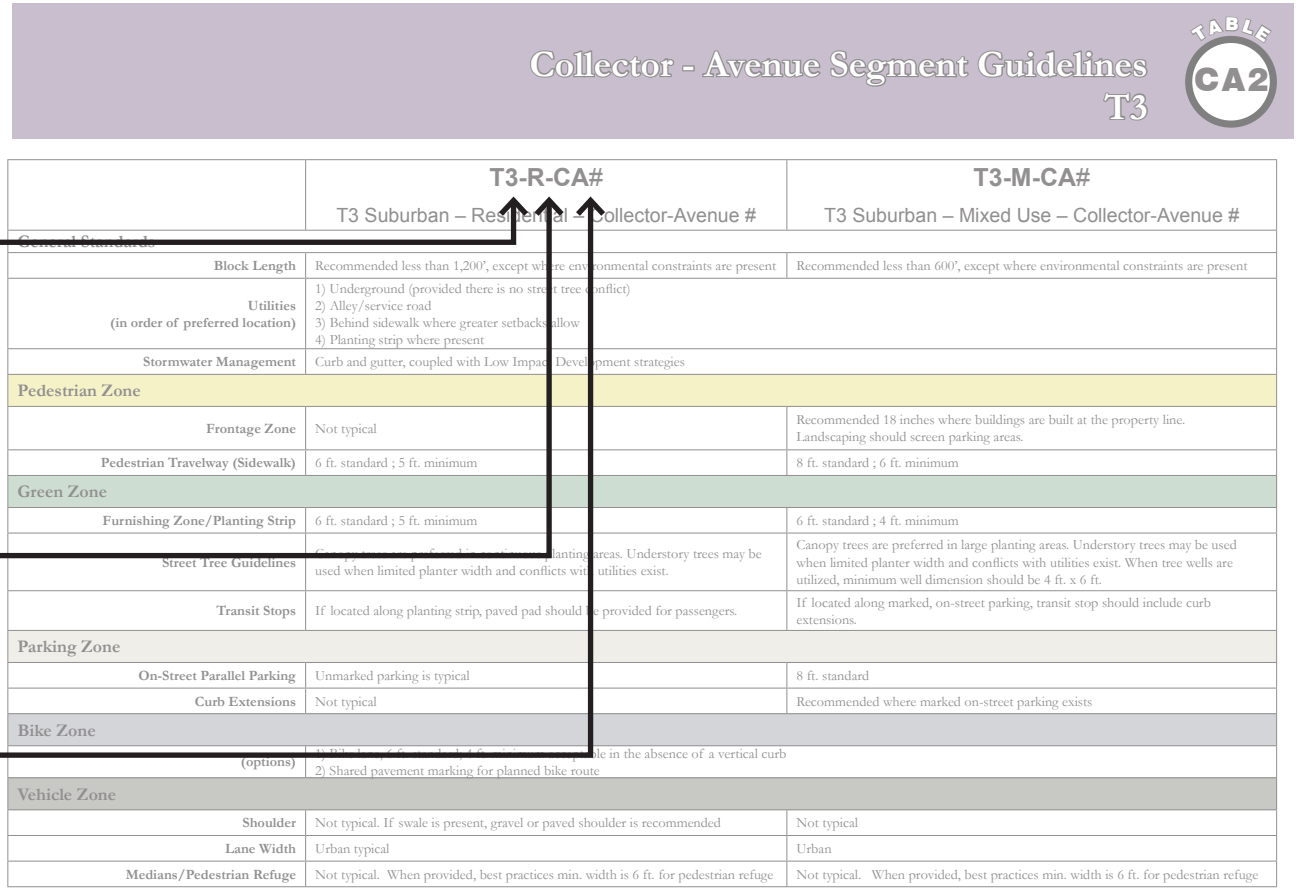
The Transect designation explains whether the street segment is part of a Rural, Suburban, Urban, Center, Downtown, or District area.

Street Context:

Denotes whether the street segment is part of a Residential or Mixed Use area. Industrial Street Context areas follow standards for Mixed Use.

Functional Design Type:

Explains the street's role in the larger network of streets and assigns design criteria to accomplish functional and design goals. The # represents the planned number of lanes.



Collector - Avenue Segment Guidelines
T3

TABLE CA2

	T3-R-CA# T3 Suburban – Residential – Collector-Avenue #	T3-M-CA# T3 Suburban – Mixed Use – Collector-Avenue #
General Standards		
Block Length	Recommended less than 1,200', except where environmental constraints are present	Recommended less than 600', except where environmental constraints are present
Utilities (in order of preferred location)	1) Underground (provided there is no street tree conflict) 2) Alley/service road 3) Behind sidewalk where greater setbacks allow 4) Planting strip where present	
Stormwater Management	Curb and gutter, coupled with Low Impact Development strategies	
Pedestrian Zone		
Frontage Zone	Not typical	Recommended 18 inches where buildings are built at the property line. Landscaping should screen parking areas.
Pedestrian Travelway (Sidewalk)	6 ft. standard ; 5 ft. minimum	8 ft. standard ; 6 ft. minimum
Green Zone		
Furnishing Zone/Planting Strip	6 ft. standard ; 5 ft. minimum	6 ft. standard ; 4 ft. minimum
Street Tree Guidelines	Canopy trees are preferred in large planting areas. Understory trees may be used when limited planter width and conflicts with utilities exist.	Canopy trees are preferred in large planting areas. Understory trees may be used when limited planter width and conflicts with utilities exist. When tree wells are utilized, minimum well dimension should be 4 ft. x 6 ft.
Transit Stops	If located along planting strip, paved pad should be provided for passengers.	If located along marked, on-street parking, transit stop should include curb extensions.
Parking Zone		
On-Street Parallel Parking	Unmarked parking is typical	8 ft. standard
Curb Extensions	Not typical	Recommended where marked on-street parking exists
Bike Zone		
(options)	1) Bike lane, 6 ft. standard, 4 ft. minimum acceptable in the absence of a vertical curb 2) Shared pavement marking for planned bike route	
Vehicle Zone		
Shoulder	Not typical. If swale is present, gravel or paved shoulder is recommended	Not typical
Lane Width	Urban typical	Urban
Medians/Pedestrian Refuge	Not typical. When provided, best practices min. width is 6 ft. for pedestrian refuge	Not typical. When provided, best practices min. width is 6 ft. for pedestrian refuge

Figure 3: How to Read the Text String Key to the Guidelines Tables for Each Street Type.

STREET ELEMENT DESCRIPTIONS

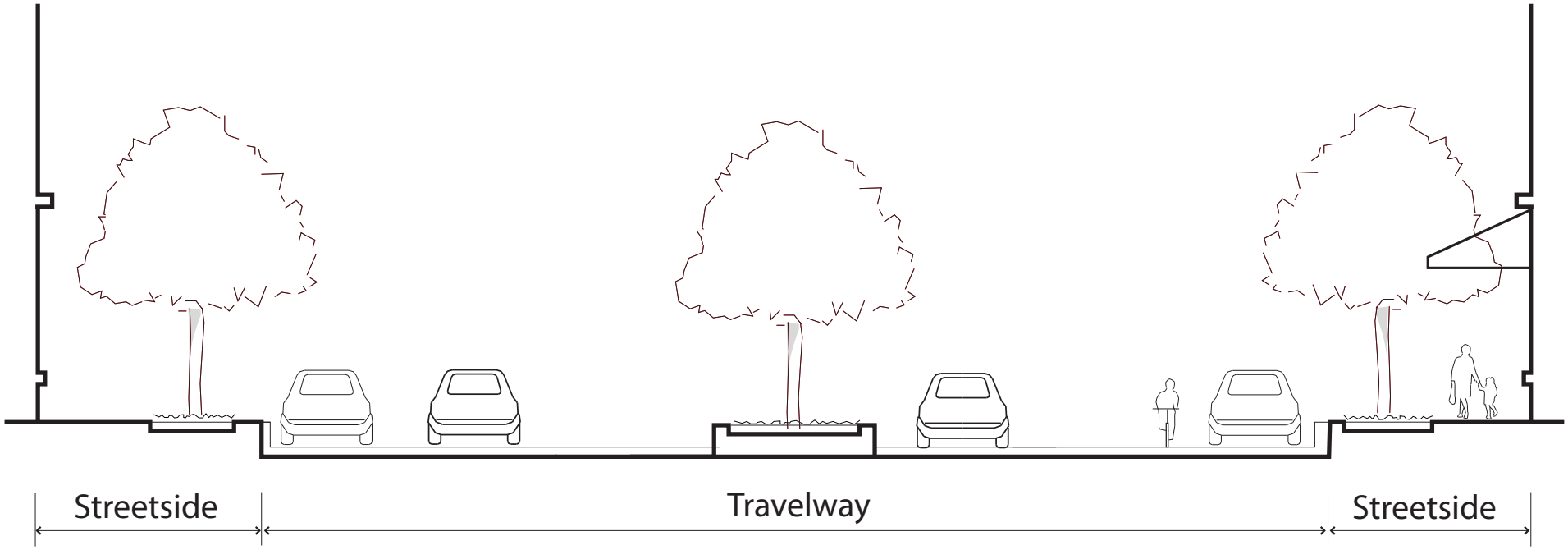
Every street segment includes many different elements that all work together to create streets that are thoughtfully designed to meet the needs of multiple users. The cross sections presented in this document show different possible arrangements for the elements that make up a street. Generally, within the public right-of-way, the elements of the street exist either within the Streetside or the Travelway. The following section offers brief summaries of the all the street elements.

STREETSIDE

The Streetside accommodates most of the non-vehicular activity of the street including pedestrian travel, business activity, and some stormwater functions. The Streetside is the public space where much of the social activity of the city takes place. Street furniture, bicycle racks, and protected bikeways may be appropriate in the streetside.

TRAVELWAY

The Travelway is the portion of the right-of-way between the curbs that accommodates the movement of vehicles including transit and bicycles, as well as on-street parking.



Street Components

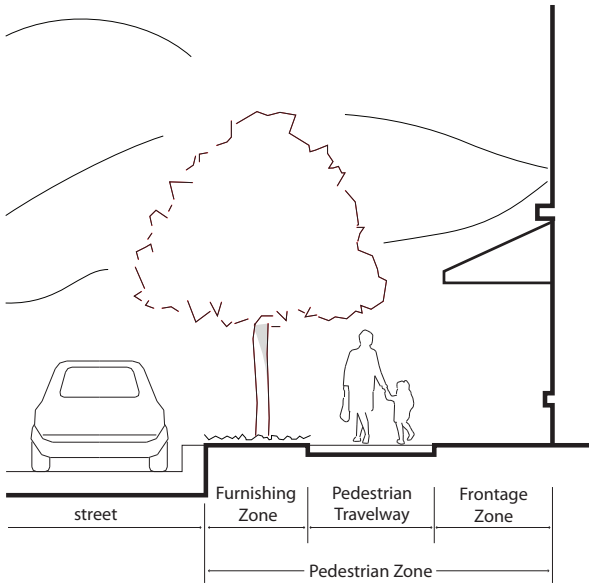
Pedestrian Zone

The pedestrian zone provides for the mobility of people walking to and from their destination, whether their entire trip was as a pedestrian or they were simply walking from their car or from the transit stop. It also serves as an important social space where people interact with one another, window shop and access businesses, have a meal at a café or wait for transit. The pedestrian zone must accommodate the unobstructed movement of people as well as the facilities and space for social functions. Accessibility and safety are primary design considerations as is the transition from the public space of the street to private property. Included within the pedestrian zone are the furnishing zone, the pedestrian travelway, the frontage zone, and transit stops.

Frontage Zone—The frontage zone is the area next to the property line. It may front a building, parking area, front yard, or undeveloped property. The frontage zone is the ideal location to accommodate dining and display areas for adjacent businesses. These types of private activities must meet the Zoning Code requirements and will require proper permitting.

Pedestrian Travelway—The pedestrian travelway is designed to facilitate the unobstructed through movement of pedestrians. Ideally, even the narrowest travelway should accommodate the width of two people walking side by side. Travelway width should vary based on context and the anticipated pedestrian activity of adjacent uses. In areas where pedestrian activity is predicted to be exceptionally high, near stadiums and arenas, convention centers, theaters or other uses that generate high volumes of foot traffic, pedestrian travelway widths should be expanded. A protected bikeway may also be appropriate to attract a range of people biking. In more rural and suburban settings, the pedestrian travelway may consist of a multi-use path (see bike zone for a full description of protected bikeway and multi-use path). The multi-use path may or may not be part of the public right-of-way. It can be maintained on private property as part of a pedestrian easement.

Furnishing Zone—The furnishing zone accommodates several different functions. Located between the curb and the pedestrian travelway, the furnishing zone provides a buffer between pedestrians and vehicles. In rural settings the furnishing zone may not be present, in suburban and residential contexts the furnishing zone may consist solely of a landscape strip with street trees, while in a more urban mixed use setting, the zone may accommodate seating, newspaper kiosks and bicycle racks in addition to trees in tree-wells. In most contexts, utility poles, fire hydrants, transit platforms and public signage are also accommodated in this zone.



Streetside Cross Section - a protected bikeway may be appropriate in the Pedestrian Zone that is additional to the Pedestrian Travelway

Street Trees and Landscaping—Landscaping provides a buffer between pedestrians and traffic and shields them from the elements, all while providing stormwater and air quality benefits. The best plants and trees for streets are well adapted to the climate, low maintenance, and sized properly for the available planting area. Typically, maintenance of landscaped areas within the right-of-way is the responsibility of the adjacent landowner.

Street trees are a great benefit to any street. Proper planning is essential when incorporating trees into the street design. By avoiding conflicts with underground utilities, "limbing" trees in their first few years to achieve proper clearance, and making sure planting strips and tree wells are properly sized and have adequate room for root growth; street trees will have a greater chance of reaching full maturity.

Transit Stops—Mass transit, including buses, provide transportation services to a large portion of the population and are essential to all Nashvillians. People who prefer not to drive, who are physically unable to drive, or who do not have access to a car benefit from transit services, and all of Nashville benefits from fewer vehicles on the road and reduced emissions. This service is typically located on major corridors, and transit stop placement along those corridors must consider many factors including: traffic operations, proximity to large trip generators, accessibility, and passenger amenities. Transit stops should be well integrated into the pedestrian realm and designed as safe and comfortable places for people who use transit, but they should also be incorporated into the context and function as an urban design amenity for the city.

Stormwater Management—Incorporating stormwater management into the design of streets is beneficial to the community on many levels. The use of green stormwater management practices such as Low Impact Development techniques, including Light Imprint strategies, provide visual stimulation, buffering of automobile traffic, and help infiltrate stormwater thus reducing runoff and flooding, especially in urban areas with high percentages of impervious surfaces. Green stormwater management facilities can be integrated with on-street parking areas as tree bulbs or pervious pavement, included with landscaping and street trees in the pedestrian zone, or designed into medians in the center of the street. Metro Stormwater's Green Infrastructure Design Manual should be consulted during the design phase of any new street or street retrofit.

Swales are typically used to mitigate stormwarter in more rural and suburban environments. Swales may be part of the public right-of-way or dedicated via an easement.

Streetside with curb inlet that directs water to stormwater infrastructure within the Furnishing Zone.

Streetside with curb, swale and multi-use path.

Parking Zone

On-street parking not only helps to meet the parking needs of the adjacent uses, but it also offers comfort for pedestrians by providing a buffer from moving traffic in the street. While in most cases, on-street parking cannot supply all of the parking needs for a commercial area, it provides convenient spaces that increase pedestrian activity and allow for easy loading and unloading when additional parking is located to the rear or side of buildings. Additionally, on-street parking helps to slow street traffic thus making pedestrian crossings safer. Parking lanes should be measured to the face of the curb.

Bike Zone

Bicycle travel is an important component in any multimodal street that can be accommodated in variety of ways. Varying street types, cyclist skill level and the availability of off-street bike routes influence the design of bike facilities. Bicycle facilities are required in accordance with recommendations of Access Nashville 2040. Bikeway design impacts the amount of right-of-way, so guidance from NACTO and FHWA has been utilized to determine appropriate widths.

Bicycle Lanes or Buffered Bike Lanes— Locating bicycle lanes along major and collector streets is an important part of a Complete Street approach, but not all major and collector streets require a bicycle lane to be a Complete Street. Several factors are taken into consideration to designate a bike lane on a street including:

- Streets with high traffic volume.
- Streets with high target speeds of 30 miles per hour or more.
- Connectivity to existing and/or planned bicycle systems and transit facilities.
- Connectivity to large employment centers and/or popular civic destinations.
- Experience or skill level of cyclist.

Striped bicycle lanes are recommended on certain streets in order to provide cyclists with a designated travelway that is visually separated from automobile traffic.

A standard striped bicycle lane should be six feet wide between face of curb and outside of painted stripe. A minimum of three feet of this width should be ridable surface located outside of the gutter pan. In the absence of a vertical curb, a four foot minimum bike lane is acceptable. Additionally, when formal parking and bike lanes coexist, the width should be six feet.

Bike Boulevards—Bike boulevards are strategically identified local street corridors that are outfitted with traffic calming measures to maintain access for all road users while prioritizing local and active transportation and accommodating recreational uses. Bike Boulevards can be implemented with curb extensions, road reconfigurations, diverters, roundabouts, and many other infrastructure components that permit access while discouraging non-local automobile traffic from using the corridor as a cut through.

Multi-Use Path, Protected Bikeway, or Cycle Track—While cycling on a sidewalk is discouraged in urban areas, along Arterial-Parkways and other streets in more rural or suburban settings, a multi-use path that is wide enough to accommodate both pedestrians and cyclists may be appropriate. Motorized traffic is excluded along multi-use paths because these facilities are designed for use by pedestrians, bicyclists, skaters, wheelchair users, runners, and other non-motorized users. Typically, a multi-use path, which is a combination of the bicycle and pedestrian zones, is separated from the vehicle zone by a landscaped area.

A protected bikeway also combines the bicycle and pedestrian zones, but the bicyclist is protected by barriers created between the zones. A two-way, raised cycle track is similar but intended for only bicyclists while walking accommodations are handled on a sidewalk.

The location of multi-use paths and protected bikeways within street rights-of-way, especially near road intersections, can challenge motorist expectations of bicyclists, so their design and interface with other travel modes should be carefully analyzed.

Buffered bike lanes along Church Street

Vehicle Zone

Travel Lanes—Travel lanes accommodate movement of vehicular, transit, and bicycle traffic. Lane width is influenced by two distinct goals that must be balanced to create complete streets. The first is to move a particular volume of vehicles through an area safely and efficiently. The second is to create a safe and comfortable pedestrian environment by limiting crossing distances and reducing vehicle speeds. Wide streets create barriers for pedestrians and encourage higher vehicular speeds reducing the level of pedestrian activity that supports economic and community activity.

Urban and Suburban Lanes: The American Association of State Highway and Transportation Officials (AASHTO) recommends narrower (10 to 11 feet) travel lanes on lower-speed urban streets, to promote flexibility in constrained right-of-way situations and to accommodate multiple modes of transportation by creating more room within the right-of-way. The benefits of narrower travel lanes include the creation of a safer pedestrian conditions with shorter crossing distances and slower traffic, the ability to accommodate more modes of transportation in constrained rights-of-way, and lower construction cost. Wide outside lanes (12 feet) are appropriate on transit corridors to accommodate transit.

Rural Lanes: In non-urban settings with less pedestrian activity, wider (12 feet) vehicle lanes are appropriate. However, when wider lanes are required, consider balancing the total width of the travel way by narrowing turn lanes or medians to maintain the same overall pedestrian crossing distance.

Medians and Pedestrian Refuges—Medians are continuous islands separating the opposing directions of traffic. Medians are used for beautification, access management, safety, utilities, and stormwater management. By separating and controlling traffic, medians help reduce vehicle-and-vehicle as well as vehicle -and-bicycle/pedestrian conflicts. Landscaped medians, especially those with canopy trees, can be a unique focal point to a neighborhood, and when properly designed, they can provide efficient stormwater management and reduce urban temperatures. Medians can also function as pedestrian refuges. These refuges break up a large crossing by providing a safe place for pedestrians and cyclists to stop while crossing the street. They are especially important on wide thoroughfares.

Landscaped medians should take priority over continuous left turn lanes or paved medians where maintenance funding is available. Plant and hardscape materials should be low maintenance including miniature grasses that do not require mowing and/or drought tolerant tree and shrub species.

Traffic Control Devices—Metro Nashville Public Works maintains over 2,200 miles of public roadways and rights-of-way and more than 800 signalized intersections. Along with the Tennessee Department of Transportation (TDOT), Public Works installs and maintains traffic control devices including signals, pavement markings, and signs within the Vehicle Zone. The Manual on Uniform Traffic Control Devices (MUTCD) defines the standards used by local road managers installing and maintaining traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. Coordination with Public Works and TDOT while applying the MCSP is essential for the safe and efficient movement of people and supporting community activities.

In addition to the MUTCD, Nashville joins FHWA, TDOT, Memphis, Chattanooga, and cities and states across the country in adopting the NACTO Urban Street Design Guide and Urban Bikeway Design Guide as a recommended best practice.

DEVELOPMENT ZONE

The development zone is the private property that abuts the public right-of-way. While this document does not address any standards specific to the development zone, the character of the development zone affects the design and use of the public street space.

Pedestrian refuge on Korean Veteran's Boulevard

Section I: Collector–Avenue

Collector–Avenue Defined

Collector-Avenues (CA) are relatively low-speed, low- to medium- volume streets that provide circulation within and between neighborhoods. Collector-Avenues usually serve short trips and are intended for collecting trips from local streets and distributing them to the Arterial-Boulevard network.

Intent

The intent of the Collector-Avenue is to balance the mobility needs of multiple transportation modes, while providing access via driveways, alleys or side streets to businesses and residences. Therefore, while there may be peak-hour congestion, this is considered a legitimate trade-off to attain other community goals such as access and pedestrian/cyclist comfort. As a result, the width of the road is not expanded to accommodate additional capacity or maintain free flowing traffic at all times.

Guidelines

These design guidelines are to be used by the private and public sectors when proposing street improvements and/or new streets. The guidelines are expressed in a series of tables and diagrams for street segments and general guidelines for intersections. Figure CA1 shows the Typical Zones and the purposes served by each.

Collector–Avenue Elements

Tables CA1-CA3 list the design guidelines for Collector-Avenues segments and the design elements within the right-of-way. These tables are followed by a variety of possible cross-sections for Collector-Avenues. Please see page 26 for the explanation of how to read the tables.

Avenue Intersection Guidelines

At the end of this section is a list of guidelines for how to create an appropriate Collector-Avenue intersection as well as intersections of Collector-Avenue and other street types.

Collector-Avenue at a glance

Future complete street function:

- Serves shorter trips, more pedestrian and bicycle oriented trips
- Relatively low speed of vehicles
- Low to medium user volumes
- Collects and distributes trips from local roads to the larger network.
- Balance user mobility and vehicular access to business/residences

Potential Design Remedies:

- Reduce travel lane widths
- Introduce parallel parking
- Introduce sidewalks and trees
- Accommodate bicycles
- Ensure sidewalks are provided

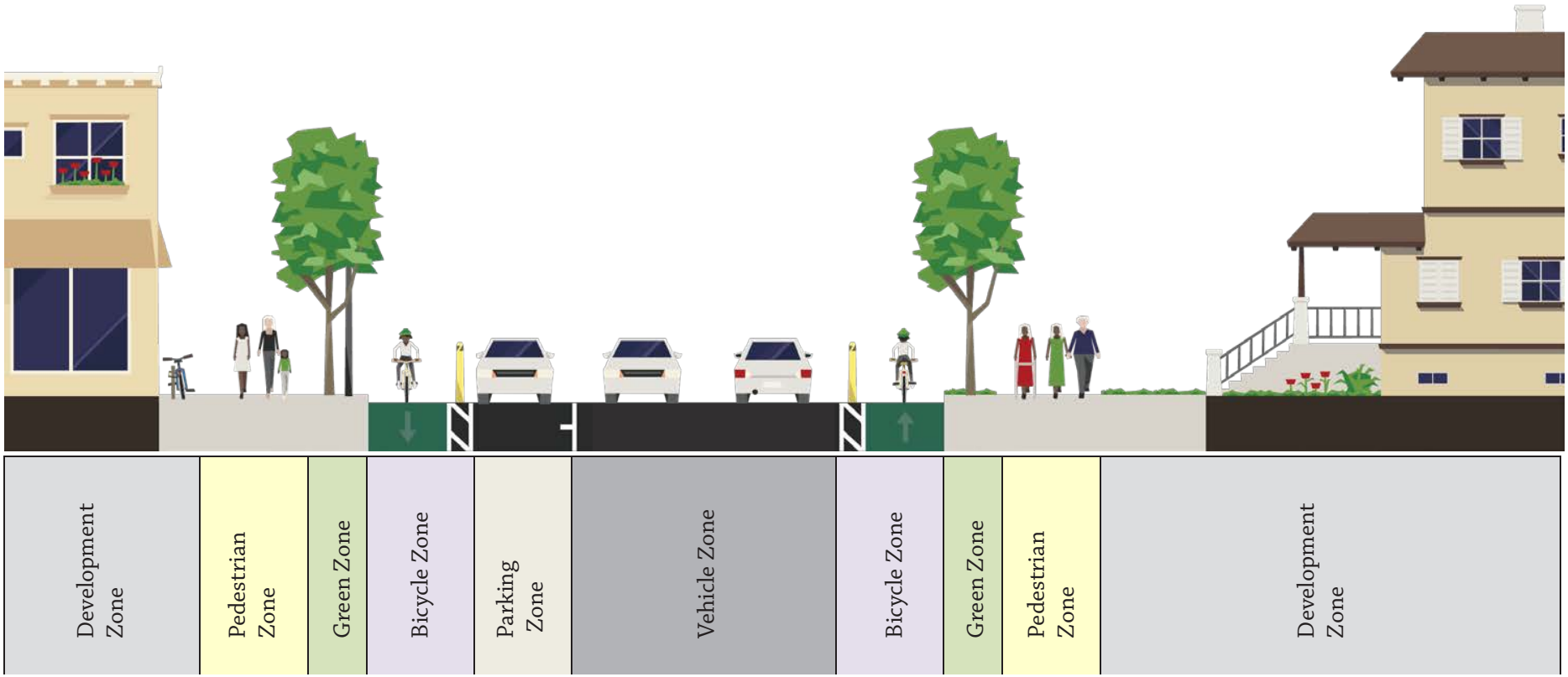
Bowling Avenue is a Collector-Avenue with a vegetated median, curb, gutter, sidewalk, and on-street parking.

Eastland Avenue is a Arterial-Boulevard with sidewalks and an advanced stop bar for bicyclists.

Collector–Avenue: Typical Zones

FIGURE CA1

Throughout the tables and the diagrams, street sections are divided into zones with corresponding colors. A description of the zones is found on pages 27-31



Development Zone
The basic intent for the Development Zone is that buildings orient toward and have good functional and visual connections to the street. Within the Development Zone, the building setbacks, site design and land uses will vary based on the context.

Pedestrian Zone
Collector-Avenues design privileges walking as a travel option. Therefore, the Pedestrian Zone should include unobstructed side-walks at appropriate widths for adjacent land uses.

Green Zone
Landscaping and trees in the Green Zone serve multiple purposes:
- Buffering for pedestrians from weather and automobile traffic
- Green Infrastructure to mitigate stormwater and summer heat/glare
- Underlying support for property values/desirability of real estate

Parking Zone
The need for the Parking Zone varies on Collector-Avenues. The benefits of the Parking Zone include traffic calming, buffering between vehicles and pedestrians, and easy "in and out" access to adjacent land uses.

Bicycle Zone
The Bicycle Zone is sometimes adjacent to the Pedestrian Zone. This is an essential component to many Complete Streets. In the chart, look for standards under "Bike Zone."

Vehicle Zone
The Vehicle Zone serves motor vehicles, with a variety of lane configurations, to accommodate higher volumes than local streets. Narrower lanes will help to slow traffic, and provide other modes of transportation additional room within the right-of-way.

TABLE CA1

Collector–Avenue Segment: Guidelines T2

	T2-R-CA# T2 Rural – Residential – Collector-Avenue #	T2-M-CA# T2 Rural – Mixed Use – Collector-Avenue #
General Standards		
Block Length	N/A	
Utilities (location)	Within ROW avoiding conflicts with trees and stormwater infrastructure	
Stormwater Management	Swales or other Low Impact Development or Light Imprint Development strategy	
Pedestrian Zone		
Frontage Zone	N/A	
Pedestrian Travelway (Sidewalk)	1) Recommended 12 ft. multi-use path on one side of street 2) 6 ft. minimum or wider sidewalk appropriate alternative	1) Recommended 12 ft. multi-use path on both sides of street 2) 6 ft. minimum or wider sidewalk appropriate alternative
Green Zone		
Furnishing Zone/Planting Strip	Drainage Swale, 12 ft. standard ; 5 ft. minimum	
Street Tree Guidelines	Informal plantings	
Transit Stops	Not Typical.	
Parking Zone		
On-Street Parallel Parking	Not typical	Unmarked parking is appropriate
Curb Extensions	N/A	
Bike Zone:		
(options)	1) Multi-use path: 12 ft. swale, 12 ft. path standard 2) Shared lane marking for planned bikeways when ADT < 3,000	1) Multi-use path: 12 ft. swale, 12 ft. path standard 2) Wide shoulder to act as bike lane 3) Shared lane marking for planned bikeways when ADT < 3,000
Vehicle Zone		
Shoulder	4 ft. standard; no minimum	
Lane Width	12 ft.	
Medians/Pedestrian Refuge	N/A	

Collector–Avenue Segment Guidelines T3

TABLE CA2

	T3-R-CA# T3 Suburban – Residential – Collector-Avenue #	T3-M-CA# T3 Suburban – Mixed Use – Collector-Avenue #
General Standards		
Block Length	Recommended less than 1,200', except where environmental constraints are present	Recommended less than 600', except where environmental constraints are present
Utilities (in order of preferred location)	1) Underground (provided there is no street tree conflict) 2) Alley/service road 3) Planting strip where present 4) Behind sidewalk where greater setbacks allowed or when no planting strip is present	
Stormwater Management	Curb and gutter, coupled with Low Impact Development strategies	
Pedestrian Zone		
Frontage Zone	Not typical	Recommended 18 inches where buildings are built at the property line. Landscaping should screen parking areas.
Pedestrian Travelway (Sidewalk)	6 ft. standard	8 ft. standard
Green Zone		
Furnishing Zone/Planting Strip	6 ft. standard	6 ft. standard
Street Tree Guidelines	Canopy trees are preferred in continuous planting areas. Understory trees may be used when limited planter width and conflicts with utilities exist.	Canopy trees are preferred in large planting areas. Understory trees may be used where limited planter width and conflicts with utilities exist. When tree wells are utilized, minimum well dimension should be 4 ft. x 6 ft.
Transit Stops	If located along planting strip, paved pad should be provided for passengers.	If located along marked, on-street parking, transit stop should include curb extensions.
Parking Zone		
On-Street Parallel Parking	Unmarked parking is typical	8 ft. standard
Curb Extensions	Not typical	Recommended where marked on-street parking exists
Bike Zone		
(options)	1) Protected bikeway: 2 ft. protected buffer, 6 ft. bikeway standard 2) Multi-use path: 8ft. planting strip, 12ft. path for two-way bikeway standard	3) Conventional bike lane: 6 ft. bikeway standard
Vehicle Zone		
Shoulder	Not typical. If swale is present, gravel or paved shoulder is recommended	Not typical
Lane Width	10-11 ft.	10-11 ft.
Medians/Pedestrian Refuge	Not typical. When provided, best practices min. width is 6 ft. for pedestrian refuge	Not typical. When provided, best practices min. width is 6 ft. for pedestrian refuge

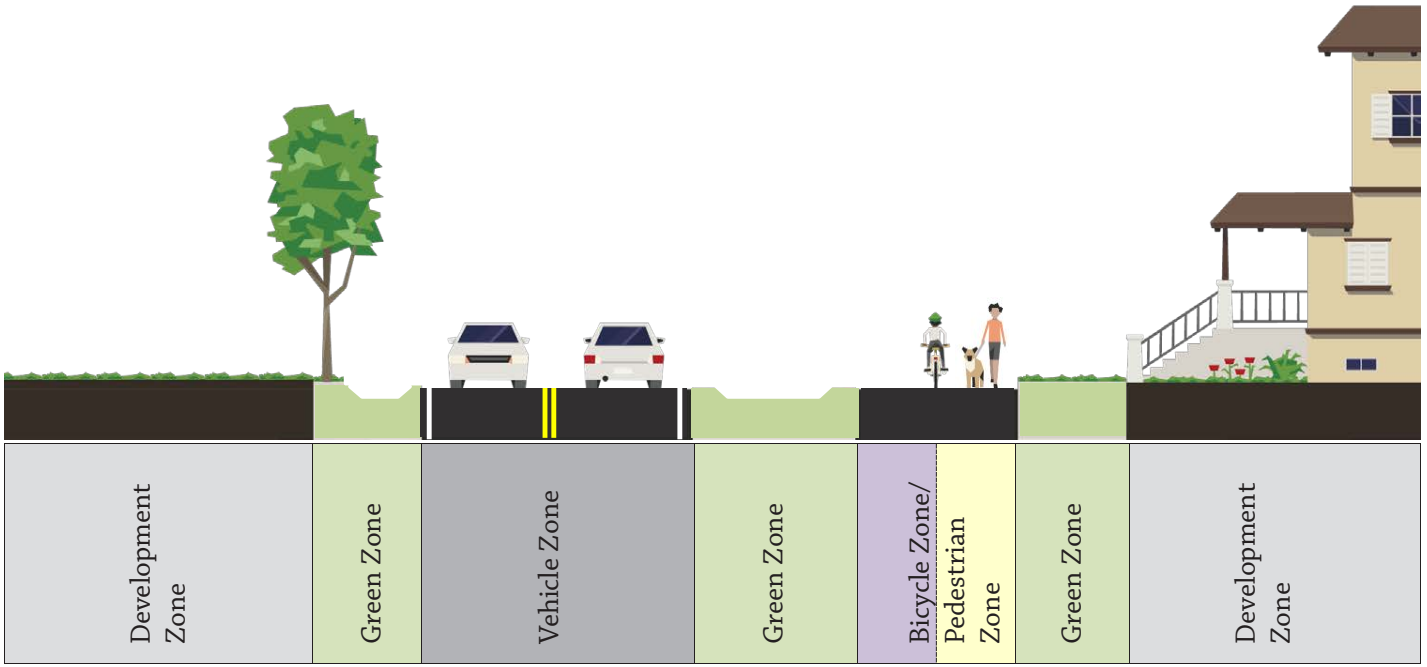
TABLE CA3

Collector–Avenue Segment Guidelines T4, T5, T6

	T4-R-CA# T4 Urban – Residential – Collector-Avenue #	T4/5/6-M-CA# T4/T5/T6 – Mixed Use – Collector-Avenue #
General Standards		
Block Length	Recommended 200-600 ft., except where environmental constraints are present	
Utilities (in order of preferred location)	1) Underground (provided there is no street tree conflict) 2) Alley/service road 3) Planting strip within Green Zone 4) Behind sidewalk where greater setbacks allowed or when no planting strip is present	
Stormwater Management	Curb and gutter, coupled with Low Impact Development or Light Imprint Development retrofit/remediation strategies	
Pedestrian Zone		
Frontage Zone	Not typical	4 ft. standard
Pedestrian Travelway (Sidewalk)	6 ft. standard	T4: 8 ft. standard T5 and T6: 10 ft. standard
Green Zone		
Furnishing Zone/Planting Strip	6 ft. standard Pedestrian lighting recommended in high traffic areas	4 ft. standard Pedestrian scaled lighting is recommended
Street Tree Guidelines	Canopy trees are preferred in continuous planting areas. Understory trees may be used when limited planter width and conflicts with utilities exist.	Trees in wells are recommended, minimum well dimension should be 4 ft. x 6 ft.
Transit Stops	If located along planting strip, paved pad should be provided for passengers.	If located along full-time on-street parking, bus stop should include curb extensions.
Parking Zone		
On-Street Parallel Parking	8 ft. standard	
Curb Extensions	Recommended where full-time on-street parking exists	
Bike Zone		
(options)	1) Protected bikeway: 2 ft. protected buffer, 6 ft. bikeway standard 2) Raised cycle track: 4 ft. planting strip, 6 ft. one-way or 12ft. path for two-way	3) Conventional bike lane: 6 ft. bikeway standard
Vehicle Zone		
Shoulder	Not typical	
Lane Width	T4: 10-11 ft. T5 and T6: 10 ft.	
Medians/Pedestrian Refuge	Not typical. When provided, best practices min. width is 6 ft. for pedestrian refuge	

Collector–Avenue with Swales and Multi-use Path

FIGURE CA2



See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T2 Residential
- » T2 Mixed Use
- » T3 Residential

FIGURE CA3

Collector–Avenue with Protected Bike Lane

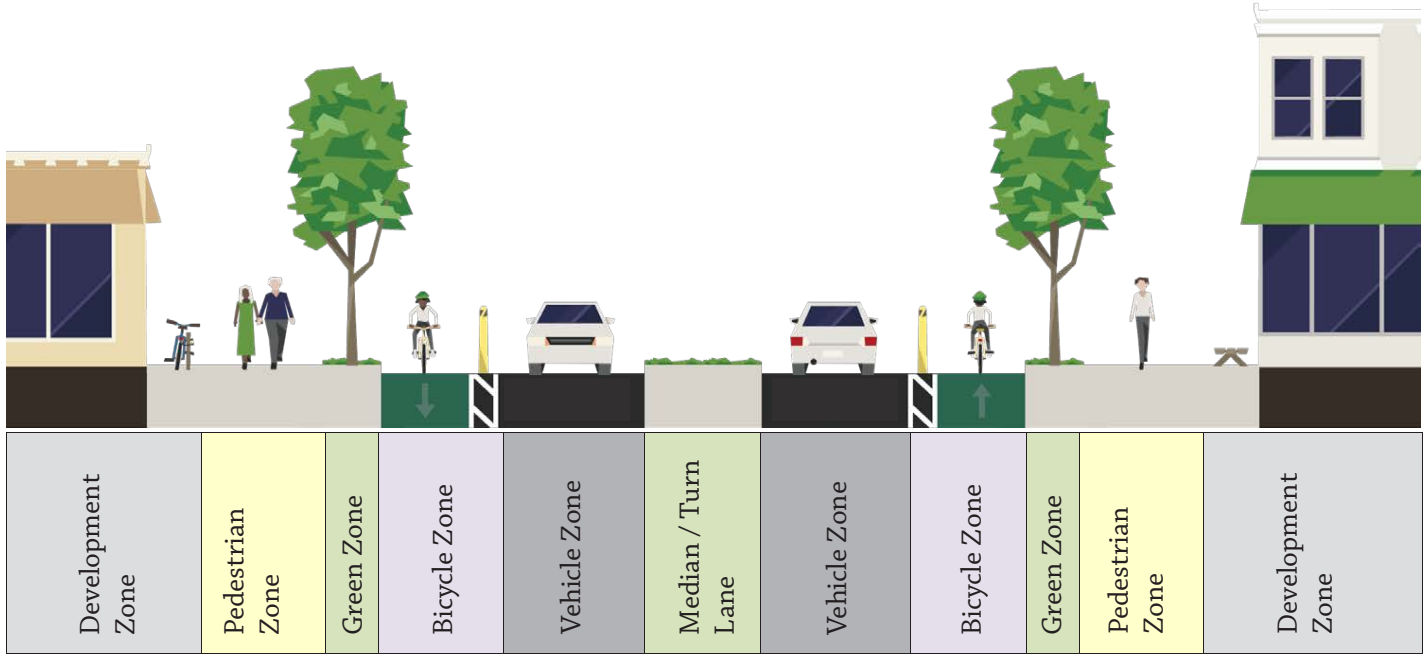
See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T3 Residential
- » T3 Mixed Use
- » T4 Residential
- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

Collector–Avenue with Median and Protected Bike Lanes

FIGURE CA4



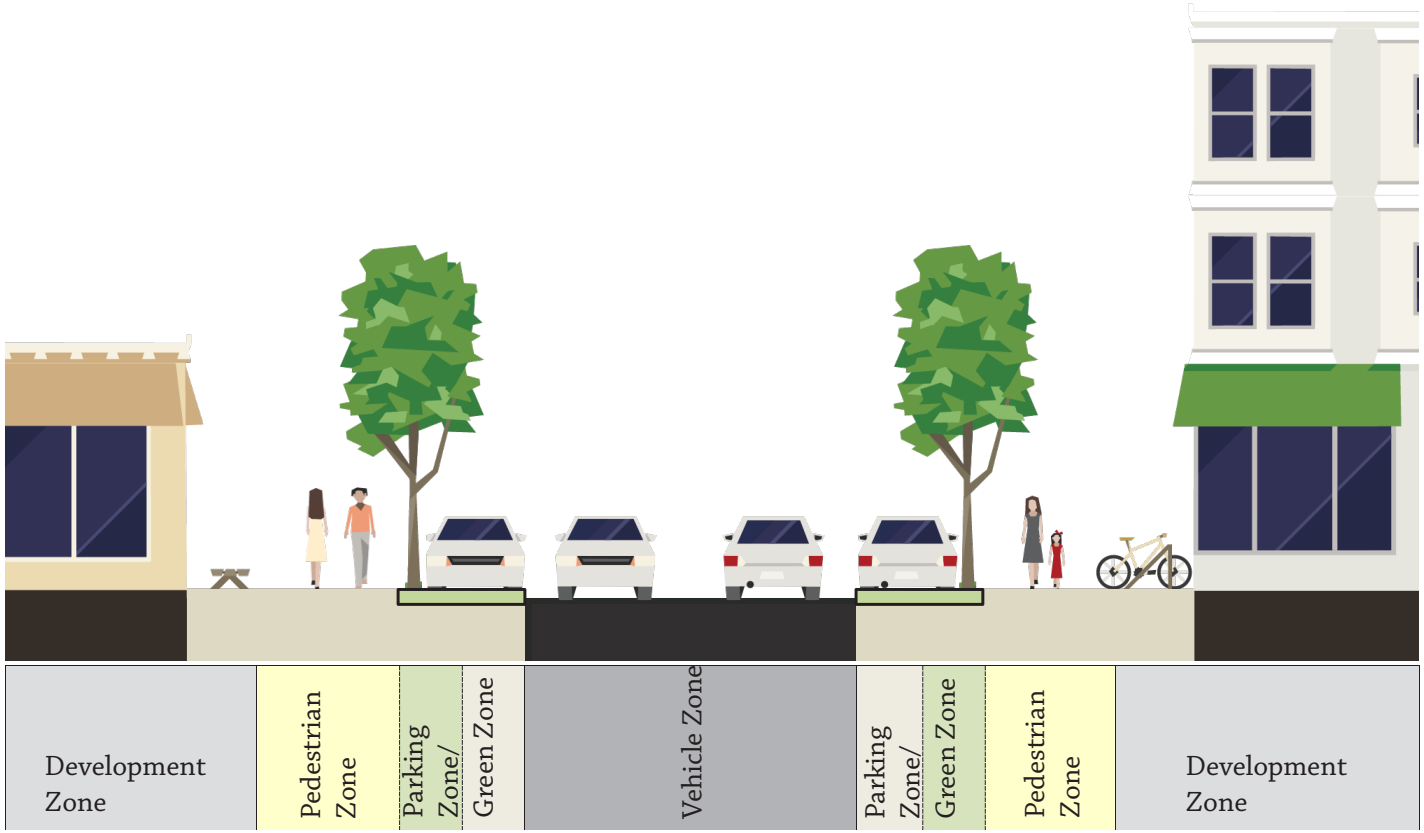
See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T3 Residential
- » T3 Mixed Use
- » T4 Residential
- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

FIGURE CA5

Collector–Avenue with On-street Parking and Curb Extensions



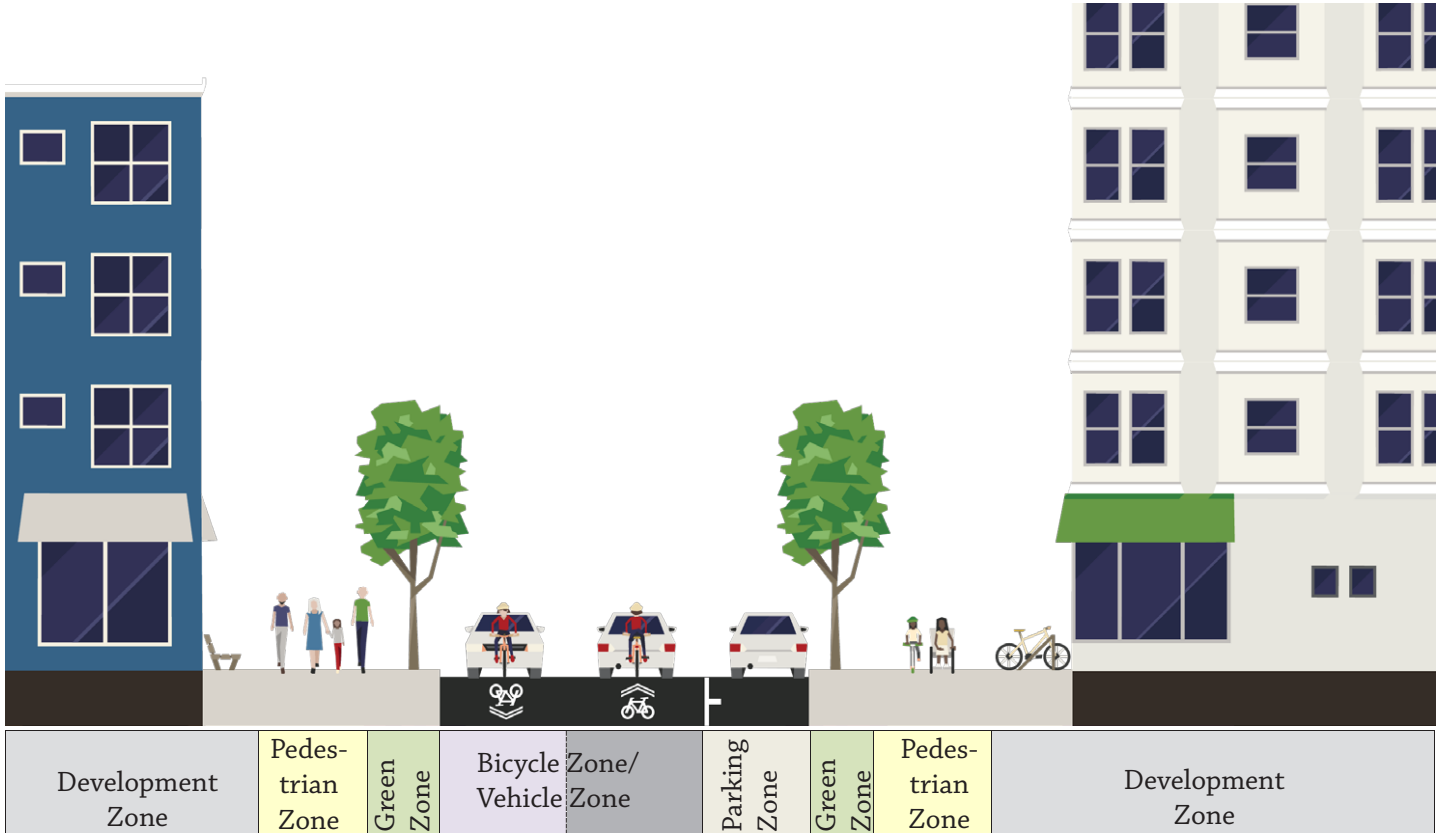
Context

- » T4 Residential
- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

See discussion of Street Elements starting on page 27 for detailed information on each element.

Collector–Avenue with Parking on One Side

FIGURE CA6



Context

- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

See discussion of Street Elements starting on page 27 for detailed information on each element.

Collector–Avenue Intersection Guidelines

Thoughtful intersection design is essential to reduce conflicts between all modes of transportation: vehicles, pedestrians, and cyclists. Good intersection design allows all users the opportunity to continue their trip in a safe and orderly manner.

Medians

Medians are not typical at smaller intersections, those generally involving a Collector-Avenue and other two lane roads. Medians are recommended as pavement widths increase and crossing distances for pedestrians are lengthened, as medians provide a refuge for pedestrians mid-crossing.

Left-turn Lanes

Left turn lanes are typical for Collector-Avenues with three lanes or more.

Right-turn Lanes

Right turn lanes are not typical on Collector-Avenues in areas of high connectivity in the surrounding street network. When right-turn lanes are necessary, a pedestrian island should be considered to increase pedestrian safety. Islands should be a minimum of 50 square feet and landscaped to provide a buffer between vehicles and pedestrians.

Curb Extensions

Collector-Avenue intersections transitioning from on-street parking and those with large shoulders should include curb extensions. Curb extensions help reduce the intersection crossing distance for pedestrians and clearly define the limits of on-street parking.

Curb Radii

It is recommended to keep curb radii as small as possible. Curb radii should be measured by effective radius of turning movements, not actual curb radius.

Crosswalks

Crosswalks are recommended at all intersections on all legs, unless pedestrian crossings would decrease safety. Crosswalks should be located outside of the curb radius where possible, while remaining as close to the intersection as possible.

Bike Signals

Collector-Avenues with high bike volumes or intersections that transition from one bike facility to another may need signalization for bicyclists.

Bike Boxes

Bike boxes are recommended at intersections where there may be right or left-turning conflicts between bicyclists and motorists.

Example of a bike box along Church Street.

Arterial-Boulevards Defined

Arterial-Boulevards (AB) usually serve longer trips with medium to high volume and are intended to collect trips from Collector-Avenues and distribute them to the larger network.

Intent

Arterial-Boulevards prioritize the mobility needs of multiple transportation modes over business and residence access. Access management occurs through establishing appropriate block length, presence of medians, and the spacing and consolidation of access points to individual developments. Arterial-Boulevards include landscaping and facilities for multiple modes of transportation, such as sidewalks, bikeways, transit stops, and in some cases transit lines. Improvements may include some or all of the following, depending on available right-of-way: vegetated medians, wide sidewalks, street trees, and urban design elements that create a comfortable, inviting place to walk or bike.

Context

While the public may generally think of a boulevard as having a vegetated median, in Nashville Arterial-Boulevards are designated as such because of the function they serve—to balance access to surrounding land uses and mobility. For example, Rosa L. Parks Boulevard is an Arterial-Boulevard with a vegetated median near Werthan Mills and becomes a five-lane Arterial-Boulevard with a center turn-lane at the Nashville Farmer's Market.

Guidelines

Design guidelines are to be used by the private and public sectors when proposing street improvements and/or new streets. The guidelines are expressed in a series of tables and diagrams for street segments and general guidelines for intersections. Figure AB1 shows the Typical Zones and the purposes served by each.

Arterial-Boulevard Elements

Tables AB1-AB4 list the design guidelines for Arterial-Boulevard segments and the design elements within the right-of-way. This table is followed by a variety of possible cross-sections for Arterial-Boulevards. Please see page 26 for the explanation of how to read the tables.

Arterial-Boulevard Intersection Guidelines

At the end of this section is a list of guidelines for how to create an appropriate Arterial-Boulevard intersection as well as intersections of Arterial-Boulevards with other street types.

Arterial–Boulevard at a glance

Future Complete Street Function:

- Serve longer vehicular and bicycle trips
- Medium to high user volumes due to higher intensity land uses
- Collects trips from Collector-Avenues and distribute them to the larger network
- Prioritize user mobility over access

Potential Design Remedies:

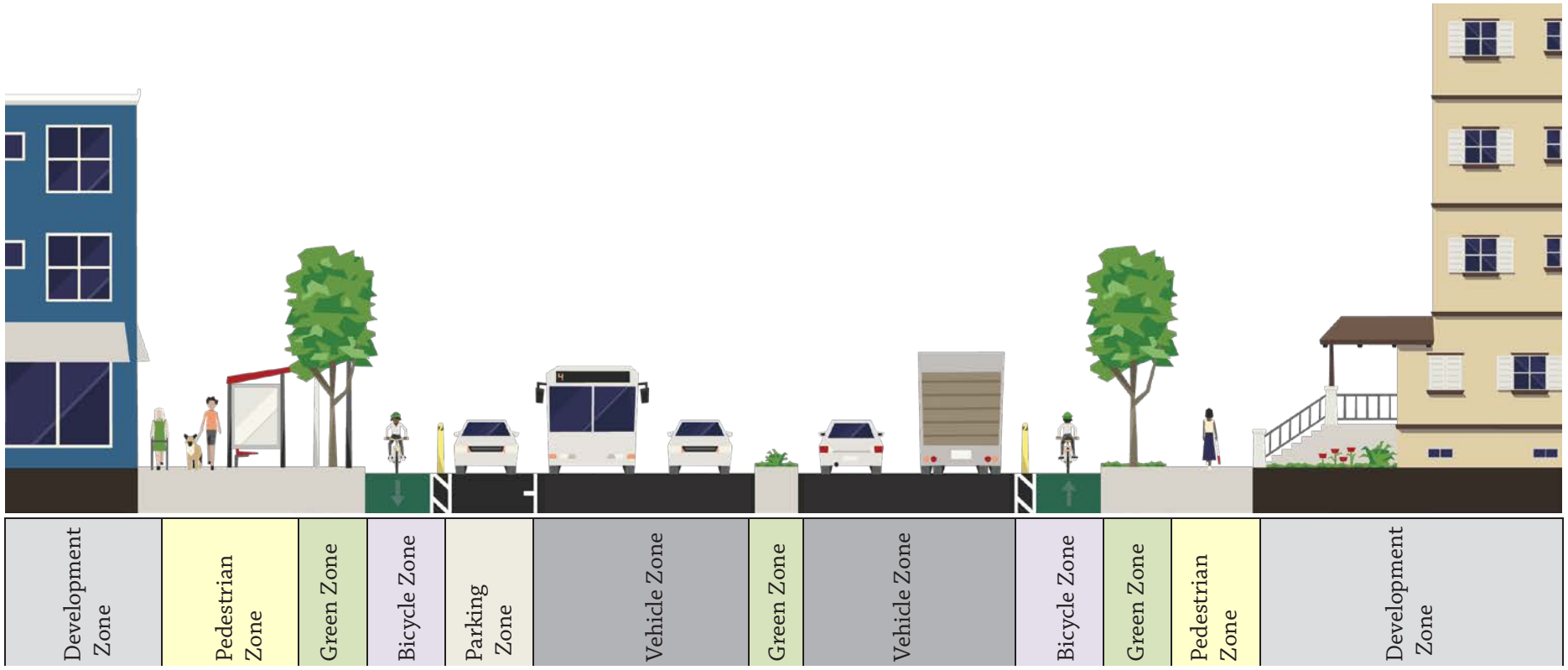
- Reduce travel lane widths
- Introduce parallel parking
- Introduce sidewalks, planting strips, and street trees
- Introduce medians
- Accommodate bicycles
- Balance transit elements–future light rail, bus rapid transit, or local bus service

Rosa L. Parks Boulevard - an Arterial-Boulevard

FIGURE AB1

Arterial–Boulevard: Typical Zones

Throughout the tables and the diagrams, street sections are divided into zones with corresponding colors. A description of the zones is found on pages 27-31.



Development Zone
The basic intent for the Development Zone is that buildings orient toward and have good functional and visual connections to the street. Within the Development Zone, the building setbacks, site design and land uses will vary based on the context.

Pedestrian Zone
Pedestrian travel should be a prominent option on Arterial-Boulevards. This zone should include unobstructed sidewalks at appropriate widths for adjacent and surrounding land uses.

Green Zone
Landscaping and trees in the Green Zone serve multiple purposes:
- Buffering for pedestrians from weather and automobile traffic
- Green Infrastructure to mitigate stormwater and summer heat/glare
- Underlying support for property values/desirability of real estate

Parking Zone
The need for the Parking Zone varies on Arterial-Boulevards. The benefits of the Parking Zone include traffic calming, buffering between vehicles and pedestrians, and easy "in and out" access to adjacent land uses.

Bicycle Zone
Arterial-Boulevards typically have higher traffic speeds and volumes so bicyclists are less likely to feel comfortable in mixed traffic. The Bicycle Zone is essential to encourage cycling.

Vehicle Zone
The Vehicle Zone serves motor vehicles, with a variety of lane configurations, to accommodate higher volumes than Collector-Avenues. Narrow lanes should be considered to slow traffic and provide for the expansion of other zones within the right-of-way

Arterial–Boulevard Segment Guidelines T2

TABLE AB1

	T2-R-AB# T2 Rural – Residential – Arterial-Boulevard#	T2-M-AB# T2 Rural – Mixed Use – Arterial-Boulevard#
General Standards		
Block Length	N/A	
Utilities (location)	Within ROW avoiding conflicts with trees and stormwater infrastructure	
Stormwater Management	Swales or other Low Impact Development strategy	
Pedestrian Zone		
Frontage Zone	N/A	
Pedestrian Travelway (Sidewalk)	1) Recommended 12 ft. multi-use path on one side of the street 2) Shoulder may be used to accommodate pedestrians in constrained situations 3) 6 ft. minimum or wider sidewalk appropriate alternative	1) Recommended 12 ft. multi-use path on both sides of the street 2) 6 ft. minimum or wider sidewalk appropriate alternative
Green Zone		
Furnishing Zone	Drainage Swale, 12 ft. standard ; 5 ft. minimum	
Street Tree Guidelines	Informal plantings	
Transit Stops	Not typical.	
Parking Zone		
On-Street Parallel Parking	Not typical	Unmarked parking is appropriate
Curb Extensions	N/A	
Bike Zone		
(options)	1) Multi-use path: 12 ft. swale, 12 ft. path standard 2) Wide shoulder to act as bike lane 3) Conventional bike lane: 6' standard when ADT < 10,000	
Vehicle Zone		
Shoulder	8 ft. standard; no minimum	
Lane Width	12 ft.	
Medians/Pedestrian Refuge	Recommended.	

TABLE AB2

Arterial–Boulevard Segment Guidelines
T3

	T3-R-AB# T3 Suburban – Residential – Arterial-Boulevard#	T3-M-AB# T3 Suburban – Mixed Use – Arterial-Boulevard#
General Standards		
Block Length	Recommended less than 1,200 ft., except where environmental constraints are present	Recommended less than 600 ft., except where environmental constraints are present
Utilities (in order of preferred location)	1) Underground (provided there is no street tree conflict) 2) Alley/service road 3) Planting strip within Green Zone 4) Behind sidewalk where greater setbacks allowed or when no planting strip is present	
Stormwater Management	Curb and gutter, coupled with Low Impact Development strategy	
Pedestrian Zone		
Frontage Zone	Not typical	Recommended 18 inches where buildings are built at the property line. Landscaping should screen parking areas.
Pedestrian Travelway (Sidewalk)	6 ft. standard	8 ft. standard
Green Zone		
Furnishing Zone	8 ft. standard	6 ft. standard Street lighting typical. Pedestrian lighting recommended in high traffic areas
Street Tree Guidelines	Canopy trees are preferred in continuous planting areas. Understory trees may be used where limited planter width and conflicts with utilities exist.	Canopy trees are preferred in large planting areas. Understory trees may be used where limited planter width and conflicts with utilities exist. When tree wells are utilized, minimum well dimension should be 4' x 6'
Transit Stops	If located along planting strip, paved pad should be provided for passengers	If located along full-time, on-street parking, transit stops should include curb extensions.
Parking Zone		
On-Street Parallel Parking	Not typical. Parking is on-site via driveways or parking lots.	8 ft. standard
Curb Extensions	Not typical	Recommended where full-time, on-street parking exists
Bike Zone		
(options)	1) Multi-use path: 8ft. planting strip, 12ft. path for two-way bikeway standard 2) Protected bikeway: 2 ft. protected buffer, 6 ft. bikeway standard	3) Conventional bike lane: 6 ft. bikeway standard
Vehicle Zone		
Shoulder	Not typical. If swale is present, gravel or paved shoulder is recommended	Not typical
Lane Width	10-11 ft.	10-11 ft.
Medians/Pedestrian Refuge	Recommended 16 ft., best practices minimum width is 6 ft. for pedestrian refuge only	

Arterial–Boulevard Segment Guidelines T4

TABLE AB3

	T4-R-AB# T4 Urban – Residential – Arterial-Boulevard#	T4-M-AB# T4 Urban – Mixed Use – Arterial-Boulevard#
General Standards		
Block Length	Recommended 200-600 ft. , except where environmental constraints are present	
Utilities (in order of preferred location)	1) Underground (provided there is no street tree conflict) 2) Alley/service road 3) Planting strip	
Stormwater Management	Curb and gutter, coupled with Low Impact Development strategies	
Pedestrian Zone		
Frontage Zone	Not typical	4 ft. standard
Pedestrian Travelway (Sidewalk)	6 ft. standard	8 ft. standard
Green Zone		
Furnishing Zone	8 ft. standard	4 ft. standard Street lighting recommended. Pedestrian lighting is recommended in high traffic areas
Street Tree Guidelines	Canopy trees are preferred in continuous planting areas. Understory trees may be used where limited planter width and conflicts with utilities exist.	Trees in wells are recommended, minimum well dimension should be 4 ft. x 6 ft. Larger planting strips may be appropriate in areas with low pedestrian activity
Transit Stops	If located along planting strip, paved pad should be provided for passengers	If located along full-time, on-street parking, transit stops should include curb extensions.
Parking Zone		
On-Street Parallel Parking	8 ft. standard	
Curb Extensions	Recommended where full-time on-street parking exists	
Bike Zone		
(options)	1) Protected bikeway: 2 ft. protected buffer, 6 ft. bikeway standard 2) Raised cycle track: 4 ft. planting strip, 6 ft. one-way or 12ft. path for two-way	3) Conventional bike lane: 6 ft. bikeway standard
Vehicle Zone		
Shoulder	Not typical.	N/A
Lane Width	10-11 ft.	
Medians/Pedestrian Refuge	Recommended 16 ft., best practices minimum width is 6 ft. for pedestrian refuge only	

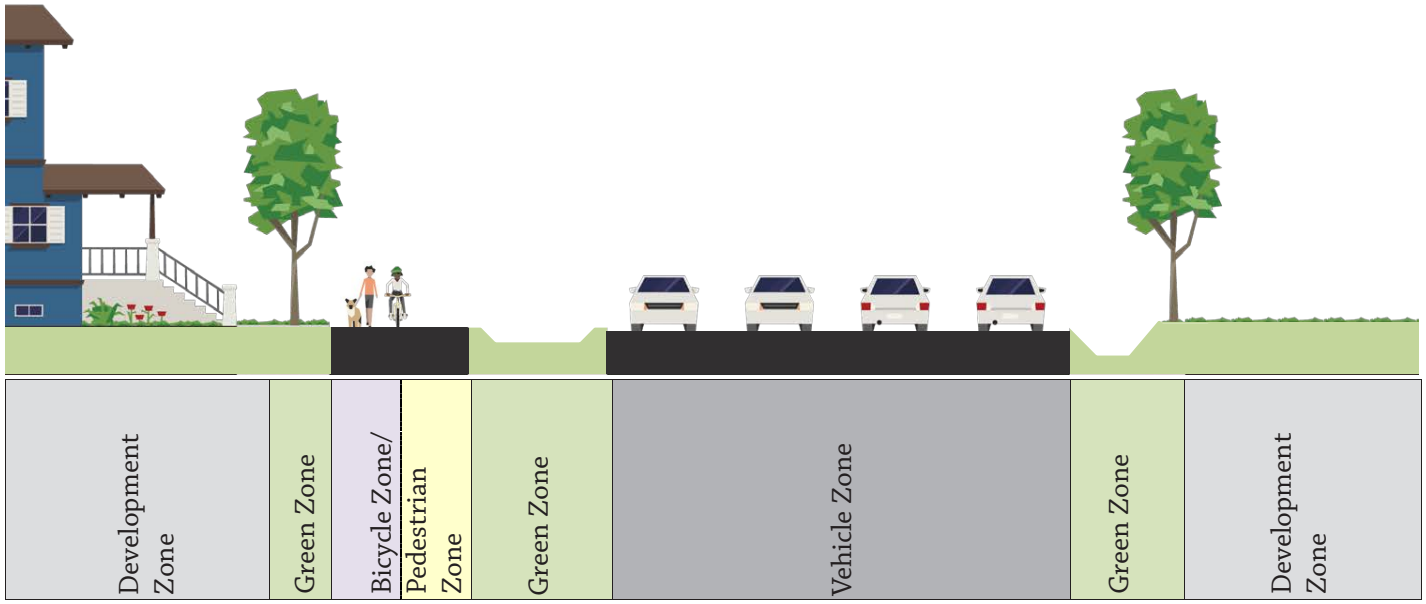
TABLE AB4

Arterial–Boulevard Segment Guidelines T5, T6

	T5 or T6-M-AB# T5 Center or T6 Downtown – Mixed Use – Arterial-Boulevard#
General Standards	
Block Length	Recommended 200-600 ft. , except where environmental constraints are present
Utilities (in order of preferred location)	1) Underground (provided there is no street tree conflict) 2) Alley/service road 3) Planting strip
Stormwater Management	Curb and gutter, coupled with Low Impact Development strategies
Pedestrian Zone	
Frontage Zone	4 ft. standard
Pedestrian Travelway (Sidewalk)	10 ft. standard
Green Zone	
Furnishing Zone	4 ft. standard
Street Tree planting areas	Trees in wells are recommended, minimum well dimension should be 4 ft. x 6 ft.
Transit Stops	If located along full-time, on-street parking, transit stops should include curb extensions.
Parking Zone	
On-Street Parallel Parking	8 ft. standard
Curb Extensions	Recommended when full-time on-street parking exists
Bike Zone	
(options)	1) Protected bikeway: 2 ft. protected buffer, 6 ft. bikeway standard 2) Raised cycle track: 4 ft. planting strip, 6 ft. one-way or 12ft. path for two-way 3) Conventional bike lane: 6 ft. bikeway standard
Vehicle Zone	
Shoulder	N/A
Lane Width	10 ft.
Medians/Pedestrian Refuge	Recommended 16 ft., best practices minimum width is 6 ft. for pedestrian refuge only

Arterial–Boulevard with Swales and Multi-use Path

FIGURE AB2



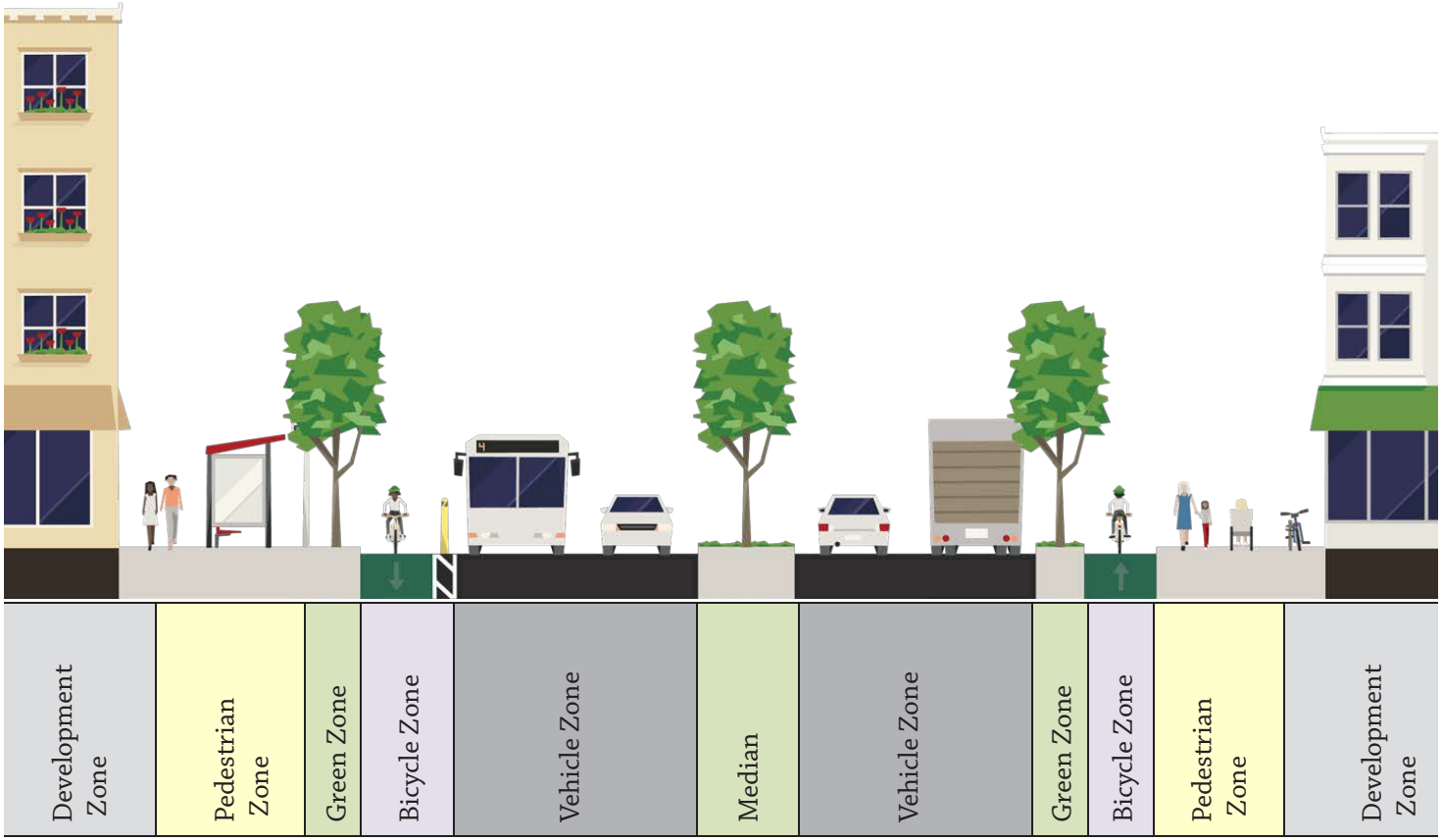
See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T2 Residential
- » T2 Mixed Use
- » T3 Residential
- » T3 Mixed Use

FIGURE AB3

Arterial–Boulevard with Median and Protected Bike Lanes



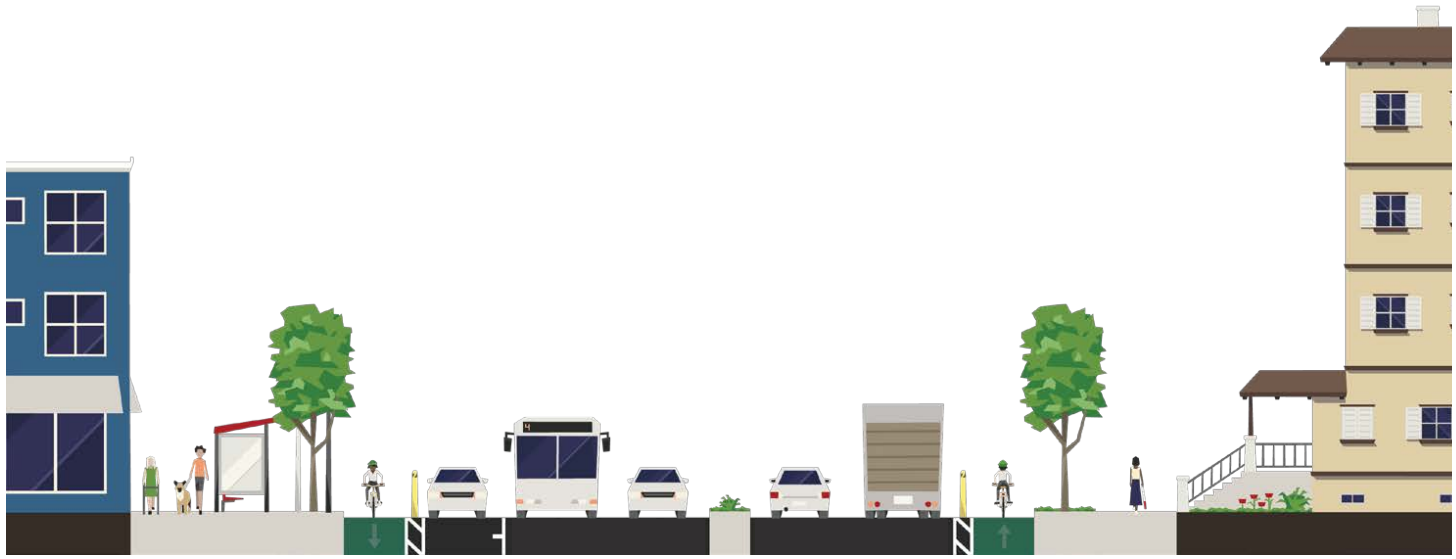
See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T3 Residential
- » T3 Mixed Use
- » T4 Residential
- » T4 Mixed Use

Arterial–Boulevard with Parking, Pedestrian Refuge, and Protected Bike Lanes

FIGURE AB4



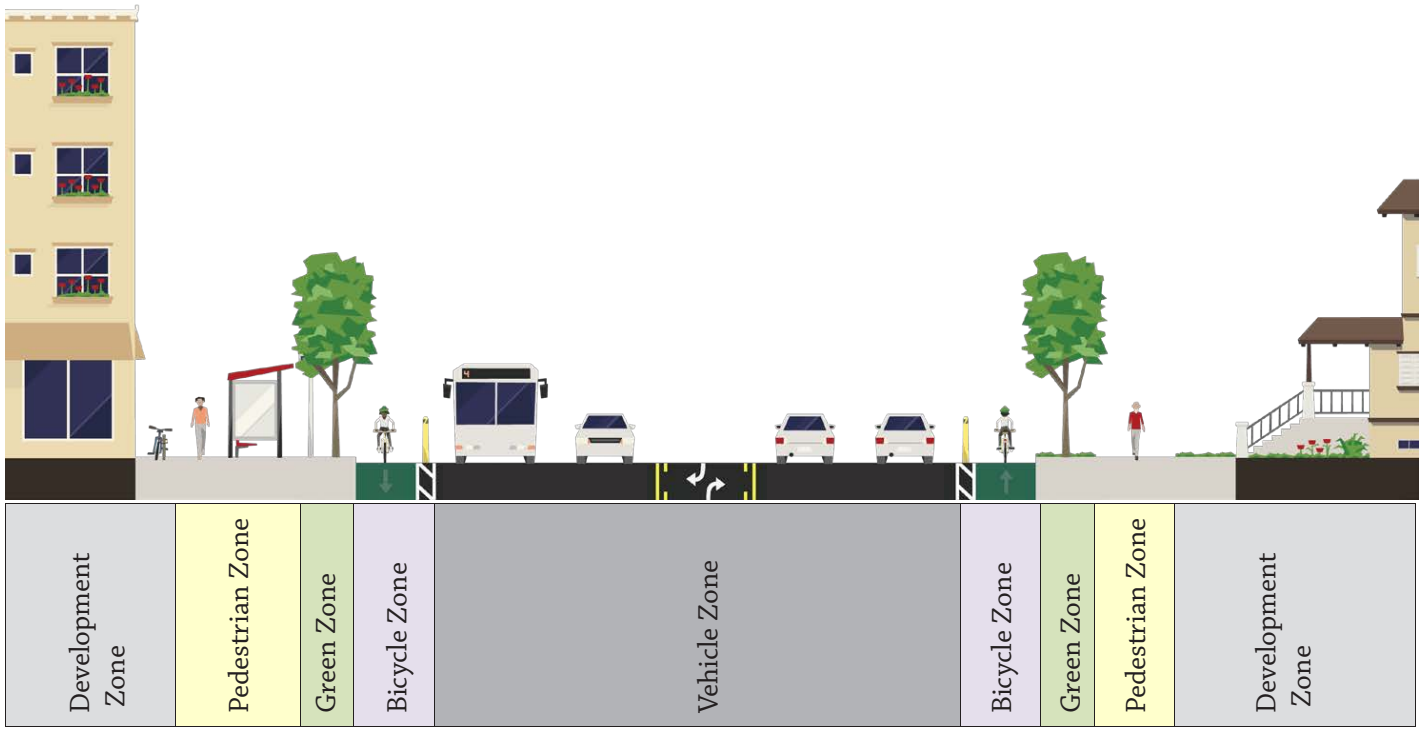
See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T3 Mixed Use
- » T4 Residential
- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

FIGURE AB5

Arterial–Boulevard with Turn Lane and Protected Bike Lanes



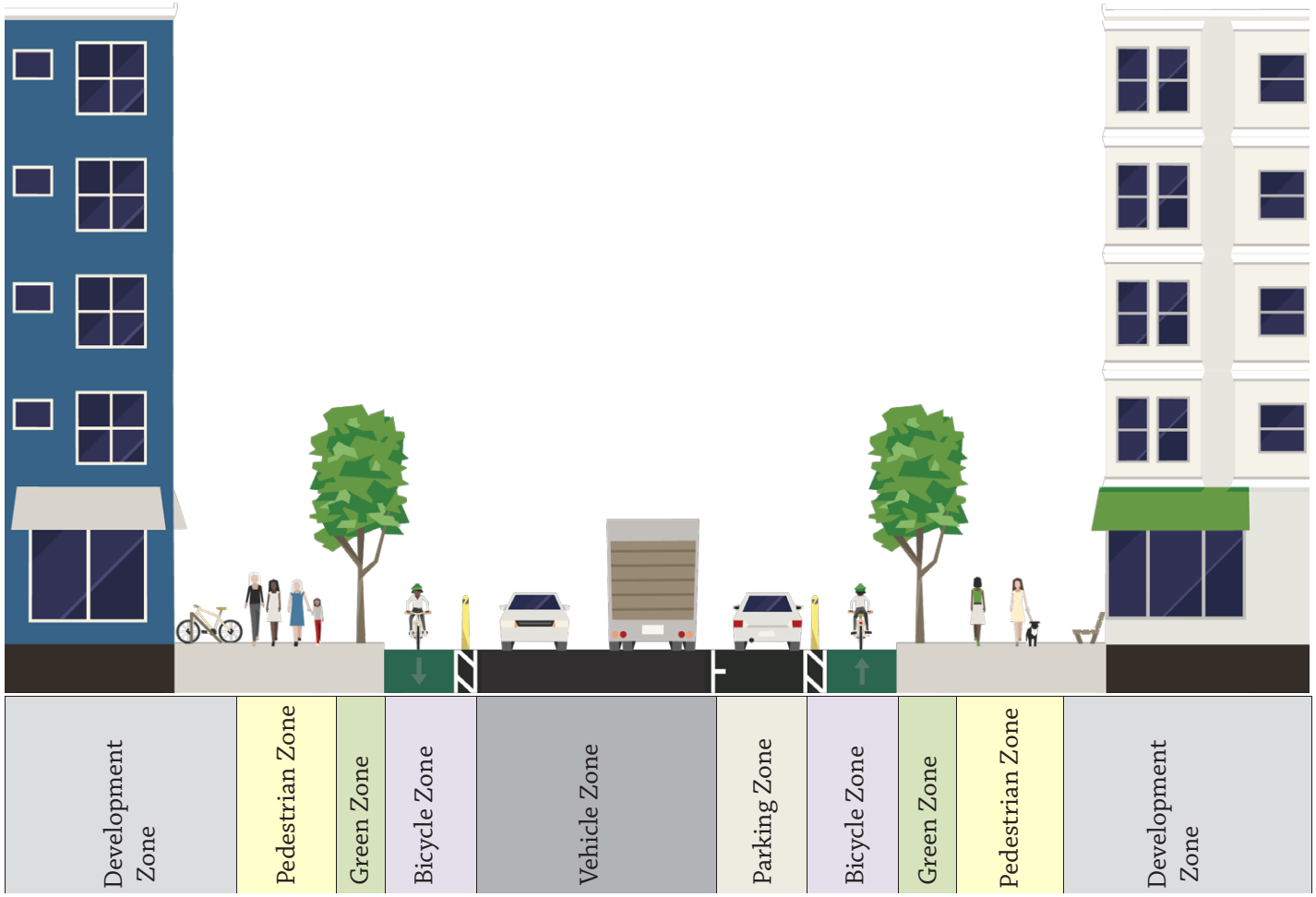
See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T3 Mixed Use
- » T4 Residential
- » T4 Mixed Use
- » T5 Mixed Use

Arterial–Boulevard with Parking and Protected Bike Lanes

FIGURE AB6



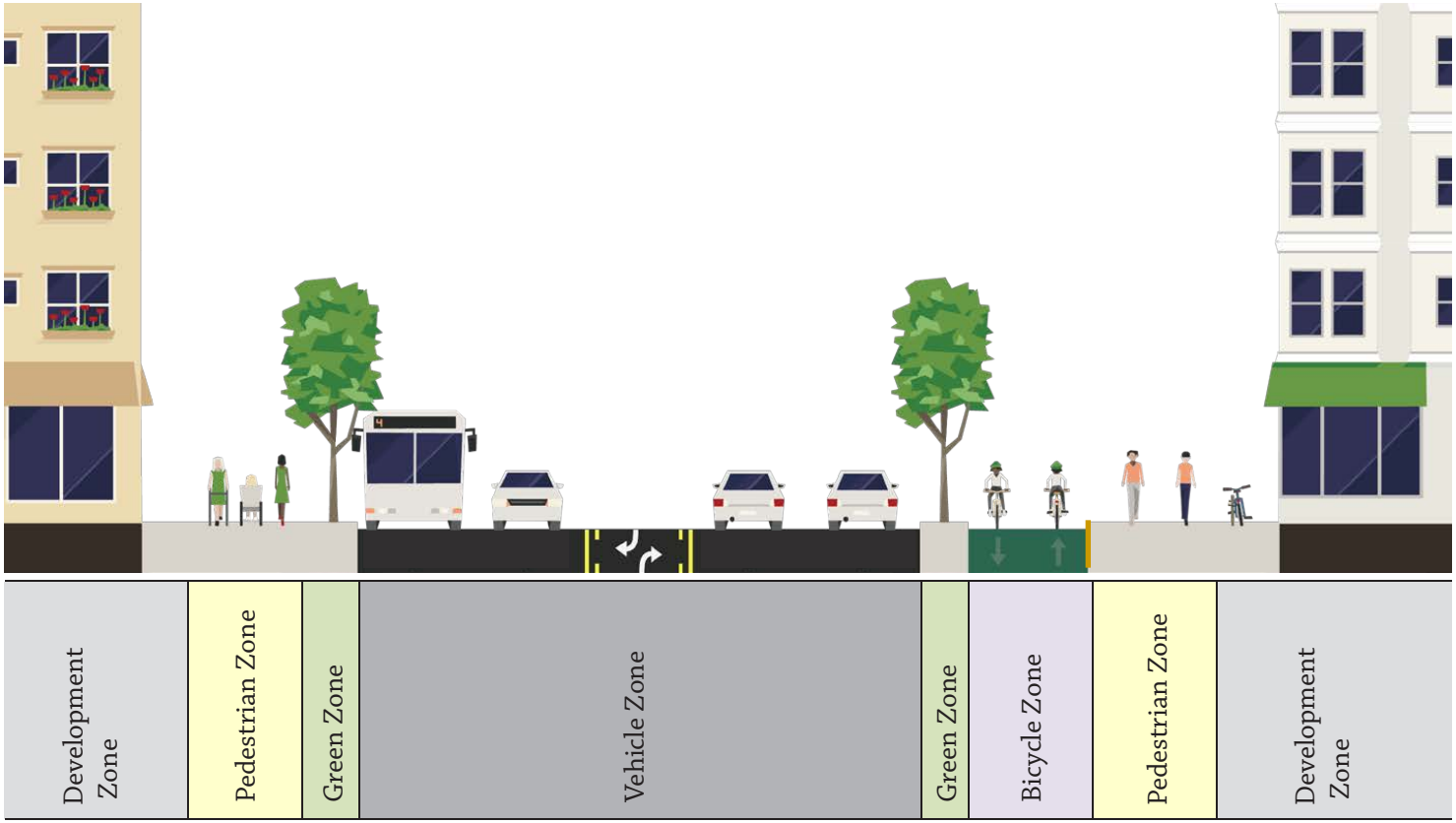
Context

- » T3 Mixed Use
- » T4 Residential
- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

See discussion of Street Elements starting on page 27 for detailed information on each element.

FIGURE AB7

Arterial–Boulevard with Turn Lane and Cycle Track



See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

Arterial–Boulevard Intersection Guidelines

Thoughtful intersection design is essential to reduce conflicts between modes of transportation: vehicles, pedestrians, and cyclists. Good intersection design allows all users the opportunity to continue their trip in a safe and orderly manner.

Medians

Medians are not typical at smaller intersections, those generally involving two lane roads. Medians are recommended as pavement widths increase and crossing distances for pedestrians are lengthened, as medians provide a refuge for pedestrians mid-crossing.

Left-turn Lanes

Left turn lanes are typical for Arterial-Boulevards with three lanes or more.

Right-turn Lanes

When right-turn lanes are necessary a pedestrian island should be considered to increase pedestrian safety. Islands should be a minimum of 50 square feet and landscaped to provide a buffer between vehicles and pedestrians.

Curb Extensions

Boulevard intersections transitioning from on-street parking and those with large shoulders should include curb extensions. Curb extensions help reduce the intersection crossing distance for pedestrians and clearly define the limits of on-street parking.

Curb Radii

It is recommended to keep curb radii as small as possible. Curb radii should be measured by effective radius of turning movements, not actual curb radius.

Crosswalks

Crosswalks are recommended at all intersections on all legs, unless pedestrian crossings would decrease safety. Crosswalks should be located outside of the curb radius where possible, while remaining as close to the intersection as possible.

Protected Intersections

Intersections should reduce conflicts between bicyclists and vehicles. Signals control movements, refuge islands create protected spaces, and proper positioning of crossings and conflicts points provide all people the time and space to traverse an intersections.

Bike Signals

Arterial-Boulevards with high bike volumes or intersections that transition from one bike facility to another may need signalization for bicyclists.

Bike Boxes

Bike boxes are recommended at intersections where there may be right or left-turning conflicts between bicyclists and motorists.

Two-Stage Turn Boxes

Two-stage turn boxes provide a formal queuing space for bicyclists needing a two-stage turn. Arterial-Boulevards with high traffic speeds and/or traffic volumes and multi-lane roadways are often appropriate for two-stage turn boxes.

As Arterial-Boulevards such as Franklin Pike redevelop, coordination between Metro, state agencies, and utilities will ensure a more walkable and bikable environment.

Section III: Arterial–Parkway

Arterial–Parkway Defined

Arterial-Parkways (AP) serve longer trips, are high-volume, and are intended for distributing trips throughout the larger street network. Arterial-Parkways are at-grade, limited access roadways.

Intent
Arterial-Parkways prioritize the mobility needs of multiple transportation modes over access to businesses and residences. Access management occurs through the use of long blocks and very limited property access points. Arterial-Parkways provide significant landscaping and multimodal enhancements such as multi-use paths, bikeways and/or sidewalks. Improvements may include some or all of the following: vegetated medians, street trees and other urban design elements that create a linear open space.

Context
Existing Arterial-Parkways are rare in Nashville. State Route 45 and Two Rivers Parkway are at-grade, limited-access roadways that provide mobility for cross-town trips while also acting as linear green spaces with landscaping along them.

Guidelines
These design guidelines are to be used by the private and public sectors when proposing street improvements and/or new streets. The guidelines are expressed in a series of tables and diagrams for street segments and general guidelines for intersections. Figure AP1 shows the Typical Zones and the purposes served by each.

Arterial–Parkway Elements
Tables AP1 and AP2 list the design guidelines for Arterial-Parkway segments and the design elements within the right-of-way. These tables are followed by a variety of possible cross-sections for Arterial-Parkways.

Arterial–Parkway Intersection Guidelines
At the end of the section is a list of guidelines for how to create an appropriate Arterial-Parkway intersection as well as intersections of Arterial-Parkway and other street types.

Arterial-Parkway at a glance

Future Complete Street Function:

- Serve longer vehicular and bicycle trips
- Potentially high traffic volumes
- Distribute trips throughout the larger network
- Connects centers
- Mobility is priority, including cyclists

Potential Design Remedies:

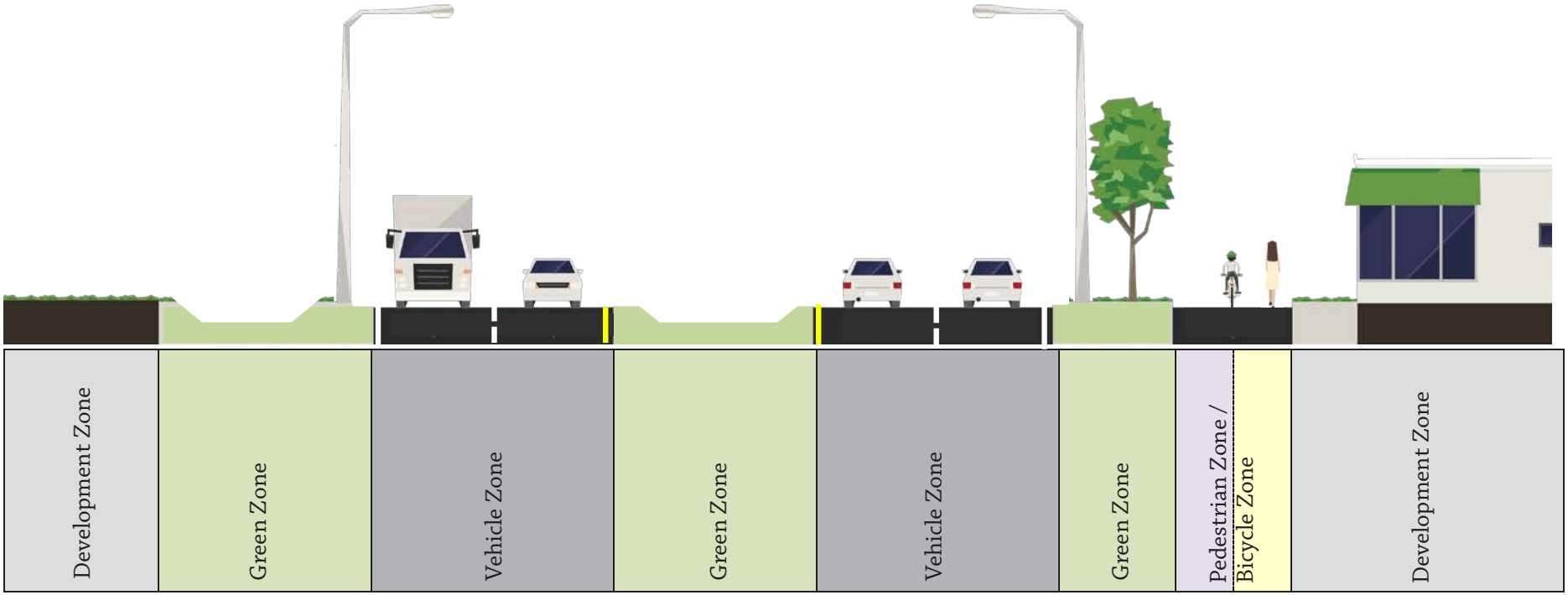
- Introduce access management
- Reduce number of vehicular lanes
- Introduce medians
- Introduce shared use trail for bicycles and pedestrians adjacent to Arterial-Parkway
- Balance transit elements

T3 Suburban Arterial-Parkway

FIGURE AP1

Arterial–Parkway: Typical Zones

Throughout the tables and the diagrams, street sections are divided into zones with corresponding colors. A description of the zones is found on pages 27-31.



Development Zone
Setbacks, design and land uses will vary, but the basic intent for this zone is to orient development toward the street. Access from individual properties to the Arterial-Parkway is very limited.

Pedestrian Zone
Pedestrian travel should be a comfortable travel option on Arterial-Parkways. Therefore, this zone should include unobstructed sidewalks or multi-use paths at appropriate widths for adjacent and surrounding land uses.

Green Zone
Landscaping and trees in the Green Zone serve multiple purposes:
» Buffering for pedestrians from weather automobile traffic
» Green Infrastructure to mitigate stormwater and summer heat/glare
» Underlying support for property values/desirability of real estate

Parking Zone
This zone does not exist on Parkways given their higher speeds and limited-access nature.

Bicycle Zone
Arterial-Parkways typically have higher traffic speeds and volumes, so bicyclists are less likely to feel comfortable in mixed traffic; this zone is important for modal balance, safety and additional buffering between drivers and pedestrians. Bicycle facilities can be provided in a multi-use path.

Vehicle Zone
The Vehicle Zone serves motor vehicles, with a variety of lane configurations, to accommodate high traffic volumes.

Arterial - Parkway Segment Guidelines T2, T3

TABLE AP1

	T2-R/M-AP# T3-R-AP# T2 Rural – Res/Mixed Use – Arterial-Parkway# T3 Suburban – Residential – Arterial-Parkway#	T3-M-AP# T3 Suburban – Mixed Use – Arterial-Parkway#
General Standards		
Block Length	Recommended ½ mile (2,640'); shorter block lengths allowed for intersecting major streets	
Utilities (in order of preferred location)	Within ROW avoiding conflicts with trees and stormwater infrastructure	1) Underground 2) Behind sidewalk (where greater setbacks allow) 3) Planting strip
Stormwater Management	Swales or other Low Impact Development strategies	Curb and gutter, coupled with Low Impact Development strategies
Pedestrian Zone		
Frontage Zone	Necessary width to maintain clear zone	
Pedestrian Travelway (Sidewalk)	1) Multi-use path: 12 ft. swale, 12 ft. path on one side standard 2) Sidewalk may be appropriate in pedestrian oriented areas, 6' standard	1) Multi-use path: 8 ft. planting strip, 12 ft. path on both sides standard 2) Sidewalk may be appropriate in pedestrian oriented areas, 6' standard
Green Zone		
Furnishing Zone	Drainage swale, 12 ft. standard	Recommended 8 ft. or wider planting strip (landscaping/trees primarily in setbacks)
Street Tree Guidelines	Informal plantings with a minimum clear zone of 25 ft. from edge of pavement	
Transit Stops	Stops should be located off the roadway with paved pad for passengers	
Parking Zone		
On-Street Parking	N/A	
Curb Extensions	N/A	
Bike Zone		
(options)	1) Multi-use path 2) Wide outside shoulder	
Vehicle Zone		
Shoulder	10 ft. standard	Not typical
Lane Width	12 ft.	
Medians/Pedestrian Refuge	Recommended 12 ft. or wider vegetated median. Pedestrian refuge should be included at intersections	

TABLE AP2

Arterial–Parkway Segment Guidelines
T4

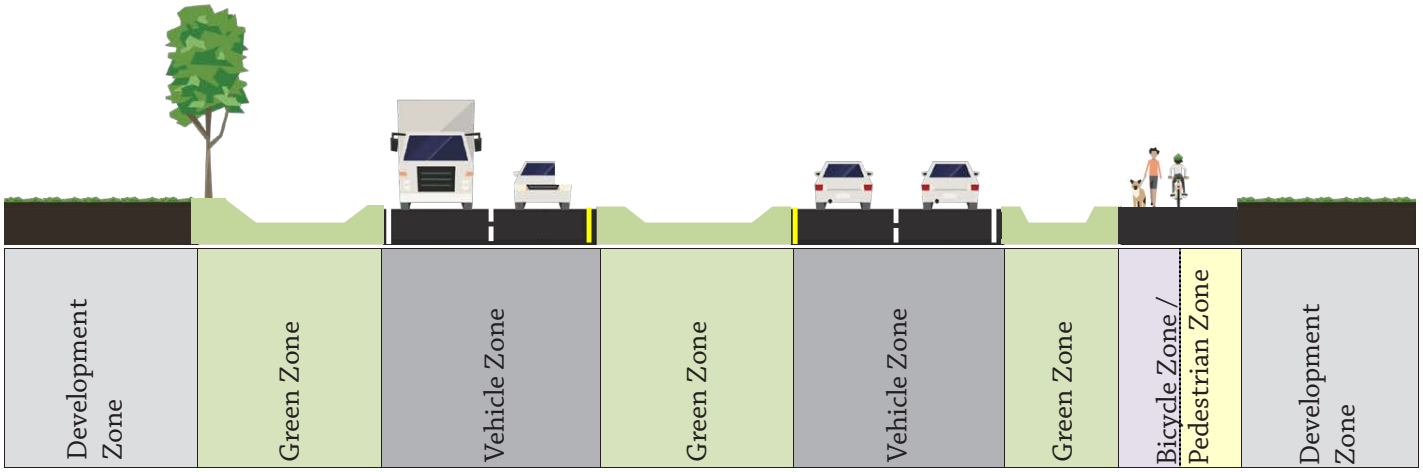
	T4-R-AP# T4 Urban – Residential – Arterial-Parkway#	T4-M-AP# T4 Urban – Mixed Use – Arterial-Parkway#
General Standards		
Block Length	Recommended ¼ mi. (1,320 ft.); shorter block lengths allowed for intersecting major streets	
Utilities (in order of preferred location)	1) Underground (pending no street tree conflict) 2) Alley/service road 3) Behind sidewalk (where greater setbacks allow) 4) Planting strip	
Stormwater Management	Curb and gutter, coupled with Low Impact Development strategies	
Pedestrian Zone		
Frontage Zone	Necessary width to maintain clear zone	
Pedestrian Travelway (Sidewalk) (In order to preferred type)	1) Multi-use path: 8 ft. planting strip, 12 ft. path on both sides standard 2) Sidewalk may be appropriate in pedestrian oriented areas, 8' standard	
Green Zone		
Furnishing Zone	Recommended 8 ft.or wider planting strip (landscaping/trees primarily in setbacks)	
Street Tree planting areas	Informal plantings with a minimum clear zone of 25 ft. from edge of pavement.	
Transit Stops	Stops should be located off the roadway with paved pad for passengers	
Parking Zone		
On-Street Parking	N/A	
Curb Extensions	N/A	
Bike Zone		
(options)	1) Multi-use path: 8 ft. planting strip, 12 ft. path on both sides standard 2) Wide outside shoulder	
Vehicle Zone		
Shoulder	Not typical	
Lane Width	10-11 ft.	
Medians/Pedestrian Refuge	Recommended 12 ft. or wider vegetated median. Pedestrian refuge should be included at intersections	

Arterial–Parkway with Median, Swales and Multi-use Path

FIGURE AP2

Context

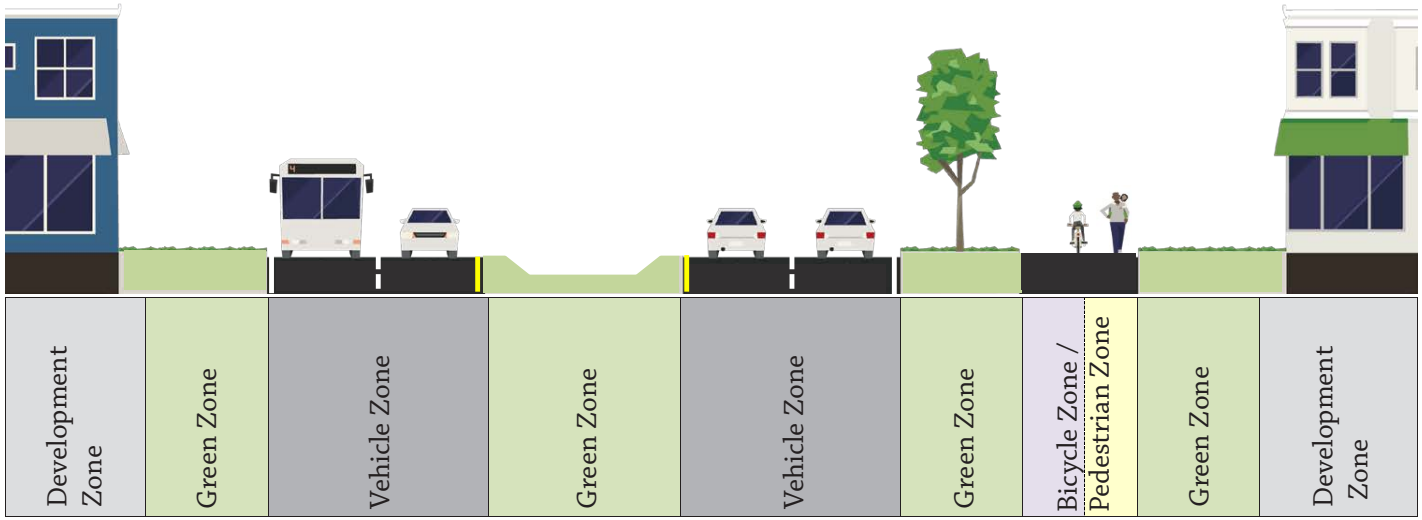
- » T2 Residential
- » T2 Mixed Use
- » T3 Residential
- » T3 Mixed Use



See discussion of Street Elements starting on page 27 for detailed information on each element.

FIGURE AP3

Arterial–Parkway with Median and Multi-use



See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- T3 Residential
- T3 Mixed Use
- T4 Residential
- T4 Mixed Use

Arterial–Parkway Intersection Guidelines

Thoughtful intersection design is essential to reduce conflicts between modes of transportation: vehicles, pedestrians, and cyclists. Good intersection design will allow all users the opportunity to continue their trip in a safe and orderly manner.

Medians

Medians are recommended for all intersections. Arterial-Parkways are typically wide, with multiple lanes for pedestrians to cross. Medians provide a needed refuge for pedestrians mid-crossing.

Left-turn Lanes

Left turn lanes are typical on Arterial-Parkways.

Right-turn Lanes

Right turn lanes are not recommended at Arterial-Parkway intersections with Collector-Avenues. Right turn lanes are typical where Arterial-Parkways intersect with Arterial-Boulevards. When right-turn lanes are necessary a pedestrian island is preferred to increase pedestrian safety. Islands should be a minimum of 50 square feet and landscaped to provide a buffer between vehicles and pedestrians.

Curb Extensions

Not typical on Arterial-Parkways, as these streets have higher speeds and no on-street parking.

Curb Radii

Curb radii should be measured by effective radius of turning movements, not actual curb radius.

Crosswalks

Crosswalks are recommended at all intersections on all legs, unless pedestrian crossing would decrease safety. Crosswalks should be located outside of the curb radius where possible, while remaining as close to the intersection as possible.

Protected Intersections

Intersections should reduce conflicts between bicyclists and vehicles. Signals control movements, refuge islands create protected spaces, and proper positioning of crossings and conflicts points provide all people the time and space to traverse an intersections.

Bike Signals

Arterial Parkways that intersect streets with high bike volumes or intersections that transition from one bike facility to another may need signalization for bicyclists.

Bike Boxes

Bike boxes are recommended at intersections where there may be right or left-turning conflicts between bicyclists and motorists.

Two-Stage Turn Boxes

Two-stage turn boxes provide a formal queuing space for bicyclists needing a two-stage turn. Arterial-Parkways with high traffic speeds and/or traffic volumes and multi-lane roadways are often appropriate for two-stage turn boxes.

Adjacent multi-use path next to a roadway

Section IV: Multimodal Corridor

MULTIMODAL CORRIDORS DEFINED

Throughout Nashville's history, the city's major corridors have supported mass transit in various forms. Originally, streetcars carried people from the city center to outlying neighborhoods. Today, bus service operates in mixed traffic on most major and many collector streets.

As Nashville plans for the future, mass transit will be crucial to the city's growth, prosperity, and preservation of the city's character. The NashvilleNext Growth and Preservation Concept Plan identifies High Capacity Transit Corridors that link Centers. Anticipated employment and residential growth along these corridors and centers will help preserve Nashville's remaining rural character and natural features and support more frequent mass transit service. The High Capacity Transit Corridors will link Nashvillians to housing, jobs, and services with multimodal transportation options. Dedicated transit lanes, high quality streetscaping, wide sidewalks, protected bikeways, linked B-cycle stations, and integrated technologies are some of the elements needed on and connected to these multimodal corridors.

For these reasons, many of the prominent corridors in Nashville—including Nolensville

Pike, Murfreesboro Pike, Gallatin Pike, Clarksville Pike, and Dickerson Pike among others—will need to be designed to provide multimodal options in the future. The MCSP anticipates that each of these streets will be called upon to serve as prominent multimodal corridors for Nashville in the future. The High Capacity Transit Corridors are identified through the road's MCSP designation as either IM for an Immediate Need Multimodal Corridor or LM for a Long Term Need Multimodal Corridor. The MCSP does not provide separate design guidelines for these corridors. They are identified to denote the significance of walking and biking to the corridor in the area and the potential for additional right-of-way needs related to mass transit. As Nashville MTA completes their Strategic Plan Update and undertakes studies of the corridors, the right-of-way needs should be adjusted to reflect current thinking to achieve the best urban design interface between the built environment and a street's multimodal elements.

Intent

The intent of the Multimodal Corridor is to provide greater access to multiple transportation modes through urban design that supports more frequent future mass transit service. Current right-of-way needs will need to be balanced with future needs and flexibility to reallocate road space for more transportation users. Future detailed studies will inform the right-of-way needs along these routes. Walking and bicycling infrastructure linking to these corridors should be optimal.

Immediate Need Multimodal Corridors correlate to the Immediate Need High Capacity Transit Corridors identified in the NashvilleNext Growth and Preservation Concept Plan. These are corridors in which more frequent transit, typically BRT Lite service, is currently operating or anticipated in the short term by 2025. These routes will likely be upgraded to higher capacity transit service through queue jump lanes, dedicated transit lanes, dedicated corridor BRT, streetcar, light rail, or other mass transit modes. Long Term Need Multimodal Corridors correlate to the Long Term High Capacity Transit Corridors. These are corridors where local bus service needs to be established and a transition to BRT Lite service is not imminent. These corridors serve as important links in the overall future transit network, but major transit investments will likely occur beyond the year 2025 or even later.

BRT vehicle with bicycle rack on Nashville's Gallatin Pike route

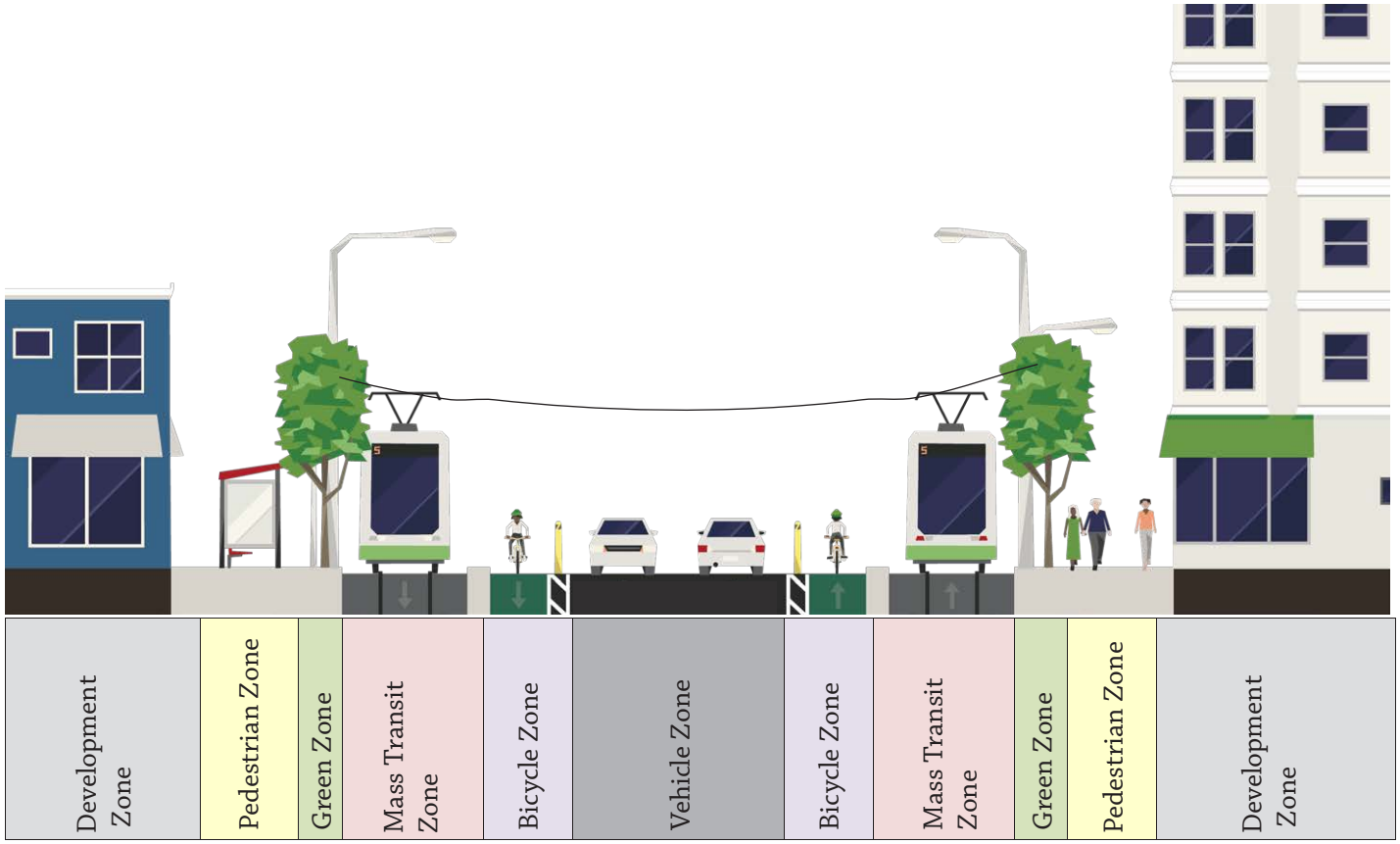
BRT Dedicated Lanes, Eugene, OR

Light rail service in Denver, CO

Connecting transit to walking and biking options provides greater travel choices between destinations. This bus shelter at Cleveland Street and Meridian Street connects to sidewalks that link to the neighborhood, provides bicycle parking, and shelter from weather.

Multimodal Corridor with Dedicated Mass Transit Lanes (Light Rail)

FIGURE M1



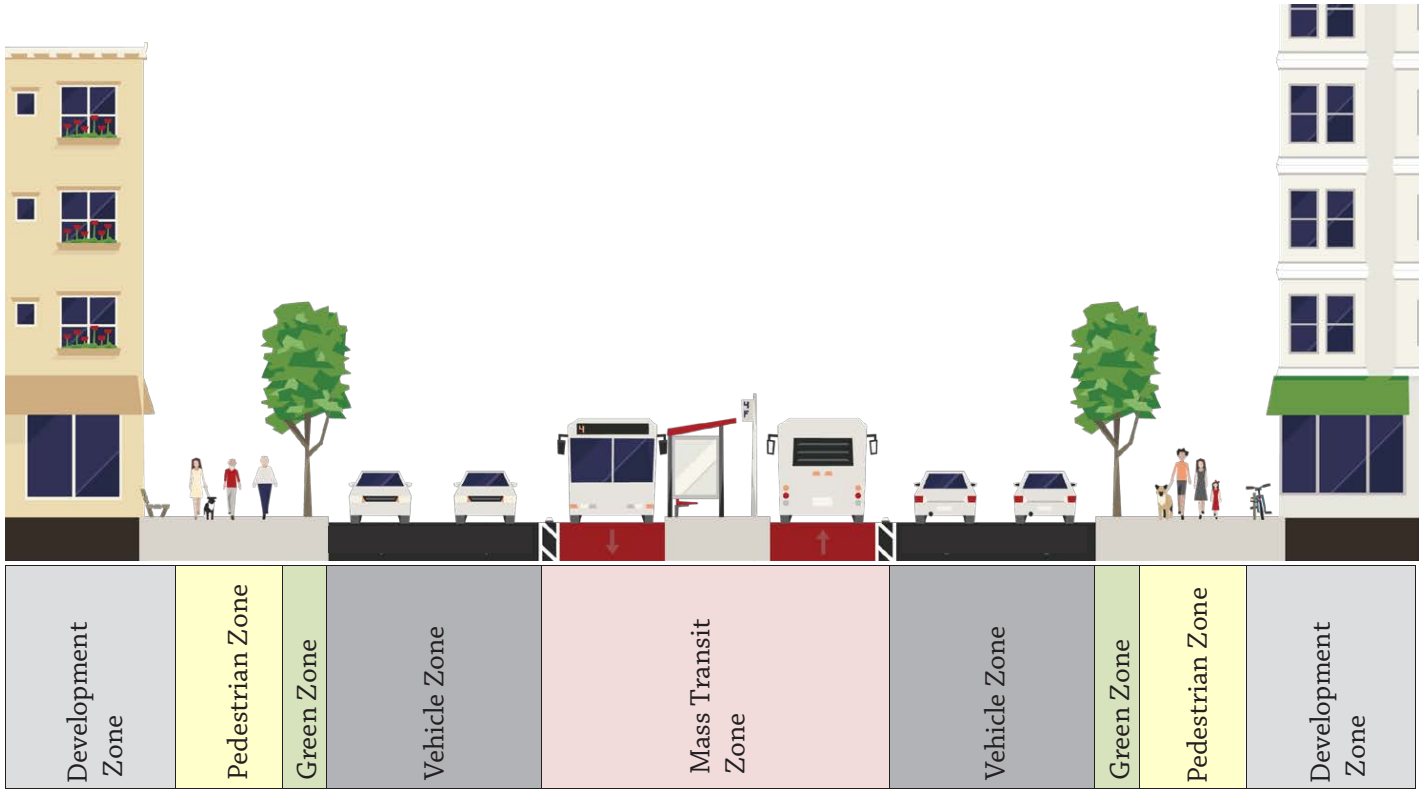
Context

- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

See discussion of Street Elements starting on page 27 for detailed information on each element.

Multimodal Corridor with Dedicated Mass Transit Lanes (Bus Rapid Transit)

FIGURE M2



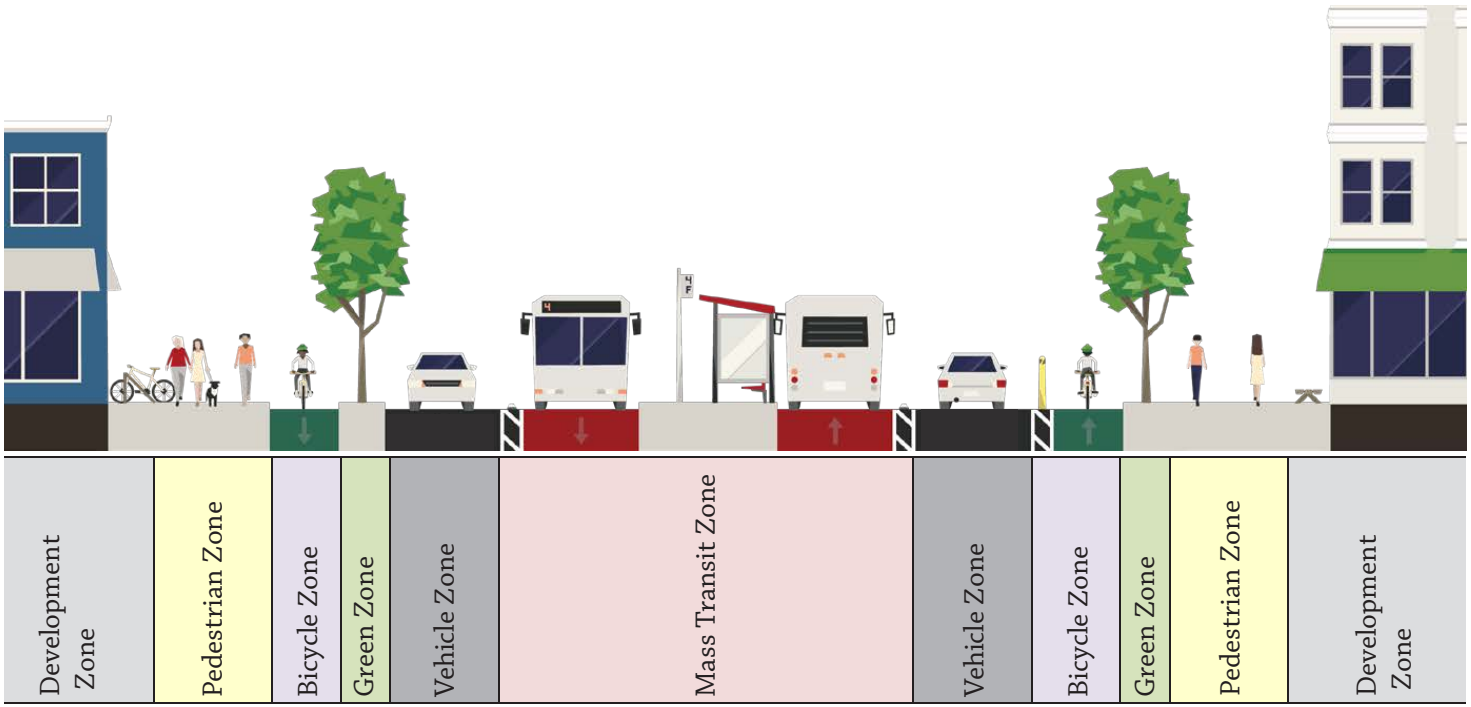
See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T3 Mixed Use
- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

Multimodal Corridor with Dedicated Mass Transit Lanes and Protected Bike Lanes

FIGURE M3



See discussion of Street Elements starting on page 27 for detailed information on each element.

Context

- » T3 Mixed Use
- » T4 Mixed Use
- » T5 Mixed Use
- » T6 Mixed Use

APPENDIX

APPENDIX A:

Right-of-Way Dimensions

Right-of-Way Elements and Dimensions—Quick Reference.

The following charts are provided as a quick reference for both public and private sector use in determining the dimensions of specific elements within the right-of-way (Table A1) and determining the width of the Standard right-of-way for every Major and Collector street type (Table A2).

The tables indicate the recommended dimensions for both the individual street elements and the overall right-of-way width. As indicated in Chapter 3, there will be circumstances in which a street is deemed "constrained" and these dimensions may be adjusted. Please review Chapter 3 for more information regarding constrained facilities.

Table A1: Street Elements Standard Dimensions

Major and Collector Street Plan Ideal Street Standards Quick Reference				Streetside						Travel Way				
				Frontage Zone	Pedestrian Travelway	Furnishing Zone / Planting Strip	Streetside Total	Stormwater		Shoulder	Parking Zone (when applicable)	Bicycle Zone[2] (when applicable)	Vehicle Zone Lane Width	Green Zone Median Width (when applicable)
								Curb & Gutter[1]	Swale					
T2	Residential	Collector Avenue	T2-R-CA	-	12 f t.	12 ft.	**24 ft.**		x	4 ft.	Not Typical	Multi-Use[3]	12 ft.	-
		Arterial Boulevard	T2-R-AB	-	12 f t.	12 ft.	**24 ft.**		x	8 ft.	Not Typical	Multi-Use[3]	12 ft.	-
		Arterial Parkway	T2-R-AP	-	12 ft.	12 ft.	**24 ft.**		x	10 ft.	-	Multi-Use[3]	12 ft.	12 ft. - 16 ft.
	Mixed Use	Collector Avenue	T2-M-CA	-	12 ft.	12 ft.	**24 ft.**		x	4 ft.	Unmarked	Multi-Use[4]	12 ft.	-
		Arterial Boulevard	T2-M-AB	-	12 ft.	12 ft.	**24 ft.**		x	8 ft.	Unmarked	Multi-Use[4]	12 ft.	-
		Arterial Parkway	T2-M-AP	-	12 ft.	12 ft.	**24 ft.**		x	10 ft.	-	Multi-Use[3]	12 ft.	12 ft. - 16 ft.
T3	Residential	Collector Avenue	T3-R-CA	-	6 ft.	6 ft.	**12 ft.**	x		-	Not Typical	6 ft.	10-11 ft.	-
		Arterial Boulevard	T3-R-AB	-	6 ft.	8 ft.	**14 ft.**	x		-	Not Typical	6 ft.	10-11 ft.	6 ft. - 16 ft.
		Arterial Parkway	T3-R-AP	-	10 ft.	12 ft.	**22 ft.**		x	10 ft.	-	Multi-Use[3]	12 ft.	12 ft. - 16 ft.
	Mixed Use	Collector Avenue	T3-M-CA	-	8 ft.	6 ft.	**14 ft.**	x		-	8 ft.	6 ft.	10-11 ft.	-
		Arterial Boulevard	T3-M-AB	-	8 ft.	6 ft.	**14 ft.**	x		-	8 ft.	6 ft.	10-11 ft.	6 ft. - 16 ft.
		Arterial Parkway	T3-M-AP	-	12 ft.	8 ft.	**20 ft.**	x		-	-	Multi-Use[4]	12 ft.	12 ft. - 16 ft.
T4	Residential	Collector Avenue	T4-R-CA	-	6 ft.	6 ft.	**12 ft.**	x		-	8 ft.	6 ft.	10-11 ft.	-
		Arterial Boulevard	T4-R-AB	-	6 ft.	8 ft.	**14 ft.**	x		-	8 ft.	6 ft.	10-11 ft.	6 ft. - 16 ft.
		Arterial Parkway	T4-R-AP	-	12 ft.	8 ft.	**20 ft.**	x		-	-	Multi-Use[4]	11 ft.	12 ft. - 16 ft.
	Mixed Use	Collector Avenue	T4-M-CA	4 ft.	8 ft.	4 ft.	**16 ft.**	x		-	8 ft.	6 ft.	10-11 ft.	-
		Arterial Boulevard	T4-M-AB	4 ft.	8 ft.	4 ft.	**16 ft.**	x		-	8 ft.	6 ft.	10-11 ft.	6 ft. - 16 ft.
		Arterial Parkway	T4-M-AP	-	12 ft.	8 ft.	**20 ft.**	x		-	-	Multi-Use[4]	11 ft.	12 ft. - 16 ft.
T5	Mixed Use	Collector Avenue	T5-M-CA	4 ft.	10 ft.	4 ft.	**18 ft.**	x		-	8 ft.	6 ft.	10 ft.	-
		Arterial Boulevard	T5-M-AB	4 ft.	10 ft.	4 ft.	**18 ft.**	x		-	8 ft.	6 ft.	10 ft.	6 ft. - 16 ft.
T6	Mixed Use	Collector Avenue	T6-M-CA	4 ft.	10 ft.	4 ft.	**18 ft.**	x		-	8 ft.	6 ft.	10 ft.	-
		Arterial Boulevard	T6-M-AB	4 ft.	10 ft.	4 ft.	**18 ft.**	x			8 ft.	6 ft.	10 ft.	6 ft. - 16 ft.

1 - Metro Standard Curb with Gutter = 2.5 ft. (24 inch gutter pan + 6 inch curb)
2 - Min. distance between bike lane outside striping and vertical curb shall be 5 ft. (no less than 3 ft. of bike lane should be part of the paved asphalt,outside the gutterpan);
Bike lane may be 4 ft. minimum when no vertical curb is present
3 - Bicycle Zone and Pedestrian Travelway to be combined into one 12 ft. Multi-use path on one side of the street.
4 - Bicycle Zone and Pedestrian Travelway to be combined into one 12 ft. Multi-use path on both sides of the street.

Table A2: Standard Right-of-Way Widths

Always consult the interactive map for right-of-way width amounts on street segments because these can vary from the standard right-of-way width amounts listed below due to constraints or additional studies. See www.nashville.gov/mpc.

Major and Collector Street Plan Standard ROW Chart				Standard ROW	Bike Lane Standard ROW	Parking Standard ROW	Bike + Parking Standard ROW
D	Industrial	Collector Avenue	D-I-CA2	57 ft.	65 ft.	69 ft.	81 ft.
			D-I-CA3	69 ft.	77 ft.	81 ft.	93 ft.
			D-I-CA4	81 ft.	89 ft.	93 ft.	105 ft.
		Arterial Boulevard	D-I-AB2	57 ft.	65 ft.	69 ft.	81 ft.
			D-I-AB3	69 ft.	77 ft.	81 ft.	93 ft.
			D-I-AB3-MM	69 ft.	77 ft.	81 ft.	93 ft.
			D-I-AB4	81 ft.	89 ft.	93 ft.	105 ft.
			D-I-AB4-MM	81 ft.	89 ft.	93 ft.	105 ft.
			D-I-AB5	93 ft.	101 ft.	105 ft.	117 ft.
			D-I-AB7	117 ft.	125 ft.	129 ft.	141 ft.
T2	Mixed Use	Collector Avenue	T2-M-CA2	80 ft.	-	-	-
			T2-M-CA3	92 ft.	-	-	-
			T2-M-CA4	104 ft.	-	-	-
			T2-M-CA5	116 ft.	-	-	-
		Arterial Boulevard	T2-M-AB2	88 ft.	-	-	-
			T2-M-AB2-MM	88 ft.	-	-	-
			T2-M-AB3	100 ft.	-	-	-
			T2-M-AB4	112 ft.	-	-	-
			T2-M-AB5	124 ft.	-	-	-
		Arterial Parkway	T2-M-AP2	90 ft.	-	-	-
			T2-M-AP3	102 ft.	-	-	-
			T2-M-AP4	114 ft.	-	-	-
	Residential	Collector Avenue	T2-R-CA2	78 ft.	-	-	-
			T2-R-CA3	90 ft.	-	-	-
			T2-R-CA4	102 ft.	-	-	-
			T2-R-CA5	114 ft.	-	-	-
		Arterial Boulevard	T2-R-AB2	86 ft.	-	-	-
			T2-R-AB2-MM	86 ft.	-	-	-
			T2-R-AB3	98 ft.	-	-	-
			T2-R-AB4	110 ft.	-	-	-
			T2-R-AB5	122 ft.	-	-	-
			T2-R-AB5-MM	122 ft.	-	-	-
		Arterial Parkway	T2-R-AP2	90 ft.	-	-	-
			T2-R-AP3	102 ft.	-	-	-
			T2-R-AP4	114 ft.	-	-	-
T3	Mixed Use	Collector Avenue	T3-M-CA2	55 ft.	63 ft.	67 ft.	79 ft.
			T3-M-CA2-MM	57 ft.	65 ft.	69 ft.	81 ft.
			T3-M-CA3	66 ft.	74 ft.	78 ft.	90 ft.
			T3-M-CA4	77 ft.	85 ft.	89 ft.	101 ft.
			T3-M-CA5	88 ft.	96 ft.	100 ft.	112 ft.
		Arterial Boulevard	T3-M-AB2	55 ft.	63 ft.	67 ft.	79 ft.
			T3-M-AB2-MM	57 ft.	65 ft.	69 ft.	81 ft.
			T3-M-AB3	66 ft.	74 ft.	78 ft.	90 ft.
			T3-M-AB4	77 ft.	85 ft.	89 ft.	101 ft.
			T3-M-AB4-MM	79 ft.	87 ft.	91 ft.	103 ft.
			T3-M-AB5	88 ft.	96 ft.	100 ft.	112 ft.
			T3-M-AB5-MM	90 ft.	98 ft.	102 ft.	114 ft.
			T3-M-AB6	99 ft.	107 ft.	111 ft.	123 ft.
			T3-M-AB6-MM	101 ft.	109 ft.	113 ft.	125 ft.
			T3-M-AB7	110 ft.	118 ft.	122 ft.	134 ft.
			T3-M-AB7-MM	112 ft.	120 ft.	124 ft.	136 ft.
		Arterial Parkway	T3-M-AP2	69 ft.	-	-	-
			T3-M-AP3	81 ft.	-	-	-
			T3-M-AP4	93 ft.	-	-	-
			T3-M-AP5	105 ft.	-	-	-
			T3-M-AP6	117 ft.	-	-	-
			T3-M-AP7	129 ft.	-	-	-
	Residential	Collector Avenue	T3-R-CA2	51 ft.	59 ft.	63 ft.	75 ft.
			T3-R-CA2-MM	53 ft.	61 ft.	65 ft.	77 ft.
			T3-R-CA3	62 ft.	70 ft.	74 ft.	86 ft.
			T3-R-CA4	73 ft.	81 ft.	85 ft.	97 ft.
			T3-R-CA5	84 ft.	92 ft.	96 ft.	108 ft.
		Arterial Boulevard	T3-R-AB2	55 ft.	63 ft.	67 ft.	79 ft.
			T3-R-AB2-MM	57 ft.	65 ft.	69 ft.	81 ft.
			T3-R-AB3	66 ft.	74 ft.	78 ft.	90 ft.
			T3-R-AB4	77 ft.	85 ft.	89 ft.	101 ft.
			T3-R-AB4-MM	79 ft.	87 ft.	91 ft.	103 ft.
			T3-R-AB5	88 ft.	96 ft.	100 ft.	112 ft.
			T3-R-AB5-MM	90 ft.	98 ft.	102 ft.	114 ft.
			T3-R-AB6	99 ft.	107 ft.	111 ft.	123 ft.
			T3-R-AB7	110 ft.	118 ft.	122 ft.	134 ft.
		Arterial Parkway	T3-R-AP2	90 ft.	-	-	-
			T3-R-AP3	102 ft.	-	-	-
			T3-R-AP4	114 ft.	-	-	-
			T3-R-AP5	126 ft.	-	-	-
			T3-R-AP6	138 ft.	-	-	-
			T3-R-AP7	150 ft.	-	-	-
			T4-M-CA2	[illegible]	67 ft.	71 ft.	83 ft.

Table A2 continued

T4	Mixed Use	Collector Avenue	T4-M-CA2	59 ft.	67 ft.	71 ft.	83 ft.
			T4-M-CA2-MM	61 ft.	69 ft.	73 ft.	85 ft.
			T4-M-CA3	70 ft.	78 ft.	82 ft.	94 ft.
			T4-M-CA4	81 ft.	89 ft.	93 ft.	105 ft.
			T4-M-CA4-MM	83 ft.	91 ft.	95 ft.	107 ft.
			T4-M-CA5	92 ft.	100 ft.	104 ft.	116 ft.
		Arterial Boulevard	T4-M-AB2	59 ft.	67 ft.	71 ft.	83 ft.
			T4-M-AB2-MM	61 ft.	69 ft.	73 ft.	85 ft.
			T4-M-AB3	70 ft.	78 ft.	82 ft.	94 ft.
			T4-M-AB3-MM	72 ft.	80 ft.	84 ft.	96 ft.
			T4-M-AB4	81 ft.	89 ft.	93 ft.	105 ft.
			T4-M-AB4-MM	83 ft.	91 ft.	95 ft.	107 ft.
			T4-M-AB5	92 ft.	100 ft.	104 ft.	116 ft.
			T4-M-AB5-MM	94 ft.	102 ft.	106 ft.	118 ft.
			T4-M-AB6	103 ft.	111 ft.	115 ft.	127 ft.
			T4-M-AB6-MM	105 ft.	113 ft.	117 ft.	129 ft.
			T4-M-AB7	114 ft.	122 ft.	126 ft.	138 ft.
			T4-M-AB7-MM	116 ft.	124 ft.	128 ft.	140 ft.
		Arterial Parkway	T4-M-AP2	67 ft.	75 ft.	79 ft.	91 ft.
			T4-M-AP3	78 ft.	86 ft.	90 ft.	102 ft.
			T4-M-AP4	89 ft.	97 ft.	101 ft.	112 ft.
			T4-M-AP5	100 ft.	108 ft.	112 ft.	124 ft.
			T4-M-AP6	111 ft.	119 ft.	123 ft.	135 ft.
			T4-M-AP7	122 ft.	130 ft.	134 ft.	146 ft.
	Residential	Collector Avenue	T4-R-CA2	51 ft.	59 ft.	63 ft.	75 ft.
			T4-R-CA2-MM	53 ft.	61 ft.	65 ft.	77 ft.
			T4-R-CA3	62 ft.	70 ft.	74 ft.	86 ft.
			T4-R-CA4	73 ft.	81 ft.	85 ft.	97 ft.
			T4-R-CA4-MM	75 ft.	83 ft.	87 ft.	99 ft.
			T4-R-CA5	84 ft.	92 ft.	96 ft.	108 ft.
		Arterial Boulevard	T4-R-AB2	55 ft.	63 ft.	67 ft.	79 ft.
			T4-R-AB2-MM	57 ft.	65 ft.	69 ft.	81 ft.
			T4-R-AB3	66 ft.	74 ft.	78 ft.	90 ft.
			T4-R-AB3-MM	68 ft.	76 ft.	80 ft.	92 ft.
			T4-R-AB4	77 ft.	85 ft.	89 ft.	101 ft.
			T4-R-AB4-MM	79 ft.	87 ft.	91 ft.	103 ft.
			T4-R-AB5	88 ft.	96 ft.	100 ft.	112 ft.
			T4-R-AB5-MM	90 ft.	98 ft.	102 ft.	114 ft.
			T4-R-AB6	99 ft.	107 ft.	111 ft.	123 ft.
			T4-R-AB7	110 ft.	118 ft.	122 ft.	134 ft.
		Arterial Parkway	T4-R-AP2	67 ft.	-	-	-
			T4-R-AP3	78 ft.	-	-	-
			T4-R-AP4	89 ft.	-	-	-
			T4-R-AP5	100 ft.	-	-	-
			T4-R-AP6	111 ft.	-	-	-
			T4-R-AP7	122 ft.	-	-	-
T5	Mixed Use	Collector Avenue	T5-M-CA2	61 ft.	69 ft.	73 ft.	85 ft.
			T5-M-CA3	71 ft.	79 ft.	83 ft.	95 ft.
			T5-M-CA4	81 ft.	89 ft.	93 ft.	105 ft.
			T5-M-CA5	91 ft.	99 ft.	103 ft.	115 ft.
		Arterial Boulevard	T5-M-AB2	61 ft.	69 ft.	73 ft.	85 ft.
			T5-M-AB2-MM	63 ft.	71 ft.	75 ft.	87 ft.
			T5-M-AB3	71 ft.	79 ft.	83 ft.	95 ft.
			T5-M-AB3-MM	73 ft.	81 ft.	85 ft.	97 ft.
			T5-M-AB4	81 ft.	89 ft.	93 ft.	105 ft.
			T5-M-AB4-MM	83 ft.	91 ft.	95 ft.	107 ft.
			T5-M-AB5	91 ft.	99 ft.	103 ft.	115 ft.
			T5-M-AB5-MM	93 ft.	101 ft.	105 ft.	117 ft.
			T5-M-AB6	101 ft.	109 ft.	113 ft.	125 ft.
			T5-M-AB6-MM	103 ft.	111 ft.	115 ft.	127 ft.
			T5-M-AB7	111 ft.	119 ft.	123 ft.	135 ft.
			T5-M-AB7-MM	113 ft.	121 ft.	125 ft.	137 ft.
T6	Mixed Use	Collector Avenue	T6-M-CA2	61 ft.	69 ft.	73 ft.	85 ft.
			T6-M-CA3	71 ft.	79 ft.	83 ft.	95 ft.
			T6-M-CA4	81 ft.	89 ft.	93 ft.	105 ft.
			T6-M-CA5	91 ft.	99 ft.	103 ft.	115 ft.
		Arterial Boulevard	T6-M-AB2	61 ft.	69 ft.	73 ft.	85 ft.
			T6-M-AB2-MM	63 ft.	71 ft.	75 ft.	87 ft.
			T6-M-AB3	71 ft.	79 ft.	83 ft.	95 ft.
			T6-M-AB3-MM	73 ft.	81 ft.	85 ft.	97 ft.
			T6-M-AB4	81 ft.	89 ft.	93 ft.	105 ft.
			T6-M-AB4-MM	83 ft.	93 ft.	95 ft.	107 ft.
			T6-M-AB5	91 ft.	99 ft.	103 ft.	115 ft.
			T6-M-AB5-MM	93 ft.	101 ft.	105 ft.	117 ft.
			T6-M-AB6	101 ft.	109 ft.	113 ft.	125 ft.
			T6-M-AB6-MM	103 ft.	111 ft.	125 ft.	127 ft.
			T6-M-AB7	111 ft.	119 ft.	123 ft.	135 ft.
			T6-M-AB7-MM	113 ft.	121 ft.	125 ft.	137 ft.

Both Immediate Need Multimodal (IM) and Long Term Need Multimodal (MM) designations are labeled in the chart as Multimodal (MM)

Local Street—A Standard right-of-way for local streets shall be set at 50 ft. for all existing streets.

Downtown Local Street—A Constrained right-of-way for local streets shall be set within the boundaries of the Downtown Code. These can exceed 50 ft. Consult the interactive map for more information.

APPENDIX B: RESOURCES AND TOOLS USED TO DETERMINE THE CLASSIFICATION OF EACH STREET

Process for Determining Functional Design Type

In updating the MCSP in 2011, functional design type decisions were based on four primary factors:

1. Innovative best practices coupled with well-established practices (FHWA Functional Classification). See below, "Best Practices for Network Design," for more information on factors influencing Nashville and Davidson County's network.
2. Mobility 2030's (the city's tansportation plan adopted in 2011) guiding principles for creating a sustainable transportation system. These principles guided an extensive review of existing conditions using Geographic Information Systems (GIS) research that included assessment of aerial photography, existing buildings and street patterns, existing and proposed land uses and built form, and existing right-of-way and environmental constraints (floodplains, steep topography).
3. The Nashville Area MPO's regional travel demand model, which allowed staff to model proposed street classifications and evaluate the results for each proposal's strength of outcomes in creating a sustainable transportation system for Nashville and Davidson County.
4. Review and evaluation of the proposed street classifications by Planning Staff, partner agencies such as Public Works and TDOT, and the community resulted in a reclassification of some streets. The regional travel demand model was not re-run because the changes made would have only added more capacity in the street network.

Nashville Area Metropolitan Planning Organization (MPO) Travel Demand Model

Like most MPOs, the Nashville Area MPO has a Travel Demand Model that guides transportation planning decisions for its seven-county planning area (Davidson, Rutherford, Sumner, Williamson, Wilson and parts of Maury and Robertson counties). Planning staff ran the travel demand model to begin the MCSP update process in 2010. The following results were just one part of the decision-making process. Other factors weighed included those outlined in Chapters 1 and 2 of the MCSP, and those reflected in the *Mobility 2030* guiding principles. Following review by the Metro Public Works Department and Nashville community members changes to street designations occured which resulted in slight alterations to the figures listed.

A travel demand model is a computer software package that mimics the "real world" transportation system in a basic four-step process:

1. **Trip Generation**—This step considers socioeconomic data (households, population, employment) and land use data (density, use) for traffic analysis zones (TAZs), producing trips generated by a given land use or household type. This process looks at the relationship between "productions" (i.e. residential areas, where people are coming from) and "attractions" (i.e. employment and commercial centers, where people are going).
2. **Trip Distribution**—With the total number of trips (i.e. travel demand) estimated, this step then matches "productions" to "attractions." The process for trip distribution relies on the assumption that time spent traveling is perceived negatively; the more distant the destination, the more burdensome the trip. Therefore, most of the trips produced in a given zone will be attracted to surrounding or nearby zones; some will be attracted to moderately distant zones; and very few are attracted to very distant zones.
3. **Mode Choice**—This step predicts likely travel modes for the movement of people and goods in the region. As of April 2011, the Nashville Area MPO has developed a mode choice model that will predict the probability of travel by specific modes. The mode choice model will assume mode choices based on relative availability and attractiveness of existing and future bus and commuter rail service. It is assumed that when transit options are introduced to the region, it will have a positive effect on congestion. Factors that are considered in the attractiveness of a mode include but are not limited to: accessibility of transit, automobile ownership, proximity to HOV lanes, transportation costs, parking cost,

and time required to use the mode.

4. **Trip Assignment**—The final step in the process is to estimate the routes people and goods will take in the region. This step creates traffic volumes that find the best "path" through the network, determining the shortest way both in terms of time and distance to get from TAZ to TAZ. Once a given street reaches its capacity, the model then starts diverting trips to the next best available link until all "productions" are matched with "attractions." This step is important for estimating travel speeds, which are the primary indicator of congestion.

Methodology/Travel Demand Model Background

The Nashville Area MPO defines "congestion" as less than 70 percent of free-flow speed. For example, on a 40 mph street, traffic would be traveling less than 28 mph in a 70 percent free-flow speed. For the update of the MCSP, the Metro Planning Department further refined this standard to show a greater range of congestion levels ranging from <=50 percent of free-flow speed. This range is more appropriate for developed areas of the city that have more compact development patterns, access to transportation options (pedestrian, bicycle, and transit) and a more walkable nature that benefits from slower speeds.

Defining Congestion

The following is an example of how an arterial street, with a posted speed of 40 miles per hour (i.e. free-flow speed) is assessed under the Metro Planning network scenario.

» < 50% of free-flow speed = Severe Congestion: i.e. 40 mph street, with traffic moving less than 20 mph

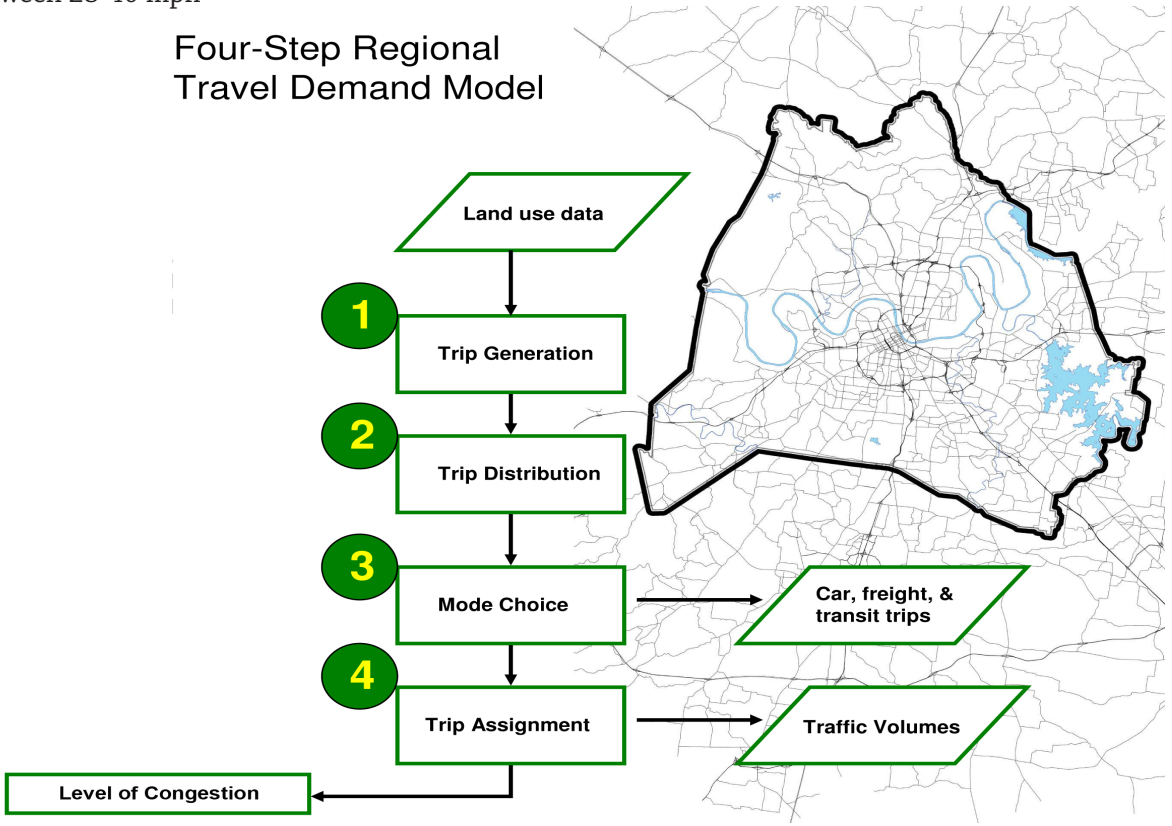
» 50-70% of free-flow speed = Moderate Congestion: i.e. 40 mph street, with traffic moving between 20-28 mph

» > 70% of free-flow speed = Not Congested: i.e. 40 mph street, with traffic moving between 28-40 mph

Scenario Modeled with the MPO Model

Metro Planning staff used the MPO model to find results for four different scenarios. While Scenario 1 is based on 2008 population and employment figures, Scenarios 2, 3 and 4 are based on population and employment projections for the year 2035 in addition to widened and newly-constructed streets.

1. **2008 Base Year**—This scenario assumes all existing roads of the transportation network as of 2008.



Four Step Regional Travel Demand Model

2. **2035 MPO Existing + Committed Projects (E+C)**—This scenario assumes all the existing roads plus build-out of the MPO's Transportation Improvement Program (TIP) projects that are already funded and ready for construction between 2008-2012. Existing + Committed includes transportation projects that are in the MPO's TIP and the fiscally-constrained portion of the Regional Transportation Plan (RTP).
3. **2035 MPO Regional Transportation Plan (RTP) and E+C**—This scenario assumes the build-out of all short-term TIP projects (i.e. E+C) and all RTP projects (widening projects, planned bridges over the Cumberland River and other projects that have no funding or engineering as of December, 2009).
4. **2035 Major and Collector Street Plan Scenario (MCSP)**—This scenario is the proposal included in this MCSP. It includes existing roads plus all RTP Freeway and Expressway projects, plus staff recommendations for upgrading and expanding existing roads, in addition to adding/upgrading Nashville and Davidson County's surface street network. This scenario also assumes upgrading of existing streets' functional classification (i.e. changing from local to collector) and build-out of new surface streets in a denser urban street network (generally half- mile spacing between collector streets at a minimum).

Travel Demand Model Results

The 2035 MCSP network produces better congestion results and a finer-grained street network that lessens Vehicle Miles Traveled (VMT) growth and better supports walkability/ transit than the Nashville Area MPO's current Regional Transportation Plan (RTP). While the model measures congestion, VMT is equally or more important as a measure of a transportation system's effectiveness. Lane miles, another transportation indicator, are listed in the summary below. Key indicators of the Metro Planning network's effectiveness include:

1. The 2035 MCSP's network produces 41 fewer lane miles of severe congestion than RTP
2. The 2035 MCSP's network reduces the growth of VMT by 851,933 miles daily over the RTP network. High and growing VMT (greater than 30 miles per capita) can negatively impact the quality of life by:
   - » Degrading air quality
   - » Lessening opportunities for active living
   - » Increasing vehicle crash rates
   - » Lessening area economic growth and competitiveness
3. The 2035 MCSP's network creates 31 more lane miles of total street network than the RTP

Lane Miles

2008 Base Year	2,946
2035 E+C	2,972
2035 MCSP	3,412
2035 E+C & RTP	3,381

Lane Miles greater than Existing + Committed (E+C)

2035 MCSP:	440
RTP:	409

4. The 2035 MCSP total street network includes the following changes (users should reference the official map for the MCSP for specific locations of changes):

	Total Daily VMT	Population	VMT per Capita
2008 Base Year	**18,941,692**	**626,144**	**30**
2035 E+C	24,447,708	752,326	32
2035 RTP & E+C	25,371,010	752,326	34
2035 MCSP	24,519,077	752,326	33
	851,933	Less daily VMT under MCSP	

By 2035 Davidson County population grows 20%, or 126,182 people

Regional average VMT for 2000: 31 VMT per capita

Davidson County Vehicle Miles Traveled (VMT)

201 lane miles of widening

72 ln mls of Arterials—Widen to 3 Lanes

28 ln mls of Collectors—Widen to 3 Lanes

14 ln mls of Arterials—Widen to 4 Lanes

87 ln mls of Arterials—Widen to 5 Lanes

142 lane miles of Planned Streets

46 ln mls of Planned New Arterials

76 ln mls of Planned New Collectors

20 ln mls of Planned New Expressway (Harding Pl. Extension north to I-40)

126 lane miles of Functional Classification Change

110 lane miles of Upgrade Locals to Collectors

2 lane miles of Upgrade Locals to Arterials (Downtown)

4 lane miles of Upgrade Collectors to Arterials

10 lane miles of Downgrade Arterials to Collectors

5 lane miles of Downgrade Collector to Local

Best Practices for Network Design

The guidance in this plan describes best practices that draw upon the philosophies and practices of Context Sensitive Solutions and Complete Streets. The focus is on major thoroughfares where development intensity, mix of land uses and design features combine to create the opportunity for walking, transit and biking to be feasible transportation choices.

The best practices presented in this plan address:

1. The relationships and tradeoffs involved in balancing mobility needs, adjoining land uses, and environment and community interests;
2. Approaches to resolving the challenges encountered on a individual thoroughfare by addressing the larger scale of the network or corridor;
3. Guidance to identify and select thoroughfare types and designs to best meet the needs of a particular context; and,
4. Design criteria for roadway elements.

Best Practices for Network Design

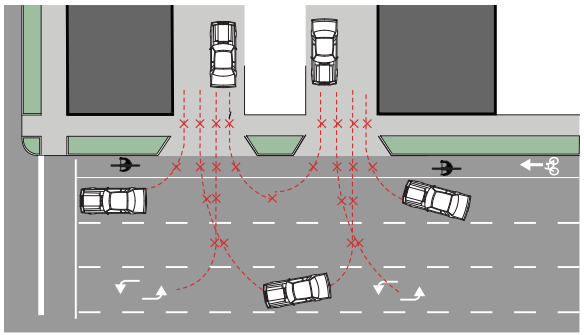
	Preferred Spacing Interval[1]	Average Width (FC-FC[2] /R.O.W.[3])	Average Length	Average Daily Traffic	Average Speed
Principal Arterial (State / U.S. highways)	3-4 miles (controlled access, i.e. grade-separated)	6 lanes (72'/300')	Greater than 5 miles	30,000-100,000	55 mph or greater
	1 mile (limited access)	5 lanes (60'/92')	Greater than 5 miles	40,000-60,000	35-40 mph
Minor Arterial (city / county streets)	Urban/Suburban : 1 mile	5 lanes (60'/92')	2-10 miles	10,000-40,000	35-40 mph 25-30 mph (in Centers)
	Rural: 2 miles	2 lanes (24'/60')	Greater than 10 miles	n/a	45-50 mph
Collector	Urban/Suburban: 1/2 mile (2,640')	2-3 lanes (24-36'/52'-64')	1-2 miles	2,000-10,000	30-35 mph 25-30 mph (in Centers)
	Rural: 1 mile	2 lanes (24'/60')	Greater than 2 miles	n/a	35-40 mph

[1] Spacing guidelines reflect "ideal network"; distances may vary in relation to existing development/environmental constraints. Planned/new development should seek to meet these standards.
[2] **F**ace-of-**C**urb to **F**ace-of-**C**urb (FC - FC); **R**ight-**O**f-**W**ay (R.O.W.)
[3] Re-allocation of *pavement width* is main consideration for existing streets in more urban areas; *right-of-way width* (R.O.W.) has more flexibility and consideration in planned/developing areas.

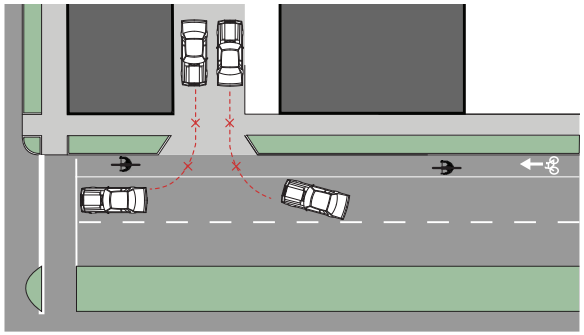
APPENDIX C GLOSSARY

Access – The ability to get in and out of surrounding land uses such as businesses or residences on a street.

Access management – Regulations of access to streets, roads, and highways from public roads and private driveways. Regulations may include, but are not limited to, restrictions on the siting of interchanges; restrictions on the type, number and location of access points; and the use of physical controls, such as signals, channelization and raised medians.

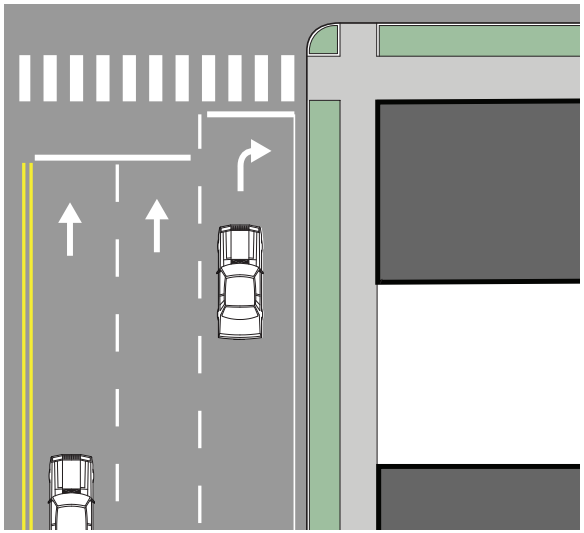


The possibility of conflict increases on streets with multiple curb cuts.



Streets with access management have less conflict.

Advance stop bars – Pavement marking used to stagger outside lane closer to crosswalk, allowing right-turning drivers greater visibility without encroaching into crosswalk.



Community Character Policies – Nashville and Davidson County's land use policies, covering the natural and built environment from natural and rural settings to Downtown. Community Character Policies are applied to all property during the Community Plan update process. See *Community Character Manual* (CCM) at www.nashville.gov/mpc for further detail.

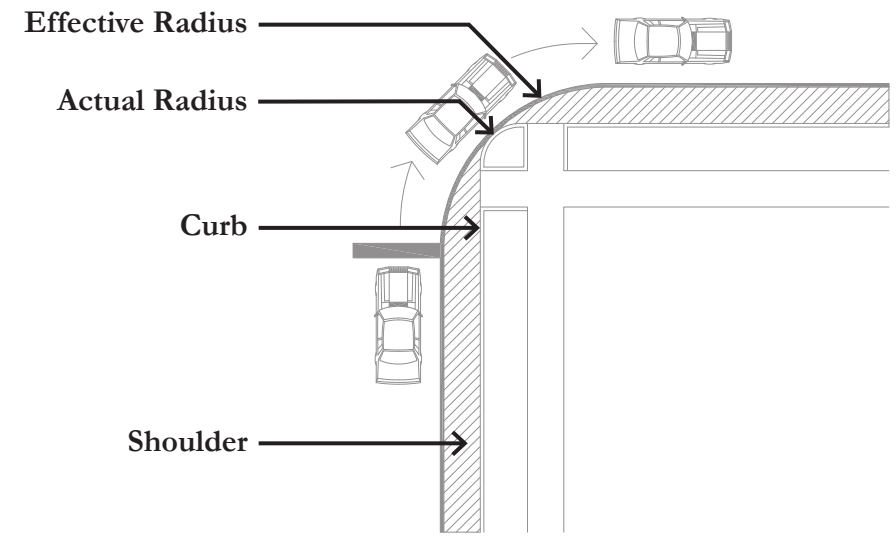
Cross section – A section-view of a street's elements including travel lanes, sidewalks and landscaping.

Curb radius (radii for plural) – The sharpness of a corner at an intersection. Curb radii should be designed based on the minimum requirement of the associated vehicle usage. See the accompanying diagrams and implications of various curb radii.

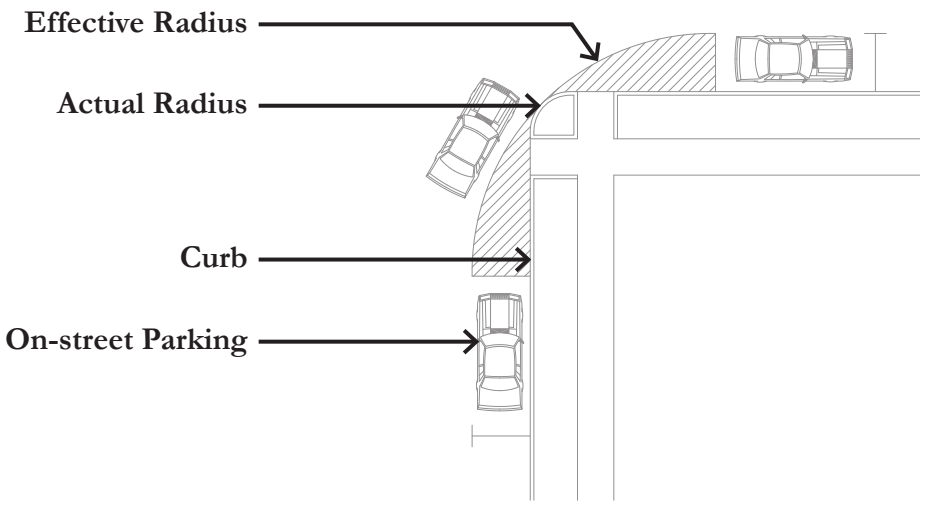
Curb radius, actual - Actual radius is the actual physical radius of concrete curb.

Curb radius, effective – The effective curb radius is the radius needed for a vehicle to complete a turning movement. It is based on the design conditions of the roadway utilizing shoulders or on-street parking as buffers for turn movements allowing more room to maneuver turn.

A small curb radius slows down turning vehicles, which makes an intersection safer for pedestrians. Reducing the curb radius can cut the time it takes to cross a two-lane street nearly in half:



Intersection with shoulder



Intersection with on-street parking

Far-side bus stop – Far-side bus stops are stops located just after a signalized intersection (see graphic). They are the most preferable stop location since they allow approaching drivers and bicyclists to see a stopped bus in advance and move around it.

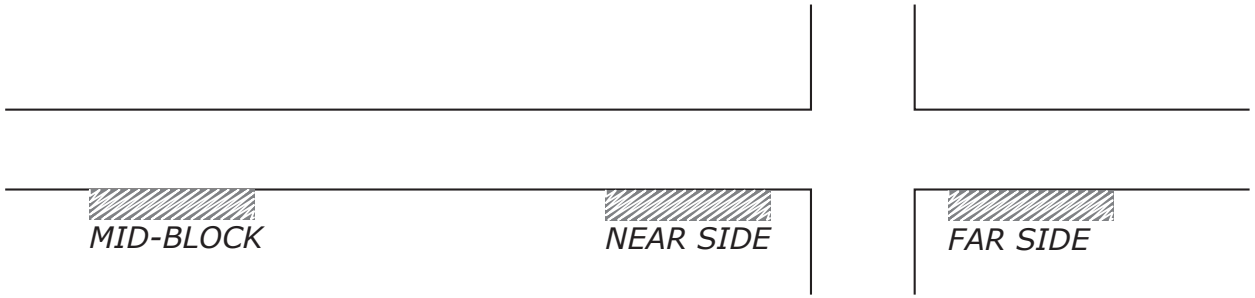
Functional Design Type – The purpose of the Functional Design Type is to classify streets according to the character of service they are intended to provide and to design those streets so that they fit their context and serve multiple users. Each street is labeled, in this document and in mapped form, with one of the three Street Types – Collector-Avenue, Arterial-Boulevard, and Arterial-Parkway.

Geometric design – Design that deals with the dimensions of a street and the relationships of its features such as alignment, profile, grades, widths, sight distances, clearances, and slopes.

Lane miles – A lane mile reflects a street segment's length, multiplied by its number of lanes. For example, a two-lane road that is one mile long creates two lane miles.

Land use – The type of use activity (residential, industrial, mixed use, etc.) occurring on a land parcel or within a building situated upon a land parcel. For example, a building on the corner of a city block, with shops on the ground floor and residences located above, is a "mixed use" land use.

Light Imprint – The term generally used for such sustainable design practices is Low Impact Development (LID), a relatively new stormwater management strategy that is used in several cities and towns across the country including Nashville. Examples of local LID projects can be found on the Metro Water Services website under Stormwater at http://www.nashville.gov/stormwater/index.asp. Similar to LID, but broader in its scope, is Light Imprint Development, which includes but goes beyond stormwater management. Light Imprint adds to sustainable stormwater management practices the development of compact, walkable neighborhoods in accordance with New Urbanist principles, See http://www.lightimprint.org/ for further information.



Bus Stop Locations in Relationship to an Intersection

Low Impact Development – Low Impact Development (LID) practices are engineering techniques that slow, store, filter and infiltrate stormwater using natural materials like vegetation and stone. These techniques contrast with traditional stormwater sewers, which quickly move large amounts of runoff into large capacity storage basins or directly into water bodies. LID's primary goal is to reduce runoff volume by infiltrating rainfall water to groundwater, evaporating rainwater back to the atmosphere and finding beneficial uses for water rather than exporting it as a waste product down storm sewers. The result is a landscape with less surface runoff and less pollution damage to lakes, streams and coastal waters. (Source: Natural Resources Defense Council.)

Major and Collector Street Plan (MCSP) – The comprehensive plan and implementation tool for guiding public and private investment in the streets and highways the make up the backbone of the city's transportation system. It further refines the guiding principles of *Mobility 2030*, the transportation element of Nashville and Davidson County's larger General Plan, and by mapping the vision for Nashville and Davidson County's major and collector streets.

Metropolitan Planning Organization (MPO) – The regional planning agency responsible for transportation planning and approval of federal transportation funding for the region including Davidson, Rutherford, Sumner, Williamson, Wilson and parts of Maury and Robertson counties.

Mobility – The ability to move people and goods via multiple transportation modes (pedestrian, bicycle, mass transit, freight and motor vehicle) through an area.

Pedestrian refuge – a small section of pavement between travel lanes within an intersection where pedestrians can stop for safe crossing of the full intersection. A rfuge should be provided where medians exist or introduced into a cross section where intersection widths are too long to cross in one safe movement.

Regional Transportation Plan (RTP) – The document resulting from regional collaboration and consensus on the region's transportation system, and serving as the defining vision for the region's transportation systems and services. In metropolitan areas, this is the official multi-modal transportation plan addressing no less than a 20-year planning horizon that is developed, adopted, and updated by the Metropolitan Planning Organization (MPO).

Segments – The parts of streets that run between intersections. This is where pedestrian, bicycle and vehicle elements like sidewalks, bike lanes and travel lanes influence safety and congestion.

Shared pavement marking – Sometimes called a "sharrow" (shared-arrow) or "bike chevron," this is a pavement marking that highlights a bike route when a street does not have enough room for a striped bike lane. This pavement marking lends greater legitimacy to bike routes than "Share the Road" signs.

Street Context – The Street Context adds to the understanding of context by defining the predominant existing or intended development pattern flanking a given street section. This designation influences design elements like setbacks and sidewalk widths. The three Street Context designations used in this document are Residential, Mixed Use, and Industrial.

Transect (Environment):– A system for categorizing, understanding and designating the various levels of development within a region, from the most rural to the most urban. Nashville and Davidson County's Transect consists of seven categories of natural and built environments:

» T1 Natural
» T2 Rural
» T3 Suburban
» T4 Urban
» T5 Center
» T6 Downtown
» D District

The Major and Collector Street Plan covers six Transect categories. T1 Natural areas have roads, but they are often local roads, which are not addressed in the MCSP. Districts vary, so streets running through them have Functional Design Types applied that correspond with the most logical adjacent Transect Category.

For example: T3 Suburabn-Residential-Collector-Avenue.

Trip lengths – The distance of a given trip. Shorter, more direct trips via interconnected streets and pedestrian networks foster transportation options that include walking, biking, and transit in addition to driving.

Vehicle Miles Traveled (VMT) – The total number of miles traveled by all vehicles in a given geographic area. VMT per capita, especially if it's over 30 miles per day per person, is often associated with poor air quality, increased risk for obesity and related chronic health problems, and auto crash rates.

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