

Missouri Livable Streets Design Guidelines

August 2011





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Executive Summary

The Missouri Livable Streets Design Guidelines was created to provide guidance and references for Missouri communities to create Livable Streets. Livable Streets is a new way of looking at transportation. Its focus is on providing transportation corridors for motor vehicles and for people on foot, in a wheelchair, or on a bike.

Communities with the Livable Streets have a higher quality of life and have experienced economic benefits as well. There are many Missourians that are unable to drive due to economic, age, physical impairments, or other barriers. By providing Livable Streets, these Missourians can lead more productive, active lives. Livable Streets also address the needs of many able-bodied people that want active transportation options for commuting and for short trips.

Livable Streets, also known as Complete Streets, consider the needs of all of the transportation users. For instance, Livable Streets sometimes provide sidewalks for pedestrians, scaled to the context of the built environment. Livable streets also consider universal design guidelines that provide space for those who use assistive devices. Livable Streets also consider bicyclists' needs as well. Livable Streets consider the needs of all transportation users whether they drive, bike, walk or wheel.

Livable Streets help create livable communities. Through active transportation options, communities will be healthier, safer, and more successful.

The steps to adopt a Livable Streets Policy are detailed in these guidelines. Additional information and resources are referenced. There is also a template for a model Livable Streets Policy resolution. As with all policies, public input and stakeholder participation will lead to a policy that meets the preferences of each community.

Once a Livable Streets policy is in place, the community's entire transportation emphasis will shift from vehicles to a complete view of their transportation needs. The accomodation of all road users is governed by multiple design guidelines. The key guidelines are referenced along with guidance on the combination of the different elements of a Livable Street.



Planning

1.0 Missouri Roads

Just over 100 years ago, motorized vehicles were not a consideration in road design, which focused on moving pedestrians, horses, cattle, and wagons along Missouri roads and trails. In 1883, a “self-propelled vehicle” was built in St. Louis, the first beginnings of the Age of the Automobile in Missouri. Although initially motorized vehicles were considered a nuisance, by the 1910s, Missouri motorists were demanding better roads to accommodate their vehicles. In response, in 1917 the Hawes Law made road building a responsibility of the State, not the counties, and in 1921 the citizens of Missouri passed a \$60 million bond issue to create a statewide network of improved roads.¹

The almost singular goal of this statewide network of roads was to accommodate volumes of fast moving motorized vehicles through mostly rural areas. (See typical road below.)



Many of these early Missouri highways became the main thoroughfares for cities that grew up around them. As the cities grew, they followed the design standards of the roads in place, and when utilizing federal or state funds to build their new arterials, they used the state design standards. Although Missouri’s motorized transportation system benefitted greatly from this focus,

in many regards it has presented barriers to safe and efficient non-motorized transportation. In these types of main thoroughfares, such as the one pictured below, there simply is no safe route or refuge for pedestrians and bicyclists.



Since the 1950’s, conventional street design theory has also played a role in unintentionally discouraging non-motorized transportation. The focus of this theory is minimizing congestion of motorized vehicles, even at the busiest times. This theory creates a hierarchy of street types, the “functional classification system.” In this system, local streets serve local residential access only and have limited or no connectivity to each other, whereas through traffic is funneled into higher levels of streets, collectors, arterials, and freeways, each with progressively higher traffic volumes, wider pavements, and higher speeds.

Implementing this theory inherently suppresses opportunities for walking, bicycling, and transit travel, since the limited connectivity of the street system creates barriers causing significant detours for the lower-speed bike and pedestrian modes. The higher level streets are inhospitable to those walking and biking because the high traffic volumes and wide intersections make traveling on or crossing difficult for those not in cars.

The picture on the next page shows an example of the large intersections that are created when following this traffic management theory.



The Missouri Highways and Transportation Commission formed a Bicycle and Pedestrian Advisory Committee (BPAC) in 1998 to address access concerns. Led by a Non-Motorized Transportation Engineer, BPAC developed policies and standards related to bicyclists and pedestrians. With cooperation from committee members who represent constituencies across Missouri, this group successfully updated state transportation policies to better accommodate bicycling and walking. Since the BPAC's dissolution in 2010 more work remains to be done on bicycle and pedestrian design policy at the state level in Missouri.

Missourians, like many Americans, desire a new concept for their streets, one that accommodates all modes of transportation, improving the livability within the cities, and improving the quality of the transportation system. As a result of this interest, there is now a national movement focused on building transportation systems for all types of users called "Livable Streets." As a logical evolution to their efforts, the Missouri Department of Transportation (MoDOT) has started looking into institutionalizing the non-motorized transportation into their planning, design and maintenance policies. MoDOT is directly responsible for more than 33,000 miles (one-quarter) of Missouri roadways, and many communities follow MoDOT standards for road design. Therefore, updating MoDOT's policies and standards is a crucial step in promoting Livable Streets in Missouri.

Local governments are also updating their street standards to better consider all users' needs. As of

August 2011, 11 Missouri cities have adopted livable or complete streets policies.

1.1 The Dawning of Livable Streets

Livable Streets (also known as Complete Streets) are streets for everyone. They provide safe access for all legal road users. This includes pedestrians, bicyclists, motorists and transit riders of all ages and abilities. As shown in the picture below, Livable Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations.



By adopting a Livable Streets policy, communities direct their transportation planners and engineers to institutionalize Livable Streets. This means that every transportation project will make the street network better and safer for drivers, transit users, pedestrians, and bicyclists – making their town a better place to live.²

Livable Street designs are flexible and sensitive to the road's surrounding conditions, or "context." Context of a business district is different from a residential area. A city arterial roadway may pass through numerous different areas. The project goals and final design may change considerably for different segments of the same roadway.

Livable Streets flexibility is a product of a process, integrating a full range of stakeholders. Stakeholders help identify the core goals and define the context. Designers develop a spectrum of options to allow the



stakeholders reach consensus on the best solution that consider the needs of all users. Designing for the roadway classification and projected traffic demand is important, but it should not be the only objective. In urban and suburban areas, capacity may be a lower priority than other factors. In these areas, walkability, economic development or historic preservation may fit the context better. Many times, stakeholders will accept some congestion to maintain the area's context.

Many benefits can be achieved by incorporating Livable Streets concepts. These include:

- ▶ Routinely provide for the needs of all street users. This can reduce injuries, reduce the need for retrofit projects, and reduce liability exposure. By designing in reduced speeds, streets are made safer for those in and outside of motor vehicles.
- ▶ Beyond merely making streets passable for people on foot, bike, and wheelchair, livable streets can create an environment where people choose to use these modes for pleasure and recreation, in addition to mobility.

- ▶ Public transit users also benefit from the safety and amenities that can be provided when their needs are routinely accommodated.
- ▶ Livable Streets are places that support commercial activity and may be destinations in their own right.
- ▶ Making walking, bicycling, and transit use safer, more comfortable, and more convenient can attract more people to those modes and potentially reduce dependence on auto travel, especially for neighborhood trips.

Active transportation—walking and bicycling—can save time because people get exercise and get where they are going at the same time. Public transit users generally walk a significant amount as part of their daily travel to get to and from transit. Active transportation can help people get the daily exercise that health professionals recognize is essential to good health. Regular physical activity is associated with lower rates of heart disease, cancer, and other chronic diseases. The Centers for Disease Control and Prevention supports Complete Streets policies as a strategy to prevent chronic diseases such as heart disease and obesity.

1.2 Livable Streets Build Sustainable Communities

Livable Streets address numerous pressing social issues:

Mobility – Many Americans, including children, youth, senior citizens and people with mobility challenges are not able to drive a car, making them reliant on someone else or forcing them to use infrastructure that is unsafe, unpleasant, and inconvenient for their mode of travel.

- ▶ In Missouri, roughly 1.2 million people are under the age of 16, 756,000 are over 65, and another 378,000 people between ages 16 and 64 report having at least one physical disability.³



Making streets more accessible for these 2.3 million citizens – about 40 percent of all Missouri residents – would have enormous benefits, not only for these individuals, but for society at large.

Health – Dependence on the automobile has contributed to some health problems – the most well-known being

the unprecedented and alarming rise in obesity.

- ▶ Between 1960 and 2009, the percentage of obese adult Americans increased from 13.4 percent to 30.6 percent.⁴
- ▶ Almost one-third of Missouri's adults were considered obese in 2009.⁵
- ▶ In combination with environmental factors and the presence of disease, being overweight or obese increases one's risk of heart disease, diabetes and some kinds of cancer.⁶
- ▶ Obesity also has economic impacts with researchers estimating that adult obesity in Missouri increased total medical spending in the state by over \$1.6 billion annually between 1998 and 2000.⁷

There is little doubt that automobile dependence and an increasingly sedentary lifestyle have contributed to this problem. Designing streets to make physically active

transportation safe, enjoyable, and convenient can help to address the problems and costs associated with obesity.

The US Department of Health and Human Services recommends conducting a [Health Impact Assessment](#) (HIA) to assess public health impacts for plans and projects. These typically would be conducted as a part of the early decision-making process. In some cases, the HIA has been incorporated into a project's environmental impact assessment process.⁸ Livable Streets have positive impacts on health outcomes such as obesity, physical inactivity, injuries and asthma.



Safety – Streets designed without consideration given to the needs of bicyclists and pedestrians contribute to the dangers faced by those on bikes or on foot.

- ▶ In 2009, in the United States, 4,722 pedestrians and bicyclists died and another 110,000 reported injuries in motor vehicle crashes. In 2009 in Missouri, 70 pedestrians and bicyclists died and another 2,044 were injured.⁹
- ▶ In a poll of people over 50 years old, 47 percent said it was unsafe to cross the street near their home.¹⁰
- ▶ In neighborhoods where traffic is a nuisance and a threat, residents both young and old are more inclined to stay in their homes. This limits much needed physical activity and social interaction.

Designing a street with pedestrians in mind – sidewalks, raised medians, better bus stop placement, traffic-calming measures, and treatments for travelers with disabilities – may reduce pedestrian risk by as much as 28 percent.¹¹

1.3 Economic Benefits

Communities around the state of Missouri are increasingly interested in improving their transportation networks to better serve all citizens. Although local support for more livable streets is growing, municipal budgets are strained. Municipal leaders interested in Livable Streets need to know that the costs of meeting these needs is reasonable and that the associated benefits are significant. A number of studies have found substantial economic benefits associated with improving conditions for bicyclists and pedestrians including:



- ▶ **Sales taxes:** A study by the North Carolina Department of Transportation (NCDOT) found that bicycling activity in the northern Outer Banks region of that state had a significant economic impact. When a sample of total visitors to the region was studied, researchers found that 680,000, or 17 percent of total visitors, rode a bicycle during their trip. These bicycle tourists generated an estimated \$60 million annual economic impact for the local community.¹²
- ▶ **Property Taxes and Property Values:** A 1998 study by ERE Yarmouth and Real Estate Research Corporation determined that real estate values in the next 25 years will rise fastest in those communities that include a combination of residential and commercial districts with pedestrian-friendly configuration.¹³ Another report from a Massachusetts realtor organization found that homes located near trails sold for closer to the original asking price than did houses not near trails. These homes near trails also sold faster than homes not near trails: in an average of 29 vs. 50 days.¹⁴
- ▶ **Tourism:** Bicyclists and walkers often seek out vacation destinations that feature Livable Streets. A study completed by the Minnesota Department of Natural Resources found that between 1996 and 2008, residents and out-of-state visitors who walked and hiked in the state spent \$1.4 billion in the state on expenses such as local lodging, food and travel.¹⁵
- ▶ **Vacancy rates:** In *The Economic Benefits of Walkable Communities*, Dan Burden writes “Downtown Lodi [California] launched a \$4.5 million public-private pedestrian-oriented project. This project included retrofits of five main street blocks from building face to building face. On the main school street, sidewalks were widened, curbs bulbed-out at intersections and colored paving stones laid in the new sidewalks and street. A striking gateway was installed, as well as 140 street trees, lighting, benches, and other streetscape amenities. The city credits the pedestrian improvements, as well as economic development incentives, with the 60 new businesses, the drop in the [commercial] vacancy rate from 18 percent to 6 percent, and the 30 percent increase in downtown sales tax revenues since work was completed in 1997.”¹⁶

House Listing in Kansas City ...*The proximity of the home to the Trolley Trail is perfect for bicyclists, joggers, or walking the dog. Many restaurants and shops are conveniently located blocks away...*

House Listing in St. Charles ...*Awesome Great Room Ranch close to Katy Trail...*

House Listing in Springfield ...*Charming home located in desirable area and adjacent to Ozarks Greenways South Sac River Trail...*

► **Return-on-investment:** Local transportation agencies interested in learning the return on investment from building livable streets elements must define the variable costs they will measure. Recent research done by planners in Kansas City indicates an 11:1 cost-benefit ratio. Planners considered benefits to local government such as improved air quality from reduced congestion.¹⁷ The NCDOT study mentioned earlier found the annual economic impact of cyclists to be nine times the initial costs of bicycle facility construction.¹⁸

► **Job creation:** Building livable streets creates more jobs than standard road construction projects. A University of Massachusetts-Amherst study found that almost twice as many jobs are created when road projects require significant design efforts, such as restriping to fit in a bicycle lane, compared to simple resurfacing projects.¹⁹ Kansas City area planners also determined that a \$23 million investment in bicycle and pedestrian facilities would create an increase of 725 construction jobs and 178 long-term jobs.²⁰



Livability Makes Economic Cents!

University City

Delmar Loop – Six blocks of retail, restaurants, café culture, and a Walk-of-Fame.

Converting an out of date retail area of the city to a lively walkable corridor has propelled the Delmar Loop to great economic success. An updated walkable and bikable streetscape welcomes University City residents and Washington University students to shop, dine and visit.

The community is now studying and raising funds for a proposed trolley line that will provide additional mobility for all citizens. Construction of the trolley along a historic streetcar line is expected to begin in 2012.



Columbia

IBM Technology Service Center – 800 jobs. Livability a factor in decision.



Because many technology companies hire young, energetic employees, those companies look to locate in communities that can support their employee's interests. Columbia walking and hiking trails, sidewalks and bike paths are all amenities that played into IBM's choice of Columbia for its planned technology service delivery center, Mayor Bob McDavid said. "The first thing any company is going to look at is if it can make money. The community's economy comes first. It's when a community becomes a finalist is when they start to look at what Columbia has to offer."²¹

At the ribbon cutting in May 2011, the City of Columbia and IBM announced that they are also working together to incorporate the new facility into Columbia's Sustainable City program, which includes building bike paths to connect the facility with downtown Columbia and planting new trees and bushes along and around LeMone Boulevard.²²

Maryville

Investment in Livable Streets increases interest in town.

Through Safe Routes to School and Transportation Enhancement funding, Maryville is investing in Livable Streets. In a conversation with City Manager, Matt LeCerc, he points out, "By partnering with the Missouri DOT we have been able to construct over 4 miles of a planned 50 mile trail network connecting various City points and Mazingo Lake. The value that trails in our community provides is to promote a healthy and active lifestyle, address environmental strains by providing alternative methods of transportation, increases safety of all our citizens, and adds an additional component to our already high quality of life citizens experience in Maryville. We firmly believe that as we continue to develop additional sections of trail that this will be a major component to our ability to recruit new businesses to the community."



1.4 Livability on the Horizon

The strong connection between transportation and livability is a message that resonates from national to state transportation and community leaders.

President Barack Obama, in his Office of Management and Budget proposal for the next Surface Transportation Act, called for a reform of Surface Transportation policies through seven key issues, one of which focused on livability. “Invest in More Livable and Sustainable Communities: A livable community is a place where coordinated transportation, housing, and commercial development give people access to affordable and environmentally sustainable transportation. The Administration’s reauthorization proposal puts forth a transformational policy shift to achieve more livable and sustainable communities through increased investments in transit, a new livability grant program in the Federal Highway Administration and the Federal Transit Administration, and a competitive livability grant program for states and localities to deliver on sound, data-driven, and collaboratively-developed transportation plans.”²³

US Department of Transportation (USDOT) Director, Ray LaHood gives this definition of livability: “Livability means being able to take your kids to school, go to work, see a doctor, drop by the grocery or Post Office, go out to dinner and a movie, and play with your kids at the park - all without having to get in your car.”²⁴ USDOT has defined “Six Principles of Livability” to help clarify their vision. (These are listed at right.)



US Department of Housing and Urban Development Director, Shaun Donovan said, “... today, we live in a changing world where cities, suburbs and the rural areas that surround them share an economic future and metropolitan regions are the engines of our economy. Where people are voting with their feet more and more, in search of walkable neighborhoods with transportation options.”²⁵

Federal Highway Administration (FHWA) Administrator, Victor Mendez, is dedicating his agency’s resources to “...work to continue improving the relationship between infrastructure and community needs, specifically to improve a community’s ‘livability,’ to enhance the environmental sensitivity of roads and bridges and to help states explore multi-modal transportation options.”²⁶

USDOT Six Principles of Livability²⁷

1. **Provide more transportation choices** to decrease household transportation costs, reduce our dependence on oil, improve air quality and promote public health.
2. **Expand location- and energy-efficient housing choices** for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation.
3. **Improve economic competitiveness of neighborhoods** by giving people reliable access to employment centers, educational opportunities, services and other basic needs.
4. **Target federal funding toward existing communities** – through transit-oriented and land recycling – to revitalize communities, reduce public works costs, and safeguard rural landscapes.
5. **Align federal policies and funding** to remove barriers to collaboration, leverage funding and increase the effectiveness of programs to plan for future growth.
6. **Enhance the unique characteristics of all communities** by investing in healthy, safe and walkable neighborhoods, whether rural, urban or suburban.



Missouri Governor, Jay Nixon, speaking on the Missouri economy said, “Many of us ...grew up in small towns. And running through the heart of most of these communities was Main Street. The hub of local commerce, Main Street offered nearly everything a family needed on a daily basis – a barbershop and a grocery store; the pharmacy and a local bank. Main Streets are a vital part of our Missouri way of life, and they’re critical to our economic prosperity. ... Our economic transformation begins with the revitalization of Main Streets across Missouri – from my hometown of De Soto, to Maryville, to Kirksville and Webster Groves.”²⁸

MoDOT Director of Transportation, Kevin Keith, not speaking about Livable Streets but overall Missouri transportation, said, “Investing in transportation creates jobs, makes our highways better and safer and increases our transportation options, which all contribute to a higher quality of life.”²⁹

Transportation needs to change to meet the needs of a modern, connected society and the policy makers for transportation and communities are finding the answer in Livable Streets. Livability is the sum of the factors that add up to a community’s quality of life. Livable Streets are the backbone of a Livable Community.

2.0 Livable Streets Policy Development

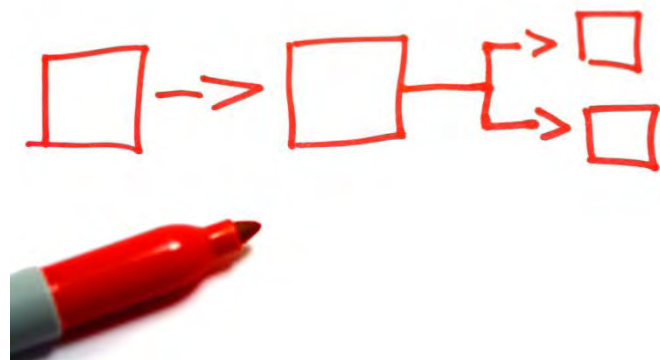
2.1 Typical Missouri Planning Process

Transportation planning in Missouri consists of a series of decisions that direct the use of current and future available resources to build and maintain the State's transportation network. The planning process is a continuous cycle, and at any given time, there are multiple needs or projects at each step in the process. All steps require continuous participation from local officials and the public. The steps of the transportation planning process can be summarized as follows:

1. Develop the State's transportation vision and a plan to accomplish it.
2. Identify and prioritize needs.
3. Develop solutions and design projects.
4. Prioritize and select projects for construction.

In Missouri, the approach during the planning process is to seek involvement from four types of stakeholders: (1) Metropolitan Planning Organizations (MPO's), which represent urbanized areas, (2) Regional Planning Commissions (RPC's), which coordinate with MPO's to facilitate planning for smaller communities, (3) local officials, and (4) the general public. (Refer to listing of MPOs and RPCs on the next page.)

This approach ensures that all sectors of the population are represented whether or not they are located in urban, suburban or rural areas of the state. It enables all Missourians to have a say in how transportation dollars are spent on transportation projects. Public involvement in project development and programming is a key element in gaining public acceptance of any transportation improvement program.



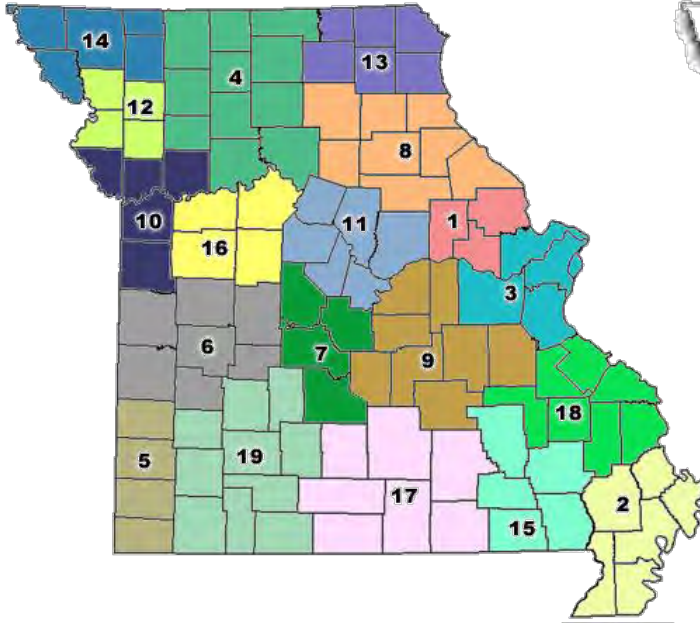
Identifying Missouri's transportation needs is crucial for successful planning. Needs are identified from a variety of sources. Although it is not feasible to address all needs, MoDOT has an obligation to consider all identified needs. Figure 1A on p. 13 shows how transportation needs are identified, prioritized and built.

There are two levels of needs identification.

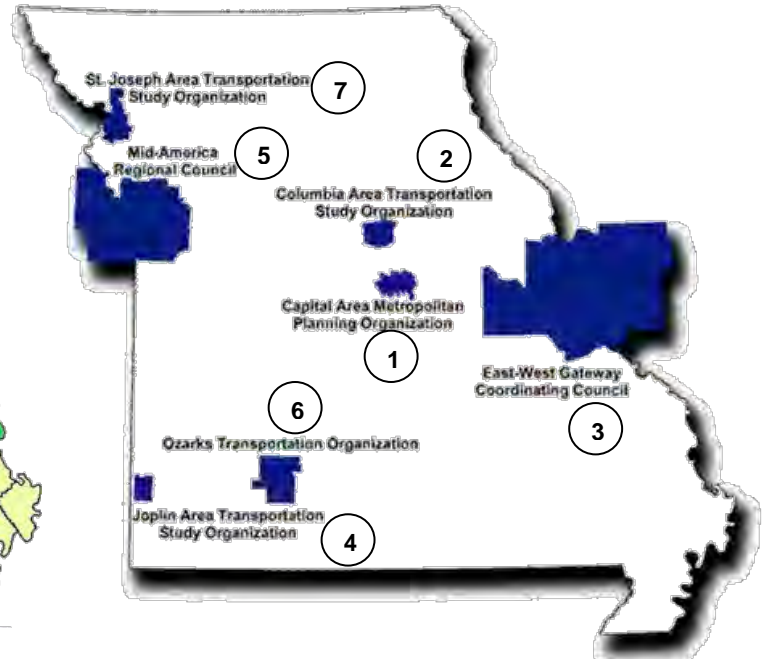
1. Regional – MoDOT districts work with planning partners and local communities to identify regional transportation needs. For example, MoDOT's Transportation Management Systems data are updated regularly with pavement and bridge condition data that identifies rehabilitation and reconstruction needs; MoDOT area engineers, working with local officials, identify bridge and roadway needs; MoDOT customer service centers track calls regarding specific problems, such as maintenance or safety needs; or citizens approach their legislators with concerns about a stretch of roadway where there has been multiple fatalities.
2. Statewide – MoDOT conducts a formal needs identification process when updating the statewide Long Range Transportation Plan (LRTP). MPO's identify needs as they develop their long-range transportation plans. They are responsible for transportation planning within their metropolitan areas. Likewise, Regional Planning Commissions (RPC), which facilitate planning on a more local level identify needs for their region. MPO and RPC needs of statewide significance are included in Missouri's LRTP.

Once the needs are identified, they are then prioritized using both objective and subjective criteria which lead to project development and design. At this point, the means for addressing needs are identified. The project is then added to the Transportation Improvement Programs, both local (TIP), and statewide (STIP).

The purpose of this step is to develop the most cost-effective solutions early in the project development process to avoid last-minute revisions. It is important to develop and define projects early in the planning process in order to maximize efficiency and resources throughout the course of the project.



Missouri's Regional Planning Commissions and Councils of Governments (RPC's)³⁰

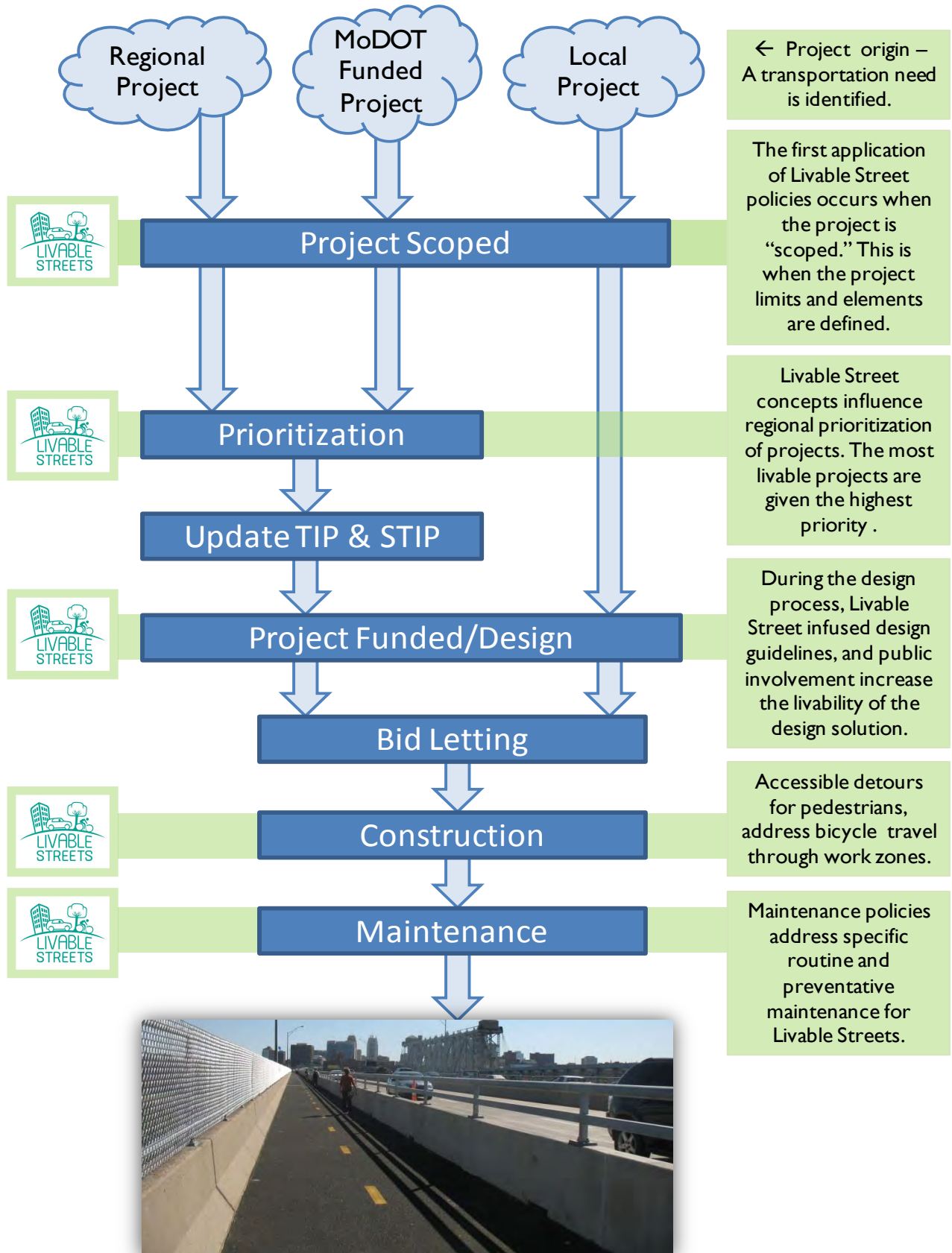


Metropolitan Planning Organizations (MPO's)

RPC No.	MPO No.	Region	Website
	1	Capital Area Metropolitan Planning Organization	http://www.jeffcitymo.org/campo/campo.html
	2	Columbia Area Transportation Study Organization	http://www.gocolumbiamo.com/Planning/Commissions/CATSO/index.php
1		Boonslick Regional Planning Commission	www.boonslick.org
2		Bootheel Regional Planning and Economic Development Commission	www.bootrpc.com
3	3	East-West Gateway Coordinating Council & MPO	www.ewgateway.org
4		Green Hills Regional Planning Commission	www.ghrpc.org
5		Harry S Truman Coordinating Council	www.hstcc.org
	4	Joplin Area Transportation Study Organization	http://www.jatso.net
6		Kaysinger Basin Regional Planning Commission	www.kaysinger.com
7		Lake of the Ozarks Council of Local Governments	www.loclg.org
8		Mark Twain Regional Council of Governments	www.marktwaincog.com
9		Meramec Regional Planning Commission	www.meramecregion.org
10	5	Mid-America Regional Council & MPO	www.marc.org
11		Mid-Missouri Regional Planning Commission	www.mmrpc.org
12		Mo-Kan Regional Council	www.mo-kan.org
13		Northeast Missouri Regional Planning Commission	www.nemorpc.org
14		Northwest Missouri Regional Council of Governments	www.nwmorcog.org
15		Ozark Foothills Regional Planning Commission	www.ofrpc.org
	6	Ozarks Transportation Organization	http://www.ozarkstransportation.org
16		Pioneer Trails Regional Planning Commission	www.trailsrpc.org
	7	St. Joseph Area Transportation Study Organization	http://www.ci-st-joseph.mo.us/mpo/mpo.cfm
17		South Central Ozark Council of Governments	www.scocog.org
18		Southeast Missouri Regional Planning and Economic Development Commission	www.semorpc.org
19		Southwest Missouri Council of Governments	smcog.missouristate.edu

Figure 1A – INSTITUTIONALIZING LIVABLE STREETS.

Transportation projects go through a thorough planning process before being built. Designers seeking to incorporate Livable Streets elements in projects have a range of opportunities for input as seen below.



2.2 Livable Streets Policy Development

Changing public policy to incorporate the goals of Livable Streets is not a simple process.

The key to success is a thoughtful dialogue involving key players such as concerned citizens, community leaders, elected officials and business leaders. It takes large numbers of people developing an interest in their community and participating in the process of public policy-making to effect change. An effective development requires the following steps:



- ▶ Identify a Need
- ▶ Involve the Public
- ▶ Identify a Vision
- ▶ Create the Policy
- ▶ Adopt the Policy

Identify a Need

The first step in policy development is identifying the need for a Livable Streets policy. There are many transportation problems, often called needs, with Missouri's transportation system. For example, one need might be redesigning a high-accident location, such as an intersection; another need might be a location improvement that helps a new business move products more efficiently. There are two levels of needs identification, regional and statewide, and they are classified in two groups, physical system condition needs, which target the state of repair of road and bridge components, and functional needs, which target how well the transportation system is operating.

Public Involvement

Organizing a Work Group or Advocacy Committee

A well-organized advocacy group is key to gaining support for public policy development. They can provide the strong presence that is a must for representing community aims to public agencies. They can also serve as a vehicle through which the community addresses issues and works out plans for making changes. Efforts should be made to gather stakeholders on all sides of the issues to work together for reforms. This work group or committee should consist of a group of citizens with varying backgrounds representing a wide-range of interests. Those might include: local bicycle, pedestrian, trails, walking, and

running clubs or groups; Safe Routes to School advocates; persons with disabilities; retirement communities, churches, neighborhood associations, community and civic groups.

Form Partnerships

It is important for the advocacy group to develop relationships with city staff and city council members, in order to achieve success when pursuing a Livable Streets policy. This step will benefit the advocacy group as they outline the broad principles and reasons for the city to move in this direction.

Seek Public Input

Citizens of a community also need to be given the opportunity to meet and share their improvement ideas. Small discussion groups, which concentrate on one particular topic, are one way to start eliciting opinions and ideas. The participants are usually a cross section of different citizens or sometimes include experts in different specialties. The groups are set up to gather opinions and perspectives through guided, though informal, conversation and interaction.

Public forums and community workshops are good for this purpose. Such meetings should be well publicized in advance, and specific materials should be prepared that can clarify the issues being discussed for participants. It also is important to have the participation of public agency representatives.



Identify a Vision

Once the groundwork is laid, the community is ready to develop a vision of the place it wants to become in the future, and how this can be achieved through a Livable Streets Policy. The vision will outline the kinds of improvements that can create such a place. Throughout the visioning process, issues and attitudes must be clearly defined, and existing conditions studied. Appropriate strategies are then developed to address these community-specific concerns and serve as guidelines for putting improvements into action. Since these strategies should be tailored to the actual needs of the particular community, it is important to be inclusive of many points of view and provide opportunities for extensive participation. To achieve optimum results, the community and the lead public agency should work together closely throughout the visioning process.



An ideal complete streets policy:³¹

- ▶ Includes a vision for how and why the community wants to complete its streets
- ▶ Specifies that 'all users' includes pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses and automobiles.
- ▶ Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
- ▶ Is adoptable by all agencies to cover all roads.
- ▶ Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
- ▶ Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- ▶ Directs the use of the latest and best design criteria and guidelines while recognizing the need for flexibility in balancing user needs.

Create a Policy

Once a vision is identified, a formal Livable Streets Policy or Ordinance can then be created. According to Livable Streets Lee's Summit, the Livable Streets planning committee in Lee's Summit, the ordinance should focus on the four following principles and practices: ³²

- ▶ The design and construction of Public Improvement Projects shall include Livable Street Elements as required by other adopted plans of the City
- ▶ Livable Street principles will be incorporated into all strategic plans, standards and regulations
- ▶ A goal of the City will be to foster partnerships with other organizations and municipalities in order to further the policy
- ▶ It is recognized that elements may be incorporated incrementally, over time. A City should strive to draw upon all possible funding sources to implement the policy.

Adoption of the Livable Streets Policy

The adoption of a Livable Streets Policy will take time as the process includes drafting the resolution, discussing it with individual stakeholders, presenting and discussing it at city council committee meetings and in other public forums and making changes and revisions to address the issues raised by the elected leaders and the public. Hands on workshops or charrettes similar to the one below engage the stakeholders and generate great response.



2.3 Livable Streets Model Policy

A Livable Streets policy is an item of legislation that has been approved by a policymaking body such as a City Council or a County Commission, and which defines or recommends how streets should be designed.

Livable Streets policies and resolutions differ from community to community. Some contain stronger language than others. Although most apply to new street construction, some policies also refer to existing streets. But all policies always direct planners and engineers to consider all modes of transportation when designing a street.

A Livable Streets resolution is a non-binding and unenforceable statement in favor of Livable Streets made by the City Council. Although resolutions do not mandate city staff to change the way streets are designed or built, they send a strong signal and empower advocates to step up their efforts.

An ordinance is a local law that is passed by a legislative body (City Council), signed by the city executive (Mayor), and subsequently enforced by local police and the court system. A Livable Streets ordinance requires city transportation staff to design and build streets according to specific instructions spelled out within the ordinance.

A Livable Streets resolution may lead to a Livable Streets ordinance. The City of Lee's Summit (below) has passed a Livable Streets resolution and an

ordinance.

A Livable Streets resolution or ordinance should include a policy focus accommodating bicyclists, pedestrians, motorists and mass transit riders of all ages and abilities. This policy could be applied to all new street projects including the resurfacing, redesign or re-striping of existing streets. It could also require developers to include safe access for bicyclists and pedestrians in any new or redeveloped areas. The Livable Streets ordinance could mandate that future developers allocate portions of their projects for greenway dedication even if they are not necessarily parallel to roads.

Making a policy work in the real world requires developing a process to handle exceptions. The Federal Highway Administration's guidance on accommodating bicycle and pedestrian travel named three exceptions:³³

1. On roadways where non-motorized use is prohibited, such as interstate freeways. In this case, greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.
2. Where cost of accommodation is excessively disproportionate to the need or probable use.
3. Where low densities of population or other factors indicate an absence of current or future need. The absence of need must be documented.

In addition to defining exceptions, there must be a clear process for granting them. Any exceptions should be kept on record and publicly available.

Access www.completestreets.com for additional features of an ideal complete or livable streets policy. A sample Livable Streets policy appears on the following pages.



RESOLUTION TEMPLATE
(Based on the City of Lee's Summit's Livable Streets Policy)

This document may be used to create a Livable Streets Policy for your City. Although it was written for a City Council/Mayor form of government, it can be easily modified for Board of Aldermen or other arrangements.

RESOLUTION _____

**A RESOLUTION ESTABLISHING
THE LIVABLE STREETS POLICY
FOR THE CITY OF _____, MISSOURI.**

WHEREAS, the Missouri Livable Streets Design Guidelines document was received by the City of _____ to serve as a guideline to create Livable Streets to support a livable community where all _____ residents, visitors, and businesses can live, work, and play; and,

WHEREAS, _____ strives to be a sustainable and vibrant city with a dynamic spirit of cooperation among its diverse citizens, businesses, organizations, educational systems and governments; and,

WHEREAS, through comprehensive community planning and regional collaboration, _____ desires economic independence and a high quality of life as a recognized destination city; and,

WHEREAS, the City desires to promote public health by encouraging walking and bicycling as a part of active living; and,

WHEREAS, older citizens and citizens with disabilities often rely on transit, mobility aids, and walking to meet basic transportation needs and benefit greatly from complete and well designed Livable Streets; and,

WHEREAS, the usual and customary users of the City's roads, streets and bridges include pedestrians, bicyclists and transit passengers of all ages and abilities, as well as drivers and passengers of automobiles, motorcycles, buses and trucks; and,

WHEREAS, the _____ residents envisioned transportation in _____ as a planned, regionally integrated, multi-modal, accessible, and well-maintained system that facilitates movement about the city and encourages growth and economic development. This system includes vehicular, bicycle, pedestrian, aeronautical, rail and mass transit components. The system provides safe, efficient, and sustainable transportation of people, goods, and services to and from places where people live, work, worship, shop, play, learn, and seek medical care; and,

WHEREAS, the terms "Complete Streets" and "Comprehensive Street Design" are also used to identify the same concepts as Livable Streets.

NOW THEREFORE BE IT RESOLVED BY THE COUNCIL OF THE CITY OF _____ AS FOLLOWS:

SECTION ONE. TITLE.

This policy shall be known as the "Livable Streets Policy."

SECTION TWO. PURPOSE.

The Livable Streets Policy sets forth guiding principles and practices to be considered in transportation projects, so as to encourage walking, bicycling and transit use while promoting safe use and operation for all users.

SECTION THREE. DEFINITIONS.

“Livable Street” means a transportation corridor for all users including pedestrians, bicyclists, transit riders, cars, trucks, motorcycles and buses. “Livable Streets” are designed and operated to safely facilitate movement of people of all ages and abilities from destination to destination along and across a continuous travel network.

“Livable Street Elements” means transportation improvements, facilities and amenities that accommodate and/or promote multiple modes of travel, including pedestrian, bicycle and transit in addition to cars, trucks, motorcycles and buses. These elements are defined and recognized by the Institute of Transportation Engineers and the American Planning Association.

“Public Improvement Project” means new roads, trails, sidewalks and facilities or maintenance or reconstruction thereof, as well as private improvement projects constructed and/or maintained in whole or part with City funds, owned or leased by the City, and/or intended to be dedicated to the City.

SECTION FOUR. APPLICABILITY.

1. This Policy applies to the design, construction and maintenance (e.g. resurfacing and striping modification) of Public Improvement Projects.
2. The City shall consider public plans, standards, regulations and ordinances that further this Policy. For example, the City shall consider an ordinance that requires safe access for pedestrians, bicyclist and other forms of travel, in addition to motorists, in any new development or redeveloped areas. This ordinance should establish design standards for future development that incorporate Livable Streets Elements.

SECTION FIVE. GUIDING PRINCIPLES.

Guiding principles and practices of the “Livable Streets Policy” are as follows:

1. “Livable Streets” are designed to serve everyone - pedestrians, bicyclists, transit riders, and motorists - including persons of all ages and abilities.
2. The planning, design, construction and maintenance of all Public Improvement Projects should include Livable Streets Elements identified in and required by:
 - a. public plans adopted by the Planning Commission, such as the Capital Improvement Plan or the City’s Comprehensive Plan; and
 - b. development related ordinances, such as the Unified Development Ordinance, Access Management Code, and the Design and Construction Manual.
3. Livable Streets Elements should be considered within the balance of mode and context of the community, including, but not limited to, environmental sensitivity, cost, budget, demand, probable use, space and area requirements and limitations, and legal requirements and limitations.
4. The City intends to incorporate Livable Streets principles into all public strategic plans, standards and regulations, including the Unified Development Ordinance, the Design and Construction Manual, the Access Management Code, the City’s Comprehensive Plan, the Traffic Code, and other relevant ordinances, practices and policies, upon subsequent updates. The Livable Streets principles, where applicable and appropriate, should be incorporated into other City plans, manuals, rules, practices, policies, training, procedures, regulations and programs as directed by the City Manager.
5. It is a goal of the City to foster partnerships with the State of Missouri, County Government, school districts, citizens, businesses, Metropolitan Planning Organizations or Regional Planning Councils, neighboring communities, and neighborhoods in consideration of functional facilities and accommodations in furtherance of the City’s Livable Streets Policy and the continuation of such facilities and accommodations beyond the City’s borders or maintenance.

6. The City recognizes that Livable Streets may be achieved through elements incorporated into a single project or incrementally through a series of improvements or maintenance activities over time.
7. The City will consider all possible funding sources to plan and implement this policy and shall investigate grants that may be available to make Livable Streets Elements more economically feasible.

SECTION SIX. LIVABLE STREETS SUMMARY.

1. A summary or description of the Livable Streets Elements of all Public Improvement Projects shall be included in:
 - the Capital Improvements Plan; and
 - the development review report of any private development plan that requires City Council approval.
2. If a Livable Streets Element identified in and required by adopted public plans or development related ordinance is not incorporated in the project, such omission shall be documented in the Livable Streets Summary that demonstrates:
 - that the accommodation is not necessary because non-motorized use is prohibited, such as interstate freeways; or
 - that the cost of accommodation is excessively disproportionate to the need or probable future use; or
 - a documented absence of current or future need.
 - a. The documentation shall be conducted by appropriate staff; or for private projects, the owner shall conduct the documentation.
 - b. The documentation shall be submitted to the City Manager and/or the City Council, as appropriate, for consideration prior to approval of project design.

SECTION SEVEN.

This resolution shall be in full force and effect from the date of its passage, adoption, and approval by the Mayor.

PASSED by the City Council and APPROVED by the Mayor for the City of _____, Missouri, this ____ day of _____, 20__.

Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney

2.4 Livable Streets Across Missouri

The Missouri communities of DeSoto, Elsberry, Ferguson, Kansas City, Lee's Summit, Festus, Crystal City, Herculaneum, St. Louis, Independence and Columbia have all passed Livable or [Complete Streets policies](#)³⁴, as have the Mid-America Regional Council, the East-West Gateway Council of Governments, and the St. Joseph Area Transportation Study Organization. More than 240 local public agencies across the United States have now passed these policies.³⁵

Lee's Summit

As a result of Livable Streets policies, Lee's Summit is now moving to appoint a Livable Streets Advisory Board, which will be a standing city board with citizen representatives from each City Council district. The Board will advise the city council and staff on a comprehensive program to encourage safe bicycling and walking throughout the city, including a review of changes in policies and ordinances needed to comprehensively implement Livable Streets in the city.



Livable streets Lee's Summit



St. Louis

In June 2010 St. Louis adopted a Complete Streets Policy, and has been active in institutionalizing the concept. St. Louis has been revising its policies on road design since 2006 when the region's MPO – East-West Gateway Coordinating Council – began the "[Great Streets](#)" initiative to expand the way the community thinks about their streets.³⁶ The MPO currently has four significant corridors that are being transformed into Great Streets. The rendering to the right is for the unincorporated town of Labadie in Franklin County.

DeSoto

DeSoto is one of the latest cities in Missouri to adopt a Complete Streets Policy. With a population of 6,500, DeSoto wanted to do more for walking and bicycling. The historic downtown Main Street has barriers to walking and bicycling, and is one of the highest priorities to address as a Livable Street. Improvements to transportation have been made through the Safe Routes to School Program and in the city's attractions, such as the pedestrian friendly DeSoto Railroad Employees' Memorial. Groups such as Get Healthy De Soto have been catalysts for improving the livability of the community. The group, seen promoting the farmers market in this photo, was active in getting a Complete Streets policy adopted in Desoto in 2010.



2.5 Institutionalizing Livable Streets

Many cities have street design guidelines that specify elements such as right-of-way width, road width, lane width, and sidewalk width. These standards often do not include the features of a Livable Streets. Changing these design standards is usually seen as the “second step” after passing a Livable Streets ordinance or policy in a community. It establishes Livable Streets as a norm and not an exception. In addition, it lessens the work advocates must do in the future and greatly reduces the cost of implementation.

To truly institutionalize Livable Streets, a culture change must occur throughout the organization. Bicycle, pedestrian, and bus projects have frequently been

treated as special projects requiring extra planning, funding, and effort. Under the Livable Streets approach, even small projects can be an opportunity to make meaningful improvements. In repaving projects, for example, lane markings can be shifted to create more room for bicyclists. In routine work on traffic signals, the timing can be changed to provide more pedestrian crossing time or to add countdown indications.



The photo at left shows how a sidewalk replacement project can increase walkability in a residential area where there is high pedestrian demand for safe walking infrastructure.

2.6 Stakeholders and Resources

In addition to the RPCs and MPOs, there are numerous advocacy resources available within Missouri and across the nation. Although this list doesn’t identify every source, it does list the key groups that are gateways to locating others. These stakeholders can provide invaluable assistance with your planning and policy making.

Major Statewide Livable Streets Stakeholders

MoDOT.....	www.modot.org
Missouri Bike/Ped Federation	www.mobikefed.org
The PedNet Coalition.....	www.pednet.org
TrailNet.....	www.trailnet.org

National Livable Streets Resources

America Walks	www.americawalks.org
Bikes Belong.....	www.bikesbelong.org
Complete Streets Coalition	www.completestreets.org
League of American Bicyclists.....	www.bikeleague.org
Urban Bikeway Design Guide*	http://nacto.org/cities-for-cycling/design-guide/

*Although researched, not all of the treatments shown are approved by federal agencies or design guidelines. Use of these treatments should be fully reviewed before implementation. Refer to the following website for information:
http://www.fhwa.dot.gov/environment/bikeped/mutcd_bike.htm

Design

3.0 Bicycle and Pedestrian = Active Transportation

To institutionalize bicycle and pedestrians mobility into the transportation planning and street design process, policies and programs must be created based on the community's preferences.

This manual provides sample standards and guidelines that can be used for individual city policies, or as a starting point to expand upon.

3.1 Program Evaluation

The performance of the Livable Street program should be tracked to judge the effectiveness of the codes and policies. A system that does not produce the desired results must be modified until the desired results are accomplished.

A tracking mechanism should be a part of the system so that tracking is not burdensome and can easily be verified. For instance, if one of the tracked measures is the number of American with Disabilities Act (ADA) ramps added to the community, then project designers and private developers should bid their work with ADA ramps as a bid item, or at least identify the quantity in some fashion.

Institutionalizing a review process within the culture of the municipality has shown to produce outstanding results. The [CitiStat](#)³⁷ program in Baltimore and the [MoDOT Tracker](#)³⁸ are two model systems for this purpose. Both systems provide a focus on the goals set out in the planning of the system so that the vision doesn't get lost in the implementation phase. Performance measures are reviewed closely. This feedback loop between planners and engineers also provides holistic opportunities to improve the implementation of the program.

Publishing regular updates on the tracking also allows elected officials and the public to observe the progress being made on these important issues. This communication also provides an important feedback loop to the stakeholders that created the vision of the program. They will be able to judge if the focus is placed on the proper elements based on the end results. This 360 degree review process improves the effectiveness

of the program, and improves the public's satisfaction with their voice in government.

Benchmarking

The League of American Bicyclists' Bicycle Friendly Communities³⁹ and the recently created FHWA Walk Friendly Communities⁴⁰ judge communities progress towards more livable streets in five categories: (The Five E's)

- ▶ Engineering
- ▶ Education
- ▶ Encouragement
- ▶ Enforcement
- ▶ Evaluation & Planning

Setting benchmarks in these five areas will focus your program in the right direction, and provide your community with more than just the proper facilities, but actually provide impetus to make the mode shift from motorized vehicles to active transportation. For instance, safe and comfortable bicycle operation on the road requires that motorists treat bicyclists with courtesy and respect and with an understanding that they are legitimate road users with equal rights and responsibilities. Much of this acceptance lies outside the realm of road design. Even-handed traffic enforcement that neither ignores the wrong-way bicyclist nor the motorist who turns right across the path of a bicyclist will improve both safety and attitudes.

4.0 Design Standards

Design Standards for transportation elements have been traditionally separated by the type of facility, so Livable Street standards have been included in this manual to demonstrate the combination of these separate standards and to show the current "best practices" across the nation.

Missouri has adopted many of the Federal standards and guidelines that apply to the elements of a Livable Street. In addition to the state and local requirements, these documents must also be reviewed to properly plan and design a well functioning Livable Street:

Roadways

- ▶ American Association of State Highway Transportation Officials (AASHTO) [A Policy on the Geometric Design of Highways and Streets 5th Edition 2004](#)⁴¹ ("Green Book")

- ▶ AASHTO [Roadside Design Guide, 3rd Edition 2006](#)⁴²
- ▶ Transportation Research Board [Highway Capacity Manual 2010](#)⁴³
- ▶ Federal Highway Administration (FHWA), [Manual on Uniform Traffic Control Devices \(MUTCD\), 2009](#)⁴⁴

Bicycle Facilities

- ▶ AASHTO [Guide for the Development of Bicycle Facilities, 3rd Edition, 1999](#)⁴⁵
 - AASHTO [Guide for the Planning, Design, and Operation of Bicycle Facilities, 2011](#)⁴⁶ (Pending)
- ▶ National Association of City Transportation Officials (NACTO) [Urban Bikeway Design Guide](#)⁴⁷ (Note: Some treatments are still experimental.)

Pedestrian Facilities

- ▶ Americans with Disabilities Act (ADA)
 - [ADA](#)⁴⁸
 - [ADA Public Rights of Way](#)⁴⁹ (Not approved, but considered a “Best Practice”)
 - [ADA for Trails](#)⁵⁰ (Pending)

Overall

- ▶ [MoDOT Engineering Policy Guide \(EPG\)](#)⁵¹
- ▶ City, County, American Public Works Association and/or local design standards

MoDOT and local standards may be the only resources referenced for most typical roadway construction; however, since these standards rely heavily on the “functional classification system,” the other standards must be consulted when introducing bike and pedestrian elements for Livable Streets.

4.1 Legal Status of Bicyclists and Pedestrians

There is sometimes confusion about the legal rights and responsibilities of bicyclists and pedestrians under the traffic laws. Road planners and designers should review the Missouri Statutes (RSMo) and local codes to confirm design parameters. The key statutes for pedestrians and bicyclists will address most of the common concerns with non-motorized transportation.

The [Missouri Drivers Guide](#)⁵² contains guidance for road users, and is a reference that must be understood by Livable Street designers. It is also important to

understand the legal status and requirements of pedestrians and bicyclists.

Pedestrians Defined

Missouri law defines a pedestrian as “any person afoot.” (RSMo 300.010.22). Although it is not stated specifically, this is assumed to also include people using mobility aids such as wheelchairs, and the statutes are specific that motorized wheelchairs are not considered “vehicles.” Other people legally considered as a pedestrian:

- ▶ People using push-scooters, roller skates, skateboards or operating electric personal assistive mobility devices, i.e., Segways™. (RSMo 300.090)
- ▶ Bicyclists riding on sidewalks, when permitted.

Pedestrian Rules

Key Missouri pedestrian rules:

- ▶ When a sidewalk is available, pedestrians may not walk along the roadway, which is the portion of the right-of-way designed for vehicular travel. If there are no sidewalks, the pedestrian may walk on the roadway or the shoulder, “when practicable” on the left side, facing traffic. (RSMo 300.405).
- ▶ Pedestrians may cross streets only at a crosswalk if there are traffic signals at both ends of the block or when in a business district (RSMo 300.395). In other situations pedestrians may cross outside of a crosswalk, but only after yielding to vehicular traffic and then taking the shortest route to the opposite curb (RSMo 300.390 and 300.385).
- ▶ A *crosswalk* can be either marked (“distinctly indicated for pedestrian crossing by lines or other markings on the surface”) or unmarked by imaginary lines extending the sidewalks on either side of an intersection. Vehicular traffic, including bicycles on the roadway, are required to yield to pedestrians in marked or unmarked crosswalks *not controlled by traffic signals* when the pedestrian is on the same half of the road or approaching closely. Although pedestrians have the right of way in such circumstances, they nevertheless may not “suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close that it is impossible for the driver to yield.” (RSMo 300.375).

- ▶ Where traffic signals are in place, pedestrians do not have the right of way all the time; they must obey the signal indications. If there are no pedestrian signals, pedestrians may start to cross on green, other than a green arrow, continue but not start on yellow, and may not cross on red. With pedestrian signals, WALK (or walking person), flashing DON'T WALK (or flashing raised hand), and DON'T WALK (or raised hand), take the place of green, yellow, and red. If drivers are permitted to turn across a crosswalk at the same time pedestrians are permitted to cross, vehicular traffic, including bicycles, must yield the right of way to pedestrians.

Bicycle Defined

Missouri state law defines *bicycle* as a “vehicle propelled solely by human power upon which any person may ride, having two tandem wheels, or two parallel wheels and one or two forward or rear wheels, all of which are more than fourteen inches in diameter, except scooters and similar devices.” (RSMo 307.180) Missouri state law says that people bicycling “upon a street or highway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle.” (RSMo 307.188) In other words, bicyclists are considered drivers, and have the same rights as motorists to use roadways.

Bicyclist Rules

All of the statutes that govern the interaction of drivers (e.g., determining right of way, passing, turning, position on the roadway, etc) apply to interactions between bicyclists and motorists (as well as between bicyclists). There are only a few differences between the operating rules for bicyclists and other drivers:

- ▶ Bicyclists may use either the travel lane or the shoulder. (RSMo 307.191)
- ▶ Like motorists, bicyclists must generally use the right half of a two-way street and must generally use the right-most lane. Bicyclists must also keep right within the right lane if the lane is wide enough for a motorist to pass within the same lane and if there are no hazards at the edge of the road that would make riding there unsafe. (RSMo 307.190)
- ▶ Bicyclists are not permitted to use limited-access highways such as Interstates. Some states, including Missouri, do permit bicyclists

to use the shoulders of rural Interstates where no other route is practical.

- ▶ Bicyclists may ride on sidewalks outside of business districts, yielding to pedestrians and providing an audible signal when passing them. (RSMo 300.347) Some Missouri communities restrict sidewalk bicycling, either by posted sign (Kansas City, Columbia) or by ordinance permitting only children 14 and under to ride on sidewalks, and only in residential districts (St Louis). Where bicyclists are permitted to use sidewalks they must follow rules for pedestrians, not drivers. For instance, this is stated explicitly in the Kansas City code. “A person propelling a vehicle by human power upon and along a sidewalk, or across a roadway upon and along a crosswalk, shall have all the rights and duties applicable to a pedestrian under the same circumstances.” (Kansas City Code of Ordinances Sec. 70-695) Therefore, bicyclists using the sidewalk must follow pedestrian signals at signalized intersections, stop and wait before entering a crosswalk at unsignalized intersections, and must cross the road using a crosswalk.

Although the sidewalk may be seen as an appropriate accommodation for bicyclists, sidewalk bicycling is not an appropriate Livable Streets solution. Sidewalk bicycling is undesirable for several reasons:

- ▶ Operations: Sidewalks are not designed for the speed, turn, and surface requirements of bicycles, nor are they designed with suitable clearance from side obstructions.
- ▶ Maneuvering space: Sidewalks provide no maneuvering space for the bicyclist to react to pedestrians or other bicyclists. Pedestrians can behave in unpredictable ways, including stopping or turning suddenly. Sidewalk space is further reduced by people walking abreast, pushing strollers, or walking dogs.
- ▶ Right-turn conflicts: A bicyclist on the sidewalk is positioned to the right of right-turning traffic at intersections and driveways. Safe sidewalk bicycle operation requires a stop at every intersection, even when faced with a signal to proceed.
- ▶ Direction of Travel: Sidewalk bicyclists frequently travel opposite the flow of traffic on the roadway, placing them outside the field of

vision of drivers look for vehicles that they are required to yield to.

Sidewalk bicyclists face extra delay due the design of the sidewalk, the presence of unpredictable users, and the need to stop at every intersection and driveway. Many sidewalk bicyclists travel too fast for these conditions. Several studies have confirmed that injury rates are higher for bicyclists using sidewalks (not trails) than for those using roadways.

4.2 Improving Connectivity

Improving connectivity is a key feature of Livable Streets and should first focus on removal of barriers. Barriers to connectivity include major arterials, highways, railroad crossings, and bridges.

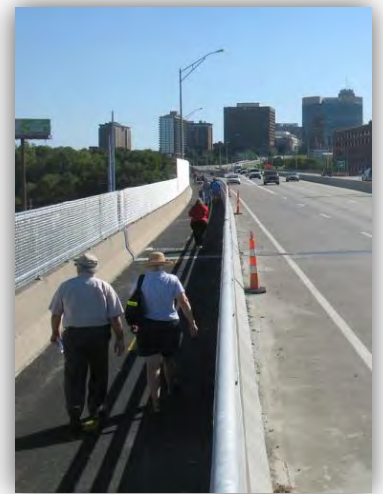
Even when major arterials are designed with pedestrians and bicyclists in mind, many people would prefer not to use them if there is an alternative parallel route with less traffic (and they do not have business on the major arterial). However, in many suburban areas, there may be no reasonable alternative through route, or through traffic may be prohibited by one-way street systems. There are several methods that can be used to improve connectivity for bicyclists without enabling unwanted “cut-through” motor traffic. These include:

- ▶ Provide paths connecting the ends of the cul-de-sacs of neighborhood streets.
- ▶ With signs and barriers, prohibit entry to motor vehicles but permit bicycle access. This design is called a “bicycle boulevard.” Such routes can be enhanced by shared lane pavement markings and an improved means of crossing major roadways.⁵³
- ▶ Provide activated signals or Pedestrian Hybrid Beacons to facilitate crossing of major arterials where traffic signals are widely spaced. These beacons require motorists to stop, but then permit them to continue as soon as pedestrians have finished crossing, rather than waiting for the timed phase to complete.⁵⁴

Even with these improvements, minimum design guidelines for bicyclists should still be observed on major arterials. Some bicyclists will still need or prefer to use these routes, which generally have traffic signal priority over lesser roadways. Such routes may be

considerably faster than parallel routes that have stop signs at every intersection.

Addressing Livable Streets in the planning process will reduce the number of new bridges that create a barrier. In Kansas City, the MPO has adopted a bicycle and pedestrian accommodation policy on river bridge crossings that provides a standard to adopt and apply for most bridges.⁵⁵ The picture below on the left is of the new bicycle/pedestrian crossing of the Missouri River in Jefferson City. The picture below on the right is of the new bicycle/pedestrian facility on the Heart of America Bridge over the Missouri River in Kansas City.



4.3 Pedestrian Facility Design

Safety

The majority of pedestrian fatalities in America do not occur in intersections.⁵⁶ More than three quarters occurred away from the intersection, which points out the importance of considering pedestrians throughout the street design, not just at the intersections.

In areas of known safety problems, tools such as the Pedestrian and Bicycle Crash Analysis Tool (PBCAT) offered by FHWA can provide detailed analysis of the crash data to propose appropriate countermeasures.⁵⁷

Pedestrian Design

Pedestrian corridors are more than just sidewalks. They require detailed design and attention to the different types of pedestrian uses. For instance, in an urban setting with shops, space should be allotted for people walking, people congregating at shop entrances, people

entering the sidewalk from parked cars, transit stops, and landscaping and drainage features. In suburban and rural areas where sidewalks aren't present, appropriate roadway design is needed to provide a safe corridor for pedestrians.

With all pedestrian facilities, particular consideration of the needs of pedestrians with disabilities is required under the Americans with Disabilities Act (ADA). These guidelines provide the technical information needed to provide a traversable route for the disabled.

Sidewalks

Nearly half of all pedestrian trips are on sidewalks, which - when designed correctly - provides a safe and comfortable route for pedestrians. Generally all sidewalks should have a minimum width of 5' to provide the space needed for people in wheelchairs to pass one another, or for two people to walk side by side. The sidewalk should also be offset at least 5' from the roadway to provide a safe, comfortable buffer from traffic.

As discussed, sidewalks should not be designated as bicycle facilities.

Shoulders

In rural areas, pedestrian travel on shoulders is an acceptable option, as shown in the picture below. Proper design must be incorporated to provide adequate offsets from traffic and road debris. With high-volume, or high-speed adjacent roadways, increased protection will be warranted, and an



appropriate channelization device, such as a concrete safety barrier will be needed.

For shoulders designated as a pedestrian route, the local ordinances of snow clearing, fall protection, and hazard removals apply.

On-street

One quarter of all pedestrian trips are on paved streets, which is acceptable for low-volume, low-speed streets such as residential cul-de-sacs, but not for higher level roads. For on-street pedestrian corridors, usually no special roadway design or signing is required. On-street and shoulder corridors used as pedestrian corridors may need additional signing for identification of the pedestrian route or warning to the motorists of special conditions.

Crossing Streets

Pedestrians need to cross streets to get to their destinations. They can cross either at mid-block or



intersection locations. A mid-block crossing is pictured below.

Mid-block Locations and Intersections without Traffic Signals
At mid-block locations without crosswalks, if crossing is permitted pedestrians must yield to traffic on the road. At intersections without marked crosswalks, it may be difficult to get motorists to comply with their legal duty to recognize that an unmarked crosswalk exists and yield to pedestrians. Even where crosswalks are marked, motorists do not always yield to pedestrians crossing. It is much easier and safer for pedestrians to cross when traffic speeds are below 35 mph and there is only one lane of traffic in each direction. A pedestrian refuge in the middle of the street makes the task easier and quicker by providing a place for pedestrians to wait for traffic on the other side of the street to pass or stop. The Manual of Uniform Traffic Control Devices (MUTCD) allows the installation of a pedestrian-activated warning beacon (Section 4L.03). This device can significantly improve safety, particularly at night,

since motorists cannot be expected to yield to pedestrians they cannot see, but they are likely to notice a light that is only displayed when a pedestrian is in the crosswalk.

Until recently, the only other option available for making a crossing safer for pedestrians was to install a full traffic signal, stopping traffic with a red signal while pedestrians cross. Since 2009, the MUTCD permits a “[pedestrian hybrid beacon](#)”.⁵⁸ When activated, the device displays alternately flashing red lights, indicating that drivers must stop for pedestrians crossing and only proceed when safe, as at a stop sign or other flashing red light. Unlike a full traffic signal, drivers may proceed when a pedestrian is no longer crossing their path, even if the light is still flashing. In recognition of its lesser delay for drivers, the MUTCD standards make it much easier to warrant the installation of a pedestrian hybrid beacon than a full traffic signal.



Signalized Intersections

At signalized intersections without pedestrian indications, pedestrians can start crossing when the light is green but not when it is yellow or red. However, the typical 3-4 seconds of clearance time (yellow and all-red) provided for drivers is insufficient for pedestrians for all but the narrowest of streets. For this reason, and also because traffic signals are not installed facing the wrong way on one-way streets, it is generally standard practice to install pedestrian signals. Providing a countdown indicator can give pedestrians a better guide to how much time is remaining before conflicting traffic is released. Because pedestrian speed is highly variable, this additional information can provide fast walkers with less delay and slow walkers with more security.



Generally a circular green and an adjacent WALK signal are displayed at the same time. Turning drivers are supposed to yield to pedestrians crossing, but many do not know this or ignore it. An exclusive phase for pedestrians (where traffic in all directions has a red) in theory can eliminate this conflict. However, in practice, most pedestrians will not wait a full cycle for a separate phase and will go when cross traffic has the red, as they do in the

case of a concurrent WALK signal. A better solution is to display the WALK indicator a few seconds before the green light, providing waiting pedestrians the opportunity to establish their right of way in the crosswalk ahead of turning traffic. This leading pedestrian interval is being used in many North American communities including New York City.

One way to reduce pedestrian delay is to narrow the crossing distance (for example, though the use of a road diet or curb extension). A shorter crossing means that the pedestrian clearance interval can be shorter, reducing delay for all users.

Another technique is to permit pedestrians to cross only half the street at a time, to a raised median or refuge as seen below. Many times, this technique is used when a left-turn phase is displayed. One technique is to



stagger the pedestrian crossing so that pedestrians cannot easily complete the crossing until the signal has changed on the far half of the road. This design should only be used when pedestrians will be allowed to cross the second half of the street immediately following the first half, without waiting for some other phase in between.

Amenities

The quality of the walking experience can be greatly enhanced by street trees and other landscaping, pedestrian-scale lighting, public art, benches, trash receptacles, and other amenities. In addition, land use regulations that encourage or require store fronts or residences along the street (rather than blank walls or surface parking lots) can provide both more interest and improved safety for pedestrians.

4.4 On-Street Bicycle Facility Design

Safety

The vast majority of bicyclist injuries result from incidents that do not involve motor vehicles.

- ▶ Hospital data compiled by the Missouri Department of Health and Senior Services shows that 94 percent of emergency room or inpatient visits for bicycling injuries do not involve a motor vehicle (virtually all of these were coded as having occurred on a “trafficway” rather than in a parking lot or on a driveway).⁵⁹
- ▶ The Missouri State Highway Patrol figures⁶⁰ show that more than 80 percent of car-bike collisions happen in urban areas. In 2009, more than one-third (34 percent) of the bicyclists involved were children (under 16) and another 23 percent were teens or young adults (16 to 25).

Analysis of bicyclist crash types find that a failure of one party or both to obey the rules of the road is associated with almost all car-bike crashes.

Motorist-caused collisions are a large factor, mostly involving same-direction motorists turning right across the path of a bicyclist, opposite-direction motorist turning left without yielding, and failing to yield when entering or crossing the road. In urban areas, particularly in daylight, overtaking collisions are one of the least common types. Where there is on-street parking, a suddenly-opened car door is one of the most common bicyclist crash circumstances.

Safety of bicyclists will increase with a well-designed Livable Street, however separating bicycles from motor vehicles does not address all safety concerns alone, there also needs to be a public education program to educate motorists and cyclists about the rules of the road. Young bicyclists may not know the rules; many older bicyclists may not be aware of the rules or deliberately disobey them (including the requirement to have lights after dark), and in many communities the chance of bicyclists receiving a violation from an officer is low.

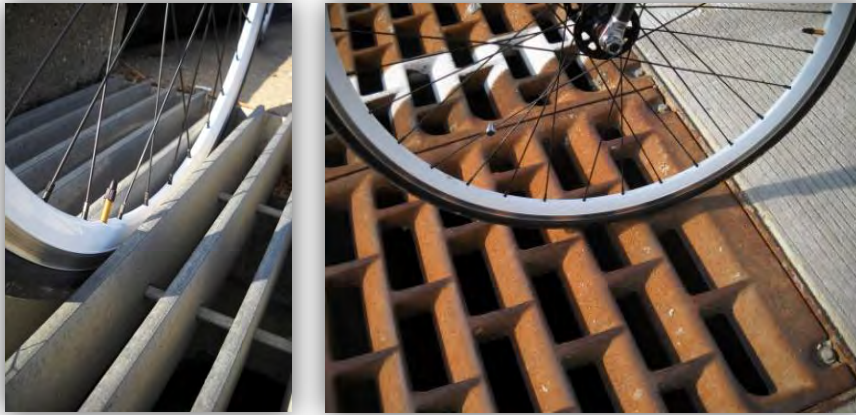
In areas of known safety problems, tools such as the Pedestrian and Bicycle Crash Analysis Tool (PBCAT) offered by FHWA can provide detailed analysis of the crash data to propose appropriate countermeasures.⁶¹

Roadway Bicycling

When beginning the process of designing a street, traffic engineers identify the design vehicle that controls particular aspects of a roadway design. Typically the *design* vehicle is the one which is tallest, widest, longest, or has the widest turning radius. If this vehicle can safely pass, then all other vehicles can too. The 2004 edition of the AASHTO *Policy on the Geometric Design of Highways and Streets* broke new ground by recognizing bicycles as a design vehicle for road designs where bicycling is permitted. By addressing aspects of design that impact bicycle use, roadway design can become much friendlier for bicyclists. Key roadway design aspects controlled by the bicycle:

- ▶ Pavement smoothness: Like other two-wheeled vehicles, bicyclists can lose steering control when passing over bumps and holes, undulating pavement, or seams and ridges. Raised reflectors or rumble strips that are not problematic for other vehicles can be troublesome for bicyclists.
 - MoDOT policy⁶² follows FHWA suggestion that “Rumble strips should only be installed when an adequate unobstructed width of paved surface remains available for bicycle use.”⁶³
- ▶ Openings: Bicyclists have narrow tires, as narrow as three-quarter-inch. Therefore no roadway elements should have slots parallel to the roadway wider than about a half-inch. Notable, drain grates with parallel slots are hazards that can catch a bicycle wheel and cause the rider to be launched headfirst into the

roadway. MoDOT policy is that only bicycle safe grates may be used in roadway and shoulder applications.⁶⁴ Below are examples of grates that are bad (left) and good (right) for



bicyclists traveling over them.

- ▶ **Signal Detection:** The induction loop system commonly used to detect vehicle mass and actuate traffic lights needs to be adjusted to accommodate the small amount of metal on a bicycle. This issue is so prevalent that Missouri law allows for bicyclists to enter intersections with a red light if the signal is not triggered and it is safe to proceed. (RSMo 304.285)
- ▶ **Signal Timing:** The slower acceleration of a bicycle means that bicyclists will need a longer gap in traffic when proceeding from a stop or yield sign, and may need longer green time when crossing wide streets from minor approaches. Additionally, an all-red clearance and/or longer yellow interval may be required to ensure that bicyclists who enter a signal at the end of the green phase or during the yellow phase can finish crossing before other traffic is given a green.
- ▶ **PASSING SPACE** - Except on downhill grades or in very congested areas, bicyclists will typically be traveling slower than other traffic, and sufficient paved shoulder or lane width should be provided to enable motorists to pass bicyclists without changing lanes. Missouri law requires this safe distance for any motor vehicle that overtakes a bicycle. (RSMo 300.411 & 304.678)

Following the minimum requirements that come from including the bicycle as a design vehicle will improve the

safety and comfort of all road users. However, there are some roadway design elements or practices that inherently reduce bicyclist safety and comfort. One aspect in particular is the intersection design that

permits high-speed right turns, particularly from a lane that permits right turn or straight-through movements. These can be challenging for bicyclists due to the unpredictability from vehicles behind the bicyclist. Other bicycle-unfriendly design elements include:

- ▶ Expressway interchanges designed for high-speed movements, including specialty interchanges such as the single-point urban interchange that combines all of the traffic movements into a single

intersection.

- ▶ Y intersections or diverges without designated turn lanes, including slip lanes where drivers have two lanes to select from and simply move to one without needing to signal or look for other traffic.

In addition, roadway designs that place bicyclists away from the right lane on high-speed roadways are undesirable. These designs include:

- ▶ Unions that place entering traffic in the center or left lane;
- ▶ Divisions that require a movement to the left of more than one lane.
- ▶ Multilane traffic circles designed for high-speed operation are particularly difficult for bicyclists to navigate safely (although this is not true of one-lane modern roundabouts).

Elements of expressway intersections that are more bicycle friendly include:

- ▶ Ramp intersections with local roads at a 90-degree angle rather than a free-flow design.
- ▶ The curb radius of the ramp intersection should be such that the right turns are made at a slower speed, i.e. 15-25 mph, depending on the location.
- ▶ The off-ramp traffic is controlled with either a stop sign or traffic signal, not a yield sign.
- ▶ Access to the on-ramp is via a right-turn only lane.

Paved Shoulders

Paved shoulders provide a low cost solution for adding bicycle travel to rural roadways with higher speeds. As shown in the photo below, a bike route was added to Route 40 in Blue Springs Missouri simply through the use of signing. Refer to Figure 4A, page 35 for additional guidance.



When using paved shoulders, it is important to accommodate cyclists through intersections.

It is also important to address rumble strips. Although they are still encouraged to provide an audible warning to the errant driver, rumble strips are not an acceptable riding surface for cyclists. The area between the rumble strip and the edge of pavement is considered the functional width of the paved shoulder.

Shared Lanes

Shared lanes are one of the most common elements of a well planned bicycle network, and for the low volume, low speed roads, very little bicycle specific modifications are required. In shared lanes the bicyclist travel in the same lane as the motor vehicles, staying to the right when operating at speeds less than the motorized vehicles, or taking the full lane as needed for their safety.

There are a number of common misperceptions about bicycling on roads. One is that “Bicyclists are too slow to operate safely on an urban street.” However, city streets frequently have stopped traffic, whether waiting

to make a left turn, backing into on-street parking, double-parking, or waiting in a queue at a traffic signal. Motorists who can avoid *stopped* traffic can certainly avoid hitting *moving* bicyclists. A 15 mph difference in speed (for example, in the case of a motor vehicle traveling at 30 mph approaching a bicycle traveling at 15 mph) requires a stopping sight distance of only 80 feet. This distance assumes there is no opportunity to safely overtake.⁶⁵

As motorized traffic volumes increase, signing, pavement markings, and even widened pavements are needed to increase the safety and comfort of both the motorist and the bicyclist. Signing and pavement markings provide more guidance on the rules of the road. Wide outside lanes are recommended when motorized traffic volumes are high, or the posted speed limit is high. This wider lane width allows for more maneuvering space for the bicyclists, but also allows the motorists to pass the slower bicyclists without encroaching into the adjacent lane of traffic and still providing a safe clearance to the bicyclist.

Shared lane markings, commonly called “sharrows,” are used to guide the bicyclists to the proper location in the shared lane. An example is seen in the picture below. This pavement marking prevents the bicyclist from riding too close to unsafe conditions such as the open door of a parked car, as in the example below. Shared Lane Markings are placed 11’ from the edge of pavement when parallel parking is present, 4’ from the edge of pavement if parking is not allowed, or in the center of a lane too narrow to share. Shared Lane Markings should be placed immediately after an intersection and at intervals of 250’ or less. Shared Lane Markings should not be placed on roadways that have a speed limit above 35 mph.⁶⁶



Appropriate signage alerts motorists to the presence of bicyclists, and provides information to the bicyclists as to their rights. Common signs approved by the Manual on Uniform Traffic Control Devices (MUTCD):

- ▶ Bicycle May Use Full Lane sign
- ▶ Share the Road

Refer to Figure 4B, page 36 for additional guidance.

Bike Lanes

A bike lane is a portion of the roadway designated for through travel by bicyclists only, analogous to bus lanes or other preferential lanes. Motorists must yield to bicyclists when crossing a bike lane. Pavement markings and signage are used to designate the lane, as shown below.



Unlike other roadway elements, such as the shoulder, the bike lane is legally part of the roadway. State law defines a bicycle lane as “a portion of the roadway or highway.” (RSMo 300.330) Statutes do allow for special situations for motor vehicles to drive in designated bike lanes only to cross the lane, or to provide safe travel, but in all cases shall yield to bicyclists.

Following design guidelines will address situations not defined by Missouri statutes. By defining the bike lane as a portion of the roadway, the statutes are ambiguous on the legal treatment of right turn lanes, as “Both the approach for a right turn and a right turn shall be made as close as practicable to the right-hand curb or edge of the roadway.” (RSMo 300.215) However, a well

designed bike lane will provide proper guidance for the proper positioning of the driver and the bicyclist.

Bike Lane Segments Without On-Street Parking

Where there is no on-street parking, the *AASHTO Guide for the Development of Bicycle Facilities* describes a minimum bike lane width of 4 ft if there is no curb and gutter. Where there is a curb and gutter, the *Guide* suggests a nominal bike lane width of 5 ft from the curb in order to provide a usable surface of 3 ft. This assumes that the gutter ends no more than 2 ft from the curb and the longitudinal joint between the paving and the gutter pan is smooth. With faster traffic and a significant volume of trucks, a bike lane wider than these minimums should be used, particularly if the adjacent travel lane is less than 12 ft wide. Refer to Figure 4C, page 37 for additional guidance.

Bike Lane Segments With On-Street Parking

A door on a parallel-parked motor vehicle can extend into the adjacent travel lane, particularly when narrow dimensions for parking and travel lanes are used, as is common in urban areas. Because moving motorists tend to use the middle of the lane, there is generally clearance for an opened door of a parked car. Bicyclists are more likely to keep to the right-most edge of the lane, in the path of a suddenly opening door (and some incorrectly believe bicyclists are required to ride in this vulnerable position).



When marking a bicycle lane adjacent to parked cars, it is therefore necessary to provide a buffer zone between the parking lane and the bicycle lane to provide space for opening doors. This buffer zone can be marked with diagonal stripes or simply with an additional longitudinal line. A bike lane adjacent to a buffer zone can have the minimum 4 ft width specified by AASHTO, since it is not adjacent to the parking lane but to the buffer zone.

Bike Lane Separation

Bike lanes are separated from other travel lanes with ordinary longitudinal pavement markings (preferably with an anti-skid surface), not by curbs, bollards, planters, parked cars or other barriers. The picture below shows a bike lane with additional separation.



The picture above is an example of a cycle track in an urban area.

Bike Lanes at Intersections

Where possible, it is highly desirable to add right-turn lanes to the right of bicycle lanes at intersections and commercial driveways. The resulting design signals clearly to right-turning motorists that they must merge right, into the turn lane, in advance of turning, and signals to straight-through bicyclists that they must stay in the bike lane. Note how the right turn lane is properly positioned in the picture below.

The MUTCD says that “Posts or raised pavement markers should not be used to separate bicycle lanes from adjacent travel lanes” and adds that “Using raised devices creates a collision potential for bicyclists by placing fixed objects immediately adjacent to the travel path of the bicyclist. In addition, raised devices can prevent vehicles turning right from merging with the bicycle lane, which is the preferred method for making the right turn. Raised devices used to define a bicycle lane can also cause problems in cleaning and maintaining the bicycle lane.”⁶⁷ They also prevent bicyclists from using the rest of the roadway when needed and place the through cyclists to the right of right-turning traffic, creating a potential for motorists to turn into oncoming bicycle traffic.

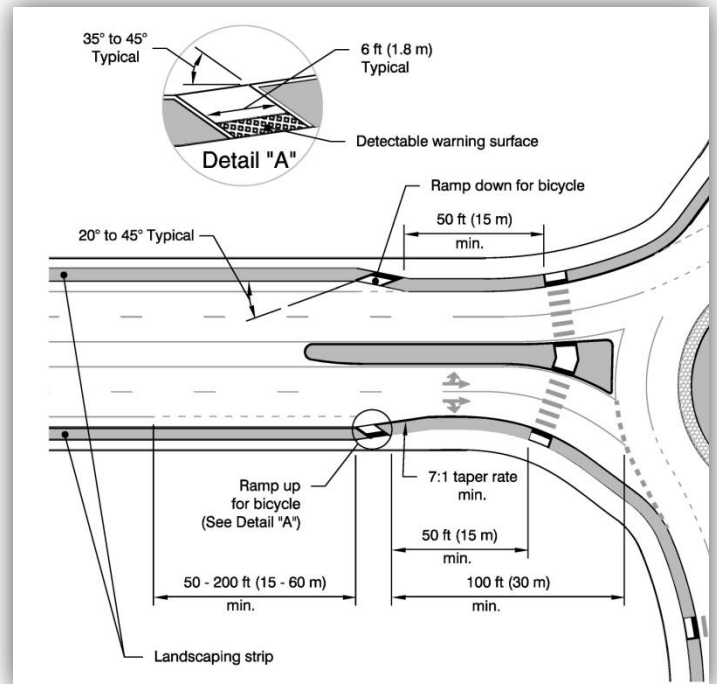
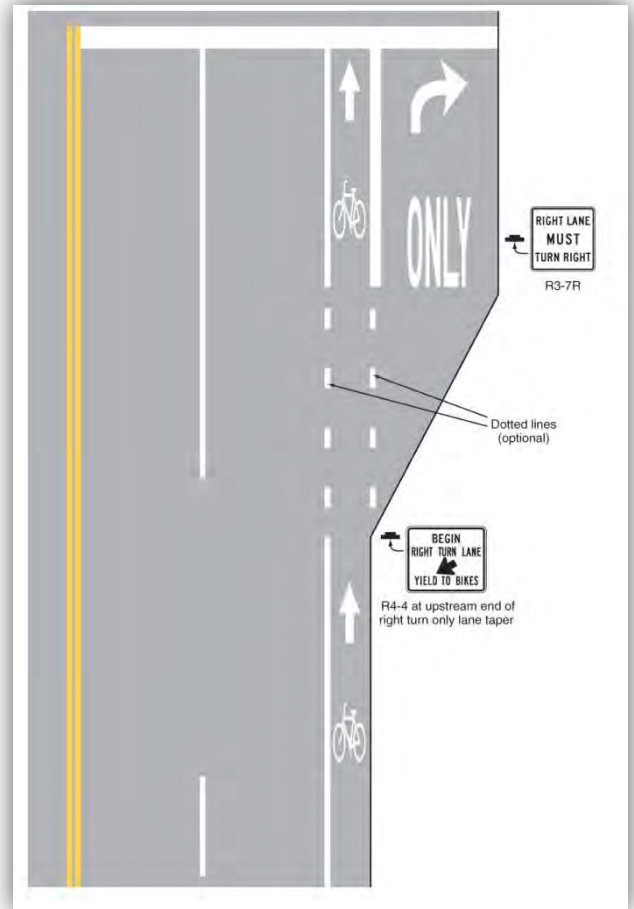
New concepts, such as cycle tracks, are challenging the separation concept. Cycle tracks, as defined by National Association of City Transportation Officials (NACTO) in the Urban Bikeway Design Guide, are exclusive bicycle facilities that combine the user experience of a separated path with the on-street infrastructure of a conventional bike lane.⁶⁸ Innovative treatments such as these may increase the bicyclist volumes, but require more care in planning and design to execute properly.



It is easier for bicyclists if they do not have to change roadway position in such circumstances, as when a parking lane becomes a right-turn lane. However, sometimes the right-most lane becomes a right-only lane, and bicyclists must merge left as traffic permits. In such circumstances, there should be a merging area of at least 100 ft between the dropping of the right-side bike lane stripe in advance of the intersection and its re-emergence to the left of the right-turn lane. MUTCD guidance is shown in the diagram to the right.

Important guidance for bike lanes:

- ▶ A bike lane should not be striped to the right of a lane that has any significant volume of right turns. Instead, the bike lane stripe can be dropped in advance of the intersection and the shared use marking can be installed in the center of the right or through lane.
- ▶ Bike lanes should not direct bicyclists to cross intersections at right angles, as in the situation where a bike lane along the road becomes a bike lane adjacent to the crosswalk crossing that road. A bicyclist following such a bike lane could be in danger should the traffic signal change as he or she is crossing.
- ▶ Bike lanes are not permitted within the circulating roadway of a traffic circle or roundabout.⁶⁹ Bike lane markings should stop at least 100 feet before the roundabout to allow the bicyclist to merge into the traffic lane. Bicyclists uncomfortable with traveling through the roundabout may enter the sidewalk and walk their bicycle to the beginning of the bike lane on the other side of the roundabout. National Cooperative Highway Research Program (NCHRP) guidance for bicycle lane treatments related to roundabouts is shown to the right.



4.5 Shared-use Path Facility Design

Unlike sidewalks, trails or paths intended for bicycle use, if designed according to current standards:

- ▶ Are placed in locations where there are a minimum number of intersections, such as along rivers, lakes, and rail corridors or inside parks. MoDOT’s current policy states that “A bicycle path is appropriate in corridors not served directly by streets and highways, such as along rivers, lakes, abandoned utility or railroad right-of-way, parks, etc. Cross movement by motor vehicle traffic should be minimal.”⁷⁰
- ▶ Are designed to permit vehicular use for maintenance.
- ▶ Have a width reflecting their use by different user types and by two directions of movement.
- ▶ Have sufficient separation from the roadway.
- ▶ Have appropriate intersection designs to reduce the potential for collisions with crossing or turning motor vehicles.

Refer to Figure 4D, page 38 for additional guidance.

Just as access management is important in roadway design, crossing management is just as important for user safety and efficient transportation of trails. The *Trails KC Plan*, the citywide trail master plan for Kansas City specifies the allowable number of driveways and roadway crossings per mile. (The table is reproduced below.) If a proposed trail segment exceeds these limits, then other options, including on-road bike facilities, must be investigated.

Table I - Trail-Roadway Crossings⁷¹

Number of Vehicular Crossings / Mile	Guideline
0	Ideal condition for safe shared-use trail.
1-4	Use special care to treat the crossings.
5-8	Caution - Consider alternative route or substituting with on-street facility. Must be approved by City Staff prior to use.
8+	Undesirable - Consider alternative route or substituting with on-street facility. Must be approved by City Staff prior to use.

The [Trails KC Plan⁷²](#) is an excellent resource for shared-use and on-street bicycle facility designs.

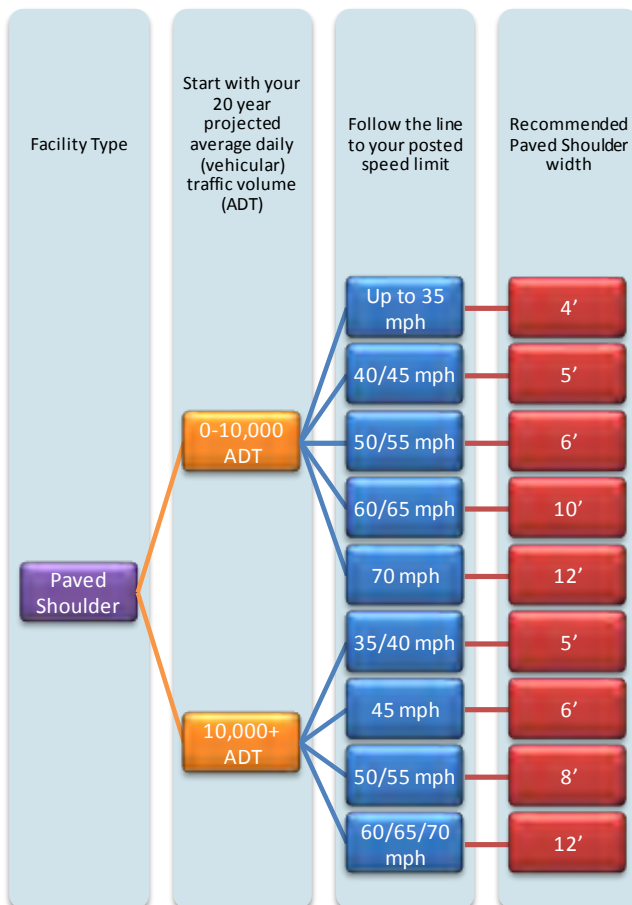
Rails to Trails is a popular method to develop a trail system by converting or leasing railroad right-of-way. Railroad grades are nearly flat, have good drainage, and provide long segments for active transportation. In towns that grew up around a railroad, conversion to a trail will allow direct access to the city’s downtown and employment centers.

[The Missouri Blueways Project⁷³](#) includes more information about methods for converting rails-to-trails in Missouri.



Figure 4A – Paved Shoulder

Figures 4A through 4D are general guides for Livable Streets treatments based on projected traffic, posted speed limits, and general street assumptions. Each specific situation is unique, so the BLOS calculation should be completed to determine the appropriate solution. See page 46 for more information on BLOS.



NOTE

Information based on normal situations to meet a Level C BLOS. Review the BLOS for your specific situation.

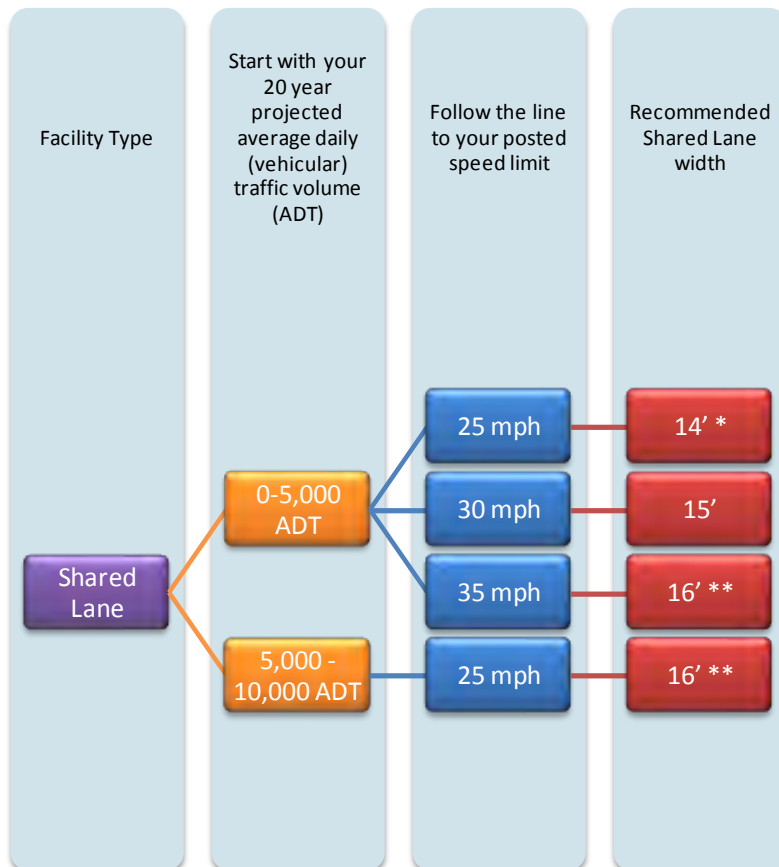
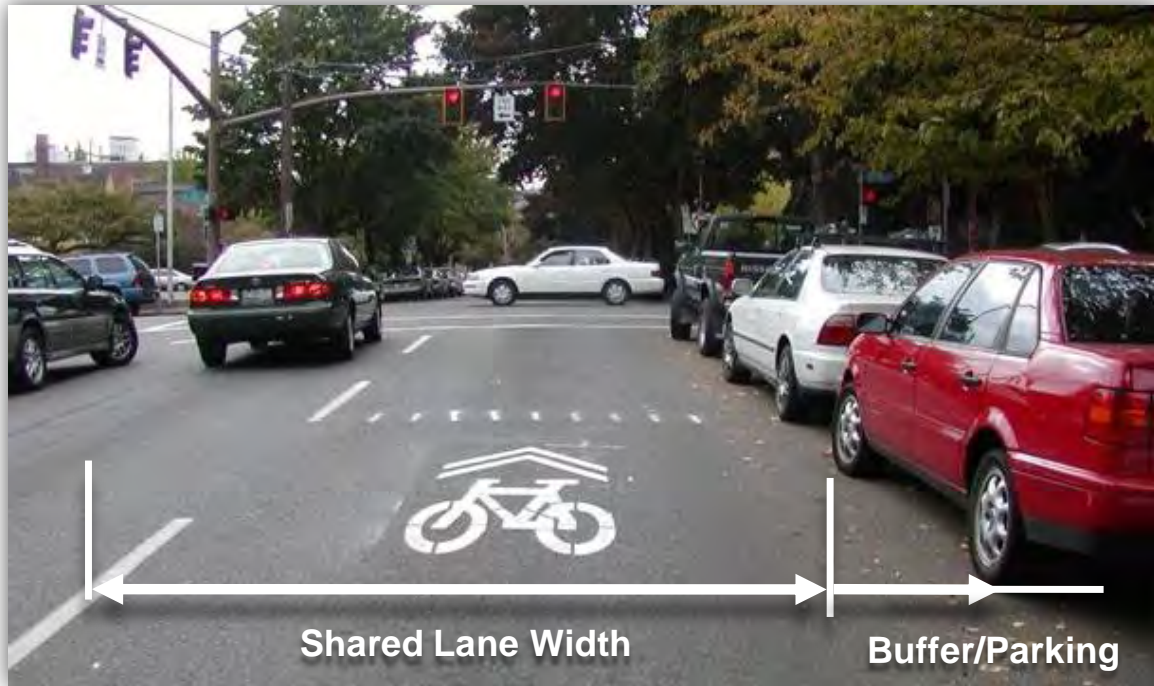
Review MoDOT EPG for guidance on proper rumble strip placement.

For volumes and speed limits outside of these options, separated facilities, such as shared use trails, sidepaths and cycle tracks are the preferred bicycle accommodation.

Paved shoulders do not extend through intersections, and careful consideration must be made for the accommodation of the bicyclist. Proper signage and pavement markings will provide a uniform, continuous route through the intersections. Refer to MUTCD for further details.

Note- MUTCD does not allow Shared Lane Markings to be used on shoulders.

Figure 4B – Shared Lane



NOTE
Information based on normal situations to meet a Level C BLOS. Review the BLOS for your specific situation.

Low-volume residential streets are usually suitable for shared lanes without any special accommodations.

If used, refer to MUTCD for proper color, size and placement of Shared Lane Markings or “Sharrows.”

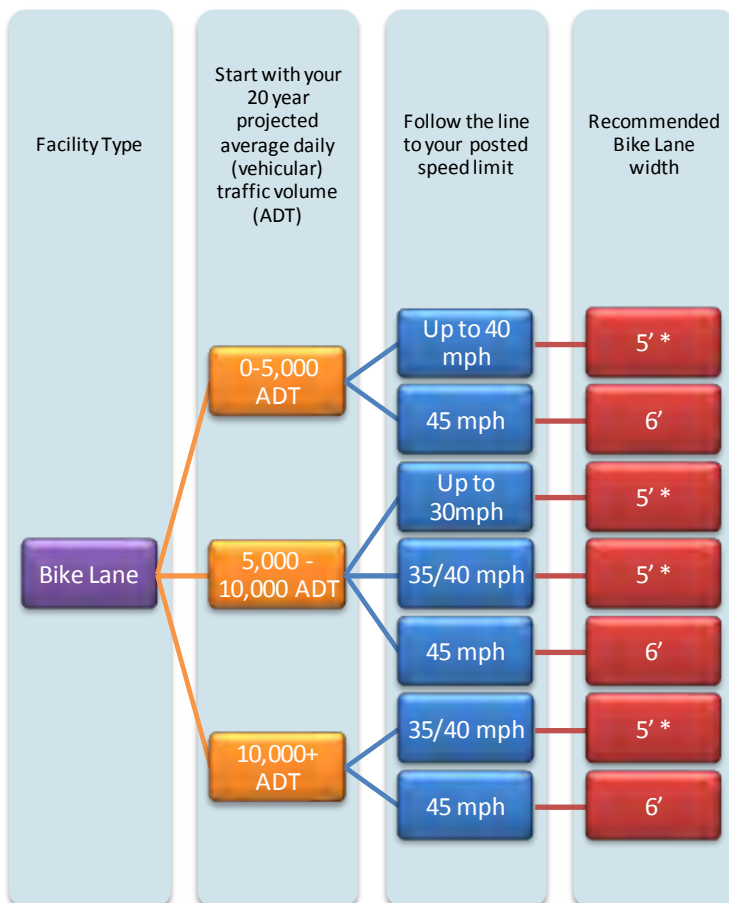
*Considered the minimum lane width that allow motorists to pass bicyclists without encroaching into the adjacent lane.

** Single lanes of this width may encourage motorists to drive as a two lane section.

Consider bike lanes for areas with steep climbs

For volumes and speed limits outside of these options, bike lanes or paved shoulders are the preferred bicycle accommodation.

Figure 4C – Bike Lane



NOTE

Information based on normal situations to meet a Level C BLOS. Trails KC was also used for guidance. Review the BLOS for your specific situation.

*Add 3' to width if adjacent to parallel parking.

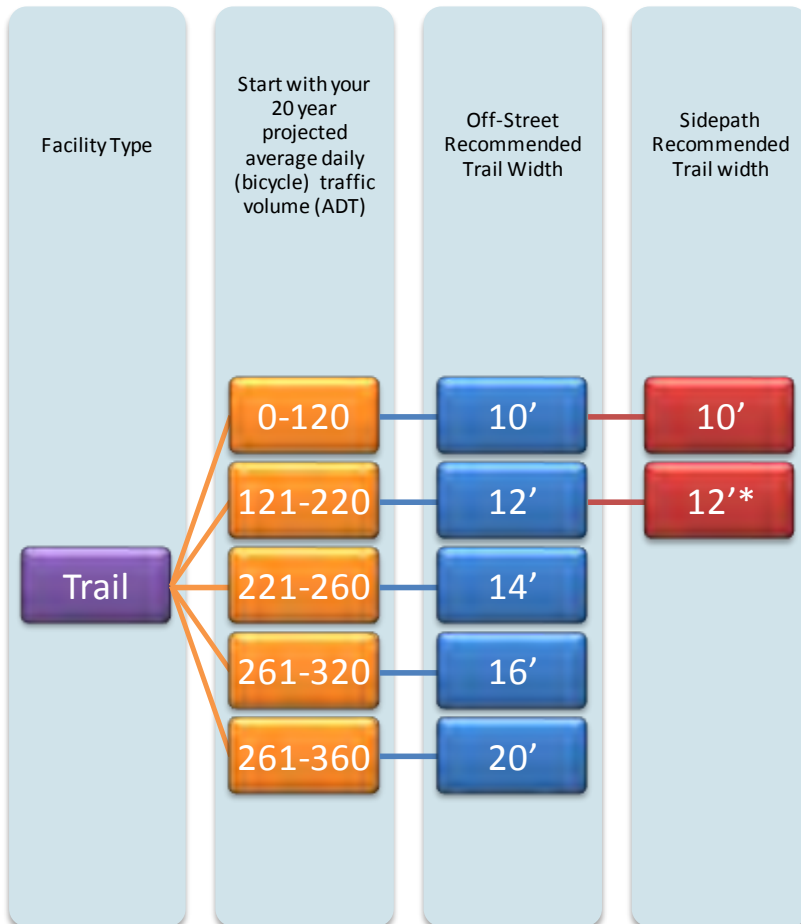
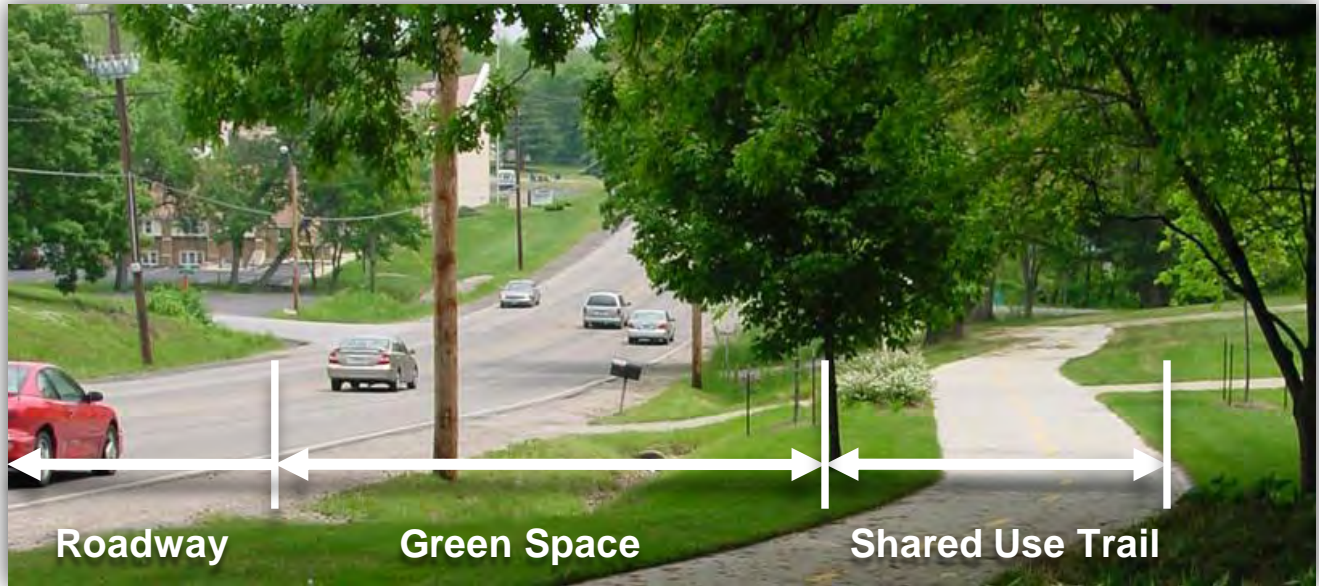
For volumes and speed limits outside of these options, paved shoulders or shared use trails are the preferred bicycle accommodation.

In urban areas, consider Cycle Tracks and other innovative solutions.

When transitioning bike lanes to independent trails or when combining with pedestrians at roundabouts, allot space for the cyclist to reduce speed.

Refer to the MUTCD for proper signing and pavement markings.

Figure 4D - Shared Use Trail/Side Path



NOTE
 Information based on normal situations to meet a Level C BLOS. Review the BLOS for your specific situation.

Shared use trails within 35' of a roadway are considered to be impacted by the characteristics of motor vehicle traffic and are considered on-street facilities. (TRB)

Desired widths are shown for both sidepaths (on-street) and off-street facilities. The minimum green space is 5 feet, with 8 feet desirable.

Many communities are standardizing the shared-use trail widths to produce a consistent character for their shared-use trails. A 12 foot trail is considered a “best practice”, providing much more capacity for not much more increase in construction cost over a 10 foot trail.

*Consider bike lanes to reduce facility cost.

4.6 Public Transit Connections

The vast majority of public transit users walk to transit and an even larger number walk to their final destination after alighting from the bus or train. Thus successful transit requires roads and streetscapes that work well for pedestrians. Transit users also have special needs with regard to accessing places where transit vehicles can stop (even if there is no adjacent land development) and with waiting safely and comfortably.

ADA Design Guidelines require that newly constructed bus stops provide a landing area for boarding and alighting passengers that is connected to a usable path. A new stop along an existing roadway should be sited so that it meets this requirement if possible. Where bus shelters are added, they must meet width and clearance requirements and must be connected to the landing area by a usable path. The guidelines also require that bus stop signs meet lettering requirements.⁷⁴

Transit vehicles also have roadway design needs with regard to turning radius, height, etc. The AASHTO Green Book has turning templates for single and articulated buses, which are similar in their requirements to single-unit trucks. The Green Book assumes that all but local residential streets will be designed to accommodate buses.

Basic consideration for transit users in street design should include the following:

- ▶ When conducting a project on a roadway that has a bus route, the designers should work with the transit providers to rethink the location of all bus stops along the route. Stops should be placed where the bus can safely stop, where passengers can cross the street, where there is room to provide amenities, and preferably at the far side of signalized intersections. Because many transit agencies frequently add bus stops but rarely remove them, road design projects



are a good occasion to consolidate stops to a more optimal number balancing the needs of walking access and minimizing bus acceleration and deceleration.

- ▶ Basic amenities should generally be provided at all bus stops where a significant number of passengers wait (specifically, shelter, lighting, seating, and a trash receptacle).
- ▶ Every passenger making a round trip will have to cross the street – the same street designated for buses and streetcars - to get to the stop on either the inbound or outbound trip. As a result, transit stops need to be located in places where it is possible to safely cross the street. On high-speed arterials with widely spaced signals, placing bus stops at signalized intersections only may result in excessive walking distances for passengers.



- ▶ The lack of connectivity in many suburban street systems may require excessive walks to

local bus stops. As with bicyclists, cut-through paths connecting cul-de-sacs can reduce this problem. It may be difficult for buses to penetrate residential neighborhoods because their streets are not designed for large vehicles. Moreover, doing so would excessively slow bus routes.

- ▶ It is often difficult for transit customers to reach the front door of large establishments such as shopping malls and office parks. Bus stops are often a long walk through parking lots. It may be difficult to maneuver a bus through the parking areas of shopping malls, and the owners of the property may prohibit bus access. Even if a bus is able to enter, serving the front door may impose a substantial time delay on passengers passing through (those not getting on or off). Convenient bus access and stops should be a required component of shopping center and office park construction.
- ▶ Transit buses typically count as the equivalent of two or three passenger cars when allocating road space, even though they may carry more than 10 times that number of people. Prioritizing people rather than vehicles suggests the use of transit priority techniques. These include: permitting movements not otherwise authorized by other vehicles; transit-activated signal phases; traffic signal progression better matched to transit operating speeds; transit signal priority, possibly coupled with queue jump lanes; and transit-only lanes.



4.7 Toolkit

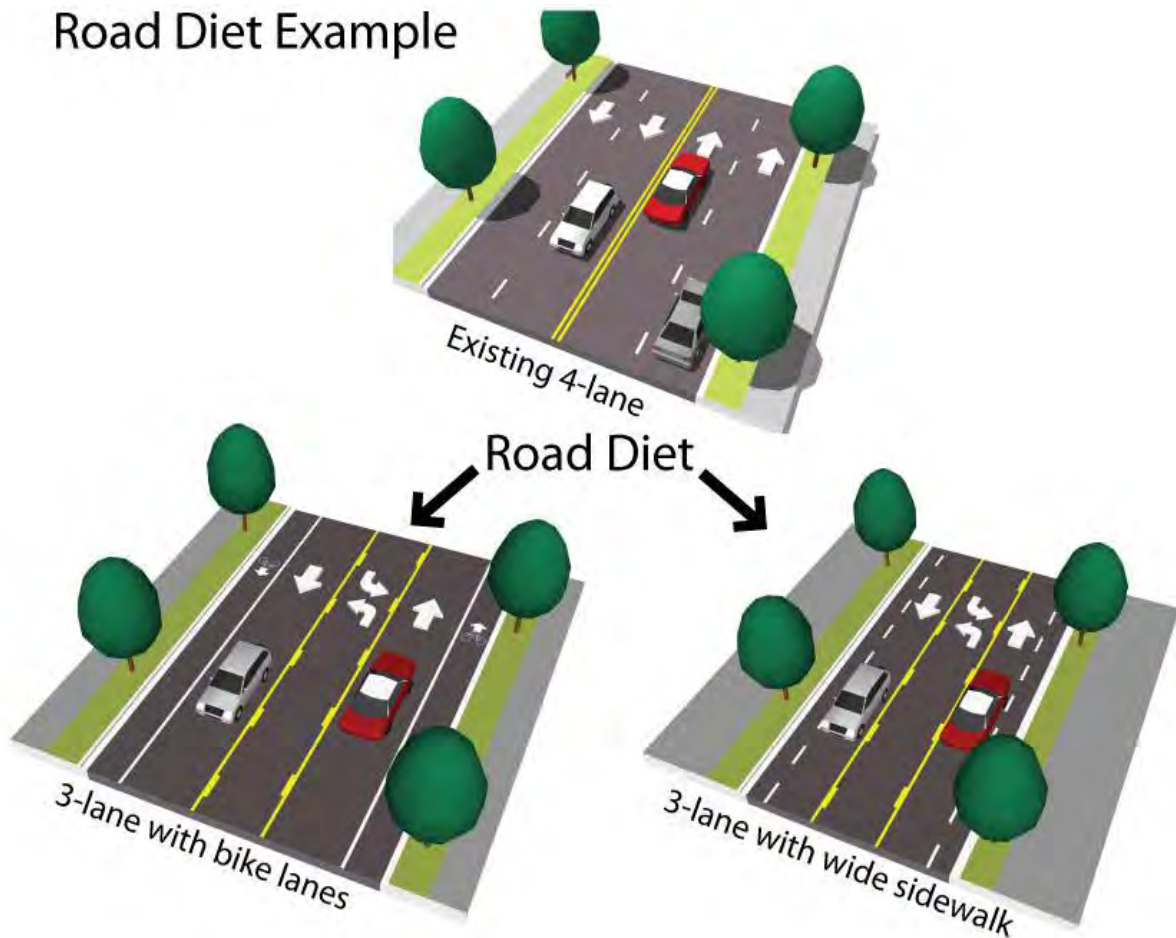
Having the elements to a Livable Street available, planners and engineers can create numerous combinations for Livable Street solutions for new roads, and for retrofits on existing roadways. Each community will have an affinity for certain combinations, so it is important to continue to engage the public on their preferences to find the right balance.

A “Toolkit” of cost effective solutions includes:

- ▶ Traffic Calming
- ▶ Bike Boulevards
- ▶ Access Management
- ▶ Road Diets (seen in image below)

Some solutions will require additional elements, such as transit, pedestrian signals, or shared use paths, and in all cases, the communities preferences will determine the most effective and accepted Livable Streets solution.

Road Diet Example



4.7.1 Traffic Calming

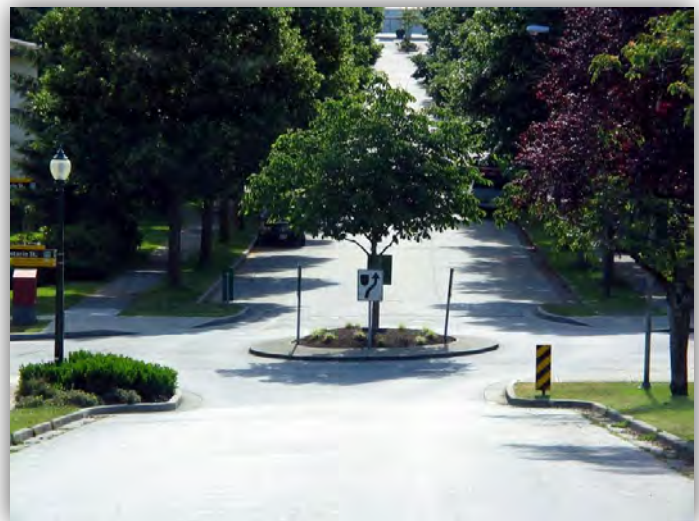
Traffic calming is usually an application made to an existing roadway that is intended to reduce traffic volume and/or traffic speeds. Barriers, signage or markings are used to make the modifications self-enforcing.

A calmer street is more conducive to pedestrian and bicycle traffic and this is reflected in the Bicycle and Pedestrian Level of Service.

Typical traffic calming devices include:

- ▶ Curb bulb-outs (seen below at left and right)
- ▶ Speed humps and tables
- ▶ Traffic circles (seen at right, middle)
- ▶ Chicanes and chokers (seen at right, top)
- ▶ Center islands
- ▶ Diagonal diverters

The Institute of Transportation Engineers has technical guidance on traffic calming in their [on-line library](#).⁷⁵



4.7.2 Road Diets

A special class of traffic calming is where the number of traffic lanes is reduced, known as a “Road Diet.” Road diets increase the capacity and access for active transportation. Motorized volumes are sometimes reduced, although through proper intersection design, some roads will not experience a volume reduction.

Typical road diets are performed on four and five lane roads that currently do not have the motorized traffic volumes to warrant that many lanes. Removing a through lane in each direction will add as much as 24 feet for bike lanes or other livable street treatments. Converting a four lane road to a three lane road will add as much as 12 feet.

Road diets are proving to be a popular recipe for transportation designers in creating Livable Streets. More guidance on road diets is available at the [National Complete Streets Coalition website](#).⁷⁶

The two pictures below show before and after photos of a Road Diet. Note the reduced crossing distance for pedestrians, and the median refuge island.



Original street before a Road Diet



The same street after Road Diet

4.7.3 Access Management

Access management for Livable Streets improves the safety, comfort and aesthetics of the roadway. Safety is improved by reducing the number of conflict points. Conflict points occur whenever two paths cross. Whether it is a two vehicle paths or a vehicle and a pedestrian path at a crosswalk, the better these points are managed, the safer the travel will be. Comfort is improved because of the minimal number of access points pedestrians and bicyclists must cross. With less access points, a roadway will have more room for plantings, seating, and other amenities.

[MoDOT's Access Management Guidelines](#)⁷⁷ are a good starting point for understanding the details of this concept.

See photo at right for an example of access management. The existing driveway was moved to a location away from the main intersection. This allows the main intersection to function more efficiently and also reduces the number of traffic movements the pedestrian and cyclist have to be aware of.



4.7.4 Bicycle Boulevards

Bicycle Boulevards are another popular recipe for use in Livable Streets. These roadways are shared roadways, but put a priority on the through movement of bicycles and pedestrians. Motorists may use the bicycle

off” roads, meaning they are one street off of the main road. This design reduces the active transportation access to the destinations on the main road, but significantly increases safety and reduces travel time.

More details on bicycle boulevards are found in the [Bicycle Boulevard Planning and Design Guidebook](#).⁷⁸



boulevard for local access, but are prevented from using it as a through route. Traffic calming measures are usually used to divert the motorist from travelling on the bicycle boulevard for more than a block or two at a time, but are configured to allow the bicyclist and pedestrians safely through.

Bicycle Boulevards work best in tandem with another roadway where proper active transportation treatments are not possible. Usually bicycle boulevards are “one-



One of the first bicycle boulevards in Missouri was just completed by the City of Columbia as seen in pictures on this page.



As a part of this project, the City assembled volunteers to paint street murals on the intersections as seen above.

4.8 Level of Service

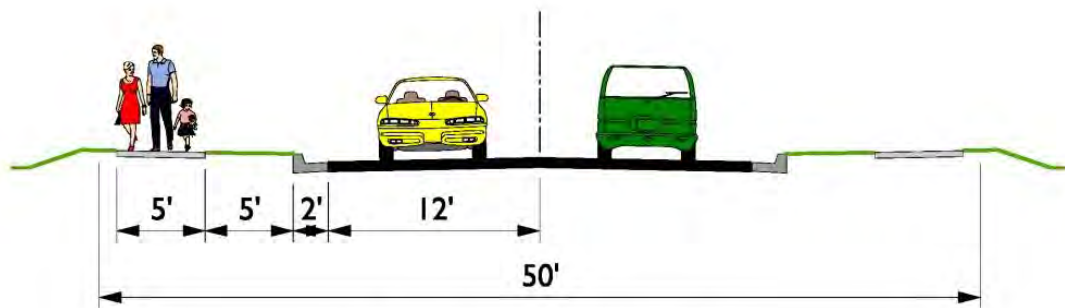
It is important to determine the functioning Level of Service for livable street facilities to assure their successful implementation. All of the bicycle and pedestrian elements should be evaluated using a Level of Service model to determine the appropriate design criteria. Two such models include the Bicycle Level of Service (BLOS)⁷⁹ and recently released Multimodal Level of Service (MMLoS).⁸⁰ As with roadway and intersection levels of service, each community should decide the design and minimally acceptable LOS. Usually this is a LOS C, which provides acceptable user safety and comfort without significant upgrades in cost.

The BLOS is based on rider comfort and safety for various roadway conditions. The Transportation Research Board has included detailed information on how to determine a BLOS in the 2010 Highway Capacity Manual.⁸¹

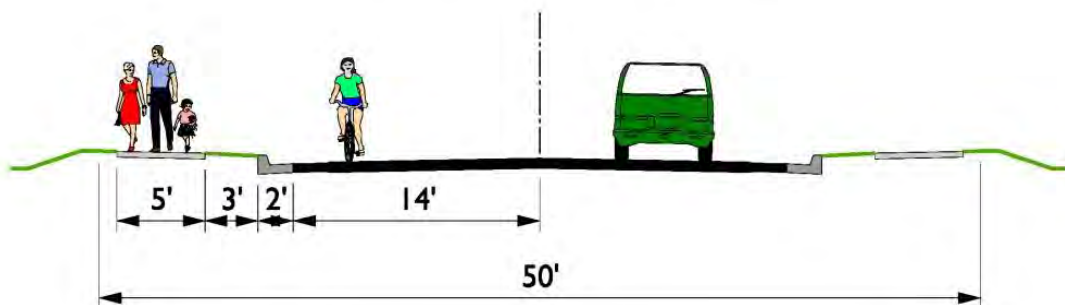
4.9 Retrofits

There are many cost friendly and right-of-way friendly ways to retrofitting an existing roadway to Livable Street standards. Using the toolkit of transit, bicycling, and pedestrian elements, the Livable Street can fit within the existing built environment. To help visualize the concepts some cost-effective retro-fit options of typical 50', 60' and 80' rights-of-way are shown on this and the following page.

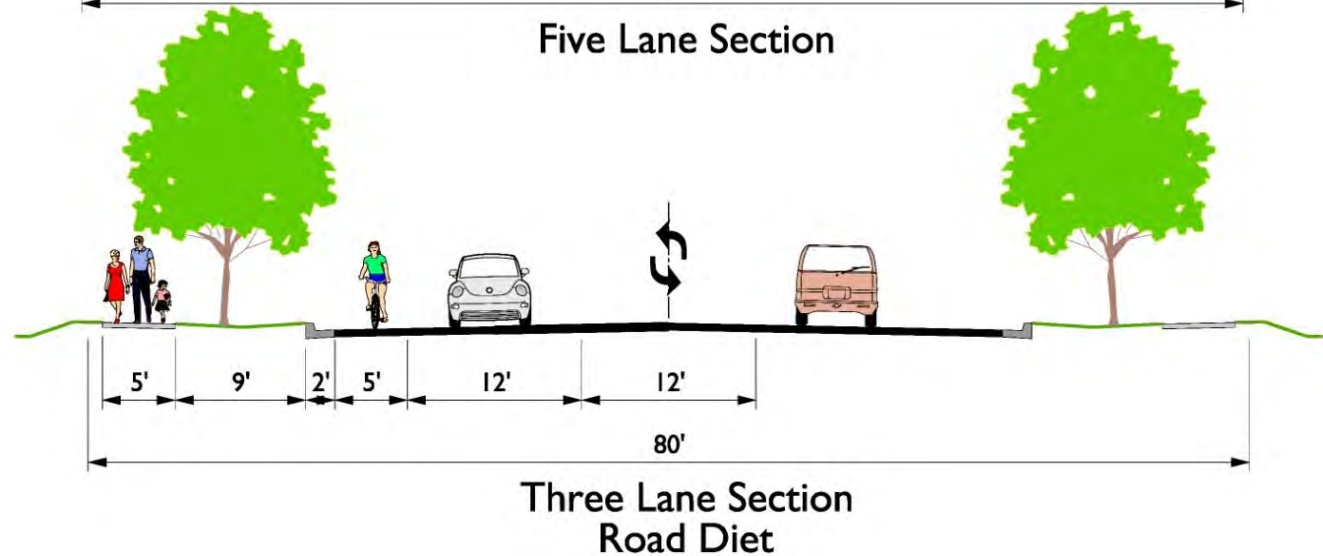
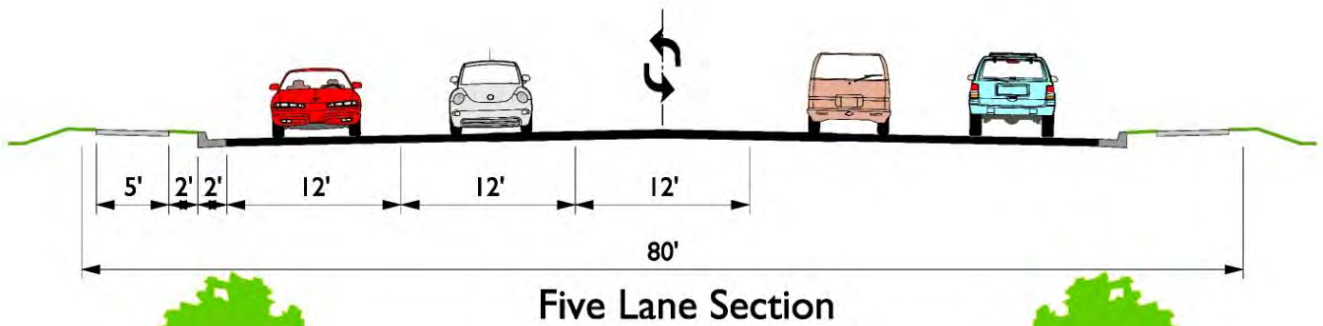
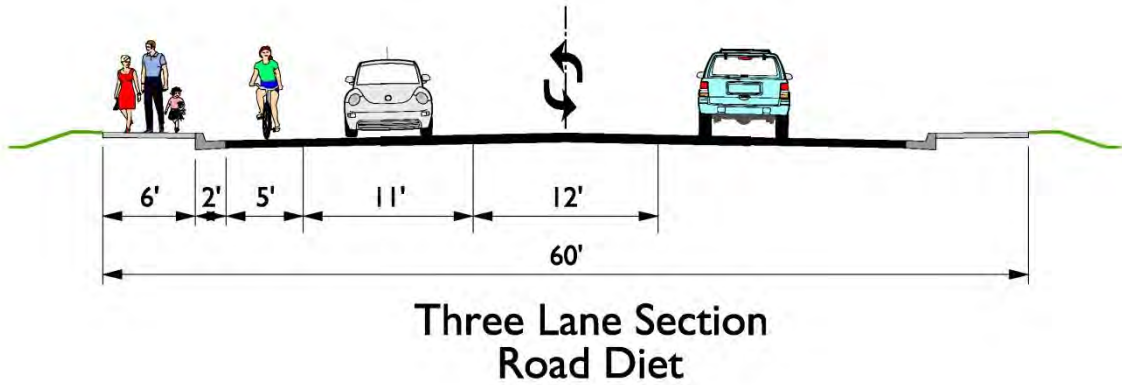
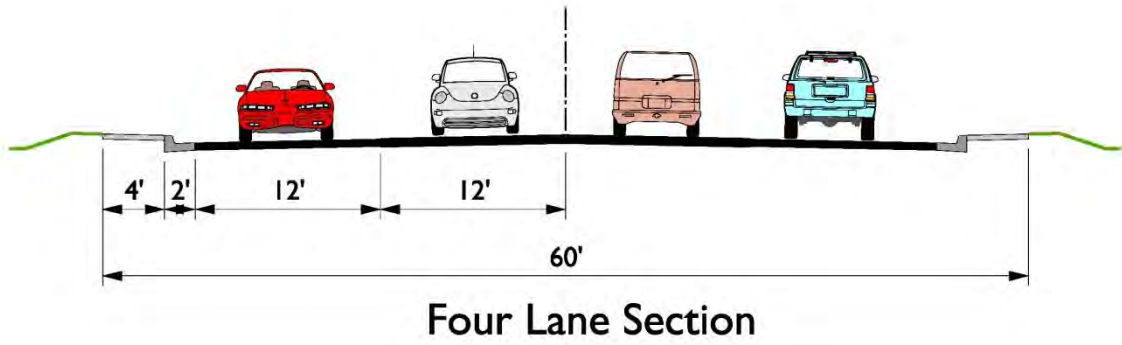
Note that a traffic study should be conducted to determine how the new facility will serve all users.



Two Lane Section



Two Lane Section
Widened for Shared Lanes



5.0 Operations and Maintenance

As with any capital improvement, the operation and maintenance of Livable Streets must be factored into budgets, and the types and frequency of maintenance must also be appropriate for the Livable Streets facility.

On-Street Bicycle Facilities

Maintaining on-street facilities is equivalent to maintaining the roadway pavement, however, higher frequency street sweeping may be required to maintain safe biking conditions. Some cities prioritize streets with bike facilities in their spring street-sweeping program.

Pothole hotlines will allow the bicyclists to alert the city to potholes before the potholes develop into a hazardous condition, such as requiring a bicyclist to swerve into traffic to avoid a large pothole.

Sidewalks - Snow Removal

Many city codes require the owner or occupant of a property to remove snow. As a matter of practicality, most cities and counties do not have the resources to complete this task. Even though most property owners understand that they are also required to maintain the portion of their yard that is within City right-of-way,



many are unsure about the requirements for snow removal on sidewalks. Proper codes present these requirements and can be used for public education. The image above shows the result of not clearing sidewalks: a pedestrian must walk in the street.

Example: City of Springfield

Sec. 98-74 Cleaning sidewalks – All persons are hereby required to take reasonable measures under the circumstances, excluding physical repairs, to keep the sidewalk in front of, or adjacent to, the property or premises

owned or occupied by them or under their control, within the city, clear and free of hazards so as not to endanger or inconvenience pedestrian using such sidewalks.

Sidewalks - Physical Repairs

In addition to keeping the sidewalks clear of hazards, some cities repair sidewalks as part of their infrastructure. Other cities expect property owners to share in these costs. A good policy addresses these issues so that property owners understand their responsibilities.

Example: City of Kansas City

The City of Kansas City requires that the abutting property owner maintain the sidewalks, including paying for replacement if needed. The city also has a program where complaints can be made about unsafe sidewalks, and if the property owner does not address the issue, the city will complete the repairs and place a special assessment on the property to cover the repair costs.⁸²

Example: City of Cameron

The City of Cameron also requires the abutting property owner to maintain the sidewalk, but will complete the work and split the cost of the materials for the repairs on a first-come-first-served basis until the City's sidewalk repair budget is spent. This encourages repairs to occur as soon as possible to take advantage of the cost savings.

As an additional commitment to improving their community, the city also has a Streetscape Program that includes a program for neighborhoods that want sidewalks and more livable streets. The City provides the labor, and pays for 50% of the materials with the property owner. Besides sharing in the cost, this program even allows for the property owners to spread out their payments with a property lien guarantee over a five year timeframe.⁸³

Example: City of Boonville

The City of Boonville offers a "90-10" program where the city pays 90% of the cost of a residential or commercial sidewalk replacement while the property owner agrees to cover the difference. This policy encourages those with an investment in the community to update decrepit sidewalks or complete sections linking existing intermittent sidewalks.⁸⁴

No matter who repairs the sidewalks, it is important to note that there are alternatives to full replacement, especially when the sidewalk material is still in good shape. Cost-effective repairs include:

- ▶ Mud-jacking (pumping a grout under the sidewalk to remove settlement issues)



- ▶ Grinding (removing the protrusion of a trip hazard with a miller or grinding wheel) (Pictured above.)
- ▶ Sealing (to repair a rough, spalled surface)

Shared Use Trails

Many studies have been conducted that review best practices of trail maintenance and operation. For trails, “[Rail-Trail Maintenance and Operations](#)”⁸⁵ is an excellent resource. It addresses the importance of routine maintenance, mowing, pruning, ditch shaping, and provides ideas on volunteers, funding through endowments, and schedules.

Shared Use Trails – Snow Removal

Paved urban trails used for transportation should be cleared by city forces as a regular part of the snow removal operations. Unpaved recreational trails are not usually cleared.

6.0 Funding

As Livable Streets are still surface transportation projects, the normal funding avenues are available, but depending on the type of Livable Streets concept, additional funding sources may be available.

- ▶ For projects with bicycle facilities, there are Transportation Enhancement funds.
- ▶ For projects with shared-use trails near parks, there are Recreational Trails Program funds.
- ▶ For projects on MoDOT right-of-way, there are cost-share funds.
- ▶ For projects with enhanced transit facilities, there are Federal Transit Administration programs.

In addition, some of the normal funding may create issues for certain elements of a Livable Street. For instance, MoDOT’s policy is that they typically will not maintain sidewalks within their right-of-way, and adjacent property owners may be required to maintain them.⁸⁶

The Federal Highway Administration has compiled a well-organized [list of standard sources of transportation funding](#)⁸⁷ and a [list of standard sources of bicycle and pedestrian transportation funding](#).⁸⁸

Missouri Livable Streets provides a [comprehensive list](#)⁸⁹ of federal, state and local livable streets funding sources available to communities.

With each of these programs, there are eligibility requirements and most are highly competitive, but in the end, a high priority, well-planned project will rise to the top of the rankings. Some of these programs give additional points to first-time submitters.

Livable Streets Success Stories

Featured in this section are five Missouri communities that have recently adopted or are currently adopting a Livable Streets Policy.

1. Lee's Summit, Missouri
2. East-West Gateway Coordinating Council (St. Louis MPO)
3. Ozark, Missouri
4. Putnam County, Missouri
5. Mid America Regional Council (KC MPO)

These represent a cross-section of Missouri, from large urban areas to growing suburban and rural areas. There are many cities in Missouri that have livable streets policies - Elsberry, Pevely, Herculaneum, Crystal City, Festus, De Soto, Ferguson, Columbia, Lee's Summit, Kansas City, and St. Louis.





**CITY OF LEE'S
SUMMIT**

City Population:
93,000

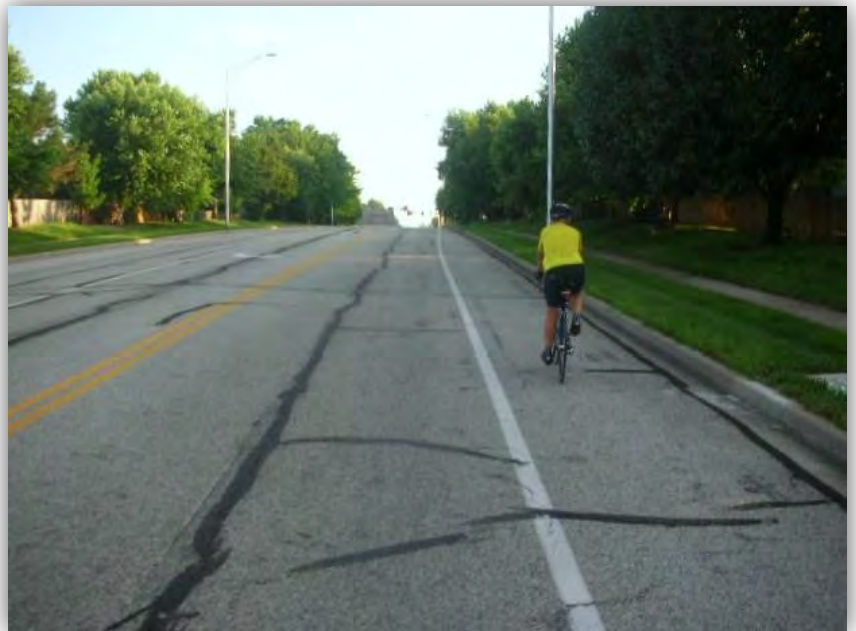
***Local Livable Streets Champion:
Michael Park
City Traffic Engineer
City of Lee's Summit***

Michael Park has been with the City of Lee's Summit for five years, serving as the City Traffic Engineer. In that time he has played a central role in educating the community about livable streets. On November 9, 2010, after a coordinated community education effort around livable streets, the Lee's Summit City Council adopted Resolution 10-17 which established the Livable Streets Policy for the City. During the campaign Park educated the broader community and local livable streets advocates about city planning and policymaking. "There was a large learning curve for citizen advocates as they got involved in the local political process – a process that took much longer than initially anticipated," he said. "Furthermore, the advocates had to get fully educated themselves about livable streets before they went out to educate others."

On January 20, 2011, the City Council passed a Livable Streets ordinance, complementary to the resolution that created a Livable Streets Advisory Board. Park provides staff support to this citizen-based board. The eleven-member board has several primary roles. First, the board will review, and advise the City Council on proposed changes in municipal code (i.e. ordinances) and long-range planning

documents (as well as new ordinances and plans) that might impact livable streets. The committee will also review development proposals and capital improvement projects in accordance with the City's adopted Livable Streets Policy. However, the Lee's Summit Livable Streets Advisory Board is not a decision-making body for the City (e.g. the Board does not have veto power over projects). Second, the board is responsible for supporting the Livable Streets concept throughout the community. Board members are charged with public education, encouragement, and promotion activity that furthers the livable streets initiative. Park will assist the committee in creating a strategic plan to guide their short and long-term efforts.

How has the new Livable Streets Resolution changed transportation planning and design in the City of Lee's Summit? Park says "It's beginning to change the way projects are developed and programmed locally. The livable streets resolution gives us more direction and a greater focus on multi-modal accommodations that result in a Livable Streets environment now known as



Bike Lane in Lee's Summit

desirable by the community. In the past, there were modes of travel that may not have been consistently considered in local transportation planning and design. The new policy not only fosters improvement, but also reinforces the good things we already do.” Some of those things include the existing Access Management Code, Road Safety Audit Program, Street Lighting, Neighborhood Traffic Calming Program, Crime Prevention Through Environmental Design, School Area Safety Study Program, Greenway Master Plan, City-Wide Transit Operations, Sidewalk Gap Construction/Rehabilitation Plan and ADA compliance. As part of the broader community planning effort around livable streets, Park led the effort to create a local bicycle transportation plan for an on-road network of bike routes that will supplement the off-road multi-use facilities found in the Greenway Master Plan. “Now that we have the advisory board in place, we can work with the board to finish the bicycle transportation plan and with their support, proceed towards its adoption.” added Park.

As Lee’s Summit moves forward as a leading example of livable streets, Park is there to guide, teach and learn. “There are obviously strong livable streets advocates and antagonists throughout Lee’s Summit with a lot of people caught in-between that might take a wait-and-see approach. But, I think given the opportunity for more education, experience, and a better understanding of the livable streets concept, we will all find some balance, value and appreciation in the effort,” Park added. “Livable Streets does not serve just one interest, rather, when appropriately applied it serves a greater good to the whole community.”



Downtown Lee’s Summit: Bulb outs and cross-walks make the downtown more livable.



ST. LOUIS REGION

Regional Population:
2,570,000

Local Livable Streets Champion:
David A. Wilson
Senior Manager
Environment and Community Planning, East-West Gateway Council of Governments

David Wilson works with cities that want to be sustainable.

Wilson helps cities in the St. Louis region examine how they can be fiscally sound while reducing their impact on the environment. “Cities would do well to take a comprehensive look at how their streets function,” suggests Wilson.

For the past five years, Wilson and his colleagues at the St. Louis-based East-West Gateway (EWG) Council of Governments have advanced the concept of Great Streets. From an initial idea of former EWG Director Les Serman, the Great Streets Initiative “advances the idea of a complete street that effectively serves automobiles and that can meet pedestrian, bicycle and transit needs,” Wilson said. The project selected four communities out of 36 applicants to receive planning and preliminary design support for a local street that had potential to function more comprehensively. The initiative also created a digital design resource guide available online at <http://www.greatstreets-stl.org/>. The design guide provides recommendations for eight different community road conditions from small town downtown to commercial corridor to mixed-use district and residential neighborhood.

Wilson notes that through the Great Streets planning process several St. Louis metropolitan communities

began to realize that planning for local streets needs to be holistic and consider issues such as stormwater runoff and how streets support local businesses. “A comprehensive strategy is important,” noted Wilson. “Streets planning is about much more than just moving automobiles.”

Wilson adds that “the last ten years for me have seen a focus on sustainable development. This includes working with local governments to develop planning strategies that encourage healthy communities. Healthy communities need to be fiscally sound. We want to see communities using streets to support a healthy community. This means communities have a vibrant center with a strong economic base. A great street, therefore, provides multimodal transportation while supporting local businesses.”

What is the long term impact of the Great Streets Initiative throughout the St. Louis region? Wilson notes “we’ve already begun to emphasize great streets when we evaluate Transportation Enhancement proposals.” Also, “each Great Street we support can have a positive net impact on local businesses and local governments. Great Streets will continue to enhance access to transit, which reduces peoples’ need to be in car. Over time Great Streets can improve air and water quality, too.”





CITY OF OZARK

City Population:
9,665

**Local Livable Streets Champion:
Larry Martin
Public Works Director
City of Ozark**

In a small town sometimes one person gets to do a lot of different things. Larry Martin in Ozark is one of those people. “My small team and I do community development, public works, facilities and emergency management,” said Martin, a veteran of seven years with the City of Ozark. Ozark lies 15 miles south of Springfield.

Upon arriving in Ozark in 2004, Martin found a growing and diverse mix of community residents interested in a more livable community. “I see my role as creating pedestrian options for everyone,” Martin said. “I am working hard to turn a conventional Ozarks community that was historically designed for automobiles into a place where citizens are engaged in the process of planning for connectivity.

“Communities that want to get started on a program towards more livable streets need to be open to receiving feedback on projects,” Martin added. While the City of Ozark uses traditional forums for public comment, the City also maintains a page on Facebook, a social networking site. “We have a core livable streets group here now. There are about 20 people I get feedback from on how to create a more

livable Ozark,” noted Martin. “Besides the traditional methods for feedback, one always has to expect opinions in any setting. For instance, I get feedback in grocery store all the time. Our core group is the real deal. They have an approach that seems to work. I let them evolve and provide assistance where needed.”

Who is getting involved in making Ozark, Missouri more livable? Martin notes that he hears from old-timers and newcomers, young and old about the desire for more walkable, bikable and accessible places. “I encourage everyone who wants to become part of the process,” Martin said. “Everyone can become part of this process to create change. While we don’t have someone on staff with expertise as a bicycle-pedestrian coordinator, we do get input from multiple sources. I continue to be surprised at the diversity of allies I am meeting on this issue,” Martin added.



To other public works officials across Missouri just getting started thinking about livable streets, Martin suggests not letting “budgets restrain your insights and vision. Stay open to different ideas and funding methods.” Martin adds that leaders should ask “If I do this now how will it benefit community? For instance, bicycle and

pedestrian options in a street design that stay in the plan can create important connections and benefits for future generations. Sometimes you won’t see all the benefits right away from a project you do.”

Martin is listening to the residents who tell him that high fuel prices and a desire for more auto-free environments are important. These factors can drive design. Martin adds: “Don’t worry about the financial obligations (of a livable street element). Once you have

more experience in designing and building livable streets then you can worry about how to pay for it. Getting involved in the process is the most important first step.”





**PUTNAM
COUNTY**

County Population:
4,979

Local Livable Streets Champion:
Ericka Klingner
Administrator
Putnam County Health Department

Ericka Klingner realizes that transportation design is new to many local public health agencies. She also realizes that there is a clear role for such agencies to address needed changes to the built environment.

Since becoming the Administrator of the Putnam County Health Department in 2007, Klingner has educated herself and others about livable streets. “A year ago livable streets was a foreign concept to me,” admits Klingner. “I learned a lot in the last year. Our health department is concerned about how our streets are built because of the connection with chronic disease. There is a proven association between how streets are built and levels of physical activity in the community. A local policy change that is population-based can impact all citizens,” she added. While not all county health departments in the state are at work on livable or complete streets efforts, Klingner acknowledges this work is an opportunity to focus on the built environment as a determinant of health and wellness.

Klingner is working with a local coalition, Putnam County Partners in Prevention, in her rural county (population 4,979) to get educated and make changes that improve health. “Two existing community health coalitions merged and expanded from a substance abuse focus to encompass other health priorities such as obesity,” Klingner reports. “Now the county health coalition has about 25 members representing different sectors such as local government, primary care hospital, business, senior citizens, the faith-based community,

school and other.” In 2010 Klingner helped create the Community Health Action Response Team (CHART). This new subcommittee to the existing coalition is focused on promoting physical activity, improving nutrition and reducing tobacco use.

Ten members of this new team were introduced to livable streets when they attended the Action Institute in Tampa. Upon returning home a community assessment was conducted that would ultimately lead to a plan for improvements in community walkability and bikability.

This foundation led to the Putnam County Health Department receiving funding from the Missouri Foundation for Health to educate the community about the value of physical activity including support to adopt a local livable streets policy in 2012. As part of an overall livable streets campaign, Klingner has planned a media campaign for the general public. She has also worked with a landscape architecture firm to develop renderings of what Unionville’s 18th Street would look like if it were more walkable and bikable.

“We selected 18th Street as our focus for the rendering since it is such an important street in town,” Klingner said. “This particular street connects the hospital on the north end of town with the school on the south. These are two of our largest employers in the county. We need our main streets to serve the needs of seniors, those who cannot afford vehicles, employees, students, and those seeking to safely exercise.”

Overall, Klingner has found working with transportation planning agencies to be very positive. Even though they may not speak the same language, the local health advocates and city and state transportation designers share a common goal: to make the community’s streets more accommodating for all transportation users regardless of age or ability.



Unionville, Missouri's 18th Street today



A rendering of 18th Street as a more Livable Street



**MID AMERICA
REGIONAL
COUNCIL (MARC)**

Kansas City Regional
Population: 1,776,000

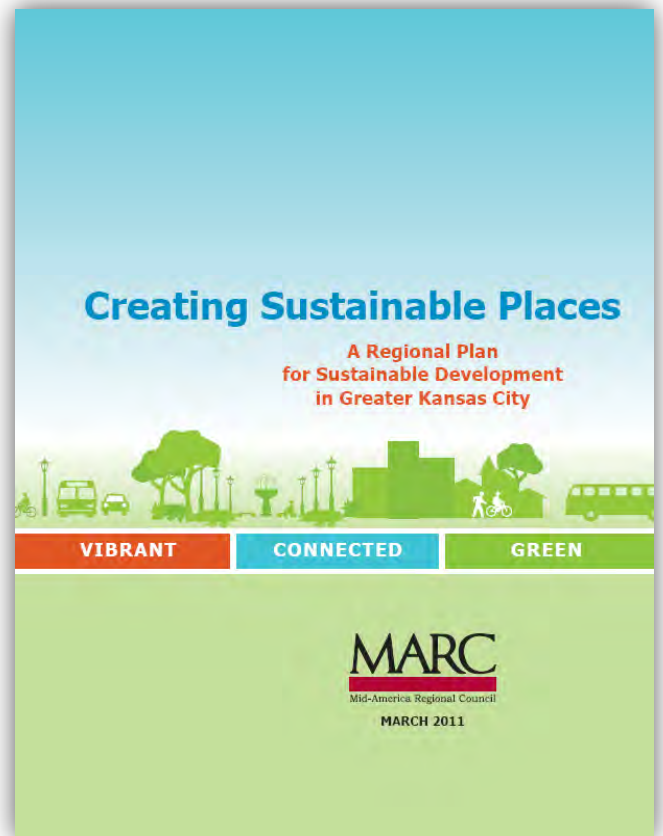
**Local Livable Streets Champion:
Marlene Nagel
Community Development Director
Mid-America Regional Council**

The Mid-America Regional Council (MARC) is the metropolitan planning organization serving nine counties and 120 cities in the two states that make up the Kansas City metropolitan area. One of MARC's primary functions is transportation planning, including to develop the region's long-range transportation plan (LRTP) and provide recommendations for how federal transportation funds get spent within the metropolitan area. The region's new long-range transportation plan reflects the increased interest by citizens and their elected leaders to accommodate all modes of transportation. MARC is working to respond to that interest.

"As the MPO for the Kansas City area, MARC works with state and local officials and broad community stakeholders to develop a LRTP every four to five years," said Nagel. "Once we adopt a LRTP, we work with Kansas and Missouri departments of transportation, transit agencies and local governments to program available federal dollars. MARC's newest LRTP was adopted in 2010 and had a much stronger focus on policy than did previous plans." The plan encourages local governments within the MARC area to consider and adopt complete or livable streets policies. LRTP has complete streets orientation embedded in it.

"We have adopted our Long Range Transportation Plan (LRTP) to include complete streets principles," said MARC Community Development Director Marlene

Nagel. "This plan guides the organization's decisions on what transportation investments should be approved. The plan guides us to look at all modes when considering new transportation projects," noted Nagel. "In the last round of funding, when agencies applied for (federal transportation) funds they provided information on how bicycle and pedestrian travel would be accommodated as part of a corridor's proposed improvements. As our committees review funding applications from local and state agencies and before we make a funding decision, our committees consider their proposals to see if complete streets components are there."



Besides policy changes that encourage local agencies to think about completing their streets, MARC also offers programming to support this healthier, more inclusive model of transportation design. The Health Care Foundation of Greater Kansas City recently awarded funds to MARC to offer training for the region's local

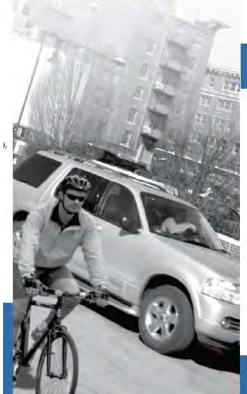
officials about complete streets. As part of the grant program, MARC recently partnered with the cities of Kansas City and Raytown to plan for complete street investments along Blue Ridge Boulevard. The roadway traverses the two cities. This aging commercial corridor features an auto-dominated landscape bisecting neighborhoods where children need safe routes to school and residents desire safe access to transit and to shopping.

Nagel encourages Missouri's other MPOs and regional planning commissions (RPCs) to encourage their local officials to consider adopting complete street policies. An important consideration for local officials is to think about how associated land use can support livable streets. "When land uses support bicycling and walking, commercial areas are more vibrant. A more bicycle-friendly and pedestrian-friendly built environment will mean that children can more safely walk to school. MPOs and RPCs can encourage cities to modify their regulations and plans to encourage new development and reinvestment that brings buildings up to the street, creating a more hospitable walking environment."

"We have heard from our local officials and public that there is a desire for better accommodation of multiple modes of transportation," Nagel stated. "If local leaders hear about from residents, they will look for ways to accommodate those desires in policy and in planning practice. Increasingly, we recognize that motor vehicles are not the sole users of a transportation corridor. In the Kansas City area, our local officials and the public want a region with a high quality of life. Providing transportation choices for everyone will help support creating a more vibrant, livable community. We are asking them to think about what is most important long

Share the Road

A guide for motorists and bicyclists in the Kansas City Region



term for the health of their communities and their residents."

Creating Quality Places
Successful Communities by Design

Quality Principles
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MARC
Mid-America Regional Council

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Creating Walkable Communities

A guide for local governments

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