



COMPLETE STREETS HANDBOOK



N NELSON
NYGAARD

In partnership with the
National Complete Streets Coalition

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ABOUT MARC

The Mid-America Regional Council (MARC) promotes regional cooperation and develops innovative solutions. MARC is a nonprofit association of city and county governments and the metropolitan planning organization for the bistate Kansas City region. Governed by board of local elected officials, MARC serves nine counties and 119 cities, providing a forum for the region to work together to advance social, economic and environmental progress. MARC is funded by federal, state and private grants, local contributions and earned income. A major portion of its budget is passed through to local governments and other agencies for programs and services. For more information, please visit www.marc.org.

As the metropolitan planning organization, MARC coordinates transportation planning at the regional level. MARC works with federal and local governments, state departments of transportation, transit providers, area stakeholders and the public to develop coordinated, multimodal transportation plans that help move the region toward greater sustainability and vitality.

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CONTENTS

| | |
|--|-----------|
| INTRODUCTION TO COMPLETE STREETS | 1 |
| DEVELOPING A COMPLETE STREETS POLICY | 17 |
| IMPLEMENTATION AND PROCESS | 22 |
| FRAMEWORK FOR DESIGN GUIDELINES AND TOOLS | 29 |
| IMPLEMENTATION COSTS & MAINTENANCE | 43 |
| APPENDIX | 53 |

INTRODUCTION TO COMPLETE STREETS

The Mid-America Regional Council's Complete Streets Handbook is designed to serve as a guide and reference for local communities in the region who wish to move forward in implementing complete streets facilities and supportive policies. The purpose of this handbook is to provide assistance to communities who may be at different stages of complete streets policy and/or facility implementation. This includes the following:

- **“Just Getting Started”** — Communities that may be starting with baseline processes that consider complete streets but have no formal policies
- **“Moving Forward”** — Communities that have adopted complete streets policies but wish to strengthen and streamline their internal project-delivery policies and procedures to incorporate complete streets principles
- **“Building Upon Successes”** — Communities that have developed an internal framework for delivering complete streets but are looking for additional implementation strategies

Understanding that readers may be coming from a wide variety of backgrounds and stages of complete streets implementation, this handbook has been developed with numerous audiences in mind:

- Local policymakers and elected officials who have a vision for complete streets
- State, regional and local planners and engineers who are tasked with delivering complete streets
- Community residents, leaders and organizations that advocate for complete streets

This document is meant to help communities take their complete streets policies or implementation to a higher level. It is also intended to help readers understand the basics and identify resources that provide more detail on complete-streets-related topics.



WHAT ARE COMPLETE STREETS?

Complete streets are streets, highways and bridges that are routinely planned, designed, operated and maintained with the consideration of the needs and safety of all travelers along and across the entire public right of way. This includes people of all ages and abilities who are walking; driving vehicles such as cars, trucks, motorcycles or buses; bicycling; using transit or mobility aids; and freight shippers. Complete streets also integrate contextually appropriate green infrastructure techniques. Every street and its environs are different, so physical manifestation of this principle will change based on the local context. However, ensuring the provision of safe facilities for all users is a core tenet of complete streets.

The term complete streets in the context of this handbook means both a process and a product. The process refers to the steps and decisions that lead to a specific street or intersection design. The product is the on-the-ground result of this process and the street designs that are used in our local communities.

Complete streets are easiest to understand as a product, as the photos in this handbook convey. However, this handbook will focus on creating the appropriate process that will lead to complete streets products — streets — which may look very different from one another depending on the context.

You may have heard of names similar to complete streets, such as livable streets, living streets, context-sensitive streets or multimodal streets. These all essentially point to the same idea — creating streets and spaces that balance the needs of a range of transportation users and support the surrounding community.

Complete streets are *not*:

- A specific design prescription
- A mandate for an immediate retrofit
- A silver-bullet solution for all transportation issues



This bicycle lane and right turn merge on N. Congress Avenue in Kansas City, Mo., provides a facility for cyclists, while informing motorists how to safely merge right across the bike lane.



This sidewalk in Kansas City, Mo., provides ample room for pedestrians, which can support increases in physical activity and pedestrian safety.

WHY COMPLETE STREETS?

Complete streets are not new. Many jurisdictions have built streets that provide safety, efficiency and connectivity for all modes for decades. In fact, most streets built before the advent of the automobile accommodated all the other modes of travel that we have today and even some that we don't, like the horse and buggy.

Rather than being something new, "complete streets" is just a new name for an old approach. The exciting thing about the complete streets approach is how quickly it is being adopted in recent decades by communities across the country as the fundamental organizing principle for how they design, build and maintain their street networks.

If your community believes streets are a public commodity, complete streets make sense. After all, it is uncommon to restrict access to other public utilities — such as water — to only some members of the public. Why would we design streets that limit access to jobs, schooling and services to only automobile drivers?

Every community that has implemented the complete streets approach has found that by providing amenities for all road users, it can offer more transportation choices — making walking, bicycling, and taking public transportation more convenient and enjoyable means to get around. In addition, many communities have found that implementing a complete streets approach can be cost effective, providing expanded or new community benefits that go beyond transportation to include physical fitness, reduced public health costs, sustainable stormwater management, and less air and noise pollution.

Achieving the many benefits from implementing a complete streets approach does not mean that automobiles will not be appropriately accommodated or that a community must accept increased traffic congestion. **Complete streets can improve roadway efficiency and capacity for all users by moving more people in the same amount of space — reducing traffic so all modes work better.** In cases where a proposed complete streets project might have a potential effect on automobile drivers, there are usually several good options to mitigate those effects, and sometimes these mitigations can even improve current or future conditions for automobile drivers when compared to the status quo.

Additional information about the benefits of complete streets can be found later in this handbook.



Transit amenities can improve comfort and safety for users waiting for the bus or train.



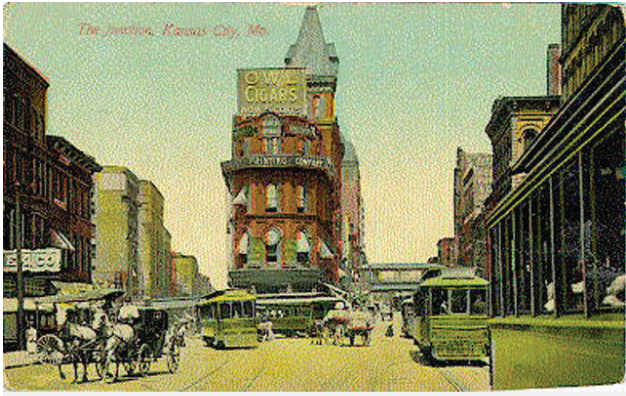
Swift Avenue provides cyclists and pedestrians an alternative to traveling the busier adjacent Burlington Street.



The Heart of America Bridge's recent improvements provide a path of travel for pedestrians and cyclists on a major thoroughfare.

Complete streets is not a new concept.

In some ways, it's a revival of a more traditional way of moving through our cities, from an era when most streets were shared by all users. Yet the concept of designing our streets to be "complete" is becoming more common again throughout the country, including the Kansas City region. MARC adopted *Transportation Outlook 2040*, the region's long-range transportation plan, in 2010 and updated it in 2015. As part of the plan, complete streets strategies were key components in addressing the region's ten overarching policy goals.



MVSC, Kansas City Public Library



Complete streets are strongly tied to improving the transit experience. This may include street features that speed up vehicle speeds or stop amenities that improve safety and comfort for those that walk or bicycle to access transit services.



123rd Street and Mission Road in Leawood, Kan.

COMPLETE STREETS – A REGIONAL GOAL

Transportation Outlook 2040 highlights the importance of “active transportation” in the Kansas City region for a number of reasons, including:

- Transportation affordability due to rising fuel prices
- Providing transportation options for those who often depend on public transit such as youth, seniors and people with disabilities
- Assisting the region in improving its air quality
- Providing opportunities to improve citizens’ health by walking and bicycling

Complete streets help facilitate all of the above goals by creating space and safe means for a range of transportation options when traveling from point A to point B. *Transportation Outlook 2040* states that “these concepts of modal equity within street design could enable broad transportation choices and should be considered for both regional and local policy implementation.”





Even when appropriate facilities are not built, users are often still present (as shown by the “goat tracks” in this photo).

IMPORTANCE OF COMPLETE STREETS

Many would agree that providing street accommodation for all users is a good thing. However, the reality of the built environment is that we face real constraints in implementing complete streets, including physical or financial constraints. In working through the solution to these challenges, many will ask, “Why should complete streets be prioritized over existing methods and processes in creating our streets?”

Provide Transportation Choices: Providing safe and convenient transportation choices to citizens is an important goal for all communities. Doing so means a town will be able to meet the needs of different types of users and provide alternatives to traffic congestion and costly trips to the gas pump. Complete streets help support this goal by ensuring the transportation network can accommodate a wide variety of users including cars, transit vehicles, bicycles, and those

who want to walk from point A to point B. In many parts of the region, walking or biking is simply not an option due to the existing built environment. Providing transportation choices also spans age groups. Many older Americans today are faced with mobility challenges that are a result of no longer being able to drive. Complete streets aid this population by giving them the ability to stay independent and “age in place” using different transportation options.

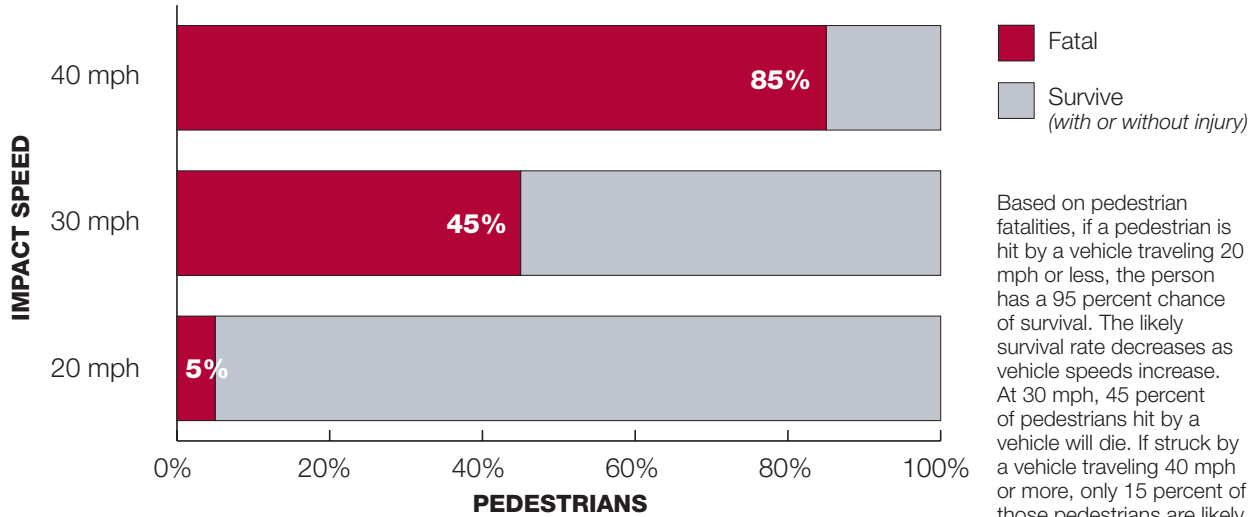
Serve the Users that Already Exist: A mantra in building any type of new facility is “if you build it, they will come.” However, in the case of complete streets, users are often already present and are underserved. Complete streets help better meet the needs of those already using the street, improve traffic safety, enhance the transit experience, and also meet demand for walkable and bikeable communities.



View of E. 39th Street in Kansas City, Mo., before sidewalk, curb and driveway replacements.

SAFETY BENEFITS

Pedestrian Fatalities Based on Vehicle Speed



Source: Federal Highway Administration Pedestrian Safety Strategic Plan: Background Report, May 2010

Based on pedestrian fatalities, if a pedestrian is hit by a vehicle traveling 20 mph or less, the person has a 95 percent chance of survival. The likely survival rate decreases as vehicle speeds increase. At 30 mph, 45 percent of pedestrians hit by a vehicle will die. If struck by a vehicle traveling 40 mph or more, only 15 percent of those pedestrians are likely to survive.

More than 40% of pedestrian fatalities occur where there is no available crosswalk.

Source: Ernst, Michelle and Lilly Shoup. (2009). *Dangerous by Design. Transportation for America and the Surface Transportation Policy Partnership.*

Pedestrian crashes

- ↓ 88% with sidewalks
- ↓ 69% with hybrid beacon
- ↓ 39% with medians
- ↓ 29% with road conversions

Source: FHWA, *An Analysis of Factors Contributing to "Walking Along Roadway" Crashes: Research Study and Guidelines for Sidewalks and Walkways. Report No. FHWA-RD-01-101, FHWA, Washington D.C., 2001.*
<http://safety.fhwa.dot.gov/provencountermeasures/>





Complete streets help provide facilities for regular walking school buses or events like Walk to School Day.

Manage Stormwater Sustainably: The term “green street” is used to describe roadway planning that enhances environmental suitability by using natural systems to manage stormwater by reducing flows, improving water quality, and enhancing watershed health. The use of trees and vegetation reduce greenhouse gases and urban heat island effect. Green streets principles also promote the use of renewable energy to operate street lights, and uses energy-efficient technologies to reduce carbon footprints. Applying these principles conserves natural systems for future generations.

Green streets support complete streets. Green streets achieve multiple benefits in addition to enhancing environmental suitability, such as creating more attractive streetscapes in corridors that connect neighborhoods and activity centers. This creates more livable communities.

Support Community Values: The benefits provided by complete streets are numerous — some direct and others indirect. Direct benefits that communities can expect include safer travel options for all road users, including those who wish to walk, bike, drive or ride transit. Drivers may be presented with better clarity and ease in navigating city streets through improved signage, signal timing or other treatments. Complete street designs can also reduce potential collision points on roadways. Communities can also expect to see more people using active transportation in their daily lives because complete streets means more, and safer, facilities for walking and bicycling. Special

populations, such as older adults, school children, and people with disabilities, may also see direct benefits as the transportation network supports their need for independent mobility.

Indirect benefits include the opportunity for place making on residential and retail corridors, increased retail spending, and stronger local economies through better access options. Historic downtown and neighborhood retail corridors are examples of commercial areas that could strongly benefit from complete streets by more safely connecting these districts to nearby neighborhoods and patrons. Complete streets also contribute to improved air quality and healthier communities.

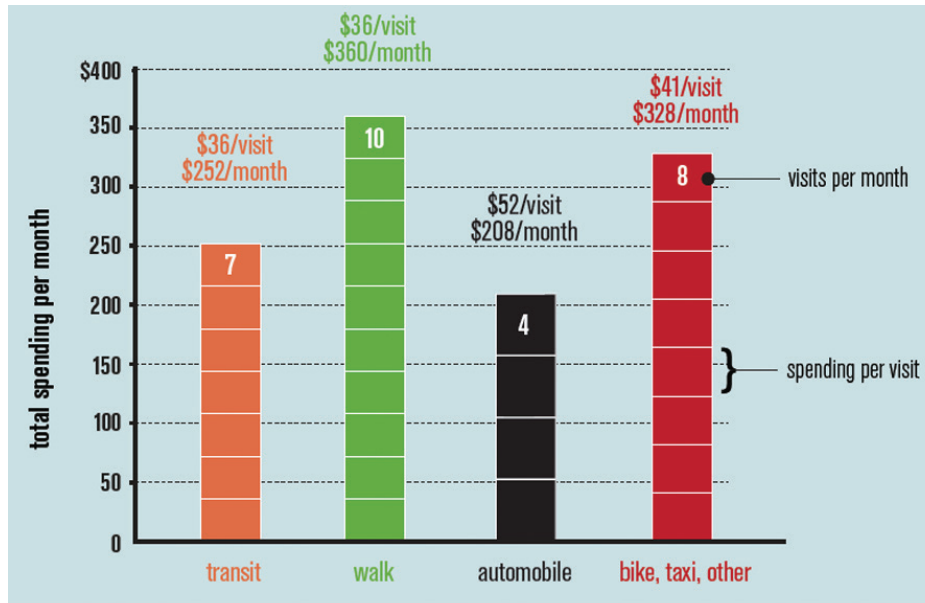
Numerous additional resources are available that highlight the benefits of complete streets. Some of the most noted benefits include:

- Safety
- Public health
- Meeting needs of and providing independence for special populations
- Gaining additional use of public space from our streets
- Long-term cost savings through preventative health (active transportation), reduced hospital visits (e.g., fewer collisions)
- Climate change mitigation
- Stormwater management, water quality, enhanced watershed health and environmental sustainability

ECONOMIC BENEFITS

Complete streets create attractive transportation corridors that make businesses both inviting and easily accessible. Attractive corridors increase property value and visibility for both homes and business owners.

Retail Shopper Survey: Frequency of Recreational Trips and Spending per Shopping Trip (by mode of access)



Source: SFCTA Columbus Avenue Neighborhood Transportation Plan, 2009

See the economic benefits the city of Mission experienced after a major complete streets project on page 15.

In some multimodal shopping corridors, it's been found that shoppers who arrive by alternative modes are the biggest spenders. The chart at left describes a busy retail corridor that is accessed by all modes. Despite initial belief from shop owners that those that arrived by automobile would spend the most, it was actually found that those who walked spent the most on a per-month basis. Providing facilities for those who wish to walk, bike or take transit can help promote and encourage these types of shopping trips.

ENVIRONMENTAL BENEFITS

Green streets integrate strategies for stormwater management, urban heat island abatement, streetscaping and urban forestry into their design. Many elements of street design, construction and operation can improve environmental sustainability while achieving transportation goals. Rain gardens and street trees improve water and air quality while creating an enjoyable environment for nonmotorized travelers.

For more information, see:

- [APWA and MARC's Manual of Best Management Practices for Stormwater Quality](#)
- [MARC Regional Forestry Framework](#)



BENEFITS FOR PEOPLE WITH DISABILITY

More than 225,000 people with a disability live in the eight-county MARC region. This is 11.7 percent of the total civilian non-institutionalized population.

This includes individuals with auditory, visual, and cognitive disabilities, and those with dementia, mental illness, or who are unable to live independently. Complete streets allow everyone to safely travel to and from work, school and other destinations. Complete streets also help people who are coping with temporary disabilities as well as those pushing strollers or pulling groceries in a wheeled cart.

Consider working with community members with disabilities on roadway design. Solutions that promote accessible travel may include:

- Intersection features like curb ramps, audible or tactile signals, or longer crossing times.
- Smooth sidewalks free of obstacles.
- Usable benches.
- Transit stops with ample space to approach, wait and board safely.

Data Source: US Census Bureau American Community Survey 2011-2015 five-year estimates



BENEFITS FOR CHILDREN

The built environment — including our streets — affects children’s ability to be active and gain independence. Complete streets provide dedicated, safe space for kids walking and bicycling to school or to a friend’s house.

More than one third of kids and teens are overweight or obese. Physical inactivity contributes to this statistic. Unhealthy weight gain brings higher risk for pre-diabetes, high cholesterol, high blood pressure, sleep apnea and joint problems.

Data from 2012 indicates that only a quarter of teens meet the daily recommended level of physical activity. Children who are obese also have a significantly higher risk of being obese as adults. A growing body of evidence links moderate physical activity and aerobic exercise to improved academic performance, mood and cognition.

For more information, see the American Academy of Pediatrics policy statement: [The Built Environment: Designing Communities to Promote Physical Activity in Children](#)

HEALTH BENEFITS

Complete streets make active living easy by providing streets and sidewalks that encourage walking and biking. They build a physical environment where residents are connected and mobile.

Residents are 65 percent more likely to walk in a neighborhood with sidewalks.

Cities with more bike lanes per square mile have higher levels of bicycle commuting.

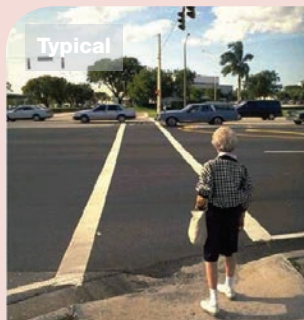
Centers for Disease Control and Prevention (CDC) recommends adoption of complete streets policies as a strategy to prevent obesity.

For more information, see the CDC guide [Recommended Community Strategies and Measurements to Prevent Obesity in the United States](#).

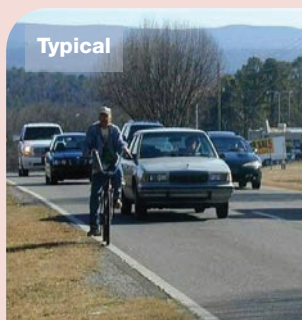
The risk of obesity goes up 6 percent for each hour spent in a car and goes down 5 percent for each additional kilometer walked.

Complete Streets Making A Difference

Intersection Crossings



Bicycling



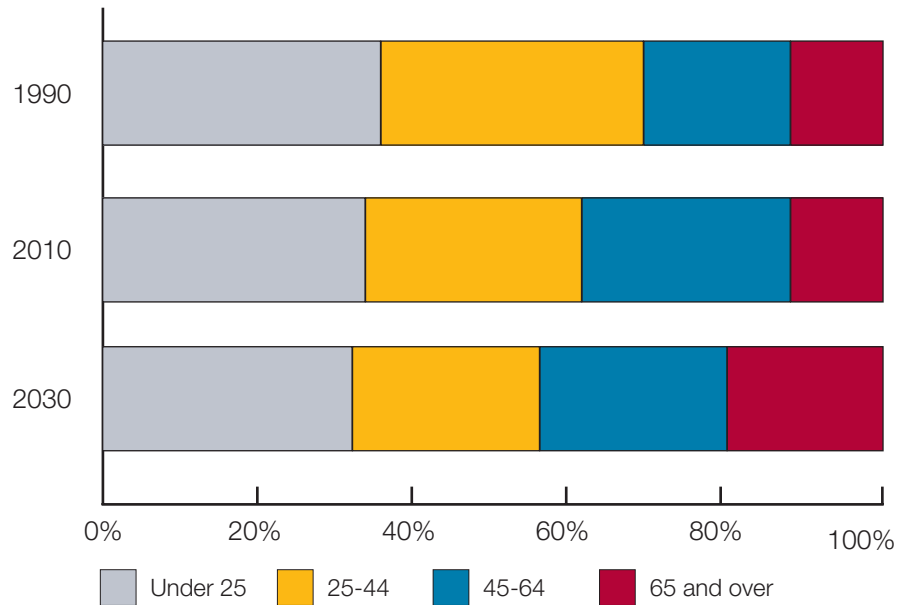
BENEFITS FOR OLDER ADULTS

Complete streets meet the needs of older drivers and older pedestrians by slowing vehicles when necessary, improving visibility and creating an easily navigated street network.

Consider:

- Retiming signals to account for slower walking speed.
- Constructing median refuges or sidewalk bulb-outs to shorten crossing distances.
- Installing curb ramps, sidewalk seating and bus shelters with seating.
- Improving lighting, signage and pavement markings.

Population Share by Age Group



Source: Using Demographic Data and Trends in Planning and Decision Making – November 9, 2016. Frank Lenk, Ph.D. Presentation: Data for Local Government Decision-Making

Seniors accounted for 12 percent of the KC region's population in 2010. This will grow to 20 percent by 2030.

Additional Reading: Complete Street Basics and Benefits

- [Sustainable Codes Framework](#) (MARC)
- [Complete Streets](#) (MARC)
- [Missouri Livable Streets](#)
- [National Complete Streets Coalition](#)
- [Complete Streets: Best Policy and Implementation Practices](#), American Planning Association
- [Livable Communities Webinar Series, Pedestrian and Bicycle Information Center \(PBIC\)](#)
- [MetroGreen](#) (MARC)
- [Clean Air Action Plan](#) (MARC)
- [Eco-Logical Action Plan](#) (MARC)
- [Greater Kansas City Regional Bikeway Plan](#) (MARC)

Bus Stops



Accessibility





Bicycle facilities and sidewalks along 87th Street in Kansas City, Missouri.

BALANCING VARYING NEEDS

Complete streets are not a one-size-fits-all treatment.¹ On the contrary, the end products of a complete streets process will look very different from one another. In some ways, complete streets can be considered both a “product” (the actual on-the-ground complete streets improvements) and a “process” (how local jurisdictions go about changing their planning protocols, design standards and funding priorities for delivering complete streets). The process of arriving at the product should be an ongoing one that strives for continuous improvement, includes specific community values and needs, and reflects the needs of current, future and projected facility users.

Complete streets can often be conveyed in photographs in “best of all worlds” situations, where every mode has a specific and separate space. However, such streets may not be appropriate or necessary. Communities should instead focus on developing facilities that best meet their needs and are achievable within financial and space constraints.

Pursuing complete streets does not inherently mean that all streets in the Kansas City region need to be modified or changed. There are many streets that function well for all users in their present state or with small interventions, with no need for expensive modifications or retrofits. Complete streets processes help ensure that, when building new streets or modifying existing ones, all users are considered whenever roads are constructed, reconstructed or repaved. Projects of all types can be opportunities to improve safety and provide facilities for multiple users and modes by using an incremental and opportunistic approach in the decision-making process. A true complete streets approach provides and encourages such flexibility.

When discussing tradeoffs with local stakeholders, the potential costs of planning and implementing complete streets is often cited as a primary hurdle. While at first moving toward a more complete product may require additional staff effort and time for public input, the additional time spent would likely result in an end product that better serves the community, and one that the public will support. Over time, this process will become more streamlined as it becomes standard practice. Communities with a history of implementing complete streets do not see any one mode as an add-on or special amenity to be provided on a handful of projects. Such work is central to their missions, and budgets are reprioritized to provide the most benefit to all users. Furthermore, funding sources today and in the foreseeable future (to be discussed in a later section) are more likely to require specific clauses or other requirements that show that a complete streets/multimodal approach has been taken to qualify for funds. In addition, investments in complete streets policies may lead to new funding sources not available to communities that are not investing in developing a multimodal transportation system.



Santa Fe in downtown Overland Park, Kan.

¹ For example photos of numerous types of complete streets treatments, please see MARC’s 2016 [Complete Streets Presentation](#).

CompleteStreets

Columbia, Missouri



Columbia moved toward a complete streets policy with two main drivers: strong advocacy for a connected non-motorized transportation system, and the desire for safety and ease of transport for all. A core group of advocates — the PedNet Coalition — provided the catalyst, developing the vision and drawing attention to the need for an explicit policy which routinely and uniformly addressed pedestrian and bicyclist accommodation in street design. Local media support for the new street standards helped this group make their case to the wider community. Columbia's street standards, adopted in 2004, now consider all users.

The new street standards require that all new streets have five-foot sidewalks on both sides and multiple options for bicycle accommodation for a wide range of street types, from residential to arterial. Retrofit projects are considered on a case-by-case basis.

To incorporate safety and ease of transport for all users into the new standards, the planning department focused on calming speed through reduced street widths and creating city infrastructure that was compatible with bicyclists, pedestrians and people with disabilities.

"It's important to view complete streets as transportation facilities that are adding bicycle and pedestrian capacity, not as punishing cars."

— Richard Stone

Traffic Engineer, Columbia's Public Works Department

Post-Implementation Benefits

Decreasing residential street width from 32 to 28 feet curb to curb has slowed traffic and improved safety. The new standards allow developers to negotiate design options, encourage fair competition, and ultimately make the transportation network more consistent. In the long-term, the community saves on public infrastructure as complete streets design from the outset has been found to be more cost effective compared to retrofitting.

Source: American Planning Association. 2010. Complete Streets Best Policies and Implementation Practices.

Columbus, Ohio



The major forces in expanding pedestrian and bicycle options in Columbus were political leadership that broke down the silos between development and transportation, and the overall desire of the city's Department of Public Service and Council to encourage non-automotive travel modes. A complete streets policy turned out to be a natural, overarching way to package two decades of street-improvement policies. In 1999, the city updated its subdivision ordinance to require developers to include sidewalks in private development. In 2000, Columbus established a sidewalk construction program to support safe routes to schools. In 2007, the city placed a moratorium on sidewalk waivers. That same year, in an effort to promote multimodal travel, Columbus created a new Division of Mobility Options from the former Transportation Division in the Public Services Department. The following year, the city adopted the Bicentennial Bikeways Plan to complete its bicycle network and the Operation SAFEWALKS Program to increase capacity in the pedestrian network. The 2008 Complete Streets Policy served as a capstone policy to clarify the city's aims for a complete, multimodal transportation network.

"The bikeways plan gives us a roadmap to provide well-planned on-street bikeway facilities for the future."

— *Randall Bowman*
administrator of the Division of Mobility Options

Post-Implementation Benefits

So far, Columbus has seen a shift in the transportation paradigm towards multimodalism, with concerted efforts from both the public and private sectors. The complete streets policy had a positive ripple effect, requiring a variety of development and transportation updates including: subdivision ordinance updates to build sidewalks and bikeways, training of planning staff to incorporate complete streets into site plan review, training of public utilities staff to help them understand the city's complete streets requirements when they dig up roads, training for contractors and consultants, and the provision of an in-lieu fee option for developers who can't meet the complete streets requirements because of significant site constraints. Having both the private and public sector play significant roles in this process allows the city to claim both long-term and short-term benefits. The private sector is required to participate in completing the network in a gradual pay-as-you go manner in all new development, while Columbus is leveraging \$65 million in capital improvement funds (\$55 million for sidewalks and \$10 million for on-street bicycle improvements) over the course of five years for this purpose.

Source: American Planning Association. 2010. Complete Streets Best Policies and Implementation Practices.

Source: Complete Streets Implementation Best Practices, APA

Implementation **Stories**

Mission

An improved eight block section of Johnson Drive re-opened in November 2014 with stormwater upgrades, new sidewalks, bicycle racks, recycling bins and pedestrian flashing beacons to aid crossing at intersections. Between March 2014 and December 2015, businesses moving into the district outpaced those moving out nearly 2 to 1, four buildings sold to new owners and existing property owners renovated their buildings. In total, the area saw nearly \$620,000 (estimated project valuation) in building permit activity from the time the project began to December 2015, including an extensive remodel of the corridor's historic theatre.

According to the Shawnee Mission Post, Steve Coon, principal for EPC Real Estate Group, pointed to the increased walkability of the downtown business district after the renovation of Johnson Drive as one of the factors that made the site attractive to the company.

"We look for walkable communities... We've always liked Mission, and have liked in particular what's been done on Johnson Drive. It has created an extremely walkable area."

— Steve Coon
Principal for EPC Real Estate Group

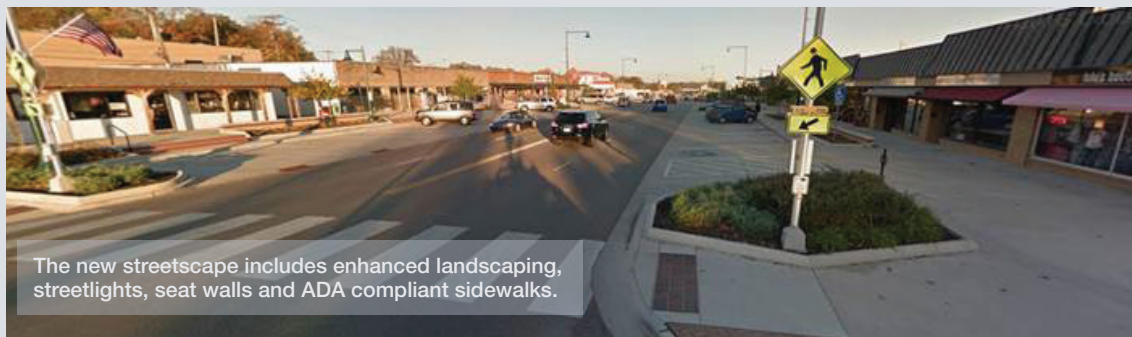


Photo courtesy Google.



Photo courtesy Google.

The Cornerstone Commons development at Johnson Drive and Barkley Street in Mission, Kansas replaced a vacant car dealership with a new grocery store, four restaurants and office space. The development was one of the city's biggest projects in 2015. Mission's 2015 annual report shows that the value of new construction reached \$24.25 million in building permits. Finances show that 40 percent of the city's general fund revenue came from sales and use taxes.

The kind of investment that the city was committing to the project was the best indicator we had of where this area was heading... Mission has always had a great feel, and this improvement to the infrastructure made us confident that the next phase of success was coming. We wanted to be a part of that."

— Clark Davis,
Owner of Mélange
Dance + Events



Photo courtesy Google.

Lee's Summit



A few years prior to the adoption of a complete streets policy, Lee's Summit reconstructed its downtown streets. The downtown redevelopment project included street trees, pedestrian-oriented street lighting, wayfinding signs, on-street public parking with accessible spaces, traffic-calming elements like intersection bulb-outs, sidewalks, street furniture, and improved two-lane, 25 mph roads. The project spurred mixed-use redevelopment, attracted new businesses and events, and helped downtown achieve national recognition, as well as awards for walkability and

bikeability. The success of this project served as a local model that was continuously referenced during the development of the city's Livable Streets Policy.

"It is important to remember that any transportation-related improvement is a complete streets element, but not all elements are appropriate for all roadways and must be considered within the context of its environment, need, network continuity, efficiency, safety, and balance of competing modes."

— Michael Park, city traffic engineer, city of Lee's Summit, Mo.

Post-implementation Benefits

Since the adoption of the city's Livable Streets policy in 2011, the design standards for Capital Improvement Program (CIP) projects and rural roads have been improved, and complete streets elements have become common in all street projects. The city has added several shared-use paths, wider curb lanes, and sidewalk improvements to currently planned CIP projects that otherwise omitted these design elements. Design standards for rural interim roads have been amended from a grass shoulder to a paved shoulder, providing safety to motorists as well as space for those on foot or bicycle. Evidence of a complete streets approach is now found in all of the Lee's Summit's projects: street lighting, sidewalks, ADA accommodations, shared-use paths, street trees, access management, wide curb lanes, paved shoulders, turn lanes and vehicular capacity. In the last year, the complete streets project roster has grown beyond just the central business area to include: the Jefferson Street road diet to improve bicycle, pedestrian and vehicle safety within the existing street width; improvements to other arterial streets through better access, sidewalks, landscaping and lighting; implementation of traffic-calming measures in residential areas with recognized speed-related issues; upgrading of all of the city traffic signals to LED and including pedestrian countdown modules where pedestrian activation exists; and the passing of a voter-approved, multimillion dollar sidewalk repair and gap-construction bond measure.

Source: Personal communication with Michael Park, city traffic engineer, city of Lee's Summit, Mo. November 29, 2011.

ADDITIONAL INFORMATION:

[Lee's Summit Livable Streets](#)

Implementation Stories



A “walking school bus” in the street on 42nd Street, Kansas City, Kan.

TAKING POLICY TO PRACTICE

Communities that have passed or are interested in complete streets policies likely are interested in not just having a policy on paper, but also in seeing the implementation of complete streets. The process of getting your community beyond talking about needs to the point of actually implementing complete streets typically follows four key steps. This document will help outline these four key steps with a particular focus on policy and process.

VISION

Vision of the community (conveyed by a local champion) that captures the desire for streets that accommodate all users and can spark action.

POLICY

An adopted policy, or set of policies, that captures the vision and provides the foundation for the community to change the way streets are designed and built.

PROCESS

A plan to modify existing processes to ensure that complete streets are incorporated into the planning, design and construction stages of streets.

RESULTS

Delivery of complete streets and policies to ensure ongoing maintenance and evaluation of street performance as compared to previous condition.



Grand Blvd

Grand Blvd

3525

RideKC.org
816.221.0660

MAX

RideKC.org

RideKC.org MAX

SAFETY
WIDE

3525



DEVELOPING A COMPLETE STREETS POLICY

In the Kansas City region, many communities have already developed complete streets policies to explicitly communicate their desire to provide safe and convenient facilities for all roadway users. As of 2017, more than 1,200 complete street policies were in place around the country, providing a wide range of examples of policy components that have been developed to fit specific community needs.

A complete streets policy formalizes a community's intent to plan, design and maintain streets so they are safe for users of all ages and abilities. Policies direct transportation planners and engineers to consistently design and construct the right of way to accommodate all anticipated users, including pedestrians, bicyclists, public transportation users, motorists and freight vehicles.

POLICY APPROACHES AND COMPONENTS

In the Kansas City region, existing local complete streets policies to date have taken the form of resolutions, which establish intent but are not mandated or codified procedure as they would be through an ordinance. A resolution is one of many strategies that can be used to establish a complete streets policy. However, since it is non-binding, it has less authority to ensure that complete streets are implemented as compared to other measures. Regardless of format, a complete streets policy should be composed in such a way as to meet a variety of needs given a community's unique characteristics. An example policy can be found in the Appendix.

FREQUENTLY ASKED QUESTIONS

What will a complete streets policy provide if adopted in our community?

- Overarching vision and an umbrella policy for how decisions are made regarding our streets.
- Opportunity to open the transportation design process to better reflect community needs.
- Actionable, achievable steps for modifying the existing process to routinely incorporate the needs of all travelers.

We currently have processes in place that address complete streets elements in our design process. Why is it important to have a formal policy?

- A complete streets policy is a clear, overarching statement that should refer to these other policies and tie together other efforts.
- A policy may open up additional funding opportunities which require legislation specific to complete streets.
- A policy creates new or strengthens existing partnerships between departments, community organizations and the public.

Who should initiate the push for policy adoption?

- There should be a decision to determine what makes the most sense in the community: political leader, department head or outside stakeholder group .
- It is important to involve numerous stakeholders and outside groups to achieve unified support for the policy (i.e., no one likes surprises, and all parties should be clear about what the complete streets vision includes).

How should we begin to compose a policy and what should it include?

- Identify champions to promote the idea and bring together a stakeholder group.
- Refer to the [Local Policy Workbook](#) from the National Complete Streets Coalition.
- Take inspiration from existing policies in the area and the National Complete Streets Coalition's [Complete Streets Policies Nationwide](#) database.

Complete Streets

Lee's Summit

The Livable Streets Policy was sought by citizens, staff, and community leaders, and founded on the city's citizen-based strategic plan: LS360. If not for its inclusion in the city's strategic plan, the policy may have taken longer to develop and implement.

"The Livable Streets Policy recognizes all the great progress and accomplishments our city has achieved in complete streets, and defines a policy to further and better accommodate and encourage all modes of transportation for people of all abilities."

— Michael Park, city traffic engineer, city of Lee's Summit, Mo.

The policy was crafted by the Livable Streets Planning Committee, which represented city staff, planners, medical professionals, engineers, lawyers, older adults, law enforcement, business owners, developers, persons with disabilities, cyclists, walkers, joggers and transit riders. It was then reviewed by a broader representation of similar interests including the Park Board, City Management, the Planning Commission, the Chamber of Commerce, Downtown Main Street, Rotaries, Home Associations and others.

"By including such representation, we assured the policy considered the transportation needs and recreational desires of our community, all ages, all abilities, and all modes, prior to City Council adoption."

Standards, ordinances and publicly adopted plans have a natural vetting process by which complete streets will be considered in a holistic, networked approach."

— Michael Park, city traffic engineer, city of Lee's Summit, Mo.

The policy takes into consideration the city's community culture, density, infrastructure and environment for a practical approach that advances complete streets within the existing development processes. Subsequent capital projects and new development must meet the Livable Streets guidelines or justify why provisions cannot be made. The policy provides flexibility through amendment of standards, ordinances and public plans, or waivers for specific conditions.

After the policy was adopted by the city council, a Livable Streets Advisory Board was created by city ordinance, composed of 11 citizens appointed by the city council, to continue facilitation and monitor implementation of the adopted policy.

Source: Personal communication with Michael Park, city traffic engineer, city of Lee's Summit, Mo. November 29, 2011.

RESOURCES:

Approved Livable Streets Resolution

www.livablestreetsls.com/images/Livable_Streets_Signed_Resolution.pdf

Lee's Summit Sidewalk Assessment

www.cityofls.net/LinkClick.aspx?fileticket=rmLDOHORpxo%3d&tabid=465

Lee's Summit Transit Demand Assessment

www.cityofls.net/LinkClick.aspx?fileticket=1Vw5SNMLxaA%3d&tabid=844

Lee's Summit Greenway Master Plan

www.cityofls.net/Parks/Parks-and-Trails/Greenway-Trail-System.aspx#MasterPlan

Policy Adoption

CURRENT REGIONAL COMPLETE STREETS POLICIES

The Kansas City region has been active in adopting complete streets policies and is among the nation's leaders. This status is in part due to the initiative taken by local governments to implement policies that create a better return on investment, and other advocacy efforts from organizations — such as KC Healthy Kids, BikeWalkKC and the Kansas City American Heart Association — that have promoted the benefits of complete streets. Most complete streets policies adopted in local communities are in the form of resolutions, which create the momentum for local staff, decision makers and residents to pursue complete streets implementation and projects.

In 2017, the city of Kansas City, Missouri, reinforced their complete streets efforts by adopting legislation with binding

requirements. It codifies the city's mission to provide connected, safe, and equitable road access.

Local policies as of 2018 included twelve municipal/county resolutions, two state resolutions, and one binding city ordinance, as shown in the table below.

In addition to the wealth of existing policies in the region, MARC adopted its own complete streets policy that helps guide policymaking in its work and serves as a framework from which cities and counties can base their own complete streets policies and tools.

See a [list of locally adopted policies](#).

| LOCAL RESOLUTIONS | | |
|-----------------------------|------------------|---|
| Complete Street Communities | Date of Adoption | Summary |
| Belton | 1/10/2012 | <ul style="list-style-type: none"> All transportation improvements are viewed as opportunities. The policy applies to the design, construction, and maintenance (e.g. resurfacing and striping modification) of new and reconstructed roads. Policy includes a clear, accountable process for exceptions in accordance with FHWA guidance. The city manager and city council are named as responsible for approving exceptions. For successful implementation, the policy expresses intent to incorporate complete streets principles into all public strategic plans, standards and regulations, including the comprehensive plan, unified development code, future land use map and overlay district plans. A reporting requirement is established. A complete streets summary is required for projects in the CIP and for any private development that requires city council approval. |
| Blue Springs | 9/19/2011 | <ul style="list-style-type: none"> The Livable Streets initiative is part of a larger effort — the 2011 Let's Move resolution — that also included access to affordable and healthy food and promoted physical activity. Applicability is broad ranging, with special attention given to new development and redevelopment. Adoptability of policy has been planned for all public strategic plans, in addition to city plans, manuals, rules, practices, policies, training, procedures, regulations and programs. |
| Grandview | 11/22/2011 | <ul style="list-style-type: none"> Livable Streets Policy sets forth guidelines for development of transportation projects to promote multimodalism (walking, cycling and transit) and consider safe use and operation for all users. Policy applies to design, reconstruction and maintenance of public improvement projects. The city will consider public plans, standards, regulations and ordinances to implement this policy. Implementation may occur through single projects or incrementally through a series of public improvements and maintenance. |
| Independence | 6/6/2011 | <ul style="list-style-type: none"> Policy aims to promote public health by encouraging walking, bicycling and active living. Applicability includes design and construction of private and public improvement projects. Adoptability is required for all public strategic plans, standards and regulations, and applies to development codes and the capital improvement plan. Achievements are expected by incorporating elements through a series of improvements or activities over time. |

LOCAL RESOLUTIONS

| Complete Street Communities | Date of Adoption | Summary |
|--|------------------|--|
| Leawood | 5/16/2011 | <ul style="list-style-type: none"> • Policy is to go beyond the Comprehensive Plan specifically to designate, design and operate streets for the safety of multiple users; approach is targeted towards specific corridors. • Sets out the agencies that will have to adopt principles into their own policies, regulations, standards and rules to support the Complete Streets Policy, as well as the agencies that have to review the policy when engaging in new development or retrofitting. |
| Lee's Summit | 11/9/2010 | <ul style="list-style-type: none"> • Policy includes regional and local connectivity to facilitate movement through and across the transportation network. • Applicability is comprehensive, including design, construction and maintenance of public improvement projects. |
| Overland Park | 11/18/2013 | <ul style="list-style-type: none"> • Policy applies to all public streets that are newly constructed or reconstructed, whether privately or publicly financed. • Facilities will be designed in context with the land uses and physical characteristics of the surrounding area. • Policy articulates the need to work with Johnson County Transit. • Planning and Parks Departments are designated to oversee implementation of aesthetic treatments. • Policy specifies the need to develop a comprehensive Bicycle Master Plan. |
| Roeland Park | 10/3/2011 | <ul style="list-style-type: none"> • Policy is aimed at enhancing the public environment experience for all modes, including single-occupancy vehicles. The aim is that complete streets design and consideration become part of the routine infrastructure planning process. |
| Jackson County | 8/27/2012 | <ul style="list-style-type: none"> • Specifies obesity prevention and reduction as a motivation for pursuing complete streets. • Clearly states the county will approach every transportation-related project and program as an opportunity to improve the transportation network for users of all ages and abilities, including pedestrians, bicyclists, public transportation, and agricultural, emergency and freight vehicles. • Policy applies to the planning, design, approval and implementation processes for construction, reconstruction, maintenance, alteration, or repair of streets and bridges. |
| Johnson County | 9/1/2011 | <ul style="list-style-type: none"> • Policy proposes a complete streets treatment of all streets with detailed contextual consideration. • Applicability is comprehensive; policy directs the county's transportation planners and engineers to routinely consider designing, building and maintaining the county's right of way to incorporate complete streets principles. |
| Unified Government of Wyandotte County/ Kansas City, Kansas | 4/7/2011 | <ul style="list-style-type: none"> • Policy is very detailed, including all the elements of the National Complete Streets Coalition best practices guidelines, and also setting out phasing and prioritization for implementation, specifying agencies to be involved and their roles, and innovation in drawing in a great variety of funding sources. |
| State of Kansas | 2/24/2012 | <ul style="list-style-type: none"> • Encourages and urges KDOT, metropolitan planning organizations, and municipalities to plan, design, build and maintain their road and street system to provide complete, safe access to all road users • Declares support for livable streets policies and urges their adoption at the local, metropolitan, regional, state and national levels |
| State of Missouri | 5/15/2011 | <ul style="list-style-type: none"> • Aim is to complete the transportation network for public health, recreation, and for the people who depend on public transit. • Resolution recognizes cooperation and coordination among multiple agencies and municipalities is needed to complete the transportation network and lists cities and metropolitan planning organization with existing complete streets policies. |

LOCAL LEGISLATION

| Complete Street Communities | Date of Adoption | Summary |
|-------------------------------------|-------------------|--|
| <p>Kansas City, Missouri</p> | <p>12/14/2017</p> | <ul style="list-style-type: none"> • Vision. Clear in intent, the ordinance states unequivocally that facilities “shall” meet the needs of all users of the transportation system, including pedestrians, wheelchair users, bicyclists, public transportation users, motorists, and people of all ages and abilities. The legislation envisions access, mobility, health, safety, and convenience for all users. • Equity. While the ordinance applies citywide, the City will develop plans and set goals to prioritize and ensure successful implementation of Complete Streets in low and moderate-income neighborhoods, neighborhoods with poor health outcomes, and neighborhoods with diminished access to transportation options. • All projects and phases. Every transportation improvement and project phase is approached as an opportunity, including programming, studies, pre-design, design, right-of-way acquisition, construction, construction engineering, reconstruction, operation, and major maintenance. • Clear, accountable exceptions. The City Plan Commission is responsible for approving any exceptions, following review by the Bicycle and Pedestrian Advisory Committee and Transportation Development Committee. • Network. The ordinance emphasizes the importance of an integrated and connected multimodal transportation network. • Partnerships. The city will coordinate with the State of Missouri, counties, public transportation providers, neighboring jurisdictions, school districts, community improvement districts, and other special taxing districts to achieve the Complete Streets vision. The ordinance also applies to private developments. • Context-sensitive design guidance. Specific recent best available standards are clearly named, including manuals created by NACTO, ITE, AASHTO, FHWA, TRB, NCHRP, MUTCD, and PROWAG. • Performance measures. Measures include pedestrian level of service, bicycle level of service, multi-modal level of service, implementation of bicycle master plan, Bicycle Friendly Community program status, Walk Friendly Community program status, crashes, injuries, and fatalities by transportation mode, and bike and walk commuting rates. • Implementation. Complete Streets principles will be incorporated into all existing and future plans, capital improvement plans, design standards, manuals, checklists, decision trees, rules, regulations, and programs. Staff professional development and training on non-motorized transportation is encouraged by the ordinance. An annual report will be made to the City Council showing progress made in implementation. • Green infrastructure. Innovative stormwater management, street trees, and appropriate lighting will be incorporated in transportation projects. |



IMPLEMENTATION AND PROCESS

Community input to the complete streets process is critical to ensure products that reflect need.

Among the biggest challenges in implementing complete streets is understanding and modifying the existing processes and standards that govern how streets are planned, designed and built in your community. Depending on the locality, tailoring the street-delivery processes can be complicated, making it easier to follow existing practices that are already familiar to development professionals.

While the framework for building streets in various cities may differ widely, the key steps in modifying the existing process toward one that results in complete streets are fairly consistent. Based on the National Complete Streets Coalition’s extensive research on community experience in implementing complete streets, the process can be summarized in five steps. The graphic at right is intended to be a quick reference describing the key steps in the process.

Each of these five broad steps is bundled with a list of steps, broken down into specific tasks and activities that are essential for that step’s success. Further detail about each of these steps can be found in the following sections. Having a complete streets policy in place provides a vision, broad-based support, and a great deal of momentum for creating the change necessary to develop networks of safe streets for all users, but the activities can be done without one.

FIVE STEPS FOR COMPLETE STREETS IMPLEMENTATION

1

Create The Foundation

(Initial Steps)

2

Benchmark Existing Conditions

(An internal investigation of existing plans, policies and processes)

3

Re-evaluate Design Standards

(Re-evaluation of existing design standards or referenced design standards)

4

Establish New Tools

(Establish new tools or performance measures)

5

Spread The Word

(Educational opportunities for staff and community members)

1

Create The Foundation

- **Establish an internal champion or working group to ensure project progress and maintain momentum**

Step one of the process is to determine a champion for the transition process, a person or group who will be responsible for developing an implementation plan and keeping the dialogue about complete streets going. Depending on the community, this champion (or organization) may be a staff member or a member of an outside group that is brought in to facilitate meetings with city staff. It may also be a small working group of key staff representatives or an existing committee assigned to the specific task, such as a bicycle and pedestrian advisory committee. This champion should also have enough support (both administrative and political) to help ensure process organization.

The champion or working group should engage all appropriate agencies, departments and stakeholders in the implementation process: planning, public works, environment, transit, parks and recreation, economic development, public health, advocacy groups, and others as appropriate for the community to ensure that all are included and present at the table. Public supporters, such as local senior organizations or bicycling advocacy groups, are valuable assets. They can be involved with the working group or committee to provide a link to general public input and also provide resources (e.g., volunteers for data collection, anecdotal accounts, etc.). Engaging members of the public early on will ensure a community-driven and supported process or project in the longer term.

- **Develop common understanding of final goal and result**

The champion or working group should, in consultation with other stakeholders, establish a final goal or result. Through this forum, group, committee or task force, a common understanding of the steps the community will take to implement complete streets should be established, accompanied with a timeframe for specific actions and assigned roles for appropriate individuals, departments or outside groups. Ground rules for the group should also be established for changes, and for aspects of the current process that should be preserved. The implementation plan should establish regular reports to celebrate progress to that point and to inform elected officials, community leaders, and the general public about implementation progress.

Lee's Summit Livable Streets Advisory Board

This citizen-based board was created by city ordinance and appointed by the City Council after the Livable Streets Policy for the city had been adopted. The advisory board is tasked with continuing policy implementation and monitoring progress.

Board members attend events, write monthly educational articles, work with stakeholders, and act as champions with the school district, neighborhood associations, and chamber of commerce.

2

Benchmark Existing Conditions

- **Initiate discussion to help outline an understanding of existing processes**

Determining the existing processes of how street-related decisions are made is a critical portion of the implementation process. Without knowing how this is currently conducted, it is impossible to make succinct recommendations for modifications to better consider complete streets.

Understanding documented guidance in the form of existing plans documentation and design guides is important, but understanding and documenting the common practice, either spoken or unspoken, is most important. Transportation decision makers should understand both. Together, they should walk through how projects move through their departments and how decisions are made regarding operations and maintenance (e.g., “How did we get here? How did this road design come to be?”). The intent of this process is not to yield wrong or right answers, but to help the overall group understand how streets are designed and built today.

- **Document existing design and development processes, procedures and guidelines**

Documenting the existing processes may be a challenge depending on the jurisdiction, but the outcome has great internal and external value for communities. Internally, it can help outline inconsistencies and also identify points for further process efficiencies. The intent of this step is to identify how the current process can support or hinder complete streets outcomes, and to build relationships between all departments involved in the process. This can also help staff define how and when to grant exceptions to the complete streets policy. Externally, it provides the public a transparent view of how projects are brought from concept to design and construction. It can be presented to the public as a primer to help convey when and how they can be involved in the process of creating streets that are appropriate for their needs.

- **Identify existing documents that may need to be modified and referenced to understand the existing framework**

List the existing documents that are relevant to the street-development and construction process, including plans, street design manuals, city codes, policies, plans checklists, decision trees, project selection criteria and ordinances that are relevant to the street-development and construction process. This should include documents and processes that impact both the public and private (e.g., private developers) street activities. Identify anticipated updates and plan to review them for consistency with complete streets goals. If a community often hires consultants for project planning, design or delivery, those contracts may also need to be updated to require a complete streets approach.

3

**Re-evaluate Design Standards
(local/regional/state)**

- Investigate which design standards provide the best fit for community context

An internal discussion should occur that further investigates the community’s existing adopted design standards, and how well they reflect current best practice in multimodal street design. Communities may want to compare their guidelines with other technical guidance or design manuals, such as those referenced in the Design Options and Tools section of this handbook. As described in that section, there are now several design guidelines that are specifically intended for developing complete streets. These documents typically incorporate the minimum guidelines and standards found in conventional design manuals, but prioritize the guidelines to encourage complete streets. Depending on community interests or desires, elements of current guidance can be amended with standards from other sources, or a new community manual can be developed wholesale based on these other existing resources. This process should include a review of standards that guide private development and contractors. Communities may find that changes to land-use and zoning codes, parking policies, and other related documents are necessary to support their complete streets efforts. Standards and guidelines can be mixed and matched from numerous existing literature and resources. Working through these adjustments to design guidance can be done over time.

Kansas City, Missouri

The City of Kansas City, Missouri addresses complete streets in several plans.

FOCUS Kansas City and Area Plans

- Offers guidelines for context sensitive streets
- Suggests revisions to Major Street Plan
- Identifies ‘through’ street network
- Recommends physical improvements to facilitate biking and walking

Walkability Plan

- Measures walkability
- Requires pedestrian impact analysis in traffic studies
- Recommends changes to engineering standards

Major Street Plan

- Includes context sensitive street section alternatives
- Accommodates alternative modes

Boulevard and Parkway Standards

- Site and building orientation and setback
- Parking
- Landscaping and screening
- Architectural design
- Use specific design criteria
- One and two family unit residential
- Multifamily residential

Transit Oriented Development Policy

- Identifies strategies to focus development near transit infrastructure and encourage connectivity, mobility options and thoughtfully designed public and private spaces

LifeX

- Seeks to improve life expectancy and decrease inequities between zip codes

Bike KC Plan

- Bicycle master plan

4

Establish New Tools
(select new tools or performance measures, quantitative and qualitative)

- **Establish performance measures/standards and decision tools that will incorporate complete streets**

Communities pursuing a complete streets approach will need to combine their current tools for measuring transportation performance with new tools that reflect the multimodal approach. A balance will need to be struck between quantitative tools that are based in data and qualitative tools that reflect harder-to-measure goals.

An overreliance on quantitative tools may stymie complete streets efforts and may require more input data than is feasible, while too many qualitative tools may not accurately measure performance. The goal of this step is to establish new decision tools and performance measures that will give deference to complete streets projects as compared to those that do not accommodate all users. There are numerous decision tools that are currently used as a supplement or replacement to level of service. The intent is that new decision tools would still meet local requirements, while promoting feasible and appropriate complete streets outcomes and making these alternatives more competitive when compared to conventional designs. Examples of potential decision tools include:

- Site/project-level performance measures (multimodal level of service, checklists, crash and injury data)
- Transportation system-level measures (miles of bicycle lanes added or repainted, blocks of new or repaired sidewalks, number of new or reconstructed accessible curb cuts, and number of new street trees per year)
- Measurement (post-performance measures, such as percent reduction in crashes or reduced vehicle speeds in residential neighborhoods or annual counts of non-motorized users or motor vehicles)
- Community-wide, long-term measures (mode shift, satisfaction surveys, and health outcomes)

Lee's Summit Annual Transportation Report

This annual document analyzes and reports on:

- Multimodal level of service (LOS), including bicycle and pedestrian.
- Crash assessment by mode, including bicycle and pedestrian.
- Miles of bicycle and pedestrian facilities added or altered.
- Changes to transit service.
- Number of sidewalk deficiencies corrected.
- Number of new or reconstructed accessible ramps.
- Summation of ADA compliance tied to ADA transition plan to meet ADA requirement for reporting.
- Mode share.
- Survey results.

5

Spread the Word (educational opportunities for staff and community members)

- **Conduct internal training (both formal and informal) to increase understanding and remove silos**

Training is a fundamental component of the complete streets process transition. Before some transportation and public works professionals involved with the street-design process begin to initiate, support and successfully oversee complete streets projects, they may want or need training on the public-policy rationale behind the complete streets approach, or have specific procedural or technical questions on how to implement complete streets projects. Implementation of complete streets is dependent on cross-departmental collaboration, where money can be saved by consolidating construction of complete streets projects with other capital improvements, like sewer replacement or street resurfacing.

“When we are reviewing and updating policies for consistency with complete streets, it involves more than just Public Works. We get input from a lot of city departments, including Planning and Development Services and the Arts Coordinator.”

— Brian Shields, City of Overland Park Traffic Engineer, 2017

Both formal (e.g., workshops, conferences) and informal (e.g., brown-bag lunches, walking audits) training should involve several different departments that have a role in the delivery of complete streets. This type of collaboration is contingent on open communication and discovery between departments, with the goal of looking for opportunities to make procedural changes that would incorporate the complete streets approach into the planning and design

of all relevant capital projects. Collaboration can possibly save money by shortening the length of time to get a project from design to construction through streamlining the review and approval processes.

- **External training, and giving the public opportunities to participate**

In addition to internal staff training, a complete streets implementation process is also an opportunity to convey to the public the intent and goals of complete streets treatments. Walking audits, tours and workshops that discuss the merits and challenges of complete streets planning and design can engage the public in a meaningful way. They can help educate the public on how to be more involved, and ensure that streets better reflect community needs. Such educational opportunities can also build important community support for the street-design process in general. Youth-led or senior-led walking tours are an important way to involve some of the most vulnerable road users so transportation professionals and elected leaders can hear directly the needs of these groups.

- **Convey importance of long-term sustainability of complete streets and that its success is also reliant on other non-transportation factors**

The process of understanding and modifying the means by which complete streets are designed, built and maintained can have many positive impacts for improving the “completeness” of future transportation projects. However, it should be noted that complete streets changes will have an amplified impact if paired with supportive changes that complement the complete streets approach.

Examples of supportive changes include adopting a comprehensive multimodal transportation program to increase the convenience and accessibility of walking, biking and transit. Such a program should be based on the five E’s: education, enforcement, encouragement, engineering and evaluation.

The relationship between transportation and land use is also a critical element that should be emphasized. Suburban-style strip malls can be designed with complete streets elements, but these types of developments will require more than just new streets in order to make them more supportive of non-auto modes of transportation. If a community is committed to developing complete streets for their inherent benefits, it should also factor in other aspects of land use, such as new development guidelines and zoning standards that align with the goals of complete streets. In addition, development impact fees can be a good funding source for complete streets improvement (see the Implementation Costs and Maintenance section for more information on funding sources).

Develop Process and Timeline to Bring Steps in Line With New Goals

The previous five steps are described to make the process clear. However, it is understandable that implementing these steps may be complex and worked out over a period of time. It is important that a clear timeline be set when trying to tackle these steps, along with the understanding that change will be incremental for both modifying processes and producing products. Initially, these changes may be more costly in terms of staff time and transportation budgets. But they will yield long-term benefits and products that more closely align with community values.

TRAINING OPPORTUNITIES AND RESOURCES:

MARC regularly hosts webinar viewings and training workshops on complete streets and design from many organizations, including the Association of Pedestrian & Bicycle Professionals.

www.marc.org/Government/GTI/Academy-for-Sustainable-Communities/Overview
<http://www.apbp.org/>

American Public Works Association Training Programs

https://www.apwa.net/MYAPWA/Events/MyApwa/Apwa_Public/Education_and_Events/Education_and_Events.aspx

FHWA Resource Center – Safety and Design Training

www.fhwa.dot.gov/resourcecenter/teams/safety/courses.cfm

Smart Growth America

smartgrowthamerica.org/program/national-complete-streets-coalition/complete-streets-implementation/

Pedestrian and Bicycle Information Center Webinars

www.pedbikeinfo.org/training/webinars.cfm

MAINTAINING MOMENTUM IN OVERLAND PARK AND LEE'S SUMMIT

Overland Park and Lee's Summit use recertification processes as opportunities to remain accountable to their complete streets policies.

The City of Overland Park uses their APWA reaccreditation process as an opportunity to update policies and procedures to reflect best practices related to complete streets.

Lee's Summit has been designated as a Silver Walk Friendly Community and a Bronze Bicycle Friendly City. The city aims for continuous improvement as it undergoes the cyclical review process required to maintain these designations. This regular periodic review helps both cities implement changes, update plans and begin new initiatives.

“Each year we summarize every capital project, what impact it has on complete streets, what elements are included, and document any exceptions, which occur on a limited basis according to the adopted policy. For private development staff has a standard report with specific regard to complete streets that the planning commission or city council review to see how the development impacts complete streets.”

—Michael Park, City of Lee's Summit Traffic Engineer, 2017



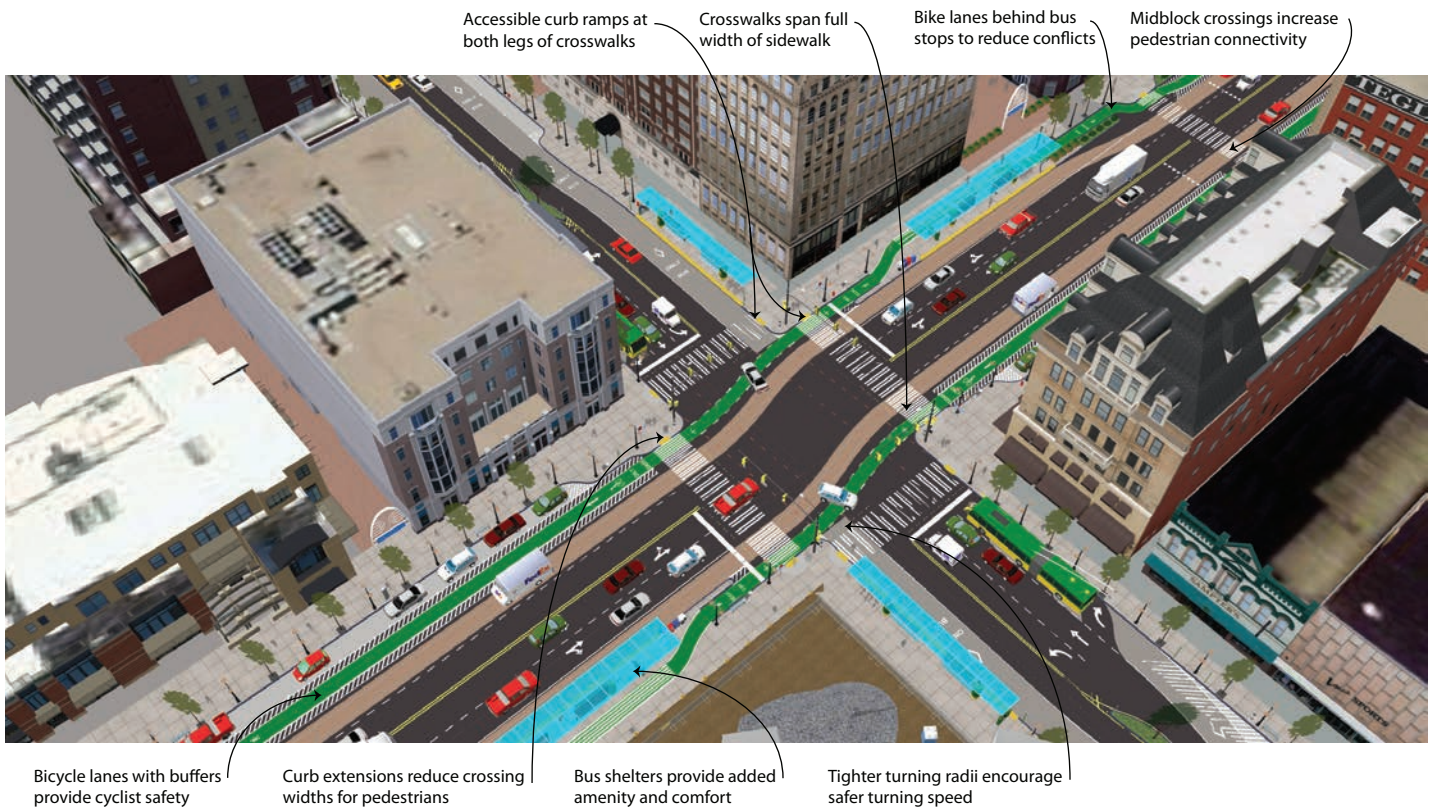
FRAMEWORK FOR DESIGN GUIDELINES AND TOOLS

In the process of developing complete streets, a wealth of information and resources already exist to help provide complete streets guidance for different communities. The primary purpose of this section is to highlight general tenets of complete streets design features, the necessity of having clear design standards, and the general means of approaching street design from a complete streets perspective. This section will not prescribe any specific design treatments. Instead, it will help point readers to resources that are considered industry best practices. This section will also describe various tools that can be used to help communities determine whether design modifications are warranted, and also those that can help implement complete streets.

Guiding Principles

Design guidelines for streets and roadways can be a long and expansive discussion. Numerous factors are important including design speed, local land uses and traffic-control devices. However, for the purpose of constructing complete streets, appropriate design can be summarized into several guiding principles. When designing complete streets, a community should consider the following:

- Designing with a variety of users in mind, spanning different modes, ages and abilities
- Being aware of local land uses and related activities
- Heightened priority on improving overall network connectivity



An example of a multimodal corridor with numerous complete street types of design treatments.

- There is no one optimal complete streets design or cross section
- A “perfect” design should not be the enemy of a “good” design
- Every time a street is touched is an opportunity to improve it in some way for pedestrians, bicyclists, transit riders or motorists

Purpose and Role of Design Guidelines/Standards

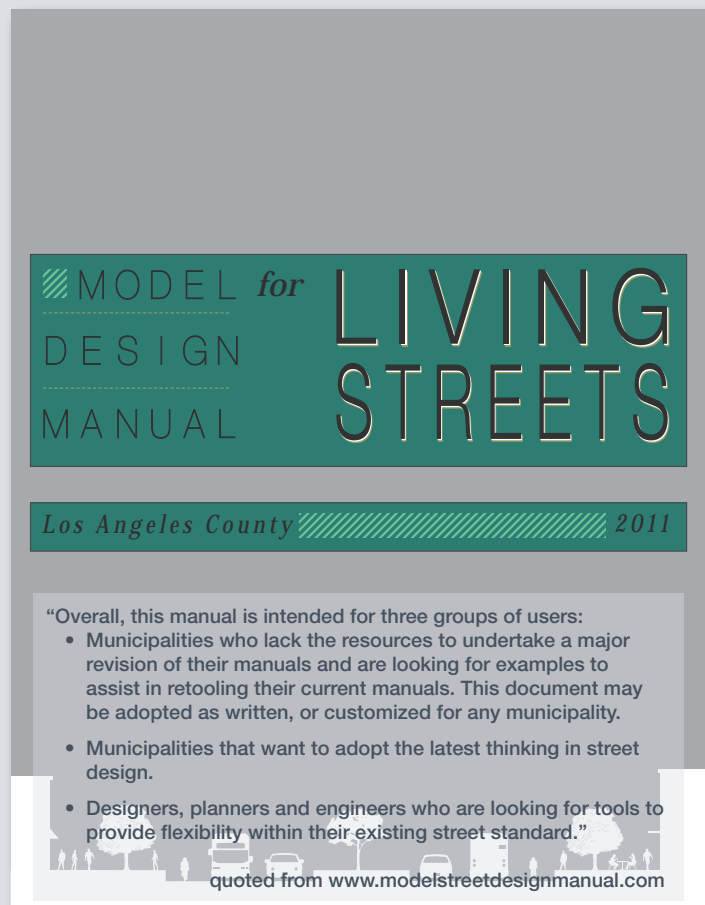
With complete streets, design standards are important but secondary to making a deliberate shift from prioritizing one mode to prioritizing many. Design guidelines or standards serve as the backstop for how streets are designed and reinforce complete streets goals.

In some cases, communities may adopt their own design guidelines or standards, and in other cases, they will directly reference standards from the state or federal level, or from professional organizations. While referencing outside sources

is relatively straightforward, communities must take care to ensure those guidelines are contextually appropriate for an given environment and do not deter from the street.

To ensure implementation of complete streets, it is imperative that complete streets policies and local design guidance are consistent and do not contradict one another. Step three of the five steps for implementation discusses the re-evaluation of design standards to ensure that adopted standards align with community goals and desired outcomes. With any adopted standard, a challenging balance includes finding standards that provide enough flexibility to enable context-sensitive and multimodal solutions, while not requiring a reinvention of the wheel at every step. Fortunately, a wealth of design guidelines, standards and resources already exist and can be drawn upon, mixed, amended or adapted to local design approaches to best accommodate a community’s needs.

Questions often arise about binding standards versus guidance when it comes to street design. In most cases, local design standards are adopted from state or federal guidance. However, there is no federal street design document that is mandated for use at any local or state level. This is typically the case with state documents as well. As an example, the AASHTO Green Book is a commonly cited design document that applies to all roads that are part of the National Highway System, such as U.S. routes and interstates, among others. For cities, this document is only guidance, though some cities may adopt it as a standard. For further reading on the legal standing of common design documents, the *Model Design Manual for Living Streets* provides extensive text on this subject. The manual can be found here: <http://modelstreetdesignmanual.com>





Signalization Considerations

While the majority of design standards address physical infrastructure or changes in the built environment, there are also numerous operations and signal modifications that align with complete streets principles. In a complete streets setting, signal-timing priorities should not default solely to maximizing vehicular throughput. They should also consider other users, both existing and future. Depending on the context, other priorities may include: modifying how pedestrian walk intervals and clearance intervals are provided and timed, eliminating permissive-left-turn movements to improve safety for all users, providing priority to transit vehicles, or providing detection or protected phases for bicyclists. While these priorities will sometimes conflict with traditional intersection level-of-service goals (see next section), this may be a conscious decision by a community to prioritize other modes of transportation.

As an example, pedestrian-oriented signal improvements prioritize pedestrian convenience and safety, while still meeting the needs of drivers and other road users. Leading pedestrian intervals (as described on page 37) give pedestrians the walk signal to begin crossing the street before motorists receive their green signal, thereby giving pedestrians a few seconds head start and making them more conspicuous to drivers. This has proved to reduce conflicts between pedestrians and turning vehicles. Leading pedestrian intervals can often be implemented with no additional delay to major street motor-vehicle traffic, and with only the length of the leading pedestrian interval delay for minor street traffic. In addition, signal-cycle lengths should be kept as short as possible — preferably less than 90 seconds — to give pedestrians more frequent opportunities to cross the street, reducing the temptation to cross against the signal. Pedestrian signals can be set to “recall to walk” when concurrent green intervals are set to recall to green. To accommodate higher volumes of pedestrians or to give pedestrians enough time to make adequate safety checks

before entering the street, walk intervals can be increased beyond the minimum time designated in the MUTCD.¹ Pedestrian-clearance intervals should be evaluated to ensure that they meet the new walking speed standards in the MUTCD (3.5 feet per second) at a minimum. A walking speed of less than 3.5 feet per second should be considered in these clearance intervals at locations where pedestrians who may need more time routinely cross, such as the elderly or those in wheelchairs. Using the techniques above to improve convenience for pedestrians leads to improved pedestrian behavior and safety.

With respect to transit users, there are also signalization techniques that can improve transit speeds and schedule reliability. Transit-signal priority (TSP) is another strategy that can be used on corridors with high transit frequencies or that are considered “priority transit streets.” At traffic signals, buses communicate with the traffic-signal system to extend a green signal indication to an approaching bus. Delay for buses may be reduced at intersections as a result. TSP may require newer or updated equipment depending on the age and capabilities of existing traffic signals.

A critical consideration for bicyclists is to ensure that they are detected by the signal equipment at signalized intersections. Vehicle detectors (either inductive loop, microwave or video detection) can be designed and adjusted in a manner to detect bicycles. In addition, bicycle-specific loop detectors can be placed in designated bike lanes, including presence detection at the stop line as well as advance loop detectors for green time extension on major roads where similar loops are placed for motor vehicles. In some situations, protected signal phases can specifically be used to improve bicyclists’ safety and convenience.

Traffic Operations Considerations

Complete streets design should not imply that vehicular throughput and mobility will be stifled as a result of new design treatments. While the concept of complete streets often means increasing the importance of non-motorized modes in the hierarchy in order to balance all modes, good implementation of complete streets can benefit motor-vehicle safety and operations as well. For example, reconfiguring street space can eliminate “dead space” on streets that formerly allowed drivers to wander and choose varying paths through intersections or along streets. By balancing all modes, complete streets principles also discourage building overly wide roads — instead applying appropriate intersection controls and turn lanes to manage capacity considerations, resulting in narrower streets that are safer for all users, including motor vehicles. Applying complete streets principles encourages the use of raised medians with turn pockets and discourages multilane undivided roads. Undivided four- and six-lane roads result in left turns being made from the inside through lanes, which are the source of many crashes and reduce capacity.

¹ Manual on Uniform Traffic Control Devices (MUTCD). FHWA.

DESIGN CONSIDERATIONS AND THEIR POSITIVE IMPACTS*

Costs are displayed in relative terms as costs between projects vary widely depending on location and other local characteristics. Some cost figures and project percentage amounts have been provided when available as a reference point, but they should not be used as an accurate estimate of the cost of a similar project in the Kansas City region. Cost estimates for other pedestrian and bicyclist

infrastructure improvements can be found in UNC Highway Safety Research Center’s resource guide: www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf

- \$ = (<\$25,000)
- \$\$ = (\$25,000–\$75,000)
- \$\$\$ = (>\$75,000)

The callout boxes in this section are taken largely from facts and figures in Dan Burden’s “Citizen’s Guide to Traffic Calming” and published by the Local Government Commission. (<http://www.walkable.org/order.htm>)

The measures of effectiveness for transit features are derived from data found in the Transit Capacity Quality of Service Manual, unless a local measure is cited.



Curb Extensions / Bus Bulbs

BENEFITS

- Improve safety for pedestrians and motorists at intersections and mid-block crossings.
- Can increase motorist visibility and reduce turning speeds by approximately 6–8 mph.
- Can reduce overall street speed if designed in sequence, thus narrowing the road, even when vehicles are not parked.
- Increase pedestrian visibility and reduce pedestrian crossing distance and time exposed to traffic, making crossing more comfortable for users of all abilities.
- Can reduce delay for all users at signalized intersections, due to shorter pedestrian clearance intervals for the shorter crossing distance.
- Encourages pedestrians to cross at designated locations.
- Improve accessibility for people with disabilities by providing space for high-quality ramps and discouraging illegal parking in the crosswalk area.
- Provide opportunities for bus stops, landscaping and other street furniture.
- Bus bulbs can minimize transit delays caused by merging back into general traffic.

COST: \$–\$\$

COST FACTORS: Draining issues, relocation of utilities, removal of on-street parking*

*These types of facilities are typically employed on streets with on-street parking



Countdown Pedestrian Signals

BENEFITS

- Provides pedestrians additional information about amount of time left to cross street, resulting in fewer pedestrians left in the street at the end of the pedestrian-clearance interval.
- Installation has been shown to reduce pedestrian collisions.*
- Installation has been shown to increase caution in driver behavior.**

* Eccles, K.A.; Tao, R.; and Mangum, B.C. 2004. Evaluation of pedestrian countdown signals in Montgomery County, Maryland. *Transportation Research Record* 1878:36-41.

** Schrock, Steven and Bundy, Brandon. 2008. Pedestrian countdown timers: Do drivers use them to increase safety or to increase risk taking? *Transportation Research Board Annual Meeting 2008*, Paper #08-2203.

COST: \$–\$

In one example, pedestrian countdown signals were noted to be able to be installed for “as little as \$2,000 per intersection”***

***American Planning Association. Complete Streets: Best Policy and Implementation Practices. 2010. Planning Advisory Service Report Number 559.



Reduced Travel-Lane Widths

MYTHS

- Reducing lane width can reduce vehicle safety.

BENEFITS

- Saves costs by reducing the amount of right of way needed in new roads.
- Saves on maintenance expenses by reducing amount of asphalt used.
- Restriping existing right of way during resurfacing to reduce lane width is a low-cost way to incrementally build a network of bicycle facilities.
- Reducing the driving lane width has been shown to reduce speeds by as much as 3 mph for every foot of lane narrowing.*
- Provides space for other modes of travel, as lanes are often unnecessarily built to the upper end of a suggested safe range.
- Provides additional flexibility in design options, such as including bicycle lanes or on-street parking, increasing the sidewalk width, installing parklets, or adding landscaping.
- On roads with speed limits of 25 mph or less, bicycles and motorized vehicles can share lanes, thus space can be reallocated from lane width to pedestrian use.
- Reducing lanes by 1 foot, from 12 feet to 11 feet or 11 feet to 10 feet, can decrease construction costs by 2 percent.

* Relationship Between Lane Width and Speed. Review of Relevant Literature. Parsons Transportation Group. 2003.

COST: Reduced lane width on new roads: -\$ (reduced cost)

Pedestrian-Refuge Islands/Medians

BENEFITS

- Enables pedestrians to focus on each direction of traffic separately with a safe place to wait in the middle of the street.
- Shorter crossing distances (to accommodate pedestrians that may not be able to cross a longer distance in a signal interval).
- “Split” pedestrian crossovers are similar to pedestrian refuges, but are designed to make pedestrians turn toward traffic before crossing (encouraging eye contact and visibility).

For further information on this and other pedestrian safety treatments, see the PEDSAFE’s list of countermeasures: <http://www.pedbikesafe.org/PEDSAFE/countermeasures.cfm>

Pedestrian-refuge islands and medians are one of FHWA’s proven safety countermeasures. More information at <https://safety.fhwa.dot.gov/provencountermeasures/>

COST: Depends on design and signalization: \$-\$\$



Road Diets

Road diets are often conversions of four-lane undivided roads into three lanes (two through lanes and a center two-way left-turn lane (TWLTL)). Other road reconfigurations are also possible.

MYTHS

- Lane reductions will significantly reduce roadway capacity and cause further congestion. (See Mission, Kansas case study on page 35.)

BENEFITS

- Reduces potential collision points along with the number and severity of crashes; can improve overall safety for all modes by 30 percent.
- Restriping existing right of way during resurfacing to reduce lanes (as shown above) is a low-cost way to incrementally build a bicycle network through bike lanes.
- Motor vehicle level of service is either unaffected or improved for volumes of 15,000–20,000 ADT, as a left-turn lane in both directions or a median with left-turn pocket lanes improve flow rate.
- Provides more space for other modes of travel by freeing right of way for sidewalks, turn lanes or medians, landscaped pedestrian buffers, and/or bicycle lanes.
- Reduces crossing distances for pedestrians and allows space for medians or islands for easier and safer crossings.
- Improves speed-limit compliance during most times of use, as reducing road to one lane in each direction allows prudent drivers to set the speed. This benefit is less effective during off-peak times.
- Added medians and bicycle lanes provide motorist and emergency responders with necessary space to maneuver.
- Benefits neighborhood context through decreased speeds, making for quieter, more comfortable neighborhoods.

Road diets are one of FHWA's proven safety countermeasures.

More information:

safety.fhwa.dot.gov/provencountermeasures

safety.fhwa.dot.gov/road_diets/guidance/info_guide

safety.fhwa.dot.gov/road_diets/desk_ref

COST: Thermoplastic Markings/Signage: \$
Medians, Refuge Islands: \$\$-\$\$\$

Mission, Kansas — Johnson Dr. road diet from Roeland Dr. to Nall Ave.

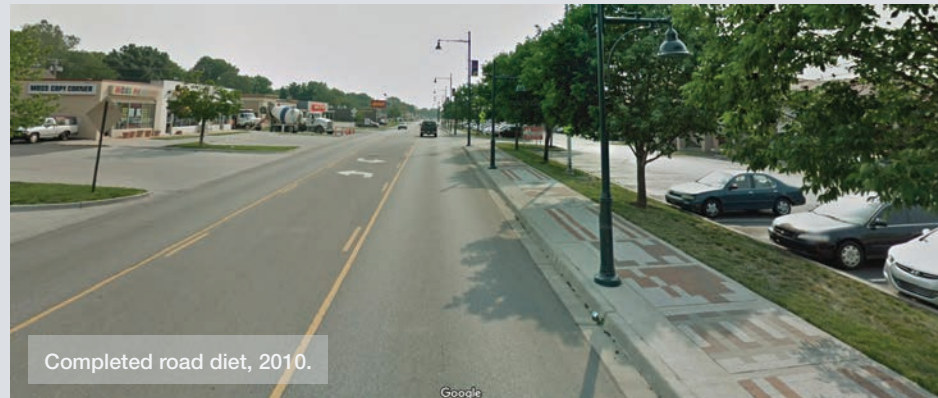
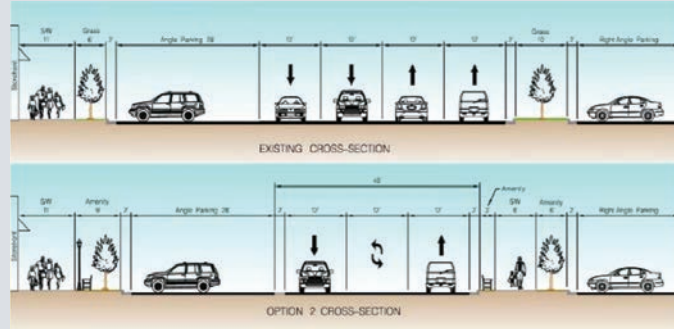
The implemented road diet on Johnson Drive accommodates traffic volumes, allows safer vehicle turning movements, adds a sidewalk, improves pedestrian crossings, and contributes to community character. This project combats the myth that lane reductions will significantly reduce roadway capacity and cause further congestion.

While most public feedback during project development was positive and supportive, some concerns were raised, including:

- “Less lanes means less traffic, this will kill business.”
- “With only one lane of moving traffic, customers will not be able to back out of parking stalls.”
- “We sell beer, gas, rakes and mulch. My customers would never walk to my store.”
- “If we want to slow down traffic, all we have to do is have police write more tickets.”
- “Why do we need sidewalks and bike facilities? Nobody walks or rides bicycles anyway.”
- “The traffic simulation model is not accurate — engineers who modeled it have never seen Johnson Drive during rush hour.”
- Traffic counts are wrong and underestimate real traffic.”
- “Reduction in lanes of street will lead to gridlock.”
- “That may have worked in another city, but it won’t work here because...”
- “Emergency vehicles will not be able to get through and kids in ambulances will die.”
- “You must have sold your soul to the devil!”

The reconstructed road has been functioning for about a decade and these dire predictions have not come true. Traffic flows well and post-construction public feedback has been positive. Staff involved with this Johnson Drive project shared these recommendations and suggestions:

- Educate, educate, educate.
- Use traffic simulation modeling.
- Listen to pros and cons.
- Engage all sectors of the community — residents and businesses.
- Be patient.



Kansas City, Missouri — Road diet ordinance

In December 2014, Kansas City, Missouri adopted Ordinance #140982, which directed staff to conduct a road diet analysis of undivided four lane streets. The analysis determined the suitability of converting these streets into reduced lane streets via a restriping and/or resurfacing program. Staff based on their study on two main criteria — average daily traffic and peak hour traffic.

Road diets completed in Kansas City, Missouri include:

- Leeds Trafficway from Stadium Dr. to Emanuel Cleaver II Boulevard
- E. Gregory Boulevard from Oldham Road to Cleveland Avenue
- N.E. 108th Street from Smalley Avenue to Cookingham Drive
- N.E. Barry Road from Kenwood Avenue to Highland Avenue
- Grand Boulevard from 5th Street to 20th Street
- N Highland Avenue from Vivion to NE 46th Street

The restriped segments typically included two lanes plus a center turn lane, leaving room on the sides for bike lanes, buffered bike lanes, walkways, and/or bus turnouts. Many road diets were completed during the normal street resurfacing cycle, which eliminated the need to spend additional funds to complete the projects. This cost-effective solution increases safety for vehicles, pedestrians, bicyclists and other roadway users. In 2016, this project was honored as a Sustainable Success Story by MARC's Academy for Sustainable Communities.



Grandview — Main Street road diet

Grandview's Main Street Improvement Project was a four-phase effort that extends from the West Frontage Road of Interstate 49 to the Kansas City Southern Railroad just east of 8th Street. Main Street improvements have emphasized walkability and the right-sizing of streets using complete street and road diet concepts.

With a goal of driving retail revitalization in the city, Main Street has led the way to more than \$375 million in major investment in just three years. These investments have led to more jobs and nearby services for the people



of Grandview. The improvements themselves have emphasized low-impact construction, including landscape designs that use native plant species to handle stormwater sensibly. Narrow and reduced lanes, along with wide, comfortable sidewalks have created a new street that is pedestrian-friendly and environmentally responsible. In 2016, this project was honored as a Sustainable Success Story by MARC's Academy for Sustainable Communities.



Bicycle Lanes

BENEFITS

- Increases total capacity of streets carrying mixed bicycle and motor-vehicle traffic.
- Addition of bicycle lanes benefits motorized users by providing emergency pull-over space and oversized vehicles with larger turning clearance.
- Indicates a preferential or exclusive space for bicycle travel on the street, and protects bicyclists from high-speed traffic.
- Serves to create a more obvious and continuous bicycle route or network, both for recreation and downtown or business-district trips.
- Provide benefit to pedestrians by adding a buffer space between themselves and moving traffic.
- Typical bicycle-lane striping on both sides of the street costs around 5 percent of total construction costs. Some of these costs may be defrayed by reducing lanes widths by 1 foot, where allowable, as this can save around 2 percent of total costs only.

There are numerous types of treatments that can benefit cyclists in addition to bicycle lanes. These include sharrows, bicycle boulevards, bicycle boxes and many more. For a more full list of treatments, please refer to the NACTO Urban Bikeway Design Guide: nacto.org/publication/urban-bikeway-design-guide

Source: National Association of City Transportation Officials Urban Bikeway Design Guide

Source: National Complete Streets Coalition. 12/1/2011. *Tackling the Question: Will Complete Streets Cost Too Much?*

COST: Restriping only: \$
Road reconfiguration / widening: \$\$-\$\$\$

Sidewalks with Landscape Strips (Buffer Zones)

BENEFITS

- Design options include buffering with landscaping, parking or cycling lanes.
- Buffer zone of grass, trees or other vegetation of 4–6 feet can greatly enhance the pedestrian experience and add a sense of safety from moving traffic.
- The buffer makes it significantly easier to meet Americans with Disabilities Act requirements for accessible sidewalks by providing space for curb ramps, sloped driveway aprons and obstacles (signs, trees, poles, utilities, and other necessary street furniture).

Source: National Complete Streets Coalition. 12/1/2011. *Tackling the Question: Will Complete Streets Cost Too Much?*

COST: \$-\$\$

From one example, typical minimal sidewalks (assume 5 feet) on both sides of the street cost around 3 percent of street construction costs only (not including planning, design and land fees). Some of these costs may be defrayed by reducing lanes widths by 1 foot where allowable, as this can save around 2 percent of total construction costs only.**

** National Complete Streets Coalition. 12/1/2011. *Tackling the Question: Will Complete Streets Cost Too Much?* – example from Charlotte, NC.



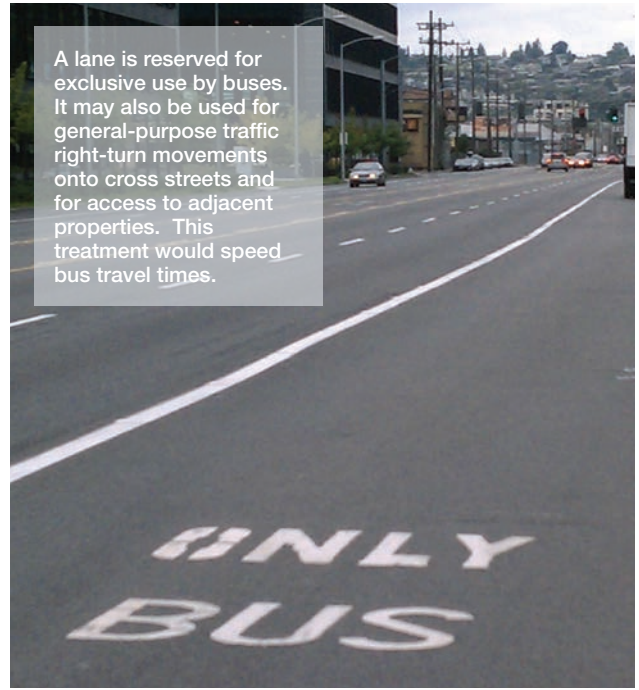
Queue-Jump Lanes

At signalized intersections, a bus is provided with a lane, adjacent to general-purpose traffic, and an advanced green signal indication to bypass congested areas. Buses “jump” the queue of waiting cars.

BENEFITS

- Provides additional travel-time savings for transit vehicles at intersections.
- Can be provided in shared right-turn lane (see photo above).
- 5–25 percent reduction in travel times at busy signals.

COST: \$–\$\$



A lane is reserved for exclusive use by buses. It may also be used for general-purpose traffic right-turn movements onto cross streets and for access to adjacent properties. This treatment would speed bus travel times.

Dedicated Bus Lanes

BENEFITS

- Provides transit service reliability in areas with traffic bottlenecks or high peak-period congestion.
- Can reduce transit travel times by 5–25 percent.

Shared bike and bus lanes

In addition to being used for transit vehicles, bus lanes in some cases can also serve as a bicycle facility. Cyclists sometimes prefer to ride in bus lanes as transit vehicles may be more predictable and more responsive to cyclists in the road. “Examples currently include Tucson, Ariz.; Madison, Wis.; Toronto, Ontario; Vancouver, British Columbia; and Philadelphia, Penn. Often the lanes are also able to be used by taxis and right-turning vehicles. Because buses and bikes will pass each other in these lanes, lane width is an important issue. The city of Madison likes to use 16-foot lanes to allow a clear 3 feet of separation between the bicyclist and a passing bus, but if either bus or bike traffic is light and space is limited, the width of a shared lane might be 14 feet or even less.”

Source: Pedestrian and Bicycle Information Center

COST: Restriping and painting: \$
Road reconfiguration / widening: \$\$–\$\$\$\$



Leading Pedestrian Interval (LPI)

An LPI is a pedestrian safety measure used at signalized intersections that provides a “walk” signal several seconds before the green traffic signal. The “walk” signal enables a longer duration for pedestrians to cross, while making them more visible to drivers (particularly those making turns).

BENEFITS

- Can reduce pedestrian-vehicle collisions caused by turning vehicles.
- Relatively low cost compared to making physical design changes.
- Can often be implemented without causing any significant delay to other users, for example: when crossing wide major streets, pedestrian clearance intervals are much longer than the time needed to clear vehicle traffic on the cross street; the LPI merely moves this “extra” time to the beginning of the green interval.

For additional information, see Chapter 4E (Pedestrian Control Features) of the Manual on Uniform Traffic Control Devices <http://mutcd.fhwa.dot.gov/HTM/2003r1/part4/part4e.htm> or visit the Pedestrian Signals page at www.pedbikeinfo.org/planning/facilities.cfm

COST: Signal reprogramming: \$
New signals: \$-\$\$

Accessible Pedestrian Signals (APS)

APS are devices that communicate information about pedestrian timing in non-visual formats, such as audible tones, verbal messages, and/or vibrating surfaces. (MUTCD)

APS are known by different names in different countries:

- Acoustic signals
- Audio-tactile signals
- Audible pedestrian signals
- Audible traffic signals
- Audible pedestrian-traffic signals
- Audible crossing indicators

BENEFITS

- Allows pedestrians to more accurately judge beginning of “walk” phase of signal, reducing delay for all pedestrians and even other users.
- Provides access for pedestrians with hearing and visual impairments.

A wealth of information can be found on the APS website: www.apsguide.org

COST: \$-\$\$



Bioretention and Bioswales

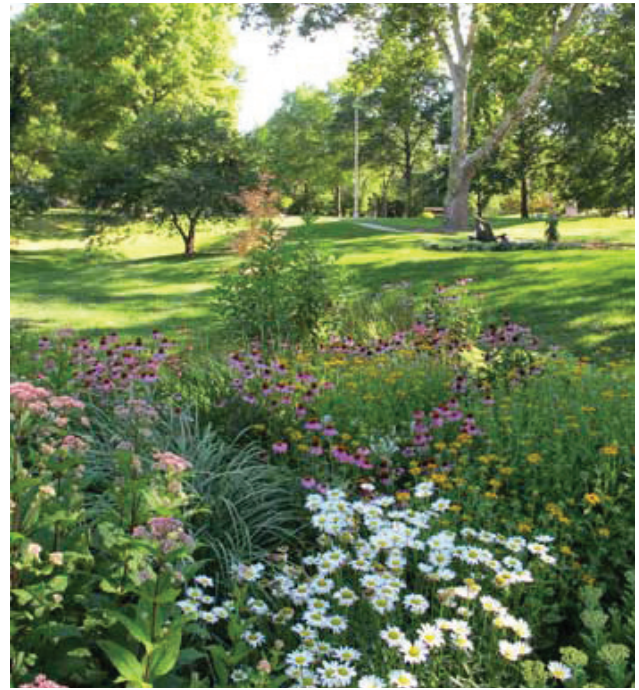
Bioretention areas are shallow surface depressions planted with carefully selected native vegetation to capture and treat stormwater runoff from impervious surfaces. Bioswales are shallow stormwater channels that are densely planted with a variety of vegetation designed to slow and filter stormwater runoff.

BENEFITS

- Stormwater runoff volume reduction
- Moderate peak rate control
- Water quality improvement
- Enhance site aesthetics and habitat
- Air quality and climate benefits

For additional information, see Chapter 7 of the Low Impact Design Manual for Michigan: <https://www.semco.org/desktopmodules/SEM-COG.Publications/GetFile.ashx?filename=LowImpactDevelopmentManualforMichiganSeptember2008.pdf>

COST \$



Native Plants

Native vegetation has significant root systems that promote runoff infiltration and uptake. Native grow areas work well where roadway runoff is directed via sheetflow. Open areas that have been traditionally managed as turf may be easily converted to native plant grow areas. These may include large highway medians or linear vegetated areas along local streets.

BENEFITS

- Low long-term maintenance
- Stormwater runoff volume reduction
- Water quality improvement
- Moderate peak rate control

For additional information, see Chapter 7 of the Low Impact Design Manual for Michigan: <https://www.semco.org/desktopmodules/SEM-COG.Publications/GetFile.ashx?filename=LowImpactDevelopmentManualforMichiganSeptember2008.pdf>

COST: \$

EVALUATION TOOLS AND FACTORS

As part of the street-design process, communities employ numerous tools and evaluation practices that are frequently used to help determine the type of roadway cross section that is ultimately built. These tools are important in their ability to help communities build appropriate transportation facilities. However, different interpretations of these tools will result in widely different results, and overreliance on any one tool can result in streets that do little to support community values. The following categories include various tools and factors that can be used to help quantify the implementation of complete streets. These tools are examples that can be used to either quantify or provide a basis for incorporation of a complete streets approach to a specific project or a more general street network.

Project Level (Intersection or Corridor) Tools

Level of Service

Level of service (LOS) is the most widely used performance metric to evaluate roadway performance for motor vehicles and often is the metric that triggers roadway expansion. Typically, communities specify an LOS grade that they desire to maintain at intersections or along corridors. In many cases, an LOS standard of C or D is used, which often results in motor vehicles being prioritized over other modes. The end results are often wide streets and intersections designed for high vehicle volumes to the detriment of transit users, bicyclists and pedestrians.

In addition to motor-vehicle LOS, level of service can be measured for other modes. The 2010 Highway Capacity Manual includes a Multimodal Level of Service (MMLOS) methodology,¹ which can be used to measure facility design for motor vehicles, bicycles, pedestrians and transit. While this methodology does incorporate all modes, aligning with complete streets principles, it has the drawbacks of requiring extensive data collection, which may increase the overall burden of implementing complete streets. In addition, the pedestrian and bicycle portions of MMLOS primarily focus on roadway segments and don't provide a full picture of challenges for these non-motorized users at intersections and other street crossings. Generally speaking, MMLOS analysis can be very useful, but it has high requirements in terms of inputs and needing the right network to be effective.

The best way to use MMLOS is identify how a proposed project has a positive or negative effect on pedestrians, bicyclists, motor vehicles and transit. This can help reduce the likelihood that a road construction project will negatively impact non-motorized users, as many widening projects have done in the past. If MMLOS is not used, a preferred approach to continuing to use motor-vehicle

LOS is to relax standards on what LOS levels are acceptable (e.g., accept LOS D instead of C, or LOS E instead of D) in situations where other modes should be prioritized, allowing streets to be designed based on local priorities to accommodate all modes. An example of this approach is San Jose's Protected Intersections Policy, in which projects in transit-oriented corridors and districts are allowed to exceed LOS standards if they provide multimodal programs and projects to reduce traffic congestion, encourage use of other modes, and reduce parking demand.

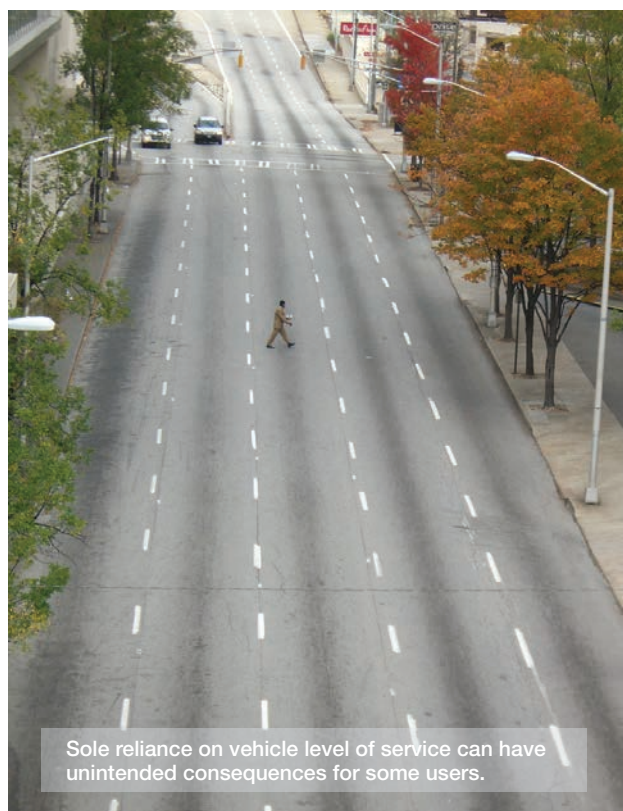
Illinois Pedestrian/Bicycle Audit Tool²

The Illinois pedestrian/bicycle audit tool, known as the Complete Streets Audit scoring methodology, is used to rate street design for pedestrian and bicyclist accommodation appropriate for the particular street type. The tool was developed by the League of Illinois Bicyclists.

Scoring is done in four categories, including pedestrian travel along a road, bike design along a road, crossings and other context-sensitive design factors. A total of 100 points is possible. The point system is flexible, allowing for proactive design to achieve additional points, as well as deduction of points for substandard design or nullification of points for significant network gaps.

For example, points are awarded for design and maintenance details, such as sufficient buffer strips, landscaping,

² Barsotti, Ed, Stephen Hunt, and Christopher Trigg. League of Illinois Bicyclists. "Complete Streets" Road Design Audits for Bicycle and Pedestrians. rideillinois.org/wp-content/uploads/2015/10/CompleteStreetsAudit.pdf



¹ (2008). NCHRP Report 616: Multimodal Level of Service Analysis for Urban Streets. Washington D.C.: Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_616.pdf and the 2010 Highway Capacity Manual

pedestrian signals, stop lines at crosswalks, refuge islands or corner islands, crosswalks and ADA ramp compliance. For cycling, points are given for pavement markings, signs, bike lanes, proper striping at intersections, better lane positioning to avoid car doors, paved shoulders, wide outside curb lanes with appropriate space for passing bicyclists, speeds and daily traffic volumes, and sidepaths.

In addition to flexibility, the benefits of this tool include: it can be used by agencies in the early stages of a project to weigh design options; it references recognized guidelines familiar to planners; and it is sensitive to proactive design measures. For example, the tool references the FHWA guidelines for sidewalk installation, AASHTO guidelines, bicycle LOS guidelines, and the DOT's bicycle policy. Testing the tool on larger roads and residential streets found more sensitivity to proactive design measures than to street-type attributes (such as traffic counts), which suggests that the tool is an effective measure of design policies rather than road classification. As expected, results show higher scores typically correlate with agencies that view bicycle and pedestrian projects as an integral part of a project, while low scores apply to agencies which deem non-motorized user provision as optional.

Project Checklists and Guides

With various projects, one approach is to develop a comprehensive complete streets checklist to set an early expectation that all users will be accommodated. A complete streets checklist could be interjected in various places of the project-delivery process, including the project planning,

programming, scoping and final design segments. Checklists can play multiple roles. In Seattle, the city's complete streets checklist serves as a means of developing a comprehensive profile of the project and ensuring that all other planning priorities (bicycle, pedestrian, transit) are incorporated into the project. In the San Francisco Bay Area, the Metropolitan Transportation Commission's Complete Streets Checklist requires justification if a proposed project does not provide accommodation or any additional amenities for bicyclists or pedestrians. Examples of these checklists are referenced in the Appendix.

Pilot Projects

Pilot projects are not necessarily a new concept, but the term and the practice have gained renewed interest in recent years as cities across the country are conducting temporary trials of new treatments to evaluate their ability to achieve specific goals or outcomes. Pilot projects can vary in scale and scope. However, the primary theory behind a pilot project is that it is a trial that can be easily installed and removed within a relatively short period of time (six to 12 months). It is also assumed that pilot projects would be evaluated in interim periods to determine any impacts, positive or negative. Pilot projects have led to permanent installations that have benefited pedestrians, cyclists and transit users.

Pilot projects have the advantage that they can be implemented relatively quickly, do not require extensive quantitative review, and can help spur innovative treatments that may be better suited for unique environments.

PILOT PROJECT: Better Block KC

In recent years, rapid urban prototyping initiatives have helped Kansas City visualize the potential for walkable, human-centered neighborhoods. In cooperation with the city, a design team and local volunteers installed temporary bollard cones, traffic signs, seating, tape, community artwork, plants, and other materials to create enhanced streetscapes. The materials remained in place during the events and were easily removed. The short-term process allowed communities to reimagine their streets at a fraction of the cost of traditional planning initiatives.

See past projects at www.betterblockkc.org



PILOT PROJECT: Mill Street in Kansas City, Missouri

In the Westport neighborhood of Kansas City, Missouri, Mill Street near Westport Road accommodates a high number of pedestrians. To improve the pedestrian experience and overall safety, an amenities zone and on-street parking were added, which buffered pedestrians from moving traffic. The existing lanes were reduced to 10-foot lanes from the previous 14-foot lanes and the center turn lane was removed. In the project's first stage, paint and traffic bollards delineated the new design and sidewalks remained unchanged while city staff monitored traffic operations in the area. Further evaluation will determine if the project would be feasible in the long term, and whether the second, more permanent phase of the project can be implemented. This phased approach allows the city time to evaluate the treatment and develop appropriate permanent solutions.

NETWORK LEVEL TOOLS

Network Expansion/Retrofit Mandates

While not rooted in specific corridor evaluation or analysis, some cities have turned to specific quantifiable construction and/or retrofit goals for their transportation network. Some communities have gone to the extent of setting mandates and objectives in terms of expanding their transportation network to more fully include other modes. Mandates typically include a time horizon and a specific target for physical expansion/improvement, and can often be found in a community's transportation master plan or similar planning document. While non-scientific, these types of goals or ultimatums provide a quantifiable policy that justifies the construction or implementation of complete streets.

Updated in 2011, Charlotte, N.C.'s Transportation Action Plan has been cited as a model for clearly defining its goals for sidewalk and bikeway expansion. By 2015, the city "will complete at least 150 miles of bikeway facilities" and will go on to create "an additional 350 miles by 2035." Furthermore, the plan goes on to state "The city will construct over 375 miles of new sidewalks by 2035."³

³ Charlotte Transportation Action Plan. 2011. Objectives 2.6 and 2.7 referenced.

Further west, the city of Phoenix has set a target for adding 100 additional miles of sidewalk along arterial or collector streets and to review at least 40 street segments for consideration of road diets. These targets are intended to be met by 2016.⁴ Finally, the city of Seattle's Bridging the Gap initiative, funded through a voter-approved tax levy, made a goal to build 117 blocks of new sidewalks, repair or restore 144 blocks of sidewalk, and restripe 5,000 crosswalks between 2009 and 2018.

Status as Bicycle Friendly or Walk Friendly Community

Bicycle Friendly or Walk Friendly Communities are designated by the League of American Bicyclists and the Pedestrian and Bicycle Information Center, respectively. Both have an application program that is intended to encourage and recognize communities that are working to provide safe, comfortable and accessible facilities for walking and bicycling. The communities awarded status as a Bicycle Friendly or Walk Friendly community can claim the honor, title and positive press. This accolade can be a strong motivator for communities to take action to improve

⁴ Phoenix Pedestrian Safety Action Plan. Referenced through the FHWA. http://safety.fhwa.dot.gov/ped_bike/ped_focus/expedaction/phoenix/

EXAMPLE OF STREET PRIORITIZATION MAP: LOUISBURG, KANSAS

Funded by a Planning Sustainable Places grant, the city of Louisburg, Kansas, worked with SWT Design to develop a simple Prioritization Map to help inform its implementation process. Access to destinations and feedback from public engagement guided the prioritization process of streets that warrant complete streets treatment.



As illustrated in this photo, one jurisdiction decided not to extend a portion of sidewalk, requiring pedestrians to cross at this curve in the road.

their transportation networks for all modes and implement complete streets projects. In the Kansas City region, three communities have achieved either Bicycle Friendly or Walk Friendly Status as of 2018.

- Kansas City, Missouri (Bronze, Bicycle Friendly Community)
- Shawnee, Kansas (Bronze, Bicycle Friendly Community)
- Lee's Summit, Missouri (Silver, Walk Friendly Community)

Street Prioritization Map

Given the continually limited funding that exists for transportation improvements, communities are most interested in ensuring that their funds are spent in a way that ensures high return on investment. As an approach to this, some cities are prioritizing their complete streets investments through a comprehensive master plan map that incorporates multimodal priorities, such as key transit routes, bicycle priority streets, walking streets and high-crash intersections. While creating such a document does require up-front investment and analysis, it provides a clear and transparent vision for street improvements and highlights where investment in complete streets could provide the greatest benefit. Going through the process allows departments to share their collective priorities, streamlining the process and aligning work so that each project creates benefits for multiple modes.

For communities interested in creating such a prioritization map, some cities have developed methodologies that help identify key corridors and locations for improvements. As an example, San Francisco initiated its WalkFirst program⁵ in 2011 to develop a tool that would help deploy limited capital dollars for pedestrian improvements in a strategic (rather than ad hoc or opportunistic) manner by identifying key locations for pedestrian improvements using a wide array of factors, including vehicle speeds, high-pedestrian activity centers, existing street network, and crash history, among other inputs. However, based on this concept, similar results can be achieved by doing simple overlays using basic knowledge, such as bicycle networks, vehicle volumes, key landmarks and crash history.

⁵ WalkFirst Program. San Francisco Planning Department. www.sf-planning.org/index.aspx?page=2568



Additional Considerations

Other important factors to consider in developing designs and design standards with complete streets include:

- **Consistency across different jurisdictions to ensure network completeness.** A chain is only as strong as its weakest link, and for this reason, a complete streets approach is best implemented consistently even when a corridor goes through multiple jurisdictions. Many have likely seen the uneven results of lack of jurisdictional communication or awareness of street design standards and investment priorities across city or county lines. Cities, counties and states can work together to ensure that regional networks for all users will be created over time.

Initial coordination and collaborative planning will result in a better end product and can also lay the foundation for further collaboration that reduce overall operational costs (e.g., shared maintenance agreements documented as part of MOUs). Steps to establish these lines of communication can be initiated at the regional level or can be as simple as inviting a neighboring jurisdiction to an initial design charrette or project scoping meeting to ensure that a project achieves mutual goals. MARC's Complete Streets Policy can serve as a justification and impetus for increasing cross-jurisdictional communication and coordination when it comes to designing, building and maintaining streets that touch many different communities.

In addition, the regional long-range transportation plan, *Transportation Outlook 2040*, calls for the incorporation of performance measures to evaluate and prioritize capital projects submitted by local jurisdictions. These performance measures will emphasize the degree to which a project improves multimodal access and reduces vehicle miles traveled and greenhouse gases as part of a complete streets approach. They could also consider the degree to which the project reflects cross-jurisdictional coordination where relevant so that the complete streets projects are implemented consistently throughout entire corridors.

- **Ensure that design standards/guidelines are clear to its users.** In many communities, the primary parties constructing streets are private developers. Street design guidelines and standards should be consistent and adopted for use by both public agency officials, as well as private developers.
- **Exceptions.** Exceptions are typically part of a complete streets policy and are important to provide design flexibility since treatments do not need to be uniformly applied across all environments. An exception will typically allow select projects to move forward without complete streets components integrated into the design. Types of allowable exceptions should be clearly defined and should not be an "easy way out." Exceptions should require approval at a senior level and also should be kept on record and publicly available.

FURTHER READING AND RESOURCES

General Street Design

- American Association of State Highway Transportation Officials (AASHTO) A Policy on the Geometric Design of Highways and Streets 5th Edition 2004 (Green Book)
- AASHTO Roadside Design Guide, 4th Edition. 2011
- Federal Highway Administration (FHWA), Manual on Uniform Traffic Control Devices (MUTCD), 2009
- Transportation Research Board Highway Capacity Manual 2010

Accessible Facilities Design

- Accessible Design for the Blind
www.accessforblind.org/aps_abt.html
- Accessible Pedestrian Signals – A Guide to Best Practices
www.apsguide.org/index.cfm
- ADA Accessibility Guidelines for Buildings and Facilities (ADAAG)
- Checklist for Accessible Sidewalks and Street Crossings
www.pedbikeinfo.org/cms/downloads/Checklist_Accessible_Sidewalks_Crossings.pdf
- Draft Guidelines on Public Rights-of-Way (PROWAC), Access Board www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way
- Great Plains ADA Center, www.gpadacenter.org

Bicycle and Pedestrian Facilities

- Kansas City Metro Chapter of APWA, Local Bicycle Facility Design Guidance, 2012 [kcmetro.apwa.net/file/Specifications/2012_MARC_Local_Bikeway_Best_Practices.pdf](http://kcmetro.apwa.net/content/chapters/kcmetro.apwa.net/file/Specifications/2012_MARC_Local_Bikeway_Best_Practices.pdf)
- AASHTO Guide for the Development of Bicycle Facilities, 4th Edition 2012
- Designing Walkable Urban Thoroughfares: A Context Sensitive
- Approach: An ITE Recommended Practice
- Lee's Summit Traffic Safety Program – Traffic Calming Toolbox cityofls.net/Public-Works/Traffic-Transit/Neighborhood-Traffic-Safety-Program
- National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide, www.nacto.org

Transit

- Pace Development Guidelines (Chicago area)
www.pacebus.com/pdf/development_guidelines.pdf
- Rethinking the Suburban Bus Stop – Pittsburgh, PA
actapgh.org/wp-content/uploads/BusStopBook2LOW.pdf
- Transit-Friendly Streets: Design and Traffic Management Strategies to Support Livable Communities
onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_33.pdf

Local Guides

- MetroGreen Plan
www.marc.org/Environment/MetroGreen-Parks
- Best Management Practices for Stormwater Quality
www.marc.org/Environment/Water-Resources/Local-Government-Resources/Stormwater-Best-Management-Practices
- Clean Air Action Plan
www.marc.org/Environment/Air-Quality/Reports/Clean-Air-Action-Plan
- Eco-Logical Action Plan
www.marc.org/Transportation/Special-Projects/Regional-Initiatives/Linking-Environment-and-Transportation-Planning
- Greater Kansas City Regional Bikeway Plan
marc.org/Transportation/Plans-Studies/pdfs/KCRBP_Jan2015adopted_web.aspx
- MARC's Regional Forestry Framework
www.marc.org/Environment/Natural-Resources/Forestry/Regional-Forestry-Framework
- Regional Pedestrian Policy Plan
www.marc.org/Transportation/Plans-Studies/Transportation-Plans-and-Studies/Regional-Pedestrian-Policy-Plan



IMPLEMENTATION COSTS & MAINTENANCE

It is often the perception that complete streets will be costly to construct and maintain. Like any type of transportation project, the costs of construction can vary widely depending on the type, environs and level of amenity of a facility. Not providing safe and adequate facilities for roadway users also carries a cost. Unless both of these costs are considered, one is unable to make a full assessment about whether complete streets are more expensive than a conventional street project that doesn't accommodate all modes. This section provides a general framework for complete street costs and presents cost-effective strategies for implementing complete streets. This section also discusses maintenance needs and considerations. The handbook presents few project costs, as these were wide-ranging across numerous surveyed complete streets projects.

An AAA study on the comprehensive costs of crashes compared to traffic congestion found that crash costs per person exceed the costs of congestion. In the Kansas City region, traffic crashes cost the area more than five times as much as traffic congestion.*

* The 11 comprehensive cost components in this study include property damage; lost earnings; lost household production (non-market activities occurring in the home); medical costs; emergency services; travel delay; vocational rehabilitation; workplace costs; administrative costs; legal costs; and pain and lost quality of life.

Source: AAA. 2011. *Crashes vs. Congestion – What's the Cost to Society?* http://newsroom.aaa.com/wp-content/uploads/2011/11/2011_AAA_CrashvCongUpd.pdf

USE OF TRANSIT FUNDS

| | |
|--|-------------------------|
| Annual cost of paratransit service for a daily commuter: | \$38,500 |
| One-time cost of making a general transit stop accessible: | \$7,000–\$58,000 |

Source: Maryland Transit Administration

A 2010 study found that the public cost of a pedestrian-related trauma injury (resulting in a hospital visit) was more than \$70,000, and more than 75 percent of this cost came from public funds.*

* Dicker, A. Rochelle and Dahianna Lopez, et. all. Cost-Driven Injury Prevention: Creating an Innovative Plan to Save Live with Limited Resources. 2011. Journal of Trauma Injury, Infection and Critical Care. Volume 70, Number 4. April 2011.

NATIONAL RECOGNITION

Two metropolitan cities were recognized by the National Complete Streets Coalition and Smart Growth America for using a complete streets approach to strengthen their economy.

MISSOURI: GRANDVIEW

A three-phase, \$3.1 million project to reinvigorate Main Street, improved capacity and the quality of environment for pedestrians along several blocks. The number of people traveling in the area by all modes increased: Pedestrians by 900 percent; bicyclists by 40 percent; automobiles by 20 percent, although its level-of-service grade (B) did not change. It was also safer, as evidenced by 90 percent fewer crashes after the changes. Residents responded positively to the new street design, with 85 percent of surveyed residents reported being satisfied or very satisfied with it.

MISSOURI: LEE'S SUMMIT

Lee's Summit reconstructed several streets within its downtown district, improving sidewalks and adding lighting and street trees, to calm traffic and encourage more pedestrian activity. The city improved sidewalks and added bump-outs, streetlights, benches, and planters. Along Lee's Summit main street, Third Street, automobile traffic increased (13 percent), as did crashes in absolute terms by 6 percent. Crashes involving injuries, however, fell by 33 percent. Acting as a catalyst for redevelopment, Downtown Lee's Summit estimates 10 net new business, 58 net new jobs, and nearly \$3.5 million in private investment has occurred since the changes. The total cost of the project was \$10.5 million, which included utility upgrades.

Source: Anderson, Geoff, and Laura Searfoss, project leads. *Safer Streets, Stronger Economies*. Smart Growth America, 2015. *Safer Streets, Stronger Economies*, smart-growthamerica.org/resources/evaluating-complete-streets-projects-a-guide-for-practitioners/?download=yes&key=40589251.

CONSIDERING COSTS

If considering only the financial bottom line, it may be true that the design process and construction of an elaborate complete streets project is more costly compared to the status quo. However, these initial costs are likely to provide substantial long-term benefits and cost savings that should be considered. There are numerous complete streets treatments or modifications that can be accommodated within existing city budgets. Most complete streets projects are not elaborate projects, but simple changes to existing streets. Factors that should be considered in discussions of complete streets costs include:

- Complete streets is an overarching approach to planning and design that touches all projects and is achieved within the context of the transportation budget by

reprioritizing projects (and funding) to ensure the most “bang for the buck.”

- Costs would not necessarily be an add-on; all street planning begins with the notion that many users will be present.
- The costs of retrofitting a facility (e.g., moving curbs, expanding bridges, etc.) will be more expensive compared to accommodating all users during initial construction.
- Any additional costs (through the design process) would result in facilities that better meet community needs and/or goals, such as improved public health and safer streets for children.
- Some complete streets design features may in fact result in lower construction costs, such as road diets that reduce pavement width. Others can be done as part of normal operations, and thus add no costs at all, such as

MISSOURI



The majority of Missourians support spending 25 percent of transportation funds on biking and walking facilities, even if that reduces the total number of projects.

Source: NCSC, MODOT

retiming traffic signals. Such measures provide multi-modal options that may help reduce congestion.

- Complete streets treatments may add lasting value by providing transportation choices, and are important to serve existing users.
- Over time, as the complete streets design process becomes more routine, it is likely that it will become more streamlined, delivering higher-quality outcomes without significant extra effort.



Complete streets treatments can take advantage of underused pavement and right of way.

Opportunities to take advantage of existing projects for cost savings

1. Repaving projects
 2. New development
 3. Rethinking needs — building narrower roadways for cost savings
 4. Aligning or consolidating nearby projects (more efficient interagency coordination)
 5. General utility work, communications wiring, general street maintenance
- Any complete streets decision not made on accommodation for particular users at the time of retrofit or new build will leave that corridor segment incomplete until the next cycle when that street can be reconsidered again in a capital improvement process.
 - Maintenance costs for pedestrian, bicycle and transit amenities need to be considered, but are likely to be a small proportion of the overall maintenance and operations costs of a street. These types of facilities have less constant wear and tear than roadways that bear the burden of vehicle weight.
- Communities may begin by asking, “Can we afford to invest in complete streets?” but after further evaluation of the comprehensive lifecycle costs and community benefits, there is a general realization that “We can’t afford not to.”

INTERAGENCY COORDINATION

20th Street, Kansas City, Missouri

While replacing 100-year old water mains, the city of Kansas City, Missouri, implemented community-driven recommendations from the 20th Street Streetscape Plan. The new street operates with a reduced number of vehicle lanes, buffered bicycle facilities, bicycle intersection treatments, widened sidewalks and ADA updates. The new design incorporates stormwater BMPs such as bioswales to help manage stormwater runoff. The innovative stormwater management allows for natural uptake and transpiration by plants and infiltration through plant roots and soils. It also adds green space where none existed before. While providing much-needed upgrades to aged infrastructure along the corridor, the city was able to incorporate complete and green street solutions. In 2016, this project was honored as a Sustainable Success Story by MARC’s Academy for Sustainable Communities.

Johnson County, Kan. Automated Information Mapping System (AIMS)

Johnson County AIMS maintains spatial data relating to local utilities, allowing municipalities to coordinate transportation projects with utility infrastructure. More information can be found at aims.jocogov.org.

COSTS TO CONSIDER

In the previous section, several examples of potential costs for design treatments were presented. Again, these examples are intended to provide a rough estimate of potential design costs, but it is certain that costs will vary by project and location. Here are some additional examples of complete street costs that may be useful to initiate a discussion about complete street improvements.

- Some complete streets treatments costs can be minimal and be tied to staff time (e.g., signal retiming). Reported relative costs of complete streets treatments are consistently a small portion of overall project and/or transportation budgets (less than 5 percent).
- Numerous complete streets treatments can be easily bundled with other projects (e.g., retrofits that only require restriping and/or signage).
- More expensive street retrofits can be phased in over time or could be started as pilot projects.

COST-EFFECTIVE COMPLETE STREETS

As with any other cost expenditure, prior planning and coordination often result in the ability to achieve more project for less money. Complete streets projects are no different since cost savings can be obtained through aligning various project timelines or simply using low-cost, high-value treatments. Just as streets themselves serve many user types, they also are constructed (and reconstructed) to serve numerous non-transportation purposes. Street reconstruction may occur due to general utility relocation, water/sewage maintenance/modification, installation of high-speed internet cables, building construction, or general street maintenance or repaving. Any of these activities provides an opportunity to conduct street improvements at the same time, while generating economies-of-scale savings.

Opportunities to take advantage of existing projects for cost savings:

1. Repaving projects
2. New development
3. Rethinking needs — building narrower roadways for cost savings
4. Aligning or consolidating nearby projects (more efficient interagency coordination)
5. General utility work, communications wiring, general street maintenance



This complete streets treatment was done in phases. The first phase only required striping. As funding allowed, a second phase was installed that included a concrete median and curb extensions to reduce crossing distances.

Complete streets treatments can take advantage of underused pavement and right of way

Examples of high-impact and relative low-cost improvements include any type of restriping project. As an example, “A Washington, D.C., neighborhood used crosswalks and stop bars to show pedestrians are expected and all users should know this, and to communicate that the city cares about this neighborhood. This costs very little money and has a very big impact.”¹ Other types of restriping projects that can provide significant benefits include road diets and others that reallocate excess (or unnecessary) right of way to be used for bicycle lanes or pedestrian refuges through the narrowing of travel lanes or tightening curb radii with painted markings. Over the longer term, corridors can become more “complete.”

¹ Stefanie Seskin, State and Local Policy Manager, National Complete Streets Coalition, Tackling the Question: Will Complete Streets Cost Too Much? Webinar. December 1, 2011.

OPPORTUNITIES FOR IMPLEMENTATION



Lamar at 123rd Street

The City of Overland Park responds to opportunities where bicycle projects can be included as part of larger street projects. A key opportunity is the annual scheduling of street resurfacing projects. As specific street segments are identified for resurfacing, the recommendations of the city's Safe Bicycle Use Outreach Project Report are considered. Recommended bikeways have been included in many larger projects because of this process.

Source: City of Overland Park, Kansas. *Bicycling in Overland Park*. <https://www.opkansas.org/things-to-see-and-do/bike-and-hike-trails/bicycling-in-overland-park/#/>

Street projects can be completed in phases (see pilot projects). A phased process could first involve rudimentary striping and painting with the intention to evaluate the project within six months to a year. After evaluating usage and user experience, decisions could then be made to determine how to best use funds to further “complete” the project, or instead continue with the as-is treatment until a definitive decision can be made. It can also mean making multiple smaller fixes over time, such as first adding pedestrian countdown signals, then restriping crosswalks, and then adding bicycle facilities when the street is resurfaced later.

Finally, it should be mentioned again that with any complete streets project, perfect should not be the enemy of good. While communities should strive to achieve the best project that will accommodate users in the longer term, financial constraints are real and need to be considered. Incremental improvements, while not always ideal, do offer existing users an improvement over the status quo.

OLD AND NEW FUNDING SOURCES

Funding for most complete streets projects will come from traditional, mainstream sources. As the complete streets movement is becoming more prevalent, numerous funding sources are adapting to accommodate these types of projects. As an example, some funding bodies are invoking complete streets/multimodal checklists that either suggest or mandate that accommodations have been made for various transportation users to be eligible for funding. Some examples of

these project checklists can be found in the appendix and links are found in the additional resources of this section. While funding for most complete streets projects will likely come from traditional funding sources, there are new types of funding sources that have become available in recent years that could be used to fund complete streets improvements. Some of these new and existing transportation funding sources include:

- Funds programmed by MARC committees (<http://www.marc.org/transportation/funding.htm>):
 - Surface Transportation Block Grant Program (STP)
 - Congestion Mitigation and Air Quality (CMAQ) funds
 - Transportation Alternatives (TA) Set-Aside
- EPA Smart Growth Grants (www.epa.gov/smartgrowth/grants/index.htm)
- HUD Sustainable Housing Community Grants (<https://www.sustainablecommunities.gov/partnership-resources>)
- Safe Routes to Schools (<http://www.saferoutesinfo.org/>)
- State programs (<http://www.ksdot.org/index.asp> <http://www.modot.org/>)
- Transportation Investments Generating Economic Recovery (TIGER, www.dot.gov/tiger)

In addition to transportation funds, there are other potential innovative sources of funding for complete streets types of treatments, including local businesses and other related sectors such as the public health field. As an example, the Centers for Disease Control and Prevention has provided funding grants that can provide planning funds for complete streets-related projects. Other cities have tapped their local businesses and community organizations to help provide better accommodation for various street users. As an example, the Pavement to Parks program in San Francisco has helped increase amenities for pedestrians and bicyclists and overall public space by allowing organizations to build “parklets” on existing on-street parking spaces. These parklets have been funded by local businesses, residents, and even major corporations with permitting occurring through the San Francisco Planning Department.

MAINTAINING FACILITIES

While the primary intent of this document is to discuss the implementation of complete streets, proper upkeep and maintenance of those facilities should be considered from the very start. Maintenance of complete streets goes beyond just smooth pavement; it extends to the assurance that the facilities are actually functional for their intended users. Typical examples of poorly maintained facilities include excess debris, unfilled cracks and sidewalks that do not meet ADA requirements. In the Kansas City region, the possibility of snow warrants the need to determine how best to plow streets while also ensuring that bicycle lanes, sidewalks, and access to transit stops are maintained. Some aspects of complete streets may require additional long-term operations costs. For example, pavement width added for bike lanes could mean more pavement that needs to be maintained and replaced in the long term. On the other hand, implementing complete streets principles may discourage unnecessary road widening, thus reducing the long-term operations costs. Installation of sidewalks is another feature that will require additional maintenance costs. The actual amount of these additional costs vary based on location, and it may be important to estimate these costs along with the other costs of a project, and compare them to the benefits of complete streets.



This mobile parklet in Columbia, Missouri temporarily transforms two on-street parking spaces into a tiny park. The space is open to the general public for sitting and relaxing. Many local businesses saw a boost in sales while the parklet was operating.
www.komu.com/news/parklet-boosts-local-business-sales/

ADDITIONAL RESOURCES

Missouri Livable Streets Funding Sources

<http://livablestreets.missouri.edu/advocate/tools/>

National Complete Streets Coalition Costs Fact Sheet

<https://smartgrowthamerica.org/resources/cost-of-complete-streets/>

Pedestrian and Bicycle Information Center

<http://www.pedbikeinfo.org/planning/funding.cfm>

MARC Transportation Funding

www.marc.org/transportation/funding.htm



It is important to keep sidewalks and bicycle facilities clear of snow to prevent users from using the roadway (in traffic).

SEECCLICKFIX

SeeClickFix is a free online tool that is being used by many communities as a means to enable the general public to document community specific issues. One major benefit of the program is that it can be used to identify street maintenance issues. A great benefit of an online service such as SeeClickFix is that it enables smaller cities with limited resources to provide its residents and businesses with a public feedback tool similar to 311 in Kansas City and other larger cities, like Washington, D.C.; Chicago; and San Francisco. It is able to do so without requiring high levels of overhead for program maintenance or administration. The tool, in some ways, is even more effective than dial-in numbers because it provides an online record that is transparent for both contributors and viewers.

For more information, visit <http://seeclix.com>.



Poor maintenance or clearing can result in hazardous conditions for some road users.

COMMUNITY IMPROVEMENT DISTRICTS (OR CIDs)



CID staff pick up garbage along Broadway Blvd. in Kansas City, Missouri.

Community Improvement Districts (or CIDs) are useful local funding mechanisms that can assist in the upkeep and maintenance of street facilities, either directly or through funding. (Note that CIDs are sometimes called Community Benefit Districts, Property Business Improvement Districts, Business Improvement Districts, Maintenance Districts, or Special Assessment Districts).

CIDs are a kind of special benefit district that could provide a stable, long-term revenue source for streetscape improvements recommended in local street-design efforts. While general benefit services are funded through general revenue sources and are typically described as curb-to-curb services, special benefits are funded through non-public sources and deliver services from curb to property line.

Many CIDs have been formed in the Kansas City region, including in Martin City, Brookside, Downtown, River Market, Jazz District, Troost Ave, Waldo, Main Street, Independence Avenue and Broadway.

Services, projects and programs provided by local CIDs include:

- Clearing litter and debris from public rights-of-way.
- Snow removal from public walkways, including crosswalk and handicap areas.
- Removal of graffiti, stickers and illegal posters.
- Holiday lighting and decorating.
- Sidewalk cleaning.
- Maintenance of streetscape improvements, lighting, fountains, trees and landscaping.
- Downtown KC's Tree Well Adoption program.

COMMUNITY PARTNERSHIPS

Several cities have taken the approach of shared maintenance responsibilities where the city would help provide resources for streetscape improvements contingent on some community organization assisting with ongoing maintenance and upkeep. A few cities have taken this approach, including Seattle, Portland and Chicago. A likely institutional partner for this approach would be Community Improvement District, as described on page 50.

- **Portland:** As part of some streetscape improvement projects, the city of Portland requires neighborhood groups to sign agreements that they will take on some maintenance responsibility, such as clearing curb returns of curb extensions and cleaning trench drains.
- **Chicago:** The city of Chicago requires a local match from Business Improvement Districts to prioritize streetscape improvements.



An example of a well-maintained street with pedestrian and bicycle facilities in North Carolina.

SNOW REMOVAL

No matter how good the condition and connectivity of existing bicycle, pedestrian and transit infrastructure in the Kansas City region, the utility of this infrastructure is significantly diminished when snow or ice makes it unusable. In addition, the value of future investments in regional bicycle, pedestrian and transit infrastructure is undermined whenever this infrastructure is made unusable due to snow or ice. Common strategies to address this issue are described below.

Property owners' responsibility to clear sidewalks

The approach most commonly taken by cities in response to the problem of snow removal from non-motorized transportation facilities is to require property owners to clear snow and ice from sidewalks and paths directly in front of their buildings, or along their entire street frontage. Often, municipal codes specify a time after first snow fall, or after declaration of a snow emergency, within which all property owners are required to clear snow.

Madison, Wis.

Madison requires property owners to remove snow and ice from sidewalks in front of their properties by noon on the day after a significant snowfall (the city provides a mixture of sand and salt for public use in the removal of ice on public sidewalks and walkways). To ensure that compliance (and consequent pedestrian accessibility) is highest in the areas where residents most rely on walkways, the city concentrates enforcement efforts downtown, near hospitals, and in communities with a high share of elderly and/or disabled residents. Fines of \$109 for the first violation and \$172 for all subsequent violations in the same season are issued, with no warning, to property owners who fail to comply with the snow-removal ordinance.

Chicago, Ill.

The city of Chicago requires tenants or building owners to shovel sidewalks narrower than five feet within three hours of initial snow fall. No information regarding fines or fees was available at time of research.

Public agency responsibility to clear pedestrian/bicycle infrastructure and transit waiting areas

Bloomington, Minn.

The Parks Department of Bloomington, Minn., is responsible for removing snow from 250 miles of sidewalks and paths in the city. To efficiently use the city's five sidewalk snow-removal units during major winter storms, the department prioritizes the removal of snow from walkways and bikeways as follows:

First priority: School walking areas, heavily used wheelchair-accessible areas and high-use areas by main roads.

Second priority: Walks expanding out from the school and along major roads.

Third priority: Residential and industrial areas.

The Parks Department uses traditional v-plows to clear most sidewalks, but crews rely on snow blowers to clear deposits that are too high for v-plow removal.

Federally funded projects

Transportation projects built with federal funding must be maintained. Federal maintenance requirements include removal of snow, ice and debris from pedestrian facilities. For more information, refer to the FHWA memorandum on Snow Removal and Sidewalks Constructed with Federal Funding, www.fhwa.dot.gov/preservation/082708.cfm.



APPENDIX

ADDITIONAL RESOURCES:

Example Complete Streets Policy

Elements of an Ideal Complete Streets Policy

National Complete Streets Coalition

<https://smartgrowthamerica.org/resources/the-ten-elements-of-a-complete-streets-policy/>

Evaluating Complete Streets Policies

National Complete Streets Coalition

<https://smartgrowthamerica.org/program/national-complete-streets-coalition/policy-development/policy-atlas/>

Example Complete Streets Checklists

Complete Streets (Routine Accommodations) Checklist

Metropolitan Transportation Commission (San Francisco Bay Area)

<https://mtc.ca.gov/our-work/plans-projects/bicycle-pedestrian-planning/complete-streets>

Seattle Complete Streets Checklist

Seattle Department of Transportation

http://www.seattle.gov/Documents/Departments/SDOT/PlanningProgram/2017_StandardChecklistCompSts.pdf

MORPC Complete Streets Checklist

Mid-Ohio Regional Planning Council

<https://www.smartgrowthamerica.org/app/legacy/documents/cs/impl/oh-morpc-checklist.pdf>

MARC Complete Streets

Mid-America Regional Council

www.marc.org/transportation/completestreets.htm

GLOSSARY OF COMMON TERMS

Local and National Resources

American Association of State Highway and Transportation Officials (AASHTO): “a nonprofit, nonpartisan association representing highway and transportation departments in the U.S. It represents all five transportation modes: air, highways, public transportation, rail and water. Its primary goal is to foster the development, operation and maintenance of an integrated national transportation system.” www.transportation.org

American Public Works Association (APWA)
“The American Public Works Association is an international educational and professional association of public agencies, private sector companies, and individuals dedicated to providing high-quality public works goods and services. APWA is a 501(c)(3) charitable organization, incorporated in the state of Illinois.” www.apwa.net

Association of Pedestrian and Bicycle Professionals (APBP)
“The Association of Pedestrian and Bicycle Professionals is the only professional membership organization for the discipline of pedestrian and bicycle transportation.
Our members include leaders in engineering, planning, landscape architecture, safety, public health, Safe Routes to School and promotion. The association also welcomes academics, students and professional advocates.” www.apbp.org

Institute of Transportation Engineers (ITE): “an international educational and scientific association of transportation professionals who are responsible for meeting mobility and safety needs. ITE facilitates the application of technology and scientific principles to research, planning, functional design, implementation, operation, policy development and management for any mode of ground transportation.” www.ite.org/

National Association of City Transportation Officials (NACTO): “encourages the exchange of transportation ideas, insights and practices among large cities while advocating for a federal transportation policy that prioritizes investment in infrastructure in the nation’s large cities and their metropolitan areas.” <http://nacto.org>

National Complete Streets Coalition (NCSC): a nonprofit organization that promotes complete streets. “Instead of fighting for better streets block by block, the National Complete Streets Coalition seeks to fundamentally transform the look, feel and function of the roads and streets in our community, by changing the way most roads are planned, designed and constructed. Complete streets policies direct transportation planners and engineers to consistently design with all users in mind, in line with the elements of complete streets policies.” www.completestreets.org

Multimodal Glossary of Terms

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

Active Transportation: walking, running, biking, skateboarding and any other form of human-powered transport necessitated by physical activity.

Aging in Place: is the ability to live in one’s own home — wherever that might be — for as long as confidently and comfortably possible; not having to move from one’s present residence in order to secure necessary support services in response to changing needs.

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

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

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

Automobile Trips Generated (ATG): performance measurement alternative to the traditional automobile level-of-service standard that is more complete in its assessment of environmental impacts, incremental in allowing negative

impacts associated with increased auto trips to be linked to new projects, and better suited to address overall city policies.

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

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

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

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

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

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

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

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

Mode: A type of transportation such as rail, bus, vanpool, automobile, bicycle, pedestrian. Most transportation modes have additional subsets such as single- or high-occupancy vehicle, bus or bus rapid transit, etc.

Modal Hierarchy: Certain transportation modes are given priority over other modes based on the function of the corridor. In instances where accommodation of all modes is not possible, a mode hierarchy is identified to guide the user in giving priority to certain modes over others to develop a multimodal corridor within the existing right-of-way framework.

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

Multimodal Level of Service (MMLoS): provides an approved alternative means of measuring facility design based on autos, bicycles, pedestrians, and transit users, replacing the LOS measure.

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

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

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

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

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

Road Diet: The practice of removing lanes from a road section in order to build balanced, holistic, healthy, safe and economically prosperous street networks (e.g., transforming a six-lane highway into a four-lane highway).

Safe Routes to School (SRTS): Programs designed to encourage and enable children to safely walk and bike to school. These programs often include education, encouragement and enforcement efforts in conjunction with a variety of site-specific engineering measures designed to improve

safety for bicycling and walking. See www.saferoutesinfo.org for more information.

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

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

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

Thoroughfare Classification Systems:

Alley: Minor street used primarily for vehicular service access to the back side of properties. In residential blocks, an alley provides access to garages allowing narrower lots with sidewalks uninterrupted by driveways, higher density, and a more walkable scale along the street.

Minor Arterial: Street carrying lesser volumes of traffic at more frequent intervals, or that direct traffic to the principal arterials.

Principal Arterial: Street carrying high volumes of traffic (vehicular, pedestrian and bicycle) across multiple districts.

Collector: Street usually confined within a district or neighborhood boundary and connecting specific land uses, and local streets to the arterial network.

Local Street: Minor street providing access to abutting properties and protection from through direct traffic.

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

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

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

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

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

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

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

Walking Audit: a review of walking conditions along specified streets conducted with a diverse group of community members; an assessment of the walkability or pedestrian access of the built environment, also known as a

walking classroom or walking workshop.

Wayfinding: Enabling a person to find his or her way to a given destination through the use of effective signage or other graphic communication, clues inherent in the building's spatial grammar, logical space planning, audible communication, tactile elements, and provision for special-needs users. Wayfinding encompasses all of the ways in which people orient themselves in physical space and navigate from place to place.

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

Sources Consulted for Glossary:

Storror Kinsella Associates Inc. 2008. Creating a Multimodal Region: Indianapolis Regional Center and Metropolitan Planning Area. Multimodal Corridor and Public Space Design Guidelines. [Accessed December 7, 2011.] Available from: http://contextsensitivesolutions.org/content/reading/indianapolis_multi_modal_corrid_/resources/0-6PG_execSumm_Aug08.pdf

*Walkable and Livable Communities Institute
www.walklive.org/?page_id=38*

PHOTO CREDITS FOR COMPLETE STREETS HANDBOOK

COVER

Downtown Kansas City, Mo., Skyline
Photo Credit Wikipedia / Hngrange
http://en.wikipedia.org/wiki/File:Downtown_from_Top_of_Liberty2.jpg

Bicyclist on Swift Avenue, North Kansas City, Mo.
Courtesy of MARC

INTRODUCTION

Riding Across Heart of America Bridge
Courtesy of MARC

What Are Complete Streets?

Photo Left: North Congress Avenue
Courtesy of MARC

Photo Right: Kansas City Sidewalk
Photo Credit Flickr User: DesignforHealth
www.flickr.com/photos/designforhealth/6329527730/sizes/l/in/photostream/

Why Complete Streets?

Photo Left: Elderly Woman Waiting on Bus
Courtesy of MARC

Photo Right: Swift Avenue, North Kansas City
Courtesy of MARC

Complete Streets is not a new concept

Heart of America Bridge
Photo Credit Flickr User: MoBikeFed
www.flickr.com/photos/mobikedef/5055007528/sizes/l/in/set-72157625102163094/

Postcard of Grand Street
Courtesy of the Kansas City Public Library
www.kchistory.org/cdm4/item_viewer.php?CISOROOT=%2FMrs&CISOPTR=719&DMSCALE=100&DMWIDTH=750&DMHEIGHT=1600&DMODE=viewer&DMFULL=0&DMX=0&DMY=0&DMTEXT=%2520pedestrian&DMTHUMB=0&REC=4&DMROTATE=0&x=217&y=195

MAX Bus Stop
Courtesy of Nelson\Nygaard

123rd Street in Mission
Courtesy of MARC

Complete Streets a Regional Goal

Road Diet and Roundabout Installation (before and after)
Courtesy of the city of Overland Park, Kan.

Importance of Complete Streets

"Goat Tracks"
Photo Credit Flickr User amndw2
www.flickr.com/photos/amndw2/4498418987/sizes/l/in/photostream/

Broken Sidewalk
Courtesy of MARC

Family Crossing Street in Downtown Lee's Summit
Courtesy of MARC

International Walk to School Day
Courtesy of MARC

Complete Street Thumbnail Photos:
Courtesy of Michael Moule, Association of Pedestrian and Bicycle Professionals, Michael Ronkin

Balancing Varying Needs

Man on Bike lane: 87th Street Kansas City
Photo Credit Flickr User: MoBikeFed
http://farm3.staticflickr.com/2265/2178982257_a71744c625_b.jpg

Santa Fe in Downtown Overland Park, Kan.
Courtesy of MARC

Complete Streets Implementation Stories

Columbia, Mo.
Photo Credit Flickr User: daveroid

Columbus, Ohio
Courtesy of National Complete Streets Coalition / Dan Burden

St. Louis, Mo.
Photo Credit Flickr User: ChrisYunker

Lee's Summit, Mo.
Photo Credit Flickr User: Bone6

Taking Policy to Practice

Walking School Bus: 42nd Street, Kansas City, Kan.
Photo Credit Flickr User: Transportation for America

Legacy Park Trail in Lee's Summit, Mo.
Courtesy of MARC

DEVELOPING A COMPLETE STREETS POLICY SECTION

Developing a Complete Streets Policy Title Block
Courtesy of MARC

IMPLEMENTATION AND PROCESS SECTION

Implementation and Process Title Block
Courtesy of MARC

FRAMEWORK FOR DESIGN GUIDELINES AND TOOLS SECTION

Framework for Design Guidelines and Tools Title Block
Photo Credit Flickr User: Lu&si

Multimodal Streets Diagram
Courtesy of Nelson\Nygaard

Model Design Manual for Design Manual
Photo Credit: Los Angeles County

Traffic Signals
Photo Credit Flickr User: grendelkhan

Design Considerations and Their Positive Impacts
Curb Extension/Bus Bulbs Photo
Courtesy of Nelson\Nygaard

Pedestrian Countdown Signal
Photo Credit: Flickr User: Paul Krueger

Reduced Travel-Lane Widths
Courtesy of Walkable and Livable Communities Institute / Dan Burden

Pedestrian Refuge Islands/Medians
Courtesy of Nelson\Nygaard

Road Diet Photo
Photo Credit: Seattle Department of Transportation

Bike Lane Photo
Photo Credit: Flickr User: MoBikeFed

Sidewalk with Landscape Strips
Courtesy of National Complete Streets Coalition

Queue-Jump Lanes
Courtesy of Nelson\Nygaard

Dedicated Bus Lanes
Courtesy of Nelson\Nygaard

Leading Pedestrian Interval
Courtesy of FHWA

Accessible Pedestrian Signals
Courtesy of MARC

Evaluation Tools and Factors

Wide Street Photo
Courtesy of National Complete Streets Coalition

Pilot Project

17th Street and Castro Intersection
Photo Credit: SF Streets Blog.org

Network Level Tools

Complete Streets Network Prioritization
Photo Credit: Complete Streets.org and City of Blue Island, Ill.

Where the Sidewalk Ends

Photo Credit: Lucy Wicks, Athol Plaza, Alameda County, 2003

Bike There Walk There — on Bus

Courtesy of MARC

IMPLEMENTATION COSTS AND MAINTENANCE SECTION

Implementation and Process Title Block

Courtesy of MARC

Washington State Callout Box

Courtesy of National Complete Streets Coalition

Charlotte, N.C., Callout Box

Courtesy of National Complete Streets Coalition

Missouri Callout Box

Photo Credit Flickr User: MoBikeFed

Seattle Wide Street Photo

Courtesy of Smart Growth USA blog / Kent McGarvey

Cost-Effective Complete Streets

Three Phases of a Complete Street

Courtesy of the Seattle DOT

Before and After of I-277/South Blvd Interchange

Source: Google Earth

San Francisco Parklet

Photo Credit: Flickr User Steve Rhodes

Maintaining Facilities

Plowed Street and Sidewalk

Courtesy of National Complete Streets Coalition

Pedestrians in Street

Courtesy of Flickr User: MoBikeFed

Logs in Street

Courtesy of Flickr User: PDXCommuter

Plowed Street and Cycle Track

Courtesy of Flickr User: M.V. Jantzen

Maintained Complete Street

Courtesy of the Pedestrian and Bicycle Information Center

APPENDIX

Appendix Title Block

Photo Credit Flickr User: Lu&Si

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