



# WICHITA PEDESTRIAN MASTER PLAN



CITY OF  
WICHITA  
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2014



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Official Document

The Wichita City Council endorsed this plan  
on November 4, 2014

## **FUNDING**

This project is funded by the Centers for Disease Control and Prevention Community Transformation Grants for Small Communities and the Health and Wellness Coalition of Wichita.



RESOLUTION NO. 14317

**A RESOLUTION ENDORSING THE WICHITA PEDESTRIAN MASTER PLAN**

**WHEREAS**, walking is the most fundamental and equitable form of human transportation; and

**WHEREAS**, the City of Wichita works to make the best use its public streets and paths to move people and goods; and

**WHEREAS**, the City of Wichita has an opportunity to improve health and to provide a variety of viable transportation options including walking; and

**WHEREAS**, multiple citizen surveys have shown a desire for improvements related to walking in Wichita, the most recent being the 2012 National Citizen Survey which reported that the satisfaction of Wichita residents with the ease of walking in the city is "much below" the satisfaction of residents in comparable cities; and

**WHEREAS**, the City Council of the City of Wichita recognizes the importance of creating a collaborative vision and long-term plan for improving the conditions for walking in Wichita; and

**WHEREAS**, the City of Wichita has hosted numerous events and meetings to gather input on the Wichita Pedestrian Master Plan, including two open house events, an online survey; and presentations to the district advisory boards, Wichita Transit Advisory Board, Wichita-Sedgwick County Access Advisory Board, and Wichita-Sedgwick County Metropolitan Area Planning Commission, and neighborhood organizations; and

**WHEREAS**, the Wichita Pedestrian Master Plan represents the culmination of that civic planning process; and

**WHEREAS**, the Wichita Pedestrian Master Plan has established a strategy for increasing the amount of walking in Wichita by 50 percent, while reducing the rate of fatal crashes involving pedestrians by one-third.

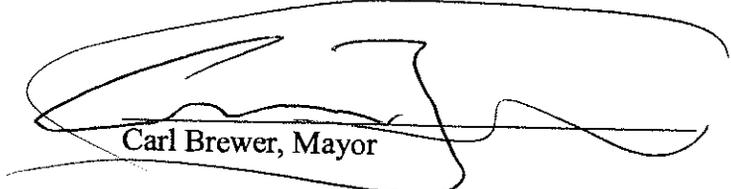
**NOW, THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF WICHITA, KANSAS:**

**Section 1.** The City Council of the City of Wichita endorses the Wichita Pedestrian Master Plan.

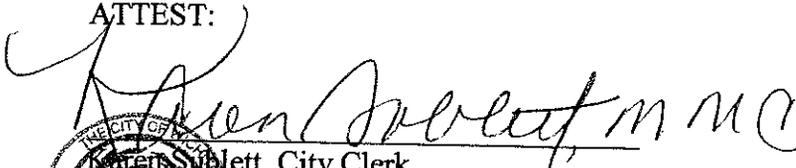
**Section 2.** The City of Wichita shall use the recommended design concepts and street improvements contained in the Wichita Pedestrian Master Plan as guidance in future planning and decision-making regarding public infrastructure investments, operations, and policies.

**ADOPTED** by the governing body of the City of Wichita, Kansas, this 4<sup>th</sup> day of November, 2014.

CITY OF WICHITA, KANSAS

  
Carl Brewer, Mayor

ATTEST:

  
Peter Sublett, City Clerk



Approved as to Form:

  
Sharon Dickgrafe, Interim Director of Law and City Attorney

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# EXECUTIVE SUMMARY



The Wichita Pedestrian Master Plan (Plan) is a guide for how the City of Wichita can improve conditions for walking over the next 10 years. Wichita residents have indicated a desire to improve conditions for walking, and especially to make needed safety improvements. Wichita residents currently walk for 1.3 percent of trips to work, yet pedestrians account for 16.8 percent of traffic fatalities in the city.<sup>1</sup> In addition to a desire for safety improvements, Wichita residents shared the following perspectives about the Wichita pedestrian environment:

- » Twenty six percent of residents in the region felt that the lack of safe and accessible sidewalks and other pedestrian facilities was currently a problem and a further 26 percent felt it is an emerging problem.<sup>2</sup>
- » Improving safety on roadways ranks second out of 16 priority options for roadway improvements for residents in the region.<sup>2</sup>
- » Nearly 93 percent of survey participants agree or strongly agree that Wichita should help seniors, those who are disabled, and low-income residents meet their transportation needs.<sup>3</sup>
- » Forty five percent of citizens rated walking conditions in Wichita as “good” or “excellent.” When compared to other cities of its size, Wichita is considerably below the national benchmark.<sup>4</sup>
- » Sidewalk maintenance was rated a 40 out of 100, much below the nationwide benchmark.<sup>4</sup>
- » The most popular recreational activities in Wichita include: walking for pleasure (#1), dog walking (#4), and nature walks (#9).<sup>5</sup>
- » Residents want to be able to walk to Wichita parks and want help finding their way to trails.<sup>5</sup>

<sup>1</sup> Alliance for Biking and Walking. “Bicycling and Walking in the United States: 2014 Benchmarking Report.” 2014.

<sup>2</sup> WAMPO Household Travel Survey. 2010 - 2011.

<sup>3</sup> Wichita-Sedgwick County Community Investments Plan Community Survey. 2013

<sup>4</sup> National Citizen Survey. 2012.

<sup>5</sup> Wichita Parks, Recreation and Open Space Plan Survey. 2007.

This Plan presents an opportunity for the City of Wichita to build on what residents already find to be valuable community assets, while continuing to improve the pedestrian environment for all users of the transportation system. Walking is the most basic form of transportation. Improving the pedestrian environment – the “walkability” of a place – can result in significant improvements in the public health, safety, and the economic well-being of a community.

## PUBLIC INPUT AND THE PLANNING PROCESS

This Plan reflects public input received throughout the planning process. This included numerous opportunities and different formats for stakeholders to provide input, including: Steering Committee meetings; two (2) public open house events; multiple listening sessions; an online survey; and an online interactive map. Ultimately, the planning process was guided by a Steering Committee of Wichita citizens and stakeholders who were assisted by a Technical Advisory Committee comprised of City staff.

One overarching theme from the public input was a desire to improve conditions for walking in Wichita and make it safer for all pedestrians. Stakeholders emphasized the need to improve the pedestrian network for seniors and children. Making and enhancing connections between and within neighborhoods was also strongly desired. The Vision, Goals, Strategies, and Actions were developed to reflect the public input.

## THE WICHITA PEDESTRIAN PLAN VISION AND GOALS

### *The Wichita Pedestrian Vision*

*By 2024, the City of Wichita will be a pedestrian friendly community and a place where walking is an easy choice in all people's daily lives. Wichita residents and visitors will have access to high quality and safe walking environments that connect all neighborhoods, destinations, and other modes of transportation, while contributing to a stronger, healthier, and more vibrant Wichita.*

### **Goals**

#### **Goal 1: Provide a safe and welcoming pedestrian network**

Improving safety for all roadway users is essential to creating a pedestrian-friendly community.

*Performance Measure Target: Reduce the pedestrian fatality rate by one third over the next 10 years.*

Baseline:

- » The Bicycling and Walking in the United States 2014 Benchmarking Report reports the 2009-2011 Pedestrian Fatality Rate for Wichita at 16.8. Pedestrian Fatalities per 10,000 daily pedestrian commuters is calculated by dividing the average number of annual pedestrian fatalities from crashes with motor vehicles (obtained from KDOT data) by the estimated average annual number of commuters walking to work (obtained from U.S. Census American Community Survey three year estimate) - divided by 10,000.<sup>6</sup>

<sup>6</sup> Alliance for Biking and Walking. “Bicycling and Walking in the United States: 2014 Benchmarking Report.” 2014.



### ***Goal 2: Improve community accessibility and connections for pedestrians***

Reducing barriers to transportation by building network connections will make the walking environment in the City of Wichita more accessible to everyone.

*Performance Measure Target: Increase the amount of walking in Wichita by 50% over the next 10 years.*

Baselines:

- » The U.S. Census Bureau 2010-2012 American Community Survey 3-Year Estimates reports that walking is the primary means of transportation to work for 1.3 percent of Wichita resident workers age 16 and over.
- » The 2013 WAMPO bicycle and pedestrian counts conducted for two hour periods on a weekend and a weekday reported 724 pedestrians counted at count locations in Wichita.

### ***Goal 3: Promote a citywide culture of walking***

Providing a citywide environment where walking is available as a comfortable everyday option provides the population of Wichita with more transportation and recreation options.

*Performance Measure Target: Increase the percentage of survey respondents rating ease of walking in Wichita as “excellent or good” to at least 60 percent.*

Baseline:

- » As part of the 2012 National Citizen Survey, 45 percent of Wichita survey respondents rated the ease of walking in Wichita as “excellent” or “good.”



The following ten strategies are recommended for implementation over the next 10 years to achieve the goals and realize the vision of this Plan.

***Strategy 1 - Implement the Design Guidance Included in Chapter 7 of this Plan***

Following a set of comprehensive design guidelines can provide consistent, useful direction to practitioners help reduce crashes, improve access, create a better walking environment, and set consistent expectations for pedestrians. This strategy recommends that the City incorporate this Plan's design guidance into City guidelines, projects and review processes.

***Strategy 2 - Create a Marked Crosswalk Policy***

It is recommended that the City develop a policy to help formalize a consistent approach for marked crosswalks. This will help improve safety and set consistent expectations for all street users. It is also recommended that the City review and update existing marked crosswalks.

***Strategy 3 - Focus Pedestrian Improvement Resources on Improving Safety at Intersections***

Crashes involving pedestrians and motor vehicles typically occur at intersections. Focusing resources on improving the design of intersections is the single best way to reduce the number of crashes and injuries involving pedestrians. It is recommended that the City identify high priority intersections for improvements and include pedestrian safety as a factor in capital projects selection processes.

***Strategy 4 - Provide Sidewalks along Arterial Streets***

It is recommended that the City continue to install sidewalks along arterial streets, and that the City utilize a prioritization process to ensure that new sidewalks are in locations that will have the greatest benefit to the community.

***Strategy 5 - Improve Pedestrian Infrastructure near Senior Centers, Housing and Destinations***

Seniors are encouraged to walk to maintain and promote health, independence, and social interaction. At the same time, the percentage of pedestrian fatalities that involve seniors is

disproportionately high compared to their representation in the general population.<sup>7</sup> It is recommended that the City work with other community partners to respond to requests for improvements along senior walking routes.

### ***Strategy 6 – Improve Safety by Improving Pedestrian Infrastructure near Schools***

It is recommended that the City work with other community partners to identify school walking routes and identify improvements. It is also recommended that the City continue its support of school districts to upgrade school curbside management plans that make it safer to walk to school.

### ***Strategy 7 – Make Maintenance of Pedestrian Infrastructure a Priority***

The City already has a significant network of sidewalks and pedestrian infrastructure. Maintaining the existing pedestrian infrastructure is necessary to improve pedestrian safety, encourage more walking, and save money by increasing facility life. It is recommended that the City review and update the process for identifying and prioritizing pedestrian maintenance needs and improve the way that people can report concerns regarding pedestrian facility maintenance.

### ***Strategy 8 - Plant and Maintain Street Trees***

It is recommended that the City continue providing trees along roadways by incorporating street trees in capital projects, and seek funding/partnerships to maintain existing and new street trees.

### ***Strategy 9 – Support Efforts to Encourage Walking to School and Safety Education***

Walking provides freedom and independence to younger populations. It is recommended that the City continue to support partner organizations to encourage and support participation in national “Walk to School Day.”

### ***Strategy 10 – Monitor and Update the Implementation Plan***

It is recommended that the City create an annual work plan and develop an annual progress report. It is also recommended that the City provide training and adequate staffing to implement this Plan.



<sup>7</sup> US Department of Transportation National Highway Traffic Safety Administration. “Traffic Safety Facts.” 2012.

Apart from the “Top 10” strategies recommended for implementation over the the next 10 years, there are a number of longer-term strategies that should also be considered including those listed below:

- » Strategy 11– Make Area-Specific Pedestrian Improvements
- » Strategy 12 – Improve Pedestrian Access to Buildings
- » Strategy 13 - Improve Pedestrian Connections to Transit
- » Strategy 14– Encourage Walking for Fun, Health, and Transportation
- » Strategy 15 – Provide Pedestrian Wayfinding
- » Strategy 16 – Support Safety Education Programs that Focus on Changing Pedestrian, Bicycle and Motorist Behavior
- » Strategy 17– Develop Enforcement Strategies that Focus on Changing Pedestrian and Motorist Behaviors that Cause Crashes
- » Strategy 18 – Maintain Pedestrian Access During Construction

## MAKING PROGRESS

An essential part of this plan is establishing a process for evaluating progress and adjusting annual work plans to react to identified priorities. Maintaining an annual work plan and progress report can be important to help achieve year to year progress. It can also be important to have a clear understanding of the costs of pedestrian infrastructure, and to identify potential infrastructure and program funding sources.

### *Annual Work Plan and Implementation Progress Report*

Establishing a process for setting short-term targets, ensuring accountability, and celebrating successes can be one of the best ways to make progress implementing this Plan over the next 10 years.



An annual implementation work plan can be used to focus attention on areas identified as lacking, be a mechanism to look for opportunities to take advantage of public and private projects, and a chance to reconsider how resources are being allocated. It should identify annual performance targets for implementation of this plan. A draft 2014-2015 Annual Implementation Work Plan is provided as Appendix G.

To monitor the progress of implementation, a progress report should be prepared on an annual basis. This document should illustrate progress relative to the goals and performance measures expressed in this plan, and provide an opportunity to celebrate major accomplishments. The progress report should be geared toward the public as the primary audience, but can also be used by the Bicycle and Pedestrian Advisory Board and the City Council as they review progress and recommend future actions.



Figure I: Pedestrian Plan Implementation

**Infrastructure Costs & Potential Funding Sources**

The cost of pedestrian infrastructure varies by location depending on many factors. However, a general sense of the scale of these costs is important for planning and project development. Chapter 5 provides additional information on planning level cost estimates for pedestrian infrastructure. The cost estimate information should only be used for planning level estimates and not for determining actual bid prices for a specific infrastructure project. Cost estimates can be refined as a potential project moves from planning to design and construction. The figure below illustrates how the cost estimates are refined as a project moves through the design process.

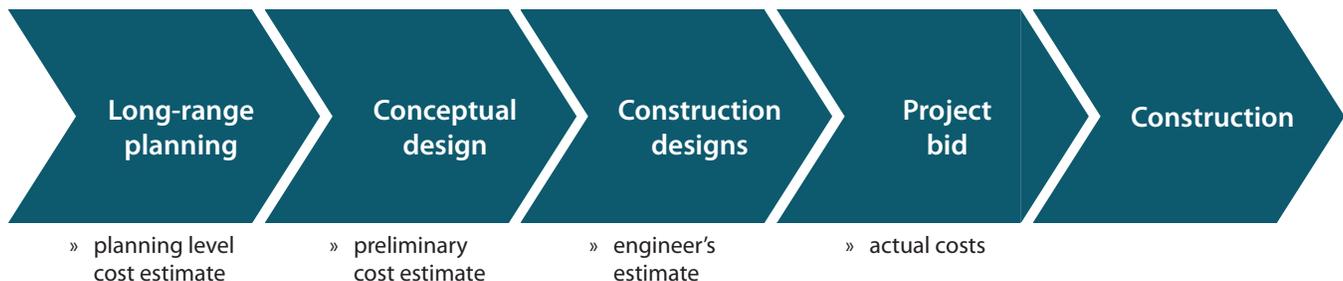


Figure II: Cost Estimates for Planning and Design Phases

Pedestrian projects and programs can be developed either as stand-alone projects or as part of other projects through routine accommodation (e.g. including a crosswalk as part of a repaving project), which generally costs less compared to undertaking a project separately.

Table I: Pedestrian Projects Funding Sources Summary Matrix

Project Type	Local			Federal							Other	
	RA	BGT	CIP	STP	HSIP	402	NHPP	CMAQ	RTP	TAP	P/P	C/R
Pedestrian Plan		X		X							X	
Paved Shoulders	X		X	X	X		X	X		X	X	
Shared Use Path/Trail	X		X	X	X		X	X	X	X	X	
Spot Improvement Program	X	X	X	X	X			X		X	X	X
Maps		X		X		X		X		X		
Sidewalks, new or retrofit	X	X	X	X	X		X	X		X	X	X
Crosswalk, new or retrofit	X	X	X	X	X		X	X		X	X	X
Trail/Highway Intersection	X	X	X	X	X		X	X	X	X		
Signal Improvements	X	X	X	X	X		X	X		X	X	X
Curb Cuts/Ramps	X	X	X	X	X		X	X		X	X	X
Traffic Calming	X	X	X	X	X					X	X	X
Coordinator Position		X						X				
Safety/Education Position		X		X		X				X		
Police Patrol		X				X				X		
Safety Brochure/Book		X		X		X		X	X		X	
Training		X		X		X		X	X		X	
Technical Assistance		X		X				X		X	X	

RA = Routine Accommodation

BGT = Budget

CIP = Capital Improvement Program

STP = Surface Transportation Program

HSIP = Highway Safety Improvement Program

402 = State and Community Highway Safety Program, Section 402

NHPP = National Highway Performance Program

CMAQ = Congestion Mitigation and Air Quality Improvement Program

RTP = Regional Trails Program

P/P = Public Private Partnerships

C/R = Private Construction

There are a variety of funding sources that can be used to fund pedestrian projects. The following matrix summarizes funding opportunities and the types of projects or programs they can support:

### Project Prioritization

Local plans and existing guidelines related to walking were reviewed. Comparison communities were also contacted for perspective on how pedestrian issues are addressed. This information helped to provide context for pedestrian related policies and conditions in Wichita.

Establishing implementation priorities is important because resources and timing generally don't allow for every project and improvement to be undertaken at once. It can be challenging for a community to decide which projects to implement first and which to defer. A structured process to prioritize projects with respect to the Pedestrian Plan's goals can help in this decision making process. The following criteria are suggested for prioritization (see Chapter 3):

- » Does it improve pedestrian safety at priority intersections?

- » Does it serve students?
- » Does it serve the senior population?
- » Does it fill in a gap in the existing system?
- » Is it on a Safety Corridor?
- » Is it on a transit route?
- » Does it connect to retail / service destinations?
- » Does it connect to a public park or public amenity?
- » Does it address a public concern?

## DESIGN TREATMENTS

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Design treatments are intended to guide the design and construction of pedestrian facilities. The Plan proposes best practice for 30 pedestrian design treatments (Chapter 7). Each treatment includes a definition, the benefits of applying the treatment, design considerations, the crash reduction factor, a photo example, a graphic showing design best practices, and additional resources. The project team reviewed existing City and State design guidance and incorporated the latest national research into the recommendations.

The pedestrian design treatments suggested address roadway crossings, intersection geometry, and traffic calming. For example, roadway crossing treatments include detailed information on marked crosswalks, crossing islands, and mid-block crossings. Similarly the intersection geometry section in Chapter 7 is focused on best practices to make intersections safer for all modes, and incorporates detailed information on elements such as curb ramps and extensions and right turn slip lanes.



# CHAPTER 1

## Why Walkability?

### Why a Pedestrian MasterPlan?



#### INTRODUCTION

Walking is our oldest and most basic form of transportation – one that maintains our individual health, and contributes to the overall livability of our cities and towns. The Wichita Pedestrian Master Plan (Plan) comes at an important time for the City of Wichita (City) to address pedestrian issues. According to the 2012 National Citizen Survey, 45 percent of Wichita residents rated the ease of walking in their community as “excellent” or “good.” This rating was much below other cities with similar populations. Wichita residents currently walk for 1.3 percent of trips to work, yet pedestrians account for 13.8 percent of traffic fatalities in the city.<sup>1</sup>

This Plan presents an opportunity for the City to build on what residents already find to be valuable community assets, while continuing to improve the pedestrian environment for all users of the transportation system.

This introductory chapter provides background on the importance of walkability, a summary of the process followed in developing the Plan, as well as a summary of policies and practices that influence its development.

#### WHY WALKABILITY?

Everyone is a pedestrian at some point in their journey. Improving walkability can result in significant improvements for the public health, safety, and the economic well being of a community. In recent decades, a large body of research has strengthened the understanding of the benefits of walking.

Walking is an essential means of transportation for people who are not able to drive. Approximately 13 percent of people in the U.S. who are sixteen years of age or older do

*“There are a host of good reasons for our citizens to get outside and walk or bike. Having good infrastructure will encourage citizens to get outside and attract new folks to our area. It has a definite, positive, economic, impact.”* -- Open House Participant

<sup>1</sup> Alliance for Biking and Walking. “Bicycling and Walking in the United States: 2014 Benchmarking Report”. 2014.

<sup>2</sup> US Department of Transportation. National Household Travel Survey. 2013.

not drive.<sup>2</sup> This figure includes persons with temporary or permanent disabilities, those who cannot afford to drive, seniors, or those who have chosen to travel by other modes. In addition, according to the 2010 US Census, 21.3 percent of the population of Wichita is under the age of 15, and therefore does not drive. Providing safe facilities allows people to maintain independence and reach important destinations such as schools, shopping, services, and social interaction.

## HEALTH

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Walking is a fundamental form of physical activity and provides substantial health benefits. The American Medical Association (AMA) and Center for Disease Control (CDC) both recommend adults engage in 150 minutes of physical activity per week (or about 20 minutes a day).<sup>3</sup> Numerous health organizations recommend walking for physical activity as it is widely accessible, relatively low impact, and requires no specialized equipment. Walking can be incorporated into daily activities as a means of transportation in addition to being used for recreational purposes. Below are some highlights from recent studies that relate to the importance of walking in Wichita.

- » In 2012, less than half of adults living in the U.S. reported meeting the recommended physical activity requirements and a third reported being physically inactive.<sup>4</sup>
- » Wichita ranked 47th out of the 52 large cities surveyed with respect to the percentage of the population that is getting the recommended amount of physical activity.<sup>4</sup>
- » Walking is the most frequently reported activity among adults who meet physical activity guidelines, as well as for those who do not.<sup>5</sup>
- » Fourteen percent of Wichita residents surveyed indicated that having parks, recreation services, and open space available to improve the health and wellness of the community was important to them.<sup>6</sup>



<sup>3</sup> US Department of Health and Human Services. "2008 Physical Activity Guidelines for Americans." 2008.

<sup>4</sup> Alliance for Biking and Walking. "Bicycling and Walking in the United States: 2014 Benchmarking Report." 2014.

<sup>5</sup> Kruger, J et al. "Prevalence of Transportation and Leisure Walking among US Adults." American Journal of Preventative Medicine. 2008.

<sup>6</sup> City of Wichita. "Wichita PROS Plan Survey Report." 2007.

Increased walking, like any physical activity, can help address many common health problems. The Centers for Disease Control and Prevention indicate that physical activities such as walking can help an individual:

- » Maintain a healthy weight;
- » Prevent or manage various conditions, including heart disease, high blood pressure, type 2 diabetes and some types of cancer;
- » Strengthen bones and muscles;
- » Improve mental health and mood;
- » Improve balance and coordination; and
- » Increase longevity.<sup>8</sup>

Walking may also be particularly beneficial for senior citizens and children.

- » Regular exercise has been shown to help prevent dementia.<sup>9</sup>
- » Walking is an excellent way for seniors, especially those who don't drive, to socialize with friends and access local services.
- » In 2010, over one third of children and adolescents in the U.S. were considered overweight or obese.<sup>10</sup> At the same time, there has been a significant decline in walking to school: Only 13 percent of children walk to school, down from 66 percent in 1970.<sup>11</sup> While a decrease in walking to school is not the only cause of childhood obesity, regular exercise from walking to school can help reverse this trend.



<sup>8</sup> Centers for Disease Control and Prevention. "Physical Activity and Health: The Benefits of Physical Activity." 2011.

<sup>9</sup> Tanzi, Rudolph E "The Cure Alzheimer's Fund National Alzheimer's Disease Research Strategy." MassGeneral Institute for Neurodegenerative Disease. 2009.

<sup>10</sup> Ogden, Cynthia L. et al. "Prevalence of Obesity in the United States 2009-2010." National Center for Health Statistics Data Brief Number 82. Center for Disease Control and Prevention. 2012.

<sup>11</sup> McDonald, MC "Active Transport to School" Trends Among US School Children 1969-2001." American Journal of Preventative Medicine. 2007.

## SAFETY

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Pedestrians are the most vulnerable road users at the highest risk for injury in the event of a crash involving a motor vehicle. Investing in a connected and well-designed pedestrian network, including sidewalks and roadway crossings, can improve safety for pedestrians. These improvements can also enhance safety for other road users by improving visibility, improving drivers' awareness of their surroundings, and reducing the severity of crashes.

Between 2008 and 2012, there were 424 motor vehicle crashes involving pedestrians reported in Wichita. Of those crashes, 96 percent resulted in an injury to at least one person and four percent resulted in a fatality. A total of 442 people were injured and 18 people were killed over the five year period.<sup>12</sup> In 2014, The Alliance for Biking and Walking released an update to their benchmarking report documenting trends and best practices in

American cities and states. The report states that in cities where a higher percentage of commuters walk (or bicycle) to work, corresponding fatality rates are generally lower. Bicycle and pedestrian fatality rates in Wichita were ranked 29th out of 52 cities surveyed.<sup>13</sup> Finally, according to the 2035 Metropolitan Transportation Plan, 25 percent of all state-wide bicycle and pedestrian crashes occur in the Wichita region and 17 percent of the state population lives in the Wichita region.

*“ Sometimes I don't feel safe at intersections and I feel that I have to be hyper vigilant at the intersections because of inattentive or rude motorists. More education of motorists and enforcement of existing laws would be appreciated. ”* -- Open House Participant

## ECONOMIC

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Improving conditions for walking can have a positive impact on the local economy by providing opportunities to reduce household transportation costs, providing access to jobs, and increasing property values. People in the U.S. are expressing a preference to live in neighborhoods with walkable connections to local businesses. According to a 2013 survey, 60 percent of adults in the U.S. favor walkable mixed use neighborhoods, and almost two thirds of adults between 18 and 35 report a desire to drive less if alternative transportation options were available.<sup>14</sup> Providing mixed-use walkable neighborhoods can help Wichita compete nationally to attract new residents.

Walkability can make a significant reduction in household expenditure and increase job opportunities. Transportation costs on average account for 31 percent of household expenditure in Wichita.<sup>15</sup> Cost savings from driving less or not owning a vehicle frees up income which can be used for other household needs and purchases, including local goods and services. In addition, national studies have shown that property values increase approximately \$700 to \$3,000 for each additional point on WalkScore, a widely used tool to measure a community's walkability.<sup>16</sup> A 2014 Harvard University study found that walkable communities that connect residential areas to employment can improve economic mobility.<sup>17</sup>

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<sup>12</sup> Kansas Department of Transportation. 2013.

<sup>13</sup> Alliance for Biking and Walking. "Bicycling and Walking in the United States: 2014 Benchmarking Report". 2014.

<sup>14</sup> National Realtors Association 2013 Community Preference Survey.

<sup>15</sup> Center for Neighborhood Technology. "Housing and Transportation Affordability Index." 2012.

<sup>16</sup> Cortright, J. "How Walkability Raises Home Values in U.S. Cities." CEOs for Cities. 2009.

<sup>17</sup> Chetty, R. et al. "Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." Harvard University and the National Bureau of Economic Research. 2014.

Walking has also been shown to have long term cost benefits in the area of public health and health care. Costs associated with obese and overweight adults in the United States and Canada are estimated to be approximately \$190.2 billion annually.<sup>18</sup> According to the National Governor's Association Report on Healthy Living could save \$5.6 billion in health care costs related to obesity if one of every 10 adults started a regular walking program.<sup>19</sup>

Traffic crashes, injuries and deaths have financial consequences for a community as well. The cost of lost wages, productivity, medical expenses, and property damage as a result of motor vehicle crashes are periodically estimated by the Kansas Department of Transportation. In 2015 dollars, KDOT estimated the average cost of a crash resulting in injury or death at \$197,800 per crash.



## WHY THIS PLAN?

### *Residents' Desire*

Listening to residents and gathering information about their desires for improving walking in Wichita was critical to the development of this Plan. Overall, there is a growing interest in making Wichita more walkable. Wichita residents indicated that they would like to walk more and that a more walkable Wichita would improve their ability to access destinations such as schools and parks. They also stated that more walkable environments would promote social interactions and lead to more activity in the City. Residents stressed that improving safety for pedestrians should be a priority for the community. Throughout the planning process, residents indicated specific locations and issues where they felt that improvements to the pedestrian environment were needed. The following

<sup>18</sup> Cawley J, Meyerhoefer C. The medical care costs of obesity: an instrumental variables approach. *Journal of Health Economics*. 31(1):219-230. 2012.

<sup>19</sup> National Governor's Association Report on Healthy Living. 2011.

information on desired pedestrian improvements was collected from large, statistically-significant surveys conducted at the local and national level.

- » Twenty six percent of residents in the region felt that the lack of safe and accessible sidewalk and other pedestrian facilities was an existing problem and 26 percent felt that it is an emerging problem.<sup>20</sup>
- » Improving safety on roadways ranks second out of 16 priority options for roadway improvements for residents in the region.<sup>20</sup>
- » Nearly 93 percent of survey participants agree or strongly agree that our community should help seniors, those who are disabled, and low-income residents meet their transportation needs.<sup>21</sup>
- » Forty five percent of citizens rated the ease of walking in Wichita as “good” or “excellent.” When compared to other cities of its size, Wichita is considerably below the national benchmark.<sup>22</sup>
- » Sidewalk maintenance was rated 40 out of 100 by Wichita residents, much below the nationwide benchmark.<sup>22</sup>
- » The most popular recreational walking activities include: walking for pleasure, (#1) dog walking (#4), and nature walks (#9).<sup>23</sup>
- » Residents want to be able to walk to Wichita parks and want help finding their way to trails.<sup>26</sup>

An online survey was issued as part of the community outreach effort for this Plan. The survey included three general categories of questions: personal walking behavior, questions related to walking in Wichita, and demographic information. The survey, available between August 23<sup>rd</sup> and October 1<sup>st</sup>, 2013, was filled out by 173 respondents. The survey sample was not statistically significant, but does serve as another tool to learn about residents’ desires for the community. Key findings from the survey are summarized below. The full survey report is located in Appendix A.

- » The most common daily walking trips are those two and from a vehicle followed by walking for recreation.
- » When asked what they liked best about walking in Wichita, the highest rated feature was that Wichita sidewalks are generally in good condition.
- » When asked what they would improve related to walking in Wichita, the highest rated improvement was to provide sidewalks on at least one side of most streets.
- » The most reported factor that makes walking in Wichita difficult or unpleasant is the long distances between destinations (work, school, parks, shopping, etc.).
- » More than 85 percent of survey respondents indicated that they feel safe or very safe walking in Wichita.

<sup>20</sup>Wichita Area Metropolitan Planning Organization. Household Travel Survey. 2010 - 2011

<sup>21</sup>Wichita-Sedgwick County Community Investments Plan Community Survey. 2013

<sup>22</sup>National Citizen Survey. 2012

<sup>23</sup>Wichita Parks, Recreation and Open Space Plan. 2008

### ***Long-term Course of Action***

Improving the pedestrian environment in Wichita requires a long-term investment. This Plan provides a road map of strategies and actions related to engineering, education, enforcement, encouragement, and evaluation to be implemented toward the goal of a more walkable Wichita. The strategies and actions are to be achieved incrementally over time, and this Plan recommends the “top ten” strategies and actions as the priority strategies to be implemented first, followed by several “down the road” strategies and actions (see Chapter 4).

Over the 10-year implementation time frame, updates to this Plan should be undertaken periodically to reflect implementation progress, changes in design standards, as well as changes to City practices and policies. The success of this Plan is contingent on the on-going support, coordination, and cooperation of Wichita residents, city staff, support organizations. Annual work plans and progress reports will help to identify and articulate each year’s priorities.

### ***City-wide Perspective***

Pedestrian improvements are important in all parts of the city. This means each neighborhood can be considered for the improvements or programs outlined in this Plan. Instead of focusing on specific locations for specific improvements the Plan provides a toolbox of options to help decision makers make informed decisions. For example, the street typologies (Chapter 2) identify pedestrian infrastructure improvements such as the types of locations where street crossing improvements may enhance crossing busy streets.

## **PLANNING PROCESS SUMMARY**

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The Plan was developed between May of 2013 and August of 2014 (see Table 1). The consulting firms Toole Design Group and TranSystems were hired to work with City of Wichita staff to undertake a planning process. A Project Team of City staff members and the consultant staff was formed to facilitate this planning process consisting of three phases:

1. Data Collection (May 2013–October 2013): the Project Team (Team) gathered information through public meetings and interviews. The Team also reviewed existing city, state and regional plans, City design guidelines, and other documents related to walking and walking infrastructure. The Team analyzed census and pedestrian crash data to better understand existing conditions and needs. See Appendix B for a complete summary of policies and practices.
2. Plan Content (November 2013 to May 2014): this phase of the project developed the main components of the Plan: 1) vision, goals, strategies, and actions; 2) best practices in street designs that promote pedestrian safety; 3) a prioritization process to guide City staff in determining which projects to fund and when; and 4) performance measures. These components were developed with guidance from the Technical Advisory Committee and Steering Committee.
3. Final Plan and Plan Adoption (May 2014 to August 2014): the Plan was finalized, reviewed and endorsed by City Council on October, XX 2014.

# PROJECT TIMELINE

Table 1: Project Timeline

2013								2014								
MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP
Data Collection																
			Online Survey and Public Input Mapping													
				Public Open House #1												
					Prepare Pedestrian Design Recommendations											
								Develop Program and Policy Recommendations								
								Develop Implementation Plan								
												Public Open House #2				
											Develop Final Master Plan					

### Stakeholder Involvement

Development of this Plan was informed by public and stakeholder input. Tables 2 and 3 provide a summary of public involvement opportunities, and how the input was used to shape the Plan. A compendium of public comments from the online survey, online community map, listening sessions, and public open houses can be found in Appendix A. The Plan draft documents, and the ways in which the public could provide input were announced via the City’s website, email blasts, the City’s Facebook page as well as media coverage, including an article in the Wichita Eagle and radio announcements on KMUW.

### Steering Committee

The steering committee was formed to guide the development of this Plan. Among others, members of the committee included representatives from Wichita Area Metropolitan Planning Organization (WAMPO), Kansas Department of Transportation, USD 259, the Wichita-Sedgwick County Access Advisory Board, and the City Bicycle and Pedestrian Advisory Board.

### Technical Advisory Committee

In addition to public engagement the project was overseen and supported by a Technical Advisory Committee (TAC) comprised of City staff from Planning, Public Works, Park and Recreation, Police, Wichita Transit, City Manager’s Office, and Metropolitan Area Building and Construction. The TAC members assisted with providing information for the planning process, advising the Steering Committee, and reviewing the Plan documents. Representatives from the departments met with the City’s consultant team on a regular basis to discuss policies and practices related to accommodating pedestrians in Wichita. Staff input helped to shape the design treatments, as well as many of the Plan’s strategies and actions found in Chapter 4. Near the end of the planning process the Steering Committee and the Technical Advisory Committee convened together to oversee, review, and approve the draft Plan.

Table 2: Stakeholder Involvement: Workshops, Open Houses, and Online Opportunities

Involvement Opportunity	Timeframe	Outcome
Design Workshop	August 2013	TAC, Steering Committee, and local practitioners were invited to attend a day long workshop highlighting street design elements that improve pedestrian safety. Attendees learned about best practices and prioritized treatments to be included in Chapter 7: Design Treatments.
Online Survey	August to October 2013	Comments from the online survey were used to identify strategies and actions and to establish baseline information related to walking in Wichita.
Interactive Map	August to October 2013	Comments were used to identify and evaluate existing conditions, safety corridors and neighborhood typologies presented in Chapter 2.
Public Open House 1	September 2013	Attendees marked-up maps of the city and provided comments on proposed Plan goals and objectives, issues and needs related to walking. Comments provided helped to identify priorities in the plan which informed the plans goals, objectives and actions.
Public Open House 2	May 2014	Attendees reviewed draft Plan content at 8 different stations. Feedback helped to guide the Performance Measures and revisions to the Design Treatments.



A series of listening sessions were held with key stakeholders in July, 2013. Discussions at these 11 meetings informed the Plan’s vision, goals, strategies, and actions.

**Table 3:** Stakeholder Involvement: July 2013 Listening Sessions

Listening Session	Outcome
Wichita Metro Chamber of Commerce and Young Professionals of Wichita	Attendees provided comments on their interest in: walkability of neighborhoods, downtown, and at Wichita State University, outdoor recreation, better sidewalk connections, and better transit connections between walkable neighborhoods.
Safe Kids	Attendees shared comments regarding: Safe Kids activities and events, concerns about safety issues at specific schools including student drop off areas, data collection, education, funding needs, and Safe Routes to School opportunities.
Seniors Organizations	Participants discussed issues related to getting more seniors walking as well as barriers to walking, funding, programs, and specific locations throughout the city where improvements could be made.
City Staff	This meeting included discussions about the existing city ordinance, regulations and requirements for sidewalks and other pedestrian amenities such as Americans with Disabilities Act (ADA), and maintenance needs. The participants discussed the city’s funding and budget opportunities related to the Plan.
Fire Department	Fire department staff discussed the fire code and subdivision access for pedestrians.
Health Organizations	These groups expressed an interest in walkability considerations for new development, walking access to city parks, walking connections citywide particularly for senior citizens to access amenities, and for children to have safe access to schools. The team also heard an interest in integrating city plans related to walking, messaging ideas for creating a culture of walking, and the importance of collecting good data.



Table 3: Stakeholder Involvement: July 2013 Listening Sessions (continued)

Listening Session	Outcome
Transit	The discussion focused on existing and future transit facilities and upcoming system changes as well as Wichita Transit’s role in making pedestrian improvements.
Downtown Design Group	Attendees discussed existing conditions in Downtown Wichita, as well as the importance of walking and pedestrians to downtown street life. The ways in which the Plan and specific design elements can help to improve the walking environment were also covered.
State and Regional Agency Staff	Participants discussed WAMPO’s pedestrian related planning process and existing plans as well as the activities and funding related to walking that the MPO supports and administers. Participants discussed the relationship between the city, county, and MPO in providing pedestrian facilities, including sidewalks and ADA compliance.
Walking Advocates	Attendees discussed the benefits of walking such as the importance of safety and ways in which it can be improved in Wichita.
Kansas Department of Transportation	The discussion highlighted state programs and funding available to the City of Wichita.

## SUMMARY OF CURRENT POLICIES AND PRACTICES

Local plans and guidelines related to walking were reviewed. Comparison communities were also contacted for perspective on how pedestrian issues are addressed.

### *Applicable Local Plans and Guidelines*

The City has many different policies, practices, and procedures that have a direct impact on the safety and quality of the pedestrian environment. A review of local transportation planning and design documents revealed that these documents can either help or hinder pedestrian travel depends on many different factors, including:

- » The strength of the original policy;
- » The authority of government agencies to implement and enforce the policies;
- » The plan review process;
- » Coordination between different departments and agencies; and
- » Resources available to ensure that policies are implemented and enforced.

Table 4 provides an overview of local plans and guidelines that influence walking and pedestrian infrastructure in Wichita. A comprehensive summary of the existing planning and design context can be reviewed in Appendix B.

Table 4: Local Plans and Guidelines

Plan	Overview
Wichita Parks, Recreation and Open Space Plan	The Wichita Parks, Recreation, and Open Space Plan is a guide for the provision of parks, open spaces, recreation opportunities, and paths/trails by the City of Wichita and Sedgwick County. The plan acknowledges both the need for well-connected recreational walking facilities within parks and also calls for high quality pedestrian facilities to accommodate pedestrian access to parks.
Project Downtown: The Master Plan for Wichita	Project Downtown is the downtown master plan for the City of Wichita. It guides development, and the provision of infrastructure and municipal services. The plan outlines a vision for downtown that enables people to live, work, shop, play, and learn within a short walk. One of the key goals of the plan is to support development that fosters walkable connections.
Wichita Area Metropolitan Planning Organization Pathways Plan	The WAMPO Pathways Plan provides an assessment of existing bicycle/pedestrian facilities and identifies, prioritizes, and recommends future connecting links for bicycle/pedestrian use within the WAMPO planning area including the City of Wichita.
Metropolitan Transportation Plan 2035	The Metropolitan Transportation Plan (MTP) 2035 is the blueprint for all regionally significant transportation projects and activities through 2035. It is a 25 year strategic plan for maintaining and improving mobility within and through the region including allocation of funding for pedestrian related projects.
WAMPO Safety Plan	The WAMPO Safety Plan is guided by the timeline and goals identified in the Metropolitan Transportation Plan 2035. It addresses how safety in the region can be improved and the number of road crashes reduced. It provides information about the type of crashes, how they occurred, and where they were located. This is useful information to identify areas that need special attention when planning for pedestrian accommodation.
Wichita-Sedgwick County Comprehensive Plan	The Wichita-Sedgwick County Comprehensive Plan serves as the overall guide for the City of Wichita and Sedgwick County. It is important for the Wichita Pedestrian Master Plan in many ways, especially because it identifies the 2030 Future Growth Area for the City of Wichita.

Table 4: Local Plans and Guidelines (continued)

Plan	Overview
WAMPO Safe Routes to School (SRTS) Plan	This plan includes an action plan that identifies and addresses issues that impact student travel behavior within the WAMPO area. The plan also lays out a phased approach to funding the SRTS program from the State of Kansas and other sources.
Wichita Subdivision Regulations	The Subdivision Regulations specify many elements of the physical environment, including parking and street designs. The regulations includes street layout and design standards that include the provision of sidewalks per street type.
Wichita Municipal Code	The Wichita Municipal Code of Ordinances contains provisions for pedestrians including traffic regulations and ordinances that influence the design, operation, and maintenance of the pedestrian realm.
Wichita Bicycle Master Plan	The Wichita Bicycle Master Plan outlines engineering, education, enforcement, encouragement, and evaluation strategies to promote bicycling in Wichita. The plan outlines a priority network of bicycle facilities and also includes detailed design recommendations that accommodate both bicyclists and pedestrians. The plan can be closely tied to the Pedestrian Master Plan when considering multimodal street improvements - improvements for bicycles are often also considered improvements for pedestrians. For example the maps that show intersection improvements for bicycling can also provide guidance for pedestrian improvement locations.



## PRACTICES IN PEER CITIES

Agency representatives from five peer cities were interviewed to understand current policies and practices related to walking in comparison communities. Interviews were conducted with city staff in:

- » Kansas City, Missouri;
- » Des Moines, Iowa;
- » Omaha, Nebraska;
- » Oklahoma City, Oklahoma; and
- » Denver, Colorado.

City staff were asked questions related to pedestrian infrastructure, policies, and procedures. A full list of the interview questions and answers can be found in Appendix C. The responses can be used by city staff as a reference during Plan implementation.

The following are key findings from the peer city research:

- » High-visibility crosswalks (e.g., ladder or continental design) are used in areas with higher pedestrian and traffic volumes such as downtowns, schools/universities and hospitals.
- » Midblock crossing locations are carefully reviewed to determine if the crossing is necessary/warranted. When midblock crossings are installed, they are typically paired with a traffic control device (e.g., HAWK, signal, yield, etc.).
- » Sidewalk requirements have evolved over time to address community desires for equity and connectivity.
- » Cities have variety of sidewalk connectivity and maintenance programs; however, maintenance is generally the responsibility of the adjacent property owner.
- » Aesthetic enhancements (e.g., public art, brick crosswalks, lighting, etc.) are typically funded by special sales taxes/assessments (e.g., business association, special taxing district, etc.) or by private institutions and foundations.



# CHAPTER 2

## Where We Are Now



### EXISTING PEDESTRIAN CONDITIONS

A good understanding of the existing conditions for walking in Wichita is essential to the development of this Plan’s recommendations. This chapter summarizes existing infrastructure, demographics, neighborhood structure, and safety issues within the city.

Since its incorporation in 1870, the City of Wichita has grown steadily in population and in size. Figure 1 illustrates the physical development of the community from 1870 to the present and projected to the 2020 growth estimate. The surge in land area size between 1940 and 1960 is evident.

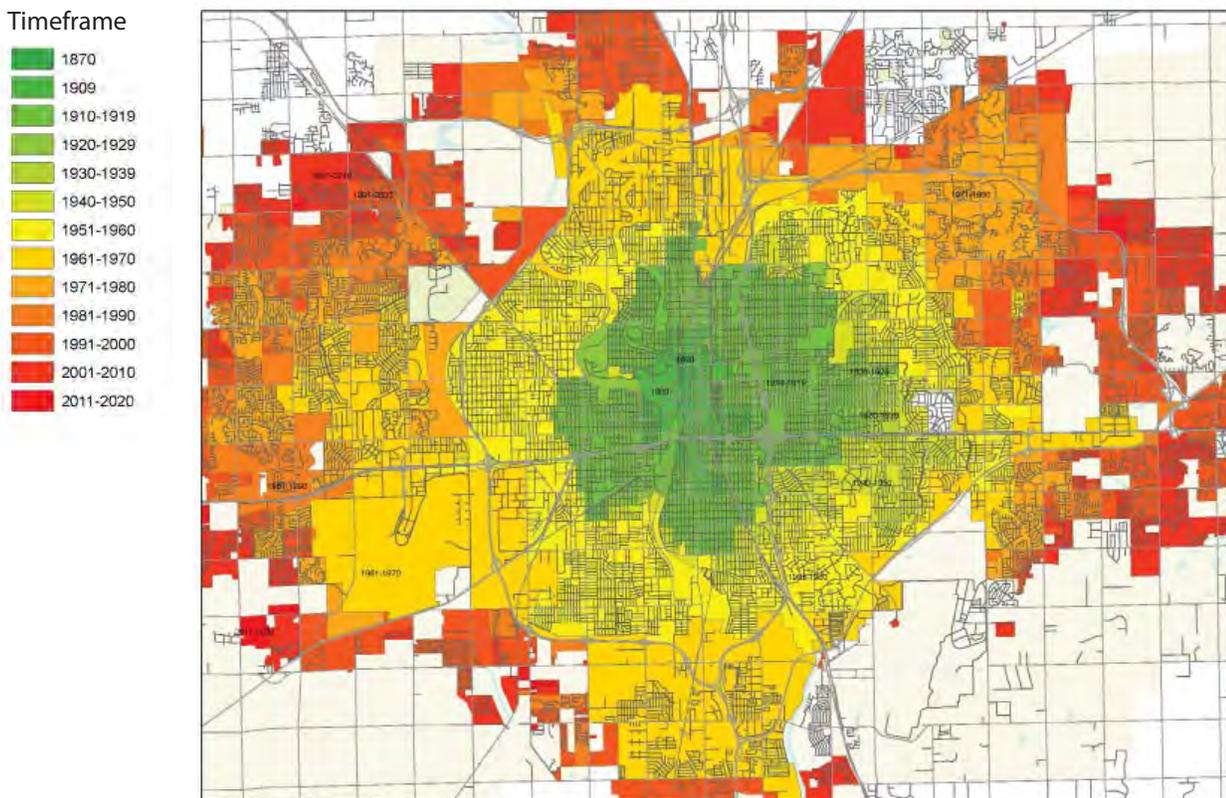


Figure 1: Wichita Growth Map 1870-2020

Some characteristics of the community that influence the pedestrian environment are shown in the following figures. The maps are presented as “heat maps” which highlight the density of a given feature with a color gradient. Red indicates areas of highest density, while blue indicates areas of lowest density.

**Intersection Density (Figure 2):** shows the density of intersections within Wichita. Higher intersection density indicates shorter blocks, which are more conducive to walking. However, intersections also represent points of conflict where pedestrians are more likely to be struck by a motor vehicle.

**Density of Motor Vehicle Crashes Involving Pedestrians (Figure 3):** illustrates the density of pedestrian crashes in Wichita based on crash data provided by KDOT for the years 2008 to 2012.

**Density of Wichita Transit Bus Routes (Figure 4):** transit users generally walk at either end of their trip. There is a strong relationship between the presence of transit and walkability.

**Density of Persons under 18 and over 65 years old (Figure 5):** illustrates the density of most vulnerable populations, youth and seniors.

Additional heat maps for the following other community characteristics are included in Appendix D.

**Overall Population Density** – Population data shows residential density in various neighborhoods in Wichita. Residential density can provide insight into trip origins for both utilitarian and recreational trips.

**Employment Density** – Areas with a higher density of businesses tend to have higher volumes of pedestrian traffic and are likely to benefit from improved walking infrastructure.

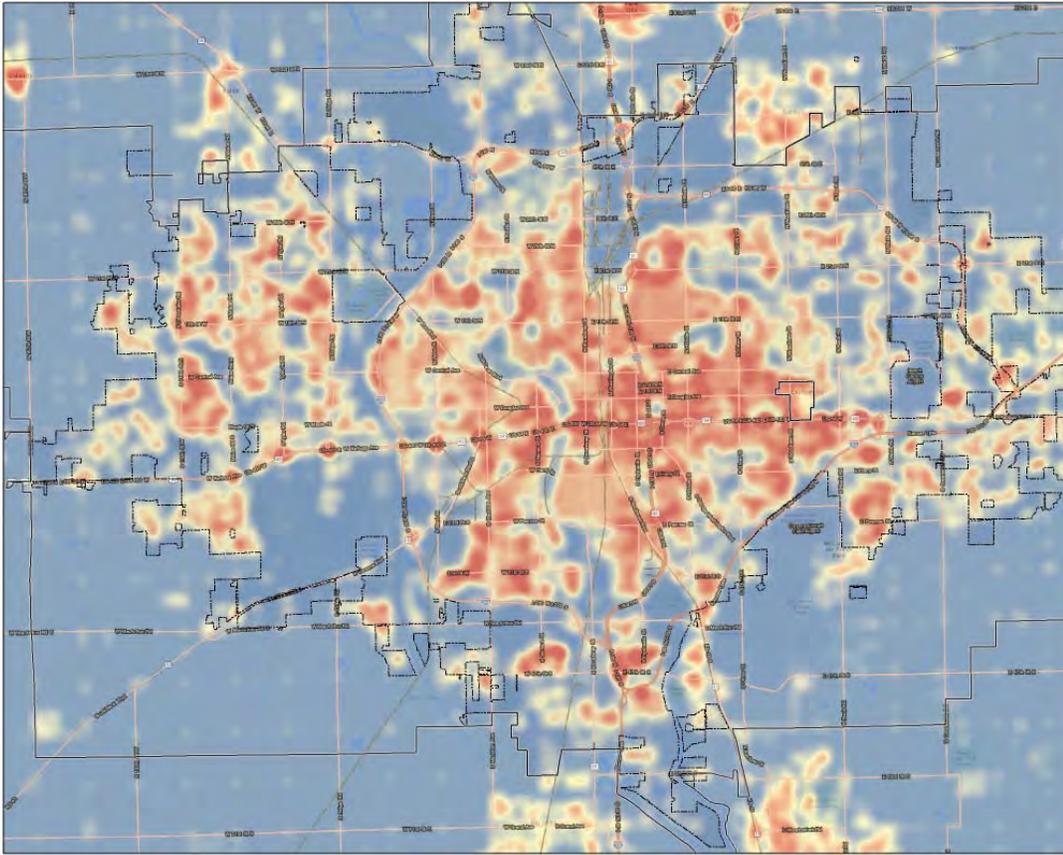
**College Density** –Walking is generally more common in and around college campuses due to the higher use of transit and lower car ownership rates among students.

**School Density** – An emphasis on pedestrian safety around school areas can encourage walking to school. School age children are some of the most vulnerable roadway users.

**Park and Community Center Density** – parks and community centers are popular destinations for residents of all ages and should be easily accessible for pedestrians.

**“ I support the Wichita Pedestrian Master Plan because we need to make Wichita an inviting City to live, work and play! In order to do this we must improve connectivity to our neighborhoods and businesses. In an economy such as ours, walking options would allow the viability of being mobile and staying connected not to mention the positive health effects walking provides us all. ”** -- Open House Participant





### Wichita Pedestrian Master Plan

Existing Conditions

#### Intersection Density



- 2030 Growth Area
- Wichita City Limits

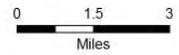
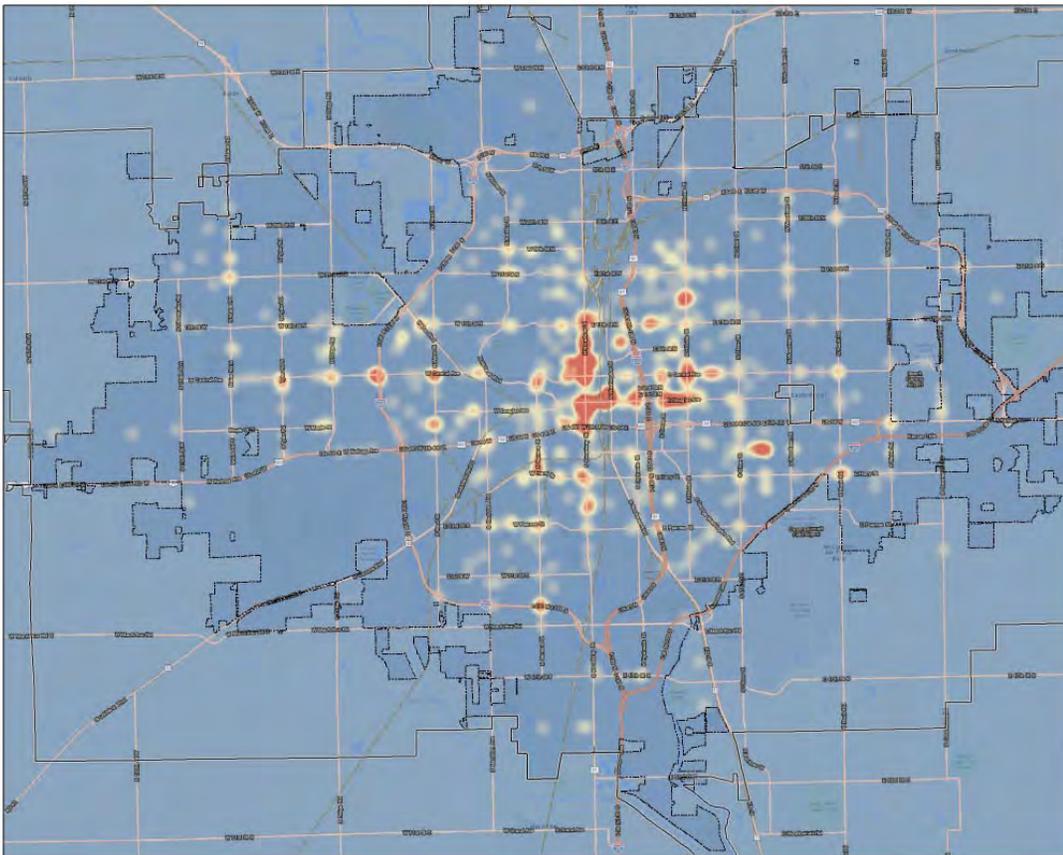


Figure 2: Intersection Density



### Wichita Pedestrian Master Plan

Existing Conditions

#### Pedestrian Crash Density



- 2030 Growth Area
- Wichita City Limits

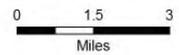
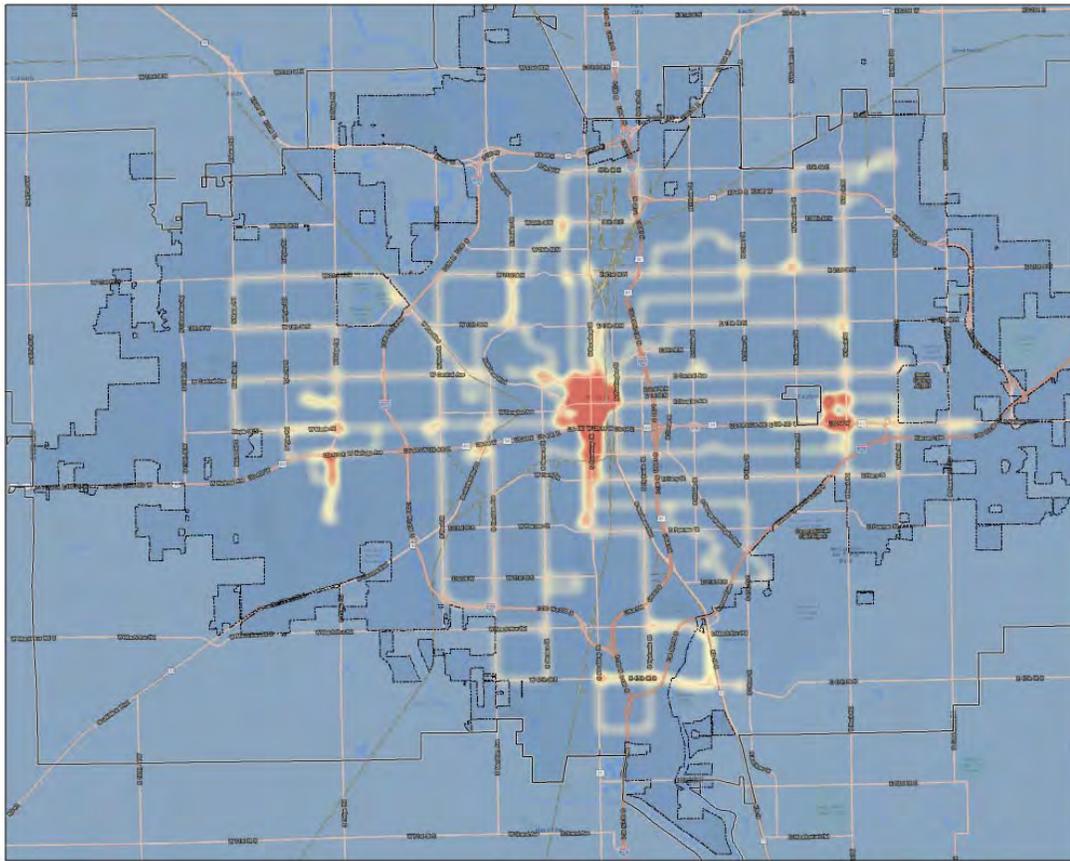


Figure 3: Pedestrian Crash Density



**Wichita Pedestrian Master Plan**

Existing Conditions

**Bus Route Density**  
 High  
 Low

2030 Growth Area  
 Wichita City Limits

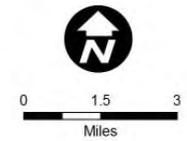
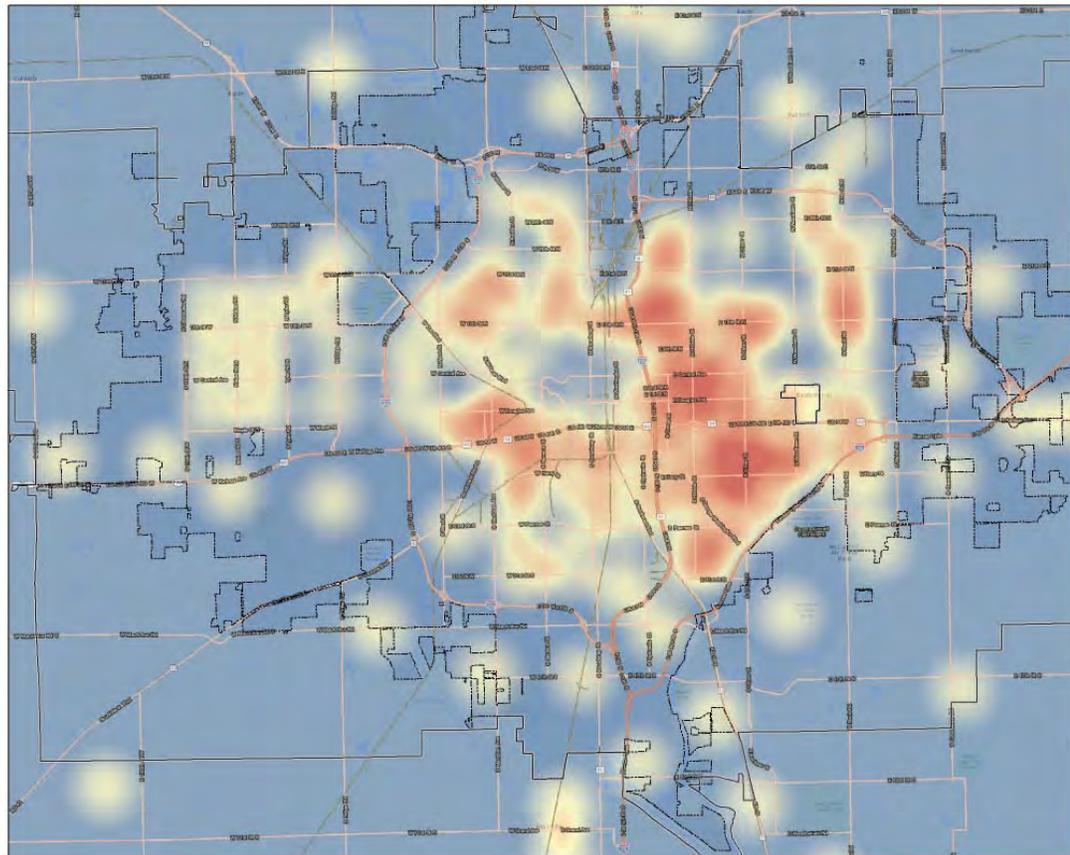


Figure 4: Transit Density



**Wichita Pedestrian Master Plan**

Existing Conditions

**Density Ages <18 and >65**  
 High  
 Low

2030 Growth Area  
 Wichita City Limits

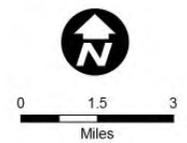


Figure 5: Density of Persons under 18 and over 65 years old

## NEIGHBORHOOD TYPOLOGIES

The pedestrian experience is significantly influenced by the design of the built environment. Factors such as the organization and connectivity of the street network, presence or lack of pedestrian facilities, and organization of land uses all play a role in walkability. Within the City of Wichita, the built environment can generally be categorized into five development patterns (referred to here as typologies) that are related to the time period in which neighborhoods were developed.

The typologies are categorized as:

- » Downtown Grid (1870-1909)
- » Residential Grid (1910-1944)
- » Grid and Curvilinear (1945-1960)
- » Higher Density Curvilinear with Cul-de-Sacs (1961-1980)
- » Low Density Curvilinear with Cul-de-Sacs (1981-present)

Each of the neighborhood typologies has unique opportunities and challenges, and pedestrian design treatments for these areas should be selected appropriately (available design treatments are explained further in Chapter 5). This section provides a brief overview of the five City of Wichita neighborhood typologies and the most common challenges for pedestrians in these areas.

### *Downtown Street Grid*

*Characteristics:* Downtown Wichita was built between 1870 and 1909 with the older sections of town built along the Arkansas River. The street grid is mostly intact with long, rectangular blocks approximately 650 feet by 350 feet. There are several major barriers to pedestrian circulation in this area including an elevated freeway, a rail corridor, and the river. The streets are generally multi-lane and one-way. The land use is predominantly commercial with large buildings and surface parking lots. There are sidewalks on both sides of the streets and building frontages are mostly adjacent to the sidewalk. Most intersections are signalized and building entrances are mostly accessible from the sidewalk. Pedestrian volumes tend to be higher here than in other parts of the city due to the concentration of services within short walking distances. From the sidewalk there also is access to on-street parking and transit.

### *Example Neighborhood*

- » Downtown



Figure 6: Example Downtown Grid

## Typology Specific Challenges

1. *Excess capacity*: many Downtown streets are wide and have more lanes than needed to accommodate traffic volumes. Wide streets increase a pedestrian's exposure to traffic when crossing the street and encourages higher vehicle speeds.
2. *Transit accommodations*: there is higher transit use Downtown compared to other areas. This requires accommodations for transit resources (e.g., bus shelters, benches) within the sidewalk zone and a need to provide facilities that allow pedestrians to safely cross the street
3. *One-way streets*: many Downtown streets are one-way with more than one travel lane, creating a multiple threat hazard for pedestrians attempting to cross. On roads with multiple lanes in the same direction, a multiple threat hazard occurs when one car stops for a pedestrian and a car in the adjoining lane does not. The driver in the adjacent lane may not be able to see the pedestrian around the first stopped vehicle.
4. *Long blocks*: on the long side of blocks in Downtown, pedestrians wanting to access businesses and services on the opposite side of the street are more likely to make a midblock crossing instead of walking out of their way to cross at a signalized intersection.
5. *Life on the streets*: with wide sidewalks and a high intensity of use, entertainment and restaurants, Downtown is a great location for placemaking related improvements such as public art, benches, and street trees.

## Residential Street Grid

Neighborhoods built between 1910 and 1939 fall into this typology. These neighborhoods are typically 1 to 3.5 miles from the city center. The street grid is intact, with blocks approximately 600 feet by 300 feet. The long side of the block is north south and typically includes a sidewalk with a buffer to the motor vehicle travel lanes. The land uses are predominantly single family residences with some schools, churches and small businesses. Commercial areas are typically located at arterial street intersections. On-street parking is available and used.

### Example Neighborhoods

- » Delano
- » South Central
- » Midtown



Figure 7: Example Residential Grid

## Typology Specific Challenges

1. *Visibility at intersections:* streets in these areas are generally narrow, and on-street parking and street trees are present close to the intersections.
2. *Cut-through traffic on roads one block away from arterial streets:* when there is congestion on arterial streets, some motorists will choose to cut through the neighborhoods, often using the residential street one block off of the arterial. These streets often see higher motor vehicle volumes and speeds than other residential streets during the peak hours.
3. *One-way streets:* some of the arterial streets in these areas are one-way with more than one travel lane, which creates a multiple threat hazard for pedestrians attempting to cross. On roads with multiple lanes in the same direction, a multiple threat hazard occurs when one car stops for a pedestrian and a car in the adjoining lane does not. The driver in the adjoining lane may not be able to see the pedestrian around the first stopped vehicle.
4. *Crossings on arterial streets between neighborhoods, schools, or shopping areas:* there are shopping areas, services and adjacent neighborhoods within walking distance of homes in these areas. However, a lack of crossing opportunities across arterial streets make them less accessible. Many arterial street intersections are not improved for pedestrians, making them challenging to cross. Walking or ADA access into commercial areas is often not provided, requiring pedestrians to pass through parking lots where sidewalks or dedicated pedestrian space are not provided from the street to the entrance to the store.

### Grid and Curvilinear Streets

*Characteristics:* In these neighborhoods built between 1940 and 1960, the street grid meets longer curvilinear blocks. These areas are typically 3.5 to 5 miles from the city center. The land use is predominately single family homes. Along residential streets there are few sidewalks, and those that are present are narrow. On-street parking is available but sparsely used because most of the homes have driveways. Residential street intersections are generally stop controlled or uncontrolled. In order to access most businesses on foot, a busy arterial street must be crossed or accessed. Arterial streets in these neighborhoods generally have sidewalks with some gaps in the network.

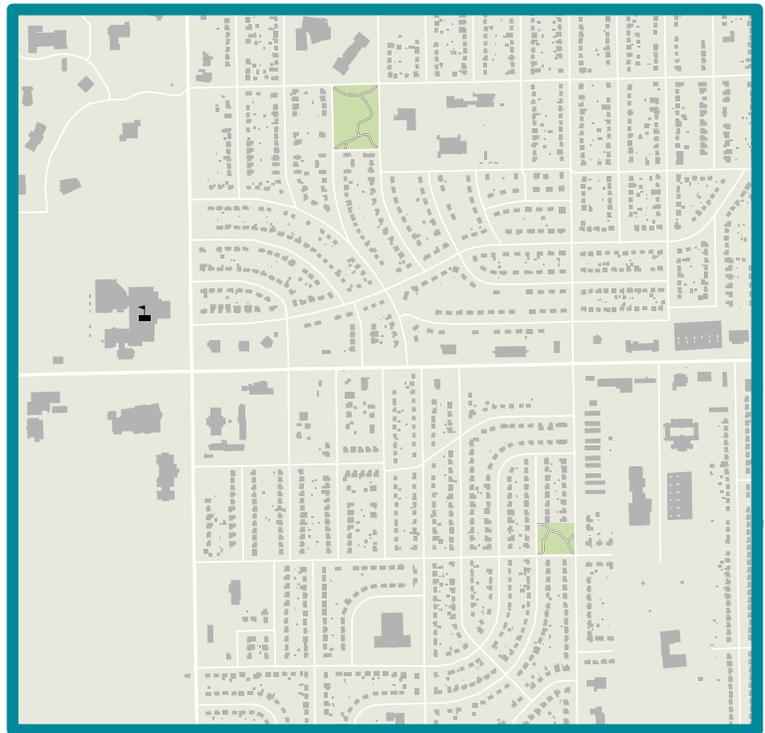


Figure 8: Example Grid and Curvilinear Street Network

## Example Neighborhoods

- » Southwest Neighborhood
- » Benjamin Hills
- » Matlock Heights
- » Fabrique

## Typology Specific Challenges

1. *Safe walking routes to schools and parks:* the intact street grid makes it possible for students to walk to school. However, streets without sidewalks and unimproved street crossings are barriers to safe walking and bicycling for children. Skewed intersections are more common in these areas when roads do not meet at right angles, which can lengthen street crossing time and increase vehicle turning speeds (due to the reduced radius of the turn).
2. *Crossings on arterial streets between neighborhoods, schools, or shopping areas:* there are shopping areas, services, and adjacent neighborhoods within walking distance of homes in these areas. However, a lack of pedestrian access across arterial streets make them inaccessible. Arterial street intersections are often not improved with crosswalks or signals for pedestrians, making them challenging to cross. Walking or ADA access into commercial areas is often not provided requiring pedestrians to pass through parking lots where sidewalks or dedicated pedestrian space are not provided from the street to the entrance to the store.
3. *Sidewalks:* many of the streets are missing sidewalks on one or both sides of the street.
4. *Residential street intersection control:* at low volume residential street intersections motor vehicle drivers may not always comply with stop controlled intersections or obey rules of the road at uncontrolled locations (yielding) because they rarely encounter cross traffic at those locations. At intersections without control, traffic calming measures can help to slow speeds and improve compliance.

## High Density Curvilinear Streets with Cul-de-Sacs

*Characteristics:* In areas built between 1961 and 1980, the streets are mostly residential, with collectors leading to arterials streets. Arterial streets are typically on a one-mile spacing. These areas are generally located 5 to 6.5 miles from the City center. Blocks inside the mile section are curvilinear with occasional cul-de-sacs. Blocks are typically long and irregular. Land uses are predominately single family homes, multifamily buildings, and large commercial lots. Commercial areas are accessed via arterial streets, and sometimes require a circuitous route to be accessed from adjacent residential areas. If sidewalks are present, they may be on one or both sides of the road. On-street parking is available but sparsely used because most homes have driveways. Residential street intersections may be uncontrolled or stop controlled. Pedestrian crossings of arterial streets occur at widely spaced signalized intersections.

### Example Neighborhoods

- » West 21st Street and Maize Rd
- » Westlink
- » Brookhollow

### Typology Specific Challenges

1. *Lack of street connections require longer walking distances:* Walking to destinations within the neighborhood can be challenging with a lack of connecting streets and sidewalks; and longer distances where connections do exist.
2. *Access management:* Arterial streets adjacent to neighborhoods are where residents access businesses, transit and other services. Driveways and their relationship to the sidewalk can impact pedestrian safety. In particular, a high number of driveways or driveways that cause a steep cross-slope across the sidewalk create a challenging walking environment.
3. *Traffic calming:* Speeding along residential streets can be a problem in areas where the streets are wide and there are few parked cars. Speeding increases the risk and severity of collisions including those involving pedestrians crossing the street.

### Low Density Curvilinear Streets with Cul-de-Sacs

*Characteristics:* In these neighborhoods built after 1981, streets are residential, curvilinear, and with frequent cul-de-sacs. Blocks are frequently long and irregular. These areas are located anywhere between 6 and 10 miles from the city center. The adjacent land use is generally single family homes, vacant lots and fields. If sidewalks are present they are typically on one side of the street. On-street parking is available



Figure 9: Example High Density Curvilinear Streets with Cul-de-Sacs



Figure 10: Example Low Density Curvilinear Streets with Cul-de-Sacs

but sparsely used because most homes have driveways. Residential street intersections may be uncontrolled or stop controlled.

### Example Neighborhoods

- » Sierra Hills
- » Lakepoint
- » Willowbend
- » Fox Ridge

### Typology Specific Challenges

1. *Sidewalks:* Many of the streets lack sidewalks on one or both sides of the street.
2. *Lack of street connections require longer walking distances between blocks:* Walking to destinations within the neighborhood can be challenging because of discontinuous streets and cul-de-sacs.
3. *Connections between neighborhoods:* Adjacent neighborhoods in these areas may be difficult to walk between. The only street connections available require pedestrians to travel long distances and/or use arterial or two-lane streets with no sidewalks.
4. *Limited entrances to developments:* Some developments have a limited number of entrances that consolidate vehicle traffic into one driveway concentrating traffic volumes. The entrances are built for motor vehicle access and are often a width that encourages high turning speeds. These limited connections also result in longer walking distances between destinations.
5. *Speeding:* Speeding along residential streets can be a problem in areas where the streets are wide and there are few parked cars. Speeding increases the severity of collisions, especially those involving pedestrians.



## SAFETY ANALYSIS

The Kansas Department of Transportation (KDOT) maintains a database of all motor vehicle crashes reported in the state. To better understand city-wide pedestrian safety issues, the location of crashes involving pedestrians that occurred between 2008 and 2012 were analyzed. Figure 11 illustrates the fatal and injury crashes that occurred within the city. Based on crash locations, the crash frequency was determined for some of the major roadways in the study area. Table 1 outlines the frequency and severity of crashes on 18 roadways in Wichita.

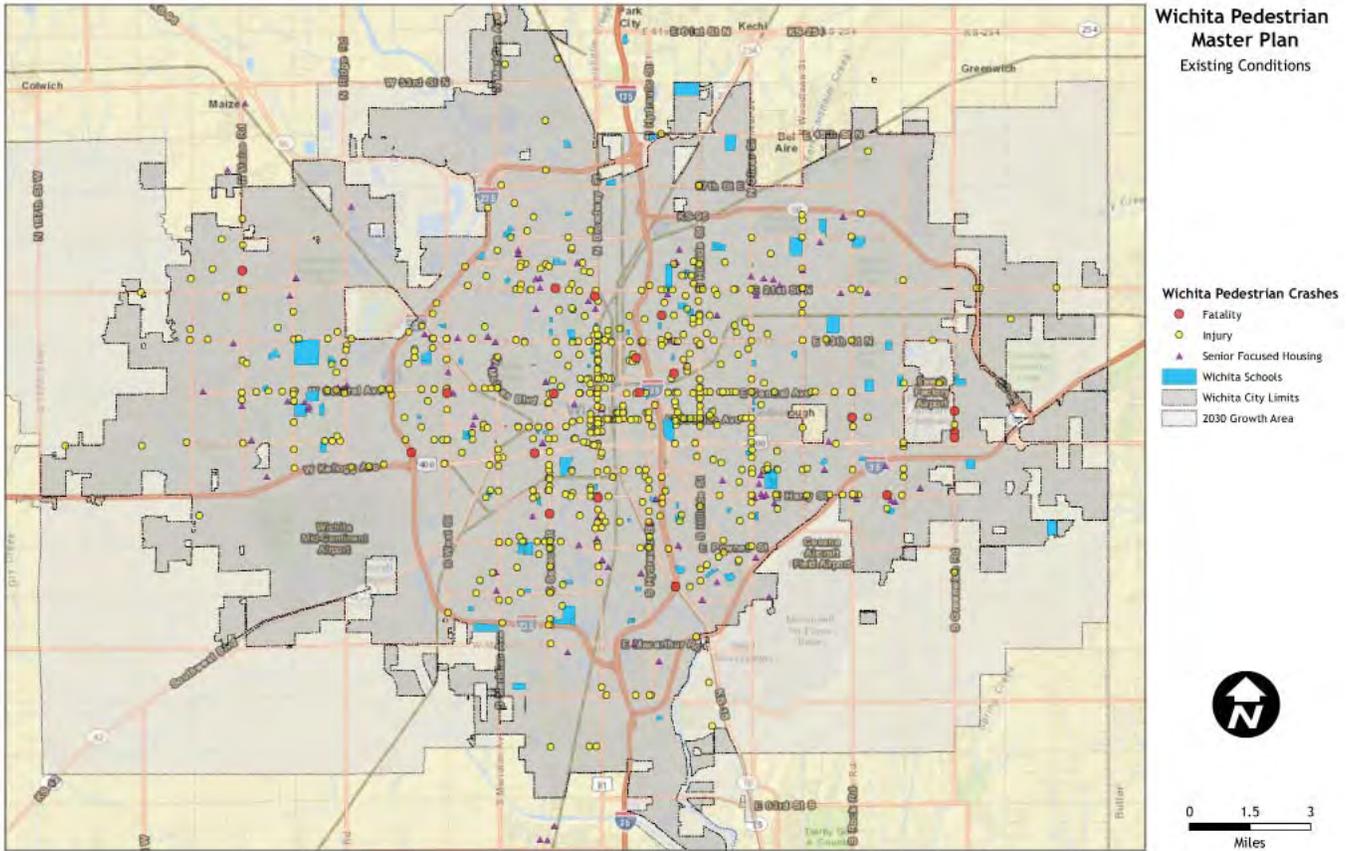


Figure 12: Safety Analysis

Table 5: Roadways with highest frequency of pedestrian crashes 2008 to 2012

Street Name	Fatal Crashes	Injury Crashes	Total Crashes
Central Avenue	2	61	63
Broadway Avenue	0	56	56
Douglas Avenue	1	50	51
13th Street	0	36	36
Seneca Street	1	31	32
Harry Street	1	29	30
Hillside Avenue	0	28	28
21st Street	1	25	25
Kellogg Drive	1	21	22
Murdock Avenue	0	21	21

Table 5: Roadways with highest frequency of pedestrian crashes 2008 to 2012 (continued)

Street Name	Fatal Crashes	Injury Crashes	Total Crashes
Oliver Avenue	0	20	20
Maple Street	0	19	19
Lincoln Street	0	18	18
I-235	1	14	15
West Street	1	13	14
Woodlawn Boulevard	0	14	14
Pawnee Avenue	0	12	12
Tyler Road	0	10	10

The crash analysis revealed that the most pedestrian crashes occurred on three corridors:

- » Broadway Avenue,
- » Central Avenue, and
- » Douglas Avenue.

Pedestrian safety improvements are needed throughout the City. However, when there is a choice of where to focus resources for improving pedestrian safety, implementing improvements along these corridors can have a larger impact on safety. Since these three corridors traverse the entire city, each corridor was broken down into one-mile segments to better illustrate where the crashes are concentrated.

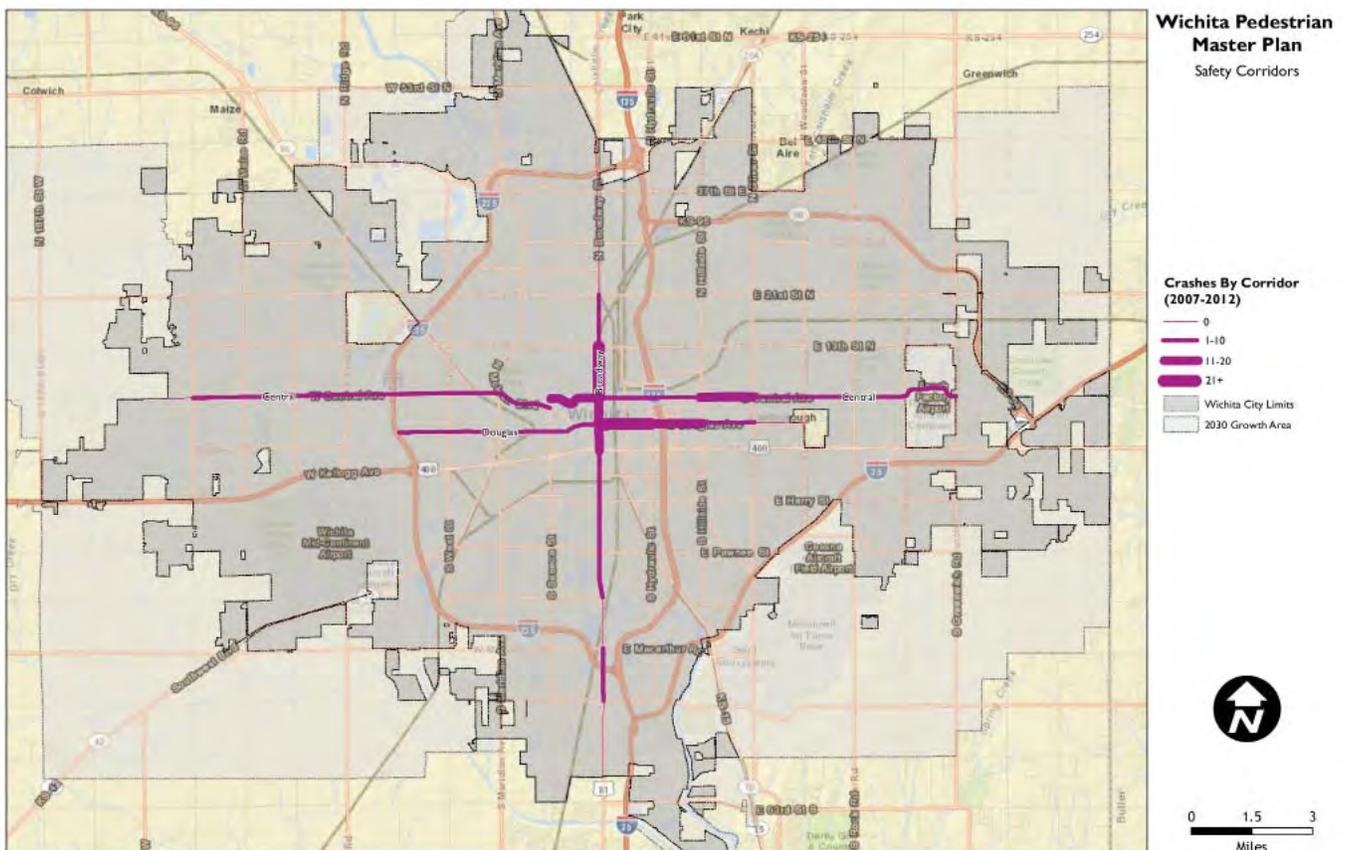


Figure 13: Wichita Safety Corridors

Table 6: Segments with high crash frequencies

Corridor	One-mile Extents	Crash frequency over 5 years
Broadway Avenue	Central to 13th	26
Douglas Avenue	Broadway to Hydraulic	21
Broadway Avenue	Kellogg to Central	19
Central Avenue	Seneca to Broadway	15
Douglas Avenue	Hydraulic to Hillside	14
Central Avenue	Hillside to Oliver	12
Central Avenue	Broadway to Hydraulic	10

The three safety corridors traverse the entire City of Wichita and intersect all the of the local neighborhood typologies. The roadways tend to be four lanes or wider. Below is a more detailed description of the roadway and network conditions found along the Safety Corridors.

### **Broadway Avenue**

From I-235 to 17th Street North, North Broadway Avenue is a four-lane arterial roadway separating a Residential Grid type neighborhood from a low-density industrial area. Land uses immediately adjacent to the corridor tend to be commercial.

Between 10th Street North and Kellogg Avenue (US-54) – Broadway Avenue is a four-lane arterial through a Downtown Grid neighborhood condition. Land uses on the corridor tend to be commercial, with some institutional and some off-street parking.

From Kellogg Avenue (US-54) to Pawnee Street – South Broadway Avenue is a four-lane arterial with Residential Grid type neighborhoods on either side. Land uses on the corridor are a mix of commercial and residential, with some institutional uses.

From Pawnee Avenue to 59th Street South – South Broadway Avenue is a four-lane arterial with some median sections and periodic left-turn lanes. Neighborhood typologies along the corridor in this area are High and Low Density Curvilinear.

### **Central Avenue**

From North 119th Street West to North Ridge Road – West Central Avenue is a four-lane arterial. Neighborhood typology in this area is Grid and Curvilinear with commercial land use and left-turn lanes at major intersections.

From North Ridge Road to Meridian Avenue – West Central Avenue is a five-lane arterial, including a



center turn lane. The Neighborhood Typology in this area is a Residential Grid, with some commercial land uses along the corridor and at major intersections.

East of Meridian Avenue, Central Avenue merges with McLean Boulevard and is a four-lane boulevard along the river. The Neighborhood Typology in this area is primarily Residential Grid.

From East of the McLean Boulevard area to I-135, East Central Avenue is a five-lane arterial, including a center turn lane. The typology in this area is the Downtown Grid condition. The neighborhood typology is Residential Grid.

Between I-135 and Edgemoor Drive, East Central Avenue transitions between a five-lane arterial including a center turn lane to a four-lane arterial with no turn lane.

From Edgemoor Drive to North Greenwich Road, East Central Avenue is a five-lane arterial with a center turn lane. The neighborhood typology is Grid and Curvilinear.

From North Greenwich Road to North 159th Street East, East Central Avenue is a five-lane arterial with a center turn lane. The neighborhood typology is High Density Curvilinear.

### ***Douglas Avenue***

From I-235 to North West Street, Douglas Avenue is a two-lane collector with residential land use. The neighborhood typology is a Residential Grid.

From West Street to Elizabeth Avenue, Douglas Avenue is a four-lane roadway that may or may not be marked as four lanes. The neighborhood typology is a Residential Grid with commercial land use immediately adjacent to the corridor.

From Elizabeth Avenue to I-135, Douglas Avenue passes through the Downtown Grid. The roadway varies between a four-lane roadway, two-lanes with angle parking, five lanes with parallel parking, and four lanes with parallel parking.

From I-135 to Webb Road, Douglas Avenue passes through a mixture of Residential Grid and Grid and Curvilinear neighborhood



typologies. The roadway is primarily a four-lane roadway, with some left-turn lanes at major intersections.

Under existing conditions, there are some challenges for walking in Wichita including areas of the City that lack connectivity or present a safety hazard for pedestrians. This Plan's recommendations seek to address these challenges for all roadway users.



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# CHAPTER 3

## Where We Want to Go



### INTRODUCTION

The Plan's vision, goals, strategies and actions were heavily influenced by public and stakeholder input. Through an interactive exercise with the project Steering Committee, a public open house event held on September 12, 2013, and multiple listening sessions; the values and needs of the Wichita community were established (see Appendix E for listening session summaries). One overarching theme in these conversations was a clear desire to improve conditions for walking in Wichita and to make it safer for all pedestrians. Specifically, stakeholders emphasized the need to improve walking conditions for seniors and children. Making and enhancing connections between and within neighborhoods was also strongly desired. The review of previous planning and policy documents also provided context for these vision, goals, strategies, and actions (see Chapter 1).

**Vision Statement:** The vision is the heart of the plan. It describes what the community will be like in 2024, and provides the framework for this civic plan by identifying key elements and conditions. From the vision statement, the goals, and strategies have been developed. They are organized from the most broad/general concepts (goals) to the most specific (actions).

**Goals:** The end state the community wants to achieve.

**Strategies:** Recommendations for achieving the vision and goals (see Chapter 4).

**Actions:** Activities undertaken to implement each recommended strategy (see Chapter 4).



Figure 14: Vision, Goals, Strategies, and Actions Relationship

## VISION STATEMENT

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**By 2024, the City of Wichita will be a pedestrian friendly community and a place where walking is an easy choice in all people’s daily lives. Wichita residents and visitors will have access to high quality and safe walking environments that connect all neighborhoods, destinations, and other modes of transportation, while contributing to a stronger, healthier, and more vibrant Wichita.**

## GOALS

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The following goals for the Wichita Pedestrian Master Plan have been derived from community engagement activities, the Technical Advisory Committee, Steering Committee, existing plans, as well as concepts from national organizations and planning efforts in other cities.

### *Goal 1: Provide a safe and welcoming pedestrian network*

Improving safety for all roadway users is essential to creating a pedestrian-friendly community.

### *Goal 2: Improve community accessibility and connections for pedestrians*

Reducing barriers to transportation by building network connections will make the walking environment in the City of Wichita more accessible to everyone.

### *Goal 3: Promote a citywide culture of walking*

Providing a citywide environment where walking is available as a comfortable everyday option provides the population of Wichita with more transportation and recreation options.



## PERFORMANCE MEASURES

Progress toward these goals and the successful implementation of the Plan can be evaluated through the use of performance measures. The most useful performance measures are quantifiable and trackable over time. The performance measures below may be expanded over time as data and resources become available.

Baseline data to measure against is provided below, and additional information can be found in Appendix F.

**Performance Measure Target: Reduce the Pedestrian Fatality Rate by one third over the next 10 years.**

*Baseline:*

The Bicycling and Walking in the United States 2014 Benchmarking Report shows the 2009-2011 Pedestrian Fatality Rate for Wichita at 16.8 pedestrian fatalities per 10,000 daily pedestrian commuters. The Pedestrian Fatality Rate is calculated by dividing the average number of annual pedestrian fatalities from crashes with motor vehicles (obtained from KDOT data) by the estimated average annual number of commuters walking to work (obtained from the U.S. Census Bureau American Community Survey three year estimates) - divided by 10,000.<sup>24</sup>

**Performance Measure Target: Increase the amount of walking in Wichita over the next 10 years by 50 percent.**

*Baselines:*

- » The U.S. Census Bureau 2010-2012 American Community Survey 3-Year Estimates reports that walking is the primary means of transportation to work for 1.3 percent of Wichita resident workers age 16 and over.
- » The 2013 WAMPO bicycle and pedestrian counts, conducted for two hours on a weekend and a week day, reported 724 pedestrians counted at count locations



<sup>24</sup> Alliance for Biking and Walking. "Bicycling and Walking in the United States: 2014 Benchmarking Report". 2014.

*Performance Measure Target: Increase the percentage of survey respondents rating ease of walking in Wichita as “excellent” or “good” to at least 60 percent.*

*Baseline:*

- » As part of the 2012 National Citizen Survey, 47 percent of Wichita survey respondents rated the ease of walking in Wichita as “excellent” or “good.”



# CHAPTER 4

## How Do We Get There?



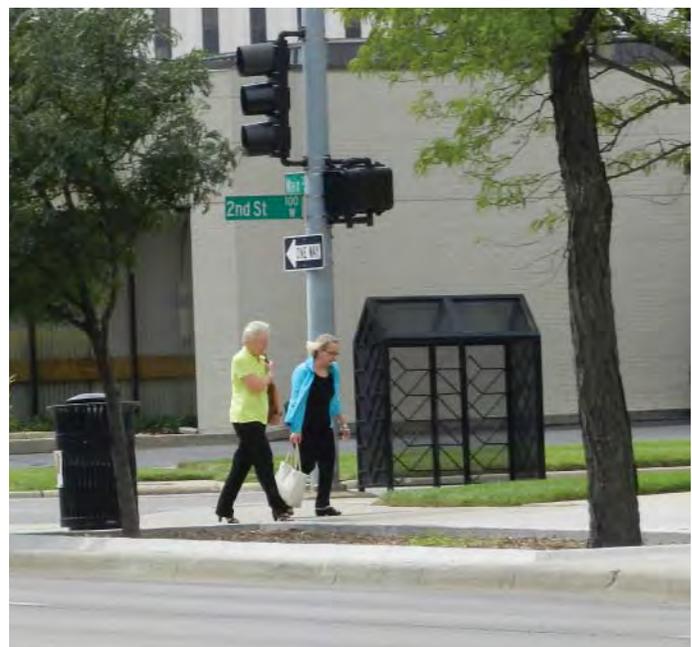
This chapter contains the top 10 strategies recommended for implementation over the course of the next 10 years to achieve the goals and realize the vision of this Plan. Apart from the “Top 10” strategies recommended for implementation over the next 10 years, there are a number of longer-term “down the road” strategies that should also be considered.

The following are the top 10 strategies recommended in this Plan:

- » Strategy 1 - Implement the Design Guidance included in Chapter 7 of this Plan
- » Strategy 2 - Create a Marked Crosswalk Policy
- » Strategy 3 - Focus Pedestrian Improvement Resources on Improving Safety at Intersections
- » Strategy 4 - Provide Sidewalks along Arterial Streets
- » Strategy 5 - Improve Pedestrian Infrastructure near Senior Centers, Housing and Destinations
- » Strategy 6 - Improve Safety by Improving Pedestrian Infrastructure near Schools
- » Strategy 7 - Make Maintenance of Pedestrian Infrastructure a Priority
- » Strategy 8 - Plant and Maintain Street Trees
- » Strategy 9 - Support Efforts to Encourage Walking to School and Safety Education
- » Strategy 10 - Monitor and Update the Implementation Plan

The recommended strategies are organized by the following categories:

- » Engineering
- » Encouragement
- » Education
- » Enforcement
- » Maintenance and Construction
- » Plan Implementation



This Plan includes a matrix for each strategy that describes the implementation action steps, lead and support organizations, and the performance measure targets to complete or conduct the actions. Below are the definitions for the table column headings.

**Actions:** Activities undertaken to implement each recommended strategy.

**Lead:** The organization responsible for leading the implementation of the action.

**Support:** The organization engaged by the lead organization for assistance and expanded perspectives as needed. In some cases the supporting partners will provide ongoing assistance to the lead organization; in others they may be consulted on an occasional basis.

**Performance Measure Target:** Progress can be evaluated through the use of performance measures. The most useful performance measures are quantifiable and trackable over time. Performance measures may be expanded over time as data and resources become available.

The implementation of the actions recommended in this Plan will be evaluated through an annual progress report and development of an annual work plan. The annual work plan (Strategy 10) is a document that identifies the tasks and deliverables that are to be accomplished in a given year and allows for the actions recommended in this Plan to be prioritized relative to the current resources, feasibility, and support.



## ENGINEERING

### Strategy 1 – Implement the Design Guidance included in Chapter 7 of this Plan

Reducing crashes, improving access, and creating a better walking environment can best be achieved by implementing the design guidance recommended in this Plan.

ACTION	LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
<b>1</b> Submit recommended design guidance, including the recommendations from this Plan (Chapter 7) for consideration and endorsement by the City Council. Update the guidance as needed.	Public Works	Planning	By 2015 and update as needed
<b>2</b> Make the design guidance from this plan available to private sector contractors, developers, builders, Metropolitan Area Building and Construction Department (MABCD), and staff responsible for site plan reviews and code enforcement by posting the guidelines as standard specifications on the City’s website.	Planning	Public Works, Metropolitan Area Building and Construction Department (MABCD)	By 2016
<b>3</b> Coordinate design guidance implementation by creating a pedestrian facility checklist to be used by the City’s site plan reviewers. Update the checklist as needed.	MABCD	Public Works	By 2017 and update as needed
<b>4</b> Coordinate design implementation by creating a pedestrian facility checklist to be used by the City’s construction inspectors. Update the checklist as needed.	Public Works	MABCD	By 2018 and update as needed

### Strategy 2 – Improve the Safety of Pedestrians at Marked Crosswalks

Marked crosswalks help to improve pedestrian safety and the connectivity of the pedestrian network. A marked crosswalk policy will create a consistent approach for the evaluation and installation of marked crosswalks. Uniform and consistent application of crosswalks can help increase predictability for both pedestrians and drivers. The policy can utilize national best practices and the design guidance provided in Chapter 7 of this plan to:

1. Identify what factors are taken into consideration during evaluation (i.e., traffic volume, traffic speeds, crashes, destinations, roadway design, etc.);
2. Establish the primary types of crossing treatments to be considered for any marked crosswalk location (including high visibility crosswalks);
3. Identify the preferred designs and treatments for the crosswalks to improve safety and driver compliance (i.e., high visibility crosswalk designs, etc.); and
4. Determine a prioritization process for how crosswalk marking is implemented and locational criteria (e.g., school walking routes, senior walking routes, high collision locations, and mid-block locations with high numbers of pedestrians crossing the street).

The policy should be coordinated with the City of Wichita School Traffic Safety Manual (2008), either by incorporating guidance from the manual and/or through updates to the manual.

ACTION		LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
1	Develop City policy for marked crosswalks.	Public Works	Planning	By 2018
2	Create and request funding for a program to identify and retrofit high priority existing marked crosswalks throughout the city. The program guidance should describe the criteria for selecting high priority existing crosswalks and meet policy standards for design and implementation.	Public Works	Planning	By 2019
3	Create and request funding for a program to identify and prioritize future locations for marked crosswalks throughout the city. The program guidance should describe the prioritization criteria and meet the policy standards for design and implementation.	Public Works	Planning	By 2022

**Strategy 3 – Focus Pedestrian Improvement Resources on Improving Safety at Intersections**

Crashes involving pedestrians and motor vehicles occur most frequently at intersections. Dedicating resources to improving the design of intersections is the single best way to reduce the number of crashes and injuries involving pedestrians.

The following criteria should be used to prioritize intersections for pedestrian improvements:

- » Crash data;
- » Roadway characteristics: speed, volume, number of lanes, distance between signals, etc;
- » Intersection improvements identified during school walking route planning processes;
- » Intersection improvements identified senior walking route planning processes; and
- » Crossings identified for further study or improvement in the Wichita Bicycle Master Plan.

ACTION		LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
1	Use the criteria listed above to identify and prioritize intersections for pedestrian improvements.	Planning	Public Works	Annually as part of the annual work plan
2	Include pedestrian safety at intersections as a prioritization factor for program activities and capital projects that impact the safety of pedestrians (i.e. roadway striping, pavement work, signals, etc.).	Public Works	Planning	Annually



**Strategy 4 - Provide Sidewalks along Arterial Streets**

Sidewalks reduce pedestrian exposure to traffic, especially in areas with high pedestrian demand, vulnerable populations (e.g., children, seniors, and persons with disabilities). This includes areas near schools, regional activity centers, neighborhood commercial nodes, senior centers, and transit connections.

ACTION	LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
<p><b>1</b> Create and apply criteria for prioritizing the existing Arterial Sidewalk Program.</p>	Public Works	Planning	By 2018
<p><b>2</b> Install missing sections of sidewalks in conjunction with development, re-development and roadway construction projects through routine accommodation.</p>	Public Works	Planning	Average 2 linear miles per year
<p><b>3</b> Update the site plan review checklist to help track the review of MABCD and engineering for compliance with the regulations and design guidance related to sidewalks.</p>	MABCD	Planning	By 2020



**Strategy 5 – Improve Pedestrian Infrastructure near Senior Centers, Housing, and Destinations**

The percentage of pedestrian fatalities that involve seniors is disproportionately high relative to their representation in the general population.<sup>25</sup> At the same time, seniors are encouraged to walk to maintain and promote health, independence, and social interaction.

ACTION	LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
<p><b>1</b> In responses to requests, partner with organizations (e.g., Agency on Aging) that request assistance to develop recommended walking routes within a half mile of senior centers and senior housing. This could be a phased approach based on the availability of City resources with a focus on senior centers/housing where demand is highest or there are known safety concerns. Focus should be on access to transit, nearby shopping and other destinations such as parks identified by seniors. The walking routes should be reviewed by the Wichita Bicycle and Pedestrian Advisory Board and presented to the City Council for endorsement.</p>	<p>Planning</p>	<p>Public Works, Parks</p>	<p>Average 1 walking route per year</p>
<p><b>2</b> Program improvements for the senior walking routes.</p>	<p>Public Works</p>	<p>Planning</p>	<p>On-going</p>

<sup>25</sup> US Department of Transportation National Highway Traffic Safety Administration. "Traffic Safety Facts." 2012.

**Strategy 6 – Improve Safety by Improving Pedestrian Infrastructure near Schools**

Direct students and parents to the safest routes to each school and provide a way to focus infrastructure improvements.

ACTION		LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
1	Continue to respond to school requests for pedestrian improvements near schools.	Public Works	Planning	Respond to an average 1 request per year
2	When requested, assist school districts in identifying preferred walking routes within a half mile of elementary schools. The process could be phased, focusing on schools with the highest potential of students walking and biking to school. The walking route should be reviewed by the Wichita Bicycle and Pedestrian Advisory Board and presented to the City Council for endorsement.	Public Works	Planning	Average 1 school per year
3	When requested, provide assistance to one or more schools to identify and apply for funding to support planning for and the installation of pedestrian improvements near schools.	Planning	Public Works	Average 1 school assisted per year
4	Continue to support school district efforts to upgrade school curbside management plans to make it safer to walk to school.	Public Works		Average 1 curbside management plan updated per year

## MAINTENANCE AND CONSTRUCTION

### Strategy 7 – Make Maintenance of Pedestrian Infrastructure a Priority

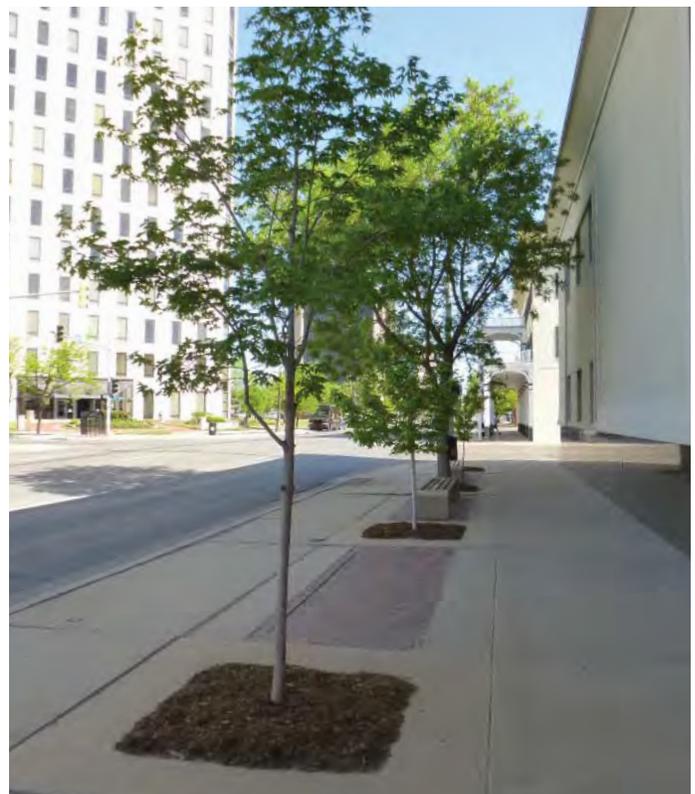
Wichita already has a significant sidewalk network. Maintaining the existing pedestrian infrastructure will maintain pedestrian safety, encourage more walking, and save money by increasing facility life-cycles. Some elements related to maintenance are required by ADA (American with Disabilities Act).

ACTION	LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
<b>1</b> Review and update the process for identifying and prioritizing pedestrian maintenance needs (e.g., annual curb ramp program).	Public Works	Planning	By 2018
<b>2</b> Assist partner organizations (e.g., school district, Safe Kids) to train parent volunteers on how to become involved in promoting Safe Routes to School (SRTS) through the Safe Kids Program. City assistance could include, but not be limited to: providing free or reduced facility rentals; event promotion; and staff attendance at kick-off meetings.	Planning	Police	Average one training per year
<b>3</b> Assist partner organizations (e.g., Safe Kids) to apply for SRTS funds if and when they are available. City assistance might include, but not be limited to: letters of support, cost estimates, and funding.	Planning	Police, Public Works	Average one per year
<b>4</b> Support partner organizations, including school districts, to encourage and provide opportunities for school principals, parents, and others to become familiar with and use the curriculum materials available through the National Center for Safe Routes to School. City support could include, but not be limited to: providing free or reduced facility rentals and promotions.	Planning		Average one per year

### Strategy 8 - Plant and Maintain Street Trees

Street trees provide shade and physical separation from motor vehicles; increase property value; improve air and water quality; and are transformative in creating great places to live, walk, and do business. Proper street design is important to the health of trees and the long term maintenance of sidewalks and other roadway features. In order to be safe, maintainable, and compatible with other essential services – it is important that trees and other vegetation meet certain criteria.

ACTION	LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
<b>1</b> Continue to incorporate street trees in capital projects through the Landscaping Policy for City Streets	Public Works	Park and Recreation	Average 2 miles per year
<b>2</b> Request additional City and non-City funds for current street tree program to maintain existing street trees and plant new trees. Identify public/private partnerships to fund the street tree and related programs.	Park and Recreation	Public Works	By 2018



## ENCOURAGEMENT

### Strategy 9 – Support Efforts to Encourage Walking to School and Safety Education

Walking provides independence and teaches responsibility to youth. Walking to school establishes habits of lifelong physical activity and the normalization of walking as a transportation mode. The behaviors and lessons learned at a young age can influence behavior for a lifetime, and can help prevent crashes and injuries. There are excellent programs and curriculum materials available (for free) through the National Center for Safe Routes to School website.

ACTION	LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
<p><b>1</b> Support partner organizations, such as Safe Kids, to encourage and support participation in national “Walk to School Day” (everything that is needed – promotional materials, sample flyers etc. -- is available at the National Center for Safe Routes to School website). City support might include opportunities for elected officials to participate, staff participation, and promotion of the events.</p>	Police	Planning	By 2018
<p><b>2</b> Assist partner organizations (e.g., school district, Safe Kids) to train parent volunteers on how to become involved in promoting SRTS through the Safe Kids Program. City assistance could include, but not be limited to: providing free or reduced facility rentals; event promotion; and staff attendance at kick-off meetings.</p>	Planning	Police	Average one training per year



## PLAN IMPLEMENTATION

### Strategy 10 – Monitor and Update the Implementation Plan

Communities that have had the most success in implementing pedestrian plans are those that: institutionalize a process to create accountability and demonstrate progress; invest in keeping staff up-to-date with best practices; and allocate adequate resources to implement the plan.

- » It is important that new facilities be designed to reflect the latest design guidelines and best practices. Nationally available courses and workshops provide an opportunity for planners, designers, and engineers to take advantage of the latest thinking and best practices for pedestrian facilities.
- » Having full-time staff in Public Works and Planning brings expertise, knowledge, awareness, and focus to implementation of this Plan. Implementing this strategy is pivotal to the long-term success of this Plan. The level of staff resources allocated (re-assignment of existing staff or new hires) to implement this Plan will affect the pace of implementation.
- » Because resources are limited, it is important to prioritize efforts to ensure that resources are directed toward projects with the greatest benefit. The creation of a prioritization process can help standardize and add more transparency to project selection.
- » Institutionalizing a system that creates accountability and demonstrates progress can help ensure year to year progress implementing this Plan and provide an annual opportunity to reflect on when, where, and how resources are being allocated. This can be accomplished through the creation of an annual work plan and annual implementation report.

ACTION	LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
<b>1</b> Create an annual work-plan to identify tasks and deliverables. Seek review and approval from the Wichita Bicycle and Pedestrian Advisory Board.	Planning	Public Works, Police, Fire, Parks, I.T.	Plan approved annually
<b>2</b> Publish a progress report on implementation of this plan. Seek review and approval from the Wichita Bicycle and Pedestrian Advisory Board. Provide a copy of the report to the City Council.	Planning	Public Works, Police, Fire, Parks, I.T.	Progress report approved annually

ACTION	LEAD	SUPPORT	PERFORMANCE MEASURE TARGET
<b>3</b> Periodically take advantage of both local and nationally available courses and workshops (often free) that provide updates on the latest research, design guidance, and best practices. Participants should include the Pedestrian and Bicycle Advisory Board, and relevant City staff including design guidance for plan reviewers.	Planning	Public Works	Average one professional course/workshop per year
<b>4</b> Create a project prioritization process based on Chapter 6 of this Plan and present the process to the Wichita Bicycle and Pedestrian Advisory Board for endorsement.	Public Works	Planning	By 2016
<b>5</b> Develop and/or modify job description for staff resources in Planning.	Planning	Public Works	By 2015
<b>6</b> Develop and/or modify job description for staff resources in Public Works.	Public Works	Planning	By 2016
<b>7</b> Allocate resources / apply for resources to fill positions in Planning.	Planning		0.5 FTE by 2015
<b>8</b> Allocate resources / apply for resources to fill positions in Public Works.	Public Works		0.5 FTE by 2016
<b>9</b> Update this plan.	Planning	Public Works	Major update every 4 years and minor updates as needed

## DOWN THE ROAD STRATEGIES

The Top 10 Strategies are recommended for implementation over the next 10 years. The longer term “down the road” strategies should also be considered.

### Engineering

#### Strategy 11– Make Area-Specific Pedestrian Improvements

Pedestrian facilities operate most effectively as a network. Improvements should be identified in conjunction with a wider pedestrian network analysis or to address common issues that occur throughout the community. Pedestrian circulation plans can be a useful tool to help area stakeholders identify and prioritize improvements related to walking. Pedestrian circulation plans can be undertaken as stand-alone projects or as part of other planning projects - including area, corridor, or neighborhood plans. Pedestrian circulation plans, which provide a plan to help pedestrians get around the neighborhood, can also be focused on multiple locations instead of areas or corridors.

Wichita stakeholders have indicated that the following areas are high priority locations for pedestrian improvements:

- » Parks,
- » Schools, and
- » Senior housing / centers.

ACTION		LEAD	SUPPORT
1	Develop a program and guidelines for neighborhood pedestrian circulation plans. The guidelines should include how area stakeholders can apply for assistance to develop a neighborhood pedestrian circulation plan.	Planning	Public Works
2	Present information about connector trails/paths to residential and commercial developers, and offer technical assistance to individuals interested in developing connector trails.	Planning	Public Works
3	Update the Wichita Parks, Recreation, and Open Space (PROS) Plan park design guidelines to include pedestrian connections as minimum resources as defined in the plan.	Park and Recreation	Planning
4	Review existing neighborhood/corridor plans that recommend pedestrian improvements with the Wichita Bicycle and Pedestrian Advisory Board.	Planning	Public Works

(Strategy 11 table continued)

ACTION		LEAD	SUPPORT
5	Apply for funding (e.g. city and non-city funding) to develop and implement City neighborhood pedestrian circulation plans.	Planning	Public Works
6	Implement pedestrian improvements recommended in existing City plans such as corridor and neighborhood plans.	Public Works	Planning

**Strategy 12 – Improve Pedestrian Access to Buildings**

Providing connections for pedestrians between the public right-of-way (where the street and sidewalks are located) and private development is important for safety and access. For example, a dedicated walking connection through a parking lot from the sidewalk to the front entrance of businesses is a connection between the public right-of-way and private development. To ensure more routine, higher quality, and more uniform pedestrian access to building entrances, it is recommended that the following City policies and regulations be updated.

ACTION		LEAD	SUPPORT
1	Update the City of Wichita building code and parking lot striping requirements (Wichita Municipal Code Sec. 18.14.020) to require Americans with Disabilities Act (ADA) compliant, dedicated pedestrian access from the sidewalk in the right of way to at least one building entrance for each building. The dedicated pedestrian access should be required during construction, substantial building renovation, and/or parking lot upgrading and restriping.	MABCD	Planning
2	Update the City Façade Loan Program to require ADA compliant, dedicated pedestrian access from the sidewalk to one entrance of each building.	Urban Development	Public Works
3	Update the zoning code to define and require Planned Unit Development (PUD), Conditional Use Permits (CUP), conditional uses, and other instances where review and approval of a site plan is required; to require ADA complaint pedestrian access from the sidewalk to at least one entrance per building.	Planning	MABCD

**Strategy 13 - Improve Pedestrian Connections to Transit**

Pedestrian facilities are important for transit trips, as every transit rider is also a pedestrian at some point during their trip. Transit benefits pedestrians by greatly expanding possible trip distances and connections. The following actions should be coordinated with the proposed updates to the Wichita Transit bus stop guidelines.

ACTION	LEAD	SUPPORT
<p><b>1</b> Create design guidelines for transit stops, informed by the design guidance in this plan. The guidelines should include recommendations regarding the types of transit resources (e.g. benches, shelters, bicycle racks, etc.), siting / location preferences, and pedestrian connections. It is recommended that the guidelines recommend situating transit stops with pedestrian crossings (see design treatments in Chapter 7) and consider other pedestrian improvements to access the transit stops (e.g. lighting, sidewalks, etc.).</p>	Wichita Transit	Public Works
<p><b>2</b> Create street design guidance for how to accommodate transit on city streets and integrate it with the design guidance for transit stops.</p>	Public Works	Wichita Transit
<p><b>3</b> Create a pilot program to identify and retrofit high priority transit stop locations along one or more transit route. The program guidance should describe the criteria for selecting the priority locations – accounting for high priority pedestrian locations, high volume transit locations, and meet the transit stop design guidelines.</p>	Wichita Transit	Public Works
<p><b>4</b> Create a report that identifies key safety and accessibility issues based on data (i.e., crash data, ridership numbers, etc.). Submit the report for review and comment by the Wichita Transit Advisory Board and Wichita Bicycle and Pedestrian Advisory Board.</p>	Planning	Wichita Transit

## Encouragement

### Strategy 14 – Encourage Walking for Fun, Health, and Transportation

Active transportation such as walking is an important form of exercise as well as a basic form of travel for short distances. Sometimes encouraging people to consider walking for health or transportation related trips requires additional effort. Encouragement can take the form of programs, campaigns or events to target specific groups or areas within the city.

ACTION		LEAD	SUPPORT
1	Create guidelines for how to evaluate partnership request from non-City of Wichita organizations that host walking events and promotion efforts. The guidelines should identify how the partnerships are formalized and the criteria for partnerships. Post the guidelines on the City website.	City Manager's Office	Planning Department
2	Support and promote partner organizations events and efforts to increase walking and running in the community. Support and promotion might include posting information on the City's Facebook page, webpage, and coordinating the participation of City representatives.	Community Engagement	Planning
3	Apply for funding to create programs for targeted outreach and consultation to provide education, encouragement, and resources to Wichita residents to use walking for transportation.	Air Quality Section	Planning, Community Engagement
4	Apply for funding to host 'Open Streets' events that temporarily close streets to motor vehicles and provide expanded opportunities for active transportation.	Air Quality Section	Planning, Public Works, Community Engagement
5	Assist partner organizations to convene a pedestrian summit to provide a public venue in which to discuss issues related to walking.	Planning	Public Works, Parks, Community Engagement
6	Host (with staff or volunteers) a table / display with information about walking in Wichita at relevant community events (e.g., farmers markets, City sponsored events and city project open houses).	Planning	Community Engagement, Air Quality Section

### Strategy 15 – Provide Pedestrian Wayfinding

A pedestrian wayfinding system helps to visually connect the pedestrian network, while also providing guidance about the optimal route for pedestrians to reach their destination. Wayfinding can be provided in the form of signage, pavement markings, or other means. Wayfinding can also increase safety by directing pedestrians to preferred facilities and can increase awareness of off-street paths and connections that may otherwise not be easily visible from a roadway. Downtown pedestrian wayfinding can provide guidance to important destinations.

ACTION	LEAD	SUPPORT
<b>1</b> Apply for funding to develop a pedestrian wayfinding system plan that provides guidance for design, implementation, prioritization, funding, and maintenance of a wayfinding system.	Planning	Public Works
<b>2</b> Apply for funding to implement a pilot program to gain support and understanding of the system before expanding it city-wide	Public Works	Planning
<b>3</b> Update the existing pedestrian wayfinding signage.	Public Works	Planning



## Education

### Strategy 16 – Support Safety Education Programs that Focus on Changing Pedestrian, Bicycle and Motorist Behavior

Streets are shared public spaces that facilitate different uses and transportation modes. It is critical for all street users to be respectful of each other and to know the rules of conduct. Education efforts should include targeted enforcement at high crash locations to reinforce the importance of safe conduct on public streets and efforts to educate new drivers. In addition, the City can help promote community safety by sharing general information (i.e., location, severity, number of pedestrians involved) about crashes involving pedestrians.

It is important that the education efforts target behaviors that are the greatest contributors to crashes. National research shows that the following behaviors should be targeted.

- » Drivers: Distracted driving, failing to yield to pedestrians, speeding
- » Pedestrians: Jaywalking
- » Bicyclists: Traveling opposite direction as traffic, riding without lights

ACTION		LEAD	SUPPORT
1	Issue an annual report identifying top ten intersections with the most crashes involving pedestrians, and/or intersections with the highest rates of pedestrian crashes.	Police	Planning
2	Apply for funding to create a pilot program to study and report information from crashes involving pedestrians, and if successful repeat the process periodically. The report(s) should identify the top ten priority pedestrian crash locations, and the behaviors that contribute to the majority and most serious types of crashes. The report(s) should also identify countermeasures to the identified priority behaviors. The report summaries should be presented to the Wichita Bicycle and Pedestrian Advisory Board for endorsement and then distributed to the City Council.	Police	Public Works

ACTION	LEAD	SUPPORT
<b>3</b> Develop an outreach campaign to educate drivers, bicyclists, and pedestrians about required and recommended roadway and path behaviors. The campaign should target the priority behaviors identified in the crash study. It should also include evaluation criteria to monitor and measure the effectiveness of the outreach campaign. Apply for funding to undertake and expand the scope of the outreach campaign.	Communications Team	Police
<b>4</b> Review current police training and identify opportunities to add / improve components related to pedestrian safety.	Police	
<b>5</b> Update the Wichita.gov website to include a section on walking/pedestrian transportation. This page should include information about submitting maintenance reports, this Plan, regulations, and other pedestrian related information.	Planning	Communications Team



## Enforcement

### Strategy 17– Develop Enforcement Strategies that Focus on Changing Pedestrian and Motorist Behaviors that Cause Crashes

Enforcement is an important component of improving roadway safety for all users. Enforcement efforts should complement, and in most cases, be preceded by educational efforts. Law enforcement can play an important role in educating roadway users about behaviors that improve or diminish roadway safety. Enforcement efforts should be balanced (i.e., target all roadway users, not one group) and focus on those behaviors that are known to cause crashes (see below).

Targeted pedestrian behaviors:

- » Jaywalking
- » Failure to follow traffic controls

Targeted motorist behaviors:

- » Distracted driving
- » Not yielding to pedestrians in crosswalks
- » Speeding through areas where there are vulnerable users

ACTION		LEAD	SUPPORT
1	Perform targeted education and enforcement of motorists in locations where yielding to pedestrians in a crosswalk is an issue or in locations where there have been pedestrian crashes.	Police	Planning
2	Perform targeted enforcement of pedestrians in locations where jaywalking has contributed to pedestrian and motor vehicle crashes.	Police	Planning
3	Perform targeted enforcement of motorists in locations where school zone signs have been installed, where speeding is an issue, and/or where collisions have occurred.	Police	Planning
4	Develop a crash report packet for pedestrians involved in a crash. Present the packet to the Bicycle and Pedestrian Advisory Board for review and endorsement, and then make the information available online and in printed format.	Police	Planning

## Maintenance and Construction

### Strategy 18 – Maintain Pedestrian Access during Construction

Temporary closures of sidewalks can result in barriers for pedestrians and lead to dangerous situations. Accommodating pedestrians during construction ensures that pedestrians have clear, safe, and accessible routes as convenient alternatives to sidewalks closed for construction.

ACTION	LEAD	SUPPORT
<p><b>1</b> Review and update the City detour protocols to ensure consistency with the guidance in section 6D.01 of the Manual on Uniform Traffic Control Devices (MUTCD) and section 4.4 of the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design, and Operation of Pedestrian Facilities for provision of appropriate pedestrian detours for sidewalks that are closed for maintenance or construction. The protocols should include information about when and where a sidewalk can be closed; when and how a detour will be provided; and how notice about the closure will be provided.</p>	Public Works	Planning
<p><b>2</b> Provide training to City inspection staff to facilitate enforcement of the detour protocols.</p>	Public Works	MABCD



# CHAPTER 5

## Costs, Funding, and Making Progress



This chapter includes information on the typical costs of pedestrian infrastructure, potential funding sources, and the processes recommended to implement this Plan.

### **ANNUAL IMPLEMENTATION WORK PLAN / PROGRESS REPORTING**

Establishing a process that sets short-term targets, ensures accountability, and celebrates successes is one of the best ways to make progress toward implementing this Plan. The creation of annual implementation work plans and annual progress reports are important tools for implementation. Below is more information about how these tools can be developed and used.



Figure 12: Pedestrian Plan Implementation

#### ***Annual Implementation Work Plan***

An annual work plan helps to ensure that year to year progress is made and sets annual priorities. It provides measurable objectives that create accountability and demonstrate progress; seeks opportunities to take advantage of public and private projects; and provides an annual opportunity to reflect on when, where, and how resources are being allocated. The creation of the annual work plan involves multiple steps described below. A draft work plan is available in Appendix G.

**Step 1.** Coordinate with City Department Directors to identify what implementation projects are anticipated for the next year. This might include the following actions.

- a. Identify pedestrian projects that can be designed and constructed as part of other projects in the CIP.
- b. Identify priority stand-alone pedestrian projects that can be submitted for design and/or construction funding.
- c. Identify and apply for funding for priority education and enforcement programs.

**Step 2.** Seek internal review of the annual work plan. The intent is to improve internal coordination and efficiency, and involve other departments, divisions, and sections as appropriate.

**Step 3.** Seek approval for the annual work plan from the Bicycle and Pedestrian Advisory Board.



As part of the process to create the annual work plan, both staff and the Wichita Bicycle and Pedestrian Advisory Board members will need to consider which of the strategies and activities identified in this Plan are priorities for the community. The draft 2014-2015 Annual Implementation Work Plan is provided as an example in Appendix G. The following factors are provided as a tool to help assist in the decision making process.

- » Will the activity accomplish one or more of the goals of the Wichita Pedestrian Master Plan?
- » What is the anticipated magnitude of the activity?
- » Will it have a long-term or large scale impact?
- » Will the activity help achieve one or more performance measures?
- » Will the activity benefit one of the priority pedestrian areas identified in this plan?
- » Will the activity implement a priority project (see Chapter 6)?

## Progress Reporting

To communicate implementation progress and effectiveness, a progress report should be drafted annually. This document should illustrate progress relative to the goals and performance measures expressed in this Plan, and provide an opportunity to celebrate major accomplishments. The progress report should be geared toward the public as the primary audience, but also be used by the Bicycle and Pedestrian Board and the City Council as they review progress and recommend future actions. The progress report should include the following elements:

- » Highlights of the major accomplishments of the reporting year;
- » Review of the performance measures recommended in this Plan; and
- » Review of performance implementing the one year work plan.

Progress implementing this Plan will depend on the City's institutionalization of processes to help provide annual goals, status updates, and accountability. Implementation will also depend on the cost and ability to fund the improvements recommended in this Plan. Below is information about infrastructure costs and potential funding sources.



## TYPICAL PEDESTRIAN INFRASTRUCTURE COSTS

Costs for pedestrian infrastructure vary greatly. Table 7 shows planning level cost estimates for typical pedestrian treatments based on a recent paper and associated database provides estimates of infrastructure costs from states and cities across the country (Bushell et al 2013). Because costs vary from site to site depending on many factors, the cost information should be used for only planning level estimates and not for determining actual bid prices for a specific infrastructure project. More detailed cost estimates can be developed for individual projects after the initial conceptual design process. Figure 13 illustrates how the cost estimates are refined as a project moves through the design process.

Table 7: Planning Level Cost Estimates for Pedestrian Infrastructure

FACILITY	AVERAGE	LOWER RANGE	UPPER RANGE	UNIT COST	SOURCE
Concrete Sidewalk 5' Wide	NA	\$3.25	\$4.00	Square Foot	B
Curb and Gutter	NA	\$12.00	\$22.00	Square Foot	B
Curb Extension/Choker/Bulb-out	NA	\$7,500	\$20,000	Each	B
High Visibility Crosswalk	\$2,540	\$600	\$5,710	Each	A
Multi-Use Trail - Paved 10' wide	NA	\$200,000	\$800,000	Mile	B
Multi-Use Trail - Unpaved	\$121,390	\$29,520	\$412,720	Mile	A
Pedestrian Hybrid Beacon	\$57,680	\$21,440	\$128,660	Each	A
Pedestrian Signal	\$1,480	\$130	\$10,000	Each	A
Raised Crosswalk	\$8,190	\$1,290	\$30,880	Each	A
Rapid Rectangular Flashing Beacon	\$22,250	\$4,520	\$52,310	Each	A
Streetlight	\$4,880	\$310	\$13,900	Each	A
Striped Crosswalk	\$770	\$110	\$2,090	Each	A
Wheelchair Ramp	\$810	\$89	\$3,600	Each	A

A: Bushell, Max, et al. Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners and the General Public. [http://katana.hsrc.unc.edu/cms/downloads/Countermeasure%20Costs\\_Report\\_Nov2013.pdf](http://katana.hsrc.unc.edu/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf).

B: City of Wichita estimates

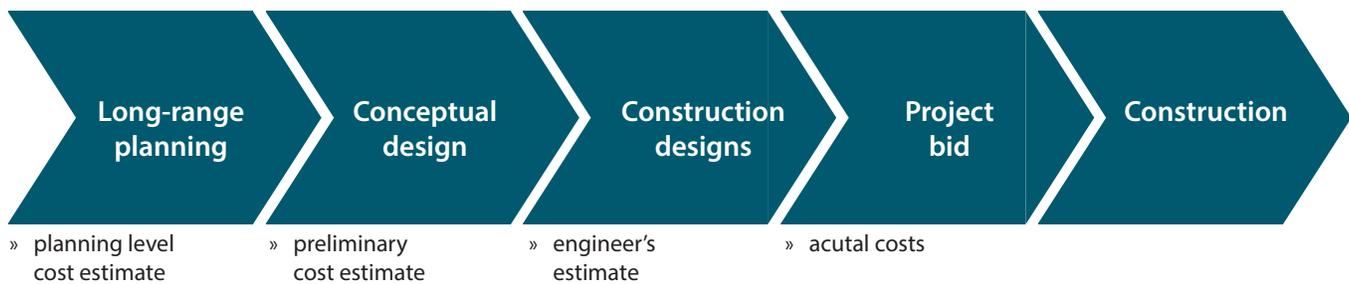


Figure 13: Cost Estimates and Design Phases

## POTENTIAL FUNDING SOURCES

Pedestrian projects and programs can be funded by local, state, federal, private sources, or a combination thereof. Funding programs that local governments, such as the City of Wichita, might pursue are described in this section. At the end of the section is a matrix that summarizes available sources by types of projects and programs (see page 71).

### City of Wichita

The City of Wichita has multiple funding sources which can be allocated to a variety of activities, including planning, design, implementation, and maintenance of pedestrian projects.

### *Routine Accommodation*

The City can adopt a policy that considers pedestrian improvements as a part of new and rehabilitation projects. Pedestrian facilities (i.e., pedestrian ramps, crosswalks, sidewalks, lighting, etc.) can be integrated into other capital projects. This approach generally costs less than completing these projects separately (i.e., retrofitting pedestrian improvements).

### *City Programs and Budget*

The City of Wichita has several annual programs that address pedestrian needs including those listed below:

- » Arterial Sidewalk Installation Program
- » Accessibility Improvements program (e.g., curb ramps)
- » Street Maintenance Program (e.g., crosswalk restriping)
- » Traffic Signal Program
- » Street Tree Program

Depending on the type of activity, these programs are funded either through the City's Capital Improvement Program (CIP) or the annual budget. The CIP is a budget document that provides a 10 year plan for financing capital assets (e.g., buildings, roads, large equipment). The CIP identifies how much, what funding type, and when capital asset improvements/purchases will be undertaken.

### **Regional**

The Wichita Area Metropolitan Planning Organization (WAMPO) is a regional metropolitan planning organization (MPO). The MPO coordinates transportation at a regional level and administers Federal transportation funding programs for some pedestrian facilities or programs. These are described under the Federal funding heading later in this chapter.

### **State**

Implementation of the City of Wichita Pedestrian Plan could be advanced by infrastructure investments by the State of Kansas, both in the timing and quality of the investment. Additionally, if pedestrian infrastructure improvements are included in KDOT's Statewide Transportation Improvement Program (STIP), federal funds from the Comprehensive Transportation Program (CTP) could be pursued. According to the KDOT website, a draft STIP document is published and available for public comment each year in August.

### **Federal**

Federal transportation funding programs are important funding sources. The most recent federal transportation funding act is Moving



Ahead for Progress in the 21st Century (MAP-21). The following MAP-21 programs can be used to fund pedestrian infrastructure and programs:

- » Transportation Alternatives Program (TAP)
- » National Highway Performance Program
- » Surface Transportation Program
- » Highway Safety Improvement Program (HSIP)
- » Section 402 of the State and Community Highway Safety Grant Program

*Transportation Alternatives Program Funding:* The MAP-21 bill provides states the option to modify the level of TAP funding in the following ways: a) increase funding that supports walking and bicycling; b) keep funding levels the same; or c) decrease funding. Under the new bill state departments of transportation (DOTs) are to distribute 50% of TAP funding to defined Transportation Management Areas (i.e., WAMPO), which consist of cities or metro areas with populations greater than 200,000. The other 50% of TAP funding may also be directed by DOTs to local or regional control, or DOTs have the option to redirect this funding to other state highway programs. Governors are given the authority to opt-in or out of the Recreational Trails program on an annual basis. If they choose to opt-out, funding set aside for the Recreational Trails program automatically goes into the TAP.

The funding for each state's TAP includes the following programs: the Recreational Trails Program; the Safe Routes to School program; and "planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways."

The Transportation Alternatives program is a part of the Federal-aid Highway Program. Although the program is a "grant" program under Federal regulation, it is not an "up-front" grant program and funds are available only on a reimbursement basis. Only after a project has been approved by the State Department of Transportation or Metropolitan Planning Organization and the FHWA division office can costs become eligible for reimbursement. This means project sponsors must incur the

cost of the project prior to being repaid. Costs must be incurred after FHWA division office project approval or they are not eligible for reimbursement.

#### *Eligible Activities for Transportation Alternatives Program*

Funds may be used for the following types of activities:

- » Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation.
- » Construction, planning, and design of infrastructure-related projects and systems



that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs.

- » Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other non-motorized transportation users.
- » Construction of turnouts, overlooks, and viewing areas.
- » Community improvement activities, including:
  - » Inventory, control, or removal of outdoor advertising;
  - » Historic preservation and rehabilitation of historic transportation facilities;
  - » Vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control; and
  - » Archaeological activities relating to impacts from implementation of a transportation project eligible under 23 USC.
- » Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to:
  - » Address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff; or
  - » Reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats.
- » The recreational trails program under 23 USC 206.
- » The safe routes to school program under §1404 of SAFETEA-LU.
- » Planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.
- » Workforce development, training, and education activities are also eligible uses of TAP funds.

**Statutory citation(s):** MAP-21 §1122; 23 USC 101, 206, 213; SAFETEA-LU §1404

**source:** <http://www.fhwa.dot.gov/map21/factsheets/tap.cfm>

#### *Congestion Mitigation and Air Quality Improvement Program (CMAQ) (Part of TA Program)*

CMAQ was established as a part of the Intermodal Surface Transportation Efficiency Act (ISTEA) and was initiated to support projects and other related efforts that contribute air quality improvements and provide congestion relief. Funds may be used for projects that demonstrate an air quality benefit. CMAQ funds are available through a competitive funding process managed by WAMPO. Project applicants must provide a local match of at least 20 percent.

- » Eligible Pedestrian Projects: paved shoulders, shared use path/trail, spot improvement program, maps, sidewalks (new or retrofit), crosswalk (new or retrofit), trail/highway intersection, signal improvements, curb cuts and ramps, coordinator position, safety brochure/book, training, technical assistance.

More information, including updates, on MAP-21 and final rulemaking can be found at Advocacy

Advance <http://www.advocacyadvance.org/MAP21> and from the Federal Highway Administration (FHWA) at <http://www.fhwa.dot.gov/map21/>.

### ***Surface Transportation Program (STP)***

The Surface Transportation Program (STP) provides flexible funding that may be used by states and localities for projects on any Federal-aid highway, including the National Highway System (NHS), bridge projects on any public road, transit capital projects, and intra-city and inter-city bus terminals and facilities. Among the eligible activities under STP are projects relating to intersections that: have disproportionately high accident rates; have high congestion; and are located on a Federal-aid highway. Funds can be used for the construction of new and the maintenance of existing pedestrian facilities. The STP funds are available through a competitive funding process managed by the Wichita Area Metropolitan Planning Organization (WAMPO). Project applicants must provide a local match of at least 20 percent.

- » Eligible Pedestrian Projects: bicycle and pedestrian plans, paved shoulders, shared use path/trail, spot improvement program, maps, sidewalks (new or retrofit), crosswalk (new or retrofit), trail/highway intersection, signal improvements, curb cuts and ramps, traffic calming, safety/education position, safety brochure/book, training, technical assistance.

### ***Highway Safety Improvement Program (HSIP)***

The HSIP emphasizes a data-driven, strategic approach to improving highway safety. A highway safety improvement project corrects or improves a hazardous road location, or addresses a highway safety problem. Funds may be used for projects on any public road or publicly owned bicycle and pedestrian pathway or trail. Each State must have a Strategic Highway Safety Plan (SHSP) to be eligible to use up to 10 percent of its HSIP funds for other safety projects under 23 U.S. Code (USC) including education, enforcement and emergency medical services. Funds can be used for projects aimed at increasing safety, and reducing crashes. The HSIP funds are available through a competitive funding process managed by KDOT.

- » Eligible Pedestrian Projects: Paved shoulders, shared use path/trail, spot improvement program, sidewalks (new or retrofit), crosswalks (new or retrofit), trail/highway intersection, signal improvements, curb cuts and ramps, traffic calming.

### ***State and Community Highway Safety Grant Program, Section 402***

Highway Safety Funds are used to support state and community programs to reduce deaths and injuries on the highways. In each state, funds are administered by the Governor's Representative for Highway Safety. Pedestrian safety has been identified as a National



Priority Area and is therefore eligible for Section 402 funds. These funds can be used for a variety of safety initiatives including conducting data analyses, developing safety education programs, and conducting community-wide pedestrian safety campaigns. Since the Section 402 Program is jointly administered by National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA), Highway Safety funds can also be used for some limited safety-related engineering projects. A state is eligible for these formula grants by submitting a Performance Plan, which establishes goals and performance measures to improve highway safety in the state, and a Highway Safety Plan, which describes activities to achieve those goals.

- » Eligible Pedestrian Projects: Comprehensive school-based pedestrian safety education programs, pedestrian safety programs for older adults, training in use of pedestrian design guidelines, community information and education programs, public information needs in May such as “Bike Safety Month” and in September for “Back to School Safety Month,” public information for school zone and crosswalk safety, and public information about older adults and impaired pedestrians.

### ***National Highway Performance Program (NHPP)***

The NHPP provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a state’s asset management plan for the NHS.

NHPP projects must be on an eligible facility and support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS, and be consistent with metropolitan and statewide planning requirements. Eligible activities include:

- » Construction, reconstruction, resurfacing, restoration, rehabilitation, preservation, or operational improvements of NHS segments.
- » Construction, replacement (including replacement with fill material), rehabilitation, preservation, and protection (including scour countermeasures, seismic retrofits, impact protection measures, security countermeasures, and protection against extreme events) of NHS bridges and tunnels.
- » Bridge and tunnel inspection and evaluation of the NHS and inspection and evaluation of other NHS highway infrastructure assets.
- » Training of bridge and tunnel inspectors.

Eligible Pedestrian Projects: Paved shoulders, shared use paths/trail, spot improvement program, sidewalks (new or retrofit), crosswalks (new or retrofit), trail/highway intersections, signal improvements, curb cuts and ramps, and traffic calming.

### ***Recreational Trails Program (RTP)***

The RTP provides funds to states to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses. RTP funds are available through a competitive process managed by the Kansas Department of Wildlife, Parks and Tourism. Project applicants must provide a local match of at least 20 percent.

Eligible Pedestrian Projects: Shared use paths/trail, single track hike/bike trail, trail/highway intersection, safety brochures/books, and training.

**Other Potential Sources**

*Public Private Partnerships:* Public private partnerships can take many forms such as neighborhood associations funding sidewalk projects, grants from foundations, and special assessments to fund improvements.

*Private Construction and Redevelopment Projects:* Sometimes, pedestrian improvements (e.g., crosswalks, curb ramps, sidewalks, lighting, etc.) are required as part of new projects that will impact the public rights-of-way. This plan recommends continuing with existing community requirements.

**Table 8:** Pedestrian Projects Funding Sources Summary Matrix

Project Type	Local			Federal							Other	
	RA	BGT	CIP	STP	HSIP	402	NHPP	CMAQ	RTP	TAP	P/P	C/R
Pedestrian Plan		X		X							X	
Paved Shoulders	X		X	X	X		X	X		X	X	
Shared Use Path/Trail	X		X	X	X		X	X	X	X	X	
Spot Improvement Program	X	X	X	X	X			X		X	X	X
Maps		X		X		X		X		X		
Sidewalks, new or retrofit	X	X	X	X	X		X	X		X	X	X
Crosswalk, new or retrofit	X	X	X	X	X		X	X		X	X	X
Trail/Highway Intersection	X	X	X	X	X		X	X	X	X		
Signal Improvements	X	X	X	X	X		X	X		X	X	X
Curb Cuts/Ramps	X	X	X	X	X		X	X		X	X	X
Traffic Calming	X	X	X	X	X					X	X	X
Coordinator Position		X						X				
Safety/Education Position		X		X		X				X		
Police Patrol		X				X				X		
Safety Brochure/Book		X		X		X		X	X		X	
Training		X		X		X		X	X		X	
Technical Assistance		X		X				X		X	X	

RA = Routine Accomodation  
 BGT = Budget  
 CIP = Capital Improvement Program  
 STP = Surface Transportation Program  
 HSIP = Highway Safety Improvement Program  
 402 = State and Community Highway Safety Program, Section 402

NHPP = National Highway Performance Program  
 CMAQ = Congestion Mitigation and Air Quality Improvement Program  
 RTP = Regional Trails Program  
 P/P = Public Private Partnerships  
 C/R = Private Construction

# CHAPTER 6

## Prioritization Process



Establishing priorities is important because resources and timing generally don't allow for every project and improvement to be undertaken at once. It can be challenging for a community to decide which projects to implement first and which to pursue at a later date. A structured process to determine which projects meet the goals of the Pedestrian Plan can help in the decision making. It is recommended that the City of Wichita create a prioritization process to help with prioritizing infrastructure projects that can improve conditions for walking in Wichita (Strategy 10, Action 4). This process can be applied to projects that are specific to the pedestrian environment (such as Arterial Sidewalk Program projects), and to other projects that have pedestrian improvements as one component of many.

It is important that the prioritization process reflect community priorities and be flexible enough to make adjustments as needed. This chapter presents recommendations for categories and criteria that can be used to help determine the relative priority for projects based on their alignment with this Plan's vision and goals, and the public input received during the planning process. Appendix H provides an example scoring system.

### ***Does it improve pedestrian safety at priority intersections?***

Pedestrians and motor vehicles interact the most at intersections, where their movements may conflict. This category could be used to prioritize projects that will improve City-identified priority pedestrian crossings (including marked crosswalks and intersections) (see Strategy 2 and Strategy 3). The criterion for this could consist of a yes or no response.

### ***Does it serve students?***

This category could be used to measure how projects might improve conditions for students to walk to school (including universities). Potential criteria might include the following:

- » Is the project within 0.25 miles of a school property?
- » Does the project travel along at least 500 feet an official City endorsed school walking route?
- » Does the project improve one or more pedestrian crossings within 0.25 miles of a school property?

***Does it serve the senior population?***

This category could be used to gauge how significantly a project could benefit the senior community, potential criteria might include the following.

- » Is the project within 0.25 miles of senior-focused housing and/or senior centers?
- » Does the project travel along at least 500 feet of a City endorsed senior walking route?

***Does it fill in a gap in the existing system?***

This category could help prioritize projects that complete / fill in gaps in the existing pedestrian network. This could be important because filling in system gaps is likely to benefit existing users more than the construction of new facilities. A more continuous network is also likely to encourage more people to walk and serves persons with disabilities. The criterion for this could consist of a yes or no response.

***Is it on a Safety Corridor?***

Based on a high-level crash analysis, three Safety Corridors have been identified for this Plan in Chapter 2. Based on the number of pedestrian crashes on these corridors, it is important to prioritize projects in these areas. These corridors are Broadway Avenue, Central Avenue, and Douglas Avenue. Projects in “top crash segments” of these corridors could be prioritized over projects that are on these corridors but not in the highest crash areas. Potential criteria for consideration include:

- » Is the project along at least a 500 foot length of a safety corridor?
- » Is the project along at least a 500 foot length of a “top crash segment” of a safety corridor?

***Is it on a transit route?***

Building connectivity within the community is a key goal of the Pedestrian Plan. Facilities within 0.25 miles of the Wichita Transit Center could be prioritized. Potential criteria for consideration are listed below:

- » Does a transit route intersect with the project?
- » Is the project within 0.25 miles of the Wichita Transit Center?

***Does it connect to retail / service destinations?***

Wichita residents have indicated the high importance of providing walking connections to retail and service destinations. Projects that connect to retail/service destinations could be prioritized. One potential criterion that could be considered is listed below:

- » Is the project within 150 feet of properties zoned: CBD; GC; LC; NO; NR; or PUD?

***Does it connect to a public park or public amenity?***

Providing access to parks and other public amenities is important to Wichita residents. Projects that connect to public parks or public services could be prioritized:

- » Is the project within 150 feet of public parks and priority public service locations?

***Does it address a public concern?***

Finally, because the City of Wichita remains focused on serving its residents, projects addressing a public concern, such as comments submitted through the Wichita Reports mobile application or other documented concerns about issues such as perception of safety or a popular local destination could be prioritized.

# CHAPTER 7

## Design Treatments for Pedestrians



### INTRODUCTION

The following section describes the intent of the best practice recommendations for 30 street-related design treatments for pedestrians. The treatments are intended to be used as a toolbox for City staff and make the general public aware of options that can be applied to Wichita's streets to improve pedestrian safety and encourage walk trips, key elements of this Plan. Each treatment includes a definition, a description of the benefits of applying the treatment, design consideration, the crash reduction factor, a local photo example, a graphic depicting the best practices for design of the treatment, and other resources. The project team reviewed existing City and State design guidance and incorporated the latest national research into the recommendations. It is important to note that the City Engineer has discretion when selecting designs. The components of the treatment recommendations are outlined below:

**Description:** The description provides a definition of the treatment and the intended effect it can have on roadway safety when implemented properly. The description, coupled with a photograph of the treatment, can inform the public about the treatment and its intended effect.

**Benefits:** This section describes the benefits of the treatment to pedestrian travel. It may include benefits to other modes. City staff can review this section when weighing different treatment types to determine the best treatment for a specific location.

**Considerations:** While engineering judgment must be exercised to determine the correct treatment for a specific location, this section presents key factors that must, should, or may be taken into consideration when planning, designing, or implementing the treatment. Policy implications of the design treatments are described in Appendix I.

**Crash Reduction Factor:** The Crash Reduction Factor (CRF) is provided, when available. This factor is based on research that has been conducted on the effectiveness of specific treatments to reduce pedestrian-vehicle crashes. When the treatment is properly implemented, the crash reduction factor is the percentage decrease in crashes that can be expected. CRFs are available for about half of the

recommended treatments.

**Photograph:** The photo is intended to assist in defining the treatment. Where possible, a local example of the treatment is provided to illustrate a real life example of how the treatment is operating.

**Graphic:** The design graphic illustrates the best practices in design of the treatment. The graphic may include the relationship of the treatment to other elements in the roadway and provide important dimensions to consider.

**Resources:** Several relevant resources are provided for more in-depth design guidance or requirements.

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## STANDARD PRACTICE

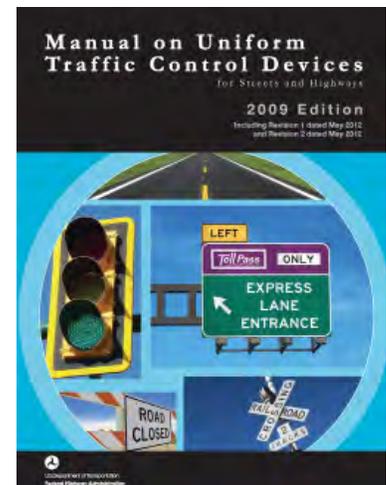
Guidance for the pedestrian design treatments was compiled from a variety of sources including national guidelines, and the City of Wichita’s standards and best practices. The following documents are important references for standard practice for pedestrian facility design and installation. More detailed references can be found in the resources section for each design treatment.

### *Manual of Uniform Traffic Control Devices (MUTCD)*

**Issuing Agency/ Organization:** Federal Highway Administration (FHWA)

**Level of Authority:** Standards, most of which are requirements (“shalls”). Some standards are flexible in that there may be more than one option for implementation.

**Overview:** The MUTCD is issued by the Federal Highway Administration (FHWA) of the U.S. Department of Transportation (USDOT) to specify the standards by which traffic signs, road surface markings, and signals are designed, installed, and used. These specifications include the shapes, colors, fonts, sizes, etc., used in road markings and signs. In the United States, all traffic control devices, such as traffic signals must generally conform to these standards. The manual is used by state and local agencies and private design and construction firms to ensure that the traffic control devices they use conform to the national standard. While some state agencies have developed their own sets of standards, including their own MUTCDs, they must substantially conform to the federal MUTCD, and must be approved by the FHWA. The Kansas Department of Transportation (KDOT) uses the federal MUTCD. Supplemental drawings and details pertaining to pavement markings can be found on the KDOT website.



### *American Association of State Highway Transportation Officials (AASHTO) Guide for the Planning, Design, and Operation of Pedestrian Facilities*

**Issuing Agency/ Organization:** American Association of State Highway Transportation Officials

**Level of Authority:** Guidelines

**Overview:** The AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities is a resource for the design, development, and maintenance of safe pedestrian facilities. The Guide presents a set of best practices for designing roadways that accommodate pedestrians. The information in the Guide is not intended to be strict standards nor is it all encompassing, rather it aims at providing guidance that should be used in conjunction with other regulations such as the MUTCD.

### ADA/PROWAG

**Issuing Agency/ Organization:** U.S. Department of Justice/ Access Board

**Level of Authority:** Guidelines

**Overview:** The Americans with Disabilities Act (ADA, 1990, Public Law 101-336) is a broad civil rights statute that prohibits discrimination against people with disabilities in all areas of public life. The Department of Justice's ADA Title II implementing regulations apply to state and local government services, activities and policy making. As part of FHWA's regulatory responsibility under Title II of the ADA and Section 504 of the Rehabilitation Act of 1973 (504), the FHWA ensures that recipients of federal aid and state and local entities that are responsible for roadways and pedestrian facilities do not discriminate on the basis of disability in any highway transportation program, activity, service or benefit they provide to the general public; and to ensure that people with disabilities have equitable opportunities to use the public rights-of-way system.

The Access Board has developed proposed guidelines for public rights-of-way (PROWAG) that address various issues, including access for blind pedestrians at street crossings, wheelchair access to on-street parking, and various constraints posed by space limitations, roadway design practices, slope, and terrain. The proposed guidelines cover pedestrian access to sidewalks and streets, including crosswalks, curb ramps, street furnishings, pedestrian signals, parking and other components of public rights-of-way.



## LIST OF DESIGN TREATMENTS

Number	Along the Roadway	18	Illumination at Pedestrian Crossings
i	Sidewalk Zone		Intersection Geometry
1	Pedestrian Zone	19	Curb Ramps
2	Building Frontage Zone	20	Curb Extension
3	Amenity Zone	21	Curb Radius
4	Buffer Zone	22	Right-turn Slip Lane
5	Connector Trails	23	Modify Skewed Intersections
	Access Management / Driveways		Transit
6	Access Management / Driveways	24	Transit Stop Location
7	Driveway Design	25	Transit Stop Design
8	Driveways Near Intersections	26	Crossing Near Transit Stop
9	Driveway Consolidation		Channelization
10	Medians	27	Road Diet
	Across the Roadway	28	Width of Lanes
11	Crosswalk		Curbside Management
12	Crossing Island	29	Back-In Angle Parking
13	Mid-block Crossing		Traffic Calming
	Signals	30	Mini Traffic Circle
14	Protected Left Turn Phase	31	Chicanes
15	Pedestrian Signal		
16	Rectangular Rapid Flash Beacons		
	Lighting		
17	Illumination Along Corridors		

Note: This design guidance is for the City of Wichita public projects and is not a requirement for private development.

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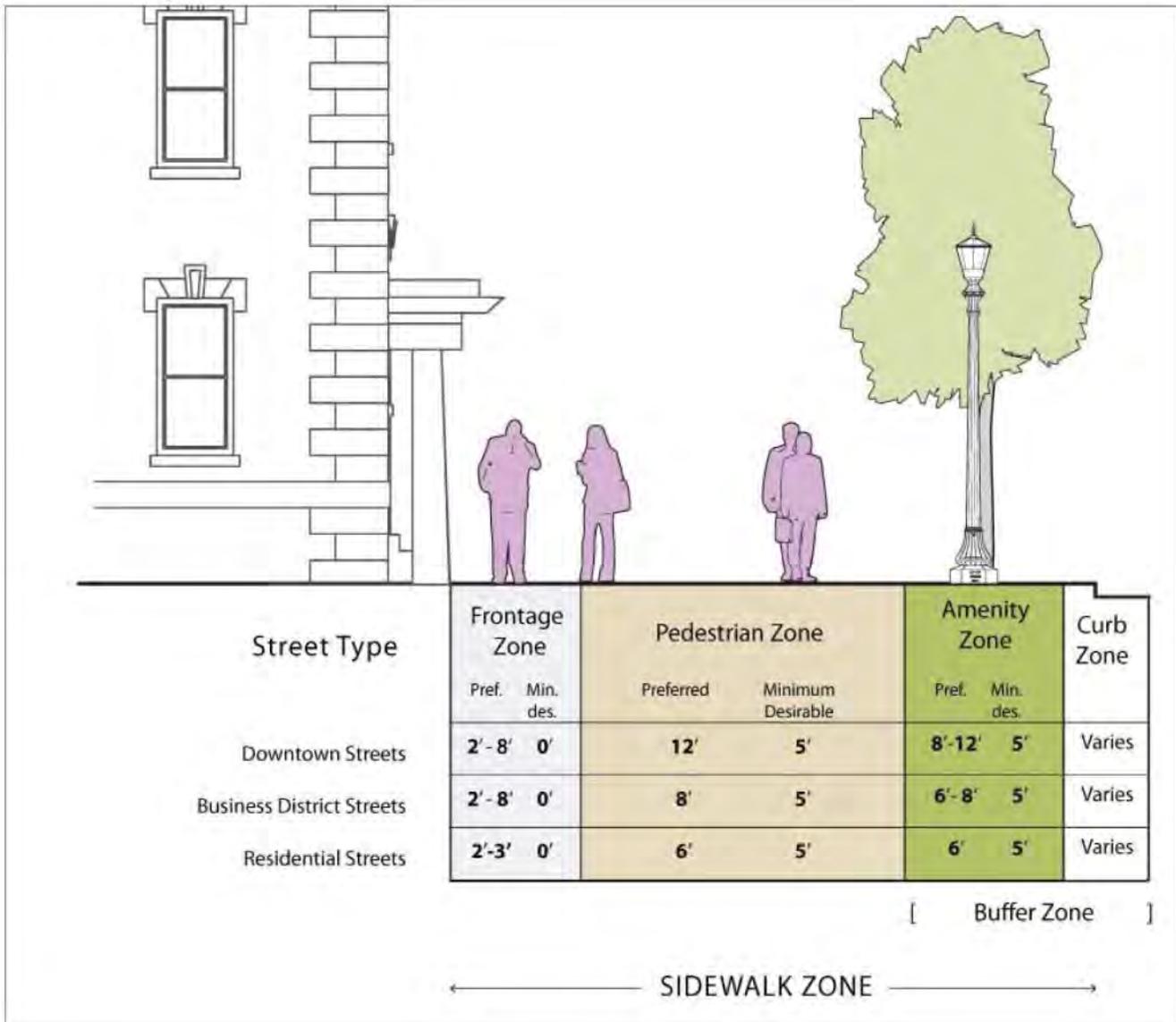
# THE SIDEWALK ZONE

## OVERVIEW

Sidewalks provide pedestrians with space to travel within the public right-of-way that is separated from motor vehicles. The Sidewalk Zone consists of three zones: the Frontage Zone, the Pedestrian Zone, and the Amenity Zone. In addition, a Buffer Zone between the motor vehicle travel land and the Pedestrian Zone can be created by the Amenity Zone, Curb Zone, or both. The zones may vary in terms of width and character depending on the adjacent land use, available right-of-way, and intended function. These zones help to organize the Sidewalk Zone and although the boundaries between the four sidewalk zones can

sometimes be blurred, each zone serves a distinct purpose.

Sidewalks are not only used for transportation, but for social interaction, lingering, and people-watching. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions where people walk in the street. Excessively wide sidewalks can create feelings of being overly exposed or vulnerable, which may result in decreased pedestrian activity. The preferred widths for each Sidewalk Zone are provided below.



*Note:* These are design guidance and not requirements.

# THE PEDESTRIAN ZONE



*Sidewalk on Delano. (Photo by TDG)*

## DESCRIPTION

The Pedestrian Zone is the walkable area within the Sidewalk Zone. It should be continuous, clear of obstacles and provide a unobstructed passageway for pedestrians to access street crossings and adjacent amenities.

## BENEFITS

- Sidewalks make walking an easy choice between destinations, they create a network for pedestrian travel throughout the city.
- Sidewalks make access to transit possible since the majority of transit users walk between their destination and transit stops.
- Sidewalks provide public social space.
- Sidewalks provide space for utilities, signs, and amenities such as bus shelters or waiting areas, bicycle parking, public seating, public art, newspaper stands, trash and recycling receptacles, and greenscape elements.

## DESIGN CONSIDERATIONS

- Refer to ADA requirements for sidewalk design. All new sidewalks and curb ramps shall comply with ADA regulations (see Resources).
- The Pedestrian Zone must meet load-bearing, friction, and other requirements as per relevant standard design specifications and regulations.
- The Pedestrian Zone should be clear of any obstructions including utilities, traffic control

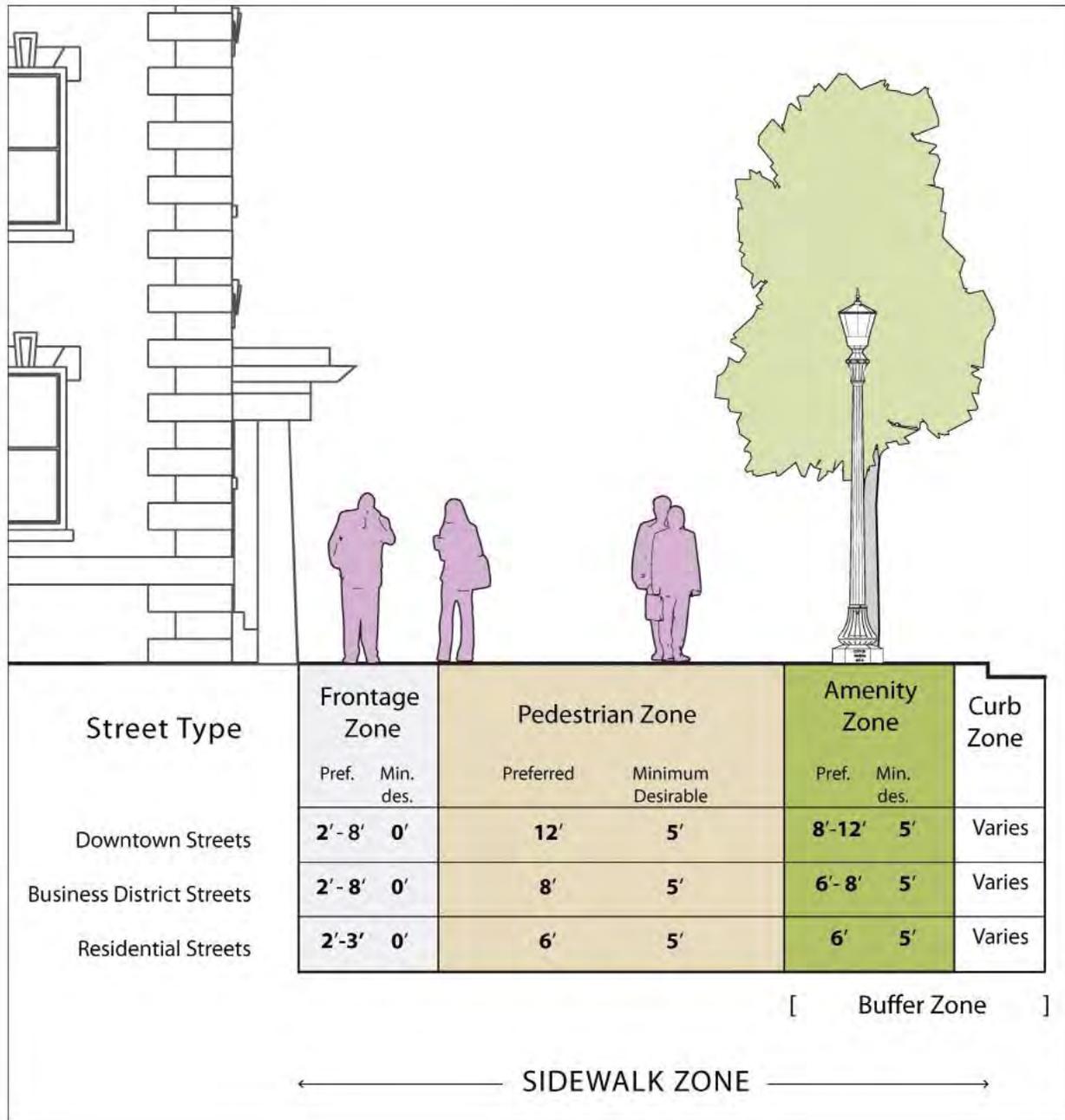
devices, trees, and furniture.

- The area within 18 inches of the face of curb should be kept free of all obstructions.
- The width and design of sidewalks will vary depending on street type, demand, and available right-of-way.
- The Pedestrian Zone should, as much as possible, keep to the natural path of pedestrian travel parallel to the roadway. Ideally, they will be located in a position that naturally aligns with crosswalks at intersections.
- It may be desirable in some locations for the Pedestrian Zone to curve to form a more direct route to an intersecting walkway, to preserve significant trees, or to provide a greater degree of separation between the sidewalk and the roadway.

## POLICY CONSIDERATIONS

- When reconstructing sidewalks and relocating utilities, all above ground utility access points should be relocated outside of the Pedestrian Zone, where practicable to reduce slip and trip hazards.
- In certain contexts (e.g., business districts, historic areas, major transit stops) pavement materials such as brick, stone or textured concrete may be desired. In such cases a maintenance agreement that identifies the entity responsible for ongoing maintenance will be required.

- Consider stormwater mitigation where feasible, through use of permeable paving, drainage swales and other green infrastructure.



RESOURCES: AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. Designing Sidewalks and Trails for Access: Ch. 4 Sidewalk Design Guidelines and Existing Practices: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalks/chap4b.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/chap4b.cfm)

# BUILDING FRONTAGE ZONE

## DESCRIPTION

The Building Frontage Zone is the area between the Pedestrian Zone and building frontages, which may incorporate public right-of-way (where available) or private property (where building setbacks have been provided). The Building Frontage Zone provides a buffer for pedestrians and bicyclists from opening doors and architectural elements, signs and may also provide space for sidewalk cafés, store entrances, window shopping or landscaping.

## BENEFITS

- The Building Frontage Zone provides room for elements that enliven the street and create visual interest for pedestrians.
- The Building Frontage Zone announces building entrances and the occasional café.

## DESIGN CONSIDERATIONS

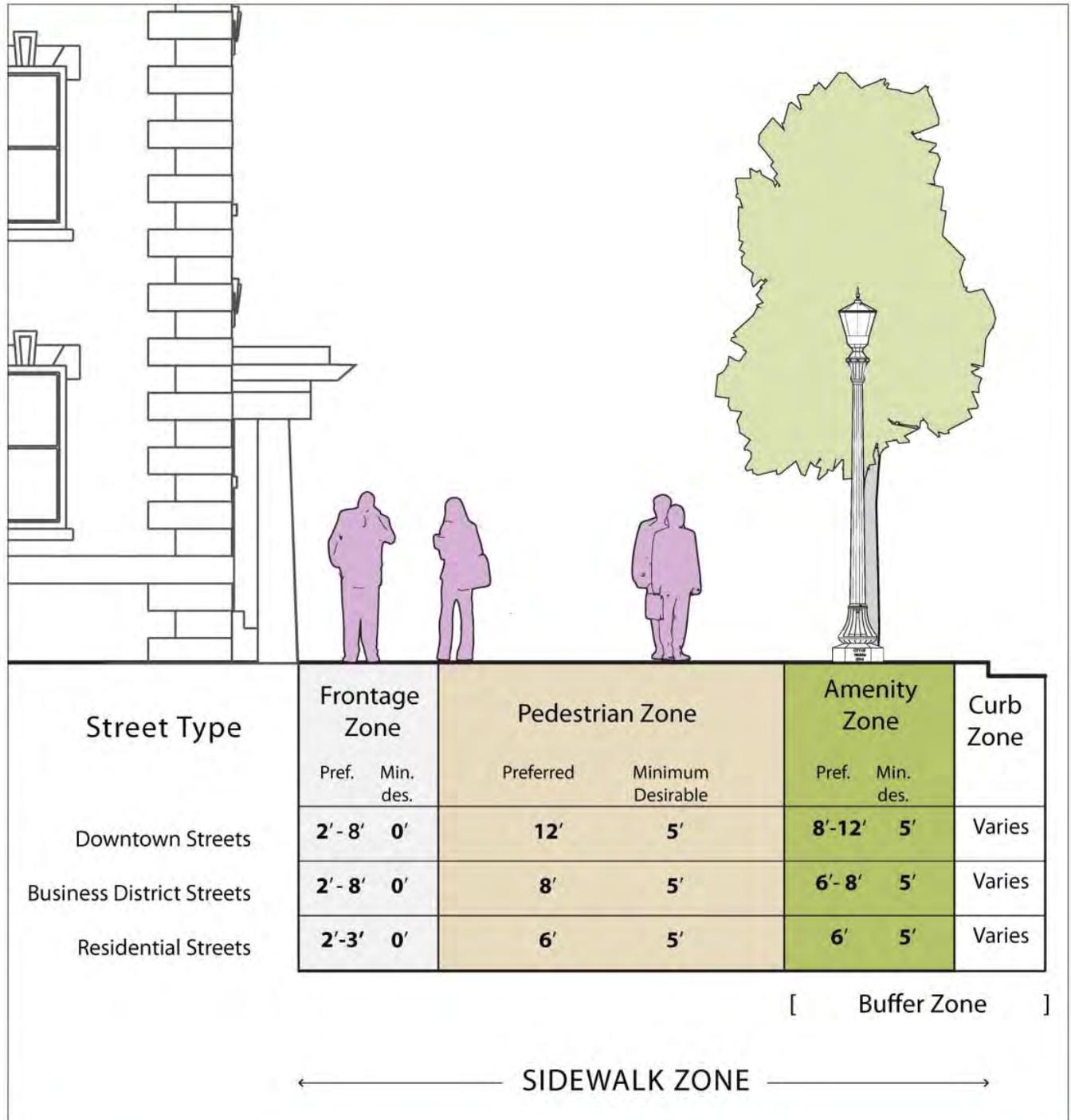
- Where buildings are located against the back of the sidewalk and constrained situations do not provide width for the Building Frontage Zone, the effective width of the Pedestrian Zone is reduced by 1 foot, as pedestrians will shy from the building edge.
- The Building Frontage Zone should be maximized to provide space for cafés, plazas, and greenscape elements along building facades, but not at the expense of reducing the Pedestrian Zone beyond the recommended minimum widths.
- The minimum width of the Building Frontage Zone necessary to accommodate sidewalk cafes is 6 feet (see Resources).
- On-site bicycle parking should be conveniently located in relation to building entrances.

## POLICY CONSIDERATIONS

- Consider requiring primary building entrances to be visible and directly accessible from the sidewalk.
- Parking encroachment from adjacent parking lots into the Sidewalk Zone should be avoided with the use of appropriate set-backs or barriers such as wheel stops or curb on private property, or by requiring a widened Frontage Zone as a revision to the building code or Wichita Municipal Code.



*Photo by City of Wichita Staff*



RESOURCES:

Sidewalk Cafe Application Requirements: [http://wichitaks.granicus.com/MetaViewer.php?view\\_id=2&clip\\_id=1736&meta\\_id=102355](http://wichitaks.granicus.com/MetaViewer.php?view_id=2&clip_id=1736&meta_id=102355)  
 Wichita Municipal Code: Parkinglot Screening and Landscaping: <http://library.municode.com/index.aspx?clientId=14166>

# AMENITY ZONE

## DESCRIPTION

The Amenity Zone is the area between the Curb Zone and the Pedestrian Zone. This is where vegetation, utilities, bike parking and street furniture should be located. This zone organizes objects away from pedestrian flow, and simultaneously provides a buffer for pedestrians from the roadway, space for stormwater management, and snow storage. Sidewalk cafes and public art may also be placed within this zone. A buffer between pedestrians in the Pedestrian Zone and motor vehicle traffic creates greater levels of comfort and safety. When the Amenity Zone is not present, parking and bike lanes in the Curb Zone can create an adequate buffer (See Curb Zone). Vertical objects in the Amenity Zone must be strategically placed to not obstruct sight lines, avoid damage from vehicles on the street, and to allow for access to and from parked cars and transit stops.

This zone should also be designed to accommodate winter snow storage and prevent snow from obstructing the Pedestrian Zone. Green infrastructure elements should be designed to make use of stormwater runoff from the sidewalk and/or the street.

The Amenity Zone is where street trees and additional vegetation can be planted. The dimensions of this zone should be taken into consideration when selecting trees and vegetation so that plantings are appropriately accommodated and do not damage the sidewalk as they mature.

## BENEFITS

- If parking and bike lanes are absent from the street, then the Amenity Zone serves as part of the Buffer Zone. In that case, the Amenity Zone improves the comfort of pedestrians by distancing them from passing traffic, and the splash zone.
- This Zone provides space for the slope of driveway ramps so that the Pedestrian Zone remains level.
- Keeps the Pedestrian Zone free from obstructions by providing space in which to organize street amenities and utilities.



*Photo by City of Wichita Staff*



## CONSIDERATIONS

- Curbside sidewalks should be provided only in extreme circumstances where right-of-way is constrained and adjacent property is built-out.
- Where minimum 6 foot Amenity Zone widths cannot be provided due to right-of-way constraints, parked cars and/or bicycle lanes can provide an acceptable buffer zone.
- Utilities, street trees, and other sidewalk furnishings should be set back from curb face a minimum of 18 inches. Allow 3.5 feet for trees
- The minimum width of the Amenity Zone necessary to accommodate sidewalk cafes is 8 feet (including 2 feet of clearance from face of curb).
- Areaways and vaults (empty space under the sidewalk) may limit the possibility of having plantings and street trees).
- To avoid sign clutter, attach new signs to existing poles where appropriate.

## POLICY CONSIDERATIONS

- For new developments in business districts and where opportunities are available to create additional width, site designs should accommodate wider sidewalks with generous Amenity Zones in the future.
- Permeable paving may be considered where appropriate. Refurbished, reused and recycled materials should be considered.

### Downtown Streets

The Amenity Zone is characterized by planters and high-quality finishes. Street furniture, bike parking, public art, wayfinding, sidewalk cafes and unobtrusive utility elements are featured in the Amenity Zone.

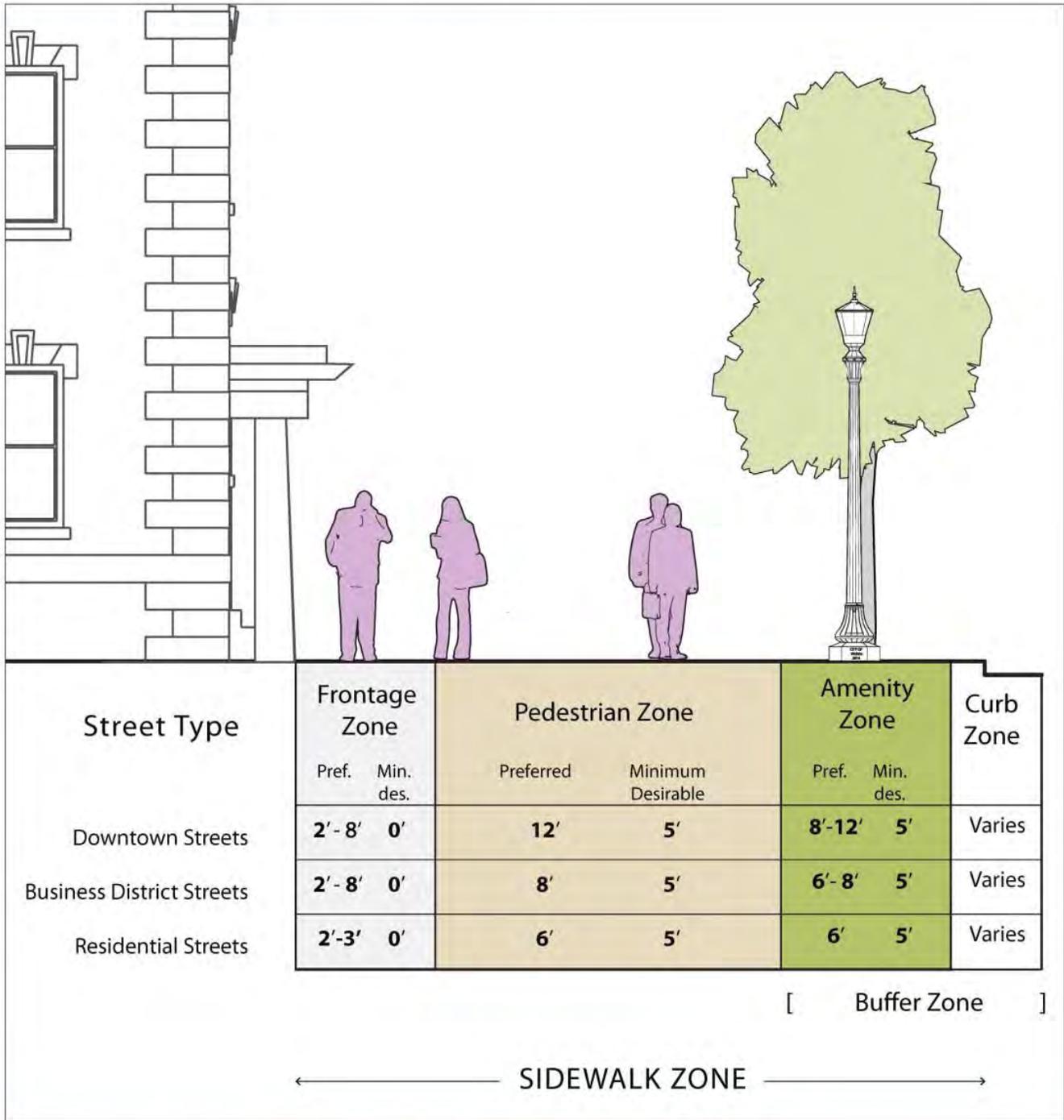
### Business District Corridors

The Amenity Zone should be as generous as possible and flexible in order to accommodate green infrastructure, public art, transit amenities, sidewalk cafes and public space that supports a variety of activities. Amenity Zone widths can range from 6 feet to 12 feet.

## Minimum Lateral Clearances from Objects

From	To	Clearance
Fixed object	Curb face with parking	18 inches (except trees)
Fixed object	Pedestrian Zone	1 foot
Fixed object	Pole face, sign post, fire hydrant	5 feet
Bicycle parking	Curb when adjacent to parking	3 feet
Bicycle parking	Curb when adjacent to vehicle travel lane	2 feet
Bicycle parking	Street trees and street furniture	1 foot
Tree (Centerline)	Face of curb	3.5 feet
Tree (Centerline)	Sidewalk or sidewalk landing	2 feet
Tree (Centerline)	Driveway	7.5 feet
Tree (Centerline)	Edge streetlight poles	20 feet
Tree (Centerline)	Edge of fire hydrants	5 feet

# AMENITY ZONE CONT.



Bicycle Parking Guidelines: <http://www.apbp.org/?page=publications>  
 Project for Public Spaces Bench Resources: <http://www.pps.org/reference/benches/>  
 PROWAG: <http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/guidance-and-research/accessible-public-rights-of-way-planning-and-design-for-alterations/chapter-5%E2%80%94model-sidewalks>

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# BUFFER ZONE



Photo by City of Wichita Staff

## DESCRIPTION

The Buffer Zone is the area between the motor vehicle travel lane and the Pedestrian Zone and/or parking lane. The Buffer Zone can be created by on street parking, the Amenity Zone, or both. It provides a buffer to the Pedestrian Zone from moving motor vehicle traffic. The Buffer Zone is frequently created by the presence of street trees, planting strip, or bike lane.

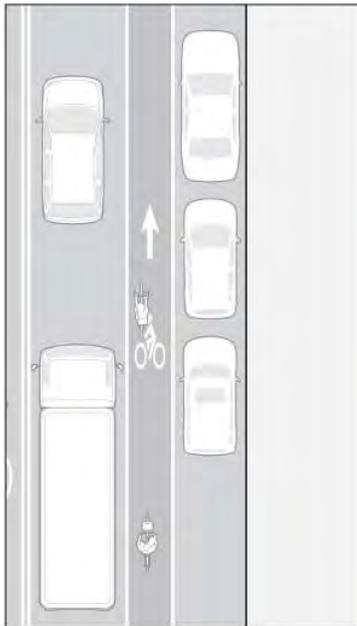
## BENEFITS

- A buffer from moving motor vehicle traffic makes the sidewalk a more pleasant place to walk.
- On Downtown streets and within business districts buffers allow for more activity on the sidewalk such as sidewalk cafes, benches and other pedestrian amenities.
- The Buffer Zone eliminates the “splash zone”, buffering pedestrians from the likelihood of getting splashed by puddled water or snow that can collect in the gutter.
- For roadways without an Amenity Zone the Curb Zone can improve the comfort of the sidewalk by creating space between moving motor vehicles and pedestrians with parking or bike lanes.
- Parking lanes provide a physical barrier between motor vehicle traffic and the sidewalk.

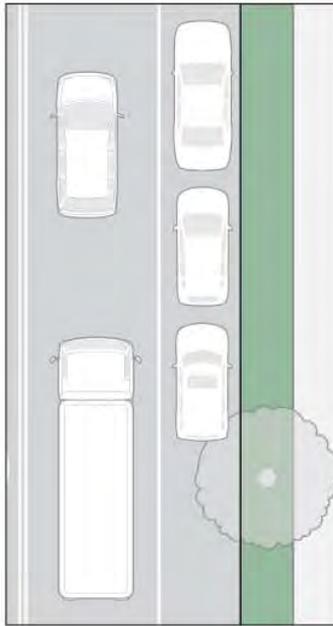
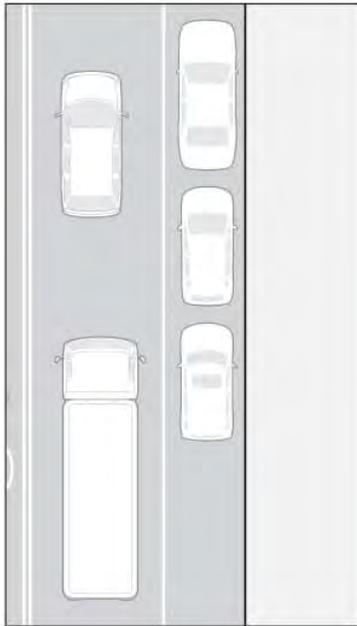
## DESIGN CONSIDERATIONS

- Downtown and Business District streets or streets with higher pedestrian volumes benefit from both an Amenity Zone and a Curb Zone to increase the comfort of the sidewalk and sidewalk activities such as sidewalk cafes.
- Parking in the Curb Zone may be parallel, perpendicular, angled or back-in angle parking. The parking configuration should be determined based on the characteristics of the street. Back-in angle parking is preferred over perpendicular or angled parking in business districts for multiple reasons (see Back-in Angle Parking).
- Additional uses of the Buffer Zone include in-street bike parking, seating and parklets.

## CRASH REDUCTION FACTOR: NOT AVAILABLE



Parking and bike lanes can function as Curb Zone buffers to comfortably distance pedestrians and the sidewalk from moving vehicles. The combination of bike lanes and parking as buffer to the street is the most comfortable for pedestrians. This buffering is effective on high volume pedestrian streets or where there are sidewalk cafes.



Any of the Curb Zone buffers combinations can be paired with an Amenity Zone to provide an additional buffer to the sidewalk.

### RESOURCES:

Wichita Bicycle Master Plan: <http://www.wichita.gov/Government/Departments/Planning/Pages/Bicycle.aspx>  
Downtown Wichita Streetscape Design Guidelines: <http://www.wichita.gov/Government/Departments/Planning/NR/NR Documents/Downtown Wichita Streetscape Design Guidelines.pdf>

# CONNECTOR TRAILS



Photo by City of Wichita Staff

## DESCRIPTION

Connector Trails are short off-road segments of trail that provide bicycles and pedestrians access between subdivisions, neighborhoods, parks, schools, and business.

There are several strategies for providing connector trails in new and established developments. Several ways to create them are through policy, ordinance, easements, or for existing developments through written agreement with adjacent property owners.

## BENEFITS

- Connector Trails can provide a more direct route between subdivisions when the street system is circuitous or walking long distances on collector arterials is required.
- Encourage walking between neighborhoods or along walking routes to schools or parks.
- Connector trails shorten distances for pedestrians.
- Exposure to traffic is limited or reduced when residential streets and trails are used rather than arterial streets.
- Connector trails offer more walking route choices within a subdivision.

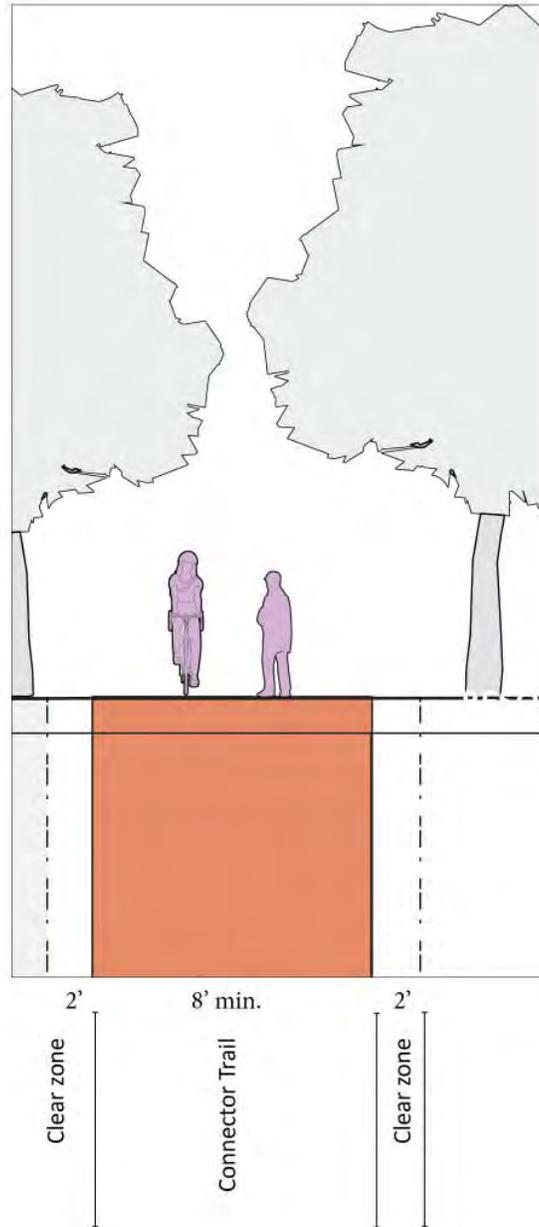
## DESIGN CONSIDERATIONS

- Connector Trails intended for use by bicycles should be designed to meet adopted guidelines. This includes widths, clearance, design speed, stopping and sight distance.
- Connector Trails intended for use by pedestrians must meet accessibility requirements under the Americans with Disabilities Act (ADA).
- If parallel to a roadway the grades may meet but not exceed the grade of the adjacent roadway.
- If not next to a roadway, the grade should not exceed 5 percent (see resources).
- Trail entrances and exits should take roadway conditions into consideration and if possible located near enhanced street crossings.
- Connector trails should be a minimum of 8 feet wide.
- Connector trails should be tied into the existing sidewalk or pathway network.
- Connector Trails can be marked with wayfinding or bollards for easy identification.

## POLICY CONSIDERATIONS

Connector trails can be established through various policy mechanisms in existing and new developments:

- Voluntary easement
- Easement required at time of property sale
- Development regulations
- Utility easements (may be included in easement for



RESOURCES:

AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. Designing Sidewalks and Trails for Access: Ch. 4 Sidewalk Design Guidelines and Existing Practices: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalks/chap4b.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/chap4b.cfm)

# ACCESS MANAGEMENT / DRIVEWAYS



Photo by TDG staff

## OVERVIEW AND DESCRIPTION

Access management reduces crashes by reducing the number of motor vehicle turning movements across travel lanes, bike lanes and the sidewalk. Access management strategies include consolidating turning movements, particularly left-turns, through median installation, interconnecting parcels with service roads or internal connections, and reducing the number and size of driveways, particularly near intersections.

The following design treatments, included on the following pages, may be integrated into an Access Management plan for a given roadway:

- Driveway Design
- Driveways Near Intersections
- Driveway Consolidation
- Median

Access management improves safety for drivers and pedestrians. Multi-lane roadways without medians present particular challenges to both pedestrians and motorists as motorists turning left into a driveway are focused on finding gaps in on-coming traffic. While focusing on gaps in traffic, the motorists' sight lines of potentially conflicting pedestrians are blocked by the approaching vehicles. Motorists often accelerate rapidly to clear a gap on multi-lane roadways which puts the pedestrian at risk when walking along the roadway.

Access management should be employed with sensitivity to the character and social function of the street. Access management can improve the safety and character of wide streets that benefit from the installation of median trees to soften and visually narrow the roadway. On main streets with business and pedestrian activity on both sides, the installation of medians should be carefully assessed to maintain visual connections between both sides of the street.

- Minimize the number of driveways particularly along commercial corridors, in order to minimize sidewalk conflicts.
- As an access management principle, avoid locating driveways within the functional area of an intersection to reduce the potential for conflicts with turning vehicles and pedestrians in the crosswalk.

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# DRIVEWAY DESIGN



Driveway design that provides a continuous, even sidewalk (Photo by City of Wichita Staff)

## DESCRIPTION

Driveways provide access to businesses and residences from public streets and in doing so often intersect with sidewalks creating occasions for conflict between pedestrians and vehicles.

## BENEFITS

When driveways are properly designed, they:

- Reenforce the law that pedestrians have the right of way.
- Provide an even, continuous walking surface for comfortable pedestrian travel particularly for those with disabilities and wheelchair users.

## DESIGN CONSIDERATIONS

Driveways occur wherever there are land uses that require vehicle access from the street network. To the extent possible:

- Design driveways to look like driveways, not roadway intersections, and incorporate the following design principles:
  - » Clearly delineated the pedestrian zone across the driveway with sidewalk pavement treatment.
  - » Have continuous sidewalks across driveways at a continuous grade and cross-slope and driveway ramps that are contained within the Amenity Zone and do not intrude on the pedestrian travel way.
  - » The Pedestrian Zone should be a minimum 6' feet clear width.
  - » The Pedestrian Zone should be consistent with current standards and have a 1% cross

slope (no more than a 2%) to ensure that all pedestrians using wheeled mobility devices can safely cross the driveway.

- » Turning radii that use minimized (5 to 15 feet) to the extent feasible to prevent high speed turning movements. Ramp style driveway designs are preferred over full curb radii designs.
- » Include smaller driveway widths (12 to 16 feet for one-way, 20 to 24 feet for two-way, 24 to 36 feet for heavy trucks).
- In locations where a driveway must function as an intersection e.g., to a major shopping area, pedestrian safety can be enhanced by including features such as crosswalks, small corner radii, and pedestrian signal heads as part of a signalized intersection.
- Truncated domes should not be used where driveways cross the sidewalk zone unless the driveway is functioning as a leg of an intersection, i.e. curb ramps are present.
- Site obstructions (signs, landscaping, building appurtenances) should be minimized to improve visibility between turning motorists and pedestrians.
- Consider retrofit options such as signalization, crosswalks etc., for certain high speed driveways.

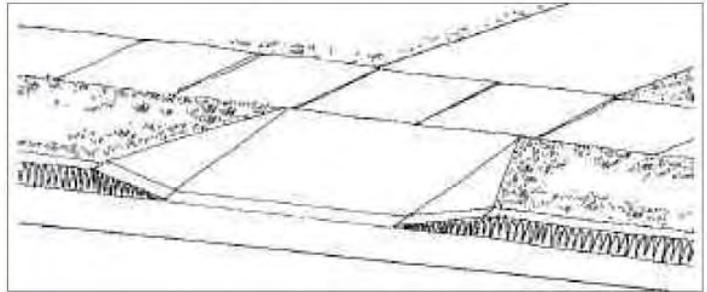
## POLICY CONSIDERATIONS

- Review and update the city of Wichita Driveway Design Standards Plates

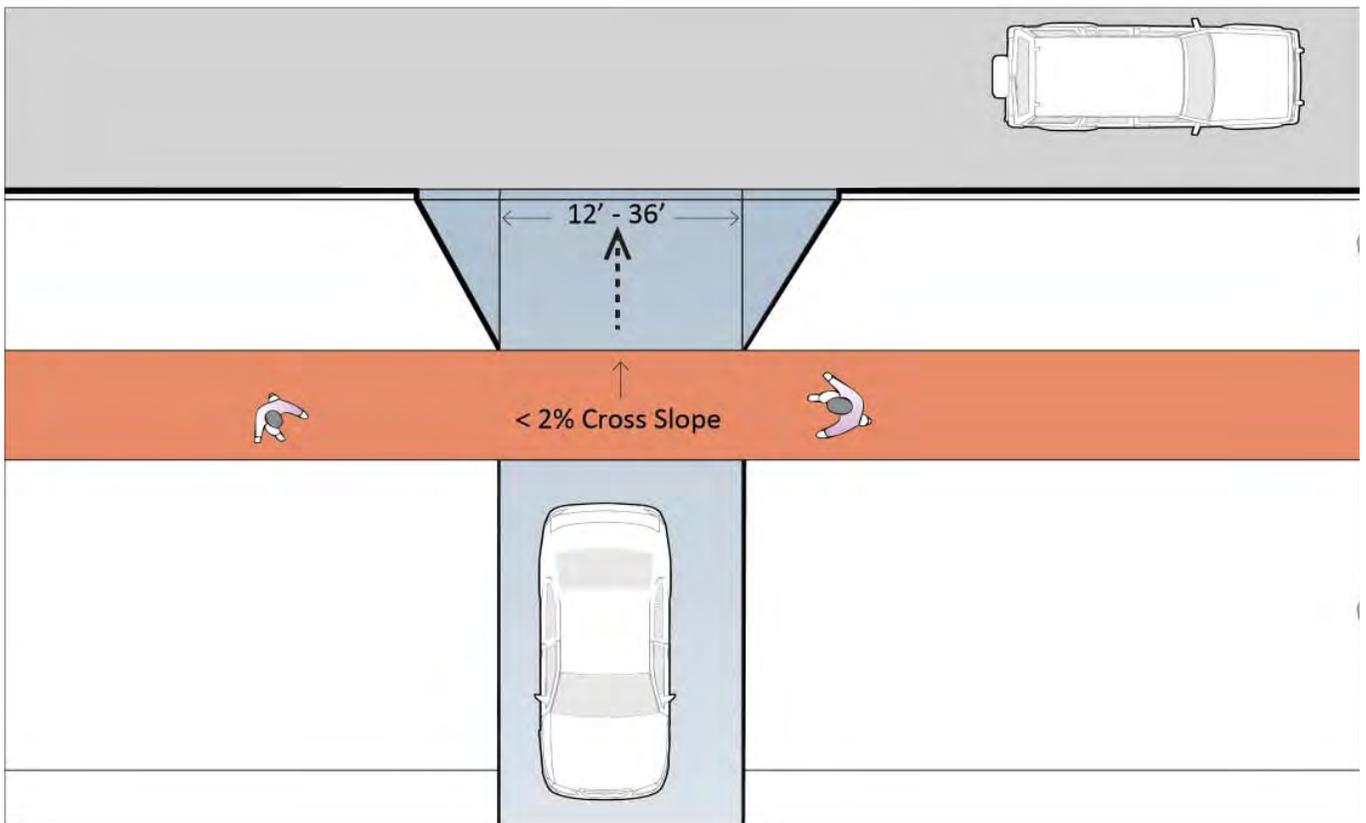
CRASH REDUCTION FACTOR: NOT AVAILABLE

BELOW: Clearly maintain the sidewalk through driveway crossings. This messages to motorists that pedestrians have the right-of-way.

RIGHT: Where feasible, design driveways with ramps rather than curb radii to look and function less like roadway intersections.



Federal Highway Administration (FHWA) *Designing Sidewalk and Trails for Access.*



RESOURCES:

FHWA *Designing Sidewalks and Trails for Access*, [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalks/chap4b.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/chap4b.cfm)  
AASHTO *Guide for the Planning, Design and Operation of Pedestrian Facilities*  
City of Wichita *Design Plates*

# DRIVEWAYS NEAR INTERSECTIONS



Photo by TDG

## DESCRIPTION

As an access management principle, driveways should be avoided within the functional area of an intersection to reduce the potential for conflicts associated with turning vehicles.

## BENEFITS

- Distancing driveways from intersections improves visibility of pedestrians and limits conflicting turn movements.

## DESIGN CONSIDERATIONS

- Refer to Access Management Guidelines for Driveway Placement, Right-of-way & Easement Requirements and Traffic Impact Studies (see Resources).

### Major Arterial Intersections:

- For right-in/right-out driveways provide a minimum of 200 feet from the intersection.
- For full turn movement driveways provide a minimum of 400 feet from the intersection
- Minimize the number of driveways particularly along commercial corridors, in order to minimize sidewalk conflicts.

### Residential Street Driveways:

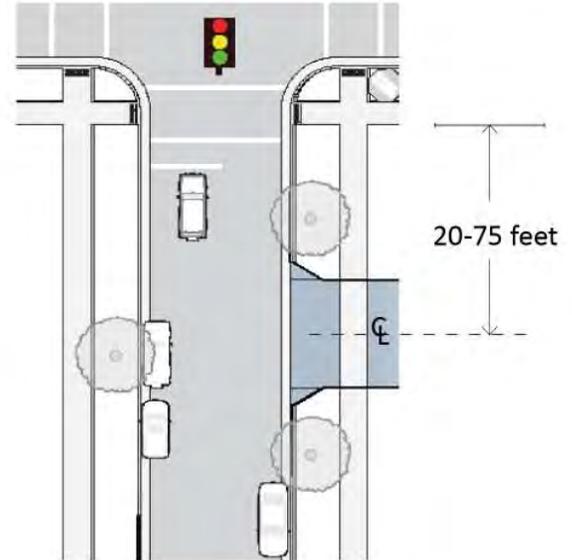
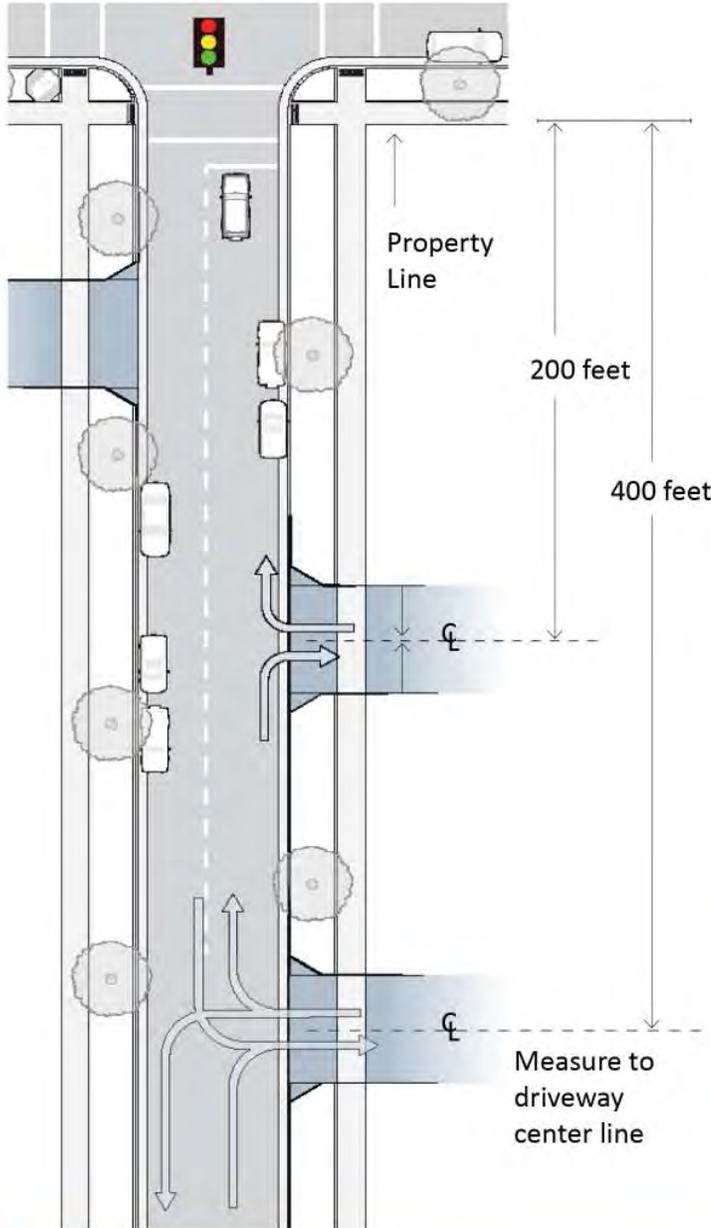
- Provide a minimum of 20 feet between uncontrolled intersections and adjacent residential street driveways.
- In locations where a driveway functions as part of an intersection, it should be designed with pedestrian safety features such as crosswalks, small corner radii, and pedestrian signal heads if signalized.

## POLICY CONSIDERATIONS

- For new development, incorporate Access Management Guidelines into the site review process.
- For redevelopment projects, provide guidance for consolidation of driveways per the Access Management Guidelines. Review and remove redundant driveways at locations with high levels of pedestrian use such as downtown and neighborhood commercial areas.
- Review and update the City of Wichita Building Code for driveway placement in relation to intersections.
- Review all public and private projects to ensure that driveways are either removed or relocated from close proximity to intersections.
- If driveway consolidation is possible, remove the driveway entrances closest to the intersection.
- Review and revise the Access Management Guidelines to specify how to measure the distance of the driveway from the property line.

**ARTERIAL STREET / COMMERCIAL DRIVEWAYS**

**RESIDENTIAL STREET / RESIDENTIAL DRIVEWAYS**



- Commercial driveway setbacks near arterial street intersections:**
- 200 feet: Right-in/Right-out Driveways
  - 400 feet: Full Turning Movement Driveways

- Residential street driveway setbacks:**
- 20 foot min.: Unsignalized intersection
  - 40 feet min.: Signalized intersection

**RESOURCES:** A Guide for Including Access Management in Transportation Planning. NCHRP Report 548: [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_548.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_548.pdf)  
 PEDSAFE: Driveway Improvements. [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=20](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=20)  
 Access Management: Guidelines for Driveway Placement, Right-of-Way & Easement Requirements, And Traffic Impact Studies: <http://www.wichita.gov/Government/Departments/PWU/StandardsTraffic/Access%20Management.pdf>

*Note:* These are design guidance and not requirements.

# DRIVEWAY CONSOLIDATION



Photo by TDG

## DESCRIPTION

Fewer driveways reduce the number of turning movements in and out of a development. The small arrows depict the number of turning movements with three driveway entrances to a single development. The larger arrows illustrate the number of turning movements if one driveway is provided.

Providing adequate space between driveways reduces vehicle turning conflicts. The required distances between driveways is 200 feet for right-in-right out driveways and 400 feet between driveways that accommodate all turning movements.

## BENEFITS

- Crash rates decrease as driveway density decreases on a roadway (i.e., number of driveways per mile).
- Limiting and consolidating vehicle access points by installing medians and reducing the number of driveway entrances benefits pedestrians and bicyclists and can also improve traffic operations by redirecting motor vehicles to make turns intersections with appropriate traffic control devices.
- Distancing driveways from intersections improves visibility of pedestrians and limits conflicting turn movements (see Driveways Near Intersections).

## DESIGN CONSIDERATIONS

- Access management strategies should be considered where numerous driveways or

excessively wide driveways impede pedestrian travel or create unnecessary potential conflicts between vehicles, bicycles, and pedestrians.

- On major arterials the City of Wichita requires minimum driveway spacing to provide sufficient distance between driveways for driver expectancy and traffic flow purposes.
- On the approaches to major intersections, install center medians with a minimum length of 300 feet and width of 4'. Medians at intersection approaches require motor vehicles to turn at the signalized intersection rather than into mid-block driveways which reduces the change of collision with pedestrians walking along the side of the roadway.

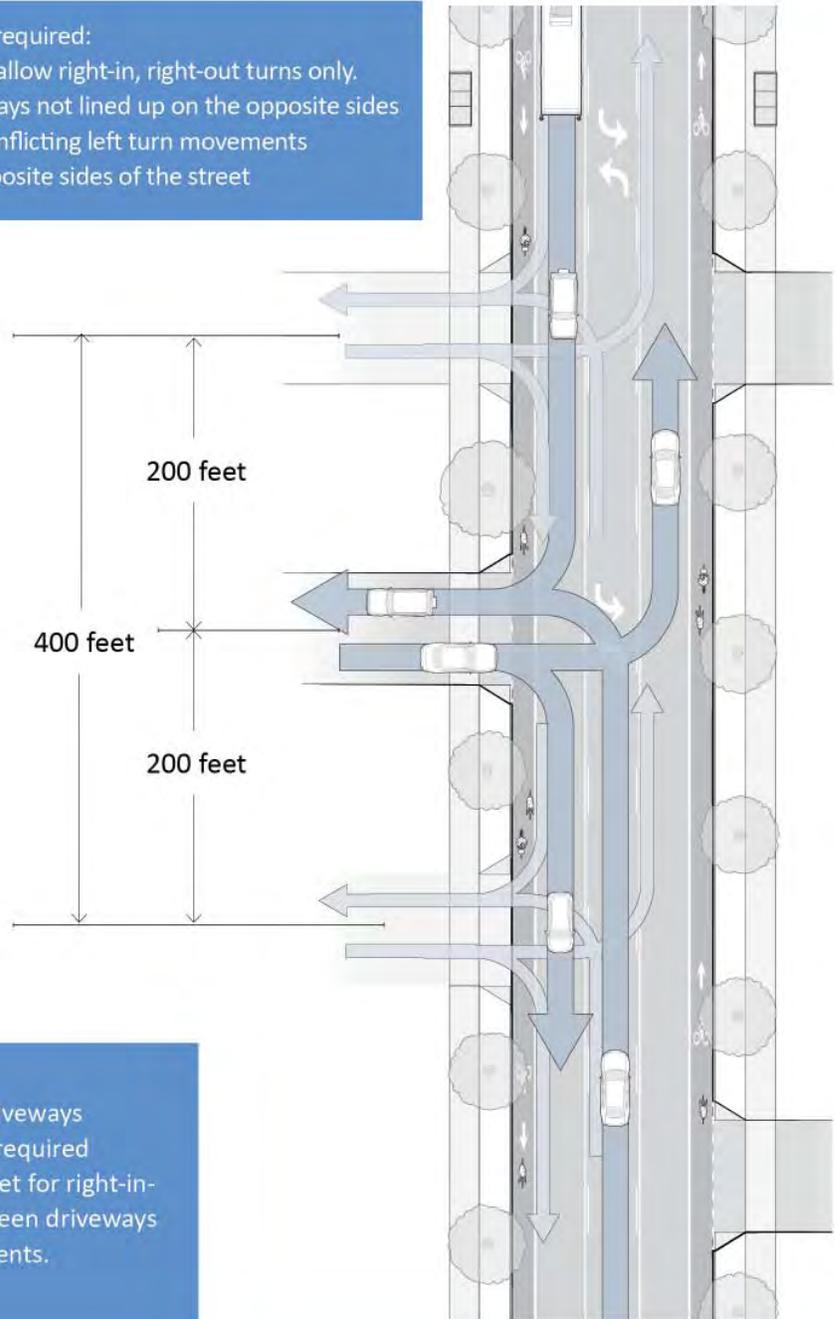
## POLICY CONSIDERATIONS

- Systematically review and remove redundant driveways at locations with high levels of pedestrians. Use in areas such as downtown and in business districts. (Also see Driveways Near Intersections).
- Review all public and private projects to ensure that driveways are either removed or relocated from close proximity to intersections.
- If driveway consolidation is possible, remove the driveway entrances closest to the intersection.
- On major arterials there are minimum driveway spacing requirements to provide sufficient distance between driveways for driver expectancy and traffic flow purposes.

## CRASH INCREASE FACTOR: 4.7% PER DRIVEWAY PER MILE

The following spacing standards will be required:

- 200 feet spacing for driveways that allow right-in, right-out turns only.
- 200 feet minimum offset for driveways not lined up on the opposite sides of arterial streets and not having conflicting left turn movements
- 400 feet offset for driveways on opposite sides of the street



### Driveway Spacing:

Providing adequate space between driveways reduces vehicle turning conflicts. The required distances between driveways is 200 feet for right-in-right out driveways and 400 feet between driveways that accommodate all turning movements.

**RESOURCES:** A Guide for Including Access Management in Transportation Planning. NCHRP Report 548: [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_548.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_548.pdf)  
PEDSAFE: Driveway Improvements. [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=20](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=20)  
Access Management: Guidelines for Driveway Placement, Right-of-Way & Easement Requirements, And Traffic Impact Studies: <http://www.wichita.gov/Government/Departments/PWU/>

# MEDIAN



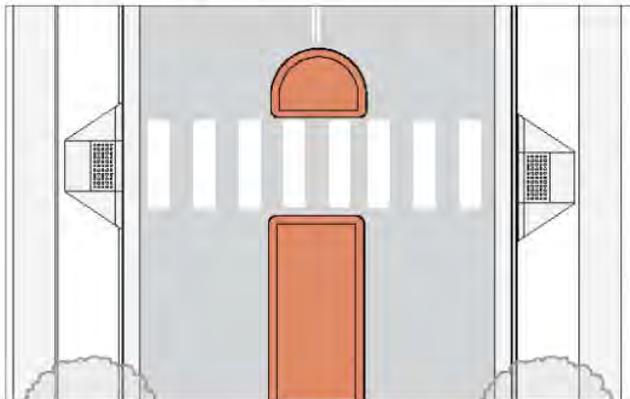
Photo by TDG

## DESCRIPTION

Medians are raised barriers in the center portion of the roadway used to manage vehicle access to adjacent land uses and associated parking.

## BENEFITS

- Medians reduce potential conflicts associated with turning vehicles.
- Medians can provide a refuge for pedestrians at crossing locations (see Crossing Island treatment).
- They can provide space for trees and other landscaping that, in turn, can help change the character of a street and reduce vehicle speeds.
- Medians also have benefits for motorist safety when they replace center turn lanes.



Mid-block pedestrian crossings in medians provide a refuge for pedestrians and reduce their exposure to traffic.

## CONSIDERATIONS

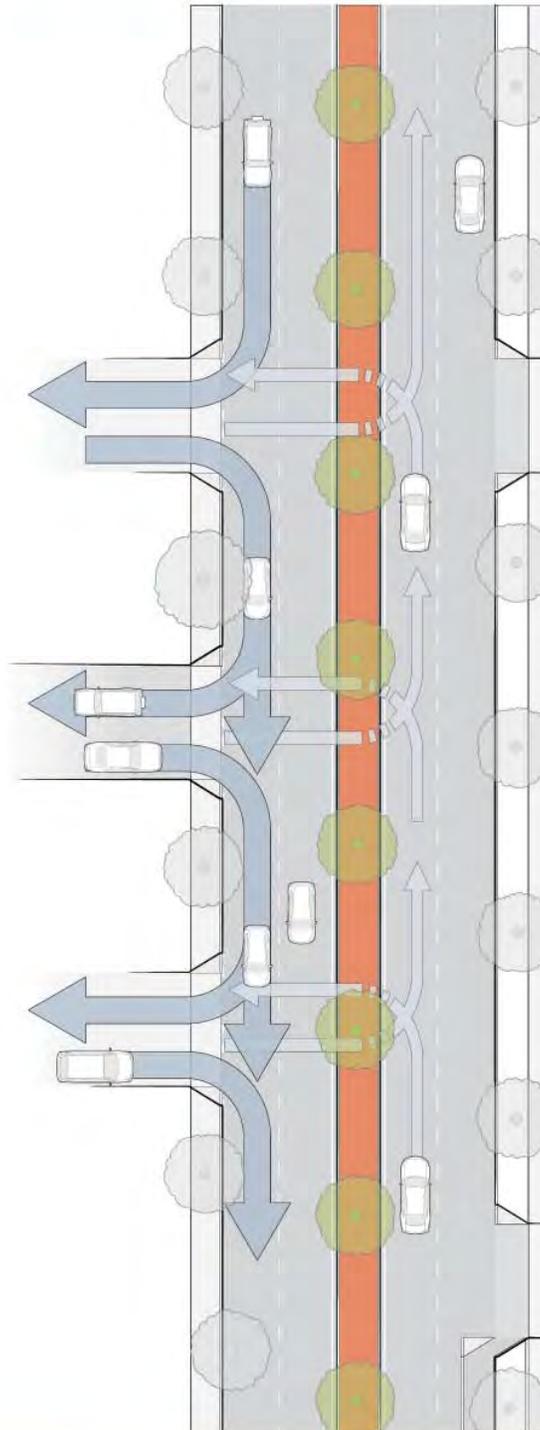
- Signalized intersections with medians should be designed to allow pedestrians to cross the

entire roadway during a single signal cycle without a pushbutton in the median.

- On the approaches to major intersections, install center medians with a minimum length of 300 feet and width of 4 feet. Medians at intersection approaches require motor vehicles to turn at the signalized intersection rather than into mid-block driveways which reduces the change of collision with pedestrians walking along the side of the roadway.
- Desired turning movements of motor vehicles, need to be adequately provided so that motorists are not forced to travel on inappropriate routes, such as residential streets or make unsafe u-turns.
- Continuous medians may not be the most appropriate treatment in every situation; separating opposing traffic flow and eliminating left-turn friction can increase traffic speeds by decreasing the perceived friction between opposing traffic lanes.
- Medians may take up space that can be better used for wider sidewalks, bicycle lanes, sidewalk buffers, or on-street parking and can cause problems for emergency vehicles.
- Sidewalks should not be reduced in width or bike lanes eliminated or precluded in order to provide space for a median.
- Under the right conditions, medians can be constructed in sections, creating an intermittent rather than continuous median.
- Medians are an opportunity to install pervious pavement.
- Medians can result in increased motor vehicle speeds.
- Medians can increase the sense of separation between opposing block faces.
- The maintenance of medians can increase the maintenance responsibilities of the City.
- Consider the use of drought tolerant plants.

Medians can provide access management by reduce the number of turning movements, notably left turns, across the sidewalk.

The larger arrows depict the turning movements with the presence of a median. Only right turns are allowed in and out of driveways.



RESOURCES: A Guide for Including Access Management in Transportation Planning. NCHRP Report 548: [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_548.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_548.pdf)  
AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities  
2009 MUTCD

# CROSSWALK



Photo by TDG

## DESCRIPTION

Marked crosswalks delineate optimal or preferred location for a pedestrian to cross a street, and indicate to motorists where to expect pedestrians. Crosswalks are patterned brick and/or pavement markings. Pavement markings must follow one of the styles as shown in the Manual for Uniform Traffic Control Devices (MUTCD). These include high visibility crosswalks (e.g. ladder style) and lower visibility (e.g. parallel bars). Markings can be installed using white paint, thermoplastic or other pavement marking material. Brick crosswalks are standard.

## BENEFITS

- Aid drivers in seeing the crosswalk, not just the pedestrian.
- Direct pedestrians to preferred crossing locations
- Define the path of pedestrian travel.

## CONSIDERATIONS

Standard crosswalk marking



High visibility crosswalk marking



## General

- Marked crosswalks should be aligned with the approaching sidewalk and should be located to maximize the visibility of pedestrians while minimizing their exposure to conflicting traffic. Crosswalk placement should balance the need to extend the desired pedestrian walking path with orienting the crosswalk perpendicular to the curb; perpendicular crosswalks minimize crossing distances and therefore limit the time of exposure.
- Marked crosswalks should be at least 10 feet wide or the width of the approaching sidewalk if it is greater. In areas of heavy pedestrian volumes such as downtown, crosswalks should be wider (e.g. 14 to 20 feet).
- Americans with Disabilities Act (ADA)-compliant curb ramps should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk (flares do not need to fall within the crosswalk).
- Standard parallel line markings are acceptable (per MUTCD), however they may be less visible to motorists.
- The design of marked crosswalks at uncontrolled locations should incorporate additional crossing treatments depending on the number of travel lanes, vehicle speed, and the volume of vehicles in a given location.
- The use of brick to identify a crossing must also include MUTCD compliant parallel markings demarcating the crosswalk extent.
- Advance stop lines at stop-controlled and signalized intersections, when used, should be striped no less than 4 feet and no more than 30 feet from the edge of the crosswalk.
- Use crosswalk marking materials that are non-skid and retroreflective.

- High visibility (ladder) style crosswalks should be used at more prominent crossings, while parallel (two lines) can be used elsewhere.
- Implementation strategy: secure funding and establish a program to remark all crosswalk over several years per the existing maintenance protocol.

**Crosswalks at uncontrolled locations**

Crosswalk installation at uncontrolled locations requires careful consideration. The table below contains guidelines for intersection and mid-block locations with no traffic signals or stop sign on the approach to the crossing. They do not apply to school crossings. Crosswalks should not be installed at locations that could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex or confusing roadway geometry, substantial volumes of heavy trucks, etc. without first providing adequate design features and/or traffic

control devices. Adding crosswalks alone will not make a crossing safer, or necessarily result in more vehicles stopping for pedestrians. Whenever marked crosswalks are installed, it is important to consider other pedestrian facility enhancements, as needed, to improve the safety of the crossing (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic calming measures, bump outs).

- These are general recommendations; good engineering judgment should be used in individual cases for deciding where to install crosswalks.
- Where speed limit exceeds 40 mph, marked crosswalks alone should not be used at unsignalized locations.

General Guidelines for Installing Marked Crosswalks and Other Needed Pedestrian Improvements at Uncontrolled Intersections*												
	Vehicle Average Daily Traffic (ADT)											
	9,000 or fewer			9,000 - 12,000			12,000 - 15,000			More than 15,000		
	Speed Limit (MPH)			Speed Limit (MPH)			Speed Limit (MPH)			Speed Limit (MPH)		
Number of Lanes	30	35	40	30	35	40	30	35	40	30	35	40
Two Lanes	A	A	B	A	A	B	A	A	C	A	B	C
Three Lanes	A	A	B	A	B	B	B	B	C	B	C	C
Four or More Lanes with Raised Median	A	A	B	A	B	C	B	B	C	C	C	C
Four or More Lanes w/o Raised Median	A	B	C	B	B	C	C	C	C	C	C	C
A = Candidate Site for Marked Crosswalk . Marked crosswalks must be installed carefully and selectively. Before installing new marked crosswalks, an engineering study is needed to show whether the location is suitable for a marked crosswalk. For an engineering study, a site review may be sufficient at some locations, while a more in-depth study of pedestrian volumes, vehicle speeds, sight distance, vehicle mix, etc., may be needed at other sites.												
B = Possible Increase in Pedestrian Crash Risk May Occur if Crosswalks Are Added without Other Pedestrian Facility Enhancements. These locations should be closely monitored and enhanced with other pedestrian crossing improvements, if necessary, before adding a marked crosswalk.												
C = Marked Crosswalks Alone Are Insufficient, Since Pedestrian Crash Risk May Be Increased By Providing Marked Crosswalks Alone. Consider using other treatments, such as traffic signals with pedestrian signals, to improve crossing safety for pedestrians.												
* Adapted from Zegeer, C.V., Stewart, R.J., Huang, H.H., and Lagerwey, P.A. Safety Effects of Marked Vs. Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines. FHWA-RD-01-075. Federal Highway Administration, Washington, D.C., 2002.												

*Note:* These are design guidance and not requirements.

# CROSSWALKS CONT.

## Marked Crosswalks

Marked crosswalks may be installed in the following locations and may also include additional signing:

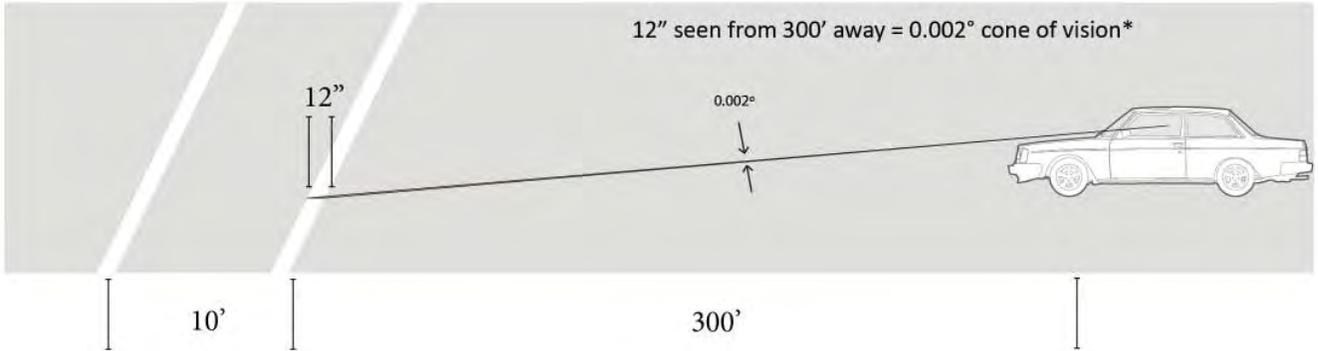
- Locations where traffic is controlled by traffic signals or signs such as a four-way stop. Signalized intersection crosswalks are typically marked at all four crossings where there are sidewalks leading to the intersection. In some cases there may be specific reasons to direct pedestrians to a particular crossing, and therefore not mark one or more legs of the intersection. At stop-controlled intersections all four legs may be marked or only two depending on whether there are reasons to direct pedestrians to a preferred crossing (e.g. poor sight-lines, slope etc.).
- At school crosswalks, which may include special school crossing signs at uncontrolled or mid-block locations to further communicate to motorists that children are likely to use the crossing.
- At crosswalk locations where there are no signs or signals to control traffic, use the decision making factors described on the previous page.
- At mid-block locations, including pedestrian or off-road path crossings. These crosswalks may be accompanied by warning signs, advanced stop bars or other crossing treatments depending on the roadway traffic conditions. Mid-block locations must be marked to be a legal crossing.
- It is recommended that a higher priority be placed on the use of marked crosswalks at locations having a minimum of 20 pedestrian crossings per peak hour (or 15 or more elderly and/or child pedestrians per peak hour).
- Crosswalk placement should balance the need to extend the desired pedestrian walking path with orienting the crosswalk perpendicular to the curb; perpendicular crosswalks minimize crossing distances and therefore limit the time of exposure.
- Markings may be installed so that the primary paths for vehicle tires are between crosswalk markings, which can reduce wear and maintenance.

The relationship between the crosswalk and wheelchair ramps. Crosswalk and ramp alignment should be at the intersection for improved visibility and be in alignment with the pedestrian path of travel.

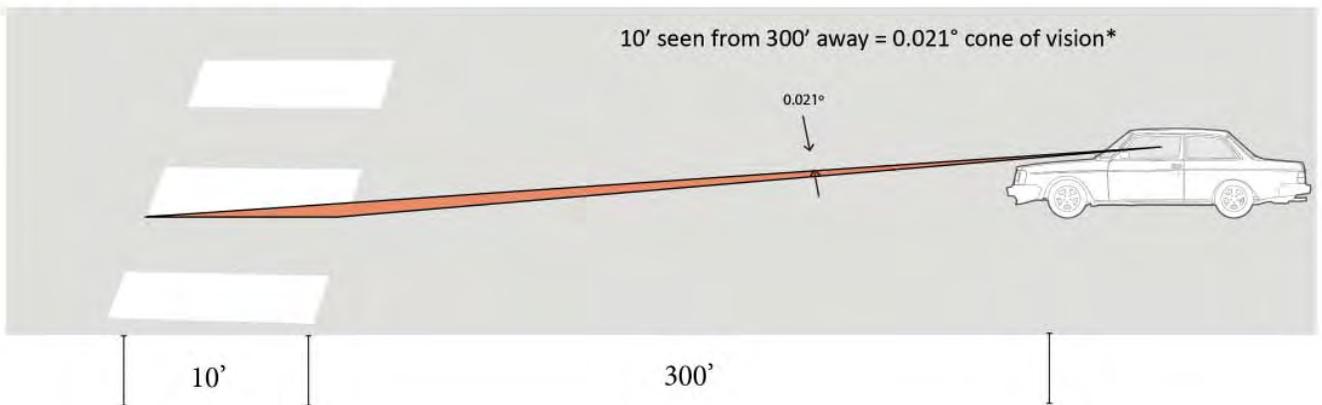




**Standard crosswalk marking**



**High visibility crosswalk marking**



\*Assumes a constant grade

RESOURCES: Manual on Uniform Traffic Control Devices Section 3B.18 Crosswalk Markings <http://mutcd.fhwa.dot.gov/pdfs/2009/part3.pdf>  
 PedSafe—Marked Crosswalks and Enhancements  
 FHWA—Designing Crosswalks and Trails for Access

# CROSSING ISLAND



## DESCRIPTION

Crossing islands (also known as center islands, refuge islands, pedestrian islands, or median slow points) are raised islands placed in the center of the street at intersections or mid-block.

## BENEFITS

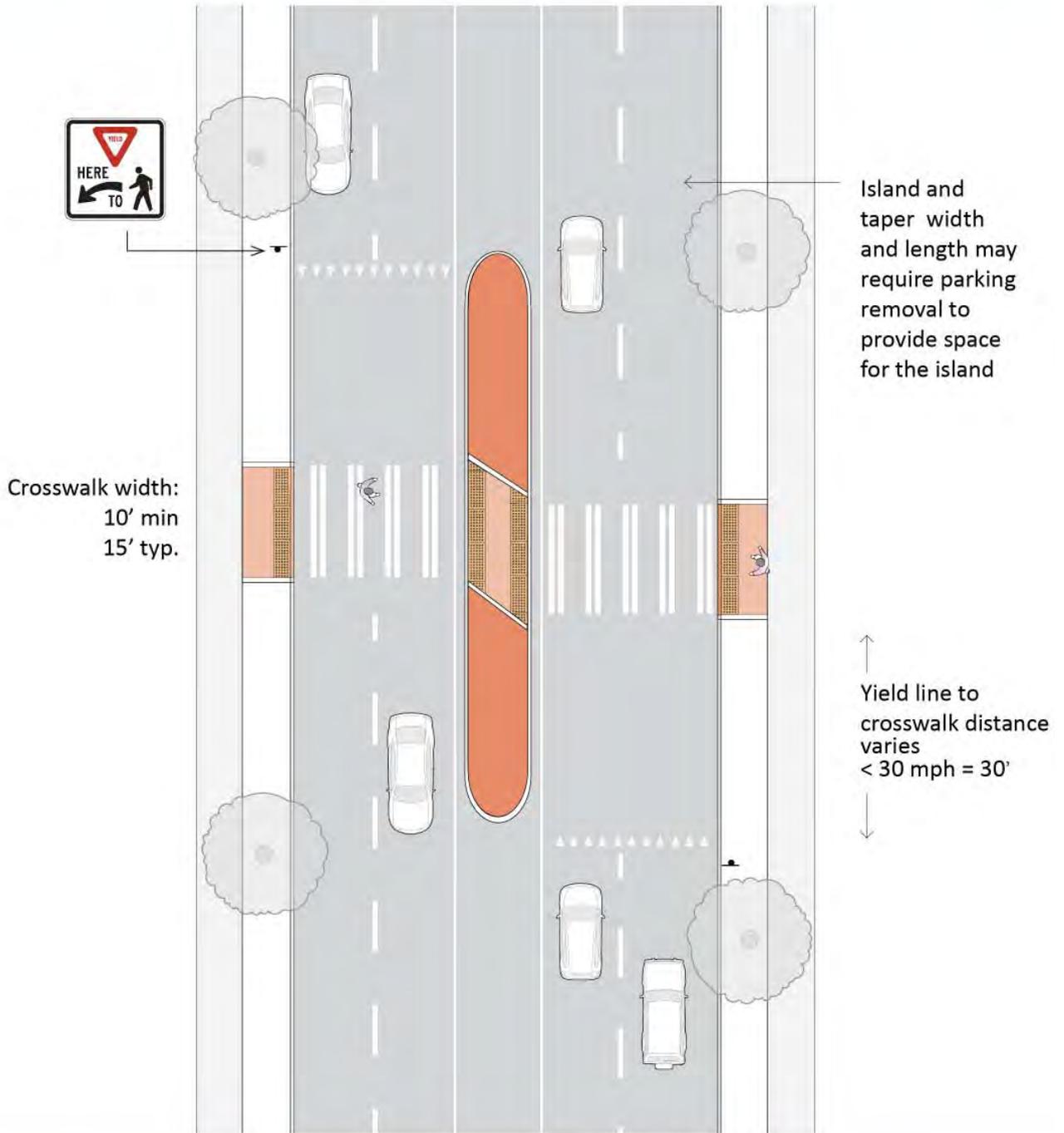
- Crossing islands allow pedestrians to deal with only one direction of traffic at a time by enabling them to stop partway across the street and wait for an adequate gap in traffic before crossing the second half of the street.
- Crossing islands are effective at reducing crashes at uncontrolled locations on busy multi-lane roadways where gaps are difficult to find, particularly for slower pedestrians, such as pedestrians with disabilities, older pedestrians and children.

## CONSIDERATIONS

The design of crossing islands and incorporation of additional crossing treatments depends on the number of travel lanes, vehicle speed, and the volume of vehicles in a given location.

- Crossing islands should be a minimum of 6' wide to accommodate the typical width of a bicycle; however, the recommended width is 10' to accommodate bicycles with trailers.
- Crossing islands should be aligned directly with marked crosswalks and provide an accessible route

- of travel (per current accessibility guidelines).
- Where mid-block or intersection crosswalks are installed at uncontrolled locations (i.e., where no traffic signals or stop signs exist), crossing islands should be considered as a supplement to the crosswalk, and should be designed with a stagger forcing pedestrians to face oncoming traffic before progressing through second phase of the crossing.
- They are appropriate at signalized crossings and may improve safety for vehicles by dividing traffic streams.
- The crossing should be outside the functional area of adjacent intersections.
- The crossing should be high visibility to both road users and sidewalk/pathway users.
- Sight lines should be maintained to meet the needs of the traffic control provided.
- The crossing and approaches should be on relatively flat grades.
- The crossing should be as close to a right angle as practical, given the existing conditions.
- The least traffic control that is effective should be selected. MUTCD signs R1-6a, R1-6b, R1-9a, and R1-9b may be used.
- If there is enough width, center crossing islands and curb extensions can be used together to create a highly visible pedestrian crossing and effective traffic calming.



RESOURCES: AASHTO Guide for Development of Bicycle Facilities  
AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities  
2009 MUTCD  
FHWA Proven Safety Countermeasures: [http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_011.htm](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_011.htm)

# MID-BLOCK CROSSING



## DESCRIPTION

A mid-block crossing allows pedestrians to safely cross the street in the absence of a traffic signal. Several treatments can be applied to mid-block crossings to improve the visibility of the crossing which can improve driver compliance to yielding to pedestrians. Treatments include: high visibility crosswalks (see the High Visibility Crosswalk design treatment), Advance Yield Lines and Pedestrian Warning Signs. Additionally flashing beacons can be added. Treatments will vary depending on the number of lanes, speed and roadway conditions. Engineering judgment should be used to determine the correct treatments for individual crossings.

### Advance Yield Lines

Advance stop lines and yield lines improve the visibility of pedestrians at mid-block locations to motorists, and can prevent multiple-threat crashes.

### Pedestrian Crossing Warning Signs

Crossing warning signs are placed in advance of and directly adjacent to marked crosswalks to increase driver yielding compliance.

## BENEFITS

The multiple-threat crash risk usually occurs at crosswalks on multi-lane roadways if motorists yielding to pedestrians block the view of the pedestrian attempting to cross the roadway from other motorists

in the adjacent travel lane. The motorist proceeding in the adjacent lane does not notice the first car has stopped to let a pedestrian cross, and the pedestrian continues to cross without seeing the other car coming. This situation can result in a high-speed crash, which usually leads to fatalities or very severe injuries. Stop and yield lines provide space between stopped vehicles and the crosswalk to improve visibility. Pedestrian crossing warning signs increases the driver's awareness of a pedestrian crossing.

## CONSIDERATIONS

### Advance Yield Lines

An advance stop or yield line placed 20 to 50 feet ahead of the crosswalk can greatly reduce the likelihood of a multiple-threat crash at unsignalized mid-block crossings, as the line encourages drivers to stop back far enough so a pedestrian can see if a second motor vehicle is not stopping and be able to take evasive action. A setback of 30 feet for the line has been found to be a good distance for most purposes.

- Parking should be restricted between the stop or yield line and the crosswalk to allow for better visibility.
- Consider restricting parking behind the yield line per the guidance provided in the Parking Restrictions at Intersections design treatment.
- The advance stop or yield line should be supplemented with "Yield Here For Pedestrians" signs (R1-5 or R1-5a) to alert drivers where to stop to let a pedestrian cross. One study found that use of a "sign

alone reduced conflicts between drivers and pedestrians by 67 percent, and with the addition of an advanced stop or yield line, this type of conflict was reduced by 90 percent compared to baseline levels.” Kansas is a yield state by law: drivers are required to yield to pedestrians in a crosswalk.

- Studies have found that advance yield markings at midblock crossings can be particularly useful when combined with high visibility crosswalks ( signs and beacons, such as the pedestrian hybrid beacon or rectangular rapid flash beacon (RRFB). See the high visibility crosswalk and RRFB design treatment.

**Pedestrian Crossing Warning Signs**

Best practice includes tandem installations with the primary location being in advance of the crosswalk location (W11-2) and including a plaque that says AHEAD, and the supplemental location with downward arrow plaque (W16-7P) placed at the crosswalk location.

A Pedestrian Crossing (W11-2) sign with an AHEAD or a distance supplemental plaque may also be used in conjunction with a YIELD HERE TO PEDESTRIANS sign (R1-5 or R1-5a) where advanced yield pavement markings are installed at multi-lane uncontrolled crossings.



W11-2 sign at marked crosswalk



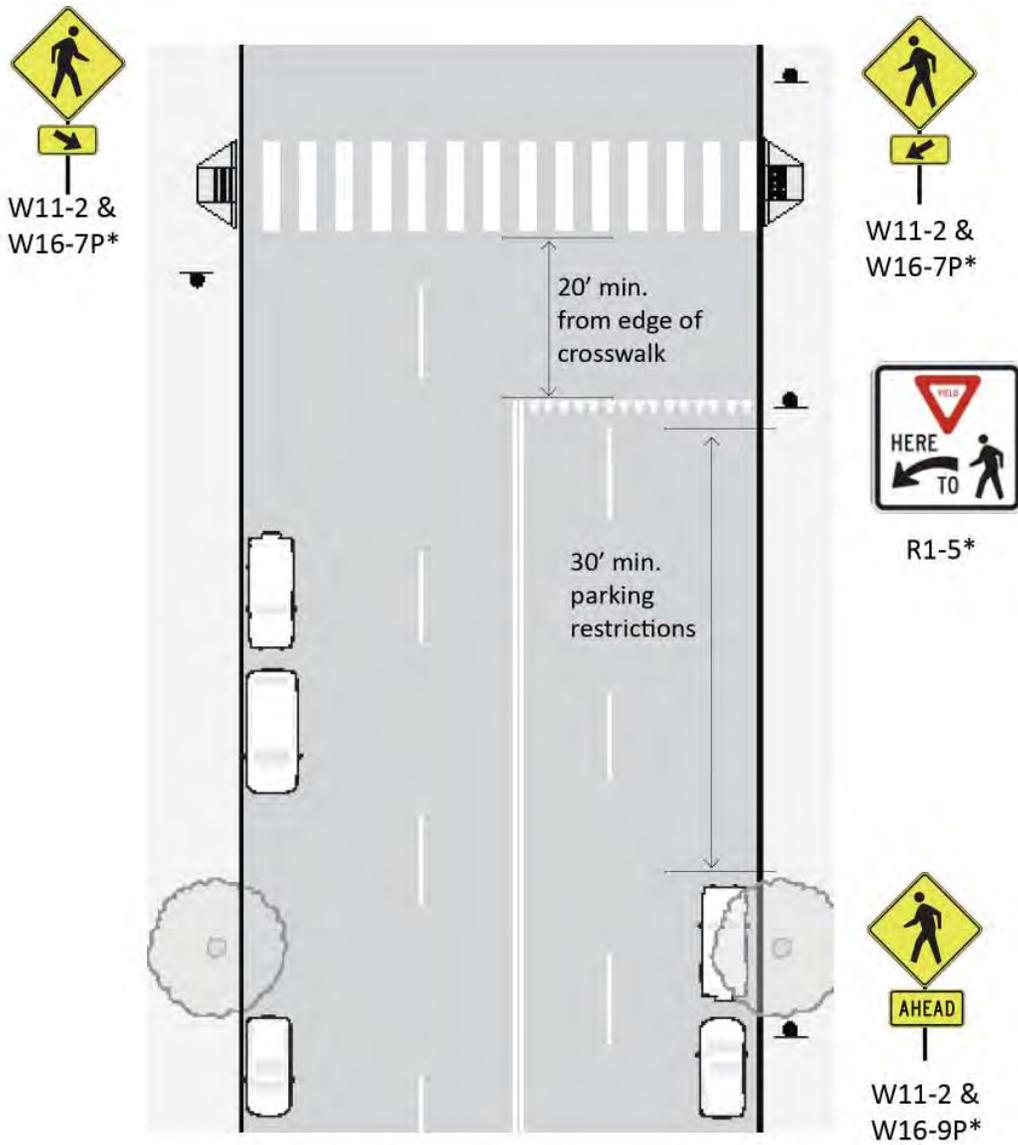
R1-5 with advance yield line



School crosswalk advance warning sign

*Note:* These are design guidance and not requirements.

# MID-BLOCK CROSSING CONT.



RESOURCES: AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities.  
2009 MUTCD

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# PROTECTED LEFT TURN PHASE



Left turn signal (Photo from [safety.fhwa.dot.gov](http://safety.fhwa.dot.gov))

## DESCRIPTION

At signals, turning movements account for most pedestrian crashes, and the ratio of crashes for left/right turns is roughly 2:1. Permissive left-turns allow vehicles to make a left turn on green when oncoming travel lanes are clear. Often pedestrians are given a walk signal at the same time that vehicles are permitted to turn left on a green light. Left-turning motorists are often focused on watching for oncoming traffic and commonly don't look for pedestrians, which results in the potential for collisions pedestrians in the crosswalk.

A protected left-turn phase (red ball followed by a green signal arrow followed by a green ball) provides a dedicated left turn and then a permissive left turn if pedestrians are not present and eliminates the need for motorists to wait for gaps in on-coming traffic. For double left turns a permissive left with a pedestrian walk signal is not allowed.

Protected left-turn phases make it clear to drivers they must wait before turning, thus allowing pedestrians to cross during the red arrow signal phase. Pedestrians will get a DONT WALK during the green arrow, protected left-turn phase. Sometimes a protected left-turn phase is followed by a permissive green. The permissive left-turn phase is concurrent with the Walk phase and often results in a higher number of pedestrian crashes. Right-turns are virtually always permissive but typically do not result in higher crash rates. However in locations where pedestrian collisions involving right-turning vehicles are reported, tools such as protected right-turn phases, RIGHT-TURN-ON-RED restrictions, or leading pedestrian intervals should be considered.

## BENEFITS

- Protected left turns, are safer for pedestrians, because they cross the street after left-turning cars have moved through the intersection.
- Protected left turns can also help to reduce vehicle-vehicle collisions.

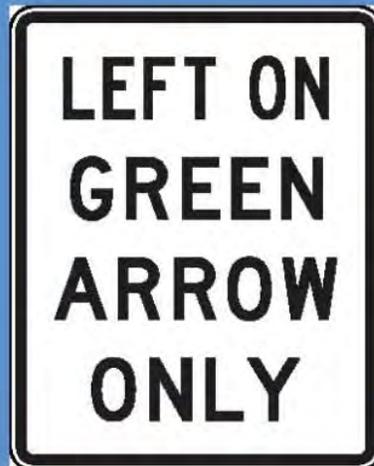
## CONSIDERATIONS

In addition to protected turn phases, the MUTCD has some signing applications that can be used in conjunction with traffic signals to enhance pedestrian crossing.

- Combination protected-permissive phasing should be provided by default, but should revert to protected-only when pedestrian push buttons are pushed, or based on the time of day.
- Manual for Uniform Traffic Control Devices (MUTCD) sign R10-5, with a yield and a pedestrian symbol, can be used to remind drivers to yield to pedestrians. Signs should be placed where drivers will see them.
- A flashing yellow arrow during the steady green light can be provided to warn drivers to yield to pedestrians and oncoming vehicles. However, a red arrow is preferred for pedestrian safety because drivers may not be as attentive to pedestrians crossing.
- Because they add an additional signal interval, protected left turns may add delay to all movements.
- Additional engineering judgement is required for locations with high on-coming volumes of traffic.



R10-9



R10-5

These MUTCD signs are often mounted on the mast arm next to the left turn signal.

**RESOURCES:**

PedSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=51](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=51)  
AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities  
2009 MUTCD

# PEDESTRIAN SIGNALS



*Pedestrian signal (Photo by TDG)*

## DESCRIPTION

The federal Manual for Uniform Traffic Control Devices (MUTCD) establishes warrants for the use of most traffic control devices. Within the parameters of the MUTCD, a pedestrian inclusive approach to signalized intersection design includes good geometric design, convenience and ease of use of pedestrian push-button actuators, signal timing techniques that favor pedestrians and other users, as well as techniques that reduce conflicts with turning vehicles. This can help address safety for all modes and ensure Americans with Disabilities Act (ADA)-compliance as part of a street design that is balanced with the conditions of the location.

## BENEFITS

- Tools that make crossing streets easier, safer, and more convenient removes barriers to walking and increases connectivity.

## CONSIDERATIONS

### Pedestrian Signal Timing Standards

- Calculating pedestrian crossing times and programming signals in a way that accommodates all users is an important way to make signalized intersections more accessible. In all cases, pedestrian crossing times shall meet the minimum standards in the most current MUTCD.
- Providing additional time should be considered on a case by case basis, depending on pedestrian and vehicular volumes, user type and other safety factors as may be appropriate.

### Pedestrian push-button actuators

Pedestrian push-button actuators are electronic buttons used by pedestrians to provide a walk interval during a signal phase. If they are present, pedestrians must push the button to get a walk interval; otherwise a walk interval will not be included in the next signal phase.

- Push-button actuators may be needed at some crossings, but their use should be based on best device applicability for conditions.
- In typical downtown, neighborhood centers and other areas of high pedestrian activity, pedestrian push-button actuators can be set to a fixed time and a push-button actuation is not necessary; pedestrians expect and should get a pedestrian cycle at every signal phase.
- At more complex intersections (e.g., where there are more than one signal phase for each direction) or where pedestrian volumes are lower, push buttons should be considered.
- Buttons must be properly placed so that they are convenient and conspicuous to pedestrians and follow MUTCD and ADA placement requirements.

### Accessible Pedestrian Signals

Accessible Pedestrian Signals (APS) provide pedestrian signal information in audible and vibrotactile formats for hearing- and sight-impaired people. They benefit all pedestrians by providing redundancy and are useful to a wider range of the population – people with cognitive impairments, children, and the elderly.

- APSs locations should be evaluated on a case by case basis against standard engineering practice.
- The location of the APS is critical to the proper functioning.
- APS can be used during exclusive pedestrian phases of leading pedestrian intervals (LPI).
- Place accessible pedestrian push-button assemblies within 10 feet from the center of the curb ramp, measured from the front of the curb or per MUTCD section 4E.08. Orient the face of the push-button parallel to the crosswalk.

Some key features of APS, which are integrated into the push button:

- Speakers at the push-button actuator with automatic volume adjustment so that tones are audible within 6 feet minimum to 12 feet maximum of the button
- A push button locator tone or street name

- Audible WALK indications that feature a tone or speech message during WALK
- Vibrotactile WALK indications that feature a tactile arrow or other surface on the button that vibrates during the WALK phase.

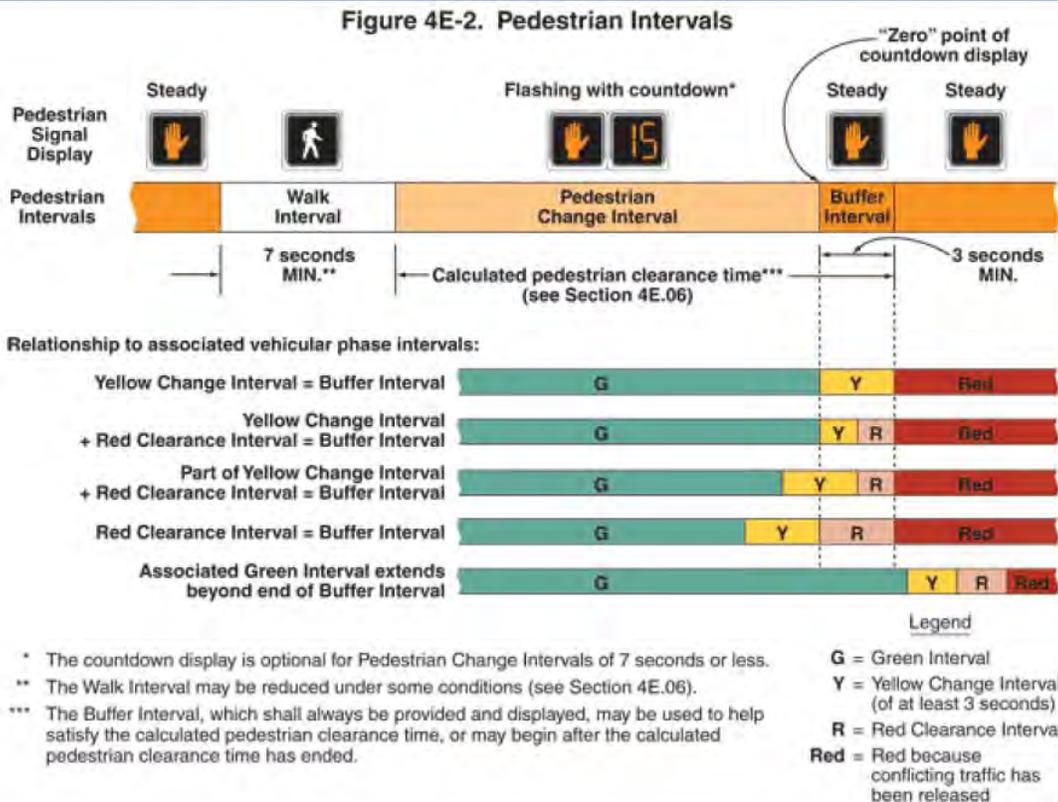
**Protected and Permissive Phase**

See Protected Left Turn Phase

**Pedestrian Phase Signal Timing Standards**

The MUTCD provides guidance on options for signal timing. Some state law allows cities to designate, by ordinance, specific pedestrian safety crossings where signal timing may be increased to be consistent with signal timing recommended in MUTCD for senior citizen and disabled pedestrian crossings. Consider using a walking speed of less than 3.5 to accommodate slower pedestrians.

Figure 4E-3 from the MUTCD outlines the intervals for pedestrian signal phasing and the relationship with traffic signals.



**RESOURCES:** PedSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=51](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=51)  
 AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities  
 2009 MUTCD: <http://mutcd.fhwa.dot.gov/htm/2009/part4/part4e.htm#figure4E02>

# RECTANGULAR RAPID FLASH BEACONS

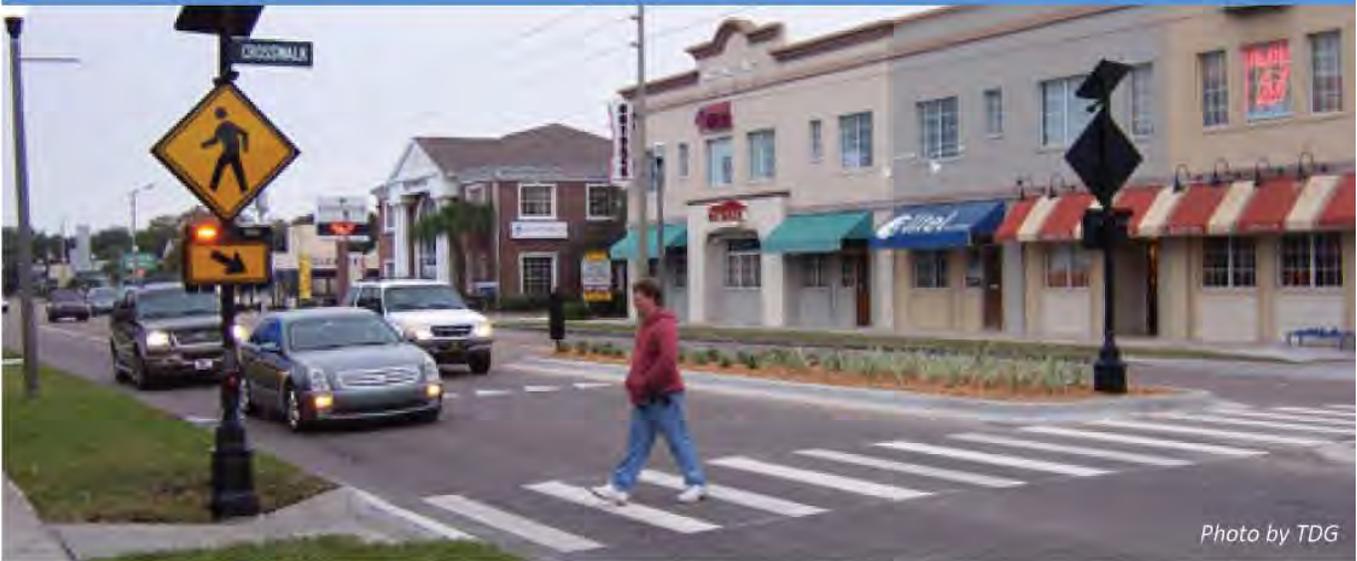


Photo by TDG

## DESCRIPTION

A Rectangular Rapid Flashing Beacon (RRFB) is a pedestrian warning signal consisting of yellow LED lights in two rectangular clusters, or beacons, that employ a stutter-flash pattern similar to that used on emergency vehicles. The beacons are often mounted below a standard pedestrian crossing warning sign and above the arrow plaque used to indicate the crossing location. RRFBs are pedestrian actuated either by a push-button or passive detection.

## BENEFITS

- Increased yielding behavior by motorists at pedestrian crossings.

## CONSIDERATIONS

- Beacons must be placed on either side of roadway and visible from both directions of traffic. If a median exists at the crossing location, a third beacon may be placed in the median, which studies show, significantly increases motorist yield rates. RRFBs may be used at uncontrolled intersections and mid-block crossings.
- RRFBs should be accompanied by pedestrian crossing signs (Manual for Uniform Traffic Control Devices [MUTCD] W11-2) both at the signal and in advance of the crosswalk location. The assembly approaching the crossing should include a plaque that says AHEAD. The assembly at the location should include a downward arrow plaque (MUTCD W16-7P) placed at the crosswalk location.

- Consider push button location such that pedestrians will face oncoming motor vehicle traffic. If RRFB crossings are planned adjacent to transit stops, coordinate with local transit agencies to relocate (bus) stops to far-side, if necessary.
- A STOP HERE FOR PEDESTRIANS (MUTCD R1-5b/R1-5c) sign with advanced yield bars should be placed a minimum 30 feet from the crosswalk then the distance should be based on roadway speed and should be considered where RRFBs are installed. A Pedestrian Crossing (MUTCD W11-2) sign with an AHEAD or a distance supplemental plaque may be used in conjunction with and in advance of a MUTCD R1-5b/R1-5c sign.
- RRFBs should be considered at uncontrolled intersections or at mid-block crossings where additional measures are needed due to high volumes and speeds.
- They should be considered where there are high volumes of pedestrians, a high number of vulnerable pedestrians (e.g., near schools, senior centers, transit), or at off-street path crossings.
- In order to encourage pedestrians to enter crosswalk while the RRFB is active, passive or active actuation should trigger an immediate response.
- Cities should consider making lighting improvements in conjunction with RRFB projects, if existing lighting at the crossing location is insufficient.



R1-5



W11-2 and W16-7p

If a rectangular rapid flash beacon is placed at an uncontrolled location, an advanced yield line should be installed with the appropriate R1-5 sign. This provides adequate yielding distance for pedestrians in the crosswalk .

A rectangular rapid flash beacon should be placed with a pedestrian crossing warning sign. A fluorescent yellow color is preferred for optimum visibility.

RESOURCES:

PedSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=54](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=54)  
 FHWA: <http://safety.fhwa.dot.gov/intersection/resources/techsum/fhwasa09009/>  
 2009 MUTCD: [http://mutcd.fhwa.dot.gov/resources/interim\\_approval/ia11/fhwamemo.htm](http://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/fhwamemo.htm)

# ILLUMINATION ALONG CORRIDORS



Photo by TDG

## DESCRIPTION

Street lighting is intended to prevent crashes and increase safety by improving visibility of roadways, intersections, and other important activity zones in order to facilitate safe movement of motor vehicles, pedestrians and bicyclists during nighttime or low light hours. Illumination along corridors is intended to greatly increase motorists' ability to see and react to pedestrians walking along the roadway in low light conditions.

## BENEFITS

- Increased safety and visibility of pedestrians, bicycles, and other roadway users by motorists.
- Street lighting can be used to create an environment that feels safe and secure for pedestrians.

## CONSIDERATIONS

### General Pedestrian Illumination Considerations

- Consider staggering street-lights on opposite sides of the street to provide consistent illumination for pedestrians.
- Where provided, pedestrian scale lighting should be closely spaced, allowing lower intensity illumination and avoiding large shadows.
- Areas where personal security is an issue should be considered for additional lighting.
- Street light poles should be aligned in a row with pedestrian scale lighting unless sidewalks are very wide.
- Pedestrian scale lighting spacing must be consistent

with regard to trees and other street poles. Consider the placement of street trees and light posts.

- Pedestrian scale lighting may also be used to enhance and reinforce the character of the streetscape and facilitate neighborhood identity and wayfinding.
- Pedestrian scale lighting can be used alone or in combination with roadway-scale lighting in high activity areas to encourage nighttime use and as a traffic calming device.

### Corridor Illumination Considerations

- Illumination should be targeted at intersections and mid-block crossings; and secondarily along roadways.
- The amount of illumination required should be proportional to the width and classification of the roadway or intersection.
- Light poles should be placed in the Amenity Zone so as not to be blocked by tree canopies.
- Light poles should be paired on arterials to provide a formal look, to reinforce the direction of travel, and to provide visibility of pedestrians crossing at non-intersection locations.
- Street lighting can be used to create an environment that feels safe and secure for pedestrians. Areas where personal security is an issue should be considered for additional lighting.
- Above-standard illumination may also be targeted in areas with higher volumes of pedestrian traffic and land uses that generate pedestrian trips during evening hours. Examples include transit stops, major transfer points and routes, community facilities, and commercial areas.



## CRASH REDUCTION FACTOR: 17-73%

- The use of consistent luminaire types creates a cohesive visual vocabulary and facilitates maintenance and replacement.
- Alternate light style may be considered for pedestrian scale lighting and would require special assessment and a maintenance agreement with adjacent property owners and/or business association. Other standards may be considered in special districts such as a historic district.
- Large fluctuations between dark and light should be avoided as drivers' vision must continually adjust to varying light levels, thereby impairing vision.

RESOURCES: PedSafe: Lighting and Illumination: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=8](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=8)  
Downtown Wichita Streetscape Design Guidelines: <http://www.wichita.gov/Government/Departments/Planning/NR/NR%20Documents/Downtown%20Wichita%20Streetscape%20Design%20Guidelines.pdf>

# ILLUMINATION AT PEDESTRIAN CROSSINGS

CRASH REDUCTION FACTOR: 42 - 78%

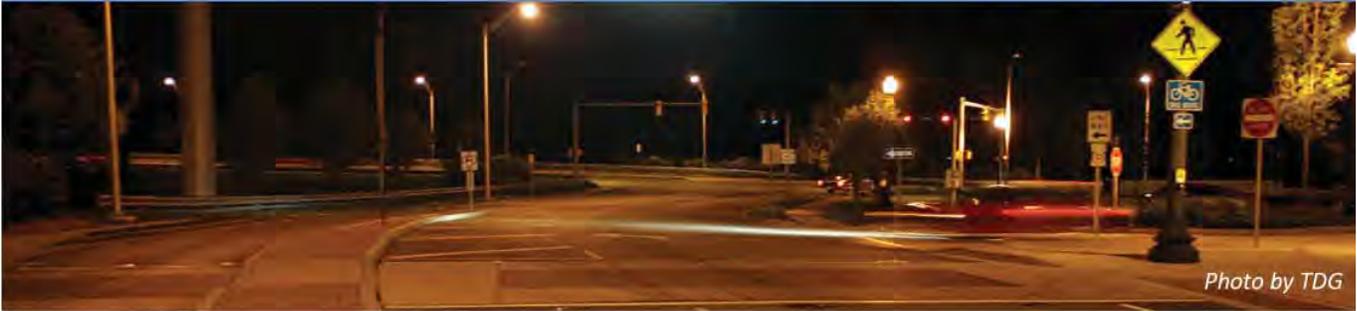


Photo by TDG

## DESCRIPTION

Supplemental roadway illumination, by use of pedestrian scale lighting or additional street lights, at pedestrian crossings facilitates safe crossings for pedestrians and bicyclists during nighttime or low light hours; pedestrians can be over confident by their own ability to see oncoming headlights and may not realize that they are not visible to motorists.

Illumination may be in the form of:

- Supplemental lighting on existing street-light poles
- Stand alone pedestrian scale lighting
- Pedestrian scale lighting affixed to street-light poles

Crosswalks at unsignalized, and especially at uncontrolled locations present special cases where pedestrians may be unexpected and higher levels of lighting are critical.

## BENEFITS

- Increased safety and visibility for pedestrians, bicyclists and other roadway users at crossings.

## CONSIDERATIONS

- Priority should be given to providing enhanced pedestrian lighting at intersections near high use areas.
- Target areas with higher crash rates and pedestrian volumes, universities/schools, major transit routes, and pedestrian generators.
- At intersections, luminaires should be placed before the crosswalk on the approach into the intersection.
- Use state of the art technology as appropriate to provide effective energy-efficient lighting that minimizes light 'trespass'.
- White light (light emitting diode or LED, metal halide, induction, and fluorescent lamps) may help to improve pedestrian perception and sense of safety at intersections.
- Lighting levels, especially at intersections, should be periodically checked to ensure minimum lighting levels for motorist, pedestrian and bicycle safety are achieved.
- Consider the use of light fixtures compliant with the International Dark-Sky Guidelines.

RESOURCES: Dark-Sky Model Lighting Ordinance: <http://www.darksky.org/outdoorlighting/mlo>  
PedSafe: Lighting and Illumination: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=8](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=8)  
Downtown Wichita Streetscape Design Guidelines  
Wichita Street Light Policy

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# CURB RAMPS



## DESCRIPTION

A curb ramp is a cut in the curb that grades down from the sidewalk to the surface of the street. The combined ramp and landing provide pedestrians a smooth transition from the sidewalk to the street. Appropriately designed curb ramps are critical for providing access across intersections and at designated midblock crossing locations for people with mobility and visibility disabilities, as well as people pushing strollers, grocery carts, suitcases, or bicycles. The Americans with Disabilities Act (ADA) guidelines require all pedestrian crossings be accessible to people with disabilities by providing curb ramps where there are curbs.

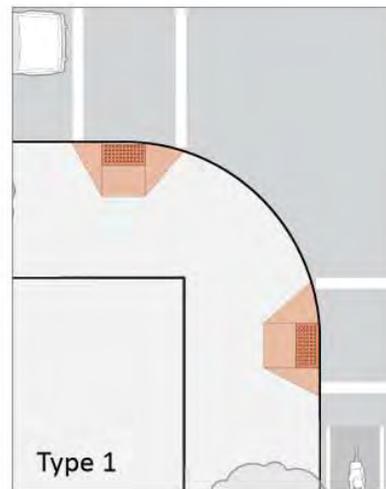
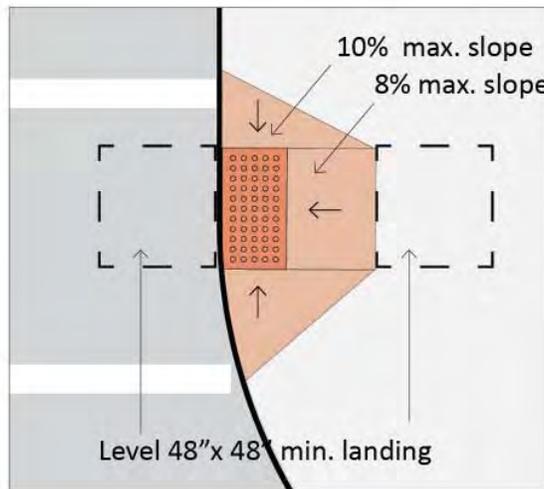
## BENEFITS

- Make sidewalks and street crossings accessible to wheel chair users, and others who rely on wheels for mobility.
- Curb ramps provide guidance for visually impaired people who use curb ramps for information about where to safely cross the street.

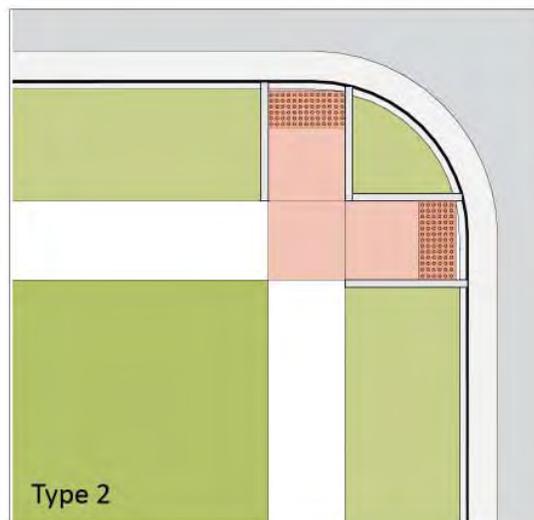
## DESIGN CONSIDERATIONS

- A curb ramp (not including the flares) must be totally contained within the marked crosswalk where a marked crosswalk is provided.
- Detectable warning strips must be installed at all roadway crossings, regardless of whether there is a grade separation.
- Detectable warning strips must ensure a 70% contrast in color with the surrounding pavement.

- Raised crossings or intersections or the absence of curbs eliminate the need for curb ramps, but does not eliminate the need for detectable warning strips.
- In areas with high pedestrian volumes, curb ramps should generally be as wide as the Pedestrian Zone on the approaching sidewalk.
- Wherever feasible, curb ramp locations should reflect a pedestrian's desired path of travel through an intersection. This means providing two separate curb ramps at a corner instead of a single ramp that opens diagonally at the intersection. A single ramp should only be considered where physical constraints (e.g. lack of right-of-way) make the installation of two ramps cost prohibitive.
- Flares are required when the surface adjacent to the ramp's sides is walkable (See Type 1 on the following page). Flares are unnecessary when this space is occupied by a landscaped buffer. A curb may be used if a flare is not used (See Type 2 on the following page).
- Design curb ramps to avoid the accumulation of water or debris. One strategy for preventing water accumulation is to locate drainage inlets on the uphill side of the ramp. During winter, snow must be cleared from curb ramps to provide an accessible route.
- A curb bulb may provide additional space to optimize curb ramp locations.



Curb ramps should be perpendicular to the curb to direct pedestrians properly into the crosswalk. Multiple styles of curb ramp can be used to meet ADA curb ramp requirements. Two perpendicular ramp styles are pictured (Type 1 & 2). Additional styles and guidance can be found below within in the Resources.



RESOURCES: Designing Sidewalks and Trails for Access: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalk2/sidewalks207.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks207.cfm)  
 US Access Board Proposed Rights of Way Guidelines: <http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines/chapter-r3-technical-requirements>  
 City of Wichita Detail Sheet: Curb Ramp

# CURB EXTENSION



Photo by TDG

## DESCRIPTION

Curb extensions are created by extending the sidewalk or curb line into the roadway. Curb extensions are intended to increase safety, calm traffic (particularly right-turning vehicles), and provide extra space along sidewalks for users and amenities.

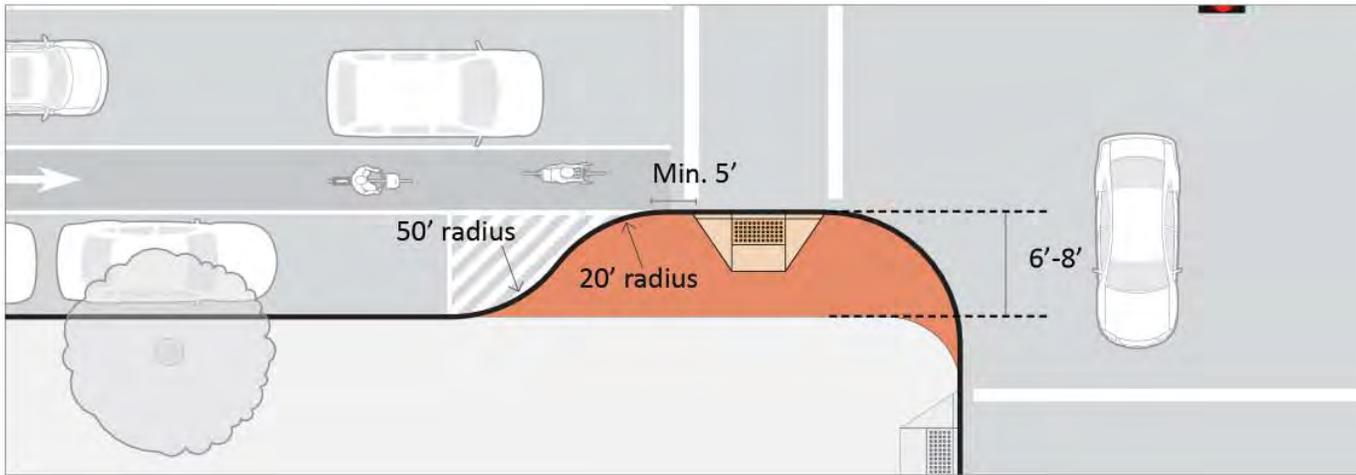
## BENEFITS

- Curb extensions shorten crossing distances (exposure time) and increase visibility between roadway users: as the waiting pedestrian can better see approaching traffic and drivers can better see pedestrians waiting to cross the road.
- This treatment is particularly valuable in locations with high volumes of pedestrian traffic or where there are demonstrated pedestrian safety issues.
- May provide space for Americans with Disabilities Act (ADA) compliant, directional curb ramps where sidewalks are narrow.
- Curb extensions may provide space for utilities, signs, and amenities such as bus shelters or waiting areas, bicycle parking, public seating, public art, street vendors, newspaper stands, trash and recycling receptacles, and greenscape elements.

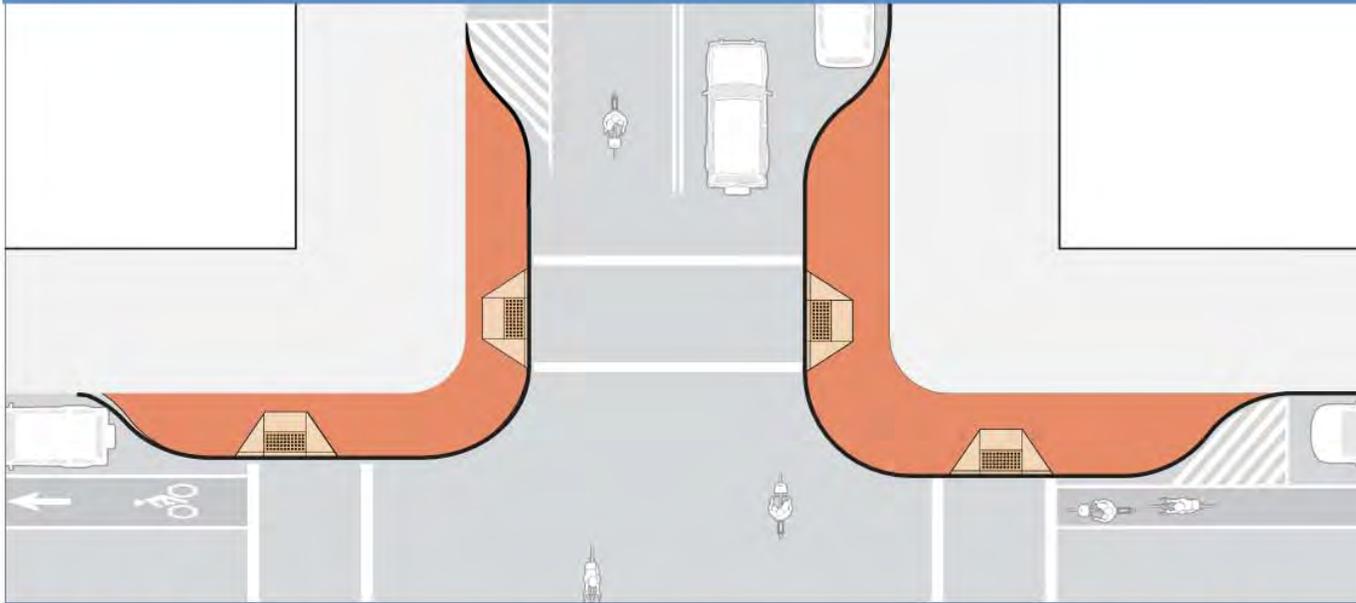
## DESIGN CONSIDERATIONS

- Curb extensions should only be considered where on-street parking is present.
- Curb extensions can be located at intersections, mid-block or at unsignalized pedestrian crossings.

- Take into consideration the turning needs of larger vehicles, bicycle needs approaching the curb extension, drainage, snow removal and street sweeping, restricting parking, and matching the width of the crosswalk.
- When a bike lane is present, curb extensions should be designed to be 1 foot less than the adjacent parking lane to provide enough shy distance for bicycle pedals.
- When there is no bike lane curb extensions can be 6 inches less than the adjacent parking lane width.
- For a 7-8 foot wide parking lane with bike lane, build the curb extension to 6 feet in width. This way there is adequate space for the bike lane line stripe and clearance from the curb for bicyclists. If there is no bike lane the curb can be built at 6.5 feet.
- The distance between the crosswalk and the tangent of the curb should be a minimum of 5 feet.



Below is a roadway improved with curb extensions on each corner.



RESOURCES: PEDSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=5](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=5)  
 NACTO: <http://nacto.org/usdg/street-design-elements/curb-extensions/>  
 AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities

# CURB RADIUS



Photo by TDG

## DESCRIPTION

Curb radii are the curved connection of curbs at the corners formed by the intersection of two streets, which guide vehicles in turning corners. The shape of a curb radius has a significant effect on the overall operation and safety of an intersection.

The curb radius is the actual radius of the curb line at an intersection. The effective radius is the radius available for the design vehicle to make the vehicle turn, accounting for the presence of parking, bike lanes, medians, or other features.

## BENEFITS

- A tighter curb radius creates a sharper turn for motor vehicles and reduces turning speeds, shortens the crossing distance for pedestrians and also improves sight distance between pedestrians and motorists.
- Reconstructing curb radii also creates the opportunity to expand pedestrian space at the curb and provides greater flexibility in the placement of curb ramps.

## DESIGN CONSIDERATIONS

The shape and dimensions of curb radii vary based on street type, transportation context, and design vehicle (vehicle type used to determine appropriate turn

radius at an intersection). Smaller curb radii provide better geometry for installing perpendicular curb ramps, resulting in simpler, more appropriate crosswalk placement, in line with the approaching sidewalk.

- When designing curb radii, factor in both the curb radius and the effective radius.
- Curb radii can allow for the selected design vehicle to complete a turn fully within its designated travel lane or lanes or can accommodate a vehicle turn by allowing for a particular vehicle type to complete a turn with latitude to use adjacent or opposing lanes on the origin or destination streets.
- The effective turning radius (rather than the actual curb radius), should always be used to determine the ability of vehicles to negotiate a turn. Determination of the design vehicle should consider and balance the needs of the various users of a street--from pedestrians and bicyclists to emergency vehicles and large trucks--considering the volume and frequency of these various users.
- The design vehicle should be selected according to the types of vehicles using the intersection with considerations to relative volumes and frequencies. The designer should distinguish between "designing for" and "accommodating" the needs of large vehicles, which may not require design modifications.

If these conditions are present for non-arterial streets the typical curb radius of 20 feet or less is preferred especially where there are:

- Higher pedestrian volumes
- Low volumes of large vehicles
- Bicycle and parking lanes create a larger effective radius.

Factors that may affect the curb radii should be taken into consideration:

- The street type
- The angle of the intersection
- Curb bulbs
- The number and width of receiving lanes
- Large vehicles
- Effective turning radius
- Where there are high volumes of large vehicles making turns- inadequate curb radii could cause large vehicles to regularly travel across the curb and into the pedestrian waiting area.

See the table below for guidance on the location and design vehicle for different street types.

<sup>1</sup>On corners along bus routes, where buses may have to make occasional detours, turns should accommodate a transit vehicle using the entire roadway, similar to an emergency vehicle. Other transit vehicles, such as

articulated buses, bus rapid transit (BRT), etc. may have a larger design vehicles.

<sup>2</sup> Because emergency vehicles have sirens and flashing lights and other vehicles must pull over, they can typically use the full right-of-way without encountering opposing vehicles. On busier streets, the ability of emergency vehicles to swing wide may be limited by queued traffic which may not be able to pull over.

<sup>3</sup> Freight corridors should be designed for WB-50 trucks. Larger WB-60 trucks may also be present on City streets, particularly on designated state highways, truck routes and in industrial areas. These may need to be accommodated in certain instances, though they are not practical in most city streets.

A variety of strategies can be used to maximize pedestrian safety while accommodating large vehicles including:

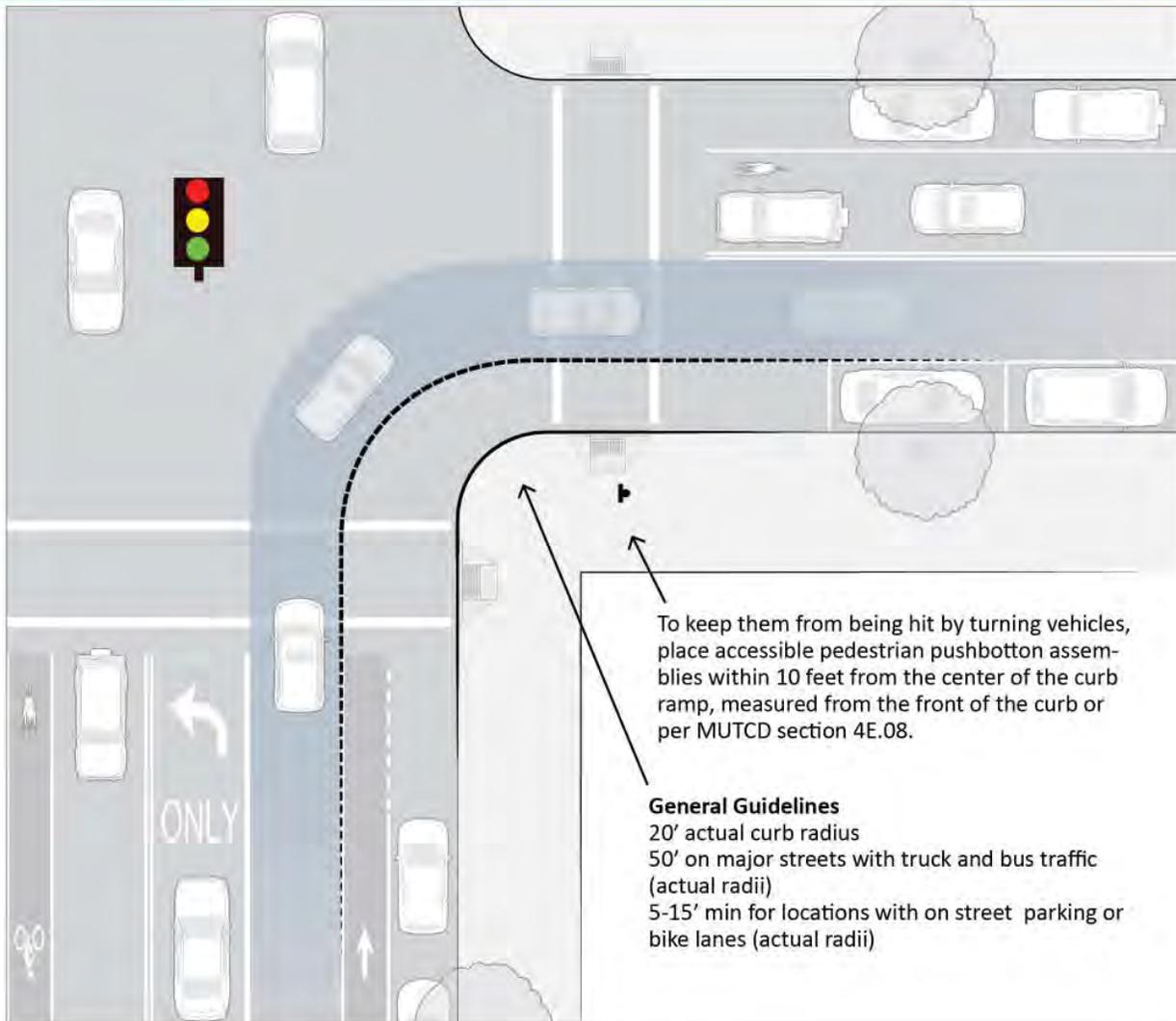
- Adding parking or bicycle lanes to increase the effective radius of the corner.
- Varying the actual curb radius (i.e., compound curb radii) over the length of the turn so that the radius is smaller as vehicles approach a crosswalk and larger when making the turn. Compound radii effectively shorten crossing distances and make pedestrians visible while accommodating larger vehicle turns; because they allow more sweeping turns and they do not slow turning vehicles.

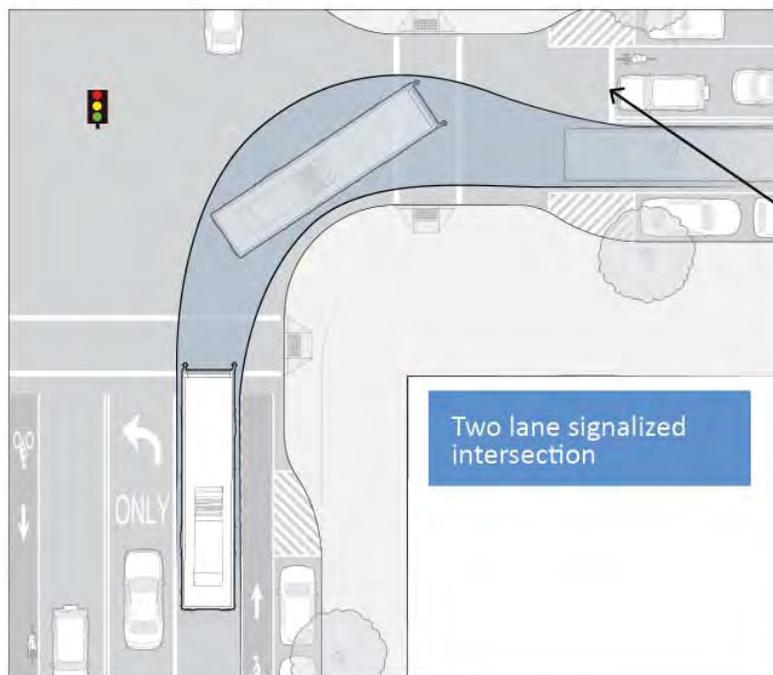
Vehicle Type	Location	Design Vehicle	Potentially Allowable Exceptions
Transit Vehicles <sup>1</sup>	Corners with turning buses on bus routes or where buses start run or return to base. In locations where traffic volumes influence effective turning radii with lane encroachment.	CITY-BUS or WB-40 A-BUS, articulated bus	Turn partially from adjacent lane
	Corners with potential occasional turning buses due to detours	CITY-BUS or WB-40	Turn partially from adjacent lane
Emergency Vehicles <sup>2</sup>	All intersections	Fire Vehicle Hook and Ladder with Outriggers	Turn partially from adjacent lane; turn fully from adjacent lane, turn from opposite lane, turn into opposite lane
Freight Vehicles <sup>3</sup>	Per Comprehensive Plan	WB-50	Turn partially from adjacent lane

# CURB RADIUS CONT.

- Painting a median: Where there is sufficient lane width on the destination street, a painted median can enable a large vehicle to complete a turn without turning into opposing traffic.
- Restricting access: Where there is a desire to keep curb radii small, restrictions on large vehicles making the turn may be considered. This should be considered in light of the overall street network.
- Installing advance stop lines on the destination street to increase the space available for large vehicles only where necessary to make a turn by enabling them to swing into opposing lanes on the destination street while opposing traffic is stopped.

Curb radius at a signalized intersection with parking and bike lanes





RESOURCES: AASHTO Pedestrian Guide  
PedSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=28](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=28)  
Manual on Uniform Traffic Control Devices (MUTCD): <http://mutcd.fhwa.dot.gov/html/2009/part4/part4e.htm>

# RIGHT TURN SLIP LANE



Photo by TDG

## DESCRIPTION

Right turn slip lanes (also known as ‘pork chop’ islands) are dedicated turning lanes that allow vehicles to make quick and easy right turns. Typically, they are not signal controlled but drivers must yield to pedestrians and on-coming traffic. The City of Wichita discourages the use of slip lanes because they can increase the speed of turning vehicles.

Right turn slip lanes, when designed correctly, can reduce crossing distances for pedestrians, improve signal timing and reduce crashes involving motorists and pedestrians.

## DISADVANTAGES

- They may result in uncomfortable and unsafe crossing conditions for pedestrians if they are designed with large turning radii that encourage high-speed turns.
- They can also present a challenge to through bicyclists since motorists will need to cross their line of travel to access the right turn slip lane.
- The older design makes it difficult for drivers who cannot easily turn their heads to look behind them to see on-coming traffic or pedestrians (see following page).

## BENEFITS

- Increased visibility of pedestrians through improved motorists approach angles.
- Reduced crossing distance and pedestrian exposure time.
- Can lead to slower motor vehicle turning speeds.

## DESIGN CONSIDERATIONS

Right turn slip lanes should be considered at intersections with high volumes of right-turning trucks and buses. A right turn slip lanes is often used in lieu of a large curb radius.

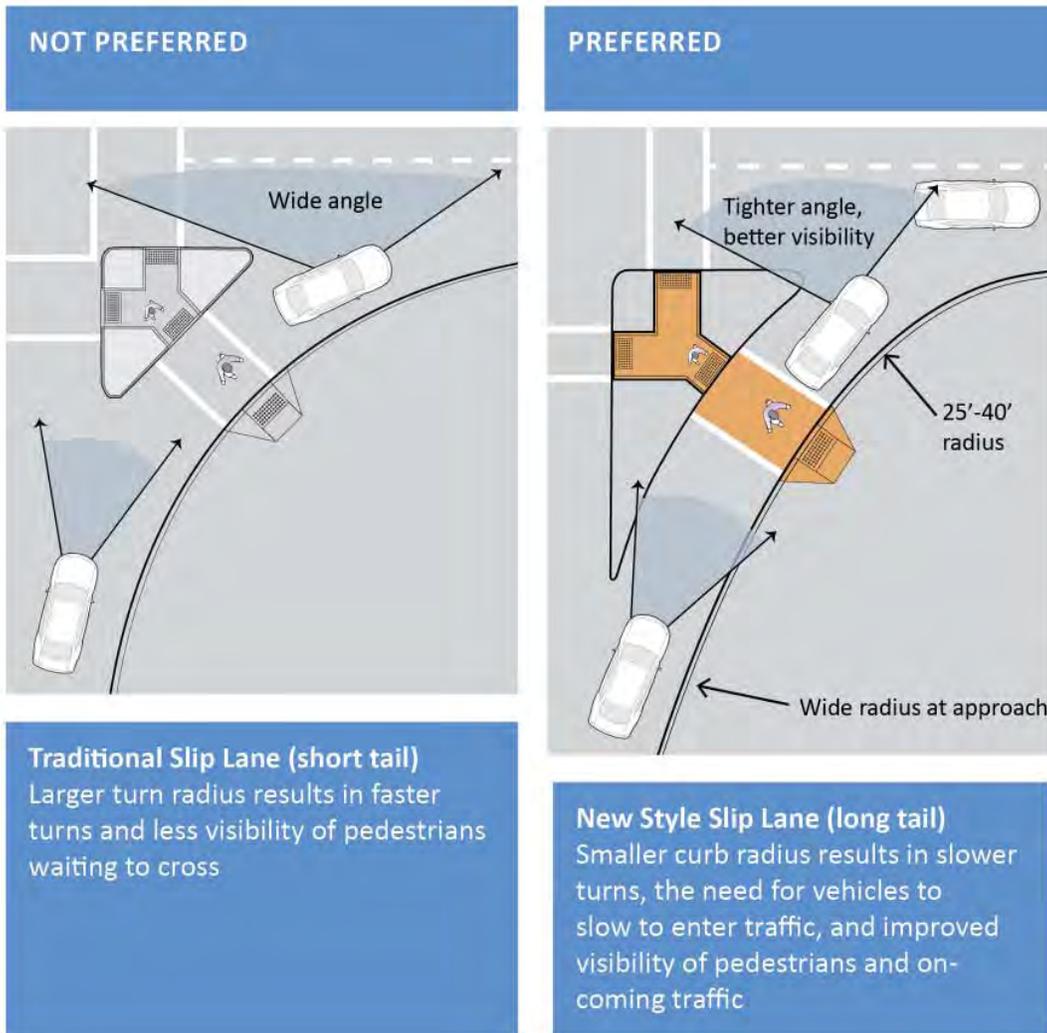
- New designs for right turn slip lanes make them function more like a conventional perpendicular intersection, while still enhancing efficiency for motorists. The new design has also been shown to reduce motor vehicle and pedestrian crashes.
- Traditional yield-controlled right turn slip lanes may be more difficult for vision-impaired people to navigate because they are not able to easily assess whether or not a vehicle has yielded and because of non-standard intersection geometry.

Evaluate whether a right turn slip lane is truly necessary. As a rule of thumb, ‘pork chop’ islands with long tails on the approaches will be more pedestrian friendly than the older designs with the short, stubby tails on the approaches.

- Curb radii should be revised to create one long radius entering the channelized right turn lane followed by a short one of 25-40 feet maximum exiting the channelized right turn lane to slow turns and improve lines of sight, particularly for pedestrians and vehicles approaching from the driver’s left.
- Triangular ‘pork chop’ islands should be lengthened at a 2:1 ratio, with the tail pointed toward approaching traffic.
- Islands should be long enough to allow a car to wait

## CRASH REDUCTION FACTOR: NOT AVAILABLE

- for a gap in traffic without blocking the crosswalk.
- Crosswalks should be relocated for maximum visibility to a spot where the driver is looking ahead, at least one car length back from the intersecting roadway. Crosswalks should also be oriented at a 90 degree angle to the right turn lane to improve sight lines and reduce crossing distance.
- Painted buffers can be used to narrow the perceived width of the right turn slip lane while still accommodating larger vehicles.
- Raised crosswalks may be used to improve yield compliance at the pedestrian crossing.



RESOURCES: AASHTO Pedestrian Guide  
 PedSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=24](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=24)  
 Designing Sidewalks and Trails for Access: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalk2/sidewalks208.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks208.cfm)  
 2009 MUTCD  
 NCHRP 03-78: Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities

# MODIFY SKEWED INTERSECTIONS



Skewed Intersection (Photo by TDG)

## DESCRIPTION

Skewed intersections occur when streets intersect at angles other than 90 degrees. Skewed intersections are generally undesirable and introduce the following complications for all users:

- The travel distance across the intersection can be greater, which increases exposure to conflicts and lengthens signal phases for pedestrians and motorists.
- Skews require motorists and pedestrians to crane their necks to see other approaching users, making it less likely that some users will be seen.
- Skews generally reduce visibility for all users on all approaches.
- Obtuse angles encourage high speed vehicle turning movements.
- Acute angles may cause complications for turning vehicles, particularly larger vehicles.

## BENEFITS

- Increased visibility and better sight lines for motorists facilitates safer turning movements.
- Lower speed turning movements.
- Shorter crossing distance reduces exposure time for pedestrians crossing the street.

## DESIGN CONSIDERATIONS

- Effort should be made to design or redesign the intersection closer to a right angle.
- Discourage the building of new skewed intersections.

- If major alterations are being done to an existing skewed intersection, consider whether it is possible to reconfigure the intersection so that the crossings are closer to perpendicular.
- In some cases, consideration should be given to acquiring right-of-way to allow for a redesign that results in a less complicated intersection. It may be possible to offset costs by selling back or swapping those portions of the right-of-way that are no longer needed for the intersection, or repurpose this area for a pocket park or other streetscape enhancing feature.

Where it is not possible to reconfigure a skewed intersection due to placement of buildings or other constraints, the following design strategies can be considered:

- Adjusting signal timing to allow for longer pedestrian crossing times.
- Providing high visibility crosswalks, as appropriate. Crosswalks should align with the pedestrian zone of the sidewalk and should never be pulled back from the intersection as a means to shorten the pedestrian crossing distance – such a strategy is counter to pedestrian or motorist expectations, and it can create problems for visually impaired pedestrians.
- Pedestrian refuges should be considered if the crossing distance exceeds approximately 40 feet.

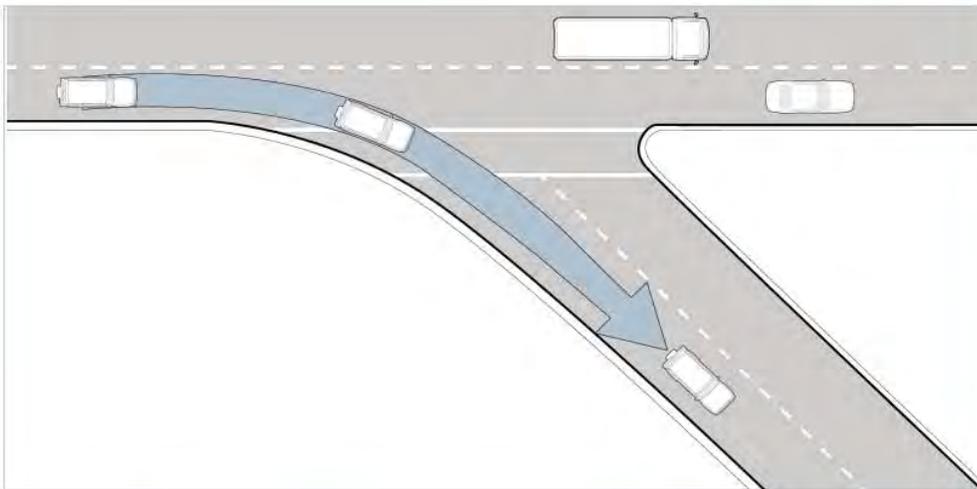
## CRASH REDUCTION FACTOR: VARIES

- General-use travel lanes and bike lanes may be striped with dashes to guide bicyclists and motorists through the large undefined area that results from intersection skew.
- Installation of a curb extension on the obtuse side of the intersection can reduce the corner curb radius and reduce the amount of undefined space,

thus reducing high speed turning movements. Curb extensions also reduce pedestrian crossing distance and may accommodate vegetation.

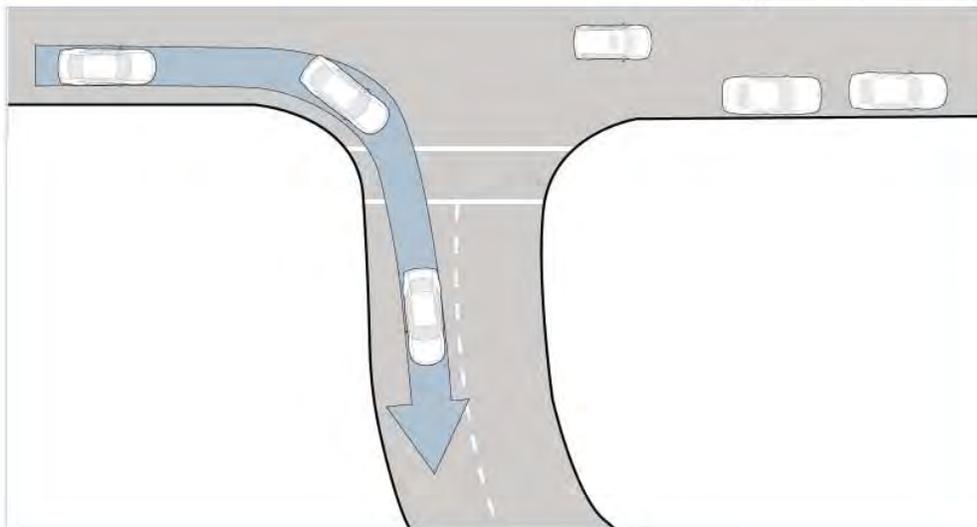
### POLICY CONSIDERATIONS

- Priority should be given to intersections with identified crash problems, on school walking routes, near transit stops, or with high pedestrian use.



#### Existing

Typical skewed intersection: Wide turning radius results in higher speed turns and longer pedestrian crossing time/exposure



#### Proposed

Realigned intersection: Narrower turning radius encourages slower turns, shortens pedestrian crossing distance and improves sight triangles for all modes

**RESOURCES:** AASHTO Pedestrian Guide  
PedSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=29](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=29)  
Designing Sidewalks and Trails for Access: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalk2/sidewalks208.cfm#ske](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks208.cfm#ske)  
2009 Manual on Uniform Traffic Control Devices (MUTCD)

# TRANSIT STOP LOCATION



## DESCRIPTION

The placement of a transit stop depends on the operational characteristics of both the street and the transit system, and should provide comfort, convenience, safety and sufficient space for all transit users, including pedestrians, cyclists and people with mobility impairments.

- Near side bus stops are bus stops placed on the approach to an intersection.
- Far side bus stops are where buses stop after having traveled through the intersection.

## BENEFITS

- Thoughtful placement of transit stops helps to enhance access for transit users.
- Proper placement of transit stops can enhance safety for pedestrians accessing transit especially for transit riders who must cross the street to access transit stops and destinations.

## CONSIDERATIONS

- Transit stop placement affects traffic flows and should be placed to minimize disruption to traffic patterns.
- Locate transit stops along the curb in an area that is well-lit, with good sight distance in close proximity to crosswalks where feasible.

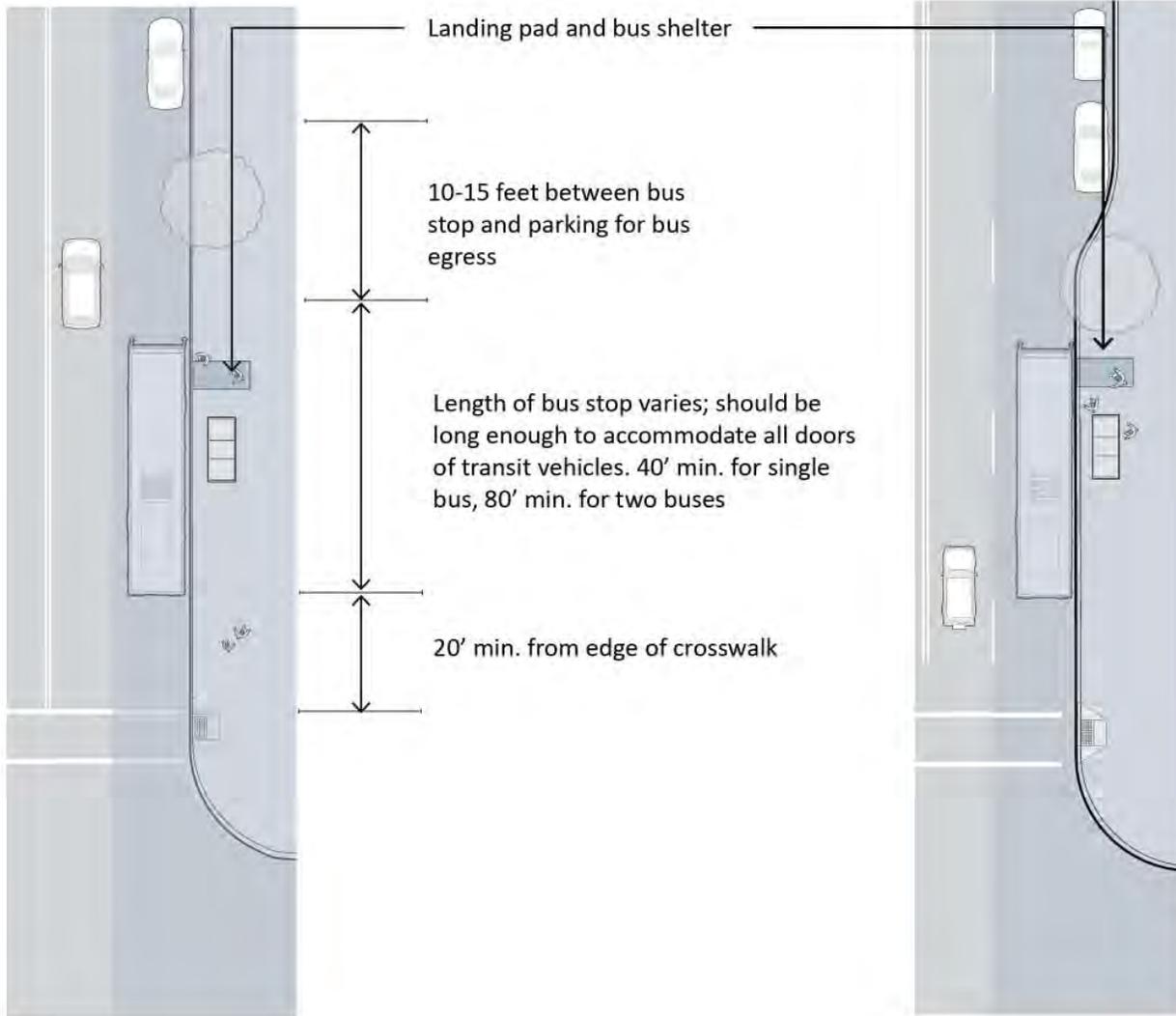
- Locate stops intersections wherever possible because intersections are generally more convenient for passengers intercepting other transit connections, using signals to cross the street and connecting to pedestrian routes and building entrances.
- The table on the following page summarizes the advantages and disadvantages of near side, far side and mid-block stop placement.
- At transit stop locations where there is an associated uncontrolled crosswalk, place the crosswalk behind the transit stop.
- Where it is possible to still meet minimum stop spacing requirements, consider moving transit stops that are located a distance from signals on multi-lane roads to signalized locations. If this is not possible, consider additional crossing treatments at these locations. For example treatments see High Visibility Crosswalks, Mid-block Crossings, Rectangular Rapid Flash Beacons.
- Transit stops should not be located at driveways. New driveways should be discouraged at transit stops (and generally along major transit routes).
- Coordinate with Wichita Transit staff when redesigning roadways to accommodate transit, e.g., determining the proper length of transit stops where multiple transit routes are planned.

Location	Advantages	Disadvantages
Near Side	Minimizes interference when traffic is heavy on the far side of an intersection	Increases conflicts with right-turning vehicles
	Minimizes the number of stops for buses	Stopped buses may decrease sight distance of passing traffic, obscuring curb-side traffic control devices, and pedestrians crossing in front of bus
	Allows passengers to board and disembark while the bus is stopped at a red signal phase	Obscures sight distances for vehicles crossing the intersection from the right of where bus is stopped
	Allows for convenient access during winter months, as snow is likely cleared at boarding points	Decreases roadway capacity during peak periods due to buses queuing in what may function as a right-turn lane
		Can delay buses that arrive during the green signal phase and finish boarding during the red phase
Far Side	Minimizes conflicts between right-turning vehicles and buses	Stacking buses may block the intersection during peak periods
	Optimal location for traffic-signal synchronized corridors	Stopping both at a signalized intersection and a far-side stop may delay bus operations, particularly where buses don't have signal priority
	Provides additional right-turn capacity by allowing traffic to use the right lane	
	Signalized intersections create traffic gaps for buses to reenter traffic lanes	
	Improves pedestrian safety as passengers cross in back of the bus	
Mid-Block	Boarding areas experience less congestion and fewer conflicts with pedestrian travel paths	Decreases on-street parking supply (may be partially mitigated with a bus bulb-out)
	Can be located adjacent to or directly across from a major transit use generator located midblock	Increases walking distance to intersections and encourages passengers to cross street at midblock (jaywalking)
		Stopping buses and mid-block pedestrian crossings may disrupt mid-block traffic flow
		May be less convenient for transit transfers

# TRANSIT STOP LOCATION CONT.

**Far Side In-Lane Stop,  
1 Lane with Parking**

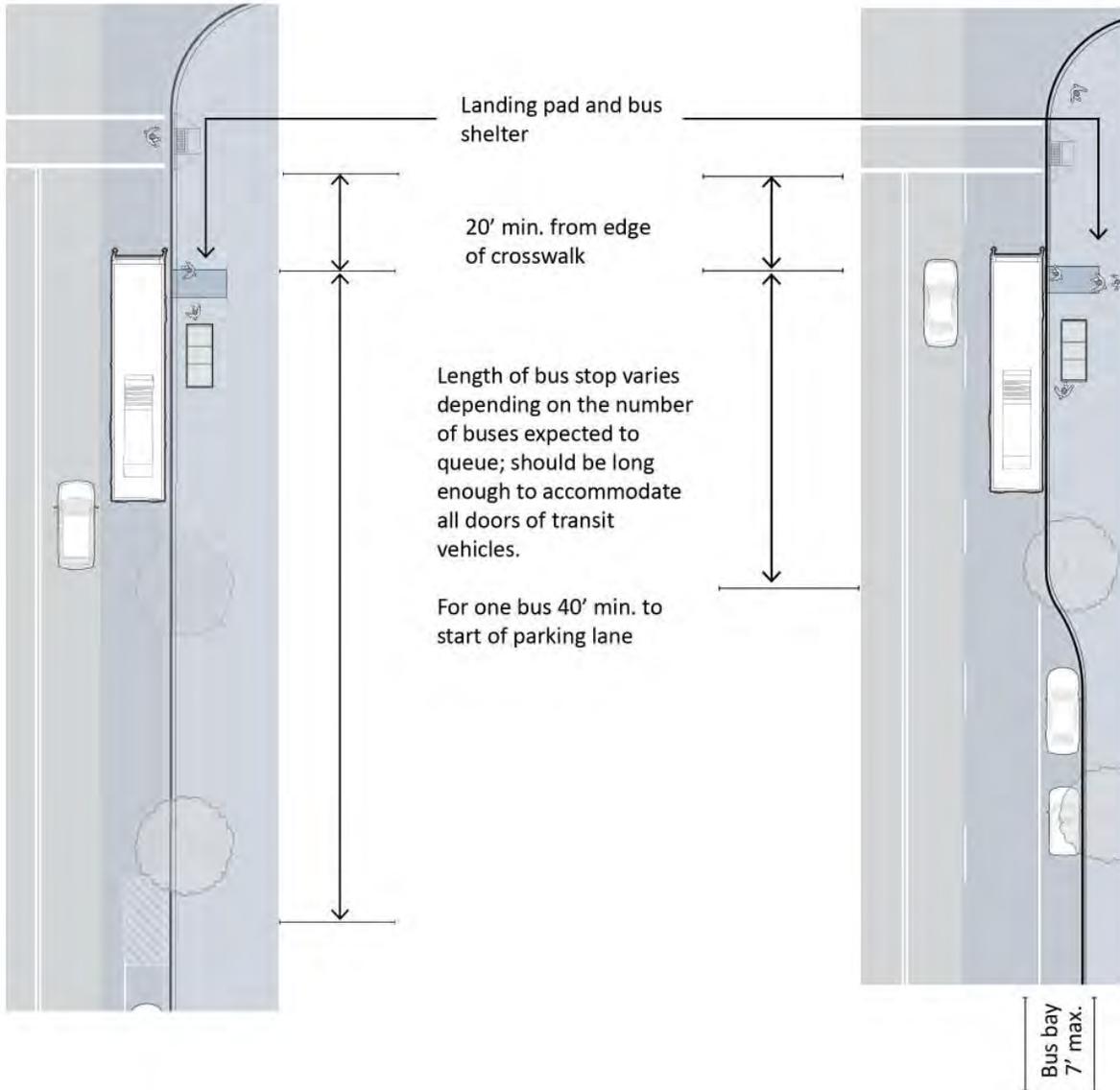
**Far Side Bus Bay,  
2 lanes with parking**





**Near Side In Lane Stop,  
1 Lane with Parking**

**Near Side Bus Bay,  
2 Lanes with Parking**



RESOURCES: AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. FHWA Pedestrian Safety Guide for Transit Agencies 2009: [http://safety.fhwa.dot.gov/ped\\_bike/ped\\_transit/ped\\_transguide/transit\\_guide.pdf](http://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/transit_guide.pdf)

# TRANSIT STOP DESIGN



Photo by TDG

## DESCRIPTION

Transit stop design can include the following:

- Sidewalk connections to transit stops: make transit stops ADA accessible for pedestrians, those with mobility impairments and those with strollers.
- Stop amenities: provision of lighting, shelters, benches and other amenities that improve the comfort of transit riders.
- Landing pads: Paved loading area that connects the sidewalk to the transit vehicle door.

## BENEFITS

- Sidewalks provide an accessible surface on which to access transit and adjacent street crossings and sidewalks.
- Provision of landing pads improves the accessibility of the transit stop particularly for those who have trouble navigating soft or uneven surfaces.
- Stop amenities: transit shelters provide cover from harsh weather, lighting improves safety and makes waiting passengers more visible to transit drivers, benches improve the comfort of stops for riders who cannot stand for long periods of time.

## DESIGN CONSIDERATIONS

Good layout of a transit stop includes:

- Visual cues on where to wait
- A clearly defined transit stop
- Ease of access between sidewalk and the transit vehicle

- Unobstructed path of travel on the adjacent sidewalk

### Accessibility

- Transit stops should be safe and accessible.
- Consider the Americans with Disabilities Act (ADA) requirements in the siting and design of new and existing transit zones.
- All transit zone amenities must be consistent with Wichita Transit standards.

### Transit Stop Amenities

Determination regarding the level of amenities per stop may take into account transit stop usage, frequency of transit and location. Streetscape amenities can serve waiting passengers and transit stop improvements may include:

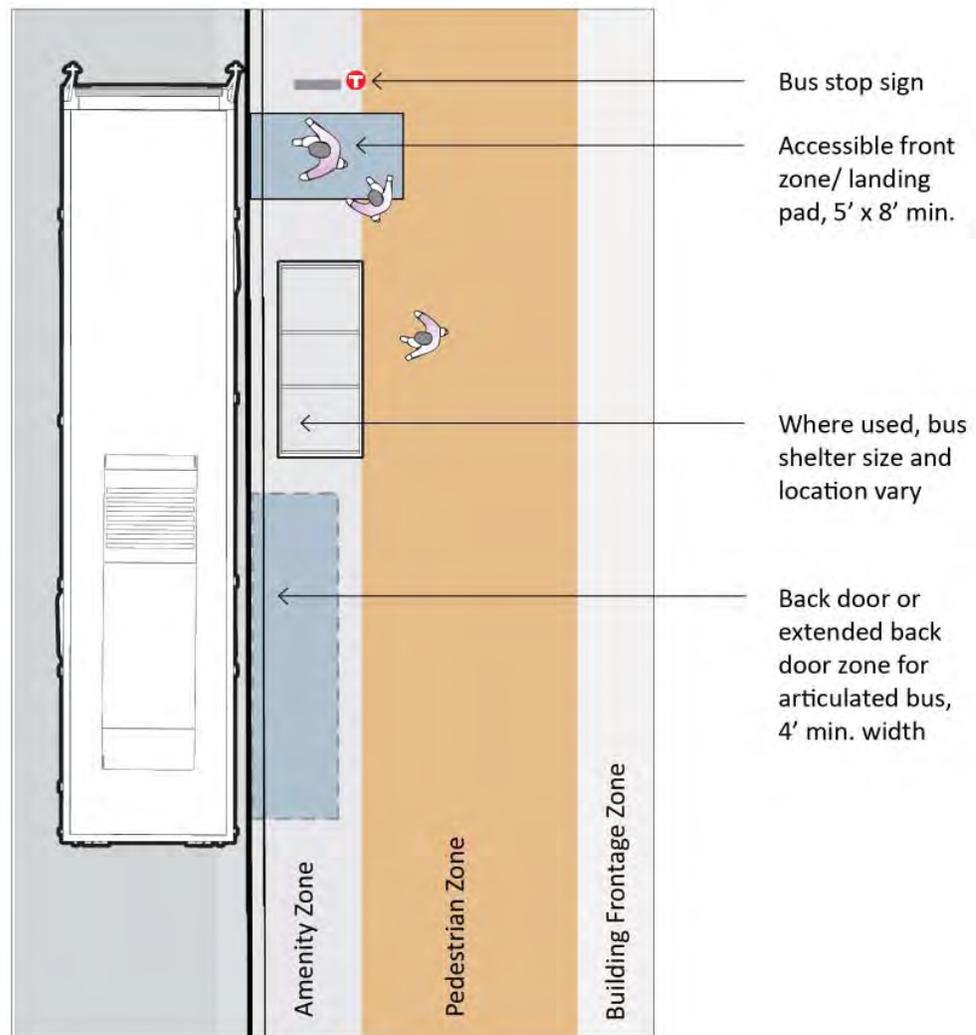
- Transit signs – provided at all stops and located at the preferred boarding location.
- Transit shelters—provide where existing sidewalk and/or right of way space allows or where a curb extension can be added to provide sufficient space, and demand warrants. Transit shelters should not be provided where sidewalk width is insufficient to accommodate a shelter and at least the minimum required clear path of travel around the shelter or the ability to carry expected pedestrian volumes.
- Lighting—located to illuminate the transit stop area, particularly the front of the stop and the transit shelter (where present). Lighting may be integral to the transit shelter, or may be provided by standard

- pedestrian or roadway lighting, where sufficient.
- Special paving—may be provided to distinguish the transit stop area from the adjacent sidewalk. Special paving may include a unique scoring pattern, a contrasting paving material, or a paving edge treatment delineating the edge of the transit stop. Special paving may be expensive, and is most appropriate at major stops or major transfer points.
  - Seating—located within the transit shelter (where present). Additional seating, either formal (benches, seats with armrests) or informal (bollards, low seat walls, leaning bars), may be placed outside of the shelter, provided it allows access to and from the transit shelter and boarding area.
  - Trash cans—placed adjacent to the transit shelter (where present).
  - Bike racks—where provided, racks should be placed to not conflict with the boarding areas of a transit stop.
  - Wayfinding information may be located within the transit stop, particularly in downtown and in neighborhood centers.
  - Electronic real-time schedule information and other premium elements should be added where demand and funding exist.
  - Minimum clearance – While a 5 feet wide by 8 feet deep sidewalk area meets minimum ADA standards, a larger clear transit zone or curb extension is preferred to ensure front and rear door access and egress for most buses (30 feet of curb clearance is needed for rear door access of a 40 foot bus).
  - The clear loading area should be where the bus doors typically open and be accessible from the transit shelter (where present) and adjacent sidewalk. If a zone is designed for more than one bus, a clear loading area should be provided for each vehicle.
  - The clear loading area should have a maximum 2% cross-slope.
  - A 30 inch by 48 inch clear floor wheelchair space should be provided within the transit shelter (where present). This space must be accessible from the sidewalk and the loading area. In some cases, this may necessitate modifying the transit shelter.
  - Where boarding platforms are not level with the sidewalk, an accessible ramp must be provided from the sidewalk to the platform.
  - Shelters should be located in the Amenity Zone wherever possible. They should be located to provide at least 4 feet of clear space between the edge of the curb and any upright portions of the shelter where possible, or another accessible path to the shelter should be provided. Alternately, shelters can be placed in the Building Frontage Zone. In all cases, shelters must be placed to leave the minimum required clear sidewalk width.
  - Transit shelters should be located toward the front of the stop to indicate where customers should wait to board the vehicle. The shelter should be placed approximately 25 feet behind the front of the stop to allow for an accessible boarding area (5 feet by 8 feet) and for the bus to pull out of the stop (approximately 20 feet). Where there is a bus bay or boarding island, the first 20 feet of setback is not necessary.
  - The shelters and other street furniture should not impede sight lines for pedestrians waiting to cross at a crosswalk.

## Transit Stop Design

Provide street lighting and street furnishings as appropriate:

- Placed in a way so as not to conflict with transit operations
- May necessitate additional Sidewalk/ Amenity Zone space



**RESOURCES:** AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. Designing Sidewalks and Trails for Access: Ch. 4 Sidewalk Design Guidelines and Existing Practices: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalks/chap4b.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/chap4b.cfm)  
 FHWA Pedestrian Safety Guide for Transit Agencies 2009: [http://safety.fhwa.dot.gov/ped\\_bike/ped\\_transit/ped\\_transguide/transit\\_guide.pdf](http://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/transit_guide.pdf)

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# CROSSING NEAR TRANSIT STOP



## DESCRIPTION

It is often necessary for pedestrians to cross roadways when traveling to and from transit stops. The placement and design of crossings near transit stops is a critical safety and convenience issue for transit users.

## BENEFITS

Well design crossings near transit stops provide:

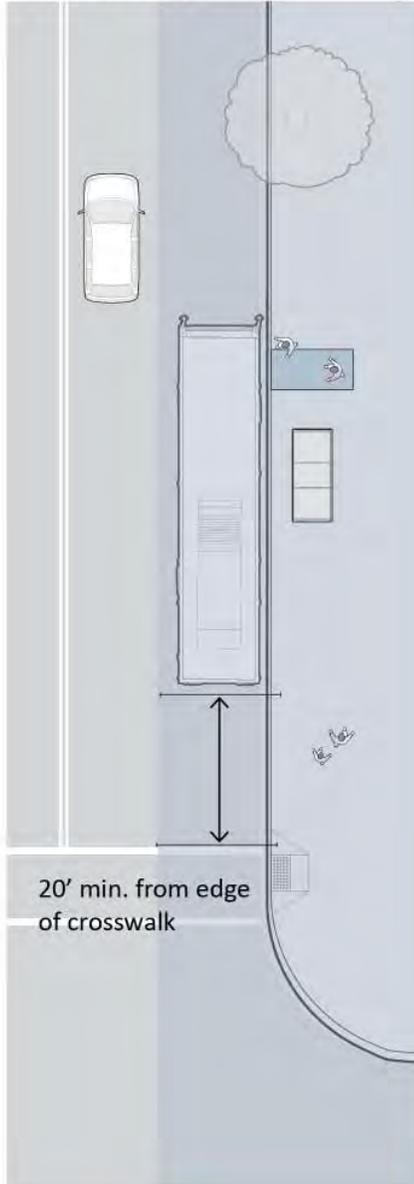
- Increased visibility for pedestrians and motorists.
- Assistance for pedestrians in making safe crossings.
- Placement that allows transit vehicles to safely maneuver into and out of traffic without coming into conflict with pedestrians.

## DESIGN CONSIDERATIONS

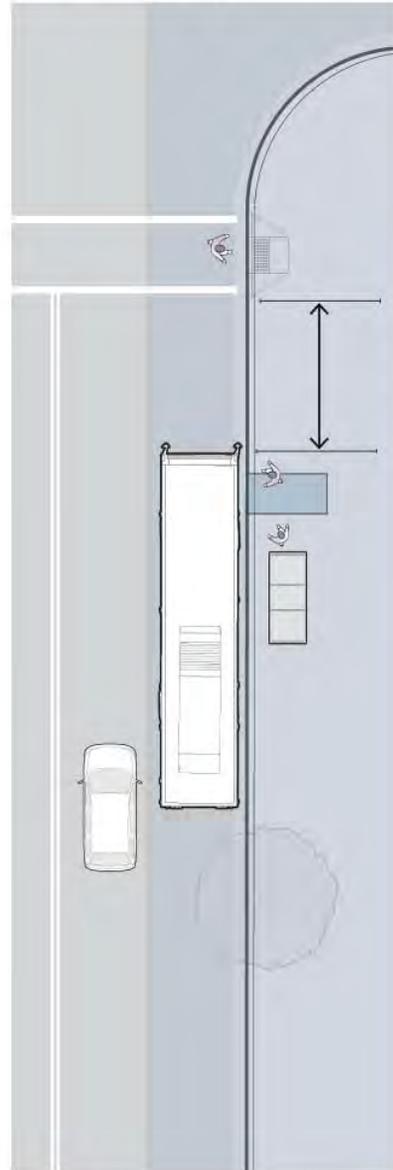
- Where bus stops are located mid-block on a long block (greater than 1,000 feet), a mid-block crossing should be considered in order to increase the visibility of transit-riding pedestrians that are likely to cross the street at unmarked mid-block locations.
- Where a signal is not warranted, pedestrian crossings near transit stops should incorporate other treatments such as crossing islands, rapid flash beacons, and warning signage.
- Crosswalks at mid-block transit stops should be placed behind the bus stop so pedestrians cross behind the bus where they can see oncoming traffic.
- Far side placement of transit stops at intersections

also allows pedestrians to cross behind the bus where they are more visible to passing traffic. This placement also enables the bus driver to pull away without endangering pedestrians. Bus stops should be set back a minimum of 5 feet from crosswalks. Where feasible, a 10 foot setback is preferred.

Far Side Bus Stop



Near Side Bus Stop



20' min.  
from edge of  
crosswalk

RESOURCES: AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities.  
FHWA Pedestrian Safety Guide for Transit Agencies 2009: [http://safety.fhwa.dot.gov/ped\\_bike/ped\\_transit/ped\\_transguide/transit\\_guide.pdf](http://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/transit_guide.pdf)

# ROAD DIET



Photo by TDG

## DESCRIPTION

Road diets are a reduction in the number of travel lanes on a multi-lane roadway.

The most common road diet is the 4- to 3-lane reduction, which results in two travel lanes and a center turn lane/median. Depending on roadway width, such a conversion may allow for bike lanes, the addition of on-street parking (where there is demand), and other features that improve the pedestrian environment such as curb extensions, sidewalks, and sidewalk buffers.

## BENEFITS

Numerous studies of road diets have shown that they provide safety benefits for all roadway users by:

- Discouraging motor vehicles from speeding. When the roadway is reduced to one lane in each direction “pace cars” going the speed limit, slow the speed of those behind them. This can have the effect of reducing the number of top end speeders.
- Making it easier for pedestrians to cross the street.
- Reducing severity and frequency of automobile crashes
- Creating room for left turn lanes and bike lanes
- Road diets accommodate the same capacity as a four lane roadways. This is because of the addition of left turn lanes that take left turning vehicles out of the flow of traffic. Additionally they slow traffic which allows for a higher throughput of vehicles per lane.
- When the number of vehicle lanes is reduced and features such as curb extensions and crossing islands are installed, the time pedestrians are exposed to traffic while crossing the street is greatly reduced.
- Road diets also reduce the multiple lane threat risk.

A multiple-threat pedestrian crash is a crash type that occurs when a motor vehicle in one lane stops and provides a visual screen to the motorist in the adjacent lane. The motorist in the adjacent lane continues to move and hits the pedestrian.

- Emergency vehicle access is improved with the presence of the two-way left turn lane.

## DESIGN CONSIDERATIONS

- There are a number of factors to weigh in determining the appropriateness of a road diet, including number of driveways, roadway width, sight distance, and the volume and type of traffic.
- Road diets should be considered on streets where capacity exceeds demand.
- Consider intermittent medians in locations where the two way left turn lane is frequently used for illegal passing. For additional guidance see Access Management.

When analyzing the potential for a road diet:

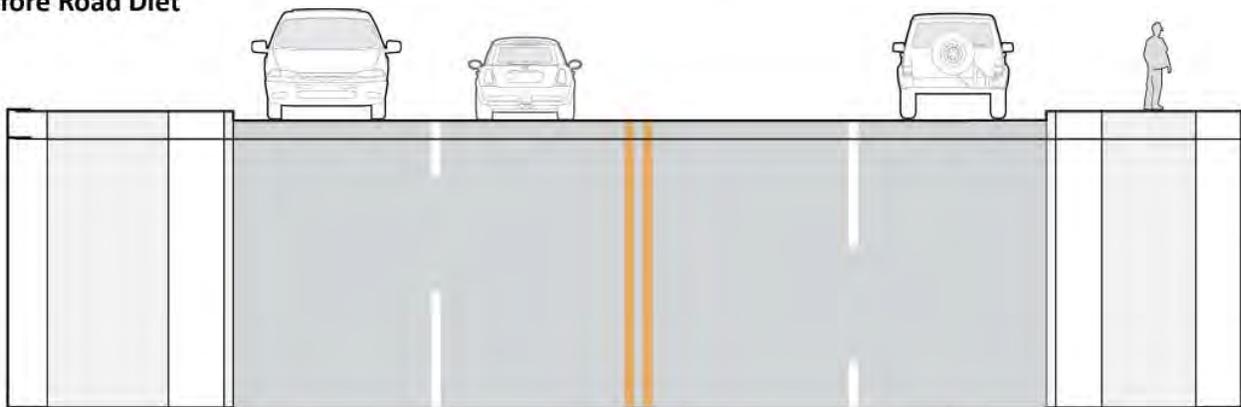
- Identify corridors with high levels of pedestrian crashes.
- Conduct a level-of-service (LOS) analysis to determine whether the number of lanes on a roadway is appropriate and how alternative routes will be impacted by a road diet.
- Consider other factors besides LOS and be willing to accept a lower LOS in exchange for other benefits, or other factors may include the importance a particular street plays in the pedestrian or bicycle network and the relationship between creating more livable streets and economic development (traffic slows, easier to make left turns into business parking lots).

- During reconstruction projects, space reallocated from vehicle lanes can be used to widen sidewalks, create bump outs, plant street trees or greenscape elements, install street furniture, implement bicycle lanes or cycle tracks, or provide on-street parking lanes.
- During resurfacing or new striping projects, installing minimum lane widths can provide additional space to install bicycle lanes or cycle tracks. On roadways with on-street parking, it is

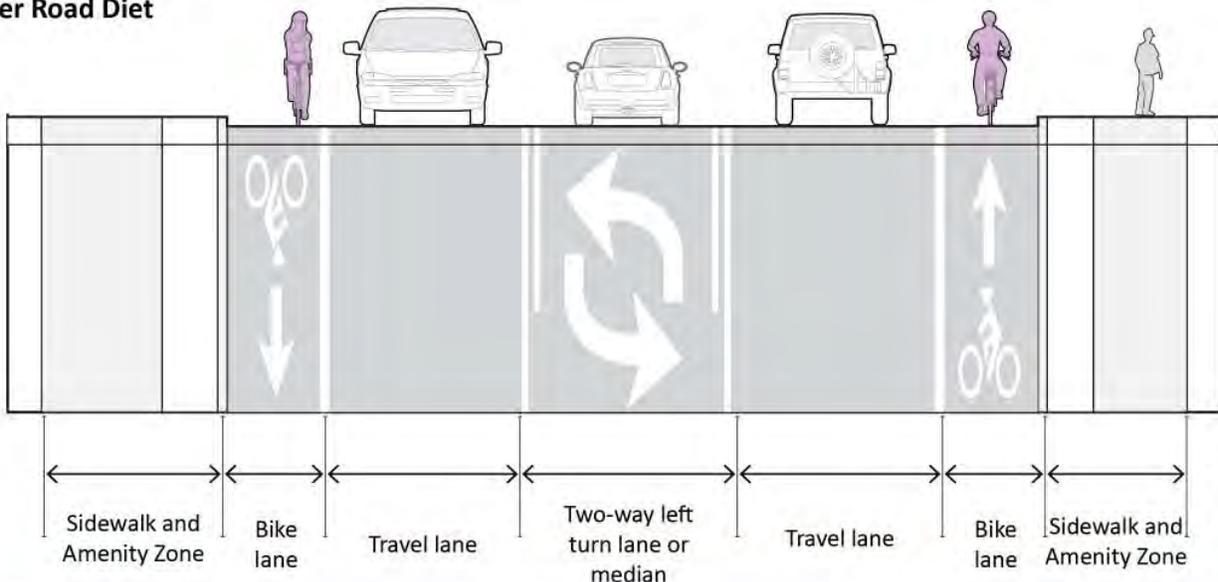
advantageous to provide additional width to either the parking lane or the bicycle lane, particularly in areas with high parking turnover, to reduce the likelihood that a bicyclist will be struck by a motorist opening a car door.

- Successful road diets include an analysis of the entire affected area in order to identify and mitigate potential traffic spill over into other areas or cut-through traffic.

**Before Road Diet**



**After Road Diet**



RESOURCES: AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. Road Diet Handbook: Setting Trends for Livable Streets. Jennifer Rosales. ITE September 2006 Road Diet: Proven Safety countermeasures. FHWA: [http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_013.htm](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_013.htm)

# WIDTH OF LANES



## DESCRIPTION

Reduced lane widths encourage slower vehicular speeds and reduce crossing widths, improving conditions for pedestrians. Existing vehicle lane widths might be wider than needed.

## BENEFITS

On roadways where vehicle lane widths are greater than needed, reduced lane widths may be a good solution that results in improved conditions for pedestrians by reducing their exposure to vehicle traffic. Additional space on the edge on the street may also provide sufficient space for installing a bicycle lane or widening sidewalks.

## DESIGN CONSIDERATIONS

- When building new roadways, avoid building lanes with excessive width. Narrower roadways are preferred for improving safety and livability.
- Avoid over wide lanes ranging from 14-16 feet. Streets with excessive width to the lanes may be good candidates for lane width reduction.
- Minimum lane widths can vary from 10 to 12 feet depending on the functional classification of the street and local conditions. A width of 10 feet may be acceptable for local, collector, and even some arterial streets. However, for most urban arterials 11 feet is an acceptable width. A reduction in lane width may not be achievable on roadways with heavy truck or bus traffic. A minimum preferred width for center turn lanes, where used, should be 10 feet, and in a neighborhood context, can be as narrow as 9 feet.

- Reduced lane widths are often implemented to allocate more space for the installation of bicycle lanes, which can act as buffers between the roadway and the sidewalk where the Amenity Zone is not present. On streets where bicycles are intended to share lanes with cars side by side, vehicle travel lanes should not be narrowed to less than 14 feet.
- During resurfacing or restriping projects, installing minimum lane widths can provide additional space to install bicycle lanes or cycle tracks. On roadways with on-street parking, it is advantageous to provide additional width to either the parking lane or the bicycle lane, particularly in areas with high parking turnover, to reduce the likelihood that a bicyclist will be struck by a motorist opening a car door.
- Reevaluate roadway standards, and narrow standard vehicle lane widths on new and existing roadways that exceed new American Association of State Highway and Transportation Officials (AASHTO) Green Book guidelines.
- Reallocate a portion of the roadway to bike lanes where appropriate.

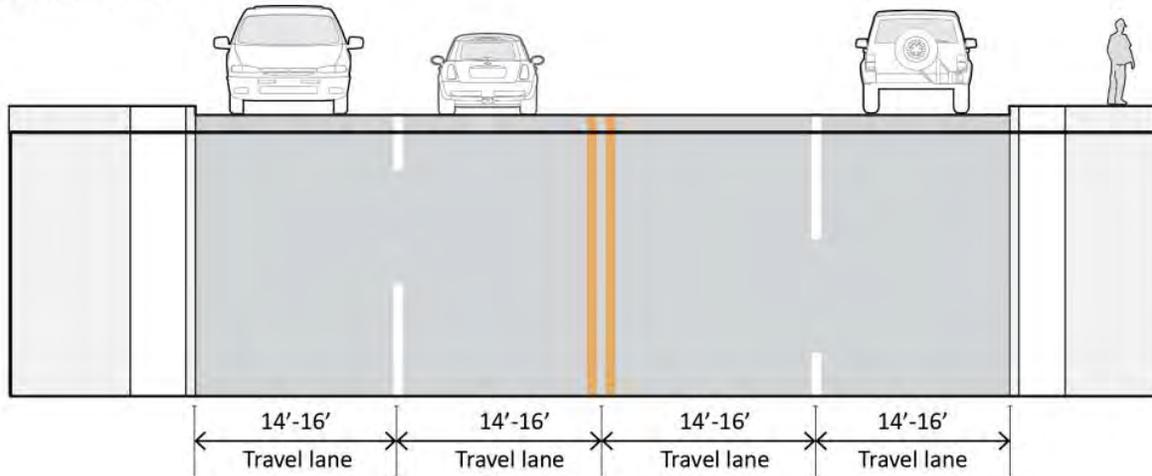
Consider lane diets on existing roadways where the following conditions exist:

- Collector and local streets with lane widths greater than 10 feet.
- Arterial streets with lane widths greater than 12 feet; heavy truck and bus volume should be a consideration but not preclude a lane diet.
- Streets near schools and other uses that generate high volumes of pedestrian traffic where there is excess lane width.

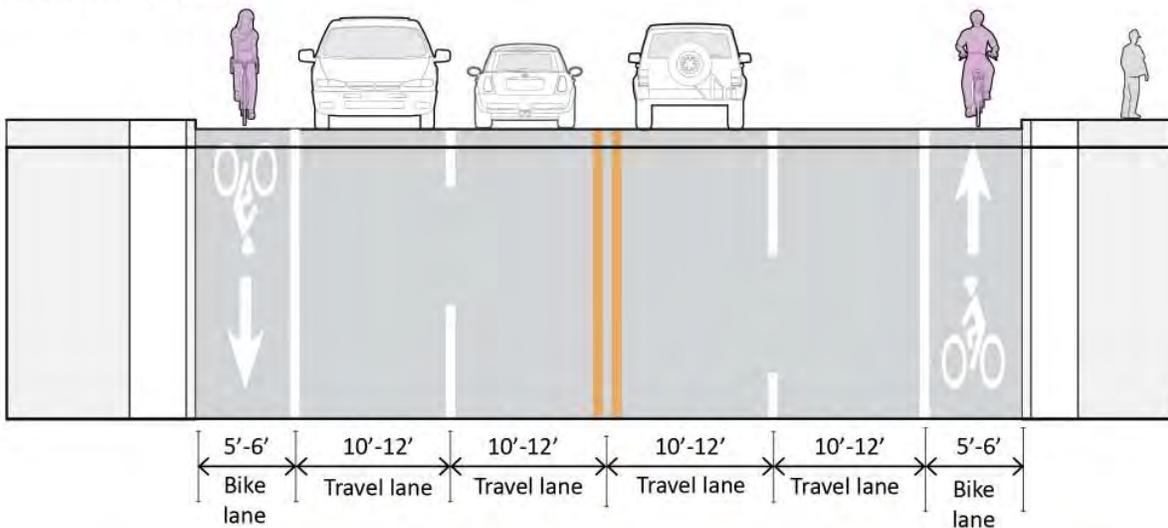
## CRASH REDUCTION FACTOR: RESEARCH INCOMPLETE

Excess lane width can be used at the margins of the roadway to widen the sidewalks Amenity Zone , parking lanes or install bike lanes which all results in lessening pedestrian exposure to vehicular traffic.

### Wide Travel Lanes



### Reduced Lane Widths



RESOURCES: AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. PedSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=18](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=18)  
 Designing Walkable Urban Thoroughfares: A context Sensitive Approach. <http://www.ite.org/css/RP-036A-E.pdf>

# BACK IN ANGLE PARKING



Photo by TDG

## DESCRIPTION

Back-in angle parking (also known as reverse angle or diagonal parking) is an alternative to parallel or front-in angle parking and has many benefits over these other parking types.

## BENEFITS

- Allows opportunity to install curb extensions, and to narrow street crossings for pedestrians
  - Increases parking capacity (9 to 10 feet of lateral curb per vehicle, versus 22 feet per vehicle for parallel parking).
  - Improves the ease of loading and unloading cargo and children, and protection for children because the open car door now directs young children back to the curb or sidewalk rather than out into the street.
  - Back-in angle parking also can create a traffic calming effect due to higher number of parking maneuvers per curb length, which can be particularly beneficial around schools and commercial areas.
  - Curb extensions can be installed with tree wells, which helps green and cool downtowns and streets.
  - Helps create place, character and identity to a business district.
- Back-in angle parking provides motorists with better vision of on-coming bicyclists, cars, and trucks as they exit a parking space and enter moving traffic. See Nelson/Nygaard 2005.
  - Back-in angle parking eliminates the risk associated with parallel parking where a motorist may open the car door into the path of a bicyclist.

## DESIGN CONSIDERATIONS

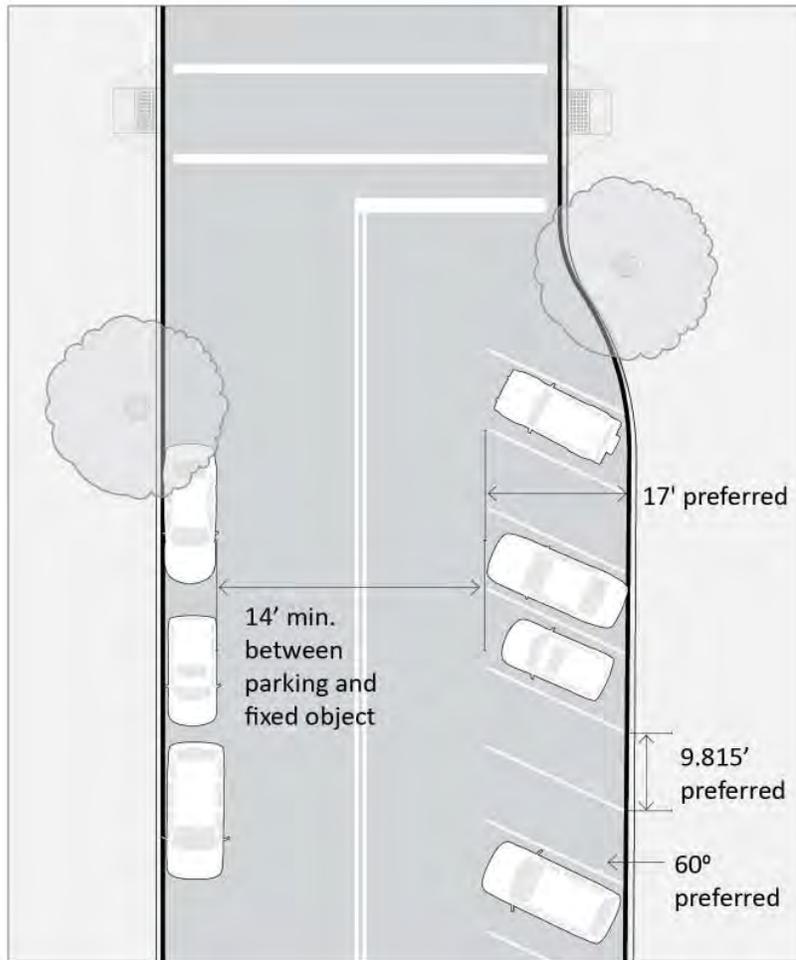
- Angled parking should be considered only where the posted speed is less than 25 to 30 mph and where there is high demand for parking.
- As a general rule, back-in angle parking should be installed on side streets first.
- It should also be considered for nonarterial streets where speeding is a problem and increased parking is needed.
- Its use on downhill grades should be studied carefully, and it may have limited usefulness on single lane, one-way streets.
- Back-in angle parking may be routinely installed wherever there is currently front-in angle parking or where there are opportunities for road or lane diets and the desire for traffic calming.

- It should also be considered in locations with bike lanes.
- Back-in angle parking is preferred to front-in angled or perpendicular parking when bike lanes are present because visibility between the driver and bicyclists is improved.
- Use of this technique may require education

up-front for motorists such as temporary educational signs providing images of what the parking should look like and guidance on how to back-in angle park.

**POLICY CONSIDERATION**

- Update Wichita Parking Standards to include back-in angle parking.



**RESOURCES:** AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. Back-in/Head-out Angle Parking. Nelson/Nygaard : [http://www.hampdenhappenings.org/HCC\\_WEB/Zoning\\_Pdf/RAP/San\\_Francisco.pdf](http://www.hampdenhappenings.org/HCC_WEB/Zoning_Pdf/RAP/San_Francisco.pdf)  
 Designing Walkable Urban Thoroughfares: A Context Sensitive Approach. ITE: <http://www.ite.org/css/RP-036A-E.pdf>

# MINI TRAFFIC CIRCLE



Photo by TDG

## DESCRIPTION

Mini-traffic circles are circular islands that are installed in the center of appropriate residential street intersections to reduce traffic speeds and collisions. Mini traffic circles require vehicles to reduce speed while allowing continuous traffic flow.

## BENEFITS

- Mini traffic circles reduce crashes at residential street intersections.
- Mini traffic circles also function as traffic-calming devices by slowing traffic.
- Mini traffic circles can be installed in lieu of stop signs to maintain the flow of traffic.
- In order to benefit pedestrians and bicyclists mini-circles must be properly designed to slow vehicles because right-turning vehicles are not controlled at an intersection with a mini-circle, potentially putting pedestrians and bicyclists at risk.
- Mini traffic circles eliminate the issue of stop sign non-compliance at low volume residential street intersection which can reduce crashes and the need for enforcement.

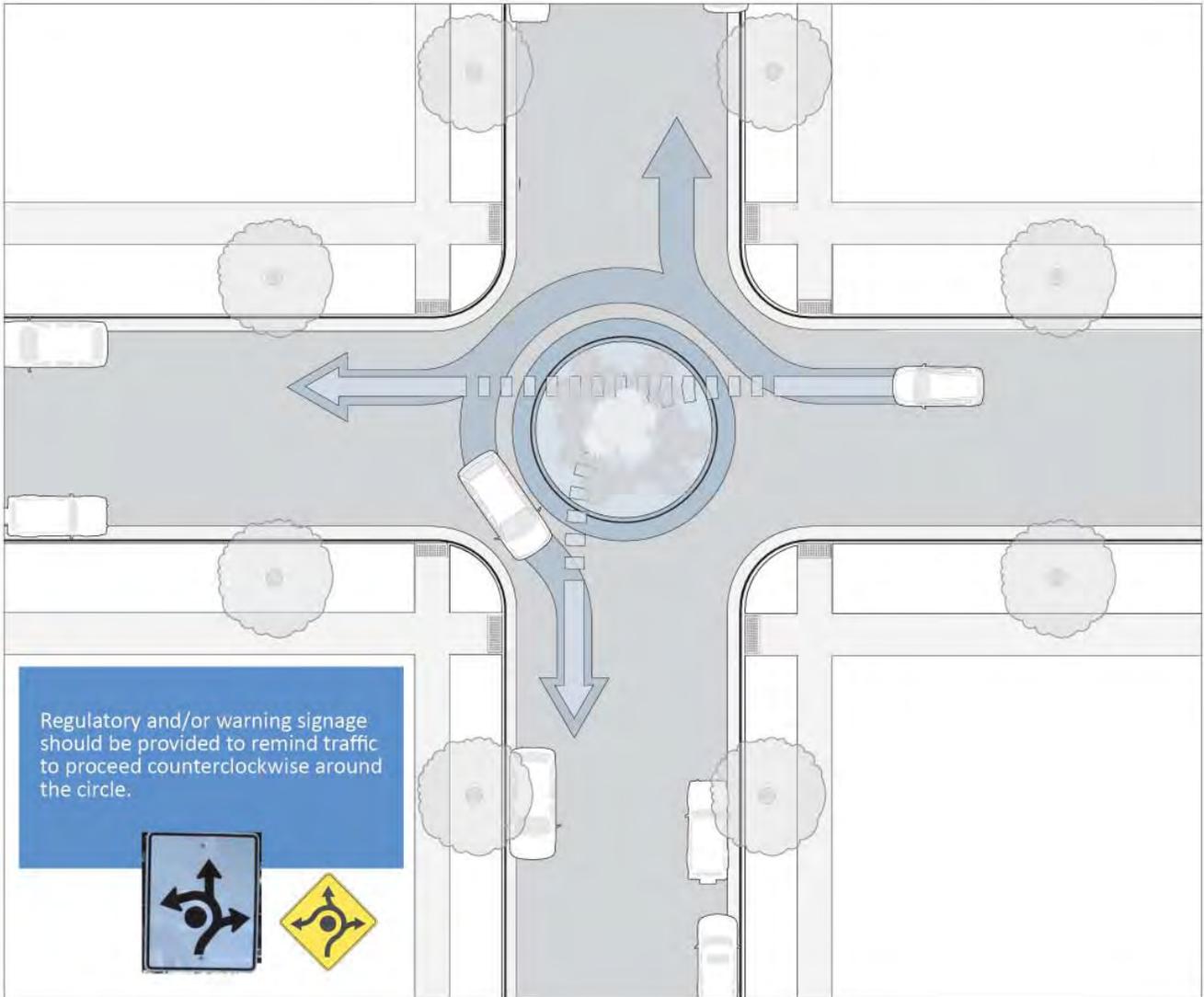
## DESIGN CONSIDERATIONS

- Mini traffic circles should be accompanied by tight curb radii on the adjacent corners to reduce right turning vehicle speeds.
- Larger vehicles such as school buses that make wider turns can be accommodated by building mini traffic circles with mountable curbs.

- Mini traffic circles should be sized according to street width and allow for the passage of emergency vehicles and snow plows.
- Regulatory or warning signage should be provided to direct traffic to proceed counterclockwise around the circle.
- Design mini traffic circles with mountable curbs to allow for emergency vehicle access.
- Vegetation should be maintained so that it does not block visibility. Keep landscaping in the circle below 36 inches and above 6 feet to maintain clear visibility through the intersection.
- Visibility of the circle can be enhanced with paint and reflectors.
- By local ordinance, fire and emergency vehicles, buses and other large vehicles may make left turns without going around the circle.
- Mini-traffic circles can be landscaped or paved.

Consider installing mini-traffic circles on:

- Intersections of residential streets where there is a history of crashes.
- Bicycle routes (residential streets that are signed or otherwise designated as bicycle routes).



RESOURCES: PedSafe. [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=34](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=34)  
Mini-Roundabouts. FHWA: <http://safety.fhwa.dot.gov/intersection/roundabouts/fhwasa10007/fhwasa10007.pdf>  
Traffic Circle Program. City of Seattle: <https://www.seattle.gov/transportation/trafficcircles.htm>

# CHICANES



Photo by TDG

## DESCRIPTION

Chicanes are a traffic calming measure that divert the path of travel along a roadway causing drivers to slow in order to make lateral shifts and/or pass through a narrowed section of roadway. Chicanes can take the form of curb extensions, center islands, or staggered on-street parking. On lower speed and lower volume residential streets, chicanes are often mid-block curb extensions used to slow traffic by narrowing the roadway to the width of one lane.

## BENEFITS

- Chicanes require drivers not only to reduce their speed but to share and negotiate the shared space with other drivers and roadway users.
- Chicanes have been shown to lower speeds.
- Chicanes can also be planted to provide additional landscaping or to incorporate stormwater treatment such as rain gardens, thereby providing secondary benefits.
- Chicanes require more attentive driving behavior.

## DESIGN CONSIDERATIONS

As with all traffic calming measures, the context of the street must be considered, including the following characteristics:

- Street classification
- Traffic operational analysis
- Mix of traffic, including consideration of bus, bike or truck routes

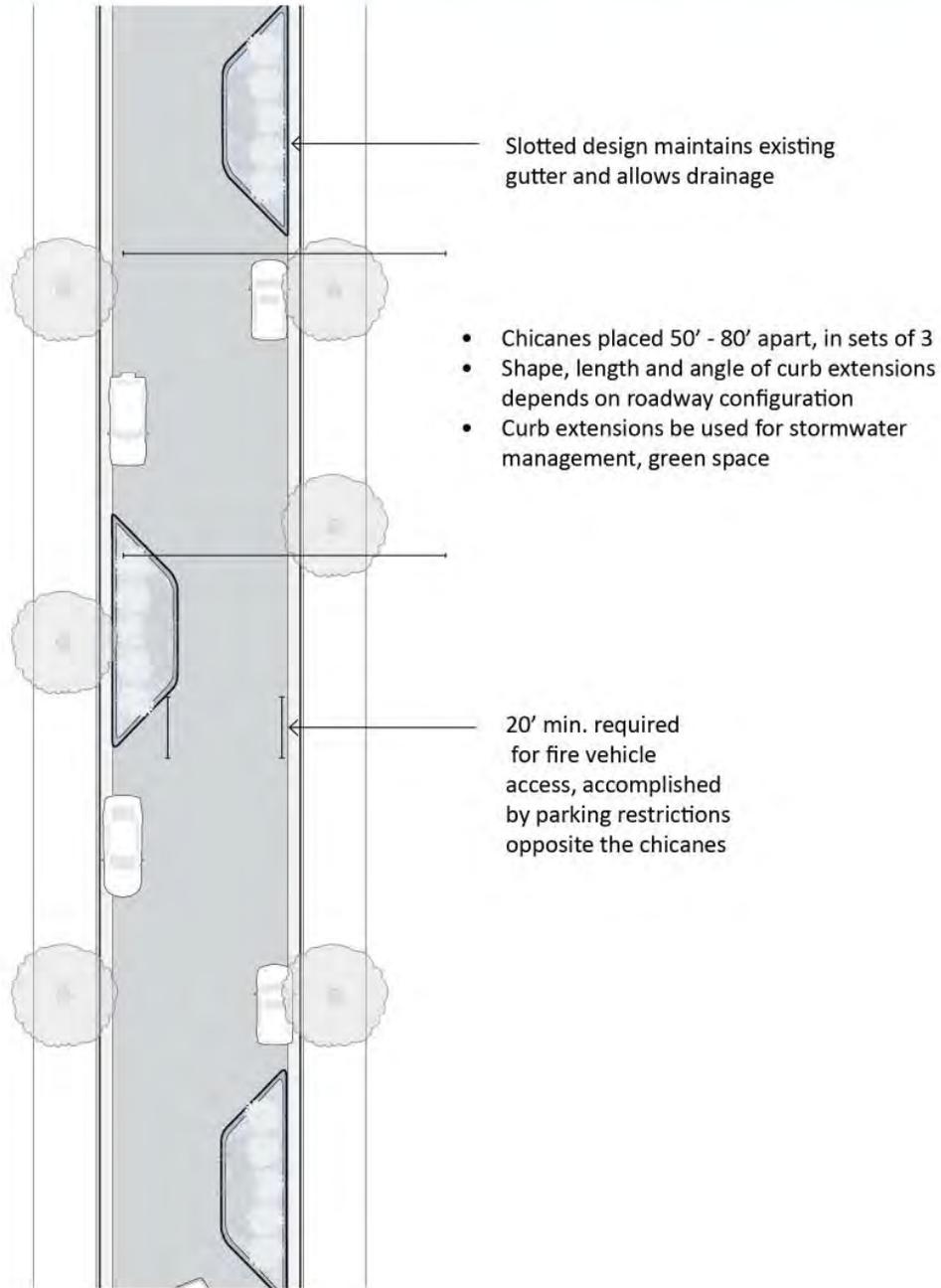
- Adjacent land uses
- First responder vehicle needs

Streets that are good candidates for traffic calming through the application of chicanes are residential streets where the following applies:

- There is a high volume of high speed cut through traffic.
- On routes that are frequented by children walking/ biking to and from school.
- Where there is a comprehensive neighborhood traffic calming program, particularly in neighborhoods where other traffic calming measures have been implemented.

Consider the following for placement of chicanes in the right-of-way:

- The placement of chicanes should alternate from one side of a street to the other, and are typically placed in groups of three.
- Removal of on-street parking may be required for chicane installation.
- The size of chicanes will vary based on the targeted design speed and roadway width, but the path of travel must be 20 feet wide curb to curb at a minimum to accommodate emergency vehicles.
- Where lane width cannot be narrowed, staggered areas for parking can create a chicaning effect.
- Chicanes can be used on both one-way and two-way streets.



RESOURCES: AASHTO Pedestrian Guide for the Planning, Design, and Operation of Pedestrian Facilities. PedSafe: [http://www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=33](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=33)  
 City of Seattle Mid-Block Speed Control: Chicane and Speed Humps. [www.seattle.gov/transportation/docs/ITerevfin.pdf](http://www.seattle.gov/transportation/docs/ITerevfin.pdf)

## DESIGN TREATMENT APPLICATION FOR NEIGHBORHOOD TYPOLOGIES

Chapter 2 outlines five distinct neighborhood typologies. The typologies, or the different ways that Wichita streets have been built at different times, provide a way to consider the application of the design treatments in specific neighborhoods. The recommendations below are based on the types of unique challenges for pedestrians in each of the typologies.

### City-Wide

City-wide there are several street related challenges to pedestrian safety that are not specific to a typology. These challenges are:

- » Crossing multi-lane arterials streets at uncontrolled locations: This is a challenge where many residential streets intersect arterials, where pedestrians need to cross the street to access adjacent businesses, schools, neighborhoods, or transit stops. This is also an issue where there are long distances between signals or signalized pedestrian crossings.
- » Missing sidewalks along arterials: Many arterial streets do not have sidewalks or have gaps in sidewalks that challenge pedestrian access along the roadway.

The following section outlines design treatments that are appropriate for each neighborhood typology based on the most common challenges faced by pedestrians in these areas.

### Downtown Grid

#### Example Neighborhoods

- » Downtown

#### Typology Specific Challenges

1. Excess capacity: Many Downtown streets are wide and have more lanes than needed to accommodate the amount of traffic using them. Wide streets increase pedestrians' exposure to traffic when crossing the street. This makes additional accommodation for pedestrians at signalized and unsignalized crossing important for safety.

#### Applicable Design Treatments

- » Road Diet
  - » Width of Lane
  - » Curb Extension
  - » Median
  - » Crossing Island
  - » Right-turn Slip Lane
  - » Pedestrian Signal
  - » Protected Left Turn Phase
2. Transit use: There is higher transit use Downtown, this requires accommodations for transit resources (i.e., bus shelters, benches) within the Sidewalk Zone and



facilities to enable pedestrians to safely cross the roadway during periods of high traffic volumes.

Applicable Design Treatments:

- » Transit Stop Location
- » Transit Stop Design
- » Crossings Near Transit Stop
- » Amenity Zone

3. One-way streets: Many of the streets in Downtown Wichita are one-way with more than one travel lane, which creates a multiple threat hazard. A multiple threat hazard can occur on roads with multiple lanes in the same direction where one car stops for a pedestrian and a car in the adjoining lane does not because the driver is unable to see the pedestrian due to the other stopped vehicle. Multiple threat hazards can be mitigated for pedestrians trying to cross the street at uncontrolled mid-block locations (e.g., locations without signals or stop signs).

Applicable Design Treatments:

- » Road Diet
- » Width of Lanes
- » Mid-block Crossing
- » Rectangular Rapid Flash Beacon
- » Curb Extension
- » Crosswalk
- » One-way to Two-way Street Conversions (Project Downtown)

4. Long blocks: The long blocks in downtown make mid-block crossing more desirable for pedestrians wanting to get to businesses and services on the opposite side of the street. Often a pedestrian is more likely to make a midblock crossing instead of walking to the end of a long block to cross at a signalized intersection.

Applicable Design Treatments:

- » Mid-block Crossing
- » Crosswalk
- » Rectangular Rapid Flash Beacon
- » Curb Extension
- » Crossing Island

5. Life on the streets: With wide sidewalks and density of businesses, entertainment and restaurants, Downtown is a great place for placemaking related sidewalk improvements.

Applicable Design Treatments:

- » Amenity Zone
- » Buffer Zone



- » Building Frontage Zone
- » Driveway Design
- » Back-in Angle Parking

### *Residential Grid*

#### *Example Neighborhoods*

- » Delano
- » South Central
- » Midtown

#### *Typology Specific Challenges*

1. Visibility at intersections: In these areas streets are narrow with on-street parking and street trees.

#### Applicable Design Treatments:

- » Curb Extensions

2. Cut-through traffic, one block off of arterial streets: Cut through traffic, avoiding congestion on arterial streets, often uses the residential street one block off of the arterial. These streets often see higher motor vehicle volumes and speeds than other residential streets.

#### Applicable Design Treatments:

- » Chicanes
- » Mini Traffic Circles

3. One-way streets: Some of the arterial streets in these residential areas are one-way with more than one travel lane, which creates a multiple threat hazard. A multiple threat hazard can occur on roads with multiple lanes in the same direction where one car stops for a pedestrian and the other car does not because the driver is unable to see the pedestrian due to the other stopped vehicle. Multiple threat hazards can be mitigated for pedestrians trying to cross the street at uncontrolled mid-block locations e.g. locations without signals or stop signs.

#### Applicable Design Treatments:

- » Road Diet
- » Width of Lanes
- » Curb Extensions
- » Crosswalk
- » One-way to Two-way Street Conversion

4. Arterial street crossings from residential areas to adjacent neighborhoods, schools, or shopping areas: Locations without pedestrian access across arterial streets, result in shopping areas, services and adjacent neighborhoods that are not accessible to pedestrians who live in nearby residential neighborhoods.



Applicable Design Treatments:

- » Road Diet
- » Width of Lanes
- » Crosswalk
- » Mid-block Crossings
  - » Rectangular Rapid Flash Beacons
  - » Crossing Islands
- » Curb Ramps

*Grid and Curvilinear*

*Example Neighborhoods*

- » Southwest Neighborhood
- » Benjamin Hills
- » Matlock Heights
- » Fabrique

*Typology Specific Challenges*

1. Safe walking routes to schools and parks: The intact street grid makes it possible for students to walk to school. Streets without sidewalks and unimproved street crossings are barriers to safe walking and bicycling for children. Skewed intersections are more common in these areas. At intersections skewed intersections can lengthen street crossings and increase turning speeds.

Applicable Design Treatments:

- » Skewed Intersection
- » Curb Extension
- » Curb Radius
- » Curb Ramps
- » Sidewalk Zone

2. Arterial street crossings from residential areas to adjacent neighborhoods or commercial areas: Many shopping areas, services, schools and adjacent neighborhoods are not accessible to pedestrians in residential neighborhoods. Arterial and residential street intersections are often not improved for pedestrians making arterial streets challenging to cross. Walking or ADA access into commercial areas is often not provided requiring pedestrians to pass through parking lots where sidewalks are not provided from the adjacent street to the front entrance of the store.

Applicable Design Treatments:

- » Driveway Design
- » Crosswalk



- » Crossing island / Pedestrian Signal
- » Sidewalk Zone

3. Sidewalks: Many of the streets are missing sidewalks from one or both sides of the street. Due to the intact street grid, there is likely a higher volume of pedestrians walking and opportunities for children to walk to school.

#### Applicable Design Treatments

- » Sidewalk Zone
- » Buffer Zone

4. Residential street intersection control: Slowing traffic at residential street intersections is important for the safety of pedestrians crossing the street. At low volume residential street intersections motor vehicle drivers may not always comply with stop controlled intersections or obey rules of the road at uncontrolled locations (yielding) because they rarely encounter cross traffic at those locations. At intersections without control, traffic calming devices can help to slow speeds and improve compliance at intersections.

#### Applicable Design Treatments

- » Mini Traffic Circles
- » Curb Extensions

### *High Density Curvilinear with Cul-de-Sacs*

#### *Example Neighborhoods*

- » West 21st St and Maize Rd
- » Westlink
- » Brookhollow

#### *Typology Specific Challenges*

1. Lack of street connections require longer block walking distances: Walking to destinations within the neighborhood can be challenging with a lack of connecting streets and sidewalks; and longer distances where connections do exist.

#### Applicable Design Treatments

- » Sidewalk Zone
- » Connector Trails

2. Access management: Arterial streets adjacent to neighborhoods are where residents access businesses, transit and other services. Driveways and their relationship to the sidewalk can affect



pedestrian safety particularly where there are a high number of driveways, where there is no sidewalk or where the sidewalk alignment and grade is not straight and flat.

#### Applicable Design Treatments

- » Access Management
- » Driveway Design
- » Illumination Along Corridors
- » Illumination at Intersections

3. Traffic calming: Speeding along residential streets can be a problem in areas where the streets are wide and there are few parked cars. Speeding increases the risk and severity of collisions including those involving pedestrians crossing the street.

#### Applicable Design Treatments

- » Mini Traffic Circles
- » Chicanes

### *Low Density Curvilinear with Cul-de-Sacs*

#### *Example Neighborhoods*

- » Sierra Hills
- » Lakepoint
- » Willowbend
- » Fox Ridge

#### *Typology Specific Challenges*

1. Sidewalks: Many of the streets are missing sidewalks from one or both sides of the street.

#### Applicable Design Treatments

- » Sidewalk Zone
- » Buffer Zone

2. Lack of street connections require longer walking distances between blocks: Walking to destinations within the neighborhood can be challenging with discontinuous streets and cul-de-sacs.

#### Applicable Design Treatments

- » Connector Trails

3. Connections between neighborhoods: Adjacent neighborhoods in these areas may be difficult to walk between with the only street connections requiring long walks and/or use of arterial or two lane streets with no sidewalks.



## Applicable Design Treatments

- » Sidewalk Zone
- » Curb Radius
- » Curb Ramps

4. Single entrance to development: Some developments have a limited number of entrances. The entrances are built wide for high speed, motor vehicle access. Because pedestrians will also use these entrances to access adjacent neighborhoods, transit or street crossings, pedestrian amenities at these locations are important for pedestrian safety.

## Applicable Design Treatments

- » Sidewalk Zone Curb Radii
- » Curb Ramps
- » Illumination at Intersections
- » Crosswalk
- » Mid-block Crossing

5. Traffic calming: Speeding along residential streets can be a problem in areas where the streets are wide and there are few parked cars. Speeding increases the risk and severity of collisions including those involving pedestrians crossing the street.

## Applicable Design Treatments

- » Mini Traffic Circles
- » Chicanes



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