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Yakima, WA
Pedestrian Master Plan

City Council
Draft Plan

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01. Introduction

Introduction

The objective of the Yakima Pedestrian Master Plan is to create a safe, complete, and connected pedestrian network that supports travel for people of all ages and abilities.

This is the City's first Pedestrian Master Plan and serves as a complement to the Transportation Systems Plan, the ADA Transition Plan, and ongoing Safe Routes to School activities. The Plan details existing conditions, summarizes public engagement, characterizes Yakima's pedestrian network, presents roadway typologies and associated improvements, and identifies implementation priorities.

Yakima residents and visitors are increasingly interested in walking as a safe and convenient mode of transportation to get to the places where they work, shop, learn, and play. Whether walking for enjoyment and recreation at popular destinations, like the Yakima Greenway, or walking to access bus stops and schools, the pedestrian network is a vital component of travel in Yakima.

The recommendations included within this Pedestrian Master Plan were developed through stakeholder and community engagement, along with technical analysis of walking needs across the city.

WHAT'S IN THIS PLAN

Chapter 01, Introduction summarizes the purpose of the Yakima Pedestrian Master Plan.

Chapter 02, Existing Conditions + Needs Analysis, reviews existing data, summarizes technical analyses, and identifies opportunities for the pedestrian network.

Chapter 03, Public Engagement, reviews both how and what we heard from Yakima residents, stakeholders, and visitors to guide the recommendations in this plan.

Chapter 04, Recommendations, defines the Pedestrian Network and presents a series of roadway typologies to guide improvements over time. These typologies respond to land use, roadway characteristics, and route function. This chapter summarizes both common challenges and associated solutions that can help Yakima become a more walkable, accessible city.

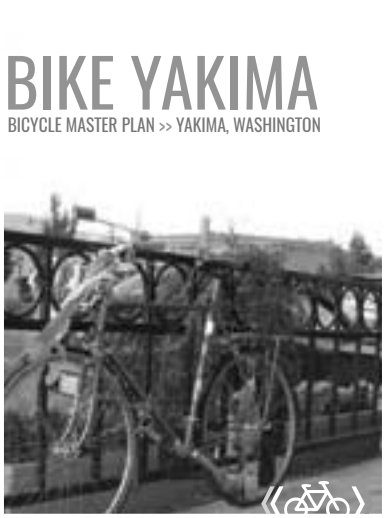
Chapter 05, Implementation, outlines a prioritization strategy for pedestrian infrastructure improvements and provides information on various strategies or approaches the city can take to implement the plan over time.

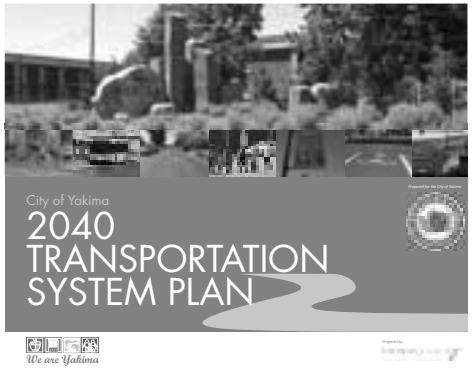
Chapter 06, Design and Maintenance Guide, outlines facility design and maintenance considerations to support the City of Yakima in selecting, implementing, and maintaining the pedestrian network over time.

RELATIONSHIP TO OTHER PLANS

Previous plans and current city policies and regulations informed the development of the Pedestrian Master Plan. This Plan does not seek to replace previous plans but instead provides additional insight into the pedestrian network specifically. It is also intended to be a complement to ongoing Safe Routes to School activities focused on Yakima's local roadways.

This plan builds on recommendations developed in the 2040 Transportation System Plan (2017) and considers recommendations from the Bike Yakima Bicycle Master Plan (2017). Other plans and documents that were consulted for the creation of this plan include the City of Yakima ADA Transition Plan (2016), the City of Yakima ADA Transition Plan Self-Evaluation (2016), the Downtown Yakima Master Plan, and the City of Yakima Municipal Code.





BENEFITS OF A PEDESTRIAN NETWORK

Everyone is a pedestrian. Residents and visitors walk to meet their daily needs, improve their health, and connect with the community and destinations. A well-connected and robust pedestrian network supports people walking or using an assisted mobility device in and around Yakima, providing not only equitable access and opportunity to the city but also improving the quality of life in the city. Elements of the network include sidewalks, trails, curb ramps, road crossings, park paths, and more to help people get around.

Improvements to the network will allow for increased access to parks, schools, and workplaces. Walking provides an alternative to vehicular travel, promoting more active lifestyles, and in many cases, may serve as a primary mode of transport. In addition, the benefits of walking are varied, including environmental, economic, and health benefits. Key benefits include:

Health and Equity

A well-connected pedestrian network provides safer and more comfortable ways to travel for people of all ages and abilities. Low-stress networks can expand access to schools, workplaces, and parks connecting residents to economic, education, and recreational opportunities that may have been more difficult to access otherwise. Moreover, having a robust pedestrian network supports those who cannot drive or choose not to drive. Other benefits of walking include improved physical and mental well-being through reduced stress, reduced anxiety, and numerous benefits associated with higher levels of activity. For example, students who are active on their way to school are more likely to show up ready to learn.

Safety

Identifying and filling network gaps in Yakima's sidewalks while promoting continued education and encouragement can reduce potential collisions between people walking and motor vehicles. Well-designed roadways and active transportation facilities can improve safety for all roadway users through increased predictability and increased separation from motor vehicles.

Environmental

Increased walking can replace vehicle trips, reducing vehicle miles traveled and vehicle emissions, and resulting in improved air quality. This not only improves the quality of life for those experiencing respiratory conditions such as asthma, but also helps reduce Yakima's carbon footprint.

Quality of Life

All city residents are pedestrians at some point during their day. An improved pedestrian network in Yakima will provide more options for city residents and visitors to safely walk where they want to go, supporting an improved quality of life for residents who might have otherwise been stuck in traffic. Improvements to the pedestrian network will not only increase pedestrian comfort, but will also encourage more people to walk, especially for short trips.

The terms "pedestrian" and "walking" used in this plan include people who use mobility devices, such as wheelchairs, and people who travel on foot .

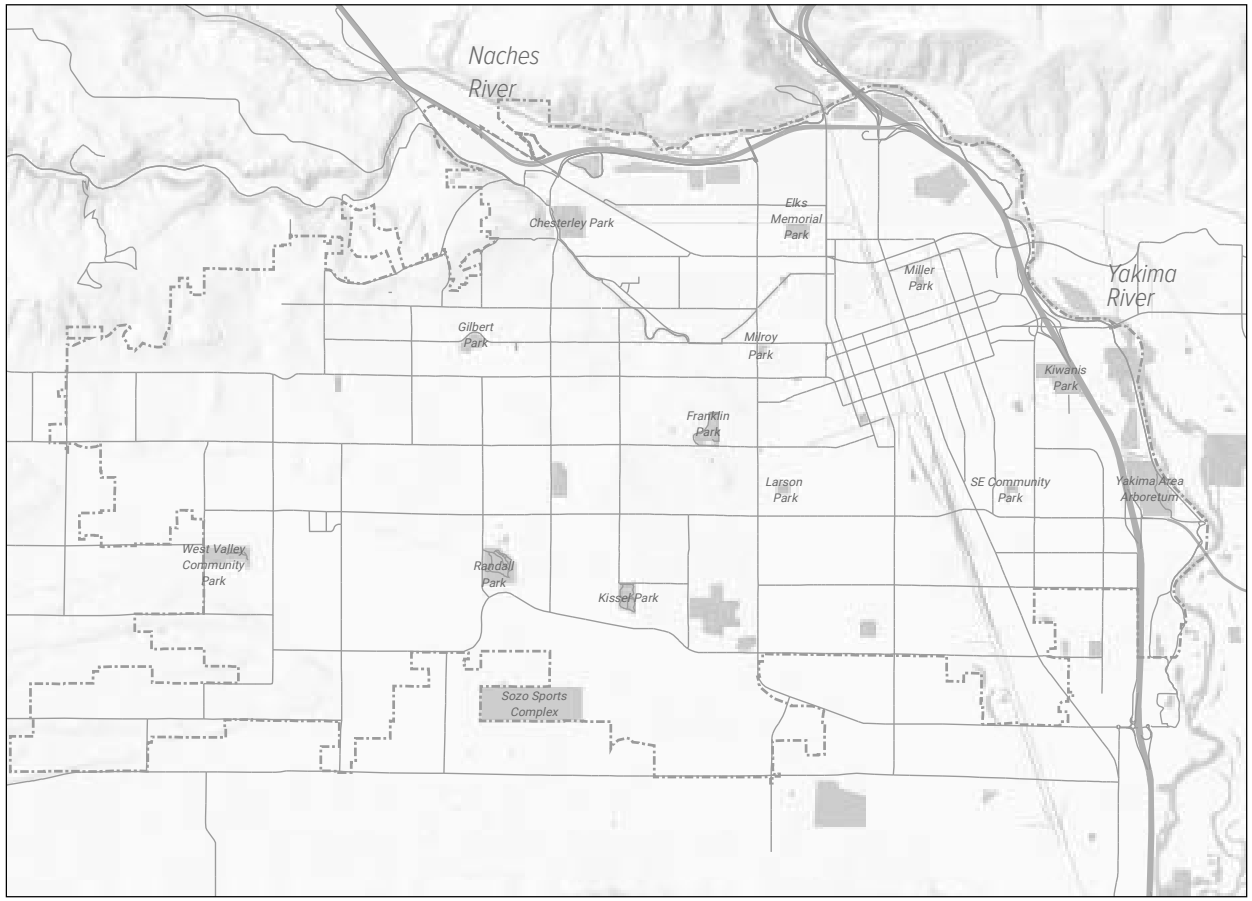
02. Existing Conditions + Needs Analysis

Community Context

The City of Yakima is the county seat of Yakima County and the eleventh largest city in the state of Washington. Located in the Yakima Valley, the city's economy has historically revolved around agriculture. It is also known as a popular tourist destination, particularly related to outdoor recreation and the historic downtown.

Today, nearly 94,000 people live in Yakima. More than half of the population is between the ages of 18 and 65; approximately 30% are under the age of 18. The City also experiences high rates of poverty, with more than 20% of households below the federal poverty line.

Yakima's population is also diverse. Nearly half of the population is Hispanic, and close to 40% of the population speak Spanish at home



Map 1: City of Yakima, Washington

TRANSPORTATION OVERVIEW

Yakima is connected to the rest of the state and region by Interstate 82, US Highway 12, and State Route 24. Within the city, a grid pattern emerges that is densest in the eastern parts of the city, including Downtown, and gradually becomes less dense moving west.

Twelve bus routes operated by Yakima Transit support travel in the city and the Greater Yakima area. Bus routes are located along many of the city's major roadways and help connect residents to the region.

The current transportation network supports a range of options for people walking, biking, taking public transportation, and driving; however, the vast majority of Yakima's population rely on driving, as shown in Figure 1.

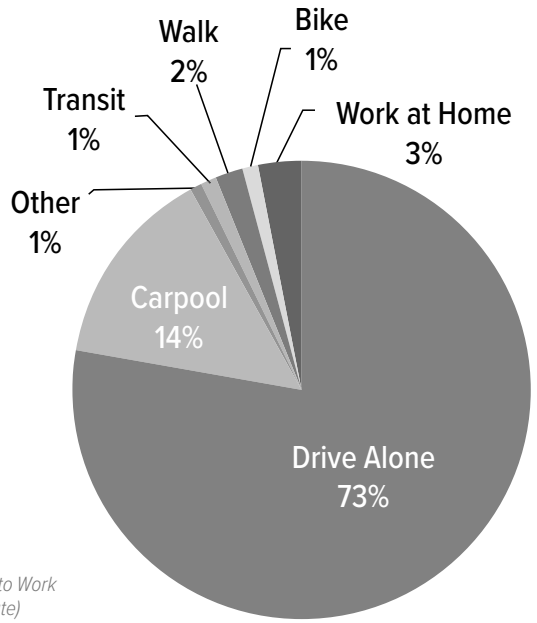


Figure 1: Transportation to Work (ACS 2019 5-year Estimate)

EXISTING PEDESTRIAN NETWORK

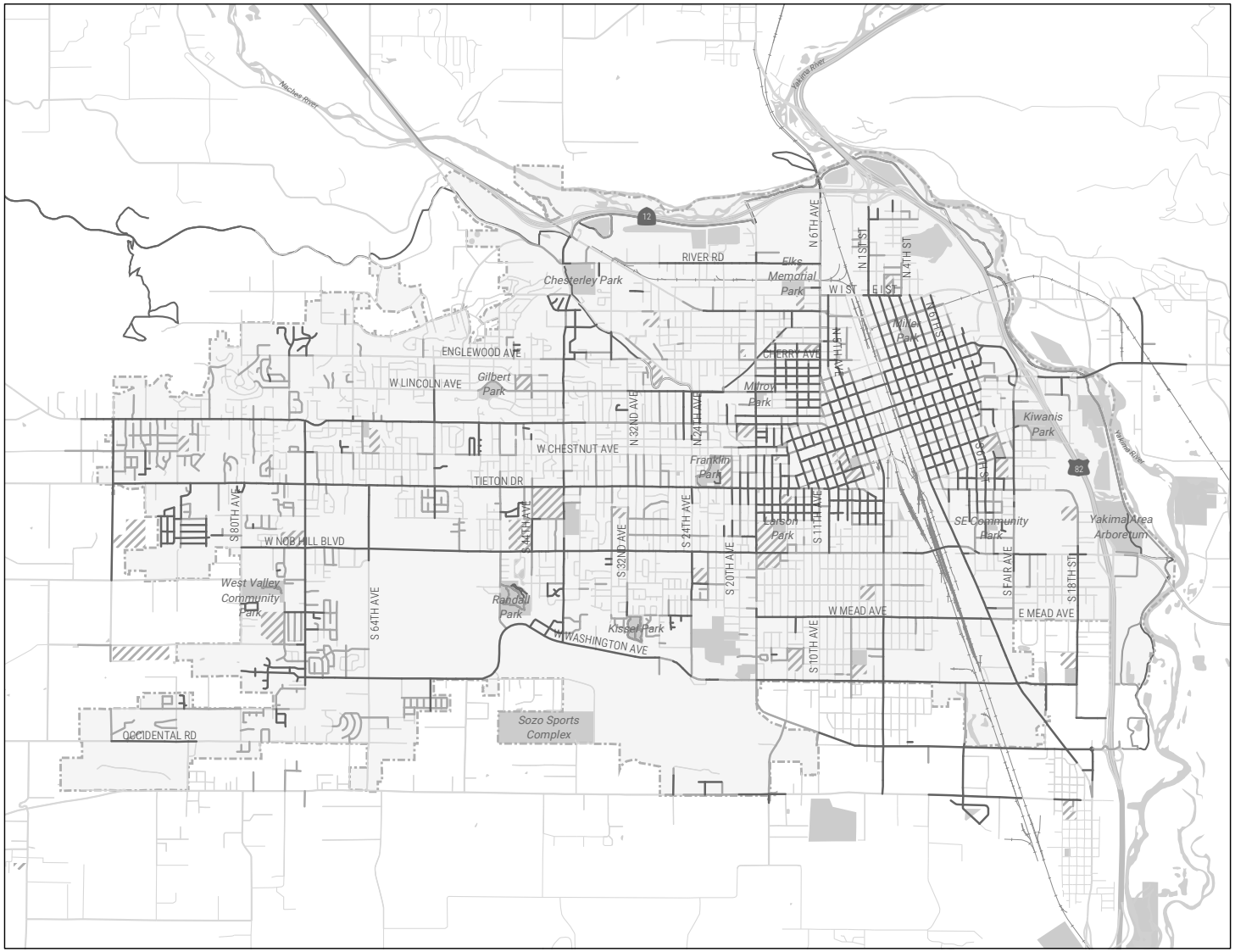
Sidewalks

Sidewalks are found along approximately 50% of Yakima's roadways. Nearly 100 miles of roads have complete sidewalks on both sides, while an additional 80 miles have sidewalks on one side of the road (Map 2). Sidewalks are most often present along major roadways, while neighborhood roads are less likely to include sidewalks. In particular, western areas of the city are less likely to have sidewalks along neighborhood roads.

Even when sidewalks do exist, there are significant gaps that limit pedestrian travel. For example, areas outside homes or businesses may have a grass or dirt path instead of a sidewalk. Gaps, no matter how large, can impact pedestrian travel by forcing people to walk in the street, cross to the other side, or not complete their journey. This is especially important for people with disabilities and those who use mobility devices.

Developer-based improvements are a major source of new sidewalks, as the City requires that new developments construct sidewalks on their internal streets and adjacent frontages. While this will continue to be a large source of new sidewalks in the city, it may leave significant gaps along major roadways needed to access essential destinations.

The City of Yakima has prioritized Safe Routes to School, seeking to improve walking safety in the vicinity of school campuses. Currently, less than 30% of roadways within one-quarter mile of schools have complete sidewalks on both sides of the roadway, limiting access to schools for those within close walking distance. The difficulty of walking or biking to school is further reinforced through the lack of crossing opportunities along major roadways that separate neighborhoods.



CITY OF YAKIMA PEDESTRIAN MASTER PLAN

SIDEWALK NETWORK

EXISTING PEDESTRIAN NETWORK

- No Sidewalk
- Sidewalk on One Side
- Sidewalk on Both Sides
- Paved Trails and Paths
- Unpaved Trails and Paths

BACKGROUND

- Railroads
- Schools
- Parks
- Yakima City Limits
- Water

N

0 0.5 1 MILES

Source: City of Yakima, WSDOT
Date Created: 12/2020

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Map 2: Existing Pedestrian Network

Trails and Off-Street Paths

Off-street paths and trails within the city also support pedestrian travel for both transportation and recreation purposes. The Yakima Greenway follows the Naches and Yakima Rivers, and includes connections to the street network at locations such as Gordon Road, N 6th Avenue, and S. 18th Avenue. In addition to the Greenway, paths and trails through parks provide recreation opportunities and vital connections separated from motor vehicles. These corridors enable recreational opportunities for residents; however, they are located primarily on the eastern and northern edges of the city and do not provide utility for residents who are seeking to make connections within the City between residences and places of work.

The Yakima Greenway includes 20 miles of paved paths for walking and bicycling. It connects local parks, protected natural areas, and river access landings. Photo Source; Yakima Greenway

Pedestrian Crossing Opportunities

In addition to sidewalks and trails, crossings are a vital component of a complete and connected pedestrian system. Marked crosswalks, hybrid beacons, traffic signals, and other roadway treatments that enhance pedestrian safety are especially important along major roadways where higher volumes of traffic and higher travel speeds limit opportunities to cross safely and comfortably.

Today, designated crossing locations within the city are located primarily at major intersections, frequently in conjunction with traffic signals. While traffic signals provide safer crossing opportunities, elements of the intersection design, such as permitted right turn on red or stop bars located in close proximity to the crosswalk, significantly reducing comfort and safety of the crossing. Additional marked crosswalks are located throughout the city, frequently in close proximity to schools.

Further, designated pedestrian crossings of major roads are often far apart. This means that to access a safer crossing opportunity, people walking often have to travel significant distances to access a safer, more comfortable crossing opportunity.

PEDESTRIAN NETWORK NEEDS ANALYSIS

This section takes a closer look at the factors influencing pedestrian travel in Yakima. Extending beyond an assessment of existing conditions, the Needs Analysis seeks to understand factors that affect comfort, safety, and demand for pedestrian travel in the City. Based on this analysis, there is significant opportunity to improve the quality and safety of Yakima's infrastructure to better support people walking.

Neighborhood roads frequently provide lower stress, more comfortable routes for local travel. However, connections to major roadways often limit the reach of the pedestrian network. High travel speeds, narrow or missing sidewalks, and missing curb ramps along major roads do not support safe and comfortable travel to destinations or between neighborhoods. Further, limited crossing opportunities require significant out-of-direction travel to connect across major roads.

Safety data shows that pedestrians are disproportionately represented in serious injury or fatal collisions, and pedestrian-involved collisions most often occur on major roads and at intersections. With many destinations located along major roads and near intersections, there is significant opportunity to support safer, more comfortable travel along the pedestrian network through improved sidewalks, new crossing opportunities, and pedestrian priority at intersections.

Pedestrian Level of Traffic Stress (PLTS)

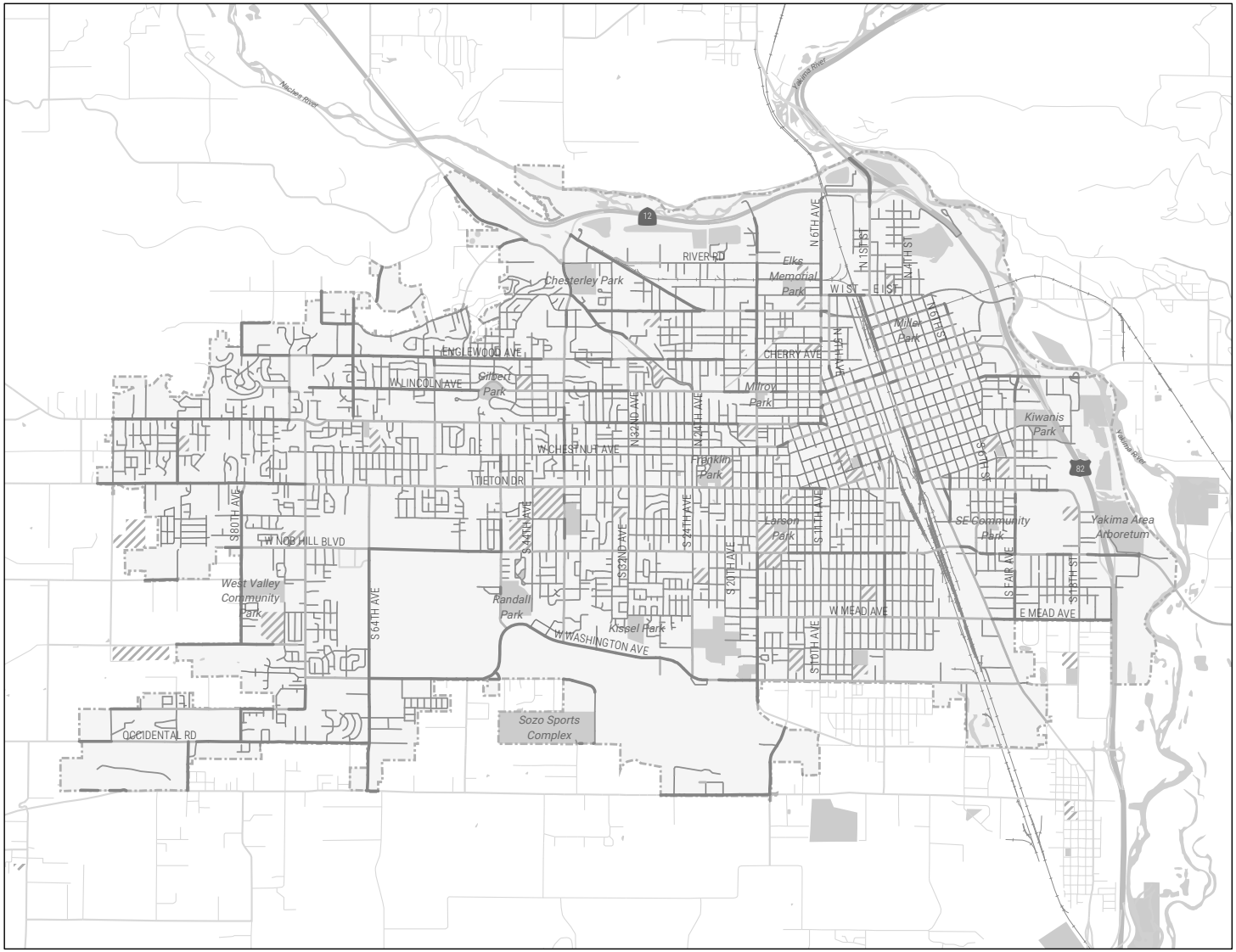
PLTS evaluates roadway characteristics and existing pedestrian infrastructure to better understand perceived levels of comfort and safety across the network. Posted speed limits, the width of roadways, and the location of sidewalks are key considerations of the PLTS.

These factors considered together are rated on a four-point scale. PLTS 1 represents the highest level of comfort along a roadway and generally includes a complete sidewalk network, lower travel speeds, and elements that provide greater space between the sidewalk and moving vehicles. Conversely, PLTS 4 represents the highest stress roadways, often with no or limited sidewalks, high travel speeds, and wide streets.

It is important to note that many factors can influence pedestrian comfort but are not considered in this analysis. For example, this analysis does not directly consider roadway crossing quality, buffers and vegetation, or lighting. However, PLTS is a starting point for network evaluation, allowing an assessment of a large area where limited data is available.

Results of the PLTS analysis are shown in Figure X. Many of Yakima's major roadways are high stress due to high travel speeds and incomplete sidewalk networks. Major roadways are often where important destinations are located, including shopping centers, medical offices, schools, and bus stops. These roadways also provide the most direct routes across town. For residents traveling on foot, it is access to streets with complete and robust infrastructure will be critical for their walking journey. Further, local roadways provide low-stress travel opportunities within neighborhoods but are limited in their connections to many destinations. There is significant opportunity to improve pedestrian routes through continued analysis of local routes and development of new connections between neighborhood streets and major roadways.

The majority of low stress (PLTS 1 or 2) streets are located in and around Downtown and on the east side of Yakima. In these areas, most streets are either PLTS 1 or 2 as the sidewalk network is more developed and traffic travels more slowly than it does along major east-west arterials that stretch across the city.



CITY OF YAKIMA PEDESTRIAN MASTER PLAN

PEDESTRIAN LEVEL OF TRAFFIC STRESS (LTS)

PEDESTRIAN
LEVEL OF TRAFFIC STRESS

- PLTS 1: Low Stress
- PLTS 2
- PLTS 3
- PLTS 4: High Stress

BACKGROUND

- Railroads
- Schools
- Parks
- Yakima City Limits
- Water

0 0.5 1 MILES

Source: City of Yakima, WSDOT
Date Created: 12/2020

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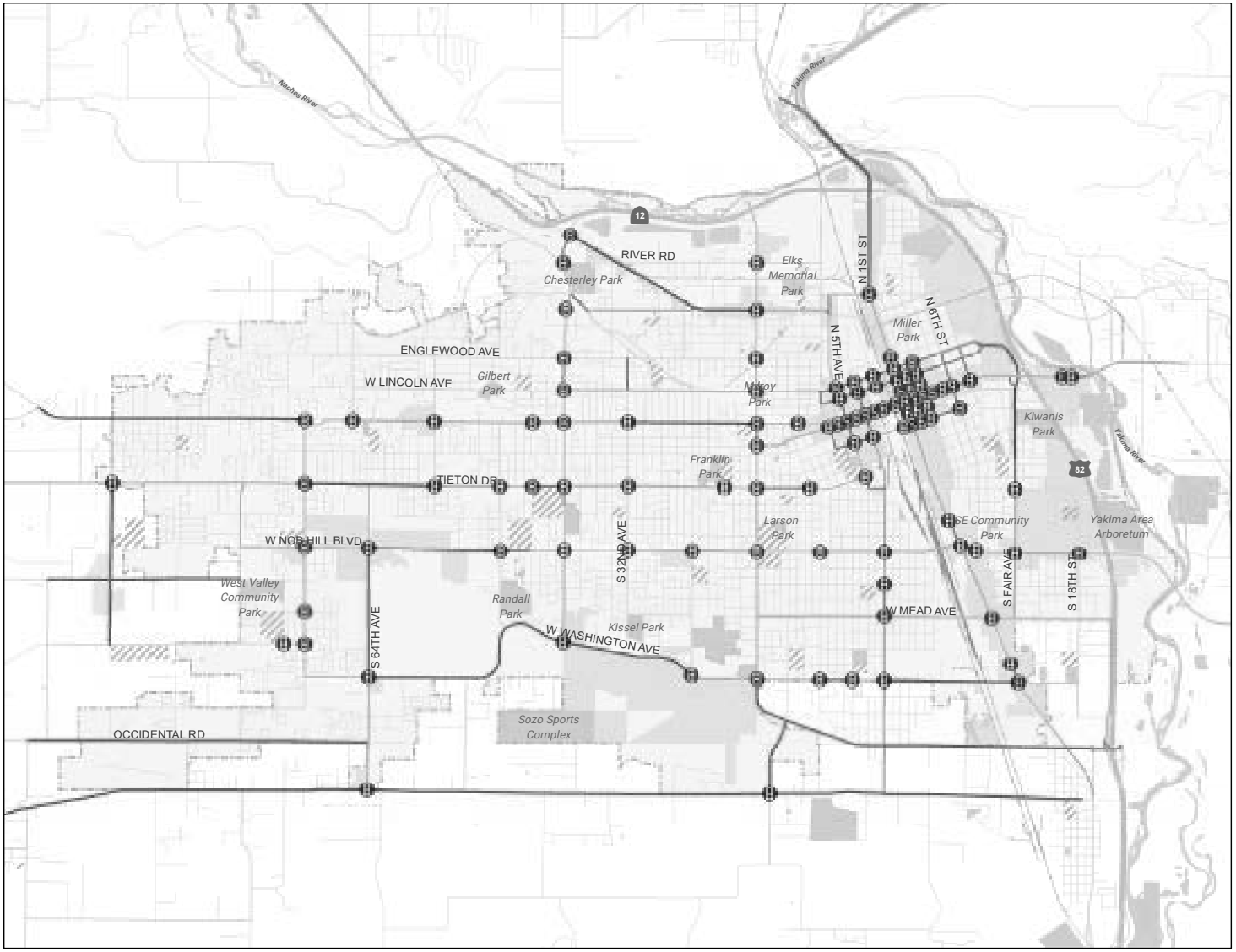
Map 3: Pedestrian Level of Traffic Stress

Crossing Spacing Analysis

Areas of low-stress pedestrian streets across the city are regularly interrupted by higher-stress PLTS 3 or PLTS 4 roadways. High stress roadways that interrupt travel along otherwise low-stress routes can limit a person's ability to reach destinations, or require significant out of direction travel for a person to find a safer crossing. To better understand crossing limitations for pedestrian travel, this analysis considers the distance between signalized intersections along major roadways.

As shown in Map 4, distances between traffic signals are often greater than one-half mile. This distance increases to one mile or more in the western and southern extents of the city. While intersections without a traffic signal are more frequent, these locations require pedestrians to navigate fast moving traffic and cross a greater number of lanes. This increases exposure to motor vehicles and potential for collisions. Improved crossing opportunities may include implementation of more signalized crossings, including pedestrian-specific signals such as hybrid beacons.



CITY OF YAKIMA PEDESTRIAN MASTER PLAN

CROSSING ANALYSIS

DISTANCE BETWEEN SIGNALIZED CROSSINGS

- Less than One-Quarter Mile
- 1/4 to 1/2 Mile
- 1/2 to 1 Mile
- Greater than 1 Mile

BACKGROUND

- Traffic Signals
- Roads
- Railroads
- Water
- Schools
- Commercial Areas
- Parks
- Yakima City Limits

Note: Map reflects data available from the City of Yakima at the time of this plan.

0 0.5 1 MILES

Source: City of Yakima, WSDOT
Date Created: 09/2021

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Map 4: Crossing Analysis

Safety

A review of the reported pedestrian-involved collisions between 2010 and 2019 in Yakima provides insight into where pedestrian safety concerns may be the greatest. It is important to note that this analysis only includes data on reported collisions; pedestrian collisions are often under-reported and does not account for near-misses or similar safety concerns.

Between 2010 and 2019, 357 pedestrian-involved collisions occurred in Yakima. While the number of collisions each year has varied, data since 2016 indicates that it is not becoming safer for pedestrians on Yakima's roads. The annual collision rate has been trending upward, though not steeply, and the total number of pedestrian-involved collisions each year has remained relatively steady when compared to the total number of collisions on Yakima's roadways. Most pedestrian-involved collisions result in an injury, and more than half occurred at an intersection, as shown in Table 1.

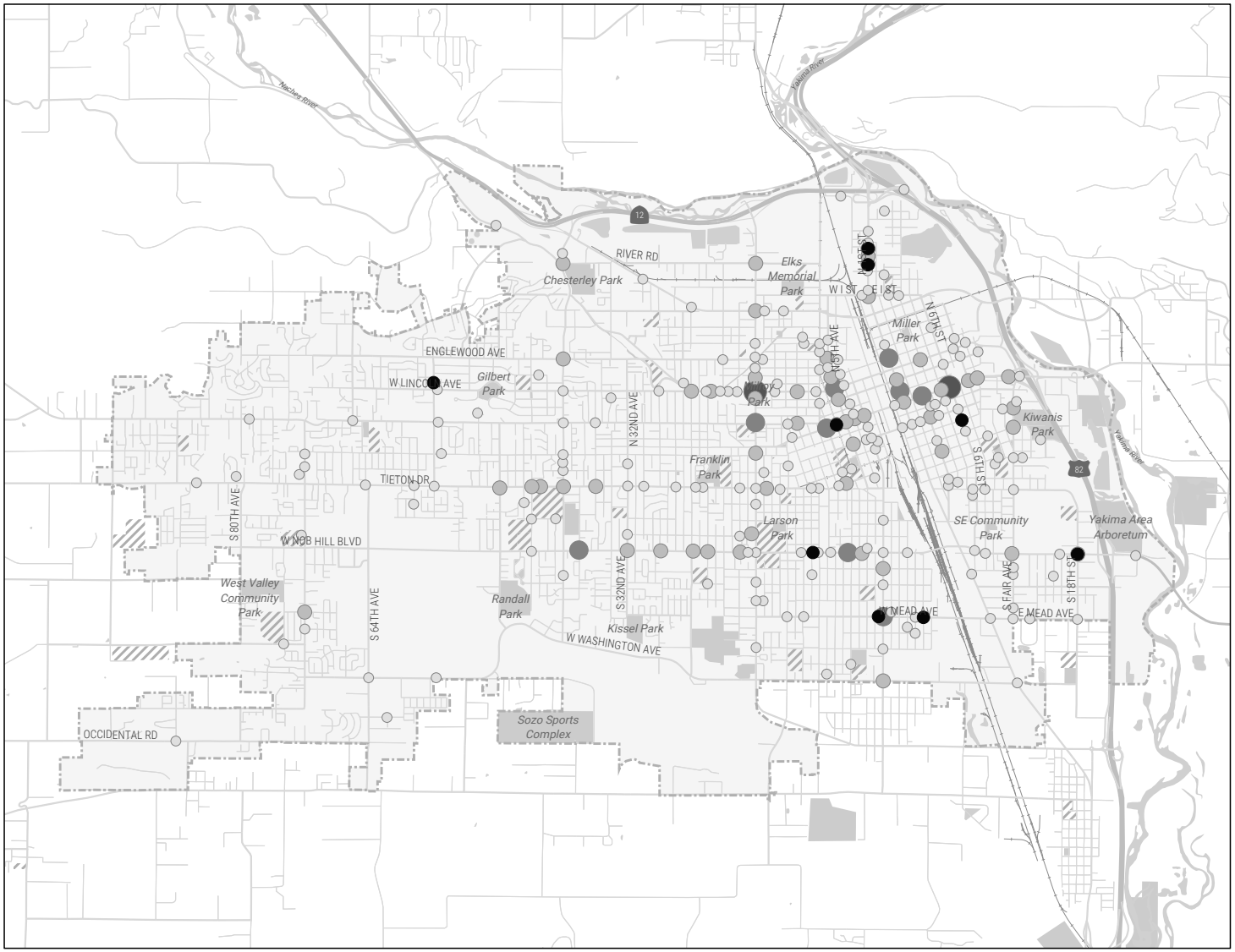
Table 1: Pedestrian-Involved Collision Summary

Collisions Resulting in an Injury	91%
Collisions Resulting in a Fatality	4%
Collisions Occurring at an Intersection	60%
Collisions involving a turning vehicle	38%

Further, pedestrians are disproportionately represented in Yakima's most serious roadway collisions, including those that result in a fatality of serious injury. During this time period, pedestrian-involved collisions accounted for only 2% of all reported collisions. However, pedestrian-involved collisions account for 28% of all fatal or serious collisions.

While it is important to recognize that reported collisions do not fully describe the experience and safety of people walking, analysis of available data provide insight into locations and trends of collisions to better understand the safety challenges of the network today. Map 5 on the next page summarizes the locations of collisions during this time period. The City of Yakima routinely monitors collision data for all modes; more information about collisions for all modes can be found on the City's website.[1]

1 *View the City's GIS web portal at https://gis.yakimawa.gov/apps/collisions/map.html*



CITY OF YAKIMA PEDESTRIAN MASTER PLAN

SAFETY ANALYSIS

PEDESTRIAN-INVOLVED COLLISIONS

- Fatal Collision
- 1
- 2 - 3
- 4 - 6
- 7 - 8

BACKGROUND

- Roads
- Railroads
- Schools
- Parks
- Water
- Yakima City Limits

0 0.5 1 MILES

Source: City of Yakima, WSDOT
Date Created: 12/2020

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Map 5: Pedestrian-Involved Collisions (2010-2019)

PEDESTRIAN DEMAND

Understanding where people want to travel provides insight into where pedestrian infrastructure improvements may be most needed. In addition to considering where specific destinations are located, such as schools or bus stops, it is also important to consider where there are clusters of destinations that may support short walking trips.

Specifically, the potential for pedestrian demand in Yakima is evaluated based on where people live, work, play, learn, shop, and access public transportation. Each of these categories represent places where people either start or end their trips. Locations with more destinations located closely together may better support short pedestrian trips. May 6 depicts these results.

Where people want to walk includes daily destinations, such as school or work, but also includes other prominent places, such as theaters, parks, or events.

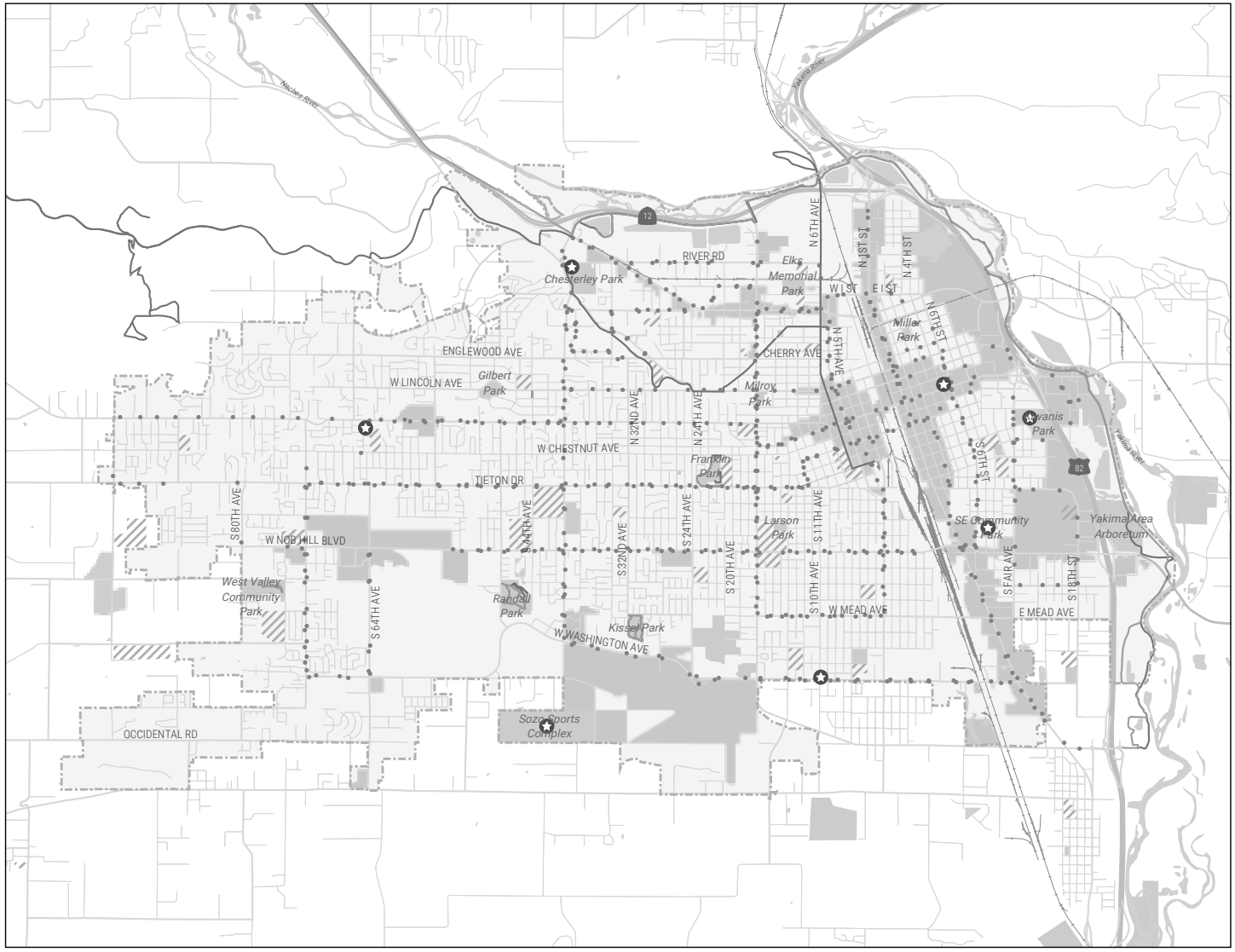
Where People Live: Higher densities of population are located in and around Downtown Yakima, with lower densities in the western areas of the city.

Where People Work: The eastern areas of Yakima have a higher density of jobs, including Yakima Memorial Hospital and corridors with a high density of retail destinations, including Washington Avenue and Fruitvale Boulevard.

Where People Play: Parks and trails are prominent in the northern and eastern areas of the city, including Gardner Park, Kiwanis Park, Chesterly Park, and the Yakima Greenway. Access to parks and trails are more limited in the western areas of the city.

Where People Learn: More than 30 schools throughout Yakima provide access to educational opportunities. Schools are most commonly located within neighborhoods and are located across the city. As discussed in the existing conditions review, many schools currently lack complete sidewalks to support student travel to school.

Where People Access Transit: Bus stops are typically located along major corridors across Yakima. These routes often coincide with Pedestrian Priority Routes identified in the TSP.



CITY OF YAKIMA PEDESTRIAN MASTER PLAN

DEMAND ANALYSIS

DESTINATIONS

- Community Centers
- Bus Stops
- Paved Trails and Paths
- Unpaved Trails and Paths
- Schools
- Parks
- Commercial Areas

BACKGROUND

- Roads
- Water
- Yakima City Limits

N

0 0.5 1 MILES

Source: City of Yakima, WSDOT
Date Created: 12/2020

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Map 6: Demand Analysis

SUMMARY OF FINDINGS AND SYSTEM GAPS

The Existing Conditions analysis indicates several opportunities for Yakima's pedestrian network. These considerations should guide project priorities moving forward in the Yakima Pedestrian Plan process, in coordination with the results of the public engagement process.

» The 2040 Transportation System Plan's identified Priority Pedestrian Routes should be the basis for recommendations of this Plan.

» Yakima's residential areas provide for lower stress travel compared to major roadways across the city; opportunities to improve connections across major roadways can increase network connectivity in the city.

» Pedestrian access to schools may be a challenge in some areas, especially where residential neighborhoods have few sidewalks and high-stress roads without complete sidewalks act as barriers.

» Sidewalks are generally incomplete in residential areas, while major roadways typically include sidewalks on at least one side of the roadway. New sidewalks should be considered along routes that provide connections to transit, schools, employment, and commercial opportunities.

» Collisions occurred most often along major roadways and during commute hours. Improve safety and comfort along major roadways, including opportunities for prioritizing pedestrian travel at intersections.

» New and/or improved crossing opportunities should be considered along major roadways; this is particularly true in the western areas of the city where the distance between crossing opportunities is greatest.

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03. Public Engagement

Public Engagement

Outreach activities provided opportunities for those who live, work, play, and learn in Yakima to share about their experience walking in the city. While previous planning documentation and network data provide valuable insight into the existing conditions for walking in Yakima, public input provides context based on the experiences of people traveling each day. Throughout the planning process, people were asked to share about what they like or don't like about walking in Yakima; how they would like to travel in the future; and what improvements they would like to see. This chapter provides a summary of the opportunities for input and results from each activity.

Generally, participants shared a vision for improved safety and connectivity. People walk often and for a variety of reasons—including for transportation as well as for enjoyment or exercise. However, improved sidewalks and crossings as well as greater separation from motor vehicles would encourage people to walk more and to more places. Public engagement results frequently align with the findings of the Needs Analysis and reflect the opportunity available to improve the pedestrian environment in Yakima.

The COVID-19 pandemic required a different approach for connecting with the public. In person events, including open houses, tabling at local events, and interviews with people on sidewalks were limited or restricted based on public health recommendations during the course of this plan.

Engagement for the Pedestrian Master Plan instead included a variety of tools for gathering feedback from residents and visitors. A virtual public meeting kicked off the plan; an online survey and interactive web map gathered feedback about how people travel today and want to travel in the future; and virtual advisory group and stakeholder meetings provide an opportunity to gather focused input on key milestones and topics. Despite these impacts, the results speak to the participants' desire to improve active travel opportunities in the city today and in the future.

OUTREACH TOOLS

Online Input asked participants to share their experience walking through a brief survey and online input map. Participants identified barriers to travel, shared about how they travel today and would like to travel in the future, and where they travel most often. This information provided insight into where people travel and what improvements will support people walking. A second survey asked participants to weigh in on the proposed priorities for the plan. Both surveys were provided in English and Spanish.

A Virtual Town Hall introduced the planning process to Yakima residents and launched the first phase of public input. Participants had an opportunity to ask questions about the plan and learn how the input tools work.

Community Walking Tours explored Yakima's sidewalks, creating an opportunity to discuss both existing conditions and plan recommendations in real time with Yakima residents. Two hour-long tours traveled in and around Downtown and the Barge-Chestnut neighborhood. Participants shared information about what they liked on the street today, what would make them more comfortable walking, and other observations ranging from the characteristics of the adjoining roadway to the quality of the route between two destinations. These walking tours, despite being impacted by wildfire smoke, provide an opportunity to gather in person and respond to the themes, observations, and recommendations of the Pedestrian Master Plan.

Table 2: Yakima Pedestrian Master Plan Public Outreach Activities

Engagement Type	Number of Participants	Event Date(s)
Community Survey #1	167	November 5, 2020 through January 10, 2021
Interactive Public Input Map	20	November 5, 2020 through January 10, 2021
Virtual Town Hall	5	November 5, 2020
Pedestrian Priorities Survey	70	August 3, 2021 through August 23, 2021
Community Walking Tours	9	August 12, 2021
Community Survey #2	86	August 2021

In addition to the opportunities identified above, a series of stakeholder interviews and workshops with the Bicycle and Pedestrian Advisory Committee provided additional insight into the needs and possible solutions for Yakima's pedestrian network.

Stakeholder Interviews included discussions with representatives of area businesses, local schools, partner agencies, and more to discuss the challenges and opportunities these groups see for walking in Yakima. Discussion included examples of what works well today and opportunities for collaboration both throughout the plan and into implementation.

Advisory Committee Workshops. The Bicycle and Pedestrian Advisory committee provided oversight and input throughout the planning process, including review of existing conditions, feedback for the elements included in the design guide, and review and input on the Pedestrian Network and prioritization criteria

Table 3: Yakima Pedestrian Master Plan Stakeholder and Advisory Group Meetings

Engagement Type	Event Date(s)
Stakeholder Interview	February 9, 2021; February 12, 2021
Bicycle and Pedestrian Advisory Committee	February 10, 2021; April 14, 2021; September 15, 2021

Community Walking Tour participants discussed challenges, opportunities, and experiences traveling in Yakima in Downtown, surrounding neighborhoods, and the Barge Chestnut neighborhood. The Tours provided an opportunity to learn about the Pedestrian Master Plan activities to date, discuss recommendations and opportunities for improvement, and share what works well for the pedestrian network today.

WHAT WE HEARD

Better access for the pedestrian network. Participants indicated a desire to more easily walk to parks, trails, and other recreational facilities.

- **People Walk for Many Different Reasons.** Many respondents indicated that they walk for health, exercise, relaxation, and enjoyment.
- **People Walk Often**. With many different reasons for walking, more than 50% of respondents indicated that they walk several times a week or more.
- **Complete, Connected Sidewalks and Crossings are Important.** People indicated they'd walk more if the network supported it. This includes complete and continuous sidewalks, curb ramps, and marked crossings in good condition.
- **Safety is a Primary Concern.** Exposure to motor vehicles limits how comfortable people feel walking. Many noted high travel speeds, failure to stop for pedestrians, and close proximity to traffic as barriers for walking. Improved lighting can also help increase visibility and security along walking routes.
- **Sidewalks Should be Accessible for All Ages and Abilities.** Sidewalks, curb ramps, and crossings should support travel for people of all ages and abilities.
- **Help People Navigate**. Many times, people may not choose to walk to a destination because they aren't sure how to get there. Tools including lighting and wayfinding help signal to people walking that they are on the correct route and can support confidence in their choice to walk.
- **Connect Neighborhoods and Destinations**. Network improvements must consider how people travel from neighborhoods to nearby destinations. Infrastructure improvements, including sidewalks and lighting, can signify connections between these areas, but information that helps people navigate and understand where they are traveling is also important.
- **Explore Low-Cost Solutions.** Not all solutions require significant investment in new infrastructure. Improved traffic signal timing and leading pedestrian intervals can help prioritize pedestrians at intersections and reduce wait time for those traveling on foot.
- **Be Innovative.** There is interest in creative solutions for Yakima's roadways. Exploring opportunities to slow traffic on key pedestrian corridors, provide more crossing opportunities, and shorten crossing distances for pedestrians can help a route feel safer and be more appealing to people walking.

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04. Recommendations

Recommendations

The recommendations included within the Yakima Pedestrian Master Plan detail a broad strategy to address Yakima's pedestrian needs today and into the future. The plan defines a Pedestrian Network, which outlines the priority routes for pedestrian improvements in the city. The network is based on the priority routes identified in the 2040 Transportation Systems Plan, with additional routes included based on the results of the Needs Analysis and Public Engagement.

The Pedestrian Network reflects key corridors that provide access to schools, transit, parks, and other destinations. Improvements along these routes, such as improved crossings and lighting; new or widened sidewalks; and traffic calming implemented along these corridors and at intersections with local roads support the vision for a better connected, more comfortable pedestrian network that works for all residents. Further, Network Typologies provide insight into the context of each corridor and which improvements are best suited to achieve the goals of the plan.

NETWORK TYPOLOGIES

The Pedestrian Network Typologies are a tool that describes the role of a route in the network. They consider surrounding land use, adjacent roadway characteristics, sidewalk presence, and common challenges pedestrians encounter while walking.

The Pedestrian Network Typologies are also a framework for identifying network improvements, including sidewalks, crossings, lighting, and more that can help improve both safety and comfort of travel along Yakima's roadways.

Based on the characteristics of the Pedestrian Network, Yakima has five distinct typologies:

- Major Street Commercial,
- Downtown/Main Street Commercial,
- School/Park/Campus Area, Primary Connector, and
- Low-Density Connector.

Although not identified as part of the Pedestrian Network, local roadways that support travel in and through neighborhoods are also vital components of the pedestrian network. Specifically, they help people connect from where they live to local destinations like schools and parks or destinations along major roadways, like bus stops and services. Specific considerations for each typology as well as local roadways are included in the pages that follow.

Recommendations include:

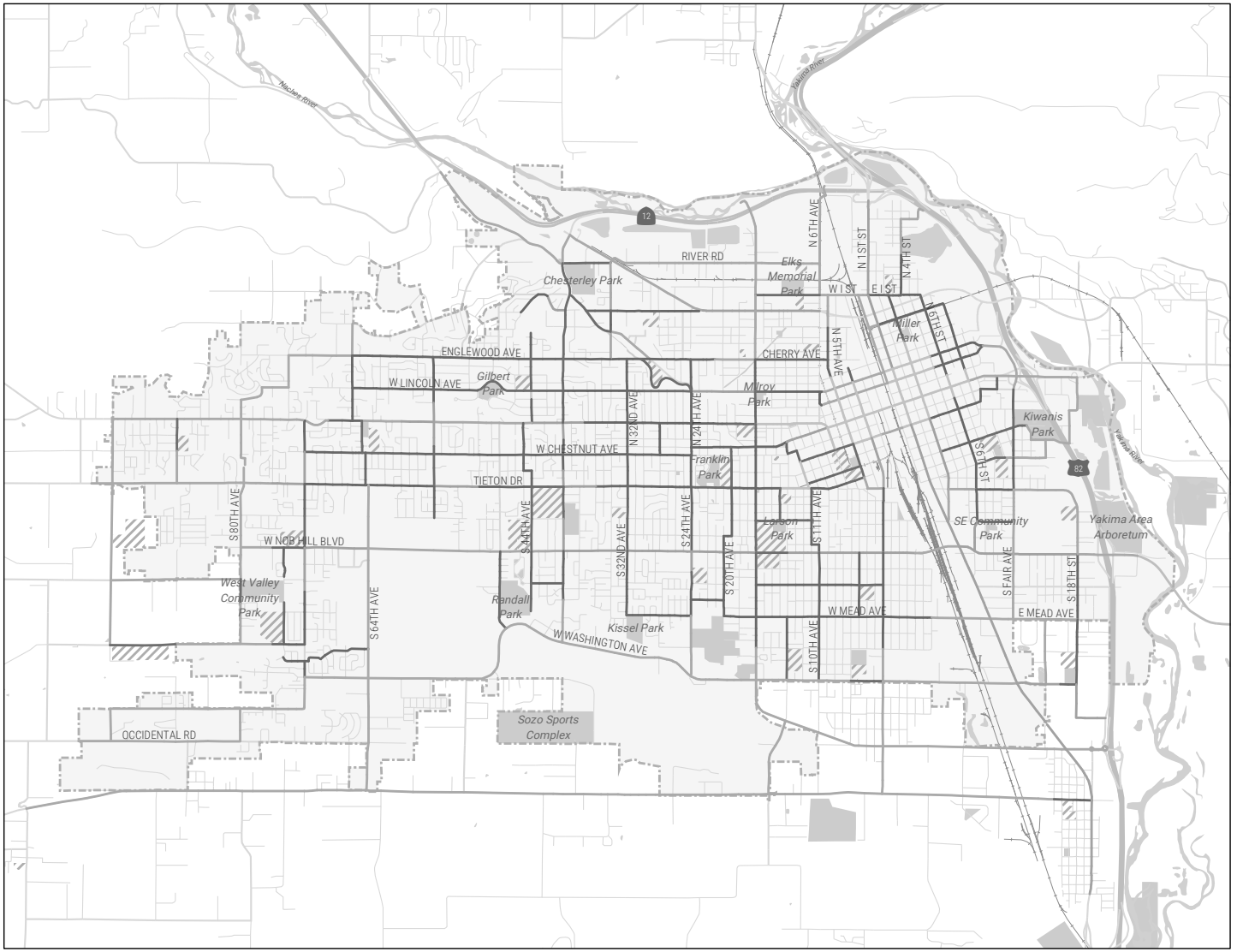
16 MILES
MAJOR STREET COMMERCIAL

6 MILES
DOWNTOWN/MAIN STREET COMMERCIAL

15 MILES
SCHOOL/PARK/CAMPUS AREA

41 MILES
PRIMARY CONNECTOR

57 MILES
LOW-DENSITY CONNECTOR



CITY OF YAKIMA PEDESTRIAN MASTER PLAN

PEDESTRIAN NETWORK TYPOLOGIES

Priority Pedestrian Route

- Major Street
- Downtown / Main Street
- School / Park / Campus
- Primary Connector
- Low-Density Corridor

BACKGROUND

- Railroads
- Schools
- Parks
- Yakima City Limits
- Water

0 0.5 1 MILES

Source: City of Yakima, WSDOT
Date Created: 12/2020

alta

Map 7: Pedestrian Network Typologies

Typology:
Major Street Commercial

Major Street Commercial describes auto-oriented commercial areas with wide driveways, large parking lots, and buildings set back from the roadway. Large supermarkets, restaurants, and “big box” stores are often located along these corridors, making them essential to be reached by pedestrians despite the notable lack of pedestrian-oriented facilities such as marked crossings, pedestrian access points, and sidewalk buffers.
These routes provide access to businesses, bus stops, services, and, in some locations, residences.

OBSERVED CHALLENGES

Major Street Commercial areas are not generally designed with pedestrians in mind, which can create conflicts between people walking or rolling and people driving. The following are common issues and hazards that can occur:

- Likelihood of pedestrians needing to cross a street where no crossing exists;
- High vehicle speeds;
- Long crossing distances;
- Presence of obstructions on sidewalks (such as utility poles, etc.);
- Driveways are wide and frequent, creating conflict zones at the entrances/exits to commercial centers

Table 4: Major Street Commercial Conditions

Observed Land Use Context	Functional Class Designation	Sidewalk Conditions	Crossing Conditions
Commercial, some residential	Arterial	Usually present on at least one side of the road. Where present, sidewalks may not always be wide enough, without obstacles, or ADA-accessible	Infrequent; long crossing distances and significant distance between crossings. Typically relies on traffic signals at major intersections.

RECOMMENDED IMPROVEMENTS

While these streets are generally designed with automobile travel in mind, improvements can be made to provide adequate space for people walking or rolling and to make crossings safer and more visible. The following recommendations identify opportunities for improvement along Major Street Commercial corridors. Additional review is required on site to determine the best combination of improvements. More information on specific design improvements can be found in the Design Guide.

Close sidewalk gaps. Some areas may lack sidewalks altogether, and others may have inconsistent quality. Complete the sidewalk network to create a predictable path for pedestrians to travel.

Increase distance between pedestrians and travel lanes. Sidewalks are often located immediately adjacent of the roadway and offer little protection from vehicle traffic. Where possible, increase distance from the road by adding buffers. This can include landscaping, planting boxes, bicycle lanes, and similar treatments. Increased vegetation may also support a more comfortable place to walk.

Remove obstructions from sidewalk. Obstacles such as utility poles, mailboxes, and overgrown landscaping can impede the safe travel of pedestrians, especially those with mobility limitations. This is especially important in locations with limited sidewalk widths.

Upgrade facilities to be ADA-accessible. All users should be able to comfortably and safely use sidewalks, curb ramps, and crossings. Upgrade or repair facilities that are not accessible. Improvements should include those identified in the ADA Transition Plan.

Provide more frequent crossings, particularly near destinations that pedestrians will access. Crossings should be well-marked and visible to people driving; signals or other crossing controls (RRFB, PHB) should be considered. Reduce distance between crossings to limit out of direction travel.

Shorten crossing distances and/or provide refuge islands. Curb extensions and/or median refuge islands can increase pedestrian safety at crossings by shortening the crossing distance and reducing the amount of time they are within the vehicle right-of-way.

Upgrade signals to include pedestrian signal head with countdown signal and leading pedestrian interval. Signal heads allow pedestrians to judge how much time they have to cross the street. A leading pedestrian interval gives pedestrians a head start to improve visibility and reduce potential for conflict with motor vehicles.

Advanced Stop Line. An advanced stop line provides additional space between the stop line and crosswalks, increasing visibility of pedestrian crossings and reducing encroachment on the pedestrian crossing.

No Right on Red. No Right Turn on Red limits motor vehicle right turning movements, reducing potential conflict with pedestrian crossings.

Improve Lighting. Lighting both along sidewalks and at intersections can increase comfort of travel along a route, increasing both visibility of the route for pedestrians traveling and visibility of pedestrians to people driving.

Typology: Downtown/Main Street Commercial

Parts of Yakima designated Downtown / Main Street Commercial are commercial or mixed-use areas where many businesses are located within close proximity to each other, including essential services such as banks, libraries, and grocery stores. Compared with more auto-oriented streets, most businesses in Downtown / Main Street Commercial areas abut the sidewalk (rather than being set back), and there may by wider sidewalks, buffers from the roadway, or pedestrian-oriented amenities to encourage foot traffic.

OBSERVED CHALLENGES

Downtown / Main Street Commercial areas are generally designed with the expectation of pedestrian traffic, and walking and rolling between destinations is often encouraged. At the same time, with multiple modes sharing the right-of-way, the following are common issues and hazards that can occur:

- Long crossing distances;
- Limited mid-block crossings to support pedestrian connectivity between destinations (including bus stops, businesses, etc.);
- Streets are often larger and support considerable vehicle traffic, creating the potential for collisions;
- Sidewalk widths may not support demand

Table 5: Major Street Commercial Conditions

Observed Land Use Context	Functional Class Designation	Sidewalk Conditions	Crossing Conditions
Commercial, Mixed-Use	Arterial, Collector	Generally present on both sides of the street, with variable quality and width	Crosswalks at signalized intersections, with some mid-block crossings

RECOMMENDED IMPROVEMENTS

While these streets are typically well-suited for pedestrian travel, improvements can be made to improve comfort and safety along the route. The following recommendations identify opportunities for improvement along Downtown/Main Street Commercial corridors. Additional review is required on site to determine the best combination of improvements. More information on specific design improvements can be found in the Design Guide.

Upgrade all facilities to be ADA-accessible. All users should be able to comfortably and safely use sidewalks, curb ramps, and crossings. Upgrade or repair facilities that are not accessible. Improvements should include those identified in the ADA Transition Plan.

Prioritize pedestrian travel through traffic calming. Slow vehicle speeds through street design elements, such as raise crossings or curb extensions, to prioritize people walking. Slower vehicle speeds mean pedestrians feel safer and are more visible when attempting to cross the street.

Shorten crossings and/or provide refuge islands. Reduce crossing distances with curb extensions and median refuge islands. Shortened crossing distances prioritize pedestrian travel, help to calm traffic, and can provide space for streetscape amenities.

Install streetscape amenities to encourage pedestrian use. Providing amenities such as landscaping, shade structures, seating, trash receptacles, and drinking fountains can make Main Street districts more attractive to pedestrians.

Consolidate driveways. Frequent driveways create more opportunities for conflict with people traveling on the sidewalk. Consolidate driveway entrances and exits along pedestrian corridors to prioritize pedestrian travel. Redirect entrances or exits to adjoining streets if feasible.

Expand Sidewalks. Along pedestrian corridors and particularly in locations with high pedestrian demand, expand sidewalks to facilitate travel, encourage access to adjacent businesses, and support streetscape amenities, signage, or similar.

Wayfinding. Pedestrian wayfinding supports navigation for Yakima residents and visitors. A combination of directional signs, kiosks, and maps can help people plan their journey, encourage travel by foot, and support navigation and exploration. It is also an opportunity to include community and/or district branding.

Expand crossing opportunities. Consider mid-block crossing opportunities in areas with high pedestrian demand and/or a high concentration of destinations. Specifically consider opportunities to connect to key destinations or cultural attractions.

Maintain pedestrian priority at major intersections. Prioritize pedestrians at major road crossings to provide a continuous, connected low-stress experience. Include pedestrian signal heads to communicate remaining time to cross and leading pedestrian intervals to facilitate travel across the road.

Convert crosswalks to continental-style crossings. Continental crosswalk marking can improve visibility of crossings and improve vehicle yielding behavior. Consistent crosswalk markings provide greater predictability and legibility of the urban environment for both pedestrians and motorists.

Remove path obstructions. Utility poles, light poles, and other objects frequently block travel or reduce the effective width of sidewalks. As projects are implemented, remove or relocate obstructions to provide for a clear walking path with adequate width.

Typology:
School/Park/Campus Area

Often a mix of civic, residential, and some commercial land use, these areas are home to essential destinations, such as schools, parks, senior centers, community centers, hospitals, and libraries. School / Park / Campus corridors are likely to be used by people of all ages and abilities and should prioritize pedestrian improvements that support safety and comfort while traveling.

OBSERVED CHALLENGES

Schools, parks, campuses and other important destinations can be located on streets of varying width, speed, and traffic volume. This means some may be relatively safe for pedestrian travel, while others can pose risks for people walking or rolling. The following are common issues and hazards that can occur in areas of this type:

- Pedestrians of varying ages and abilities frequently present;
- Higher volumes of vehicles may be accessing the same destinations at similar times, creating potential conflict with pedestrians;
- Limited visibility at crossings;
- Sidewalk widths may not support demand

Table 6: Major Street Commercial Conditions

Observed Land Use Context	Functional Class Designation	Sidewalk Conditions	Crossing Conditions
Civic, Residential, Limited Commercial	Collector, Local	Sidewalks typically present on at least one side of the street, with variable width and quality	Marked crossings are often located near schools and parks. Often long distance between crossing opportunities.

RECOMMENDED IMPROVEMENTS

While schools, parks, and campuses can be located on many different types of streets, there are some common improvements that can facilitate pedestrian access to these important destinations. The following recommendations identify opportunities for improvement along School/Park/Campus Area corridors. Additional review is required on site to determine the best combination of improvements. More information on specific design improvements can be found in the Design Guide.

Close sidewalk gaps. Some areas may lack sidewalks altogether, and others may have inconsistent quality. Complete the sidewalk network to create a predictable path for pedestrians to travel. Especially in areas surrounding schools, parks, and other essential locations, sidewalk should provide a complete, continuous route for travel for people of all ages and abilities.

Shorten crossings. Curb extensions and median refuge islands can be used to shorten crossing distances, which is especially helpful where children and older adults will be crossing frequently. These improvements increase pedestrian visibility at crosswalks and prioritize pedestrian travel.

Install high-visibility crosswalks. Upgrading to high-visibility striped crosswalks and supporting signage around schools and parks creates greater awareness of crossing locations and increases visibility of pedestrian crossing.

Convert crosswalks to continental-style crossings. Converting crosswalks to the more visible marking patterns of a continental-style crosswalk can improve visibility of crossings and has been demonstrated to improve vehicle yielding behavior. Further, consistent crosswalk markings provide greater predictability and legibility of the urban environment for both pedestrians and motorists.

Install traffic controls at critical crossings. Traffic controls, such as rectangular rapid-flashing beacons (RRFBs) or pedestrian hybrid beacons (PHBs), can facilitate crossings of busier roadways, increasing safety and comfort for pedestrians. Specifically consider implementation where identified school suggested routes intersect with adjacent roadways.

Prioritize pedestrian travel through traffic calming. Include design features such as curb extensions or raised crossings along pedestrian routes to prioritize people walking and encourage people driving to slow down. Slower vehicle speeds mean pedestrians feel safer and are more visible when attempting to cross the street.

Upgrade facilities to be ADA-accessible. All users should be able to comfortably and safely use sidewalks, curb ramps, and crossings. Upgrade or repair facilities that are not accessible. Improvements should include those identified in the ADA Transition Plan.

Quick-Build Solutions. Especially on local roadways with limited right-of-way, consider interim solutions that can be implemented more quickly. Examples can include curb extensions created with paint and flexible bollards; dedication of right-of-way for pedestrian travel, delineated with curb or other physical barriers; or median safety islands.

Remove path obstructions. Utility poles, light poles, and other objects frequently block travel or reduce passable space on sidewalks. As projects are implemented, remove or relocate obstructions to provide for a clear walking path with adequate width.

Typology:
Primary Connectors

Typically collector roadways, these routes provide connections between neighborhoods, helping people access transit, schools, businesses, trails and other important destinations. Unlike local residential streets, where traffic and speeds are low, these streets may see more vehicle travel (including buses), have higher posted speeds, and require dedicated space for pedestrian travel.

OBSERVED CHALLENGES

Primary connectors form a critical network for daily trips in terms of both transportation and recreation. Pedestrians share these convenient routes with private vehicles, as well as public transportation, making it important to consider how to make travel safe and comfortable for people walking and rolling. The following are common issues and hazards that can occur in areas of this type:

- Sidewalk gaps and lack of marked crossings limit pedestrian connectivity;
- Where sidewalks do exist, obstructions or narrow sidewalks limit accessibility;
- In many locations, residences are located along the street and household driveways are frequent.
- Destinations may also have demand for people traveling by motor vehicle, creating potential for conflict among modes.

Table 7: Major Street Commercial Conditions

Observed Land Use Context	Functional Class Designation	Sidewalk Conditions	Crossing Conditions
Residential (including Multi-family)	Collector, Local	Presence varies by street; where present, quality and width is variable.	Presence and type vary by street. Often long distances between crossing locations.

RECOMMENDED IMPROVEMENTS

Demand in these areas is likely to be lower than in important commercial or civic centers, but improving these routes is key to enabling pedestrians to access their ultimate destinations. The following recommendations identify opportunities for improvement along School/Park/Campus Area corridors. Additional review is required on site to determine the best combination of improvements. More information on specific design improvements can be found in the Design Guide.

Provide sidewalks on at least one side of the street. A continuous route should be available on at least one side of the street; completing the sidewalk on both sides of the road is preferable. Consider locations of bus stops, schools, major destinations, and commonly-used routes to determine sidewalk location.

Provide more frequent crossings, particularly near destinations that pedestrians will access. Crossings should be well-marked and visible to people driving; signals or other crossing controls (RRFB, PHB) should be considered where applicable. Reduce distance between crossings to limit out of direction travel.

Install high-visibility crosswalks. Upgrading to high-visibility striped crosswalks and supporting signage around schools and parks creates greater awareness of crossing locations and increases visibility of pedestrian crossing.

Prioritize pedestrian travel through traffic calming. Include design features such as curb extensions or raised crossings along pedestrian routes to prioritize people walking and encourage people driving to slow down. Slower vehicle speeds mean pedestrians feel safer and are more visible when attempting to cross the street.

Wayfinding. Pedestrian wayfinding supports navigation for Yakima residents and visitors. Directional signs that provide insight into trip lengths can help people plan their journey, encourage travel by foot, and support navigation and exploration. Wayfinding may be used to help direct pedestrians to more comfortable local routes.

Improve pedestrian access to destinations. Many destinations are also frequently accessed by people driving. Consider improvements to reduce potential for conflict at driveways, and provide for dedicated pedestrian access routes to destinations, particularly when set back from the road.

Upgrade facilities to be ADA-accessible. All users should be able to comfortably and safely use sidewalks, curb ramps, and crossings. Upgrade or repair facilities that are not accessible. Improvements should include those identified in the ADA Transition Plan.

Remove path obstructions. Utility poles, light poles, and other objects frequently block travel or reduce passable space on sidewalks. As projects are implemented, remove or relocate obstructions to provide for a clear walking path with adequate width.

Typology:
Low-Density Corridors

Along low-density streets, the land use is not primarily pedestrian-oriented, but these routes provide important connections to both jobs and pedestrian amenities, such as trails, greenways, and parks. These routes often travel through industrial or agricultural areas or along highways. While these streets aren't designed principally for pedestrian movement, providing a safe and comfortable linear connection is essential.


Image Source: Google Earth


Image Source: Google Earth

OBSERVED CHALLENGES

Because they are usually designed for purposes other than active transportation, low-density corridors can pose challenges for pedestrians. The following are common issues and hazards that can occur in areas of this type:

- Routes coincide with freight/truck routes;
- Streets and crossings are not at the pedestrian scale, resulting in long crossing distances and significant distance between crossing opportunities;
- Route is frequently not conducive to pedestrian travel, including limited shade, frequent impediments to travel (railroad tracks, driveways), and exposure to freight traffic;
- Generally difficult to navigate without prior knowledge, particularly to access recreational destinations (i.e., trailheads, pedestrian connections).

Table 8: Low-Density Corridors

Observed Land Use Context	Functional Class Designation	Sidewalk Conditions	Crossing Conditions
Light Industrial, Industrial, Agricultural, Open Space	Collector, Arterial	Sidewalks are limited; gaps in the network are frequent where sidewalks do exist.	Marked crossings at signalized intersections. Other crossing locations are limited.

RECOMMENDED IMPROVEMENTS

Recommended improvements focus on making pedestrians more visible and providing a comfortable, designated space for them to travel along Low-Density Corridors. Additional review is required on site to determine the best combination of improvements. More information on specific design improvements can be found in the Design Guide.

Provide sidewalks on at least one side of the street. A continuous route should be available on at least one side of the street. Consider locations of trailheads, other pedestrian routes, and commonly-used routes to determine sidewalk location.

Consider shared use paths. A wide shared use path located along one side of the roadway can provide a more comfortable location for people walking, offering greater separation from motor vehicle traffic. Further, a shared use path can support people bicycling and support access to trails and other recreation destinations.

Install crossings with high-visibility markings and appropriate signal at/near trailheads and other important locations. In areas where pedestrians will be crossing to access key destinations, ensure that crossings are made visible to people driving by using pavement markings and, as appropriate, flashing beacons or other additional design features.

Use wayfinding to facilitate trail/park access. For pedestrians using these corridors to access trailheads and other recreational destinations, wayfinding signage can be instructive and encouraging.

Include buffer between travel lanes and pedestrian facility. Along low-density corridors, vehicle speeds can be high, truck traffic is frequent, and people driving may not be expecting to encounter pedestrians. Installing a buffer between the roadway and the sidewalk or path increases pedestrian safety and comfort.

Include vegetation and lighting along priority corridors. Lighting, shade, and landscaping can create a more inviting environment for walking and rolling. Lighting is particularly important to increase visibility and support safety along the corridor.

Wayfinding. Directional signs and other wayfinding support can help pedestrians navigate along low-density corridors and reach their destination efficiently. Since pedestrian travel along low-density corridors may not be as common, wayfinding can help support people navigating the trails and parks by foot.

Typology: Local/Residential

Residential streets support connections within neighborhoods and to adjacent major corridors. With low travel speeds and no marked center line, these roads provide lower-stress routes for local destinations. Although residential roadways are not included as part of the Pedestrian Network, improvements along Network corridors should also consider the connections to and from neighborhoods to provide a complete and connected network.

OBSERVED CHALLENGES

For most of Yakima's residents, local residential roads are the points of access to the city's road network. They support people of all ages and abilities traveling to schools, recreating, or connecting major routes. The following are common issues and hazards that can occur in areas of this type:

- Limited sidewalks often result in people walking in the roadway, with no designated space for pedestrian travel;
- This condition limits accessibility of the route and may limit safe and comfortable travel, particularly in areas with relatively higher traffic volumes;
- Cul-de-sacs and similar street patterns do not provide direct routes and limit connectivity in many areas;
- Connections to major roadways and routes along the Pedestrian Network may be difficult to navigate as road context and available infrastructure changes.

Table 9: Local/Residential

Observed Land Use Context	Functional Class Designation	Sidewalk Conditions	Crossing Conditions
Primarily Single-family residential	Local	Sidewalks presence varies throughout the city.	Crossings are typically unmarked; marked or signalized crossings may be available at major roads.

RECOMMENDED IMPROVEMENTS

Recommended improvements reflect opportunities to improve connections with major roadways, support routes with higher pedestrian demand, and improve accessibility within neighborhoods. Specific opportunities to coordinate with the Safe Routes to School improvement program should be explored. Additional review is required on site to determine the best combination of improvements. More information on specific design improvements can be found in the Design Guide.

Provide sidewalks on at least one side of the street. A continuous route should be available on at least one side of the street; completing the sidewalk on both sides of the road is preferable. Special consideration should be given to roadways within school zones.

Establish pedestrian connections. Pedestrian connection projects can help make new connections that provide pedestrian access to schools, transit, jobs, and shopping, particularly in areas with low street connectivity. These projects can achieved in public right-of-ways or through a public access easement from a private property owner. Examples of such projects include pathways linking cul-de-sacs.

Install high-visibility crosswalks. Upgrading to high-visibility striped crosswalks and supporting signage around schools and parks creates greater awareness of crossing locations and increases visibility of pedestrian crossing. Visibility should also be prioritized at crossings where people driving may not notice pedestrians or where crashes have occurred.

Prioritize pedestrian travel through traffic calming. Include design features such as curb extensions or raised crossings along pedestrian routes to prioritize people walking and encourage people driving to slow down. Slower vehicle speeds mean pedestrians feel safer and are more visible when attempting to cross the street.

Improve pedestrian access to destinations. Many destinations are also frequently accessed by people driving. Consider improvements to reduce potential for conflict at driveways, and provide for dedicated pedestrian access routes to destinations, particularly when set back from the road. Special attention should be given to roads around schools, as these roads support many pedestrians who may be younger and more inexperienced.

Improve shoulder conditions where possible. Remove vegetation or other obstacles that limit pedestrian movement and visibility. Encourage residents to report shoulder conditions so that they can be rectified by the City.

Upgrade facilities to be ADA-accessible. All users should be able to comfortably and safely use sidewalks, curb ramps, and crossings. Upgrade or repair facilities that are not accessible. Improvements should include those identified in the ADA Transition Plan.

Explore lower-cost solutions. Quick build or other interim solutions can support pedestrian safety and provide lower-cost options. Paint, concrete curbs, flexible delineators, and more can help Yakima designate pedestrian space while also evaluating different treatments and building support for projects.

RECOMMENDED POLICIES AND PROGRAMS

Programs refer to non-infrastructure efforts that support walking and use of other mobility options. Programs supplement infrastructure improvements by connecting residents with the information needed to try new ways to get around. They provide education about how to navigate and select route options, safety tips for travel, or how to connect with other modes for a multimodal trip. Programs also provide encouragement through a variety of activities, such as group walks, incentive programs, or route planning assistance. Similarly, policies are tools that guide city action and priorities. They can include both internal procedures and external policies, such as Complete Streets.

Safe Routes to School – Education and Encouragement

Safe Routes to School (SRTS) connect students with information about how to travel to school safely by foot or by bike. SRTS programs aim to improve safety on the trip to school while also reducing congestion and improving air quality near schools. While often implemented in conjunction with infrastructure improvements, education and encouragement elements can include events such as celebration of Walk and Bike to School Days, hosting walking school buses and bike rodeos, and teaching students how to walk and bike safety in their neighborhoods.

Pedestrian Wayfinding

Wayfinding is a system of signs that help people navigate the city confidently by providing information about preferred walking routes and travel times to common destinations. A comprehensive wayfinding system will support not only visitors to Yakima but also support residents as they travel by foot around the city. Wayfinding systems can include a wide range of sign types, maps, and other markings to support travel.

Safe Routes to School Programs, including Walking School Bus activities as shown above, provide education, encouragement, and other support to families and students as they travel to school by foot , by bike, or by carpool. Safe Routes to School Programs can help improve safety and reduce congestion near schools.

Expanded Outreach

The City should explore opportunities for expanded, more equitable public outreach. This includes not only more opportunities for input and discussion, but also engagement completed in multiple languages, at a variety of locations and times. Additional opportunities can include closer partnership with community-based organizations and other groups that have long-standing and trusted relationships with the community.

Community Walks and Education Events

As Yakima works to improve the physical pedestrian infrastructure in the city, promoting a culture of walking can happen through community walks and other educational events. Community walks can be organized throughout the year and demonstrate to community members how walking can be a viable option of getting to key city destinations. Yakima should partner with local and regional groups to identify opportunities for new community events.

Data Collection

A comprehensive data collection program will provide the city with information and tools necessary to better manage implementation, maintenance, and evaluation of the pedestrian network. For selected programs, collection should be done regularly. Two primary areas of data collection that should be explored and expanded include:

- Infrastructure Inventory: The City of Yakima should formulate a comprehensive database of pedestrian facilities to better track implementation progress and identify locations for new crosswalks, maintenance needs, or other project opportunities. This program would expand on information available regarding sidewalk presence and ramp status. This database should include up-to-date information on signal locations, crosswalk locations and quality; sidewalk location, quality, and width; pedestrian-scale lighting location; traffic calming locations; and other relevant facilities. The data plan should include considerations for regular updates to the data set and protocols for integrating new projects.
- User Counts: A user count program tracks use of existing pedestrian facilities to better understand where pedestrian activity is greatest. Pedestrian counts can be accomplished through permanent automatic counters, temporary counters, or manual counters completed with the aid of local volunteers. Counts should be performed using consistent locations and methodology.

05. Implementation

Implementation

The following chapter outlines the implementation approach for the Pedestrian Master Plan. This approach identifies a prioritization framework to evaluate project priority and guide implementation over time, while remaining flexible to account for future changes in the city. It also outlines strategies for the City to consider, including internal policies and procedures, that will advance the objectives of this plan.

Specifically, the results of the prioritization analysis will help guide the City in identifying which roads and intersections have the greatest need for improvement, while the implementation strategies will help direct the City in implementing these projects. Strategies include internal procedures and coordination, such as coordination among ongoing projects and development of the annual CIP, to improved standards for infrastructure and development requirements.

Project Prioritization

While the Pedestrian Master Plan recommends improvements across the pedestrian network, limited resources require an action plan that identifies which projects may have the greatest impact. The prioritization process seeks to evaluate the pedestrian network based on which improvements and locations may provide the greatest benefit.

The criteria captured in the prioritization framework are informed by the existing conditions analysis and public feedback gathered throughout the planning process. In particular, the criteria are established to:

- Align with local values and needs, as informed by this plan and previous planning efforts
- Use readily-available data that can be easily measured
- Create a process that can be repeated in the future to identify projects as the city changes

Prioritization Strategy

The prioritization strategy evaluates all segments within the Pedestrian Network to determine areas where improvements may have the greatest impact. The factors outlined in Table 10 below are all weighted equally; scores for each factor are then summed to identify the final priority score.

Table 10: Prioritization Criteria

Prioritization Factor	What does it Measure	How is it Measured?
Network Connectivity	Does the project close a gap in the network or extend the coverage of the network?	• 5 Points: Segment connects on both ends to fill a gap in the existing network or fills a crossing gap where no other crossing exists within half-mile • 3 Points: Segment extends existing sidewalk, connecting on only one end
Safety	Does the project provide an opportunity to address a known safety issue based on collision history?	• 4 points for segments with five or more collisions, plus 1 additional point where there is a reported injury/fatality; • 2 points for segments with two or more collisions, plus 1 additional point where there is a reported injury/fatality. • 1 point for segments with one collision, plus 1 additional point where there is a reported injury/fatality.
School Proximity	Does the project support connections to schools?	• 5 points: Segment is within a quarter-mile of a school; • 3 points: Segment is within a half-mile of a school; • 1 point: Segment is within a mile of a school
Proximity to Transit	Does the project support connection to transit?	• 5 points: Segment is within 500 feet of a bus stop; • 3 points: Segment is within a quarter-mile of a bus stop; • 1 point: Segment is within a half-mile of a bus stop
Proximity to High-Demand Destinations	Does the project support connection to other key destinations?	• 5 points: Segment is located within a quarter-mile of three or more categories of destination. (Ex. school, community center, and park); • 3 points: Segment is located within a quarter-mile of two categories of destination; • 1 point: Segment is located within a quarter-mile of one destination
ADA Accessibility	Does the project provide an opportunity to improve identified deficiencies based on the ADA transition plan?	• 5 points: Segment addresses identified ADA deficiency, based on available ramp status data
Equity	Does the project provide an opportunity to improve identified deficiencies in an identified focus area?	• 5 points: Segment is located within an area identified as low-to-moderate income
Community-Identified Need	Network Connectivity	• 5 points for segments/areas that were identified through community input activities

Prioritization Results

Map 8 shows the results of the prioritization process. The highest priority segments are located in Downtown and locations throughout the central city, such as 24th Avenue between Englewood Avenue and Nob Hill Boulevard; 32nd Avenue between Summitview Avenue and Tieton Drive; 32nd between Nob Hill Boulevard and Mead Avenue; Tieton Drive between 32nd and 24th; and Nob Hill Boulevard between 24th Avenue and 12th Avenue.

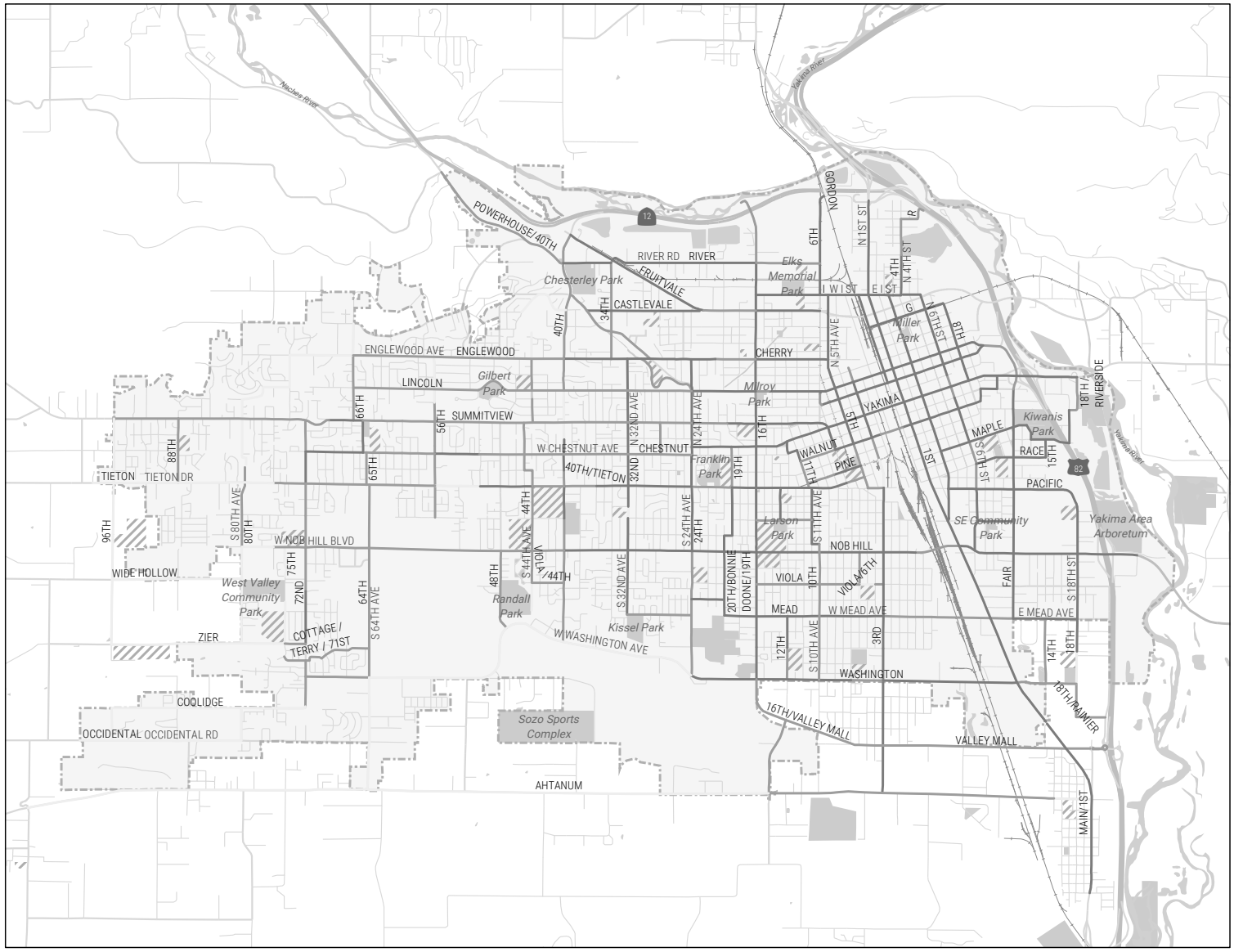
Locations scoring as highest priority represent areas that scored well on most or all criteria. For example, most roads in Downtown received full points based on safety; proximity to transit; and proximity to commercial areas and parks. Outside of Downtown, the highest scoring segments include those that received scores for proximity to transit; proximity to high demand destinations; proximity to schools; and network connectivity.

Areas in the western areas of the city as well as southern extents scored lowest. These areas—such as 80th Avenue, Tieton Drive west of 64th Avenue, and Coolidge Road—have more limited access to bus stops, parks, schools, and commercial areas; further, there were fewer reported collisions in these areas.

A complete project table can be found beginning on page 50.

CITY OF YAKIMA PEDESTRIAN MASTER PLAN

PRIORITIZED PEDESTRIAN NETWORK



PRIORITIZED PEDESTRIAN NETWORK

- Higher Priority
- Lower Priority

BACKGROUND

- Railroads
- Schools
- Parks
- Yakima City Limits
- Water

0 0.5 1 MILES

Source: City of Yakima, WSDOT
Date Created: 12/2020

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Map 8: Prioritized Pedestrian Network

Table 11: High-Priority Corridors

Location	From	To	Typology
MAPLE	S 7th St	S 13th St	School/Park/Campus Area
16TH	Fruitvale Blvd	Cherry Ave	Low-Density Corridors
NOB HILL	S 40th St	S 16th St	Major Street Commercial
1ST	HWY 12	E I St	Major Street Commercial
24TH	Englewood Ave	Nob Hill Blvd	Primary Connectors
CHERRY	N 16th Ave	N 5th Ave	Primary Connectors
NOB HILL	S 1st St	S 18th St	Major Street Commercial
16TH	River Rd	Fruitvale Blvd	Low-Density Corridors
YAKIMA	N 6th St	N Fair Ave	Low-Density Corridors
FAIR	Spruce St	Maple St	School/Park/Campus Area
I St S	N 6th Ave	N 1st St	Low-Density Corridors
PACIFIC	Fair Ave	Nob Hill Blvd	Low-Density Corridors
YAKIMA	S 12th Ave	S 7th Ave	Major Street Commercial
FAIR	Maple St	Pacific Ave	Primary Connectors
YAKIMA	S 7th Ave	S 6th St	Downtown/Main Street Commercial
FAIR	Pacific Ave	Mead Ave	Low-Density Corridors
16TH	Arlington St	Prasch Ave	School/Park/Campus Area
1ST	Lincoln Ave	Walnut St	Downtown/Main Street Commercial
NOB HILL	S 16th Ave	S 12th Ave	School/Park/Campus Area
FRUITVALE	N 40th Ave	N 34th Ave	Low-Density Corridors
12TH	Mead Ave	Pierce St	Primary Connectors
16TH	Summitview Ave	Park Ln	School/Park/Campus Area
16TH	Barge St	Arlington St	Primary Connectors
16TH	Cherry Ave	Lincoln Ave	Primary Connectors
18TH	Nob Hill Blvd	Pierce St	Primary Connectors
3RD	E St	E Walnut St	Downtown/Main Street Commercial
5TH	Willow St	D St	Primary Connectors
8TH	Staffsgtpendleton Way	Yakima Ave	Downtown/Main Street Commercial
CHESTNUT	S 72nd Ave	S 65th Ave	Primary Connectors
MAPLE	S 3rd St	S 7th St	Primary Connectors
PACIFIC	S 6th St	Fair Ave	Primary Connectors

Table 11: High-Priority Corridors (cont.)

Location	From	To	Typology
RACE	S 9th St	S 15th St	Low-Density Corridors
SUMMITVIEW	N 16th Ave	W Walnut St	Downtown/Main Street Commercial
WASHINGTON	S 3rd Ave	S 1st St	Low-Density Corridors
3RD	Lincoln Ave	Walnut St	Downtown/Main Street Commercial
5TH	D St	Walnut St	Downtown/Main Street Commercial
YAKIMA	N 24th Ave	S 12th Ave	Primary Connectors
1ST	I St	Lincoln Ave	Major Street Commercial
12TH/CHESTNUT	Yakima Ave	S 11th Ave	Primary Connectors
11TH/STEWART	Tieton Dr	S 10th Ave	Primary Connectors
16TH	Prasch Ave	Pierce St	Primary Connectors
3RD	Pierce St	Valley Mall Blvd	Low-Density Corridors
40TH	Tieton Dr	Arlington St	School/Park/Campus Area
BEECH	S 13th St	Chalmers St	Low-Density Corridors
LINCOLN	N 24th Ave	N 16th Ave	Major Street Commercial
TIETON	S 13th Ave	S 11th Ave	Downtown/Main Street Commercial
TIETON	S 19th Ave	S 13th Ave	Primary Connectors
TIETON	S 36th Ave	S 24th Ave	Primary Connectors
NOB HILL	S 12th Ave	Rock Ave	Major Street Commercial
6TH	I St	A St	Primary Connectors
15TH	Beech St	Race St	Low-Density Corridors
32ND	Arlington St	Mead Ave	Primary Connectors
3RD	Walnut St	Pacific Ave	Major Street Commercial
3RD	Pacific Ave	Arlington St	Low-Density Corridors
4TH	E N St	E I St	Primary Connectors
6TH	Gordon Rd	Hathaway St	Low-Density Corridors
CASTLEVALE	Powerhouse Rd	Fruitvale Blvd	Primary Connectors
FRUITVALE	River Rd	N 21st Ave	Low-Density Corridors
G St	N 1st St	N 8th St	Primary Connectors
HATHAWAY	N 16th Ave	N 6th Ave	School/Park/Campus Area
I St	N 4th St	N 6th St	Primary Connectors
LINCOLN	Lewis Ave	Pierce Ave	Primary Connectors

Table 11: High-Priority Corridors (cont.)

Location	From	To	Typology
LINCOLN	Pierce Ave	Front St	Low-Density Corridors
MARTIN LUTHER KING	Naches Ave	Fair Ave	Primary Connectors
MARTIN LUTHER KING	Pierce Ave	Front St	Low-Density Corridors
WALNUT	Front St	S 3rd St	Downtown/Main Street Commercial
YAKIMA	Fair Ave	S 18th St	Low-Density Corridors
MEAD	Fair Ave	S 18th St	Low-Density Corridors
UNION/CHESTNUT/10TH	Walnut St	Terrace Heights Way	Primary Connectors
MARTIN LUTHER KING	Front St	Naches Ave	Downtown/Main Street Commercial
LINCOLN	Front St	Naches Ave	Downtown/Main Street Commercial
13TH	Maple St	Beech St	Low-Density Corridors
20TH/BONNIE DOONE/19TH	Tieton Dr	Mead Ave	Primary Connectors
32ND	Englewood Ave	Webster Ave	Primary Connectors
40TH	North of Chestnut Ave	Walnut St	Primary Connectors
72ND	Chestnut Ave	Tieton Dr	Major Street Commercial
FAIR	Chestnut Ave	Spruce St	Primary Connectors
I St	Buwalda Ln	N 3rd St	School/Park/Campus Area
PACIFIC	S 3rd st	S 6th St	Low-Density Corridors
SUMMITVIEW	N 69th Ave	N 65th Ave	Primary Connectors
TIETON	S 50th Ave	S 44th Ave	Primary Connectors
WASHINGTON	S 24th Ave	Cornell Ave	Low-Density Corridors
MAIN/1ST	Mead Ave	Washington St	Major Street Commercial
MEAD	S 20th Ave	S 3rd Ave	Primary Connectors
3RD	Division St	Pierce St	Primary Connectors
6TH	Pacific Ave	Arlington St	Primary Connectors
6TH	Chestnut Ave	Maple St	Primary Connectors
16TH	Pierce St	Washington Ave	Low-Density Corridors
13TH	Tieton Dr	Arlington St	School/Park/Campus Area
6TH	Arlington St	Nob Hill Blvd	Major Street Commercial
CHALMERS	Riverside St	Beech St	Low-Density Corridors
FRUITVALE	N 16th Ave	N 6th Ave	Major Street Commercial
LOGAN	S 24th Ave	S 20th Ave	Primary Connectors

Table 11: High-Priority Corridors (cont.)

Location	From	To	Typology
NOB HILL	S 18th ST	S 24th St	Low-Density Corridors
RACE	S 6th St	S 9th St	School/Park/Campus Area
RIVER	N 40th Ave	N 34th Ave	School/Park/Campus Area
1ST	Walnut Ave	Mead Ave	Major Street Commercial
ENGLEWOOD	N 40th Ave	N 19th Ave	Primary Connectors
FRONT	I St	Martin Luther King Jr Blvd	Low-Density Corridors
11TH	Chestnut Ave	Walnut St	Primary Connectors
16TH	Monroe Ave	Summitview Ave	Primary Connectors
3RD	E I St	E F St	Primary Connectors
65TH	Summitview Ave	Chestnut Ave	School/Park/Campus Area
72ND	Gregory Pl	Zier Rd	Primary Connectors
ARLINGTON	S 6th St	S 9th St	School/Park/Campus Area
ARLINGTON	S 9th St	S Fair Ave	Primary Connectors
CHESTNUT	S 56th Ave	S 50th Ave	School/Park/Campus Area
G St	Front St	N 1st St	Low-Density Corridors
I St	N 3rd St	N 4th St	Primary Connectors
I St	N 1st St	Buwalda Ln	Primary Connectors
PINE	S 8th Ave	S 5th Ave	School/Park/Campus Area
RIVER	Fruitvale Blvd	N 16th Ave	Low-Density Corridors
SUMMITVIEW	Park Ave	S 16th Ave	School/Park/Campus Area
TIETON	S 11th ST	S 7th Ave	Primary Connectors
WALNUT	S 5th Ave	S 3rd Ave	Downtown/Main Street Commercial
WALNUT	S 3rd St	S 6th St	Primary Connectors
WALNUT	S 6th St	Union St	Primary Connectors
WALNUT	S 7th Ave	S 5th Ave	School/Park/Campus Area
5TH / FRUITVALE	I St	Willow St	Low-Density Corridors
8TH	G St	A St	Primary Connectors
LINCOLN/FAIR	Naches Ave	Fair Ave	Primary Connectors

Table 12: Medium-Priority Corridors

Location	From	To	Typology
16TH/LINCOLN	Monroe Ave	Lewis Ave	School/Park/Campus Area
40TH	Arlington St	Nob Hill Blvd	Major Street Commercial
40TH/TIETON	Walnut St	S 36th Ave	Major Street Commercial
44TH	Tieton Dr	Nob Hill Blvd	School/Park/Campus Area
65TH	Chestnut Ave	Tieton Dr	Primary Connectors
ARLINGTON	S 16th Ave	S 13th Ave	School/Park/Campus Area
LINCOLN	N 30th Ave	N 24th Ave	School/Park/Campus Area
POWERHOUSE/34TH	Englewood Ave	Englewood Ave	Low-Density Corridors
TIETON	S 44th Ave	S 40th Ave	School/Park/Campus Area
ENGLEWOOD	N 66th Ave	N 40th Ave	Primary Connectors
10TH	Stewart St	Washington Ave	Primary Connectors
44TH/WALNUT/45TH	Summitview Ave	Tieton Dr	Primary Connectors
12TH	Pierce St	Washington Ave	School/Park/Campus Area
14TH	Mead Ave	Washington Ave	Low-Density Corridors
18TH/RAINIER	Washington Ave	Rudkin Rd	Major Street Commercial
34TH	Fruitvale Blvd	Castlevale Rd	Low-Density Corridors
3RD	E F St	E St	School/Park/Campus Area
3RD	D St	Lincoln Ave	Primary Connectors
66TH	Englewood	Summitview	Primary Connectors
DIVISION/5TH	Tieton Dr	S 3rd Ave	Low-Density Corridors
FAIR	Lincoln Ave	Chestnut Ave	Low-Density Corridors
NOB HILL	Rock Ave	S 1st St	Low-Density Corridors
POWERHOUSE	N 40th Ave	N 34th Ave	School/Park/Campus Area
POWERHOUSE/40TH	Naches Heights Rd	Fruitvale Blvd	Low-Density Corridors
16TH	Naches River	River Rd	Low-Density Corridors
FRUITVALE	N 21st Ave	N 16th Ave	Major Street Commercial
16TH/VALLEY MALL	Washington Ave	S 3rd Ave	Low-Density Corridors
POWERHOUSE CANAL TRAIL	Englewood Ave	Lincoln Ave	School/Park/Campus Area
28TH	Summitview Ave	Chestnut Ave	Primary Connectors
34TH	Castlevale Rd	Powerhouse Rd	Primary Connectors
40TH	River Rd	Lincoln Ave	School/Park/Campus Area

Table 12: Medium-Priority Corridors (cont.)

Location	From	To	Typology
48TH	Carol Ave	Washington Ave	School/Park/Campus Area
48TH	Nob Hill Blvd	Carol Ave	Primary Connectors
CHESTNUT	N 65th Ave	S 60th Ave	School/Park/Campus Area
MEAD	Voelker Ave	Fair Ave	Low-Density Corridors
SUMMITVIEW	N 65th Ave	N 60th Ave	Low-Density Corridors
TIETON	S 72nd Ave	S 56th Ave	Primary Connectors
VALLEY MALL	S 3rd Ave	I-82	Low-Density Corridors
WASHINGTON	S 1st St	E of S 14th ST	Major Street Commercial
RIVER	N 16th Ave	N 6th Ave	Low-Density Corridors
MEAD	S 3rd Ave	Voelker Ave	Primary Connectors
CHESTNUT	S 50th Ave	S 24th Ave	Primary Connectors
18TH / RIVERSIDE	Yakima Ave	Chalmers St	Low-Density Corridors
24TH	Nob Hill Blvd	Clinton Way	Major Street Commercial
R	Freeway Lake Rd	E R St	Low-Density Corridors
VIOLA/44TH	Nob Hill Blvd	S 40th Ave	Primary Connectors
WASHINGTON	E of S 14th St	S 18th St	School/Park/Campus Area
LINCOLN	N 66th Ave	Bitterroot Way	Primary Connectors
NOB HILL	S 64th Ave	S 40th Ave	Low-Density Corridors
11TH	Walnut St	Tieton Dr	Downtown/Main Street Commercial
3RD	Walnut St	Pine St	Major Street Commercial
40TH	Nob Hill Blvd	Logan Ave	Primary Connectors
44TH	Englewood Ave	Lincoln Ave	School/Park/Campus Area
4TH	E R St	E N St	Low-Density Corridors
56TH	Haven Way	North of Chestnut Ave	Major Street Commercial
56TH	N of Chestnut Ave	Tieton Dr	School/Park/Campus Area
5TH	Walnut St	Tieton Dr	School/Park/Campus Area
64TH	Tieton Dr	Washington Ave	Low-Density Corridors
6TH	Staffsgtpendleton Way	Chestnut Ave	Downtown/Main Street Commercial
6TH	Maple St	Pacific Ave	Primary Connectors
72ND	Nob Hill Blvd	Gregory Pl	Major Street Commercial
72ND	Summitview Ave	Chestnut Ave	Primary Connectors

Table 12: Medium-Priority Corridors (cont.)

Location	From	To	Typology
80TH	Congdon Canal	Nob Hill Blvd	Low-Density Corridors
88TH	Summitview Ave	W Chestnut Ave	School/Park/Campus Area
CHESTNUT	S 60th Ave	S 56th Ave	Primary Connectors
PIERCE / 7TH	Lincoln Ave	Martin Luther King Jr	Primary Connectors
PINE	S 11th Ave	S 8th Ave	Primary Connectors
SUMMITVIEW	N 56th Ave	N 44th Ave	Low-Density Corridors
WALNUT	S 11th Ave	S 7th Ave	School/Park/Campus Area
WASHINGTON	Cornell Ave	S 3rd Ave	School/Park/Campus Area
19TH	Yakima Ave	Tieton Dr	School/Park/Campus Area
44TH	Uplands Way	Summitview Ave	Primary Connectors
72ND	Midvale Rd	Nob Hill Blvd	School/Park/Campus Area
72ND	Tieton Dr	Midvale Rd	Primary Connectors
LINCOLN	N 40th Ave	N 30th Ave	Primary Connectors
MEAD	S 32nd Ave	S 29th Ave	School/Park/Campus Area
MEAD	S 29th Ave	S 24th Ave	Primary Connectors
NOB HILL	S 72nd Ave	S 64th Ave	Major Street Commercial
NOB HILL	S 76th Ave	S 72nd Ave	School/Park/Campus Area
SUMMITVIEW	N 60th Ave	N 56th Ave	Major Street Commercial
TIETON	S 24th Ave	S 19th Ave	School/Park/Campus Area
LINCOLN	Bitterroot Way	N 40th Ave	School/Park/Campus Area
COTTAGE / TERRY / 71ST	S 75th Ave	S 64th Ave	Primary Connectors
16TH	Valley Mall Blvd	Ahtanum Rd	Low-Density Corridors
24TH	Viola Ave	Mead Ave	Primary Connectors
24TH	Mead Ave	Washington Ave	Low-Density Corridors
72ND	Washington Ave	Coolidge Rd	Low-Density Corridors
88TH	W Chestnut Ave	Tieton Dr	Low-Density Corridors
AHTANUM	S 16th Ave	5th St	Low-Density Corridors
TIETON	S 7th Ave	S 5th Ave	School/Park/Campus Area
24TH	Clinton Way	Viola Ave	School/Park/Campus Area
40TH	Logan Ave	Washington Ave	Low-Density Corridors
56TH	Tieton Dr	Arlington St	Primary Connectors

Table 12: Medium-Priority Corridors (cont.)

Location	From	To	Typology
6TH	Nob Hill Blvd	Viola Ave	Primary Connectors
72ND	Spokane St	Washington Ave	Primary Connectors
ENGLEWOOD	N 19th Ave	N 16th Ave	Low-Density Corridors
SUMMITVIEW	N 44th Ave	N 38th Ave	Major Street Commercial
SUMMITVIEW	S 96th Ave	S 88th Ave	Low-Density Corridors
TIETON	S 76th Ave	S 72nd Ave	Major Street Commercial
VIOLA	S 16th Ave	S 6th Ave	Primary Connectors
VIOLA	S 4th Ave	S 3rd Ave	Primary Connectors
WALNUT	S 2nd Ave	S Front St	Low-Density Corridors
ZIER	S 75th Ave	S 72nd Ave	Primary Connectors
SUMMITVIEW	N 96th Ave	N 69th Ave	Low-Density Corridors
WASHINGTON	S 72nd Ave	S 64th Ave	Low-Density Corridors
SUMMITVIEW	N 37th Ave	Park Ave	Primary Connectors

Table 13: Low-Priority Corridors

Location	From	To	Typology
18TH	Pierce St	Washington Ave	School/Park/Campus Area
56TH	Englewood Ave	Haven Way	Primary Connectors
32ND	Webster Ave	Arlington Ave	School/Park/Campus Area
3RD	Pine St	Division St	Low-Density Corridors
44TH	Congdon Canal	Englewood Ave	Primary Connectors
75TH	Nob Hill Blvd	Westbrook Loop	Primary Connectors
80TH	Poplarview Way	Congdon Canal	Low-Density Corridors
TIETON	S 56th Ave	S 50th Ave	Major Street Commercial
96TH	Summitview Ave	Tieton Dr	Low-Density Corridors
AHTANUM	S 62nd Ave	S 16th Ave	Low-Density Corridors
40TH	Lincoln Ave	Summitview Ave	Primary Connectors
96TH	Tieton Dr	Wide Hollow Rd	Low-Density Corridors
NOB HILL	S 80th Ave	S 76th Ave	Low-Density Corridors
96TH	Wide Hollow Rd	Zier Rd	Low-Density Corridors
AHTANUM	4th St	3rd St	School/Park/Campus Area
AHTANUM	3rd St	Main St	Primary Connectors
AHTANUM	5th St	4th St	Primary Connectors
ZIER	S 88th Ave	West of Conover Dr	Low-Density Corridors
80TH	Nob Hill Blvd	Wide Hollow Rd	Low-Density Corridors
64TH	Washington Ave	Ahtanum Rd	Low-Density Corridors
6TH	Logan Ave	Mead Ave	Primary Connectors
75TH	Plath Ave	Zier Rd	School/Park/Campus Area
ENGLEWOOD/LINCOLN/POPLAR	N 80th Ave	N 66th Ave	Low-Density Corridors
TIETON	S 98th Ave	S 80th Ave	Low-Density Corridors
VIOLA/6TH	Logan Ave	S 3rd Ave	School/Park/Campus Area
ZIER	S 96th Ave	S 88th Ave	School/Park/Campus Area
WASHINGTON	S 64th Ave	S 24th Ave	Low-Density Corridors
44TH	Viola Ave	Wide Hollow Creek	School/Park/Campus Area
FECHTER/CONESTOGA	Surrey Ln	Castlevale Rd	Primary Connectors
GORDON	Gordon Rd	Gordon Rd	Low-Density Corridors
40TH	Summitview Ave	North of Chestnut Ave	Major Street Commercial

Table 13: Low-Priority Corridors (cont.)

Location	From	To	Typology
80TH	Wide Hollow Rd	Plath Ave	School/Park/Campus Area
80TH	Plath Ave	Zier Rd	Low-Density Corridors
CASTLEVALE	Fetcher Rd	N 40th Ave	Major Street Commercial
ZIER	West of Conover Dr	Conover Dr	School/Park/Campus Area
TIETON	S 80th Ave	S 76th Ave	Low-Density Corridors
COOLIDGE	S 96th Ave	S 72nd Ave	Low-Density Corridors
66TH	Scenic Dr	Englewood Ave	Low-Density Corridors
WIDE HOLLOW	S 96th St	S 80th St	Low-Density Corridors
OCCIDENTAL	West of S 96th Ave	S 80th Ave	Low-Density Corridors
96TH	Coolidge Rd	Occidental Rd	Low-Density Corridors
AHTANUM	Draper Rd	S 62nd Ave	Low-Density Corridors
80TH	Coolidge Rd	Occidental Rd	Low-Density Corridors

WHAT'S NEXT?

The results of the prioritization strategy provide insight into locations in the city where improvements may have the greatest benefit. While it does not specifically outline the order in which projects should be completed or restrict the extent or length of a project, it does serve as a tool to better understand and guide opportunities for improving the pedestrian network in Yakima.

With limited resources to implement this network, it's important for the City to consider the range of options available for improving sidewalks, implementing the ADA transition plan, enhancing crossings, and improving safety. The following are opportunities available to the City to advance this vision:

Development Review. Installation of sidewalks and ramps is frequently completed by developers, and as Yakima grows, will continue to remain an important tool in expanding the network. A comprehensive review and update of existing development standards and code, as described on page X, can better align the infrastructure completed by developers with the Pedestrian Master Plan vision.

Further, development review should specifically consider the recommendations of the Pedestrian Master Plan to better align and identify opportunities to coordinate among ongoing improvements.

Capital Projects. Include the projects and priorities of the Pedestrian Master Plan in the annual Capital Improvement Plan (CIP). Identify additional opportunities for coordination among projects in the CIP that both advance the Pedestrian Master Plan and the transportation components of the ADA Transition Plan.

Grant Funding. Consistent with Capital Projects, the City should pursue available grant opportunities. Resources such as the Washington Traffic Safety Commission, Transportation Improvement Board, and the Recreation and Conservation Office, among others, have annual grant opportunities that can support the planning, design, and construction of projects in Yakima. See the next section, Funding Sources, for more information on funding and grant options.

Staff Trainings Interdepartmental and internal staff training offers an opportunity to promote a shared understanding of active transportation needs, City policy, and preferred practice across City staff. Additional training could be included that provides guidance from the American Association of Transportation Officials (AASHTO), National Association of City Transportation Officials (NACTO), Federal Highway Administration (FHWA), and others to support city staff as Yakima seeks to support a pedestrian network that meets the needs of users of all ages and abilities.

Maintenance Routine maintenance of the city's pedestrian network can prolong the life of surface materials, increase the utility of the system, and encourage use. Sidewalks and other pedestrian facilities should be cleared of debris, kept free of obstructions, and clearly marked. For trails, maintaining access points, trail surfaces, and crossings are important components of a well-functioning and effective system that supports trips of all types. The City should establish a routine maintenance program that includes not only opportunities to address more acute issues in the network but also works to preserve what the city already has.

City Code, Facility Standards, and Development Requirements. The City of Yakima should evaluate existing facility standards to better reflect the guidance included as part of this plan, best practices, and the City's Complete Streets policy. The Complete Streets policy provides a foundation for expanding the transportation options available to Yakima residents, and a comprehensive update to codes, standards, and procedures can help advance the vision of the Complete Streets policy. Updates should include not only standard details for sidewalks, curb ramps, and crosswalks but should also consider requirements associated with development. This review should be completed with relevant departments and provide a comprehensive update to the City's existing practice.

Quick Build Infrastructure. A quick build project approach can support Yakima's vision for a more walkable city while also providing solutions that are lower cost, quicker to install, and provide an immediate benefit to the community. Quick build projects rely on familiar materials to establish space for people walking and support a complete and connected network. Examples may include painted curb extensions with flexible delineators or other barriers; concrete curbs to designate walking space; planters or other barriers to create a buffer between the sidewalk and adjacent travel lanes' and more. A quick build approach also provides the City with an opportunity to gather feedback about different treatment types, build community support for pedestrian and streetscape improvements, and find the solutions that work the best for Yakima.

Active Transportation Network Coordination. Consider opportunities to coordinate with improvements to the bicycle, trail, and off-street path network. As projects are implemented to advance the Bicycle Master Plan, the Comprehensive Plan, and the Transportation System Plan, the City of Yakima should explore opportunities to provide enhancements to the pedestrian network. This may include improved crossings, new and improved access to trails and paths, and other improvements that support a complete, connected, and accessible active transportation network.

PROJECT FEASIBILITY AND COST

The Network Typologies presented in the previous chapter identify a series of improvements for each context, supporting travel both along and across the roadway based on the function of the roadway and its surrounding context. It is important to note that while these series of improvements work together to advance the vision for a more a walkable Yakima, the application of specific solutions for each location should be determined through the project scoping and design phases of implementation. This approach will allow the City to consider the unique factors that influence both the need for an improvement as well as its feasibility.

The Design and Maintenance Guide (see Appendix A) provides information about pedestrian infrastructure improvements to support the City as projects advance to implementation. The Guide includes details about the typical application of solutions, material selection and maintenance, design parameters, and additional considerations that influence implementation. Further it also acknowledges that a number of factors will influence the feasibility of specific solutions for each location.

Considerations for project feasibility provide insight into which projects may take additional time and/or more resources to complete. This information influences which projects can be completed in the near term; which projects may require additional planning and coordination; and which projects will require specific funding strategies to implement. Examples of key factors to consider at the planning stage include:

- **Coordination Among Agencies**: Projects that require coordination among multiple agencies, such as county or state departments, may require additional time and staff resources to complete.
- **Available Right-of-Way**: Many corridors in Yakima have a constrained right-of-way, with minimal space available between the curb and the adjacent property line. Acquiring or re-allocating right-of-way increases project costs and requires additional resources for coordination.
- **Location Characteristics:** Characteristics of the project location will influence which improvements are applicable. Factors such as roadway speed and volume, relationship to other elements such as driveways or intersections, and more must be considered as specific improvements are selected along the corridor.

In addition to items influencing feasibility, a number of factors also influence the total cost of implementation. Project costs must account for not only the materials needed for a project, but also the design and construction, right-of-way acquisition, stormwater improvements, and more. The Design and Maintenance Guide (Appendix A) includes approximate costs for the materials associated with different improvements; however, it should be noted that this represents only one component of the overall project cost. These variables should be accounted for when incorporating projects into the city's CIP, when pursuing funding opportunities, and when exploring opportunities for coordination among projects.

FUNDING SOURCES

Table 12 summarizes common funding mechanisms that can be used to advance implementation of the Pedestrian Network. It includes a variety of sources and partners that align with the goals and objectives of the Pedestrian Master Plan. The City should explore opportunities to apply for available funds to advance the Pedestrian master Plan. Further, the City should coordinate with the Yakima Valley Council of Governments and other project partners to identify opportunities to advance the objectives of this plan.

Table 14: Example Funding Programs and Grant Opportunities

Source name	Associated Agency	Description
Washington Wildlife & Recreation Program - Recreation, Trails Category	Washington State Recreation and Conservation Office	The WWRP Trails category provides grants to acquire, develop, or renovate non-motorized public recreation pedestrian or bicycle trails that provide connections to neighborhoods, communities, or regional trails. The next funding cycle will open in 2022. Note: Trails funded in this category cannot be part of a street or roadway, such as a sidewalk or unprotected road shoulder.
Recreation Trails Program	Washington State Recreation and Conservation Office	Administered through RCO, this grant program assistance for projects that maintain trails, develop links to recreation trails, and provide educational programming related to trail safety and environmental protection. The next funding cycle will open in 2022.
Safe Routes to School Program	WSDOT, Federal	A call for projects is opened in even numbered years for projects that improve safety and mobility for children by enabling and encouraging them to walk and bicycle to school. Projects within 2 miles of a primary, middle, or high school may qualify. The next funding cycle will open in 2022.
Pedestrian and Bicycle Safety Program	WSDOT	A call for projects is opened in even numbered years for projects that improve the transportation system and enhance safety and mobility for people who walk or bike. The next funding cycle will open in 2022.
Transportation Alternatives Program	Administered by WSDOT	The Federal Transportation Alternatives Program provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and improved mobility, community improvement activities and environmental remediation; recreational trail program projects; and safe routes to school projects.
Surface Transportation Block Grant Program (STBG)	Administered by WSDOT	The Federal Surface Transportation Block Grant Program provides flexible financial support to local agencies. Projects eligible for STP funding include highway and bridge construction and repair; transit capital projects; bicycle, pedestrian, and recreational trails; and construction of ferryboats and terminals.

Source name	Associated Agency	Description
Commute Trip Reduction Program	State (administered by WSDOT)	The Commute Trip Reduction Program focuses on improving air quality, reducing traffic congestion, and decreasing fuel consumption through employer-based programs that encourage alternatives to driving alone to work. Local governments are required to develop and implement plans to reduce single occupancy vehicle commute travel to large work sites and dense employment centers in congested urban areas. Technical assistance is available to qualifying communities.
Community Economic Revitalization Board (CERB)	Washington State Department of Commerce	Community Economic Revitalization Board is a state board focused on economic development through job creation in partnership with local governments. The Board has the authority to finance public infrastructure improvements that encourage new private business development and expansion. In addition to funding construction projects, CERB provides limited funding for studies that evaluate high-priority economic development projects.
Complete Streets Program RCW 47.04.320	Transportation Improvement Board	The Complete Streets Grant Program funds local government arterial retrofits to improve safe access for all users: pedestrians, bicyclists, motorists, public transportation users, and truck drivers. Applying agencies must have an adopted Complete Street ordinance. Grant applicants must be nominated by an approved party. The next funding cycle is anticipated in 2023.
Urban Arterial Program	Transportation Improvement Board	The Urban Arterial Program funds projects that enhance arterial safety, support growth and development, improve mobility and physical condition. TIB also rates projects on sustainability and constructability. The program requires sidewalk on both sides of the streets and funds bike lanes when consistent with a local transportation plan. Applications are typically accepted annually.
Urban Sidewalk Program	**Transportation Improvement Board**	The Urban Sidewalk Program establishes highly connected pedestrian networks in downtowns and activity centers. The program constructs and replaces sidewalks to improve pedestrian safety, create system continuity, link pedestrian generators, extend the system and complete gaps. The intent of each project must be transportation-related, not recreational, and the project must be on a federally classified route. Applications are typically accepted annually.
School Walk Route Improvement Project grant	Washington Traffic Safety Commission	The School Walk Route Improvement Project grant is available for projects that enhance safety near schools in Washington. Examples of projects include school walk area maps and walk route plans; quick build or pop-up traffic calming for school zones; encouragement activities; and some signage for school zones, including RRFBs and PHBs. A call for applications is typically released in the fall of each year.

Source name	Associated Agency	Description
Community Development Block Grants	Federal (HUD), Administered by Washington State Department of Commerce	Certain projects supporting transportation and streetscape improvements may be eligible for CDBG funding. Projects must principally benefit low-and-moderate income populations. The next funding cycle will be available in 2022.
Highway Safety Improvement Program	Administered by WSDOT	Funding is available for projects that address spot location or systemic safety issues based on a submitted Local Road Safety Plan. This program seeks to address fatal and serious injury crashes and systemic safety needs on City streets. The next funding cycle is anticipated in Fall 2021.
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	US DOT	Formerly TIGER/BUILD, this discretionary grant program provides funding for projects that have significant local or regional impacts. Projects are evaluated based on criteria such as safety, environmental sustainability, quality of life, economic competitiveness, state of good repair, innovation, and partnership.

FALL 2021

Appendix A: Design and Maintenance Guide

Yakima, WA
Pedestrian Master Plan
Draft Plan

Prepared by:

alta

Contents

01. Introduction

Overview

This toolbox presents guidance for local planners, engineers, and advocates to improve the walkability of Yakima and create more comfortable streets for pedestrians of all ages and abilities. Planners and project designers should refer to these guidelines in developing the infrastructure projects recommended by this plan, but they are not a substitute for thorough project-by-project evaluation by a licensed practitioner upon implementation.

Context

This Pedestrian Toolbox has been developed to assist the City of Yakima in the selection and design of pedestrian facilities. The designs featured in this Toolbox work to promote pedestrian comfort. This chapter presents current planning, engineering, and design resources and approaches to implement pedestrian enhancements.

WHAT, WHY, WHERE, WHEN AND HOW?

Future roadway planning, engineering, design and construction will continue to strive for a balanced transportation system that includes a seamless, accessible pedestrian network and encourages pedestrian travel wherever possible.

There are many reasons to integrate pedestrian facilities into typical roadway development policy. The goal of a transportation system is to better meet the needs of people - whether in vehicles, bicyclists or pedestrians - and to provide access to goods, services, and activities.

Supporting active modes gives users important transportation choices, whether it is to make trips entirely by walking or cycling, or to access public transit. Often in urban or suburban areas, walking and cycling are the fastest and most efficient ways to perform short trips.

Convenient non-motorized travel provides many benefits, including reduced traffic congestion, user savings, road and parking facility savings, economic development, and a healthier environment.

Compatible design does more than help those who already walk. It encourages greater use of non-motorized transportation and makes the street safer for everyone.

The design recommendations in this document are for use on Yakima roadways. Projects must not only be planned for their physical aspects as facilities serving specific transportation objectives; they must also consider effects on the aesthetic, social, economic and environmental values, needs, constraints and opportunities in a larger community setting. This is commonly known as Complete Streets Design, and should be employed when determining which standard is applicable in each scenario.

Pedestrian design guidelines in this document meet or exceed the minimums set by current accessibility standards.

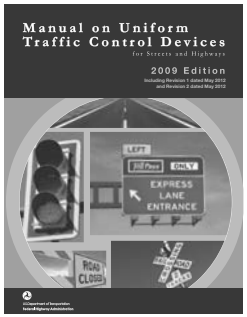
Traffic control devices, signs, pavement markings used and identified in this document conform to the latest 2009 edition of the “Manual on Uniform Traffic Control Devices” (MUTCD).

Whenever possible and appropriate, the National Association of City Transportation Officials (NACTO)’s guidance is recommended where applicable.

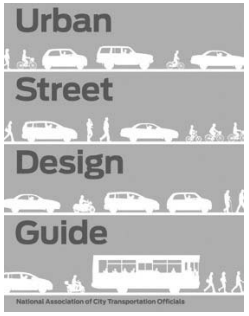
Guidance Basis

The sections that follow serve as an inventory of pedestrian design treatments and provide guidelines for their development. These treatments and design guidelines are important because they represent the tools for creating a pedestrian-friendly, accessible community. The guidelines do not include all design elements that need to be considered for each treatment and are not a substitution for consultation of relevant local, state, and federal guidance/standards. Any projects under design should be under the care of a professional engineer prior to implementation. The following guidelines are incorporated in this Design Guide.

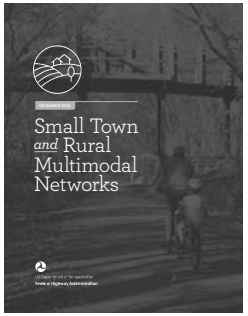
NATIONAL GUIDANCE



The Federal Highway Administration's **Manual on Uniform Traffic Control Devices (MUTCD)** *defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic.*

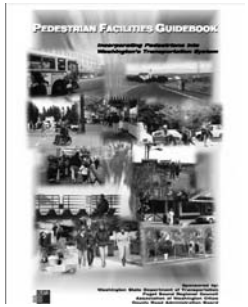


The National Association of City Transportation Officials' (NACTO) **Urban Bikeway Design Guide (2012)** *and* **Urban Street Design Guide (2013)** *are collections of nationally recognized street design standards, and offers guidance on the current state of the practice designs.*



The Federal Highway Administration's **Small Town and Rural Multimodal Networks Report (2016)** *offers resources and ideas to help small towns and rural communities support safe, accessible, comfortable, and active travel for people of all ages and abilities. It connects existing guidance to rural practice and includes examples of peer communities.*

WASHINGTON GUIDANCE



Washington State Department of Transportation (WSDOT) *has endorsed the* **NACTO Urban Street Design Guide**, *but has also provided the 1997* **Pedestrian Facilities Guidebook** *for pedestrian design guidance on state highways outside of cities.*

Design Needs of Pedestrians

TYPES OF PEDESTRIANS

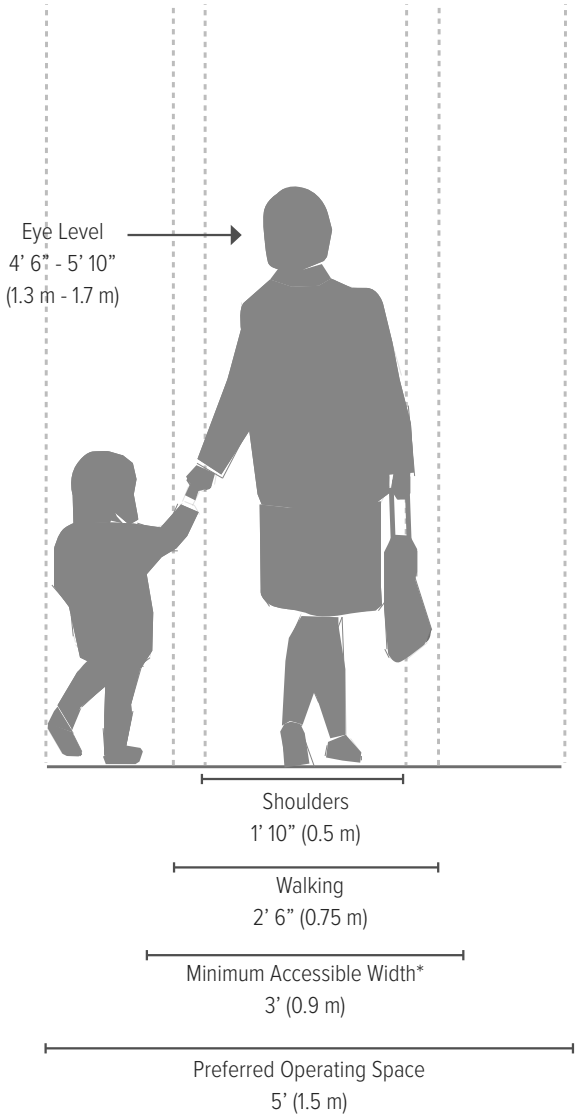
Pedestrians have a variety of characteristics and the transportation network should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have lower eye height and may walk slower than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing.

DISABLED PEDESTRIAN DESIGN CONSIDERATIONS

The table below summarizes common physical and cognitive impairments, how they affect personal mobility, and recommendations for improved pedestrian-friendly design.

Disabled Pedestrian Design Considerations

Impairment	Effect on Mobility	Design Solution
Physical Impairment Necessitating Wheelchair and Scooter Use	Difficulty propelling over uneven or soft surfaces.	Firm, stable surfaces and structures, including ramps or beveled edges.
	Cross-slopes cause wheelchairs to veer downhill or tip sideways.	Cross-slopes of less than two percent.
	Require wider path of travel.	Sufficient width and maneuvering space.
Physical Impairment Necessitating Walking Aid Use	Difficulty negotiating steep grades and cross slopes; decreased stability and tripping hazard.	Cross-slopes of less than two percent. Smooth, non-slippery travel surface.
	Slower walking speed and reduced endurance; reduced ability to react.	Longer pedestrian signal cycles, shorter crossing distances, median refuges, and street furniture.
Hearing Impairment	Less able to detect oncoming hazards at locations with limited sight lines (e.g. driveways, angled intersections, channelized right turn lanes) and complex intersections.	Longer pedestrian signal cycles, clear sight distances, highly visible pedestrian signals and markings.
Vision Impairment	Limited perception of path ahead and obstacles; reliance on memory; reliance on non-visual indicators (e.g. sound and texture).	Accessible text (larger print and raised text), accessible pedestrian signals (APS), guide strips and detectable warning surfaces, safety barriers, and lighting.
Cognitive Impairment	Varies greatly. Can affect ability to perceive, recognize, understand, interpret, and respond to information.	Signs with pictures, universal symbols, and colors, rather than text.



**At point of contact*

Pedestrian Characteristics by Age

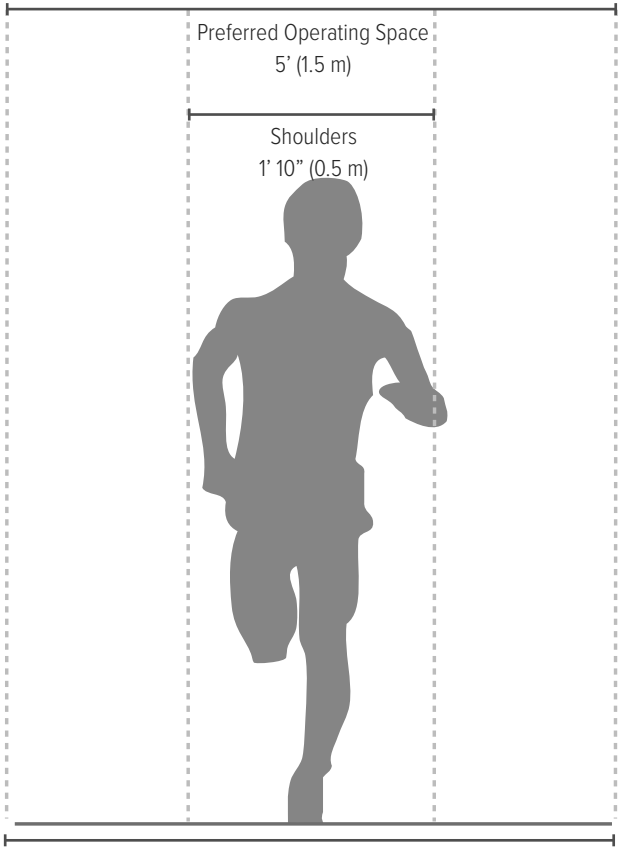
Age	Characteristics
0-4	Learning to walk
	Requires constant adult supervision
	Developing peripheral vision and depth perception
5-8	Increasing independence, but still requires supervision
	Poor depth perception
9-13	Susceptible to "darting out" in roadways
	Insufficient judgment
	Sense of invulnerability
14-18	Improved awareness of traffic environment
	Insufficient judgment
19-40	Active, aware of traffic environment
41-65	Slowing of reflexes
65+	Difficulty crossing street
	Vision loss
	Difficulty hearing vehicles approaching from behind

Source: AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities, Exhibit 2-1. 2004.

DESIGN NEEDS OF RUNNERS

Running is an important recreation and fitness activity commonly performed on shared use paths. Many runners prefer softer surfaces (such as rubber, bare earth or crushed rock) to reduce impact. Runners can change their speed and direction frequently. If high volumes are expected, controlled interaction or separation of different types of users should be considered.

Runner Dimensions

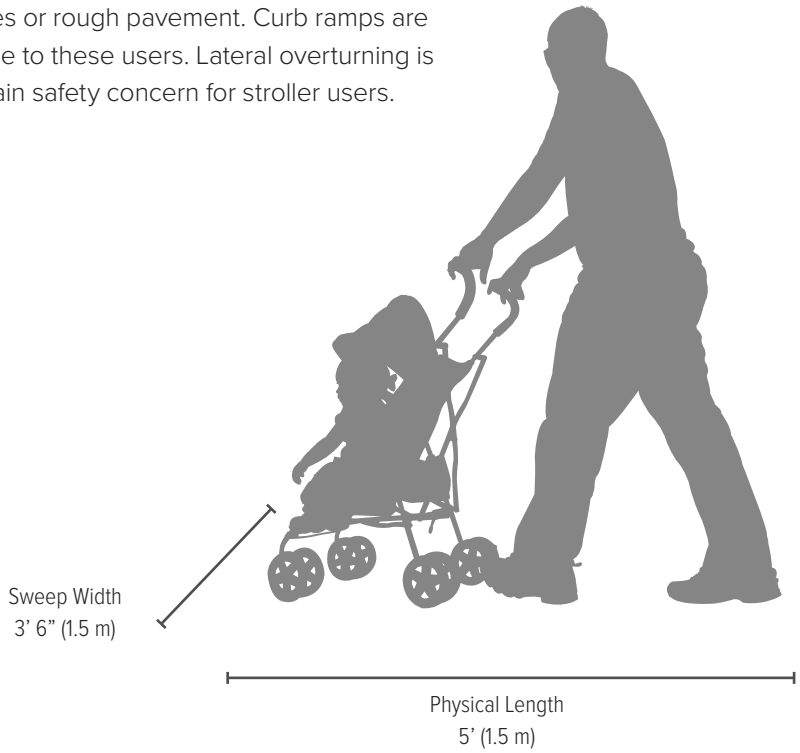


DESIGN NEEDS OF STROLLERS

Strollers are wheeled devices pushed by pedestrians to transport babies or small children. Stroller models vary greatly in their design and capacity. Some strollers are designed to accommodate a single child, others can carry 3 or more. Design needs of strollers depend on the wheel size, geometry and ability of the adult who is pushing the stroller.

Strollers commonly have small pivoting front wheels for easy maneuverability, but these wheels may limit their use on unpaved surfaces or rough pavement. Curb ramps are valuable to these users. Lateral overturning is one main safety concern for stroller users.

Stroller Dimensions



DESIGN NEEDS OF WHEELCHAIR USERS

As the American population ages, the age demographics in Yakima may also shift, and the number of people using mobility assistive devices (such as manual wheelchairs, powered wheelchairs) will increase.

Manual wheelchairs are self-propelled devices. Users propel themselves using push rims attached to the rear wheels. Braking is done through resisting wheel movement with the hands or arm. Alternatively, a second individual can control the wheelchair using handles attached to the back of the chair.

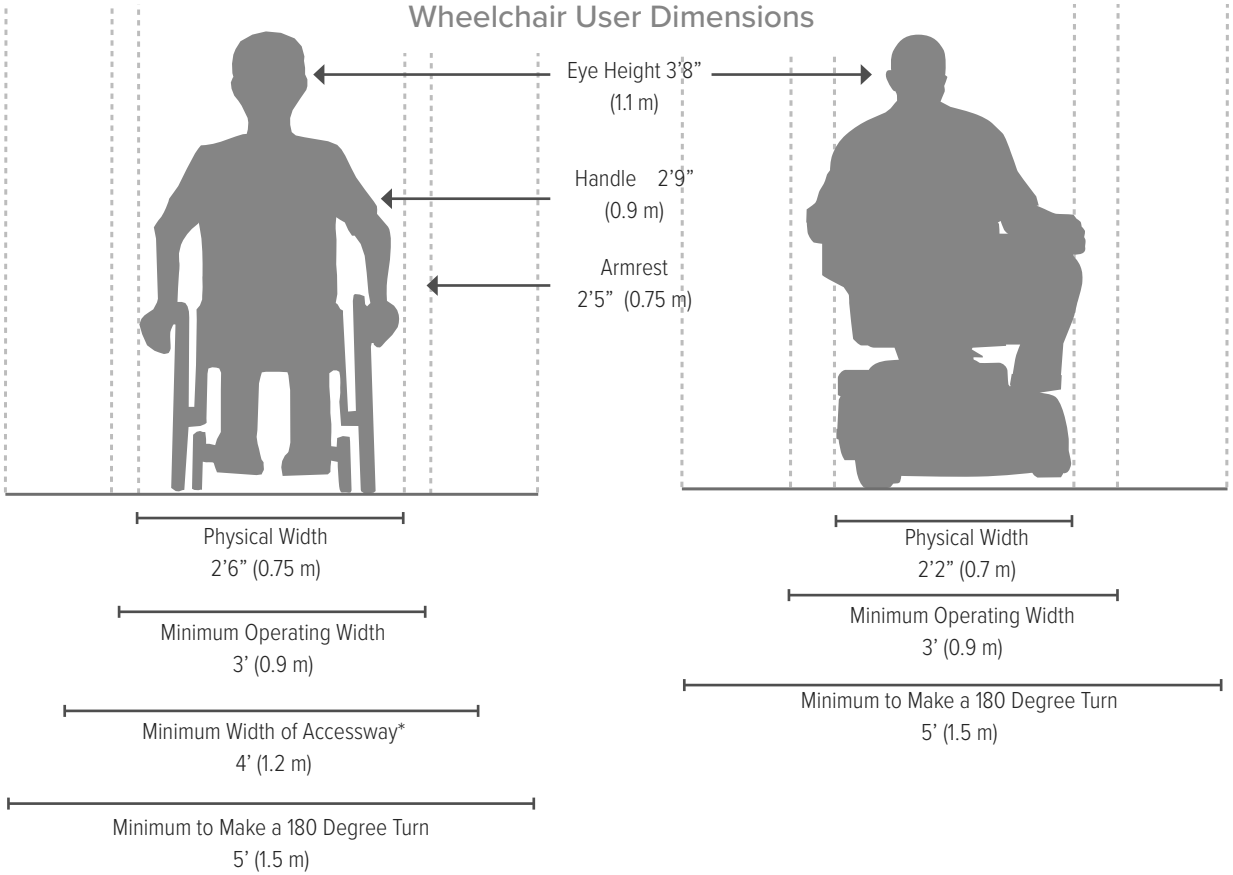
Power wheelchairs use battery power to move the wheelchair. The size and weight of power wheelchairs limit their ability to negotiate obstacles without a ramp. Various control units are available that enable users to control the wheelchair movement, based on their ability (e.g., joystick control, breath controlled, etc).

Maneuvering around a turn requires additional space for wheelchair devices. Providing adequate space for 180 degree turns at appropriate locations is an important element of accessible design.

Wheelchair User Design Considerations

Effect on Mobility	Design Solution
Difficulty propelling over uneven or soft surfaces.	Firm, stable surfaces and structures, including ramps or beveled edges.
Cross-slopes cause wheelchairs to veer downhill.	Cross-slopes of less than two percent.
Require wider path of travel.	Sufficient width and maneuvering space.

Wheelchair User Dimensions

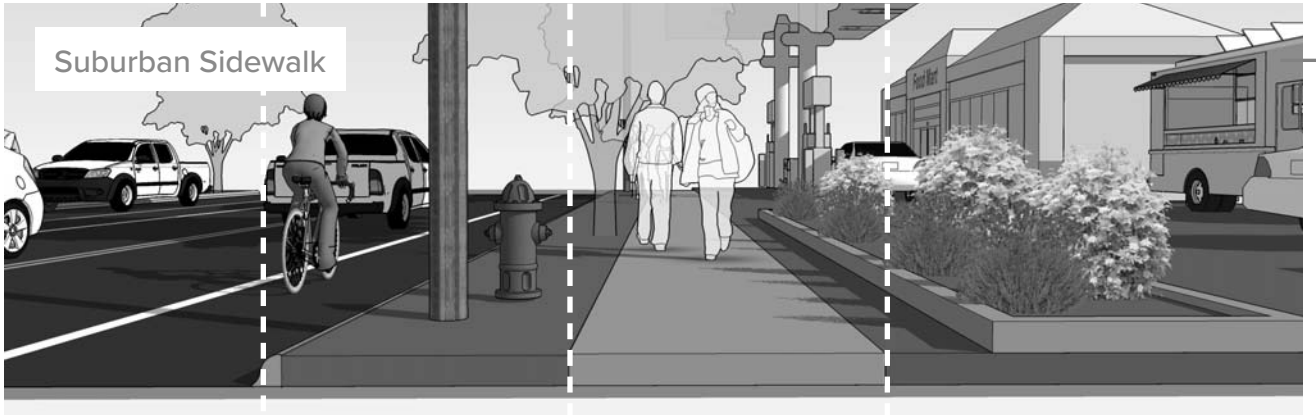


**Provide 5' x 5' passing zone every 200' if travel way width is less than 5 feet.*

02. Pedestrian Toolbox

Pedestrian Facilities
Sidewalk Zones

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved accessibility, and the creation of social space.



Enhancement Zone	Buffer Zone	Pedestrian Through Zone	Frontage Zone
The enhancement zone may add additional space to the pedestrian realm in the form of curb extensions, parklets, bicycle corrals or other features. The enhancement zone may occupy a parking lane or shoulder, but should not block bike lanes.	The buffer zone, also called the furnishing or landscaping zone, buffers pedestrians from the adjacent roadway, and is also the area where elements such as street trees, signal poles, signs, and other street furniture are properly located.	The through zone is the area intended for pedestrian travel. This zone should be entirely free of permanent and temporary objects. Wide through zones are needed in downtown areas or where pedestrian flows are high.	The frontage zone allows pedestrians a comfortable “shy” distance from the building fronts, fencing, walls and vertical landscaping. It provides opportunities for window shopping, to place signs, planters, or chairs.

TYPICAL APPLICATION

- Wider sidewalks should be installed near schools, at transit stops, in downtown areas, or anywhere high concentrations of pedestrians exist.
- At transit stops, an 8 ft by 5 ft clear space is required for accessible passenger boarding/alighting at the front door location per ADA requirements.
- Sidewalks should be continuous on both sides of urban commercial streets, and should be required in areas of moderate residential density (1-4 dwelling units per acre).
- When retrofitting gaps in the sidewalk network, locations near transit stops, schools, parks, public buildings, and other areas with high concentrations of pedestrians should be the highest priority.

MATERIALS AND MAINTENANCE

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped boulevard. Less expensive walkways constructed of asphalt, crushed stone, or other stabilized surfaces may be appropriate. Ensure accessibility and properly maintain all surfaces regularly. Surfaces must be firm, stable, and slip resistant. Colored, patterned, or stamped concrete can add distinctive visual appeal.

APPROXIMATE COST

Cost of standard sidewalks range from about $6-10 per square foot for concrete sidewalk. This cost can increase with additional right-of-way acquisition or addition of landscaping, lighting or other aesthetic features. As an interim measure, an asphalt concrete path can be placed until such time that a standard sidewalk can be built. The cost of asphalt path can be less than half the cost of a standard sidewalk.

Street Classification	Parking Lane/ Enhancement Zone	Buffer Zone	Pedestrian Through Zone	Frontage Zone*
Local Streets	Varies	4 - 6 ft	5 ft	1 - 2 ft
Downtown and Pedestrian Priority Areas	Varies	4 - 6 ft	12 ft	2 - 10 ft
Arterials and Collectors	Varies	4 - 6 ft	6 - 8 ft	1 - 5 ft

**Indicates ideal frontage zone space. Actual frontage zone is contingent upon the City's development code and required set backs*

Pedestrian Lanes

A pedestrian lane is a low-cost alternative to a separated path or sidewalk that may be appropriate on roads with moderate speeds and volumes. The lane provides a space for pedestrians to walk and separated from motor vehicle traffic by roadway striping.

TYPICAL APPLICATION

- As an affordable alternative to a sidewalk. In some suburban and rural communities, sidewalks may not be the appropriate pedestrian facility choice, due to right of way constraints, storm water infrastructure, economic impacts, or other reasons.
- On streets with low to moderate volumes and low to moderate speeds.
- Works best inside more built up areas, such as near commercial areas.
- Preferred application is on roadways with a motor vehicle volume (ADT) under 2,000 and a motor vehicle operating speed under 25 mph. The range for potential application extends to roadways with 6,000 ADT and 30 mph.

DESIGN FEATURES

(A) Pedestrian lane width of 8 feet is preferred, 5 foot minimum.

(B) A pedestrian lane must be separated from the adjacent travel lanes with some form of lane delineation, such as a 6”-8” white line or a double 4” white line. A marked buffer may also be used to provide additional separation.

(C) Pedestrian lanes should be marked with the appropriate pavement legend markings in white color, positioned laterally in the center of the lane (MUTCD, 2009, p. 415).

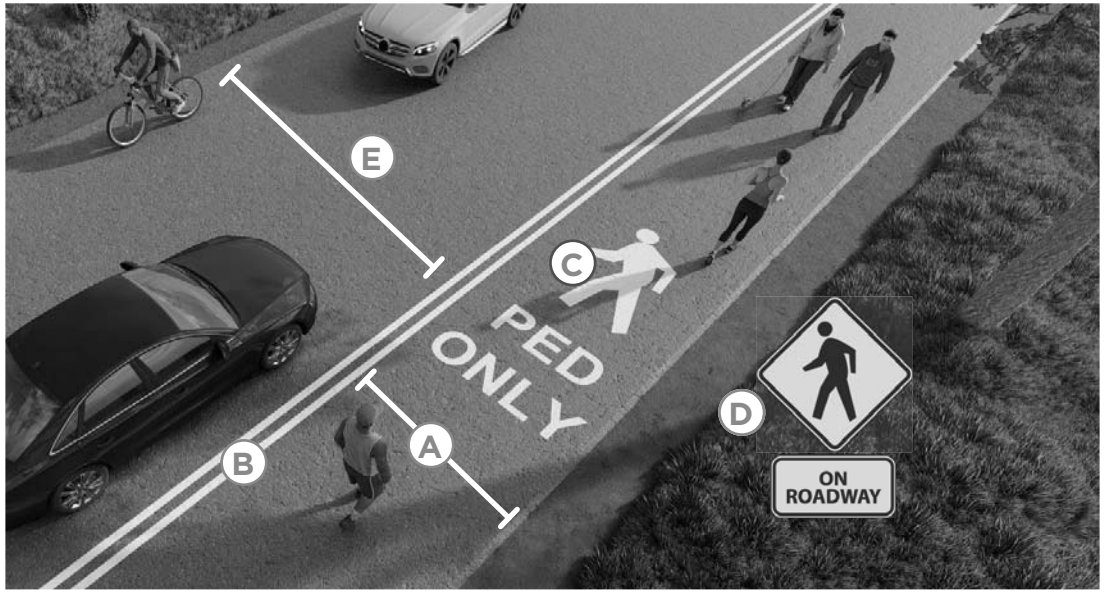
(D) Pedestrian Warning Sign (W11-2) paired with an “ON ROADWAY” legend sub plaque may be used to indicate to drivers to expect pedestrians within the paved road surface.

(E) Vehicles need to be able to traverse the roadway without encroaching into the pedestrian lane. The minimum clear width would be 18 feet in low volume and speed scenarios and 20-22 feet minimum typical.

- Pedestrian lanes should meet accessibility requirements to the greatest extent possible, including having cross-slopes less than 2% and detectable warnings in appropriate locations.

APPROXIMATE COST

- $10 - $15 per linear foot dependent on bollard and stencil placement.
- Approximate cost reflects estimated material cost; does not reflect full cost of installation.



Crossing Improvements
Marked Crosswalks

Marked crosswalks raise awareness to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer, particularly on higher speed multi-lane roadways.

Marked crosswalks across the uncontrolled leg of unsignalized intersections should follow the design guidance of marked crosswalks at mid-block locations. See Marked Crosswalks at Mid-Block for more guidance.

TYPICAL APPLICATION

At signalized intersections, all crosswalks should be marked. At unsignalized intersections, crosswalks may be marked under the following conditions:

- At an intersection within a school zone or on a walking route, and at parks, libraries, or community centers.
- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the preferred route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.

DESIGN FEATURES

- The crosswalk should be located to align as closely as possible with the through pedestrian zone of the sidewalk corridor.
- Transverse markings are the most basic crosswalk marking type, but may wear faster as every vehicle drives over the markings.
- Continental markings provide improved visibility and can be located outside of vehicle wheel paths.
- Local climate can present unique challenges for pavement markings due to extreme heat/ cold, snow plows, and de-icing techniques.

FURTHER CONSIDERATIONS

Continental crosswalk markings should be used at crossings with high pedestrian use, particularly where the crossing is not controlled by signals or stop signs, such as a local street crossing of a multi-lane arterial.

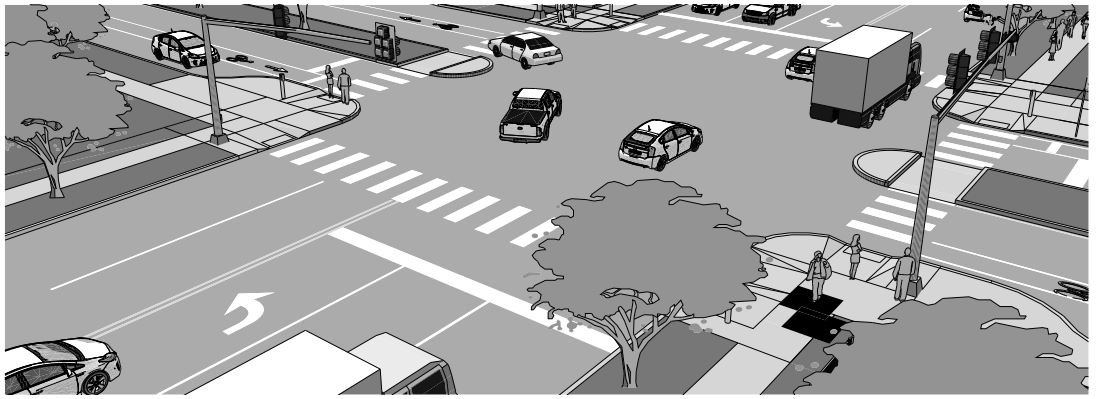
These type of markings should also be used where vulnerable pedestrians are expected, including crossings near schools. Continental crosswalk marking also requires less on-going maintenance and lasts longer than other marking techniques.

MATERIALS AND MAINTENANCE

The effectiveness of marked crossings depends entirely on their visibility; maintaining marked crossings should be a high priority. Thermoplastic markings offer increased durability when compared to conventional paint.[1]

APPROXIMATE COST

- Traditional paint - $9/linear foot.
- Thermoplastic - $15/linear foot.
- Total cost varies by crosswalk length, design, and context (e.g., solid, standard, continental, dashed, zebra, or ladder).



Mid-Block Crosswalks

An effective pedestrian crossing at an uncontrolled location consists of a marked crosswalk, appropriate pavement markings, warning signage, and other treatments to slow or stop traffic such as curb extensions, median refuges, beacons, hybrid beacons, and signals. Designing crossings at mid-block locations depends on an evaluation of motor vehicle traffic volumes, sight distance, pedestrian traffic volumes, land use patterns, vehicle speed, and road type and width.

TYPICAL APPLICATION

- Locations where mid-block crossings should be considered include:
- Long blocks (longer than 600 ft.) with destinations on both sides of the street
- Locations with heavy pedestrian traffic, such as schools, shopping centers, and shared use path crossings
- At transit stops, where transit riders must cross the street on one leg of their journey
- Marked crosswalks at mid-block locations should not be installed without additional crossing enhancements when the speed limit of the roadway is greater than 40 MPH and the roadways has either of the following volume and physical characteristics:
  - 12,000 ADT or greater on four-lane roads without a raised median or pedestrian refuge island
  - 15,000 ADT or greater on four-lane roads, with a raised median or pedestrian refuge island

DESIGN FEATURES

- Detectable warning strips are required to help visually impaired pedestrians identify the edge of the street and are required through ADA
- Advance stop lines should be placed 20-50 feet in advance of multi-lane uncontrolled mid-block crossings
- Crosswalk markings legally establish mid-block pedestrian crossing
- Pedestrian and stop warning signage (W11-2 and R1-5C) should be installed at the crossing to alert drivers of the potential presence of pedestrians in the roadway

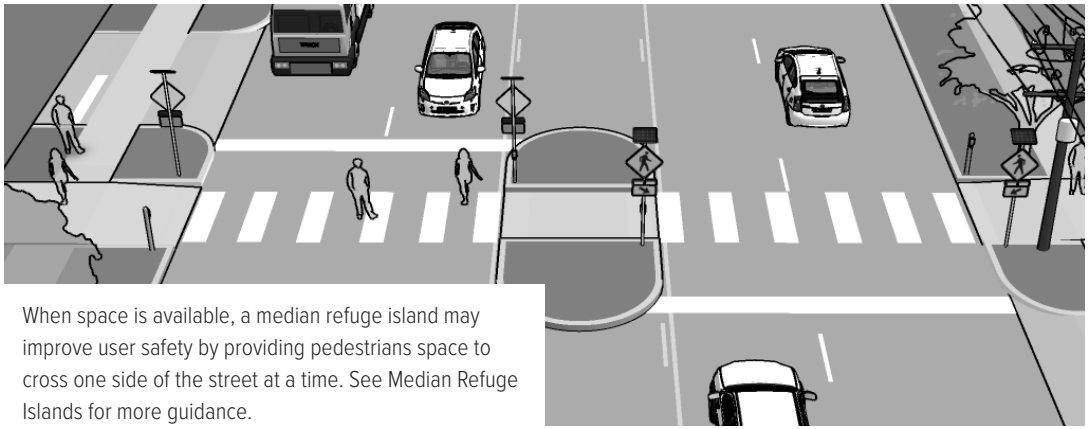
FURTHER CONSIDERATIONS

Uncontrolled crossings of multi-lane roadways with over 15,000 ADT may be possible with features such as sufficient crossing gaps in vehicular traffic (more than 60 per hour), median refuges, or beacons, and good sight distance.

On roadways with low to moderate traffic volumes (<12,000 ADT, and posted speeds at or below 30mph.) and posted speeds at or below 30 mph, a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety.

APPROXIMATE COST

- $55,000 - Minimal installation (2 beacons, 2 poles)
- $280,000 - Multi-lane overhead
- Approximate cost reflects estimated material cost; does not reflect full cost of installation.



When space is available, a median refuge island may improve user safety by providing pedestrians space to cross one side of the street at a time. See Median Refuge Islands for more guidance.

Curb Ramps

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access. There are a number of factors to be considered in the design and placement of curb ramps.

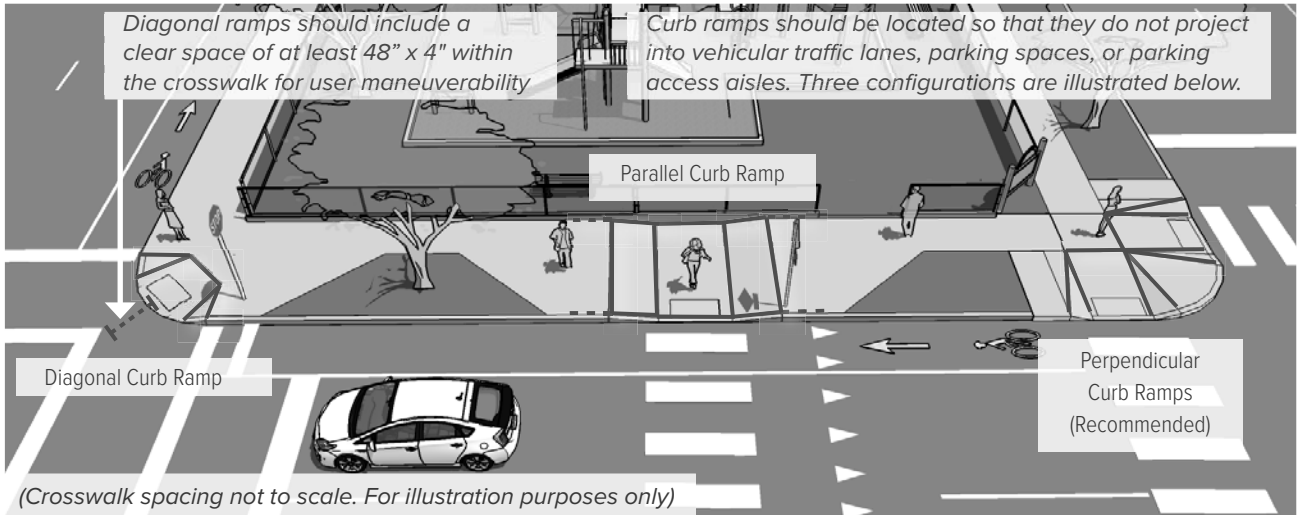
TYPICAL APPLICATION

Curb ramps must be installed at all intersections and midblock locations where pedestrian crossings exist, as mandated by federal legislation (1973 Rehabilitation Act and ADA 1990). All newly constructed and altered roadway projects must include compliant curb ramps. In addition, existing facilities must be upgraded to current standards when appropriate.

The edge of an ADA compliant curb ramp should be marked with a detectable warning surface (also known as truncated domes) to alert people with visual impairments to changes in the pedestrian environment. Visual contrast between the raised tactile device and the surrounding infrastructure is important so that the change is readily evident to partially sighted pedestrians.

DESIGN FEATURES

- The level landing at the top of a ramp should be at least 4 feet long and at least the same width as the ramp itself. The slope of the ramp should be compliant to current standards.
- If the top landing is within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 4’-0” long (in the direction of the ramp run) and at least as wide as the ramp, although a width of 5’-0” is preferred.



(Crosswalk spacing not to scale. For illustration purposes only)

FURTHER CONSIDERATIONS

Where feasible, separate directional curb ramps for each crosswalk at an intersection should be provided rather than having a single ramp at a corner for both crosswalks. Although diagonal curb ramps might be less expensive, they orient pedestrians directly into the center of the intersection, which can be challenging for wheelchair users and pedestrians with visual impairments. Diagonal curb ramp configurations are not recommended.

Curb radii need to be considered when designing directional ramps. While curb ramps are needed for use on all types of streets, the highest priority locations are in downtown areas and on streets near transit stops, schools, parks, medical facilities, shopping areas.

MATERIALS AND MAINTENANCE

It is critical that the interface between a curb ramp and the street be maintained adequately. Asphalt street sections can develop vertical differentials where concrete meets asphalt at the foot of the ramp, which can catch the front wheels of a wheelchair.

APPROXIMATE COST

The cost is approximately $5,000-$10,000 per curb ramp, depending on drainage and right-of-way. Approximate cost reflects estimated material cost; does not reflect full cost of installation.

Not recommended: Diagonal curb ramp configuration.

Recommended: Curb extension with bidirectional curb ramps for crossing in both directions.

Curb Radii

The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances and consider the effective radius in any design vehicle turning modeling.

TYPICAL APPLICATION

The curb radius may be as small as 3 ft where there are no turning movements, or 5 ft where there are turning movements and adequate street width. On-street parking and bike lanes create a larger effective turning radius and can therefore allow a smaller curb radius.

DESIGN FEATURES

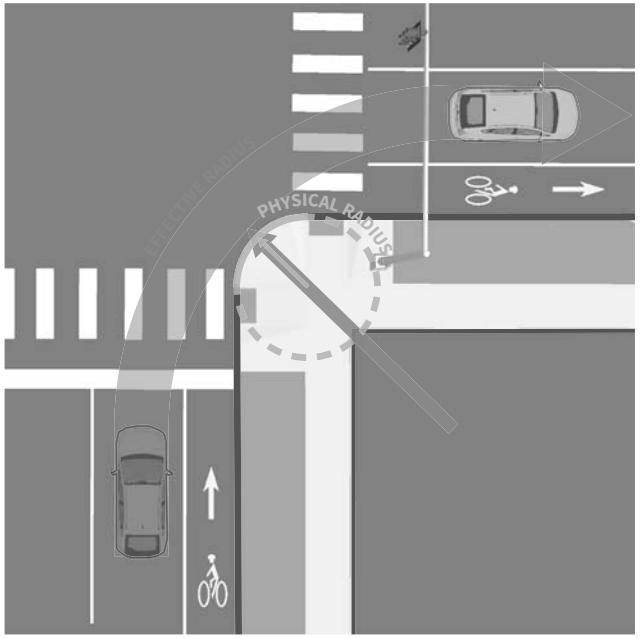
Corners have two critical dimensions which must be considered together.

- The physical radius controls the pedestrian experience.
- The effective radius is the widest turning arc that a vehicle can take through the corner and is larger than the physical radius.

FURTHER CONSIDERATIONS

Several factors govern the choice of curb radius in any given location. These include the desired pedestrian area of the corner, traffic turning movements, street classifications, design vehicle turning radius, intersection geometry, and whether there is on-street parking or a bike lane (or both) between the travel lane and the curb.

The city should review its policies surrounding accommodating large design and control vehicles at corners and explore techniques such as allowing large vehicles to take up multiple receiving lanes to complete their turn or begin their turn by straddling two approach lanes. Mountable corners or medians may also allow infrequent large vehicles to complete their turns without necessitating longer pedestrian crossings and larger intersections than needed.



Recommended: Bidirectional curb ramps for crossing in both directions.

Median Refuge Islands

Median refuge islands are located at the mid-point of a marked crossing and help improve safety by increasing visibility and allowing pedestrians to cross one direction of traffic at a time.

Refuge islands minimize pedestrian exposure at mid-block crossings by shortening the crossing distance and increasing the number of available gaps for crossing.

Median refuge islands can also be configured as an off-set crossing. This requires pedestrians to change their direction of travel while in the median - to face on-coming vehicles - before crossing. Here, pedestrians are more likely to see, and establish eye contact with on-coming motorists before stepping into the roadway.

TYPICAL APPLICATION

- Refuge islands can be applied on any roadway with a left turn center lane or median that is at least 6' wide.
- Islands are appropriate at signalized or unsignalized crosswalks.
- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.
- The island should be at least 6' wide between travel lanes and at least 20' long (40' minimum preferred).
- Provide double centerline marking, reflectors, and "KEEP RIGHT" signage in the island on streets with posted speeds above 25 mph.

DESIGN FEATURES

- Cut-through median refuge islands are preferred over curb ramps to better accommodate wheel chairs users.
- Pedestrian warning signage should be placed at the crossing. Advanced warning signage should also be considered where site obstructions may be present on the approach.

FURTHER CONSIDERATIONS

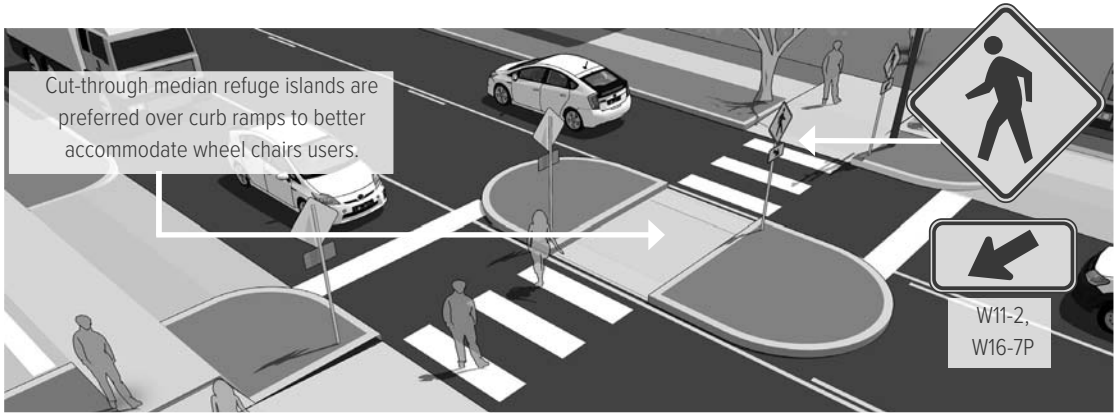
- This treatment may be combined with Rectangular Rapid Flashing Beacons (RRFBs). See treatment description for more information.

MATERIALS AND MAINTENANCE

Refuge islands may require frequent maintenance of road debris. Trees and plantings in a landscaped median must be maintained so as not to impair visibility, and should be no higher than 1 foot 6 inches.

APPROXIMATE COST

$10,000 - $20,000, depending on presence of existing median and length of new median. desired pedestrian area of the corner, traffic turning movements, street classifications, design vehicle turning radius, intersection geometry, and whether there is on-street parking or a bike lane (or both) between the travel lane and the curb.



Pedestrian Signals
Rectangular Rapid Flashing Beacon (RRFB)

Rectangular Rapid Flash Beacons (RRFB) are a type of active warning beacon used at unsignalized crossings. They are designed to increase driver compliance on multi-lane or high-volume roadways.

TYPICAL APPLICATION

- Guidance for marked/unsignalized crossings applies.
- RRFBs should not be used at crosswalks controlled by YIELD signs, STOP signs, Pedestrian Hybrid Beacons (HAWKs), or traffic control signals.
- RRFBs should initiate operation based on user actuation and should cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.
- Rectangular Rapid Flash Beacons (RRFB) dramatically increase compliance over conventional warning beacons.

DESIGN FEATURES

- RRFBs are typically activated by pedestrians manually with a push button, or can be actuated automatically with passive detection systems.
- Providing secondary installations of RRFBs on median islands improves conspicuity and driver stopping behavior.
- Must be used in conjunction with W11-2, S1-1, or W11-15, (and W16-7P if post-mounted). See FHWA Interim Approval 21 for more information.
- Beacons may be installed as side mounted or in overhead installations.

FURTHER CONSIDERATIONS

Rectangular rapid flash beacons elicit the highest increase in compliance of all the amber warning beacon enhancement options.

A Florida study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88%. Additional studies of long term installations show little to no decrease in yielding behavior over time.

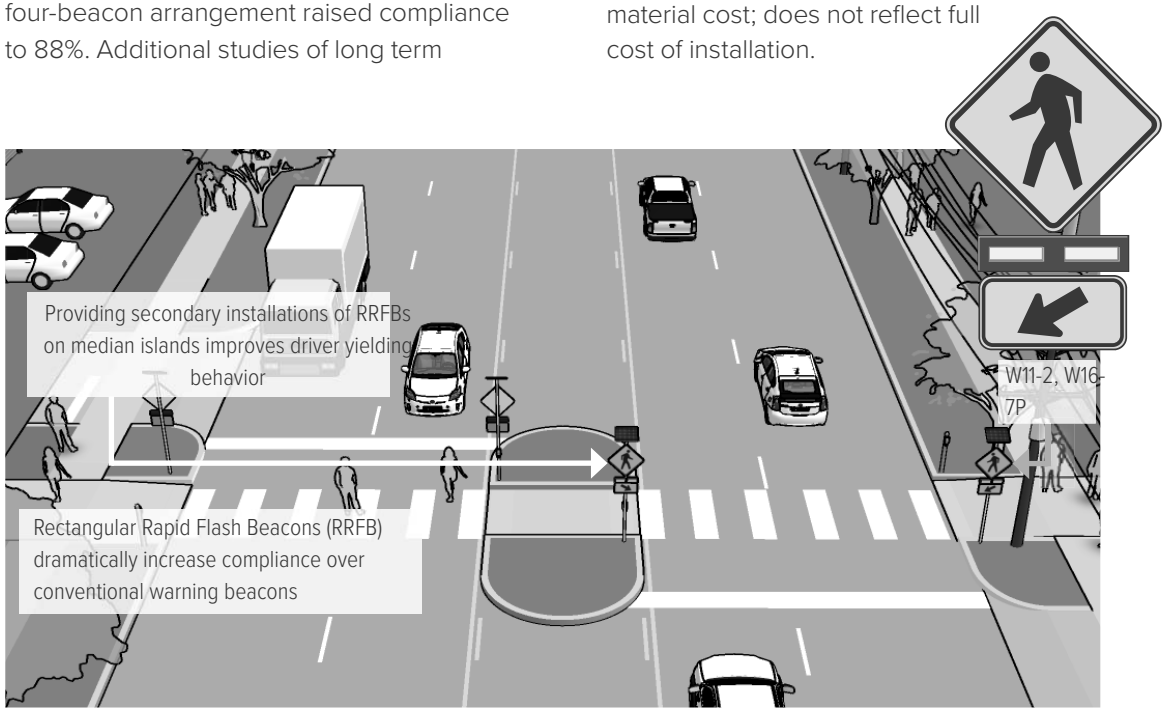
See FHWA Interim Approval 21 (IA-21) for more information on RRFBs.

MATERIALS AND MAINTENANCE

RRFBs should be regularly maintained to ensure that all lights and detection hardware are functional.

APPROXIMATE COST

- $15,000 for two RRFBs
- Approximate cost reflects estimated material cost; does not reflect full cost of installation.



Pedestrian Hybrid Beacon (PHB)

Pedestrian Hybrid Beacons (PHB) or High-Intensity Activated Crosswalks (HAWK) are used to improve non-motorized crossings of major streets. A hybrid beacon consists of a signal head with two red lenses over a single yellow lens on the major street, and a pedestrian signal head for the crosswalk.

Hybrid beacons are only used at marked mid-block crossings or unsignalized intersections. They are activated with a pedestrian pushbutton at each end. If a median refuge island is used at the crossing, another pedestrian pushbutton can be located on the island to create a two-stage crossing.

TYPICAL APPLICATION

- Suitable for arterial streets where speeds are above 30-45 mph and there are three or more lanes of traffic (or two lanes with a median refuge).
- Where off-street bicycle facilities intersect major streets without signalized intersections.
- At intersections or midblock crossings where there are high pedestrian volumes.

DESIGN FEATURES

- Hybrid beacons may be installed without meeting traffic signal control warrants based on engineering judgement if roadway speed and volumes are excessive for comfortable pedestrian crossings.
- If installed within a signal system, signal engineers should evaluate the need for the hybrid beacon to be coordinated with other signals.
- Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk to provide adequate sight distance.
- Crossings with a median refuge and no more than two lanes in each direction may utilize side mounted beacons for reduced cost and complexity.

FURTHER CONSIDERATIONS

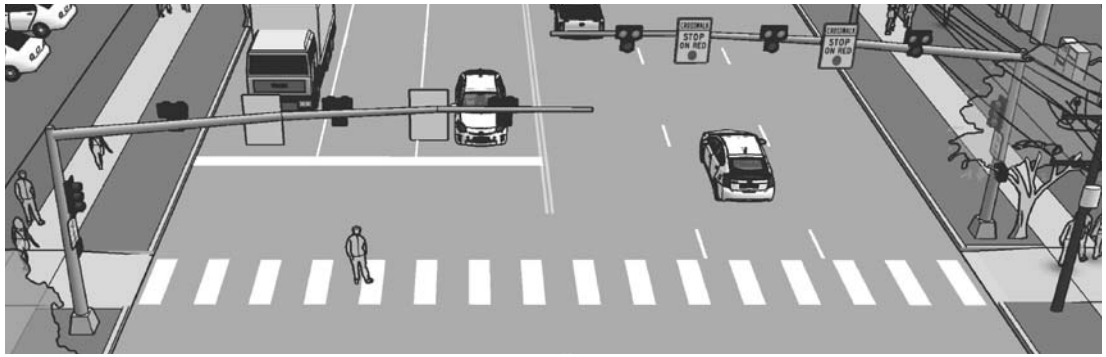
- Hybrid beacon are normally activated by push buttons, but may also be triggered by infrared, microwave, or video detectors. If not on-demand, the maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street, but a much shorter delay is strongly preferred.
- Each crossing, regardless of traffic speed or volume, requires review to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity, and safety.
- The installation of hybrid beacons should also include public education and enforcement campaigns to ensure proper use and compliance.

MATERIALS AND MAINTENANCE

PHBs are subject to the same maintenance needs and requirements as standard traffic signals. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

APPROXIMATE COST

- $60,000 - $130,000, depending on complexity and overhead vs side mounted configuration.
- Approximate cost reflects estimated material cost; does not reflect full cost of installation.



Pedestrian Signalization Improvements

Pedestrian Signal Heads

TYPICAL APPLICATION

Pedestrian signal heads indicate to pedestrians when to cross at a signalized crosswalk. Pedestrian signal indications are recommended at all traffic signals except where pedestrian crossing is prohibited by signage.

Countdown pedestrian signals should be retrofitted at existing signals with older style pedestrian signals and on any new installation. Countdown signals have a crash reduction factor of between 25 and 52% in varied studies[1].

DESIGN FEATURES

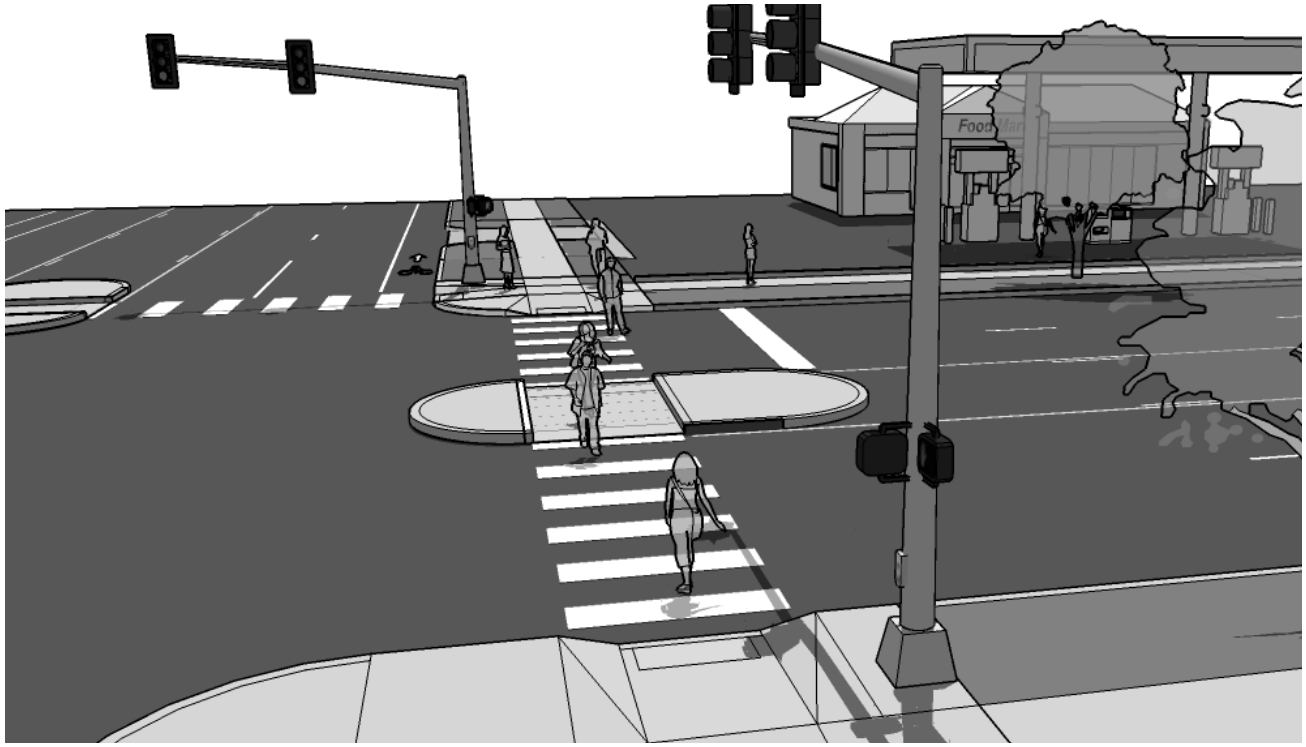
Countdown pedestrian signals are particularly valuable for pedestrians, as they indicate whether a pedestrian has time to cross the street before the signal phase ends.

MATERIALS AND MAINTENANCE

It is important to perform ongoing maintenance of traffic control equipment. Consider semi-annual inspections of controller and signal equipment, intersection hardware, and detectors.

APPROXIMATE COST

Adjusting signal timing is relatively inexpensive, as it requires only a few hours of staff time to accomplish. New signal equipment ranges from $20,000 to $140,000.



Signal Timing

TYPICAL APPLICATION

Adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street. The MUTCD requires a walking speed of 3.5 ft per second.

At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3 ft per second should be assumed. Such locations can have crossing time extensions through microwave detectors or timed at 3 ft per second for all pedestrian crossings. Special pedestrian phases can be used to provide greater visibility or more crossing time for pedestrians at certain intersections.

Large pedestrian crossing distances can be broken up with median refuge islands. A pedestrian push-button must be provided on the median to create a two-stage pedestrian crossing if the pedestrian phase is actuated. This ensures that pedestrians are not stranded on the median, and is especially applicable on large, multi-lane roadways with high vehicle volumes, where providing sufficient pedestrian crossing time for a single stage crossing may be an issue. Pedestrian refuge areas should be offset if possible for two-stage crossings so that it is clear which pedestrian signals pedestrians should obey.

MATERIALS AND MAINTENANCE

It is important to perform ongoing maintenance of traffic control equipment. Consider semi-annual inspections of controller and signal equipment, intersection hardware, and detectors.

APPROXIMATE COST

Adjusting signal timing is relatively inexpensive, as it requires only a few hours of staff time to accomplish. New signal equipment ranges from $20,000 to $140,000.

Leading Pedestrian Intervals (LPI)

TYPICAL APPLICATION

Leading Pedestrian Intervals (LPI) are used to reduce right turn and permissive left turn vehicle and pedestrian conflicts. By providing pedestrians a "head-start" into the intersection to gain positioning and visibility.

DESIGN FEATURES

The pedestrian interval is initiated 3-10 seconds, in advance of the concurrent green with the potential for permissive right and left turn conflicts. The LPI gives pedestrians a headstart making them more visible, and reducing crossing exposure time. Accessible Pedestrian Signals (APS) should be implemented with an LPI.

FURTHER CONSIDERATIONS

APS may be on "recall" or be actuated on an as-needed basis through pedestrian push buttons.

APPROXIMATE COST

Adjusting signal timing is relatively inexpensive, as it requires only a few hours of staff time to accomplish.

[1] http://www.cmfclearinghouse.org/index.cfm

Accessible Pedestrian Signals (APS)

TYPICAL APPLICATION

Pedestrian-vehicle conflicts can occur when drivers performing turning movements across the crosswalk do not see or yield to pedestrians who have the right-of-way. Pedestrians may also arrive at an intersection late, or may not have any indication of how much time they have to safely cross the intersection. Pedestrian traffic signal enhancements can be made to provide pedestrians with a head start or extend the walk time to allow them to safely and comfortably cross the street.

DESIGN FEATURES

- Consider the use of a Leading Pedestrian Interval (LPI) to provide additional traffic-protected crossing time to pedestrians.
- Accessible Pedestrian Signals (APS) provide crossing assistance to pedestrians with a variety of disabilities.
- Audible locator tones, tactile arrows aligned with the crossing, voice information about when to cross and confirmation beeps assist people with vision impairments.
- Large buttons that can be operated with a closed fist and require low effort assist people with a variety of physical disabilities.
- Confirmation lights and vibrotactile feedback assist pedestrians with hearing impairments
- Low mounting height and positioning at the curb ramp landing allow easy access for pedestrians in wheelchairs or other mobility assisted devices.
- APS pushbuttons should be well signed and within reach and operable from a flat surface for pedestrians in wheelchairs and with visual disabilities. They should be conveniently placed in the area where pedestrians wait to cross.

FURTHER CONSIDERATIONS

- The provision of APS is not currently a requirement; however, the draft Public Rights of Way Accessibility Guidelines from 2011 require APS at all new and altered signals. It is recommended that APS be installed as a standard in Yakima.
- In areas with very heavy pedestrian traffic, consider an all-pedestrian signal phase to give pedestrians free passage in the intersection when all motor vehicle traffic movements are stopped.
- At locations with very high pedestrian volumes, such as downtown, an exclusive pedestrian signal phase with a diagonal crossing called a “Pedestrian Scramble” can be provided to reduce vehicle turning conflicts.

APPROXIMATE COST

Adjusting signal timing is relatively inexpensive, as it requires only a few hours of staff time to accomplish. New signal equipment ranges from $20,000 to $140,000.

Other Traffic Control Measures

Advanced Stop Lines

TYPICAL APPLICATION

Advance stop lines increase pedestrian comfort and safety by stopping motor vehicles further in advance of multi-lane approaches to marked crosswalks, providing drivers a better line of sight of pedestrians, and giving inner lane motor vehicle traffic time to stop for pedestrians.

GENERAL

- Install advance stop lines prior to any marked crosswalk.
- Provide advance stop lines in each direction of vehicular travel.
-

UNCONTROLLED CROSSINGS

- A “Stop Here for Pedestrians” (R1-5b) sign must accompany, and be in the same location as, the advance stop bar on multi-lane approaches. The sign should be placed 20 to 50 feet in advance of the nearest crosswalk.

DESIGN FEATURES

- Wide stop lines are recommended to provide increased visibility
- Parking should be prohibited in the area between the stop line and the crosswalk.

APPROXIMATE COST

- $100 - $500 dependent on whether paint or thermoplastic is used.
- Approximate cost reflects estimated material cost; does not reflect full cost of installation.

No Right Turn on Red

TYPICAL APPLICATION

Restricting the ability of vehicles to turn right turn on red in certain circumstances can see improvements in pedestrian safety where right turning vehicles may come in conflict with pedestrians. Restricting Right Turns on Red (RTOR) should be considered in the following scenarios:

- Poor sight distance between vehicles and pedestrians. An unusual number of pedestrian conflicts with turns on red (compared to turns on green).
- An exclusive pedestrian phase
- A leading pedestrian interval

DESIGN FEATURES

There are a range of treatments which can be instituted ranging from:

- Static signs only (will likely not be very effective)
- Red right arrow signal heads. May still not achieve high compliance if Right Turn on Red restrictions are not commonplace.
- Blankout signs which illuminate during the prohibition (the most effective if high compliance is needed).

FURTHER CONSIDERATIONS

Restricting RTOR can be a condition:

- At all times (resulting in a decrease in intersection capacity)
- In effect when pedestrians are present only
- In effect during certain times of day

APPROXIMATE COST

Varies depending on approach (sign, signal, blankout sign, or all three) and if restriction is needed on all intersection approaches.

Speed Management - Vertical Elements

TYPICAL APPLICATION

Motor vehicle speeds affect the frequency at which automobiles pass pedestrians as well as the severity of crashes that can occur. Slower motor vehicle speeds greatly improve pedestrians' comfort on a street. Slower vehicular speeds also improve motorists' ability to see and react to pedestrians by reducing the distance needed to stop in any situation.

Vertical speed control measures are composed of slight rises in the pavement, on which motorists must reduce speed to cross.

- Vertical speed management is recommended on Neighborhood Greenways where 85th percentile speeds exceed 22 MPH.
- Other select locations where speeding is a concern for pedestrian safety, such as near schools or pedestrian priority districts.

DESIGN FEATURES

(A) Speed humps are raised areas usually placed in a series across both travel lanes. A 14' long hump reduces impacts to emergency vehicles. Speed humps can be challenging for bicyclists, gaps can be provided in the center or by the curb for bicyclists and to improve drainage. Speed humps can also be offset to accommodate emergency vehicles.

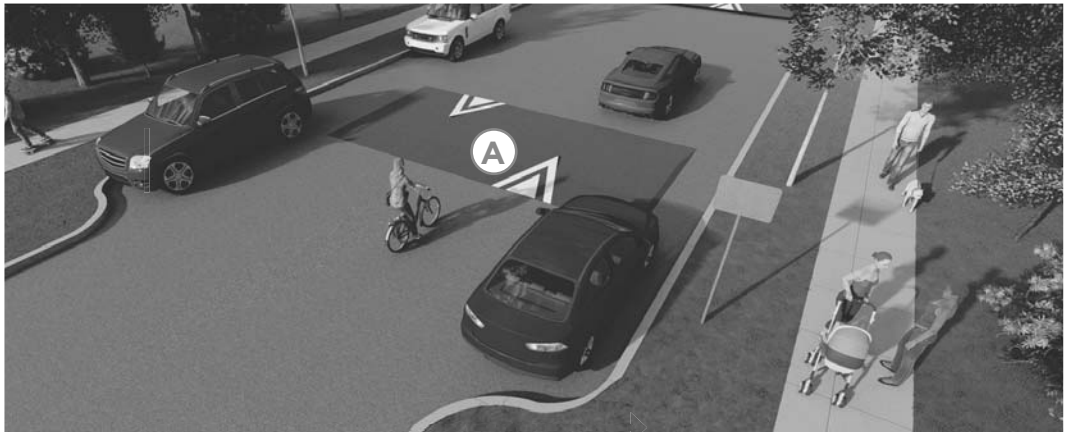
- Speed lumps or cushions have gaps to accommodate the wheel tracks of emergency vehicles.
- Speed tables are longer than speed humps and flat-topped. Raised crosswalks are speed tables that are marked and signed for a pedestrian crossing.
- For all vertical traffic calming, slopes should not exceed 1:10 or be less steep than 1:25. Tapers should be no greater than 1:6 to reduce the risk of bicyclists losing their balance. The vertical lip should be no more than a 1/4" high.

FURTHER CONSIDERATIONS

Emergency vehicle response times should be considered where vertical deflection is used. Because emergency vehicles have a wider wheel base than passenger cars, speed lumps/cushions allow them to pass unimpeded while slowing most other traffic. Alternatively, speed tables are recommended because they cannot be straddled by a truck, decreasing the risk of bottoming out. Traffic calming can also deter motorists from driving on a street. Monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

APPROXIMATE COST

- $25 - $50 per linear foot for speed hump depending on design and width.
- Approximate cost reflects estimated material cost; does not reflect full cost of installation.



Speed Management - Horizontal Elements

TYPICAL APPLICATION

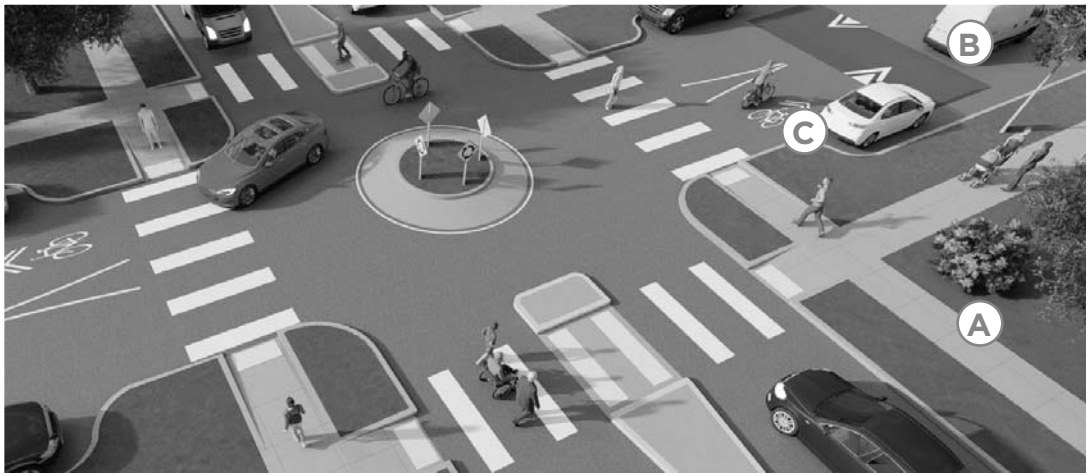
Horizontal deflection is a form of speed management utilizing design elements intended to reduce the speed of motor vehicle traffic closer to walking and bicycling travel speeds. They also effectively discourage motorists from using neighborhood streets as cut-through corridors. Constricting the roadways space, forces drivers to slow down, and maneuver more carefully. Such measures may reduce the design speed of a street, and can be used in conjunction with reduced speed limits and vertical deflection elements to reinforce the expectation of lowered speeds.

- Neighborhood streets should have a maximum posted speed of 25 mph, with an ideal speed of 20 mph. Use horizontal deflection to maintain an 85th percentile speed below 20 mph (25 mph maximum). Roadways with average speeds above this limit should be considered for horizontal deflection measures.
- Maintain a minimum clear width of 14 feet with a constricted length of at least 20 feet in the direction of travel.
- To provide a comfortable walking environment, bring traffic volumes down to 1,500 cars per day (4,000 cars per day maximum). Roadways with daily volumes above this limit should be considered for horizontal deflection measures.

DESIGN FEATURES

(A) Median islands in the center of the roadway create a pinchpoint for vehicles and offer shorter crossing distances for pedestrians when used with a marked crossing.

(B) Pinchpoints are curb extensions placed on either side of the road. They restrict motorists from operating at high speeds on local streets by visually and physically narrowing the roadway. An effective configuration narrows the roadway to a single lane so only one vehicle traveling in either direction can proceed at a time. When placed at intersections, pinchpoints are known as chokers or neckdowns. They reduce curb radii and further lower motor vehicle speeds.



C Traffic circles are raised or delineated islands placed at intersections that reduce vehicle speeds by narrowing turning radii and the travel lane. Traffic circles can also include a paved apron to accommodate the turning radii of larger vehicles like fire trucks or school buses. Traffic circles can be landscaped but must be maintained to preserve sightlines.

D Chicanes are a series of raised or delineated curb extensions, edge islands, or parking bays on alternating sides of a street forming an “S”-shaped curb, which reduce vehicle speeds by requiring motorists to shift laterally through narrowed travel lanes while preserving sightlines.

E Pinch points, also called chokers, are curb extensions or edge islands at midblock locations which narrows the road for a short distance, forcing all motorists to merge into a single lane.

FURTHER CONSIDERATIONS

- Horizontal speed management elements also provide opportunities for planting street trees, vegetation, and other stormwater management installations. In addition to the aesthetic benefits of landscaping, street trees narrow a driver’s visual field and creates a consistent rhythm and canopy along the street, which provides a unified character and facilitates place recognition.
- Horizontal deflection elements should be designed to minimize impacts to streetsweepers and allow for regular maintenance. Vegetation should be regularly trimmed to maintain visibility and attractiveness.

APPROXIMATE COST

- Varies depending on design/landscaping requirements.
- Each element may range from $1,500 - $25,000.
- Approximate cost reflects estimated material cost; does not reflect full cost of installation.