JUNE 2023

Wilmington Pedestrian Plan Update | 2023

Prepared for the City of Wilmington, North Carolina, in partnership with the Wilmington Urban Area Metropolitan Planning Organization (WMPO) and the NCDOT Integrated Mobility Division

Prepared by Alta Planning + Design

Acknowledgments

Thank you to the 1,000+ local residents, community leaders, and government staff that participated in the development of this plan through meetings, tabling outreach, interactive maps, comment forms, and plan review.

Steering Committee Members

Liz Carbone	Good Shepherd Center
Joe Conway	City of Wilmington
Adrienne Cox	NCDOT Division 3
Drew Davey	UNC-Wilmington
Elizabeth Forte	Novant Health
Wendy Giannini-King	Wilmington Fire Department
Christina Haley	Wilmington Downtown, Inc.
Doug Lewis	City of Wilmington Parks & Recreation
Abby Lorenzo	Wilmington Urban Area Metropolitan Planning Organization (WMPO)
Karin Mills	Bicycle and Pedestrian Advisory Committee
Jason Pace	City of Wilmington Engineering
Linda Painter	City of Wilmington Planning Department
Marie Parker	Wave Transit/Cape Fear Public Transit Authority
Deborah Porterfield	CastleBranch
Ron Satterfield	City of Wilmington Planning Department
Dave Spetrino	PBC Design + Build
Denys Vielkanowitz	City of Wilmington Traffic Engineering
Lori Wainright	District Court, New Hanover County Community Relations Advisory Committee
Lt. Alanna Williams	Wilmington Police Department

City of Wilmington Leadership

Mayor	Bill Saffo
Mayor Pro-Tem	Margaret Haynes
City Council	Neil Anderson Clifford D. Barnett, Sr. Charles H. Rivenbark Kevin Spears Luke Wadell
City Manager	Tony Caudle
Deputy City Mgrs.	Chad McEwan Thom Moton Mary Vigue

Project Consultants

Alta Planning + Design:

Jason Reyes, Project Manager
Meg Bryson, Planner
Lucy Laird, Planner
Kim Voros, GIS Manager

Project Contacts

Abby Lorenzo, Deputy Director, WMPO
(910) 341-7890 | abby.lorenzo@wilmingtonnc.gov

Bryan Lopez, Regional Planning Manager
NCDOT-Integrated Mobility Division
(919) 707-2606 | balopez@ncdot.gov

Table of Contents

\ 1 \
Introduction 2

\ 2 \
Existing Conditions 10

\ 3 \
Recommendations 47

\ 4 \
Programs and Policies 84

\ 5 \
Implementation 112

\ A \
Public Engagement 124

\ B \
Design Resources 140

\ C \
Funding Resources 160

\ D \
Existing Plans Summary 176

\ 1 \

Introduction

Walk Wilmington is an update to the City's 2009 pedestrian plan. The updated plan will build on the successes of the previous plan and continue to guide the City's prioritization of safe, healthy, and equitable pedestrian infrastructure projects, policies, and programs.

Background and Purpose

This updated plan provides a framework for prioritizing and implementing infrastructure, programs, and policies to make walking in Wilmington a safe, healthy, and equitable option.

Over the last 13 years, the 2009 pedestrian plan (also called Walk Wilmington) has guided the City through funding, design, and construction of more than 200 pedestrian projects, such as the Gary Shell Cross City Trail. The City has also implemented safety education programs for walking and driving, and revised its development policies to include pedestrian infrastructure.

Wilmington has successfully expanded and connected its sidewalks in areas like downtown and the University of North Carolina Wilmington (UNCW) campus. However, many roadway corridors throughout the city still lack complete sidewalks and adequate crossings, contributing to unsafe walking conditions in those areas.

Recognizing a need to update the 2009 pedestrian plan, the City of Wilmington requested and received funding from the North Carolina Department of Transportation (NCDOT). This plan update provided an opportunity to build on past successes while better aligning with current issues, including increases in crashes involving pedestrians and those who walk as a primary means of transportation, a desire for a greater focus on equity, and continued community support for pedestrian improvements.

Key Milestones

2009: Wilmington adopts the first Walk Wilmington Pedestrian Plan.

2012: The Moving Ahead for Progress in the 21st Century Act (MAP-21) is signed into law, providing federal funding opportunities for pedestrian projects through 2014.

2013: Wilmington adopts the Wilmington/New Hanover County Comprehensive Greenways Plan.

2014: Voters approve a City transportation bond that funds trails, sidewalks, bike lanes, and crosswalks.

2015: The Federal Fixing America's Surface Transportation (FAST) Act is signed into law, providing federal funding opportunities for pedestrian projects through 2020.

2019: Amid a nationwide increase in pedestrian crashes, injuries, and fatalities, Wilmington experiences the highest pedestrian crash rate among large cities in NC.

2021: Wilmington and NCDOT initiate a citywide pedestrian safety study; the City requests funding from NCDOT to update Walk Wilmington; the Infrastructure Investment and Jobs Act (IIJA) is signed into law, providing federal funding opportunities for pedestrian projects through 2026.

2023: Wilmington adopts the updated Walk Wilmington Pedestrian Plan.

Planning Process

The planning process included public engagement, participation and direction from a project committee, and a final presentation to City Council. The time frame for these and other steps is outlined below:

Public Engagement (May 2022-February 2023):
Project Website, Online Map, Public Comment Form, Open Houses, and Tabling at Local Events

Plan Vision, Goals, and Objectives

The Walk Wilmington vision, goals, and objectives guide every aspect of the plan. The framework provides a foundation for the plan's needs analysis, prioritization process, implementation strategies, and performance measures. The vision, goals, and objectives were developed with input from the project steering committee.

Plan Vision

The City of Wilmington will be a pedestrian-friendly environment where walking is a safe and comfortable mobility choice for residents and visitors of all ages and abilities.

Plan Goals & Objectives

These six goals guided the plan development process. Of these, three **Key Plan Goals** were identified as the most important priorities for the Walk Wilmington Pedestrian Plan based on feedback from the steering committee and public input.

KEY PLAN GOALS

Increase Safety

Reduce overall pedestrian crashes and improve safety for all users of the roadway network. Promote adherence to traffic laws through education and awareness campaigns.

Promote Equity

Prioritize investment in areas with a history of underinvestment in pedestrian infrastructure and with historically under-served populations such as people with disabilities, people of color, and low-wealth households.

Enhance Connectivity, Mobility, and Accessibility

Fill gaps in the pedestrian network, improve connections to destinations and essential services, and ensure accessibility for people of all ages and abilities.

Enhance Health

Improve the health of residents and the environment by getting more people walking as a means of transportation and recreation through policies, programs, and projects.

Improve Livability and Protect the Environment

Make walking an inviting, attractive, and enjoyable experience through sound design and pedestrian-friendly policies. Reduce traffic congestion and harmful emissions through a reduction in vehicle miles traveled (VMT).

Create a Positive Economic Impact

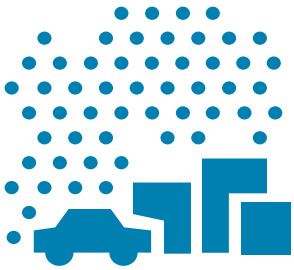
Continue to attract investment and tourism by enhancing walkability throughout Wilmington and providing more spaces to create economic returns. Establish a strategic prioritization process to fund improvements and maintenance.

Why Invest in Walking?

Increased rates of walking can help to improve people's health and fitness, enhance environmental conditions, and decrease traffic congestion. Infrastructure for walking, such as greenways and crosswalks, supports active lifestyles, resilient and sustainable transportation systems, and economic prosperity. Studies from the fields of public health, city planning, urban ecology, real estate, tourism, and transportation have demonstrated the value and benefits of creating more walkable communities. The following section presents findings from some of these studies that relate to Walk Wilmington's goals and objectives.

Environmental Benefits

Decreasing reliance on automobiles and reducing congestion by utilizing sidewalks and trails will lead to improved air quality. Trails and greenways serve as tools for conserving open space and preserving wetlands.



AIR QUALITY IN WILMINGTON

21 bad-air days in 2018

= NEARLY 1 MONTH/YEAR in which ground-level ozone and/or particulate pollution was **above the level** that the US Environmental Protection Agency has determined presents "little or no risk."

Environment North Carolina Research & Policy Center, "Trouble in the Air", 2020

If **8% more children** living within **2 miles of a school** were to walk or bike to school, the air pollution reduced from not taking a car would be **EQUIVALENT TO REMOVING 60,000 CARS** from the road for one year, nationally.

Pedroso, 2008, SRTS

Health Benefits

Sidewalks and greenways offer safe and accessible opportunities for physical activity. People who utilize pedestrian facilities are able to connect with places that they want or need to go.

32% **ADULT OBESITY** in New Hanover County (compared with 34% for the state of North Carolina)

23% of adults are **PHYSICALLY INACTIVE** in New Hanover County (compared with 26% for the state of North Carolina)

University of Wisconsin Population Health Institute, County Health Rankings, 2019

Every **0.6 MILES WALKED** **=5%** **REDUCTION** in the likelihood of obesity.

Frank, 2004

THOSE WHO ARE PHYSICALLY ACTIVE GENERALLY LIVE LONGER and have a lower risk for heart disease, stroke, type 2 diabetes, depression, some cancers, and obesity.

CDC, 2015

20 MINUTES walking or biking each day is associated with a

21% **LOWER RISK OF HEART FAILURE FOR MEN &**

29% **LOWER RISK FOR WOMEN**

Rahman, 2014 and 2015

Safety Benefits

Pedestrian infrastructure and traffic calming help save lives. Additionally, natural surveillance of trails and greenways occurs through increased numbers of trail users, creating a safer environment where behavior on trails is monitored by trail users themselves.

PEDESTRIAN-VEHICLE CRASH FACTS

From 2016-2020, Wilmington averaged

75 PEDESTRIAN-VEHICLE CRASHES / YEAR

3 PEDESTRIAN FATALITIES / YEAR

NCDOT, 2021

CRASH REDUCTION MEASURES

	% decrease in crashes
Install sidewalk to avoid walking in roadway	65-89
Increase enforcement to reduce vehicle speed	70
Install pedestrian refuge island	56
Add exclusive pedestrian phasing to signalized intersection	34

Federal Highway Administration, 2008

A PEDESTRIAN HIT BY A VEHICLE TRAVELING AT:

25 MPH

has an **89%** chance of survival

35 MPH

has a **68%** chance of survival

45 MPH

has a **35%** chance of survival

Rosén & Sander, 2009

Economic Benefits

Connected walkways and trails often yield high returns on investment through economic revitalization, recreational tourism, increased property values, and small business opportunities.

Building sidewalk and bicycle facilities creates **36% MORE JOBS** than building highways and **ALMOST 100% MORE** jobs than pavement improvements.

American Association of State Highway and Transportation Officials (AASHTO) Average Direct Jobs by Project Type (2012); Job in terms of full-time equivalents (FTE).

21%

of all trips made by a privately operated vehicle in the US are **1 MILE OR LESS**

NHTSA, 2017

DRIVING 4 MILES PER DAY COSTS

$905

per year in fuel and vehicle wear and tear

AAA, 2019

A 2018 study looking at the **ECONOMIC IMPACT OF FOUR GREENWAYS** in North Carolina (Brevard Greenway, Little Sugar Creek Greenway, American Tobacco Trail, and Duck Trail) found that every **$1.00 of initial trail construction supports $1.72 annually** from sales revenue, sales tax revenue, and benefits related to health and transportation. A one-time $26.7M capital investment in the four greenways supports:

$19.4M
Estimated annual sales revenue at local businesses along the four greenways

$684K
Estimated annual local and state sales tax revenue from businesses along the greenways

$25.7M
Estimated annual savings due to more physical activity, less pollution and congestion, and fewer traffic injuries from use of the greenways

$48.7M
Estimated business revenue from greenway construction

790 JOBS
Supported annually through greenway construction

NCDOT, Alta Planning + Design, and Institute for Transportation Research and Education, "Evaluating the Economic Impact of Shared Use Paths in North Carolina" 2018

\ 2 \

Existing Conditions

This chapter explores how Wilmington's recent history, community context, existing transportation network, and planned projects are shaping the future of walking in this growing city. Insight from stakeholders supplements safety- and equity-focused data analyses to examine the existing conditions through multiple lenses.

Overview and Local Context

Wilmington is a port city located along the Cape Fear River in New Hanover County, and is the economic center of Southeastern North Carolina's Cape Fear Region. The City's pedestrian network serves a diverse population of people walking for transportation, including youths, students, workers, retirees, tourists, and locals. Wilmington's flat topography and compact downtown grid are ideal for walking, but the city faces challenges with traffic safety, outward development, access to transit, and lack of walking infrastructure in areas outside of the downtown core.

The 2009 Walk Wilmington Plan identified 475 recommended pedestrian improvement projects—to date, 233 of these have been funded, designed, or completed, demonstrating the City's and the WMPO's commitment to serving the needs of pedestrians in the area. Wilmington has successfully expanded and connected its sidewalks in areas like downtown and the university campus. However, many roadway corridors throughout the city still have sidewalk gaps and inadequate crossings.

NCDOT owns and maintains many of Wilmington's high-capacity urban streets, where changes to the roadway design have great potential to improve pedestrian safety. The relationship between NCDOT, WMPO, and the City has helped fund pedestrian improvements through cost-sharing on NCDOT roadway projects; however, the City has limited power to influence modifications to NCDOT-owned and maintained streets.

Wilmington
QUICK FACTS

POPULATION*
115,451

8th
MOST POPULOUS CITY IN NC*

59,341
HOUSEHOLDS†

MEDIAN HOUSEHOLD INCOME†
$53,186

17.1%
OF RESIDENTS LIVING IN POVERTY†

RACE AND ETHNICITY*

HISPANIC OR LATINO	8.3%
NOT HISPANIC OR LATINO	91.7%
WHITE ALONE	70.9%
BLACK OR AFRICAN-AMERICAN ALONE	16.5%
ASIAN ALONE	1.6%
AMERICAN INDIAN OR ALASKA NATIVE ALONE	0.4%
NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER ALONE	0.1%
SOME OTHER RACE	3.9%
TWO OR MORE RACES	6.6%

Sources:
**2020 Decennial Census*
†2021 American Community Survey, 1-Year Estimates

Support for Walkability

The city's government, residents, and local organizations are broadly supportive of efforts to make walking safer and more convenient throughout Wilmington, in order to ensure sustainable growth for the city as well as the wider Cape Fear region. Voters approved a 2014 Transportation Bond, which funded trails, sidewalks, streetscapes, bike lanes, and crosswalks in high-priority locations.

The 2014 Transportation Bond included $12M for trails, $5M for sidewalks, $1.1M in bike/ped contingency funds, and $445K for crosswalks.[1]

Safety and Equity

Wilmington continues to experience a higher annual rate of pedestrian crashes and fatalities compared to similar-sized cities in NC. Seeking to understand the contributing factors, the City and NCDOT initiated a pedestrian safety study in 2021. Findings indicated that specific roadway characteristics are linked to more crashes and injuries, and showed that certain racial, age, and income groups are disproportionately affected—reiterating the need for equity considerations in project development and prioritization.

Wilmington consistently has one of the highest annual pedestrian crash rates in NC. From 2011-2020, the majority of crashes involving pedestrians occurred in areas with higher concentrations of minority residents and higher poverty rates compared to the county average.[2]

Tourism and Visitors

Tourism is a key part of Wilmington's economy. Recreational visitors are drawn to the beaches, rivers, parks, and gardens, while business travelers come for conferences, educational events, and business opportunities. After a record-breaking 2019, tourism spending declined all across the state in 2020 due to the Covid-19 pandemic, but early data for 2021 show a strong recovery.[3]

In 2020, visitors spent $598M in New Hanover County, the seventh highest amount in NC counties.[4] *The county supported 5,455 travel and tourism jobs, worth $186.5M in total.*[4]

Sources: 1) City of Wilmington, "Transportation Bond Update" February 7, 2020. 2) City of Wilmington, Wilmington Pedestrian Safety Study: 2011-2020 Crash Analysis Highlights, 2022. 3) NC Department of Commerce, "North Carolina announces total tourism spending at near recovery in 2021," May 3, 2022. 4) Economic Development Partnership of North Carolina, "The Economic Impact of Travel on North Carolina Counties," 2021.

Opportunities and Challenges

In recent years, Wilmington has made significant investments in pedestrian infrastructure, policies, and programs. The City seeks to build on its momentum by identifying potential opportunities and challenges related to pedestrian mobility in Wilmington, which are described below.

TABLE 1. *Opportunities and Challenges*

OPPORTUNITY/ CHALLENGE AREA	ASSESSMENT
Overall transportation network	The pedestrian experience varies dramatically in different parts of Wilmington. High density areas like the downtown have a strong pedestrian network with sidewalks, crosswalks, and signalized intersections. Other areas, such as along the City's major urban roadways, pedestrian infrastructure lacks connectivity and protected crossing locations, leading to increased pedestrian vulnerability. Wilmington is also a tourist destination and regional employment hub, and many of the users of these facilities are not familiar with the geography, further necessitating the need for connectivity, signage, and safe crossing locations along these roadways and at major intersections.
Current conditions for pedestrians & major infrastructure/ physical barriers to walking	Barriers faced are connectivity and the crossing of major corridors, especially increasing the number of midblock crossings for access to important destinations. High-capacity urban corridors have a patchwork sidewalk network that has yet to provide a solid string of connections vital for safe pedestrian traverse and crossing. Infrastructure is especially sparse in Wilmington's historically low-wealth communities, where people who have to walk out of necessity are most likely to encounter large gaps in the sidewalk network.
Existing side paths and greenways	There is a side path on the east side of Military Cutoff Road running from Drysdale Drive to Gordon Road for approximately 2.8 miles. The Park Avenue sidepath was recently completed. The Gary Shell Cross City Trail is a multi-use trail that runs for 15 miles through the City of Wilmington from Wade Park to the Heide-Trask Drawbridge at the Intracoastal Waterway, providing pedestrian and bicycle access to several city parks, the UNCW campus, and various cultural resources around the city. The Summer Rest Trail also connects to the Cross City Trail. Paved walking paths, ranging in length from 0.4 to 4.8 miles, exist in parks throughout the city. In addition, the Wilmington Downtown Riverwalk (pedestrian use only) is designated part of the East Coast Greenway and runs from Nutt Street to Nun Street along the Cape Fear River. Additional planned multi-use paths include Hooker Road, Hinton Avenue, South 17th Street, the Greensboro Loop Trail, and the Masonboro Loop Trail.

OPPORTUNITY/ CHALLENGE AREA	ASSESSMENT
Existing sidewalk network	As Wilmington becomes more suburban outside of the relatively well-connected downtown grid, the sidewalk network becomes more sporadic. Outside of downtown, much of the existing sidewalk infrastructure can be found in newer subdivisions, many of which are cut off from the City's broader pedestrian network.
Pedestrian network interaction with local transit system	The 2019 Road Safety Assessment identified the location of transit stops relative to the pedestrian network as an area-wide issue in Wilmington. Often, stops are located only on one side of a major road, with no safe and convenient way for riders to cross from the stop to the other side of the road.
Current walking rates	According to 2019 ACS data, nearly 3% (2.98%) of households in Wilmington walked to work.
Key generators/ attractors, origin and destination points	Key generators of pedestrian activity include greater downtown Wilmington, Sunset Park and Brookwood neighborhoods, UNC Wilmington, the hospital district, Mayfaire shopping center, Carolina Beach Road/US-421 business and commercial corridor, Market Street corridor, and Oleander Drive/US-17 corridor.
Special populations or user groups	The Wilmington area has a variety of special populations and user groups that utilize the pedestrian system differently and have specific needs. These include college students at both UNC Wilmington and Cape Fear Community College, retirees, and tourists visiting the nearby beaches, state parks, and historical destinations.
Roadway ownership and collaboration with NCDOT	NCDOT and the City of Wilmington have successfully used cost-sharing to add pedestrian improvements to roadway projects overseen by NCDOT. Examples include incorporating sidewalks and bike lanes into the widening of Kerr Ave and the future Independence Blvd Ext, and constructing multi-use paths along Military Cutoff Rd and Eastwood Rd. However, the City has limited power to initiate and influence modifications to NCDOT-owned and maintained streets. Within the hierarchy of Wilmington's streets, NCDOT owns many high-capacity urban streets that have been identified as needing pedestrian safety improvements, including Carolina Beach Road, Oleander Drive, Kerr Avenue, College Road, Market Street, Wooster Street, and Dawson Street. The map on page 19 shows roadway ownership in Wilmington.

OPPORTUNITY/ CHALLENGE AREA	ASSESSMENT
Local encouragement, educational, or enforcement programs and initiatives	The WMPO has a program called "Be A Looker" to encourage drivers to watch for pedestrians and bicyclists and to share the road. The WMPO and City of Wilmington have also participated in Watch for Me NC, a statewide program aimed at educating drivers, bicyclists, and pedestrians about safety. UNCW also prioritizes improving safety for students walking to campus, instructing all other modes to yield to pedestrians and providing students living on campus with information on how to safely navigate crossing the streets adjacent to campus. UNCW also has a policy of not issuing parking permits to students residing within 1 mile of campus, encouraging the use of walking, biking, and transit.
Existing plans, programs, and policies **See plan summary in Appendix D.*	Existing planning documents that are relevant to Wilmington include: ▶ Land Development Code Update (2021)* ▶ 2020 Biennial Data Report (2021) ▶ Cape Fear Change in Motion (2020)* ▶ Cape Fear Moving Forward 2045 (2020)* ▶ Congestion Management Process (CMP) (2020)* ▶ Wilmington Rail Trail Master Plan (2020)* ▶ Rail Realignment Plan (2017)* ▶ Comprehensive Transportation Plan (2016)* ▶ Create Wilmington Comprehensive Plan (2016)* ▶ US 17 Business (Market St) Corridor Study (2016)* ▶ River to Sea Bikeway Master Plan (2013)* ▶ Wilmington-New Hanover County Comprehensive Greenway Plan (2013)* ▶ Cross-City Trail Master Plan (2012)* ▶ Market Street Corridor Plan (2011) ▶ Wrightsville Sound Small Area Plan (2011)* ▶ Wrightsville Avenue 2030 (2010)* ▶ Southside Small Area Plan (2009)* ▶ Walk Wilmington: A Comprehensive Pedestrian Plan (2009)* ▶ Cape Fear Historic Byway Corridor Management Plan (2008)* ▶ Dawson & Wooster Corridor Plan (2007)* ▶ Seagate Neighborhood Plan (2007)* ▶ Carolina Beach Road Corridor Plan (2004)* ▶ College Road Corridor Plan (2004)* ▶ Oleander Drive Corridor Plan (2004)* ▶ Wilmington Vision 2020: A Waterfront Downtown (2004)* ▶ Northside Community Plan (2003)*

Steering Committee Comments on Existing Conditions

The following comments were provided by members of the steering committee. Members provided network-wide observations, and also wrote and drew on the base maps (provided by Alta) to indicate important destinations, issues, and dangerous crossings/intersections.

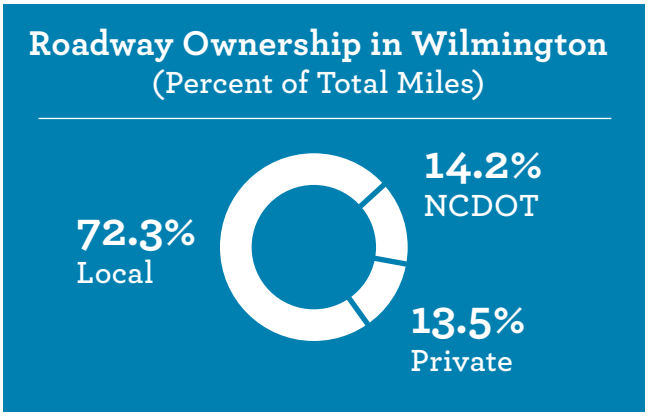
General Comments

- A general need for pedestrian connectivity to grocery stores, drugstores, dollar stores, social services, and medical facilities.
- In general, vehicle speeds are an issue around town. People tend to accelerate quickly after stops/through intersections.
- Connectivity with transit—important to have connections to sidewalks to increase transit utilization. More cons than pros in terms of transit connectivity—lots of crosswalks needed, especially in spots where buses only stop on one side of the street. Get WAVE ridership data.
- ADA improvements needed.
- Cultural change is a critical part of increasing safety for pedestrians. Many examples given of other US (west coast) communities where there is a “culture” of respect for people walking, particularly at intersections and crosswalks.
- “Be a Looker” program in conjunction with the Fire Department—first responders to many of the ped/bike crashes. UNCW, Oleander—”Stop, Look, Go” education program.

A WAVE Transit rider waits in the street at the South Front St and Ann St bus stop.

WMPO's "Be A Looker" educational program for bicyclists, pedestrians, and drivers.

- People crossing midblock often out of necessity. Example: 5th St—crosswalk gap.
- Fire Department and WMPO have given out bicycle helmets to people they see riding on the street.
- Minimum width for a residential sidewalk is 5 ft (wider for high-use areas); for shared-use paths 10 ft; up to 12 ft and wider becoming more common.
- Shared-use path materials: depends on guidelines used. Asphalt initially cheaper, but more maintenance. Recommend concrete for lower maintenance costs.
- It seems like many of our neighborhoods with the largest sidewalk gaps often have the most people who have to walk by necessity.
- Bike/ped committee has a list of priorities, much of it shared-use paths—take community input into account. The list of projects is in bike/ped element of the long-range plan (already digitized).
- Enforcement of traffic laws in pedestrian/vehicle interactions is important. Lighting issues for crashes, pedestrians crossing midblock. WPD participates in Governor's Highway Safety Program.
- For tourists: better signage, better crosswalks needed downtown. Overall need for promoting intermodal connectivity.
- 1-mile radius around UNCW—these students can't get parking passes, so shuttle runs. Heat map of population, ridership. Lots of foot traffic, bikeshare to get to campus.
- In-ground lights in the crosswalk are effective.
- Recent development code updates (as of Dec 1, 2021): Streetscape improvements downtown, connectivity/subdivision requirements, requiring midblock crossings, traffic calming. Looking at technical standards changes.
- Snow's Cut bridge is an example of where bike/ped facilities don't actually connect to the larger network.
- Inventory of worn foot paths? WMPO has an app that could be promoted to collect this info by crowdsourcing.
- General need for clear signage, wayfinding that will increase safe driving behavior.
- Sidewalk implementation question: Seems simple, why is it difficult? Many reasons: constrained public rights-of-way (City vs. NCDOT); utility lines (moving them very costly); drainage and cost of curb and gutter; coordinating with future roadway reconstruction plans or future land development plans.

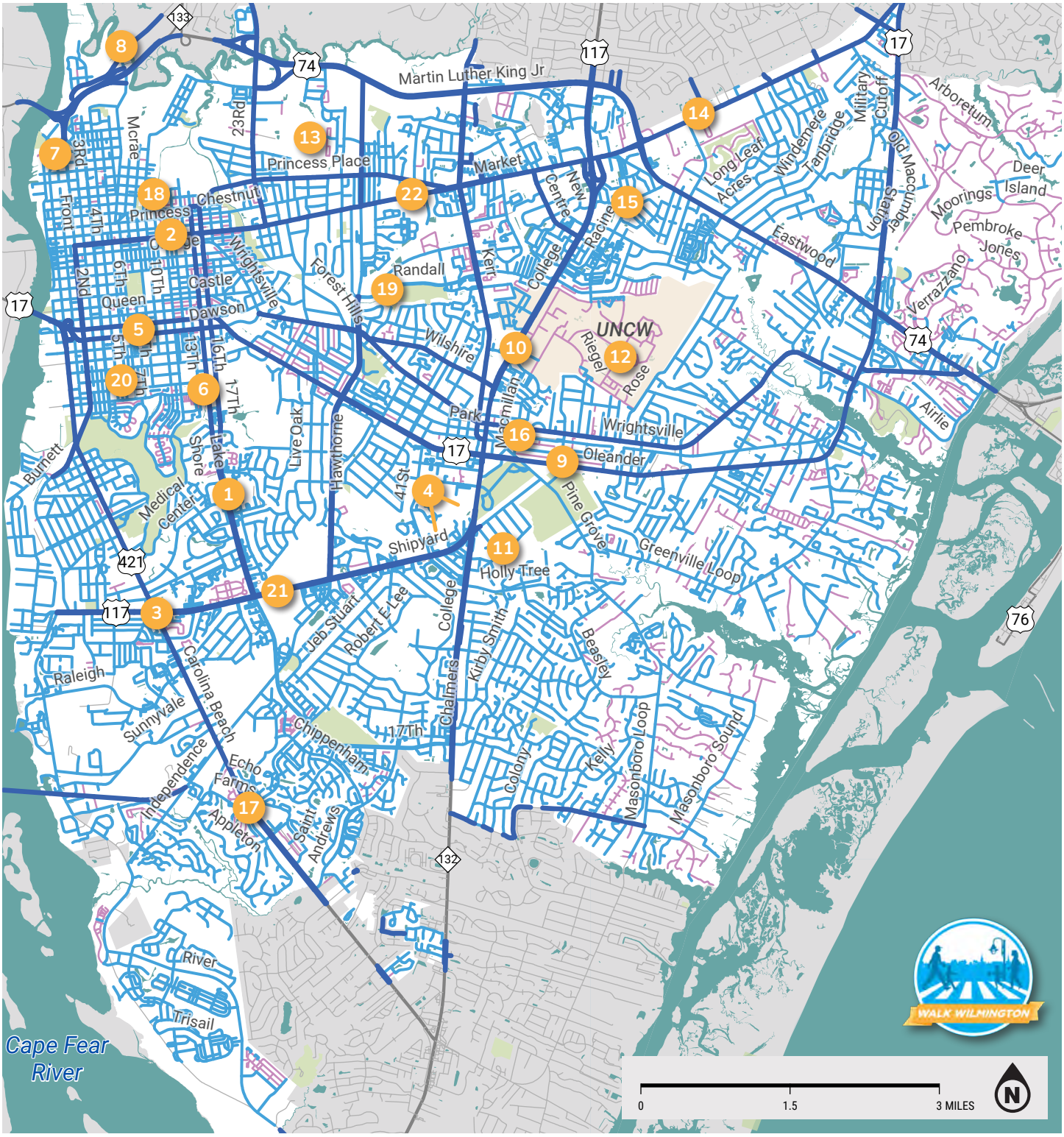


Roadway ownership determines maintenance responsibilities and the processes for making design changes, both of which influence the walking environment. **MAP 1 (page 19)** shows roadway ownership across Wilmington's network.

Location-Specific Comments

The following comments correspond to the numbered locations on **MAP 1 (page 19)**.

1. Public health—crosswalk put in for hospital access (from the parking deck).
2. Barriers to help direct pedestrian traffic towards safe crossings—successful at New Hanover High School.
3. Area around the intersection of Shipyard Boulevard and US-421/Carolina Beach Road is a high-volume pedestrian traffic area, with addiction rehab and other medical facilities present. Affordable housing is also planned for this area.
4. Students often cross Shipyard Boulevard to Hoggard High School, and College Road to Roland-Grise Middle School.
5. Wooster and Dawson/Cargo District: sidewalk is intermittent, with no crosswalks.
6. New affordable housing being put in at 16th Street/Greenfield Street. Lots of social services in this area, plus a planned grocery store.
7. N Front/Cowan/Harnett/N 3rd Street area: vehicles come into downtown quickly. Lots of ped traffic in this area, especially during events at Riverfront Park. Possibility of signage during events?
8. Castle Hayne Road bridge over Smith Creek to be reopened soon.
9. High pedestrian volume on Oleander Drive with few opportunities to cross.
10. Few crossings on College Road.
11. No sidewalks in Long Leaf Hills neighborhood.
12. Crosswalks needed on streets surrounding UNCW, including connections to Isaac Bear Early College High School.
13. New mixed-use development going in around the N 26th Street/Kornegay Avenue area.
14. Market Street between Kerr Avenue and Gordon Road is main corridor where serious pedestrian injuries/fatalities occur. Factors: impairment, dark clothing, time of day.
15. Racine Drive often used by college students to get to campus.
16. Parent/student circulation an issue around Winter Park Elementary School.
17. Ped/bike facilities needed at intersection of Carolina Beach Road/US-421 and George Anderson Drive.
18. Soda Pop District/New Hanover High School area: N 10th Street and Princess Street. Need more connectivity as area is developed more, and for safer walking/biking connections to high school.
19. Speeding on Randall Parkway.
20. On-street lighting needed on S 5th Avenue. Potential maintenance opportunities on S 5th Street.
21. No way to cross on Shipyard Boulevard between Carolina Beach Road and Independence Boulevard.
22. Frequent pedestrian traffic between motels and businesses on Market Street between N Kerr Avenue and 29th Street.



MAP 1:

Existing Conditions and Roadway Ownership

WALK WILMINGTON PEDESTRIAN PLAN

ROADWAY MAINTENANCE

- State Maintained
- Locally Maintained
- Private

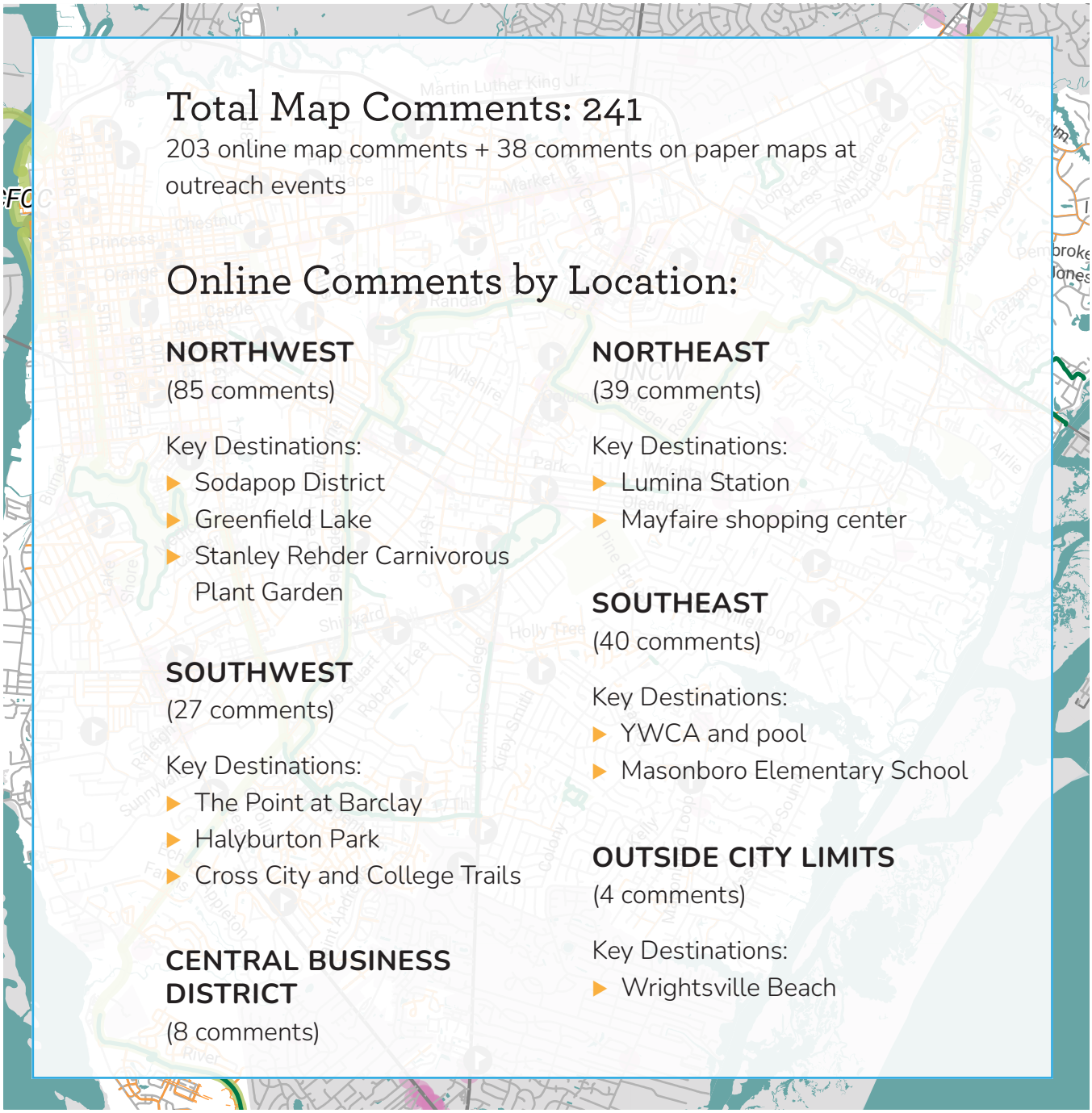
DESTINATIONS

- Parks

alta

Public Input on Existing Conditions

The project team invited community members to participate in plan development through an interactive virtual map where the public could comment on existing conditions for walking in Wilmington. This section highlights themes from the public input map comments.



Total Map Comments: 241

203 online map comments + 38 comments on paper maps at outreach events

Online Comments by Location:

NORTHWEST
(85 comments)

Key Destinations:
- Sodapop District
- Greenfield Lake
- Stanley Rehder Carnivorous Plant Garden

SOUTHWEST
(27 comments)

Key Destinations:
- The Point at Barclay
- Halyburton Park
- Cross City and College Trails

CENTRAL BUSINESS DISTRICT
(8 comments)

NORTHEAST
(39 comments)

Key Destinations:
- Lumina Station
- Mayfaire shopping center

SOUTHEAST
(40 comments)

Key Destinations:
- YWCA and pool
- Masonboro Elementary School

OUTSIDE CITY LIMITS
(4 comments)

Key Destinations:
- Wrightsville Beach

Top Comments

These comments received the most "likes" from other users on the online input map.

"There are numerous restaurants and stores in **Lumina Station**, by Sweet and Savory, by the new ABC store, and by Ceviche's/Beach Bagels. Yet it is impossible to be a pedestrian and cross **Wrightsville Avenue** safely. There is no cross walk anywhere in this area. The speed limit is 35 but cars routinely travel at 45 mph or more. A crosswalk is needed to facilitate more pedestrian access to retail and restaurants in this area." (8 likes)

"Almost no safe way for pedestrians to cross from one side of **College Rd** to the other except for one crossing by the university." (8 likes)

"Last time I checked, there are no crosswalks to get from the mixed use trail along **Military Cutoff Rd** to major destinations like **Mayfaire** (movie theater). Although I added a point location, there need to be several signaled crosswalks along Military Cutoff Rd." (7 likes)

"The sidewalk/bike path ends without a way to **access the beach**. Cutting through the shopping center is dangerous with many moving cars/lots and difficult visuals." (6 likes)

Sidepath runs along Military Cutoff Road, but crossings of the major road are not provided at several intersections.

Main Corridor Inventory

This table describes the physical characteristics of Wilmington's major roadway corridors, as well as what conditions for pedestrians are like on them. Only corridors where pedestrian traffic is permitted were included in this inventory. "Map ID" corresponds to **MAP 2 (page 24)**.

TABLE 2. *Main Corridor Inventory*

MAP ID	ROADWAY NAME	PREDOMINANT ROADWAY WIDTH (LF)	NO. OF LANES	2021 AADT	SPEED LIMIT (MPH)	CURB & GUTTER	CONDITIONS FOR PEDESTRIANS
1	Bus 17/Market St (from College Rd to N 23rd St)	37-80	4-7	23,000-35,500	35	Varies	Sidewalks on both sides of the roadway in most of the corridor, with signalized crossings at major intersections.
2	Bus 17/Market St (West of N 23rd St)	57-75	4-5	8,600-21,000	35	Varies	Sidewalks on both sides of the roadway, but a lack of crosswalks at most intersections.
3	Bus 17/Market St (East of College Rd)	56-68	4-6	33,500-48,000	45	Varies	Some disconnected sidewalk segments on both sides of the roadway. Lack of safe pedestrian crossings throughout corridor.
4	Eastwood Rd/ US-74 (West of Military Cutoff Rd)	65-100	5-7	24,000-33,500	35-45	Yes	Sidewalks on most of the north side of the roadway and Cross City Trail on the south side. Lack of signalized crossings at many intersections.
5	Eastwood Rd/ US-74/US-76 (East of Military Cutoff Rd)	65-100	4-7	16,500-21,000	35-45	Yes	Cross City Trail sidepath on north side of roadway, with some sidewalk on the south side. Few signalized crossings.
6	N & S 3rd St (& Burnett Blvd north of US-421)	65-70	4-5	12,000-18,500	35	Varies	Corridor has sidewalks on both sides, but additional crosswalks are needed outside of the downtown core, especially on Burnett Blvd.
7	US-421/Carolina Beach Rd (from Burnett Blvd to Independence Blvd)	65-80	4-6	28,000-36,000	40-45	Yes	Sidewalks are present on both sides of the corridor until the Holbrooke Ave intersection, after which there are gaps on both sides. Signalized crossings appear at most major intersections throughout the corridor.
8	US-421/Carolina Beach Rd (from Independence Blvd to College Rd)	60-100	4-6	32,000-33,500	35-45	Varies	Several small, disconnected sections of sidewalk exist, but most of the corridor does not have sidewalks. Signalized crossings are present at most major intersections.

MAP ID	ROADWAY NAME	PREDOMINANT ROADWAY WIDTH (LF)	NO. OF LANES	2021 AADT	SPEED LIMIT (MPH)	CURB & GUTTER	CONDITIONS FOR PEDESTRIANS
9	US-117/ Shipyard Blvd (West of S 17th St)	68-120	4-8	6,900-16,000	35-45	Varies	Sidewalk is present on the south side of the roadway for much of the corridor, and more intermittently on the north side. Several major intersections lack signalized crossings.
10	US-117/ Shipyard Blvd (East of S 17th St)	78-100	4-8	22,500-27,500	35-45	Varies	Signalized crossings and sidewalks on both sides of the road present in the eastern part of the corridor near Hoggard High School.
11	US-17/ Oleander Dr	58-98	4-8	22,500-36,500	35-45	Varies	The western portion of Oleander near downtown has sidewalks on both sides, but few crosswalks. The more commercial section of the corridor has some sidewalk on both sides of the roadway, with few safe pedestrian crossings.
12	Military Cutoff Rd	68-100	4-8	19,500-39,000	35-45	Varies	There is a sidepath on the east side of the roadway north of Drysdale Dr, and sidewalk south of Eastwood Rd until the Wrightsville Ave intersection. There are a few crosswalks at major intersections, but overall, the corridor lacks safe pedestrian crossings.
13	Wooster St/ US-76 W/ US-17 S	40-46	3-4	15,000-18,500	35	Yes	Corridor contains intermittent sidewalk on both sides of the street. There are limited pedestrian crossing facilities, mostly at the major intersections at the east end of the corridor.
14	Dawson St/ US-76 E/ US-17 N	40-65	4-5	16,500-20,500	35	Yes	Corridor has sidewalk on both sides of the street. There are limited pedestrian crossing facilities, mostly at the major intersections at the east end of the corridor.
15	College Rd/ S College Rd (North of Oleander Dr)	72-130	6-10	38,000-51,500	35-45	Yes	There is intermittent sidewalk on both sides of the roadway, mostly between the Oleander Dr & Cedar Ave intersections, Safe pedestrian crossing facilities are present at many of the major intersections.
16	S College Rd (South of Oleander Dr)	65-72	4-7	34,500-47,000	35-45	Varies	Sidewalk is present on the west side of the corridor, and becomes a sidepath south of Holly Tree Rd. There are several crosswalks at side streets, but none crossing S College Rd.

MAP 2:

Main Corridor Inventory

WALK WILMINGTON PEDESTRIAN PLAN

alta

EXISTING FACILITIES

- Shared-Use Paths
- Existing Sidewalks
- East Coast Greenway Alignment

PEDESTRIAN-VEHICLE CRASHES, 2007-2020

- Fatal or Severe Injury

DESTINATIONS

- Schools
- Parks

Equity Analysis

Promoting equity is a goal of the Walk Wilmington plan update. By focusing on equity, we can begin to address barriers that contribute to disparities in our communities, and ensure that the benefits of our investments reach everyone.

The transportation planning practice has not always asked critical questions about whether the benefits and burdens of transportation investments are distributed equitably. Contemporary planning practice seeks to acknowledge harmful past actions by critically examining who benefits from investments, and reflect on the needs of socially vulnerable populations as part of the planning process.

Historic underinvestment and exclusionary policies have contributed to disparities in Wilmington's built environment. As a result, some communities and the people who live in them experience reduced access to transportation options, less pedestrian infrastructure, and higher instances of death and injury while walking. Looking through an equity lens to prioritize pedestrian infrastructure investments that serve areas and populations with greater need—including people of color, people with disabilities, and low-wealth households—Wilmington can develop a more equitable transportation system.

What is TRANSPORTATION DISADVANTAGE?

NCDOT defines **transportation disadvantage** as limited ability to reach necessary goods, services, and employment by people with limited access to transportation options. These barriers may occur from lack of access to a motor vehicle or transit, inability to drive or access transit, or other reasons.

Groups most likely to experience transportation disadvantage include:

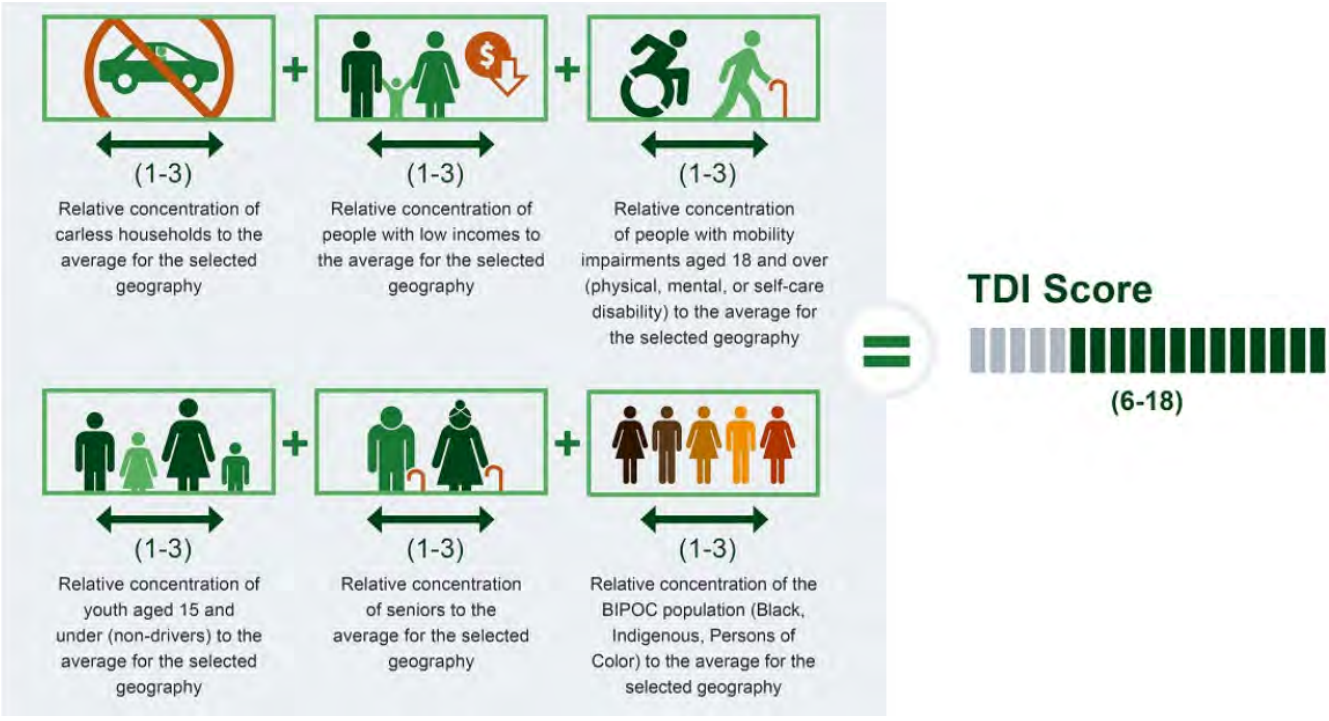
- Racial minorities
- People with low incomes
- Ethnic minorities, specifically of Hispanic or Latino origin
- BIPOC (Black, Indigenous, and Persons of Color)
- Households without access to a personal vehicle
- Youth aged 15 and under who are unable to drive
- Seniors (aged 65 years old or more)
- People with mobility impairments (physical, mental, or self-care disability)

Wilmington and NCDOT have already taken steps to understand conditions related to pedestrian safety and equity. Initial findings from the 2021 Citywide Pedestrian Safety study with NCDOT indicated that certain roadway characteristics coincided with more pedestrian crashes. The study also compared demographic data with crash locations and found that certain racial, age, and income groups were disproportionately affected by pedestrian crashes.

This equity analysis maps potential transportation disadvantage in Wilmington in conjunction with existing sidewalk data to help the planning team confirm and understand what other patterns exist in Wilmington. This analysis, along with findings from previous efforts, informed the development of plan recommendations and prioritization of the recommendations.

NCDOT Transportation Disadvantage Index (TDI)

NCDOT has developed a screening tool to provide information about transportation disadvantage and explain the patterns that occur throughout the state. By visualizing and talking about these patterns, we can start to address inequity through informed policy review, planning, and project development decision making. The NCDOT TDI screening tool provides a score at the Census block group level based on concentrations of six factors (shown in graphic below) compared to state-wide averages. **Higher TDI scores indicate areas with potentially higher transportation disadvantage.**



NCDOT's TDI scoring process assigns each Census block group a score between 6 and 18, based on six factors.

Analysis

METHODS

The Walk Wilmington equity analysis relies on the 2021 NCDOT TDI data and process and normalizes the TDI scores for block groups in Wilmington by calculating a percent rank score that is specific to the city and translates the raw scores of 6–18 to a relative scale of 0–100. The purpose of this calculation is to generate a measurement (a percentile ranking) that enables an understandable comparison between TDI scores for each block group to the distribution of all the TDI scores for Wilmington on a standardized scale.

FINDINGS

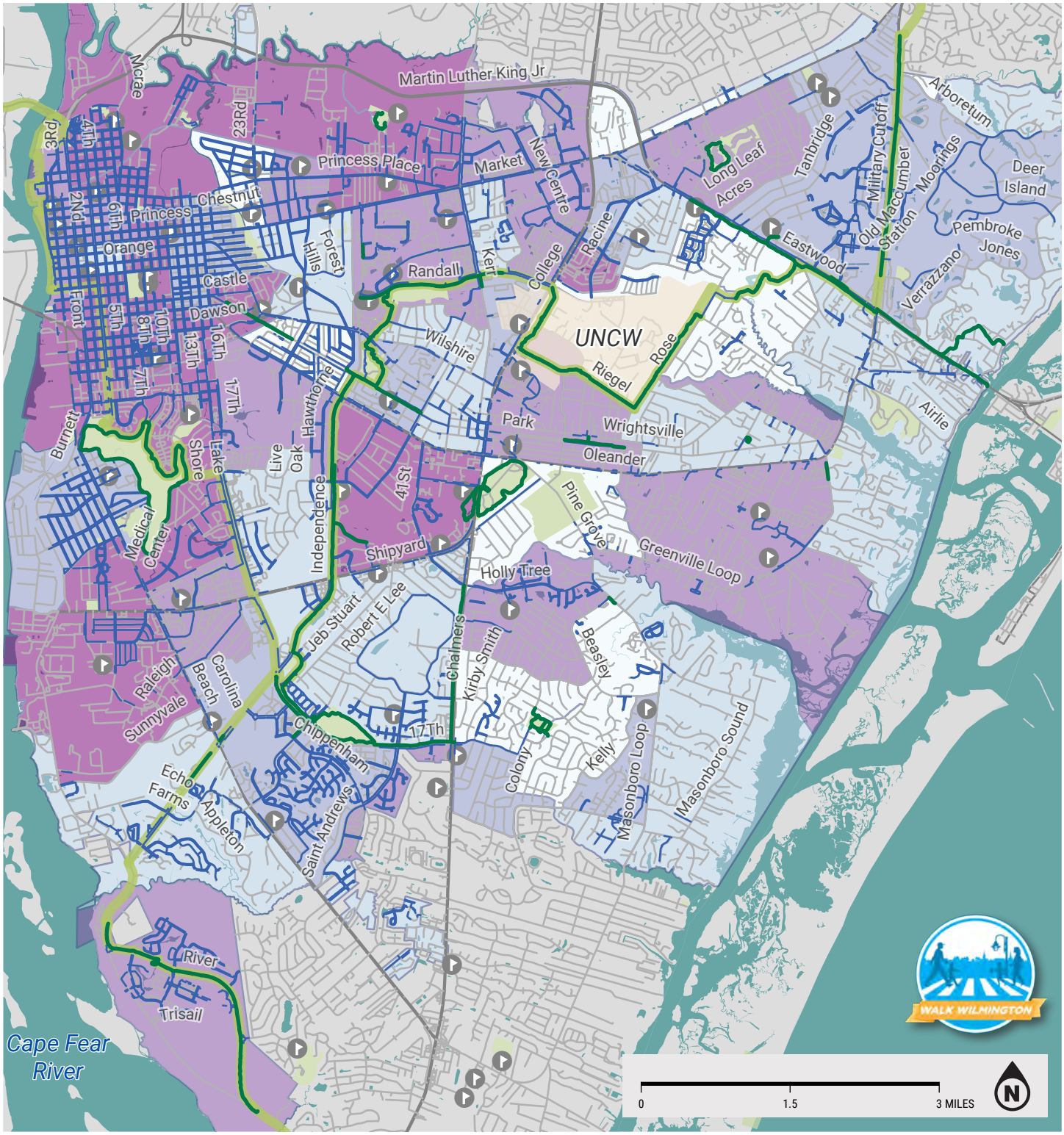
MAP 3 (page 28) shows TDI scores and sidewalk locations. The areas of greatest potential transportation disadvantage are centered around the downtown core, in the western half of Wilmington. The TDI scores in the eastern part of the city, near the North Carolina coast, are generally lower. The areas with the lowest TDI scores are in the center of Wilmington surrounding the municipal golf course, in the area surrounding James Wade Park, and along Eastwood Road to the northeast of the University of North Carolina Wilmington (UNCW) campus.

TABLE 3 shows the relationship between TDI scores and the percentage of the sidewalk network that has complete sidewalks. While it is common for roadways in Wilmington to lack complete sidewalks, there is a general correlation between areas with higher TDI scores and sidewalk completion. This is due in no small part to downtown Wilmington's complete sidewalk network and high TDI scores.

TABLE 3. *Census Block Group TDI Tier and Sidewalk Completion in Wilmington*

	TDI PERCENTILE RANK	MILES OF ROADWAY (ROADWAY CENTERLINE)	MILES OF SIDEWALK (ROADWAY CENTERLINE)	ROADWAY NETWORK COVERAGE (%)
Top Quantile (block groups with the highest need) →	80.1% - 100.0%	166	55	33%
	60.1% - 80.0%	175	45	26%
	40.1% - 60.0%	145	42	29%
	20.1% - 40.0%	190	31	16%
Bottom Quantile (block groups with the lowest need) →	0.0% - 20.0%	84	14	17%

Note: Census block groups contain approximately even populations and have different geographic sizes. This, in turn, impacts the miles of roadway included in each quantile bin.



MAP 3:

Equity Analysis

WALK WILMINGTON PEDESTRIAN PLAN

alta

EXISTING FACILITIES

- Shared-Use Paths
- Existing Sidewalks
- East Coast Greenway Alignment

DESTINATIONS

- Schools
- Parks

TDI PERCENTILE RANK

- 0.0% - 20.00%
- 20.01% - 40.00%
- 40.01% - 60.00%
- 60.01% - 80.00%
- 80.01% - 100.00%

EQUITY ANALYSIS KEY TAKEAWAYS

Considering the relationship of sidewalks to transportation disadvantage yields the following observations:

- Downtown Wilmington is an area with high potential transportation disadvantage, and also benefits from a relatively complete sidewalk network.
- Neighborhoods between the downtown core and UNCW have sporadic sidewalk coverage and moderate-to-high TDI scores.
- Areas along the eastern edge of Wilmington have both low TDI scores and little sidewalk coverage.
- Outside of downtown Wilmington, roadways classified as state routes or secondary routes are more likely to have complete sidewalk coverages than other roadways, such as non-system roadways.

The downtown area of Wilmington has the highest concentration of people who may experience transportation disadvantage, but also benefits from a relatively complete sidewalk network.

High Injury Network (HIN) Analysis

What is a HIN?

High Injury Networks (HINs) are the collection of roadways and intersections in a city where the most fatal or serious injury crashes occur. Frequently, the HIN analysis demonstrates that improving a small amount of the street network can address the majority of serious crashes. By identifying the HIN, Wilmington and NCDOT can focus their money and efforts to apply safety interventions in these areas, reducing the likelihood of serious crashes at these locations in the future.

The pedestrian HIN includes

74 out of **~760**

total miles of roads in Wilmington.

In other words, from 2010-2020,

50% of pedestrian crashes occurred on only

10% of Wilmington's roads *(shown on page 33).*

Wilmington's Pedestrian HIN

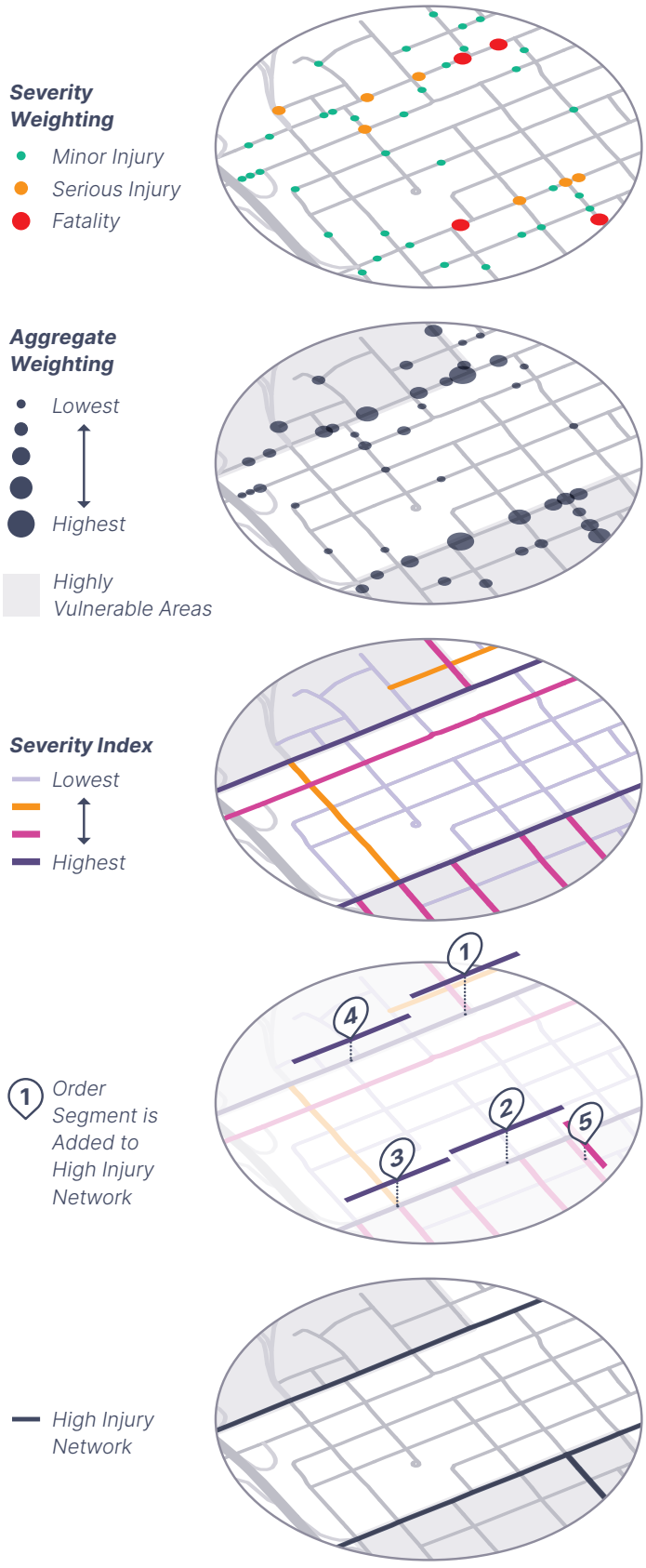
Crashes in the City of Wilmington from 2011 to 2020 were analyzed to identify the streets with the highest concentrations of pedestrian involved collisions. Crash data were obtained from NCDOT through the Connect NCDOT Business Partner Resources Website. To gain a more comprehensive understanding of the collision patterns present in Wilmington, the analysis assessed the following types of collisions:

- All reported pedestrian involved collisions
- All reported bicycle involved collisions
- Reported motor vehicle collisions resulting in a fatality or serious injury

Project consultants developed the pedestrian HIN for the City of Wilmington using roadway data provided by the City (see the process described on the following page). The collision scoring scheme, shown in **TABLE 4**, was used to score the roadway network, which was divided into segments approximately ¼ mile long.

TABLE 4. *Collision Weighting Scheme for HIN Development*

REPORTED INJURY SEVERITY	ASSIGNED WEIGHT BY COLLISION TYPE		
	PEDESTRIANS	BICYCLES	MOTOR VEHICLES
K - Killed	40	4	0.4
A - Suspected Serious Injury	10	1	0.1
B - Suspected Minor Injury	5	0.5	n/a
O - No Injury	1	0.1	n/a



Developing the HIN

Severity Weighting

One goal of a **High Injury Network (HIN)** is to identify an improvable subset of a community's streets that address the majority of collisions where a victim is **Killed or Severely Injured (KSI)**. To achieve this, KSI collisions are assigned higher scores so they have more "weight" relative to collisions with less severe outcomes.

Other Considerations

These scores can also be modified to include other considerations such as whether collisions involve pedestrians and bicyclists or occur in socially vulnerable communities. These factors can be directly incorporated into the weights associated with each collision.

Severity Index

After weights are developed, they are associated to the network, aggregated, and normalized so that we can understand the relative intensities of collisions of concern.*

Accumulated Collisions by Severity Index

Once an index is created, we progressively add segments to the HIN in the order indicated by the severity index. As more segments are added to the network, we look at KSI or other collisions of interest directly on the network, and track the percentage of collisions on the network relative to its length.

High Injury Network

A final HIN determination is made based on stakeholder feedback and qualitative review of when each new mile added to the HIN starts to see a decreasing rate of severe collisions.

**There are many methods available to develop a final index including kernel density estimation (Euclidian or network based), rolling window analysis, or aggregations to a segment normalized by network miles.*

HIN Corridor Profiles

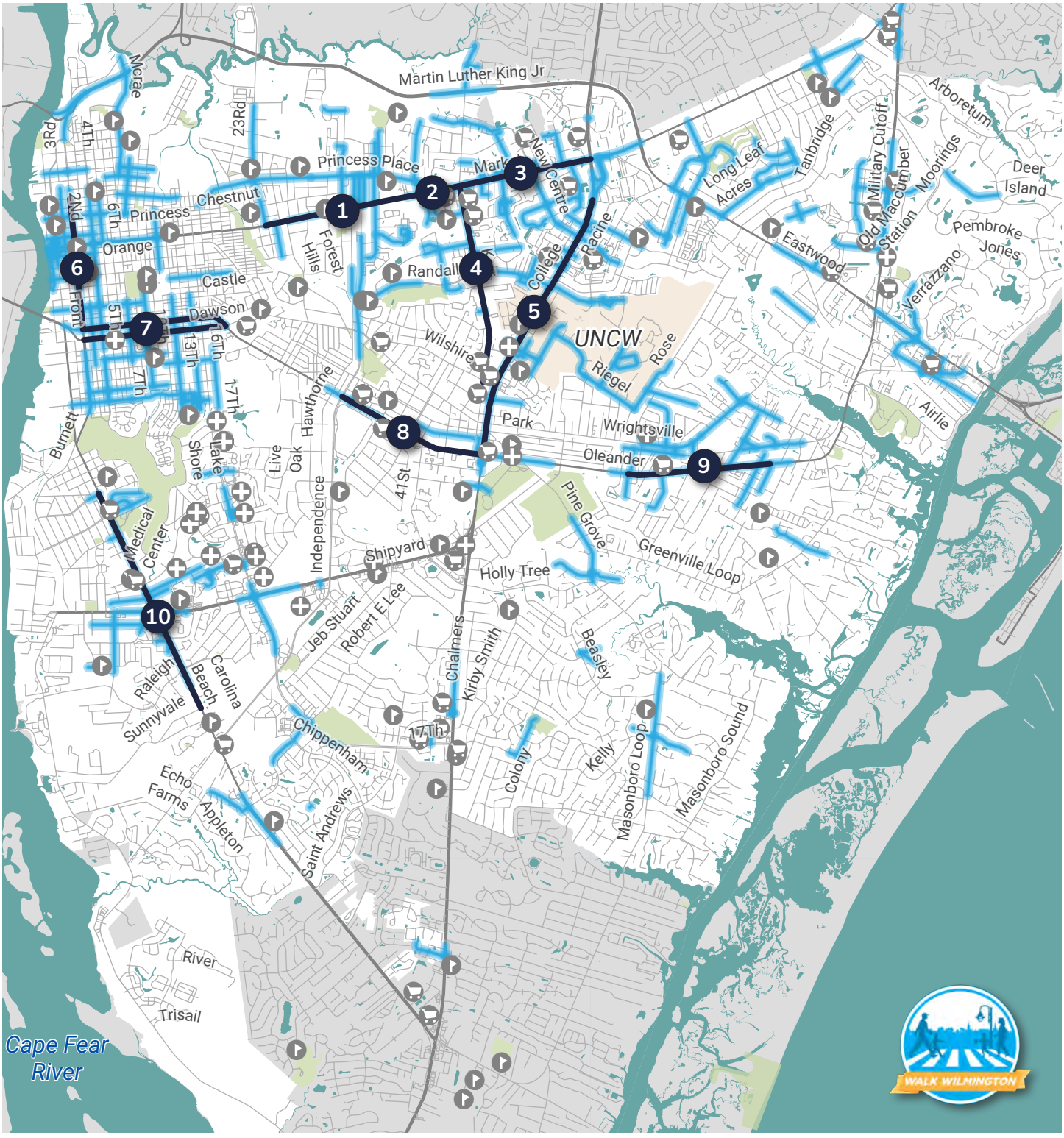
To better understand the context and causes of collisions, it is important to identify the factors influencing these crashes, such as the number of lanes, speed limits, and facilities present. Following development of Wilmington's pedestrian HIN, a subset of priority corridors were selected for further review. These corridors include roadways with multiple pedestrian fatalities and high numbers of serious injury collisions. These corridors are typically high-to-mid capacity streets in proximity to areas of higher pedestrian demand.

These corridors were mapped to show the location of pedestrian, bicycle, and severe vehicle crashes. Additional charts and tables provide further information on the following:

- Collision summary tabulations
- Road context summary
- Factors causing pedestrian crashes
- Location of pedestrians at the time of the collision
- Traffic control devices present for collisions that occurred at intersections
- Racial demographics of pedestrian victims on that corridor compared to that of the City of Wilmington as a whole

Information from these corridor profiles can help inform the types of interventions required to address pedestrian safety concerns. **MAP 4 (page 33)** shows the HIN and priority corridors identified by numeric ID. Detailed HIN Corridor Profiles are found on pages 34-43 for the ten priority corridors (corridor numbering is for reference only and does not indicate a ranking):

1. Market St (23rd St to Darlington Ave)
2. Market St (Darlington Ave to Lullwater Dr)
3. Market St (Lullwater Dr to College Rd)
4. Kerr Ave S (Market St to Wilshire Blvd)
5. College Rd S (Oleander Dr to Jeff Gordon Dr)
6. 3rd St (Red Cross St to Wooster St)
7. Wooster/Dawson St (3rd St to Oleander Dr)
8. Oleander Dr (Independence Blvd to College Rd)
9. Oleander Dr (Forest Park Rd to Victory Gardens Dr)
10. Carolina Beach Rd (Northern Blvd to Sunnyvale Dr)



MAP 4:

Pedestrian High Injury Network (HIN) & Priority Corridors

WALK WILMINGTON PEDESTRIAN PLAN

alta

EXISTING FACILITIES

- HIN Focus Corridors
- High Injury Network

DESTINATIONS

- Grocery Stores
- Schools
- Healthcare Facilities
- Parks

Pedestrian HIN Corridor Profile

1 MARKET ST (23RD ST TO DARLINGTON AVE)

Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	6	2	1	0
Bicycle	8	0	4	1
Vehicle (KSI only)	--	3	--	--
Total	14	5	5	1

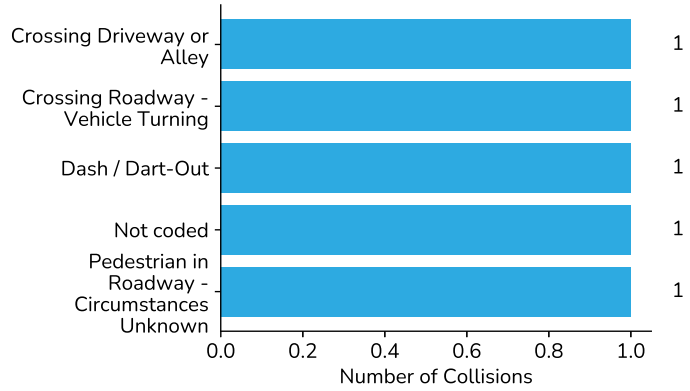
Collision data provided by NCDOT, 2011-2021.

Context Summary

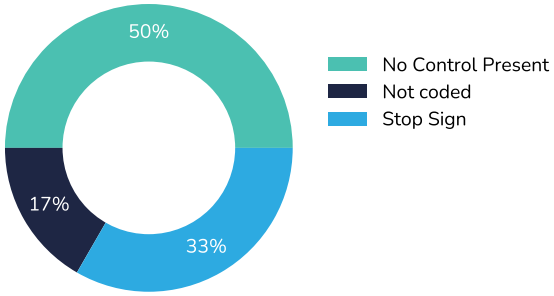
Speed Limit	30 - 35 MPH
Number of Lanes	4 lanes
Road Configuration	Two-Way, Not Divided
Pedestrian Volumes*	698
Bicycle Volumes*	193
Car Volumes*	68.5k

*Modeled weekday volumes from Replica Places

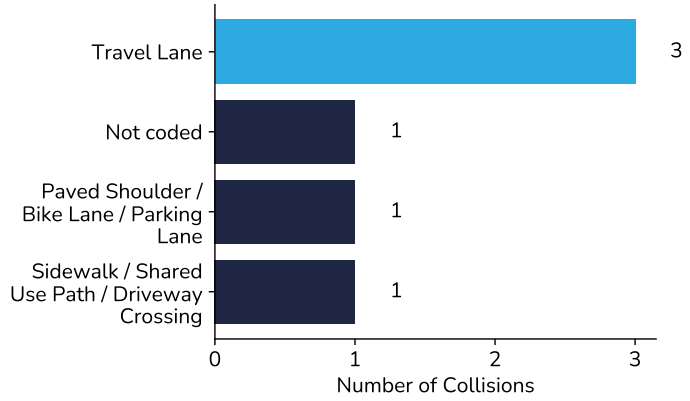
Pedestrian Crash Group
(Top Five Most Common Responses)



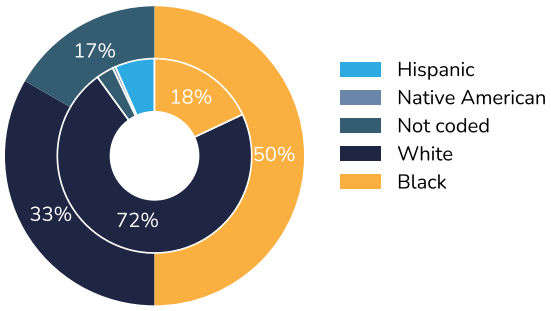
Traffic Control for Intersection Collisions



Pedestrian Location at Time of Collision



Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

2 MARKET ST (DARLINGTON AVE TO LULLWATER DR)

Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	24	5	3	0
Bicycle	22	1	7	1
Vehicle (KSI only)	--	1	--	--
Total	46	7	10	1

Collision data provided by NCDOT, 2011-2021.

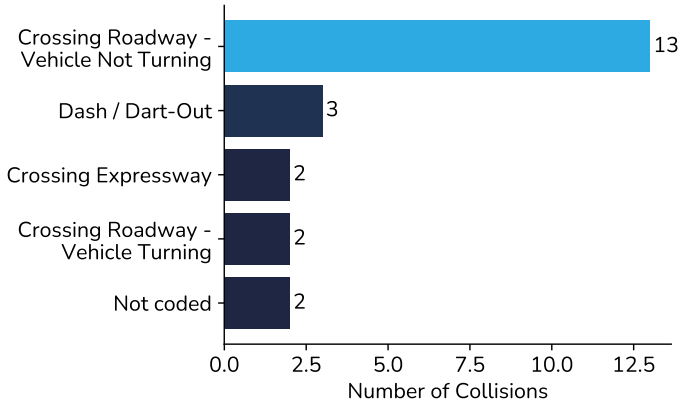
Context Summary

Speed Limit	40 - 45 MPH
Number of Lanes	5 lanes
Road Configuration	Two-Way, Not Divided
Pedestrian Volumes*	1290
Bicycle Volumes*	349
Car Volumes*	71.3k

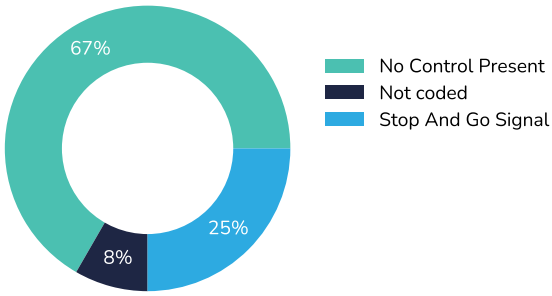
*Modeled weekday volumes from Replica Places

Pedestrian Crash Group

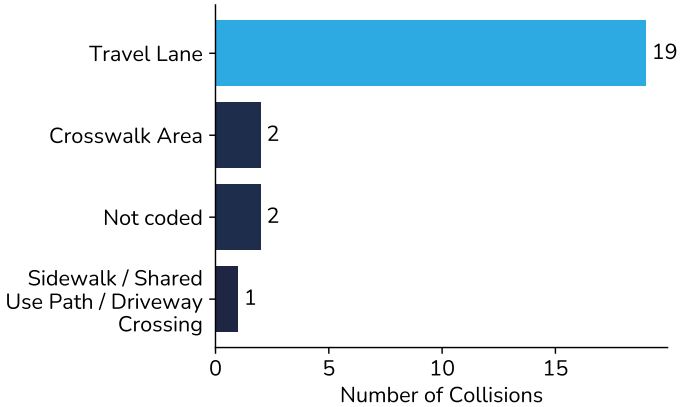
(Top Five Most Common Responses)



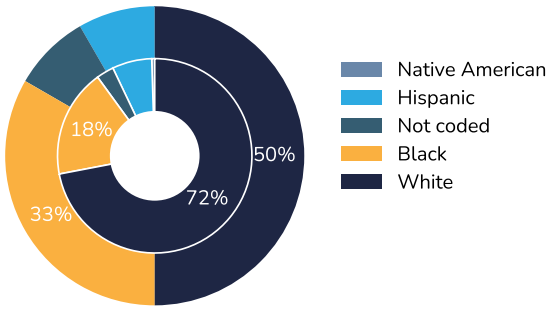
Traffic Control for Intersection Collisions



Pedestrian Location at Time of Collision



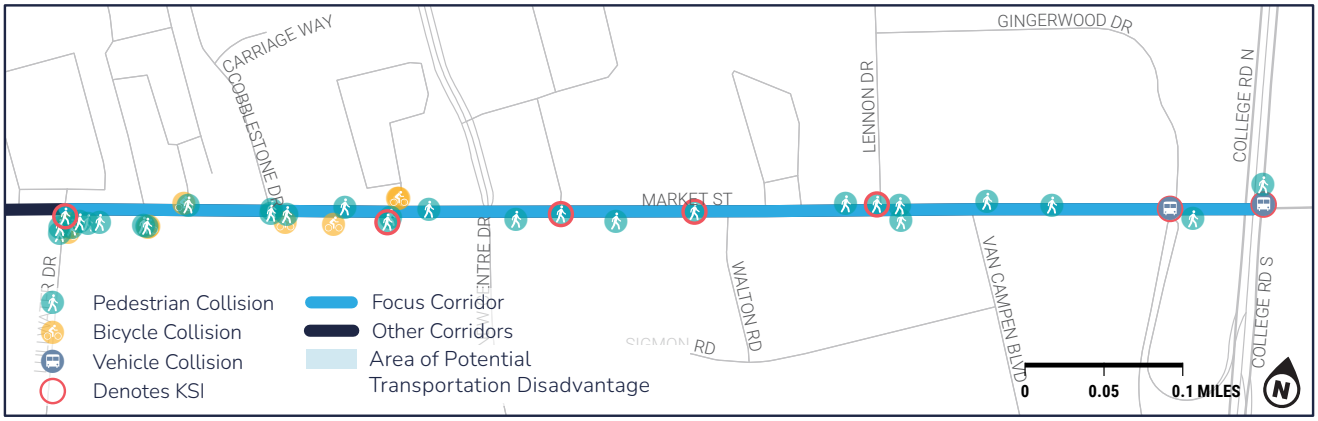
Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

3 MARKET ST (LULLWATER DR TO COLLEGE RD)



Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	29	5	4	0
Bicycle	11	0	2	1
Vehicle (KSI only)	--	2	--	--
Total	40	7	6	1

Collision data provided by NCDOT, 2011-2021.

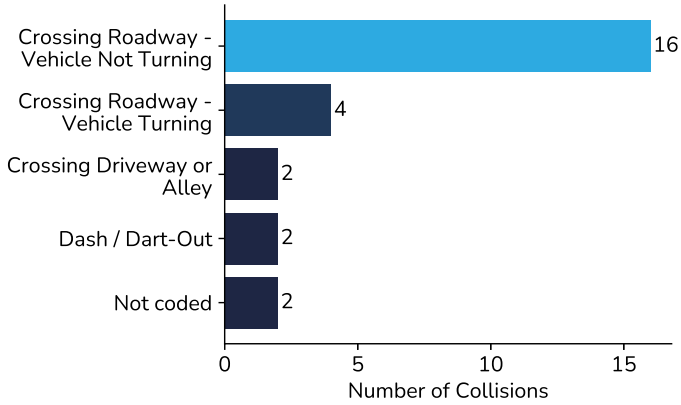
Context Summary

Speed Limit	40 - 45 MPH
Number of Lanes	5 lanes
Road Configuration	Two-Way, Not Divided
Pedestrian Volumes*	1990
Bicycle Volumes*	304
Car Volumes*	81.7k

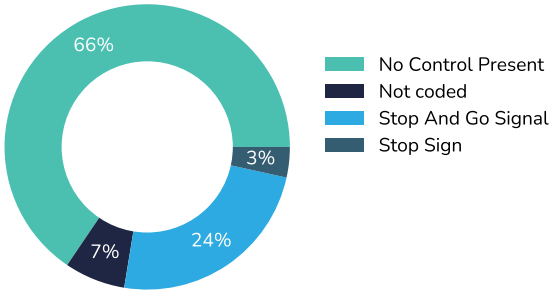
*Modeled weekday volumes from Replica Places

Pedestrian Crash Group

(Top Five Most Common Responses)

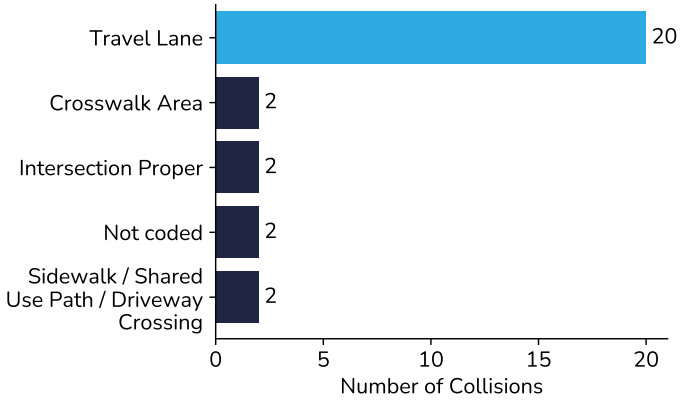


Traffic Control for Intersection Collisions

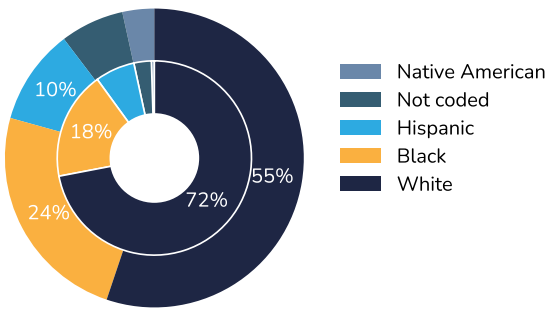


Pedestrian Location at Time of Collision

(Top Five Most Common Responses)



Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

4 KERR AVE S (MARKET ST TO WILSHIRE BLVD)

Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	11	2	1	0
Bicycle	19	2	10	1
Vehicle (KSI only)	--	4	--	--
Total	30	8	11	1

Collision data provided by NCDOT, 2011-2021.

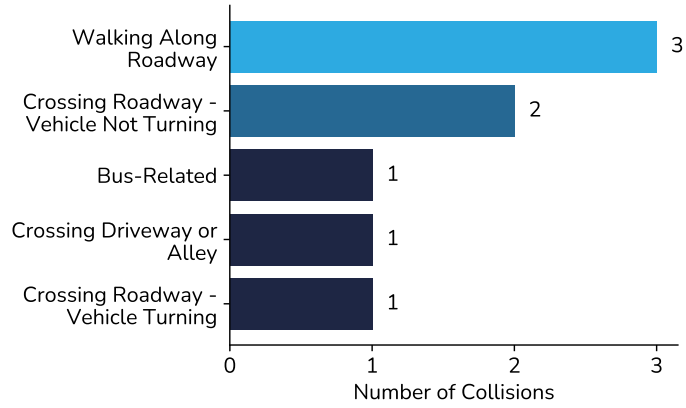
Context Summary

Speed Limit	30 - 35 MPH
Number of Lanes	3 lanes
Road Configuration	Two-Way, Not Divided
Pedestrian Volumes*	1540
Bicycle Volumes*	539
Car Volumes*	31.2k

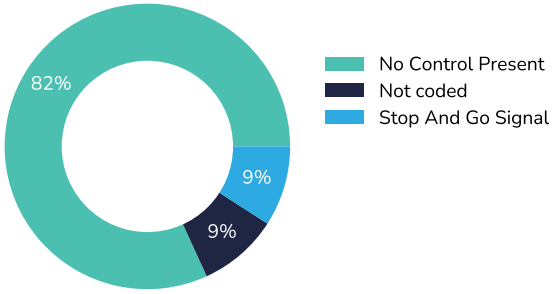
*Modeled weekday volumes from Replica Places

Pedestrian Crash Group

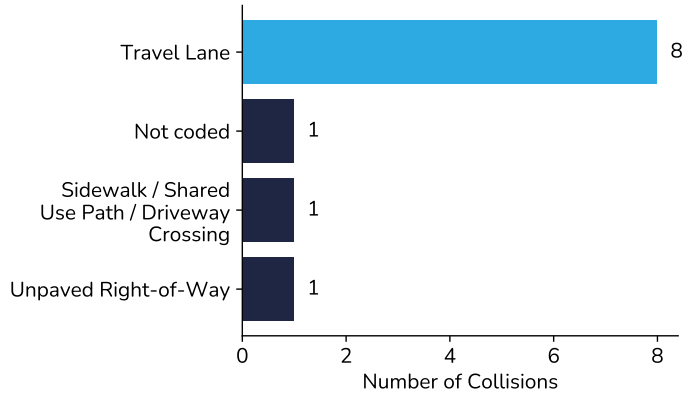
(Top Five Most Common Responses)



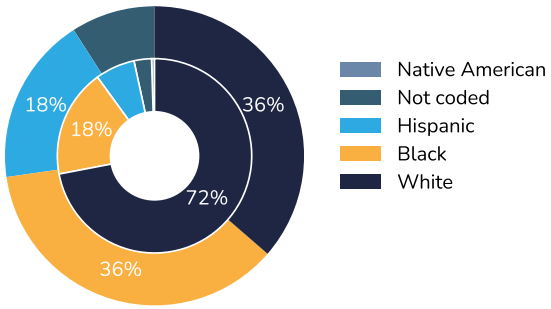
Traffic Control for Intersection Collisions



Pedestrian Location at Time of Collision



Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

5 COLLEGE RD S (OLEANDER DR TO JEFF GORDON DR)

Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	28	5	12	0
Bicycle	28	2	13	4
Vehicle (KSI only)	--	11	--	--
Total	56	18	25	4

Collision data provided by NCDOT, 2011-2021.

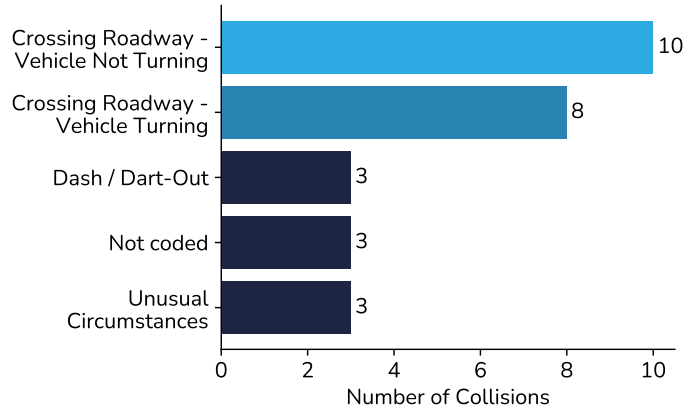
Context Summary

Speed Limit	40 - 45 MPH
Number of Lanes	7 lanes
Road Configuration	Two-Way, Divided, Unprotected Median
Pedestrian Volumes*	3870
Bicycle Volumes*	530
Car Volumes*	147k

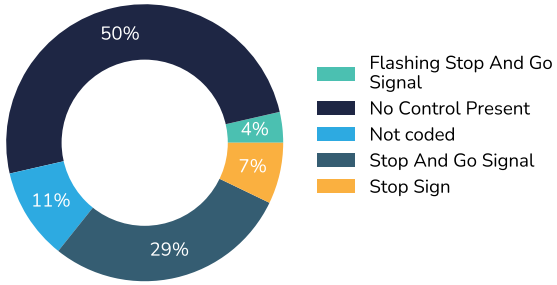
*Modeled weekday volumes from Replica Places

Pedestrian Crash Group

(Top Five Most Common Responses)

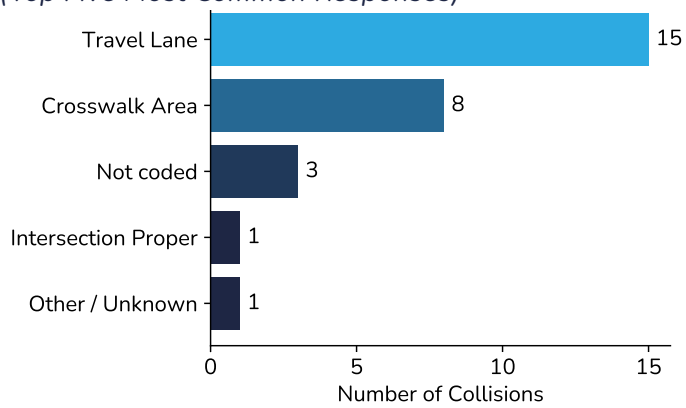


Traffic Control for Intersection Collisions

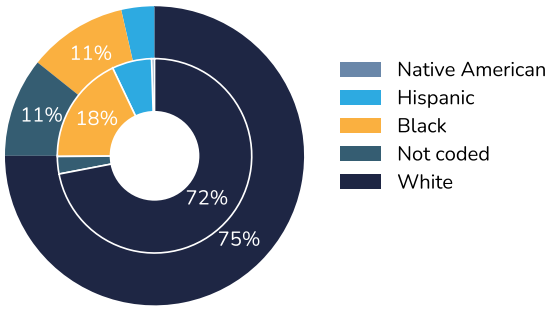


Pedestrian Location at Time of Collision

(Top Five Most Common Responses)



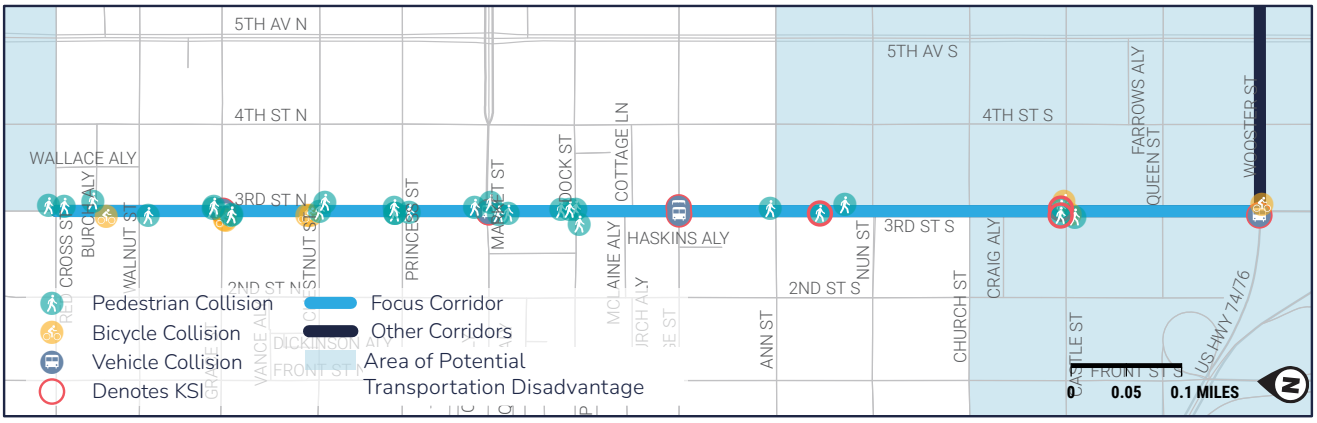
Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

6 3RD ST (RED CROSS ST TO WOOSTER ST)



Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	28	3	19	0
Bicycle	8	0	6	2
Vehicle (KSI only)	--	6	--	--
Total	36	9	25	2

Collision data provided by NCDOT, 2011-2021.

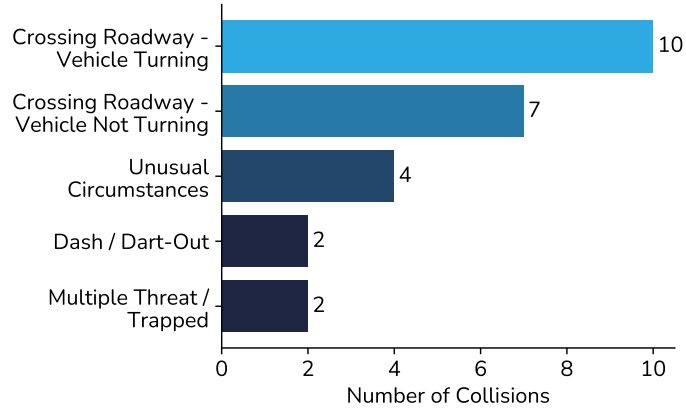
Context Summary

Speed Limit	30 - 35 MPH
Number of Lanes	4 lanes
Road Configuration	Two-Way, Not Divided
Pedestrian Volumes*	671
Bicycle Volumes*	123
Car Volumes*	35.9k

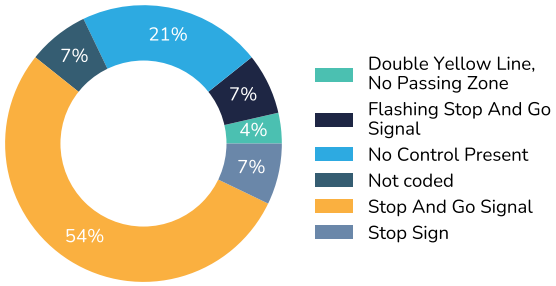
*Modeled weekday volumes from Replica Places

Pedestrian Crash Group

(Top Five Most Common Responses)

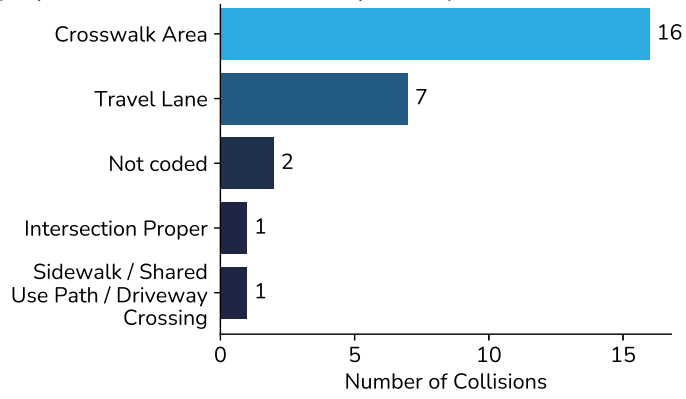


Traffic Control for Intersection Collisions

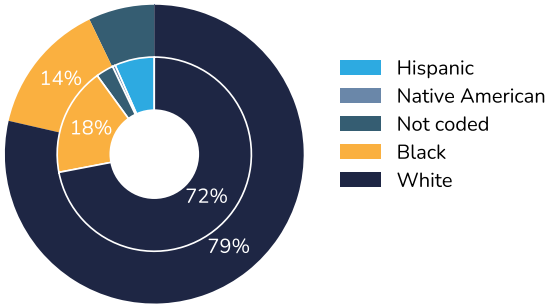


Pedestrian Location at Time of Collision

(Top Five Most Common Responses)



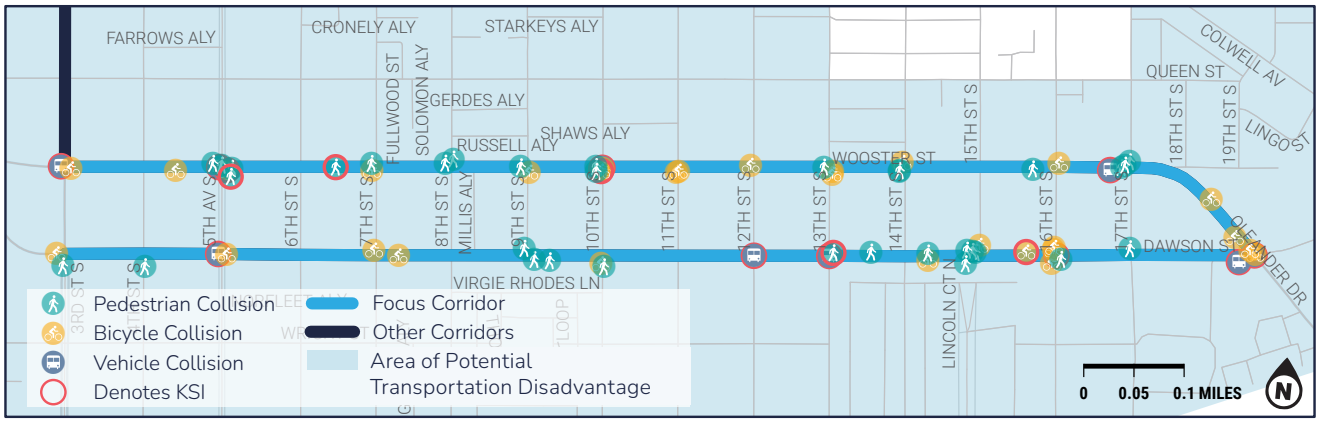
Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

7 WOOSTER/DAWSON ST (3RD ST TO OLEANDER DR)



Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	33	3	16	0
Bicycle	29	3	18	4
Vehicle (KSI only)	--	11	--	--
Total	62	17	34	4

Collision data provided by NCDOT, 2011-2021.

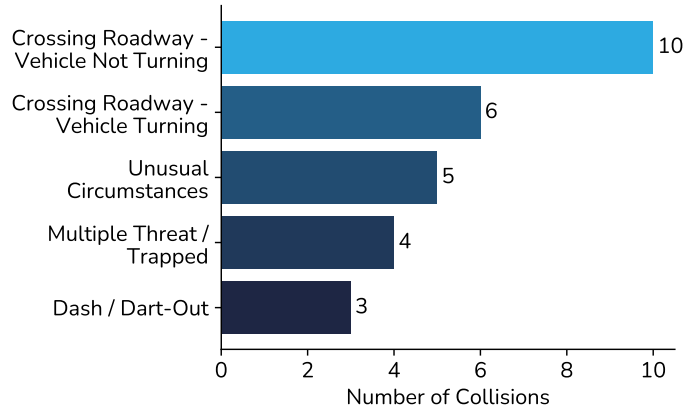
Context Summary

Speed Limit	30 - 35 MPH
Number of Lanes	4 lanes
Road Configuration	One-Way, Not Divided
Pedestrian Volumes*	560
Bicycle Volumes*	95
Car Volumes*	110k

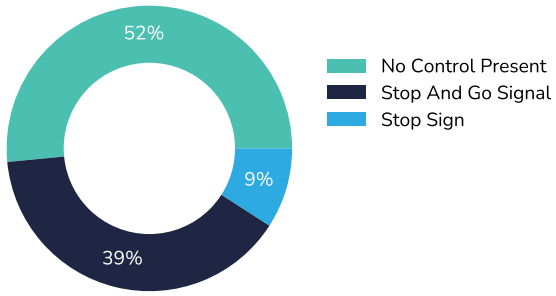
*Modeled weekday volumes from Replica Places

Pedestrian Crash Group

(Top Five Most Common Responses)

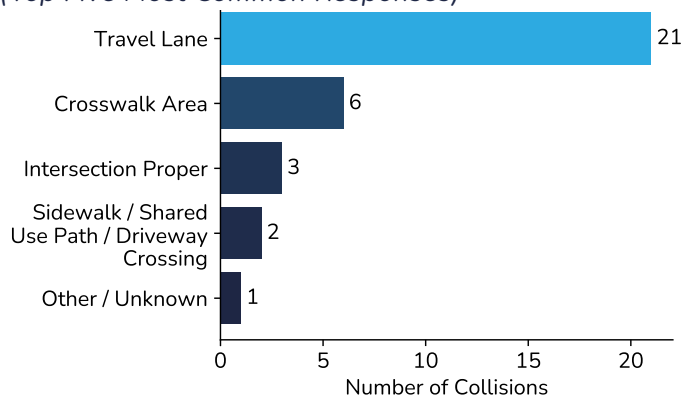


Traffic Control for Intersection Collisions

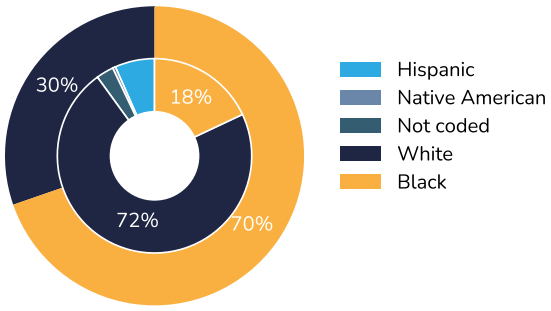


Pedestrian Location at Time of Collision

(Top Five Most Common Responses)



Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

8 OLEANDER DR (INDEPENDENCE BLVD TO COLLEGE RD)

Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	10	1	3	0
Bicycle	9	1	3	0
Vehicle (KSI only)	--	5	--	--
Total	19	7	6	0

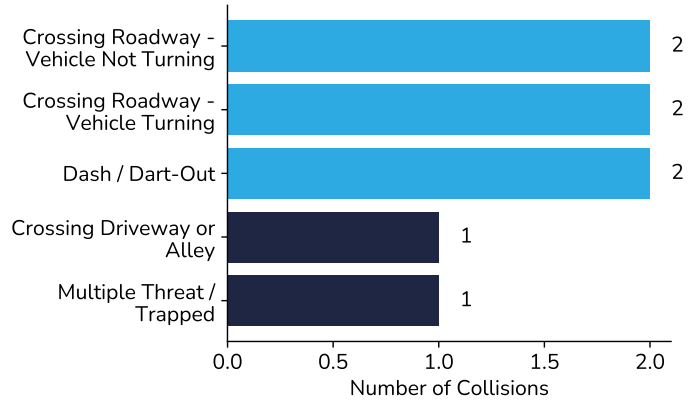
Collision data provided by NCDOT, 2011-2021.

Context Summary

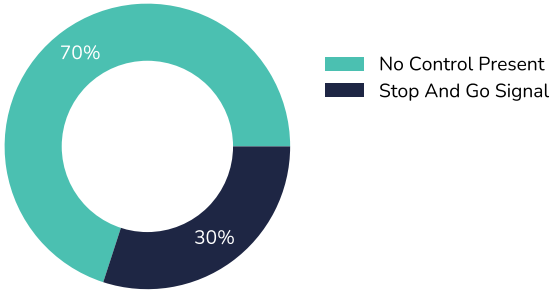
Speed Limit	40 - 45 MPH
Number of Lanes	7 lanes
Road Configuration	Two-Way, Divided, Unprotected Median
Pedestrian Volumes*	1500
Bicycle Volumes*	202
Car Volumes*	75.4k

*Modeled weekday volumes from Replica Places

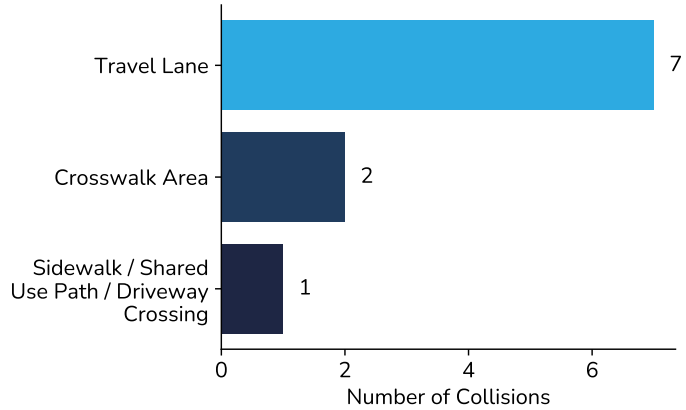
Pedestrian Crash Group
(Top Five Most Common Responses)



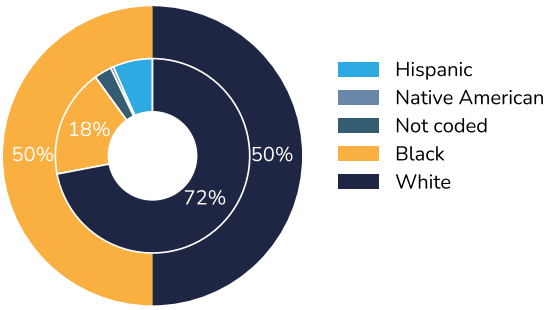
Traffic Control for Intersection Collisions



Pedestrian Location at Time of Collision



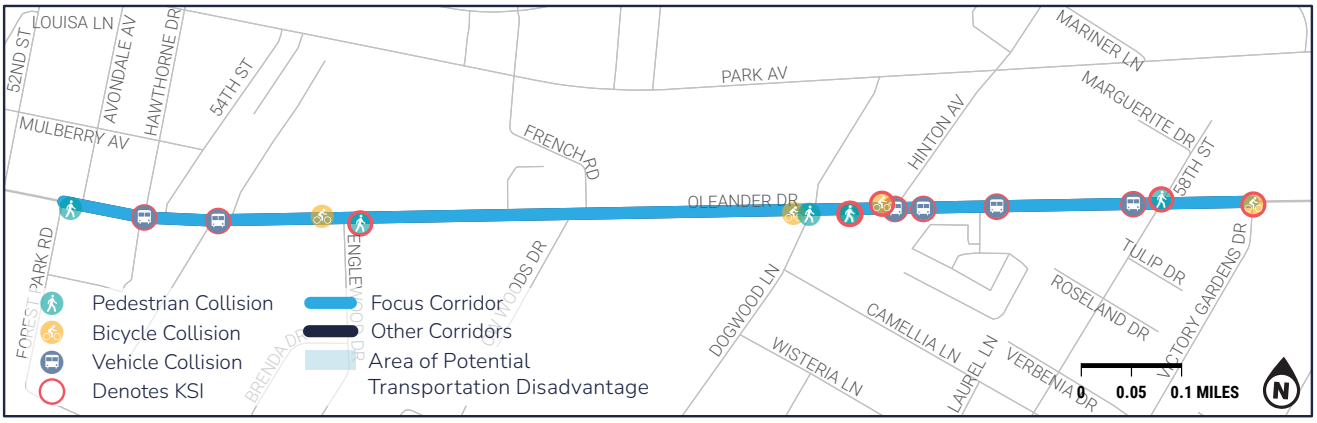
Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

9 OLEANDER DR (FOREST PARK RD TO VICTORY GARDENS DR)



Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	6	4	2	0
Bicycle	4	2	1	0
Vehicle (KSI only)	--	6	--	--
Total	10	12	3	0

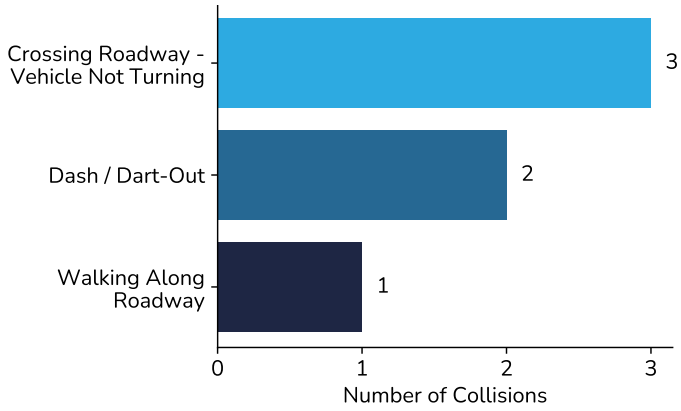
Collision data provided by NCDOT, 2011-2021.

Context Summary

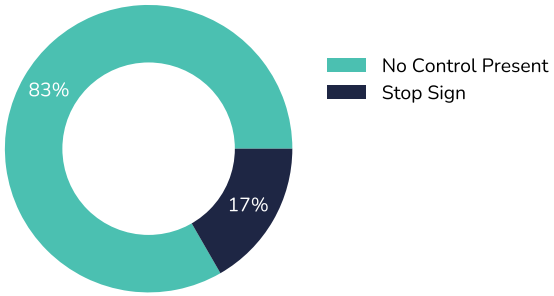
Speed Limit	40 - 45 MPH
Number of Lanes	5 lanes
Road Configuration	Two-Way, Not Divided
Pedestrian Volumes*	709
Bicycle Volumes*	92
Car Volumes*	44.6k

*Modeled weekday volumes from Replica Places

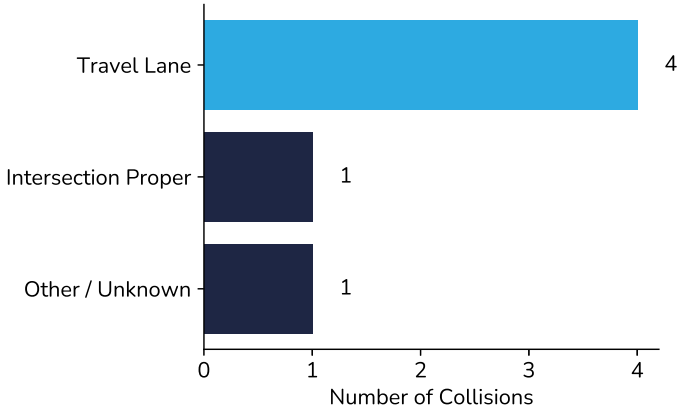
Pedestrian Crash Group



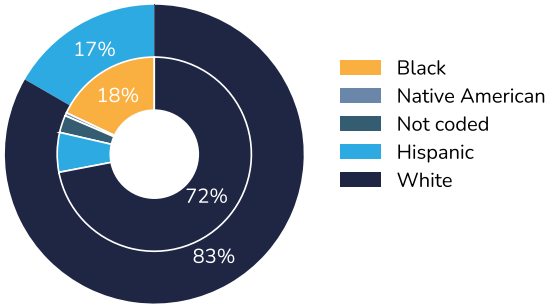
Traffic Control for Intersection Collisions



Pedestrian Location at Time of Collision



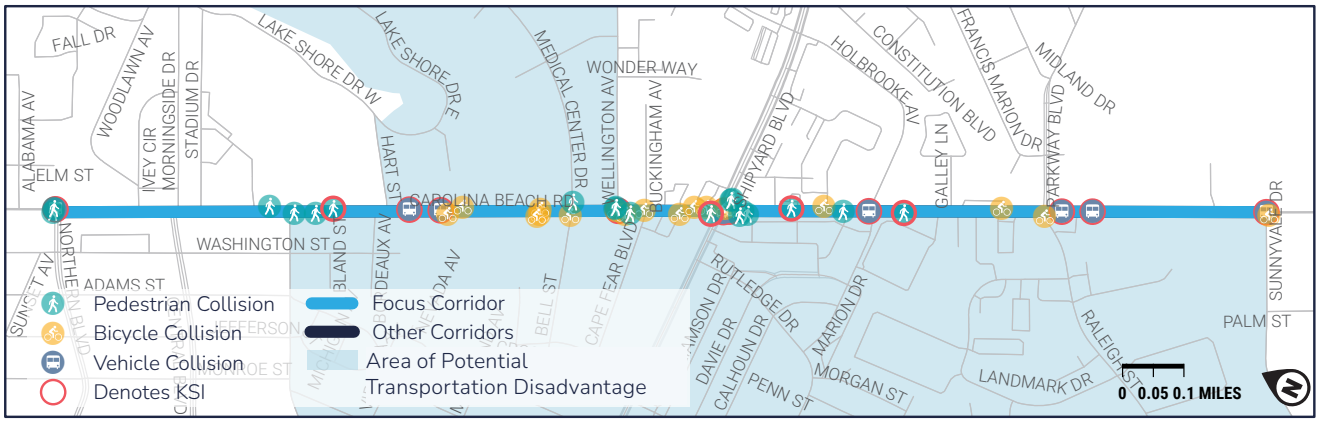
Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

Pedestrian HIN Corridor Profile

10 CAROLINA BEACH RD (NORTHERN BLVD TO SUNNYVALE DR)



Collisions Summary

	All	KSI	At Intersection	Youth Victim
Pedestrian	19	4	4	0
Bicycle	17	0	6	4
Vehicle (KSI only)	--	11	--	--
Total	36	15	10	4

Collision data provided by NCDOT, 2011-2021.

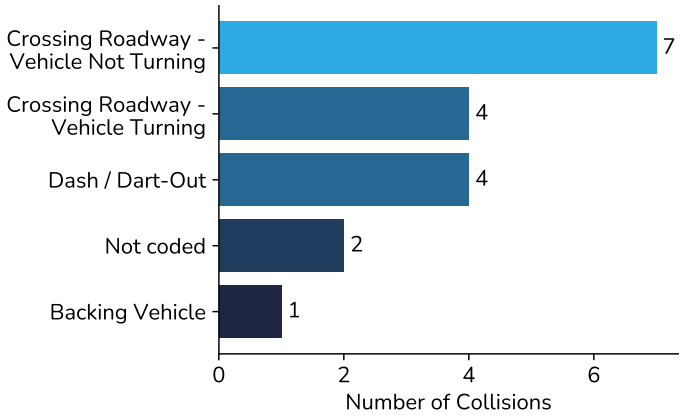
Context Summary

Speed Limit	40 - 45 MPH
Number of Lanes	5 lanes
Road Configuration	Two-Way, Not Divided
Pedestrian Volumes*	1360
Bicycle Volumes*	135
Car Volumes*	57.1k

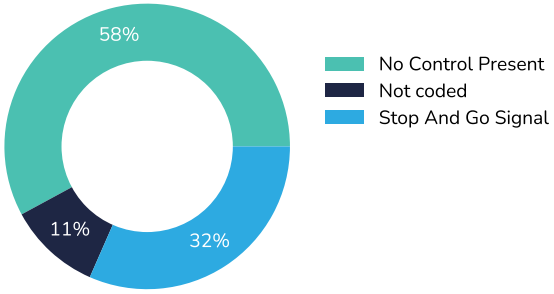
*Modeled weekday volumes from Replica Places

Pedestrian Crash Group

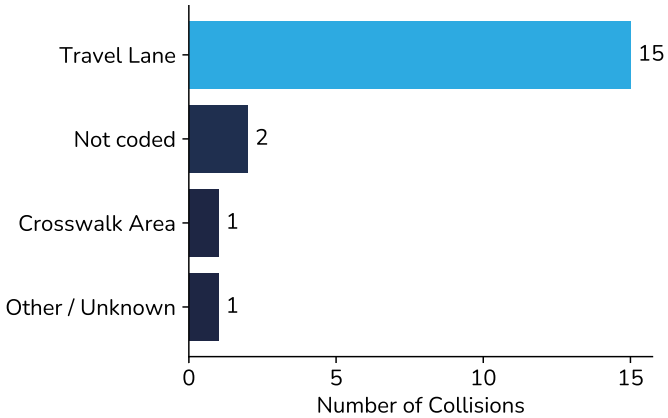
(Top Five Most Common Responses)



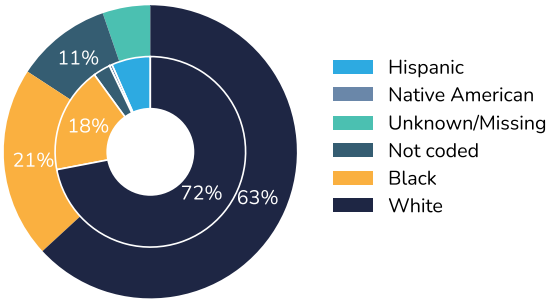
Traffic Control for Intersection Collisions



Pedestrian Location at Time of Collision



Race of Pedestrian Victim



*Inner ring indicates citywide racial demographics, ACS 2020 5-Year Estimates

2021-2022 Citywide Pedestrian Safety Study

The City of Wilmington and NCDOT undertook a pedestrian safety study in 2021-2022 to understand pedestrian crash and injury trends, patterns, and risk factors. These findings, in conjunction with the HIN analysis from this Walk Wilmington Pedestrian Plan update, will help the City and NCDOT prioritize and implement data-driven safety improvements where they will have the greatest impacts.

BACKGROUND

Wilmington and NCDOT completed this study as part of the pilot for NCDOT's Pedestrian Safety Improvement Program (PSIP), a comprehensive and data-driven program that uses multiple data sources and analysis methods to prioritize pedestrian safety improvements. PSIP projects are proactive, coordinated with state and local projects, and integrated with the state's Highway Safety Improvement Program (HSIP) and other existing plans and policies.

METHODS

The study analyzed crash data from 2011 to 2020 in Wilmington. The comprehensive approach identified specific locations where the most crashes occurred ("hot spots"), as well as systemic risk factors such as roadway type, land use, population density, seasonality/time of day, and demographics.

The study team also conducted two Road Safety Audits (RSAs) with City of Wilmington and NCDOT staff in 2022.

PEDESTRIAN CRASH KEY FINDINGS

Crash Hot Spots

- UNC-Wilmington campus
- Greater Downtown, Sunset Park, and Brookwood neighborhoods
- Carolina Beach Rd (US 421) Business & Commercial Corridor
- Oleander Dr (US 17) Corridor

Overall Crash Statistics

- Wilmington's pedestrian crash rate was 48 crashes per 100K residents in 2019 (the highest among NC large cities).
- Wilmington's K/A crash rate was 4th highest among NC large cities in 2019.
- Annual K/A crashes declined from 2015-2018 but increased in 2019.
- 51% of crashes occurred at intersections and 44% occurred at non-intersections.
- 50% of all K/A crashes occurred at non-intersections.

***K/A crashes** refer to crashes where a pedestrian was killed or severely injured, as defined by the KABCO injury severity scale.*

Lighting

- Dark conditions accounted for 47% of all crashes and 75% of all K/A crashes.

Signals

- 45% of all crashes occurred at or near a signalized intersection.
- 16% of crashes near signalized intersections were reported as K/A injuries.

Roadway Type

- 75% of K/A crashes occurred on NCDOT-maintained roadways.
- NCDOT-maintained roadways account for 15% of centerline miles in Wilmington but 82% of fatal pedestrian crashes and 65% of serious injury crashes.
- The highest percentage of K/A crashes occurred on 40-45 mph roads (62% of fatal and 39% of serious injury crashes).
- Two-lane and five-lane roadways had the highest share of pedestrian K/A crashes with 23% on two-lane and 23% on five-lane roadways.

Demographics

- 75% of all crashes and 80% of K/A crashes occurred in areas with minority populations higher than the New Hanover County average.
- 91% of all crashes and 92% of K/A crashes occurred in areas where the poverty rate is above the New Hanover County average.
- 31% of pedestrians in crashes were reported as Black/African American, despite that group accounting for only 18.4% of Wilmington's total population.
- 30-to-39 year olds had the highest share of all crashes (18%).
- 50-to-59 year olds had the highest share of K/A crashes (24%).

RECOMMENDATIONS

This study's implementation plan identified priority corridors, focus areas, and future HSIP intersections for 2022-2027. Key areas include:

- S 17th St/S 16th St (Elmore St to Shipyard Blvd)
- S Kerr Ave (McClelland Dr to Peachtree Ave)
- Wrightsville Ave (Kerr Ave to Oak Crest Dr)
- Carolina Beach Rd/Shipyard Blvd intersection area
- Carolina Beach Rd near Southside Park
- Wooster St/Dawston St area
- Market St downtown area
- Market St (23rd St to College Rd)
- College Rd (Oleander Dr to New Centre Dr)
- Oleander Dr/Greenville Loop Rd area
- Eastwood Rd/US 17 area

To view a map of the complete recommendations, visit:

https://vhb.maps.arcgis.com/apps/mapviewer/index.html?webmap=ea173b5b42084a74a11abc7830924747

Conclusion

Wilmington is actively improving walkability through infrastructure projects, planning efforts, pedestrian safety programs, and policy changes that support the objectives of safety, connectivity, and equity. The existing conditions analysis showed which parts of Wilmington's pedestrian network are working well and identified many areas where the city could focus its efforts to improve walkability even more.

Key Takeaways

- **Pedestrian activity** is concentrated around downtown, UNC-Wilmington, larger neighborhoods, and several business/commercial hubs.
- Existing shared-use paths and trails are well-utilized, but **maintenance and connections** to/from these facilities need to be priorities, based on public survey responses.
- **High-speed urban roadways** such as College Road, Market Street, Oleander Drive, and Carolina Beach Road are a safety concern and connectivity challenge for people walking. Of the ten HIN priority corridors, all have speed limits of **35mph or greater, and six have 45mph speed limits.**
- Seamless **integration between the WAVE Transit system and the pedestrian network** is a citywide issue, with many transit stops lacking sufficient walking infrastructure and amenities.
- High numbers of **tourists and visitors** in Wilmington represent an opportunity but also a challenge, as these groups may be willing to walk but are more likely to need **guidance on routes and directions.**
- Areas where TDI scores are highest have significant overlap with the pedestrian HIN. **In other words, many of the areas with the greatest potential for transportation disadvantage are also the least safe for walking in Wilmington.**
- Several of the HIN priority corridor detail sheets also indicate racial disparities in safety outcomes, showing that **pedestrian victims were disproportionately Black** compared to the overall proportion of Black residents in Wilmington.

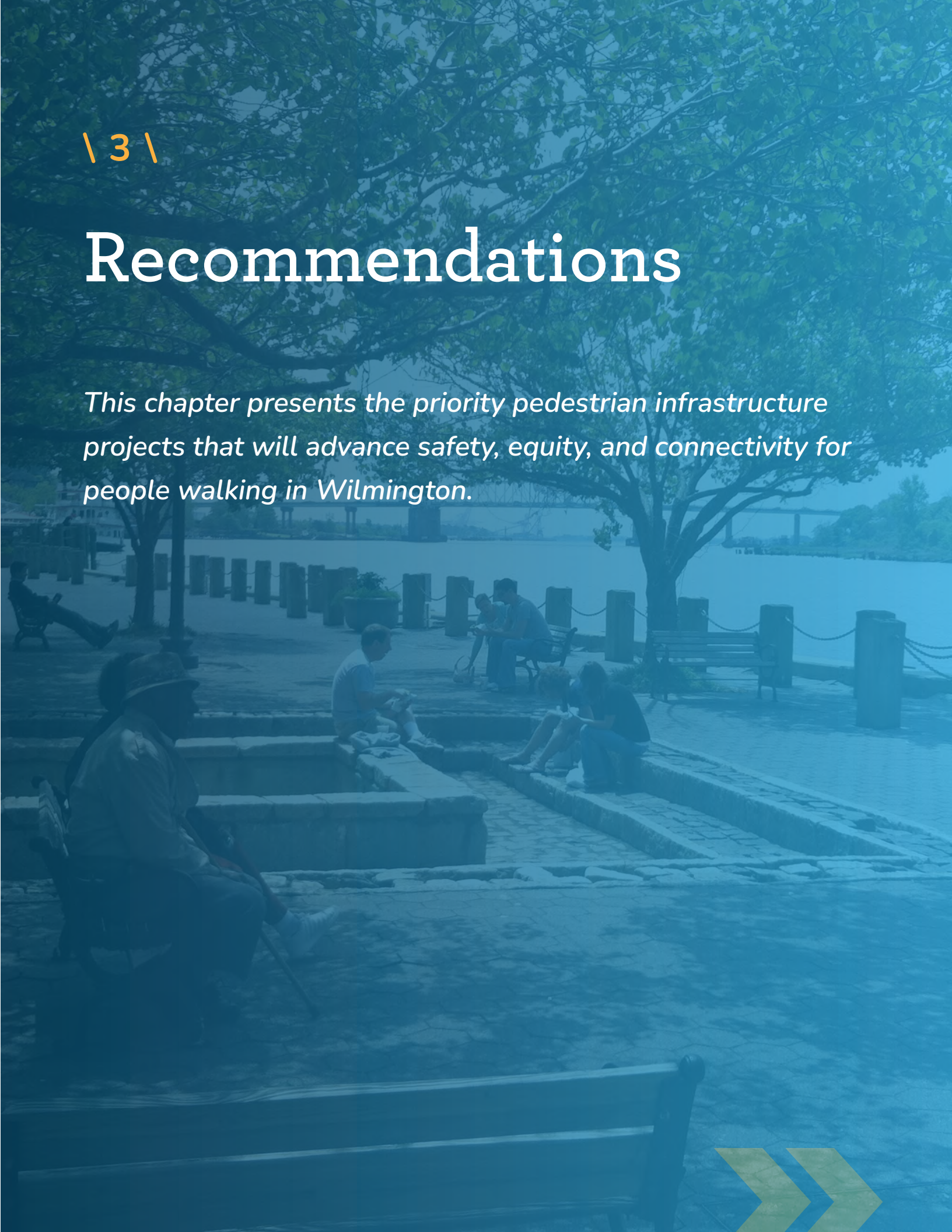
Next Steps

The following chapters identify **specific projects at the nexus of the key plan goals (safety, equity, and connectivity) and feasibility.** By focusing on implementable projects, programs, and policies that will have the greatest impact, Wilmington can efficiently allocate resources in the near-term while planning and anticipating long-term needs to create a more walkable city.

\ 3 \

Recommendations

This chapter presents the priority pedestrian infrastructure projects that will advance safety, equity, and connectivity for people walking in Wilmington.



Overview

The projects in this chapter are recommended as the highest-priority infrastructure projects to support the goals of a more walkable Wilmington. This chapter describes how the project team developed a prioritization process that reflected community and steering committee goals, and describes the resulting priority project focus areas in detail.

From Plan Goals to Recommendations

KEY PLAN GOALS

Increase Safety

Promote Equity

Enhance Connectivity, Accessibility, and Mobility

KEY FACTORS FOR DEVELOPING RECOMMENDATIONS

Pedestrian High Injury Network
A comprehensive safety analysis showed which streets in Wilmington are the most dangerous for pedestrians. These streets comprise the pedestrian high injury network (HIN). Improving safety within the HIN can make a substantial impact on overall network safety. See page 30 for more detail about the HIN and safety analysis.

Transportation Disadvantage Index
The equity analysis used NCDOT's Transportation Disadvantage Index (TDI) to screen for areas with the greatest potential need for pedestrian projects, based on economic and demographic factors. See page 25 for more detail about TDI and the equity analysis.

Connections to Recreation
Pedestrian connections to trails and park entrances were especially important based on community feedback.

Connections to Employment and Housing
Projects that create or improve connections to employment centers and housing support the goal of connectivity, accessibility, and mobility.

Prioritization Factor Weighting

The main prioritization factors of safety, equity, and connectivity to recreation, housing, and employment were selected and given weights based on the results of the summer 2022 public input process. The raw results of the public survey related to priorities are shown below, along with filtered sets of responses by income and race of the survey participants (see Appendix A for more detail).

Results from over 1,000 responses to the question: "What factors are most important to you in prioritizing improvements for walking in Wilmington? (Please select up to three)"

All Results	Responses
Projects to reduce pedestrian injuries and fatalities	634
Connections to parks, greenways, and recreation centers	571
Connections to homes, jobs, and entertainment	356
Projects serving lower income areas	348
Connections to schools, libraries, colleges, and universities	273
Public input (map comments, stakeholder interviews, surveys, past plans)	173
Connections to bus stops and routes	154

Filtered by Household Income $50,000 or Below	Responses
Projects to reduce pedestrian injuries and fatalities	87
Projects serving lower income areas	72
Connections to parks, greenways, and recreation centers	72
Connections to homes, jobs, and entertainment	53
Connections to bus stops and routes	49
Connections to schools, libraries, colleges, and universities	40
Public input (map comments, stakeholder interviews, surveys, past plans)	30

Filtered by Black, Indigenous, and people of color (BIPOC)	Responses
Projects to reduce pedestrian injuries and fatalities	66
Projects serving lower income areas	50
Connections to parks, greenways, and recreation centers	45
Connections to homes, jobs, and entertainment	35
Connections to schools, libraries, colleges, and universities	31
Connections to bus stops and routes	28
Public input (map comments, stakeholder interviews, surveys, past plans)	19

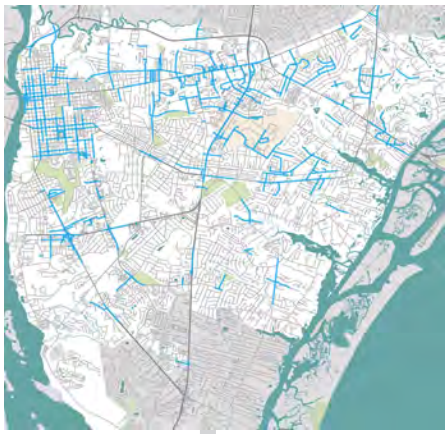
Applying Prioritization Weights & Creating Priority Focus Areas

Based on the results of the survey, each prioritization factor was given a weight to reflect the priorities of Wilmington residents.

KEY FACTORS, BASED ON PUBLIC INPUT

Safety

Based on a High Injury Network Analysis

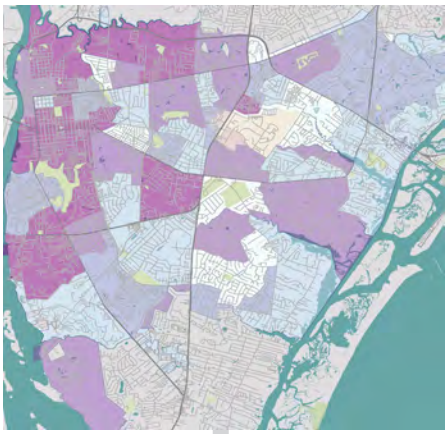


35% of score

+

Equity

Based on NCDOT's Transportation Disadvantage Index (TDI)

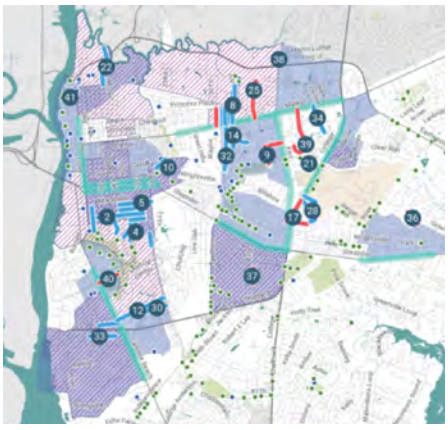


30% of score

+

=

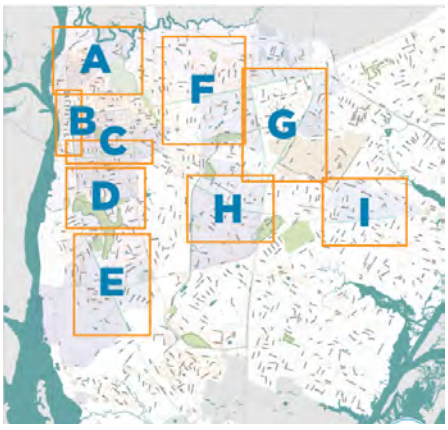
IDENTIFY HIGH SCORING PROJECT CLUSTERS



Top 5% highest scoring projects shown here.

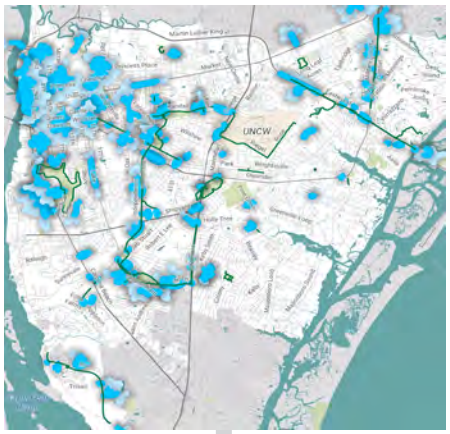
→

USE RESULTS TO DEFINE PRIORITY FOCUS AREAS



Connections to Recreation

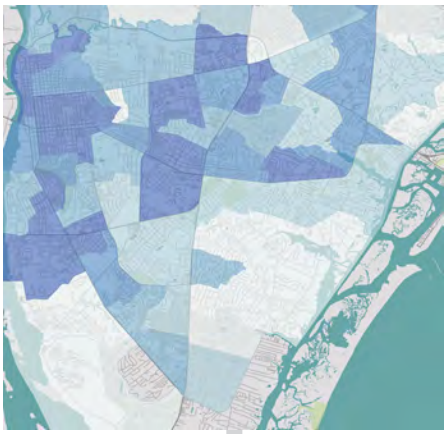
Based on Park Entrances and Trail Locations



20% of score

Connections to Homes and Jobs

Based on the EPA Smart Location Database



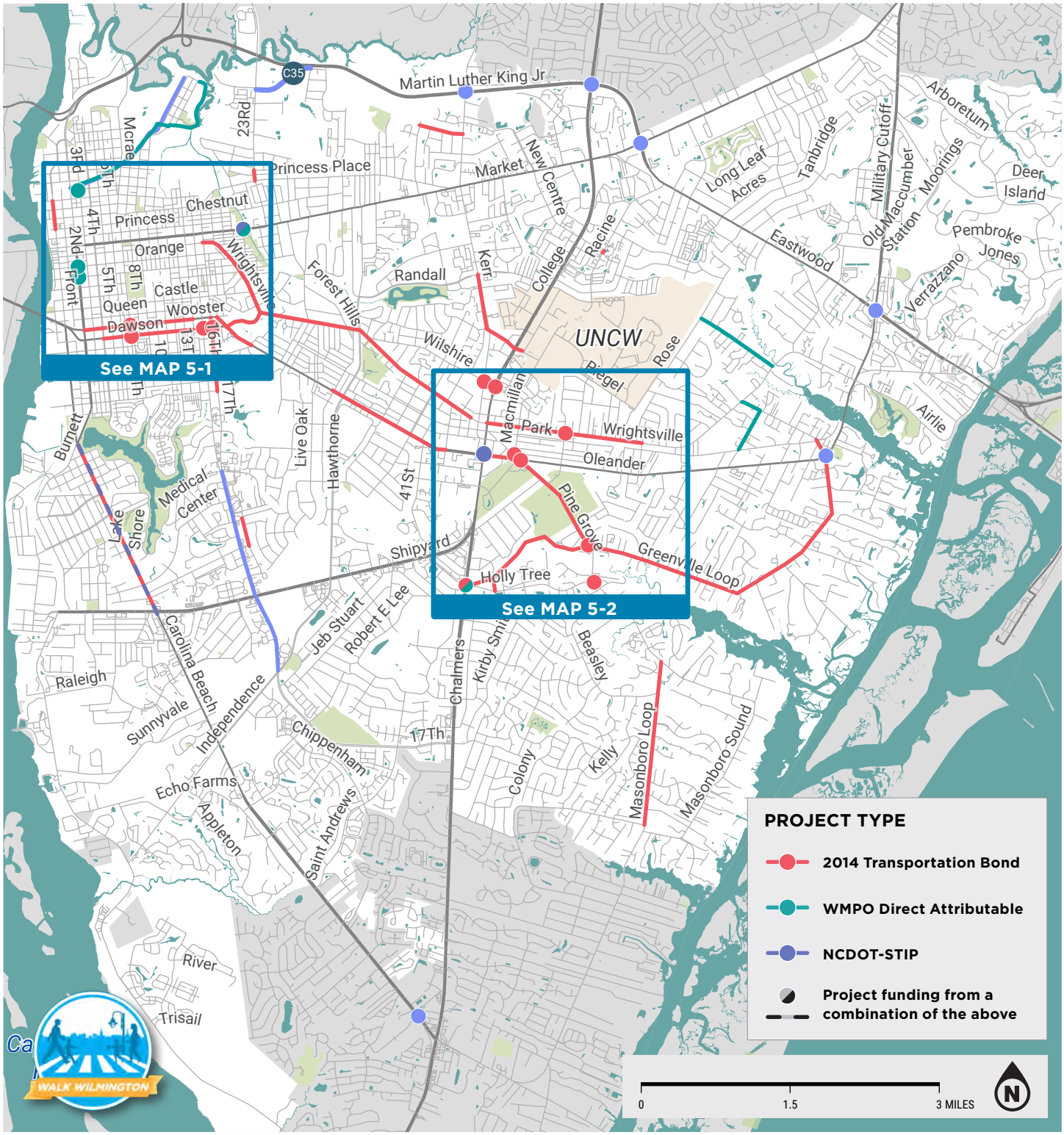
15% of score

% Weight assigned to each factor, based on public comment form results

DEVELOP RECOMMENDATIONS FOR PRIORITY AREAS

Example for project area "D" shown here.

COORDINATE WITH PROJECTS ALREADY IN DEVELOPMENT (BOND, WMPO, STIP)



MAP 5:

Projects in Development

WALK WILMINGTON PEDESTRIAN PLAN

This map shows pedestrian projects in Wilmington that are in development, including projects funded by the 2014 Transportation Bond, WMPO Direct Attributable projects, and projects in NCDOT's 2020-2029 State Transportation Improvement Program (STIP).

Projects in Development

MAP 5 (page 52) and **MAP 5-1** and **5-2** reflect a snapshot in time, and do not show every pedestrian project in development in Wilmington. The the projects shown will continue to change and evolve as they advance towards completion. The resources below provide current information about funded pedestrian projects and projects in development.

NCDOT STIP

2020-2029 STIP:
https://connect.ncdot.gov/projects/planning/STIPDocuments1/NCDOT%20Current%20STIP.pdf

Interactive STIP Map:
https://connect.ncdot.gov/projects/planning/pages/state-transportation-improvement-program.aspx

Contact the NCDOT STIP Eastern Division Manager: https://apps.ncdot.gov/dot/directory/authenticated/UnitPage.aspx?id=10086

WILMINGTON 2014 TRANSPORTATION BOND PROJECTS

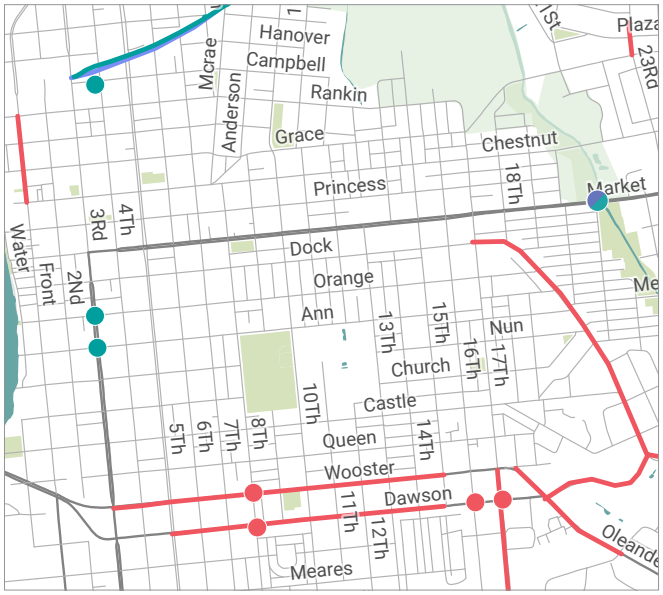
Bond Project Information:
https://www.wilmingtonnc.gov/departments/major-construction-projects/2014-transportation-bond

WMPO METROPOLITAN TRANSPORATION PLAN (MTP)

Cape Fear Moving Forward 2045:
https://www.wmpo.org/mtp/

Contact the WMPO Executive Director or Deputy Director: https://www.wmpo.org/contact/

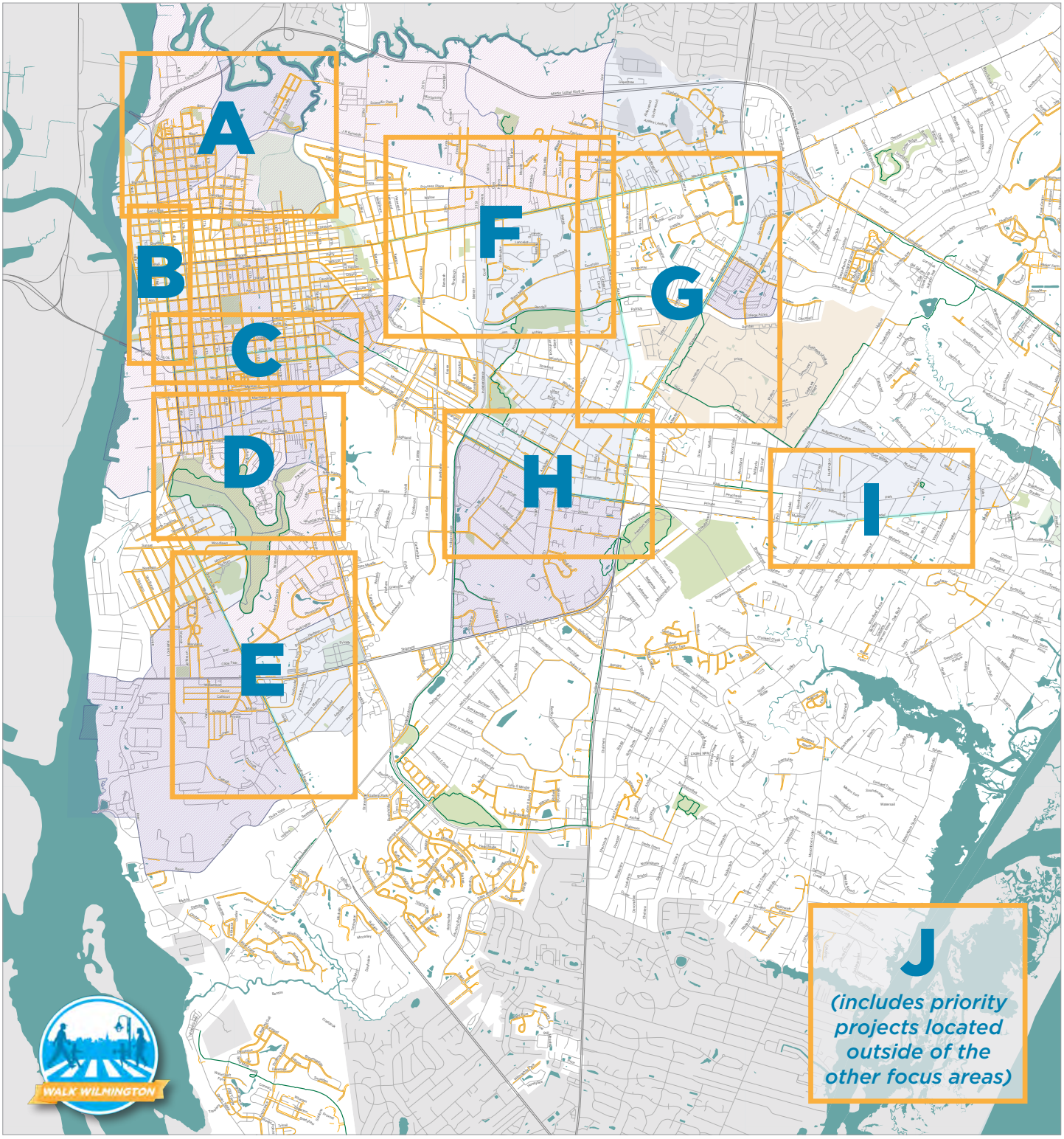
MAP 5-1: Projects in Development (Downtown Area)



MAP 5-2: Projects in Development (University/Oleander Area)

PROJECT TYPE

- 2014 Transportation Bond
- WMPO Direct Attributable
- NCDOT-STIP
- Project funding from a combination of the above



MAP 6:

Priority Focus Areas for Safety, Equity, Connectivity

WALK WILMINGTON PEDESTRIAN PLAN

Refer to the priority focus area cutsheets in this chapter for project details.

- Safety Focus (High Injury Corridors)
- Connectivity: Parks and Shared-Use Paths
- Connectivity: Jobs & Homes (EPA Smart Location Database)
- Equity Focus (Transportation Disadvantage Index)
- Connectivity and Equity Focus Overlap
- Priority Focus Areas
- UNCW
- Wilmington
- County/outside Wilmington

Priority Focus Areas for Safety, Equity and Connectivity

The priority focus areas, shown in **MAP 6 (page 54)**, are the emphasis of the infrastructure recommendations in this plan. The following pages provide a detailed look at each focus area:

A: Northside & Downtown Trail (including Wilmington Rail Trail)

B: 3rd Street

C: Wooster and Dawson

D: Greenfield Street Area

E: Carolina Beach Road

F: Market Street

G: Market Street/S Kerr Avenue/College Road

H: Oleander Drive (Independence Boulevard to College Road)

I: Oleander Drive (Avondale Avenue to Victory Gardens Drive)

J: Additional Priority Projects

Note about terminology: Throughout this report, **shared-use path** refers to any separate facility (besides a sidewalk) for use by people walking, biking, skating, or using other non-motorized transportation. In the recommendations sections that follow, a distinction is made between **sidepaths** (shared-use paths in a shared roadway right-of-way) and **greenways** (shared-use paths in an independent right-of-way). Sidepath terminology is used in NCDOT project development and Complete Streets policies.

WALK WILMINGTON

PRIORITY FOCUS AREA A:

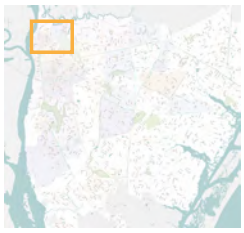
Northside & Downtown Trail (including Wilmington Rail Trail)

RECOMMENDATIONS

- Recommended Sidewalks
- Recommended Greenways
- Key Crossing Improvements *(see notes on next page)*

EXISTING CONDITIONS

- Existing Sidewalks
- Existing Parks and Greenways
- Wilmington
- Railroad
- Bus Stop
- School
- Convenience/Grocery Store
- Police Station
- Health/Medical Services
- Government Services and Related Non-Profits



PRIORITY FOCUS AREA A:

Northside & Downtown Trail (including Wilmington Rail Trail)

For the purposes of this plan, the Northside area is generally bound by 3rd Street, Red Cross Street/Rankin Street, Oakdale Cemetery, and Martin Luther King Jr Parkway. This downtown Wilmington residential area is bordered by major downtown destinations, several parks, recreation centers, and schools, and a network of bus routes. Several sidewalk and greenway recommendations would fill key gaps in the pedestrian network, but the bulk of improvements recommended for this area are focused on improving crossings at bus stops and key destinations.

CROSSING IMPROVEMENTS

- All key intersections marked "X" in Focus Area A are recommended for crosswalks and stop bars* for all legs of the intersection that have existing sidewalks on both sides; signalized crossings should also include pedestrian signals.

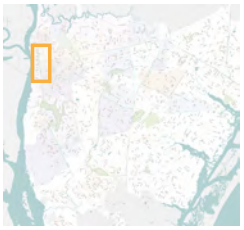
The future Downtown Trail, which includes the Wilmington Rail Trail, will be a key pedestrian feature in this area, providing a connection from the residential areas it runs through to the downtown area where people work, shop, go to school, and recreate. The project is partially funded through WMPO's Coronavirus Response and Recovery Supplemental Appropriations Act (CRRSAA) funds, and a full master plan outlines the key opportunities, constraints, and recommendations for the corridor (see images below from the Wilmington Rail-Trail Master Plan (2020), prepared by Kimley Horn for the WMPO, City of Wilmington, and The Arts Council of Wilmington & New Hanover County). To see the full plan, visit: www.wilmingtonrailtrail.com

**The term "stop bars" is used throughout this report to refer to the rectangular white pavement markings that indicate where drivers should stop at an intersection (signalized or stop-controlled). These markings are important in relation to pedestrian crossings, as they help keep vehicles clear of the crossing space and maintain sight lines for pedestrians and drivers.*

Images from the Wilmington Rail-Trail Master Plan (2020), prepared by Kimley Horn.

WALK WILMINGTON

PRIORITY FOCUS AREA B: 3rd Street



RECOMMENDATIONS

Key Crossing Improvement
(see notes on next page)

EXISTING CONDITIONS

Existing Sidewalks

Existing Parks and Greenways

Wilmington

Bus Stop

School or Library

Convenience/Grocery Store

Government Services and Related Non-Profits

High Injury Network (HIN) Priority Corridor *(see section starting on page 32 for HIN corridor profiles)*

PRIORITY FOCUS AREA B:
3rd Street

This focus area is along 3rd Street from Red Cross Street to Highway 17/Wooster Street. The northern half of this street segment has seen many improvements for pedestrian safety in the past decade, including an entirely new streetscape design with wider sidewalks, clear crosswalks, pedestrian countdown signals, and other safety measures.

However, even with these improvements, this segment of 3rd Street was identified in Chapter 2 as a High Injury Network (HIN) Priority Corridor, with 28 pedestrian collisions (plus eight bicyclist collisions) reported by NCDOT from 2011-2021. Of the 28 pedestrians involved in collisions with motor vehicles, three were killed or sustained serious injuries (two at 3rd Street & Castle Street and one on 3rd Street between Nun Street and Anne Street).

Part of this corridor also scores high on NCDOT's Transportation Disadvantage Index, which measures the disproportionate impact transportation barriers have on Black, Indigenous, and persons of color; lower income communities; households without personal vehicle access; people with mobility impairments; the elderly; and youths.

EXISTING CONDITIONS

3rd Street:

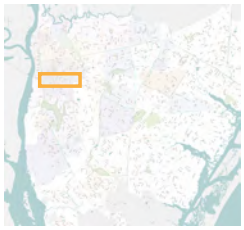
35mph
Posted Speed

12,000-18,500
AADT (2021)

CROSSING IMPROVEMENTS

1. Hardened centerlines.
2. Hardened centerlines; turn calming wedges.
3. Hardened centerlines; turn calming wedges.
4. Hardened centerlines; turn calming wedges.
5. Hardened centerlines.
6. Hardened centerlines; median refuge island.
7. None; intersection was recently improved,
8. Crosswalks; median refuge islands; consider signalization or pedestrian wayfinding signage indicating nearest signalized crossing; crosswalks across Orange St/along 3rd St at minimum.
9. Existing RRFB crossing to be updated to fully signalized intersection.
10. Crosswalks; median refuge islands; consider signalization or pedestrian wayfinding signage indicating nearest signalized crossing; crosswalks across Nun St/along 3rd St at minimum.
11. Crosswalks; median refuge islands; consider signalization or pedestrian wayfinding signage indicating nearest signalized crossing; crosswalks across Church St/along 3rd St at minimum.
12. Hardened centerlines; median refuge islands.
13. Crosswalks; median refuge islands; consider signalization or pedestrian wayfinding signage indicating nearest signalized crossing; crosswalks across Queen St/along 3rd St at minimum.
14. See Focus Area C.

PRIORITY FOCUS AREA C:
Wooster and Dawson



RECOMMENDATIONS

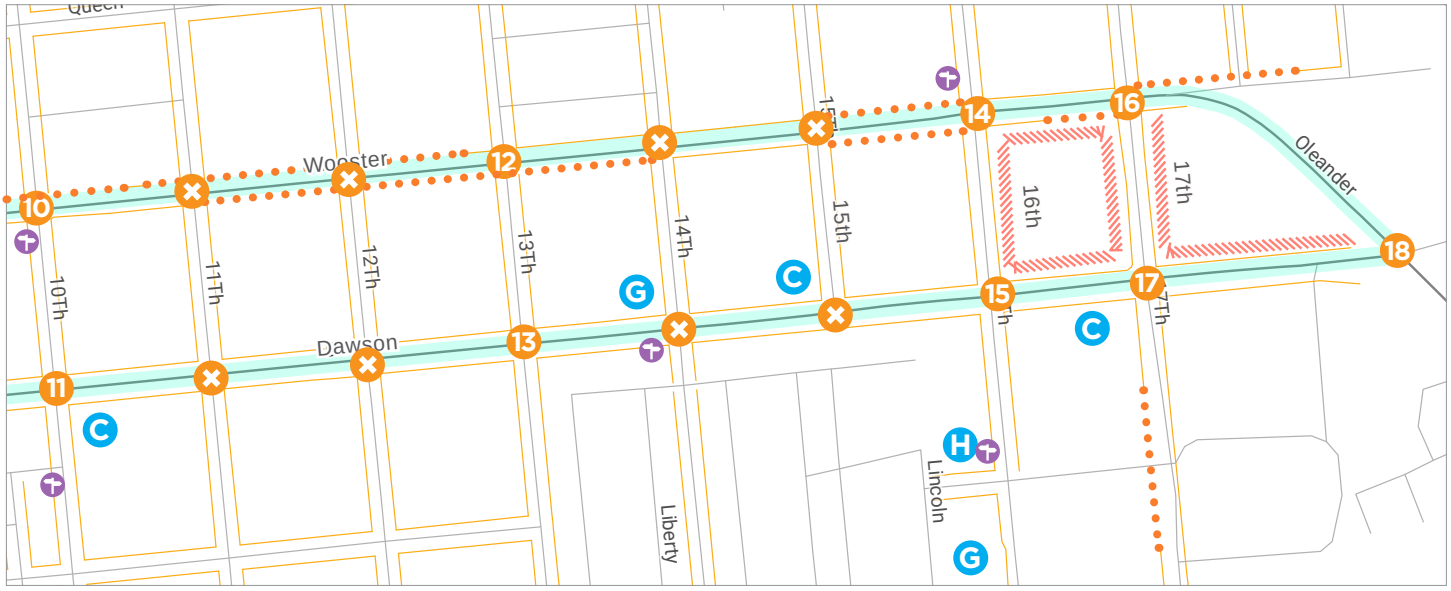
- Recommended Sidewalks
- Recommended Sidepaths
- Key Crossing Improvements *(see notes on next page)*
- Access Management Plan Recommended

EXISTING CONDITIONS

- Existing Sidewalks
- Existing Parks
- Wilmington
- Bus Stop
- Convenience/Grocery Store
- Health/Medical Services
- Government Services and Related Non-Profits
- High Injury Network (HIN) Priority Corridor *(see section starting on page 32 for HIN corridor profiles)*

This focus area is along Highway 17 (Wooster Street and Dawson Street) from 3rd Street to Oleander Drive. These are two one-way pairs with heavy volumes of traffic, serving as a barrier to connectivity and safety for pedestrians.

This area was identified in Chapter 2 as a High Injury Network (HIN) Priority Corridor, with 33 pedestrian collisions (plus 29 bicyclist collisions) reported by NCDOT from 2011-2021, including three pedestrians who were killed or sustained serious injuries. The entire focus area also scores high on NCDOT's Transportation Disadvantage Index.



EXISTING CONDITIONS

Wooster St:

35mph
Posted Speed

15,000-18,500
AADT (2021)

Dawson St:

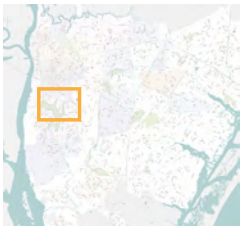
35mph
Posted Speed

16,500-20,500
AADT (2021)

CROSSING IMPROVEMENTS

- All key intersections marked "X" in Focus Area C are recommended for east-west crosswalks and stop bars only; consider pedestrian wayfinding signage indicating nearest signalized crossing.
- 1 See Focus Area B.
- 2 Crosswalks, median refuges, countdown signals.
- 3 Crosswalks, median refuges, countdown signals.
- 4 No intersection/4th Street does not cross.
- 5 East-west crosswalks only.
- 6 None; intersection was recently improved.
- 7 None; intersection was recently improved.
- 8 Crosswalks, curb ramps, countdown signals.
- 9 Crosswalks, curb extensions, countdown signals.
- 10 None; intersection was recently improved.
- 11 None; intersection was recently improved.
- 12 None; intersection was recently improved.
- 13 None; intersection was recently improved.
- 14 Crosswalks and countdown signals.
- 15 Crosswalks and countdown signals.
- 16 Crosswalks and countdown signals.
- 17 Crosswalks and countdown signals.
- 18 Intersection study needed.

PRIORITY FOCUS AREA D:
Greenfield Street Area



RECOMMENDATIONS

- Recommended Sidewalks
- Recommended Greenways
- Key Crossing Improvements *(see notes on next page)*
- Access Management Plan Recommended

EXISTING CONDITIONS

- Existing Sidewalks
- Existing Sidepaths
- Existing Parks
- Wilmington
- Railroad
- Bus Stop
- School
- Convenience/Grocery/ Food Bank
- Health/Medical Services
- Government Services and Related Non-Profits

PRIORITY FOCUS AREA D:

Greenfield Street Area

This priority focus area is roughly bound by Marstellar Street, S 17th Street, E Lake Shore Drive, and S 3rd Street. It is characterized by a mix of residential, industrial, and recreational land uses. Located at the southern end of downtown Wilmington, this focus area is a transition point to both Greenfield Lake and many medical destinations and jobs in and around the regional medical center.

Other key destinations include New Hanover County Department of Social Services, Social Security Administration, Wilmington Housing Authority, a food bank, Greenfield Lake Park, and dozens of medical/health services that support the regional medical center.

EXISTING CONDITIONS

Greenfield Street:

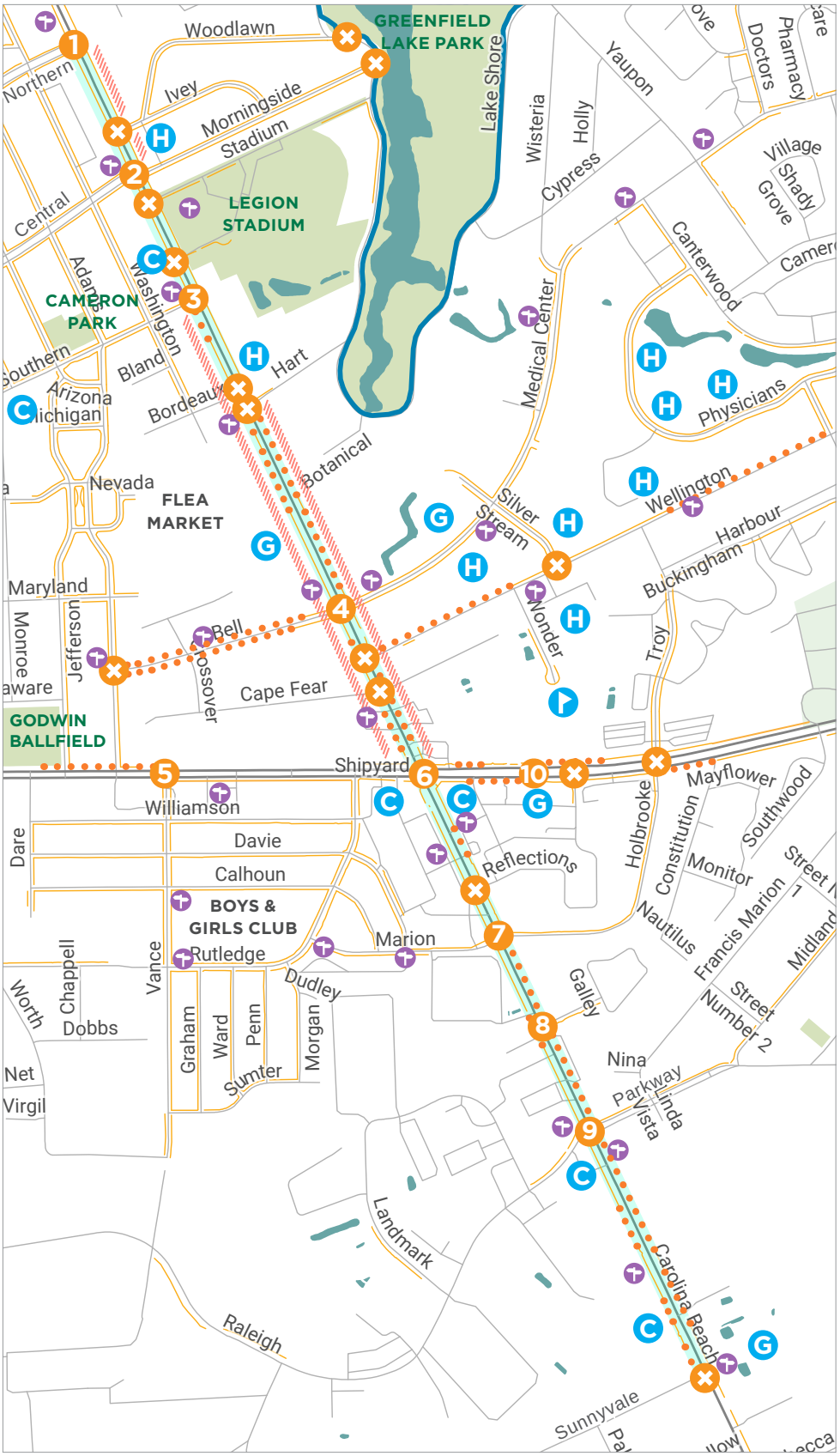
25-35mph	4,200-4,500
Posted Speed	AADT (2021)

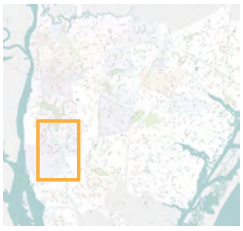
CROSSING IMPROVEMENTS

- All key intersections marked "X" in Focus Area D are recommended for crosswalks in all directions, with stop bars and curb ramp improvements as needed, and median refuge islands as feasible.
- 1 PHB signal crossing with median refuge island recommended; this is the midpoint between the nearest signalized intersections on 3rd Street, which are both 1,380 ft away in either direction (at Highway 17 to the north and Greenfield Street to the south); north-south crosswalks and stop bars also recommended.
- 2 North-south crosswalks and stop bars.
- 3 North-south crosswalks and stop bars.
- 4 Countdown signals and additional crosswalks.
- 5 Countdown signals and crosswalks on all approaches.
- 6 East-west crosswalk and stop bar; consider Greenfield St crosswalk to convenience store and bus stop.
- 7 East-west crosswalk and stop bars.
- 8 East-west crosswalk and stop bars.
- 9 East-west crosswalk and stop bars.
- 10 Consider crosswalk and/or PHB signal across Greenfield Street to convenience store and bus stop; the nearest signalized crossings are 1,380 ft west to 5th Street and 1,760 ft east to 13th Street; east-west crosswalk and stop bar also recommended.
- 11 East-west crosswalk and stop bars.
- 12 East-west crosswalk and stop bars.
- 13 East-west crosswalk and stop bars.
- 14 East-west crosswalk and stop bars.
- 15 Intersection was recently improved; still needs curb ramp on one corner; consider countdown signals.
- 16 East-west crosswalk and stop bars.
- 17 East-west crosswalk and stop bars.
- 18 North-south crosswalk and stop bars.
- 19 None; intersection was recently improved.
- 20 North-south crosswalk and stop bars.
- 21 North-south crosswalk and stop bars.
- 22 None; intersection was recently improved.

PRIORITY FOCUS AREA E:

Carolina Beach Road





RECOMMENDATIONS

- **Recommended Sidewalks**
- **Key Crossing Improvements** *(see notes on next page)*
- **Access Management Plan Recommended**

EXISTING CONDITIONS

- **Existing Sidewalks**
- **Existing Sidepaths**
- **Existing Parks**
- **Wilmington**
- **Bus Stop**
- **School or Library**
- **Convenience/Grocery Store**
- **Health/Medical Services**
- **Government Services and Related Non-Profits**
- **High Injury Network (HIN) Priority Corridor** *(see section starting on page 32 for HIN corridor profiles)*

PRIORITY FOCUS AREA E:

Carolina Beach Road

This focus area is along Carolina Beach Road from Northern Boulevard to Sunnyvale Drive. The corridor lined with highway commercial development, with primarily residential areas to the west of the main corridor, and health/ medical destinations to the east/northeast.

This segment of Carolina Beach Road was identified in Chapter 2 as a High Injury Network (HIN) Priority Corridor, with 19 pedestrian collisions (plus 17 bicyclist collisions) reported by NCDOT from 2011-2021. Of the 19 pedestrians involved in collisions with motor vehicles, four were killed or sustained serious injuries (just north of Hart Street, at Shipyard Boulevard, just south of Shipyard, and just south of Holbrooke Avenue). Several cross streets in this focus area are also part of the HIN, such as Morningside Drive, Bell Street, Wellington Street, Shipyard Boulevard, and Williamson Street, and Vance Street.

Most of this corridor also scores high on NCDOT's Transportation Disadvantage Index.

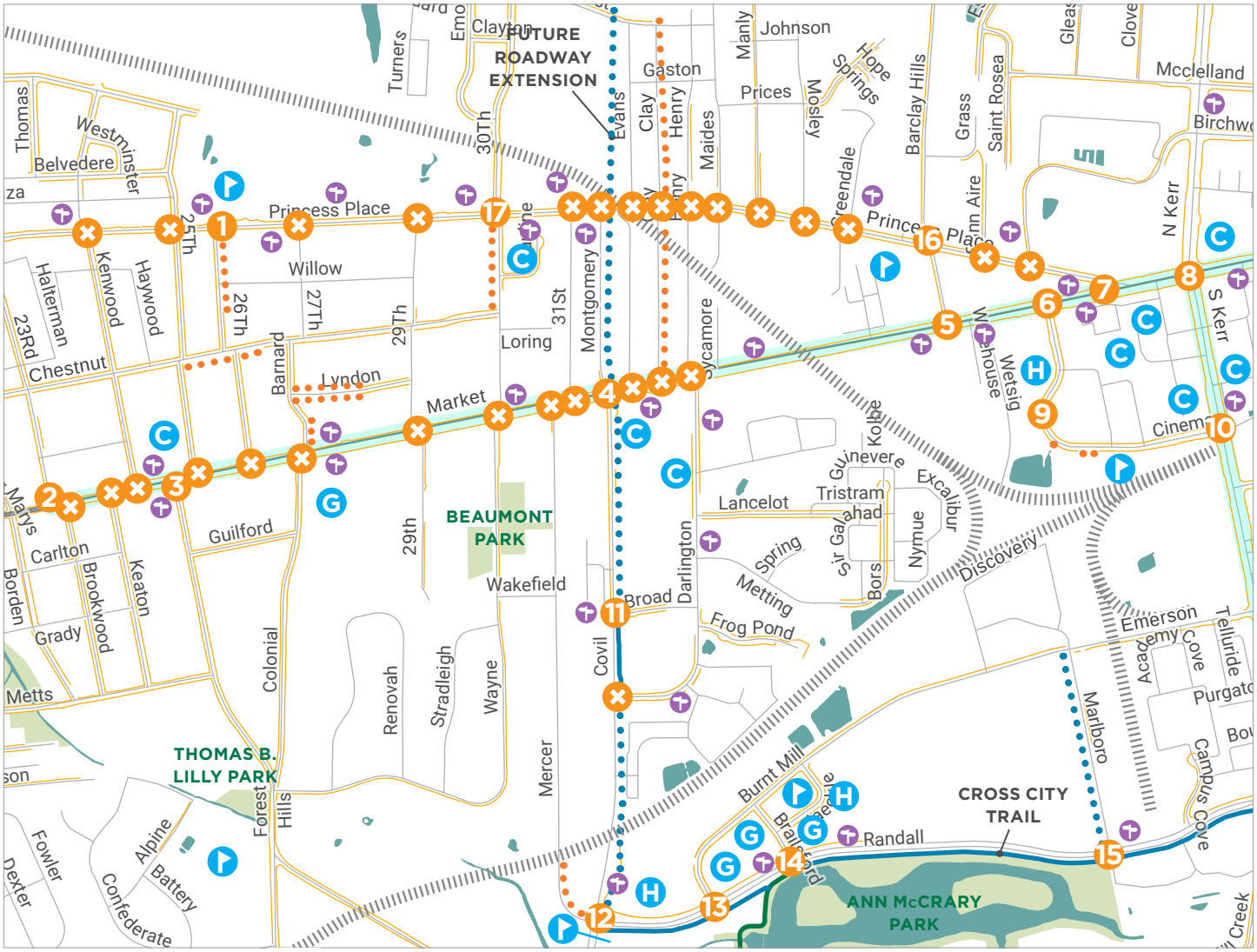
EXISTING CONDITIONS

Carolina Beach Road:

40-45mph	28,000-36,000
Posted Speed	AADT (2021)

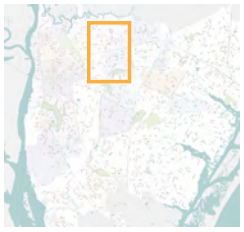
CROSSING IMPROVEMENTS

- ✖ All key intersections marked "X" in Focus Area E are recommended for crosswalks and stop bars on the minor road legs of the intersection only; consider pedestrian wayfinding signage indicating nearest signalized crossing.
- 1 Add crosswalk and median refuge island across Northern Boulevard.
- 2 Add median refuge island across Central Boulevard.
- 3 Add crosswalk across Southern Boulevard.
- 4 Add crosswalk across west side of Bell Street.
- 5 New full signalization of Shipyard Boulevard and Vance Street with crosswalks, pedestrian signals and median refuge islands. This intersection includes two intersecting streets on the HIN; connects residential areas on both sides of the street; connects to a ball field and Boys & Girls Club on opposite sides of the street, and most importantly, it would offer a connection to allow north-south pedestrian travel along residential streets, avoiding Carolina Beach Road altogether,
- 6 Add crosswalks and pedestrian signals to two legs of intersection where missing; include a pedestrian refuge island on the western Shipyard Boulevard crossing that is designed to protect pedestrians from left turning truck movement.
- 7 Crosswalks, stop bars, and median refuge islands crossing Marion Drive and Holbrooke Avenue.
- 8 None; intersection was recently improved.
- 9 Crosswalks and pedestrian signals in all directions with median refuge islands on minor street legs of the intersection.
- 10 Consider a signalized mid-block crossing such as a PHB in this area; coordination with nearby fire station would be required.



WALK WILMINGTON

PRIORITY FOCUS AREA F:
Market Street



RECOMMENDATIONS

- Recommended Sidewalks
- Recommended Sidepaths
- Key Crossing Improvements *(see notes on next page)*
- Access Management Plan Recommended

EXISTING CONDITIONS

- Existing Sidewalks
- Existing Sidepaths
- Existing Parks and Greenways
- Wilmington
- Railroad

- Bus Stop
- School
- Convenience/Grocery/ Food Bank
- Health/Medical Services
- Government Services and Related Non-Profits
- High Injury Network (HIN) Priority Corridor *(see section starting on page 32 for HIN corridor profiles)*

PRIORITY FOCUS AREA F:

Market Street

This segment of Market Street is a commercial and residential corridor connecting historic downtown neighborhoods to commercial areas around Kerr Avenue. Key destinations include shopping centers near Kerr Avenue; the development on Randall Parkway, which has a concentration of government services (including the Wilmington Veterans Service Center, New Hanover County Child Support, NC Deaf and Hard of Hearing Service–Wilmington Regional Center, and Internal Revenue Service (IRS) Taxpayer Assistance Center); and the Cross City Trail. North of Market Street, Princess Place Drive is primarily residential and has two school entrances.

Market Street and S Kerr Avenue are HIN priority corridors. Nearby streets in the HIN include Princess Place Drive, 30th Street, 31st Street, Evans Street, Montgomery Avenue, Henry Street, Darlington Avenue, Mercer Avenue, Covil Avenue, Cinema Drive, Westig Road, Marlboro Street, Randall Parkway, and Emerson Street. The neighborhoods north of Market Street scored high on NCDOT's Transportation Disadvantage Index, and could benefit from traffic calming, especially where right-of-way is constrained.

EXISTING CONDITIONS

Market Street:

35mph
Posted Speed

23,000-35,500
AADT (2021)

Princess Place Drive:

25-35mph
Posted Speed

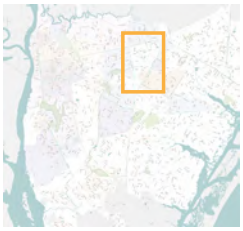
4,100-12,500
AADT (2021)

CROSSING IMPROVEMENTS

- ✕ All key intersections marked "X" in Focus Area F are recommended for crosswalks and stop bars across the minor road legs of the intersection only; consider pedestrian wayfinding signage indicating nearest signalized crossing.
- 1 Convert to a signalized intersection with crosswalks and pedestrian countdown signals at all approaches. Presently the nearest signalized crossings of Princess Place Drive are ~0.5 miles east and west at 23rd Street and 30th Street; additional crossing here would serve the elementary school and improve connectivity for surrounding residential areas.
- 2 Crosswalks and pedestrian countdown signals on all approaches.
- 3 Crosswalks and pedestrian countdown signals on all approaches.
- 4 Crosswalks and pedestrian countdown signals on all approaches.
- 5 Crosswalks and pedestrian countdown signals on all approaches.
- 6 Crosswalks and pedestrian countdown signals on all approaches.
- 7 None; recently improved (verify crosswalks and stop bars were added)
- 8 See Priority Focus Area F cutsheet.
- 9 Crosswalk visibility enhancements.
- 10 See Priority Focus Area F cutsheet.
- 11 Crosswalk and stop bars on Broad Street approach. There is no crossing from the bus stop on the west side of Covil Avenue; consider adding stop control and crosswalks on Covil Avenue, or add nearby midblock crossing of Covil Avenue (RRFB or PHB).
- 12 Crosswalks and pedestrian countdown signals on all approaches.
- 13 Crosswalk, stop bars, and signage across Randall Parkway (similar to existing crossing at Brailsford Drive)
- 14 None; recently improved
- 15 Consider conversion to signalized intersection with crosswalks and pedestrian countdown signals.
- 16 Consider conversion to signalized intersection with crosswalks and pedestrian countdown signals or pedestrian-friendly roundabout due to offset intersection.
- 17 Pedestrian countdown signals on all approaches.

PRIORITY FOCUS AREA G:

Market Street/S Kerr Avenue/ College Road



This priority focus area is bounded by three HIN priority corridors: Market Street, S Kerr Avenue, and College Road. This section of College Road serves as a gateway into Wilmington and UNCW from I-40. The area contains many neighborhoods of single family and multifamily housing developments and a concentration of retail, restaurants, and services.

While the three HIN priority corridors comprise the most pedestrian fatalities and serious injuries in this focus area, other nearby streets also show up on the HIN. These roads can be improved for pedestrians by providing sidewalks to separate pedestrians from traffic, crossing opportunities at desired destinations, traffic calming to control speeds, and pedestrian-scale lighting.

One residential area north of UNCW's campus scored high on NCDOT's Transportation Disadvantage Index.

EXISTING CONDITIONS

Market Street:

35mph Posted Speed

23,000-35,500 AADT (2021)

S Kerr Avenue:

30-35mph Posted Speed

12,500-23,000 AADT (2021)

College Road:

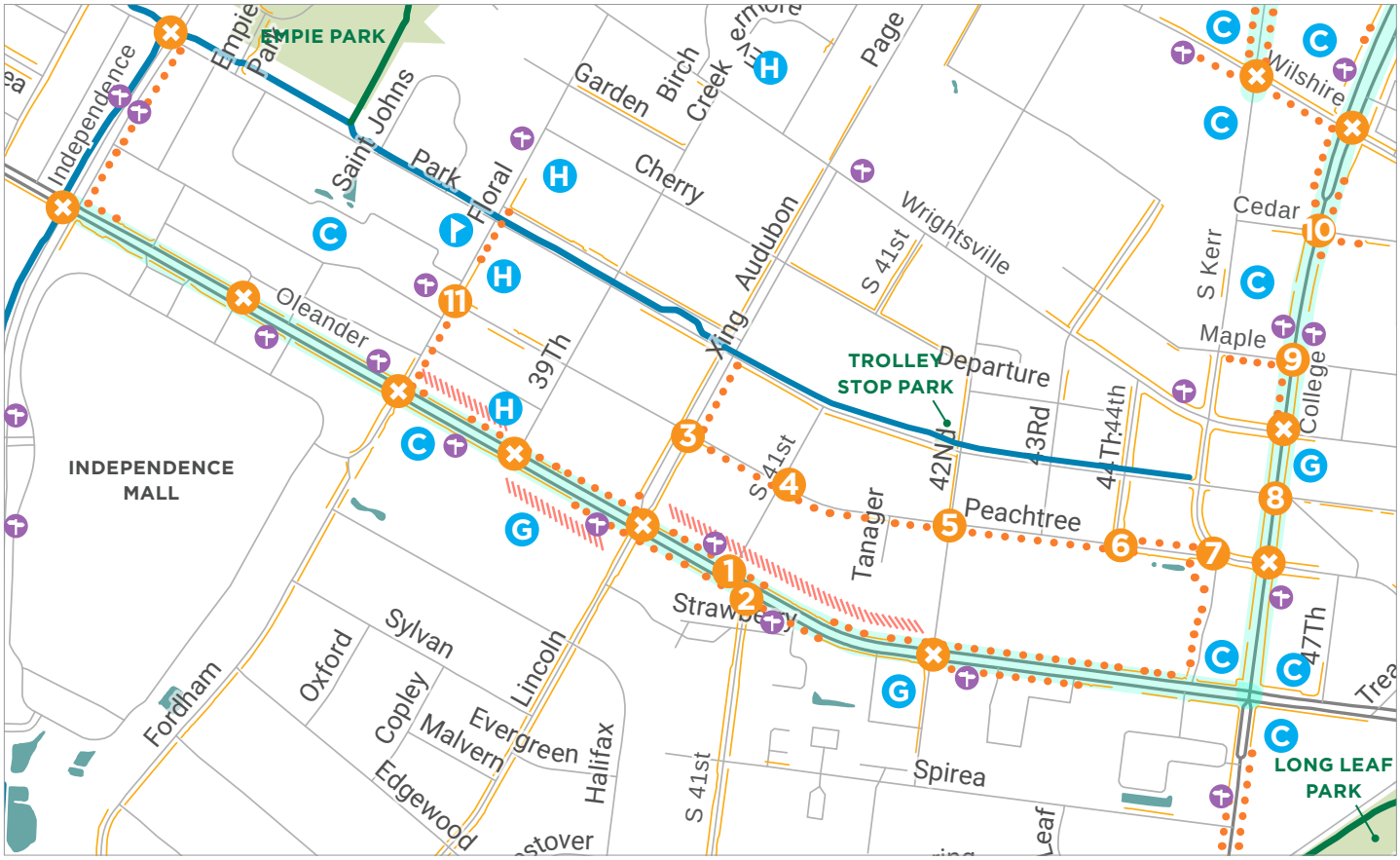
35-45mph Posted Speed

38,000-51,500 AADT (2021)

CROSSING IMPROVEMENTS

- ✖ All key intersections marked "X" in Focus Area G are recommended for crosswalks and stop bars across the minor road legs of the intersection only; consider pedestrian wayfinding signage indicating nearest signalized crossing.
- 1 None; recently improved.
- 2 Crosswalks and pedestrian countdown signals on all approaches.
- 3 Crosswalks and pedestrian countdown signals on all approaches; consider centerline hardening.
- 4 Crosswalks and pedestrian countdown signals on all approaches.
- 5 Crosswalks and pedestrian countdown signals on all approaches.
- 6 None; recently improved.
- 7 Crosswalks and pedestrian countdown signals on all approaches.
- 8 None; recently improved.
- 9 Consider PHB or RRFB nearby. Presently no safe crossing between neighborhoods on west side of S Kerr Avenue and bus stop on east side.
- 10 Convert to signalized intersection or add PHB/RRFB nearby. Presently no safe crossing between neighborhoods on west side of S Kerr and bus stop on east side.
- 11 – 20 Crosswalks and pedestrian countdown signals on all approaches.
- 21 Consider conversion to signalized intersection. This intersection is roughly halfway between the nearest signalized crossings of Randall Parkway, ~0.5 miles east and west. A safer crossing here would improve connectivity between the neighborhoods and commercial areas to the north and south, and connect to the Cross City Trail.
- 22 Crosswalks and pedestrian countdown signals on all approaches.

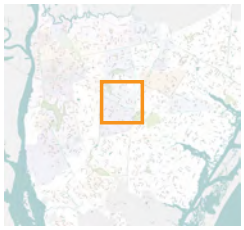

Mcclelland
Noke
Birchwood
Cobblestone
Dunlea
Carriage
Market
New Centre
Sigmon
Van Campen
Walton
College
Wilmington
Jacksonville
New Bern
Kinston
Lamppost
Hunt Club
Bob King
Jeff Gordon
Government Center
Cinema
Playa
Thompson
Havelock
Franklin
Dapple
Vineyard
Durango
Lullwater
Amy
Cedar Branch
Greenway
Red Bud
Emerson
Academy
Telluride
Cove
Purgatory
Boulder
Kerr
Kubeck
Campus Drive
Collegiate
Dove
Drake
Grouse
Pheasant
Thrasher
Randall
UNIVERSITY CENTRE
Racine
Red Wing
Black Wing
Oriole
Thrush
CROSS CITY TRAIL
Patrick
Pepys
Clemson
Crete
Capri
Alicia
Mill Creek
Sequoia
Kimberly
Hoggard
Fillmore
Tulane
Purdue
Yale
University
Wagoner
Kenan Hall
Alumni
UNIVERSITY OF NORTH CAROLINA WILMINGTON
Eaton
Crews
Union
Hamilton
Plum Nearly
Cedarwood
Varsity
Fraternity
Winterberry
Saint James
Fountain
College
Seahawk
MacMillan
Montclair
Morton
Kerr
Kenan
Bear
Atlantis
Seabury
Seabrook
Barefoot
RECOMMENDATIONS
Recommended Sidewalks
Recommended Sidepaths
Key Crossing Improvements
(see notes on adjacent page)
EXISTING CONDITIONS
Existing Sidewalks
Existing Sidepaths
Existing Parks
Wilmington
UNC Wilmington
Railroad
Bus Stop
School
Convenience/Grocery/ Food Bank
Health/Medical Services
Government Services and Related Non-Profits
High Injury Network (HIN) Priority Corridor
(see section starting on page 32 for HIN corridor profiles)



PRIORITY FOCUS AREA H:

Oleander Drive

(Independence Boulevard to College Road)



RECOMMENDATIONS

- **Recommended Sidewalks**
- **Key Crossing Improvements** *(see notes on next page)*
- **Access Management Plan Recommended**

EXISTING CONDITIONS

- **Existing Sidewalks**
- **Existing Sidepaths**
- **Existing Parks and Greenways**
- **Wilmington**

- **Bus Stop**
- **School**
- **Convenience/Grocery/ Food Bank**
- **Health/Medical Services**
- **Government Services and Related Non-Profits**
- **High Injury Network (HIN) Priority Corridor** *(see section starting on page 32 for HIN corridor profiles)*

PRIORITY FOCUS AREA H:

Oleander Drive

(Independence Boulevard to College Road)

This section of Oleander Drive is a bustling commercial corridor surrounded by several large neighborhoods. The corridor contains many destinations including grocery stores, restaurants, retail, general services, employment agencies and job skills training, and social services (in particular, several organizations serving veterans).

Both Oleander Drive and College Road are HIN priority corridors. NCDOT recorded 10 pedestrian and 9 bicyclist crashes on this segment of Oleander Drive between 2011-2021. College Road from Oleander Drive to Jeff Gordon Road (to the north, not shown on this map), had 28 pedestrian and 28 bicyclist crashes during the same time period. Peachtree Avenue is also part of the HIN.

The area south of Oleander Drive scored high on NCDOT's Transportation Disadvantage Index.

EXISTING CONDITIONS

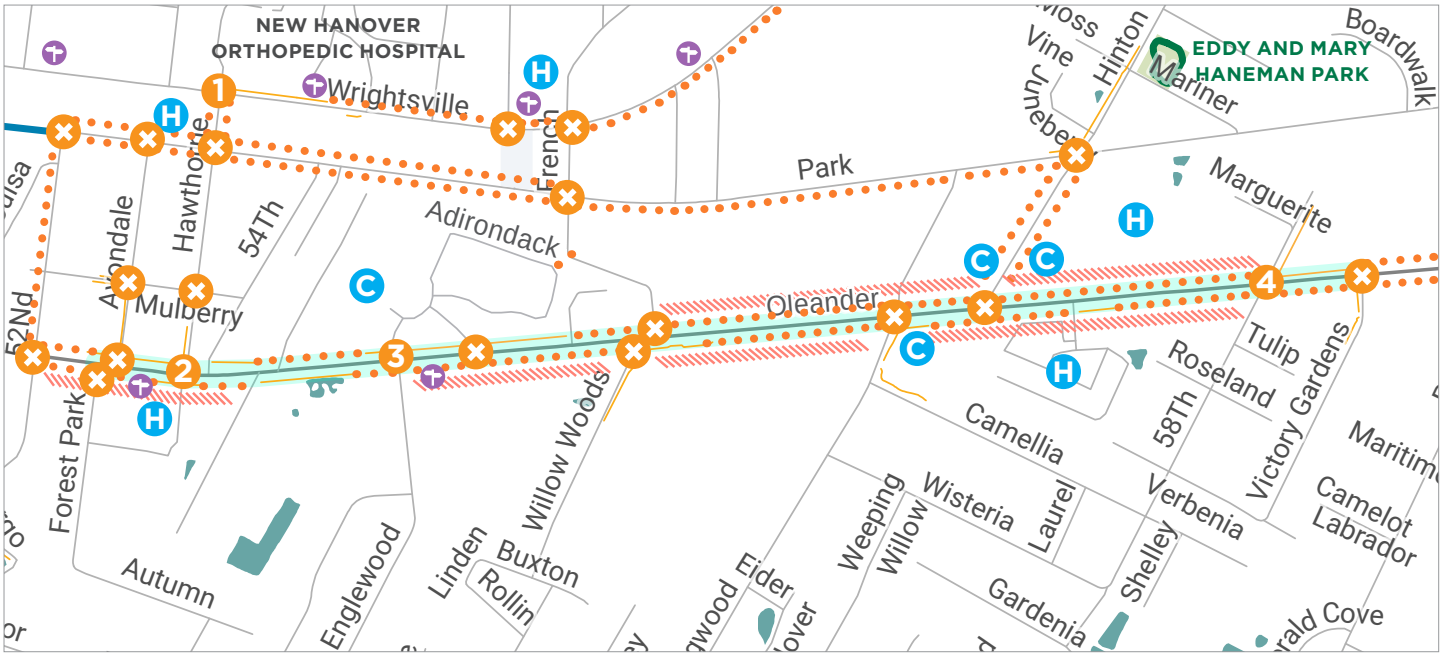
Oleander Drive:

35-45mph
Posted Speed

22,500-36,500
AADT (2021)

CROSSING IMPROVEMENTS

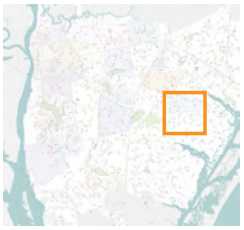
- ✖ All signalized intersections marked "X" in Focus Area H are recommended for crosswalks and pedestrian countdown signals on all approaches (some currently have crosswalks/signals only on select approaches).
- 1 Signalize intersection with crosswalks and pedestrian signals.
- 2 Signalize intersection with crosswalks and pedestrian signals.
- 3 Crosswalks in all directions; Audubon Boulevard is divided with a large landscaped median; include a large pedestrian refuge (34 feet of sidewalk) across the median.
- 4 East-west crosswalk and stop bar on the southern approach.
- 5 Add crosswalks and stop bars on southern and western approaches.
- 6 Consider stop control on Peachtree Avenue and north-south crosswalk on western approach.
- 7 Crosswalk and stop bar on Peachtree Avenue approach.
- 8 North-south crosswalks and stop bars; signage to direct pedestrians to nearest signalized crossings of College (Wrightsville and Peachtree/S Kerr) and wayfinding for the River to Sea Bikeway, which crosses College at Peachtree/S Kerr intersection.
- 9 North-south crosswalks and stop bars.
- 10 North-south crosswalks and stop bars.
- 11 North-south crosswalk and stop bar; consider PHB or RRFB on Floral Parkway to provide safer connection to the bus stop and shopping center from neighborhoods to the east.



PRIORITY FOCUS AREA I:

Oleander Drive

(Avondale Avenue to Victory Gardens Drive)



RECOMMENDATIONS

- Recommended Sidewalks
- Key Crossing Improvements *(see notes on next page)*
- Access Management Plan Recommended

EXISTING CONDITIONS

- Existing Sidewalks
- Existing Sidepaths
- Existing Parks and Greenways
- Wilmington
- Bus Stop
- School
- Convenience/Grocery/ Food Bank
- Health/Medical Services
- High Injury Network (HIN) Priority Corridor *(see section starting on page 32 for HIN corridor profiles)*

PRIORITY FOCUS AREA I:

Oleander Drive

(Avondale Avenue to Victory Gardens Drive)

This focus area covers the Oleander Drive corridor from Avondale Avenue to Victory Gardens Drive. The main corridor is primarily commercial with residential areas to the north and south. UNC Wilmington's campus is less than 0.5 mi north, while the Novant Health New Hanover Orthopedic Hospital entrance is on Wrightsville Avenue.

This segment of Oleander Drive is a HIN Priority Corridor, with six pedestrian and four bicyclist crashes reported by NCDOT between 2011-2021. The nearby sections of Park Avenue and Wrightsville Avenue (primarily residential) are also part of the HIN.

Oleander Drive presently has many driveways and stop-controlled intersections, with few sidewalks and no marked crosswalks across Oleander Drive. There are few signalized intersections on the corridor, limiting opportunities for pedestrians to cross Oleander Drive where vehicles are fully stopped. Redevelopment along the corridor is improving walkability through the construction of sidewalks and signalized intersections, along with other connectivity requirements in Wilmington's Land Development Code.

EXISTING CONDITIONS

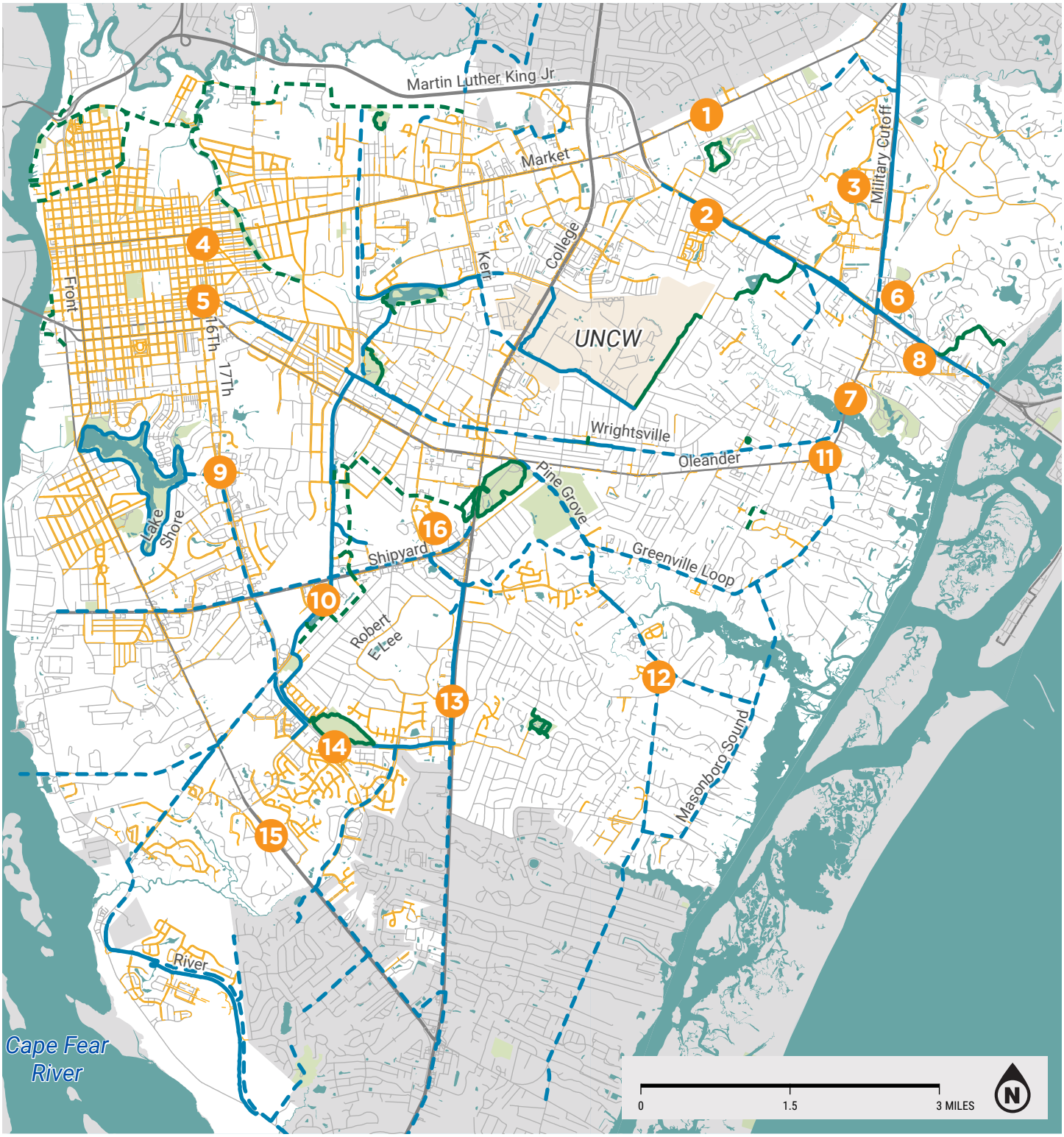
Oleander Drive:

35-45mph
Posted Speed

22,500-36,500
AADT (2021)

CROSSING IMPROVEMENTS

- ✖ All key intersections marked "X" in Focus Area I are recommended for crosswalks and stop bars across the minor road legs of the intersection only; consider pedestrian wayfinding signage indicating nearest signalized crossing.
- 1 Crosswalks and pedestrian countdown signals on all four approaches; consider centerline hardening.
- 2 Crosswalks and pedestrian countdown signals on all four approaches; consider centerline hardening.
- 3 Recently improved; add crosswalks and pedestrian countdown signals on all four approaches; consider centerline hardening.
- 4 Recently improved; add crosswalks and pedestrian countdown signals on all four approaches; consider centerline hardening.



WALK WILMINGTON

PRIORITY FOCUS AREA J:
Additional Priority Projects

RECOMMENDATIONS

- **Additional Priority Projects**
- **Recommended Greenways** *(from 2013 Comprehensive Greenway Plan)*
- **Recommended Sidepaths** *(from 2013 Comprehensive Greenway Plan)*

EXISTING CONDITIONS

- **Existing Sidewalks**
- **Existing Sidepaths**
- **Existing Parks and Greenways**
- **UNC Wilmington**
- **Wilmington**

Priority Focus Area J includes all areas in the City of Wilmington outside of the other focus areas. The projects listed are representative of where there were higher levels of public input through the online public input map and public survey, calling for specific improvements.

While many of these projects are located outside of the higher tiers of the equity-based Transportation Disadvantage Index (TDI) analysis, they are still very important from a safety perspective, as they align with and are supported by the High Injury Network (HIN) analysis.

MAP ID	PUBLIC COMMENT	RECOMMENDATION	RELATED PROJECTS IN DEVELOPMENT
N/A	N/A	Continue to implement proposed facilities from the 2013 Wilmington/New Hanover County Comprehensive Greenway Plan.	N/A
N/A	N/A	Implement sidewalks on local streets in residential areas, prioritizing areas within one mile of key pedestrian generators and destinations.	N/A
1	Pedestrian safety and access improvements needed along Market St from Eastwood Rd to Gordon Rd	This area of Market St (Eastwood Rd to Gordon Rd) has more than 140 intersecting driveways and roadways. Each one presents a potential conflict between turning vehicles and pedestrian travel. In addition to the funded crossing improvements for Market St and North Green Meadows Dr, this plan recommends: 1. Sidewalks along Green Meadows Dr to nearby residential streets (south to Athens Ln and north to Spicewood St). 2. Crosswalks and pedestrian signals across Market St at Cardinal Dr and Blair School Rd. 3. Crosswalks along Market St where existing sidewalks cross driveways and intersecting roadways. 4. Fill gaps in the intermittent existing sidewalks. 5. An access management plan.	N/A
2	Pedestrian connectivity needed to Inland Green Park from Cross City Trail	Connect Cross City Trail to N Cardinal Dr with crosswalk and pedestrian signal across Eastwood Rd. Add approximately 950 ft of sidewalk along west side of N Cardinal Dr from Eastwood Rd to existing sidewalk at George Task Dr. Include crosswalks for N Cardinal Dr and George Task Dr intersection, as well as the N Cardinal Dr and Inland Greens Dr intersection.	N/A
3	Crosswalks needed to access Mayfaire from Military Cutoff Trail	Add crosswalks and pedestrian signals across Military Cutoff Rd at Main St/Sir Tyler Dr. Extend existing sidewalks on both sides of Main St by approximately 150 feet to the intersection of Military Cutoff Rd; extend existing sidewalk on south side of Sir Tyler Dr by approximately 125 feet to the intersection of Military Cutoff Rd and Military Cutoff Trail.	N/A
4	Pedestrian crossing improvements needed at S 16th St and Dock St	This is a signalized intersection; crosswalks and pedestrian signals recommended; Consider curb extensions to align with on-street parking; sidewalk repair needed on SE corner; nearby bus stop for this intersection is reportedly frequently used by people with disabilities; add bus stop amenities that include seating.	N/A
5	More pedestrian crossings needed in vicinity of S 16th St, S 17th St, Castle St, and Queen St (Cargo District).	1. S 16th St/Castle St: This is a signalized intersection; crosswalks and pedestrian signals recommended; consider curb extensions to align with on-street parking; consider reducing S 16th St to 2 lanes. 2. S 17th St/Castle St: This is a signalized intersection with existing crosswalks; pedestrian signals recommended; consider curb extensions to align with on-street parking. 3. S 16th St/Queen St and S 17th St/Queen St: These are unsignalized intersections. Consider PHB signal crossings.	N/A

MAP ID	PUBLIC COMMENT	RECOMMENDATION	RELATED PROJECTS IN DEVELOPMENT
6	Connect Military Cutoff Trail to Cross City Trail	Extend Military Cutoff Trail from current southern terminus for approximately 660 ft along the north side of Drysdale Dr. Cross Drysdale Dr with a crosswalk and median refuge island to the utility corridor that runs north-south behind the Food Lion shopping center. Extend trail along utility corridor for approximately 1,800 feet and connect to Cross City Trail at Eastwood Rd. Add signage at both ends of the new connection.	N/A
7	Pedestrian access and safety improvements needed in vicinity of Airlie Rd	1. Sidewalk recommended along west side of Oleander Dr between north and south segments of Wrightsville Ave. 2. Crosswalks and pedestrian signals recommended at Wrightsville Ave and Military Cutoff Rd intersection. 3. Crosswalks and pedestrian signals recommended to connect existing sidewalks at opposite sides of Wrightsville Ave and Oleander Dr intersection. 4. Separated pedestrian (and bicycle) access should be provided across Bradley Creek when the Oleander Dr bridge is updated or improved.	N/A
8	Pedestrian access and safety improvements needed in vicinity of Lumina Station and Eastwood Road	1. Add PHB signal crossing along Wrightsville Ave near Pavilion Pl, connecting sidewalks on both sides of Wrightsville Ave. Locate PHB crossing where the center turn lane is underused to allow for a median refuge. The bus stop near Pavilion Pl would also be served by a safe pedestrian crossing. 2. Separated pedestrian (and bicycle) access should be provided across the Intracoastal Waterway when the Causeway Dr bridge is updated or improved. 3. Provide crosswalks, pedestrian signals, and median refuges to cross Eastwood Rd at Landfall Business Park and Lion's Gate; upgrading these two signalized intersections would connect neighborhoods and retail (Lumina Station) on the south side of Eastwood to the Cross City Trail and Summers Rest Trail on the north side.	N/A
9	Pedestrian safety and access improvements needed across S 17th St to medical services on both sides of the street	1. S 16th St and S 17th St at Hospital Plaza Dr/Ambulance Dr: This is a signalized crossing with sidewalks on both sides; add crosswalks and pedestrian signals; use existing large landscaped medians as pedestrian refuge islands. 2. S 17th St at Medical Center Dr: This is a signalized intersection with an existing crosswalk and pedestrian signal; add crosswalk to east leg of the intersection and consider adding a hardened centerline extending from the raised median at the existing crosswalk across S 17th St. 3. S 17th St at Glen Meade Rd: This is a signalized crossing with sidewalks on all sides; add crosswalks and pedestrian signals in all directions; use existing large landscaped medians as pedestrian refuge islands.	S 17th St shared-use path
10	Crosswalks needed between offices, services, and residential areas along Independence Blvd	There is one existing crosswalk for approximately 5,000 feet along Independence Blvd between Shipyard Blvd and S 17th St. Add crosswalks and signage at Independence Blvd/Commons Dr and Independence Blvd/Croquet Dr, similar to the existing crossing at Independence Blvd/Ashton Dr.	N/A

MAP ID	PUBLIC COMMENT	RECOMMENDATION	RELATED PROJECTS IN DEVELOPMENT
11	Pedestrian crossing needed at Greenville Loop Road and Oleander Dr	This intersection is signalized with sidewalk on the north side and nearby sidewalk on the south side. Add crosswalks and pedestrian signals; consider a turn radius reduction or crossing islands in the wide turn angles; extend existing sidewalk along west side of Greenville Loop Rd north to the intersection (approximately 260 feet) with a crosswalk across the gas station driveway entrance.	Greenville Loop Trail
12	Pedestrian connectivity needed for Masonboro Loop	Masonboro Loop Trail is a 2014 Bond Project that will connect residential street network with one another, while providing space for walking and bicycling that is separated from motor vehicle traffic.	Masonboro Loop Trail
13	Multiple crosswalks needed on S College and the Cross City Trail to connect residential areas to the commercial businesses and destinations along College Rd.	1. College Rd and Pine Valley Rd: This is a signalized intersection with a trail and sidewalk on the west side and no sidewalk on the east side; Sidewalk should be added to Pine Valley Dr between College Rd and at least Chalmers Dr. Add crosswalks and pedestrian signals to intersection. 2. College Rd and Bragg Dr: This is a signalized intersection with a trail and sidewalk on the west side and no sidewalk on the east side; Sidewalk should be added to Bragg Dr between College Rd and at least Chalmers Dr. Add crosswalks and pedestrian signals to intersection. 3. All trail/driveway crossings in this vicinity should be marked with a crosswalk. 4. Waltmoor Rd at CVS and Aldi: A crosswalk could be provided to connect the Cross City Trail to Aldi, about 400 feet east of College Rd; this would allow trail users from the residential areas to the east to access Aldi without going to College Rd to cross Waltmoor Rd.	N/A
14	Safe crossing needed between Halyburton Park and the Cross City Trail on the north side of S 17th St and large residential areas on the south side.	1. S 17th St and George Anderson Dr: This is a signalized intersection with existing an crosswalk and pedestrian signal; enhance this long distance crossing by not allowing right turns on red while pedestrians are present; consider adding a hardened centerline extending from the raised median at the existing crosswalk across S 17th St; add crosswalks to the George Anderson Dr legs of the intersection, connecting existing sidewalks and trails on each side. 2. Add sidewalk and/or trail on south side of S 17th St between George Anderson Dr and Steeplechase Rd (about 1,530 feet); include signage at north end of Steeplechase Rd directing pedestrians to cross at George Anderson Dr.	N/A
15	Safe crossing needed for Carolina Beach Rd near Echo Farms Park and Codington Elementary.	Carolina Beach Rd and George Anderson Dr/Echo Farms Blvd: This is a signalized intersection with sidewalk that stops short of the intersection on both sides; extend existing sidewalks along north sides of George Anderson Dr (about 160 feet) and Echo Farms Blvd (about 320 feet) to the intersection at Carolina Beach Rd; add crosswalk, pedestrian signal, and median refuge island across Carolina Beach Rd.	N/A
16	Improvements needed near Hoggard High School	1. Complete the sidewalk on north side of Shipyard from Pickard Rd to 41st St/Hoggard High School entrance (about 2,200 ft). Worn footpath along roadway indicates heavy pedestrian use in this area. 2. Add crosswalks and pedestrian signals on signalized intersections at Shipyard and 41st St and Shipyard and Long Leaf Mall entrance.	N/A

Countermeasure Toolbox

USDOT *encourages* the widespread implementation of proven safety countermeasures to accelerate safety goals. To maximize return on investment, implementing countermeasures with proven success enables Wilmington to begin reaping safety benefits early and effectively; thereby gaining additional public support and momentum. The implementation of countermeasures can occur through different delivery, material, and installation methods. This allows some of the countermeasures to be installed as a quick build or more permanent implementation.

The countermeasures in this section are broken down into operational and design safety improvements. They are intended to serve as a menu of options that Wilmington and NCDOT can tap into to reduce and ultimately eliminate severe crashes. Additional audits and analysis may be needed to identify the appropriate locations for installing some of these improvements. Nonetheless, a systemic, widespread application of these improvements is recommended to create a consistent and systemwide safer environment. Lastly, while this menu of options is not an exhaustive list, it represents the recommended improvements that best address the specific needs of Wilmington.

Operational Safety Countermeasures

LEADING PEDESTRIAN INTERVAL (LPI)

LPI gives pedestrians a 3-7 second head start to enter an intersection before any vehicles get the green light. LPIs have shown to *reduce pedestrian-involved crashes by 13%* at intersections. They are most suitable at intersections with both high pedestrian and bicyclist demand, and heavy right and/or left turning vehicle movements.

PEDESTRIAN PHASING AND CYCLE LENGTHS

Every new traffic signal installation and upgrade should strongly consider using pedestrian phasing and signal heads. Additionally, in urban areas, traffic signal full cycle lengths at intersections with crosswalks and pedestrian phasing should ideally be limited to *60-90 seconds*. This reduces pedestrian wait times and side street delay. On wider streets with medians and pedestrian refuge areas, consider two-stage pedestrian phasing. In some cases, signal cycles may be adjusted throughout the day based on pedestrian demand and vehicular peak travel times. Furthermore, the benefits of LPIs as a proven safety countermeasure should also be considered when updating pedestrian phasing at signalized intersections.

COORDINATED SIGNAL TIMING

Synchronizing traffic signal timing across closely spaced traffic signals (0.25 miles or less) facilitates vehicular traffic flow during peak times. However, it can also be optimized to control vehicular speeds and facilitate bicycle travel along bike routes, as well as along transit routes to maximize transit efficiency.

VARIABLE SPEED LIMIT (VSL) SIGNS

VSLs have been shown to reduce severe crashes *by over 50%*, especially on high-speed roadways (>40 mph) such as arterials. They are relatively inexpensive, and can be applied at either particular locations or along a corridor, in either an advisory or a regulatory capacity.

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS (TSM&O)

TSM&O is a set of operational strategies that improve the transportation system's performance, ideally for all road users, through operational improvements rather than physical capacity. TSM&O can be integrated systemwide to manage traffic congestion and competing demands, or it can be dedicated to specific traffic incidents and circumstances such as work zones, special events, and road incident management. TSM&O should also be used to enhance transit and freight operations through techniques such as transit signal priority and traffic signal preemption at railroad crossings.

NO RIGHT TURN ON RED (RTOR) SIGNS

Permitting vehicles to turn right when the corresponding traffic light is red can have significantly adverse impacts on pedestrians and cyclists attempting to cross. The practice, which was introduced in the 1970s as a way to save fuel, was shown to *increase pedestrian and bicyclist crashes*. Prohibiting RTORs at specific intersections, (which could be evaluated and prioritized based on pedestrian and bicycle demand) is a low-cost treatment with significant benefits, and can be implemented in a number of different ways: post-mounted sign, overhead sign, or a variable blank out sign. If needed, "No RTOR" treatments can be implemented on a part-time basis during the day.

Design Safety Countermeasures

The scope of this Plan allowed for limited site-specific recommendations which are featured in the this Plan's Focus Area maps. Additional countermeasures should also be considered in the design process when addressing pedestrian safety within the Focus Area corridors and crossings. These additional countermeasures are described in this section, followed by cost estimates.

SIDEWALKS

Sidewalks are the foundational component of the walking network, providing a designated walking area separated from vehicles. Providing a sidewalk along a roadway can *reduce pedestrian crashes by 89%*. Sidewalks should be continuous and unobstructed by

driveways, poles, and street furniture to be accessible, especially to those using wheelchairs and assistive mobility devices. 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.

CURB EXTENSIONS

Curb extensions are often installed at intersections or midblock locations to increase pedestrian visibility. They are also sometimes installed with LPIs to improve their effectiveness. They are especially useful when there is on-street parking. Installed to provide either just a visual (through colored pavement) or physical intrusion into the vehicular path, curb extensions are also effective in reducing vehicle turning speeds. If curb extensions pose drainage issues, they can be installed as a "floating" island, with a 1-2 foot gap from the original curb or drainage structure.

TRUCK APRONS

As an expansion of the curb extension countermeasure, evaluating intersection corners for all users involves also considering freight turning movements along arterials. Truck aprons present a solution where large trucks have a little more space than other vehicles to turn, without allowing them to turn at high speeds. To further protect pedestrians at those installations, truck aprons are often accompanied by bollards at the intersection corner. Truck aprons are also common at roundabouts.

SIGNALIZED PEDESTRIAN CROSSINGS

Pedestrian crossings at midblock and uncontrolled crossings present a high percentage of the locations where pedestrian fatalities and severe injuries are occurring in Wilmington. Therefore, a systemic safety approach is needed to deploy additional protection (i.e., signalized crossings) for pedestrians crossing at these locations, especially along high-speed roadways. The MUTCD includes specific warrants that must be applied to determine the type of signalization control based on roadway characteristics and conditions. These signalization options include Pedestrian Hybrid Beacons (PHB), pedestrian signals, and full traffic signals. PHBs have been shown to reduce pedestrian crashes by *more than 55%*, and offer an option when a full traffic signal is not warranted if vehicular volumes are not high enough. A practice highly supported by FHWA, widespread implementation of PHBs should be accompanied with public education since they are considered a relatively new technology.

PROTECTED LEFT TURNING MOVEMENTS

Intersections often pose a conflict point for pedestrians and cyclists. Vehicular left-turning movements pose a particular threat, as left-turning vehicles are usually focused on oncoming vehicles to try to find a gap to turn, and may not pay attention to pedestrians crossing the intersection. A countermeasure that requires analysis but one that has been often used to regulate left-turning vehicles is a protected left turn, which means that vehicles turning left turn only when the green arrow appears. While providing left turning cars a separate traffic signal phase may impact other vehicular movements, it is important to weigh the benefits of installing it to pedestrians and cyclists.

FHWA's *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* contains guidelines for the application of various safety countermeasures based on roadway characteristics (lane configuration, traffic volume, and posted speed).

MINI MEDIANS, MEDIANS, AND PEDESTRIAN REFUGE ISLANDS

Pedestrian fatalities and severe injuries in Wilmington are prevalent along multilane, high-speed arterial roadways. Installing hardscape medians provides an opportunity for pedestrians and cyclists to cross wide roadways more safely, and in stages if needed. Medians with marked crosswalks, have been shown to *reduce pedestrian crashes by 46%*. Additionally, if a pedestrian refuge island with ADA-compliant ramps is installed in the median, pedestrian crashes have been reduced by 56%. For quick build or location-based applications, a mini median may be installed to break up a two-way left turn lane, managing vehicular access and furnishing a crossing opportunity for pedestrians.

RAISED CROSSWALKS

Raised crosswalks can *reduce pedestrian crashes by 45%*. They are most effective on local and collector streets, where the roadway cross section is typically 2 to 3 lanes wide, speed limits are 30 mph or less, and AADT is below 9,000. Raised crosswalks may not be appropriate for bus transit routes, primary emergency vehicle routes, and high-traffic, high-speed streets.

LIGHTING

Many pedestrian fatalities and severe injuries occur at night or other low light conditions. Intersection lighting *can reduce pedestrian crashes by 40%*.

ROUNDABOUTS

Roundabouts are a proven countermeasure that could significantly reduce the severity of crashes compared to a traditional four-legged intersection. Studies have shown that converting an intersection into a roundabout can *reduce crashes by 78 to 82%.* It is important, however, to approach roundabout design from a context-sensitive and multimodal perspective. Bike facility transitions through a roundabout, pedestrian refuge islands, and crossing opportunities are all critical elements that should be considered.

"MULTIMODAL" SPEED LIMITS

Speed management is one of the key tenets of a systemic approach to safety. It has been proven that higher speeds result in more severe crashes; therefore, setting speed limits based on context rather than vehicular 85th percentile, especially when combined with design safety countermeasures, reduces fatalities and severe injuries on both urban and rural roads. Lower speed limits can be applied along a corridor segment or areawide, such as within the urban core. For example, the City of Seattle saw *a 26% decrease* in traffic-related fatalities when the City implemented a set of Vision Zero safety strategies, including setting posted speed limits at 20 mph on non-arterial roadways.

OTHER TREATMENTS

Other treatments that should be considered in conjunction with the operational and design treatments in this toolbox include: lane narrowing through striping or rumble strips, high-visibility crosswalks, enhanced/flashing signage, ADA-compliant ramps and sidewalk slopes, and physically separated bike lanes (which can improve safety and reduce user conflicts between pedestrians and bicyclists).

For more information on the countermeasures in this toolbox and pedestrian design guidelines, see Appendix B: Design Resources.

HOW TO USE THE ESTIMATED COSTS IN TABLE 5:

When reviewing the estimated countermeasure costs in Table 5, please take into account the following important notes and caveats:

- The cost estimates represent a planning-level analysis and therefore may not reflect final construction costs.
- Costs will likely change as more information becomes available in the design phase.
- Costs are listed in the base year of 2022, and should be escalated at a rate of 5% each year thereafter.
- Design costs are not listed but can range between 15-25% of construction costs. Higher costs will be encountered on projects utilizing federal funds that require a high level of regulatory compliance and on projects that impact FEMA-regulated floodways that require detailed flood modeling and permitting. Small projects will also see higher percentages for design cost.

Countermeasure Costs

The costs below are an estimate of expected costs to procure and install devices to improve safety. These costs can be used in planning and allocating the City's transportation budget.

TABLE 5. *Countermeasure Costs*

COUNTERMEASURE	UNIT	COST PER UNIT	TIME FROM PURCHASE TO IMPLEMENTATION (MONTHS)
Advanced Warning Flashing Beacons	Ea	$4,800	4
Armadillo Traffic Separators	Ea	$60	varies
Bollards (fixed/concrete)	Ea	$2,494	varies
Bollards (flexible posts)	Ea	$121	varies
Curb Extension (all inclusive of curb + concrete)	Ea	$24,000	varies
Curb Extension (Temp) (all inclusive of asphalt paint, flexible bollards)	Ea	$2,400	varies
Flashing LED lights addition to Warning Signs	Ea	$3,000	3
Full Pedestrian Signal HAWK/PHB (no ROW)	Ea	$180,000	10
Full Traffic Signal Two Lane - 4 approach typical	Ea	$360,000	24
Full Traffic Signal Four Lane - 4 approach typical	Ea	$480,000	24
Full Traffic Signal T type typical	Ea	$360,000	varies
Full Traffic Signal Four Lane - 4 approach w right of way needed	Ea	$540,000	36
High Visibility Crosswalk	SF	$18	2
In-Street Pedestrian Crossing MUTCD R1-6 Sign	Ea	$960	2
Roadway or pedestrian lighting (new)	Ea	$12,000	8
Roadway or pedestrian lighting (signal modification)	Ea	$2,400	3
Modify existing traffic signal adding ped crossing features (typical)	Ea	$12,000	6
Pedestrian Signal Head with Push Button (mounted on existing pole)	Ea	$1,320	3
Pedestrian Signal Head with Push Button (standalone assembly)	Ea	$8,400	6
Raised Pedestrian Crosswalk	Ea	$10,000	6
Rectangular Rapid Flashing Beacon (per assembly)	Ea	$6,000	6
Rumble Strips	LF	$180	3
Sidewalk (one side of street; with curb and gutter, new drainage)	LF	$225	varies
Sidewalk (one side of street; with curb and gutter, no new drainage)	LF	$125-150	varies
Sidewalk (one side of street; no curb and gutter, landscape only)	LF	$60	varies
Traffic Signal Head Back Plates	Ea	$240	2
Traffic Signal Head Back Plates with Retroreflective Borders	Ea	$300	2
Variable Speed Limit Signs	Ea	$7,800	9

\ 4 \

Programs and Policies

In addition to infrastructure improvements, programs and policies are key components that contribute to a safe, equitable, and connected pedestrian network. This chapter examines how Wilmington's existing programs and policies relate to this plan's goals and recommends additional ways to advance Walk Wilmington's goals.

Existing Policies and Guidelines

NCDOT Policies and Guidelines

These policies describe how pedestrian and bicycle projects are developed at NCDOT. For full policies, visit: *https://connect.ncdot.gov/projects/BikePed/Pages/Policies-Guidelines.aspx*

COMPLETE STREETS

NCDOT's Complete Streets Policy guides when and how planners and designers should design streets and roads to accommodate all users, including people walking and biking, in transportation projects. NCDOT updated the Complete Streets Policy in 2019, followed by the creation of the Integrated Mobility Division (combining bicycle, pedestrian, and transit functions).

The policy says: "**Bicycle and pedestrian and public transportation facilities that appear in a state, regional or locally adopted transportation plan will be included as part of the proposed roadway project. NCDOT will fully fund the cost of designing, acquiring right of way, and constructing the identified facilities**."

In 2022, NCDOT released an *updated methodology for Complete Streets Review*. The new methodology is intended to standardize implementation of the policy for NCDOT project managers and includes several consultation points with local governments and MPOs/RPOs throughout the project development process.

A summary of the updated process is below:

- **Step 1: Initial Screening and Data Input.** Screen planning documents such as the MTP and other adopted local and regional plans (see the *FAQ* for details about plan requirements), compile existing and future conditions data, conduct connectivity and gap analysis, review alternatives.
- **Step 2: Transportation Need Determination.** Estimate demand using NCDOT Demand Estimation Map, observed conditions, land use, and other data. Special considerations are made for areas where demand is "low" and "intermittent/none."
- **Step 3: Facility Type Selection.** Refine the demand estimation from Step 2, identify preferred facilities, and review other design elements such as transit, intersections, and crossings.
- **Step 4: Impact Assessment.** Conduct comprehensive cost analysis, evaluate schedule impacts, and review environmental risk.
- **Step 5: Final Analysis.** Evaluate cost and schedule impacts and document recommendations.

PEDESTRIAN POLICY & GUIDELINES

NCDOT policy and guidelines for planning, designing, building, maintaining and operating pedestrian facilities and accommodations.

GREENWAY ACCOMMODATIONS MEMO AND GUIDELINES

Approved in 2015, NCDOT guidelines, approaches and cost-sharing recommendations for proposed greenways underneath bridge replacements.

ADMINISTRATIVE ACTION TO INCLUDE GREENWAY PLANS

NCDOT administrative guidelines for considering greenways and greenway crossings during the highway planning process to ensure that critical corridors for future greenways are not severed by highway construction.

BRIDGE POLICY

Policy establishing design elements for new and reconstructed bridges on the state's road system, including requirements for sidewalks and bicycle facilities on bridges.

TRAFFIC ENGINEERING POLICIES, PRACTICES AND LEGAL AUTHORITY

NCDOT policies and federal design guidelines for specific pedestrian and bicycle safety accommodations.

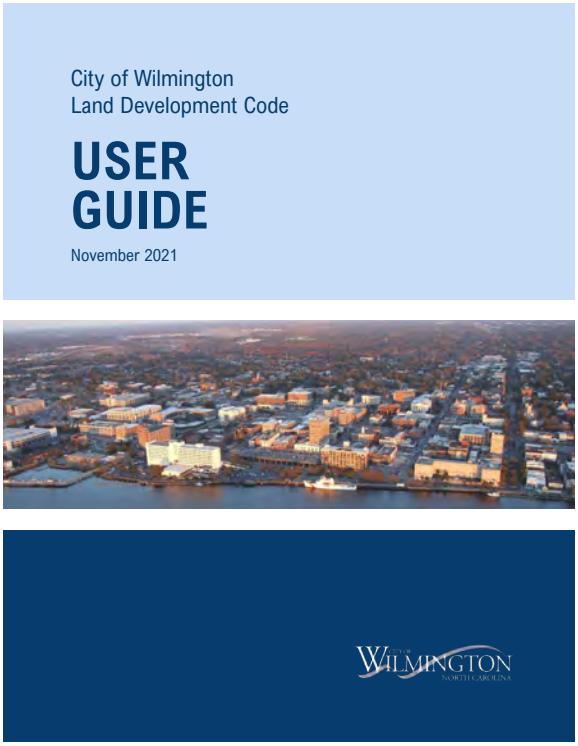
Example of a Complete Street design that accommodates many uses such as walking, biking, driving, and transit.

Wilmington Land Development Code (LDC)

The LDC is one of the City's most powerful tools for guiding future growth in ways that enhance pedestrian connectivity, safety, and equity. According to the City, the LDC "**aims to reduce sprawl, improve traffic conditions, preserve and grow our tree canopy, better manage stormwater, and develop a more convenient, compact, and connected future city with a more thoughtful land use approach.**"

The 2021 LDC update included many policies that align with the goals of this pedestrian plan, including downtown streetscape improvements, connectivity requirements for subdivisions, policies that encourage walkable density, mid-block crossing requirements, and traffic calming measures.

The following table highlights aspects of the code that relate to the goals of this pedestrian plan and recommends several changes to the code to better align with the plan vision for a safe and convenient pedestrian network for all ages and abilities, and with NCDOT's Complete Streets Policy. The table is organized into the categories: Pedestrian and Bicycle Facility Standards, Other Streetscape Standards Related to Pedestrian-Oriented Community Design, Network Connectivity, and Parking Requirements. **The recommendations in the following table are for consideration only; adoption of this plan does not obligate the City to make these changes to the LDC.**



Wilmington's Land Development Code includes policies that support walkable development.

A new residential development including sidewalks and crossing improvements along Oleander Drive.
Photo: Hawthorne Residential Partners

This page intentionally left blank.

TABLE 6. *Review of Wilmington's Land Development Code*

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
PEDESTRIAN AND BICYCLE FACILITY STANDARDS Note: Wilmington's Technical Standards and Specifications Manual and Standard Detail Files provide specific engineering-level guidance for designing and implementing facilities. This table references the Manual as needed but does not provide a comprehensive review of the Manual and Standard Detail Files, which are available at: https://www.wilmingtonnc.gov/departments/engineering/technical-standards-details			
Definitions of pedestrian and bicycle facilities	Article 8 - Measurements and Definitions, Division 3 - Definitions, Section 18-687: A/B/C Definitions	Bikeway: A right-of-way restricted for the exclusive use by bicycles, except for areas designated for motorized vehicles and pedestrian cross flow.	"Bikeway" is the only pedestrian or bicycle facility defined in the code. Additional terms for pedestrian facility types are used in the code but are not defined, including: greenway, pathway, path, sidewalk, walkway, and multi-use path. Consider adding definitions for these terms and standardizing their usage throughout the code (e.g., remove or combine redundant terms and replace undefined terms with defined terms). Standardizing terms will result in greater clarity for code users and enforcers, and will ultimately help develop a consistent network of bicycle and pedestrian facilities.
Bicycle and pedestrian connections	Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-494: Sidewalks, walkways, and bikeways	B. Bicycle and pedestrian connections 1. Provisions shall be made in all new developments to facilitate the use of bicycle and pedestrian travel through the integration of bicycle and pedestrian paths, multiuse paths, and bicycle lanes that connect to **parks, open spaces, schools, public transit, and shopping areas**. Within new residential subdivisions, bicycle and pedestrian paths, trails, and bicycle lanes shall also connect to collector and minor arterial streets. 2. Easements or rights-of-way shall be provided for bicycle/pedestrian paths between and within developments. 3. A continuous internal bicycle/pedestrian path shall be provided from the perimeter public sidewalk, multiuse path, or other bicycle or pedestrian way, to include paved or unpaved internal paths to each of the following: a. Entrances to each building on the site, including pad site; b. Public sidewalks, walkways, and trails on adjacent properties that extend to the boundaries shared with the subject development; c. Public sidewalks along all perimeter streets adjacent to the development; d. Adjacent public park, trail, or other public or civic use; and e. Adjacent public transit station areas, transit stops, park and ride facilities, and other transit facilities (see Figure 18-494.1: Continuous internal pedestrian walkway).	The requirement only appears to apply to collector and minor arterial streets; consider specific provisions for other street types. Additionally, consider making the "adjacent to" requirements more specific or defining in terms of distance from the amenity (e.g., 0.5 miles from a public park or transit stop). Finally, consider expanding the proximity and connectivity requirements to include other types of destinations adjacent to a new development. Expanding these requirements would facilitate pedestrian travel to jobs, healthcare services, libraries or other civic buildings, and neighborhoods.

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Sidewalks and crosswalks	Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-494: Sidewalks, walkways, and bikeways	C. Sidewalk, crosswalks, and multiuse path required locations **1. Sidewalks, crosswalks, and multiuse paths shall be constructed by the developer in accordance with the facility type identified in the city's adopted plans** as follows (see figures 18-494.2: Sidewalks location and 18-495.3: Sidewalks on cul-de-sacs): a. On a minimum of one side of the right-of-way of all thoroughfares such as freeways, expressways, arterials, collector streets, or local streets that are adjacent to the property to be developed; b. On both side of the right-of-way of all thoroughfares that run through property to be developed if the developer intends to construct any portion of the thoroughfare as access to the proposed development; c. On both side of the right-of-way of all local or collector streets, extending through the property to be developed; d. On one side of a minor street when lots are proposed for only one side of the street; and e. On both sides of the right-of-way for a cul-de-sac or other turnaround per the Technical Standards and Specifications Manual, except when lots are proposed for only one side of the street. In that case, the sidewalk shall be located on the lot side of the cul-de-sac. 2. The technical review committee may exempt sidewalk installation in specific cases to avoid impacting wetlands as documented by the regulatory authority over the wetland.	Section 1 calls for sidewalks as required in adopted plans. Consider expanding to explicitly require sidewalks in certain circumstances/contexts (e.g., high-density industrial or where there is an existing gap in the network) or within 0.5 mile of a transit stop or collector street. There appears to be a discrepancy between the LDC and the Technical Standards and Specifications Manual relating to sidewalks on cul-de-sacs. Page 7-6 of the Manual says: " Sidewalks are not required on the bulb portion of cul-de-sacs." The diagram referenced in the LDC (18-495.3: Sidewalks on cul-de-sacs) shows sidewalks on the bulb of the cul-de-sac. It is recommended to update the Technical Standards and Specifications Manual to agree with the LDC, since extending the sidewalks to the bulb would create a more complete and traversible sidewalk network.

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Mid-block crossings	Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-494: Sidewalks, walkways, and bikeways	D. Mid-block pedestrian connection 1. All new streets with a length greater than 600 feet or streets extended to a length greater than 600 feet between the centerlines of the nearest pair of intersections **shall have a midblock pedestrian connection with accessible pedestrian ramps on both sides of the street.** If an internal trail system is included in the development, **a midblock crossing shall be required where the trail crosses more than 150 feet from an intersection.** 2. Mid-block pedestrian connections shall: a. Be located approximately equidistant from either intersection in the pair (see Figure 18-494.4: Mid-block pedestrian connection); b. Be located at property boundaries wherever possible; c. Be located at least 25 feet from the nearest driveway curbcut; d. Be designed at 90 degrees to the roadway centerline; e. Provide easements to accommodate all pedestrian improvements if not within a public right-of-way; f. Be designed to provide pedestrian bump-outs where onstreet parking is permitted; g. Be designed to provide bump-outs to narrow the street crossing to no more than 20 feet where street width exceeds 30 feet or implement a central island as a refuge; h. Connect at both ends to either a: i. Public sidewalk or similar pedestrian feature; or ii. Public off-street pedestrian pathway; i. Not conflict with utility structures, manhole covers, and storm sewer grates; j. Be marked and signed as required by the current edition of the Manual on Uniform Traffic Control Devices; and k. Be lit to provide positive contrast of the crossing pedestrian; 3. The mid-block crossing may be waived by the technical review committee where: a. Roadway geometry does not provide adequate sight lines; or b. The crossing would encroach on a regulated natural feature (e.g., regulated streams, wetlands, slopes exceeding American with Disabilities Act (ADA) standards, protected trees, etc.).	The requirement for mid-block crossings is a good way to increase safe crossing opportunities in future development. Consider requiring additional safety treatments such as pedestrian-activated beacons and/or median refuge islands. Refer to NCDOT's Pedestrian Crossing Guidance for treatment considerations based on roadway characteristics and traffic volumes. Multi-lane and high-speed roadways in particular may have lower yield rates and be more dangerous for pedestrians to cross. Crosswalk enhancements such as the ones described above can improve driver yielding rates and reduce crashes. **Resources:** • FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* • NCDOT *Pedestrian Crossing Guidance*

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Pedestrian facilities required with site improvements	Article 5 - Site Development Requirements, Division 3 - Changes in Use, Section 18-359: Changes in Use	A. Changes in use with no expansion Change from one nonresidential use to another nonresidential use that does not include a building or structure expansion or more than five additional parking spaces above what is already provided shall require: **1. Installation or repair of sidewalk, including associated curb ramps compliant with the Americans with Disabilities Act (ADA), along all adjacent streets and pedestrian connections to all entrances;** 2. Screening of existing and expanded parking with a low buffer at least three feet in height; and 3. Closure or modification of any nonconforming driveways. B. Changes in use with expansion In addition to the requirements for changes in use with no expansion, changes from one nonresidential use to another nonresidential use that include a building or structure expansion greater than five percent in area, or more than five additional parking spaces shall require: 1. Compliance with the requirements of Table 18-326: Required landscaping for expansions; and 2. Bicycle parking as required based on the square footage of the building expansion or at a 1:5 ratio for new parking spaces (whichever is greater). C. Changes from residential to nonresidential use In addition to the requirements of subsections A. and B., any change from a residential use to a nonresidential use shall require: 1. Bicycle parking based on the square footage of the entire building; and 2. Full compliance with divisions 1 and 6 of this article.	This requirement helps complete gaps between existing sidewalks and creates anchors for new pedestrian connections.
Pedestrian connections within parking facilities	Article 5 - Site Development Requirements, Section 18-344: Parking Facilities Design	9. Pedestrian connectivity a. Pedestrian connections to the site and internal pedestrian circulation shall be incorporated into the design of any parking facility. Access to building entrances shall be provided in accordance with Section 18-495: Sidewalks, walkways, and bikeways. b. Pathways or crosswalks shall be distinguished from asphalt driving surfaces using durable, low-maintenance surface materials such as pavers, bricks, or scored, stamped, or colored concrete to enhance pedestrian safety and comfort as well as the attractiveness of the parking area.	Safe pedestrian circulation within parking facilities is important, but specific guidance could be provided as to best practices for placement of walkways and crossings.
Pedestrian connections within courtyards	Article 5 - Site Development Requirements, Division 8 - Alternative Lot Layouts, Section 18-435: Courtyard development	C.4.c.ii. Pedestrian connectivity shall be provided through each central courtyard open space. An **improved pedestrian path or sidewalk** from each dwelling unit to the pedestrian facilities of the central courtyard open space shall be provided.	Consider providing a definition for "improved pedestrian path" and require these facilities to be ADA-compliant (including ramps where needed) and accessible to all types of people walking.

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
District-specific standards related to sidewalks	Article 2 - Zoning Districts, Section 18-44: District-specific standards	UMX District 3. General site design a. Multimodal Transportation i. Pedestrian circulation shall be defined with paving materials and landscaping and shall connect all uses to one another and to the public sidewalk system. ii. Bicycle or pedestrian connectivity to adjacent developments is required. iii. Where no sidewalks currently exist, sidewalks shall be installed [within] the right-of-way between the property line and the back of the curb. iv. The minimum width of newly installed sidewalk shall be five feet, except where sidewalks exist on the same side of the block, in which case, the width of newly installed sidewalks shall align with the existing sidewalk width. b. When new streets are installed, the establishment or continuation of a grid street pattern shall be required. Block lengths within the grid pattern shall not exceed 400 feet between intersecting streets. CBD District 2. Sidewalks a. North of Red Cross Street, where no sidewalks currently exist, sidewalks shall be installed within the right-of-way at a minimum width of 12 feet between the property line and the back of the curb (see Figure 18-44.14: CBD sidewalks north of Red Cross Street). b. Within the CBD, where sidewalks exist on the same side of the block, the width of newly installed sidewalks, including existing sidewalk that is removed and replaced, shall align with or be greater than the existing sidewalk width.	These districts have strong pedestrian and bicycle connectivity standards that align with their intended uses.
OTHER STREETSCAPE STANDARDS RELATED TO PEDESTRIAN-ORIENTED COMMUNITY DESIGN			
Traffic calming	Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-499: Traffic control devices	**C. When straight street segments exceed 400 feet, appropriate traffic calming devices, as approved by the city manager, shall be incorporated.** Such devices include, but are not limited to, roundabouts, chicanes, and curb extensions.	Traffic calming measures can reduce vehicle speeds, thereby creating a safer and more comfortable environment for people walking and biking. In addition to the devices mentioned in the LDC, speed reduction can also be achieved through medians, street trees, on-street parking, narrower lane width, speed humps/raised crosswalks, and building mass/sight lines. The NACTO Urban Street Design Guide includes considerations for selecting context-appropriate traffic calming measures. **Resources:** • NACTO *Urban Street Design Guide*

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Lighting	Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-498: Streetlights	A. Streetlights shall be installed within subdivisions in accordance with the Technical Standards and Specifications Manual. B. At the time of submittal to the technical review committee, it shall be noted on the plan whether standard or non-standard streetlights will be provided. *From Wilmington's Technical Standards and Specifications Manual, pg. 7-24:* *The "standard streetlight fixture" shall be a high-pressure sodium vapor, Type III enclosed cutoff fixture that is attached to an arm bracket to a wooden or fiberglass pole and is leased from Progress Energy Carolinas. "Nonstandard streetlight fixture" shall be a high-pressure sodium vapor, Type V or a Type III "shoebox" fixture leased from Progress Energy Carolinas.* ***These fixtures are typically mounted on top of a fourteen-foot (minimum height) post.***	A 14ft light fixture is considered pedestrian scale, but more guidance is needed on when to use different scales of lighting.
Street trees	Article 5 - Site Development Requirements, Division 1 - Landscaping, Section 18-320: Street trees	Street trees shall be planted in the right-of-way wherever a new street right-of-way is constructed, where new construction occurs along an existing street right-of-way, and where an existing principal building is expanded by 2,500 square feet or more, except for single dwelling detached, duplex, triplex, and quadraplex units. Standards for spacing, tree size, and species shall meet the requirements set forth in the Technical Standards and Specifications Manual (see Figure 18-320: Street trees).	This requirement and other requirements for preserving existing trees help create a more inviting and comfortable walking environment. In addition to their value for improving the air quality, water quality, and beauty of a community, street trees can help slow traffic and improve comfort for pedestrians. Trees add visual interest to streets and narrow the street's visual corridor, which may cause drivers to slow down. When planted in a planting strip between the sidewalk and the curb, street trees also provide a buffer between the pedestrian zone and the street.
Shade requirements	Article 5 - Site Development Requirements, Division 1 - Landscaping, Section 18-318: Shading requirements	A. Shading of impervious surface area shall be required. The requirements of this section shall apply to any of the following development activities within a multiple dwelling, commercial, and industrial zoning districts: 1. Construction of a new building or structure; and 2. Any increase in impervious surface area over 2,500 square feet within a rolling five-year period. B. For purpose of determining if a landscape plan meets the shading requirements of this section, each canopy tree of the type described shall be presumed to shade a circular area of 707 square feet. When smaller shade trees are planted, each tree shall be presumed to shade a circular area of 314 square feet. Perimeter trees shall be credited that portion of the area of the canopy that overlays the lot. C. For existing trees, shading credit shall be given for the canopy overhang existing within the interior of a lot. D. All plantings shall be in accordance with Section 18-315: Standards for landscaping. E. Trees shall be planted to shade impervious surface area as prescribed in Table 18-318: Canopy coverage requirements.	Providing shade through street trees makes walking more pleasant and comfortable for pedestrians, while providing numerous other environmental benefits to the City.

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Accessibility/clear zones	Article 5 - Site Development Requirements, Division 5 - Signs, Section 18-390: Freestanding signs	C. Sandwich board signs Section 18-390: Sandwich board signs 4. Placement of signs a. Sandwich board signs are allowed only on the sidewalk directly in front of the associated use. b. Along streets with no parallel parking, sandwich board signs shall be placed on the sidewalk within four feet of the curb. c. Along streets with parallel parking, a two-foot step-out zone shall be provided, and sandwich board signs shall be placed on the sidewalk at least two feet from the curb but not more than four feet from the curb. d. The location of any sandwich board sign shall be at least 20 feet from any intersection and at least five feet from any crosswalk or fire hydrant. **e. No sandwich board sign may be placed where the unobstructed space for the passageway of pedestrians is reduced to less than four feet.** All attached fixed objects shall be considered obstructions, including but not limited to trees, poles, signs, hydrants, trash receptacles, and tree grates.	Keeping the pedestrian travelway clear of obstacles is important for accessibility and safety. Based on these requirements, placing a sandwich board on a street with parallel parking would require a minimum 7 foot sidewalk (assuming a sandwich board takes up 1 foot of space) and a street without parallel parking would require a minimum 5 foot sidewalk.
NETWORK CONNECTIVITY			
Block length	Article 6 - Subdivision Regulations, Division 3 - Design Standards, Section 18-523: Blocks, lots, and access	B. Block length 1. Block length standards apply to preliminary subdivision plans, final plats, and site plans submitted in accordance with this article. **2. Within the 1945 Corporate Limits and for all R-5-zoned developments, block length shall not exceed 400 feet.** 3. Unless otherwise stated elsewhere in this chapter, blocks outside the 1945 Corporate Limits shall not exceed 1,000 feet in length and through/connecting streets shall be required. 4. Block length for industrially-zoned developments shall not exceed 1,500 feet. 5. The technical review committee may allow a block to exceed the maximum length if at least one of the following standards are met. a. Approved traffic calming devices, as defined in Article 8, are provided every 400 feet. b. A civic building or open lot is included, if the lot is at least 50 feet wide and deep and a pedestrian connection that directly connects two streets on each block face is provided (see Figure 18-523.1: Pedestrian connection with civic building or open lot). c. The block is interrupted by public parkland, including greenways, that is open and accessible to the public and pedestrian access points are provided with a minimum spacing equal to one-half of the maximum block length (see Figure 18-523.2: Interrupted block). 6. The technical review committee may allow block lengths to exceed the maximum if the applicant demonstrates it is impracticable to achieve due to natural water courses or wetlands as documented by the appropriate regulatory authority.	This section does a good job of relating block length to land use density and typologies to promote connectivity and pedestrian access. Small block size is important for intersection density and interconnectivity which serve to enhance walking, bicycling, and transit-access opportunities. In more walkable areas, blocks as narrow as 200 feet can be desirable. Consider expanding the requirement for sub-400ft blocks to more areas and zones to encourage walkable development. Traffic calming on longer blocks reduces vehicle speeds, providing a safer and more comfortable experience for people walking. In areas with longer blocks (800 feet or greater), consider a requirement for a pedestrian and/or bicycle path of 6-8 feet in width, with an easement of 15-20 feet wide.

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Cul-de-sacs	Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-495: Streets	3. Design Whenever cul-de-sac streets are created, at least one 10-foot wide pedestrian access easement shall be provided between each cul-de-sac head or street turnaround and the sidewalk system of the closest adjacent street or pedestrian sidewalk or pathway (see Figure 18-495: Pedestrian connection on cul-de-sac).	Long, dead-end streets and cul-de-sacs create challenges for pedestrians, cyclists, and effective transit and other public services. Requirements for cul-de-sac connectivity, like the one in this section of the LDC, provide more connections for pedestrians and bicyclists. Designing compact and connected developments that do not use cul-de-sacs further supports the goals of Walk Wilmington as well the future growth and policy goals of the City's Comprehensive Plan. Consider limiting the creation of new cul-de-sacs unless no practical alternative exists, or limiting the length of cul-de-sacs to 250 feet or basing the maximum length on a context-based requirement related to the land use and transportation context of the area. Where cul-de-sacs are used, in addition to requiring an easement for a future connection, consider requiring developers to build the pathway or sidewalk, particularly if it will connect to an existing facility. Finally, consider language that requires easements or built connections to future networks even when there is no current sidewalk system on an adjacent street to connect into.
Public transit stations	Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-496: Public transportation system	Public transportation system terminal facilities (to include turnout lanes, shelters, signs, and markings) along city-maintained streets shall be constructed, provided, and installed in accordance with the Technical Standards and Specifications Manual and acceptable traffic engineering specifications and standards. Such facilities along roadways maintained by the North Carolina Department of Transportation (NCDOT) shall be installed in accordance with NCDOT specifications and standards.	Wilmington's Technical Standards and Specifications Manual, Section VIII - Public Transportation, contains minimum design specifications and standards for terminal facilities and provides guidance for location placement of facilities. In addition to the terminal facilities themselves, the specifications should include provisions to ensure that safe, comfortable, and convenient pedestrian crossings to terminal facilities are provided. The NACTO Transit Street Design Guide details best practices for terminal facility design, with many considerations for the placement and design of transit stops on streets with different types of pedestrian and bicycle facilities, such as sidewalks, multi-use paths, bike lanes, and cycle tracks. Resources: • NACTO *Transit Street Design Guide* • FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* • NCDOT *Pedestrian Crossing Guidance*

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Open space set-aside	Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-507: Open space	B. Standards for open space areas Any area dedicated for required open space set aside shall meet the requirements of articles 2 and 8 of this chapter. Except as otherwise approved by the design adjustment committee, all park, recreation, and open space set-aside areas shall meet the following criteria: **1. Consistency with parks master plan** **If any portion of any subdivision proposed for residential development lies within an area designated on a master parks plan officially adopted by the city or by New Hanover County as a park, such area shall be included as part of the area set aside to satisfy the requirements of this section.** **2. Greenways** **If open space is a greenway, the land shall be a continuous linear lot through the subdivision of at least 30 feet in width.** 3. Access All dwelling units in the subdivision shall have free, easy, and convenient ingress and egress to and from the park, recreation, and open space areas provided within the development by means of improved streets or dedicated walkways. Rights-of-way for such access shall be shown on the preliminary plans and final plats. 4. Topography The average slope of the portion of dedicated land deemed usable for active recreation shall not exceed the average slope of the entire subdivision to be developed, and in no case shall the slope of the land dedicated be greater than 15 percent.	The current language requires open space dedication for facilities designated on a parks master plan; expand the requirement to include areas designated on bicycle/pedestrian/greenway plans and comprehensive plans as future trails and greenways. Some NC cities go further in requiring construction of greenways where they are part of an adopted plan. Consider adding requirements for greenway corridor construction in new developments where a greenway or trail is shown on an adopted plan or where a property connects to an existing or proposed greenway in an adopted plan. **Resources:** See requirements in Wake Forest, NC UDO, Section 6.8.2 Greenways: "When required by Wake Forest Open Space & Greenways Plan or the Wake Forest Transportation Plan, greenways and multi-use paths shall be provided according to the provisions [that follow in the section cited above]." *http://www.wakeforestnc.gov/udo.aspx*
PARKING REQUIREMENTS			
Parking quantity requirements	Article 5 - Site Development Requirements, Division 2 - Parking Standards, Section 18-340: Applicability	1. Off-street parking shall be provided for all new residential buildings and uses pursuant to Table 18-341.1: Residential parking ratios. 2. There shall be no minimum off-street parking requirement for nonresidential buildings or uses. Maximum off-street parking is established in Table 18-341.2: Nonresidential baseline parking ratios by use.	The removal of most parking minimums and introduction of parking maximums for non-residential uses supports the goal of a walkable city.

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Parking quantity requirements	Article 5 - Site Development Requirements, Division 2 - Parking Standards, Section 18-340: Applicability	A. Parking standards 1. The maximum number of spaces for nonresidential uses shall be limited based on the ratios in Table 18-341.2: Nonresidential baseline parking ratios by use. An increase in parking over this ratio may be permitted subject to a parking analysis, per the standards of this section. 2. Outside of the 1945 Corporate Limits, **minimum off-street parking shall be applicable to residential dwelling units, group living uses, and nonresidential uses located in residential zoning districts.** **3. There shall be no minimum parking requirements** except that for nonresidential uses within 650 feet of a single-dwelling residential district that include less than 40 percent of the maximum number of parking spaces for that use, a parking analysis, per the standards of this section, shall be required to demonstrate that adequate parking would be provided. B. Off-street parking in residential districts 1. The minimum and maximum number of spaces outside of the 1945 Corporate Limits shall conform to the parking ratios listed in Table 18-341.1: Residential parking ratios. 2. If not included in Table 18-341.1: Residential parking ratios, the maximum number of spaces allowed for nonresidential uses in residential zoning districts outside of the 1945 Corporate Limits shall conform to the maximum number allowed in Table 18-341.2: Nonresidential baseline parking ratios by use, except with a parking analysis per the standards of this section. C. Residential parking exceptions Minimum parking requirements for multiple dwelling, townhouse, group homes, and dormitory, fraternity, sorority house units may be reduced by up to 15 percent from the prescribed parking ratios when the use is located within one-quarter of a mile radius of a transit stop.	The removal of many parking minimums, along with incentives for providing only the necessary amount of parking (as opposed to providing more than necessary), are policies that support the goals of this plan and will help create a more dense and walkable network.
Bicycle parking quantity	Article 5 - Site Development Requirements, Division 2 - Parking Standards, Section 18-342: Bicycle parking	A. Applicability **1. Bicycle parking shall be provided with each new multiple dwelling, mixed-use, commercial, institutional, or office development and any redevelopment with 15 or more vehicle parking spaces per the requirements in Table 18-342: Bicycle parking requirements.** 2. No bicycle parking spaces shall be required beyond 30 spaces; however, additional spaces may be installed. 3. When there is more than one principal use on a site, the required bicycle parking for the site shall be the sum of the required parking for the individual principal uses. 4. Developments in the CBD shall be exempt from required bicycle parking; however, bicycle parking spaces may be installed. 5. In the UMX district, designated on-street public bicycle parking spaces, located within 325 feet of the use, may be counted toward the minimum requirements in Table 18-342 if approved by the technical review committee.	Bicycle parking requirements can contribute to a creating a supportive culture for walking and biking by making it more convenient for people to safely store their bicycles. The current language excludes the CBD zone from the requirement. Consider language that requires some amount of bicycle parking in new development in the CBD if there is not already a sufficient amount of bicycle parking nearby.

TOPIC	SECTION	EXISTING CODE LANGUAGE	COMMENTS
Bicycle parking standards	Article 5 - Site Development Requirements, Division 2 - Parking Standards, Section 18-342: Bicycle parking	B. Design and installation requirements 1. Bicycle parking facilities shall allow for cyclists to secure their vehicle against theft. 2. Required bicycle parking facilities shall be within 100 feet of the primary entrance(s) to the principal uses, including on-street facilities, where permitted and installed in accordance with the Technical Standards and Specifications Manual. In the event of multiple entrances, bicycle parking facilities shall be dispersed for easy access to entrances. 3. Bicycle parking areas shall be installed on hard surfaces. This may include pavement or pervious pavers. If bicycle lockers are used, they shall be located within 325 feet of building entrances. Hanging spaces may be incorporated into structured parking. 4. Bicycle parking areas and pathways connecting them to the buildings they serve shall be lighted in accordance with division 9 of this article. *From Wilmington's Technical Standards and Specifications Manual, pg. 7-21:* *F. BICYCLE PARKING* *Where Bicycle Parking is provided under Section 19-43, Paragraph (f) of the City Zoning Ordinance, the following standards shall apply:* *a. Construction* *When a bicycle parking facility is adjacent to motor vehicle parking, the surface and subgrade construction shall be the same as that for the adjacent motor vehicle parking.* *b. Bicycle Parking Mechanisms* *All bicycle parking facilities should accommodate a minimum of four (4) bicycles per 150 square feet. Mechanisms for securing the bicycles in place should consist of a standard rack anchored into the subgrade.*	Bike trips often include a walking component (e.g., riding a bicycle from home, parking, and walking to a final destination, or biking to a transit stop, parking, taking a bus, and walking to a final destination). Providing convenient and secure bicycle parking can encourage these types of multimodal trips. The code mentions multiple types of secure bike storage, but could provide guidance on when different types are appropriate. For example, at residences, where bikes are likely to be stored overnight or for long periods of time, consider higher-security parking such as bike lockers. At commercial and other destinations where short-term (several hours) parking is needed, a standard bike rack can be used. Also consider requirements for styles of bike racks such as inverted "U" racks, which 1) support the bike frame at two points of contact, 2) allow users to lock the bike frame and one wheel to the rack, 3) accommodates many different bike styles (e.g., cargo bikes) and 4) do not require users to lift the bicycle. The requirement for proximity to adjacent building entrances is good, but consider a requirement that a sidewalk or clear pedestrian path connects the bicycle parking to building entrances. **Resources:** • Association of Bicycle and Pedestrian Professionals *Bicycle Parking Guidelines* • City of San Francisco *Zoning Bulletin No. 9: Bicycle Parking Requirements* for designs/layout/etc. The document includes limits on hanging racks, how to park family bikes, and various configurations. The city separates bike parking into two tiers based on length of use.

This page intentionally left blank.

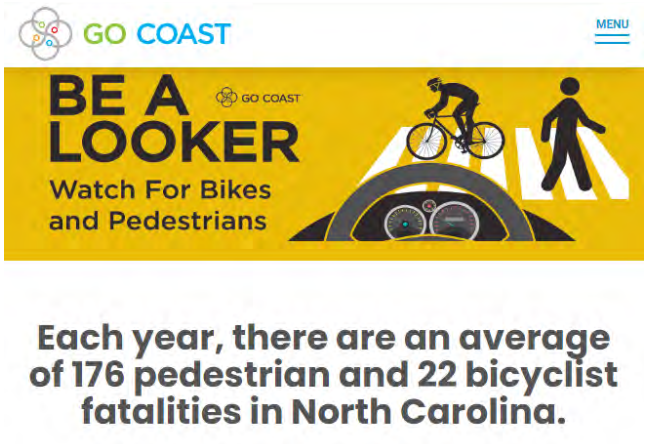
Existing Programs to Support Walking

"Be a Looker"

Lead Agency: WMPO

"Be a Looker" is a program of Go Coast, WMPO's Transportation Demand Management program. Similar to the statewide program, Watch for Me NC, "Be a Looker" educates the public on best practices and laws pertaining to bicycle and pedestrian safety and aims to foster a safe and respectful culture around walking and biking in the Wilmington area.

The original campaign ran from April to September 2019. The project website is still active and displays links to learn about pedestrian and bicycle safety, take a safety pledge, and request program materials. This program will continue to run on a regular basis.



Go Coast's Be a Looker webpage includes pedestrian and bicycle safety information.

WMPO and GoCoast published a 2019 program report detailing the campaign and its impact. The campaign included eight strategies/channels for visually communicating the program's safety messages:

1. Images on WAVE Transit shuttles
2. Digital billboards
3. Mass email
4. Local media
5. Social media
6. Community events
7. Print material
8. Website

WMPO estimated the number of impressions (people viewing the materials and receiving the message) and conducted a survey about the campaign. Digital billboards were one of the most cost effective ways of reaching a large number of people. Survey responses indicated support for the campaign and the goal of culture change, while acknowledging that changing behaviors and perceptions is a long-term process.

Watch for Me NC

Lead Agency: WMPO, local jurisdiction

Wilmington and local partners (including WFD, WPD, and Wilmington Communications Department) have participated intermittently in this statewide program aimed at reducing pedestrian and bicycle injuries and fatalities through public education and high visibility enforcement.

The program includes training for local law enforcement to conduct focused enforcement campaigns, educational outreach materials, and marketing campaigns. With WMPO as the lead agency, Wilmington participated in 2014, 2016, 2017, and 2020. Other partners have included New Hanover County; the cities of Carolina Beach, Wrightsville Beach, and Kure Beach; UNC-Wilmington and Cape Fear Community College; the local cycle club; the transit authority, Wave Transit, and the Wilmington Department of Public Safety.

The 2019 "Be a Looker" program report noted that in recent years, local law enforcement had less interest in participating in Watch for Me NC due to lack of time and resources; "Be a Looker" is modeled after Watch for Me NC and aims to address the issue of law enforcement capacity while educating community members about walking and biking safety.

Watch For Me NC educational materials include eye-catching posters and stickers.

WMPO Bicycle and Pedestrian Advisory Committee (BPAC)

Lead Agency: WMPO

The BPAC meets bi-monthly to provide guidance and feedback on bicycle and pedestrian needs in the region. This includes drafting model ordinance, identifying infrastructure needs and challenges, outreach, education, and advocacy for proposed projects. The WMPO BPAC is comprised of MPO member jurisdiction staff and citizens and is appointed by the MPO Board members.

City of Wilmington Bicycle and Pedestrian Committee

Lead Agency: City of Wilmington

This committee meets monthly and has a budget to address identified pedestrian and bicycle needs.

Program Recommendations

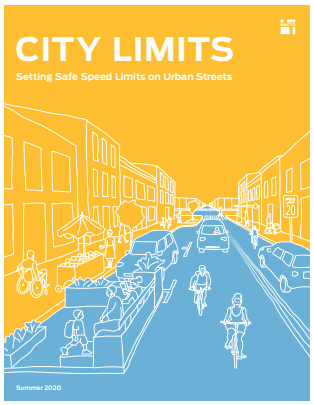
Safe Speed Study/Citywide Safe Speed Program

Conduct a Safe Speed Study to determine the safest maximum speed limits for places where people walk in Wilmington.

Lead Agency: City of Wilmington
Potential Partners: WMPO, NCDOT

Speed is a key factor in the severity and number of pedestrian crashes nationwide and in Wilmington. For example, the City and NCDOT's 2021-2022 Pedestrian Safety Study found that the highest percentage of pedestrian K/A crashes in Wilmington occurred on 40-45 mph roads (62% of fatal and 39% of serious injury crashes).

On major streets, where conditions vary widely, cities can conduct a Safe Speed Study to determine the safest maximum speed limit. NACTO City Limits provides guidelines for setting safer speed limits in urban areas. The guide uses a context-sensitive approach to set speed limits citywide or for individual corridors, based on street characteristics. The approach includes three methods, which can be combined to suit the context of the environment: 1) setting default speed limits on many streets at once, 2) designating slow zones in certain areas, and 3) setting corridor speed limits on priority streets.



NACTO City Limits guide.

In urban areas, a Safe Speed Study will most often result in a recommended maximum speed limit of 20 or 25 mph for major streets. For streets that have well-protected places for people to walk and bike, and that are in low density areas with primarily manufacturing and residential uses, cities may find that a 30 or even 35 mph speed limit is appropriate. However, these higher speed limits should be used sparingly and only in cases where safe conditions can be met.

Program Considerations: Safe speed studies could be stand-alone or folded into other studies, such as a Vision Zero Action Plan. The cost of actually lowering speeds as a result of such a study is estimated to be in the range $4,000-5,000 per mile and something crews can implement quickly versus deeper-dive design changes that cost more and take longer to implement. A citywide speed-lowering program in Seattle, for example, is estimated to cost just over $1.5M.[1] Program funding could be from CIP or outside sources such as part of an SS4A grant application.

1. https://visionzeronetwork.org/webinar-recap-cities-managing-speed-for-safety-learning-from-seattle-and-minneapolis/

Neighborhood Traffic Safety Campaign

Conduct a neighborhood safety campaign aimed at establishing community norms and culture around pedestrian safety and reducing driving behaviors that are especially dangerous to pedestrians, such as speeding and failing to yield to people in crosswalks.

Lead Agency: City of Wilmington
Potential Partners: Local law enforcement, community groups and neighborhood associations, Communications Department, Wilmington Fire Department (WFD)

Wilmington can build upon previous pedestrian safety campaigns ("Be a Looker" and Watch for Me NC) and neighborhood traffic management program by conducting a campaign that engages residents and community members. Public participation in the campaign is important for establishing agreed-upon community values and norms around walking and biking. Involving the community in campaign development can foster a sense of shared responsibility around pedestrian safety. Residents can also provide key insights into what messaging will resonate with their neighborhoods, and local perspectives on safety issues and priorities related to walking.

Highly visible campaign materials like stickers, posters, yard signs, and bus wraps can serve as visual cues to convey acceptable behaviors to visitors and residents alike. Community members can serve as ambassadors, whether in official capacities or unofficially (e.g., by displaying stickers and yard signs or sharing information with their social networks).

Wilmington can look to crash data and police crash reports to identify specific areas and behaviors to target for the campaign. Behaviors are often linked to cues from the physical environment as well as social and cultural norms; therefore, this campaign could be paired with another program or engineering project, such as a speed limit reduction or installations of new pedestrian infrastructure like PHBs or other crossing improvements. However, this may limit the ability to evaluate whether any effects were due to the campaign or other projects/programs.

The targeted behaviors of the campaign will inform the performance measures and evaluation effort. Potential measures include number of impressions, attitudes towards pedestrians, awareness of the campaign, knowledge of traffic laws relating to walking, change in self-reported behaviors, observed behaviors. Evaluation can include qualitative and quantitative measures like surveys, interviews, and observations.

Program Considerations: Campaign costs vary widely on the intensity and duration of the campaign and the degree to which existing staff time is used. The cost range for a campaign similar to the case study example on the following page is in the range of $100,000-$150,000 for a small city.

CASE STUDY:

A Community-Driven Campaign for Safer Neighborhood Streets

In 2021, Alta helped the City of Lawrence, KS, conduct a traffic safety education and outreach campaign aimed to help make neighborhood streets safer, more comfortable, and accessible to all. The campaign was part of a citywide program to manage traffic on neighborhood streets, which included a speed limit reduction on all neighborhood streets plus enforcement efforts.

The resulting "Safer Neighborhood Speeds" campaign focused on reducing three unsafe driving behaviors that community members most commonly report to the City:

- Speeding
- Driving while distracted
- Drivers failing to yield to people trying to cross the street

Community participation was key to the success of the campaign. The campaign team engaged the public, multimodal transportation commissioners, and City staff to help shape the campaign. More than 1,000 community members helped to select the campaign look and feel. Neighborhood groups, schools, and businesses helped spread awareness. Sixty community ambassadors promoted the campaign in their neighborhoods.

To evaluate the campaign's effectiveness, the City conducted pre- and post-campaign surveys to gather the public's baseline perceptions and feedback. The survey results provided insight into the campaign's reach and impact. The city also evaluated the 85th percentile speeds before and after the campaign.

The project team used surveys to evaluate the campaign's effectiveness at changing unsafe behaviors.

Community members helped select the campaign's graphics and slogan used on promotional materials.

Non-Motorized Traffic Count Program

Implement a program to count non-motorized traffic (i.e., people walking, biking, and using other small personal mobility devices) on sidewalks, bike lanes, shared lanes, and shared-use paths across the city.

Lead Agency: WMPO
Potential Partners: City of Wilmington, UNCW, Wilmington Police Department (WPD)

WMPO regularly conducts vehicle traffic counts for the MPO area, including within the City of Wilmington. To a lesser extent, WMPO collects some bicycle and pedestrian counts. A formalized non-motorized traffic count program would provide Wilmington with valuable information about when, where, and how often people walk in Wilmington. Data about pedestrian activity will help the City understand overall walking patterns, identify high-activity areas, and track changes in use of facilities seasonally and over time. Local planners can use this information to plan and prioritize projects, assess needs for improvement, and evaluate the usage (and return on investment) of completed projects. Better data on pedestrian and bicycle travel can help to determine where investments are most needed and quantify the benefits of walking and biking. Count data also makes active transportation projects more competitive for funding opportunities, including NCDOT funding.

Many types of non-motorized count programs and counter technologies exist; WMPO should choose a method that is feasible and cost-effective to implement and maintain. To understand some of the different options, refer to the 2021 study by NCDOT and the Institute for Transportation Research and Education (ITRE), *State-of-the-Art Approaches to Bicycle and Pedestrian Counters*. The report describes the state of the practice nationally for non-motorized traffic counts, including costs, benefits, and limitations of various counter technologies and considerations for managing and integrating data across other government agencies (such as state and local agencies).

Program Considerations: Costs per unit for counting equipment vary by the technology used, which also impacts count accuracy. The NCDOT/ITRE report referenced above compares over 20 different systems, their costs, and their strengths and weaknesses. Costs for some of the higher-rated counting equipment in that study ranged from $1,500-6,500/unit.

Safe Routes to Schools and Parks

Develop action plans for active transportation connections to both schools and parks in Wilmington building off the Focus Area recommendations in this pedestrian plan update.

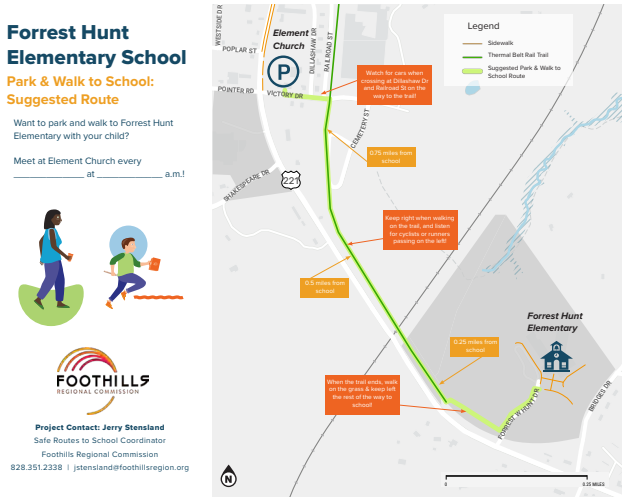
Lead Agency: City of Wilmington
Potential Partners: Local school administrators

Safe Routes to Schools and Parks enables and encourages children to walk and bike to schools and parks. These programs facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools and parks.

Both schools and parks are key local destinations with significant amounts of local travel (i.e., shorter, walkable distances). If connected by all ages and abilities pedestrian infrastructure, they have the potential to influence a shift to more active modes of transportation.

Serving as 'mini' pedestrian/bicycle plans for each school/park, these planning processes could begin by incorporating the recommendations for the network updates from this plan, and further explore opportunities and challenges for infrastructure, programming, and policy.

For schools seeking to implement Safe Routes programs, National Walk to School Day can serve as a starting point. This event



This "Park and Walk to School" map from Forest City, NC shows the meetup point and route for a walking school bus.

is organized by the National Safe Routes to School Partnership. More information is available at www.walkbiketoschool.org.

Program Considerations: Program costs vary based on scope and scale of the program. For example, NCDOT's SRTS Program will use federal funds to fund projects ranging from one to three years, with funding amounts ranging from $50,000 to $500,000 per program.[1]

1. https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx

Vision Zero Policy and Action Plan

Create and adopt a Vision Zero Policy and develop an action plan as part of a formalized program to eliminate traffic deaths in Wilmington. Develop clear objectives and action items to achieve the goal. Prioritize safe street design to minimize the impact of human error on our roadways. Use education and enforcement strategies to supplement safe street design.

Lead Agency: City of Wilmington
Potential Partners: WMPO, WPD, WFD, New Hanover County Schools, community groups and neighborhood associations, and many other stakeholders

The Vision Zero philosophy rejects the notion that traffic fatalities are inevitable and proactively tries to keep people safe. Key tenets of the Vision Zero safe system approach are that design should seek to prevent crashes, and that we can always afford to take steps that save lives.

Wilmington has already been taking important steps to making its streets safer for residents and visitors, including incorporating pedestrian-friendly polices into the Land Development Code, conducting the Citywide Pedestrian Safety Study with NCDOT, and participating in traffic safety educational programs like Watch for Me NC and "Be A Looker." A Vision Zero policy and action plan will build on these efforts.

A Vision Zero policy and action plan would provide a framework for City departments and community stakeholders to work together to eliminate traffic deaths. The policy would be a long-term promise to put safe mobility at the forefront of all decisions made regarding transportation policy and projects going forward. The goal of zero deaths on the Wilmington's roads is not one that will be accomplished in a few years. It will take a continuing effort by many stakeholders, including residents, to change the nature of the roadways and the culture of mobility in Wilmington. This ongoing effort will occur over decades, and the City will need to become dedicated to making the changes necessary to achieve zero traffic deaths.

The federal Safe Streets and Roads for All (SS4A) grant program can be used to fund Vision Zero and safety action plans. See **Appendix C: Funding Resources** for more details about the program.

Program Considerations: Cost varies by the size of the community and the scope of the planning process. For example, current Safe Streets and Roads for All (SS4A) planning grants range from $200,000-$1M.

Safe Systems Prioritize People

Vision Zero follows a "safe systems" framework, which recognizes that all facets of the transportation environment work together as a system. Systemic changes are needed in order to prevent traffic-related deaths and serious injuries. This represents a paradigm shift from many traditional approaches to road safety, which depend on human road users to not make mistakes.

Key components of safe systems are safe streets and safe speeds.[1] Safe streets have physical separation of people walking and biking from people driving and use design elements that slow vehicles and improve visibility. Safe speeds refers to managing speeds in a way that protects all road users; this means prioritizing lower speeds where people walking and biking could cross paths with drivers. In all cases, safe systems should center vulnerable populations that experience a disproportionate rate of injuries and fatalities.

As a growing number of communities in the United States adopt Vision Zero policies, peer cities can look to one another for lessons learned and success stories. The ***Vision Zero Network*** compiles many resources and case studies to support communities implementing Vision Zero policies and programs, as well as those who are interested in beginning.

1. Vision Zero Network. https://visionzeronetwork.org/resources/demystifying-the-safe-system-approach/

Traditional Road Safety Practices vs. Safe System Approach

Whereas traditional road safety strives to modify human behavior and prevent all crashes, the Safe System approach also refocuses transportation system design and operation on anticipating human mistakes and lessening impact forces to reduce crash severity and save lives.

TRADITIONAL	SAFE SYSTEM
Prevent crashes	Prevent deaths and serious injuries
Improve human behavior	Design for human mistakes/limitations
Control speeding	Reduce speed
Individuals are responsible	Share responsibility
React based on crash history	Proactively identify and address risks

Pedestrian Wayfinding

Create and implement a pedestrian wayfinding scheme that can be incorporated into the City's current wayfinding signage.

Lead Agency: City of Wilmington
Potential Partners: Wilmington Visitors Bureau and tourism agencies, WMPO BPAC

A pedestrian wayfinding system is similar to transit, vehicular, or bike facility wayfinding systems in that it consists of comprehensive signage and/or pavement markings to guide pedestrians to their destination along routes that are safe, comfortable and attractive. Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the pedestrian network, including guiding users to nearby facilities and crossings
- Helping users identify the best routes to destinations within walking distance or connections to other modes
- Helping to address mis-perceptions about time and distance
- Helping overcome a "barrier to entry" for people who are not frequent walkers

Pedestrian signage throughout Wilmington should indicate the direction of travel, and distance and travel time to destinations. The City's 2016 Comprehensive Plan briefly touches on wayfinding and recommends creating a unified wayfinding system for bicyclists, pedestrians, and vehicular travelers.

Interactive kiosk for pedestrians in downtown Fuquay-Varina, NC.

Program Considerations: Wayfinding programs for a small city could range from $50,000-$100,000 for the signage and wayfinding plan, with the costs of implementation depending on the number and types of signs installed.

Walk Friendly Community Designation

Apply to become a designated Walk Friendly Community (WFC).

Lead Agency: City of Wilmington
Potential Partners: WAVE Transit, WMPO, WFD, New Hanover County Schools, UNCW, WMPO BPAC, and others

WFC is a national program that recognizes municipalities that have made efforts to prioritize walkability in their communities. WFC communities include those that are working to improve safety, mobility, access, and comfort for people walking.

The application consists of an assessment tool that measures a community's progress in the areas of planning, education, encouragement, enforcement, engineering, and evaluation. The application process itself supports walkability by:

- Building new local partnerships
- Collecting data for future planning efforts
- Documenting all local walking-related programs, projects, and policies
- Identifying areas of needed improvement
- Providing tools to develop specific solutions before the application is submitted
- Offering feedback and further suggestions to the community after application review
- Creating momentum for future projects

To prepare, Wilmington should take the brief self-assessment and assemble a team of partners that will help with the application. These partners could include representatives from: City of Wilmington planning and development, engineering, police, and public services departments; WAVE transit; New Hanover County Schools; and advocacy and community groups.

Program Considerations: The largest costs associated with the designation are in the many program and infrastructure improvements needed to create a walk-friendly community. The actual cost of applying can be covered in existing staff time for the application process; much of the data and information in this Walk Wilmington Plan will be helpful for the process.

The application and other resources are available at: www.walkfriendly.org

\ 5 \

Implementation

Realizing the vision for Wilmington's safe, comfortable, all-ages-and-abilities pedestrian network will require ongoing efforts from City and MPO staff, elected officials, local organizations, and community groups over the coming years. This chapter outlines the immediate, mid-term, and long-term actions needed to achieve the goals in this plan.

Framework for Implementation

WILMINGTON METROPOLITAN PLANNING ORGANIZATION (WMPO)

- ★ Coordinate with partners on project development.
- ★ Support and assist the City of Wilmington with additional planning, permitting, public engagement, and implementation.
- ★ Provide funding to support the implementation of the pedestrian plan.
- ★ Pursue project opportunities, including ways to leverage funds across federal, state, local, private, and non-profit sources.

CITY OF WILMINGTON

- ★ Coordinate with local stakeholders, such as community leaders and local/regional non-profits, to involve them in project development tasks as needed.
- ★ Coordinate with WMPO and NCDOT to leverage local project funding.
- ★ Work with local landowners (and a local land trust, if necessary) to secure trail easements along planned routes.
- ★ Work with local utility operators (such as Duke Energy) and developers to dedicate right-of-way for projects such as greenways.
- ★ Work with developers to make sure new development and redevelopment projects comply with Wilmington's Land Development Code, specifically policies that promote walkability and connectivity.
- ★ Design roads that are safe for pedestrians facilitate pedestrian activity.

LOCAL LAND TRUSTS

The City of Wilmington should work with a local land trust such as NC Coastal Land Trust to help secure trail conservation easements along proposed trail/greenway corridors.

NEW HANOVER COUNTY SCHOOLS

Leaders from New Hanover County Schools should continue to stay involved in project planning by leveraging their relationships with the local community to support projects that improve walking and biking.

NON-PROFIT AND ADVOCACY PARTNERS

Non-profit and advocacy partners could include East Coast Greenway, Wilmington Downtown iNC, Port City United, and many others. These partners could lead or support in many different areas of project implementation, as they:

- ★ Promote public awareness of the benefits of investing in walkability, especially safety benefits.
- ★ Communicate the economic benefits of more walkable communities to local businesses.
- ★ Promote safe walking, bicycling, and driving behaviors.
- ★ Advocate for access to trails and the outdoors.
- ★ Coordinate volunteer trail projects and maintenance of trails.
- ★ Advocate for adoption of local and regional walking, biking, and trail plans.
- ★ Advocate for safe and sustainable active transportation.
- ★ Advocate for walkable places as a tool for economic development.

NCDOT

- ★ **NCDOT Division 3** is responsible for the construction and maintenance of pedestrian facilities on NCDOT-owned roadways in Wilmington (unless Wilmington takes responsibility through an encroachment agreement).
- ★ **NCDOT Integrated Mobility Division (IMD)** administers bicycle and pedestrian grants and provides regional technical assistance. IMD is part of the Complete Streets Technical Team, and can support partners with interpretation of the Statewide Complete Streets policy.

OTHER TRANSPORTATION AND UTILITY PARTNERS

- ★ **Utility providers**, such as Duke Energy, can be amenable to trails and walking paths through certain utility easements, as long as the facilities comply with their requirements.
- ★ **Railroad operators** should be engaged as stakeholders when projects would impact an at-grade rail crossing.

PRIVATE PARTNERSHIPS

- ★ **Higher education partners**, such as UNCW and Cape Fear Community College, can promote safe walking, biking, and driving behaviors on their campuses.
- ★ **Local and regional businesses** should help promote project funding and could possibly capitalize on increased business that results from project completion.
- ★ **Consultants** should provide guidance to WMPO, City of Wilmington, New Hanover County, and partners on project development, ROW/permitting, design, and construction.
- ★ **Developers** in Wilmington should recognize the quality of life benefits that walkable communities bring; champion the development of bicycle and pedestrian infrastructure through development partnerships; and market walkability as a key feature and selling point to prospective buyers/residents.

Implementation Action Steps

ACTION	DETAILS	LEAD	SUPPORT	TIMEFRAME
ADMINISTRATIVE ACTION STEPS				
Adopt Walk Wilmington as the City's Pedestrian Transportation Plan.	Through adoption, the Plan becomes an official planning document of the City. Adoption does not commit the City to dedication of funding, but rather shows intention to support plan implementation over time. It also signals to outside funding groups that Wilmington has undergone a successful, supported planning process, which is key to securing outside funding.	City Council	City staff, project consultants, Steering Committee	2023
Designate BPC staff time to lead implementation of Walk Wilmington.	WMPO, the Wilmington City Manager, Wilmington Police Department (WPD), Wilmington Fire Department (WFD) and City directors of Planning and Development; Engineering; Community Services; and Public Services should each identify their respective staff leads for implementing this pedestrian plan. A staff organizational chart for plan implementation should be shared among departments, so there is a known point person for each. In the future, the City may choose to create a designated position of "Pedestrian Plan Coordinator" within the BPC.	City Council and City Manager	Multiple City department directors, WMPO, WPD, and WFD	2023
Continue to convene the City of Wilmington Bicycle and Pedestrian Committee (BPC).	The BPC should continue to meet regularly and be involved in promoting projects and leading advocacy efforts around walkability.	BPC	N/A	2023
Create a Bicycle and Pedestrian Task Force to evaluate methods to reduce walking and biking conflicts and prioritize projects in priority areas.	The task force composition is to be determined by the City and WMPO, but could be made up of a combination of City, WMPO, NCDOT, and possibly BPAC representatives. Task force should meet quarterly.	BPC	WMPO	2024 onward
Communicate this plan's priority projects to potential implementation partners.	The purpose of this step is to network with potential project partners, and to build support for implementing the top projects. Possible groups to receive a presentation/coordination meeting include: WMPO, NCDOT Division 3, New Hanover County, and neighboring jurisdictions.	BPC	N/A	Ongoing

ACTION	DETAILS	LEAD	SUPPORT	TIMEFRAME
Begin annual Walk Wilmington meeting.	Coordination between key project partners will provide a level of accountability, and ensure that recommendations are implemented. Key project partners should meet on an annual basis to discuss and evaluate the implementation of this Plan. A brief progress benchmark memo should be a product of these meetings, and participants should reconfirm the plan's goals each year. The meetings could also occasionally feature special training sessions, or include on-site tours of recently completed projects and upcoming priority project corridors.	BPC	City department leads, WMPO, NCDOT Division 3 highway staff and planning engineer	2023 onward
Track plan progress and share updates.	Track progress towards plan goals using the performance measures in this plan. Progress should be shared with City Council and key partners at least annually (such as at the annual meeting described in a previous step). Progress and updates should also be shown on a public-facing website for transparency and accountability.	BPC	N/A	Ongoing
Update Walk Wilmington.	This plan should be updated by 2028 (about five years from adoption). If many projects and programs have been completed by then, a new set of priorities should be established. If not, a new implementation strategy should be established, potentially reassigning project priorities.	City Council, BPC, City Manager and staff	WMPO	2028
INFRASTRUCTURE AND FUNDING ACTION STEPS				
Ensure that projects are incorporated in NCDOT's prioritization process.	The City of Wilmington, WMPO, and NCDOT Division 3 should coordinate to fund recommendations from this plan over time. Use the plan cut-sheets and recommendation maps to communicate project details and to submit projects for funding. Projects that have secured public right-of-way and design completed (or at least underway) will be more competitive. The state should be prepared to incorporate the recommendations of the plan info projects in the STIP.	BPC	WMPO, NCDOT Division 3	2023 onward
Seek multiple funding sources and facility development options.	It will be necessary to consider many different sources of funding that together will support plan implementation. Funding sources can be used for a variety of activities, including: programs, planning, design, implementation, and maintenance. The appendix outlines the most likely sources of funding from the federal, state, and local government levels as well as from the private and non-profit sectors.	BPC, City Council	N/A	2023 onward

ACTION	DETAILS	LEAD	SUPPORT	TIMEFRAME
Develop a long-term funding strategy.	To allow continued development of the project recommendations, capital funds for pedestrian and trail facility construction should be set aside every year. Funding for an ongoing maintenance program should also be included in the City's operating budget. Consider incorporating Walk Wilmington recommendations into a multi-year bond package for the City, along with other initiatives, such as with projects related to parks, recreation, and transportation improvements. Pursue large-scale Federal funding for complete networks of recommendations (Priority Focus Areas from this plan), such as the Safe Streets and Roads for All (SS4A) Infrastructure Grant.	BPC, City department leads	City Council	2023 onward
Begin priority projects.	Dedicate funding, seek proposals, and hire a contractor for a site survey, construction documents, and permitting. Confirm that the project can be designed completely within existing public right-of-way, and secure easements if needed. When design is complete, select a phase of the project to be constructed first, based on costs and funding available at that stage. Send the project out to bid, select a contractor, and begin work.	BPC	City Council, City department leads, consultants, contractors	2024 onward
PROGRAM AND POLICY ACTION STEPS				
Ensure that Walk Wilmington recommendations are implemented as part of new development.	Update the LDC using the recommendations in Chapter 4: Programs and Policies. Update other City documents and maps with plan recommendations to make sure planned projects and improvements can be constructed as new development or redevelopment occurs.	BPC	Designated staff from Planning and Development Department	2023
Update the Technical Standards and Specifications Manual and Standard Detail Files.	The LDC review pointed out several areas where the Technical Standards and Specifications Manual conflicts with the recent LDC updates, or does not provide guidance on some areas. Wilmington should update the specifications to align with LDC policies and industry best practices for pedestrian facility design.	BPC	Designated staff from Engineering Department	2023
Develop an Access to Transit Plan for WAVE Transit.	Conduct a study to identify needed improvements to WAVE Transit service, access, and stops. Develop a plan and process that prioritizes improvements based on relevant factors such as ridership, equity, connectivity to jobs and destinations, and safety.	WAVE, WMPO	City of Wilmington staff, consultants	2023

ACTION	DETAILS	LEAD	SUPPORT	TIMEFRAME
Interagency coordination on street trees.	The Tree Maintenance Section of Wilmington's Community Services department is responsible for maintaining the city's urban forest, including more than 30,000 street trees on City-owned and NCDOT roadways. BPC staff should coordinate with tree maintenance staff to assess and fulfill needs for street trees in priority focus areas of this plan.	BPC	Wilmington Community Services	2023 onward
Invest in staff training opportunities related to pedestrian infrastructure.	Consider trainings from the National Association of City Transportation Officials (NACTO) on the Urban Street Design Guide. These trainings can be customized for City staff, helping to ensure that as new facilities are designed and constructed, they are up to world-class standards for safety and functionality. If Wilmington hosts the workshop, they could strategically invite NCDOT division staff, WMPO staff, and others who would be partners in implementation. Cost sharing for the training could come from participation of staff from neighboring municipalities. More info: https://nacto.org/training-and-workshops/	City Manager and Department Heads	BPC, Engineering Division	Training would be most beneficial before design phase of major projects
Maintain pedestrian and greenway facilities.	The City of Wilmington should define a maintenance plan, budget, and schedule for existing and future pedestrian and trail facilities, working with NCDOT where necessary. See maintenance program recommendations in this chapter for more on this topic.	Dedicated staff from Parks and Recreation and Public Services	BPC, NCDOT	2023 onward
Continue current efforts to promote walkability and pedestrian safety.	As a separate effort, the City is working with NCDOT to conduct a citywide pedestrian safety study, which will result in a better understanding of Wilmington's challenges and needs related to pedestrian safety. The City, WMPO, and partners including WPD and UNCW also participate in educational efforts including "Be a Looker."	City of Wilmington	WMPO, NCDOT	2023 onward
Launch new programs.	These groups should coordinate to launch new programs, as described in Chapter 4, such as launching a safety campaign, implementing a non-motorized count program, conducting safe speed studies, applying for Walk Friendly Community designation, and pursuing some form of wayfinding program. Walk Wilmington committee members could also be called upon for program involvement.	BPC	NCDOT, WMPO, WFD, UNCW, City Engineering Department, New Hanover County Schools, and others	2023 onward
Conduct communications and outreach campaigns related to walking.	BPC should publicly announce their successes as progress is made. This could be achieved partly through social media, and by establishing a page on the City website dedicated to bike/ped education and project updates. Also, BPC should provide regular (annual) reports to the City Council on implementation progress.	BPC	City website and social media managers, WMPO, local media	2023 onward

Performance Measures

Performance measures allow the City of Wilmington staff to measure and track progress toward achieving the plan goals and objectives, determine if the methods being used to achieve goals are working, and report about progress to the community.

Performance measures may include any metric that can be compared year to year and that illustrates progress toward completing an action item or objective. This plan suggests performance measures that can help track progress relevant to specific plan goals and their accompanying objectives, which are shown in Table 7.

Measuring progress toward Walk Wilmington's goals is a meaningful way to show that the City is working to implement this plan and improving walkability for the residents of Wilmington. Table 8 describes performance measures that could be tracked using existing data sources. Table 9 presents additional performance measures that would require an investment in additional data collection and/or management. Progress on the chosen performance measures should be reported periodically by the City in a publicly accessible place, such as a dedicated page on the City website.

TABLE 7. *Plan Goals and Objectives*

GOAL	OBJECTIVE
Increase Safety	Reduce overall pedestrian crashes and improve safety for all users of the roadway network. Promote adherence to traffic laws through education and awareness campaigns.
Promote Equity	Prioritize investment in areas with a history of underinvestment in pedestrian infrastructure and with historically under-served populations such as people with disabilities, people of color, and low-income households.
Enhance Connectivity, Mobility, and Accessibility	Fill gaps in the pedestrian network, improve connections to destinations and essential services, and ensure accessibility for people of all ages and abilities.
Enhance Health	Improve the health of residents and the environment by getting more people walking for their transportation, recreation, and daily needs through policies, programs, and projects.
Improve Livability and Protect the Environment	Make walking an inviting, attractive, and enjoyable experience through sound design and pedestrian-friendly policies. Reduce congestion and emissions through a reduction in vehicle miles traveled (VMT).
Create a Positive Economic Impact	Continue to attract investment and tourism by enhancing walkability throughout Wilmington and providing more spaces to create positive economic returns. Establish a strategic prioritization process to fund improvements and maintenance.

● = *Key plan goal*

TABLE 8. *Walk Wilmington Performance Measures with Readily Available Data*

PRIMARY GOAL(S)	PERFORMANCE MEASURE	DESIRED TARGET OR TREND	DATA SOURCES
	Pedestrian crashes of all injury types.	Decrease in annual number and per capita rate of pedestrian crashes of all injury types. Decrease in annual number and per capita rate of pedestrian injuries and fatalities. Decrease in proportion of pedestrian crashes that result in fatalities and serious injuries.	• Crash data (WPD and/or State) • Population data (US Census) • Pedestrian count data if calculating crash rates relative to walking rates (City of Wilmington/WMPO)
	Population served by walking, biking, and transit.	Increase in percent of population within a specified distance of a transit stop, sidewalk, trail, and/or bike facility. Prioritization of projects that would increase this percentage in areas with higher Transportation Disadvantage.	• Pedestrian infrastructure inventory data (WMPO) • Transit route data (WAVE Transit, WMPO) • Population and demographic data (US Census) • Transportation Disadvantage data (NCDOT)
	Number/density of destinations accessible via the pedestrian network.	Increase in number of destinations accessible via the walking network within 0.5 miles of a given point in the network. Destinations should be defined by the City and could include parks, trails, schools, grocery stores, employment centers, and/or transit stops. Prioritization of projects in areas with high potential numbers of destinations that are currently not connected to the pedestrian network.	• Local parcel data (City of Wilmington) • GIS data for locations of destinations (City of Wilmington/ WMPO) • Pedestrian infrastructure inventory data (WMPO) • Employment data (US Bureau of Labor Statistics)
	Percent of commuters walking, biking, and taking transit to work.	Increase in percent of commuters walking/biking/ taking transit to work.	• Travel survey data (American Community Survey, WMPO)

TABLE 9. *Additional Performance Measures Requiring Investment in Data Management*

RELEVANT GOAL(S)	PERFORMANCE MEASURE	DESIRED TARGET OR TREND	DATA NEEDS
	Traffic safety education efforts.	Safety education efforts or campaigns may use a variety of specific performance measures, some of which are described in Chapter 4: Programs and Policies.	Data to track specific campaigns could include number of campaign impressions, before-after observations of driver behavior, and/or surveys.
	Quality and condition of pedestrian network.	Increase in percentage of the network that exceeds a quality/condition threshold determined by the City. Prioritization of projects based on facilities in need of maintenance, especially in areas with greatest Transportation Disadvantage.	Would require regular citywide data collection on facility condition. This could be accomplished through a combination of public works/maintenance staff reviews and user reporting on an app. A "condition" field could be added to the existing Pedestrian infrastructure inventory data (WMPO), Transportation Disadvantage data (NCDOT)
	Number of jobs that can be accessed within 15 minutes using walking, biking, and/or transit.	Increase in number of jobs that can be accessed via walking/biking/transit within 15 minutes. Increase investment in proximity to walkable infrastructure.	Local parcel data, walk/bikeshed data, GIS data on pedestrian network (Wilmington/WMPO), transit route data (WAVE/WMPO) employment data (US Bureau of Labor Statistics).
	Total number and percent of pedestrian network elements that meet ADA accessibility standards (e.g., percent of all crossings, sidewalks, signals, bus stops, and on-street parking spots that are accessible).	Increase in total number and percent of pedestrian network elements that meet accessibility standards. Prioritization of projects that increase accessibility.	Would require assessing ADA compliance across the existing pedestrian network and adding ADA compliance element to WMPO's existing Pedestrian infrastructure inventory data.
	Annual count of greenway users.	Increase in greenway users.	Would require annual greenway count data (City of Wilmington, WMPO).
	Amount of land acquired/preserved (including easements granted) for trails, greenways, and parks.	Increase in land acquired for planned trails, greenways, and parks.	Parcel data from City of Wilmington and coordination with planners for updates.
	Percentage of residents/visitors who are satisfied with walking conditions in Wilmington.	Increase in percentage of residents satisfied with walking conditions.	Surveys (City of Wilmington).
	Job creation related to improving walkability.	Increase in temporary jobs related to project construction and permanent jobs due to employers relocating to the area.	Analysis of local employment data (City of Wilmington, US Census, US Bureau of Labor Statistics).

Maintenance Best Practices

Cities around the country grapple with extensive and growing needs for sidewalk maintenance and limited resources. The following practices can serve as a model for a systematic approach to pedestrian infrastructure maintenance in Wilmington.

Categorize Repairs by Cost and Longevity

The FHWA's A Guide for Maintaining Pedestrian Facilities for Enhanced Safety (FHWA Guide) categorizes sidewalk repair into three types:

- **Temporary Maintenance:** Alleviate hazards in the short-term. Examples include wedging and patching.
- **Short-Term Maintenance (repairs):** Address hazards with medium-term fixes designed to last 1–5 years. Approaches include patching, wedging, grinding and horizontal cutting, mud-jacking, and overlays.
- **Long-Term Maintenance (replacement):** Replacement is the primary long-term form of maintenance. In some cases, short-term maintenance techniques can last as long as ten years and are therefore considered part of this category.

The use of temporary and short-term measures allows cities to respond to resident complaints without allocating the bulk of available resources in a reactive manner. Staff can instead focus sidewalk replacement projects on a comprehensive prioritization of needs that is grouped geographically for efficiency. For more details on the various types of repair, see the FHWA Guide.

Implement Low-Cost Inventory Strategies

Periodic sidewalk inventories can be built into City budgets using low-cost alternatives to full-time staff. These include local volunteers, student interns, or technology tools. The FHWA Guide describes a case study in Hoboken, NJ, where staff used a mix of volunteers and a smartphone application to review and digitize sidewalk conditions annually. Similarly, students at Georgia Tech developed a crowdsourcing app called SidewalkScout to collect and publish sidewalk conditions efficiently. The ArcGIS Collector App has a configuration called Sidewalk Inventory as part of their Solutions for Local Government, which is another tool that can be quickly deployed and tied back to a City's database on infrastructure.

While some cities review all sidewalks annually, this is generally only achievable in smaller towns and small cities without sprawling street and sidewalk networks. As an alternative, many cities break cities into zones and inspect one zone each year. This can be tied to grouping repairs by zone, which is a recommended practice in the following section.

Establish Revenue Sources and Develop Monetary Plan

Reviewing sidewalk maintenance practices from other cities shows a wide variety of funding approaches. In many cities, property owners are partially or fully responsible for the cost of sidewalk maintenance. In general, however, cities that relied on property owners to repair sidewalks and did not have a local funding source reported extensive backlogs in their maintenance needs.

Charlotte, NC and Austin, TX are two locations where the City government maintains sidewalks in the public right-of-way. Charlotte uses voter-approved bond measures every two years to fund the majority of new sidewalk construction and maintenance, while supplementing with state grants and the general fund. At the time of review, they were spending approximately $2 million annually on sidewalk maintenance and $8 million on new sidewalks. Austin also uses voter-approved bond measures for their sidewalk program, but their primary funding source is a Transportation User Fee (a.k.a. Street Fee) that is included in every residential customer's electric bill. At the time of view, they were generating $40-50 million a year from the fee, which was used for a variety of transportation needs, and spending more than $10 million annually on sidewalks.

Understand Liability Issues

A reactive approach to maintenance can open cities to legal liability. For example, in Atlanta, GA, sidewalk maintenance is the responsibility of the property owner. When complaints are reported, the City sends a crew to repair the sidewalk and bills the property owner or assesses the cost through the property tax bill. Atlanta paid out over $4 million to two injured pedestrians based on lawsuits in 2011 and 2012. Los Angeles, CA adopted Safe Sidewalks LA in 2016, which is a 30-year $1.6 billion program to improve sidewalk accessibility. This was undertaken following a historic 2015 settlement in the class action case of Willitis v. City of Los Angeles, which was intended to improve access for persons with mobility disabilities. The FHWA guide found that a documented, clear approach to deal with sidewalk maintenance with the resources a City has available, including through enforcement of private responsibilities, can help reduce a City's liability.

Group Replacement Projects by Zone

Breaking down the sidewalk network by zone is an efficient strategy for sidewalk replacement, along with an inventory of conditions. The City of Minneapolis organizes inventory and repair by ten geographic zones, and allocates resources into one zone each year (FHWA Guide). This approach reduces mobilization costs, while still allowing for prioritization of needs within each zone. Rochester, MN varies the frequency of inspection based on localized user needs. Areas around the Mayo Clinic are inspected monthly, downtown is inspected annually, and the remainder of the sidewalk network, which is primarily in residential areas, is completed less frequently (FHWA Guide).

Establish a System of Maintenance Prioritization

While the majority of communities complete sidewalk repairs in response to complaints, the most successful programs also establish a scoring system to prioritize repairs in parallel. This allows the City to proactively consider where sidewalk repairs most align with established goals based on factors like equity and to use limited resources where they will serve key demographics like children and people with disabilities.

As part of Safe Sidewalks LA, the City of Los Angeles established a prioritization matrix that includes needs (areas around hospitals, assisted living facilities, transit corridors, and the high injury network), relative damage, and cost effectiveness. The City of Memphis' 2014 Pedestrian and School Safety Action Plan established a prioritization scoring for sidewalk and intersection projects and repairs based on school access, safety, equity, connectivity, activity centers, transit access, and stakeholder input. A set of pilot projects were selected based on the results, and the City has successfully obtained federal grants to implement many of the pilot projects identified in the plan.

Conclusion

Implementing the recommendations in this plan will take time, patience, and consistent hard work from the City of Wilmington and its many partners to complete.

The Appendix that follows serves as a supplementary resource to assist the City and its partners in these efforts. It includes design guidance, an overview of funding resources, a summary of public engagement to date, and a summary of previous planning documents that supported this plan.

A Living Document

Overall, this plan is meant to serve the City of Wilmington and its partners as a living document, not only to be referenced during implementation, but also periodically updated to reflect the ever-changing opportunities, constraints, and progress on the ground. For up-to-date information on proposed projects, contact:

Abby Lorenzo, Deputy Director, WMPO
(910) 341-7890 | abby.lorenzo@wilmingtonnc.gov

Bryan Lopez, Regional Planning Manager
NCDOT-Integrated Mobility Division
(919) 707-2606 | balopez@ncdot.gov

\ A \

Appendix A

Public Engagement

Overview

Throughout the Walk Wilmington planning process, the project team prioritized soliciting robust public input and feedback to ensure that the final plan aligned closely with the vision that Wilmington residents have for their city.

Steering Committee Meetings

Four steering committee meetings were held throughout the planning process, in March, May, September, and December of 2022. The project steering committee helped determine the plan's overall vision and goals, assisted with public outreach, and provided feedback to the project team during every step of the plan's development. The committee was made up of a diverse group of Wilmington residents, representing the City and the WMPO as well as public safety agencies, nonprofits, New Hanover County Schools, and other neighborhood and business associations.

Steering Committee members:

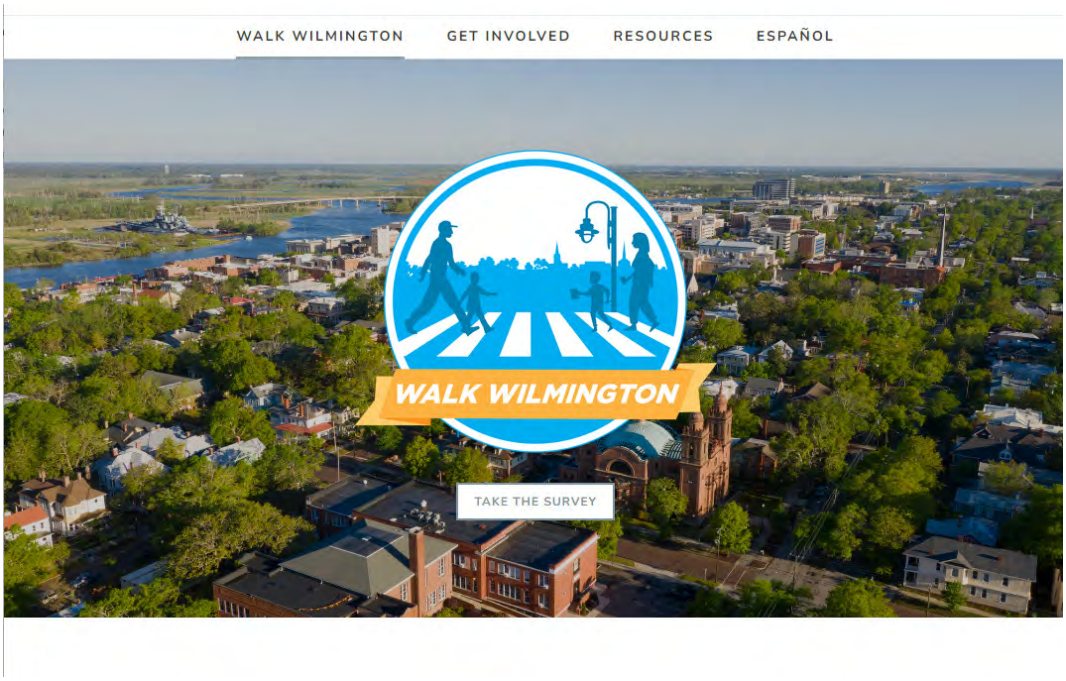
- Karin Mills, WMPO Bicycle and Pedestrian Advisory Committee
- Liz Carbone, Good Shepherd Center
- Gloria Gardner, Disability Resource Center
- Eddie Anderson/Leanne Laurence, New Hanover County Schools
- Holly Childs, Wilmington Downtown Inc.
- Drew Davey, UNCW
- Adrienne Cox, NCDOT Division 3
- Deborah Porterfield, WMPO GoCoast
- Lt. Alanna Williams/Will Richards, WPD
- Wendy Giannini-King, WFD
- Amber Smith, NHC Senior Center
- Elizabeth Forte, Novant Health
- Dave Spertrino, developer
- Sonya Green, Interfaith Community
- Marie Parker, Wave Transit
- Kim Huffman, CVB
- Christina Haley, Wilmington Downtown, Inc.
- TBD, Cape Fear Collective
- Rhonda Bellamy, Phillip Brown, citizens

Representing the City of Wilmington:

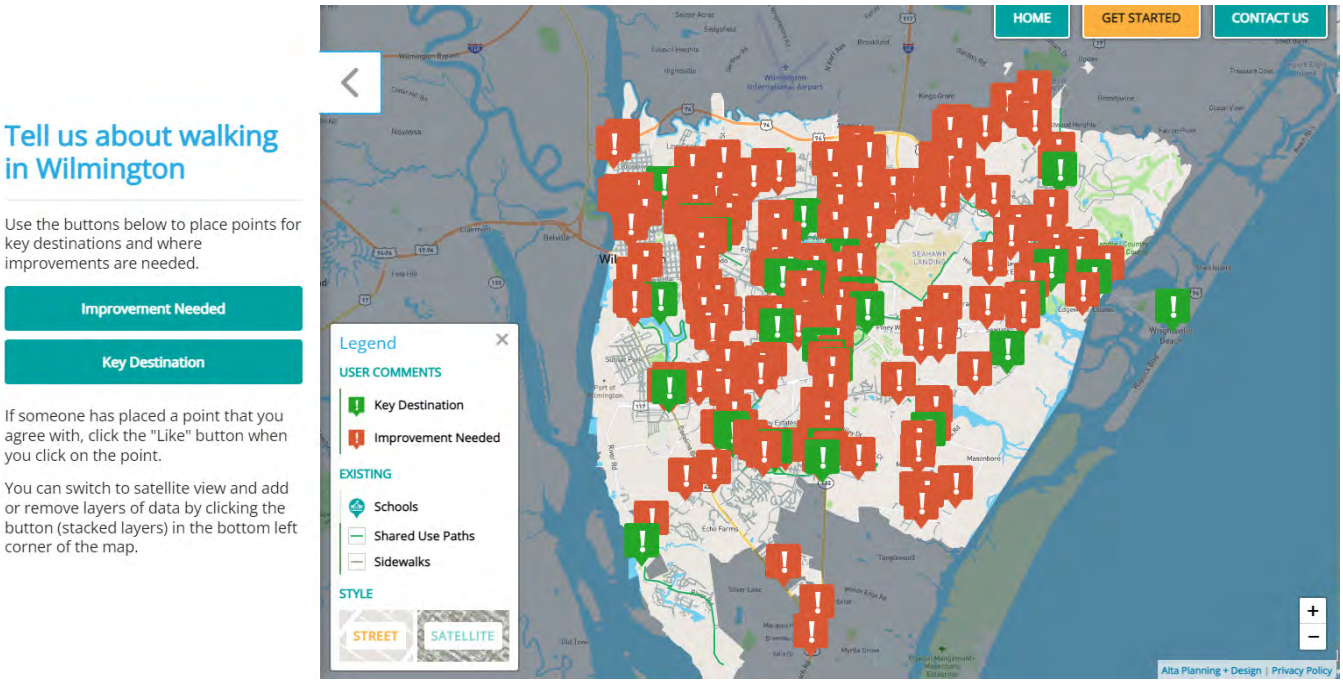
- Doug Lewis, Community Services
- Ron Satterfield, Long-Range Planning
- Denise Freund, Engineering
- Jason Pace, Engineering
- Denys Vielkanowitz, Traffic Engineering
- Joe Conway, Diversity, Equity, and Inclusion

Project Website

The project team created a website, *walkwilmington.com*, where Wilmington residents could access all information related to the plan in one location. The website provided information on the project purpose, the anticipated project timeline, links to related WMPO and City of Wilmington



Homepage of the Walk Wilmington project website.



Screenshot of the online input map, with over 200 points marked by residents.

policies and planning efforts, as well as links to access the online survey form and the online input map. The website also had a page in Spanish with a condensed version of all of the above information, plus a link to the Spanish version of the survey.

Online Input Map

The online input map was accessible via the project website from June through October 2022. Participants were able to mark locations and add comments on a map of Wilmington where walking improvements were needed, or where there were key destinations in the community that should be connected by walking routes. Users were also able to "like" or "dislike" others' comments. Over 200 points were placed on the online map (see left), and comment clusters helped provide valuable input as the planning team created project recommendations.

In-Person Outreach

Representatives from the project team traveled to Wilmington for three days of in-person outreach during summer 2022. The main purpose of the in-person outreach was to increase visibility of the project and to encourage survey completion. Locations for in-person outreach were chosen based on the goal of reaching target populations that are most likely to be pedestrians out of necessity (including transit riders, the elderly, low-income populations, and people of color). At most locations (except where context made it infeasible), the team's approach was to set up

Front and back of the project information cards distributed during in-person outreach. The QR code was linked to the survey.

a table with a large map, paper copies of the survey, and stacks of project information cards (see above). WMPO staff assisted at most of the tabling events, and the WMPO team also held separate tabling events at farmers markets during summer 2022, helping to distribute project information cards and collect survey responses.

Alta-led outreach events:

June 22, 2022

- Padgett Station, 10:00 - 11:45 a.m.
- Good Shepherd Center Grocery Giveaway, 12:00 - 1:00 p.m.
- Robert R. Taylor Senior Homes, 2:00 - 3:00 p.m.

July 20, 2022

- Mt. Zion AME Church, 1:00 - 1:45 p.m.
- NHC Library Main Branch, 2:00 - 4:00 p.m.
- Forden Station, 5:00 - 7:00 p.m.

July 21, 2022

- Padgett Station, 8:00 - 10:00 a.m.
- Good Shepherd Center, 10:00 - 11:00 a.m.
- NHC Senior Resource Center (College Rd), 11:00 - 12:00 p.m.

The team also distributed stacks of project information cards to local businesses such as coffee shops, breweries, restaurants, markets, and thrift stores, and also left cards on the campuses of Cape Fear Community College and UNC Wilmington.

Tabling setup at Padgett Station, above; placard publicizing the survey on the WAVE buses, below.

Filling out surveys at the Senior Resource Center.

WAVE Bus Ads

The ad shown on the previous page was printed and put on every bus in the WAVE transit fleet, where it ran from early August to early September 2022.

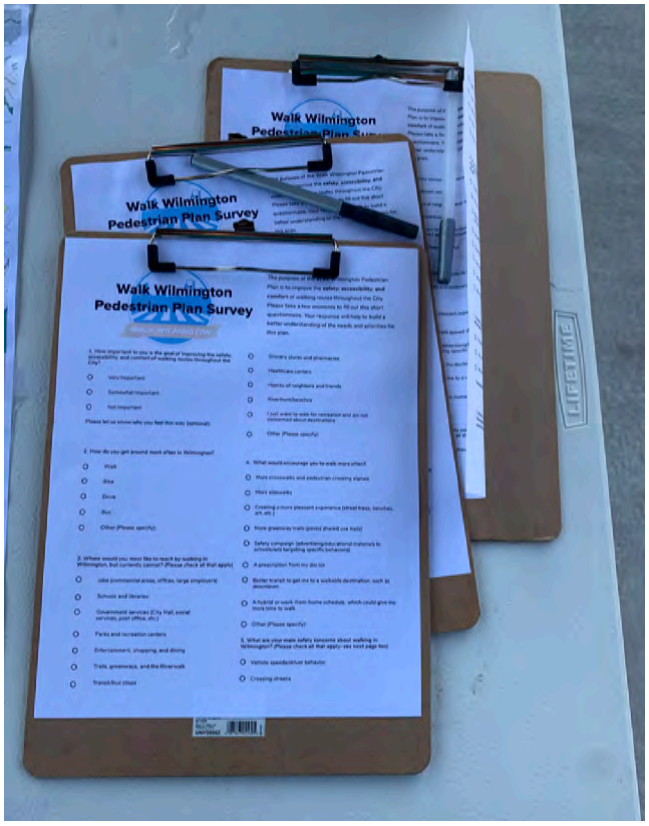
Survey

The Walk Wilmington pedestrian plan survey consisted of nine questions related to current conditions for walking in Wilmington, as well as suggested areas for improvement. There were an additional six demographic questions, which were optional.

The survey was available online on SurveyMonkey from June 15 - September 7, 2022, along with several opportunities for in-person completion of paper survey forms, as described above. The paper surveys were input manually into SurveyMonkey, for a total of 1,038 surveys completed.

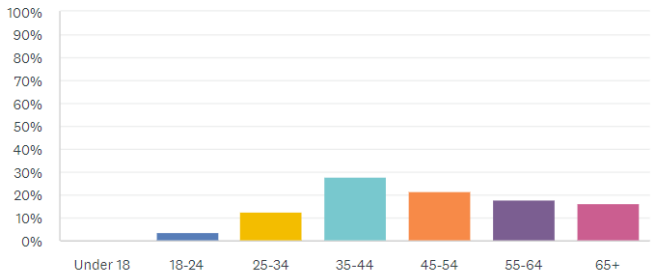
Respondent Demographics

As is common with online surveys, respondents to the Walk Wilmington comment form largely identified as White/ Caucasian (88% of respondents) and had higher incomes (23% of respondents reported household incomes above $150,000) relative to the rest of the city's population. This is the reason that survey answers were filtered by race/ethnicity and income during the prioritization process.



Paper copies of the survey used during in-person outreach.

Additionally, approximately 68% of respondents who provided their gender indicated that they were female, while 32% were male. The age of respondents was clustered around the middle, with the largest group of respondents (nearly 28%) indicating that they were between 35 and 44 years of age (see chart below). Analysis of the more directly pedestrian plan-related questions appears in the following pages.

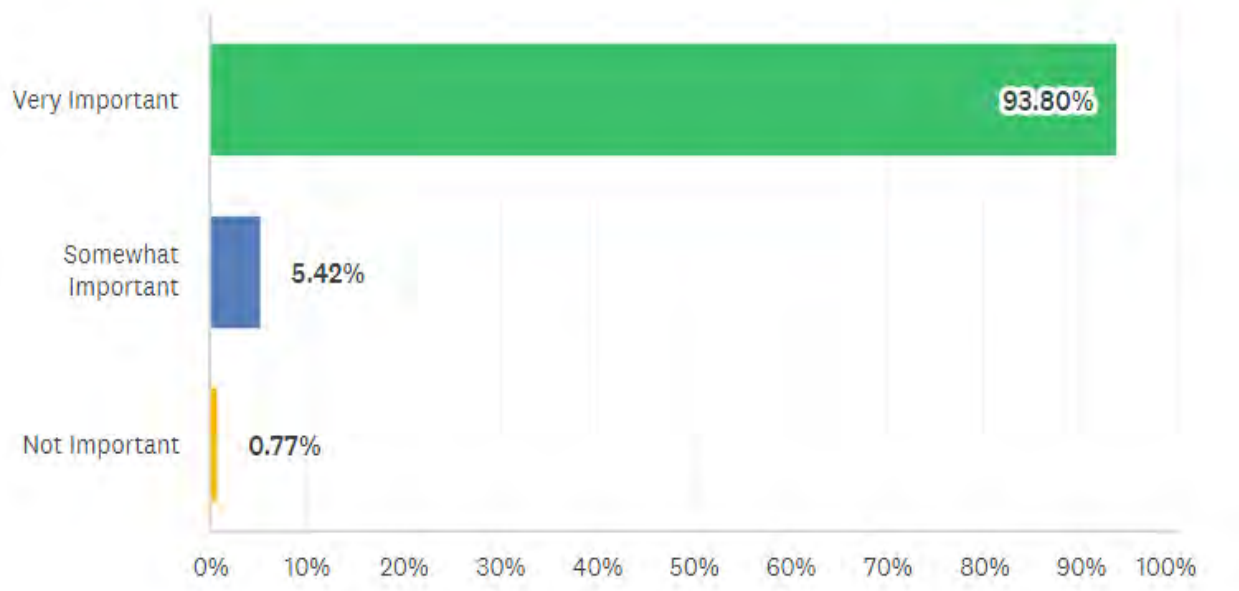


Age distribution of survey respondents.

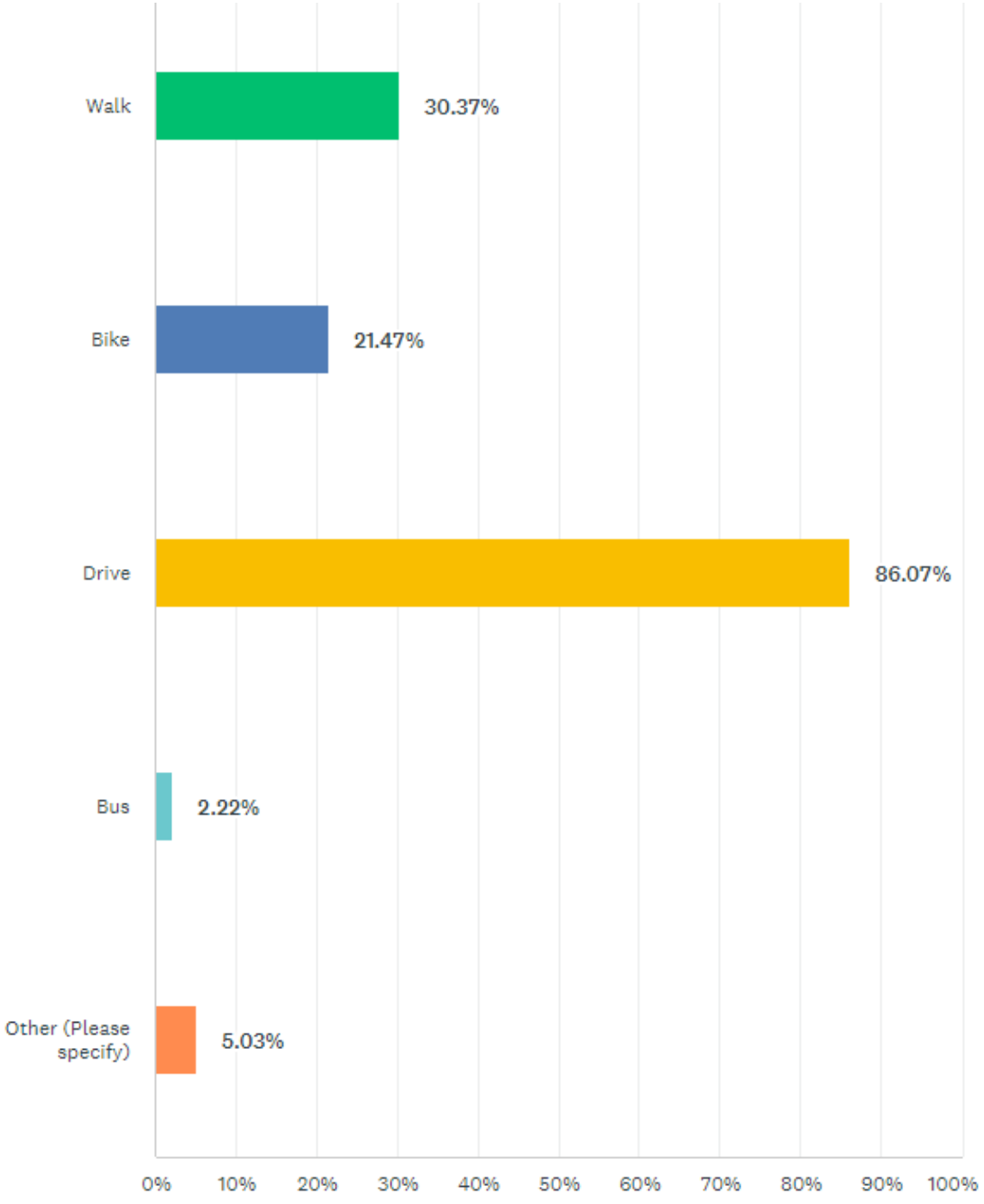
Main Survey Questions

Q1. *"How important to you is the goal of improving the safety, accessibility, and comfort of walking routes throughout the City?"*

1,033 Responses

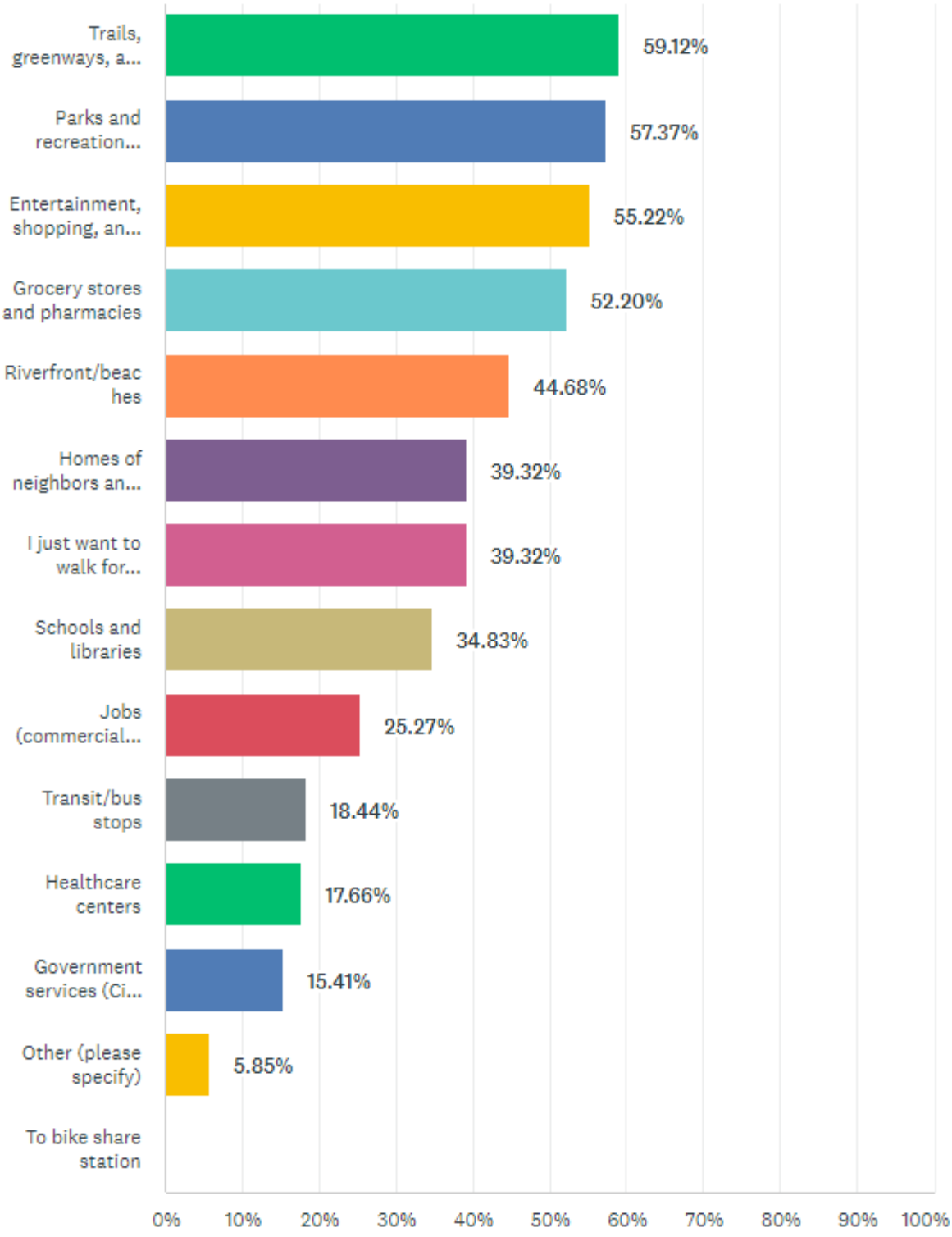


Q2. *"How do you get around most often in Wilmington?"* 1,034 Responses

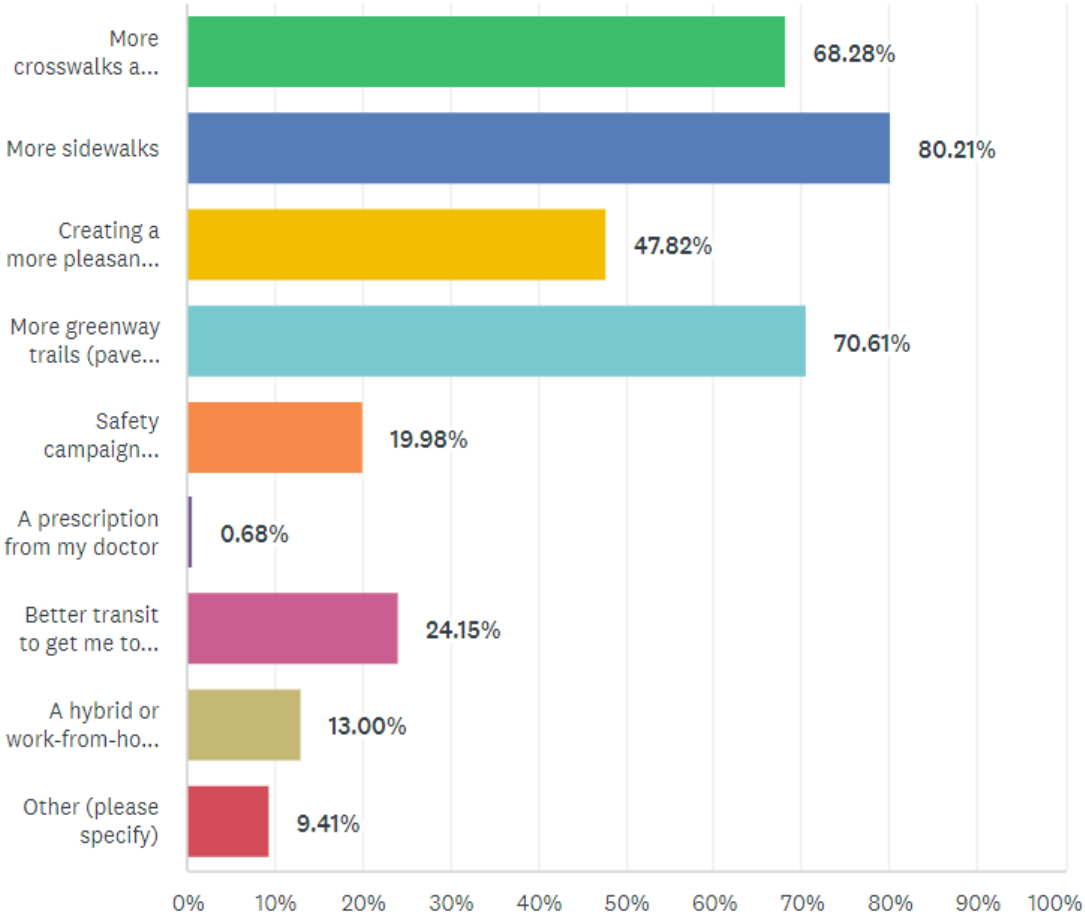


"Other" responses include wheelchair/motorized chair, multiple modes, motorcycle, or asking friends & family to drive them.

Q3. *"Where would you most like to reach by walking in Wilmington, but currently cannot (Please check all that apply)?"* 1,025 Responses



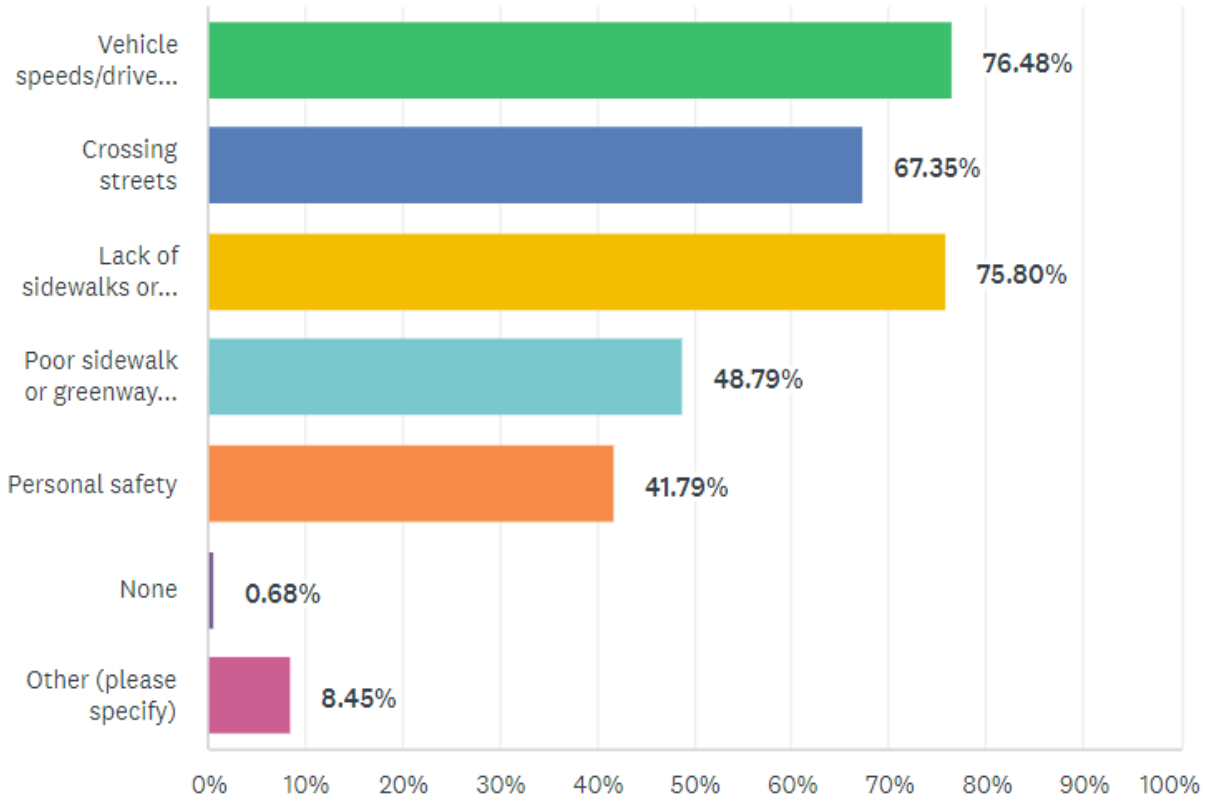
Q4. *"What would encourage you to walk more often (Please check all that apply)?"* 1,031 Responses



ANSWER CHOICES		RESPONSES	
More crosswalks and pedestrian crossing signals		68.28%	704
More sidewalks		80.21%	827
Creating a more pleasant experience (street trees, benches, art, etc.)		47.82%	493
More greenway trails (paved shared use trails)		70.61%	728
Safety campaign (advertising/educational materials to schools/ads targeting specific behaviors)		19.98%	206
A prescription from my doctor		0.68%	7
Better transit to get me to a walkable destination, such as downtown		24.15%	249
A hybrid or work-from-home schedule, which could give me more time to walk		13.00%	134
Other (please specify)	Responses	9.41%	97
Total Respondents: 1,031			

"Other" responses include: better enforcement of traffic laws, better connections to existing greenways, pedestrian bridges/underpasses, share trees and artwork, better signage/ wayfinding and publicity about where walking routes are.

Q5. *"What are your main safety concerns about walking in Wilmington (Please check all that apply)?"* 1,029 Responses

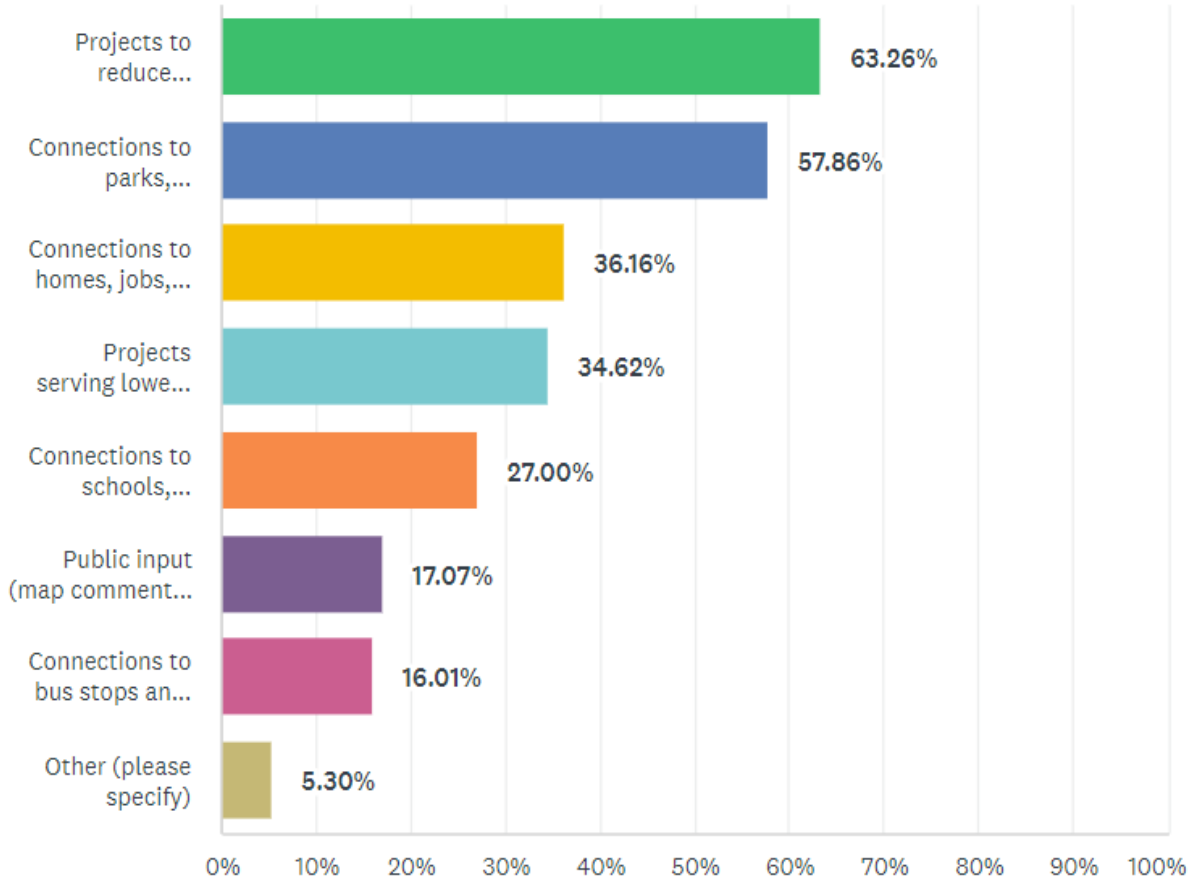


ANSWER CHOICES		RESPONSES	
Vehicle speeds/driver behavior		76.48%	787
Crossing streets		67.35%	693
Lack of sidewalks or greenways		75.80%	780
Poor sidewalk or greenway conditions		48.79%	502
Personal safety		41.79%	430
None		0.68%	7
Other (please specify)	Responses	8.45%	87

"Other" responses include: concerns about lighting at night, personal safety concerns, tree roots pushing up sidewalks, need for more family-oriented spaces downtown to walk to, dangerous drivers, lack of enforcement of speed limits/other traffic laws.

Q6. *"What factors are most important to you in prioritizing improvements for walking in Wilmington (Please select up to three)?"*

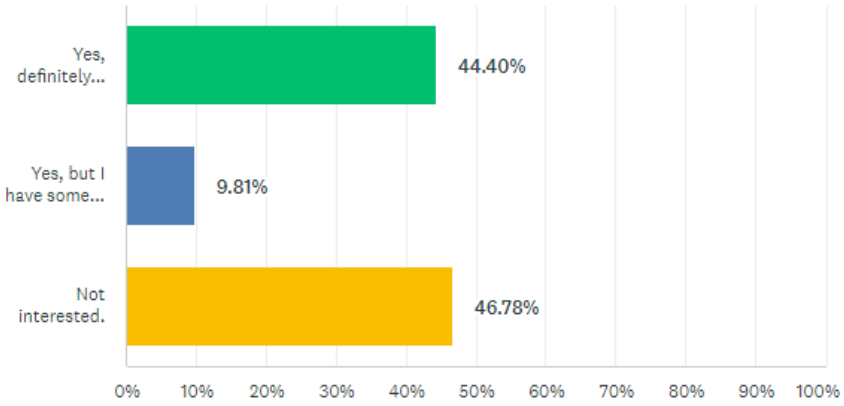
1,037 Responses



ANSWER CHOICES		RESPONSES	
Projects to reduce pedestrian injuries and fatalities		63.26%	656
Connections to parks, greenways, and recreation centers		57.86%	600
Connections to homes, jobs, and entertainment		36.16%	375
Projects serving lower income areas		34.62%	359
Connections to schools, libraries, colleges, and universities		27.00%	280
Public input (map comments, stakeholder interviews, surveys, past plans)		17.07%	177
Connections to bus stops and routes		16.01%	166
Other (please specify)	Responses	5.30%	55
Total Respondents: 1,037			

"Other" responses include: connections to Pender & Brunswick counties, connections to the beaches, connections to UNCW, all of the above.

Q7. *"Would you be interested in using a bike share service in Wilmington?"* 1,009 Responses



ANSWER CHOICES	RESPONSES	
Yes, definitely interested.	44.40%	448
Yes, but I have some concerns (please use comment box below to share).	9.81%	99
Not interested.	46.78%	472
Total Respondents: 1,009		

Concerns include: bikeshare bikes left in roadways/on sidewalks in other cities–people largely prefer bikeshare bikes that are docked at specific stations, cost to the city, safety concerns for tourists/inexperienced cyclists biking sharing the roads with cars, general lack of bike infrastructure, which should be the priority.

Q8. *"Where are improvements most needed for walking in Wilmington? Please include street names, intersections, or names of destinations."* 773 Responses - Contact the WMPO for a copy of the full results.

Common responses include: Middle Sound Loop, Greenville Loop, Shipyard, Market St, Carolina Beach Rd, Wrightsville Ave, Mayfaire, UNCW, River Rd, Eastwood Rd, Oleander, downtown, Monkey Junction, Greenfield Lake, Military Cutoff Rd, Kerr Rd, 17th St, Masonboro Loop, 3rd St.

Q9. *"Are there other comments you would like to share about walking in Wilmington and how to improve it?"* 1,009 Responses - Contact the WMPO for a copy of the full results.

Selected comments:

"Walking and biking access should be required for all new development in the greater Wilmington area. The City and County need to develop a greater degree of cooperation."

"Better signage, or an app or something to easily navigate accessible routes. improve connectivity between existing routes. focus on destinations and improve connectivity between destinations"

"As a person who walks with a cane, it would be nice to walk on smooth well kept sidewalks when I am required to walk on them."

"Sidewalks are just so all over the place and so inconsistently implemented and maintained, and crosswalks so unsafe (left turning drivers are the WORST) I don't feel safe walking the city."

"If the plan is to provide a city that has a walks of life residing and visiting here, then make sure the plan is highly inclusive for all. Not just those who have the $$$ and status."

"Traffic is never going to get better, and we are running out of space to build roads, so if we want to improve traffic in town we need to focus on building a better public walking/biking infrastructure."

"I walk for leisure and for exercise, as a women my biggest priority is safety. But for people who again walk as their means of transportation, then those areas need to be well lit as it gets darker especially when in the Fall it gets darker earlier."

"Yes, this isn't happening in a vacuum. Cyclists need to be considered too. It's my position that all main roads should contain walkable, cycleable, and drivable terrain. Walk or bike up and down Market, College, and Oleander and let me know how that goes. It's going to go bad. That's how it's going to go."

"I wish there were more walking/biking trails connecting parks, and that they didn't need to cross the roads (have more overpasses, underpasses, etc). Needs to be a connection for cross city trail to greenfield lake and Maides park, and pedestrian overpasses on market and college. Would love Kerr to become like a University Boulivard for students to be able to walk, shop, go to restaurants, etc. If there is a volunteer" committee for this, I'd love to be part of it."

Outreach to Community Organizations

The project team enlisted the help of representatives from the City of Wilmington and the Good Shepherd Center to put together a list of local organizations that serve target communities and could help with outreach to these groups. After the list was created, the project team reached out these organizations via an email message that included an introduction to the project purpose, the link to the project website, and a PDF of the flyer in both English and Spanish.

Organizations/agencies contacted:

- Wilmington Arts Council
- Frankie's Market
- Arts Council
- Mother Hubbard's Cupboard
- Wilmington Housing Authority
- Good Shepherd Center Grocery Giveaway
- Disability Resource Center
- Harrelson Center
- Nourish NC
- Cape Fear COG Continuum of Care
- Public Health Dept
- Voyage
- St Jude's MCC
- New Hanover County Schools
- Farmers Market
- Port City United
- UNCW Latino Alliance
- Basilica of St. Mary
- UNCW Catholic Ministry
- Community Relations Advisory Committee
- Wilmington Downtown Inc.
- UNCW
- CFCC
- LGBTQ Center of the Cape Fear Coast
- Northside Food Co-Op
- Cape Fear Food Council
- Wilmington Ministerial Alliance
- New Hanover Public Library
- meals on wheels
- Senior Resource Center
- NHC-NAACP
- Cape Fear Latinos
- Cape Fear Habitat for Humanity
- Vigilant Hope
- The Help Hub at the Harrelson Center
- One Christian Network
- Food Bank of Eastern and Central NC
- First Fruit Ministries
- Poplar Grove Plantation
- The A.C.T.S. Movement
- Foster Pantry
- Wrightsboro United Methodist Church
- Feast Down East
- Brigade Boys and Girls Club
- StepUp Wilmington

- Dreams Center for Arts Education
- Cape Fear Literacy Council
- Cameron Art Museum
- Wilma
- Sea level Vegan Diner
- the lower case leaders
- Mics Wide Open
- Cape Fear Volunteer Center
- YWCA Lower Cape Fear
- WRAAP (Wilmington's Residential Adolescent Achievement Place)
- Communities in Schools Cape Fear
- Smart Start New Hanover County
- NC Cooperative Extension
- Bargain Box of Wilmington

Public Workshops and Draft Plan Comments

The project team provided opportunities for the public to review and comment on the draft plan. Alta and WMPO hosted two in-person public open house events to solicit feedback on the draft plan:

- Jan 31, 2023, Halyburton Park, 5:00 - 7:00 p.m.
- Feb 1, 2023, MLK Center, 5:00 - 7:00 p.m.

Additionally, the draft plan was posted to the project website, along with an online form to submit comments. The public comment period for the draft plan was January 20th through February 20th, 2023. In total, 183 draft plan comments were received online and at the in-person events.

Participants at a public open house event provided feedback on the plan at MLK Center on February 1, 2023.

\ B \

Appendix B

Design Resources

Overview

This toolbox presents guidance for local agency staff, elected officials and community advocates to create a more walkable and bicycle-friendly community for people 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 should not be used as the sole reference for any detailed engineering design.

As a starting point, the following list of resources are from the NCDOT website for "Bicycle & Pedestrian Project Development & Design Guidance," located here (resources listed are linked through this page; Last retrieved in December 2021):

https://connect.ncdot.gov/projects/BikePed/Pages/Guidance.aspx

North Carolina Guidelines

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT)

- WalkBikeNC: Statewide Pedestrian & Bicycle Plan
- Glossary of North Carolina Terminology for Active Transportation
- NCDOT Complete Streets: This policy directs the department to consider and incorporate several modes of transportation when building new projects or making improvements to existing infrastructure. The link below is a landing page with resources such as the Complete Streets policy, the Implementation Guide, Evaluation Methodology, Flowchart, FAQs, and more. https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx
- Evaluating Temporary Accommodations for Pedestrians
- NC Local Programs Handbook
- Traditional Neighborhood Development Guidelines

GREENWAY CONSTRUCTION STANDARDS

- Greenway Standards Summary Memo
- Design Issues Summary
- Greenway Design Guidelines Value Engineering Report
- Summary of Recommendations
- Minimum Pavement Design Recommendations for Greenways
- Steps to Construct a Greenway or Shared-Use Trail

National Guidelines

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

- Guide for the Planning, Design, and Operation of Pedestrian Facilities

RAILS-TO-TRAILS CONSERVANCY

- General Design Guidance: *https://www.railstotrails.org/build-trails/trail-building-toolbox/*
- Rails-with-Trails: *https://www.railstotrails.org/resource-library/resources/americas-rails-with-trails/*

THE FEDERAL HIGHWAY ADMINISTRATION (FHWA)

- Accessibility Guidance
- Design Guidance
- Facility Design
- Facility Operations

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

- Part 4E: Pedestrian Control Features
- Part 7: Traffic Controls for School Areas

NATIONAL ASSOCIATION OF CITY TRANSPORTATION OFFICIALS (NACTO)

- Urban Street Design Guide
- City Limits: Setting Safe Speed Limits on Urban Streets

SAFE ROUTES TO SCHOOL (SRTS) NON-INFRASTRUCTURE

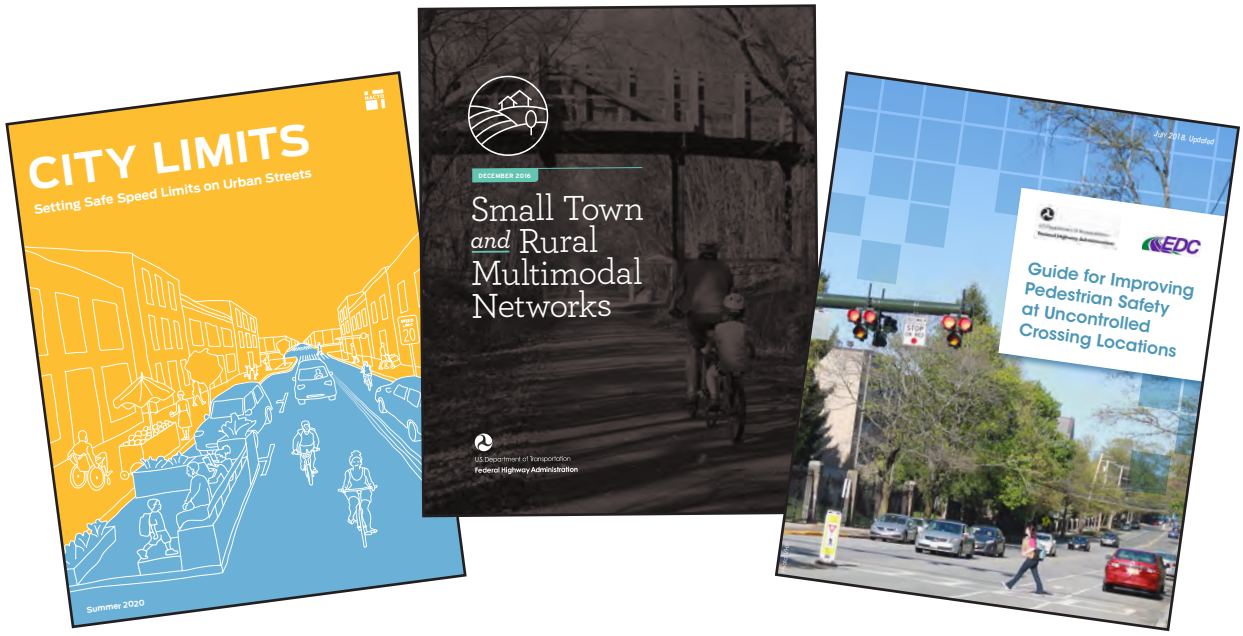
- National Center for Safe Routes to School
- National Partnership for Safe Routes to School

US ACCESS BOARD

- ABA Accessibility Standards
- ADA Accessibility Guidelines
- ADA Accessibility Standards
- Public Rights-of-Way, Streets & Sidewalks, and Shared-Use Paths

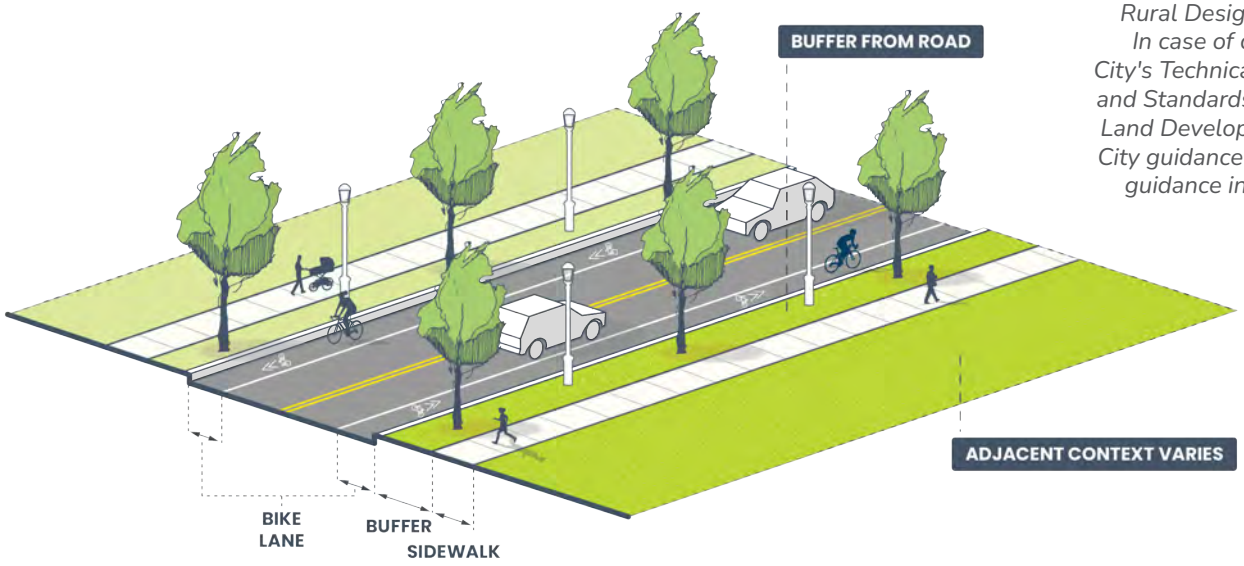
ADDITIONAL FHWA RESOURCES

- Achieving Multimodal Networks (2016): https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/
- Small Town and Rural Multimodal Networks Design Guide (2016): https://ruraldesignguide.com/
- Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (2018): https://safety.fhwa.dot.gov/ped_bike/step/docs/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf



Sidewalks

Design guidelines are based on NACTO Design Guides and the Small Town and Rural Design Guide (2016). In case of conflict with the City's Technical Specifications and Standards Manual and/or Land Development Code, the City guidance supersedes the guidance in this appendix."



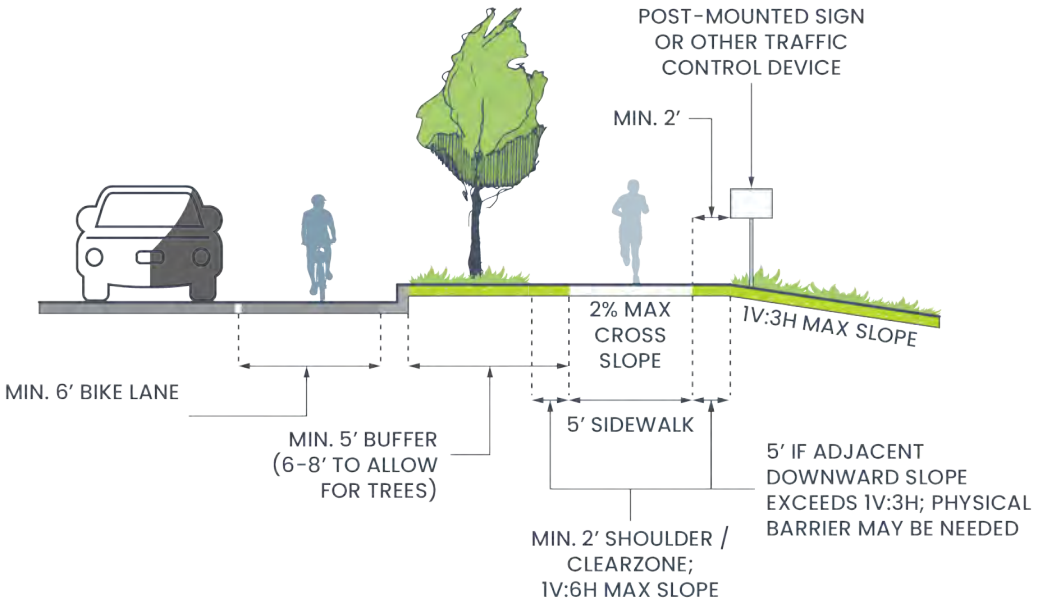
Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved safety, and the creation of social space.

Typical Applications

Sidewalks should be provided 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.

In some suburban areas, no curb and gutter is necessary to establish a sidewalk. Instead, the sidewalk should feature a wide furnishing zone, which may be configured as an open ditch for stormwater catchment and infiltration. Ditches can be retrofitted into bioswales or rain-gardens for filtration and water purification.



Design Guidelines

WIDTH

It is important to provide adequate width along a sidewalk corridor. A pedestrian through zone width of 6’ enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably.

In areas of high demand, sidewalks should contain adequate width to accommodate the high volumes and different walking speeds of pedestrians.

BUFFER

Appropriate placement of street trees in the furnishing zone (minimum width 4’) helps buffer pedestrians from the travel lane and increases facility comfort.

OTHER DESIGN CRITERIA

At a minimum, the Americans with Disabilities Act requires a 3’ clear width in the pedestrian zone plus 5’ passing areas every 200’.

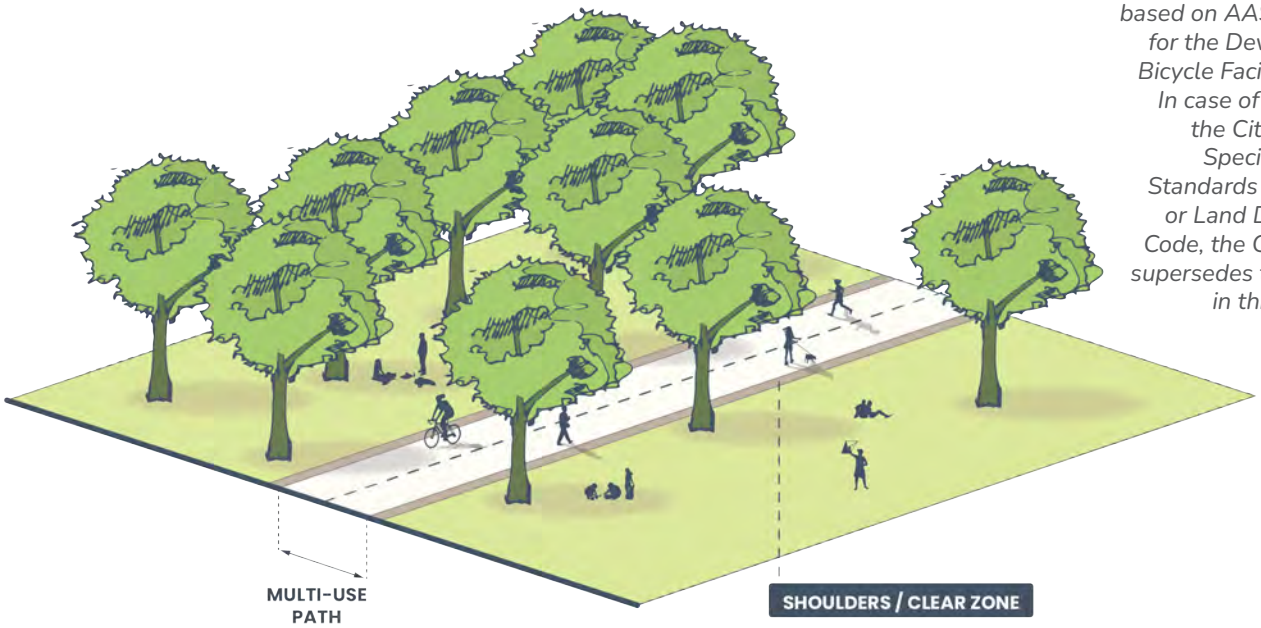
The clear width may be reduced to a minimum of 32 inches for short, constrained segments of up to 24 inches long, provided that constrained segments are separated by regular clear width segments that are a minimum of 48 inches long and 36 inches wide.

Providing a 6’ clear width across the full corridor for all new sidewalks (and 12’ or greater in downtown and pedestrian-priority areas) meets requirements for passing and maneuverability.

Existing deficient-width sidewalks are to be retrofitted to meet citywide standards.

Shared-Use Path (or Greenway)

Design guidelines are based on AASHTO, Guide for the Development of Bicycle Facilities (2012). In case of conflict with the City's Technical Specifications and Standards Manual and/ or Land Development Code, the City guidance supersedes the guidance in this appendix."



A shared-use path (SUP), labeled in the graphic above as a multi-use path, provides a travel area separate from motorized traffic for cyclists, pedestrians, skaters, wheelchair users, joggers, and other users. SUPs are desirable for cyclists of all skill levels preferring separation from traffic. These off-road travelways generally provide routes and connections not provided by existing roadways. Most SUPs are designed for two-way travel of multiple user types. Designs vary depending on factors such as the grade of the land, size and amount of vegetation present, and proximity to waterways, structures, and other elements.

Typical Application

SUPs are typically located in independent rights-of-way, separate from roadways.

Refer to guidance on sidepaths for information on SUPs adjacent to roadways.

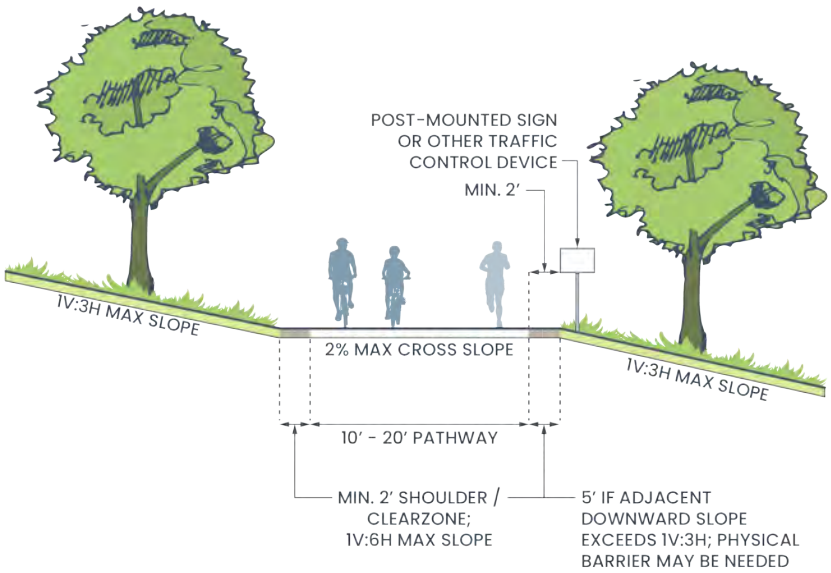
REAL WORLD EXAMPLES

Gary Shell Cross City Trail
Wilmington, NC

Island Greenway
Carolina Beach, NC

South Tar River Greenway
Greenville, NC

Source: Visit Greenville NC



Design Guidelines

WIDTH

A demand analysis, combined with the use of FHWA's SUPLOS Calculator, should be conducted to determine appropriate widths. 10-12' is a typical default SUP width, and 8' width is acceptable only in constrained conditions and for short distances (AASHTO Bike Guide Section 5.2.1).

SHOULDER / CLEAR ZONE

Minimum 2' graded area (maximum 1V:6H slope) should be provided for clearance from landscaping or other vertical elements such as fences, light poles, sign posts, etc.; recommend aggregate or turf grass to prevent weeds from spilling onto trail.

VERTICAL CLEARANCE

8' minimum, 10' typical.

SLOPE

Trail slopes should be designed at 5% (greater slope is permitted, but should be limited, see AASHTO); SUP cross slope should not exceed 2%.

PHYSICAL BARRIER

If the land beyond the shoulder/clear zone has a slope exceeding 3:1, a physical barrier may need to be added.

OTHER DESIGN CRITERIA

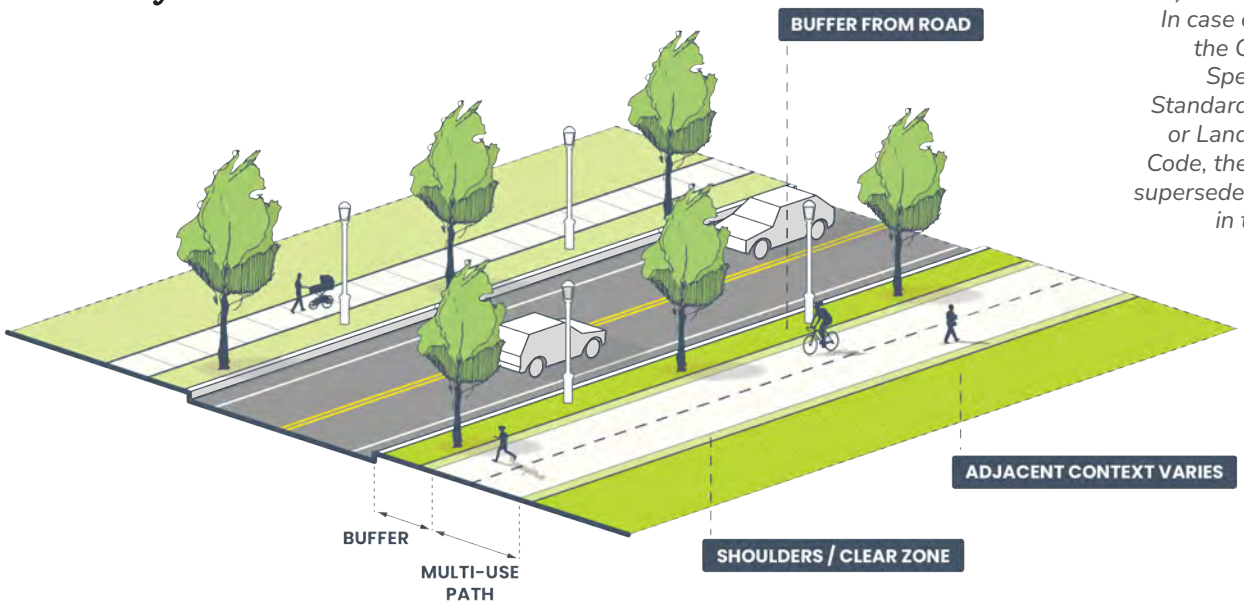
With the great variety of users on open space trails, amenities such as benches, trash and recycling receptacles, bike racks, and appropriate lighting should be included along trails.

Trail design should comply with all AASHTO requirements for SUPs related to design speed, sight distances, stopping distances, and grades.

Shared-Use Path (or Greenway)

Design guidelines are based on AASHTO, Guide for the Development of Bicycle Facilities (2012). In case of conflict with the City's Technical Specifications and Standards Manual and/ or Land Development Code, the City guidance supersedes the guidance in this appendix."

Roadway Corridor



Shared-use paths which are located alongside roadway corridors, also known as sidepaths, serve as both recreational and utilitarian routes. While this placement poses unique SUP challenges, such as driveway crossings and close proximity to moving vehicles, these trails create direct and important routes through the community.

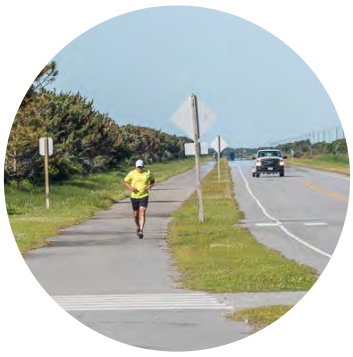
Typical Application

When SUPs run alongside a roadway corridor, standard shared use path characteristics should be maintained in order to reinforce the continuity of the SUP and create a distinction between sidewalks and other nearby facilities. Buffer space of at least 5' between the roadway and SUP can include smaller vegetation, light and utility poles, and other physical barriers. A buffer must be at least 8' wide to accommodate trees.

REAL WORLD EXAMPLES

Gary Shell Cross City Trail
Wilmington, NC

Source: Wilmington and Beaches

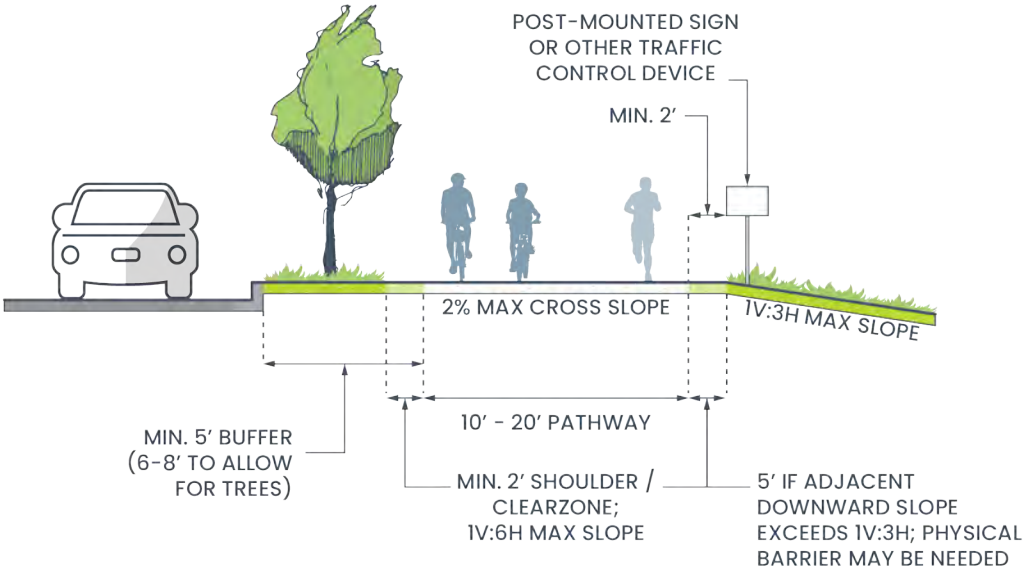


Highway 12 Sidepath
Ocracoke Island, NC

Source: OuterBanks.com

Emerald Path
Emerald Isle, NC

Source: Town of Emerald Isle



Design Guidelines

WIDTH

A demand analysis, combined with the use of FHWA's SUPLOS Calculator, should be conducted to determine appropriate widths. 10-12' is a typical default SUP width, and 8' width is acceptable only in constrained conditions and for short distances (AASHTO Bike Guide Section 5.2.1).

BUFFER

A wide separation should be provided between the trail and adjacent roadway. The buffer is measured from the face of curb (if present) or the edge of the paved roadway, and should not be less than 8'. Paved shoulders do not count towards the overall buffer width. Greater separation is desirable along high-speed roadways. In either case, if proper separation is not achievable, a physical barrier or railing should be provided.

SHOULDER / CLEAR ZONE

Minimum 2' graded area (maximum 1V:6H slope) should be provided for clearance from landscaping or other vertical elements such as streetscape amenities, light poles, sign posts, etc.; recommend aggregate or turf grass to prevent weeds from spilling onto trail.

VERTICAL CLEARANCE

8' minimum, 10' typical.

SLOPE

SUP slopes should be designed at 5% (greater slope is permitted, but should be limited, see AASHTO); SUP cross slope should not exceed 2%.

OTHER DESIGN CRITERIA

Trail design should comply with all AASHTO requirements for shared use paths related to design speed, sight distances, stopping distances, and grades. See AASHTO p. 5-8 for roadway corridor conflict considerations.

SIGNAGE

Wayfinding or other informational signage, if located within buffer between roadway and trail, should be mounted at 7' from trail to bottom of sign and 2' from the side of the SUP (see MUTCD).

Street Trees

Street trees contribute to attractive and comfortable places to walk. Healthy trees can provide ample shade to cool a hot urban environment. For more information on Wilmington's street tree policies and maintenance, refer to the City's **2022 Parks, Recreation & Open Space Comprehensive Plan.**

Typical Application

Urban street trees are typically located within paved sidewalks (in tree wells or planters), in parking lots, or in continuous planting strips parallel to a roadway or walkway.

Design Guidelines

TREE SPACE DESIGN

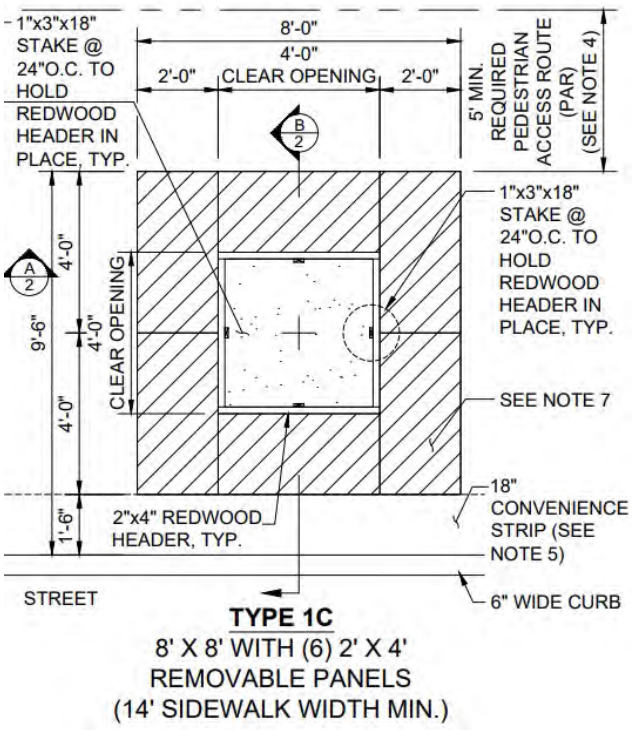
A preferred design detail for a city standard tree well detail is one that goes beyond a typical 4'x4' dimension with the goal of providing as much rootable soil as possible and a larger area of open soil for gas exchange and stormwater infiltration.

Studies have shown that trees grown in large volumes of rootable soil grow faster, develop larger canopies, and outlive those grown in smaller volumes of compacted soil. For example, the approximate recommended soil volume for a 30-foot canopy street tree is 1,000-1,500 cubic feet.

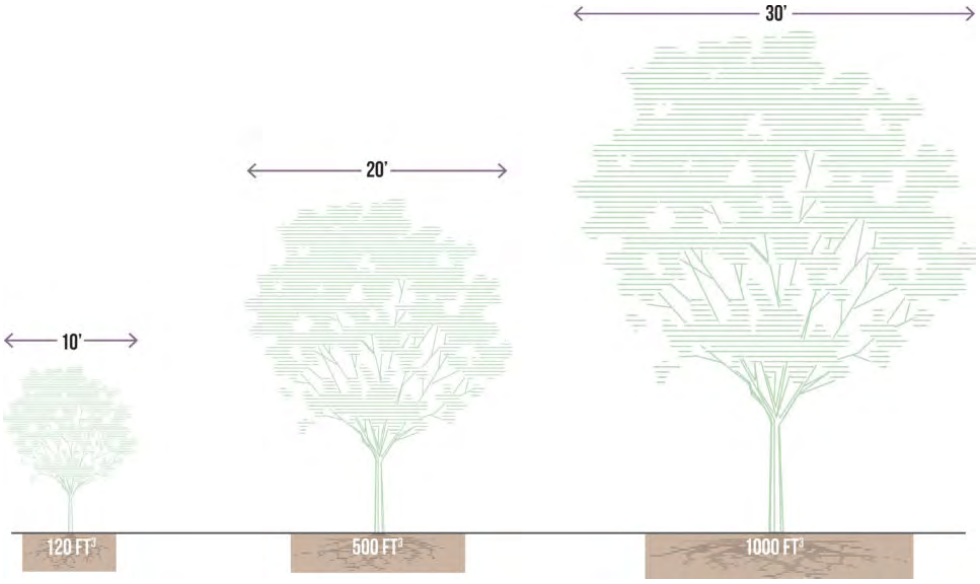
When grates are used, avoid small openings that cause "girdling" or constriction of the tree's natural trunk flare, which is vital to tree health (trunk flare is typically two to three times the expected trunk diameter at maturity). The tree space design should also allow for easy inspection of the soil and irrigation system to promptly diagnose and address any issues affecting tree health.

TREE SPACING

Trees should be spaced to account for maturity; two-thirds of mature canopy width between trees is ideal, with regular pruning once trees are mature.



Example tree well detail for a large tree (Source: Los Angeles Bureau of Engineering)



Larger trees that provide the greatest shade and cooling benefits require greater volumes of uncompacted soil space to allow roots to grow. For example, a tree with a 30-foot wide canopy needs approximately 1,000 cubic feet of root space to thrive. (Source: NACTO)

IRRIGATION

Many street trees are non-irrigated, relying instead on moisture from precipitation and urban runoff to meet their water needs. Prolonged drought and heat stress can be detrimental to trees and may necessitate tree removal.

When new street trees are planted, an 'establishment' period is typically put into place where the trees will receive supplemental water for a period of time, typically 1 to 3 years.

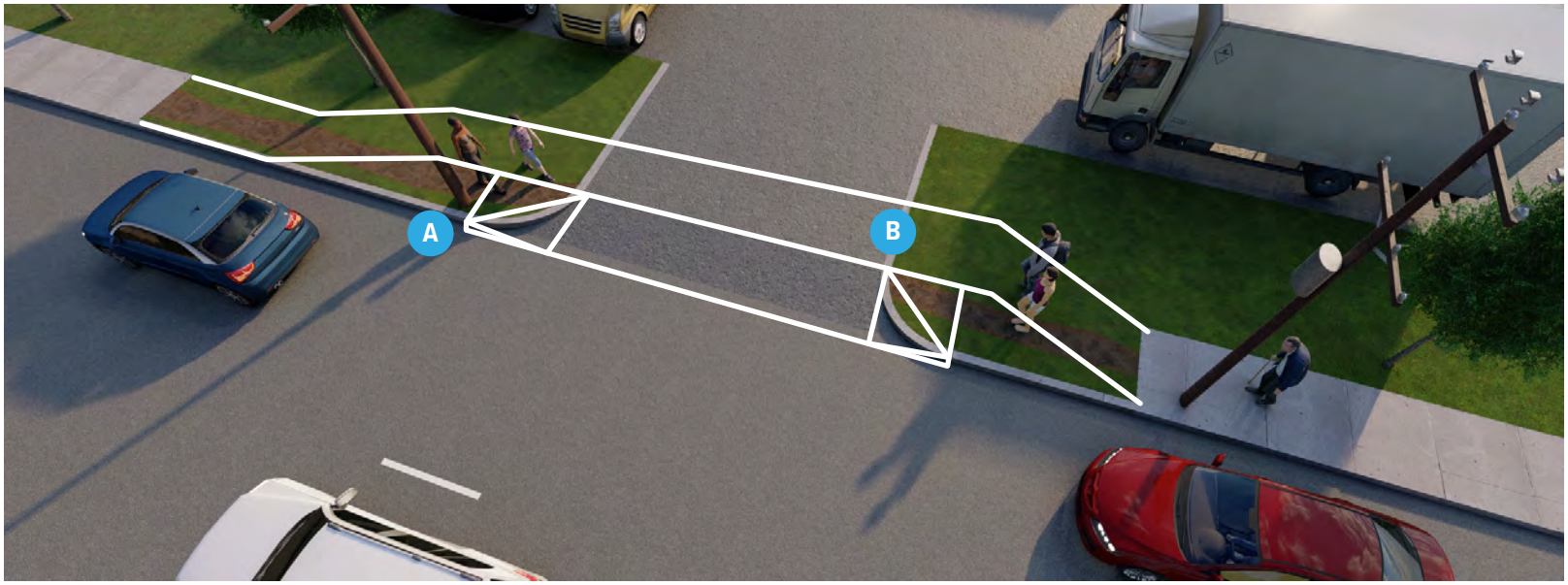
Street trees may be permanently irrigated using a variety of methodologies with the most typical configurations being surface bubblers, root watering systems, and subsurface drip irrigation.

MAINTENANCE

Routine maintenance includes removing leaf litter, replenishing mulch, applying fertilizer, and irrigation. Periodic maintenance includes tree pruning, pest inspection/extermination, and removing dead branches.

OTHER CONSIDERATIONS

Tree species should be selected carefully to match the location's conditions and constraints. Consider whether the desired tree species is appropriate for the spatial context (above and below ground), solar orientation and expected sunlight year-round, and projected future increases in extreme weather conditions (eg, heat, drought).



Sidewalk Infill and Improvements

Due to historic development patterns, sidewalks may be missing or underbuilt for limited segments along an otherwise continuous corridor, or may be provided on only one side of the street where demand exists for access on both sides. Sidewalk infill and improvement strategies should identify and prioritize gaps in order to provide complete, accessible facilities. Providing a sidewalk along a roadway can reduce pedestrian crashes by 88%[1].

Typical Application

- Missing segments in an otherwise complete corridor
- Missing on one side of a corridor
- Where sidewalks are completely absent from the roadway
- The AASHTO Guide for the Development of Pedestrian Facilities states "Wherever there is developed frontage along a road or street, there will be people walking for exercise, visiting neighbors, accessing bus stops, or walking for pure enjoyment. Sidewalk or pathways are needed to safely accommodate these activities." (2004, p.25)

Design Features

- Sidewalk width will vary depending on the available public right-of-way between the curb line and private property line.
- Generally, sidewalk infill projects do not change the configuration of the roadway travel area.
- When filling gaps in a corridor, sidewalk segments should provide adequate width and landscaped buffer. A buffer zone of four to six feet is desirable to separate pedestrians from the street.

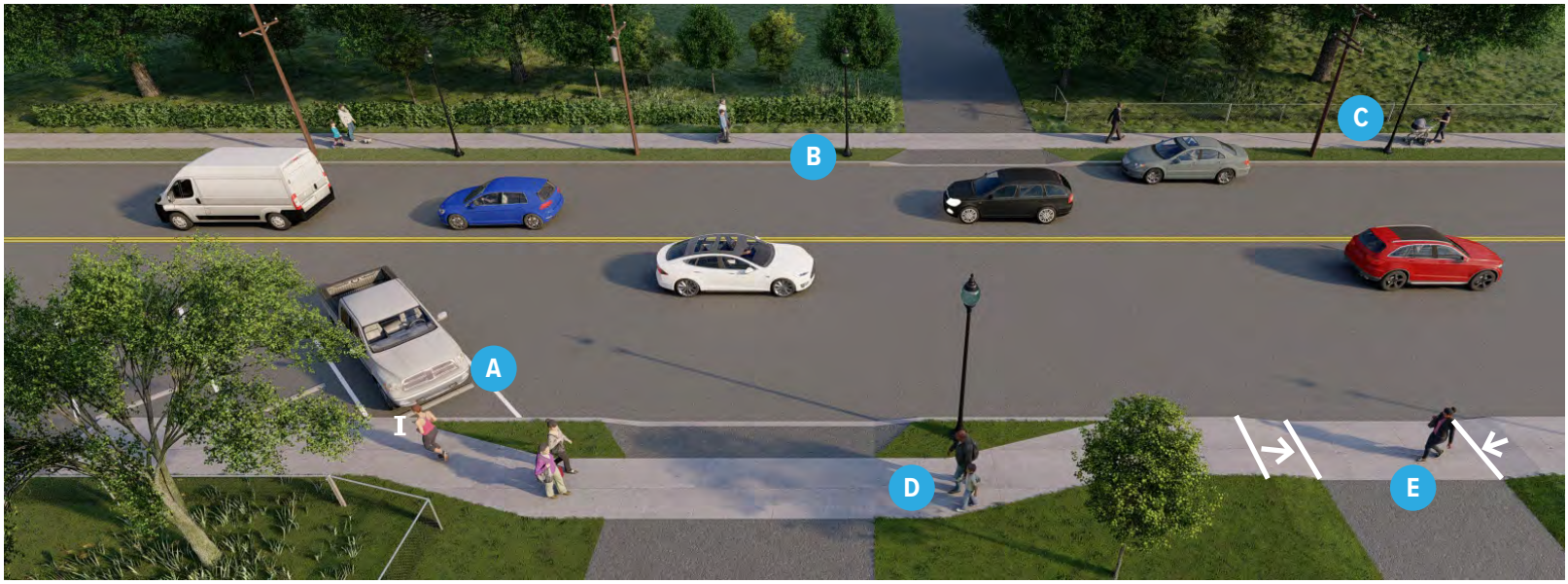
A Infill sidewalks may need to transition at the ends of the segments to connect to existing sidewalk alignment and design.

B New and reconstructed sidewalks must meet accessibility guidelines. This includes the design of curb ramps and driveway curb cuts.

Planning-Level Cost Estimate

- Varies significantly dependent on project specifications

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



Sidewalk Obstructions and Driveways

Obstructions to pedestrian travel in the sidewalk corridor typically include driveway ramps, curb ramps, sign posts, utility and signal cabinets, pull boxes and poles, mailboxes, fire hydrants and street furniture. Driveways and entrances to parking structures can also be challenging due to the restricted visibility of exiting motorists.

Typical Application

- Limiting the number and width of access points reduces the need for special provisions.
- Obstructions such as utility boxes, pull boxes and traffic signal cabinetry should be placed in the furnishing or utility zone between the sidewalk and the roadway, or behind the sidewalk. They should be set back from driveway entrances to increase visibility of pedestrians.

Design Features

A When sidewalks abut angled on-street parking, increase the width of the sidewalk by 3' to account for vehicle overhang.

B Planter strips allow sidewalks to remain level, with the driveway grade change occurring within the planter strip. The furnishing or utility zone also serves as the extended area where driveway grade changes should occur. This ensures a continuous elevation along the pedestrian through zone.

C When sidewalks abut hedges, fences, or buildings, an additional two feet of lateral clearance should be added to provide appropriate shy distance.

D Where constraints preclude a planter strip, or where the planter strip is narrow, wrapping the sidewalk around the driveway allows the sidewalk to still remain level.

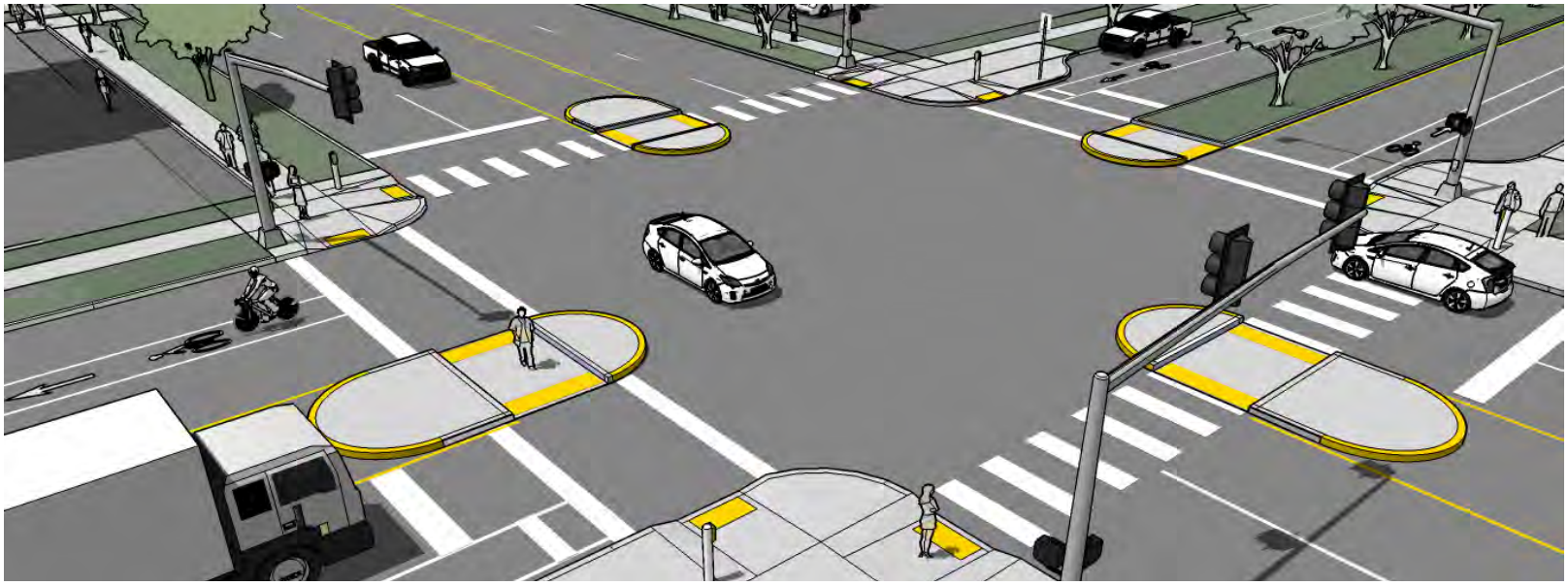
E Driveways are a common sidewalk obstruction, especially for wheelchair and other mobility assisted device users. When constraints only allow curb-tight sidewalks, lowering the entire sidewalk at the driveway approach keeps the cross-slope at a constant grade. However, this may be uncomfortable for pedestrians and could create drainage problems behind the sidewalk. Frequent driveways in this configuration create a "roller coaster" effect forcing pedestrians to constantly be climbing or descending.

Further Considerations

Pedestrians easements may allow for the installation of sidewalks outside of the available right-of-way.

Planning-Level Cost Estimate

- Varies significantly dependent on project specifications



Marked Crosswalks

Marked crosswalks support walkability by signaling to motorists that they must yield to pedestrians and encouraging pedestrians to cross at designated locations. Depending on context, crosswalks may need to be implemented in conjunction with other visibility and safety measures.

Typical Application

All crosswalks should be marked at signalized intersections. At stop- or yield-controlled intersections and mid-block locations, an engineering study should be performed prior to installation, considering: **number of lanes, presence of a median, distance from adjacent signalized intersections, pedestrian volumes and delays, average daily traffic (ADT), posted speed limit or 85th-percentile speed, geometry of the location, possible consolidation of multiple crossing points, availability of street lighting, and other appropriate factors.**[1]

Design Features

- The crosswalk should be located to align as closely as possible with the through pedestrian zone of the sidewalk corridor.
- Users should not have to leave the crosswalk or reorient themselves from the crosswalk when accessing the curb ramp onto the sidewalk.
- Several marking types are acceptable, depending on the context and intersection type. Further guidance is provided in the MUTCD, Section 3B.18: Crosswalk Markings.

Further Considerations

- Pedestrians are sensitive to out-of-direction travel, and reasonable accommodations should be made to make crossings convenient at locations with adequate visibility.
- At roadways that meet certain geometric and ADT criteria, new mid-block marked crosswalks should not be installed without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence.[2]
- Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority. Thermoplastic markings offer increased durability over conventional paint.

Planning-Level Cost Estimate

- Varies significantly dependent on project specifications

[1,2] Manual on Uniform Traffic Control Devices, Part 3: https://mutcd.fhwa.dot.gov/pdfs/2009r1r2r3/part3.pdf

Raised Crosswalks

Typically limited to 2 and 3-lane roadways (30mph max), raised crosswalks slow vehicles and have a studied crash reduction factor of 45%[1].

Raised crosswalks create a special emphasis on crossing pedestrians and should be used on a limited basis. Schools and Neighborhood Greenways are good candidate locations. Some raised crossings can eliminate the need for grade changes over the pedestrian path of travel and improve comfort for users.

Typical Application

- Use detectable warnings at the curb edges to alert vision-impaired pedestrians that they are entering the roadway.
- Approaches to the raised crosswalk may be designed to be similar to speed humps.
- Drainage improvements may be required depending on the grade of the roadway.

Design Features

A. A tactile warning device should be used at the curb edge.

B. No grade change with sidewalk level is preferred.

Further Considerations

Like a speed hump, raised crosswalks have a traffic slowing effect which may be unsuitable on high-speed streets, designated transit or freight routes, and in locations that would reduce access for emergency responders. The noise of vehicles traveling over raised crosswalks may be of concern to nearby residents and businesses.

Planning-Level Cost Estimate

- $300-400 per linear foot of crossing width utilizing concrete construction. Does not include bulb-outs as depicted in graphic.

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

Pedestrian Hybrid Beacon

Hybrid beacons 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 posted speeds are 30-45 mph and multiple travel lanes. In some cases, PHBs are also being implemented along 2-lane roadways.
- Where off-street pedestrian/bicycle facilities intersect major streets without signalized intersections.
- At intersections or midblock crossings where there are high pedestrian volumes.

Design Features

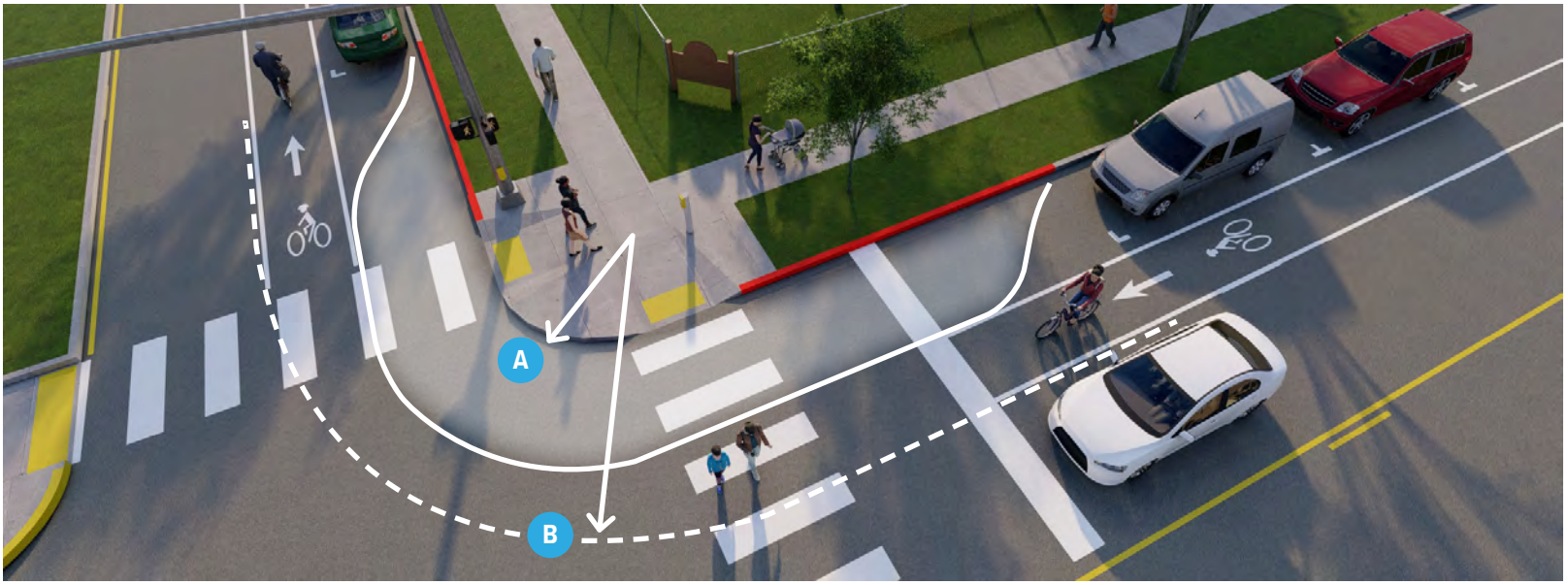
- Hybrid beacons may be installed without meeting traffic signal control warrants based on engineering judgment if roadway speed and volumes are excessive for comfortable pedestrian crossings.
- If installed within a signal system, signal engineers should evaluate the need for the hybrid beacon to be coordinated with other signals. To maximize pedestrian compliance, the PHBs should activate on demand.
- 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 beacons 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.

Planning-Level Cost Estimate

- $75,000-$150,000 depending on complexity and overhead vs side mounted configuration.



Corner Radii and Bulb-Outs

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 calculations.

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 physical curb radius.

Design Features

Corners have two critical dimensions which must be considered together.

- **A** The physical radius controls the pedestrian experience.
- **B** The effective radius is the widest turning arc that a vehicle can take through the corner and is larger than the physical radius. The effective radius should be considered when studying design vehicle accommodation.

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. This is a complex topic and many strategies can be employed to balance the trade-offs between accommodating large vehicles and maximizing pedestrian safety. Truck aprons, mountable corners, and wider turning into multiple receiving lanes can help keep turning speeds low for the vast majority of vehicles.

For more information on corner design, including policy support, recommendations, case studies and more, see *Corner Design for All Users: A review of geometric design practices to improve safety for pedestrians and bicyclists at intersection corners*.

Pedestrians at Signalized Intersections

Typical Application

PEDESTRIAN SIGNAL HEADS

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].

SIGNAL TIMING AND THE PEDESTRIAN PHASE

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 recommends 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. Special pedestrian phases can be used to provide greater visibility or more crossing time for pedestrians at certain intersections (See *Pedestrian Traffic Signal Enhancements)*.

Large pedestrian crossing distances can be broken up with median refuge islands. A pedestrian pushbutton can 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.

A Consider the use of a Leading Pedestrian Interval (LPI) to provide additional traffic-protected crossing time to pedestrians. See *Pedestrian Traffic Signal Enhancements* for additional detail.

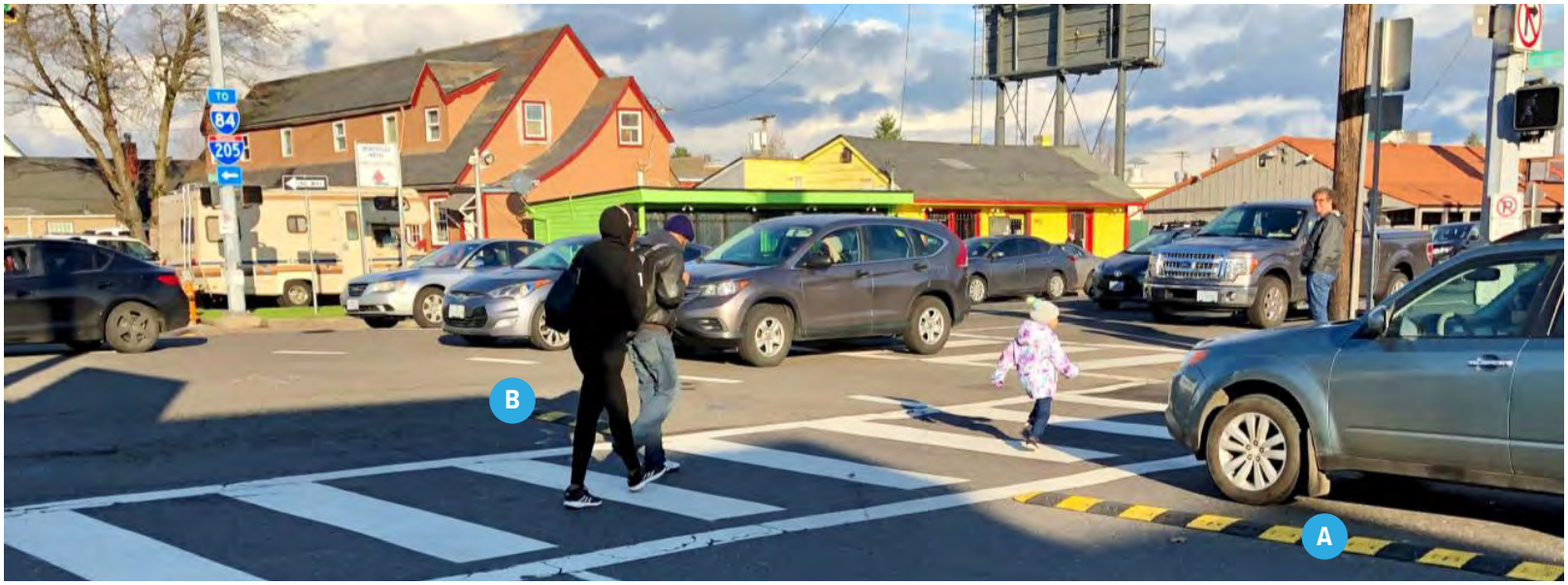
B Accessible Pedestrian Signals (APS) provide crossing assistance to pedestrians with vision impairment at signalized intersections

Further Considerations

Pushbuttons should be located so that someone in a wheelchair can reach the button from a level area of the sidewalk without deviating significantly from the natural line of travel into the crosswalk. Pushbuttons should be marked (for example, with arrows) so that it is clear which signal is affected.

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. This may provide operational benefits as turning movements are then unimpeded.

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



Hardened centerline treatment at intersection. Source: Portland Bureau of Transportation

Hardened Centerlines

Hardened centerlines use prefabricated rubber speed bumps to deter vehicles from crossing the centerline when making left turns. Similar to curb extensions, this treatment can reduce the radius and speed of car turning movements, but maintains existing large vehicle turning movements when needed.

The cities of New York and Portland have pilot tested this treatment to reduce left-turn crashes as part of their Vision Zero programs and reported positive results. In Portland, for example, hardened centerlines with rubber speed bumps nearly eliminated sharp turns in which drivers cross the centerline (reductions ranging from 82-100%), slowed turning speeds an average of 12%, and were more durable and less expensive than a similarly-effective treatment using flexible delineator posts.[1]

Typical Application

Hardened centerlines are used at intersections to guide left-turning vehicles, reduce turning speeds, and deter turning movements that cut across the centerline.

Design Features

- **A** Flexible rubber speed bumps parallel to the centerline reduce the effective turning radius.
- **B** "Nose" extends no more than 6ft into the intersection and reduces the effective turning radius even further.[2]

Further Considerations

- The configuration varies slightly depending on whether the intersecting roadways are one-way or two-way. The treatment can be used for multiple left turn approaches at the same intersection.
- Installation can typically be completed by a municipality's public works/transportation staff.

Planning-Level Cost Estimate

- A hardened centerline kit (consisting of rubber curbs and hardware for installation at one left turn) can cost less than $1,000.

[1] Portland Bureau of Transportation, *Left Turn Calming webpage*; [2] NYC DOT: *Turn Calming Program webpage*

\ C \

Appendix C

Funding Resources

Overview

When considering possible funding sources for pedestrian projects, it is important to remember that not all construction activities or programs will be accomplished with a single funding source. It will be necessary to use several sources of funding that together will support full project completion. Funding sources can be used for a variety of activities, including: programs, planning, design, implementation, and maintenance. This appendix outlines the most likely sources of funding from the federal, state, and local government levels as well as from the private and nonprofit sectors. Note that this reflects the funding available at the time of writing. Funding amounts, cycles, and the programs themselves may change over time.

Federal Funding Sources

Federal funding is typically directed through state agencies to local governments either in the form of formula funds or discretionary grants. Federal funding typically requires a local match of five percent to 50 percent, but there are sometimes exceptions. The following is a list of possible Federal funding sources that could be used to support the construction of pedestrian facilities.

Federal STBGP-DA & TASA-DA Funds

The Surface Transportation Block Grant Program Direct Attributable (STBGP-DA) and Transportation Alternative Set Aside Direct Attributable (TASA-DA) are federal funding sources distributed by the WMPO. Member jurisdictions of the WMPO are eligible to apply for these funds through a competitive funding process that prioritizes locally administered projects in the Region. These projects are funded using the federal funding sources directly attributed to the region with a minimum 20% local match.

For more information: *https://www.wmpo.org/stp-datap-da/*

Transportation Alternatives Program (TAP) Bike/Ped Scoping Guide

In January 2020, NCDOT released the Transportation Alternatives Program (TAP) Bike/Ped Scoping Guide. This document provides detail and guidance on the Project Delivery Process and important elements to consider in bike/ped project development.

For more information: *https://connect.ncdot.gov/projects/BikePed/Documents/BikePed%20Project%20Scoping%20Guidance%20for%20Local%20Governments.pdf*

Carbon Reduction Program (CRP) Funds

The CRP provides funds for projects designed to reduce transportation emissions, such as those that shift travel mode from vehicles to walking. The WMPO administers funds for the Wilmington area. Projects require a minimum 20% local match to the federal funds.

For more information: *https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_fact_sheet.cfm*

The Infrastructure Investment and Jobs Act (IIJA)

The following is a preliminary summary of how IIJA may affect funding sources related to pedestrian infrastructure based on what is known at the time this plan was written (Q3 2022).

FORMULA FUNDS (STATE DOTS ADMINISTER TO LOCALS)

Transportation Alternatives Program (TAP)

TAP will increase from $850 million to $1.44 billion per year. This is the largest dedicated source of funds for walking and biking projects in the US and it just got 70% bigger. The North Carolina Department of Transportation (NCDOT) administers this funding for rural areas of the state that do not have a metropolitan planning organization. The Wilmington Urban Area Metropolitan Planning Organization (WMPO) administers Transportation Alternatives Program funding on a competitive basis to local jurisdictions in its region.

Highway Safety Improvement Program (HSIP)

States where more than 15% of all fatalities involve cyclists or pedestrians (Vulnerable Road Users or VRU), will be required to spend 15% of their HSIP funding on bicycle/pedestrian projects. This includes North Carolina, where about 15% of all fatalities involve VRUs. Projects are evaluated, prioritized, and selected at the NCDOT district level based on three years of crash data (targeted funds) or systemic approved projects as outlined in the HSIP guidance.

Every state and MPO will be required to use at least 2.5% of its apportioned funding to develop planning documents that can include but are not limited to: Complete Streets standards, a Complete Streets prioritization plan, multimodal corridor studies, or active transportation plans (among other uses).

DISCRETIONARY GRANTS (US DOT ADMINISTERS TO LOCALS)

Rebuilding American Infrastructure with Sustainability and Equity (RAISE)

In the first RAISE grant cycle, nearly one in five funded grant applications involved trail development. In addition, the selection committee awarded another 21% of funding to projects focused on making roads safer for vulnerable road users like cyclists and pedestrians. Many trail and greenway projects have a chance to compete well for the RAISE program when they focus on connecting people to local and regional destinations.

Under the IIJA, the RAISE grant program will have $7.5 billion available over the next five years. Competitive applications to this program have the following in common:

1. The project can demonstrate broad community support and is a recognized local or regional priority.
2. The project explicitly considers how it will address climate change and racial equity.
3. The project documents direct and significantly favorable local or regional impact relative to the scoring criteria:

- Safety
- Environmental Sustainability
- Quality of Life
- Economic Competitiveness
- State of Good Repair
- Innovation
- Partnership

4. The project has a high benefit to cost ratio.
5. The project demonstrates readiness by providing a detailed scope of work and budget, a realistic project delivery schedule, an understanding of the environmental risks, permit requirements, and mitigation measures, and is within the public right-of-way.
6. A United States Senator or Congress member actively champions the project.

For more information on RAISE program guidelines and upcoming Notice of Funding Opportunities, see: *www.transportation.gov/RAISEgrants*

NEW: *Safe Streets for All (SS4A)*

SS4A is a new federal grant program that will award up to $5 billion over the next five years to support the US DOT's goal of zero deaths and serious injuries on our nation's roadways. Grants are available for developing safety action plans, implementing projects or programs identified in an action plan, and conducting supplemental planning activities to support or enhance an existing action plan.

MPOs, municipalities, and Tribal governments are eligible to apply. The program requires a 20% non-federal match.

Successful grant applications will demonstrate engagement with public and private stakeholders and seek to adopt innovative technologies and strategies to promote safety, including: low-cost/high-impact systemic safety improvements, equitable investment, and evidenced-based strategies. Applications should also show how proposed projects align with USDOT's mission and priorities such as equity, climate and sustainability, quality job creation, and economic strength and global competitiveness.

For more information: *https://www.transportation.gov/grants/SS4A*

NEW: *Reconnecting Communities Pilot Program*

This new program is the first-ever Federal program dedicated to reconnecting communities that were previously cut off from economic opportunities by transportation infrastructure. Funding supports planning grants and capital construction grants, as well as technical assistance, to restore community connectivity through the removal, retrofit, mitigation, or replacement of eligible transportation infrastructure facilities. The program is funded at ~$200 million per year through 2026.

For more information: *https://www.transportation.gov/grants/reconnecting-communities*

Two other new programs, the *Healthy Streets Program* and the *Active Transportation Infrastructure Investment Program*, are still subject to appropriations and may become available in 2023.

Other Federal Funding Sources

Safe Routes to School (SRTS) Program

SRTS enables and encourages children to walk and bike to school. The program helps make walking and bicycling to school a safe and more appealing method of transportation for children. SRTS facilitates the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. Most of the types of eligible SRTS projects include sidewalks or shared-use paths. However, intersection improvements (i.e. signalization, marking/upgrading crosswalks, etc.) or off-street shared-use paths are also eligible for SRTS funds.

The North Carolina Department of Transportation's Safe Routes to School (SRTS) Program was established in 2005 through SAFETEA-LU as a federally funded program to provide an opportunity for communities to improve conditions for bicycling and walking to school. It is currently supported with Transportation Alternatives federal funding through the Surface Transportation Block Grant program established under the FAST Act. The SRTS Program has set aside $1,500,000 per year of Transportation Alternative Program (TAP) funds for non-infrastructure programs and activities over a three-year period. Funding requests may range from a yearly amount of $50,000 to $100,000 per project. Projects can be one to three years in length. Funding may be requested to support activities for community-wide, regional or statewide programs. Check the link below for information on the current funding cycle.

For more information: *https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx*

Federal Transit Administration Enhanced Mobility of Seniors and Individuals with Disabilities

This program can be used for capital expenses that support transportation to meet the special needs of older adults and persons with disabilities, including providing access to an eligible public transportation facility when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs.

For more information: *https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310*

Federal Lands Transportation Program (FLTP)

The FLTP funds projects that improve transportation infrastructure owned and maintained by the following Federal Lands Management Agencies: National Park Service (NPS), U.S. Fish and Wildlife Service (FWS), USDA Forest Service, Bureau of Land Management (BLM), U.S. Army Corps of Engineers, Bureau of Reclamation, and independent Federal agencies with land and natural resource management responsibilities. FLTP funds are available for program administration, transportation

planning, research, engineering, rehabilitation, construction, and restoration of Federal Lands Transportation Facilities. Transportation projects that are on the public network that provide access to, adjacent to, or through Federal lands are also eligible for funding. Under the IIJA, $2.2 billion has been allocated to the program for FY 2022-2026.

For more information: https://flh.fhwa.dot.gov/programs/fltp/documents/FAST%20FLTP%20fact%20sheet.pdf

Federal Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) has historically been a primary funding source of the U.S. Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. In North Carolina, the program is administered by the Department of Environment and Natural Resources.

Since 1965, the LWCF program has built a park legacy for present and future generations. In North Carolina alone, the LWCF program has provided more than $75 million in matching grants to protect land and support more than 875 state and local park projects. More than 38,500 acres have been acquired with LWCF assistance to establish a park legacy in our state. As of August 2020, the LWCF is now permanently funded by the federal government for $900 million every year. This is hundreds of millions more per year than the fund typically receives.

For more information: https://www.ncparks.gov/more-about-us/grants/lwcf-grants

Rivers, Trails, and Conservation Assistance Program

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program that provides technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program only provides planning assistance; there are no implementation funds available. Projects are prioritized for assistance based on criteria, including conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments. Project applicants may be state and local agencies, tribes, nonprofit organizations, or citizen groups. National parks and other federal agencies may apply in partnership with other local organizations. This program may benefit trail development in North Carolina indirectly through technical assistance, particularly for community organizations, but is not a capital funding source.

For more information: https://www.nps.gov/orgs/rtca/index.htm

Environmental Contamination Cleanup Funding Sources

EPA's Brownfields Program provides direct funding for brownfields assessment, cleanup, revolving loans, and environmental job training. EPA's Brownfields Program

collaborates with other EPA programs, other federal partners, and state agencies to identify and leverage more resources for brownfields activities. The EPA provides assessment grants to recipients to characterize, assess, and conduct community involvement related to brownfields sites. They also provide area-wide planning grants (AWP) which provides communities with funds to research, plan, and develop implementation strategies for areas affected by one or more brownfields.

For more information: *https://www.epa.gov/brownfields/types-brownfields-grant-funding*

National Fish and Wildlife Foundation: Five Star & Urban Waters Restoration Grant Program

The Five Star & Urban Waters Restoration Grant Program seeks to develop community capacity to sustain local natural resources for future generations by providing modest financial assistance to diverse local partnerships for wetland, riparian, forest and coastal habitat restoration, urban wildlife conservation, stormwater management as well as outreach, education and stewardship. Projects should focus on water quality, watersheds and the habitats they support. The program focuses on five priorities: on-the-ground restoration, community partnerships, environmental outreach, education and training, measurable results, and sustainability. Eligible applicants include nonprofit organizations, state government agencies, local governments, municipal governments, tribes, and educational institutions. Projects are required to meet or exceed a 1:1 match to be competitive.

For more information: *http://www.nfwf.org/fivestar/Pages/home.aspx*

State and State-Administered Funding Sources

There are multiple sources for state funding of pedestrian transportation projects. However, state transportation funds cannot be used to match federally funded transportation projects, according to a law passed by the North Carolina Legislature.

NCDOT Strategic Transportation Investments (STI)

Passed in 2013, the Strategic Transportation Investments law (STI) allows NCDOT to use its funding more efficiently and effectively to enhance the state's infrastructure, while supporting economic growth, job creation and a higher quality of life. This process encourages thinking from a statewide and regional perspective while also providing flexibility to address local needs. STI also establishes a way of allocating available revenues based on data-driven scoring and local input. It is used for the State Transportation Improvement Program

(STIP), which identifies the transportation projects that will receive funding during a 10-year period. STIP is a state and federal requirement, which NCDOT updates it every two years.

STI's Quantitative Scoring Process

All independent bicycle and pedestrian projects are ranked based on a quantitative scoring process, with the following main steps:

- Initial Project Review (NCDOT Strategic Prioritization Office (SPOT))
- Review Projects and Data (NCDOT Integrated Mobility Division (IMD))
- Review Data (MPOs, RPOs, Divisions)
- Review Updates and Calculate Measures (NCDOT IMD)
- Score Projects (NCDOT SPOT)

Bicycle and Pedestrian Project Eligibility Requirements

- Minimum total project cost = $100,000.
- Eligible costs include right-of-way, preliminary engineering, and construction.
- Bicycle and pedestrian and public transportation facilities that appear in a state, regional or locally adopted transportation plan will be included as part of the proposed roadway project. NCDOT will fully fund the cost of designing, acquiring right of way, and constructing the identified facilities.

Specific Improvement Types

- Grade-Separated Bicycle Facility (Bicycle)
- Off-Road/Separated Linear Bicycle Facility (Bicycle)
- On-Road; Designated Bicycle Facility (Bicycle)
- On-Road Bicycle Facility (Bicycle)
- Multi-Site Bicycle Facility (Bicycle)
- Grade-Separated Pedestrian Facility (Pedestrian)
- Protected Linear Pedestrian Facility (Pedestrian)
- Multi-Site Pedestrian Facility (Pedestrian)
- Improved Pedestrian Facility (Pedestrian)

Bundling Projects

- Allowed across geographies and across varying project types.
- Bundling will be limited by project management requirements rather than geographic limitations.
- Any bundled project must be expected to be under one project manager/ administrative unit (must be a TAP-eligible entity).
- Makes projects more attractive for LIPs and easier to manage/let.

More Information on Prioritization 6.0

NCDOT's Prioritization Data page has training slides that explain the prioritization process: *https://connect.ncdot.gov/projects/planning/Prioritization%20Data/Forms/AllItems.aspx*

See the "Prioritization Training" folder and the following session information within:

- Session 3: Detailed information on overall scoring components, including local input points.
- Session 4: Features relevant project funding information.
- Session 7: Detailed slides explaining the bicycle and pedestrian project scoring.

High Impact/Low Cost Funds

Established by NCDOT in 2017 to provide funds to complete low-cost projects with high impacts to the transportation system including intersection improvement projects, minor widening projects, and operational improvement projects. Funds are allocated equally to each Division.

Project Selection Criteria

Each Division is responsible for selecting their own scoring criteria for determining projects funded in this program. At a minimum, Divisions must consider all of the following in developing scoring formulas:

- The average daily traffic volume of a roadway and whether the proposed project will generate additional traffic.
- Any restrictions on a roadway.
- Any safety issues with a roadway.
- The condition of the lanes, shoulders, and pavement on a roadway.
- The site distance and radius of any intersection on a roadway.
- $1.5M max per project unless otherwise approved by the Secretary of Transportation.
- Projects are expected to be under contract within 12 months of funding approval by BOT.

NCDOT Technical Review & Approval

- Division Engineer completes project scoring and determines eligibility.
- Division Engineer determines projects to be funded and requests approval of funding from the Chief Engineer. Division Engineer shall supply all necessary project information including funding request forms, project designs and cost estimates.
- The Project Review Committee will make a recommendation for further investigation or to include on the Board Agenda for action by the Secretary, NCDOT.

Incidental Projects

Bicycle and Pedestrian accommodations such as; bike lanes, wide paved shoulders, sidewalks, intersection improvements, bicycle and pedestrian safe bridge design, etc. are frequently included as "incidental" features of larger highway/roadway projects.

In addition, bicycle safe drainage grates and handicapped accessible sidewalk ramps are now a standard feature of all NCDOT highway construction. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds.

"Incidental Projects" are often constructed as part of a larger transportation project, when they are justified by local plans that show these improvements as part of a larger, multi-modal transportation system. Having a local bicycle or pedestrian plan is important, because it allows NCDOT to identify where bike and pedestrian improvements are needed, and can be included as part of highway or street improvement projects. It also helps local government identify what their priorities are and how they might be able to pay for these projects. Under the updated NCDOT Complete Streets Policy, NCDOT pays the full cost for incidental projects if the project is proposed in a locally adopted plan (see link to updated NCDOT Complete Streets Policy below).

For more information: *https://connect.ncdot.gov/projects/BikePed/Documents/Complete%20Streets%20Implementation%20Guide.pdf*

NCDOT Complete Streets Policy

There are opportunities to incorporate pedestrian improvements into STIP Projects due to the Complete Streets Policy. See Chapter 4 of this plan for more details about the policy.

NC Highway Safety Improvement Program

The purpose of the North Carolina Highway Safety Improvement Program (HSIP) is to provide a continuous and systematic process that identifies reviews and addresses specific traffic safety concerns throughout the state. The program is structured in several distinct phases:

- A system of safety warrants is developed to identify locations that are possibly deficient.
- Locations that meet warrant criteria are categorized as potentially hazardous (PH) locations.
- Detailed crash analyses are performed on the PH locations with the more severe and correctable crash patterns.
- The Regional Traffic Engineering staff performs engineering field investigations.
- The Regional Traffic Engineering staff utilizes Benefit: Cost studies and other tools to develop safety recommendations.

Depending on the cost and nature of the countermeasures, the investigations may result in requesting Division maintenance forces to make adjustments or repairs, developing Spot Safety projects, developing Hazard Elimination projects, making adjustments to current TIP project plans or utilizing other funding sources to initiate countermeasures. Selected projects are evaluated to determine the effectiveness of countermeasures.

The ultimate goal of the HSIP is to reduce the number of traffic crashes, injuries and fatalities by reducing the potential for and the severity of these incidents on public roadways.

For more information: *https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-program-and-Projects.aspx*

Highway Hazard Elimination Program

The Hazard Elimination Program is used to develop larger improvement projects to address safety and potential safety issues. The program is funded with 90 percent federal funds and 10 percent state funds. The cost of Hazard Elimination Program projects typically ranges between $400,000 and $1 million. A Safety Oversight Committee (SOC) reviews and recommends Hazard Elimination projects to the Board of Transportation (BOT) for approval and funding. These projects are prioritized for funding according to a safety benefit to cost (B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the department's State Transportation Improvement Program (STIP).

Governor's Highway Safety Program

The Governor's Highway Safety Program (GHSP) funds safety improvement projects on state highways throughout North Carolina. All funding is performance-based. Substantial progress in reducing crashes, injuries, and fatalities is required as a condition of continued funding. Permitted safety projects include checking station equipment, traffic safety equipment, and BikeSafe NC equipment. However, funding is not allowed for speed display signs. This funding source is considered to be "seed money" to get programs started. The grantee is expected to provide a portion of the project costs and is expected to continue the program after GHSP funding ends. Applications must include county level crash data. Local governments are eligible to apply.

For more information: *https://www.ncdot.gov/initiatives-policies/safety/ghsp/Pages/default.aspx*

The North Carolina Division of Parks and Recreation - Recreational Trails Program Grant

Funding from the federal Recreational Trails Program (RTP), which is used for renovating or constructing trails and greenways, is allocated to states. The North Carolina Division of Parks and Recreation and the State Trails Program manages these funds with a goal of helping citizens, organizations and agencies plan, develop and manage all types of trails ranging from greenways and trails for hiking, biking, and horseback riding to river trails and off-highway vehicle trails. Grants are available to governmental agencies and nonprofit organizations. The maximum grant amount is $250,000 and requires a 25% match of RTP funds received. Permissible uses include:

- New trail or greenway construction
- Trail or greenway renovation
- Approved trail or greenway facilities
- Trail head/ trail markers
- Purchase of tools to construct and/or renovate trails/greenways
- Land acquisition for trail purposes
- Planning, legal, environmental, and permitting costs - up to 10% of grant amount
- Combination of the above

For more information: *http://www.ncparks.gov/more-about-us/grants/trail-grants/recreational-trails-program*

NC Parks and Recreation Trust Fund (PARTF)

The Parks and Recreation Trust Fund (PARTF) provides dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the general public. Counties, incorporated municipalities, and public authorities, as defined by G.S. 159-7, are eligible applicants. A local government can request a maximum of $500,000 with each application. An applicant must match the grant dollar-for-dollar, 50 percent of the total cost of the project, and may contribute more than 50 percent. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match. Property acquired with PARTF funds must be dedicated for public recreational use.

For more information: *https://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/parks-and-recreation-trust-fund*

Clean Water Management Trust Fund

The Clean Water Management Trust Fund (CWMTF) is available to any state agency, local government, or non-profit organization whose primary purpose is the conservation, preservation, and restoration of North Carolina's environmental and natural resources. Grant assistance is provided to conservation projects that:

- enhance or restore degraded waters;
- protect unpolluted waters, and/or
- contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits;
- provide buffers around military bases to protect the military mission;
- acquire land that represents the ecological diversity of North Carolina; and
- acquire land that contributes to the development of a balanced State program of historic properties.

For more information: *http://www.cwmtf.net/#appmain.htm*

Urban and Community Forestry Grant

The North Carolina Division of Forest Resources Urban and Community Forestry grant can provide funding for a variety of projects that will help plan and establish street trees as well as trees for urban open space. The goal is to improve public understanding of the benefits of preserving existing tree cover in communities and assist local governments with projects which will lead to more effective and efficient management of urban and community forests.

For more information: *https://www.ncforestservice.gov/Urban/urban_grant_program.htm*

Local Funding Sources

Local governments often plan for the funding of pedestrian infrastructure or improvements through development of Capital Improvement Projects (CIP) or occasionally, through their annual Operating Budgets. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows decision-makers to balance all capital needs. Typical capital funding mechanisms include the capital reserve fund, taxes, fees, and bonds. However, many will require specific local action as a means of establishing a program if it is not already in place.

Private and Nonprofit Funding Sources

Many communities have solicited funding assistance from private foundations and other conservation-minded benefactors. Below are examples of private funding opportunities.

Rails-To-Trails Conservancy

Under the Doppelt Family Trail Development Fund, RTC will award approximately $85,000 per year, distributed among several qualifying projects, through a competitive process. Eligible applicants include nonprofit organizations and state, regional, and local government agencies. Two types of grants are available - community support grants and project transformation grants. Around three to four community support grants are awarded each year, ranging from $5,000-$10,000 each. Community Support Grants support nonprofit organizations or "Friends of the Trail" groups that need funding to get trail development or trail improvement efforts off the ground. Each year, 1-2 Project Transformation Grants are awarded that range from $15,000-$50,000. The intention of these grants is to enable an organization to complete a significant trail development or improvement project. For both types of grants, applications for projects on rail-trails and rails-with-trails are given preference, but rail-trail designation is not a requirement. The trail must serve multiple user types, such as bicycling, walking, and hiking, and must be considered a trail, greenway, or shared-use path.

For more information: *http://www.railstotrails.org/our-work/doppelt-family-trail-development-fund/*

National Fish and Wildlife Foundation (NFWF)

The National Fish and Wildlife Foundation (NFWF) is a private, nonprofit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants, and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation provides grants through more than 70 diverse conservation grant programs. One of the most relevant programs for pedestrian projects is Acres for America. Funding priorities include conservation of bird, fish, plants and wildlife habitats, providing access for people to enjoy outdoors, and connecting existing protected lands. Federal, state, and local government agencies, educational institutions, Native American tribes, and non-profit organizations may apply twice annually for matching grants. Due to the competitive nature of grant funding for Acres for America, all awarded grants require a minimum 1:1 match.

For more information: http://www.nfwf.org/whatwedo/grants/Pages/home.aspx

The Trust for Public Land

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the TPL is the only national non-profit working exclusively to protect land for human enjoyment and well-being. TPL helps acquire land and transfer it to public agencies, land trusts, or other groups that intend to conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities.

For more information: http://www.tpl.org

Land for Tomorrow Campaign

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals, and community groups committed to securing support from the public and General Assembly for protecting land, water, and historic places. Land for Tomorrow works to enable North Carolina to reach a goal of ensuring that working farms and forests, sanctuaries for wildlife, land bordering streams, parks, and greenways, land that helps strengthen communities and promotes job growth, and historic downtowns and neighborhoods will be there to enhance the quality of life for generations to come.

For more information: http://www.land4tomorrow.org/

The Conservation Alliance

The Conservation Alliance is a nonprofit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. Grants are typically about $35,000 each. Funding criteria states that:

- The project should seek to secure lasting and quantifiable protection of a specific wild land or waterway. We prioritize landscape-scale projects that have a clear benefit for habitat.
- The campaign should engage grassroots citizen action in support of the conservation effort. We do not fund general education, restoration, stewardship, or scientific research projects.
- All projects must have a clear recreational benefit.

For more information: http://www.conservationalliance.com/grants//?yearly=2020

Blue Cross Blue Shield (BCBS) of North Carolina Foundation

BCBS does not have a traditional grant cycle and announces grant opportunities on a periodic basis. Grants can range from small-dollar equipment grants to large, multi-year partnerships.

For more information: *http://www.bcbsncfoundation.org/grants-programs/grantmaking-overview/*

Duke Energy Foundation

Funded by Duke Energy shareholders, this foundation makes charitable grants to nonprofit organizations and government agencies. Grant applicants must serve communities that are also served by Duke Energy. The grant program has several investment priorities that could potentially fund pedestrian projects. The Duke Energy Foundation is committed to making strategic investments to build powerful communities where nature and wildlife thrive, students can excel and a talented workforce drives economic prosperity for all.

For more information: *https://www.duke-energy.com/community/duke-energy-foundation*

Z. Smith Reynolds Foundation

This Winston-Salem-based Foundation is committed to improving the quality of life for all North Carolinians. The Z. Smith Reynolds Foundation is a statewide, private, family foundation that has been a catalyst for positive change in North Carolina for more than 80 years. A variety of grant programs are available.

For more information: *http://www.zsr.org/grants-programs*

Bank of America Charitable Foundation

The Bank of America Charitable Foundation supports a wide range of activities, including a focus on community greening efforts that create healthy neighborhoods and environmental sustainability through the preservation, creation or restoration of open space, parks and community gardens.

For more information: *https://about.bankofamerica.com/en-us/global-impact/charitable-foundation-funding.html*

Local Trail Sponsors

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

Corporate Donations

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Local governments typically create funds to facilitate and simplify a transaction from a corporation's donation to the given locality.

Donations are mainly received when a widely supported capital improvement program is implemented.

Private Individual Donations

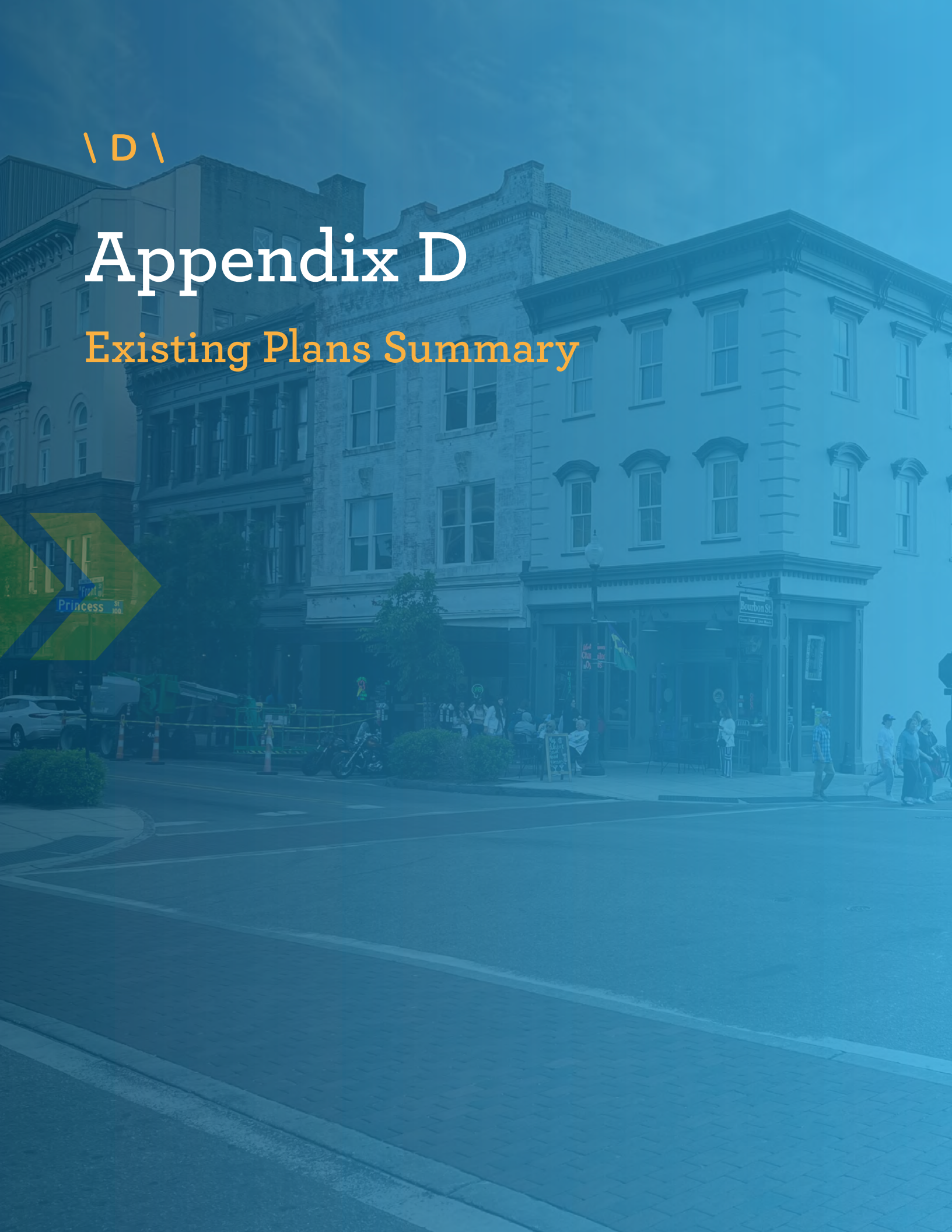
Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Local governments typically create funds to facilitate and simplify a transaction from an individual's donation to the given locality. Donations are mainly received when a widely supported capital improvement program is implemented.

Fundraising/Campaign Drives

Organizations and individuals can participate in a fundraiser or a campaign drive. It is essential to market the purpose of a fundraiser to rally support and financial backing. Often times fundraising satisfies the need for public awareness, public education, and financial support.

Volunteer Work

It is expected that many citizens will be excited about the development of pedestrian projects. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fundraising, maintenance, and programming needs.



\ D \

Appendix D

Existing Plans Summary

Overview

This memo provides a summary of local and regional planning documents that directly or indirectly address active transportation and public right of way planning and design in the City of Wilmington. The purpose of this memo is to provide a summary of relevant goals and recommendations that may influence the Wilmington Pedestrian Plan.

Planning Documents Reviewed

- Cape Fear Moving Forward (2020)
- Cape Fear Change in Motion (2020)
- Congestion Management Process (CMP) (2020)
- Comprehensive Transportation Plan (2016)
- Wilmington-New Hanover County Comprehensive Greenway Plan (2013)
- Walk Wilmington: A Comprehensive Pedestrian Plan (2009)
- Create Wilmington Comprehensive Plan (2016)
- Cross-City Trail Master Plan (2012)
- River to Sea Bikeway Master Plan (2013)
- Wilmington Vision 2020: A Waterfront Downtown (2004)
- Wrightsville Sound Small Area Plan (2011)
- Southside Small Area Plan (2009)
- Seagate Neighborhood Plan (2007)
- Northside Community Plan (2003)
- US 17 Business (Market St) Corridor Study (2016)
- Cape Fear Historic Byway Corridor Management Plan (2008)
- Dawson & Wooster Corridor Plan (2007)
- Wilmington Rail Trail Master Plan (2020)
- Wrightsville Avenue 2030 (2010)
- Carolina Beach Road Corridor Plan (2004)
- College Road Corridor Plan (2004)
- Oleander Drive Corridor Plan (2004)
- Rail Realignment Plan (2017)
- LDC Update (2021)
- Market Street Corridor Plan (2011)

Previous Policy and Planning Efforts

Cape Fear Moving Forward (2020)

STUDY AREA

- Cape Fear

PLAN GOALS

- Efficient: Transportation network allows for time savings, interconnected across all modes of transport.
- Multimodal: Alternative modes of transportation available for most trip types
- Safe: Promotes transportation projects that increase the safety of all users by decreasing injury and increasing user awareness.
- Environmentally and Socially Responsible: Accessible, sustainable, and equitable transportation solutions actively communicated to increase public awareness and collaboration

KEY RECOMMENDATIONS AND STRATEGIES

Resiliency Recommendations

- Identify sustainable and resilient transportation project criteria that can be used as part of the prioritization/programming process

Transportation Systems Management and Operations

- Streetscape Improvements

Transportation Demand Management Strategies

- Bicycle and Pedestrian Infrastructure
- Transit Amenities

Cape Fear Moving Forward (2020) Appendices G, L, & M

STUDY AREA

- Cape Fear

PLAN GOALS

Appendix G: Bicycle and Pedestrian Element

- Bicycle Facilities
  - » Safety, Education, and Enforcement
  - » Multimodal Connectivity
  - » Built Environment, Land Use, and Connectivity
  - » Health
  - » Economic Development
- Pedestrian Facilities
  - » Safety, Education, and Enforcement
  - » Transportation Choice
  - » Built Environment, Land Use, and Connectivity
  - » Health
  - » Economic Development

Appendix L: Transportation Systems Management and Operations Element

- Improve the safety, security, and reliability of the system by enhancing existing infrastructure to increase roadway capacity, reducing congestion, and integrating transportation and land use planning

Appendix M: Transportation Demand Management Element

- Promote more efficient travel modes in order to move more people with the same amount of roadway infrastructure.
- Spread travel demand over a longer portion of the day to better utilize available space and capacity.

KEY RECOMMENDATIONS AND STRATEGIES

Bicycle and Pedestrian Element

- Develop and maintain a safety campaign for drivers, cyclists, and pedestrians.
- Focus on improving bicycle and pedestrian safety at intersections using best practices and emerging tools.
- Give high priority to safety improvements in the vicinity of schools, public transit, commercial corridors, and other high-use bicycle and pedestrian destinations.
- Work toward addressing and improving challenging intersections and physical barriers, and consider pedestrian and bicycle movement in the planning stages for new or reconstructed facilities.
- Proactively seek new opportunities for acquisition of abandoned rights-of-way, natural waterways, utility rights-of-way, and other lands for the development of new facilities that integrate with the planned system.
- Encourage events that introduce residents to walking and bicycling, such as Walk/Bike to Work, Walk/ Bike to School, the River to Sea Bike Ride, and charity or fundraising events.
- Accommodate all types, ages, and abilities of users in a comfortable manner throughout the system, while recognizing that all modes of travel and/or level of user ability may not necessarily be accommodated on every road or path.
- Support the development and adoption of local bicycle and pedestrian plans that identify projects to create an integrated and multimodal transportation system for the region.
- Express interest in an increased availability of regional, state, and federal funding sources for bicycle and pedestrian transportation projects.
- Utilize the WMPO TDM Committee (Go Coast Committee), when appropriate, to develop projects, programs, initiatives, and events that support active transportation choices.
- Continue to support the recommendations of the WMPO BPAC.
- Seek all possible funding sources to implement programs and projects. Work with federal, state, regional, and local agencies as well as any other available public or private funding sources to secure funding for the bicycle and pedestrian system.
- Support the incentivization of public/private partnership development of bicycle and pedestrian facilities.

Transportation Systems Management and Operations Element

- Access Management
- Additional Turn Lanes

- Bus Pullouts
- Emergency Vehicle Preemption and Transit Signal Priority
- Improved Signage and Lighting
- Intersection Modifications and Geometric Design Improvements
- Motorist Assistance Program
- Pavement Markings
- Social Media and Smart Apps
- Streetscape Improvements
- Traffic Signal Timing Optimization
- Vehicle Detectors Repair/Replacement
- Traveler Information Systems and Dynamic Message Signs

Transportation Demand Management Element

- Short-Range Strategies (0-5 Years)
  - Alternative Work Schedules
  - Bicycle and Pedestrian Infrastructure
  - Bike Share
  - Carpool and Van Pool
  - Consulting for Telecommuting Opportunities
  - Development Review
  - Continued Employment of Full-Time TDM Staff
  - Personalized Commuter Plans
- Medium-Range Strategies (5-15 Years)
  - Bicycle and Pedestrian Infrastructure
  - Bus Rapid Transit (BRT)
  - Car Share
  - Employer Shuttles
  - Park and Ride Lots
  - Transit Amenities

- Long-Range Strategies (15-20 Years)
  - » Bicycle and Pedestrian Infrastructure
  - » Fixed Rail Transit
  - » High-Occupancy Vehicle (HOV) Lanes
  - » High-Occupancy Toll (HOT) Lanes
  - » Water Taxi Service

Cape Fear Change in Motion (2020)

STUDY AREA

- Cape Fear

PLAN GOALS

Vision and Desired Outcomes

- Reduce time spent in traffic
- Improved health and safety
- Equitable mobility solutions
- Improved quality of life through a walkable and bikeable community
- Decrease the need for major spending on capital projects

KEY STRATEGIES

Strategy 5: Fostering a Bicycle and Pedestrian Friendly Culture

- Create a culture that recognizes bicycling and walking as legitimate forms of transportation and prioritizes the safety of cyclists and pedestrians.

Strategy 6: Improved TDM-Focused Collaboration

- Utilize more opportunities for the TDM Coordinator to further the influence of the Go Coast program.

Strategy 7: Personalized Commuter Plans

- Assist individuals in discovering options they have to commute outside of a single occupancy vehicle.

Congestion Management Process (CMP) (2020)

STUDY AREA

- Cape Fear

PLAN GOALS

Safe

- Reduce bicycle and pedestrian crashes along congested corridors.

Efficient

- Prioritize accommodations of all modes over motorized vehicular travel time along corridors that have potential for heavy multimodal usage.
- Prioritize accommodations of all modes over reduction in delay at congested intersections where those intersections have potential for heavy multimodal usage.

Multi-Modal

- Prioritize multimodal congestion management strategies first.

KEY STRATEGIES

Reduce Demand

- The purpose of this strategy is to reduce congestion through lessening the demand for motorized vehicular capacity on the congested corridors.

Shift Mode of Trip

- The purpose of this strategy is to reduce congestion by shifting usage of the congested corridor from single-occupant vehicles to more capacity-efficient modes.

Comprehensive Transportation Plan (2016)

STUDY AREA

- Cape Fear

PLAN CONTENTS

- Contains the map for existing, needs improvement, and recommended on-road, off-road, and multi-use paths

Wilmington-New Hanover County Comprehensive Greenway Plan (2013)

STUDY AREA

- New Hanover County

PLAN GOALS

- Develop new trails that complement and expand upon existing trails.
- Create safe connections for bicycling and walking between existing and planned parks, schools, commercial and employment centers, and neighborhoods.
- Improve health and wellness of residents by offering more opportunities for physical activity through recreation and active transportation.
- Improve transportation options by offering safe and connected bicycle and pedestrian facilities; increase overall mode-share for walking and bicycling.

KEY PRINCIPLES AND ACTION STEPS

Guiding Principles

- THE WALKING AND BICYCLING ENVIRONMENT SHOULD BE SAFE.
  - » All bicycling and walking routes should be physically safe and perceived as safe by all users. Safe means minimal conflicts with external factors, such as noise, vehicular traffic and protruding architectural elements. Safe also means routes are clear and well-marked with appropriate pavement markings and directional signage.
- THE PEDESTRIAN AND BICYCLE NETWORK SHOULD BE ACCESSIBLE.
  - » Sidewalks, shared-use paths, bike routes and crosswalks should permit the mobility of residents of all ages and abilities. The pedestrian and bicycle network should employ principles of universal design. Bicyclists have a range of skill levels, and facilities should be designed with a goal of providing for inexperienced/recreational bicyclists (especially children and seniors) to the greatest extent possible.
- PEDESTRIAN AND BICYCLE NETWORK IMPROVEMENTS SHOULD BE ECONOMICAL.
  - » Pedestrian and bicycle improvements should achieve the maximum benefit for their cost, including initial cost and maintenance cost, as well as a reduced reliance on more expensive modes of transportation. Where possible, improvements in the right-of-way should stimulate, reinforce and connect with adjacent private improvements.

- THE PEDESTRIAN AND BICYCLE NETWORK SHOULD CONNECT TO PLACES PEOPLE WANT TO GO.
  - The pedestrian and bicycle network should provide continuous direct routes and convenient connections between destinations such as homes, schools, shopping areas, public services, recreational opportunities and transit. A complete network of on-street bicycling facilities should connect seamlessly to existing and proposed multi-use trails to complete recreational and commuting routes.
- THE WALKING AND BICYCLING ENVIRONMENT SHOULD BE CLEAR AND EASY TO USE.
  - Shared-use paths and crossings should allow all people to easily find a direct route to a destination with minimal delays, regardless of whether these persons have mobility, sensory, or cognitive disability impairments. All roads are legal for the use of pedestrians and bicyclists (except freeways, from which each is prohibited unless a separate facility on that right of way is provided). This means that most streets are bicycle facilities and should be designed, marked and maintained accordingly.
- THE WALKING AND BICYCLING ENVIRONMENT SHOULD BE ATTRACTIVE AND ENHANCE COMMUNITY LIVABILITY.
  - The walking and bicycling facilities should be compatible with the nature, history and character of the environment. Context and scale should be given thoughtful consideration. Good design should integrate with and support the development of complementary uses and should encourage preservation and construction of art, landscaping and other items that add value to communities. These components might include open spaces such as plazas, courtyards and squares, and amenities like street furniture, banners, art, plantings and special paving. These along with historical elements and cultural references, should promote a sense of place. Public activities should be encouraged and the municipal code should permit commercial activities such as dining, vending and advertising when they do not interfere with safety and accessibility.
- DESIGN GUIDELINES ARE FLEXIBLE AND SHOULD BE APPLIED USING PROFESSIONAL JUDGMENT.
  - This document references specific national guidelines for bicycle and pedestrian facility design, as well as a number of design treatments not specifically covered under current guidelines. Statutory and regulatory guidance may change. For this reason, the guidance and recommendations in this document function to complement other resources considered during a design process, and in all cases sound engineering judgment should be used.

- BLUEWAYS AND BLUEWAY ACCESS POINTS (FOR CANOEING AND KAYAKING) SHOULD FEATURE WAYFINDING, SAFETY AND ENVIRONMENTAL EDUCATIONAL INFORMATION.
  - » This document contains recommendations for new non-motorized water access points, including best practices for designing such sites. Further, this plan recommends wayfinding for blueway routes, and safety information for how to use blueways and monitor changing tides. Access sites should be constructed in a manner that minimizes environmental impact, and local programs should continue to focus on water quality and river clean-up outings.

Program Action Steps

- Appoint a Regional Bicycle, Pedestrian, and Trails Coordinator.
- Form a Greenways Advisory Committee
- Support establishment of a Friends of Blueways and Greenways Group
- Continue and expand the 'See Share Be Aware' campaign or other safety campaign
- Safe Routes to School Regional Plan (Connecting Schools Initiative)
- Develop Walking Maps and plan Weekend Walkabouts
- Schedule Open Street Events
- Establish a bicycle and pedestrian wayfinding system for trails and other points of interest throughout the region

Infrastructure Action Steps

- Establish Identify and secure specific funding sources for priority trail corridors
- Establish an Adopt-a-Greenway Program and an Adopt-a-Blueway Program
- Use consistent trail design standards and guidelines
- Begin priority trail and blueway projects
- Develop a long term funding strategy
- Maintain greenway and blueway facilities

Walk Wilmington: A Comprehensive Pedestrian Plan (2009)

STUDY AREA

- Wilmington

PLAN GOALS

Goal 1: Safety

- Residents and visitors of all physical abilities will be able to travel safely on foot along and across the city's roadways, trails, and sidewalks.

Goal 2: Transportation Choice

- Pedestrians, regardless of location, mobility level, age or socioeconomic status, will be able to choose a convenient and comfortable mode of travel to reach their desired destination. Pedestrians will be a strong presence on the streets of Wilmington.

Goal 3: Built Environment, Land Use, and Connectivity

- Land uses in Wilmington will provide pedestrians with walkable destinations and the built environment will enhance the pedestrian experience and encourage walking. Adjacent land uses will be connected by pedestrian facilities such as sidewalks and crosswalks so that pedestrians can safely and conveniently make trips on foot.

Goal 4: Education, Awareness and Enforcement

- People will have access to educational opportunities to learn about the benefits of walking as well as access to walking resources. Wilmington will raise awareness and enforcement of safe walking and driving practices and pedestrian and motorist rights and responsibilities.

Goal 5: Health

- Citizens will be more physically active by walking on a regular basis. Improving their health and reducing their health care costs. Creating more walking opportunities will also improve air quality, which will improve the outdoor environment.

Goal 6: Economic Development

- Tourists will be drawn to Wilmington for its comfortable walking environment. Among southern coastal cities, Wilmington will stand out because its walking routes are safe and convenient, as well as aesthetically pleasing.

KEY OBJECTIVES

Goal 1: Safety

- Objective 1.1 All transportation projects should incorporate complete streets design elements. “Complete streets” are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users. Pedestrians, bicyclists, motorists and public transport users of all ages and abilities are able to safely and comfortably move along and across a complete street. All new traffic signals should include pedestrian signal heads and marked crosswalks.
- Objective 1.2 The city will develop countermeasures to reduce the number of pedestrian crashes at identified locations. This will include using traffic calming as a tool to increase pedestrian safety and comfort.
- Objective 1.3 The city will install three or more new signalized pedestrian crossings per year. (about $150,000/year in 2008 dollars) Objective
- Objective 1.4 The city will conduct education and enforcement campaigns and will design streets to reduce motor vehicle speeds and increase safe driving and walking behaviors.
- Objective 1.5 The city will encourage schools to apply for Safe Routes to School Grants and also to participate in other Safe Routes to School programs and events.
- Objective 1.6 Provide greater awareness of pedestrian laws, rights and responsibilities to affected groups, including but not limited to law enforcement, court officials, and the general public.
- Objective 1.7 Provide a higher level of enforcement to increase pedestrian safety.

Goal 2: Transportation Choice

- Objective 2.1 The city will construct two miles (10,560 feet) of new sidewalk per year (about $422,000 in 2008 dollars).
- Objective 2.2 The city will develop strategies and design solutions to overcome barriers to pedestrian travel in Wilmington, such as arterials, bridges and missing linkages.
- Objective 2.3 Streets in Wilmington will be designed as multi-modal facilities, providing access to destinations by motor vehicle, on foot, by bicycle and by transit.
- Objective 2.4 The city will increase the provision of off-road pedestrian paths and improve connectivity to existing paths and greenways.
- Objective 2.5 The city will ensure that pedestrian facilities are maintained and repaired and are accessible for all users. This includes requiring property owners to maintain vegetation adjacent to sidewalks on a regular basis.

Goal 3: Built Environment, Land Use, and Connectivity

- Objective 3.1 Modify the city's codes, policies and ordinances to include requirements ensuring that new development is scaled and oriented to pedestrian travel, and that logical connections are provided internally and externally for pedestrians and bicyclists.

Goal 4: Education, Awareness and Enforcement

- Objective 4.1 The city will encourage more citizens to travel as pedestrians for all types of trips, including work, errands, exercise and recreation.
- Objective 4.2 The city will increase citizen participation in educational and encouragement programs and promotions.
- Objective 4.3 The city will increase awareness and understanding of pedestrian laws, rights and responsibilities by affected groups, including but not limited to law enforcement, court officials, and the general public.
- Objective 4.4 The city will conduct education and enforcement campaigns to increase safe driving and walking behaviors.
- Objective 4.5 The city will encourage more students to walk to school and other destinations, either alone or with a parent or caregiver.
- Objective 4.6 The city will encourage schools to apply for Safe Routes to School grants and also to participate in other Safe Routes to School programs and other events.

Goal 5: Health

- Objective 5.1 Increase awareness of the recommended levels of daily physical activity and the health benefits of walking.

Goal 6: Economic Development

- Objective 6.1 New streets in the Central Business District Zone and Urban Core Zone will incorporate pedestrian lighting along with vehicular lighting.
- Objective 6.2 Existing corridors and thoroughfares will be retrofitted with pedestrian lighting.
- Objective 6.3 Wilmington will continue to support the missions of Wilmington Downtown, Inc., as it aims to revitalize the historic downtown.
- Objective 6.4 Encourage the inclusion of amenities, plantings and art in pedestrian improvement projects.
- Objective 6.5 The city will produce brochures and other materials to be distributed at events in order to encourage walking and to provide information about Transportation Demand Management services.

- Objective 6.6 The city will work with the Wilmington Tree Commission to ensure that trees are included in the pedestrian environment while maintaining the pedestrian path of travel.

Create Wilmington Comprehensive Plan (2016)

STUDY AREA

- Wilmington

PLAN THEMES

Getting Around

- Diverse modes of transportation are needed for an inclusive, connected community. Regional partnerships can link greenways and other amenities. Options for pedestrian and bicycle transportation, along with other modes of transportation, should be explored as valid alternatives to automobile transportation, as well as other options for local and regional mass transit.

Unique Places, Captivating Spaces

- The built environment encompasses places and spaces created or modified by people, including buildings, parks, land use patterns, and transportation systems. Since the built environment has profound consequences for individual and community well-being, all elements of our built environment should enhance the character of our community, being functional and aesthetically appropriate, enriching the lives of visitors and residents alike.

KEY POLICIES

1.2 CITYWIDE GROWTH

- 1.2.4 Development and infrastructure investments should promote healthy communities and active lifestyles by providing enhanced bicycle and pedestrian circulation, access, and safety.

1.3 LAND USE AND TRANSPORTATION

- 1.3.3 Development should provide pedestrian and vehicular connections between and within individual development sites to provide alternative means of access along corridors.
- 1.3.4 Mixed-use development that provides a range of services within walking distance of integrated residential development should be promoted as a way to help reduce motor vehicle trips. Developments that reduce reliance on single-occupancy motor vehicles should be supported.
- 1.3.6 Transit-oriented and transit-ready development should be promoted around existing

and planned transit stations and stops.

- 1.3.8 Pedestrian-friendly and transit-supportive development patterns should be promoted along multimodal corridors and areas identified for intensive transit investments.

1.5 MIXED-USE DEVELOPMENT

- 1.5.1 Mixed-use centers should be made up of a diverse mix of uses and integrated design that avoids segregation of uses. Centers should have well-planned public spaces that bring people together and provide opportunities for active living and social interactions.
- 1.5.2 Integration and mix of uses should be provided within all "Areas of Opportunity" and "Mixed-use Centers" identified in the Growth Strategies Maps. These developments may vary in scale and intensity, but should all contribute to the city's livability, manage future growth, and provide bike, pedestrian, and transit-accessible destinations.
- 1.5.3 The development of mixed-use activity centers with multimodal transportation connections should be promoted. Convenient and accessible residential and employment should be a part of mixed-use centers.
- 1.5.4 The dedication of land for the construction of transit stations and stops within mixed-use centers should be coordinated as part of the development review and zoning process.

1.6 COMMERCIAL DISTRICTS, CORRDIORS, AND NODES

- 1.6.1 Pedestrian-oriented centers of commercial development should be encouraged at key locations along major corridors, such as the "Main Streets" identified on the Growth Strategies Maps. Auto-oriented strip commercial development should be discouraged.
- 1.6.6 Commercial infill and redevelopment should be bicycle- and pedestrian-friendly.

1.7 NEIGHBORHOOD CONSERVATION AND REVITILIZATION

- 1.7.7 Large, oversized blocks in neighborhoods and subdivisions should be avoided in favor of smaller, walkable blocks and enhanced networks that create better connections and help facilitate walking and reduce the need to drive.

2.1 LAND USE AND TRANSPORTATION COORDINATION

- 2.1.2 Safe and attractive transportation choices among all modes should be encouraged through street patterns that consider multimodal transportation alternatives and access to and circulation between adjacent neighborhoods, parks, and commercial and employment centers.
- 2.1.4 Comprehensive transportation impacts, including parking and impacts on all modes of transportation should be identified and addressed before a development or redevelopment is

implemented.

2.2 STREET SYSTEMS

- 2.2.2 New residential, commercial, and mixed-use developments that require construction or extension of roadways should include a multimodal network. The use of cul-de-sacs and dead-end streets should be minimized.
- 2.2.5 When considering closure of public streets, alleys, and other rights of way, affected city departments and utility providers should consider the integrity of the city's street network, pedestrian and vehicular safety, emergency access, the ability to provide utility services, impacts on health and safety, and the welfare of the community.

2.3 TRANSPORTATION DEMAND MANAGEMENT

- 2.3.2 An integrated, multimodal transportation system that offers safe and attractive choices among travel modes should be promoted.

2.4 STREET DESIGN, COMPLETE STREETS, AND AGE-FRIENDLY DESIGN

- 2.4.1 The majority of the city's streets should be designed as public spaces that are scaled for pedestrians and should be enhanced with appropriate street trees and landscaping.
- 2.4.2 Complete street design standards that provide mobility for all types of transportation modes and users should be promoted on all streets.
- 2.4.3 New roadway projects and major reconstruction projects should provide appropriate and adequate right-of-way for safe and convenient movement and amenities for all users, including bicyclists, pedestrians, transit riders, and motorists.
- 2.4.4 When reviewing traffic impact analyses for infill and redevelopment, level of service measurements should include all modes of transportation, including bicycles, pedestrians, and transit, in addition to automobile level of service.
- 2.4.5 Complete street amenities should be designed with all users in mind, with multimodal amenities appropriate for the type of roadway. The use of undivided multi-lane streets should be limited; raised and/or landscaped medians should be used where feasible, to provide safe landings for pedestrians and vehicle travel.

2.5 PUBLIC TRANSPORTATION

- 2.5.1 Quality transit services that enhance mobility options, meet the needs of city residents and visitors, focus on transit-dependent households, and incorporate age-friendly elements should be promoted.
- 2.5.3 The possibility of returning a vehicular/pedestrian ferry to the Wilmington region

should be explored.

- 2.5.7 The use of transit facilities should be encouraged through enhancing the bike and pedestrian network near transit stops and sufficient sidewalk infrastructure should be installed near all transit stops. Where necessary, enhancements to make sidewalks compliant with the Americans with Disabilities Act (ADA) should be prioritized.
- 2.5.9 Transit-oriented development should be encouraged. Planning for transportation, transit stop locations, public spaces, density, and land use should be coordinated, and high-density, mixed-use development patterns should be encouraged around express bus lines, the planned multimodal transportation center downtown, and any future transit stations.

2.6 BICYCLE AND PEDESTRIAN CIRCULATION

- 2.6.1 Bicycle and pedestrian circulation, access, and safety should be enhanced, especially along corridors, downtown, in activity and employment centers, within densely-developed areas, at transit stations, and near schools, libraries, and parks.
- 2.6.2 A continuous bicycle and pedestrian network should be provided within and between existing and new developments to facilitate safe and convenient travel. New subdivisions, mixed-use developments, and large-scale commercial developments should include safe pedestrian walkways or multiuse paths that allow direct links between roadways and major destinations, transit stops, and schools.
- 2.6.3 New development, redevelopment, street reconstruction, and resurfacing projects should include bicycle and pedestrian facilities as appropriate for the roadway character. Existing development should be retrofitted with connections where possible.
- 2.6.4 Where possible, and especially along identified pedestrian priority streets, tools such as protected left turns, pedestrian head start, raised crosswalks, curb extensions, medians, pedestrian refuge islands or mid-block crossings, and restricted right turns on red should be used to improve pedestrian and bicycle movements and safety.
- 2.6.5 Safe and convenient pedestrian and bicycle facilities should be maintained and should be universally accessible, adequately lit, and properly designed to reduce conflicts between motor vehicles, bicycles, and pedestrians.
- 2.6.6 Pedestrians and bicyclists should be accommodated on bridges, interchanges, and over and underpasses, where permitted by law. Bicycle lanes and wide sidewalks should be included in all new bridges and over and underpasses.
- 2.6.7 The city's greenways, blueways, and trails network should be treated as part of the city's transportation network and connections should be planned for accordingly.
- 2.6.8 Bicycle facilities such as secure racks, personal lockers, and showers should be encouraged in new and redeveloped office and employment centers to facilitate bicycling and

walking as viable alternative modes for commuting to work.

- 2.6.9 Infrastructure that encourages students to walk or bike safely to school should be supported. The city should continue to coordinate with the WMPO to partner with New Hanover County Schools, the Wilmington Police Department, and the North Carolina Department of Transportation to identify funding and opportunities to enhance walking routes to school.
- 2.6.10 Where appropriate, primary building entrances should front onto publicly accessible, easily discernible, and Americans with Disabilities Act-compliant sidewalks that lead directly from the street to the building entrance.
- 2.6.11 Wherever appropriate, roadways and rail corridors should be retrofitted with bicycle and pedestrian facilities such as multi-use paths, cycle tracks or bike lanes, bike boxes, and bike detectors.
- 2.6.12 The city should continue to coordinate with the WMPO to work with partners to identify creative funding solutions for bike and pedestrian infrastructure, including partnerships with the Cape Fear Public Utility Authority, the North Carolina Department of Transportation, parks and recreation partnerships, and public-private partnerships.

2.7 PARKING MANAGEMENT

- 2.7.2 Parking and development that encourages multiple destinations within pedestrian-connected areas should be encouraged.
- 2.7.3 A parking program and management strategies should be established at existing and planned transit stations.
- 2.7.6 Parking lots should include vehicular and pedestrian connections between and through lots. Parking facility quality should be considered equally with quantity of parking spaces. Parking lot design should minimize pedestrian conflicts, make use of appropriate landscaping, and properly manage stormwater.

2.8 TRANSPORTATION SAFETY, TRAFFIC CALMING, AND NEIGHBORHOOD TRAFFIC

- 2.8.1 Safe routes for motorists, transit riders, bicyclists, and pedestrians should be provided. The city should work with its partners to improve the multimodal system to enhance safe transportation options across modes.
- 2.8.2 Traffic calming measures should be incorporated into the design of new or retrofitted local and neighborhood streets, within schools and parks, and around pedestrian-oriented business areas. Pedestrian and bicyclists should have safe, convenient, well-marked means to cross streets.

- 2.8.3 The data necessary to assess transportation network safety performance should be collected and maintained. Ongoing education and enforcement should be supported. The safety impacts of proposed roadway capacity projects, including impacts to bicycle and pedestrian safety, should be evaluated and documented.

4.2 GREENWAYS, BLUEWAYS, TRAILS, AND CONNECTIVITY

- 4.2.1 Safety, security, ease of use, sustainability, and equity should be considered when planning, designing, and constructing new and maintaining existing greenways, blueways, and trails.
- 4.2.2 Neighborhood connectivity to trails and greenways should be facilitated. Connections between neighborhoods, shopping centers, schools, transit stops, and employment centers should function as transportation alternatives in addition to recreational amenities.
- 4.2.3 Partnerships with New Hanover County and New Hanover County Schools, health care providers, nonprofit groups, and others should be enhanced to create or improve greenways and trails in the city and the region.
- 4.2.5 Wilmington's greenway/trail network should include multi-use paths that connect other greenways, parks, and schools. New greenways should be designed to serve both recreational and transportation needs.
- 4.2.7 Public awareness of the trails/greenway network should be promoted, including an ongoing educational campaign on bike and pedestrian safety, driver awareness, bike and pedestrian rights and regulations, and the benefits of greenways, blueways, and trails as related to increased property values and health and environmental benefits.

5.1 COMMERCIAL CORRIDOR REINVESTMENT

- 5.1.2 Mixed-use redevelopment should be promoted as a means of revitalizing and enhancing economic development in commercial corridors and creating transit- and pedestrian-oriented development patterns.

5.2 NEIGHBORHOOD REINVESTMENT

- 5.2.1 In partnership with neighborhood groups, focused reinvestments to make safe, attractive, and walkable neighborhoods and attract skilled workers to Wilmington should be encouraged. A mix of housing types and price points should be encouraged to diversify neighborhoods, particularly around business clusters and schools.
- 5.2.5 Investments in public infrastructure, such as parks, schools, sidewalks, and streetscapes, should be done in a targeted manner in the neighborhoods of greatest need.

5.5 ECONOMIC DEVELOPMENT AND LAND USE

- 5.5.2 Appropriate intensification and retrofitting of existing office and retail clusters with new, interconnected, pedestrian- and bike-friendly residential and retail uses should be encouraged to provide attractive and competitive live-work designations.

6.4 AIR QUALITY

- 6.4.1 Walkable and bikeable communities, public transit, and integrated land use and transportation planning should be promoted and encouraged to help reduce motor vehicle emissions.
- 6.4.3 State, regional, and local resources should be applied to encourage clean transportation choices through a transportation demand management program.

7.1 PUBLIC ART

- 7.1.1 Public art should help create and foster community and neighborhood identity and should be part of public projects, community facilities, greenspace, and along greenways. Public art should be part of the planning process for all municipal projects.

8.1 INFRASTRUCTURE

- 8.1.2 Maintenance, repair, and enhancements of streets and sidewalks should be undertaken in an equitable manner as well as an objective evaluation of condition and need. Funding and physical maintenance should be distributed equally throughout the city and in a way that benefits all neighborhoods and parts of town and all residents and visitors.
- 8.1.4 Coordination with utilities and infrastructure partners to ensure that construction, design, and improvements to streets and sidewalks are carried out in an efficient and coordinated manner should be maintained.
- 8.1.16 The city's parking program should support alternative means of transportation, encouraging alternative energy sources, promoting downtown as a regional destination, and maximizing transportation demand management. The pedestrian experience should be considered in parking planning, siting, and design and new and existing parking decks should provide for adequate pedestrian access the parking areas.

8.4 EDUCATION

- 8.4.6 School siting and assignment policies that work to achieve diverse, walkable schools should be developed. All health impacts should be taken into account, including a health impact assessment or another methodical analysis of health impacts, when considering new locations and rehabilitation of existing school facilities.

- 8.4.7 Programs to maximize opportunities for schools that are an integral part of the surrounding neighborhood and that promote walking and biking to school should be supported. Safety and convenience of travel by foot, bike, and public transportation to and near schools should be improved by providing safe infrastructure.

9.1 UNIQUE WILMINGTON

- 9.1.4 A unified system of vehicular and pedestrian wayfinding signs, kiosks, and other environmental graphics should be created to provide directions for bicyclists, pedestrians, and vehicular travelers. Wayfinding systems should link physical and digital elements.

9.2 PUBLIC SPACE NETWORK

- 9.2.3 The appearance, identity, and safety of streets should be prioritized through the appropriate use of pedestrian elements such as sidewalks, crosswalks, street lights, landscaped areas, street furnishings, signage, and traffic signals and signals management.
- 9.2.4 Bus shelters, seating, and related elements should be provided at transit stop locations, where appropriate.
- 9.2.5 Along pedestrian priority streets, sidewalks should be designed and managed in a way that promotes pedestrian safety, efficiency, and comfort, providing adequate space for street trees, pedestrian traffic, and social activities such as sidewalk cafes.
- 9.2.6 Streets should be designed as public spaces that are scaled for pedestrians, especially along corridors designated as special character streets and pedestrian priority streets in the Growth Strategies Maps.
- 9.2.8 The design of alleys should reflect their best potential use, whether service-oriented, pedestrian pathways, or gathering places and venues. Alleys used as pathways should provide pedestrian elements, such as street lights, quality paving materials, and street furnishings (trash bins, bollards, signs, etc.).
- 9.2.9 Appropriate street tree plantings should be chosen for the function of the street and distinctive parts of the city. Trees in high pedestrian traffic areas and the Greater Downtown should be planted in tree wells with grates to protect the roots and allow safe pedestrian passage. Xeriscaping and native plants should be used where appropriate.

9.3 PEDESTRIAN-ORIENTED PLACEMAKING

- 9.3.1 Mixed-use buildings and multi-use development sites should be encouraged where appropriate. Infill development that creates a destination for existing land uses should include opportunities for cross-site pedestrian connections, shared parking arrangements and other strategies to enhance mixed-use environments.

- 9.3.2 Comfortable, safe, and convenient pedestrian places should be promoted through buildings that face the street, avoidance of deep front setbacks, and providing direct pedestrian connections and entries along the public space network.
- 9.3.3 New development should promote pedestrian-oriented uses, especially those within Mixed-use Centers delineated in the Growth Strategies Maps. Automobile-oriented uses and designs such as drive-through windows should be discouraged in these areas.
- 9.3.4 Attractive and interesting commercial streetscapes should be created by promoting active ground-floor uses, creating desirable street activities, minimizing curb cuts and driveways, and avoiding windowless facades and large gaps in the street wall.
- 9.3.5 Where appropriate, indoor uses moved outdoors, such as dining areas and small merchandise displays on walkways and plazas, should be employed to activate the streetscape, while outdoor spaces moved indoors, such as atriums and courtyards, may also be used to improve views, exposure to light, and encourage social interaction.
- 9.3.6 Pedestrian-scaled lighting should be provided to encourage a safe walking environment while providing unified character elements for pedestrian oriented streets, centers, and neighborhoods.
- 9.3.7 On-street parking should be provided along pedestrian-oriented streets to act as a buffer from vehicular traffic. Surface parking should be confined to the rear or side of buildings.
- 9.3.8 Parking decks should be encouraged in Urban Centers as identified on the Growth Strategies Maps and, where feasible, should be wrapped with active uses for the entire frontage along public streets, especially on pedestrian-priority streets. Where wrapped parking is not feasible, decks should be screened and should not be visibly distinct from the building(s) they serve.

9.5 NEIGHBORHOODS

- 9.5.2 Clear and safe pedestrian networks within, through, and between neighborhoods should be enhanced. Opportunities to connect existing neighborhoods to adjacent commercial centers and community facilities and services should be explored.

10.2 TRANSPORTATION

- 10.2.1 Downtown should be well served by the broadest range of transportation options, including bikeways, sidewalks, greenways, roadways, streetcars, and buses. Enhanced transit service, including circulators, which may be buses, rubber-tire trolleys, or modern streetcars, and car and bike sharing programs should be encouraged.
- 10.2.2 The construction of a mixed-use, multimodal transit center downtown, with bike

and pedestrian connections, should be encouraged to provide a transit hub accommodating service for passenger rail, public transit, and private transit providers.

- 10.2.3 Non-automotive circulation among downtown activities and employment centers should be encouraged and pedestrian safety should be promoted.
- 10.2.7 As redevelopment occurs throughout downtown, sidewalks should be widened, where appropriate, to enhance the downtown pedestrian experience. Along identified priority pedestrian streets, new development and infrastructure projects should enhance pedestrian and bicycle safety and such elements should be given equal priority to vehicular traffic flow.
- 10.2.8 Opportunities to extend the urban greenway system should be examined and implemented concurrent with infill and redevelopment.
- 10.2.11 Transportation demand management strategies, such as carpooling, park and ride services, and staggered work hours, should especially be encouraged and supported to downtown locations.

10.6 URBAN DESIGN

- 10.6.2 The public realm should be reinforced through the placement of main building entrances along public streets, the creation of a continuous street wall and the use of wide sidewalks and streetscape plantings. Parks, plazas, and public spaces should be surrounded by activity such as ground-floor retail and other active uses and upper-floor balconies and terraces.
- 10.6.3 Pedestrian engagement should be enhanced through the ground-floor design of all new infill and redevelopment. Such street-level enhancements may include the use of multiple building entrances, large, transparent windows, creative signage, lighting, protection from the elements via canopies, awnings, and arcades, and a high level of architectural articulation and pedestrian-scale element on all facades.

Cross-City Trail Master Plan (2012)

STUDY AREA

- Wilmington

PLAN GOALS

- The goal of the Gary Shell Cross-City Trail is to provide residents and visitors with an amenity that provides opportunities for recreational use, physical activity and alternative transportation.

River to Sea Bikeway Master Plan (2013)

STUDY AREA

- River to Sea Bikeway from Wilmington to Wrightsville Beach

PLAN GOALS

- The goal of The River to the Sea Bikeway is to provide visitors and residents with a facility that creates opportunities for basic transportation, recreational use and physical activity while connecting downtown Wilmington to Wrightsville Beach.

KEY PRINCIPLES

- Provide connectivity to established destinations;
- Provide a safe route with the least amount of conflicts;
- Minimize property impacts;
- Provide consistency with Wilmington, WMPO, Wrightsville Beach, and NCDOT planning practices and policies;
- ADA Accessible;
- In harmony with existing infrastructure;
- Represent good stewardship of the environment;
- Create a sense of place; and
- Meet all of the above criteria in a way that is politically acceptable.

Wilmington Vision 2020: A Waterfront Downtown (2004)

STUDY AREA

- Downtown Wilmington

PLAN GOALS/OBJECTIVES

- Encourages a friendly streetscape environment— Since successful American cities accommodate many modes of travel, the street network should be easily navigated by pedestrians, bicyclists and automobiles. The streetscape should provide a scale and quality of design that is interesting to the pedestrian, amenities to provide comfort, and adequate signage for locating cultural attractions, historic landmarks, and parking garages. This Plan considers the physical character of streets for their walkability and wayfinding purposes.

KEY ACTIONS

STRATEGY 1: ACTIVATE THE WATER'S EDGE

- C. Enhance Water Street as an attractive walking experience

STRATEGY 2: CONNECT PEOPLE TO THE RIVER

- A. Improve access to the Riverwalk along key pedestrian routes

STRATEGY 7: ADDRESS QUALITY OF LIFE CONCERNS

- B. Maintain adequate sidewalk clearance of at least 4 feet.

Wrightsville Sound Small Area Plan (2011)

STUDY AREA

- The planning area generally includes all properties from Bradley Creek north to the Landfall subdivision, and from the Atlantic Intracoastal Waterway (AIW) to just west of Oleander Drive and Military Cutoff Road. The area includes the Landfall Center shopping center, the nonresidential properties on the west side of Military Cutoff Road, and the residential areas between Rogers Avenue and Eastwood Road on the west side of Military Cutoff Road.

PLAN GOALS

- To provide safe and viable bicycle and pedestrian facilities throughout the area.
- To provide a convenient mix of land uses that offers options for residents while ensuring new development is compatible with the surrounding area.
- To provide a safe and efficient transportation network for all modes of travel (auto, mass transit, bike, pedestrian).

KEY STRATEGIES

3.4 BICYCLE AND PEDESTRIAN FACILITIES

- 3.4.1 Provide signalized pedestrian crossings and high-visibility crosswalks at all major intersections
- 3.4.2 Evaluate potential for sidewalks and/or a bike path along Airlie Road. Minimize tree disturbance with any future bicycle and/or pedestrian improvements.
- 3.4.3 Support the completion of the Gary Shell Cross-City Trail.
- 3.4.4 Construct sidewalks throughout the area in accordance with Walk Wilmington: A Comprehensive Pedestrian Plan.

- 3.4.5 Provide bicycle and pedestrian connections between existing residential and commercial areas
- 3.4.6 Provide a bicycle and pedestrian connection between the Gary Shell Cross-City Trail and Airlie Gardens
- 3.4.7 Support efforts to improve the safety and function of bicycle and pedestrian access to Wrightsville Beach.
- 3.4.8 Support the construction of a public walkway/pier underneath the Heidi Trask Drawbridge to provide a safe alternative for cyclists and pedestrians wishing to cross Wrightsville Avenue.
- 3.4.9 Explore the potential to acquire additional right-of-way, while protecting existing trees, along Airlie Road for bicycle and pedestrian improvements.
- 3.4.10 Implement bicycle and pedestrian improvements in accordance with the Recommended Transportation Improvements Map.

3.6 MIX OF USES

- 3.6.2 Ensure commercial uses are accessible from surrounding residential areas by establishing a network of interconnected sidewalks, foot paths and bike paths.

3.7 TRAFFIC & TRANSPORTATION

- 3.7.4 Improve transit service to other areas of the county by increasing access and making bus stop improvements.
- 3.7.6 Support the construction of a public walkway/pier underneath the Heidi Trask Drawbridge to provide a safe alternative for cyclists and pedestrians wishing to cross Wrightsville Avenue.
- 3.7.8 Support and promote interconnectivity for automobiles, cyclists and pedestrians between developments.
- 3.7.9 Address off-street parking along Airlie Road to improve safety for cyclists and pedestrians and prevent environmental impacts.

3.10 DEVELOPMENT & REDEVELOPMENT

- 3.10.7.1 Commercial Redevelopment: Landfall Center. Require bicycle and pedestrian access.
- 3.10.7.2 Commercial Redevelopment: Galleria Mall. Require bicycle and pedestrian connections to adjacent residential areas.
- 3.10.7.3 Commercial Waterfront: Airlie Road. Provide sidewalk/walkway along the east side

of Airlie Road, connecting and providing access to the existing commercial establishments. Improve safety for pedestrians crossing Airlie Road with context- sensitive signage and/or pavement markings.

- 3.10.7.4 Transition Area: Allens Lane. Encourage bicycle and pedestrian access and connections to surrounding uses.
- 3.10.8.1 —Residential Redevelopment: Westbrook Avenue & Allens Lane. Require bicycle and pedestrian access and connections to surrounding uses.
- 3.10.8.2 Residential Redevelopment: Airlie Road. Encourage bicycle and pedestrian access and connections to surrounding uses.

Southside Small Area Plan (2009)

STUDY AREA

- Stakeholder-identified area including The Bottom, Dry Pond, and Lake Forest.

PLAN OBJECTIVES

- Objective 3 – Environmental Design – Ensure development is designed in such a way that residents feel connected to and therefore safe within the community regardless of race, income, or other factors.
- Objective 14 – Transportation Infrastructure – Improve the transportation infrastructure to accommodate safe vehicular travel, access to public transit, and non-vehicular alternatives.

KEY STRATEGIES

OBJECTIVE 3 ENVIRONMENTAL DESIGN

- 3.1 Include architectural and design elements in new construction, renovation, and redevelopment projects that connect people to the community. These elements include, but are not limited to, porches, sidewalks, pedestrian-scale street lighting, and building fenestration (the arrangement of windows and doors).
- 3.2 Eliminate barriers to walking, biking, and recreating in the physical environment. Assess and inventory sidewalks, trails, street furniture, shade, commercial parking access, street connectivity, parks, and transit access. Work with the city, WAVE Transit, and other appropriate agencies to improve the quality of these resources.

OBJECTIVE 14 TRANSPORTATION INFRASTRUCTURE

- 14.1 New multi-family and mixed-use projects should be located convenient to public transit and encourage transit-oriented development (TOD) projects.

- 14.2 Install sidewalks where sufficient right-of-way exists. Sidewalks should be constructed in accordance with the Walk Wilmington Comprehensive Pedestrian Plan.

Seagate Neighborhood Plan (2007)

STUDY AREA

- Stakeholder-identified area between Oleander Drive, Wrightsville Avenue and Bradley Creek

PLAN GOALS

- To promote safer, better-maintained travel routes that accommodate vehicular and non-vehicular modes of transportation.
- To maintain adequate infrastructure to support the needs of the area while proactively addressing future needs and resources.

KEY ACTIONS

OBJECTIVE 1: REDUCE VEHICLE TRIPS

- 1.1 Incorporate sidewalks and bike paths where possible to minimize vehicle trips
- 1.2 Support developments that are designed to accommodate convenient access to public transit (there is currently a WAVE Transit bus stop on Oleander at the arboretum).
- 1.5 Install sidewalks and bike paths where sufficient right-of-way exists.

OBJECTIVE 3: SIDEWALKS AND BIKEPATHS

- 3.1 Install sidewalks and bikepaths where sufficient right-of-way exists.
- 3.2 Include sufficient pedestrian circulation to facilitate community interaction.

Northside Community Plan (2003)

STUDY AREA

- The plan area is bounded by Smith Creek to the north, Burnt Mill Creek and N. 17th Street to the east, Market Street to the south and the Cape Fear River to the west.

PLAN GOALS

- Create an attractive NorthSide community that residents and visitors can enjoy while preserving the history, character and beauty of its residential and commercial neighborhoods.
- Provide recreational, educational, vocational, cultural opportunities and community meeting space to meet the needs of everyone in the NorthSide community.

- To provide safe and efficient traffic flow and public transportation for the NorthSide community.

KEY ACTIONS

OBJECTIVE 4- STREETSCAPE ENHANCEMENT

- Implement streetscapes, landscapes and other measures on public property including signage, pedestrian-scale lighting and other amenities (curb and gutters, trash cans, bus shelters and benches) in the Northside community.

OBJECTIVE 2- EXISTING FACILITIES

- 2.5. Redevelop the Love Grove landfill into a usable public greenspace that includes reuses such as open space, habitat restoration, parks, gardens, fishing, playgrounds, and trails for pedestrians, horseback riding and bicycles.

OBJECTIVE 1- TRAFFIC CALMING

- 1.1. Provide input to Neighborhood Traffic Studies on areas in need of traffic-calming devices to slow traffic (especially between N. 8th and N. 11th Streets). Also consider installing pedestrian safety amenities.

OBJECTIVE 2- ENHANCED TRANSIT SERVICE

- Increase convenience of public transportation by adding bus stops in strategic locations and extending bus and trolley service to and from strategic locations.

OBJECTIVE 5- SIDEWALKS

- Provide sidewalks in identified priority areas

US 17 Business (Market St) Corridor Study (2016)

STUDY AREA

- Corridor (Market St)

PLAN GOALS

- Implement a road diet by reducing the travel lanes to one in each direction, thus creating space to add planted median, channelized left-turn lanes and bike lanes. The road diet project is not recommended for the proposed limits of this study due to the negative impacts to Market Street. Based on the results of this study, the road diet could successfully be implemented between 3rd Street and 16th Street, with a transition to current geometry west of 16th Street.

Market Street Corridor Study (2010)

STUDY AREA

- Corridor (Market St)

PLAN GOALS

- Integrate pedestrian and bicyclist amenities along Market Street during construction of the proposed median treatments.
- Provide an alternate network of pedestrian and cyclist amenities through neighborhoods and collector streets.

KEY POLICIES

- “Complete street" elements should be included in collector street design standards, including streets trees, sidewalks, and bicycle amenities.

Cape Fear Historic Byway Corridor Management Plan (2008)

STUDY AREA

- Corridor (Cape Fear Historic Byway)

PLAN GOALS

- Goal #1: Encourage visitors to get out of their cars and safely explore the corridor by alternative means of transportation such as on foot, bike, trolley, horse carriage and even boat.
- Goal #11: Increase pedestrian and biking safety along the byway corridor, particularly on 3rd Street.

KEY RECOMMENDATIONS

- This plan offers a number of pedestrian related recommendations meant to encourage multi-modal transportation use, including installation of crosswalks, expansion of transit services, and upgrading of sidewalks and pedestrian scale lighting.

Dawson & Wooster Corridor Plan (2007)

STUDY AREA

- Corridor (Dawson St, Wooster St)

PLAN GOALS

- Address corridor safety.

KEY RECOMMENDATIONS

- This plan includes a series of recommendations for pedestrian improvements in the short, medium, and long term. These recommendations include high visibility crosswalks, pedestrian signal heads, and bulb-outs.

Wilmington Rail Trail Master Plan (2020)

STUDY AREA

- The Wilmington and Weldon Railroad Corridor

PLAN GOALS

- Connect Wilmington Northside neighborhood to Downtown, area amenities, and other parts of Wilmington.
- Create a unique space for art, exercise, and community engagement.

KEY RECOMMENDATIONS

- The Rail Trail provides a critical link in a multimodal system that the City of Wilmington is trying to implement.
- The visual elements of a trail can considerably reshape the experience for the user. Encouraging people to use active modes of transportation is not solely accomplished by providing a physical path but by ensuring that the trail has a purpose in how it provides the connection to a given destination.
- The amenities the Rail Trail provides can transform the level of enjoyment and comfort that people experience while they are using the trail.

Wrightsville Avenue 2030 (2010)

STUDY AREA

- Corridor (Wrightsville Ave)

PLAN GOALS

- To provide a safe and efficient travel route for all users that accommodates all modes of transportation (auto, bicycle, pedestrian, public transit).

KEY STRATEGIES

OBJECTIVE: MAINTAIN ROAD FUNCTIONALITY BY IMPROVING SAFETY AND TRAFFIC FLOW ALONG THE CORRIDOR.

- Strategy 3.2.2 Minimize conflict points between vehicles and bicycles/pedestrians to improve safety for all modes of travel.

OBJECTIVE: IMPROVE THE EFFECTIVENESS OF ALTERNATIVE MODES OF TRANSPORTATION INCLUDING BICYCLE, PEDESTRIAN, AND PUBLIC TRANSIT.

- Strategy 3.2.6 Include pedestrian and bicycle facilities as a component of all transportation-related capital projects and programs when feasible.
- Strategy 3.2.7 Construct sidewalks throughout the corridor in accordance with Walk Wilmington: A Comprehensive Pedestrian Plan.
- Strategy 3.2.8 Continue to improve the River to the Sea Bikeway and Cross-City Trail bicycle and pedestrian facilities.
- Strategy 3.2.9 Install wayfinding signage along Wrightsville Avenue to direct bicyclists and pedestrians to the River to the Sea Bikeway and Cross-City Trail.
- Strategy 3.2.10 Install benches, shelters and bus pull-outs at high-volume transit stops along the corridor.
- Strategy 3.2.11 Provide half-hour bus service along the entire length of the corridor
- Strategy 3.2.12 Implements bicycle and pedestrian improvements along the corridor in accordance with the Recommended Transportation Improvements Map.

Carolina Beach Road Corridor Plan (2004)

STUDY AREA

- Corridor (Carolina Beach Rd)

KEY STRATEGIES

STRATEGIES FOR CAPITAL IMPROVEMENTS

- Secondary to the sidewalk priority areas in the Future Land Use Plan, sidewalk priority areas on Carolina Beach Road should focus on the area between Bordeaux Avenue and Independence Boulevard and at bus stops.

STRATEGIES FOR REGULATORY CHANGES

- Create a neighborhood commercial overlay district between South 3rd Street and Southern Boulevard. The purpose of the district is to return this area to its original function as a neighborhood commercial center. The emphasis will be on improving the overall aesthetics through enhanced landscaping and site and building design and on improving pedestrian amenities such as sidewalks and crosswalks. Public and private investment is necessary to be successful.

College Road Corridor Plan (2004)

STUDY AREA

- Corridor (College Rd)

KEY STRATEGIES

STRATEGIES FOR CAPITAL IMPROVEMENTS

- Create and fund a redevelopment incentive program that focuses on the Future Land Use Plan priority redevelopment areas but is also applicable to other areas. This program will provide specific standards for desired redevelopment (mix and type of uses, signage, architecture, landscaping, site design) and establish cost-sharing levels for infrastructure improvements such as deceleration lanes, traffic signals, turn lanes, medians, alleys, frontage roads, sidewalks/multi-use paths and other access management improvements that would be required for development approval. Priority redevelopment areas for College Road include the Marketplace Mall near the Market Street overpass, the commercial areas between Wilshire Boulevard and Lake Avenue, and Long Leaf Mall at the Shipyard Boulevard intersection. The commercial areas between Wilshire Boulevard and Peachtree Avenue should be the top priority.

- Secondary to the sidewalk priority areas in the Future Land Use Plan, sidewalk priority areas on College Road should be focused around shopping areas and UNCW, through new development, redevelopment, and City capital projects.
- Crosswalk priority intersections along College Road are Randall Parkway, New Centre Drive, and Lake Avenue. Enhancements to pedestrian crossings will be based on site specific engineering analysis and will potentially include:
  - Raised medians
  - Illuminated crosswalks and median refuges
  - Special markings such as striped, or "zebra," longitudinal lines or diagonal cross-hatching to increase visibility and emphasize a crossing
  - Textured crossings, using non-slip bricks or colored pavers, to increase a driver's awareness through increased noise and vibration
  - Visible signage
  - Flashing beacons

Oleander Drive Corridor Plan (2004)

STUDY AREA

- Corridor (Oleander Dr)

KEY STRATEGIES

STRATEGIES FOR CAPITAL IMPROVEMENTS

- Create and fund a redevelopment incentive program that focuses on the Future Land Use Plan priority redevelopment areas but is also applicable to other areas. This program will provide specific standards for desired redevelopment (mix and type of uses, signage, architecture, landscaping, site design) and establish cost-sharing levels for infrastructure improvements such as deceleration lanes, traffic signals, turn lanes, medians, alleys, frontage roads, sidewalks/multi-use paths and other access management improvements that would be required for development approval. Priority redevelopment areas for Oleander Drive include the Dawson/Wooster intersection, and the areas generally located around the intersections with 42nd Street, 51st Street and Hinton Avenue. The node at Hinton Avenue should be the top priority.
- Work with NCDOT to construct a separate multi-use bicycle/pedestrian crossing at the Bradley Creek Bridge. Seek grants with NCDOT when possible.

- Secondary to the sidewalk priority areas in the Future Land Use Plan, sidewalk priority areas on Oleander Drive should focus on major commercial centers (nodes) and at bus stops. When bus service is extended east of College Road, sidewalks should be prioritized to provide access from Oleander Drive to the Cape Fear Hospital and planned nodes near Hinton Avenue and Greenville Loop Road.

Rail Realignment Plan (2017)

STUDY AREA

- CSX Rail Corridor between Navassa and the Port of Wilmington

KEY GOALS

- Replace and improve the existing freight rail route between Navassa (Davis) Yard and the Port of Wilmington by creating a new, shorter route that bypasses busy streets and densely populated areas
- Post-realignment, the city will work to repurpose the existing route for public use in order to accommodate growth in both population and commercial freight activity

PROJECT STATUS

- The realignment project has three phases: 1) a screening assessment, identifying feasible alternatives to be considered in the study, 2) alternatives analysis with identification of a preferred alternative, 3) environmental review and preliminary engineering activities pursuant to NEPA.
- As of Q4 of 2020, work had begun on the economic feasibility study, which is occurring in conjunction with the ongoing environmental and engineering studies.

Wilmington Land Development Code Update (2021)

STUDY AREA

- Wilmington

PLAN GOALS

- Improve traffic conditions
- Preserve and grow the city's tree canopy
- Better manage stormwater
- Develop a more convenient, compact, and connected future city with a smarter approach to land use

KEY UPDATES

- Eliminations of parking minimums for most non-residential uses, with exceptions.
- Incentivizes the preservation & expansion of the urban tree canopy in Wilmington.
- Encourages construction of affordable housing.
- "Urban," "semi-urban," and "suburban" designations with different parking, landscaping, and setback/building requirements.
- Corridor-specific design standards on major thoroughfares.
- Incentivizes infill development & redevelopment of vacant/decaying parcels.
- Permits the construction of "middle" housing such as townhomes & duplexes in residential areas previously limited to single-family housing.

Market Street Corridor Plan (2011)

STUDY AREA

- Corridor (Market St)

KEY STRATEGIES

CONNECTIVITY

- Strategic network of connector streets (lower design speeds and multimodal amenities)
- Encourages future development to create a closely spaced/denser street network
- Encourage Complete Streets elements

ACCESS MANAGEMENT

- Limit number of driveways where possible

LANDSCAPING

- Provisions for street trees

ROADWAY IMPROVEMENTS

- Pedestrian-level improvements at all full median opening signalized intersections and at certain mid-block areas

MULTIMODAL CONSIDERATIONS

- Integrate pedestrian and bicyclist amenities along Market Street during construction of the proposed median treatments
- Provide an alternate network of pedestrian and cyclist amenities through neighborhoods and collector streets

alta