

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 |

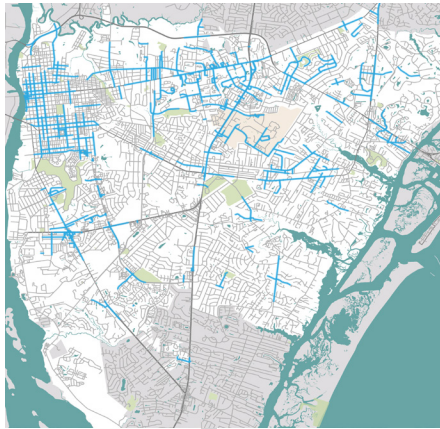
Applying Prioritization Weights & Creating Priority Focus Areas

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

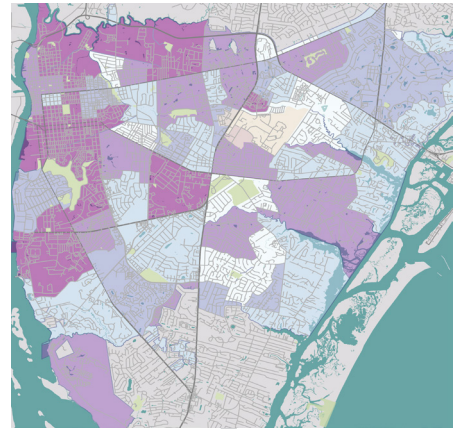
Based on a High Injury Network Analysis



35% of score

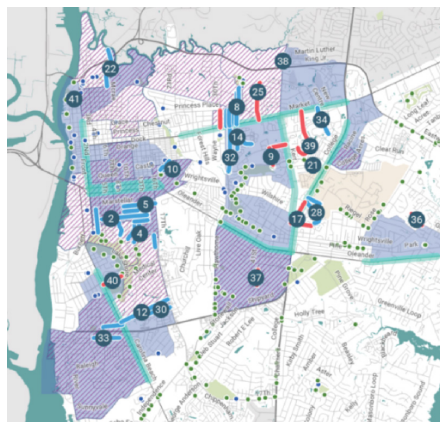
Equity

Based on NCDOT's Transportation Disadvantage Index (TDI)



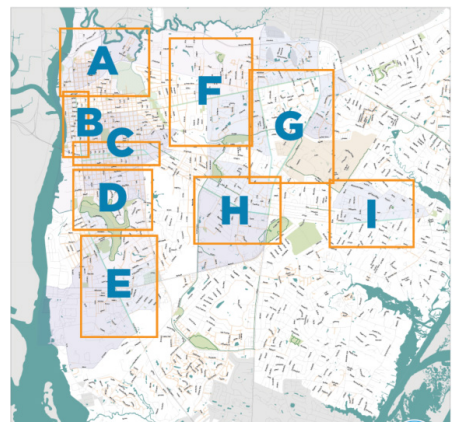
30% of score

IDENTIFY HIGH SCORING PROJECT CLUSTERS



Top 5% highest scoring projects shown here.

USE RESULTS TO DEFINE PRIORITY FOCUS AREAS

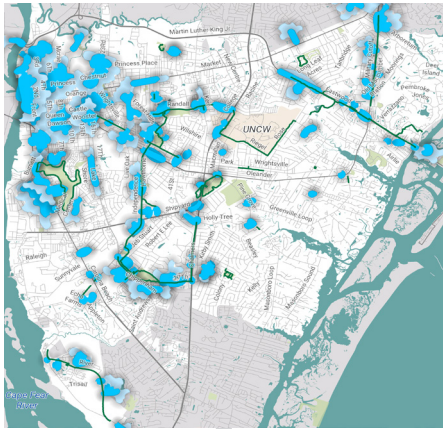


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Connections to Recreation

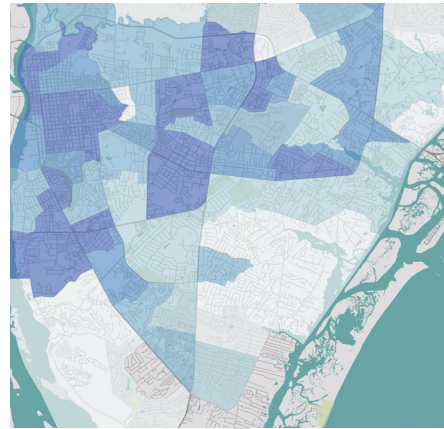
Based on Park Entrances and Trail Locations



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

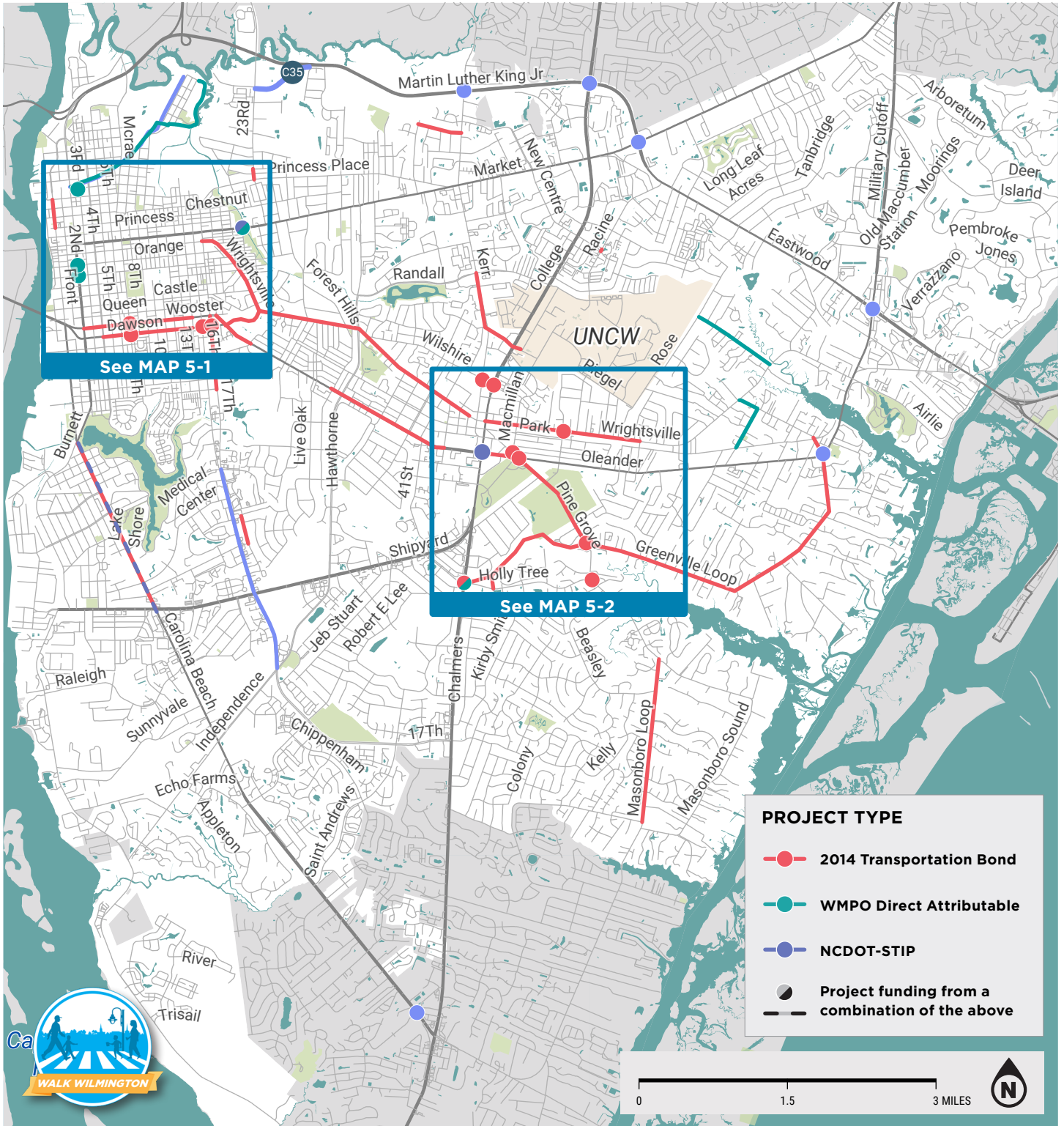
DEVELOP RECOMMENDATIONS FOR PRIORITY AREAS



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>

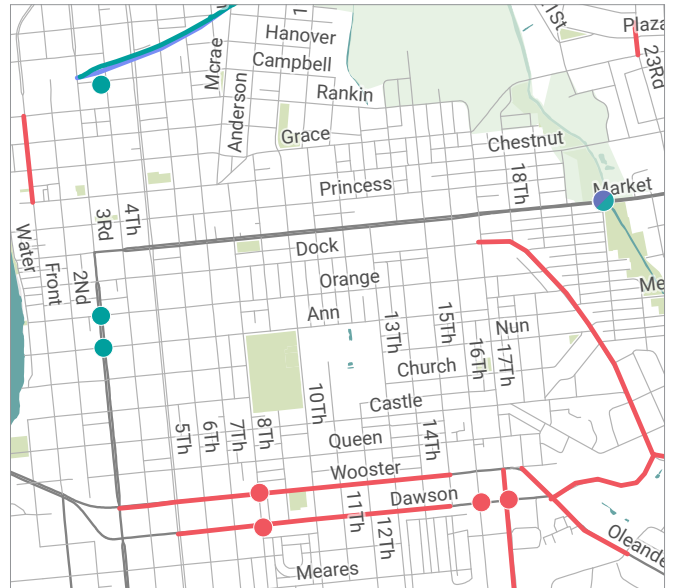
WMPO METROPOLITAN TRANSPORTATION PLAN (MTP)

Cape Fear Moving Forward 2045:

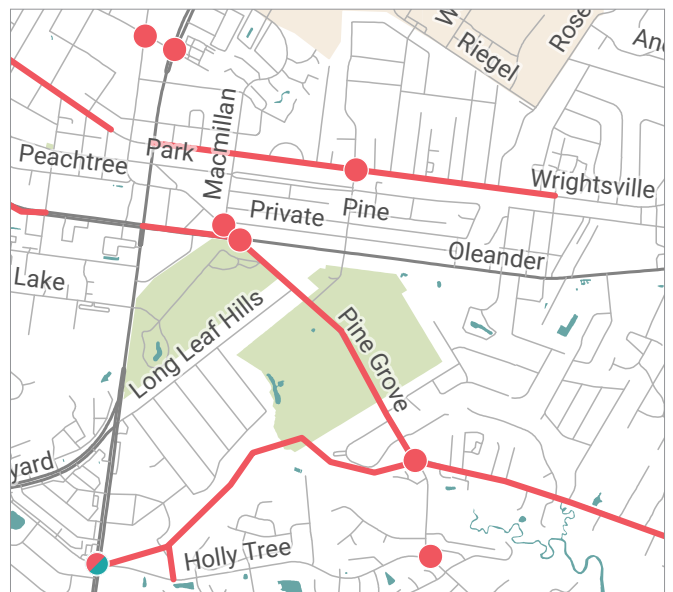
<https://www.wmpo.org/mtp/>

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

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

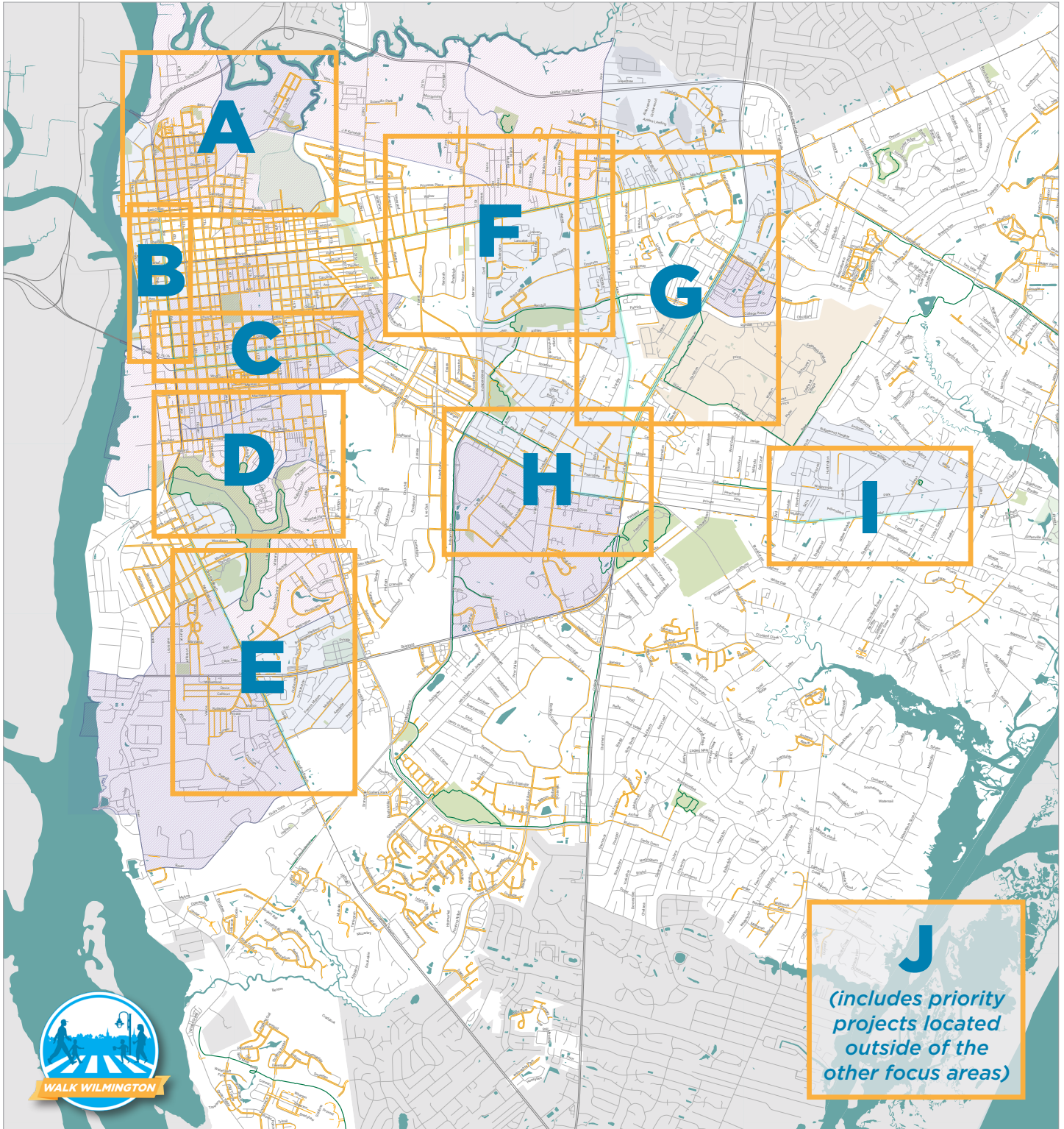


MAP 5-2: Projects in Development (University/Oleander Area)



PROJECT TYPE

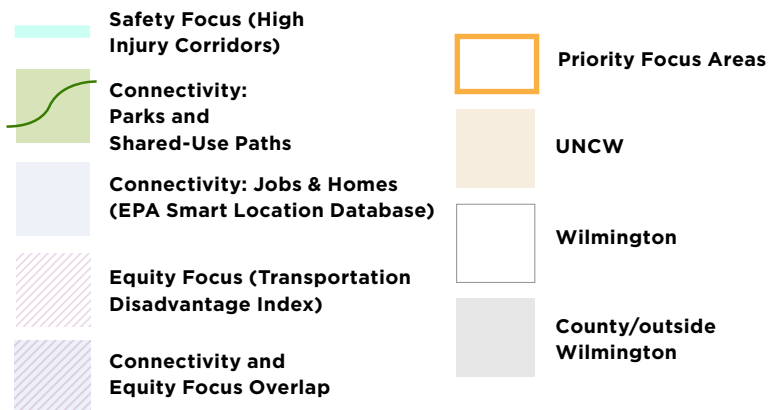
- 2014 Transportation Bond
- WMPO Direct Attributable
- NCDOT-STIP
- Project funding from a combination of the above



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.



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.



PRIORITY FOCUS AREA A: Northside & Downtown Trail (including Wilmington Rail Trail)

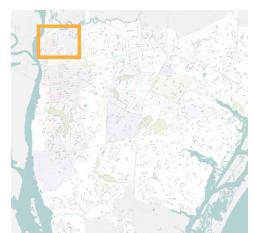
RECOMMENDATIONS

- 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.

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.*

CROSSING IMPROVEMENTS

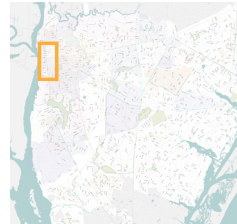
- ✘ All key intersections marked "X" in Focus Area A are recommended for crosswalks and stop bars* for all legs of the intersection that have existing sidewalks on both sides; signalized crossings should also include pedestrian signals.



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



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

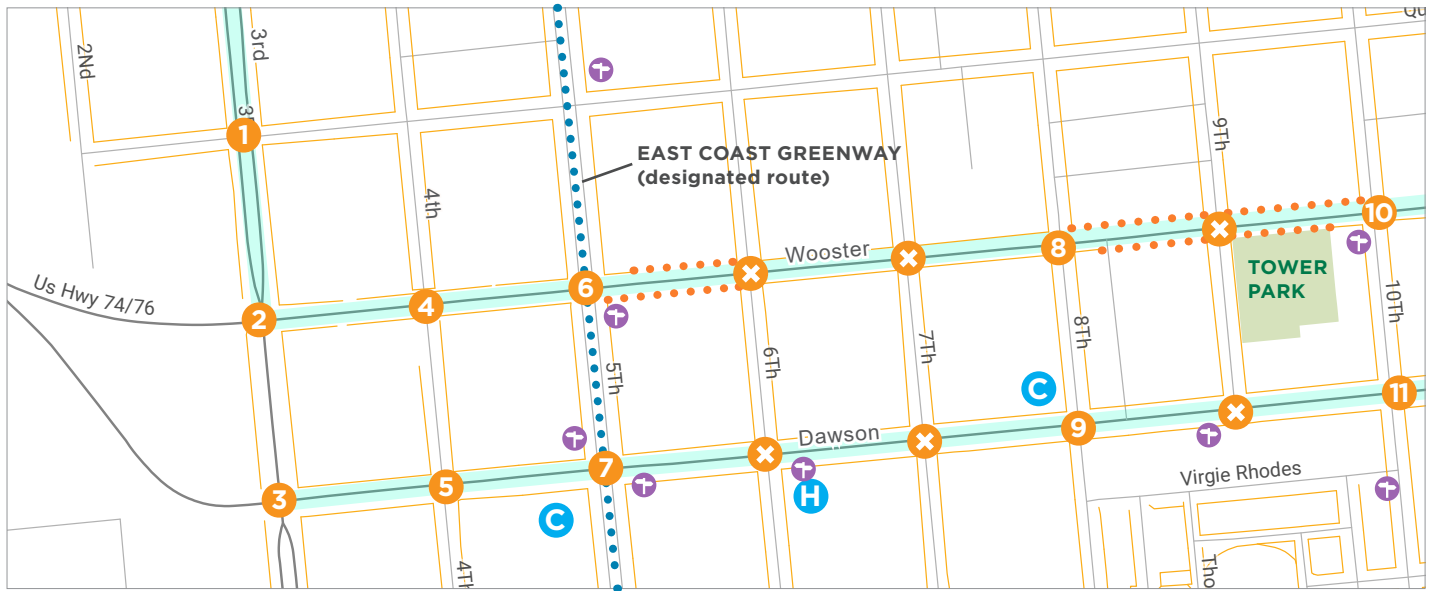
Posted Speed

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

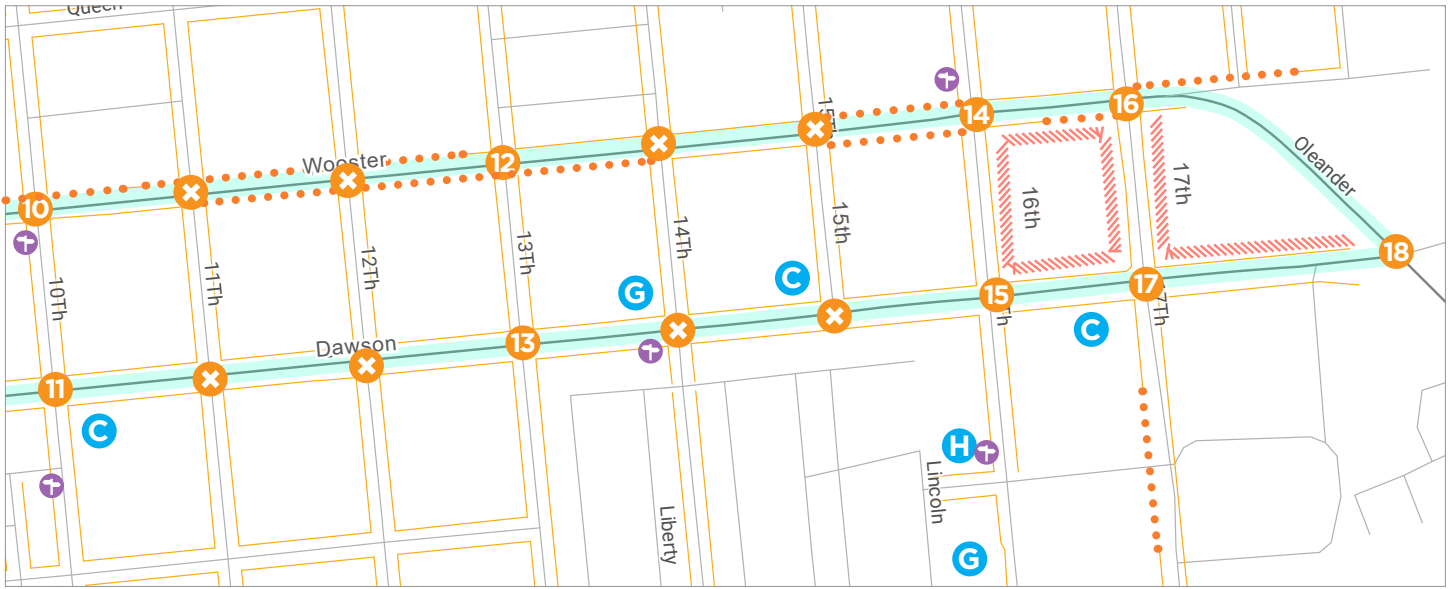
EXISTING CONDITIONS

- 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

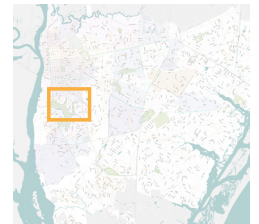
AADT (2021)

CROSSING IMPROVEMENTS

- X** 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:

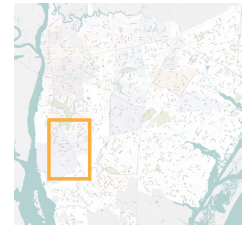
| | |
|-----------------|--------------------|
| 25-35mph | 4,200-4,500 |
| Posted Speed | AADT (2021) |

CROSSING IMPROVEMENTS

- x** 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
- C Convenience/Grocery Store
- H Health/Medical Services
- G 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

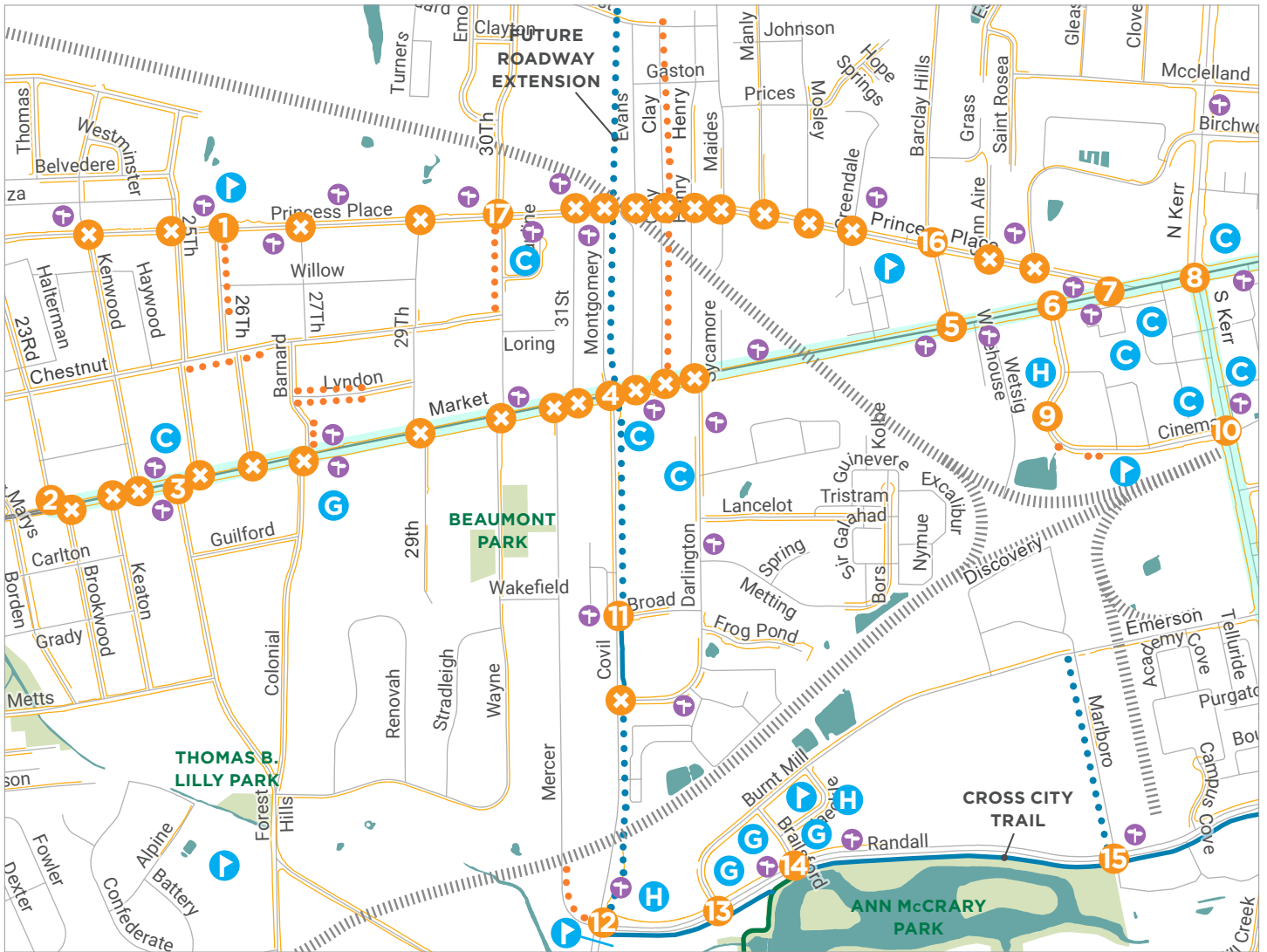
28,000-36,000

Posted Speed

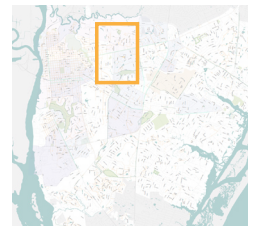
AADT (2021)

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.



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 | 23,000-35,500 |
| Posted Speed | AADT (2021) |

Princess Place Drive:

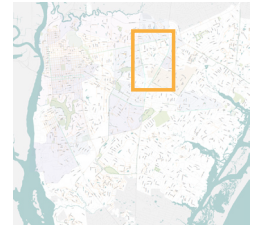
| | |
|-----------------|---------------------|
| 25-35mph | 4,100-12,500 |
| Posted Speed | AADT (2021) |

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 **23,000-35,500**
Posted Speed AADT (2021)

S Kerr Avenue:

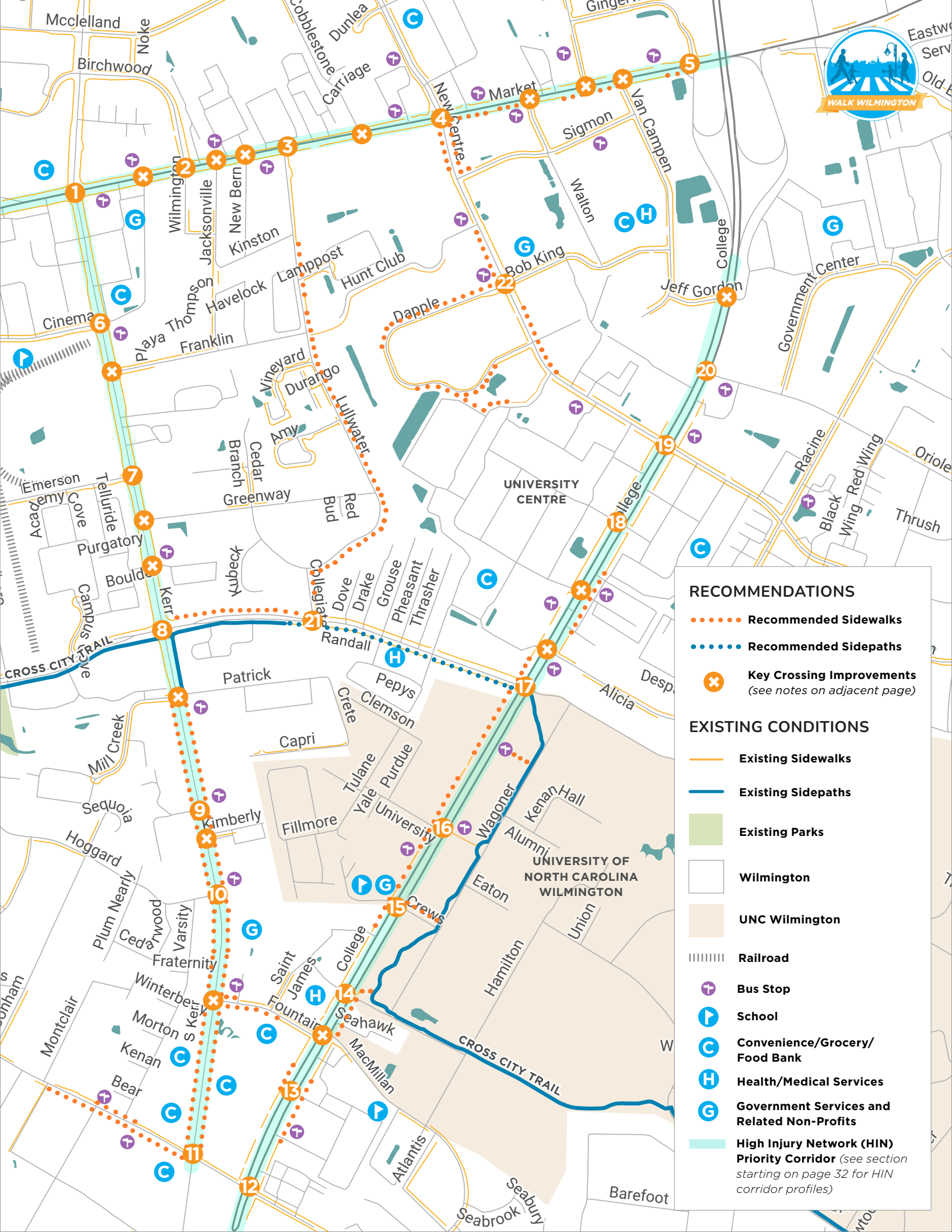
30-35mph **12,500-23,000**
Posted Speed AADT (2021)

College Road:

35-45mph **38,000-51,500**
Posted Speed AADT (2021)

CROSSING IMPROVEMENTS

- X** 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.

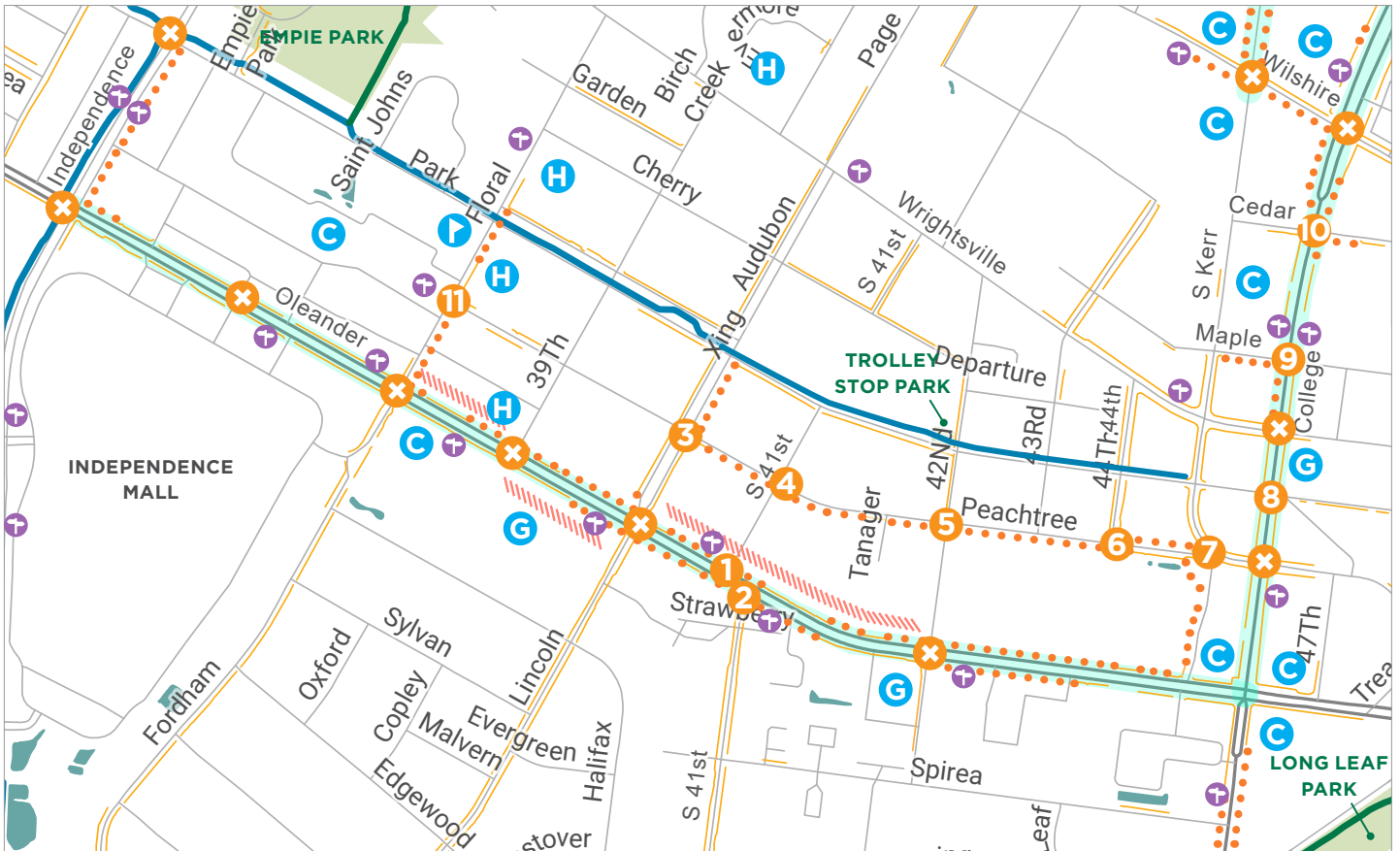


RECOMMENDATIONS

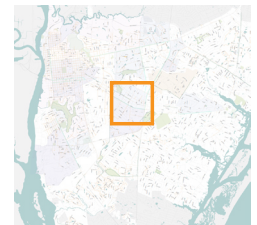
- Recommended Sidewalks
- Recommended Sidepaths
- Key Crossing Improvements (see notes on adjacent page)

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
- X 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
- C Convenience/Grocery/
Food Bank
- H Health/Medical Services
- G 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

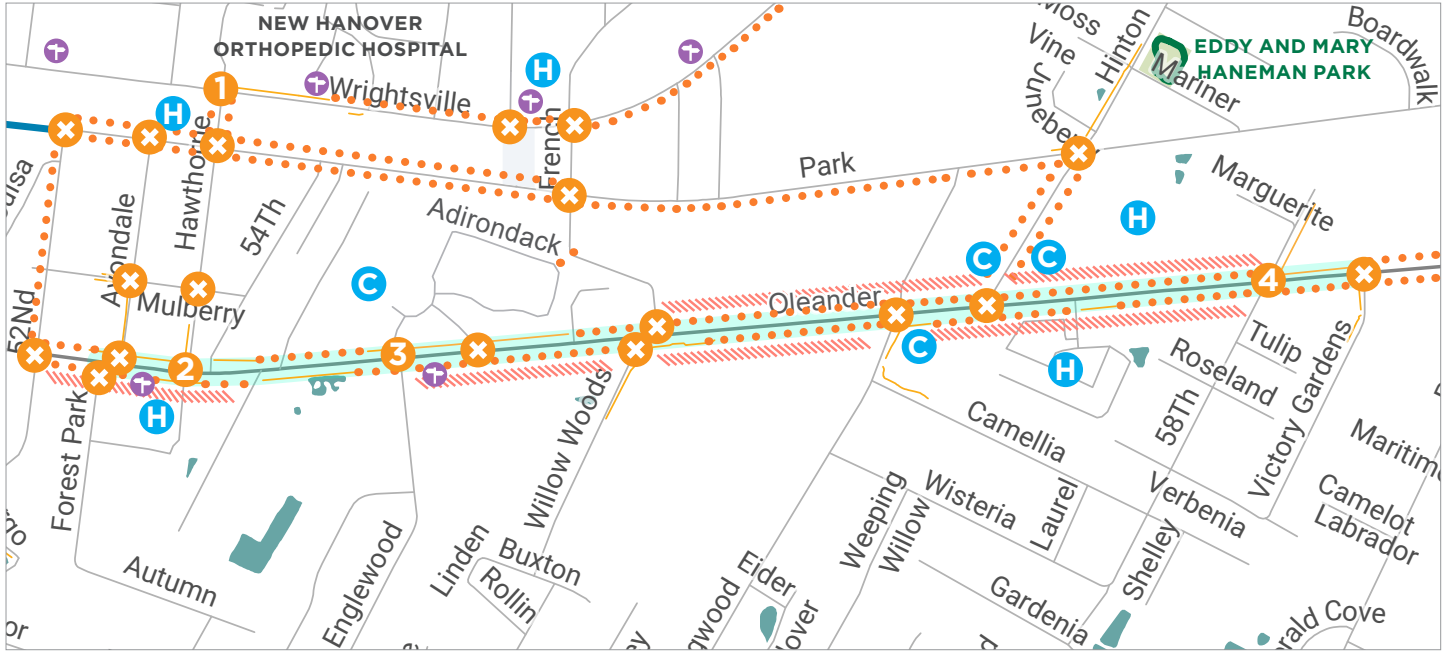
Posted Speed

22,500-36,500

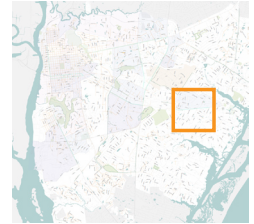
AADT (2021)

CROSSING IMPROVEMENTS

- x** 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
- C Convenience/Grocery/
Food Bank
- H 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

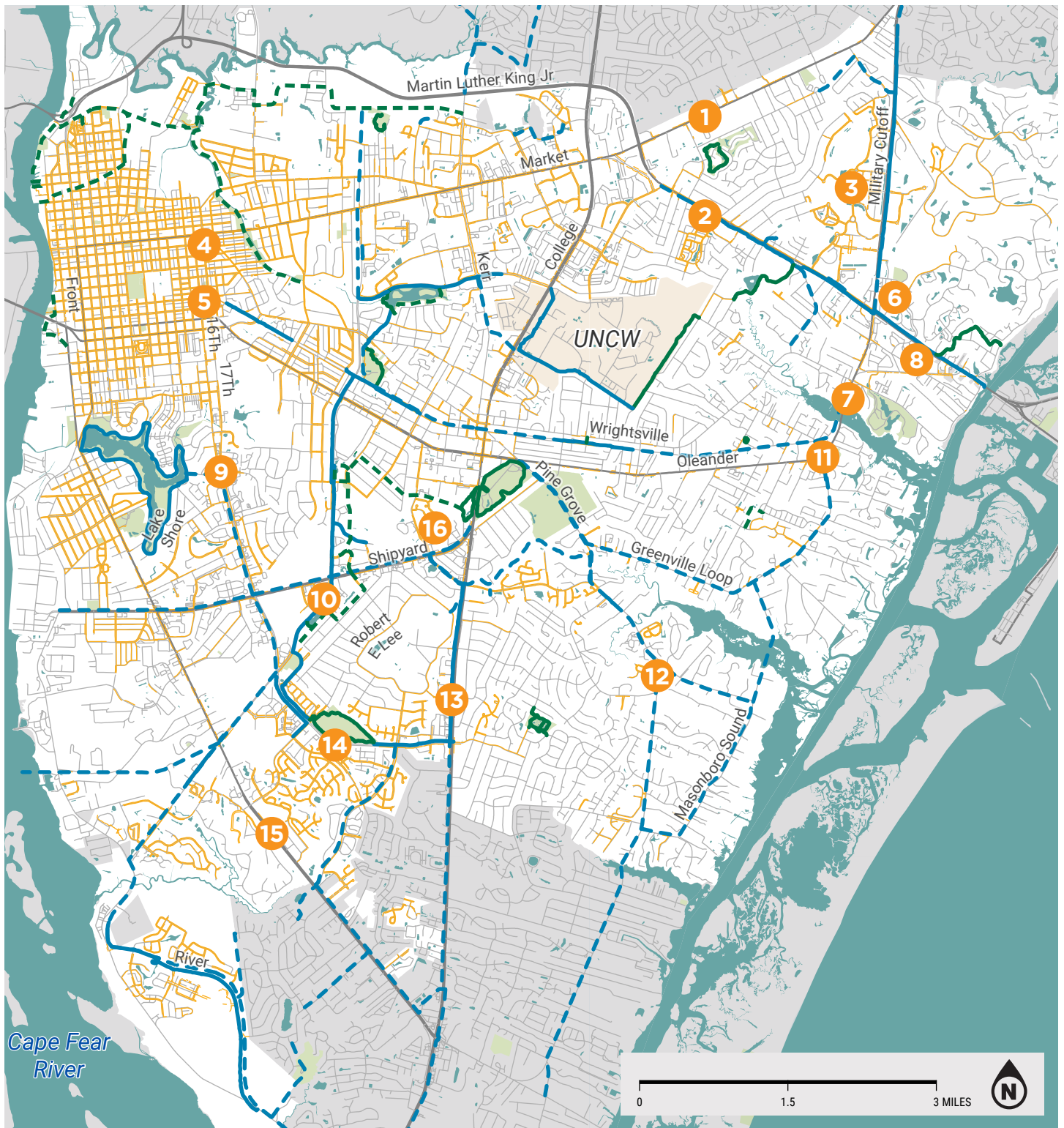
Posted Speed

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.



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 | <p>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:</p> <ol style="list-style-type: none"> 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). | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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.

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.



Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations

| Posted Speed Limit and AADT | Vehicle AADT 9,000-15,000 | | | | Vehicle AADT >15,000 | | | |
|-----------------------------------------------------------------|---------------------------|--------|---------|---------|----------------------|---------|---------|---------|
| | ≤30 mph | 35 mph | >40 mph | ≤30 mph | 35 mph | >40 mph | ≤30 mph | >40 mph |
| 4+ lanes with raised median (2 or more lanes in each direction) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4+ lanes w/o raised median (2 or more lanes in each direction) | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 7 | 8 | 9 | 7 | 8 | 9 | 8 | 8 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

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).

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%](#).

ROUNDBABOUTS

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 |

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.



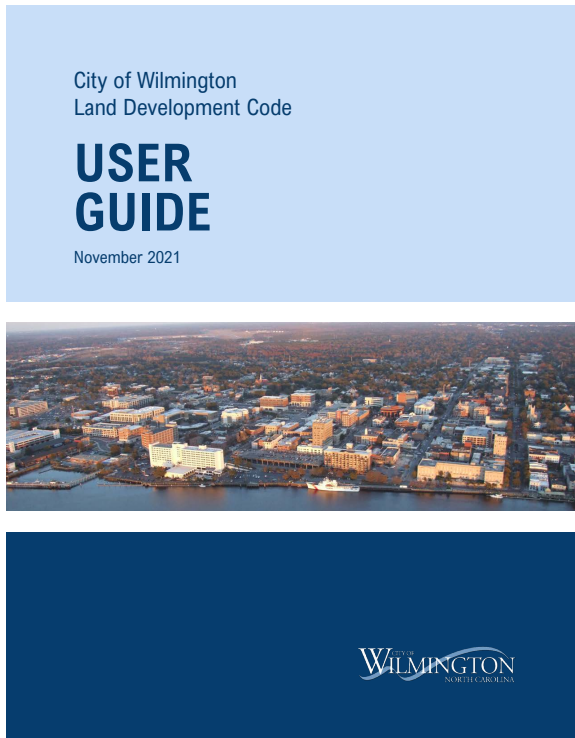
Example of a Complete Street design that accommodates many uses such as walking, biking, driving, and transit.

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

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TABLE 6. Review of Wilmington's Land Development Code

| TOPIC | SECTION | EXISTING CODE LANGUAGE | COMMENTS |
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| <p>PEDESTRIAN AND BICYCLE FACILITY STANDARDS</p> <p>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</p> | | | |
| <p>Definitions of pedestrian and bicycle facilities</p> | <p>Article 8 - Measurements and Definitions, Division 3 - Definitions, Section 18-687: A/B/C Definitions</p> | <p>Bikeway: A right-of-way restricted for the exclusive use by bicycles, except for areas designated for motorized vehicles and pedestrian cross flow.</p> | <p>"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).</p> <p>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.</p> |
| <p>Bicycle and pedestrian connections</p> | <p>Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-494: Sidewalks, walkways, and bikeways</p> | <p>B. Bicycle and pedestrian connections</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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). | <p>The requirement only appears to apply to collector and minor arterial streets; consider specific provisions for other street types.</p> <p>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).</p> <p>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.</p> |

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| Sidewalks and crosswalks | Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-494: Sidewalks, walkways, and bikeways | <p>C. Sidewalk, crosswalks, and multiuse path required locations</p> <p>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):</p> <ul style="list-style-type: none"> 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. <p>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.</p> | <p>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.</p> <p>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.</p> |

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| Mid-block crossings | Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-494: Sidewalks, walkways, and bikeways | <p>D. Mid-block pedestrian connection</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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.). | <p>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.</p> <p>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.</p> <p>Resources:</p> <ul style="list-style-type: none"> • FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations • NCDOT Pedestrian Crossing Guidance |

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| Pedestrian facilities required with site improvements | Article 5 - Site Development Requirements, Division 3 - Changes in Use, Section 18-359: Changes in Use | <p>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:</p> <ol style="list-style-type: none"> 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. <p>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:</p> <ol style="list-style-type: none"> 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). <p>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:</p> <ol style="list-style-type: none"> 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 | <p>9. Pedestrian connectivity</p> <ol style="list-style-type: none"> 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. |

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| District-specific standards related to sidewalks | Article 2 - Zoning Districts, Section 18-44: District-specific standards | <p>UMX District</p> <p>3. General site design</p> <p>a. Multimodal Transportation</p> <p>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.</p> <p>ii. Bicycle or pedestrian connectivity to adjacent developments is required.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>CBD District</p> <p>2. Sidewalks</p> <p>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).</p> <p>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.</p> | <p>These districts have strong pedestrian and bicycle connectivity standards that align with their intended uses.</p> |

OTHER STREETScape STANDARDS RELATED TO PEDESTRIAN-ORIENTED COMMUNITY DESIGN

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| Traffic calming | Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-499: Traffic control devices | <p>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.</p> | <p>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.</p> <p>Resources:</p> <ul style="list-style-type: none"> NACTO Urban Street Design Guide |
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| Lighting | Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-498: Streetlights | <p>A. Streetlights shall be installed within subdivisions in accordance with the Technical Standards and Specifications Manual.</p> <p>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.</p> <hr/> <p><i>From Wilmington's Technical Standards and Specifications Manual, pg. 7-24:</i></p> <p><i>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.</i></p> | 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 quadplex 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). | <p>This requirement and other requirements for preserving existing trees help create a more inviting and comfortable walking environment.</p> <p>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.</p> |
| Shade requirements | Article 5 - Site Development Requirements, Division 1 - Landscaping, Section 18-318: Shading requirements | <p>A. Shading of impervious surface area shall be required.</p> <p>The requirements of this section shall apply to any of the following development activities within a multiple dwelling, commercial, and industrial zoning districts:</p> <ol style="list-style-type: none"> 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. <p>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.</p> <p>C. For existing trees, shading credit shall be given for the canopy overhang existing within the interior of a lot.</p> <p>D. All plantings shall be in accordance with Section 18-315: Standards for landscaping.</p> <p>E. Trees shall be planted to shade impervious surface area as prescribed in Table 18-318: Canopy coverage requirements.</p> | Providing shade through street trees makes walking more pleasant and comfortable for pedestrians, while providing numerous other environmental benefits to the City. |

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| Accessibility/clear zones | Article 5 - Site Development Requirements, Division 5 - Signs, Section 18-390: Freestanding signs | <p>C. Sandwich board signs Section 18-390: Sandwich board signs</p> <p>4. Placement of signs</p> <p>a. Sandwich board signs are allowed only on the sidewalk directly in front of the associated use.</p> <p>b. Along streets with no parallel parking, sandwich board signs shall be placed on the sidewalk within four feet of the curb.</p> <p>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.</p> <p>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.</p> <p>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.</p> | <p>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.</p> |

NETWORK CONNECTIVITY

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| Block length | Article 6 - Subdivision Regulations, Division 3 - Design Standards, Section 18-523: Blocks, lots, and access | <p>B. Block length</p> <p>1. Block length standards apply to preliminary subdivision plans, final plats, and site plans submitted in accordance with this article.</p> <p>2. Within the 1945 Corporate Limits and for all R-5-zoned developments, block length shall not exceed 400 feet.</p> <p>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.</p> <p>4. Block length for industrially-zoned developments shall not exceed 1,500 feet.</p> <p>5. The technical review committee may allow a block to exceed the maximum length if at least one of the following standards are met.</p> <p>a. Approved traffic calming devices, as defined in Article 8, are provided every 400 feet.</p> <p>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).</p> <p>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).</p> <p>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.</p> | <p>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.</p> <p>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.</p> <p>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.</p> |
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| Cul-de-sacs | Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-495: Streets | <p>3. Design</p> <p>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).</p> | <p>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.</p> <p>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.</p> <p>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.</p> |
| Public transit stations | Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-496: Public transportation system | <p>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.</p> | <p>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.</p> <p>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.</p> <p>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.</p> <p>Resources:</p> <ul style="list-style-type: none"> • NACTO Transit Street Design Guide • FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations • NCDOT Pedestrian Crossing Guidance |

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| Open space set-aside | Article 6 - Subdivision Regulations, Division 2 - Improvements Required, Section 18-507: Open space | <p>B. Standards for open space areas</p> <p>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:</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> | <p>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.</p> <p>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.</p> <p>Resources:</p> <p>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</p> |
| PARKING REQUIREMENTS | | | |
| Parking quantity requirements | Article 5 - Site Development Requirements, Division 2 - Parking Standards, Section 18-340: Applicability | <p>1. Off-street parking shall be provided for all new residential buildings and uses pursuant to Table 18-341.1: Residential parking ratios.</p> <p>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.</p> | The removal of most parking minimums and introduction of parking maximums for non-residential uses supports the goal of a walkable city. |

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| Parking quantity requirements | Article 5 - Site Development Requirements, Division 2 - Parking Standards, Section 18-340: Applicability | <p>A. Parking standards</p> <ol style="list-style-type: none"> 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. <p>B. Off-street parking in residential districts</p> <ol style="list-style-type: none"> 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. <p>C. Residential parking exceptions</p> <p>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.</p> | 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 | <p>A. Applicability</p> <ol style="list-style-type: none"> 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. | <p>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.</p> <p>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.</p> |

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| Bicycle parking standards | Article 5 - Site Development Requirements, Division 2 - Parking Standards, Section 18-342: Bicycle parking | <p>B. Design and installation requirements</p> <ol style="list-style-type: none"> 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. <hr/> <p><i>From Wilmington's Technical Standards and Specifications Manual, pg. 7-21:</i></p> <p>F. BICYCLE PARKING</p> <p><i>Where Bicycle Parking is provided under Section 19-43, Paragraph (f) of the City Zoning Ordinance, the following standards shall apply:</i></p> <p><i>a. Construction</i></p> <p><i>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.</i></p> <p><i>b. Bicycle Parking Mechanisms</i></p> <p><i>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.</i></p> | <p>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.</p> <p>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.</p> <p>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.</p> <p>Resources:</p> <ul style="list-style-type: none"> • 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. |

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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.



Each year, there are an average of 176 pedestrian and 22 bicyclist fatalities in North Carolina.

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

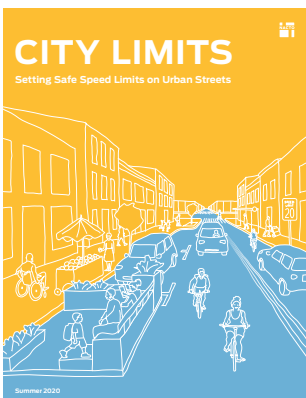
Conduct a Safe Speed Study to determine the safest maximum speed limits for places where people walk in Wilmington.

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



NACTO City Limits guide.

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.

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.



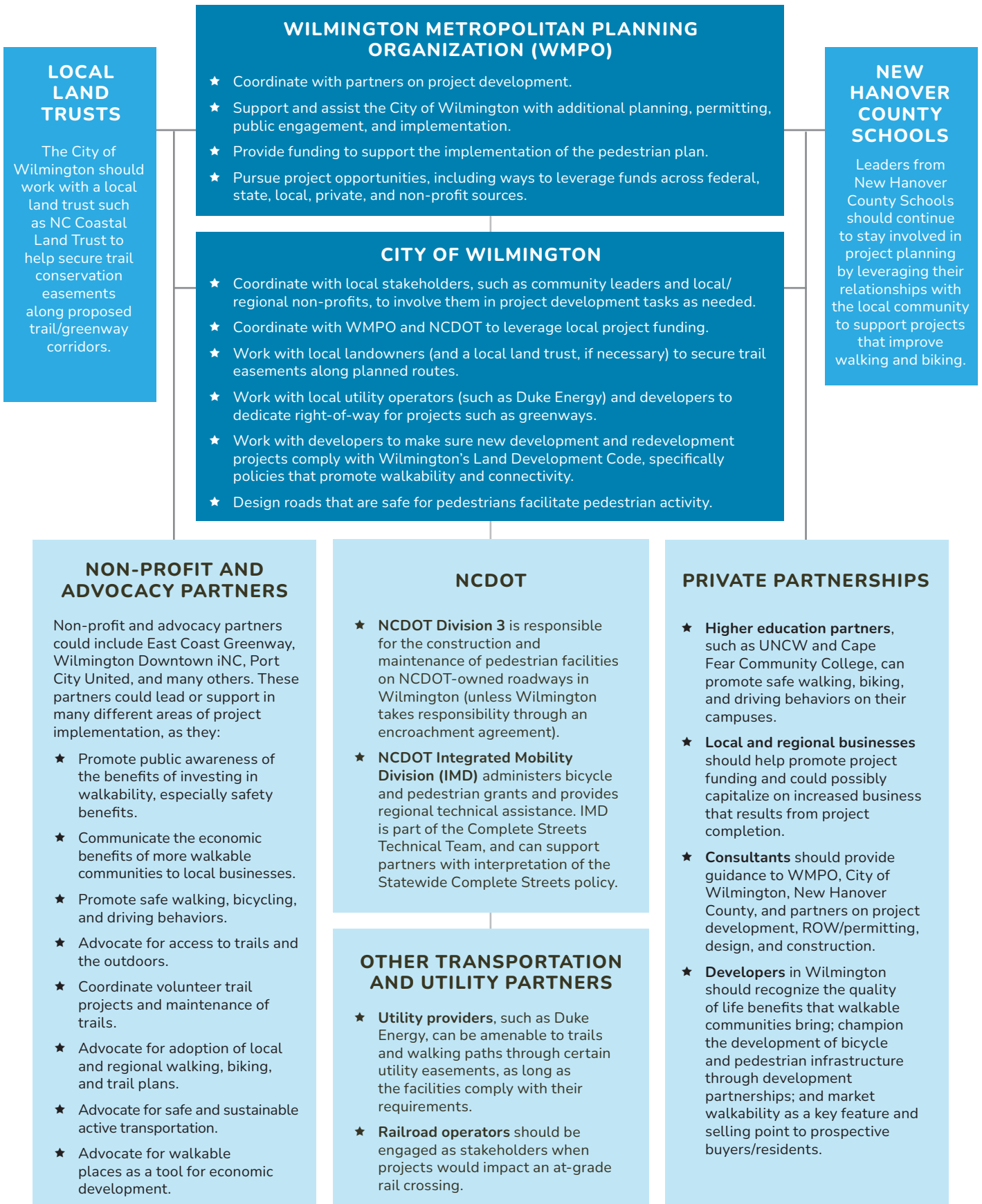
The application and other resources are available at: www.walkfriendly.org

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



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 into 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. | <p>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.</p> <p>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.</p> | 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. |

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








| PRIMARY GOAL(S) | PERFORMANCE MEASURE | DESIRED TARGET OR TREND | DATA SOURCES |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Pedestrian crashes of all injury types.</p> | <p>Decrease in annual number and per capita rate of pedestrian crashes of all injury types.</p> <p>Decrease in annual number and per capita rate of pedestrian injuries and fatalities.</p> <p>Decrease in proportion of pedestrian crashes that result in fatalities and serious injuries.</p> | <ul style="list-style-type: none"> • 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) |
|  | <p>Population served by walking, biking, and transit.</p> | <p>Increase in percent of population within a specified distance of a transit stop, sidewalk, trail, and/or bike facility.</p> <p>Prioritization of projects that would increase this percentage in areas with higher Transportation Disadvantage.</p> | <ul style="list-style-type: none"> • Pedestrian infrastructure inventory data (WMPO) • Transit route data (WAVE Transit, WMPO) • Population and demographic data (US Census) • Transportation Disadvantage data (NCDOT) |
|   | <p>Number/density of destinations accessible via the pedestrian network.</p> | <p>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.</p> <p>Prioritization of projects in areas with high potential numbers of destinations that are currently not connected to the pedestrian network.</p> | <ul style="list-style-type: none"> • 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) |
|   | <p>Percent of commuters walking, biking, and taking transit to work.</p> | <p>Increase in percent of commuters walking/biking/ taking transit to work.</p> | <ul style="list-style-type: none"> • 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/WMPPO), transit route data (WAVE/WMPPO) 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:

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