

MOVE DURHAM

CENTRAL DURHAM TRANSPORTATION STUDY



2020



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CENTRAL DURHAM
TRANSPORTATION STUDY

Background

Move Durham will study access to and mobility through central Durham and develop recommendations that consider all modes of transportation, including walking, biking, taking transit, and driving.



**CITY OF
DURHAM**



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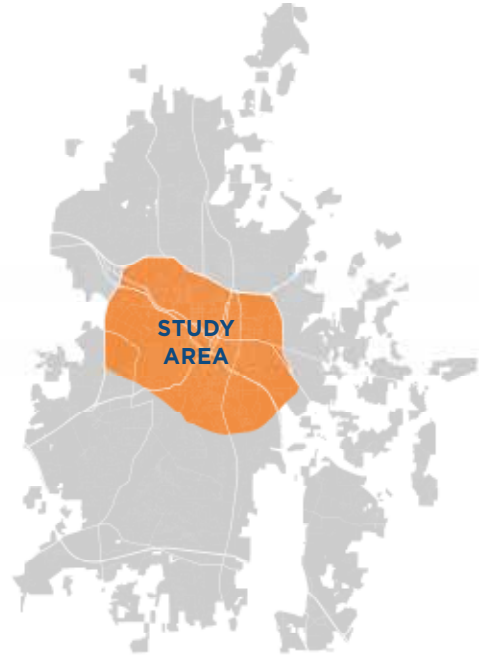
EXECUTIVE SUMMARY

Vision Statement: Whether traveling by bus, foot, bike or car, people in central Durham will be able to move safely and reliably. A more convenient and connected multimodal transportation network will ensure that moving in central Durham is affordable and equitable for all.

Central Durham Study Area

The central Durham study area is defined by the corridors of I-85 to the north, US 70 to the east, Cornwallis Rd to the south, and US 15-501 to the west.

The Move Durham team studied access to and mobility through central Durham and developed recommendations that consider all modes of transportation, including walking, biking, taking transit, and driving. The planning process included extensive public engagement and data gathering to better understand mobility needs in the central city.



Durham Today

Key findings from the existing conditions analysis of the study area include:

- Walking
 - » 221 Total miles of sidewalk
 - » 597 Pedestrian crashes (2007-2015)
- Biking
 - » 20 Total miles of bike facilities
 - » 220 Bicycle crashes (2007-2015)
- Transit
 - » 1,296 Total bus stops
 - » Average of 33 GoDurham passengers per hour (2019)
- Driving
 - » 22% of all trips that begin and end within the study are under one mile, or a 15-minute walk.
 - » Once open, the East End Connector will provide a direct connection between the Durham Freeway (NC 147) and Miami Boulevard (US 70) and will divert traffic off of north/south roadways and Holloway Street.



*A pedestrian crossing
Fayetteville Street near NCCU*

Equitable Engagement Process

The Equitable Engagement Blueprint guided our efforts to ensure all voices were heard including those that are traditionally underrepresented in City processes.

Phase 1

- 1,120 Completed surveys
- 450 Map comments
- 200 Stakeholders included
- 400+ Community conversations
- Feedback was used to select the priority corridors

Phase 2

- 2,589 Corridor surveys completed

Transportation Priorities

- Better bus stops
- Frequent, reliable and extensive transit
- More sidewalks and safer crossings
- Better lighting and traffic calming
- Low-stress and connected bikeways



An interactive cross section activity was used to gather input and spark discussion about how streets are designed.

Priority Corridors

The Move Durham team developed recommendations for each priority corridor (see list to the right) based on community feedback, stakeholder input, existing conditions analysis, best practices research, and implementation feasibility.

- Avondale Dr & Alston Ave
- Chapel Hill St
- Downtown Loop
- Duke St & Gregson St/Vickers St
- Durham Freeway
- Fayetteville St & Elizabeth St
- Holloway St
- Mangum St & Roxboro St

Funding Strategies

The cost estimates below for program recommendations and corridor improvements in the study area are planning level costs only. More analysis and equitable engagement are needed to develop engineering cost estimates.

Recommendation	Cost Estimate
Sidewalk Repair	\$1.6 - \$1.7M
Pedestrian Signals & Crosswalks	\$2.8 - \$5.6M
Sidewalk Gaps	\$2.0 - \$2.2M
Bike Facilities	\$2.0 - \$8.0M
Bus Stop Amenities (Shelters, bike parking, benches, wayfinding, etc.)	\$500,000
Priority Corridor Improvements	\$1.8 - \$2.8M per mile
Total Plan Cost	\$29.8M - \$83.9M



A cyclist crossing 9th Street



EXECUTIVE SUMMARY

Durham Tomorrow: A series of policy and program recommendations to improve the way people move in and around central Durham.

Our Sidewalk Network

There are 157 total miles of roadway in the four sidewalk priority tiers. Currently, 68% of that existing roadway network, or 106 miles, has a sidewalk on at least one side. 54% percent, or 39 miles, of existing roadways within ¼-mile of a high frequency transit route have a sidewalk on at least one side of the street.

Recommendations:

- Implement projects in the priority sidewalk network and continue implementation of the 2017 Bike+Walk Implementation Plan.
- Address transit first/last-mile connections.
- Implement priority pedestrian crossing improvements throughout the study area.
- Explore innovative and low-cost, quick-build design solutions.



W. Club Boulevard Pilot Project

Our Bike Network

There are currently 20 miles of bicycle facilities in the study area with an additional 20 miles of future funded bikeways. Of the current 20 miles of bikeways, 1/2 mile is a protected bike lane and 2.5 miles are buffered bike lanes. Existing bicycle facilities are more prevalent in the western part of the study area, while there are more planned trails in the eastern part of the study area.

Recommendations:

- Implement projects identified in the priority bikeway network and continue implementation of the 2017 Bike+Walk Implementation Plan.
- Prioritize low-stress bike facility selection during the project scoping and design phase.
- Improve key intersections to ensure a consistent and connected low-stress bike experience.



Protected bike lanes on E Main Street

Our Transit Network

Durham has one of the most productive transit systems in North Carolina - with an average of 33 passengers per hour. However, this also presents challenges with over-crowded buses and the ability to maintain reliable service. Although the Durham-Orange Light Rail Transit project has been discontinued, GoDurham is implementing several transit improvements from the adopted Short Range Transit Plan. Additionally, an update to the Durham County Transit Plan will identify priority transit investments with the opportunity to improve service, relieve crowding, and increase ridership through more frequent and reliable service and better access to/from transit.

Recommendations:

- Install more bus stop amenities and construct access to transit projects to improve user comfort and safety.
- Coordinate with the Durham County Transit Plan to:
 - » Leverage Move Durham public engagement results.
 - » Identify priority corridors for high-frequency transit.
 - » Prioritize and allocate transit investment equitably throughout the study area.



*Bus only red lane in Portland, OR
(Photo Credit: Willamette Week)*

Our Driving Network

As new roadway improvements and connections, such as the East End Connector, are implemented, both local and regional travel behavior will change. Durham has an opportunity to shift to a more comprehensive approach to roadway design that prioritizes the movement of people to ensure Durham residents have safe, healthy and equitable transportation options.

Recommendations:

- Continue to incorporate the Equitable Engagement Blueprint into transportation planning and projects.
- Develop and adopt a speed management policy.
- Strengthen Durham's Vision Zero efforts by setting implementation-focused goals and action items.
- Pilot innovative parking and curb management strategies to provide for the efficient use of public space.



*A multimodal street (Dexter Ave) in Seattle, WA allows for safe and comfortable travel using diverse modes.
(Photo credit: Green Lane Project)*



EXECUTIVE SUMMARY

What's Next? Implementation strategies and call to action to respond to community concerns and input.

Policy, Funding, and Infrastructure Recommendations

While transportation infrastructure – roads, sidewalks, crossings, bikeways – are critical for improving walking and bicycling, policies and programs add political backing and institutionalize recommendations into city practice.

Recommendations:

- The plan recommends the adoption of several policies and programs such as speed management and transportation demand management.
- The plan recommends establishing infrastructure program funding for priority sidewalk, bike, transit, and street projects throughout the study area.
- The plan also recommends specific infrastructure projects on the nine priority corridors. These projects will require federal, state, and/or local funding, coordination with NCDOT on roadway maintenance responsibilities, and consideration in the Durham County Transit Plan process.



Residents taking surveys at a Juneteenth event

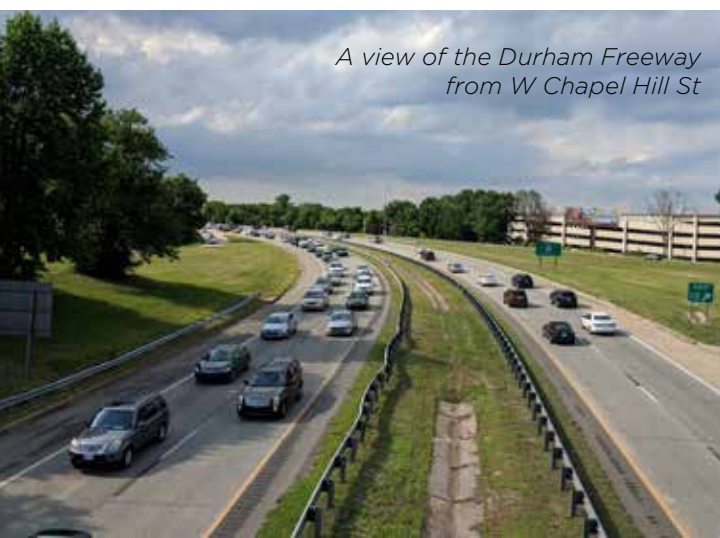
The Durham Freeway

During the 1970's the Durham Freeway (NC 147) was built to provide a high-speed vehicle connection from Research Triangle Park (RTP) to central Durham. NC 147's path through Durham destroyed well-established African American communities such as the Hayti community. As a result of NC 147's construction, African American businesses, homes, and places of worship were demolished and residents were permanently displaced.

Today, NC 147 serves as a primary route through Durham with between 44,000 and 87,000 vehicles driving the corridor every day. However, the impact on adjacent communities can still be felt, and NC 147 represents a significant barrier to access for many Durham residents.

Recommendations:

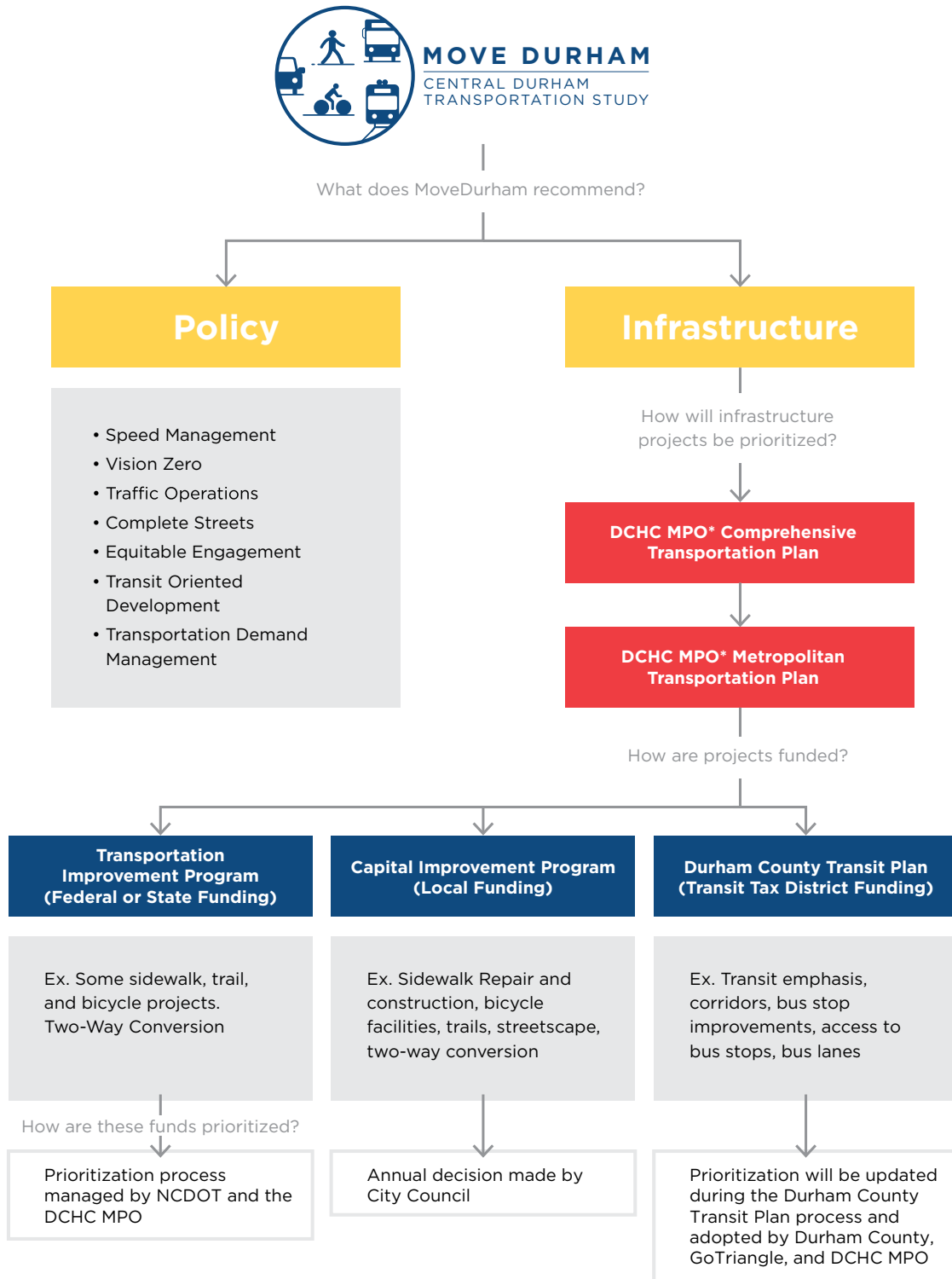
- Leverage the Durham Comprehensive Plan Update planning process to continue the conversation with local leaders and neighborhoods about the impact of the Durham Freeway, challenges the Freeway causes to downtown access, and potential improvements.
- Coordinate with NCDOT regarding their TIP project to advocate for community needs and City priorities as this project proceeds through project development.



A view of the Durham Freeway from W Chapel Hill St

Implementation

The flow chart below highlights the primary recommendations of this plan and how they relate to other city planning efforts and funding programs. Any infrastructure project that moves forward into implementation will have a focused and equitable engagement effort associated with it.



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1

DURHAM TODAY



WHERE WE ARE

Central Durham Study Area

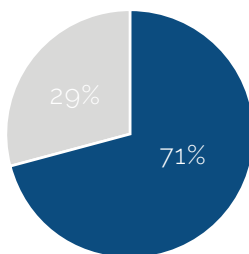
The Central Durham Study Area is defined by the corridors of I-85 to the north, US70 to the east, Martin Luther King Jr. Blvd and Cornwallis Rd to the south, and US 15/501 to the west.



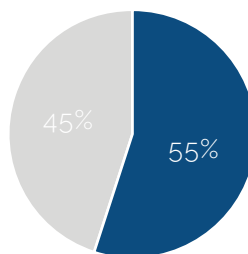
Who We Are

The graphs below highlight the existing demographics of the study area. The title graph correlates with the blue percentage.

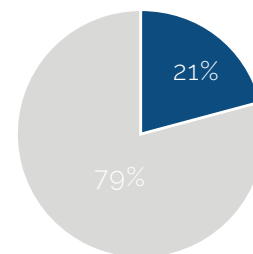
Non-White



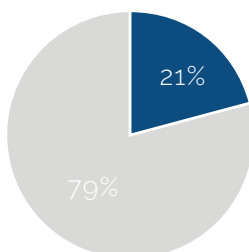
Below Poverty Level



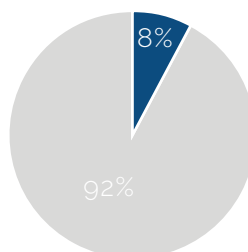
No Access to Vehicle



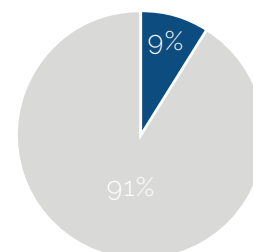
Under Age 18



Over Age 65

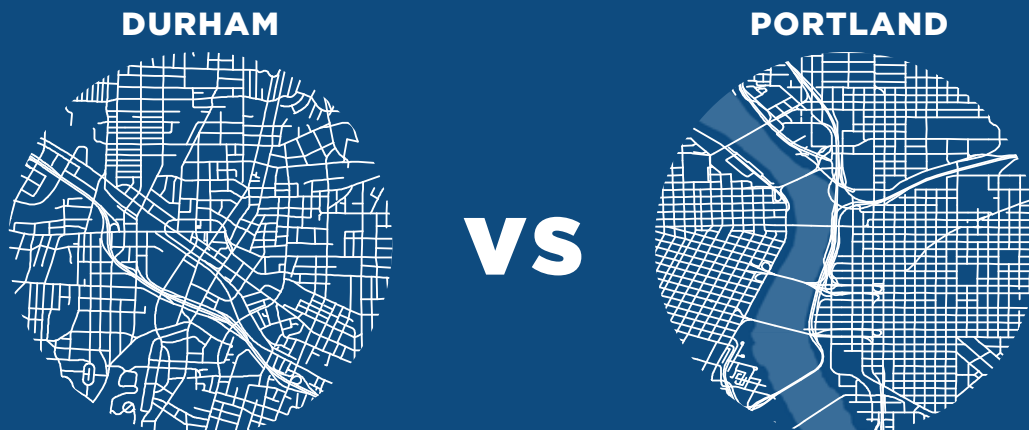


Limited English



Our Roadway Network

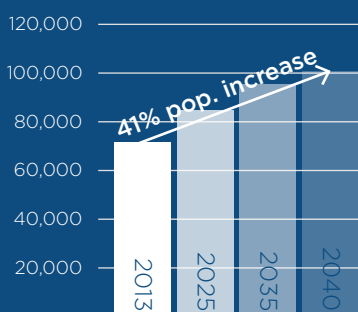
Like many southern cities, Durham lacks a traditional street grid when compared to other leading multimodal cities like Portland, Oregon. The lack of interconnected public streets and deficiencies in bikeways and sidewalks mean that even the shortest trips are primarily made by car.



A City and Region of Growth

Durham and the surrounding region are facing rapid growth and change that will impact how people move.

CENTRAL DURHAM STUDY AREA



DURHAM COUNTY population is expected to increase by:

48%

TRIANGLE REGION population is expected to increase by:

62%

Source: population growth estimates from 2045 CAMPO/DCHC MTP

Increasing Transit Demand + Ridership

Durham has one of the most productive transit systems in North Carolina. This high utilization presents challenges with over-crowded buses and the ability to maintain reliable service. While additional service is needed, in April 2019, the Durham-Orange Light Rail Transit project was discontinued.

AVERAGE PASSENGERS PER HOUR

GoDurham*

33



GoRaleigh

23



Charlotte

22



*Stat represents the entire GoDurham network, not just trips within the Move Durham study area.



Equity

Transportation equity requires understanding the unique needs and safety concerns of different populations and focusing improvements and resources to each group appropriately.

Safe and efficient transportation options are essential to create communities of opportunity and reduce disproportionate economic and health burdens.

Often, traditionally vulnerable populations rely heavily on affordable transportation options, specifically walking, biking, and transit.

The map on page 6 highlights areas of priority in central Durham that were identified using the following economic and demographic indicators*:

- **Race:** Percentage of the population that identifies as non-white
- **Age - Children:** Individuals under the age of 18
- **Age - Seniors:** Individuals over the age of 65
- **Vehicle Access:** Households with no access to a vehicle
- **Income:** Individuals of working age who are living at or below 200% of the Federal Poverty Level (FPL)
- **Educational Attainment:** Population with no high school diploma or equivalent
- **Limited English Proficiency (LEP):** Percentage of the population that identifies as not speaking English well or at all

Safety Spotlight

Nationally, Black, Indigenous, and Latinx people are struck and killed while walking at higher rates than White people and it's no different in central Durham.

53%

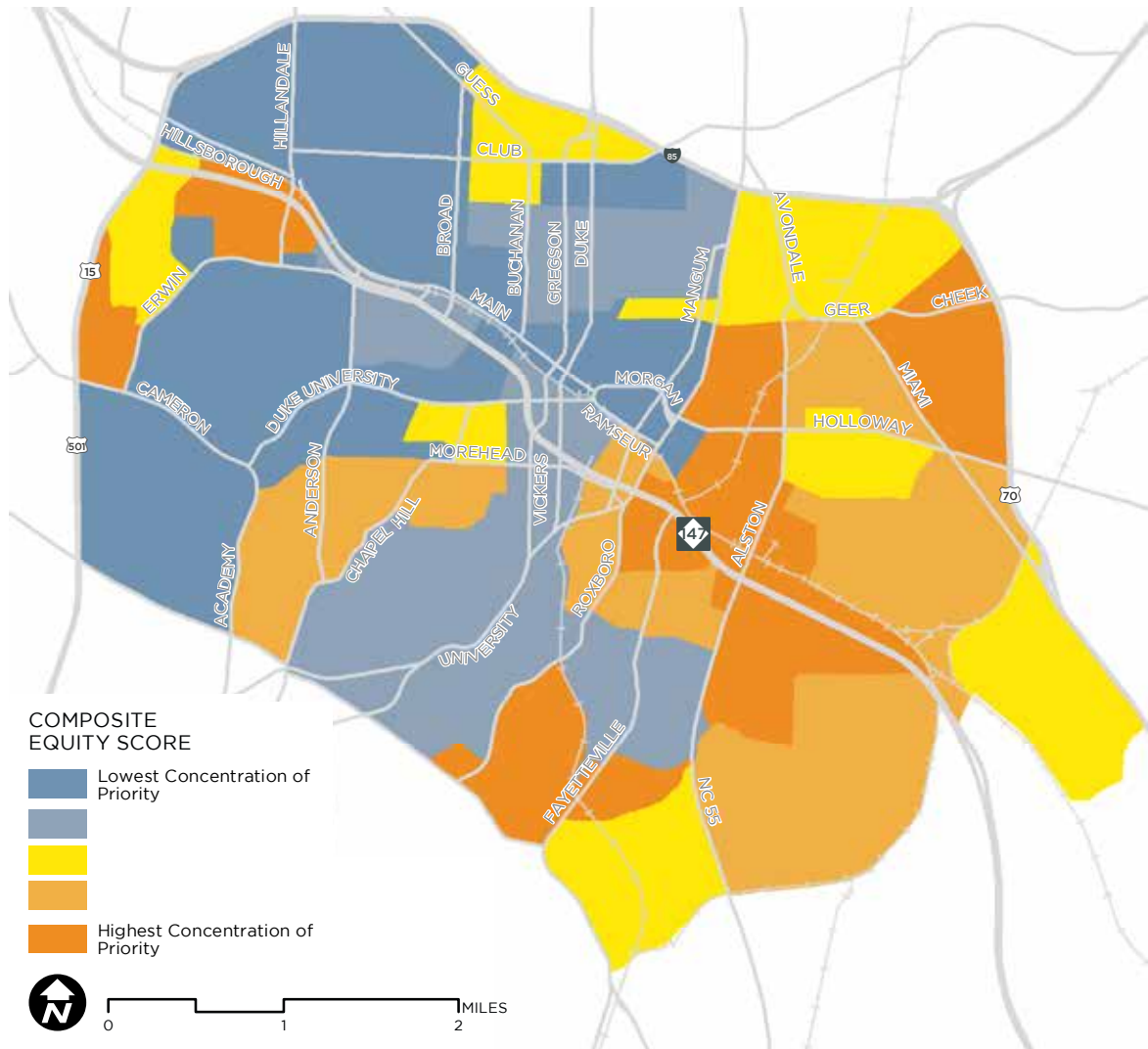
of bicyclists involved in a crash in the study area were people of color

77%

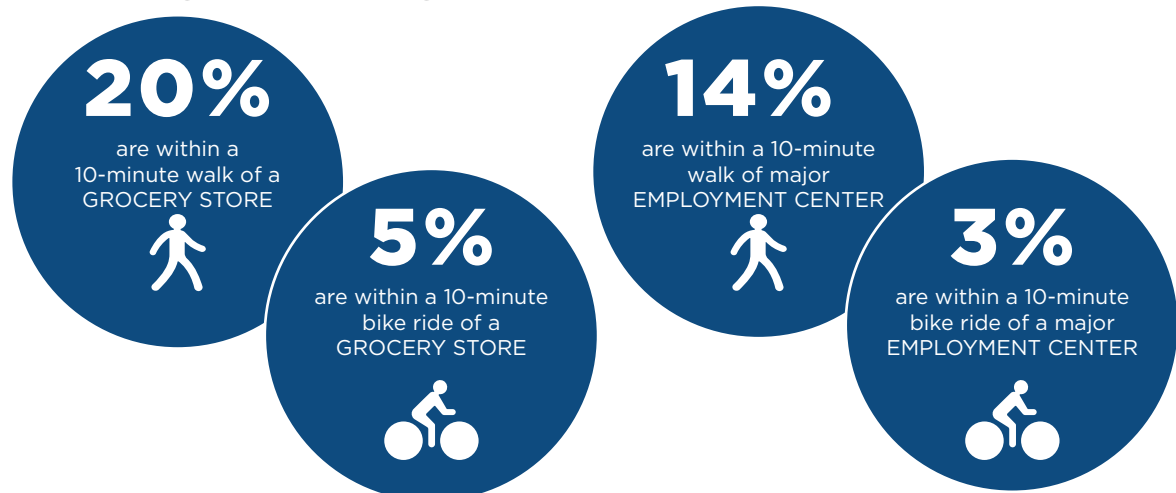
of pedestrians involved in a crash in the study area were people of color

Source: NCDOT Crash Data from 2007 through 2015; 2019 Dangerous by Design Report from Smart Growth America

Source: 2016 ACS 5-year estimates by Census block group



With the existing bikeway and sidewalk networks, those living in areas of high need...





HOW WE MOVE

Walking in Central Durham

INFRASTRUCTURE
SAFETY
CONNECTIVITY



221

Total miles of sidewalk in the study area.



47%

Of the existing roadway network has a sidewalk on at least one side.



597

Pedestrian crashes between 2007 and 2015.



66%

Of pedestrian crashes occurred on roadways with a speed limit of 35 mph or higher.



14%

Of the study area is within a 10-minute walk of a grocery store using existing sidewalks.



14%

Of the study area is within a 10-minute walk of a job center using existing sidewalks.







An activated and complete sidewalk in Old East Durham



Pedestrian in unsafe crossing situation on Fayetteville St



Biking in Central Durham

INFRASTRUCTURE		20	Total miles of bicycle facilities in the study area (of which, 1/2 mile is protected bike lane and 2.5 miles are buffered bike lanes)
		20	Miles of proposed bikeways and trails funded, in design, or under construction in the study area.
SAFETY		220	Bicycle crashes between 2007 and 2015.
		65%	Of bicycle crashes occurred on roadways with a speed limit of 35 mph or higher.
CONNECTIVITY		8%	Of the study area is within a 10-minute bike ride of a grocery store using an existing bikeway.
		7%	Of the study area is within a 10-minute bike ride of a job center using an existing bikeway.

New buffered bike lane on East Main St



Cyclist merges with traffic from the Loop to W Main St





Transit in Central Durham

ROUTES+RIDERSHIP		3	Bus operators, including GoDurham, GoTriangle, and Duke Transit
		1,296	Total bus stops in the study area.
		33	Average GoDurham passengers per hour in 2019.
SAFETY		78%	Of bus stops are on a street with a sidewalk on at least one side of the street.
		82%	Of pedestrian crashes from 2007 to 2015 occurred within 0.1 miles of a bus stop.
CONNECTIVITY		14%	Of the study area is within a 10-minute walk of a high frequency transit stop using existing sidewalks.
		2%	Of the study area is within a 10-minute bike ride of a high frequency transit stop using a designated bike facility.

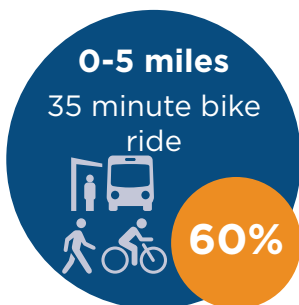
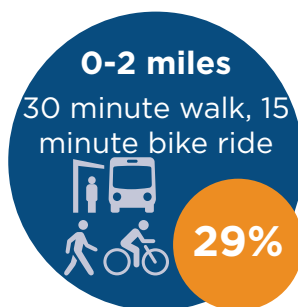
Sheltered bus stop on Fayetteville Street



An unsheltered bus stop in an uncomfortable environment



Driving in Central Durham



11% of driving trips ending in the study area are under a mile. That's a distance that most people can walk comfortably in 15 minutes. The top five destinations within the study for driving trips are:

- Downtown
- Duke
- Old West Durham/ Ninth Street
- American Tobacco/ Durham Station
- Northgate Area

CONNECTIVITY



98%

Of the study area is within a 10-minute drive of a grocery store.



98%

Of the study area is within a 10-minute drive of a job center.

Parking in Central Durham

According to the 2018 Downtown Durham Parking Study, the top three parking issues in downtown Durham are:



Supply or availability of parking



Cost of parking



Convenience

Parking Garages:

7

Parking Lots:

113

On-Street Parking Spaces:

2,024

2 YOUR VOICE



YOUR VOICE MATTERS!

With the launch of the Move Durham project, the City of Durham saw a unique opportunity to think differently about how the public is involved in the planning process. With guidance derived from the Equitable Community Engagement Blueprint, staff input, and community stakeholders, the project team created an outreach process to provide accessible, meaningful, and equitable engagement opportunities.

During Phase One outreach, we had three primary questions to ask:

- *How do you currently move and how to you want to move around central Durham today?*
- *What big ideas do you have to improve how you move around central Durham?*
- *What needs to be fixed in order to improve how you move around central Durham?*

Outreach Goals

Build *community trust and support for the Move Durham study with local partners.*

Empower *local partners and community leaders to increase their knowledge of data, resources, etc.*

Demonstrate *that ideas and concerns are being heard and responded to as thoroughly as possible.*

Ensure *that the voices presented during the Move Durham planning process are a reflection of the demographics within the central Durham study area.*

Guiding

Build *personal relationships with target populations*

Create *a welcoming atmosphere*

Increase accessibility

Develop *alternative methods for engagement*

Maintain *a presence within the study area*

Partner *with diverse organizations and agencies*



Identified Project Stakeholders

Using various resources, including previous projects, web searches, news articles, conversation with City of Durham staff, and interviews with key community leaders, a list of project stakeholders was developed.

Targeted messages and multiple communication channels were used to keep the general public and project stakeholders updated on specific issues, events, and key milestones.

The project stakeholder list below includes individuals and organizations who:

- *Would be affected by the outcome, negatively or positively; and*
- *Are able to help to amplify the study objectives; and*
- *Are able to influence/encourage community participation.*

Community / Civic Associations	61
Faith-Based / Spiritual	46
Education	24
City / Social Services	22
Business / Education	18
Media	6

TOTAL CONTACT LIST 177

Targeted Outreach

To make it easy for people to share their ideas and thoughts, a number of strategic outreach efforts were used to increase awareness of the study and the user survey.

INTERCEPT INTERVIEWS were conducted at strategically located, high-volume sites by members of the study team and students from Partners for Youth Opportunity. Location sites included:

- Durham Bus Station
- Durham Tech
- Durham City Hall
- Main Street and Chapel Hill Street during high pedestrian traffic times (weather dependent)

SMALL GROUP MEETINGS were conducted with the following stakeholders to identify opportunities to disseminate project-related information as well as the transportation survey.

- President, Durham County NAACP
- Partners for Youth Opportunity
- NCCU
- Durham Tech

A MAPPING EXERCISE was implemented via a hard copy poster map that was brought to events, an online map managed by Move Durham, and an online map managed by the Durham Participatory Budget Project. The comments received were sorted by mode (pedestrian, biking, transit, and driving) and by common theme. Results are highlighted on pages 17 through 24.

DROP-OFF/PICK UP SURVEYS were used at the following high-volume community services establishments. Owners/managers were given a brief overview of the study's purpose and goals, and were asked to encourage clients to participate in the survey.

- Families Moving Forward
- Holton Community Center
- JJ Henderson Housing Center for Seniors
- Lyons Park
- Nehemiah Christian Day Center
- Partners for Youth Opportunity
- Phoenix Square
 - Imperial Barbershop
 - Black Wallstreet Barbershop
 - Naturally Yours Hair Salon
- ReCity
- Step Up Durham
- Samuel & Sons Barbershop
- Spirit House
- Wellons Village
 - Beauty Land
 - H & R Block
 - Hispanic Bakery
 - Rent-A-Center



PHASE ONE: OUTREACH ACTIVITIES

NOVEMBER 2018



Launch Online Materials

- Website
- Survey (English + Spanish)
- User Map
- Social Media Campaign
- Participatory Budget Input Map



Printed Materials

- Posters Distributed
- Project Info Cards Shared with Stakeholders (English + Spanish)
- Survey (English + Spanish)



Public Outreach Briefing

Invite public stakeholders to learn about the project, pick up outreach materials, and offer suggestions on who/what/when/where.

DECEMBER 2018



Durham City Council Presentation

Provide short update to community leaders on project and outreach opportunities.



Tag Along at Public Events

Attend events to promote project, receive survey responses and map ideas. Events include:

- Participatory Budget Event at Maureen Joy Charter School
- Durham Holiday Parade Outreach
- Durham Neighborhood Bicycle Routes Event
- Participatory Budget Youth Jam Event at WG Pearson Center
- NCCU and Durham Tech Focus Group

JANUARY 2018



Online Publicity

- Facebook Advertisements
- Bull City Today Video



Community Workshops

Project materials, interactive opportunities, and staff were on-hand at 3 workshops held at the Hayti Heritage Center, Durham County Department of Public Health, & Durham Bus Station



Interdenominational Ministerial Alliance of Durham and Vicinity

Community awareness and Q&A

FEBRUARY 2018



Durham Green Flea Market Pop-Up Event

Provided both English and Spanish surveys and had translation services available. Held a raffle for two \$25 gift cards for those that completed the survey.

PHASE ONE OUTREACH BY THE NUMBERS:

1,120 Surveys Completed

573 Online Entries

547 Paper Entries

450 Map Comments

200 Stakeholders Included

400+ Community Conversations



INTERACTIVE MAPPING: PEDESTRIAN-ORIENTED COMMENTS

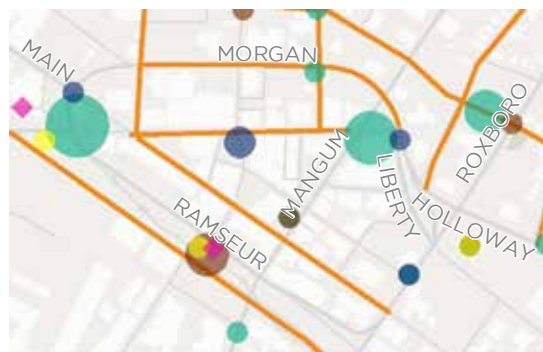
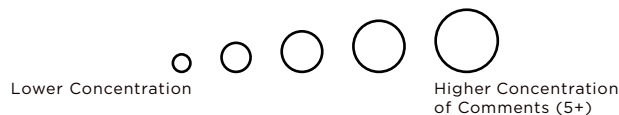
More than any other type of travel, the community expressed their desire for improved walking conditions. The types of comments range from specific infrastructure safety issues, concerns relating to travel behavior, streetscape improvements, and more.

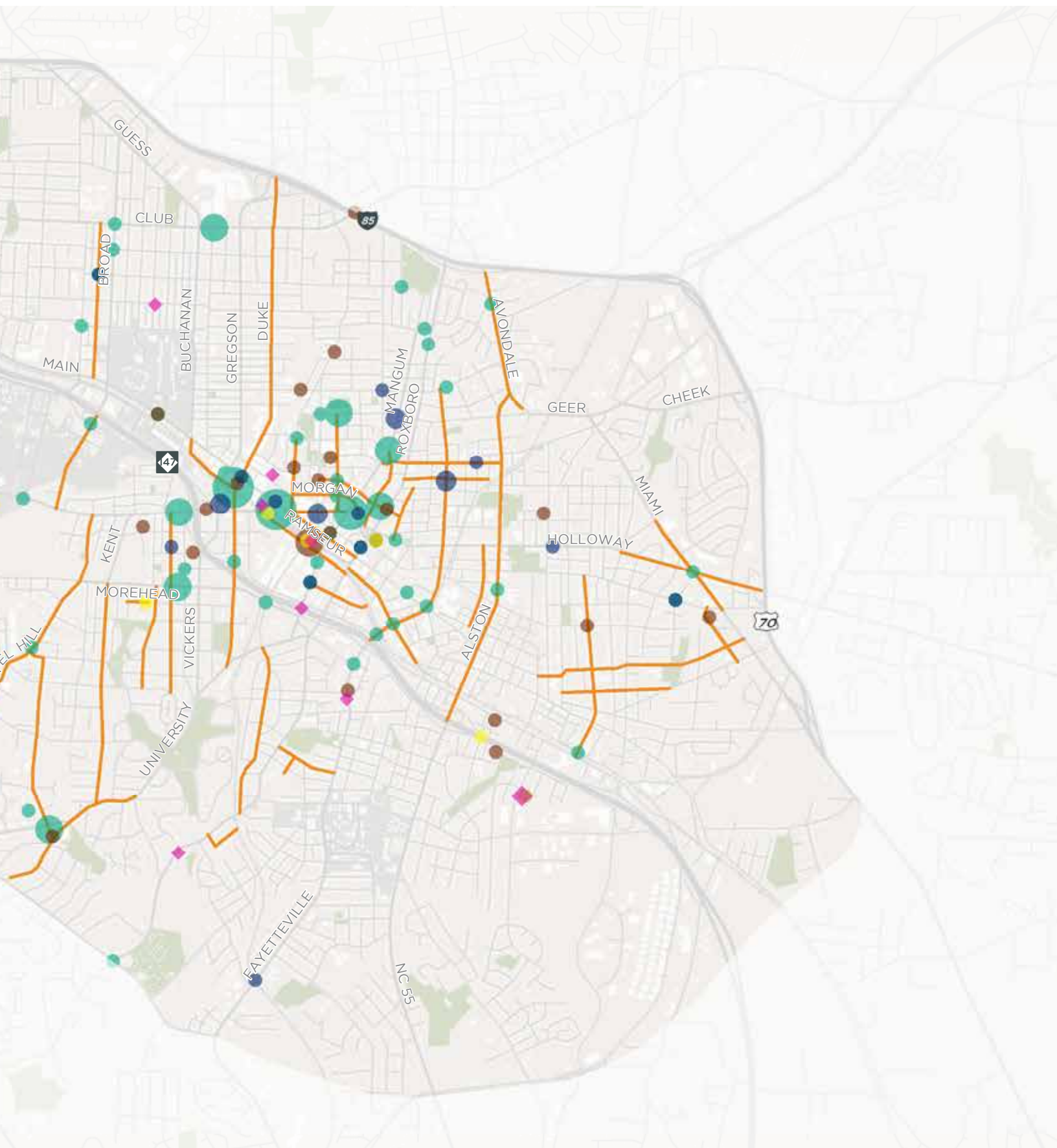
206
COMMENTS
TOUCHED ON
WALKING

COMMENT THEME

- Sidewalk Needed (83)
- Improved Crossing at Intersections (75)
- Streetscape + Livability (37)
- Traffic Calming (22)
- Improved Crossing of Barriers (Railroads, Durham Freeway, etc) [10]
- ◆ Bus Stop/Station Amenities (10)

COMMENT CONCENTRATION







INTERACTIVE MAPPING: BICYCLING-ORIENTED COMMENTS

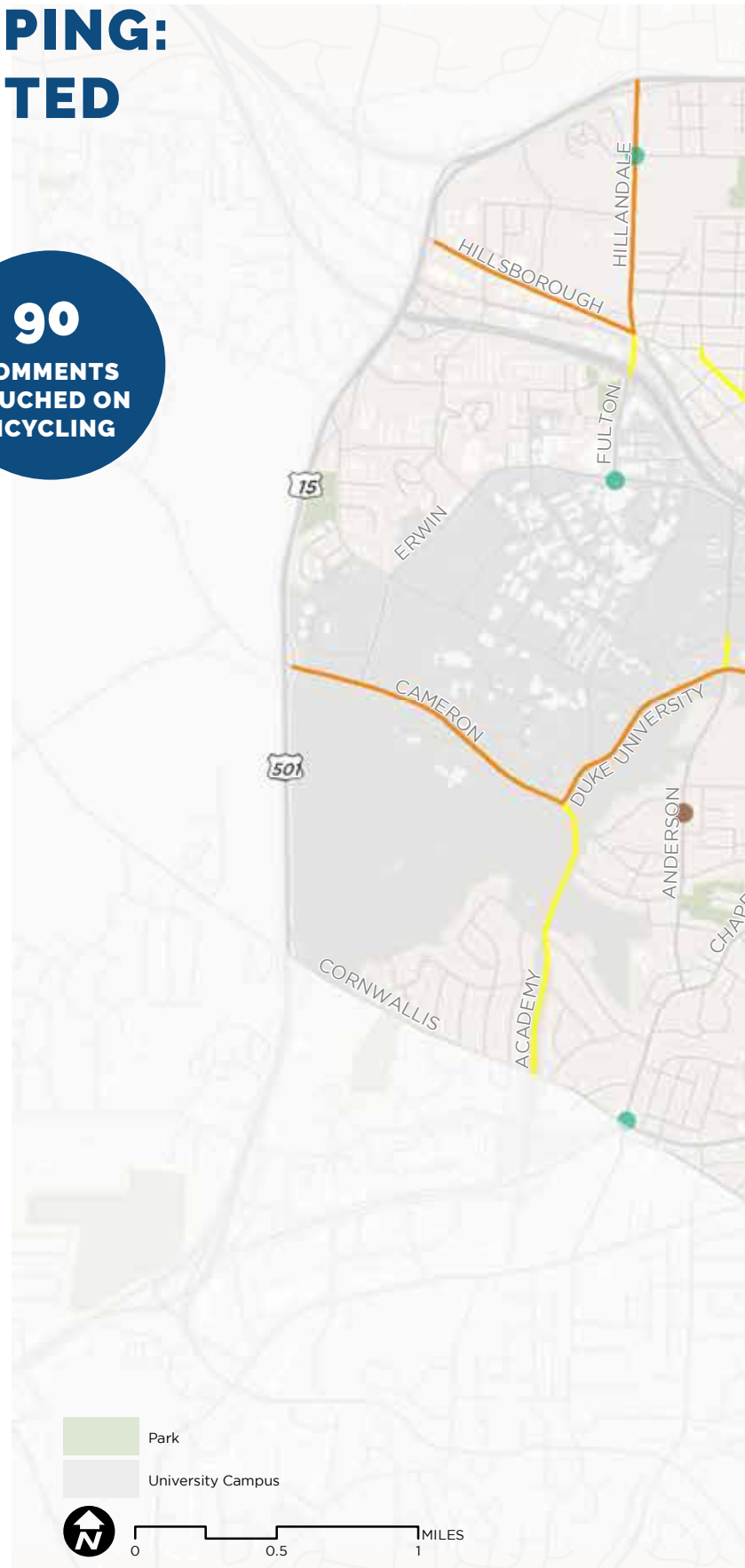
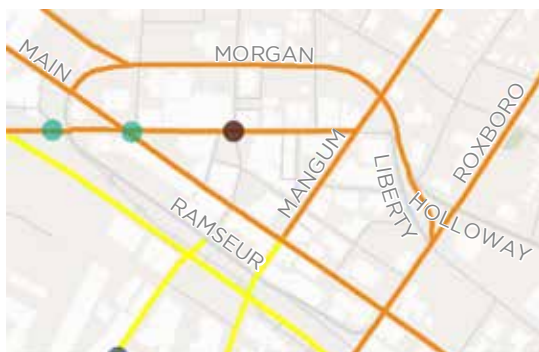
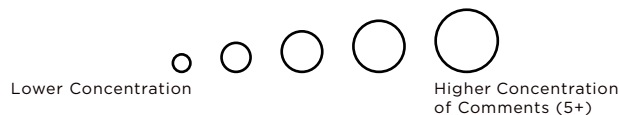
Bicycle comments were quite dispersed around the study area. The community focused on network improvements for a low-stress experience and also discussed the need for more connectivity to access specific destinations.

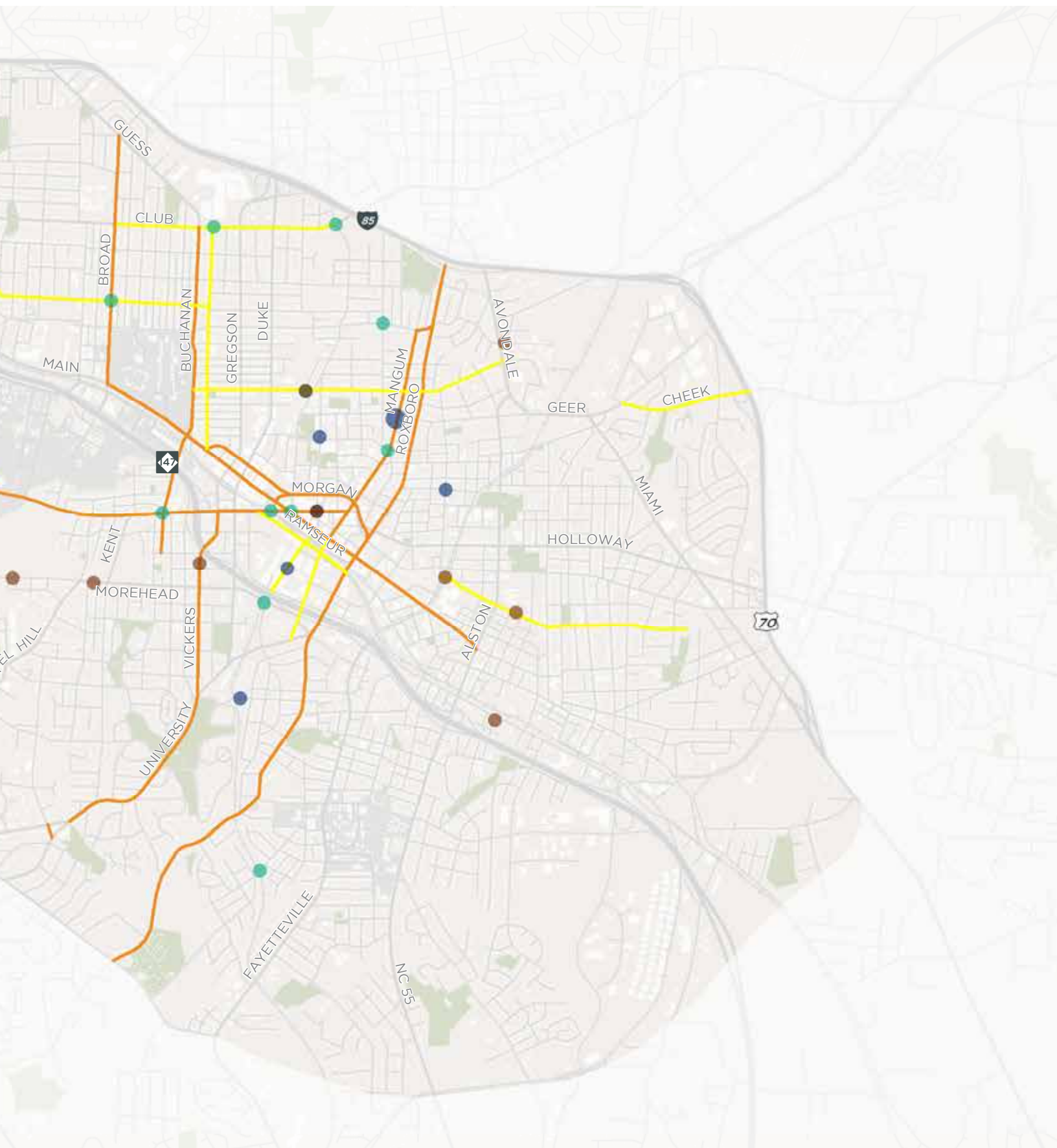
90
COMMENTS
TOUCHED ON
BICYCLING

COMMENT THEME

- Separated Bikeway Needed (21)
- Bikeway Needed (38)
- Intersection Safety (14)
- Wayfinding/ Lighting (10)
- Traffic Calming (7)

COMMENT CONCENTRATION







INTERACTIVE MAPPING: TRANSIT-ORIENTED COMMENTS

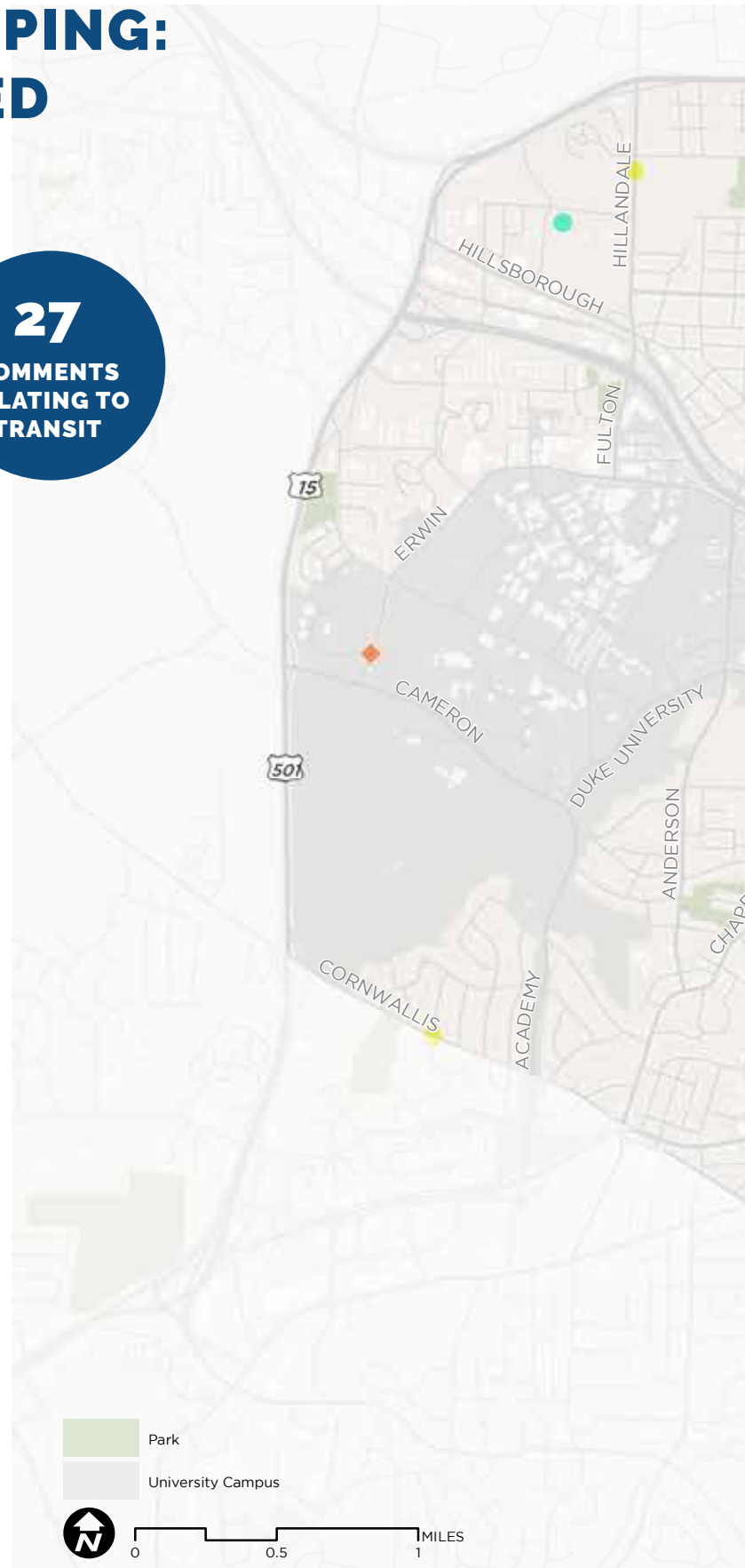
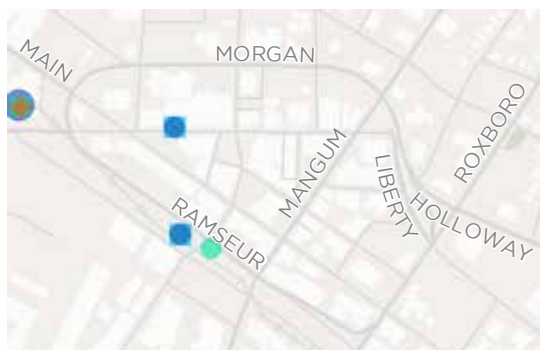
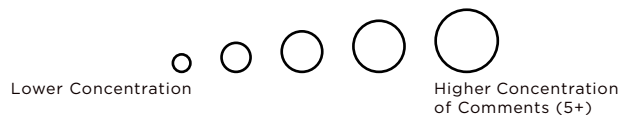
Transit comments primarily focused on service improvements and the desire for more high frequency transit options like bus rapid transit and light rail. The comments received through the participatory budget process focused on specific amenities such as bus stop improvements.

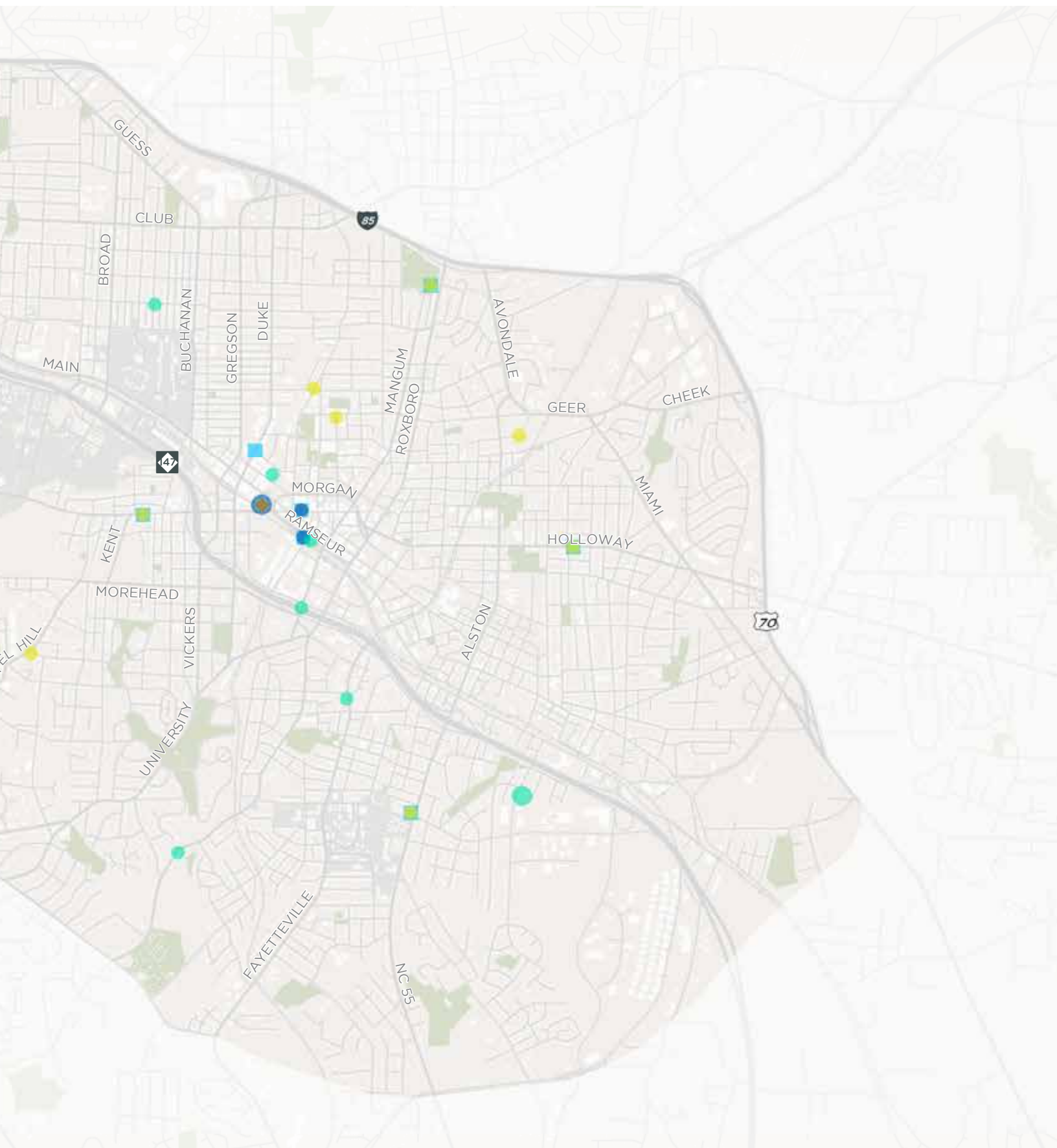
27
COMMENTS
RELATING TO
TRANSIT

COMMENT THEME

- New Service (10)
- Bus Stop/Station Amenities (10)
- Light Rail (7)
- Regional travel (4)
- Complete Streets (2)

COMMENT CONCENTRATION







INTERACTIVE MAPPING: DRIVING-ORIENTED COMMENTS

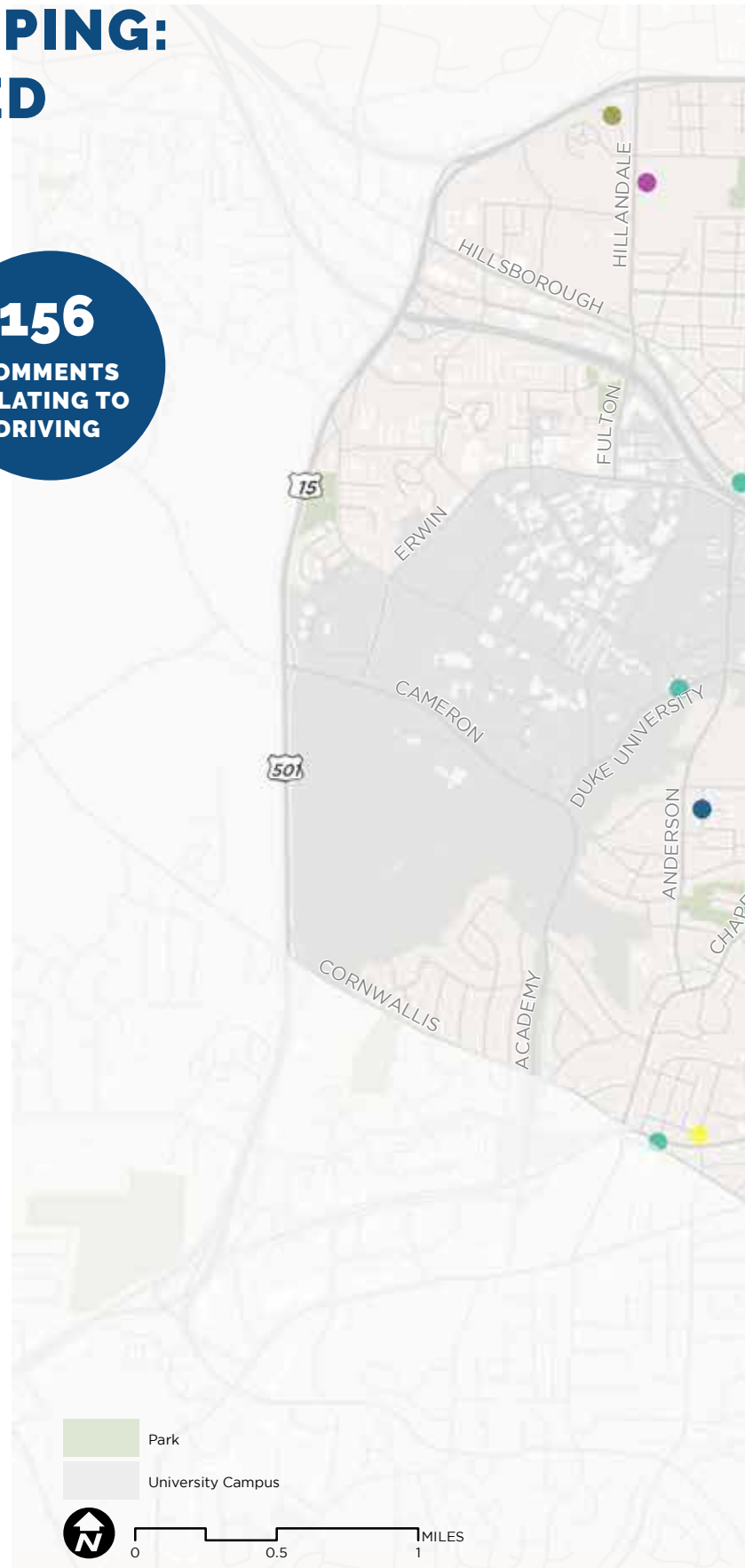
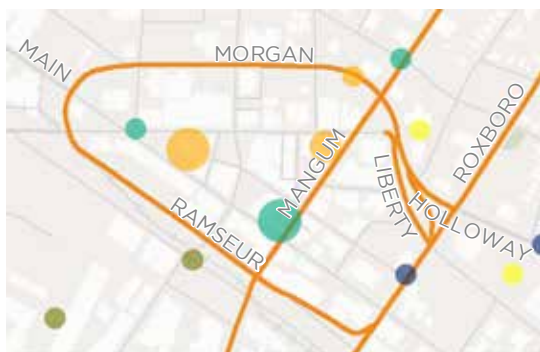
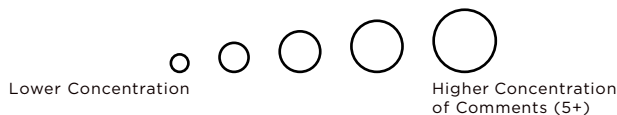
The most commented-on theme relating to driving issues was intersection safety. In this theme, topics range from new infrastructure, signage, and signals. The need for more traffic calming throughout the project area was also identified. Major roadway improvements included ideas such as removing the Downtown Loop, or two-waying major one-way streets.

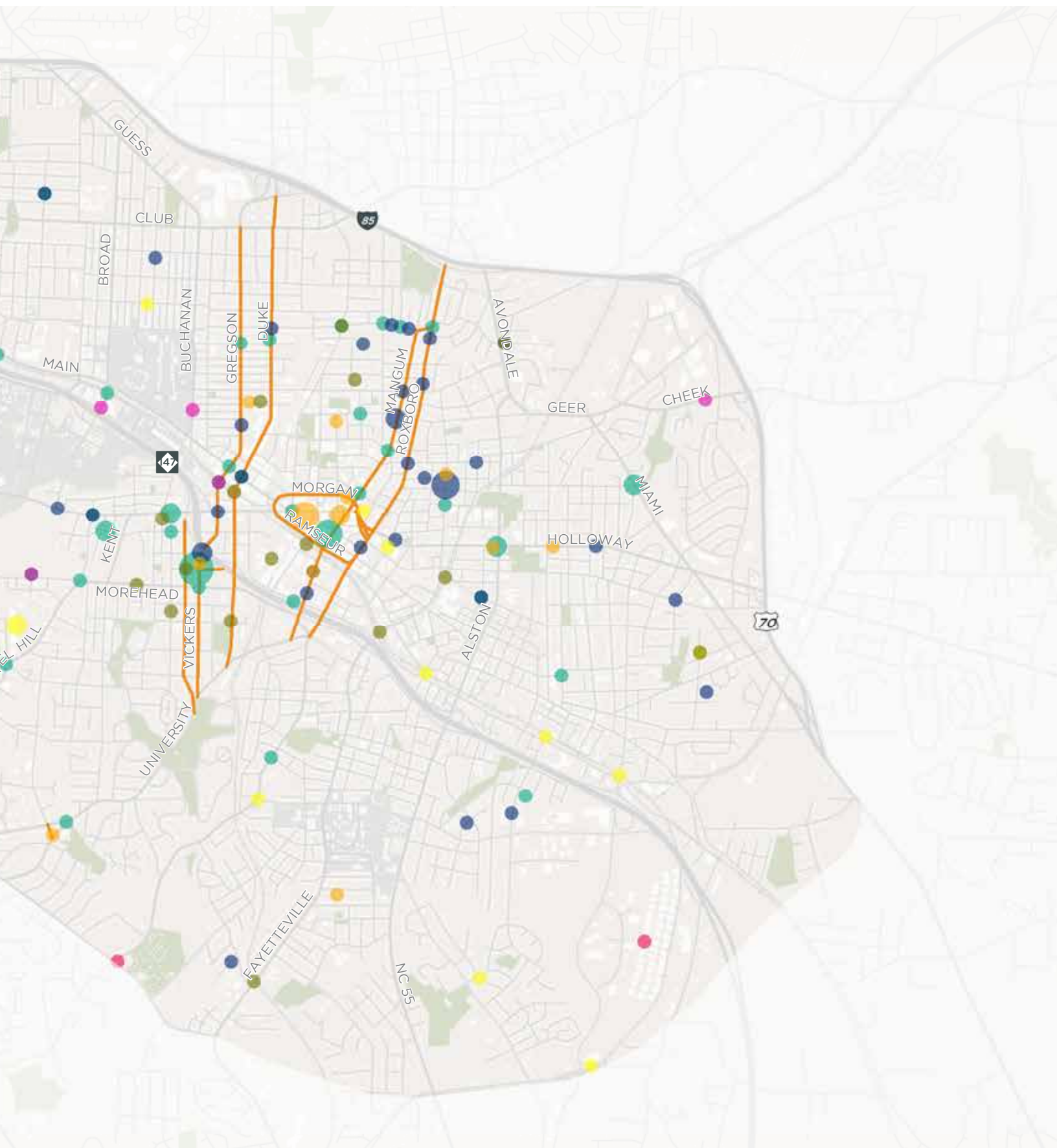
156
COMMENTS
RELATING TO
DRIVING

COMMENT THEME

- Major Roadway Improvement Needed (30)
- Intersection Safety (46)
- Traffic Calming (31)
- Parking (18)
- Enhanced Connectivity (16)
- Maintenance (11)
- Congestion (6)

COMMENT CONCENTRATION



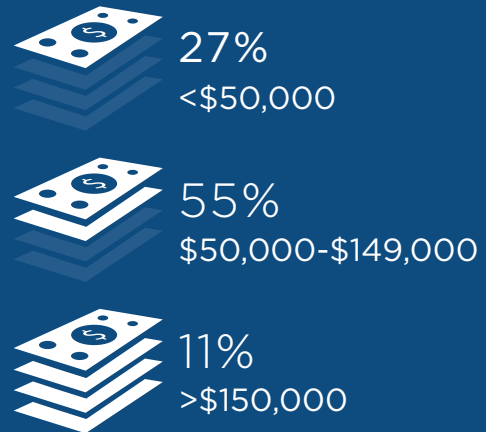
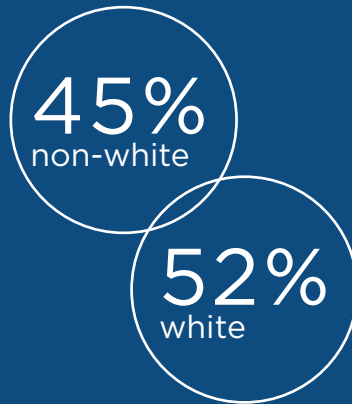
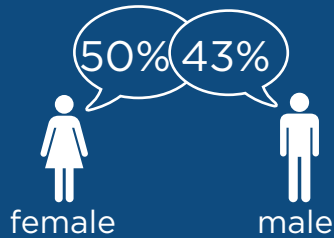




PUBLIC SURVEY RESULTS

Move Durham Public Survey Demographics: By The Numbers

1,120
surveys
completed



People taking surveys and learning about the project at a Holiday Fun Fest

I would WALK more if...

- “There were more sidewalks. Durham is full of college students or young professionals without cars left to walking along roads or in grass without sidewalks. This city is small enough to be biker/ pedestrian friendly but a lot of us just take Uber because the routes are not set up safely enough for bikers/walkers.”
- “Construction opens the sidewalks back up - lots of having to criss-cross streets to get around blocked sidewalks.”
- “There were more street trees to provide shade.”
- “I could reasonably walk to public transit departure point and walk to my destination after arriving.”

I would BIKE more if...

- “There were safe bike lanes and adequate lighting at night”
- “There were more dedicated and PROTECTED lanes in Central Durham.”
- “Going east/west was easier, like a bike lane on trinity with some help crossing busy roads.”
- “We had more bike lanes, better pavement, fewer highways running through downtown, less oneway highways.”
- “All the busy roads had designated bike lanes. And if there were bike lanes outside the central Durham area leading into it.”

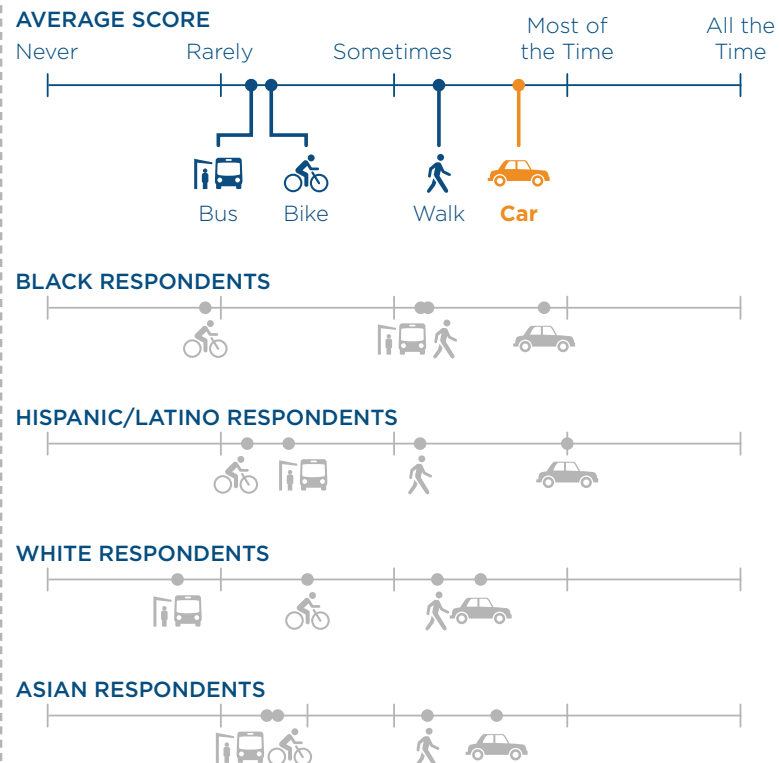
I would take PUBLIC TRANSIT more if...

- “It was more convenient for work. I work in Chapel Hill and from Durham the bus(es) take too long compared to driving. But would love a train or more direct bus option-- that would definitely get my car off the road as I much prefer transit than to drive.”
- “Decent bus shelters existed.”
- “My primary hindrance to GoDurham is service frequency. Please increase frequency.”
- “It were a bit more efficient / frequent / we had light rail.”
- “There were more options besides Bus transit.”



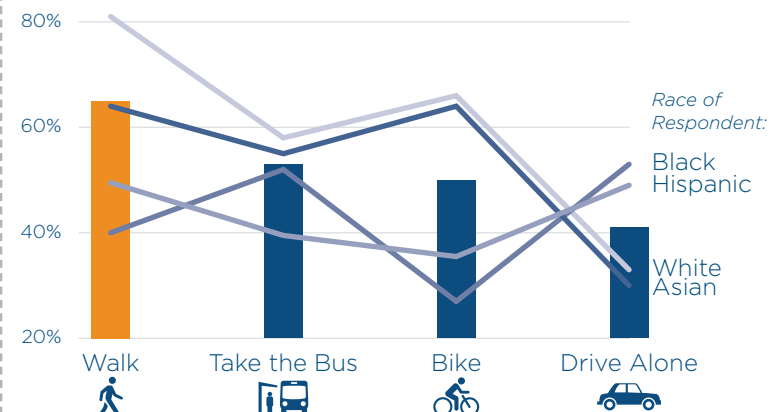
The graphics to the right highlights the key differences in how people typically move around Central Durham by reported race.

How do you typically move to/from and around central Durham?

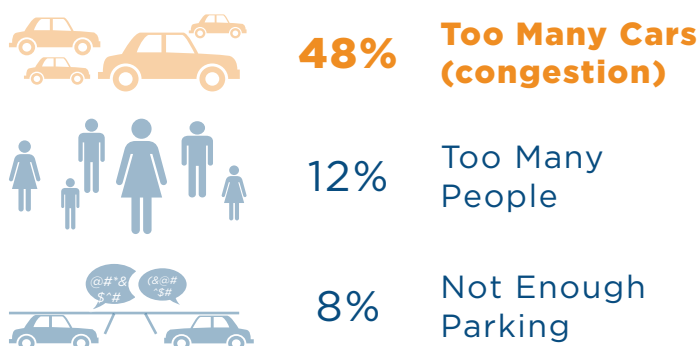


Transportation priorities vary among respondents with different backgrounds and experiences. While these results are limited and more community conversations are needed, the desire for more multi-modal options is clear when comparing how people currently move vs how they want to move around Central Durham.

How do you want to move to/from and around central Durham?

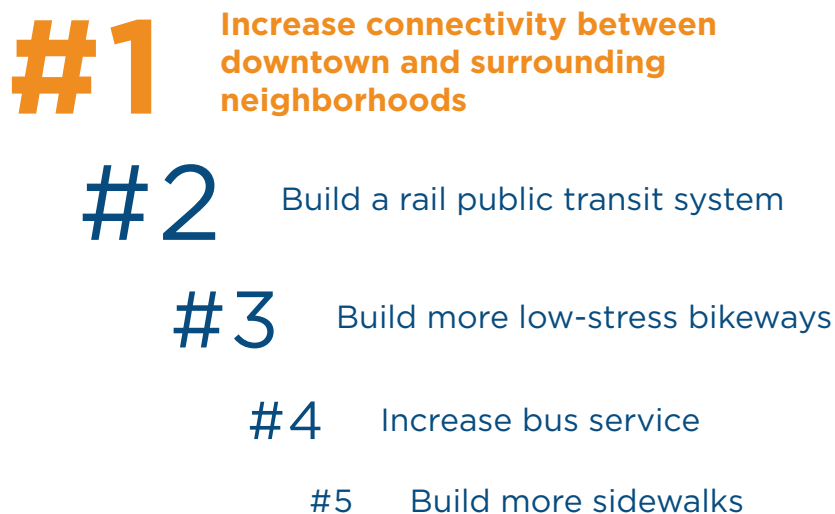


What do you think the biggest transportation issue will be in central Durham in 10-years?



The top three transportation issues were consistently reported regardless of race. Poor bus service and not feeling safe walking and crossing the street were also identified as big transportation issues.

If you could do ONE thing to improve mobility in central Durham, what would you do?



While the top five priorities were generally consistent among all races, there were clear differences in how the improvements were ranked:

- Black respondents listed increasing bus service as number one and prioritized widening roadways over building low-stress bikeways.
- Hispanic/Latino respondents listed building more sidewalks and increasing bus service as a higher priority.
- Asian respondents included widening roadways over increasing bus service.

WHAT YOU SAID!

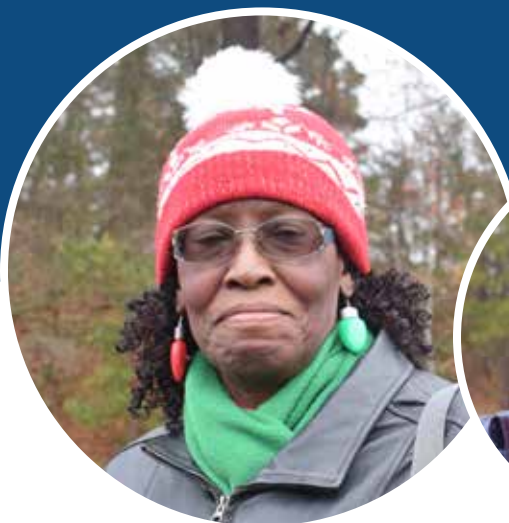
Please fix the broken sidewalks around the city! Also, please increase pedestrian access to Northgate mall area! Any shopping area should have lots of pedestrian access. It is very dangerous - I have stopped for people with walkers, canes, wheelchairs, who cannot walk the long distance to the crosswalk. There is a neighborhood right across the street, why not actually connect it so people don't always have to drive in their cars?

The buses need to be more convenient, run more often and have more routes to all parts of Durham.

Would love to see downtown streets go two-way...especially the loop!

Remember youth often get around by bus/bike/walking and any plans should be made with youth and seniors in mind.

With all the new apartments being built south of the railroad tracks downtown, Mangum and Roxboro streets need to be improved so that vehicles are driving slower and there are better bicycle options.



Durham really has to increase the number of bus routes and frequency of stops/service. This has the potential to reach way more many people than light rail, is more equitable and affordable than rideshare services, and it's a more accessible option in all weather conditions than biking/walking.

Needs to be a more strategic approach for bike and pedestrian facilities, linking concentrations of housing to employers and entertainment centers.

I would like to see more sidewalks connecting surrounding neighborhoods within downtown.

I would like speed bumps closer to my house. I would like more information for buses geared towards the Spanish community.

Traffic and speed on central roads are getting much worse as Durham grows. There are no safe bike routes and walking only works between places close enough to walk between.

”



3 OUR VISION



OUR VISION

Whether traveling by bus, foot, bike or car, people in Central Durham will be able to move safely and reliably. A more convenient and connected multimodal transportation network will ensure that moving in Central Durham is affordable and equitable for all.

OUR VALUES

To ensure the Move Durham plan recommendations reflect the vision and mobility needs of the people who live, work, play and go to school in Central Durham, the following core values were developed.

EQUITY – Address transportation disparities for our most vulnerable users and increase access to opportunity.

SAFETY – Prioritize moving people safely, rather than faster, in order to achieve zero traffic deaths.

MOBILITY CHOICES – Develop an easy-to-use and affordable transportation system that gives people more options.

CONNECTIONS – Increase access to neighborhood destinations such as grocery stores, bus stops, schools and parks.



PRIORITY CORRIDORS

The seven priority corridors were identified using the following inputs:

- Equity
- Safety
- Connectivity
- Mode Share
- Trip Conversion Potential
- Public Comments
- Access to Destinations
- Access to Transit
- Roadway Congestion
- Economic Development
- Previous Planning Efforts

The vision and values identified during the Phase I outreach process were applied to these seven priority corridors that are discussed in Chapter 5.

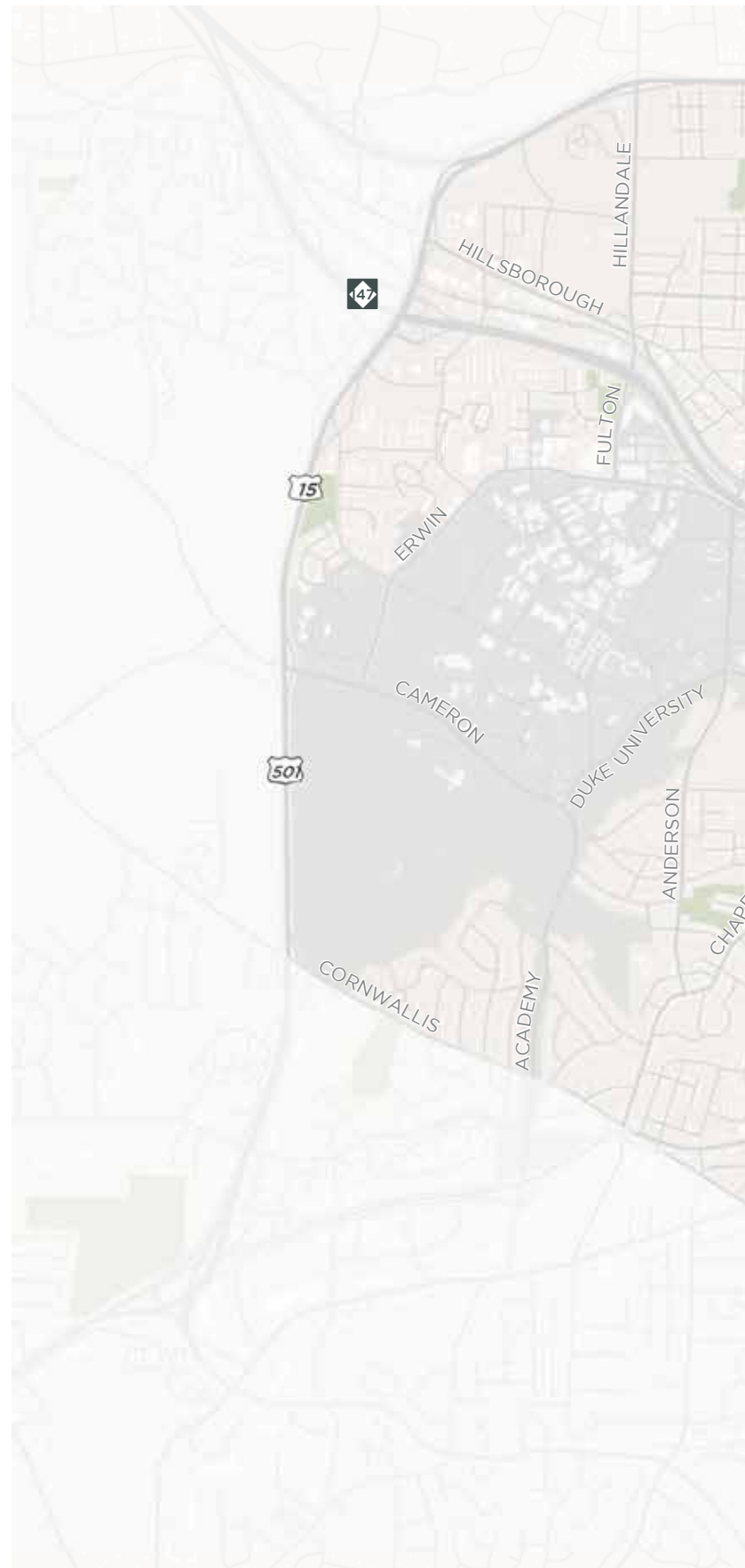
Study Corridor

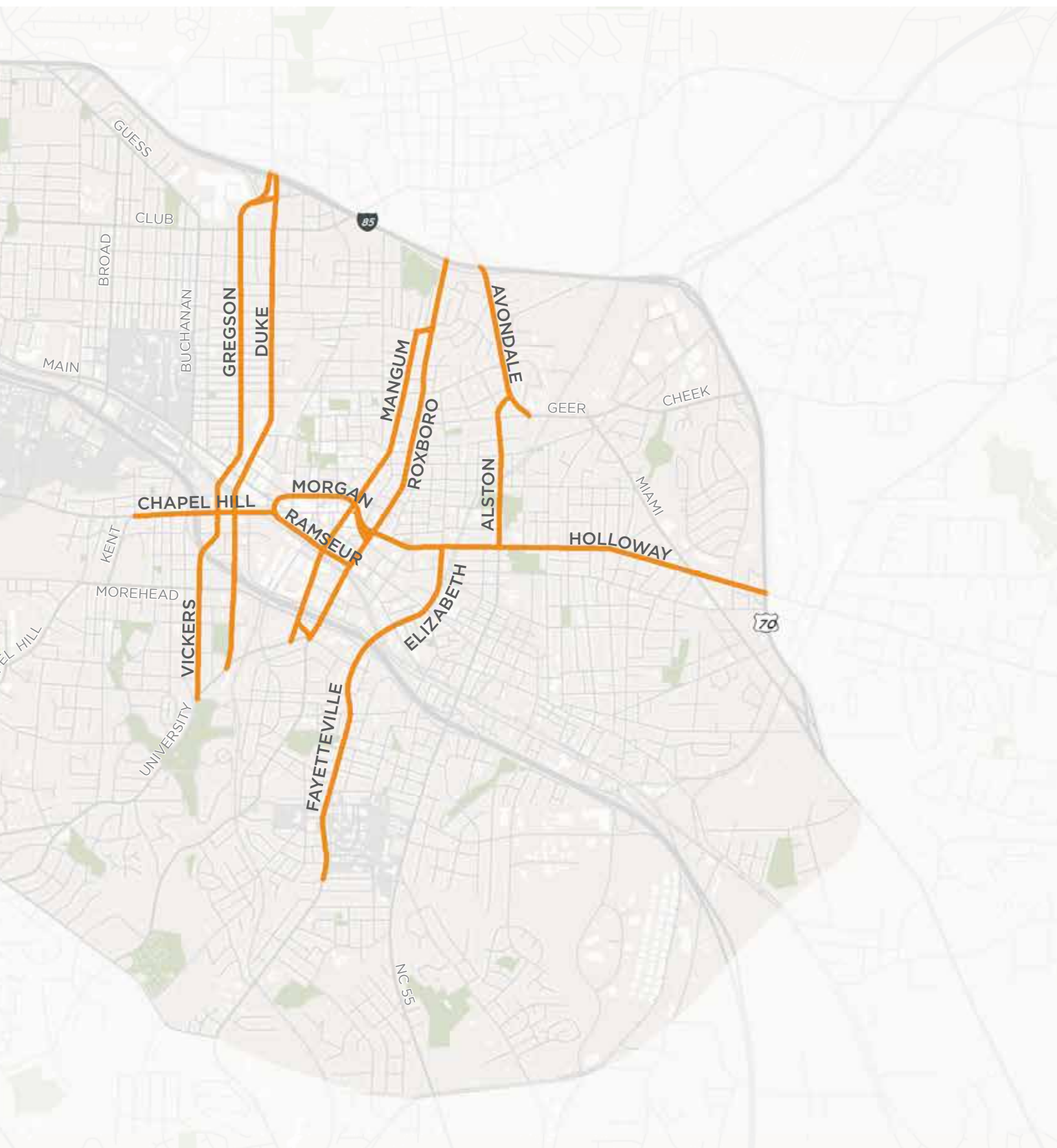
Park

University Campus



0 0.5 1 MILES







4

CALL TO ACTION

Our Sidewalk Network

Page 37

Our Bicycle Network

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Our Transit Network

Page 59

Our Driving Network

Page 67

General Recommendations

Page 83



OUR SIDEWALK NETWORK

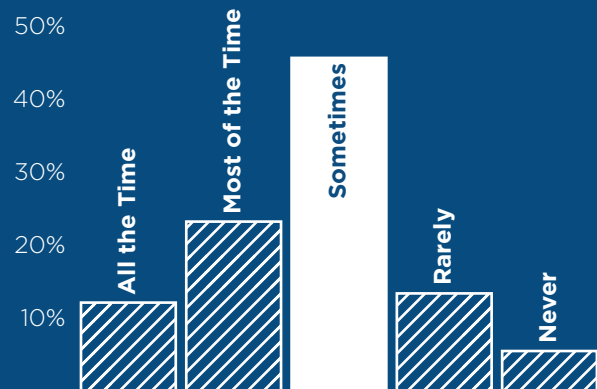
Every trip we take will, at some stage, involve being a pedestrian. Whether it's walking to work, crossing the street, navigating the parking lot, getting to the bus stop, walking the dog, or getting some exercise; we all need safe and comfortable pedestrian access. It's also critical to provide accessible infrastructure for users of all ages and abilities.

Improving the quality of sidewalks and increasing the number of facilities and connections are primary concerns among the community according to survey responses from phase one.

Survey results relating to the sidewalk network and pedestrian experience in central Durham are summarized to the right and also available in more detail in the Durham Today chapter.

The responses summarized to the right were based on survey results done as part of the study. While efforts were made for demographic representation, it was not a statistically valid sample.

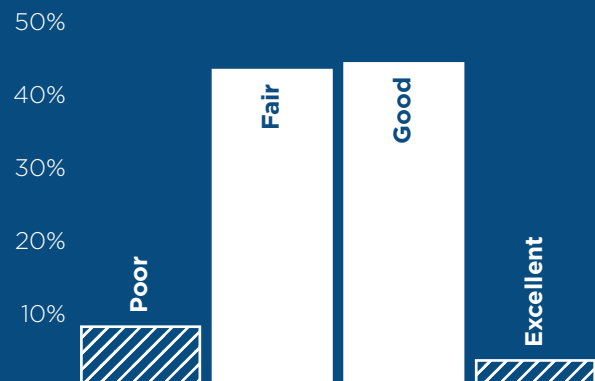
How often do you typically walk to/from and around central Durham?



How do you want to move to/from and around Central Durham?

65% Want to WALK

How would you rate your overall walking experience in central Durham?

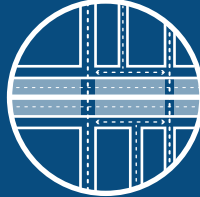


What is the most important walking goal?

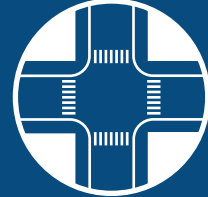
1. Fill gaps in sidewalk network



2. Improve the connectivity of sidewalks, trails, and greenways across barriers like the railroad and freeways



3. Make intersections and crosswalks safer



What is the most important reason you walk to work/school?

1. I enjoy walking more (low stress)



2. For exercise/recreation



3. Walking is better for the environment



What is the biggest issue walking in or around central Durham today?

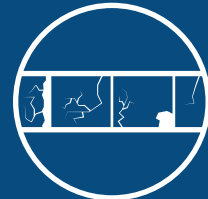
1. Not enough sidewalks or trails



2. Takes too long (no connectivity from neighborhoods, barriers like the railroad or freeways)



3. Sidewalks/trails are in poor condition or too narrow



What might encourage you to walk more?

1. More sidewalks



2. Improve the connectivity of sidewalk, trails, and greenways across barriers like the railroad and freeways



3. More destinations within a comfortable walking distance





WHY IS WALKING IMPORTANT?

Working to create a walkable city means designing a people-friendly city, where residents equally share the opportunity to safely and comfortably walk to neighborhood destinations, meet their neighbors, enjoy positive health impacts and contribute to the quality of the environment.

Making walking a safe and attractive choice for all and increasing the number of people walking in Durham can help us address the goals below.

EQUITY

Pedestrian safety and access is an equity issue. In Durham, inadequate pedestrian infrastructure and traffic safety concerns disproportionately impact low-income communities and people of color.

HEALTH

There is a strong link between walking and individual and public health outcomes. Walking can improve the physical and mental health of people of all ages.

ENVIRONMENT

Nearly 40% of all local carbon emissions come from transportation sources. Shifting our mobility patterns from driving to sustainable modes such as walking, biking, and public transit help limit our contribution to the climate emergency.

MANAGING GROWTH AND CONGESTION

Durham's population is growing and will continue to grow. While the demands on our transportation system are increasing, space within city streets is not. Successfully absorbing growth means moving more people in the same amount of space. Sidewalks have the capacity to move more people than many other forms of transportation.

LIVABILITY

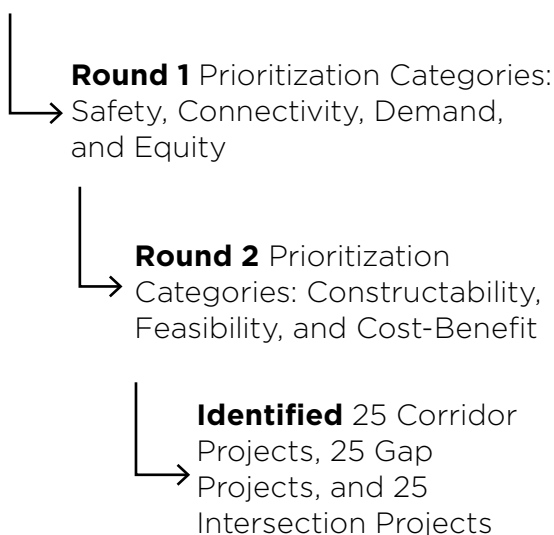
Walkable urbanism is the foundational element for great neighborhoods and cities. Walking provides a way for people to interact and connect with their community which makes our cities more vibrant.

BIKE+WALK PLAN RECOMMENDATIONS


Background

In 2017, the City of Durham approved the Durham Bike+Walk Implementation Plan. This process combined the separate biking and walking comprehensive plans with a focus on implementation. Move Durham outcomes will build upon the priority projects outlined in Bike+Walk Plan. The process for selecting priority projects is summarized below.

Outreach






Project Status for Bike+Walk Plan Pedestrian Priority Projects in the Move Durham Study Area

-  Complete, Funded, or In Development
-  Unfunded

PRIORITY SIDEWALK GAPS

-  Ashe St (Guthrie Ave to Existing Sidewalk)
-  Broad St (Guess Rd to Hillcrest Dr)
-  Cheek Rd (Hardee St to Andover Dr)
-  Cooper St (Existing Sidewalk to Existing Sidewalk)
-  Duke University Rd (Wannamaker Dr to Cameron Blvd)
-  S Elm St (Dale St to E Main St)
-  Green St (Existing Sidewalk to Iredell St)
-  Gregson St (Northgate Mall to Existing Sidewalk)
-  Hunt St (Mangum St to Rigsbee Ave)
-  Main St (Broad St to Ninth St)
-  Morehead Ave (Mangum St to Blackwell St)
-  Ramseur St (Mangum St to Corcoran St)
-  Raynor St (Holloway St to Liberty St)
-  University Dr (Existing Sidewalk to Lakewood Ave)

PRIORITY PEDESTRIAN CORRIDORS

-  Corporation St (Mangum St to Duke St)
-  Fayetteville St (Lawson St to Main St)
-  Hardee St (Cheek Rd to Holloway St)
-  Hillsborough St (LaSalle St to Bus Stop)
-  Holloway St (Miami Blvd to Guthrie Ave)
-  Pettigrew St (Briggs Ave to Alston Ave)



PRIORITY SIDEWALK NETWORK

Recommendation:

Identify consistent funding stream for filling sidewalk gaps and priority sidewalks within the study area and the recommended priority sidewalk network.

Facilitate community conversations about the priority sidewalk network to ensure that resident needs are addressed and that potential impacts are understood.

The Move Durham recommended sidewalk network was developed by layering a series of past recommendations and new analyses to identify key gaps and corridors in need of sidewalks.

Full implementation of all missing sidewalk gaps in the study area will take many years and require significant investment. However, this Plan aims to identify projects located in areas with the highest demand and the greatest need for short-term, priority implementation.

"I would walk more if the sidewalks were connected in networks that connected neighborhoods and the growing trail network. More crosswalks and pedestrian safety infrastructure."

-Public Comment

Prioritizing missing sidewalk gaps is a difficult, but necessary element of an implementation strategy. The four prioritization categories below were used to identify missing sidewalks in areas of the highest need and demand. A further refined prioritization process will need to take place during funding identification and the Durham County Transit Plan Update.

Transit Routes



Arterial Streets



High Frequency Transit Corridor* (.25 mile buffer)



Access to Employment Centers + Grocery Stores (.25 mile buffer)

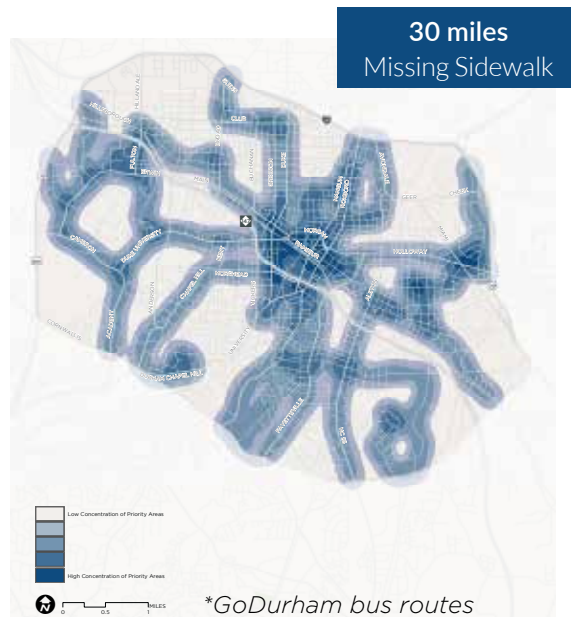


**15 minute or better frequency*

Prioritized Sidewalk Network

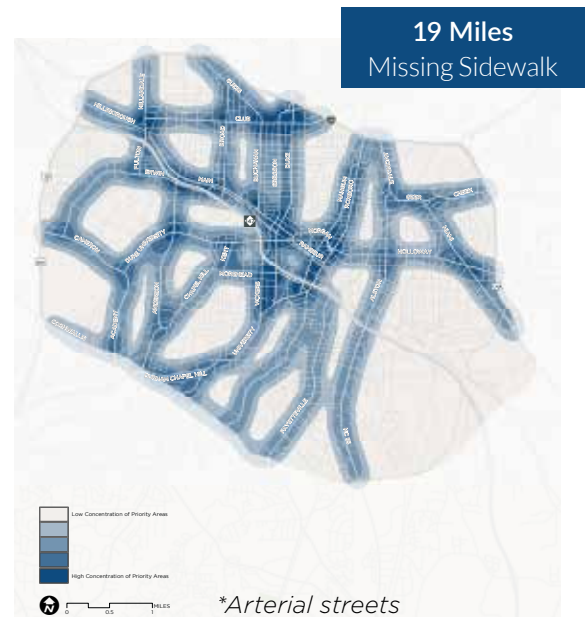
Tier 1: Transit Routes*

Sidewalk Priority Areas



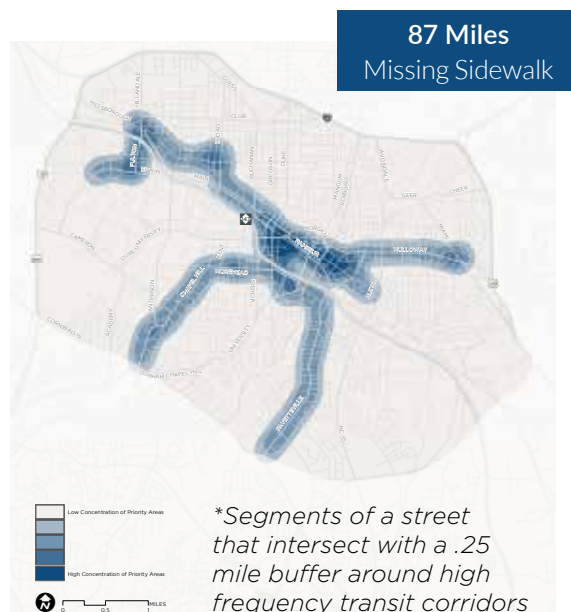
Tier 2: Arterial*

Sidewalk Priority Areas



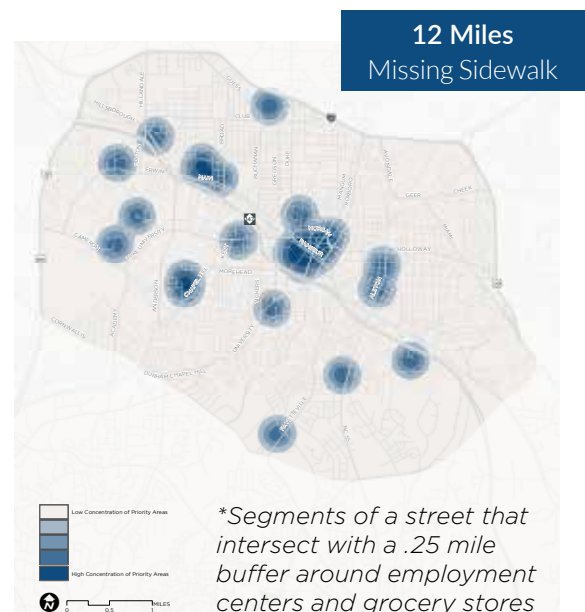
Tier 3: High Frequency Transit Corridors*

Sidewalk Priority Areas



Tier 4: Employment Centers or Grocery Stores*

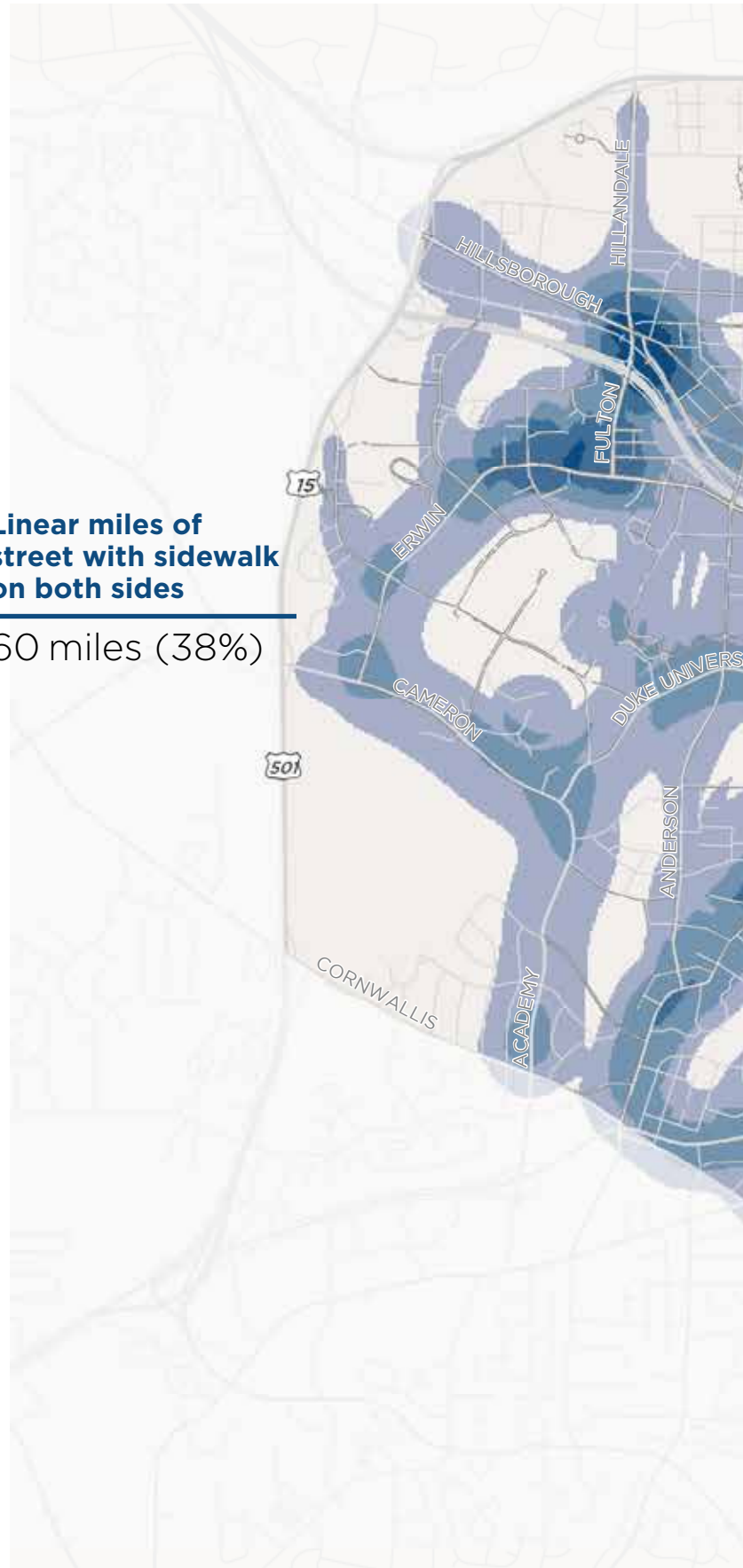
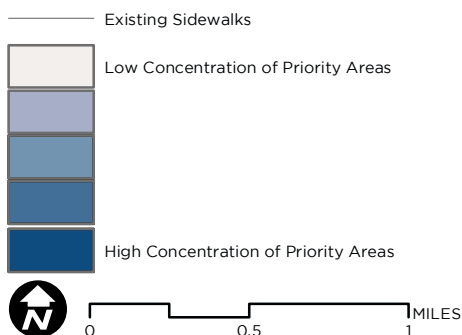
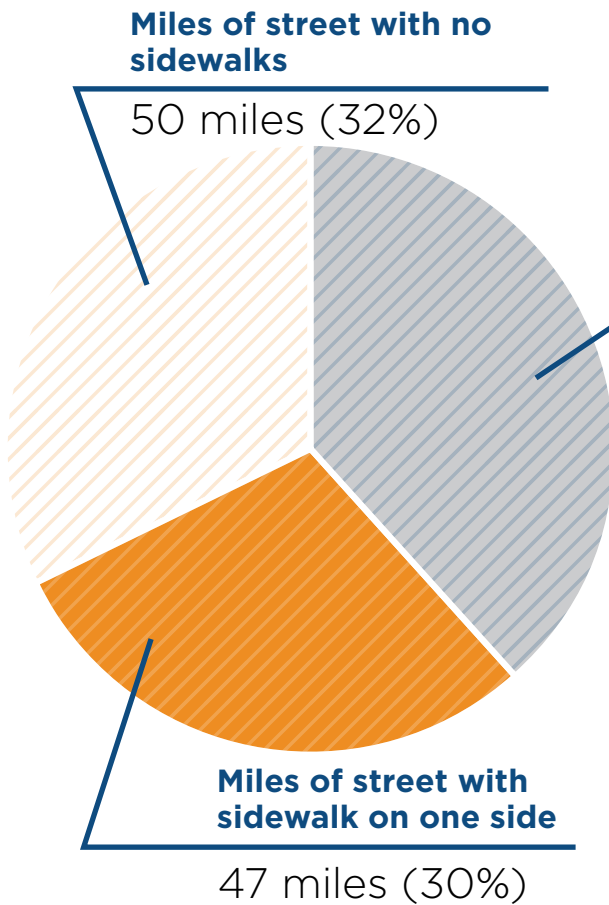
Sidewalk Priority Areas





COMPOSITE MAP

147 miles of missing sidewalks within the four priority tiers.







TRANSIT FIRST/LAST MILE

Recommendation:

Partner with GoDurham/GoTriangle to provide amenities at priority transit stops.

Utilize the Durham County Transit Plan Update as the next step to identify high priority pedestrian connections to transit stops and regional transit centers.

Plan and allocate funding for walksheds around each priority transit stop.

Background

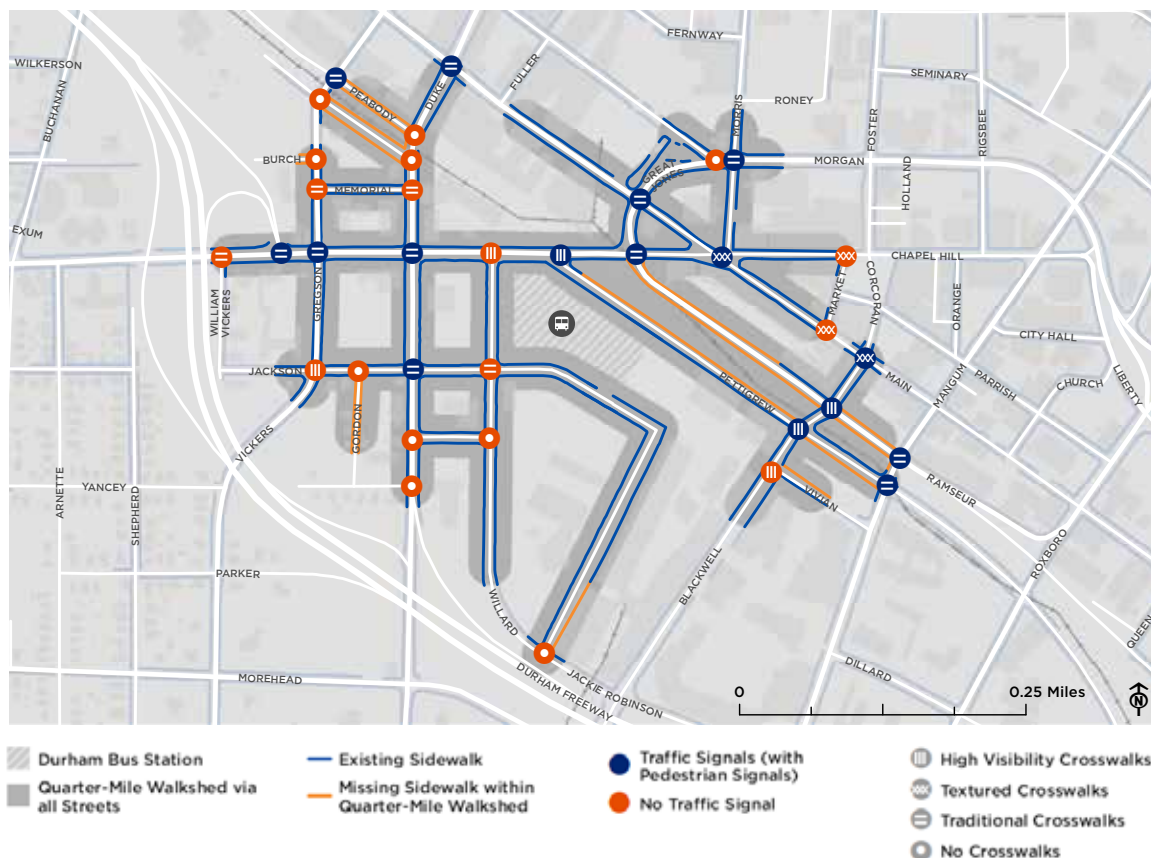
In 2014, NCDOT, the City of Durham, and GoTriangle developed a pilot Access to Transit Plan. The study adopted the goal to, “Improve the efficiency and effectiveness of the transportation system by improving and increasing mobility, safety, and security, access, and comfort through an interconnected network of quality facilities. Outcomes include increases in ridership and decreases in crashes at or near bus stops.”

One strategy to improve transit service for riders is to improve pedestrian access and bike connections to transit stops. The City of Durham should work with GoTriangle and GoDurham to focus on planning walksheds and bikesheds around each priority transit stop. These walksheds and bikesheds should be the focus of where pedestrian and bike connections to transit are made. According to the Federal Transit Authority (FTA), all pedestrian improvements within a half mile and all bicycle

improvements within three miles of a transit stop or station can impact public transportation. Focusing on these walksheds and bikesheds would improve safety for cyclists and pedestrians and increase the likelihood of shifting vehicle trips to active transportation and transit trips.

Key transit amenities to promote walking and biking at transit stops are:

- ADA compliant curb ramps and ADA landing pad
- Bench
- Lighting
- Bus route information
- Bus shelter
- Bike parking
- Public art
- Trash receptacles



Spotlight: Durham Station Walkshed

On an average weekday, nearly 7,000 passengers board and alight at Durham Station. The station acts as a hub for both local and regional routes. However, there are significant barriers to accessing the station as a pedestrian. The map above shows the quarter-mile walkshed of the bus station using the existing street grid. In this walkshed, only 6 intersections have high visibility crosswalks. An additional 1.4 miles of sidewalk are needed to complete the walkshed. This type of analysis along high priority transit corridors can help target specific pedestrian improvements that complement public transit.

1.4 miles of missing sidewalk

6 intersections with high visibility crosswalks

10 intersections without crosswalks

"The pedestrian crossing on the north side of West Chapel Hill Street across the Downtown Loop is dangerous and misleading."

-Public Comment



MISSING SIDEWALKS AROUND HIGH FREQUENCY TRANSIT ROUTES

87 miles of missing sidewalks within 1/4 mile of a high frequency transit route.

Tier 3

Missing sidewalk within 1/4 mile of a high frequency transit route

87 miles

Existing or funded sidewalk

113 miles

Tier 1 & 2

Missing sidewalk on arterial streets and transit routes

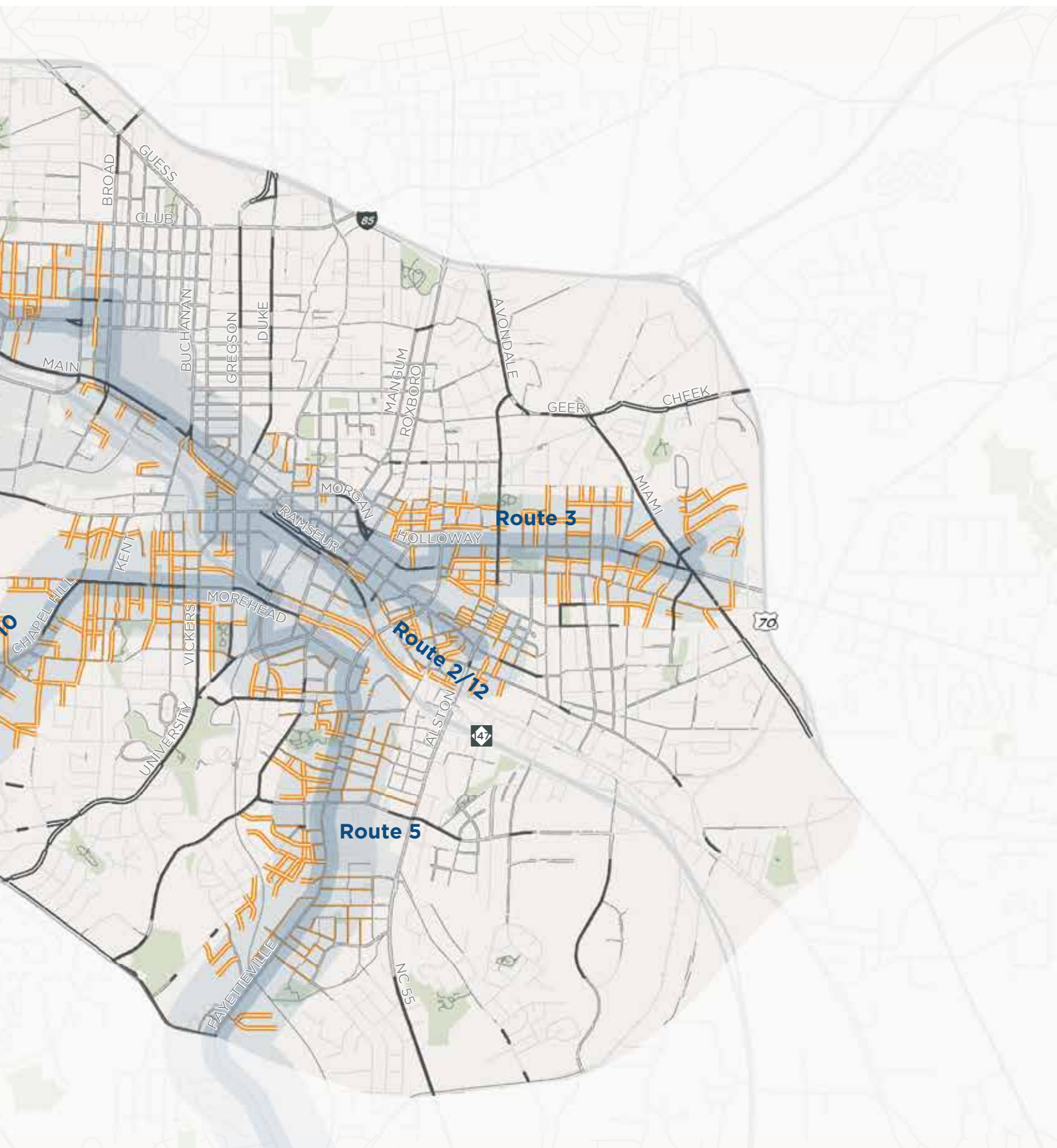
15 miles

- Existing Sidewalks
- Arterial or Transit Street - Sidewalk Missing on Both Sides
- Arterial or Transit Street - Sidewalk Missing on One Side
- 1/4 mile around High Frequency Transit Route - Sidewalk Missing on One Side
- 1/4 mile around High Frequency Transit Route - Sidewalk Missing on Both Sides
- GoDurham High Frequency (15-minute) Bus Routes
- Park
- University Campus



0 0.5 1 MILES







OUR BIKE NETWORK

There are many benefits associated with increasing the share of trips made by bicycling. Some of these benefits include improved traffic safety, reduced congestion, improved air quality and public health, better and more equitable access to jobs and opportunities, and bolstering local economies. Emerging research is also finding that cities with more separated and protected bicycle facilities tend to have greater safety outcomes for all road users.¹

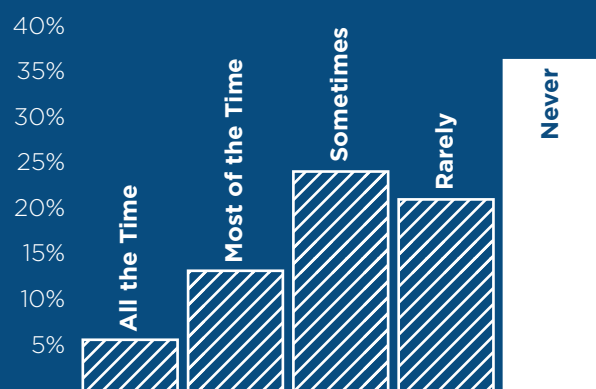
To maximize these benefits, cycling should be accessible to the broadest segments of the population, rather than only the most confident riders, who tend to be adult men. To make riding a bike feel safe and comfortable for the largest group of people, design of bike facilities with people of all ages and abilities in mind is recommended.

Survey results relating to the bikeway network and cyclist experience in central Durham are summarized to the right and also available in more detail in the Durham Today chapter.

The responses summarized to the right were based on survey results done as part of the study. While efforts were made for demographic representation, it was not a statistically valid sample.

¹Marshall, W.; Ferencak, N. (2019). "Why cities with high bicycling rates are safer for all road users". *Journal of Transport & Health*, Volume 13, June 2019, 100539, <https://doi.org/10.1016/j.jth.2019.03.004>

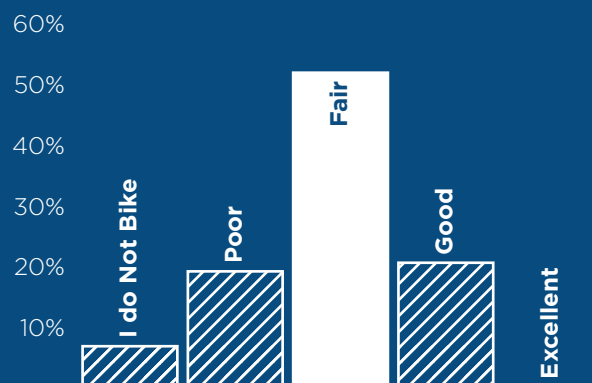
How often do you typically bike to/from and around central Durham?



How do you want to move to/from and around central Durham?

50% Want to BIKE

How would you rate your overall biking experience in central Durham?



What is the most important biking goal?

1. Create safer conditions for biking



2. Expand bike lanes/routes



3. Build more trails and greenways



What is the most important reason you bike to work/school?

1. I enjoy biking more (low stress)



2. Biking is better for the environment



3. For exercise/recreation



What is the biggest issue biking in or around central Durham today?

1. No separation from traffic



2. Safety concerns



3. Aggressive or distracted drivers



What might encourage you to bike more?

1. More low-stress bikeways



2. Improve existing bikeways (more separation for traffic)



3. Improve the connectivity of bike lanes, trails, and greenways across barriers like the railroad and freeways





PRIORITY BIKE NETWORK

Recommendation:

Continue to fund and implement priority recommendations from the 2017 Bike + Walk Implementation Plan and the bike priority network.

Identify dedicated funding sources for bike network improvements.

Incorporate priority bike network recommendations in future projects funded by the City, NCDOT, and other implementation partners.

Low-Stress Bikeways

Biking needs to be a safe, convenient, and pleasant form of transportation for the broadest array of people.

Bike lanes, trails, and low-speed neighborhood bike routes all make biking more comfortable. However, perception of safety is largely driven by factors like vehicle speeds and traffic volumes. Not all routes are the same and therefore design flexibility is essential for building a low-stress network. The network approach developed as part of this plan sets the parameters for the bikeway network but the project design process will determine the ultimate cross-section for each project using national best practices and engineering judgment.

"I would bike more if there were bike lanes entering and traversing downtown. Families could bike if there were well protected bike lanes (with barriers)."

-Public Comment



Ellerbee Creek Trail



Protected bike lane on E Main St

Planning the Bike Network

The priority bike network is a result of a planning process that involved public engagement, data collection, and technical analysis. The proposed recommendations focuses on developing a network of connected, low-stress facilities. Building on recommendations from Bike + Walk Plan, the network closes several gaps and intends to connect users to key central Durham destinations.

The priority network identifies corridors in need of a low-stress bike facility, but it does not provide detailed bike facility recommendations. Determining the appropriate bike facility requires context-sensitive analysis. The characteristics described to the right combined with targeted public engagement will be used to determine the appropriate facility choice on a project-by-project basis.



Roadway Characteristics

- Number of Travel Lanes
- Speed Limit
- Average Daily Traffic
- Topography (Avoiding Steep Hills)



Bicycle Demand

- Key Destinations
- Existing Network Connectivity
- Transit Connections



Constructability

- Available Rights-of-Way
- Implementation Strategy (How will the facility be installed?)
 - » Road Diet
 - » Road Widening
 - » Travel Lane Re-purposing
 - » Construct or widen sidewalk to serve as a shared use path/ trail parallel to the roadway

Project Status for Bike+Walk Plan Bicycle Priority Projects in the Move Durham Study Area

✓ Funded and In Development

Ⓢ Unfunded

- ✓ Liberty St (Alston Ave to Dillard St)
- ✓ Fulton St (Erwin Rd to NC 147)
- ✓ Watts St (Morgan St to Club Blvd)
- Ⓢ Foster St/Corcoran St/Blackwell St (American Tobacco Trail to Trinity Ave)
- Ⓢ W Chapel Hill St (Downtown Loop to Swift Ave)
- Ⓢ Club Blvd (Broad St to Washington St)
- Ⓢ W Morgan St (W Main St to Great Jones St)



Public Input

- Equitable Engagement Results
- NCDOT + City Review



Types of Facilities



Low-Speed Shared Streets

Shared streets are very slow, balanced streets where pedestrian and bicycle traffic outweighs motor vehicle traffic and speeds of all users is generally below 10 mph.



Neighborhood Bike Routes

In residential neighborhoods, Neighborhood Bikeways improve travel for bicyclists while calming traffic and greening neighborhoods. Neighborways are shared by automobiles and bicycles, but at speeds that make travel more comfortable for bicyclists.



Buffered and Conventional Bicycle Lanes

A bike lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists. Buffered bike lanes include a striped space of a few feet between the bike lane and parking or motor vehicle lanes.



Protected Bicycle Lanes

Protected bicycle lanes are essentially buffered bicycle lanes with a physical separator in the buffer. Separation can be achieved through parked cars, curbs, medians, bollards/traffic posts, planters, or marked buffered space between the bike lane and adjacent travel lane. Protected bicycle lanes should include a minimum 3 foot buffer in which to install the physical separator.



Shared-Use and Bicycle Paths

Shared-use paths are completely separated from motorized vehicular traffic and are constructed in their own corridor, often within an open-space area. Shared-use paths can be paved and should be a minimum of 10' wide. Pavement widths of 12-, 14-, and even 16-feet are appropriate in high-use urban situations.

Choosing an All Ages and Abilities Bikeway Type

This chart provides guidance in choosing a bikeway design that can create an All Ages and Abilities bicycling environment based on a street's basic design and motor vehicle traffic conditions such as vehicle speed and volume. This chart should be applied as part of a flexible, results-oriented design process on each street, alongside robust analysis of local bicycling conditions.

Users of this guidance should recognize that, in some cases, a bicycle facility may fall short of the All Ages and Abilities criteria but still substantively reduce traffic stress. Jurisdictions should not use an inability to meet the All Ages and Abilities criteria as a reason to avoid implementing a bikeway, and should not prohibit the construction of facilities that do not meet the criteria.

Contextual Guidance for Selecting All Ages and Abilities Bikeways				
Roadway Context				All Ages and Abilities Bicycle Facility
Target Motor Vehicle Speed	Target Max. Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any	Any	Any	Any of the following: high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts	Protected Bicycle Lane
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	Shared Street
≤ 20 mph	≤ 1,000 - 2,000	No centerline, or single lane one-way	<50 motor vehicles per hour in the peak direction at peak hour	Neighborhood Bike Routes
≤ 25 mph	≤ 500 - 1,500	No centerline, or single lane one-way	<50 motor vehicles per hour in the peak direction at peak hour	Neighborhood Bike Routes
	≤ 1,500 - 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane
	≤ 3,000 - 6,000			Buffered or Protected Bicycle Lane
	> 6,000			Protected Bicycle Lane
	Any	Multiple lanes per direction		
> 26 mph	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	Protected Bicycle Lane, or Reduce Speed
		Multiple lanes per direction		Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed
	> 6,000	Any	Any	Protected Bicycle Lane, or Bicycle Path
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		Any	High pedestrian volume	Bike Path with Separate Walkway or Protected Bicycle Lane
			Low Pedestrian volume	Shared-Use Path or Protected Bicycle Lane



PRIORITY BIKEWAY NETWORK

20 miles of Existing Bike Bikeways

20 miles of Funded Future Bikeways

25 miles of Unfunded Bikeways

79 miles of Priority Bikeways

- Existing Bike Lane(s)
- Existing Greenway
- Future Bike Lanes
- Future Sidepath
- Future Neighborhood Bike Route
- Future Greenway
- Future Bike Lane, Not Funded
- Future Sidepath, Not Funded
- Future Nbhd. Bike Route, Not Funded
- Priority Greenway*
- Priority Bikeways

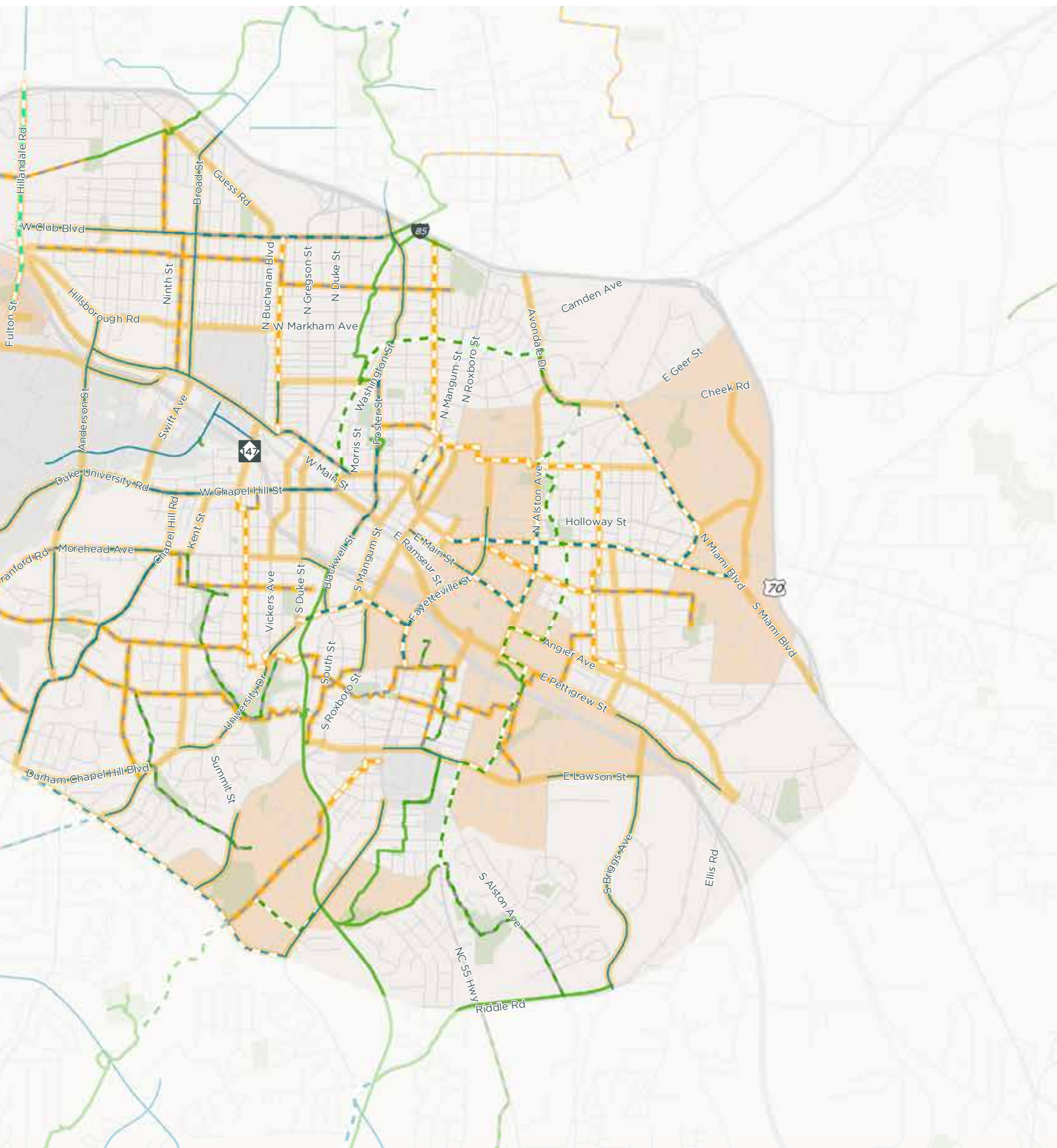
- Park
- High Need Area
- University Campus

*Priority greenway trail alignments subject to change based on the outcome of the Durham Trails Implementation Program



0 0.5 1 MILES







DESIGNING INTERSECTIONS FOR SAFE CYCLING

Recommendation:

Develop new bike intersection design guidelines using national best practices, such as the NACTO Don't Give Up At the Intersection or FHWA Bike Facility Design Guide

Working with residents and neighborhoods, identify and implement high priority bike intersection improvements.

Background

In 2017, 43% of urban bicyclist fatalities in the United States occurred at intersections. Designing intersections with bicycle travel as a priority is shown to reduce conflict by increasing visibility and encouraging clear travel directives for different modes. The type and level of treatment applied to an intersection is dependent on many factors such as the adjacent land uses, streets and cross streets, bicycle facility type, and presence of intersecting bicycle facilities. The following guidance illustrates some potential treatments but the implementation of these strategies should be context-sensitive.



Two-Stage Turn Queue Boxes

Two-stage turn queue boxes offer bicyclists a safe way to make left turns at multi-lane signalized intersections from a right side cycle track or bike lane, or right turns from a left side cycle track or bike lane. Two-stage turn queue boxes may also be used at unsignalized intersections to simplify turns from a bicycle lane or cycle track, as for example, onto a bicycle boulevard.



Intersection Crossing Markings

Intersection crossing markings indicate the intended path of bicyclists. They guide bicyclists on a safe and direct path through intersections, including driveways and ramps. They provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane.



Bike Boxes

A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.



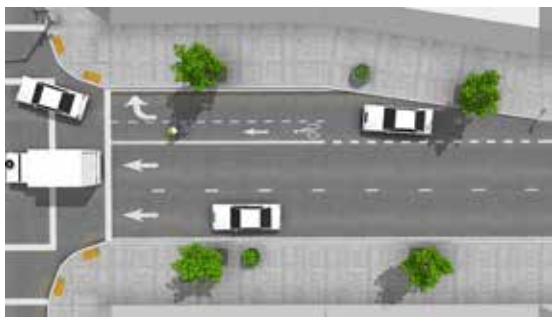
Median Refuge Island

Median refuge islands are protected spaces placed in the center of the street that facilitates bicycle and pedestrian crossings.



Through Bike Lanes

For bicyclists traveling in a conventional bike lane or from a truncated cycle track, the approach to an intersection with vehicular turn lanes can present a significant challenge.



Combined Bike Lane/Turn Lane

A combined bike lane/turn lane places a suggested bike lane within the inside portion of a dedicated motor vehicle turn lane.



Separated Bike Lanes

The approach to an intersection from a cycle track should be designed to reduce turn conflicts for bicyclists and/or to provide connections to intersecting bicycle facility types. This is typically achieved by removing the protected cycle track barrier or parking lane (or lowering a raised cycle track to street level), and shifting the bicycle lane to be closer to or shared with the adjacent motor vehicle lane.



OUR TRANSIT NETWORK

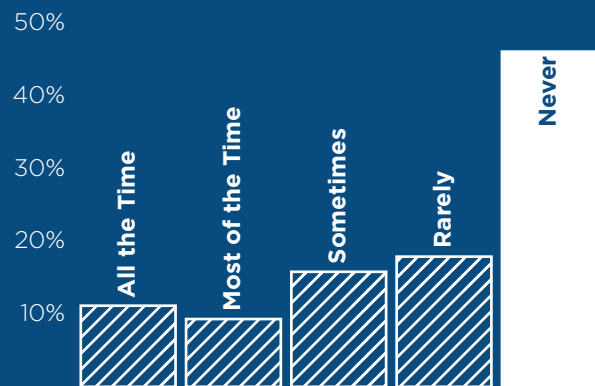
Public transit is a pillar of Durham's mobility network. In fact, GoDurham experiences the highest average passengers per hour amongst peer systems (including Charlotte, the largest metropolitan region in the state). However, this also presents challenges with over-crowded buses and the ability to maintain reliable service. The success of GoDurham is critical to an equitable, sustainable, and economically successful community.

Survey 1 results relating to the transit network and transit rider experience in central Durham are summarized to the right and also available in more detail in the Durham Today chapter. Additionally, strong support for better bus stops and more reliable bus service was recorded throughout the priority corridor phase 2 outreach process.

Implementing a public light rail line was the number one goal among survey respondents and was reinforced repeatedly by the community over the last 20 years. Unfortunately, as of April 2019, the Durham-Orange Light Rail Transit project has been discontinued after facing critical setbacks.

The responses summarized to the right were based on survey results done as part of the study. While efforts were made for demographic representation, it was not a statistically valid sample.

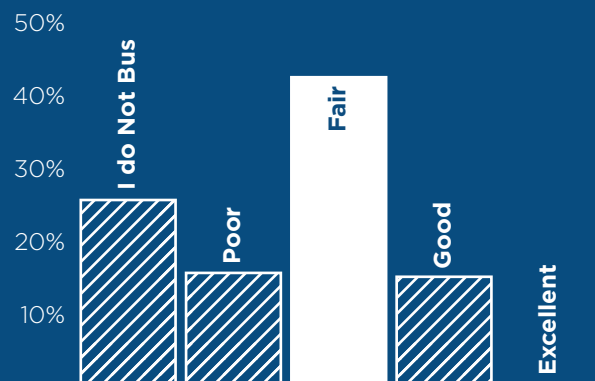
How often do you typically take the bus to/from and around central Durham?



How do you want to move to/from and around central Durham?

53% Want to BUS

How would you rate your overall transit (bus) experience in central Durham?



What is the most important transit goal?

1. Build a rail public transit system



2. Increase bus travel speeds/frequency



3. Expand transit routes



What is the most important reason you take the bus?*

1. Taking the bus allows me to read, work, etc. on my commute



2. Taking the bus is better for the environment



3. Taking the bus is cheaper



**45% of respondents (the majority) answered, "I do not ride the bus"*

What is the biggest issue with taking transit in central Durham today?

1. Service takes too long compared to other options like driving



2. Service is infrequent/unreliable



3. No convenient stops or stations near my home



What might encourage you to take the bus more?

1. Faster and more direct service



2. More frequent service



3. Routes at more destinations I would like to travel





HIGH QUALITY TRANSIT

Recommendation:

Integrate public input received through Move Durham into the Durham County Transit Plan process.

Expand frequency, reliability, and coverage of transit service in central Durham.

Ensure transit recommendations are included and funded as part of the Durham County Transit Plan Update process.

As Durham continues to grow, reliable, safe, and connected transit options can help move more people efficiently in central Durham. GoTriangle and GoDurham have made significant investments in local and regional transit over the last decade. Even with these major investments, residents, businesses, and visitors want more frequent, reliable, and convenient connections to jobs, neighborhoods, schools, and services.

Through community input, feedback from GoDurham, and technical analysis, the guiding principals for transit investment in central Durham were developed.

"I would take public transit more if frequencies were improved (particularly at night), buses were given signal priority, and sidewalk gaps along bus routes were filled in."
-Public Comment



EQUITABLE

Increase access to transit by ensuring an affordable system for all.



ENHANCE

Promote transit as a comfortable choice by making it reliable and competitive with driving, increasing frequency, and enhancing user experience.



CONNECT

Connect people and destinations to transit by improving neighborhood access, promoting transit friendly land use patterns, and improving first/last mile connections.



SUSTAIN

Support transit in Durham by leveraging dedicated funding sources, identifying staff resources, and evaluating progress.

SHORT-TERM TRANSIT NEEDS

GoDurham's Short Range Transit Plan: Recommendations

IMPROVE reliability on routes that are consistently late.

EXTEND the high frequency service network, offering 15 minutes service to the Streets at Southpoint, the Duke/VA Hospital, and E. Main Street at Alston Avenue..

SIMPLIFY many GoDurham routes which have route variations.

ADD 30 minute frequency to some Sunday and weekday evening services, and provide more direct connections to major destination (e.g. East Durham to RTP, Southpoint and Brier Creek).

GoDurham is implementing several transit improvements from the adopted Short Range Transit Plan, including:

- 9.3 more miles of frequent service (15 minute frequency or better).
- Providing 15-minute service to 12,700 more residents and jobs (within a quarter mile).
- Providing 30-minute service to 16,000 more residents and jobs (within a quarter mile).



Loading a bike onto a bus
Photo credit: GoTriangle



Bus loading at Durham Station
Photo credit: GoDurham



DURHAM COUNTY TRANSIT PLAN

The 2017 Durham County Transit Plan provides dedicated funding to support seamless mobility within Durham and the surrounding region. The services and capital investments funded by the Tax District Fund include:

- Providing greater frequency and more hours on many bus routes;
- Creating new routes to serve growth;
- Making improvements to transit infrastructure such as bus stops and park-and-ride lots; and
- Planning for major transit infrastructure, such as commuter rail.

With the discontinuation of the Durham-Orange Light Rail project, several questions exist regarding the future of transit in Durham County:

- The future of the rail corridor and the planned rail operations maintenance facility in southwest Durham;
- The status of planned land use and zoning changes along previously identified transit corridors; and
- How to provide high-quality transit service in Durham County.

An update to the Durham County Transit Plan will identify priority transit investments with the opportunity to improve service and increase ridership through more frequent and reliable service and better access to/from transit. The Transit Plan is expected to be complete by the end of 2021.

The following items should be incorporated into the work of the upcoming Durham County Transit Plan:

Equitable Engagement - Ensure that community members, especially those that rely on transit as their primary form of transportation, have a voice in the planning process. Engagement should happen early in the process with transparent decision making.

Priority Corridor Long-Term Vision Refinement - Using the public feedback gained through the Move Durham process, the transit plan should identify high-priority transit corridors within central Durham. Specifically, the feasibility and need for high-frequency transit service should be evaluated along the following corridors:

- Fayetteville St/Elizabeth St
- Holloway St
- Mangum St/ Roxboro St
- Corridors used by multiple bus routes in/out of Durham Station including the Downtown Loop, Chapel Hill Street, Duke Street, and Gregson Street

Prioritize First/Last Mile Access and User Experience - Identify funding strategies to integrate and improve pedestrian and bicycle facilities and amenities that provide access and connections to transit. Support the implementation of Vision Zero through the application of safe access and connections. Design and enhance transit stops and stations to create a comfortable and safe experience for transit riders.

INNOVATIVE TRANSIT IMPLEMENTATION

Charlotte MetroRapid

Charlotte Area Transit System recently launched MetroRapid, a new Bus Rapid Transit service in North Mecklenburg County. MetroRapid provides regional commuters with a quicker, more reliable commute into Charlotte utilizing the I-77 Express Lanes.



Charlotte MetroRapid
Photo credit: City of Charlotte, NC

Minneapolis Arterial Rapid Transit (A-line and C-line)

Minneapolis' Metro Transit is focusing on speed to improve transit ridership and service. The arterial rapid transit lines feature new buses with modern amenities and wider doors so people can get on and off easily. The lines are part of a high frequency network which provides service every 10 minutes on most days. Additionally, each station has enhanced amenities and automated ticketing machines.



Minneapolis Arterial Rapid Transit
Photo credit: Jaime DeLage / Pioneer Press file

Portland Red Lanes

Portland, OR is implementing transit-only lanes marked by red paint on several congested corridors. The goal is to designate transit-only lanes to provide higher frequency service and the red paint helps to make the lanes more visible. Other cities across the country are implementing red transit-only lanes, and it has resulted in faster and more reliable transit services, as well as fewer collisions between buses and cars.



Portland Red Lanes
Photo credit: City of Portland, OR



INCREASING RIDER COMFORT

Recommendation:

Prioritize rider comfort in transit planning and decision-making.

Expand funding sources and annual budget allocations for bus stop amenities including shelters, lighting, real-time schedule updates, bike parking, free Wi-Fi service and more.

Background

Providing bus shelters should be prioritized to improve the comfort of passengers. In addition to stops with a moderate number of boardings, shelters should be provided at transfer points, at stops in weather-exposed locations or without nearby potential sheltering locations, and at stops with a relatively high use by senior and child passengers.

At low-volume stops where service is less frequent or only basic coverage service is provided, basic shelters can provide passengers with comfortable seating and vital information. Providing comfortable shelters and seating can significantly improve perception of wait time and rider satisfaction.

NACTO'S SIX PRINCIPLES FOR GREAT BUS STOPS

1. Treat bus stops as gateways to your system
2. Facilitate movement, ease interactions
3. In-lane stops save time
4. Universal design is equitable design
5. Design for safety
6. Integrate vehicle design and platform design

ACTION ITEMS FOR MAKING GREAT BUS STOPS

1. Be an expert of your bus stops
2. Make a plan to balance bus stop spacing and prioritize improvements
3. Establish ground rules for collaborating internally and with other agency partners on bus stops
4. Increase budget for bus stops

Source: TransitCenter - From Sorry to Superb: Everything You Need to Know about Great Bus Stops

CITY OF PITTSBURGH, PA

CRITERIA FOR SHELTER PLACEMENT

High Ridership	Stops serving high numbers of passengers
Vulnerable Populations	Stops serving high numbers of seniors and/or persons with disabilities
Transfer Points	Stops in locations where high numbers of passengers transfer between vehicles
High Wait Time	Inbound stops in the outer system and outbound stops downtown
Park and Ride	Stops close to park and ride lots
Topography	Stops in locations where a shelter will not interfere with pedestrians or vehicle clearance
Weather	Stops in locations with high winds or other harsh weather effects

Source: City of Pittsburgh and Port Authority of Allegheny County, 2018

To make transit more attractive and accessible, especially to new riders, the Port of Authority of Allegheny County staff works with local governments, developers, and/or property owners as well as the Pennsylvania Department of Transportation to encourage implementation of transit amenities. The 2017 Bus Stop and Street Design Guidelines aims to encourage a more consistent, more accessible, and better connected network of bus stops over time. Innovative user amenities, such as heat panels as shown in the picture to the right, are encouraged to make waiting for a bus a convenient and pleasant experience.



Heated bus stops in Pittsburgh



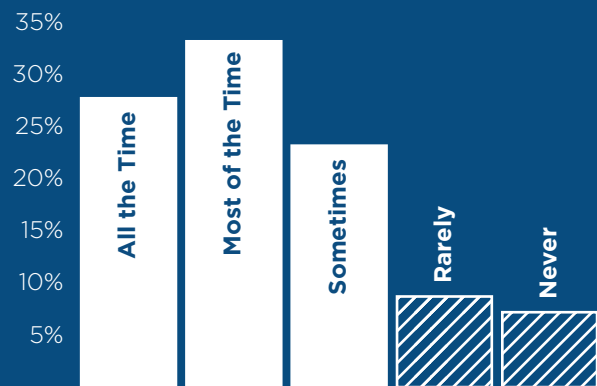
OUR DRIVING NETWORK

Durham, like nearly all communities throughout the Southeast, is very autocentric. Freeway building, suburban sprawl, downtown neglect, and many other factors coalesced to create an environment was developed primarily for motor vehicle travel. Today, not only are people's preferences changing, but mobility is changing. Streets that were developed on the movement of a single object are now expected to safely and comfortably move electric scooters, bikes, pedestrians, buses, delivery drones, self-driving cars, and whatever else is right around the corner.

Survey results relating to the street network and driving experience in central Durham are summarized to the right and also available in more detail in the Durham Today chapter.

The responses summarized to the right were based on survey results done as part of the study. While efforts were made for demographic representation, it was not a statistically valid sample.

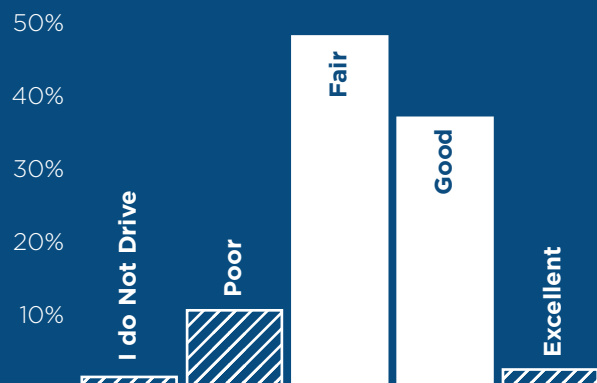
How often do you typically drive to/from and around central Durham?



How do you want to move to/from and around central Durham?

41% Want to DRIVE

How would you rate your overall driving experience in central Durham?



What is the most important driving goal?

1. Reduce congestion



2. Reduce speeding



3. Improve the connectivity of bike lanes, trails, and greenways across barriers like the railroad and freeways



What is the most important reason you drive to work/school?

1. Driving is faster



2. Driving is more convenient



3. Driving is my only option due to distance or limited other choices



What is the biggest issue driving in or around central Durham today?

1. Not enough parking



2. Aggressive or distracted drivers



3. Difficult to drive around downtown



"...For my job/life (and a lot of other people) I find myself needing to move around Durham a lot during the day for meetings and errands. It would be great if there was something even half as convenient right now for that kind of constant movement around Durham as driving."

-Public Comment



RETHINKING OUR STREETS

Recommendation:

Develop new and update existing evaluation metrics for roadway projects to incorporate livability metrics and multimodal integration.

Identify dedicated funding sources for streetscape projects and priority corridor implementation.

Background

Transportation planning and design used to be a more direct exercise in meeting and accommodating growth. Modern transportation planning requires balancing the needs of cities, users, and new mobility services that are consistently re-shaping how people move.

As Durham prepares to accommodate more people, the need for new strategies that increase capacity, economic vitality, and community development will be critical.

Durham has an opportunity to shift to a more comprehensive approach to roadway design that prioritizes the movement of people to ensure Durham residents have safe, healthy, and equitable transportation options.

Evaluation of transportation mobility projects across the country show that investing in multimodal transportation provides opportunities to mitigate population growth impacts, increase economic development, and achieve network goals to move people safely and efficiently.

REDESIGNED STREETS CAN ACCOMMODATE A GROWING CENTRAL CITY

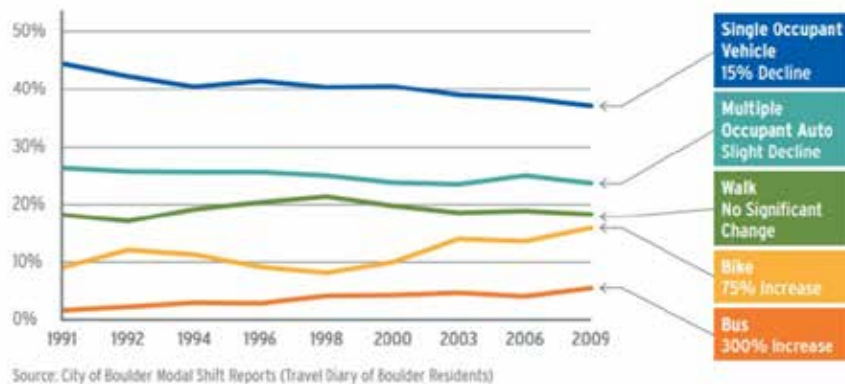


Case Studies

These are cities that have successfully shifted travel in their center cities to options other than drive-alone trips through funding and prioritizing other modes and disincentivizing car trips.

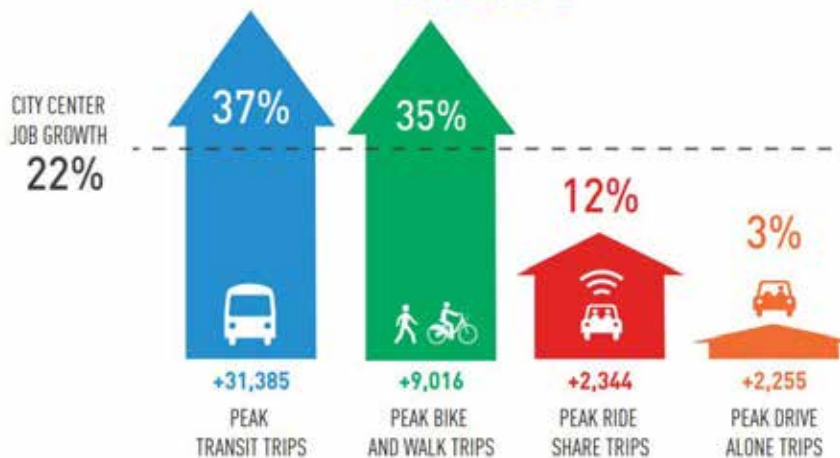
BOULDER, CO

1991-2009



SEATTLE, WA

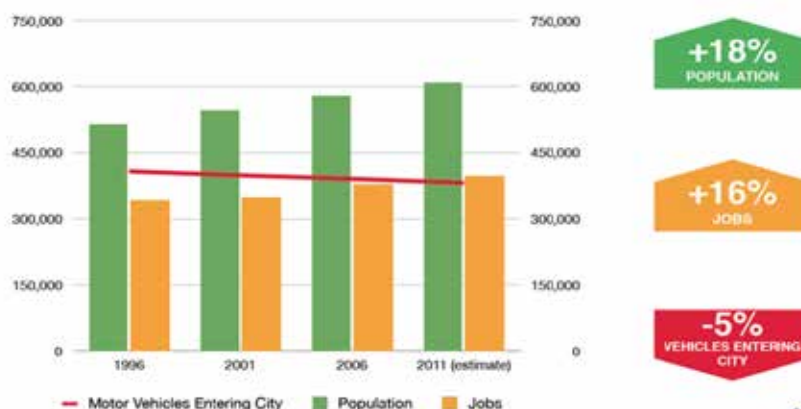
2010-2016



*Seattle New Mobility Playbook

VANCOUVER, BC

1996-2011



Source: City of Vancouver estimates based on census data and various information. Change in population & job numbers have been rounded to the nearest 1%, and some data points to the nearest 5%.





SPEED MANAGEMENT

Recommendation:

Update the traffic calming program to provide residents a clear implementation process, establish policies for more traffic calming measures, and dedicate ongoing funding for the program.

Develop and adopt a speed management policy to reduce the actual driving speeds on arterial streets in central Durham.

Consider new speed management techniques and technologies, such as automated speed enforcement. In some cases, this will require legislative authority from the North Carolina General Assembly to implement.

Background

The City of Durham's traffic calming program is intended to create safe and attractive streets, increase safety, enhance the street environment, increase access for all modes of transportation, and reduce the need for police enforcement.

The Traffic Calming Guidelines, outlines the general evaluation and decision-making procedure to determine priorities among city-maintained streets for traffic calming. The measures listed to the right are identified in the guide, but there is currently no formal policy, dedicated funding, or implementation strategy.

The City of Durham has a speed hump policy that allows residents to petition the City for the placement of speed humps. In order to qualify, there must be 75% support from property owners, the street must be functionally classified as a local street and be residential in nature, and traffic volumes can not exceed 2000 vehicles per day. Many streets

do not qualify due to concerns from the Durham Fire Department for emergency access. More details on the Speed Hump Policy and the current traffic calming program can be found at durhamnc.gov.

Traffic Calming Measures:

- Temporary targeted speed enforcement and/or radar trailer
- Lowering speed limit
- Narrowing travel lanes and/or adding shoulders or bike lanes
- Neighborhood Bike Route
- On-street parking
- Rumble strips
- Neighborhood traffic circles
- Speed humps or speed tables
- Raised crosswalks or intersections
- Neckdowns or chicanes
- Medians
- Partial street closure (diagonal diverters)

A pedestrian hit by a vehicle traveling at
25 MPH



has a **89%** chance of survival

A pedestrian hit by a vehicle traveling at
35 MPH



has a **68%** chance of survival

A pedestrian hit by a vehicle traveling at
45 MPH



has a **35%** chance of survival

Source: Tefft, B. C. *Impact speed and a pedestrian's risk of severe injury or death. Accident Analysis & Prevention* 50 (2013) 871-878.

Innovative Speed Management in Durham

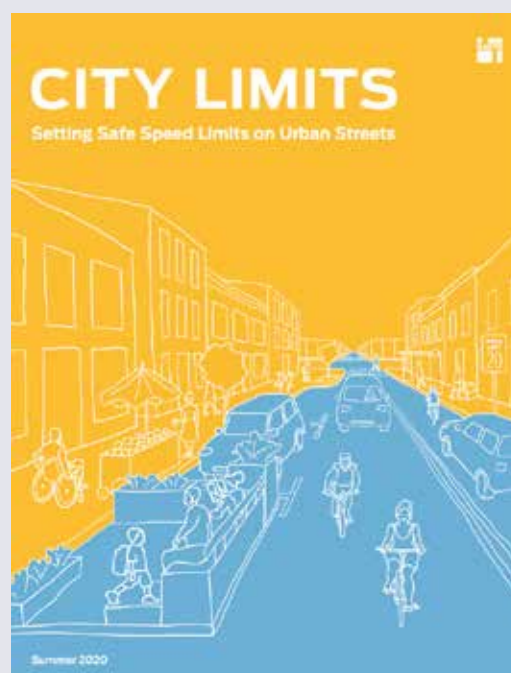
The City of Durham is currently exploring multiple ways our transportation network can be more safe, both in terms of traffic safety and in response to the Covid-19 pandemic. Each of the programs described below will require close monitoring and outreach before, during, and after implementation. These programs are likely only feasible on City maintained streets.

- **Shared Streets** - A program aiming to create more spaces for residents to enjoy the outdoors while maintaining safe social distance. These streets will limit vehicular access and slow speeds. Learn more at: <https://durhamnc.gov/4069/Durham-Shared-Streets>
- **Slow Zones*** - A similar approach could be applied to areas around schools. This will allow children to more safely walk or bike to school and practice social distancing as schools re-open.
- **City-wide 5 MPH speed limit reduction*** - Many cities around the country are exploring system-wide speed reductions. Trends amongst cities testing this approach point to positive outcomes in reducing pedestrian collisions and injuries.

*More on these tactics can be found in the NACTO City Limits guide referenced to the right.

NACTO GUIDANCE FOR SPEED MANAGEMENT

The National Association of City Transportation Officials (NACTO) has recently released a new guide on speed limits. The document succinctly outlines why cities may want to revisit their speed limits, how to go about making changes, and what is recommended based on context and goals.



<https://nacto.org/safespeeds/>



PARKING

Recommendation:

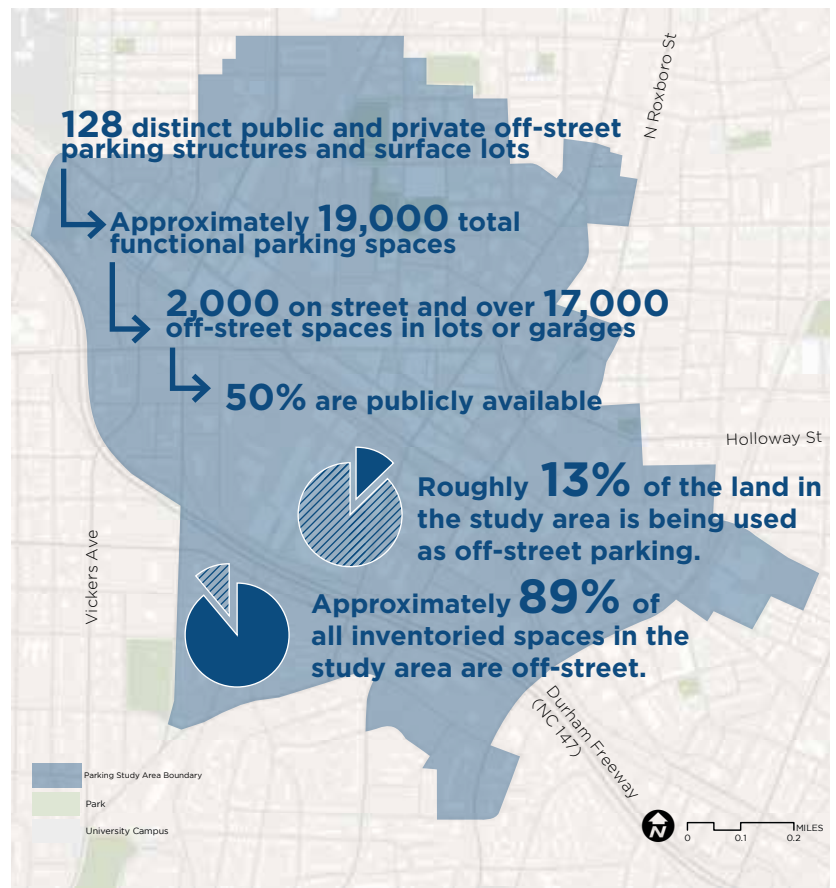
Implement recommended strategies from the Downtown Durham Parking Study.

Engage the community in any potential changes to on-street parking to understand parking demand and needs.

Background

The growth of central Durham means many more people are coming into and out of the city to live, work, and play. Currently, much of that movement necessitates ample motor vehicle parking. In 2018, the City completed the Downtown Durham Parking Study, which aims to provide guidance on parking strategies that maximize existing resources and combat the public perception that there is a lack of parking downtown.

The Move Durham process has repeatedly heard comments from the public and stakeholders about the importance of parking to access key destinations. This feedback has informed preferred alternatives along priority corridors. General downtown parking guidance follows that of the dedicated parking study from 2018.



Recommended Strategies from the Downtown Durham Parking Study

Emphasize Pricing as the Primary Management Tool

Short-Term

- Adopt performance-based pricing
- Provide a grace period
- Monitor performance
- Adjust monthly permit fees

Medium- Term

- Simplify regulations and time limits
- Create tiered hourly pricing
- Adjust pricing schedules
- Coordinate rates with private facilities

Proactively Manage Curbside Activity

Short-Term

- Provide adequate and accessible ada parking

Medium- Term

- Better manage delivery and drop-off activity
- Prepare for autonomous vehicle use
- Add on-street parking

Restructure Management

Short-Term

- Restore self-operation of parking management

Medium- Term

- Expand the parking facilities fund
- Improve parking system reporting and tracking

Optimize Existing Inventory

Medium-Term

- Facilitate shared parking agreements
- Upgrade technology and payment systems
- Explore valet parking options

Long- Term

- Improve and coordinate information systems
- Initiate a downtown employee parking shuttle

Improve the User Experience

Short-Term

- Coordinate programs and event management
- Plan facility condition improvements
- Develop a security plan

Medium- Term

- Accentuate branding and marketing

Long-Term

- Participate in pedestrian environment improvement initiatives

Reduce Demand Through Multimodal Enhancement Opportunities

Short-Term

- Incentivize the use of public transit

Medium- Term

- Improve and expand bicycle parking and repair facilities
- Prioritize pedestrian crossing safety

Redefine Parking Requirements

Medium- Term

- Define an access management requirement



NETWORK CAPACITY

Recommendation:

Continue to evaluate central Durham traffic and its network capacity, especially after the East End Connector project and Alston Ave widening projects are complete.

Coordinate with NCDOT during all future roadway projects to ensure community values and Move Durham goals are implemented.

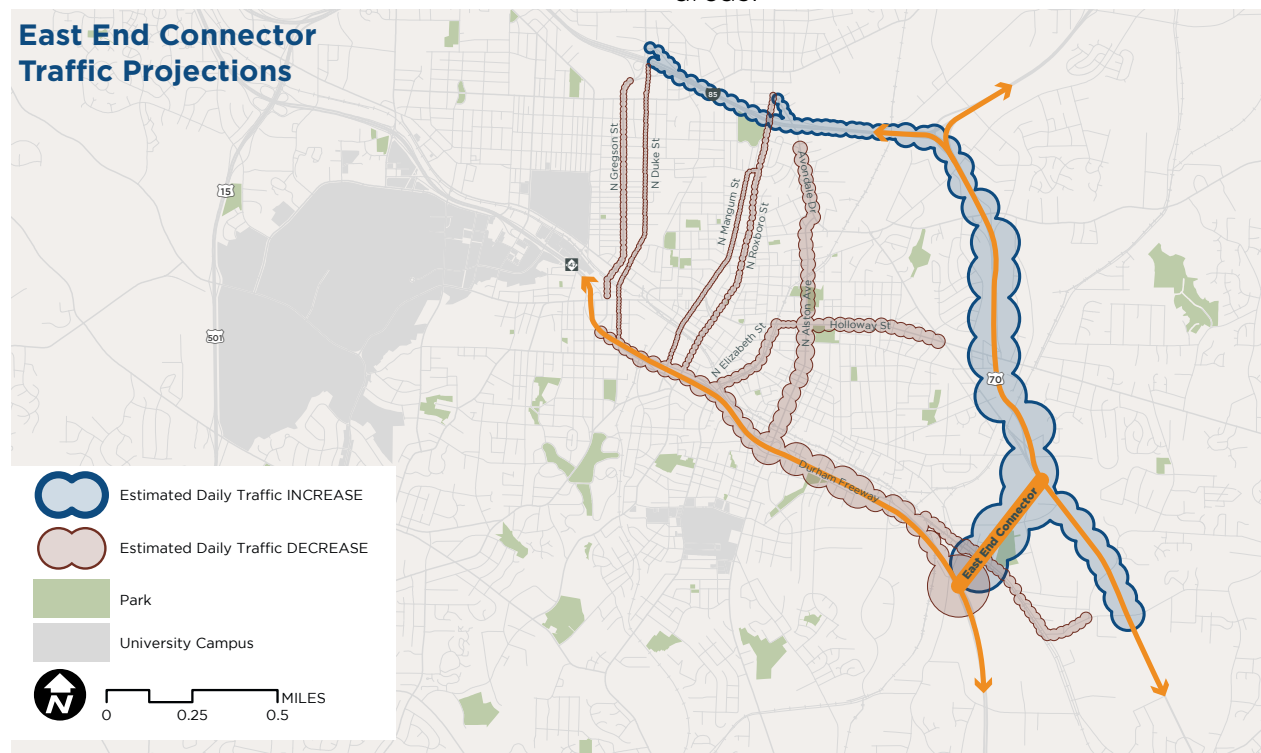
Expected Impacts of the East End Connector

Durham has several active roadway projects in central Durham, including the East End Connector and Alston Ave Roadway Widening. These projects have the potential to relieve congestion and traffic volumes on key neighborhood and commercial roads within central Durham.

The East End Connector will provide a direct connection between the Durham Freeway (NC 147) and Miami Boulevard (US 70) - two major east-west highways in the Triangle - and improved access to I-85 and I-40.

Once complete, the East End Connector is expected to divert traffic from the Durham Freeway through downtown Durham and local roads, such as Alston Ave, Avondale Dr, Roxboro St, Mangum St, Gregson St, Duke St, and Holloway St (see map below).

However, changes to the streetscape of these roadways, including road diets, two-way conversions, crossing improvements, sidewalk installation, and low-stress bikeways will be necessary in order to influence driver behavior, divert through traffic, and realize the potential benefits for downtown and residential areas.



Induced Demand: How Congestion Meets Capacity

Transportation researchers started the conversation around induced demand in the 1960's. Although there is still healthy debate about the degree of impact, there is a growing number of studies reinforcing the concept. According to CityLab's Benjamin Schneider, induced demand occurs "when you provide more of something, or provide it for a cheaper price, people are more likely to use it." In other words, if we make it easier for people to drive alone, they will drive alone at even greater rates which will lead to more congestion.

There are a host of different factors contributing to this phenomenon. The greatest combatant available is to supplement expansion projects with multi-modal corridors. Providing attractive alternatives to new highway facilities and discouraging driving in areas where it is undesirable are the only ways to maintain balance and ensure roads don't revert to previous traffic congestion levels, or get worse.

<https://www.citylab.com/transportation/2018/09/citylab-university-induced-demand/569455/>

<https://www.vtpi.org/gentraf.pdf>

<https://www.wired.com/2014/06/wuwt-traffic-induced-demand/>



Katy Freeway - Houston, TX

Reduced Demand - Freeway Removal

There is a growing list of cities around the US that are doing what would have been unthinkable decades ago - removing high-capacity highways. The highway boom era of the 1960's bisected countless communities and cities with little or no attention to long-term rehabilitation of the spaces, especially because the areas affected usually fell along racial or economic dividing lines.

There are many methods and rationales used to reclaim these spaces. Some projects like the Alaskan Viaduct in Seattle and Big Dig in Boston are lengthy and expensive projects. Another freeway conversion is Rochester's Inner Loop East Transformation Project that converted a sunken highway into a complete street.

usa.streetsblog.org/2019/08/14/federal-program-would-help-cities-tear-down-highways/

www.cityofrochester.gov/InnerLoopEast/



Rochester , NY Inner Loop



DURHAM FREEWAY

Recommendation:

Leverage the Durham Comprehensive Plan Update planning process to continue the conversation with local leaders and neighborhoods about the impact of the Durham Freeway, challenges the Freeway causes to downtown access, and potential improvements.

Background

During the 1970's, as part of Durham's Urban Renewal program, the Durham Freeway (NC 147) was built to provide a high-speed vehicle connection from Research Triangle Park (RTP) to central Durham. NC 147's entire length is classified as a limited access freeway, linking NC 540 in Morrisville with RTP, Downtown Durham, and Interstates 40 and 85. NC 147's path through Durham destroyed well-established African American communities such as Durham's Hayti community. As a result of NC 147's construction, African American businesses, homes, and places of worship were demolished and

residents were permanently displaced, as seen in the images below.

Today, NC 147 serves as a primary route through Durham with between 44,000 and 87,000 vehicles driving the corridor every day. However, the impact on adjacent communities can still be felt, and NC 147 represents a significant barrier to access for many Durham residents.

There is a lot of work ahead to understand, and where feasible, to mitigate the damage the construction of the Durham Freeway caused.



Hayti area in 1950



Hayti area in 1972
Photo Source: Bull City 150

The Future of the Durham Freeway

Potential changes to the Durham Freeway are described below but these are not recommendations. More community engagement, stakeholder involvement, and technical analysis is needed to determine the feasibility and impacts of the alternatives described below.

Cut and Cap



This alternative is generally only found viable in urban areas experiencing extremely high land values or severe need. A cut and cap of even a small segment would likely have high costs and potential impacts to surrounding neighborhoods.

Boulevard



A boulevard alternative would involve converting the existing freeway to a complete street - high-capacity boulevard. This option maximizes multi-modal capacity, placemaking potential, economic opportunity, and community development benefits.

Safety + Capacity Improvements



Changes to the existing interchanges, such as consolidating exits and re-aligning interchanges, may decrease vehicular crashes along the Durham Freeway.

**Cost for all three options will vary depending on the scope of the project.*



CROSSING BARRIER ANALYSIS

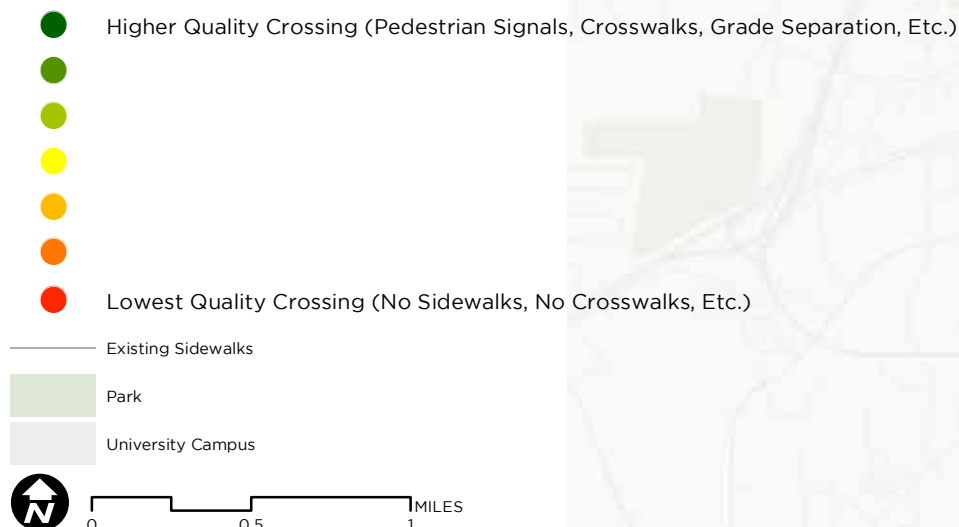
Recommendation:

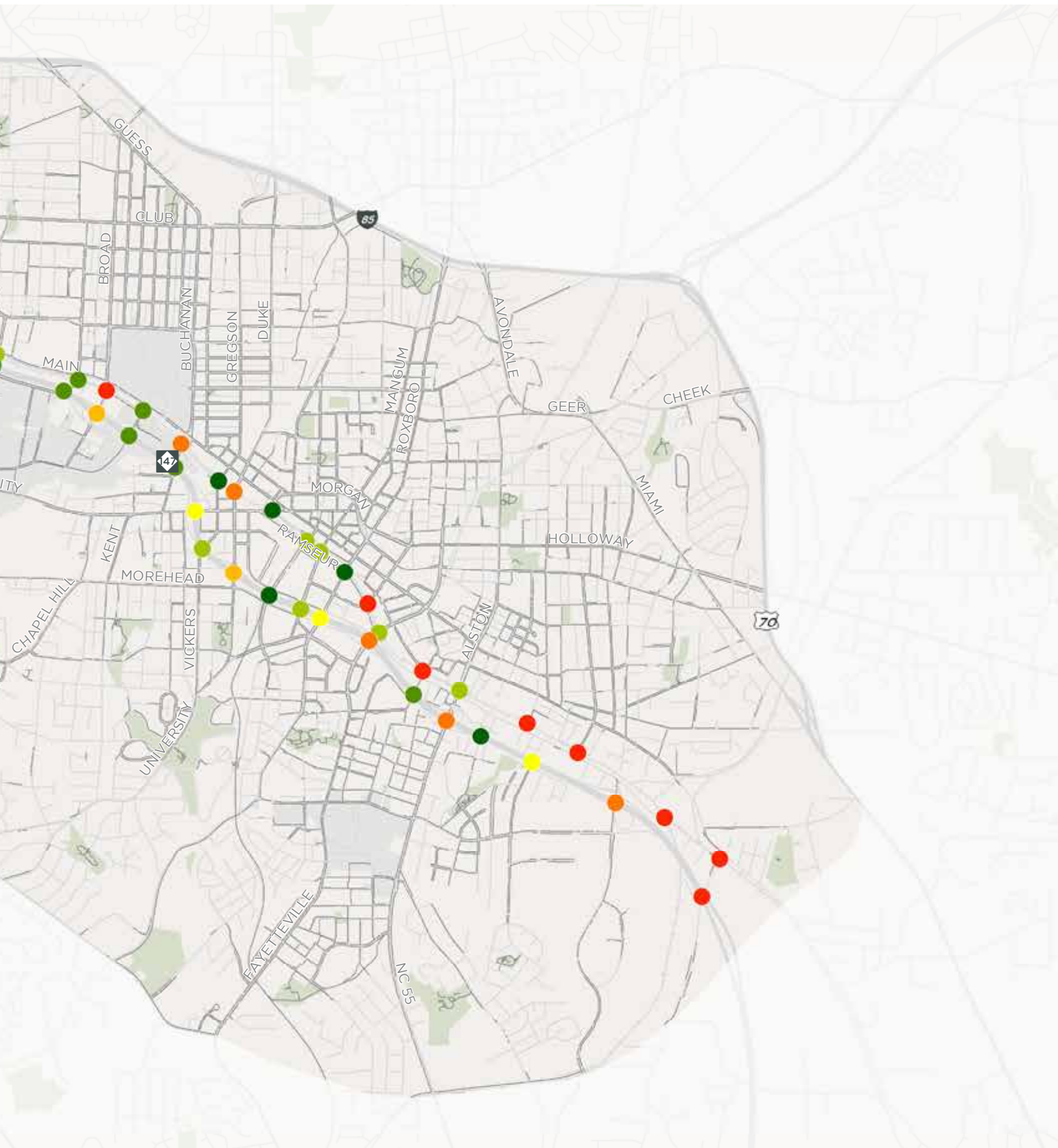
Prioritize bicycle and pedestrian crossing improvements of the Durham Freeway (NC 147) and the North Carolina Railroad (NCRR) to increase neighborhood connectivity and mobility options.

Background

Throughout both phases of Move Durham outreach, users consistently identified NC 147 and the railroad as a barrier of connectivity.

The map to the right evaluates the existing condition of the crossings of NC 147 and NCRR, and ranks the quality of the crossing experience. Metrics such as the presence of sidewalks, bikeways, street trees, and the distance between an existing sidewalk from the roadway was used to determine the quality of the crossing.







NC 147 (DURHAM FREEWAY) NCDOT TIP PROJECT

Recommendation:

NCDOT, the City of Durham, and DCHC MPO should coordinate on a comprehensive study of the future of NC 147 and ensure a thoughtful and equitable engagement process is the basis of recommendation development. The current TIP project should be delayed to allow for this coordination to occur, and the outcome of the study may not be compatible with the current TIP project resulting in the need to re-prioritize the project in the TIP process.

NCDOT Project Goals:

- Safety and operational improvements
 - » Reduce merging conflicts near the on/off ramps on NC 147 by consolidating and closing ramps and lengthening auxiliary lanes
- Maintenance
 - » Rehabilitate existing pavement and aging bridges

Contact Info

NCDOT Division 5
(919) 220-4600

Project Schedule

The current project was suspended due to NCDOT cash flow issues.

- Project development is currently suspended and may not restart until 2023
- Right-of-Way is scheduled to begin in FY2023 with a proposed delay to FY 2027
- Construction scheduled to begin in FY 2027 with a proposed delay to FY 2030



A view of S Duke St near NC 147 ramps

Move Durham Findings + Identified Priorities for NC 147

TRUST

Original construction of the Durham Freeway and the negative impacts on black neighborhoods has contributed to a distrust of government, especially transportation agencies. A project planning and development process that is community-led, comprehensive, focused on rebuilding trust, and addressing past harms is necessary for a successful project.

CONNECTIVITY

Improving connectivity between downtown and surrounding neighborhoods was a top priority in the Move Durham engagement process. The number and quality of crossings of NC 147 is a critical factor in improving connectivity for users of all ages and abilities.

EQUITY

Improvements to the Durham Freeway should result in a positive impact for the communities that were most harmed by the original construction and those who currently experience the negative impacts of living near the freeway. Any transportation improvement needs to have an equity analysis for its impact on land use, housing affordability, economic and community development, public health, and the environment.

ACCESS

With the construction of the East End Connector, through traffic could be diverted to US 70 and I-85 shifting the purpose of NC 147 more towards providing access to/from downtown and surrounding neighborhoods. Maintaining and improving access to central Durham should be the goal of any future NC 147 improvement project.



GENERAL RECOMMENDATIONS





INNOVATION LAB

Recommendation:

Collaborate with the Innovation Lab within the City of Durham to pilot innovative parking and curb management strategies to provide for the efficient use of public space.

Adopt a Tactical Urbanism Design Guide and implementation policy to streamline the process and ensure consistent implementation.

Background

Creating a Durham Innovation Lab would involve the establishment of a manager, programs, and inter-department team focusing on evolving technology and innovative engagement with the community. Primary pillars of the lab would be to manage a tactical urbanism program, monitor and set policy on new mobility developments, and link these programs directly with the community and across departments.

WHY TACTICAL URBANISM?

Tactical urbanism has evolved quickly from small community-driven acts addressing a need in the built environment with a temporary, and often quirky intervention; to include formalized processes that test and implement major infrastructure projects. Cities tend to support these activities because their benefits can be far-reaching with often minimal risk. Although Durham has experience with tactical urbanism events and interventions, the development of a more formalized process with materials and people dedicated to the management and encouragement of these activities

could allow for more engagement, facility improvements, and cost savings.

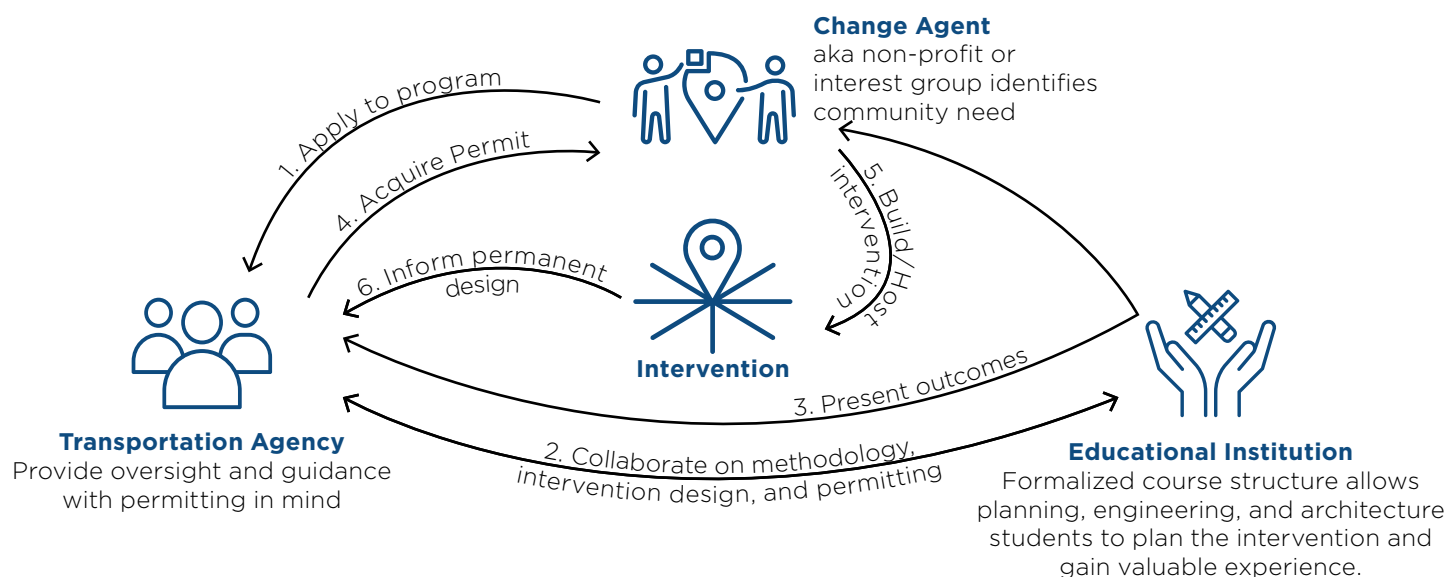
WHY NEW MOBILITY?

Transportation technology and services is causing rapid and sweeping changes to our urban environments. Seemingly overnight new app-based technology is shifting people's behavior and mobility and our streets are not prepared to accommodate all of the changes. Our existing policies and codes do not currently accommodate new technologies. Having dedicated staff understand these complex realities and forecast and prepare for upcoming developments would ensure Durham is taking advantage of these shifts instead of just reacting to them.

Additionally, integrating new mobility solutions and emerging technologies can mean putting new data sources to use for more accurate and insightful planning. Big data will be an increasingly useful tool in anticipating needs but there are currently a myriad of sources and approaches.

Innovation Lab Management Models

The Durham Bike+Walk Implementation Plan recommended the development of a tactical urbanism program managed by the City of Durham. The Transportation Department has had recent success piloting a tactical urbanism project on Club Blvd in collaboration with Smart Growth America's Safe Streets Academy. This plan recommends building on that event with a dedicated program structure leading to more innovative, cost-effective, and efficient projects around Durham. Perhaps the most advantageous way a tactical urbanism program could be implemented in Durham is by using the Collaboration-Based Program model, which is outlined below. Equitable and creative engagement strategies will be an essential component of this program.



City of Burlington, VT “Community-Led Demonstration Project Policy + Guide”

The City of Burlington, VT underwent a collaboration process with the goals of formalizing, encouraging, and simplifying the tactical urbanism projects in the city. Similar to Durham, the city has experience with various forms of tactical and Open Streets type projects. The guide and policy builds off those precedents to create a more clear and engaging process so the community and city can develop and test ideas in a more streamlined way. Complete with easy-to-understand timelines, FAQs, materials and idea examples, all the necessary forms, and more, the guide and policy is a great example of people-forward planning that would be great in Durham.

COMMUNITY-LED DEMONSTRATION PROJECT POLICY + GUIDE

City of Burlington, VT | January 2018





URBAN DESIGN & CONNECTIVITY

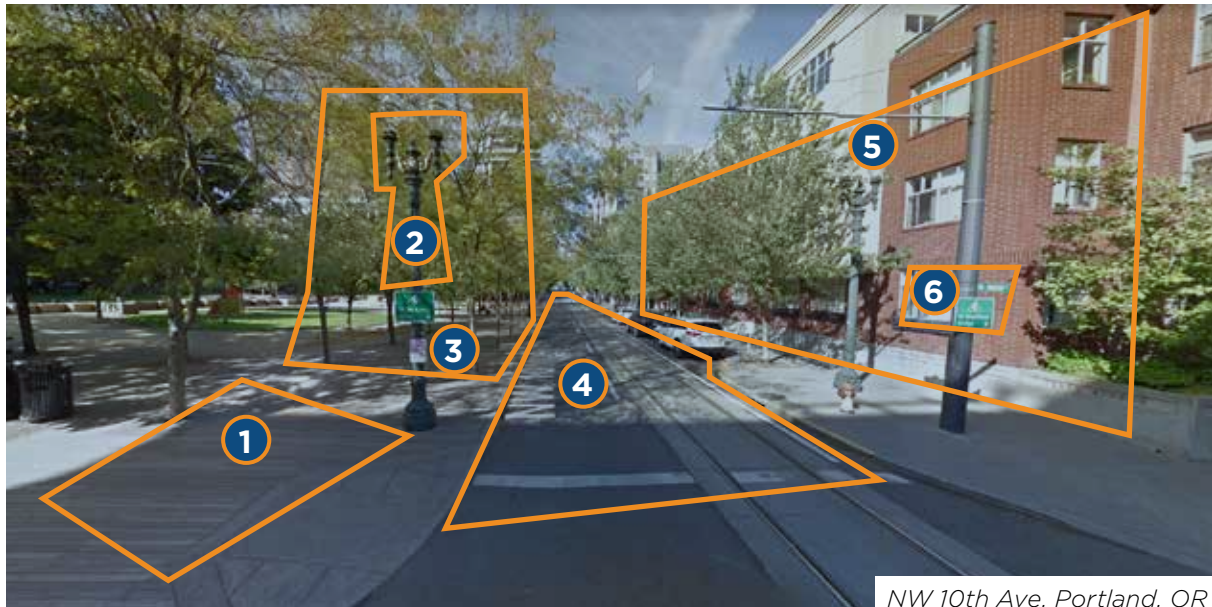
Recommendation:

Adopt policies and strategies that more intimately link transportation and urban design projects. Incorporate these policies into the Unified Development Ordinance and use the Durham Comprehensive Plan Update to vet new strategies and approaches.

Recommend wider sidewalk and better streetscape standards in the Urban Tier for neighborhood commercial centers and arterials.

The Street as a Place

The example below identifies how urban design and transportation can work together to achieve a unique place in the city.



NW 10th Ave, Portland, OR

- 1 Pedestrian Ground Space** - Use ground materials as a method of contributing to placemaking, organizing users, and as passive wayfinding.
- 2 Furniture Zone** - Work towards a harmony between materials and design of elements in the furniture zone and how they relate to the surrounding place.
- 3 Pedestrian Enclosure** - A permeable frame and ceiling improves user experience, stormwater, temperature stability, and security.
- 4 Multimodal Street** - Narrow travel lanes and placing a priority on multi-modal travel contributes to a generally more safe and activated street.
- 5 Mixed Uses** - Further urban design guidelines that maintain permeability, activated ground floors, diverse architecture, human scale, etc.
- 6 Wayfinding** - Create a system that builds upon an area's placemaking language and helps users develop lasting mental maps of an area.

Downtown Durham Connectivity Recommendations

The mobility network in a downtown core can and should mean more than moving people as quickly as possible between destinations. Successful downtowns require a welcoming and safe atmosphere in the public realm that encourages a slower multi-modal pace.

Durham has multiple highly-activated downtown pockets but there is little urban fabric or connectivity between them. Using streets as catalysts, an accessible and welcoming environment can be achieved between public spaces and activated areas. The recommendations below are from Downtown Durham, Inc. 2016 Downtown Master Plan.



Circulation

- Two-way the Loop/recreate historic street grid.
- Promote Complete Streets as a way to improve functionality for all users.
- Improve access and promote investment by converting some one-way streets to two-way



Dead Zones

- Connect activity areas with high quality infill development and engaging streetscapes.
- Create interesting “walks” between destinations



Wayfinding

- Connect the dots between “starting points” and destinations
- Use landmarks and gateways to direct and orient people downtown
- Provide signage for multimodal users



Linkages

- Improve and expand infrastructure to enhance access to nearby neighborhoods
- Reinforce neighborhood character and identity as part of larger neighborhood revitalization efforts
- Re-establish former neighborhood-scale commercial nodes outside of downtown



Open Space

- Prioritize recommendations from recent plans to add or improve open space
- Promote diverse public spaces and experiences that meet the needs of downtown’s various users



IMPLEMENT VISION ZERO PLAN

Recommendation:

Establish a Vision Zero task force to strengthen Durham's commitment to Vision Zero. Develop clear objectives and action items to achieve the goal.

Create a permanent, dedicated funding source and administrator for Vision Zero implementation.

Prioritize safe street design to minimize the impact of human error on our roadways. Use education and enforcement strategies to supplement safe street design.

Background

The City has long been committed to making its streets safer for residents, and Vision Zero Durham will build on these efforts. In 2003, the City introduced an Accident Reduction Program to identify and treat high-crash intersections. In 2015, Mayor Bell accepted the Mayor's Challenge for Safer People and Safer Streets issued by former US Transportation Secretary Anthony Foxx. On September 18, 2017, the Durham City Council adopted the Vision Zero Durham Resolution making Durham one of the first cities in North Carolina to officially adopt a Vision Zero program.

The Vision Zero Durham Resolution affirms the City's commitment to eliminating traffic deaths and serious injuries on Durham roadways, and provides a framework for City departments and community stakeholders to work together to achieve this goal.

Implementation Progress

While there is still more work to be done, the following implementation progress has been made since adopting a Vision Zero policy in 2017:

- Conducted a crash study for 2012-2016 including an equity analysis of these crashes to determine whether communities of concern were experiencing a disproportionate crash burden.
- Initiated the development of a Vision Zero Action Plan
- Selected for the Smart Growth America Safe Streets Academy which resulted in a demonstration project on W. Club Boulevard and a permanent pedestrian crossing improvement at a high-use bus stop.

Vision Zero Durham

Walk Safe. Ride Safe. Drive Safe

Working together, we can achieve zero fatalities on our roadways because every person in our community matters.

Long-Term Commitment

When the City Council adopted the Vision Zero Resolution in 2017, they affirmed Durham's commitment to roadway safety for all users and to a long-term promise that this commitment would be at the forefront of all decisions made regarding transportation policy and projects going forward. The goal of zero deaths on the city's roads is not one that will be accomplished in a

few years. It will take a continuing effort by many stakeholders, as well as the city's residents, to change the nature of the roadways and the culture of mobility in the city. This ongoing effort will occur over decades, and the city is dedicated to making the changes necessary to achieve the goals outlined in the program.

Traffic Fatalities by mode and year (2013-2019)

Year	Ped	Bike	Vehicle	Total
2013	5	1	13	19
2014	2	2	11	15
2015	4	1	13	18
2016	4	0	10	14
2017	3	1	14	18
2018	5	0	16	21
2019	9	0	12	21
Total	32	5	89	126

Charlotte, NC Vision Zero Program

Charlotte, North Carolina recently implemented a Vision Zero Policy with a commitment to "eliminate traffic deaths and serious injuries for all who share Charlotte streets by 2030." A task force was established with the plan that will continue to meet and evaluate plan implementation. The task force includes more than 50 members from 25 stakeholder groups representing law enforcement, area schools, local government, advocacy organizations, and neighborhood associations.

Charlotte's Vision Zero policy uses a data-driven approach that focuses on high-injury corridors, which make up 10% of the roadway network. The crash analysis found that 38% of fatal crash victims in Charlotte were pedestrians, while 6% were cyclists.

For more information, go to: <https://charlottenc.gov/VisionZero/Pages/VisionZero.aspx>



EQUITABLE ENGAGEMENT IN TRANSPORTATION PLANNING + DESIGN

Recommendation:

Continue to incorporate the Equitable Engagement Blueprint into transportation planning and design projects. The Blueprint should also be updated to reflect lessons learned throughout implementation.

Develop a toolbox of equitable engagement strategies and materials to be used at future transportation events and engagement efforts.

Implement an ongoing engagement process utilizing Community-Rooted Partners that builds community capacity and is available to supplement engagement for various plans and projects

Background

The Durham Equitable Community Engagement Blueprint (the Blueprint) was created within the Neighborhood Improvement Services Department (NIS) to provide a guide for the City of Durham on how to best engage with the Durham community. The Blueprint intends to advance the goal of “encouraging active participation in neighborhood redevelopment... public policy and decision-making dialogue.”

This compilation of principles and methods were formed as a result of conversations with other departments and community leaders, and it is the intention of the City that the Blueprint be the basis for future community engagement practices by the City of Durham.

Guiding Principles

The Blueprint lists key components for Equitable Community Engagement to outline principles for equitable engagement. The first key component emphasizes the importance of reorienting perspectives on public participation and its success measures.

In doing so, the City might be able to recognize ways in which inequity manifests within the public participation process by identifying who participates versus how many participate in public input sessions. Shifting this standard moves passive data collection towards intentional understanding and knowledge of representation. The goal is to ensure that plans, processes, and projects meet the needs of all community members, particularly those who have been historically marginalized.

Tools for Measuring Successful Engagement

Is there any overall guidance?

- Be transparent
- Define the impact
- Identify the engagement level

Who should we engage?

- Define the engagement audience
- Identify community partners
- Coordinate with government departments

How should we engage with the community?

- Define potential barriers and opportunities

How will we measure successful engagement?

- Collect data and evaluate

How will we build for the long-term?

- Grow community capacity
- Continue engagement



Residents taking surveys at a Juneteenth event



TRANSIT-ORIENTED DEVELOPMENT

Recommendation:

Leverage the development of the Comprehensive Plan update and Durham County Transit Plan to identify areas for transit-oriented development and identify strategies for investment.

Use GoTriangle's Transit-Oriented Development Guidebook as a resource.

Background

Transit-Oriented Development (TOD), can provide housing and other services that are organized around transit access, whether bus or rail. These developments can create and increase access to jobs, all while reducing transportation

costs. By developing affordable housing around transit, TODs can spur investment, add transit riders, and allow low and moderate-income communities to spend money on other basic needs, such as food and education.

Oakland, CA Equitable TOD

The Fruitvale Village project in Oakland, California is a unique example of an Equitable TOD led by a non-profit. The Unity Council promotes economic development in the Fruitvale neighborhood, which has BART rail stations and is a major bus transfer center. Fruitvale is home to Oakland's largest Latino population, and is a predominately low-income area with low rates of vehicle ownership.

In the mid-1990s, The Unity Council held a series of community charrettes to determine how the TOD at Fruitvale Village should be designed, and the amenities it should include. And by 1995, the regional transit agency (BART), the City of Oakland, and the Unity Council agreed on conceptual plans. The City updated the zoning to prohibit parking lots or parking structures within and around the

TOD, and used a diverse mix of capital financing, private loans, and federal grants to build the project.

The first phase was completed in 2004, and included 40 small businesses, 68 low-income senior housing units, 37 market rate apartments, and 10 restricted income apartments.



Fruitvale Village
Photo credit: www.bart.gov

Denver, CO Equitable TOD

The City of Denver is building a \$7 billion voter-approved light-rail expansion network known as FasTracks. To plan for the anticipated growth around the new light-rail line and ensure that land-use planning and affordable housing are developed in conjunction with transit, the Denver Regional Council of Governments (DRCOG) developed the Gold Corridor Housing Strategy, along the route of the future FasTracks Gold Line.

The strategy seeks to balance growth with the preservation of the vibrant communities along the route, and is an implementation plan for creating affordable, diverse housing types. The strategy documented existing affordable housing and needs, identified specific sites for affordable housing, developed policies to enable and promote affordable housing, and established a set of performance

measures to evaluate the success of maintaining and building affordable housing. For more information on the Gold Corridor Housing Strategy, go to:

<https://drcog.org/sites/drcog/files/resources/Gold%20Corridor%20Technical%20Assistance%20Reports%20-%20Affordable%20Housing.pdf>



Additional Resources

Corridor Housing Preservation Tool: <https://soa.utexas.edu/work/corridor-housing-preservation-tool>

Center for Neighborhood Transportation Housing + Transportation Affordability Index: <https://www.cnt.org/tools/housing-and-transportation-affordability-index>

5 PRIORITY CORRIDORS







Priority Corridors

Seven priority corridors were selected for in-depth study based on community input from Phase I and existing condition analysis. See pages 99-100 for priority corridor cost estimates.

- 1 Avondale Dr, Alston Ave**
Page 105
- 2 Chapel Hill St**
Page 113
- 3 Downtown Loop**
Page 121
- 4 Duke St, Gregson St/Vickers St**
Page 129
- 5 Fayetteville St, Elizabeth St**
Page 137
- 6 Holloway St**
Page 145
- 7 Mangum St, Roxboro St**
Page 153

These corridors were selected in early 2019. Several corridors were not selected due to budget constraints or due to interaction with the Durham-Orange Light Rail Transit project which was still in active development at that time. The following corridors should be considered for future study:

- South Alston Avenue
- Erwin Road
- West Main Street
- West Club Boulevard

 Study Corridor

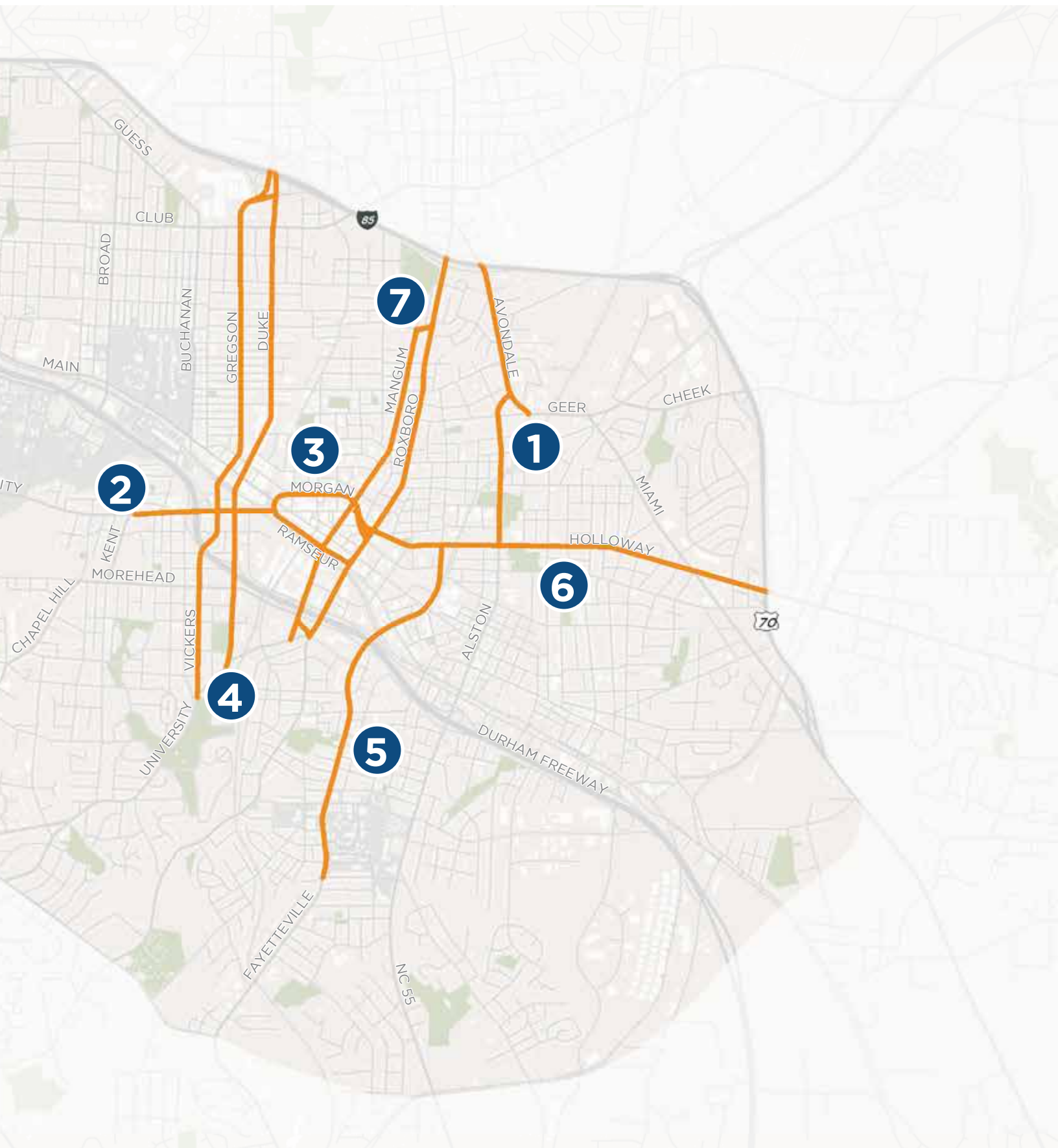
 Park

 University Campus



0 0.5 1 MILES







PHASE II OUTREACH: PRIORITY CORRIDORS

Phase II outreach of the Move Durham planning process aimed to understand how to apply the community values identified in Phase I to the priority corridors. The goals of Phase II outreach are listed to the right.

Phase II targeted both stakeholders in the immediate vicinity of the priority corridors and the larger central Durham community. People living and working adjacent to the priority streets understand the dynamics, issues, and potential solutions better than anyone.

Build community trust and support for the Move Durham study and planning process with local partners, especially in communities that may be affected by changes to the priority corridors.

Invite clear feedback that will further inform the vision for how people want to move around central Durham in the future, as well as more detailed input regarding priority corridors.

Demonstrate the opportunities for changing priority corridors and allow the community to help shape the vision for these corridors through an open and equitable process.

Ensure that the planning process is equitable, and the Move Durham team engages with target communities in their neighborhoods.

Phase II Outreach: By The Numbers

2,589

Corridor Surveys
Completed

1,372
Online
Entries



1,217
Paper
Entries



1,196

Project Postcards Mailed



13

Community Events Attended



11

Community Presentations
and Intercept Survey Events

Engagement Strategies

PRESENTATIONS

The project team spoke to many audiences about the project to solicit feedback.



DESIGN YOUR STREET

Using scaled street elements, the participants built their ideal cross section for different priority corridors.



PREFERRED CROSS-SECTION

Participants voted for their preferred cross section by placing a sticker on the display boards for each priority corridor.



VOTE YOUR MODE

Participants dropped a vote into the canister of their preferred method of travel.



VOTE YOUR IMPROVEMENT

Participants dropped a vote into the canister of their preferred street improvement.



SURVEYS

Paper surveys as well as on-line surveys asked participants how they moved along each priority corridor and solicited additional thoughts and feedback.



PROJECT CARDS

Information about the project and how to engage were mailed to every property along the priority corridors and distributed at outreach events.





Phase II Outreach: What We Heard by Priority Corridor

The table below highlights the general themes heard for each priority corridor and a more detailed summary of feedback is included in each corridor section of this chapter.

Priority Corridor	Public Feedback
Avondale Drive & Alston Avenue	<ul style="list-style-type: none">• Add more crosswalks, especially near bus stops• Re-route non-local and commercial traffic• Add sidewalks on both sides of the street• Install a separated bicycle facility• Slow traffic and enforce speed limits
Chapel Hill Street	<ul style="list-style-type: none">• Add protected bike lanes for a continuous network of bike lanes• Improve safety at the Durham Freeway• Make the pedestrian crossings safer and more comfortable• Slow traffic and enforce speed limits
Duke Street & Gregson/Vickers Street	<ul style="list-style-type: none">• Accommodate two-way traffic• Slow traffic and enforce speed limits• Add more crosswalks
Elizabeth/Fayetteville Street	<ul style="list-style-type: none">• Add more comfortable and safe sidewalks and crosswalks• Add more streetscape elements (street trees, lighting, public art, etc.)• Remove under utilized on-street parking in low-demand areas and add on-street parking in high-demand areas• Slow traffic and enforce speed limits
Durham Freeway	<ul style="list-style-type: none">• Provide more overpasses and pedestrian crossings• Add protected bike lanes and safer sidewalks at overpasses and interchanges• Improve safety at the entrance and exit ramps• Add more lanes to accommodate growth
Holloway Street	<ul style="list-style-type: none">• Add more lighting along the corridor• Add sidewalks on both sides of the street• Slow traffic and enforce speed limit
Downtown Loop	<ul style="list-style-type: none">• Accommodate two-way traffic• Slow traffic and enforce speed limit• Install protected bike lanes• Add more streetscape elements (street trees, lighting, public art, etc.)• Add sidewalks on both sides of the street and make sidewalks wider• Add and improve safety at pedestrian crossings• Remove on-street parking
Roxboro Street & Magnum Street	<ul style="list-style-type: none">• Accommodate two-way traffic• Slow traffic and enforce speed limits• Replace on-street parking with bike lanes

Phase II Outreach: Predominant Themes by Mode

Themes by mode of travel emerged across all or most corridors and are broken down by travel mode in the table below. Feedback was received through both on-line surveys and paper surveys. The on-line respondents were 88% white, and 14% of respondents earn less than \$50,000 annually. The paper survey respondents were 23% white, and 50% of respondents earn less than \$50,000 annually. Because these groups of survey respondents vary greatly demographically, it is important to distinguish their varying priorities.

WALKING



Over 70% of respondents identified sidewalks as needing improvements, the highest support among all modes and consistent between on-line and paper respondents. This includes adding more sidewalks, widening sidewalks, and repairing sidewalks. In addition, respondents want to see increased pedestrian safety through safer street crossings, better lighting, traffic calming, and improved ADA accessibility.

BIKING



Most on-line respondents indicated they would like to see bicycle facility improvements, but support was lower among paper survey responses. Respondents expressed a preference for protected bike lanes on high traffic roads or neighborhood bike routes on low traffic roads parallel to busy thoroughfares to create a connected network of facilities.

TRANSIT



50% of all respondents indicated they would like to see better bus stops that include more shelters, better lighting and seating, and more trash cans. Support was consistent between on-line and paper respondents. Higher bus frequency and more reliable bus service were among the top comments related to transit use.

DRIVING



Traffic calming, slower vehicle speeds, and road surface quality were the top priority for driving improvements. Opinions are mixed on parking supply, with few on-line respondents identifying a need for parking, versus 40% of paper survey responses identifying a need for increased parking opportunities.



PROJECT DEVELOPMENT + ROADWAY MAINTENANCE

Recommendation:

Coordinate with NCDOT on Move Durham project implementation on state-maintained roadways. Accelerate the implementation of short-term recommendations through infrastructure, signage, traffic signal, pavement markings, and roadway resurfacing projects. If needed to achieve the long-term vision, identify necessary upgrades and additional funding for ongoing roadway maintenance costs to shift maintenance responsibility to the City.

NCDOT Coordination

NCDOT was a valued stakeholder and member of the Move Durham technical committee that oversaw the development of this plan. In a formal response to draft recommendations, NCDOT issued the following statement:

“[NCDOT is] committed to improving streets for all users and the type of changes noted in the plan is consistent with our Complete Streets Policy and Guidelines.

The State Highway system inside corporate limits is intended to consist of major streets and highways necessary to move volumes of traffic efficiently and effectively from points beyond the corporate limits to major business, industrial, governmental and institutional destinations located inside municipalities.”

Individual project approval would be provided on a case-by-case basis considering the following:

- Roadway capacity and need for turn lanes
- Changing Character of Roadway

How does this impact priority corridor recommendation?

Every priority corridor is currently maintained by NCDOT. Recommendations were split into two types of improvements:

- Short-term generally do not meet NCDOT’s concerns about changing the character of the roadway and there are precedents in Durham on state-maintained roadways such as road diets, bike lanes, pedestrian signals, etc.
- Long-term improvements require additional funding sources or new programs for implementation. Some of these long-term improvements, such as two-way conversion projects on Duke/Gregson and Mangum/Roxboro, also would require NCDOT to change their position on changing the character of a state-maintained roadway or require the City to agree to take over maintenance responsibility.

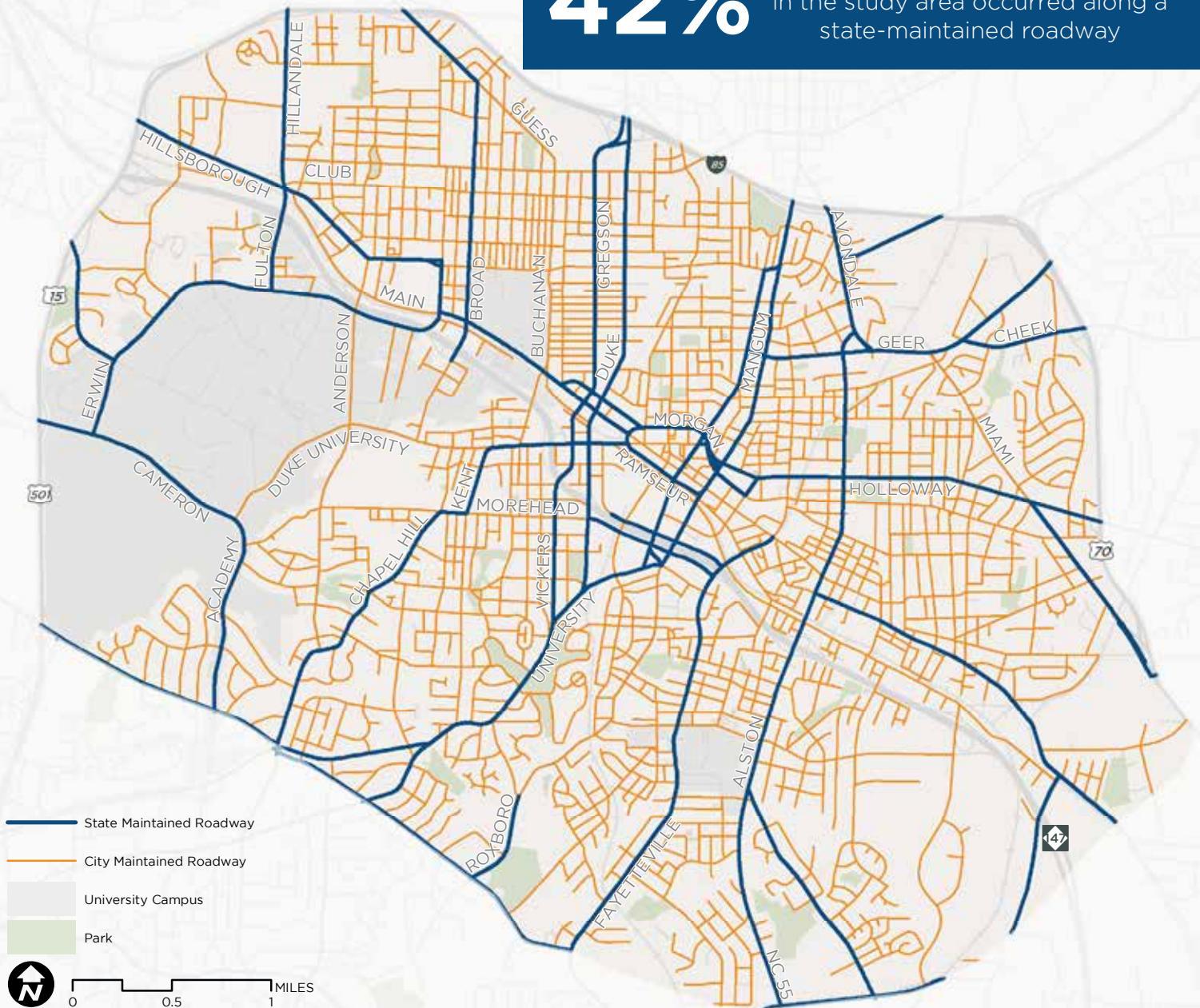
Other Considerations

Roads may also require substantial maintenance improvements such as repaving and stormwater management to bring them up to adequate standards before they would be accepted into the City maintained system.

25% of Roadway Miles in central Durham are maintained by the NCDOT*

HOWEVER,

42% of all pedestrian and bicycle crashes in the study area occurred along a state-maintained roadway



*The lane mileage and crash calculations exclude limited access freeways (NC 147, US 15-501, I-85, and US 70) and private streets.



SHORT-TERM PROGRAM FUNDING

Short-term funding recommendations for the priority corridors are summarized in the table below on a program basis. The following five programs will be used to fund the majority of the short-term improvements along the priority corridors.

The FY21 CIP funding amounts shown below highlight the existing program funding for the entire City. The funding estimates demonstrate the need for more dedicated funding to support implementation of Move Durham recommendations.

Project Type	Existing FY21 CIP Funding	Short-term Funding Needs by Program Type*
Sidewalk Repair	Ongoing funding in 10-Year CIP FY21 \$772,500/year	\$1.6 - \$1.7 million
Pedestrian Crossing Improvements	Ongoing funding in 10-Year CIP FY21 \$345,050/year	\$2.8 - \$5.6 million
Sidewalk Gaps & Corridor Construction	No funds in 10-Year CIP after FY 2023 Current funding all programmed and no capacity to initiate new projects.	\$2.0 - \$2.2 million
Bike Facilities	No funds in 10-Year CIP Current funding all programmed and no capacity to initiate new projects outside of resurfacing programs.	\$2.0 - \$8.0 million
Bus Stop Improvements	\$3.6 million *Durham County Transit Plan	\$210,000 - \$420,000

**These costs are planning-level estimates only and more design will be needed to develop engineering-level cost estimates.*

LONG-TERM PRIORITY CORRIDOR COST ESTIMATES

The table below highlights the funding needed to implement the long-term vision of each priority corridor. The Annual Maintenance Cost column provides an estimate of the additional funding that would be required to maintain these roads if implementation of the long-term

vision requires the City to take over maintenance responsibility. This is an identified issue on Duke St & Gregson/Vickers St and Mangum St & Roxboro St. It is less likely an issue on the other streets. However, NCDOT did not provide a definitive answer at this time.

Priority Corridor	Mileage	Long-Term Vision Planning-Level Cost Estimate*	Annual Maintenance Cost (\$50k-\$100k per mile)
Avondale Dr & Alston Ave	1.5	\$3 - \$4+ million	\$75,000 - \$150,000
Chapel Hill St	0.7	\$2 - \$3+ million	\$35,000 - \$70,000
Downtown Loop	1.0	\$13 - \$20+ million	\$50,000 - \$100,000
Duke St & Gregson/Vickers St	4.8	\$8 - \$12+ million	\$240,000 - \$480,000
Fayetteville St & Elizabeth St	1.8	\$3 - \$5+ million	\$90,000 - \$180,000
Holloway St	2.0	\$1+ million	\$100,000 - \$200,000
Mangum St & Roxboro St	3.8	\$5 - \$7+ million	\$190,000 - \$380,000
Total	15.6	\$35 - \$52+ million	\$780,000 - \$1,560,000

**These costs are planning-level estimates only and more design will be needed to develop engineering-level cost estimates*



AVONDALE DR, ALSTON AVE

**Drew/
Granby
Park**

**Future Kelly
Bryant
Bridge Trail**

**East End
Park**

Geer St

Trinity Ave

Alston Ave

**Future
Durham
Belt Line**

Avondale Dr

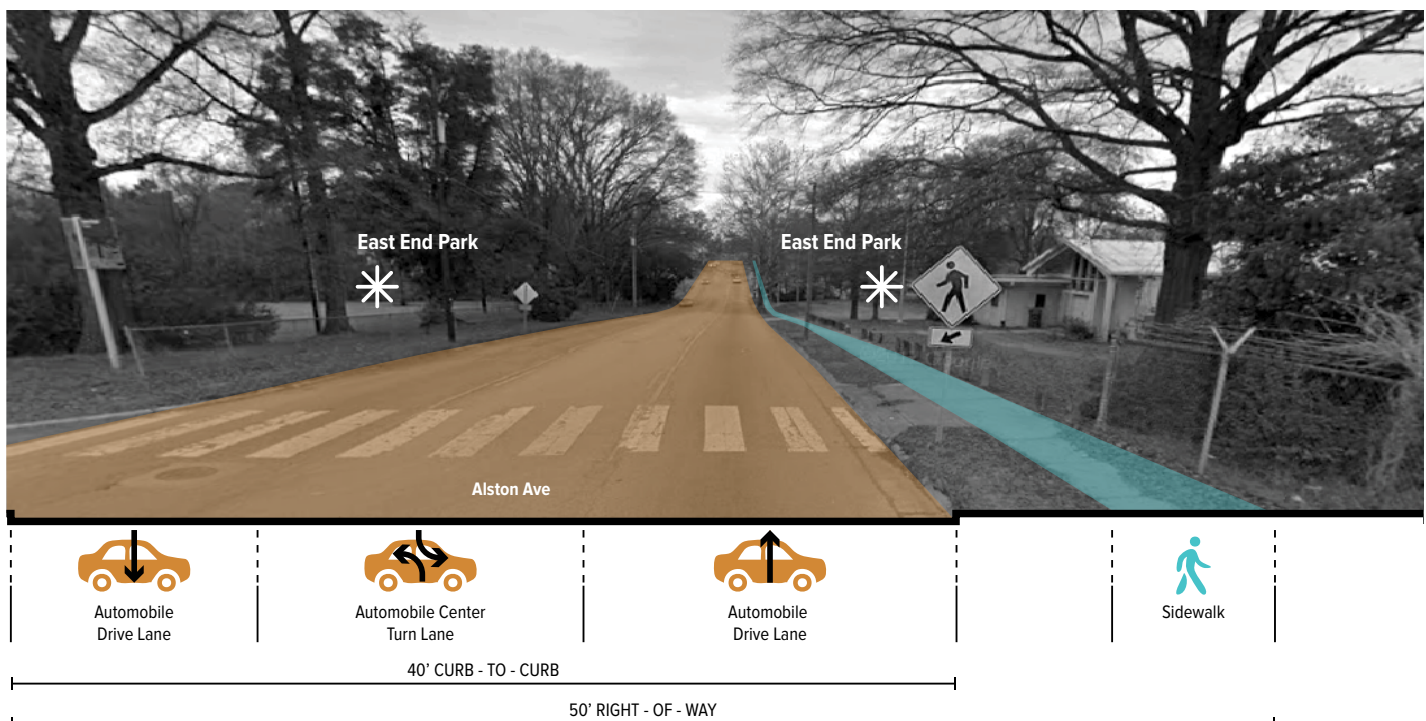
About

The north-south corridors of Avondale Drive and Alston Avenue extends from Holloway Street to I-85. Although it is largely residential, the corridor also provides access to commercial areas concentrated around the intersection of Avondale and Alston. The corridor connects many existing and future green spaces in Durham, including East End Park and the future Belt Line and Kelly Bryant Bridge Trails.



Typical Section*

Alston Avenue



*Cross-Section Varies



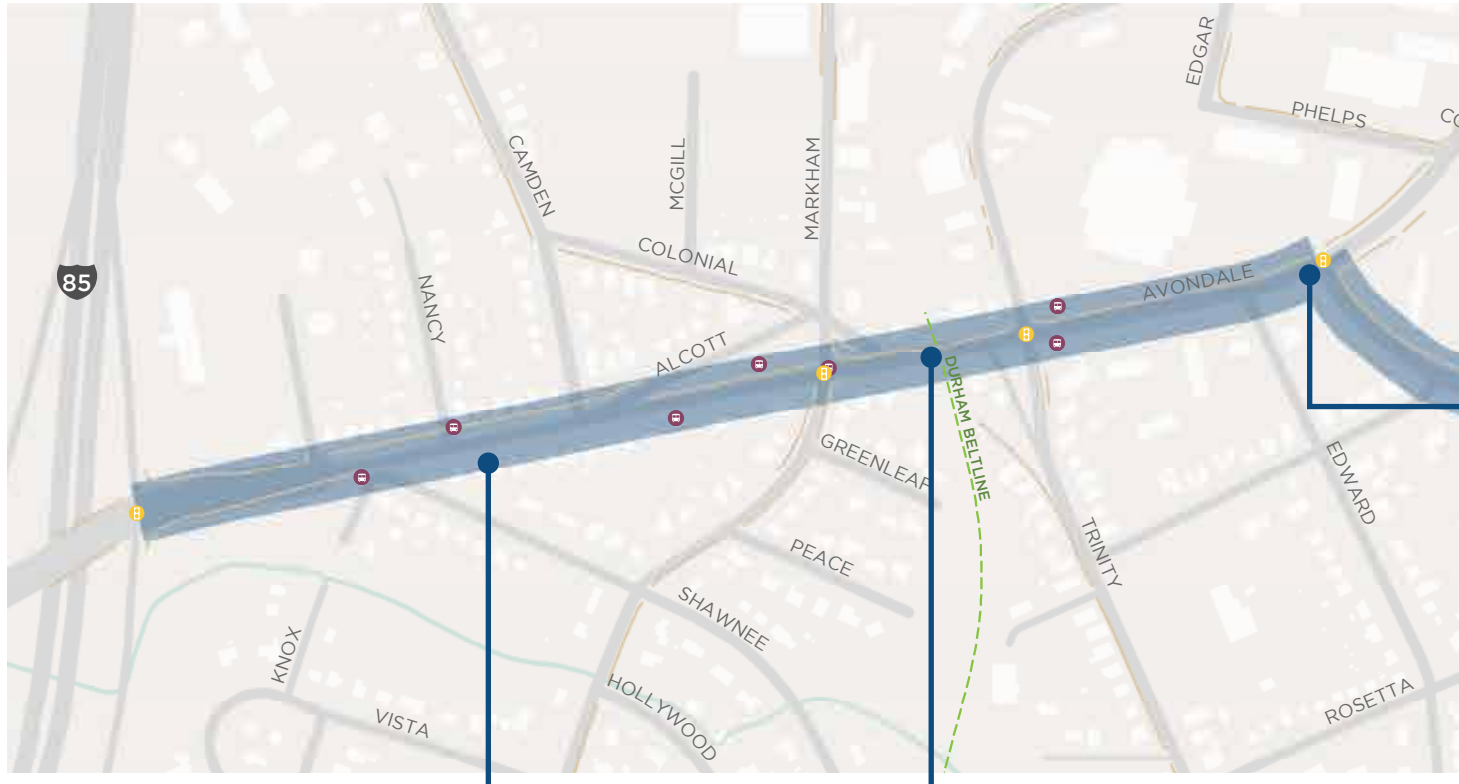
AVONDALE DR, ALSTON AVE

From **Holloway St**

To **I-85**

Corridor Length
(total miles) **1.5**

Average Annual
Daily Traffic **13,147 -
18,258**



There is only sidewalk on one side of the road for the majority of the corridor. This makes it difficult to reach the many transit stops along Avondale and Alston.

The eastern terminus of the future Durham Belt Line Trail is at Avondale Drive. There are currently no bicycle facilities connecting to the trailhead, discontinuous sidewalks, and a grade difference between the road and the trail.

Transit



12 Bus Stops

15 Average weekday
boarding/alighting at
stops along the corridor

Transit passengers
moving through corridor
each day

985 Avondale

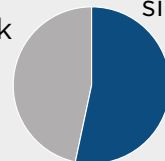
1,006 Alston

Pedestrian



1.3 miles
Missing
sidewalk

1.5 miles
Existing
sidewalk

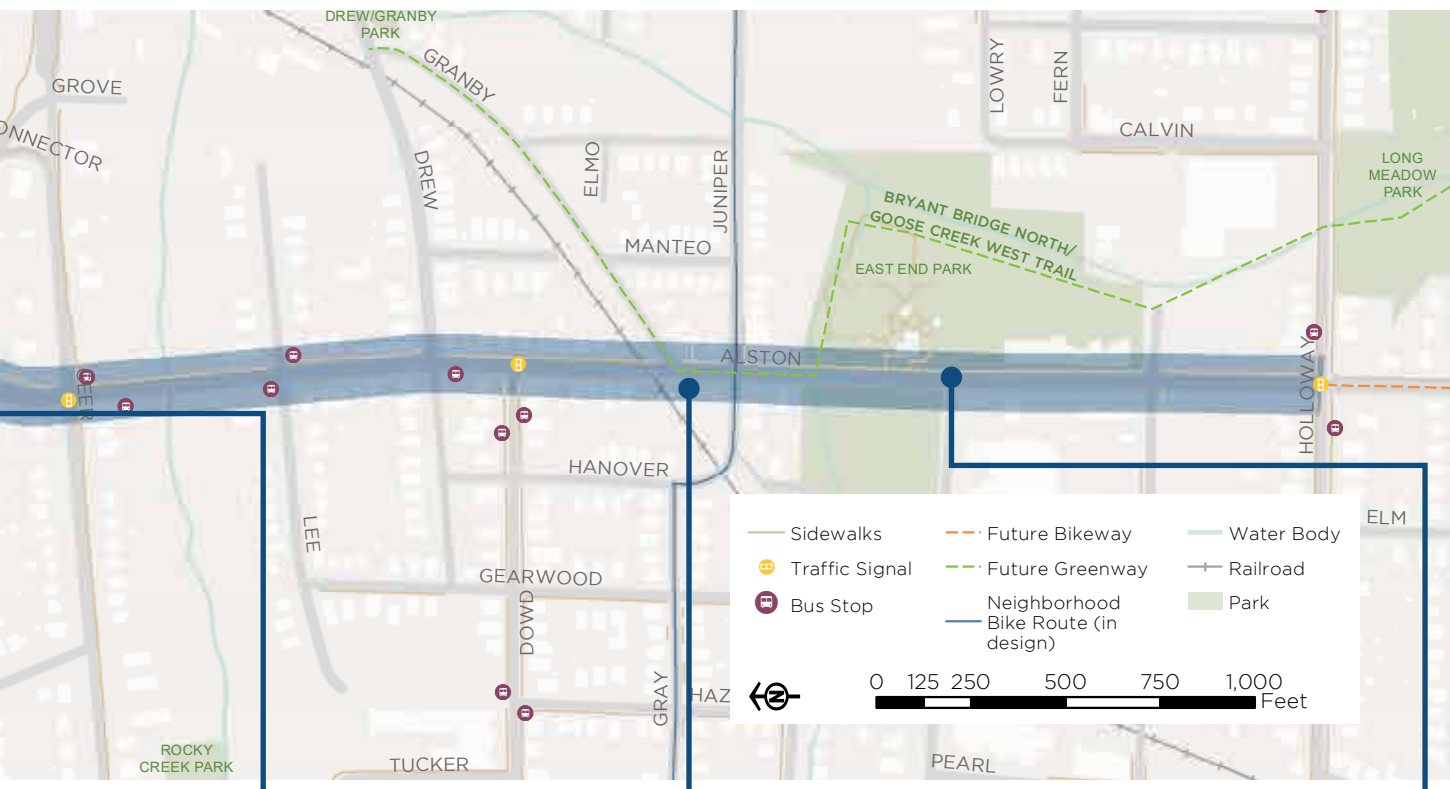


12 Pedestrian collisions
(2007-2015)

Posted Speed Limit **35**

High Speed
Sections

- **Avondale Dr from E Knox St to I-85**
- **Alston Ave from E Geer St to E Markham Ave**



The corridor transitions to commercial land uses that provide access to services and retail. Several neighborhoods along the corridor are experiencing rapid change and redevelopment.

The Kelly Bryant Bridge Trail parallels Alston Avenue, but there will be a gap between this trail and the Durham Belt Line trail at Avondale Drive.

East End Park straddles Alston Avenue to both the east and west of the road. However, it is difficult for pedestrians to cross due to high traffic volumes and high driving speeds.

Bicycle



- 0 Miles of bicycle facilities
- 7 Bicycle collisions (2007-2015)

There are no existing bicycle facilities; however the corridor intersects several planned facilities including the Durham Belt Line Trail, the R Kelly Bryant Bridge Trail, a neighborhood bike route on Juniper Street and future bicycle lanes on Alston Avenue to the south.

Auto

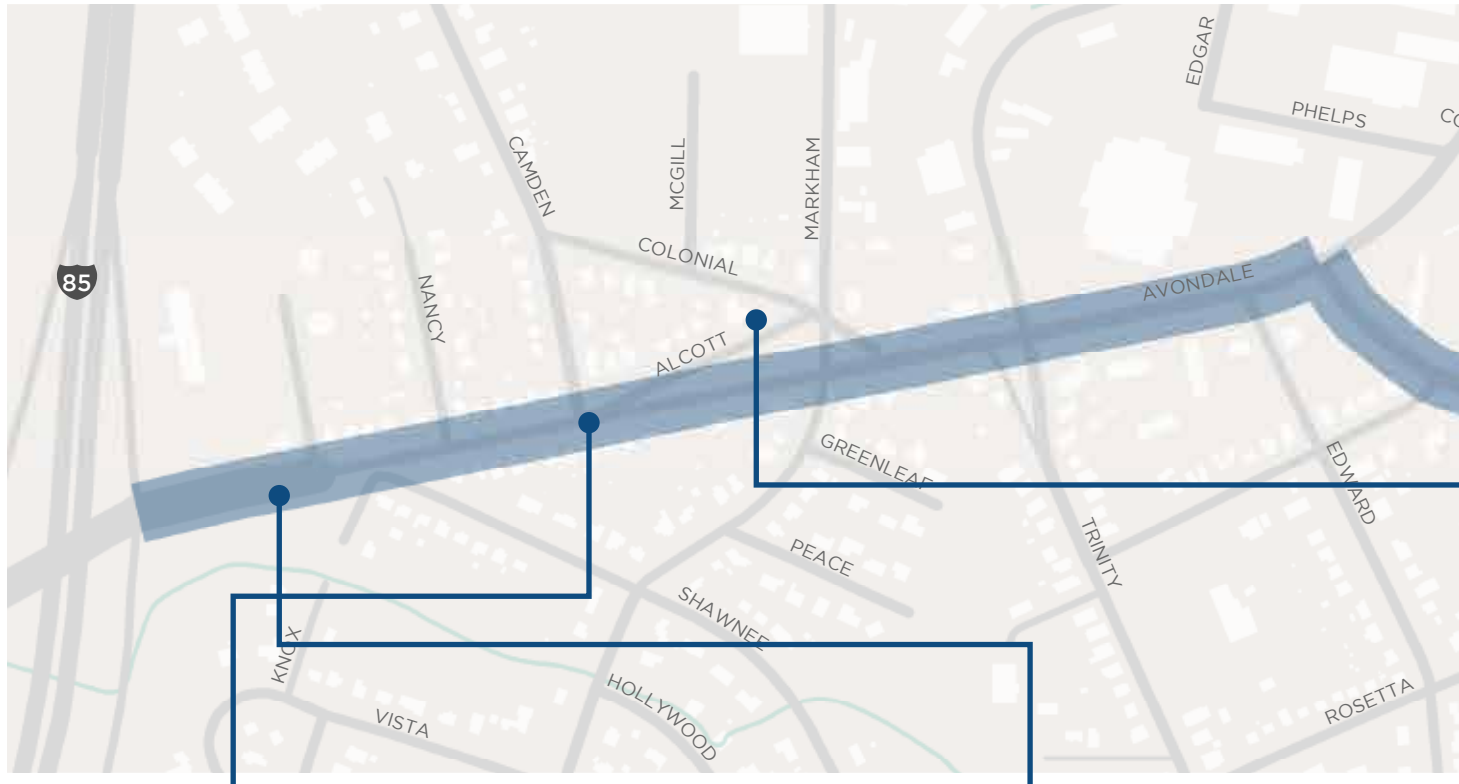


- 0 Fatal or severe auto crashes between 2013 and 2017

The corridor is state-maintained NC 55 and serves as a thoroughfare between NC 147 and I-85, with average daily traffic volumes ranging from 17,000 on Avondale near the intersection with I-85 to 13,000 further south on Alston near East End Park. Traffic models forecast that many trips on Avondale and Alston could be diverted to the East End Connector.



AVONDALE DR, ALSTON AVE



“Traffic calming for vehicles coming off of 85; reduction in number of Mack trucks/18 wheelers turning onto Camden Drive from Avondale (there is some grading company or something down Camden, and there are large trucks moving through this corridor throughout the day. They need better access to their facility than via this residential area.) It’s crucial to add pedestrian crossing at choice intersections, with flashing lights. I think a median is not a great idea, as this will make residential homes very difficult to access.”

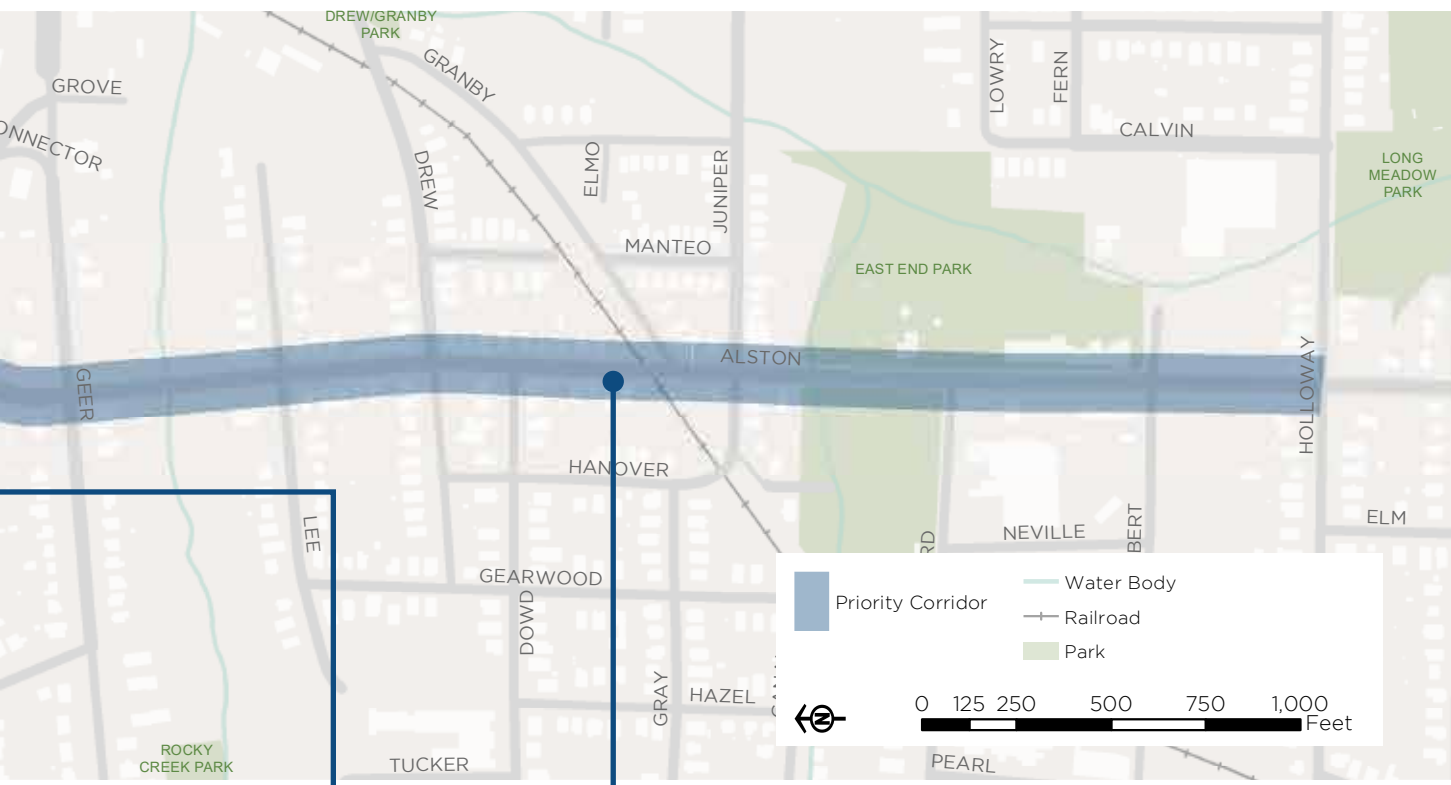
“There should be a better north going bus stop with seating on Avondale just north of Knox. There are a lot of people from the Rescue Mission and Apartments that wait there.”

“New sidewalks have been installed on Avondale, but only one side of the street. It’s a busy street and crossing twice is a nuisance to stay on the sidewalk.”

“Traffic along Avondale Dr. is extremely high making it difficult for me/my family to cross the street to get to the bus stop. The number of dump trucks/large vehicles on Avondale Dr is very high making noise and traffic a huge problem.”

Move Durham at a Back-to-School event





“Making this stretch accessible on foot and bike will bring the neighborhood around Geer Cemetery into the Duke Park / OND [Old North Durham] tier. As the most direct access to the trail, significant bike and ped improvements are necessary to ensure broad access.”

“Sidewalks are needed on both sides of Avondale and Alston. The typical sections shown for Alston do not include sidewalks on the west side of the street. With the completion of Alston Avenue south of Holloway, the city should consider a bus route that runs north-south along Alston without diverting to Durham Station. The city should also require that e-scooter companies distribute them to neighborhoods in this corridor.”

Community Engagement Summary



Online
Surveys

68



Paper
Surveys

220



Community
Events +
Presentations

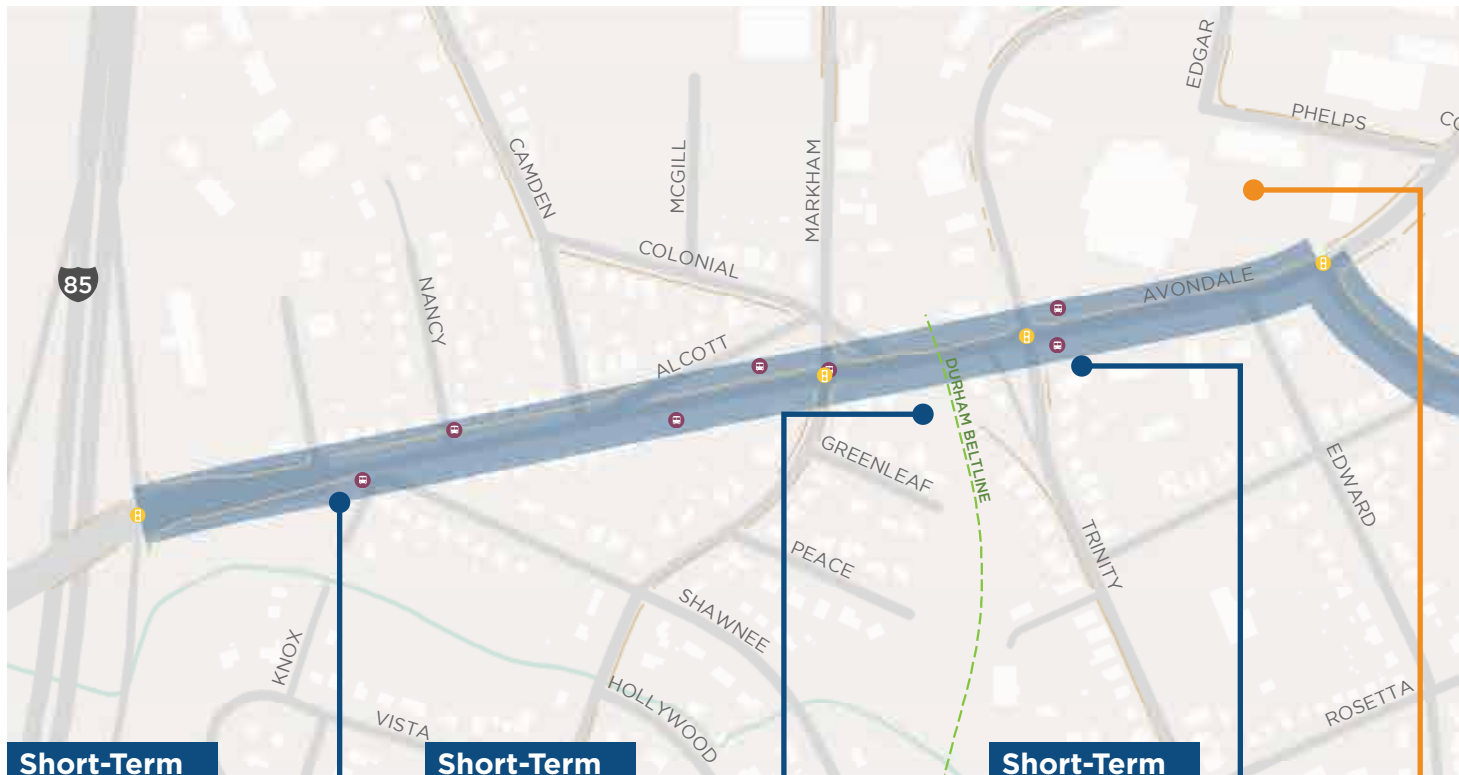
12

Themes

- Prioritize people over cars
- Re-route non-local and commercial traffic
- Sidewalks on both sides of the street
 - Shade for the sidewalks
 - Protected bike lanes
- Slow down traffic and enforce speed limits
- Crosswalks along corridor, especially near bus stops



AVONDALE DR, ALSTON AVE



Short-Term

Improve pedestrian crossings at bus stops and include amenities such as shelters, benches, bike parking, public art, and interactive wayfinding.

Short-Term

A gateway/trailhead is recommended for this location in the Durham Belt Line Master Plan. The plan also recommends active uses such as retail, restaurants, and amenity space in new developments in this area.

Short-Term

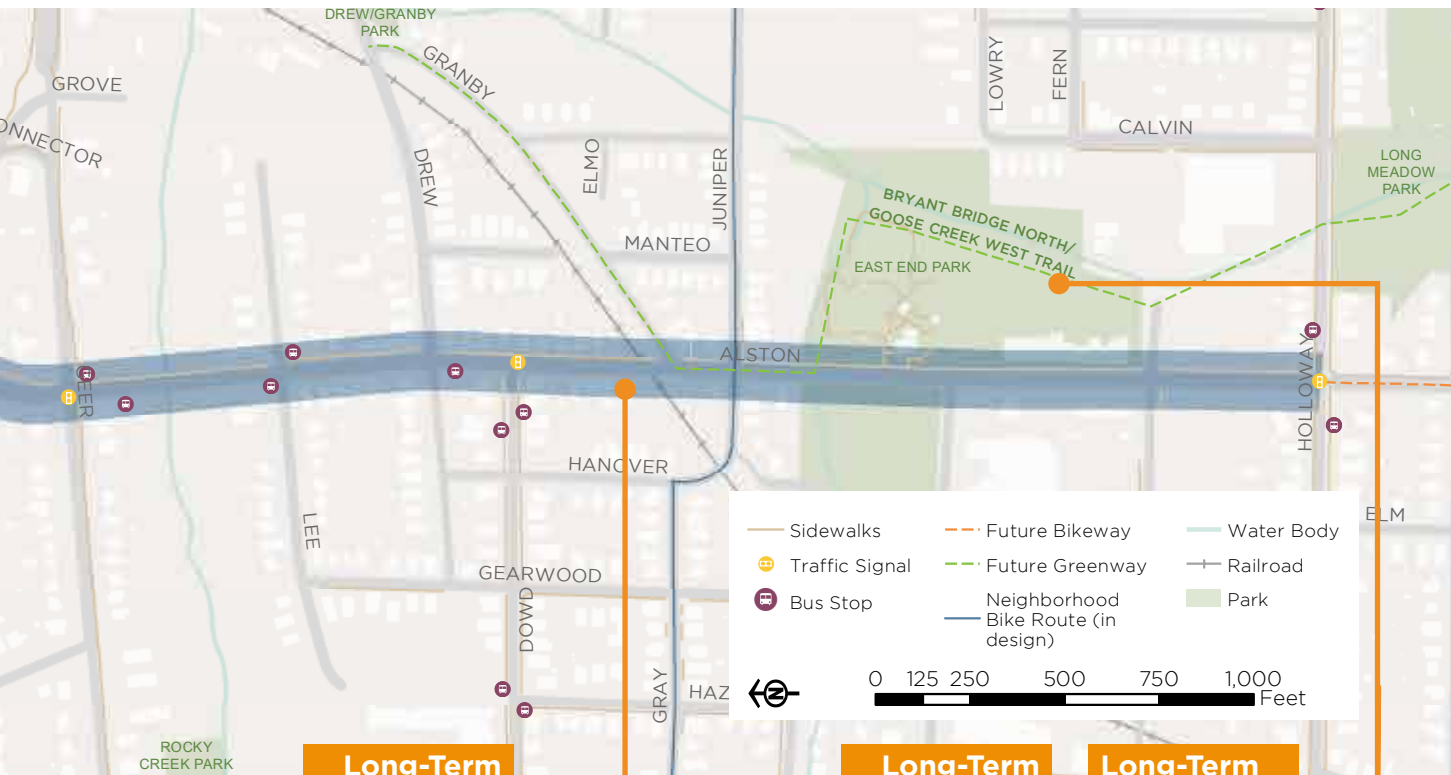
Close channelized right turn to reduce traffic speed on East Trinity by routing all traffic through the light.

Short-Term Recommendations

- Add multi-use path connection from the future Belt Line Trail and Kelly Bryant Bridge Trail
- Repair sidewalks as needed
- Improve pedestrian crossings:
 - » High visibility crosswalks
 - » Leading pedestrian intervals
 - » Prohibit right turn on red
 - » Enhance pedestrian signal timing
- Implement a speed management plan with a target speed of 25 mph.
- Consider increasing transit service in the updated Durham County Transit Plan

Long-Term Recommendations

- Prohibit through truck traffic on the residential portion of Camden
- Convert center turn lane to a pedestrian refuge island where feasible
- Add sidewalks to both sides of the street
- Consider parking + left turn restrictions
- Improve neighborhood bicycle route connections to the Belt Line Trail and Kelly Bryant Bridge Trail



Long-Term

Support neighborhood commercial nodes that provide essential services and groceries for residents, and prioritize sidewalk and transit access to these areas.

Long-Term

Add sidewalk on both sides of the street where feasible with consideration of constraints due to steep grades, small front yards, driveways, and parking needs of residents.

Long-Term

Add a median for traffic calming and a bicycle/pedestrian refuge to improve access to East End Park.

Long-Term Vision

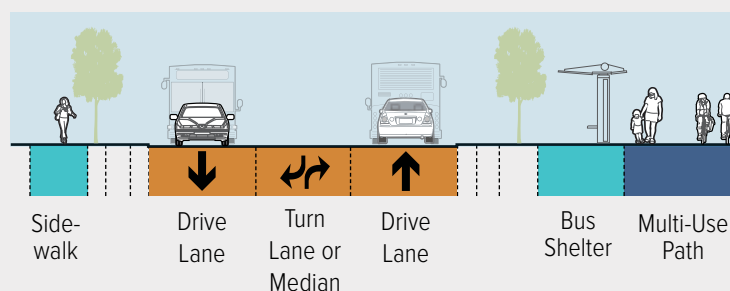
The graphic below represents a potential long-term vision. Further traffic analysis, design, and engagement is needed to determine the ultimate cross-section of the corridor.

Planning-Level Cost Estimate*

Construction Estimate.....\$2,760,000

Design Estimate.....\$450,000

**These cost estimates are subject to change during design and do not include right-of-way acquisition.*





CHAPEL HILL ST

**Durham
Station**

Downtown

**Durham
Amtrak
Station**

Durham Freeway

**American
Tobacco
Campus**

Buchanan Blvd

Chapel Hill Street

**Durham
Co-Op
Market**

Kent St

About

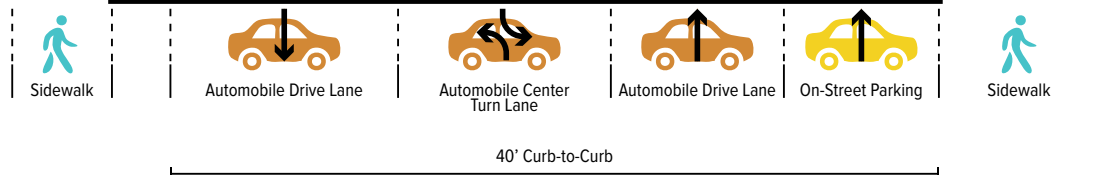
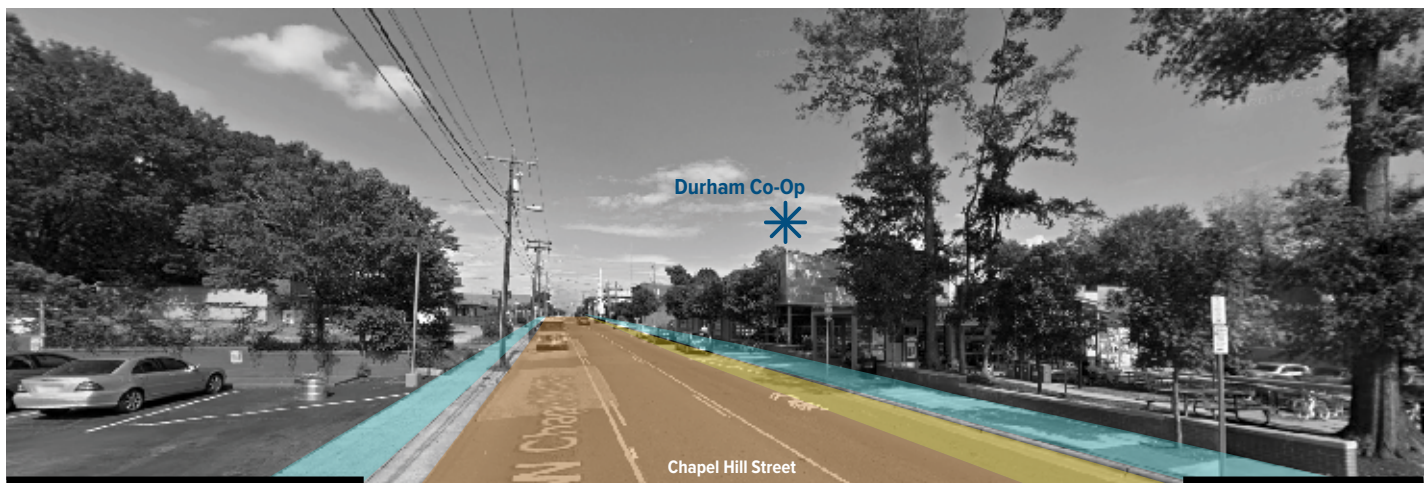
Chapel Hill St between Kent St and the Durham Loop is a critical east-west corridor linking major destinations and neighborhoods to downtown. Traffic on this two-way street can often get very congested, especially around the Durham Freeway (NC 147) interchange.

Chapel Hill St is the most direct connection between downtown and Duke University West Campus. It also provides access to the Burch Avenue, West End, Lyon Park, and Lakewood neighborhoods. There are residential uses, commercial uses (including grocery stores and restaurants), and institutional uses (including churches and schools) on the corridor.



Typical Section*

Chapel Hill Street



*Cross-Section Varies



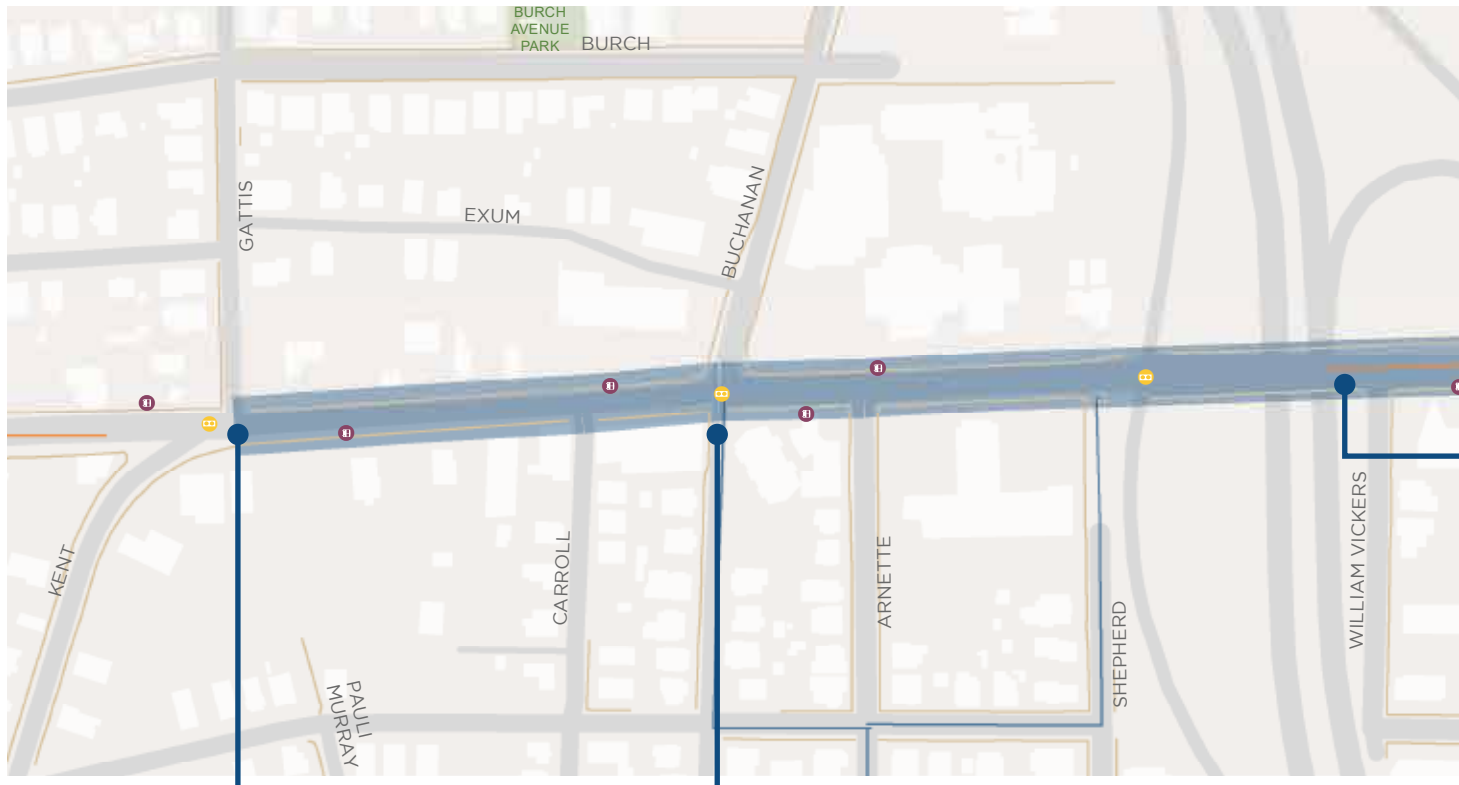
CHAPEL HILL ST

From **Kent St**

To **Downtown Loop**

Corridor Length
(total miles) **0.7**

Average Annual
Daily Traffic **14,232-
15,317**



The node around Kent St and Chapel Hill St has become a popular mixed-use destination.

The connection at Buchanan Blvd is important because it connects many users north to Duke East campus and Main St near Brightleaf Square. In the future it will be a link to neighborhood bikeways heading south.

Transit



7 Bus Stops

21 Average weekday
boarding/alighting at
stops along the corridor

5,064 Transit passengers
moving through corridor
a day

Chapel Hill Street is a primary
access route to Durham Station for
GoDurham and GoTriangle buses.

Pedestrian



0 Miles of missing
sidewalk

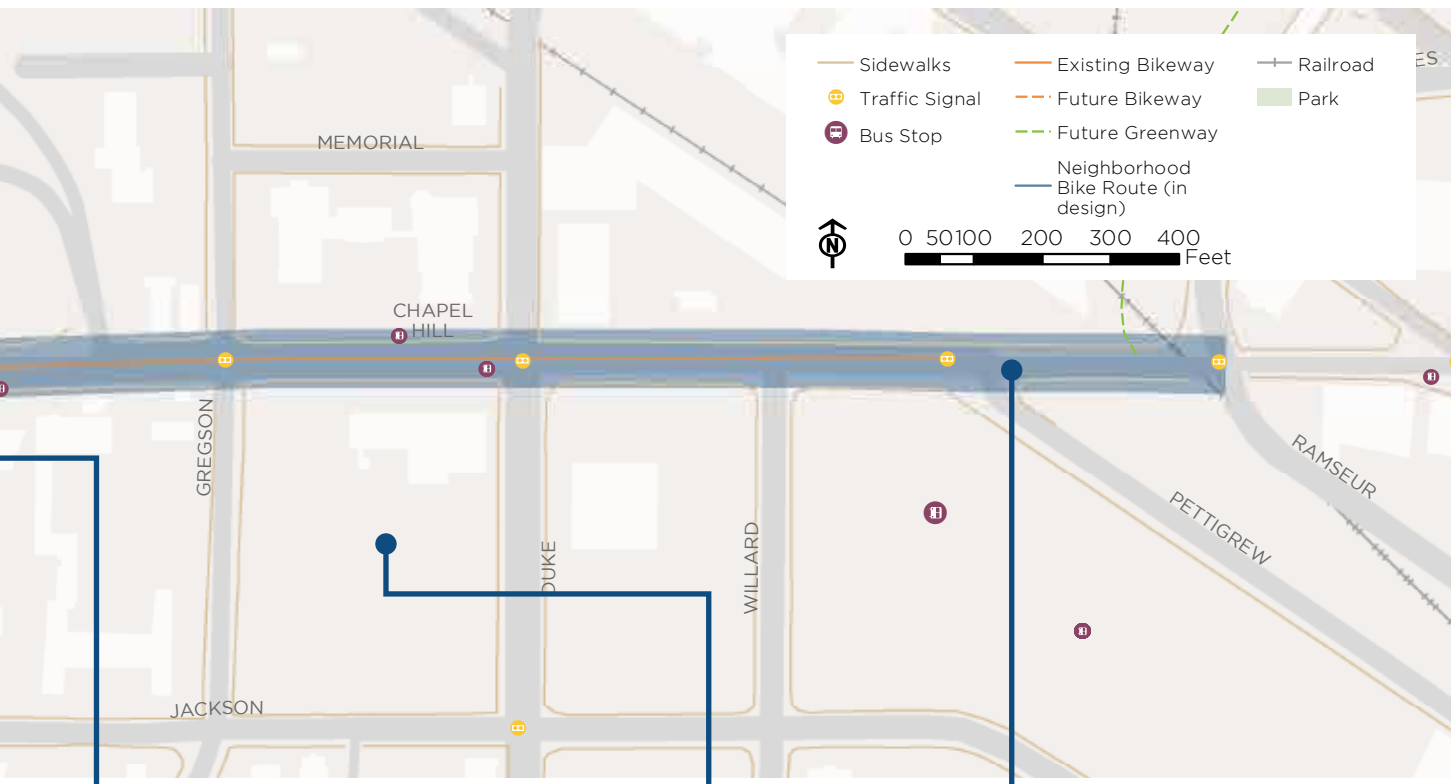
2 Miles of existing
sidewalk

14 Pedestrian collisions
(2007-2015)

Posted Speed Limit **25**

High Speed
Sections

- **W Chapel Hill between Kent & Shepherd**
- **W Chapel Hill between Gregson & Downtown Loop**



The stretch between Gregson St and Arnette Ave becomes congested around rush hour and creates major discomfort for bicyclists and pedestrians. Today, 11% of all eastbound weekday driving trips on NC-147 use the Chapel Hill St exit.

The old police headquarters lot will be redeveloped bringing many more users onto the corridor.

The eastern end of the corridor is a major multi-modal hub and gateway into downtown. Transportation destinations include the Durham Station, Durham Amtrak station, and future Belt Line Trail.

Bicycle



Existing bike lane between Pettigrew St and NC 147

6 Bicycle collisions (2007-2015)

Bike lane abruptly ends at the NC 147 southbound ramps with no bicycle facility from NC 147 to Kent St. Bicyclists travel through high conflict intersections at NC 147 and high speed right turn movements at Pettigrew St and Ramseur St.

Auto



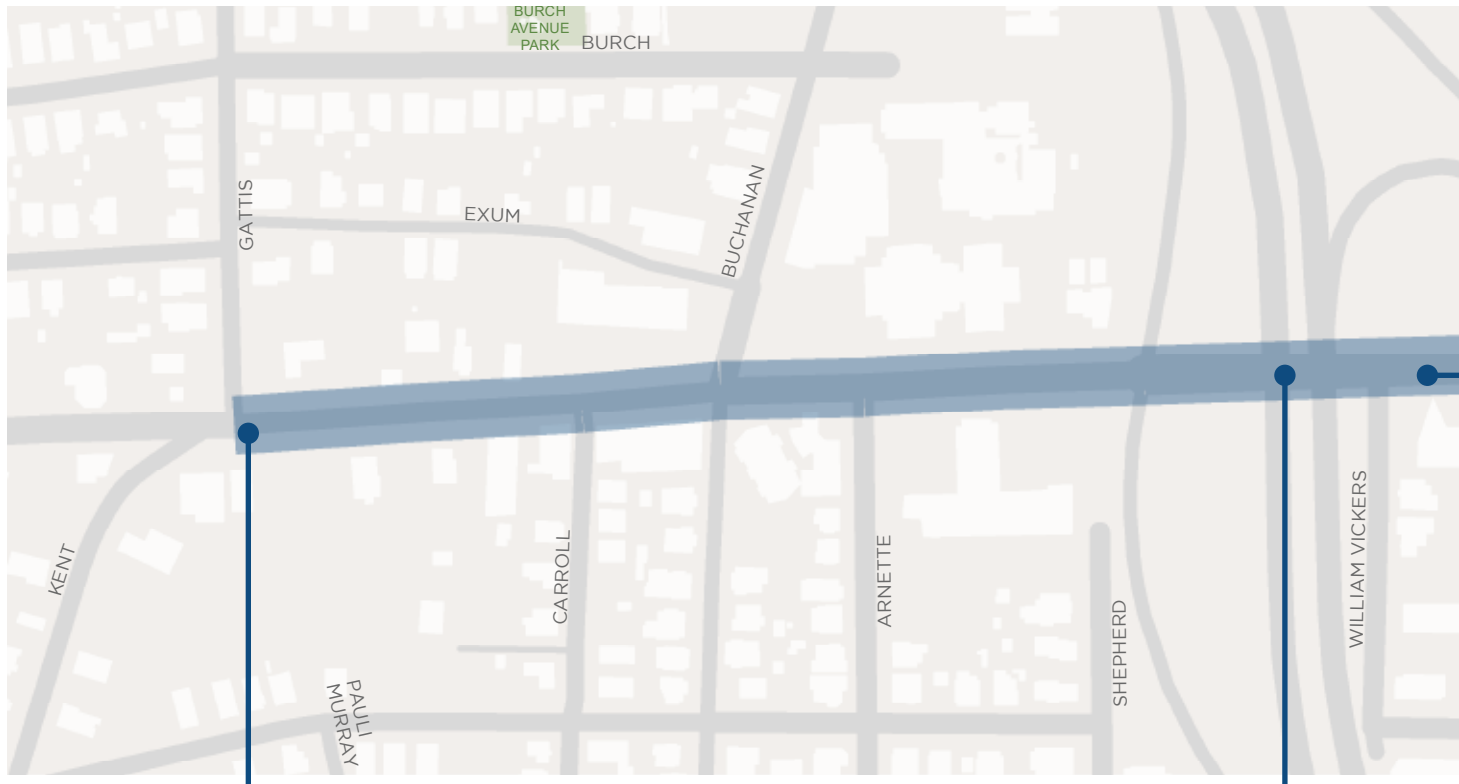
1 Severe auto crash between 2013 and 2017

The Durham Freeway interchange creates significant congestion during peak AM and PM hours.

On-street parking is used by some of the businesses in the West End, but there are also off-street parking lots and parking on side streets in the area.



CHAPEL HILL ST



"There are several dicey pedestrian crossings on Chapel Hill Street: at Gregson, at Kent, at the 147 ramp, where crossing against the light is safer than crossing with it."

"The bridge over 147, and transitions onto 147 are nuts and very scary for bikers/peds. Rumble strips and a lot of paint at the very least. Raised walk ways, and expanded width of sidewalks (to include space for bikes.) This idea that cars will yield/accommodate bikes on our narrow streets is not helping us, can't happen, won't happen. We have the scars to show this. We've also lost a number of good citizens because of this."

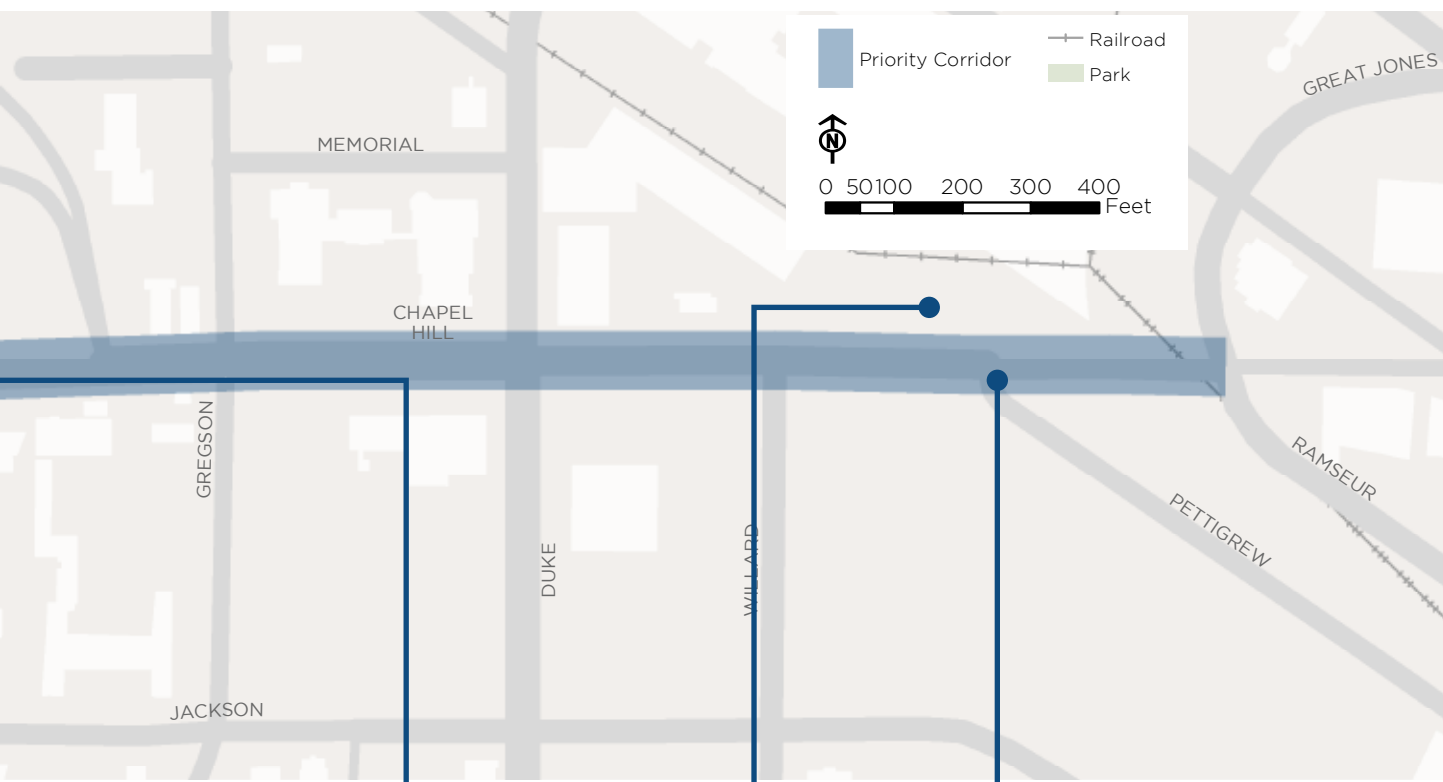
"Generally, there are sidewalks and bike lanes (would like to see them extended), but need fewer lanes so traffic SLOWS down. There is so many walkers - terribly unsafe to cross the street, especially around the co-op"

"I have a young son, so having sidewalks/crosswalks that are stroller-friendly would be fantastic! "

"This should be a major foot traffic route to help the local businesses. Widen the sidewalks and install some art, maybe flowerboxes. Consistent streetlights so people feel comfortable walking through the less-populated areas like Willard to Gregson."

An outreach event at Lyon Park





“The most dangerous part as a biker or pedestrian feels like the crossings over the Durham Freeway. Cars don’t look before entering/exiting the freeway ramps.”

“Better wayfinding from Chapel Hill Street to Amtrak Station.”

“Cars drive too fast especially on the east side of this section, and heavy bus use make it feel less safe for bikes with the current structure. Intersection with Pettigrew is challenging for non-motorized vehicles.”

Several businesses along the corridor reported that they had access to off-street parking or shared parking agreements and that the increased congestion caused during the Water Management project due to the removal of the center turn lane negatively affected business.

Community Engagement Summary



Online
Surveys

159



Paper
Surveys

99



Community
Events +
Presentations

8

Themes

- Protected bike lanes
- Continuous network of bike lanes
- Intersection with 147 is dangerous for all (merging traffic, bikes, peds)
 - Better lighting
- Safer, more comfortable pedestrian crossings
- Traffic calming



CHAPEL HILL ST

Short-Term

Implement the Bike+Walk Plan recommendation to add bike improvements beyond Kent St to Swift Ave

Short-Term

Adding buffered bike lanes to this corridor will greatly improve the connectivity into downtown and contribute to commercial vitality.

Short-Term

Encourage shared parking agreements among property owners and businesses in the West End. Consider valet or rideshare curb management strategies in high-use areas or for special events.

Short-Term

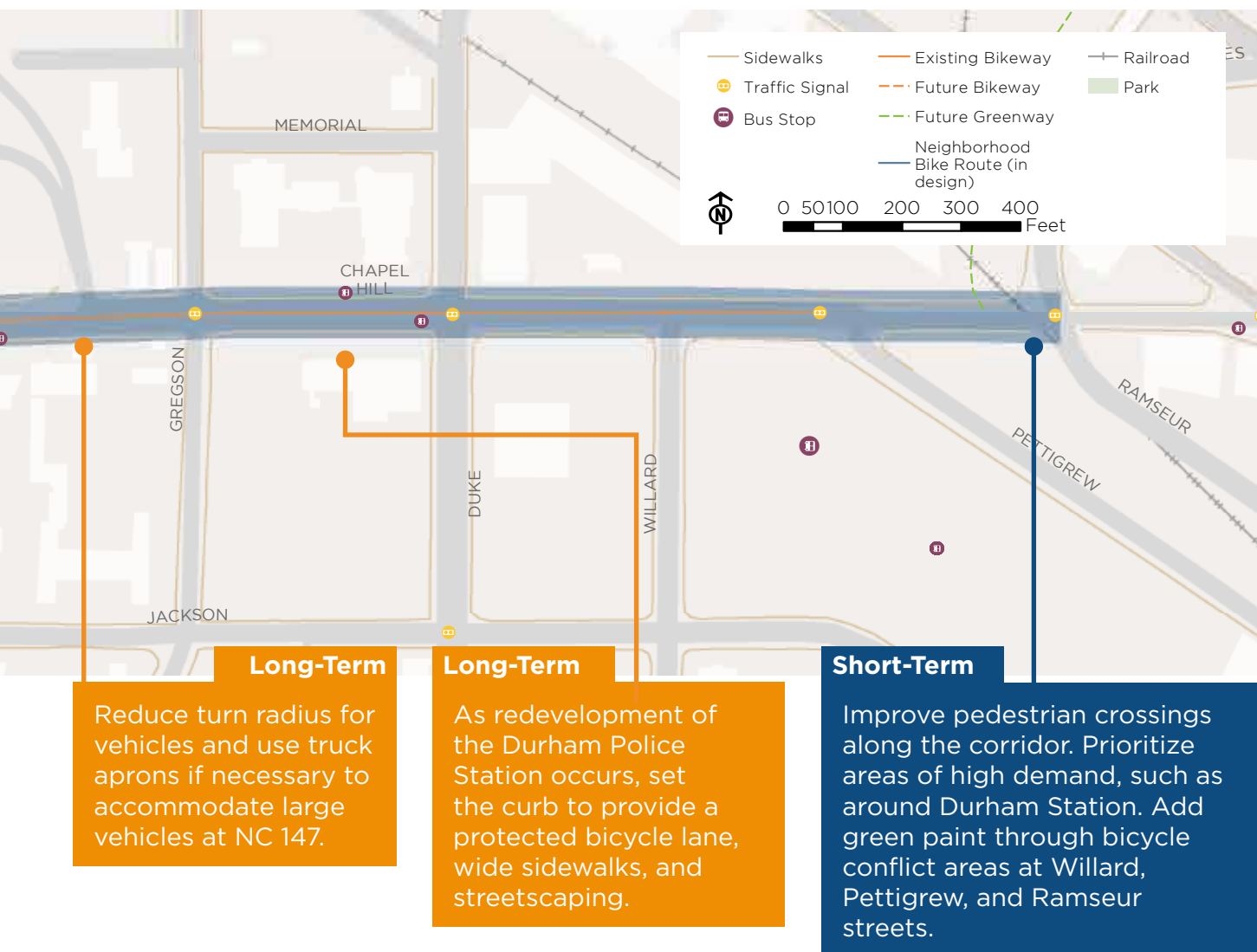
Improve access to the Shepherd Street neighborhood bicycle route from Chapel Hill Street.

Short-Term Recommendations

- Include buffered bike lanes with flexible delineator posts where possible
- Retain center turn lane
- Remove parking near intersections between Kent St and Shepherd St
- Repair sidewalks
- Improve pedestrian crossings:
 - » High visibility crosswalks
 - » Leading pedestrian intervals
 - » Banning right turn on red
 - » Enhancing pedestrian signal timing
- Add green paint and flexible delineator posts in bicycle conflict areas at intersections and NC 147 ramps
- Implement a speed management plan with a target speed of 20 mph
- Develop a gateway brand along the corridor + install wayfinding signs

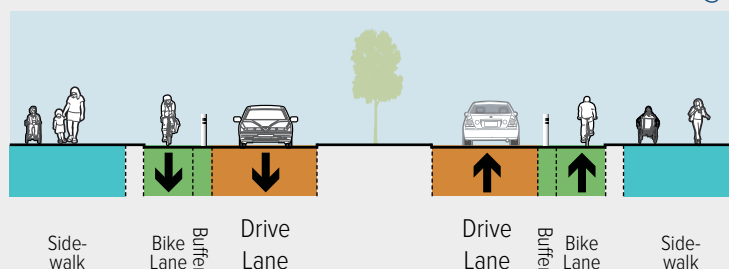
Long-Term Recommendations

- Convert center turn lane to a landscaped median or pedestrian refuge island where feasible
- Widen sidewalks and provide streetscape improvements
- Study access to/from Durham Station and opportunities to speed buses through traffic bottlenecks
- Redesign NC 147 ramps to minimize conflicts with pedestrians and bicyclists.
- Explore the potential for transit improvements:
 - » Transit signal priority
 - » Bus stop amenities



Long-Term Vision

The graphic below represents a potential long-term vision. Further traffic analysis, design, and engagement is needed to determine the ultimate cross-section of the corridor.



Planning-Level Cost Estimate*

Construction Estimate....\$2,310,000

Design Estimate.....\$350,000

**These cost estimates are subject to change during design and do not include right-of-way acquisition.*



DOWNTOWN LOOP (MORGAN ST & RAMSEUR ST)

City Hall

US Post Office

Mangum St

Rigsbee Ave

To American Tobacco Trail

Durham Innovation District

Morgan St

Ramseur St

Great Jones St

Durham Amtrak Station

Future location of Durham Belt Line Trail

Morgan St

Main St

Chapel Hill St

Pettigrew St

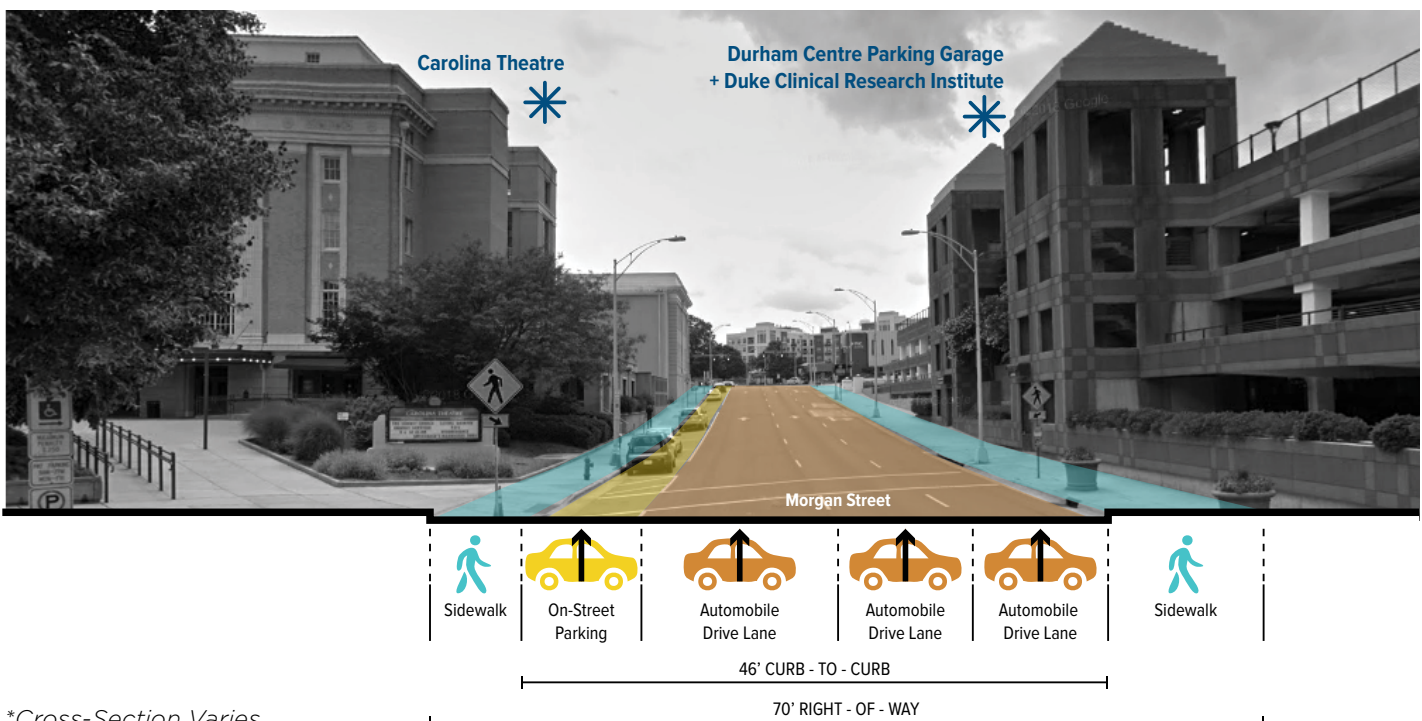
About

The Downtown Loop is a series of one-way streets encircling the heart of Durham's downtown business district. The Loop was built in the 1970's as part of downtown revitalization efforts. In 2010, the City conducted a feasibility study that recommended the conversion of the one-way streets to two-way traffic to improve vehicular and pedestrian access and flow, and to spur economic redevelopment in the downtown core.



Typical Section*

Downtown Loop



*Cross-Section Varies



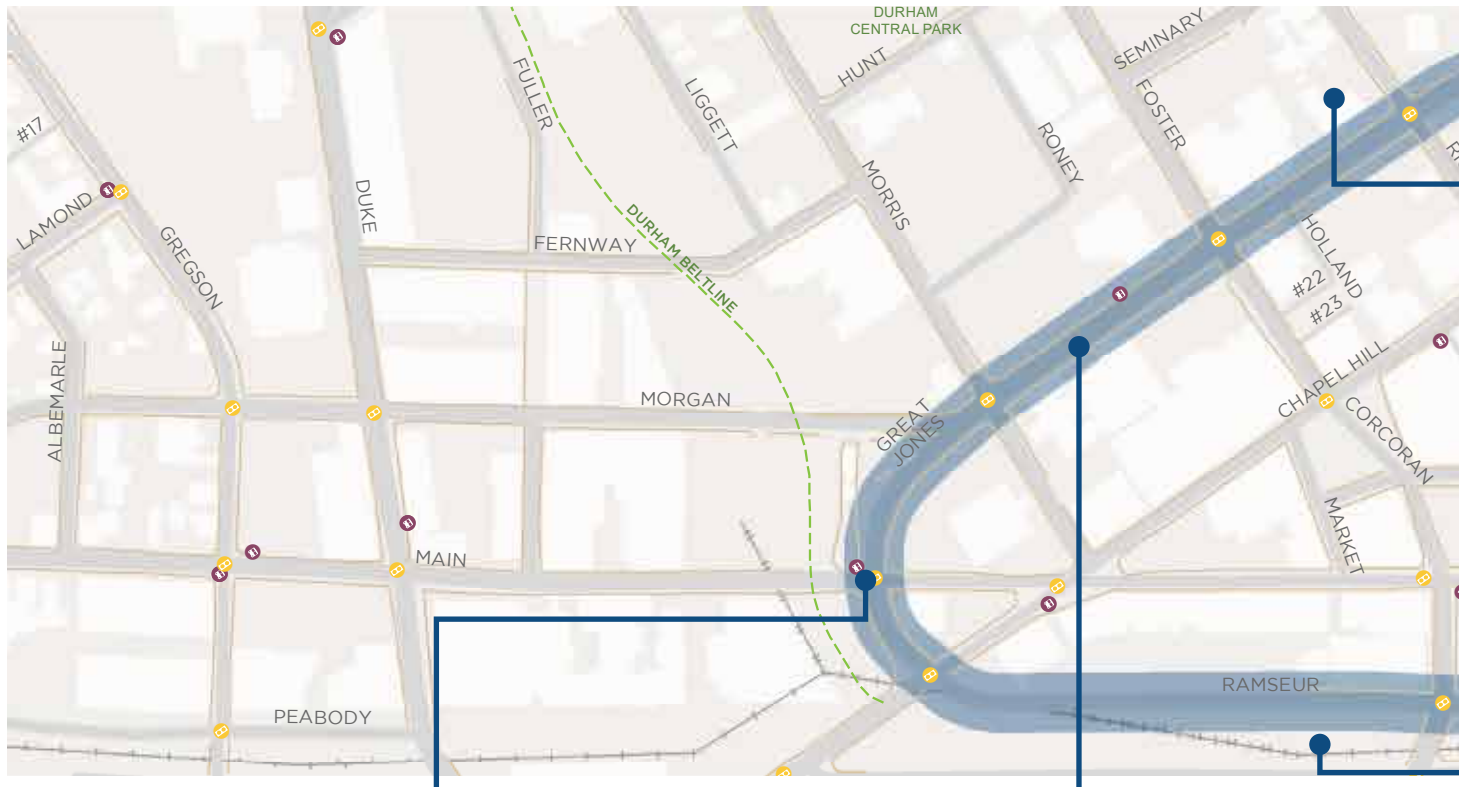
DOWNTOWN LOOP (MORGAN ST & RAMSEUR ST)

From **Roxboro St**

To **Roxboro St**

Corridor Length
(total miles) **1.0**

Average Annual
Daily Traffic **6,700**



The western boundary of the Loop borders a major multimodal hub, including Durham Station, Durham Amtrak Station, and the future Belt Line trail. This area is not comfortable for pedestrians and bicyclists.

On-street parking and loading zones are heavily utilized during special events at the Carolina Theater on Morgan Street.

Transit



- 2** Bus Stops
- 19** Average weekday boarding/alighting at stops along the corridor
- 913** Transit passengers moving through corridor a day

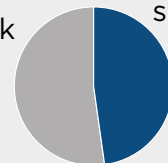
Potential to use the Downtown Loop for access to/from Durham Station for multiple bus routes.

Pedestrian



1.2 miles
Missing
sidewalk

1.1 miles
Existing
sidewalk



18 Pedestrian collisions
(2007-2015)

Posted Speed Limit **25**

High Speed
Sections

- **Ramseur from Corcoran to E Main**
- **Morgan from Morris to Mangum**



While Morgan Street is just one block north of Chapel Hill Street, the streetscape, building orientation and lack of character makes the corridor feel unwelcoming.

Ramseur Street is bounded to the south by the railroad, another major barrier between surrounding neighborhoods and downtown.

The Loop surrounds the main downtown business district, which encompasses many small local businesses as well as public services including City Hall and the Main Library.

Bicycle



- 0 Miles of bicycle facilities
- 7 Bicycle collisions (2007-2015)

Although the Downtown Loop currently has no bicycle facilities, it connects to an existing protected bike lane on East Main Street, and is near other key connections such as the American Tobacco Trail and future Belt Line. The Loop is a barrier for continuous safe bicycle travel to and through downtown.

Auto

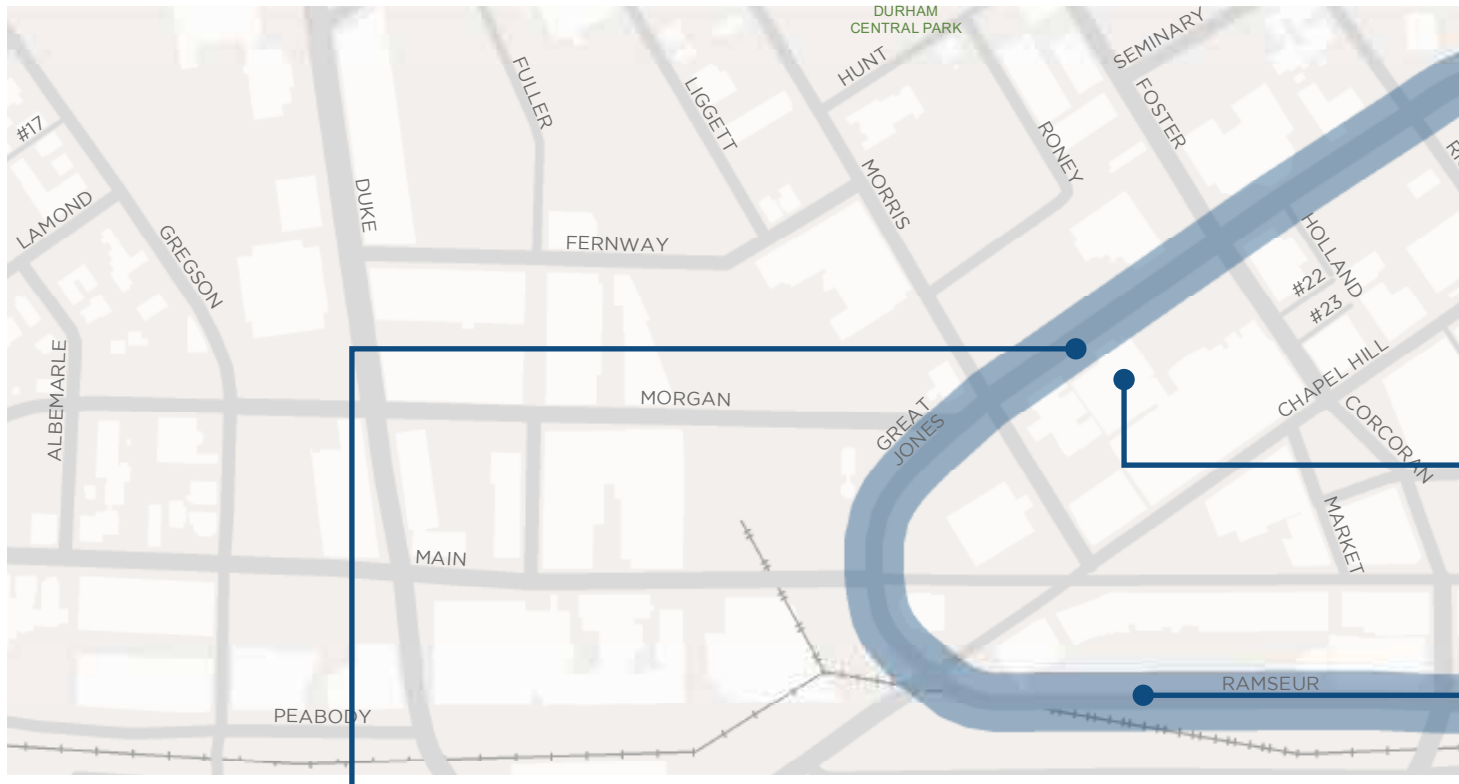


- 1 Fatal auto crash between 2013 and 2017

The streets of the Downtown Loop are designed for high capacity, high speed throughput. However, traffic volumes are low at an average of 6,700 vehicles per day. There is on-street parking along much of the Loop that is used regularly, especially on Morgan Street during events at the Carolina Theater.



DOWNTOWN LOOP (MORGAN ST & RAMSEUR ST)



“Safer pedestrian crossing between the Durham Center Parking Garage and the park/Carolina Theater (which is kind of the gateway to the more pedestrian-friendly parts of downtown). Ideally, a pedestrian walkway would be great here because crossing that road is like playing frogger (particularly at night when lots of events happen at the Carolina Theater/people are parking to spend time downtown) and as a driver/cyclist, it’s always scary that there may be people darting into traffic.”

“I would like to see improved flow for bikes and buses, two-way traffic for cars, and public art.”

“I would be interested in the possibility of making the loop two-way again. Navigating downtown Durham by car can be frustrating due to the loop. Better sidewalks are needed on the Ramseur portion.”



Move Durham outreach at the Farmers' Market



"I frequently go to the Carolina Theatre coming from the west (Brightleaf/East Campus). The current one-way loop makes it difficult to get there without either getting stuck into main downtown traffic (at Chapel Hill St. and Main St. intersection) or taking some circuitous route around the edge of downtown (via Fernway or Corporation)."

"There are no sidewalks on Ramseur from Great Jones/ Main and on the loop. It's death-defying to traverse. It's a NASCAR speedway."

"We need to remove the empty feeling that exists in this corridor-- this area should be park-like with safe crossings and equal opportunity to bike, walk, drive."

Community Engagement Summary



Online
Surveys

171



Paper
Surveys

114



Community
Events +
Presentations

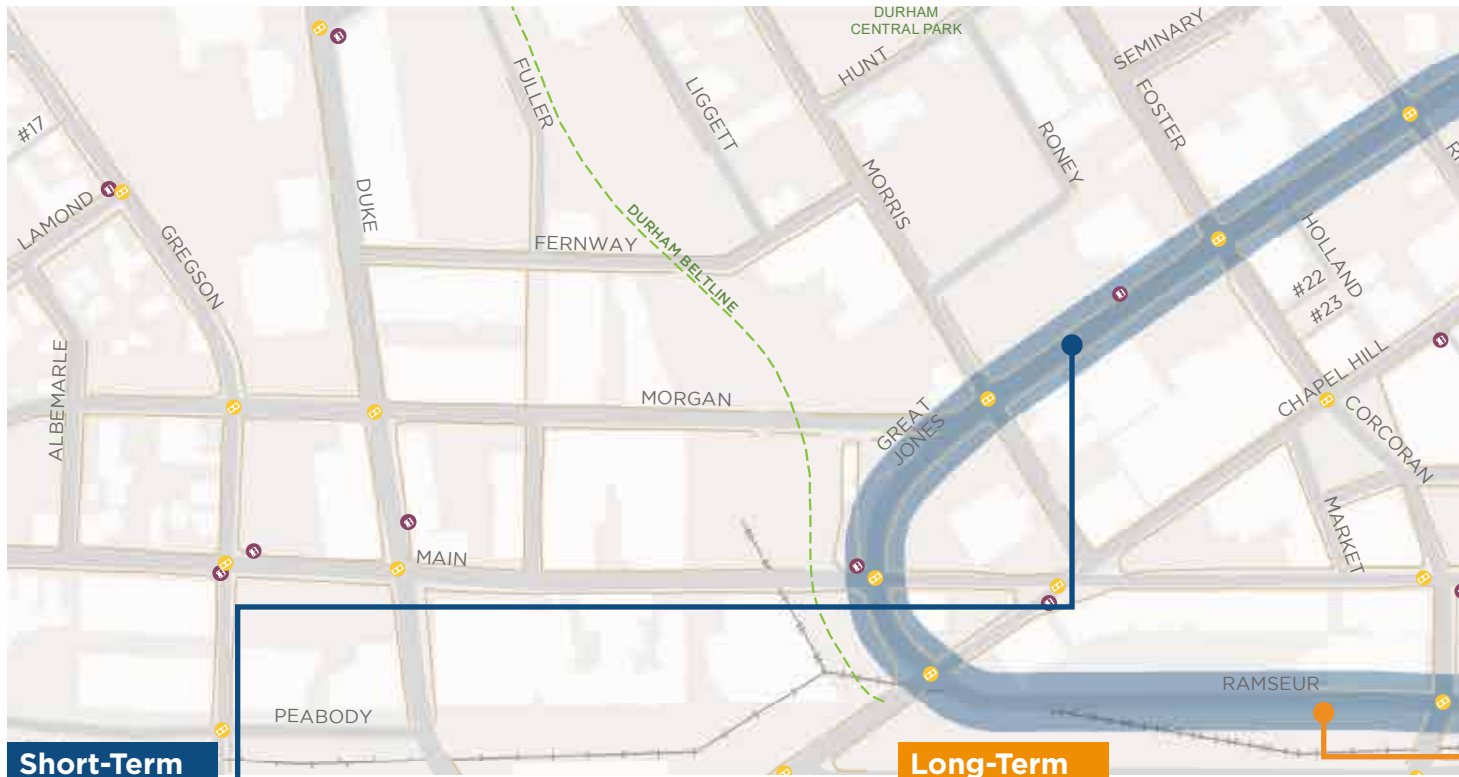
8

Themes

- Two-way traffic
- Traffic calming
- Protected bike lanes
- More street trees, and more/wider sidewalks
- More/safer pedestrian crossings



DOWNTOWN LOOP (MORGAN ST & RAMSEUR ST)



Short-Term

Improve pedestrian crossings at key intersections by adding high-visibility crosswalks, banning right turn on red, and implementing leading pedestrian intervals. Enhance the mid-block crossing along Morgan Street near the Carolina Theatre.

Long-Term

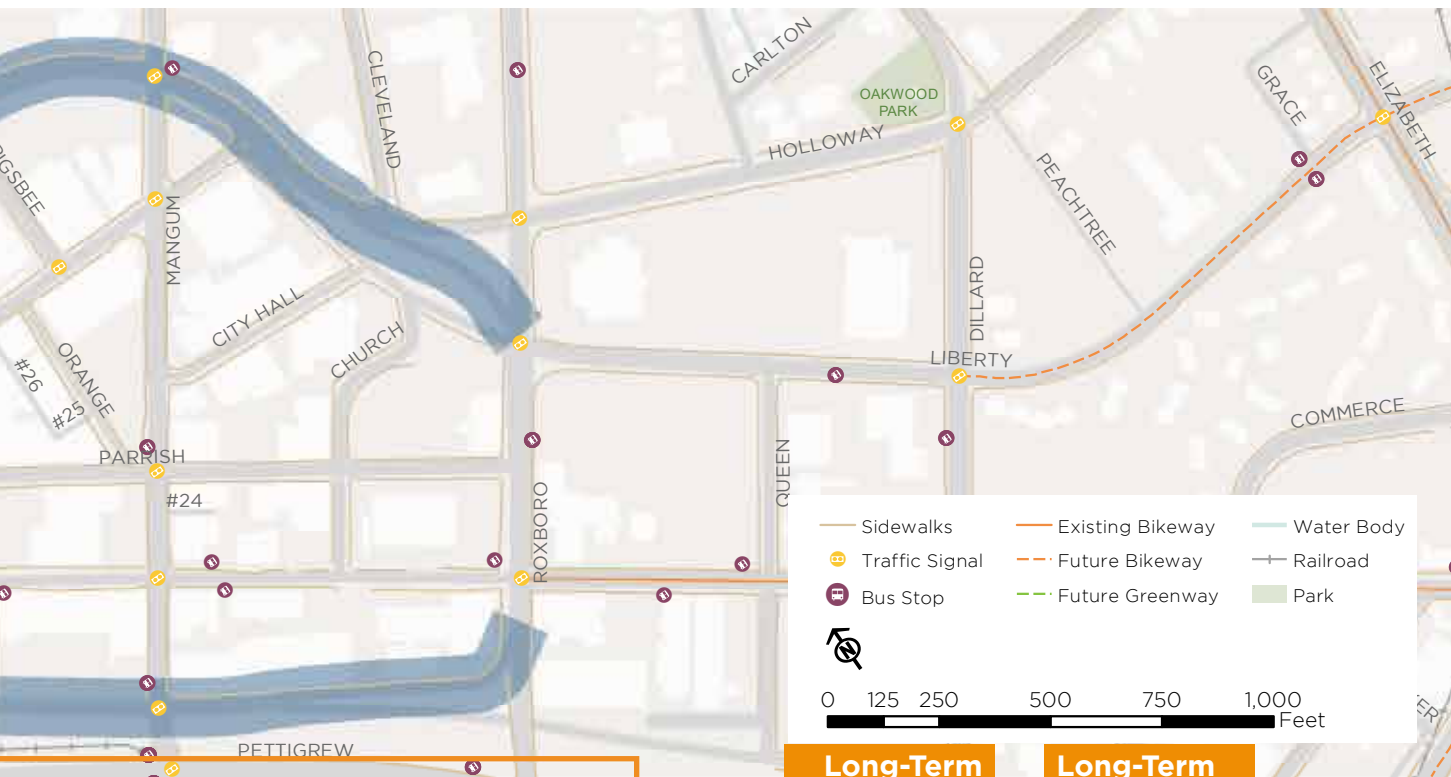
Consider providing and enhancing transit service along all or part of the Downtown Loop during the update of the Durham County Transit Plan.

Short-Term Recommendations

- Retain one-way traffic and continue to explore grant opportunities for two-way conversion that leverages private investment, federal funding, and potential transit funding
- Consider curb management strategies to better utilize the space for parking and/or loading zones
- Convert a travel lane to a one-way parking protected bike lane
- Implement a speed management plan with a target speed of 20 mph
- Improve pedestrian crossings:
 - » High visibility crosswalks
 - » Leading pedestrian intervals
 - » Prohibiting right turn on red
 - » Enhancing pedestrian signal timing

Long-Term Recommendations

- Study access to/from Durham Station and opportunities to speed buses through traffic bottlenecks
 - » Dedicated one-way bus lanes
 - » Transit signal priority
- Convert to two-way traffic:
 - » Cross-section will vary based on context + opportunities
- Install parking protected bike lane or shared-use path
- Build and widen sidewalks and add streetscaping
- Improve connection between the Belt Line Trail and the American Tobacco Trail

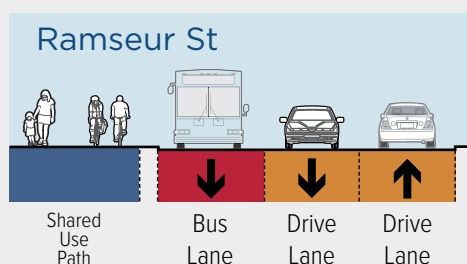


Ramseur Street serves as a critical connection between the Durham Belt Line Trail, Durham Innovation District, and the American Tobacco Trail. A shared-use path along Ramseur Street should be considered to provide an urban trail connection that is comfortable for users of all ages and abilities.

Converting the Downtown Loop and Liberty Street to two-way traffic will improve local access, slow traffic, and increase bicycle and pedestrian traffic.

Long-Term Vision

The graphic below represents a potential long-term vision for the Ramseur Street portion of the Downtown Loop. Further traffic analysis, design, and engagement is needed to determine the ultimate cross-section of the corridor.



Planning-Level Cost Estimate*

Construction Estimate.....\$5,000,000

Design Estimate.....\$705,000

*These cost estimates are subject to change during design and do not include right-of-way acquisition or intersection reconfiguration that will be needed with a two-way conversion project or extensive streetscape improvements.



DUKE ST, GREGSON ST, VICKERS ST

Interstate 85

Northgate

Duke East
Campus

Durham
School for
the Arts

Brightleaf
Square

Gregson Street

Duke Street

Main Street

Downtown

Chapel Hill Street

American
Tobacco

DPAC

Durham Bulls
Stadium

Durham Freeway

Vickers Street

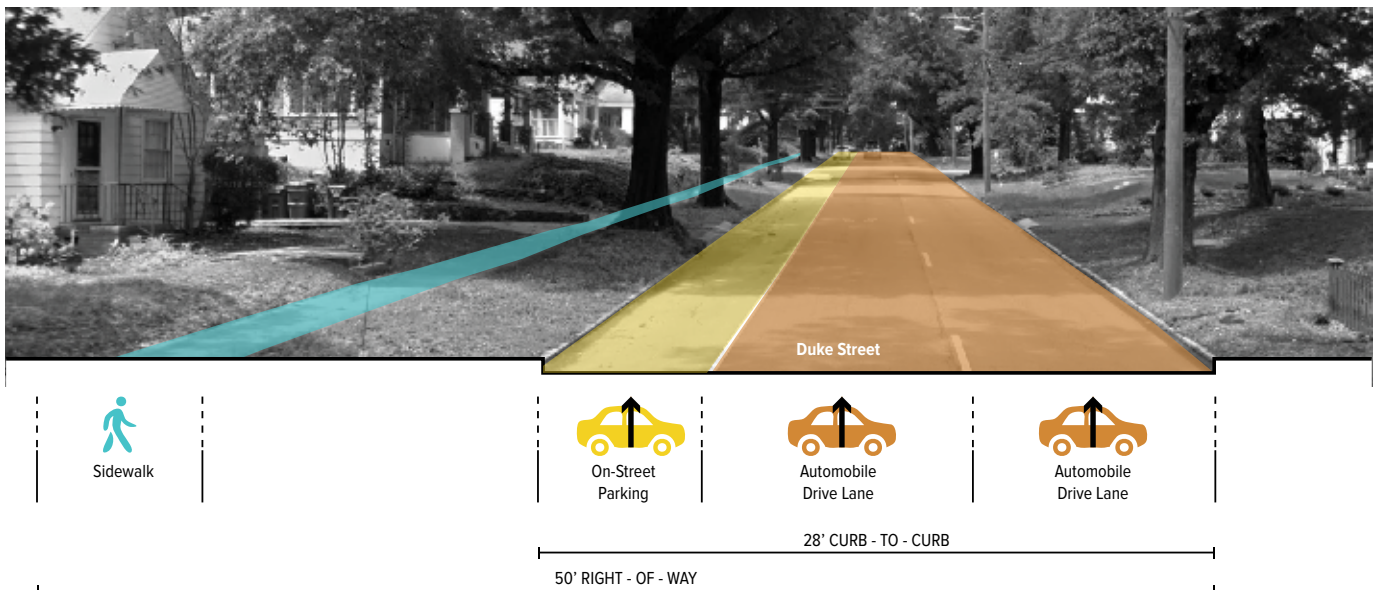
About

The one-way pair of Duke Street and Gregson Street serve as a critical north-south commuter route, a thriving commercial corridor and as a neighborhood street. The corridors extend almost 5 miles from I-85 to south of the Durham Freeway and pass through the center of the Brightleaf district.



Typical Section*

Duke Street - W Trinity Ave & W Club Blvd



*Cross-Section Varies



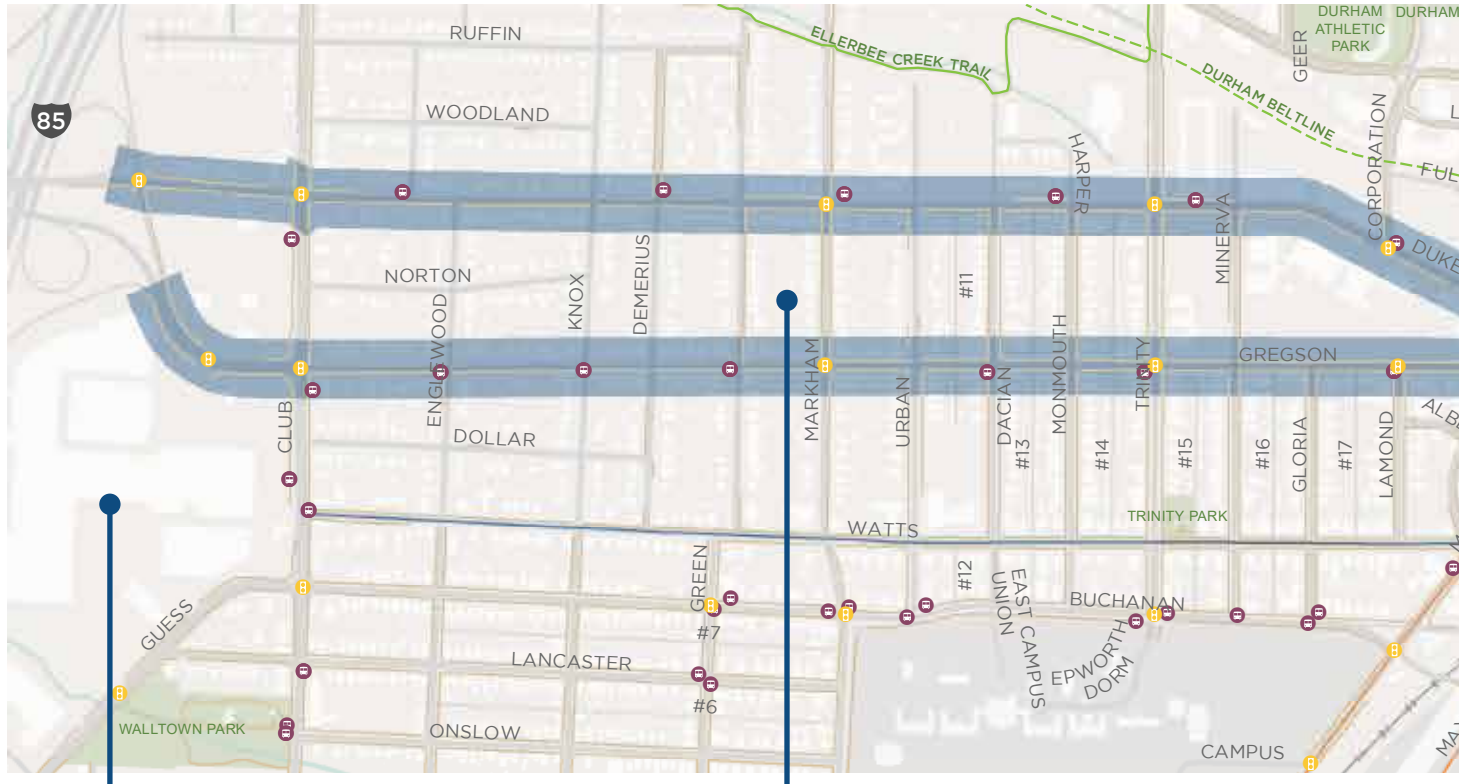
DUKE ST, GREGSON ST, VICKERS ST

From **I-85**

To **University Dr**

Corridor Length
(total miles) **4.8**

Average Annual
Daily Traffic **4,700 -
18,308**



Northgate Mall is currently a major destination in the community and its importance and impact will only grow as the new mixed-use vision for the site is implemented.

The design of these one-way streets with limited signals and turns invites speeding through the Trinity Park neighborhood and makes it difficult to cross safely on-foot.

Transit



17 Bus Stops

16 Average weekday
boarding/alighting at
stops along the corridor

Transit passengers
moving through corridor
a day:

2,456 Duke St

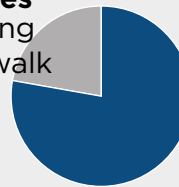
2,269 Gregson/Vickers St

Pedestrian



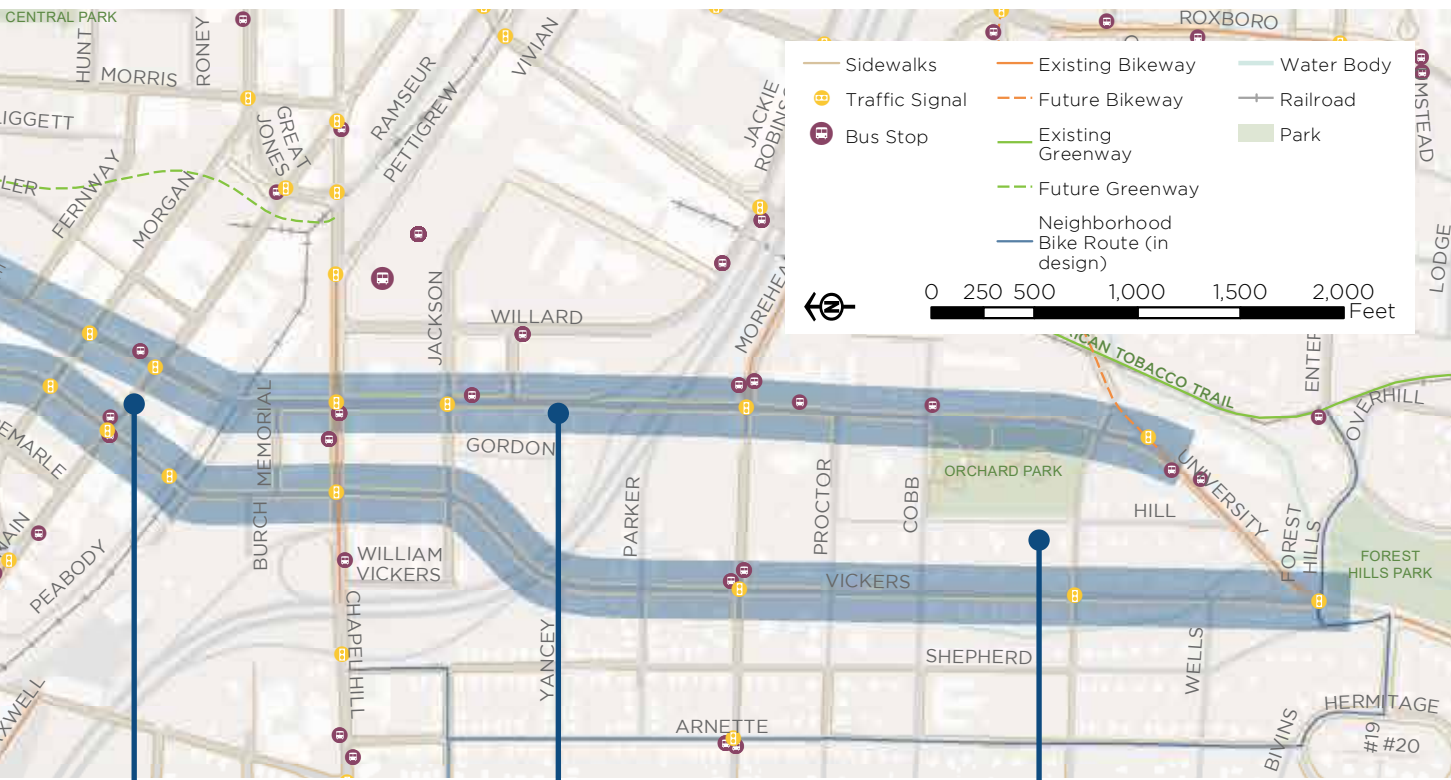
2 miles
Missing
sidewalk

7 miles
Existing
sidewalk



26 Pedestrian collisions
(2007-2015)

Posted Speed Limit **25 to 35** High Speed Sections • **Duke and Gregson - between Minerva Ave & I-85**



South of Trinity Avenue, Duke Street and Gregson Street transition into a highly urban context and business district.

Today, 17% of all northbound weekday driving trips on NC-147 use the Duke St exit. This is the second most used northbound exit in the study area.

Existing traffic volumes are much lower in Morehead Hill, and the excess lane capacity encourages speeding through the residential area.

Bicycle



- 0 Miles of bicycle facilities
- 15 Bicycle collisions (2007-2015)

Although there are currently no bicycle facilities, the corridor runs parallel to the Watts St and Arnette Avenue neighborhood bike routes, the Ellerbee Creek Trail, the American Tobacco Trail, and the future Durham Belt Line Trail.

The topography of the corridor could present challenges for cyclists of varying abilities.

Auto

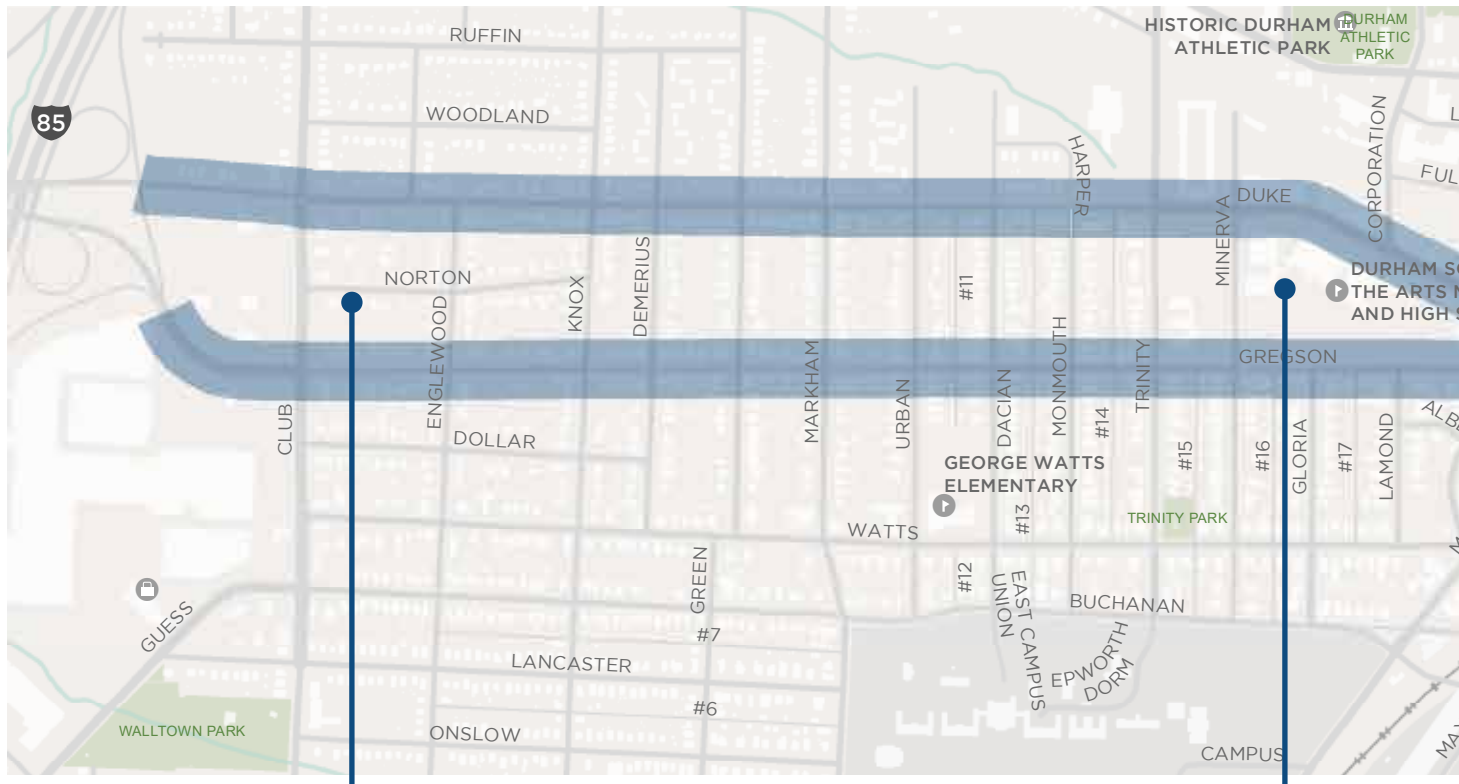


- 4 Severe auto crashes between 2013 and 2017 (all along Gregson St/Vickers St)

There is on-street parking along most of the corridor that appears to be used regularly. There is also metered parking on Duke St between Peabody St and Morgan St and 2-hour parking on Gregson St around the Durham School of the Arts. 31% of drivers exiting NC 147 heading north on Duke St continue on Duke St past I-85 (weekday trips).



DUKE ST, GREGSON ST, VICKERS ST



"Yes, please put up at least more pedestrian lights up and down Gregson and Duke between Morgan and Club. That's cheap right now and can slow traffic while encouraging folks to walk safely."

"The Duke and Gregson Corridor is a mini-highway in downtown Durham. I teach at DSA and students have been struck by cars traveling too fast down both of the streets. We need to encourage drivers to use other roadways and slow down a great deal along this corridor."

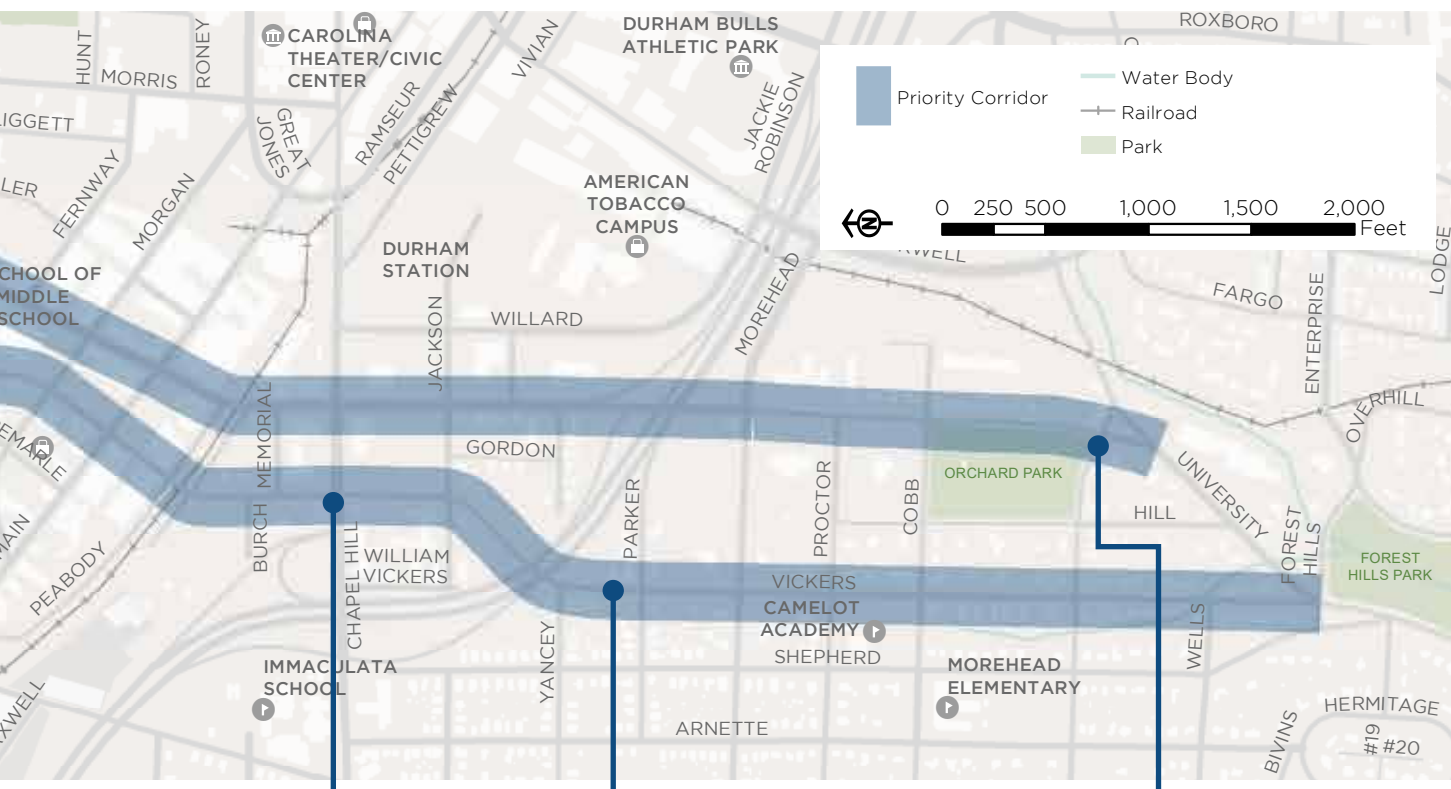
"It's very noisy and loud. Cars go too fast making walking along these streets unpleasant. I will often take a different route for a more pleasant experience, even if longer. I will not even consider riding my bike on these streets because traffic goes too fast and there are too many hills/blind spots and with parked cars, there is no room."

"Police these streets. Cars fly by and I have seen many scary pedestrian/motorists moments. I would like to see them turned into bi-directional streets (with a bike lane) rather than the current freeway-esque setup."

"I wanted to call attention to the priority of safer pedestrian crossing. This goes in hand with walking. I crossed the streets on foot regularly, and the speeding of cars and lack of crosswalks at many intersections is a significant issue. Especially without sidewalks on one side of the street, having more regular crosswalks or lights is essential."



Sharing progress and getting input at a Bike Durham meeting



“The pedestrian crossing at Gregson/Chapel Hill St has a lot of cars taking very fast rights at the intersection (both on red and green) and drivers often don’t stop for crossing pedestrians.”

“I would like to see all of Vickers included in this, especially near the on-ramp for 147 at Yancey and Parker streets. I live a few blocks from this intersection and it is dangerous for walkers, bikers and drivers. I’d love to see Vickers become a calm neighborhood street. We walk all around our neighborhood and to downtown but often don’t feel safe due to speeding traffic.”

“There NEEDS to be a light [traffic signal] at Duke/Lakewood; the number of accidents there is a scandal!”

Community Engagement Summary



Online
Surveys

396



Paper
Surveys

125



Community
Events +
Presentations

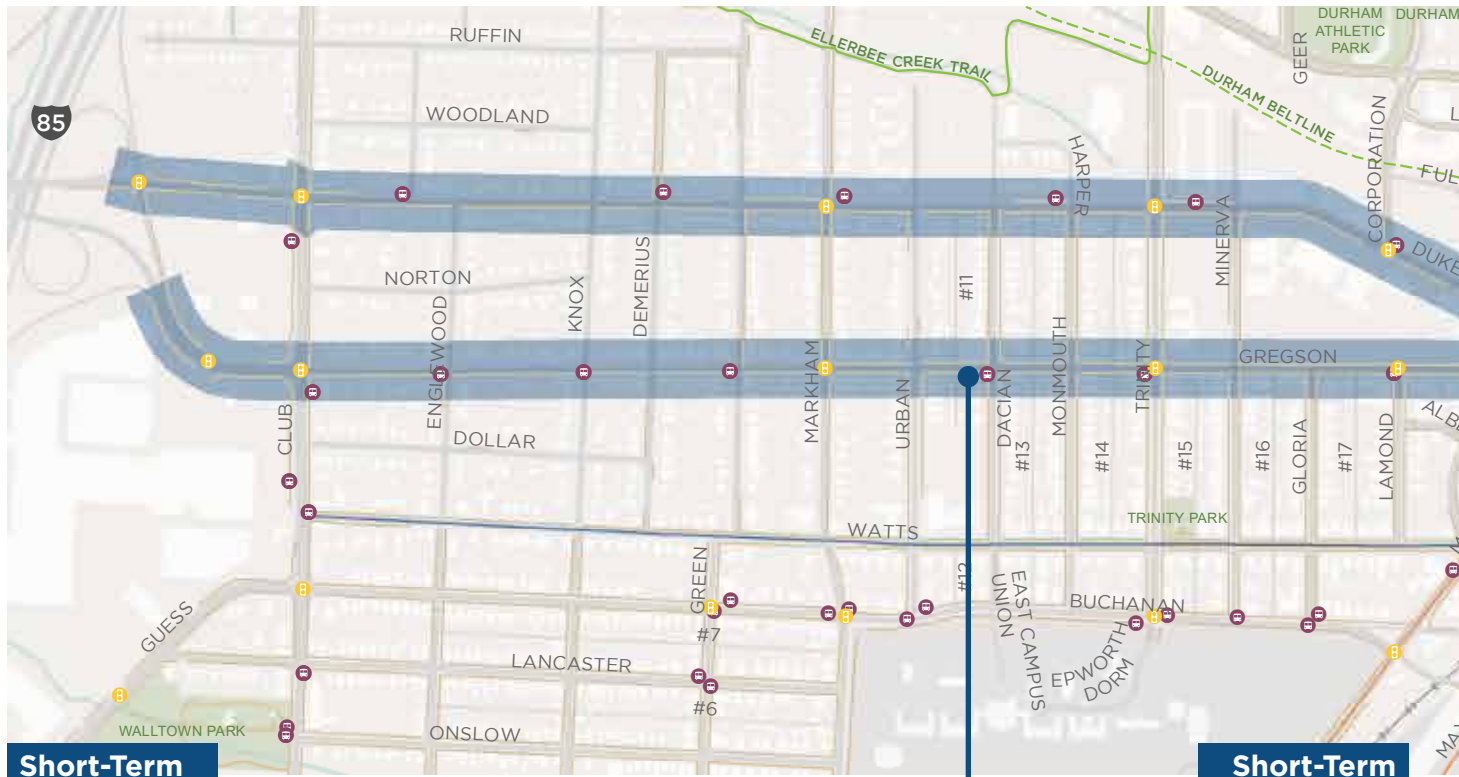
7

Themes

- Accommodate two-way traffic
- Calm traffic (lower speeds)
- Add more frequent and safe crossings
- Add protected bike lanes



DUKE ST, GREGSON ST, VICKERS ST



Short-Term

Crossing Duke Street and Gregson Street is challenging due to current traffic volumes and speeds, especially at uncontrolled locations. Evaluate the need for new mid-block crossing locations through field observation and public engagement. At existing or new mid-block locations, install curb extensions and high visibility crosswalks to shorten the crossing distance and increase the visibility of pedestrians.

Short-Term

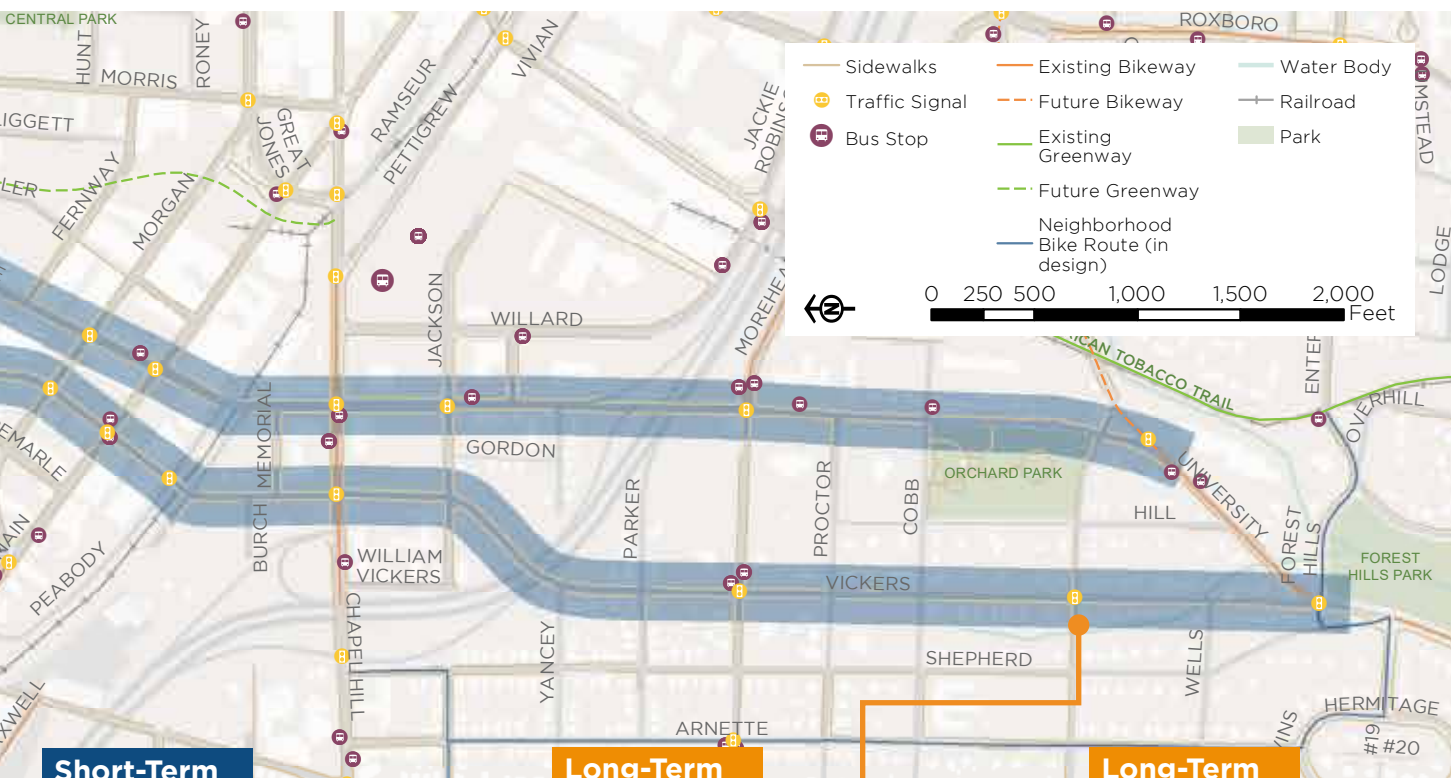
Improve existing bus stop locations by installing bus shelters and benches where feasible. Consider a slim shelter design in areas where right-of-way is limited to reduce impacts.

Short-Term Recommendations

- Retain one-way traffic
- Repair sidewalks
- Improve bus stop amenities
- Improve pedestrian crossings:
 - » Leading pedestrian intervals
 - » Banning right turn on red
 - » Enhancing pedestrian signal timing
 - » High visibility crosswalks
- Implement a speed management plan with a target speed of 25 mph.

Long-Term Recommendations

- Convert to two-way traffic:
 - » Cross-section will vary based on context and opportunities
 - » Restrict left turns or signalize based on traffic volumes and safety considerations
- Retain on-street parking
- Install sidewalks on both sides of the street where feasible
- Provide pedestrian scale lighting
- Restrict parking at intersections to improve pedestrian visibility with curb extensions
- Improve connections to neighborhood bicycle routes on Watts St and Arnette Ave and the Ellerbe Creek Trail and Belt Line Trail



Short-Term

Convert a travel lane or parking lane to a bike lane with a buffer flexible delineator posts where feasible.

- Duke: between Yancey & Main
- Gregson/Vickers: between Chapel Hill & Morgan

Long-Term

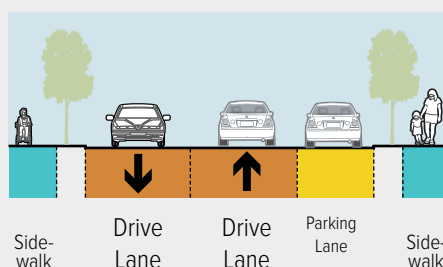
Add left turn pockets at signalized intersections. Consider restricting left turns at unsignalized intersections based on limited sight distance, on-street parking needs, and congestion impacts.

Long-Term

Construct new sidewalks where gaps exist. Topography and right-of-way may make sidewalk construction challenging.

Long-Term Vision

The graphic below represents a potential long-term vision. Further traffic analysis, design, and engagement is needed to determine the ultimate cross-section of the corridor.



Planning-Level Cost Estimate*

Construction Estimate.....\$7,710,000

Design Estimate.....\$1,160,000

**These cost estimates are subject to change during design and do not include right-of-way acquisition or intersection reconfiguration that will be needed with a two-way conversion project.*



FAYETTEVILLE ST, ELIZABETH ST

Downtown

Durham Freeway

**Hayti
Heritage
Center**

**Eagle
Landing
Residence
Hall**

**North
Carolina
Central
University**

**Baynes
Residence
Hall**

George St

Nelson St

**Alfonso
Elder
Student
Union**

Fayetteville St

About

The Fayetteville Street corridor has rich cultural heritage with a mix of residential, commercial, and institutional uses. The corridor also provides a direct connection from North Carolina Central University to the downtown area. Fayetteville Street is a high-frequency transit corridor (15-minute service) and has high ridership.



Typical Section*

Fayetteville St



*Cross-Section *Varies*

60' Curb-to-Curb



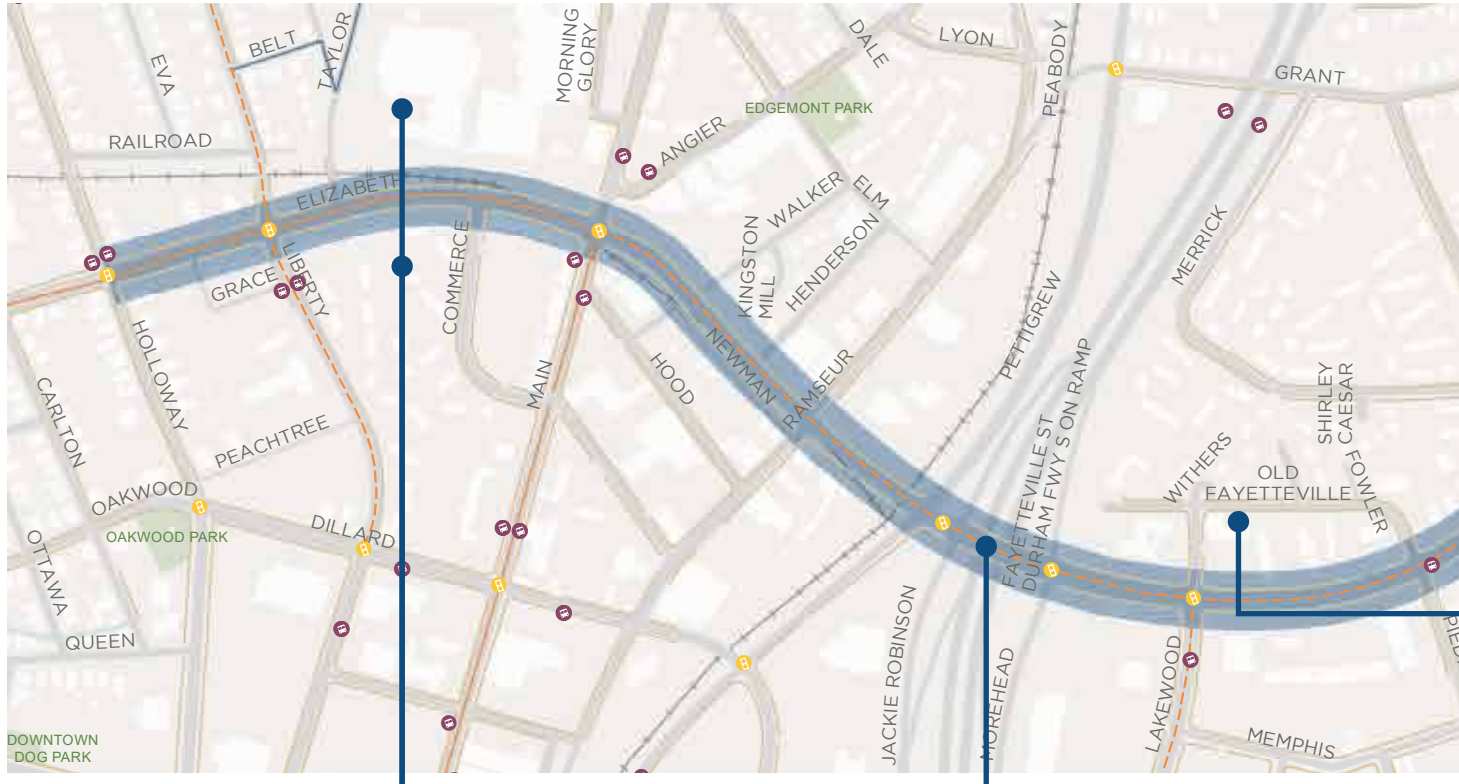
FAYETTEVILLE ST, ELIZABETH ST

From **Cecil St**

Corridor Length
(total miles) **1.8**

To **Holloway St**

Average Annual
Daily Traffic **15,901-
20,398**



Elizabeth Street is bounded by a Durham Housing Authority apartment complex to the west and by the redeveloped Golden Belt Campus to the east.

5% of all northbound weekday driving trips on NC 147 use the Fayetteville Street exit. The Fayetteville Street overpass, which currently has a six-lane cross section, is congested at peak hours and is very inhospitable to pedestrians, with narrow sidewalks next to high-volume traffic.

Transit



16 Bus Stops

53 Average weekday boarding/alighting at stops along the corridor

3,541 Transit passengers moving through corridor a day

Pedestrian



<1 Miles of missing sidewalk

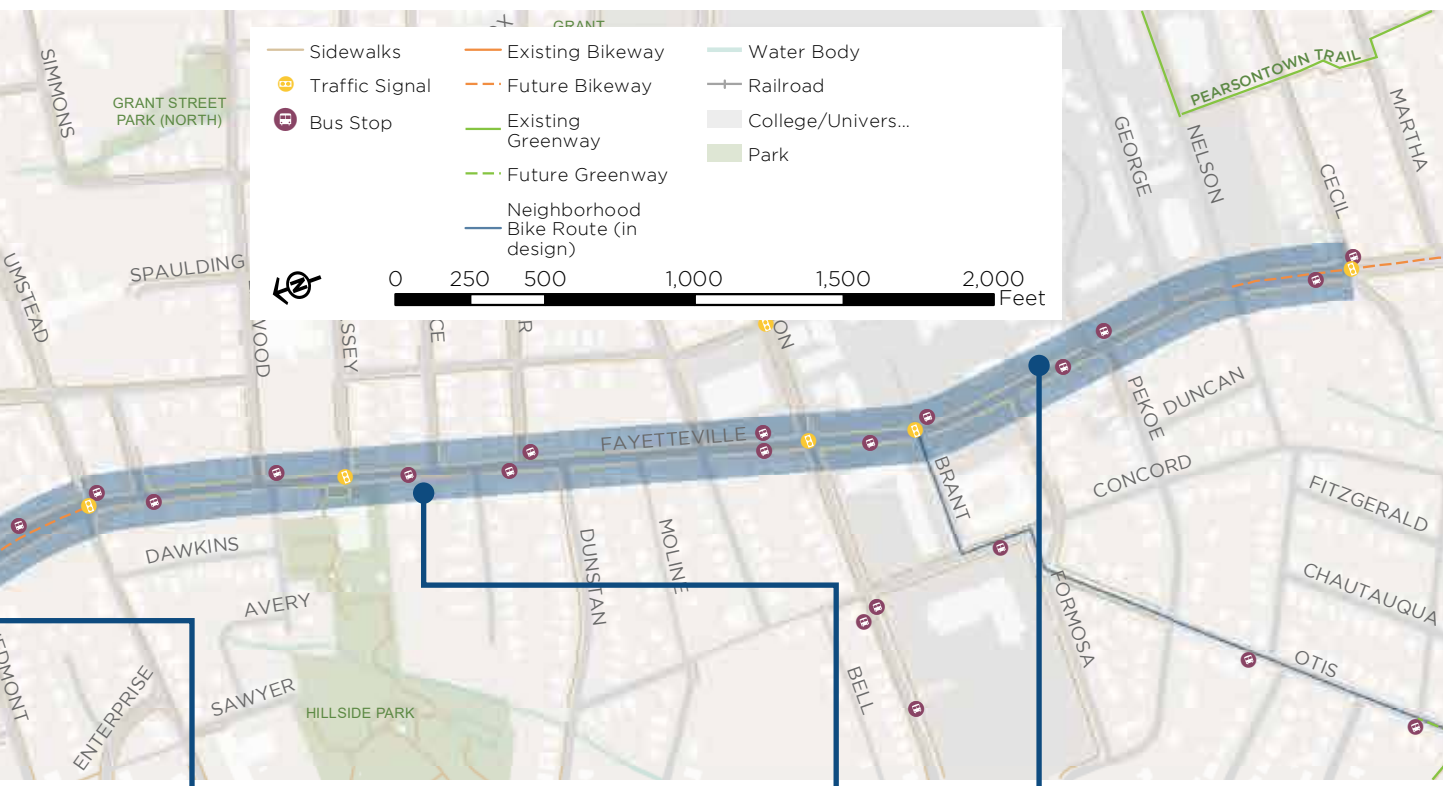
3.3 Miles of existing sidewalk

37 Pedestrian collisions (2007-2015)

Posted Speed Limit **30 - 35**

High Speed
Sections

• **Fayetteville St from
Lakewood to Main**



The Fayetteville corridor is home to the Hayti Heritage Center, which is a cultural enrichment and arts education facility founded in the Hayti neighborhood, much of which was destroyed by the construction of the Durham Freeway and urban renewal.

There are many bus stops along the corridor. Many do not have shelters or amenities.

Over 8,000 students are enrolled at North Carolina Central University, along with nearly 1,400 faculty and staff. The campus is a major destination for all transportation modes.

Bicycle



Existing bike lane between Main St and Carlton Ave

8 Bicycle collisions (2007-2015)

There are existing striped bicycle lanes on Elizabeth Street from Holloway Street to Main Street. Buffered bike lanes are currently being designed from Main Street to Umstead. The corridor passes through the NC Central campus, which hosts an on-campus bike share program, and is a hot spot for scooter usage.

Auto



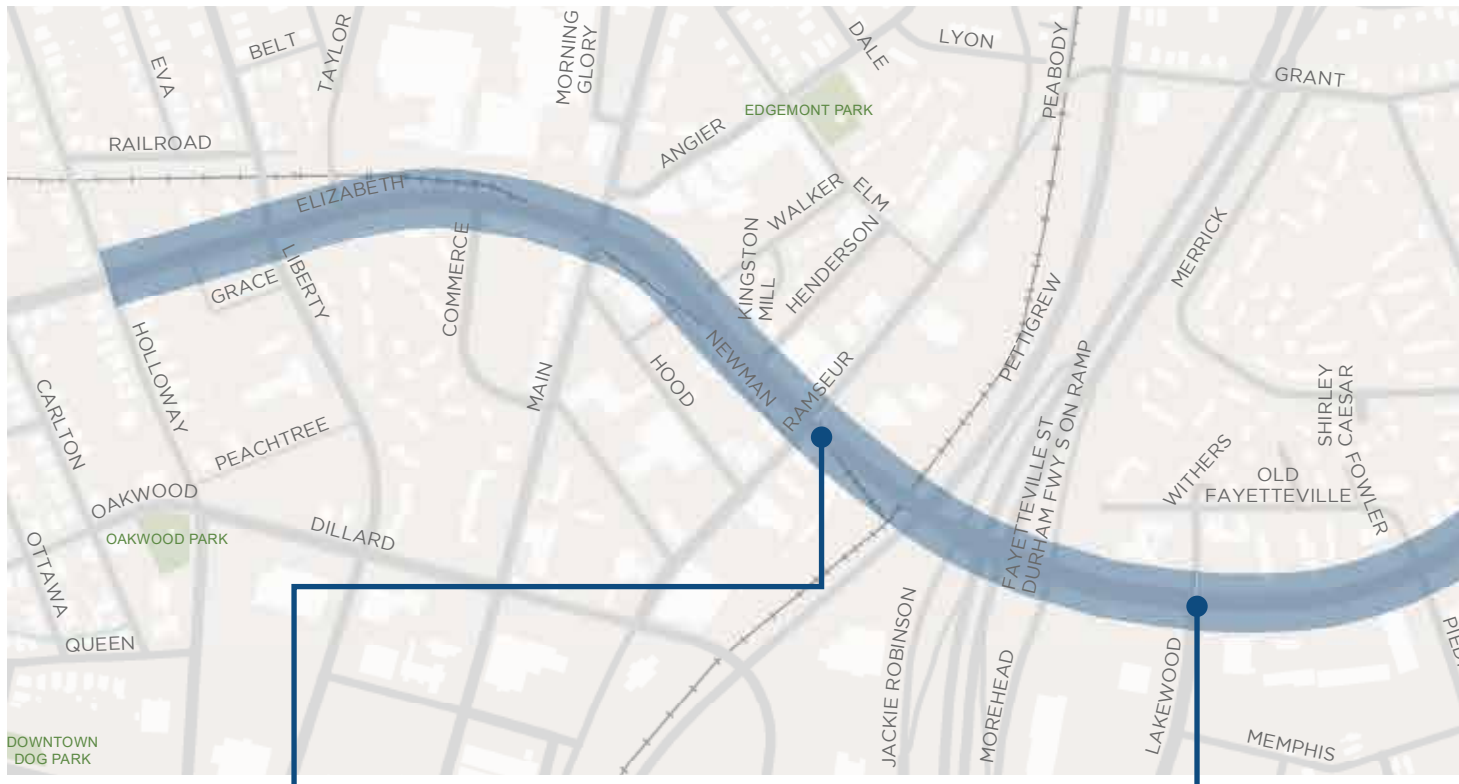
3 Severe auto crashes between 2013 and 2017

Fayetteville is a relatively high-volume corridor, with approximately 14,000 vehicles per day.

Elizabeth Street from Holloway Street to Main Street has striped on-street parking which serves several apartment complexes in the area but is often underutilized.



FAYETTEVILLE ST, ELIZABETH ST



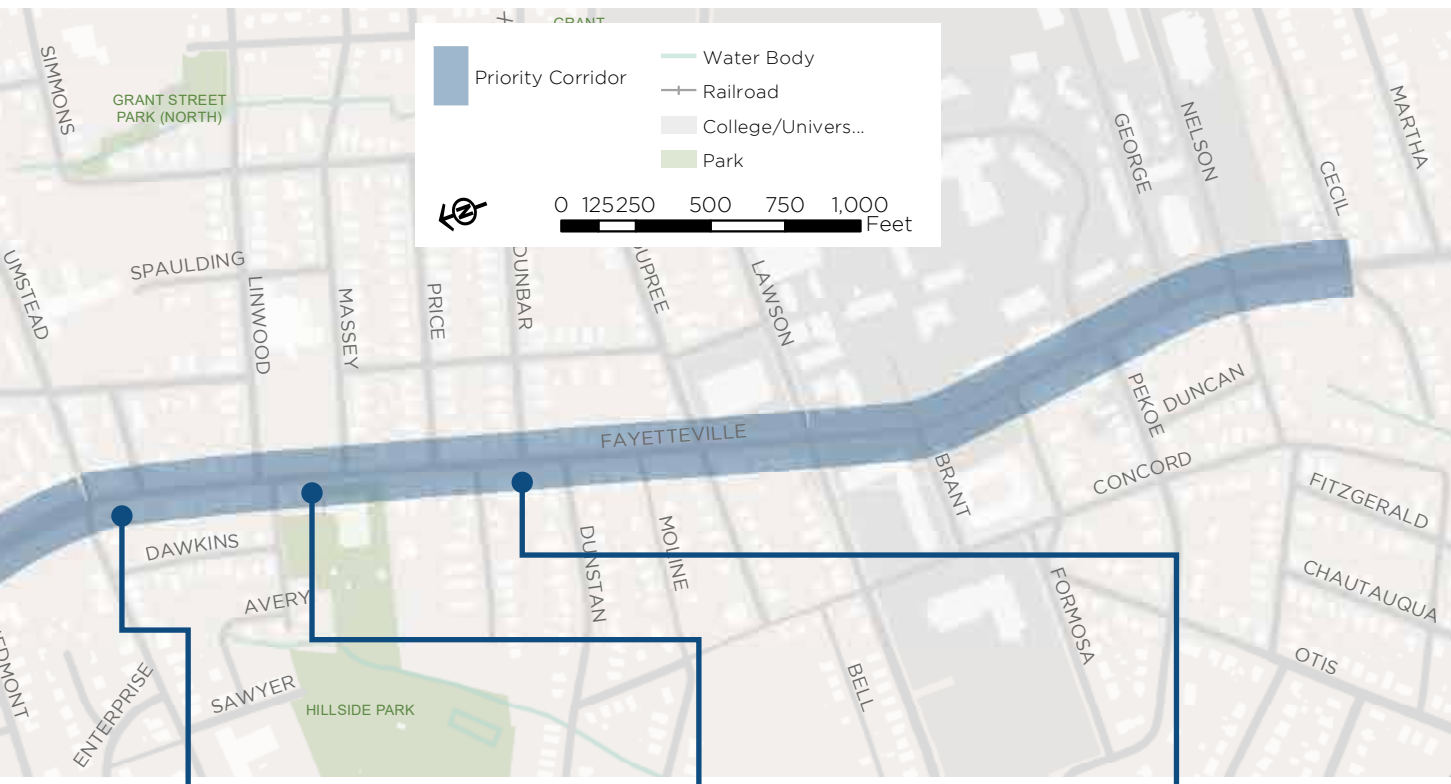
“The corridor at Ponysaurus should be a complete street road diet, with trees and perpendicular parking. There is no need for more than 1 driving lane in each direction, and there is a growing need for parking.”

“Public art on bus shelters, crosswalks, utility boxes, etc. and streetscaping, along with repaired sidewalks, left turn signals at the Fayetteville Street - Lakewood intersection, and possibly a reduced speed limit between Umstead and Lakewood in order to provide safer access for pedestrians and bicyclists to move along and across the street.”

It's such a wonderful and important crossing in Durham. We live East of Fayetteville, and would feel so much more easily integrated into downtown with sidewalks, safer crossings, trees. It's an awesome part of town and to see people on foot, on bikes, with their families or just solo, would be amaaaaazing!



Discussing Move Durham and getting feedback at a Juneteenth event



“Fayetteville south of Main needs bike lanes. Immediately south of Main it’s 2 lanes each way, but cars drive very fast, the road is treated as a highway. Then south of umstead, it narrows to one lane each way without any room for a bike.”

“This street desperately needs safe places to cross. The stretch between Lakewood and Massey has no crosswalks despite being heavily used by pedestrians. I see people daily cross in the middle of four lanes of traffic. It is absurdly unsafe and needs to be a top priority.”

“Bus cut outs or lanes. There is a real choke zone from E Umstead to NCCU, that becomes standstill when the buses come through. Particularly at the stop serving Lincoln clinic. That stop takes a while as many passengers coming and going to/from Lincoln have mobility/accessibility issues that make on and off boarding a slow process.”

Community Engagement Summary



Online
Surveys

240



Paper
Surveys

174



Community
Events +
Presentations

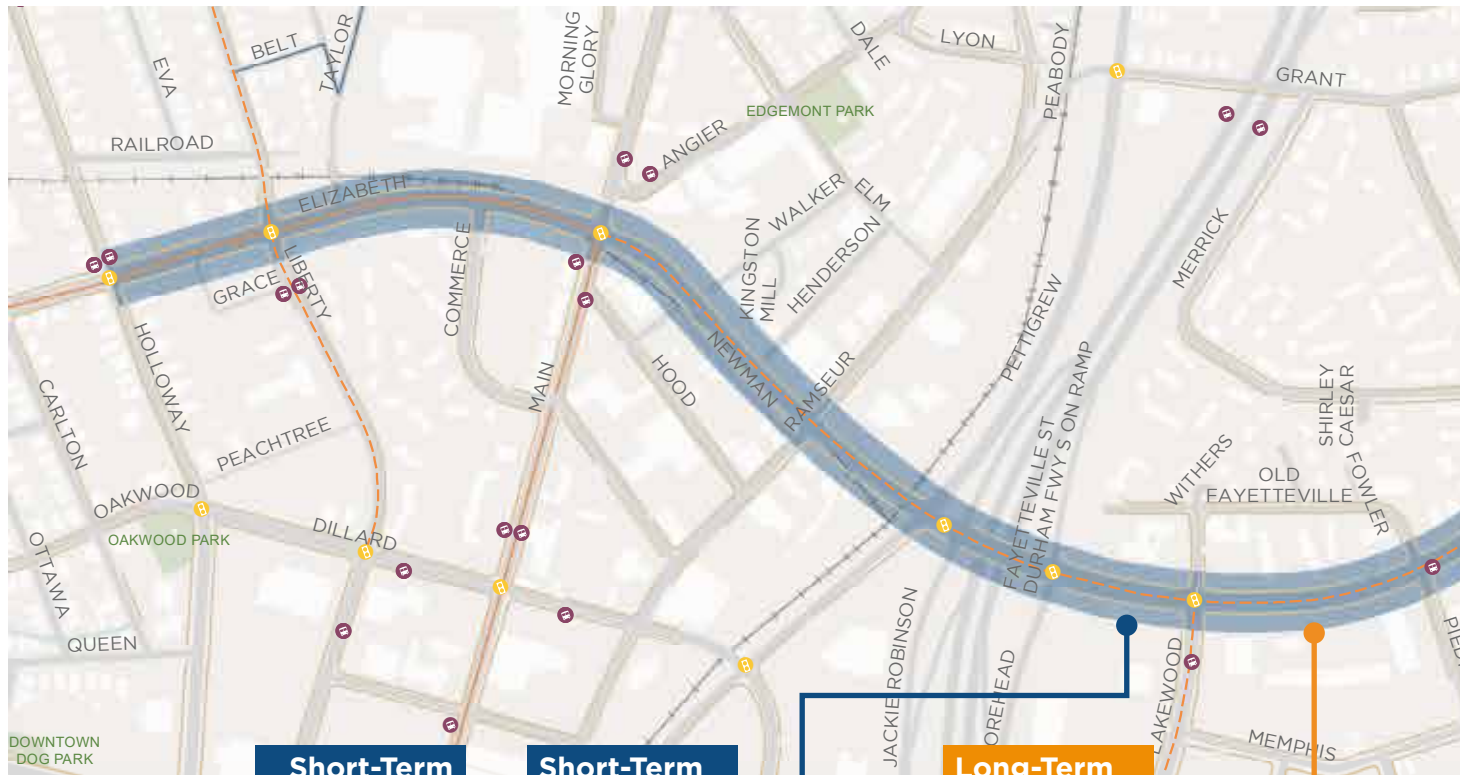
9

Themes

- More comfortable and safe sidewalks
- More crosswalks
- On-street parking makes bicycling difficult
- Slow traffic down
- Improved bus frequency and reliability with better bus stops



FAYETTEVILLE ST, ELIZABETH ST



Short-Term

Develop a gateway brand to enhance neighborhood identity along the corridor + install wayfinding and interpretive signs.

Short-Term

Design road reconfiguration to be installed with upcoming Water Management project.

Long-Term

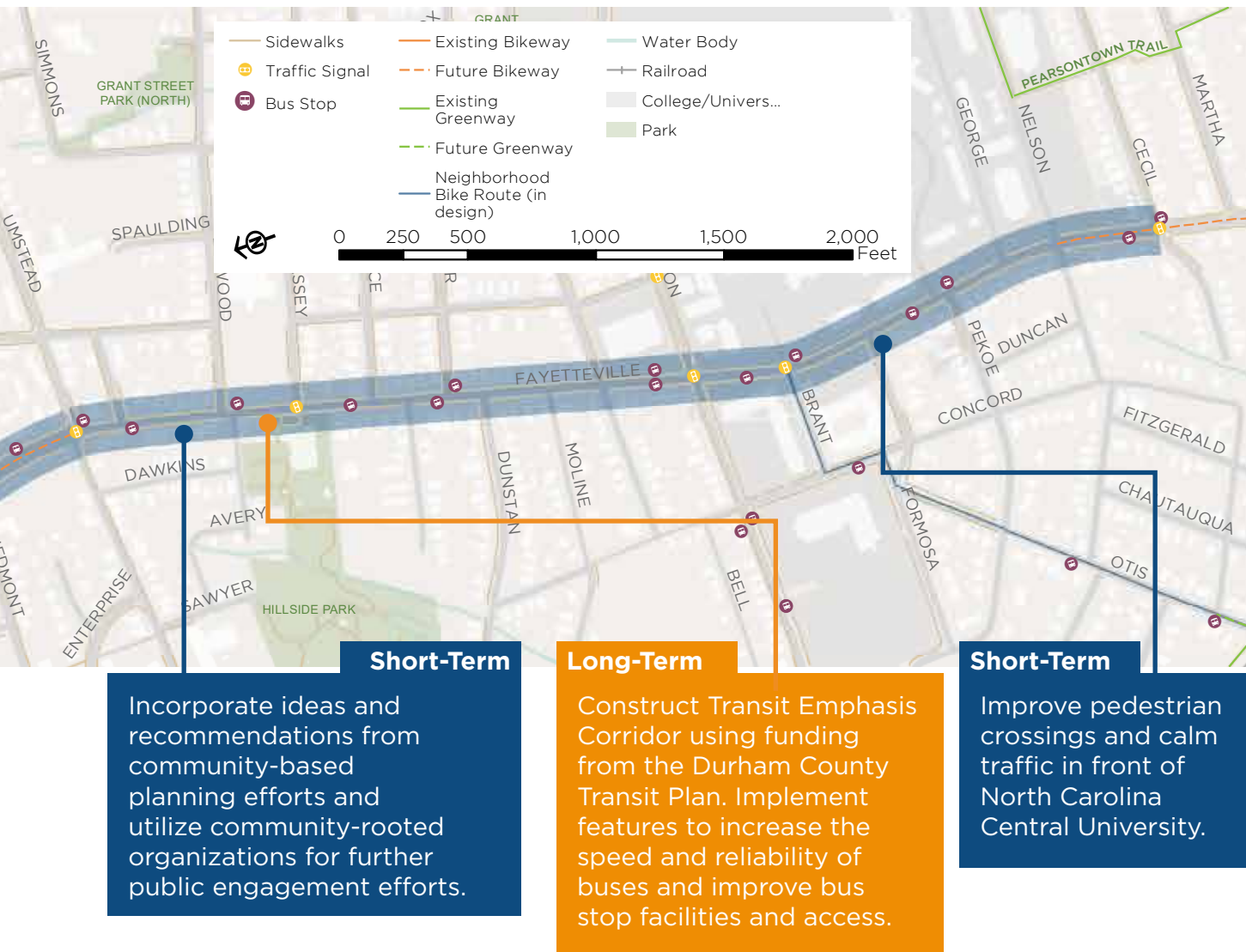
Add landscaping and streetscaping throughout the corridor to enhance livability and the comfort of pedestrians and transit riders.

Short-Term Recommendations

- Retain current on-street parking
- Convert travel lane to a buffered bike lane between Main and Umstead (funded project in 2020)
- Improve bus stop amenities
- Improve pedestrian crossings:
 - » Leading pedestrian intervals
 - » Banning right turn on red
 - » Enhancing pedestrian signal timing
 - » High visibility + decorative crosswalks
 - » Pedestrian flashing beacons
 - » Raised crosswalks or intersections where feasible
- Implement a speed management plan with a target speed of 25 mph (20 mph through campus).

Long-Term Recommendations

- Work with NCDOT to develop improved pedestrian and bicycle connectivity through the NC 147 interchange
- Convert center turn lane to a landscaped median where feasible
- Widen sidewalks, plant street trees, and provide streetscape improvements
- Implement a Transit Emphasis Corridor on Fayetteville with Durham County Transit Plan funds to increase the speed and reliability of buses and improve access to transit.
- Explore the potential for additional transit improvements such as Bus Rapid Transit (BRT) in the upcoming Durham County Transit Plan.



Long-Term Vision

The graphic below represents a potential long-term vision. Further traffic analysis, design, and engagement is needed to determine the ultimate cross-section of the corridor.

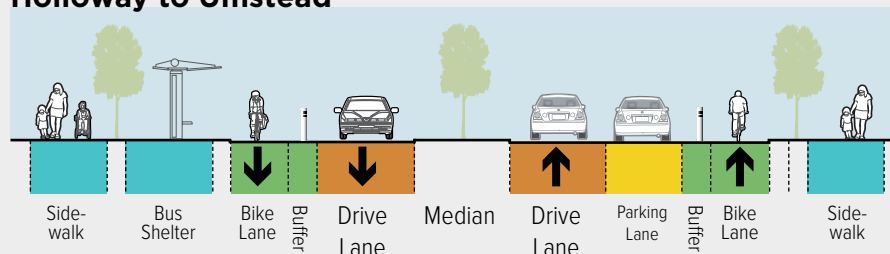
Planning-Level Cost Estimate*

Construction Estimate.....\$3,510,000

Design Estimate.....\$530,000

**These cost estimates are subject to change during design and do not include right-of-way acquisition. The cost estimate does not include extensive streetscape and landscaping costs.*

Holloway to Umstead





HOLLOWAY ST

Downtown

**Long
Meadow
Park**

**KIPP Durham
College
Preparatory
School**

Holloway St

Park Ave

Alma St

Guthrie Ave

About

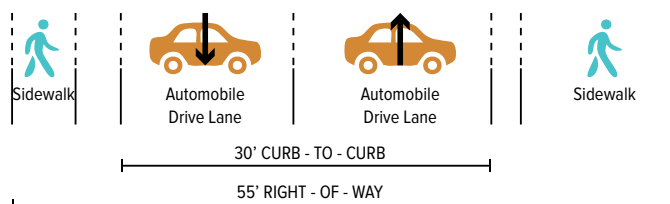
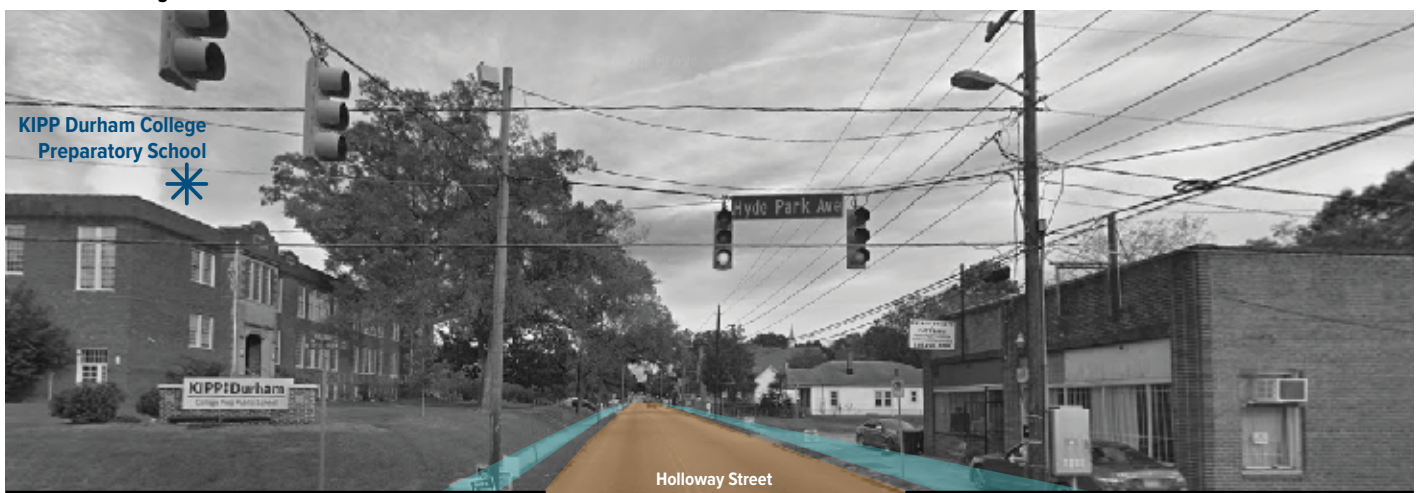
The Holloway Street corridor is a predominately residential corridor, extending about 2 miles in length. Holloway Street provides an important connection between the residential neighborhoods east of the corridor to Durham's downtown. Holloway Street is also designated as Business 70, providing a critical connection between Durham and Raleigh.

While much of its length is one lane in each direction, traffic volumes on this corridor vary from moderate to high. Traffic volumes are expected to decrease with the new East End Connector.



Typical Section*

Holloway St



*Cross-Section Varies



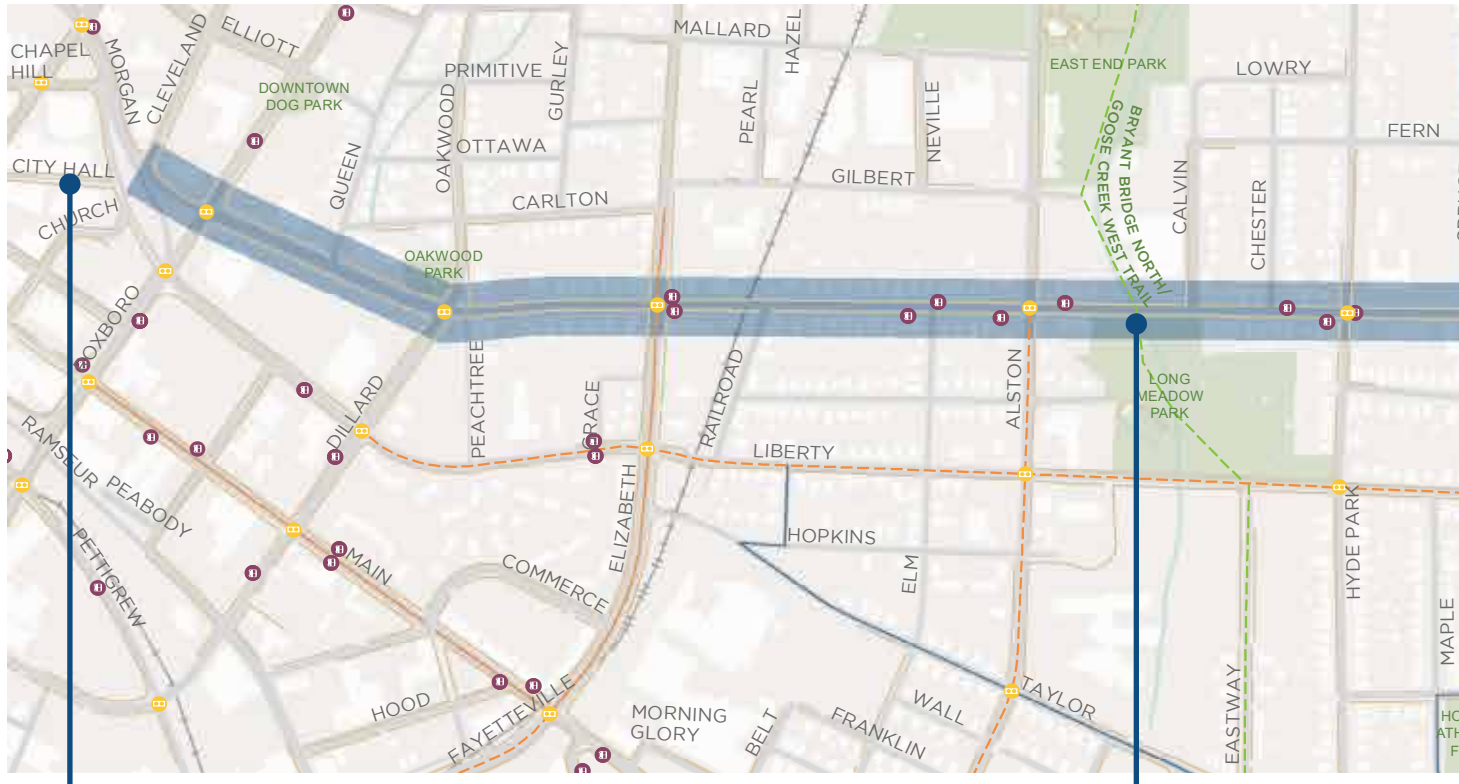
HOLLOWAY ST

From **US 70 Bypass**

To **E Morgan St**

Corridor Length
(total miles) **2.0**

Average Annual
Daily Traffic **5,646 -
15,033**



The Holloway Street corridor is bounded by Durham City Hall and other government offices to the west and by the Village Shopping Center to the east.

A future mid-block pedestrian crossing is planned to connect the Kelly Bryant Bridge Trail to Long Meadow Park.

Transit



20 Bus Stops

37 Average weekday
boarding/alighting at
stops along the corridor

1,953 Transit passengers
moving through corridor
a day

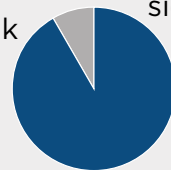
The bus stop at the Village Shopping Center on the eastern end of the corridor is the second highest boarding stop in the GoDurham system.

Pedestrian



0.3 miles
Missing
sidewalk

3.3 miles
Existing
sidewalk

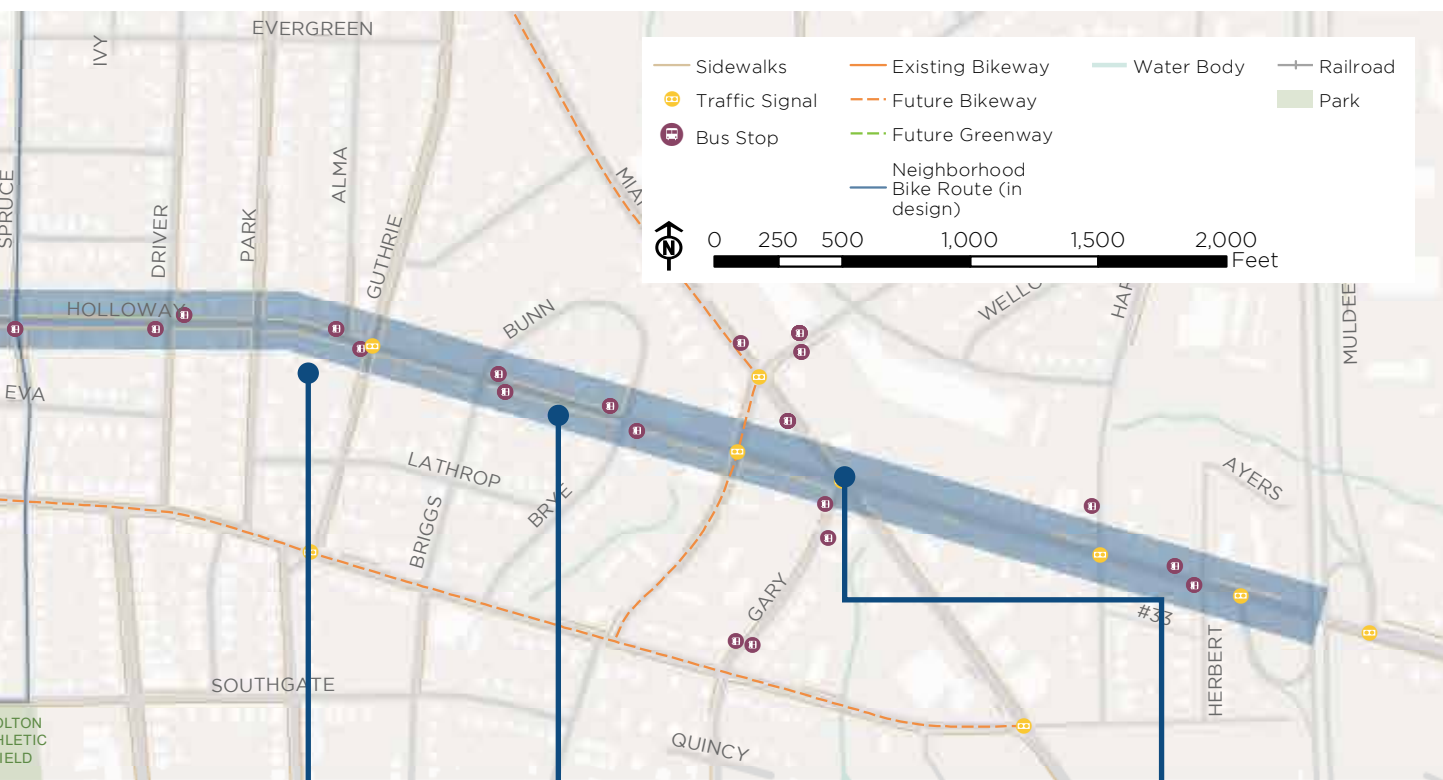


32 Pedestrian collisions
(2007-2015)

Posted Speed Limit **35**

High Speed
Sections

- **Holloway St from Brye St to N Hardee St**
- **Holloway St from Peachtree Pl to Hardee St**



Along the Holloway corridor is Housing for New Hope, an affordable workforce housing shelter with a history of over 20 years in operation.

Existing bus stops lack amenities such as shelters and benches. While the close spacing of the bus stops provide rider access, it also slows down the buses due to frequent stops.

The intersection of Holloway Street and Miami Boulevard has a history of high pedestrian crash rates.

Bicycle



- 0 Miles of bicycle facilities
- 9 Bicycle collisions (2007-2015)

There are currently no existing striped bicycle lanes on Holloway Street. Holloway Street does connect to an existing bikeway on Elizabeth Street and will connect to planned future bikeways at Raynor Street and N Alston Avenue. A future bikeway is planned along Liberty Street providing an alternative parallel route.

Auto

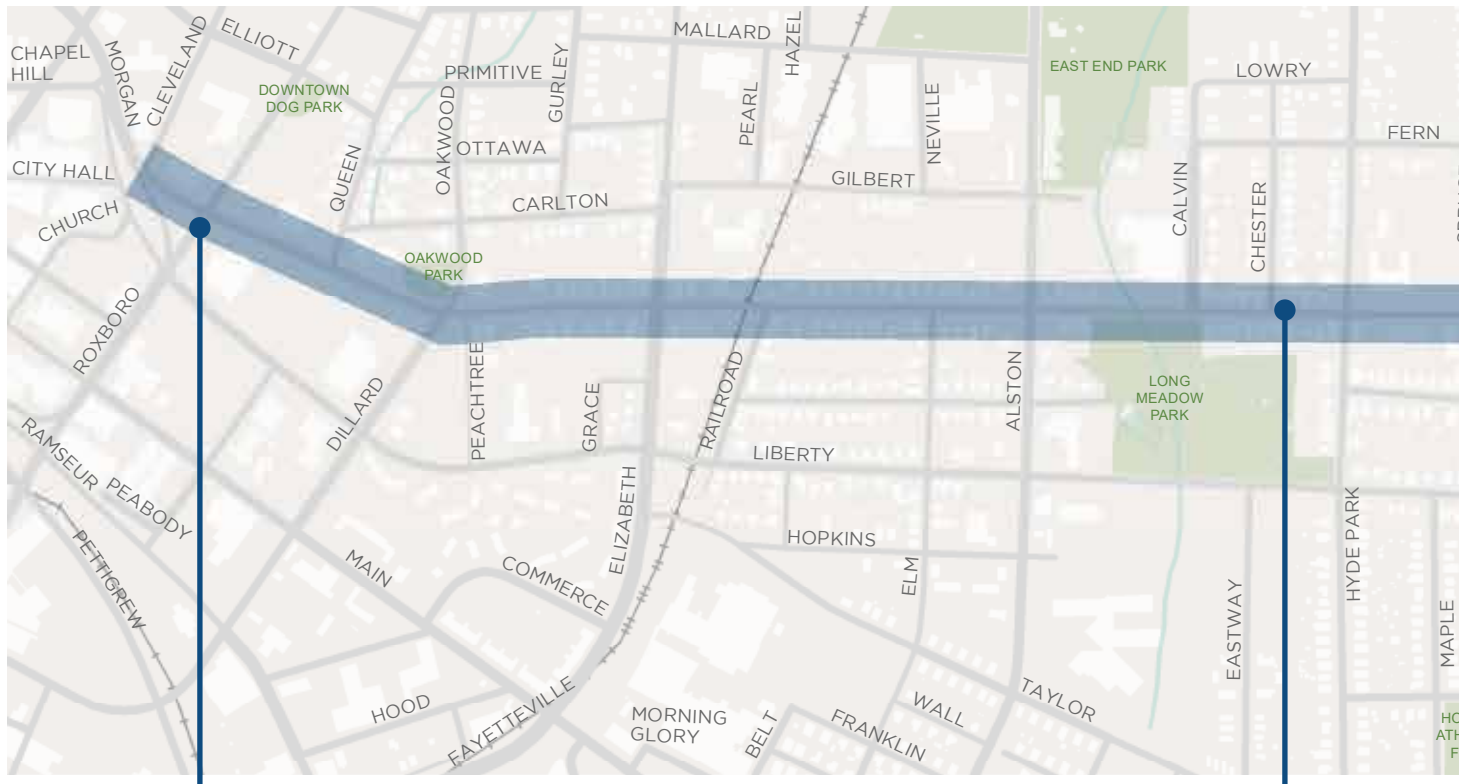


- 1 Severe crash between 2013 and 2017

Traffic volumes along Holloway Street are moderate to high. Average Annual Daily Traffic Volumes vary between 5,646 and 15,033. Traffic models forecast that many trips on Holloway could be diverted to the East End Connector. On-street parking exists along the corridor with varying rates of utilization.



HOLLOWAY ST



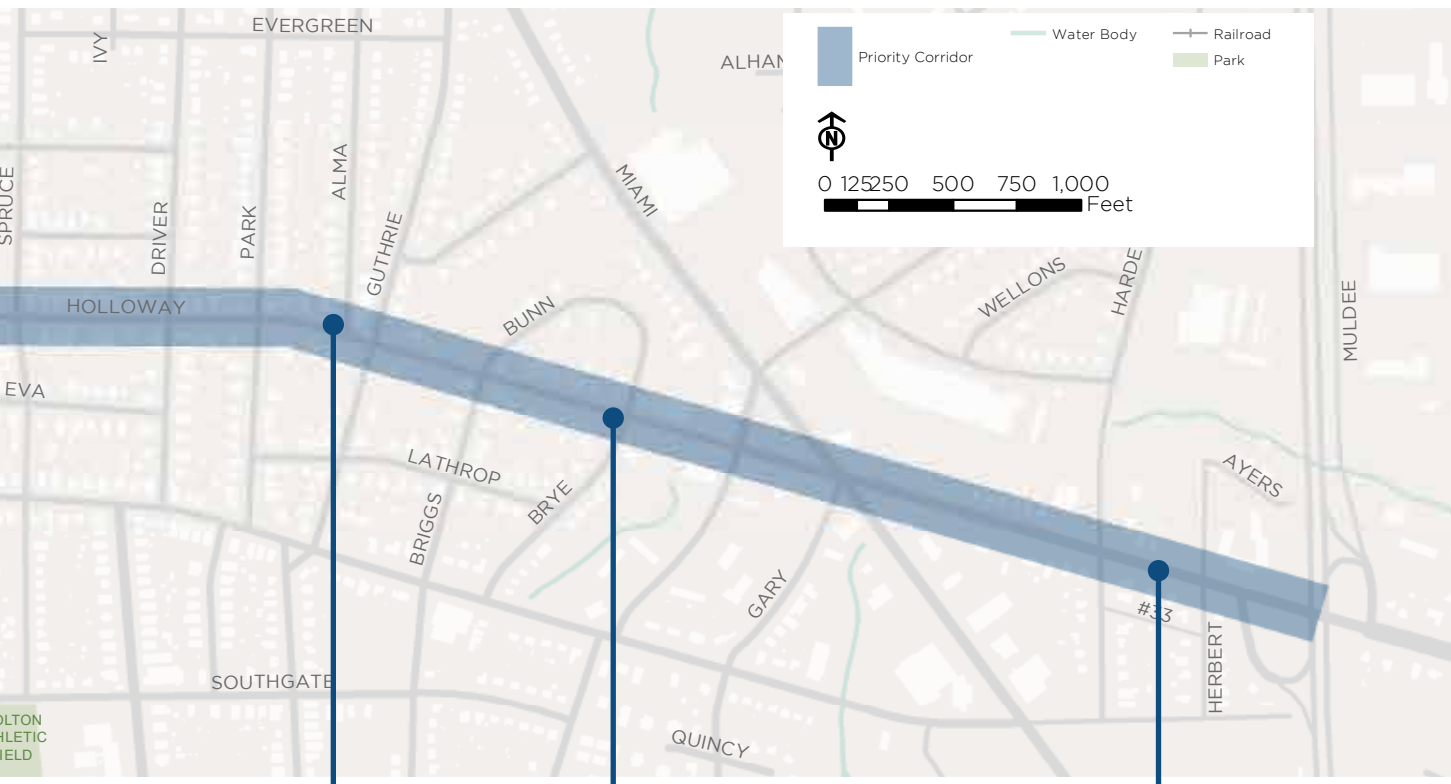
“Definitely [need] better walk/crossing areas around the Main Durham Public Library and the crossing of Holloway Street and Roxboro.”

“Cover the bus stops because it’s terrible to wait for the [bus] in the heat/rain, add bike lanes and offer classes/flyers to residents about bike/pedestrian safety.”

“I live on Holloway Street and it is very noisy. Traffic needs to slow down and emergency vehicles need to lower the volume of their sirens, especially in the middle of the night when there is little traffic. Often there are loud motorbikes. There is a need for better police presence on foot rather than in cars.”



A resident reviewing a Move Durham poster and filling out a survey at a Juneteenth event



“There needs to be sidewalks on both sides of the street. There are sections of Holloway Street a little further east that have no sidewalks at all. Walking down that street is risking your life.”

“More public transit and a light rail system. You need to connect downtown, East Durham, NCCU, South Point, 9th Street, Geer Street, Qshack/ Nana Taco area, Lakewood Crossing Shopping Mall, Duke West Campus, the area with apartment buildings like Poplar Manor/The Heights, RTP.”

“Reduced speed limit or other traffic calming measures. Garbage/ recycling/compost bins, better storm drainage.”

Community Engagement Summary



Online
Surveys

70



Paper
Surveys

173



Community
Events +
Presentations

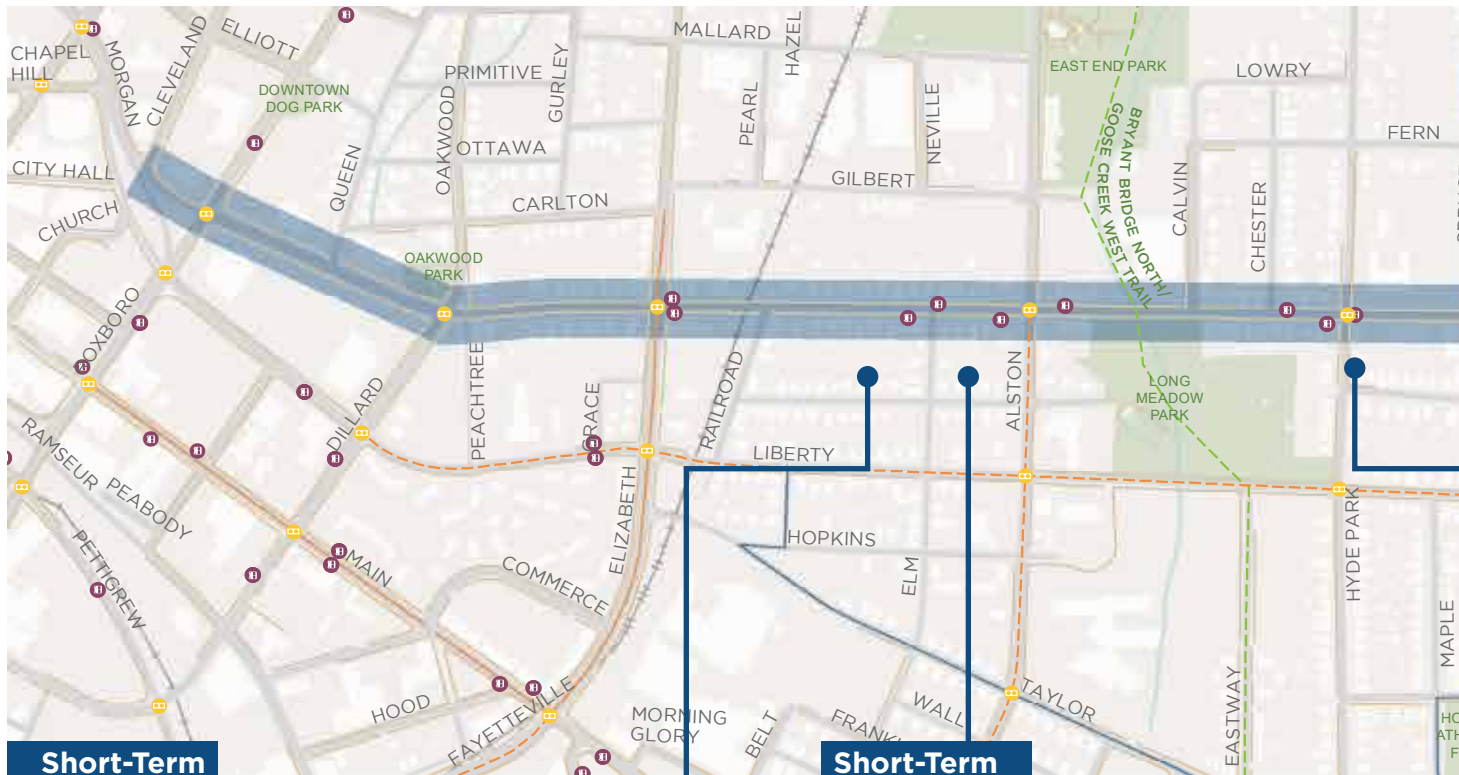
10

Themes

- Security concerns
- Sidewalks needed on both sides of the street
- Slower speeds and more traffic enforcement
- Better bus stops and transit service



HOLLOWAY ST



Short-Term

To ensure a safe transit experience, consider relocating bus stops from “near side” to “far side” of intersections so that pedestrian crossings are behind stopped buses. Where there is insufficient sidewalk space for passengers to wait, dedicated waiting areas and curb extensions should be considered to enhance the pedestrian experience, as visualized in the Oakwood Ave graphic below.

Short-Term

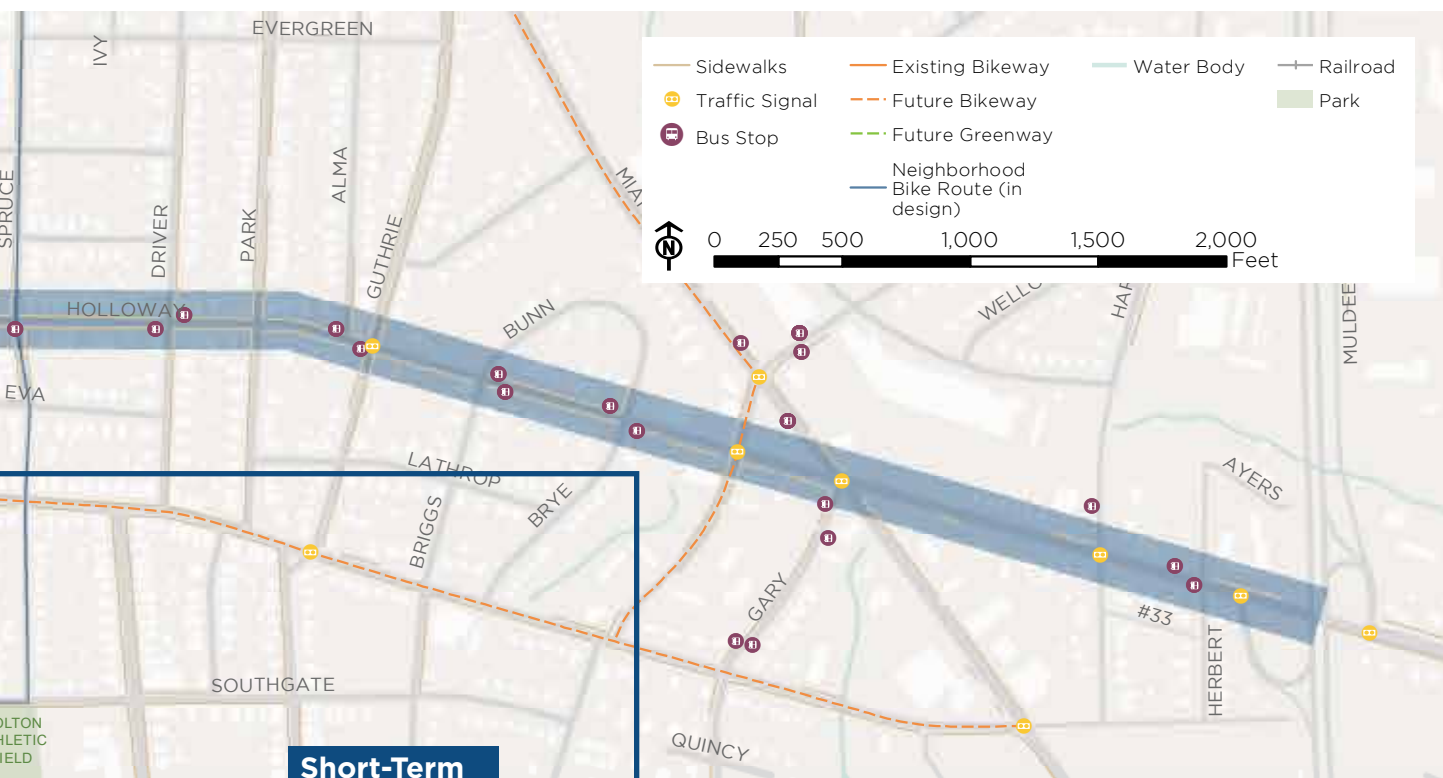
On the wider sections of Holloway Street, bus bulbs can prioritize buses by reducing their time spent pulling into and out of traffic. Transit Signal Priority and/or bus queue jump lanes can be considered at intersections to decrease the time it takes buses to traverse the corridor, further incentivizing transit use.

Short-Term Recommendations

- Repair sidewalks as needed
- Improve pedestrian crossings:
 - » High visibility crosswalks
 - » Include leading pedestrian intervals
 - » Ban right turn on red
 - » Enhance pedestrian signal timing
 - » Add curb extensions
- Improve bus stop amenities
- Implement a speed management plan with a target speed of 25 mph
- Add bike lanes where feasible such as the wider section of roadway in front of the library

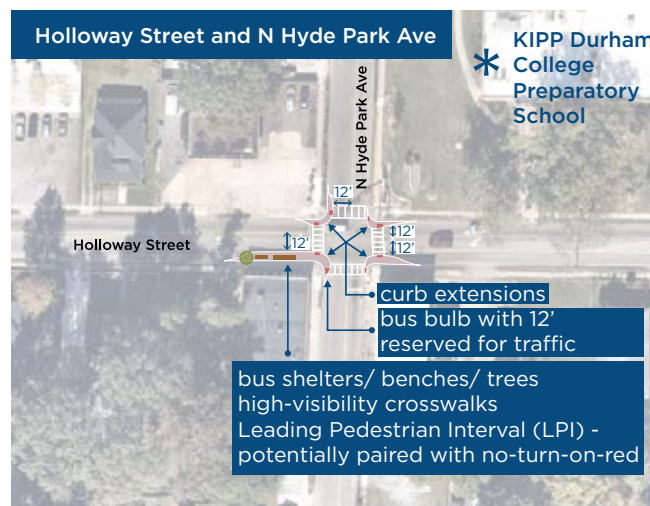
Long-Term Recommendations

- Fund and implement a Transit Emphasis Corridor on Holloway with Durham County Transit Plan funds to increase the speed and reliability of buses and improve access to transit



Short-Term

As visualized below in the below N Hyde Park Ave graphic, each bus stop should make use of shelters, benches, and street lights to provide riders with a protected place to wait. Other amenities such as planters and artwork could also be added at high-ridership bus stops to enhance the rider experience. Branding, route maps, route schedules, and stop names should be added to each stop to ensure riders have as much information as they need to understand how to use the transit corridor.



The graphics above are only concepts. More traffic analysis, design and engagement is needed to determine the ultimate cross-section of the corridor.



MANGUM ST, ROXBORO ST



**Main
Library**

**DPAC &
Durham Bulls
Athletic Park**

Downtown

**Old Five
Points**

Roxboro St

Mangum St

Duke Park

About

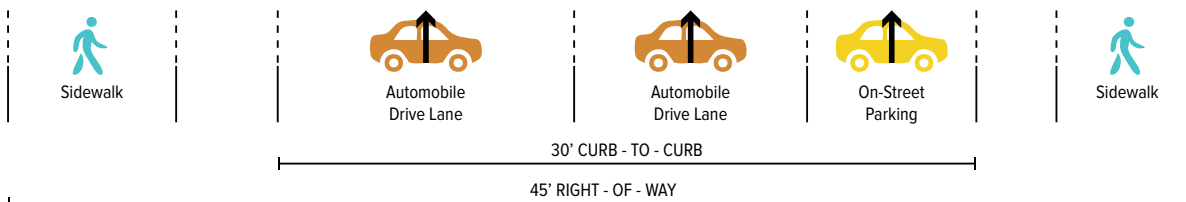
The one-way pair of Mangum and Roxboro Street, also designated as Business 15-501, are critical north-south corridors connecting downtown to northern Durham County. The four-mile corridors extend from just south of the Durham Freeway (NC 147) to I-85.

These streets provide primary access to downtown from NC 147 for visitors to the Durham Performing Arts Center (DPAC), Durham Bulls Athletic Park, and other cultural attractions.



Typical Section*

Roxboro Street



*Cross-Section Varies



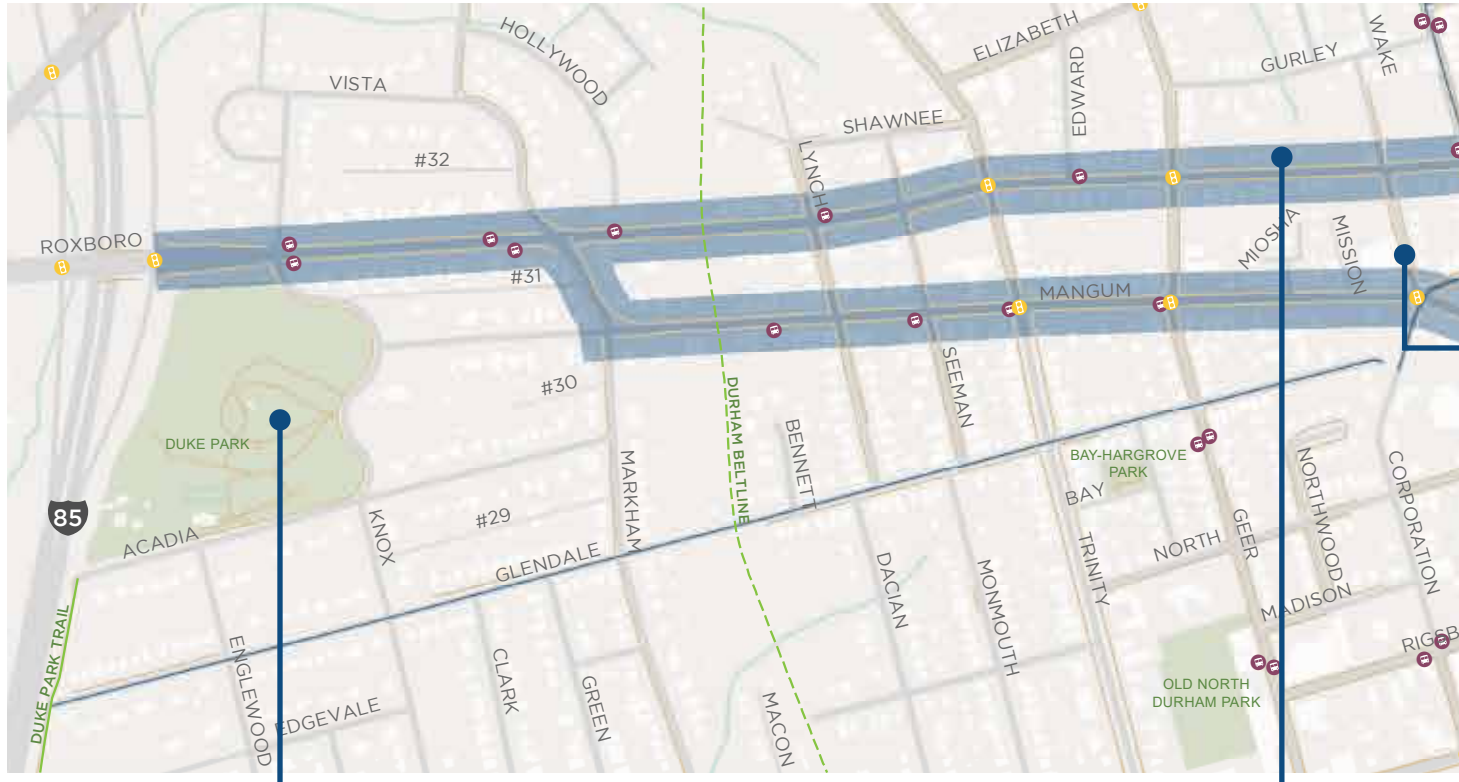
MANGUM ST, ROXBORO ST

From **W Lakewood Ave**

To **I-85**

Corridor Length (total miles) **3.8**

Average Annual Daily Traffic **8,620-18,093**



Mangum St and Roxboro St bisect the middle of the Duke Park, Old North Durham, and Old Five Points neighborhoods, and act as high-speed barriers that separate residents from amenities such as Duke Park, Bay-Hargrove Park, and Old North Durham Park.

The Cleveland Holloway neighborhood lies primarily to the east of these two corridors. This is a rapidly changing neighborhood that is close to downtown.

Transit



21 Bus Stops

18 Average weekday boarding/alighting at stops along the corridor

Transit passengers moving through corridor a day:

1,046 Roxboro St

1,014 Mangum St

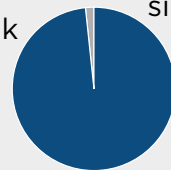
Roxboro St is the highest use transit route to northern Durham.

Pedestrian



0.1 miles Missing sidewalk

6.5 miles Existing sidewalk

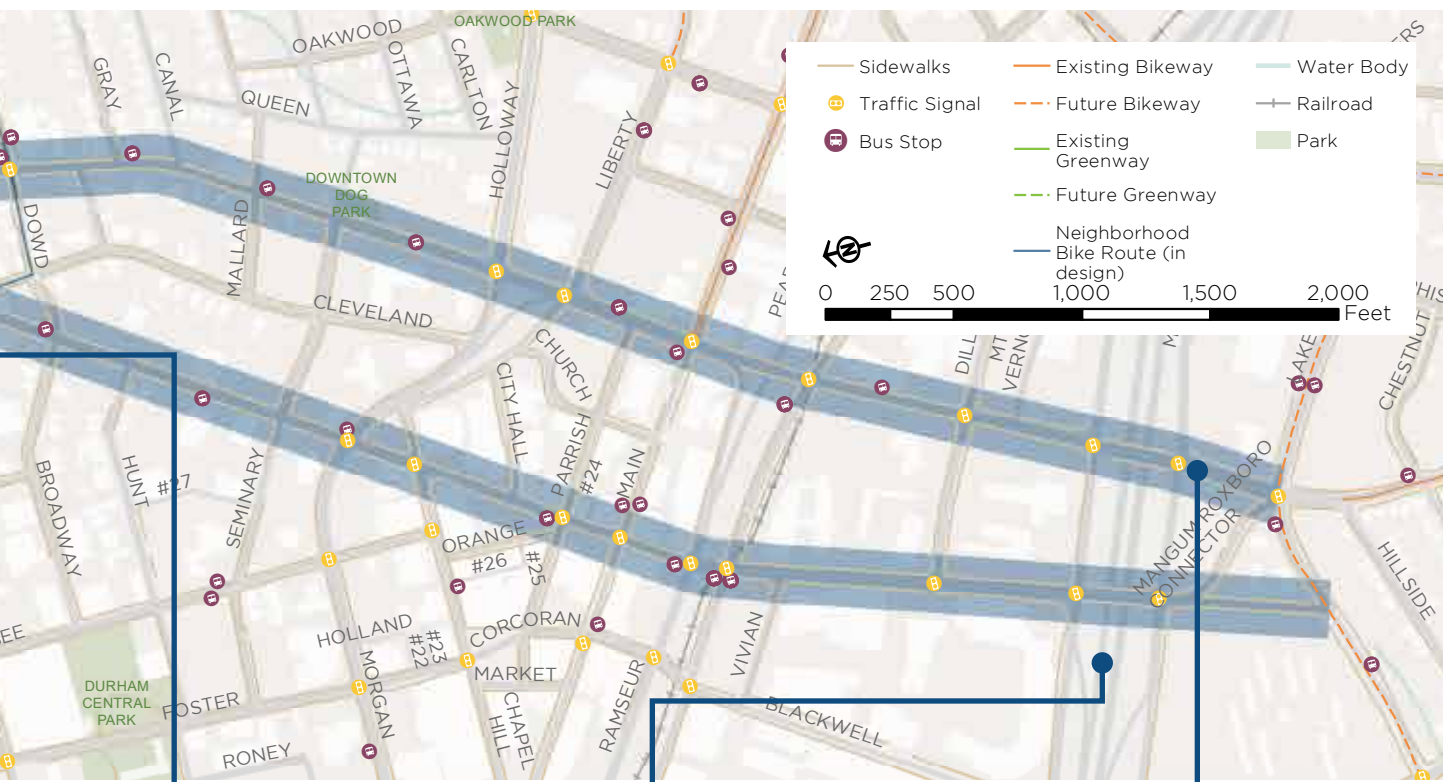


29 Pedestrian collisions (2007-2015)

Posted Speed Limit **25 - 35**

High Speed
Sections

- **Mangum from Broadway to Roxboro**
- **Roxboro from E Knox to I-85**



Mangum and Roxboro quickly transition south of Corporation Street into an urban context and business district in the heart of downtown.

Today, 7% of all southbound weekday driving trips on NC 147 use the Morehead exit, which feeds into the Mangum and Roxboro corridors.

At the southern end of the corridors, access from the nearby Southside neighborhood is challenging due to the narrow sidewalks on the Durham Freeway bridges and underpasses, and high traffic speeds.

Bicycle



0 Miles of bicycle facilities

15 Bicycle collisions
(2007-2015)

While it does not currently have a formal bike facility, many people use a wide striped parking lane on Mangum St to bike commute into the downtown area. The future Belt Line will intersect the corridors. The corridors parallel a planned neighborhood bike route on Glendale and connect to planned bike lanes on Lakewood to the south.

Auto



1 Auto fatality

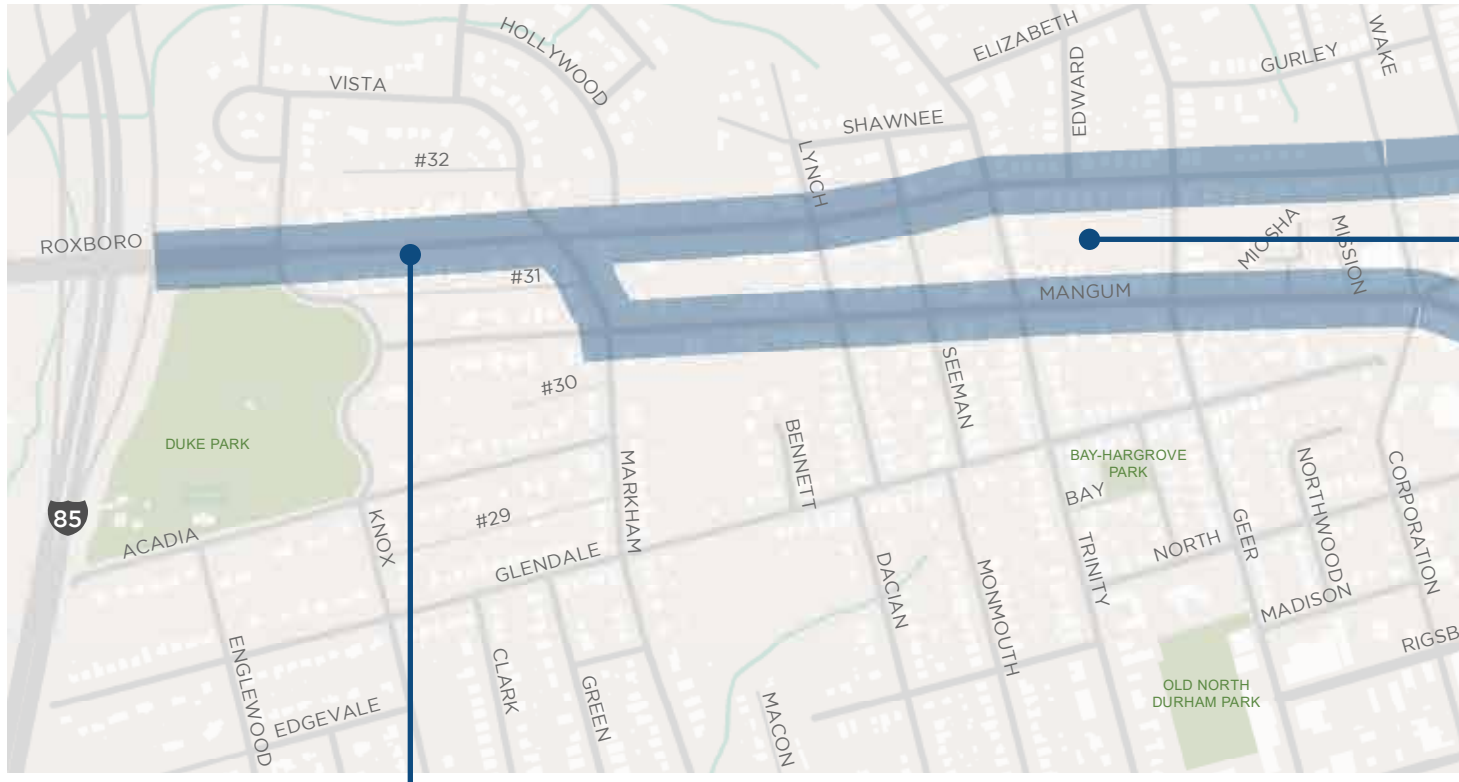
1 Severe auto crash
between 2013 and 2017

The corridors serve as commuter connections to downtown. Traffic models forecast that many trips on Mangum and Roxboro streets could be diverted to the East End Connector.

On-street parking on Roxboro St is primarily located on the northern portion of the corridor; while on Mangum St it extends into downtown.



MANGUM ST, ROXBORO ST



"We have three children under 10 years old. They love the playground and prefer to bike to school. BUT it is SO DANGEROUS to cross Roxboro during rush hour (and often all hours of the day) that we CAN NOT go to the park or bike to the Duke Park Bike Trail. Even at less busy times of day, we've been yelled at and honked at by people who don't want to wait on my kids to cross. I've had children fall in the cross walk and nearly be hit by impatient drivers trying to pass the person who has stopped to let us cross. The road widens from two lanes to four as you're approaching 85 and is on a hill. It needs very clear lights or a stop light in order to be safe."

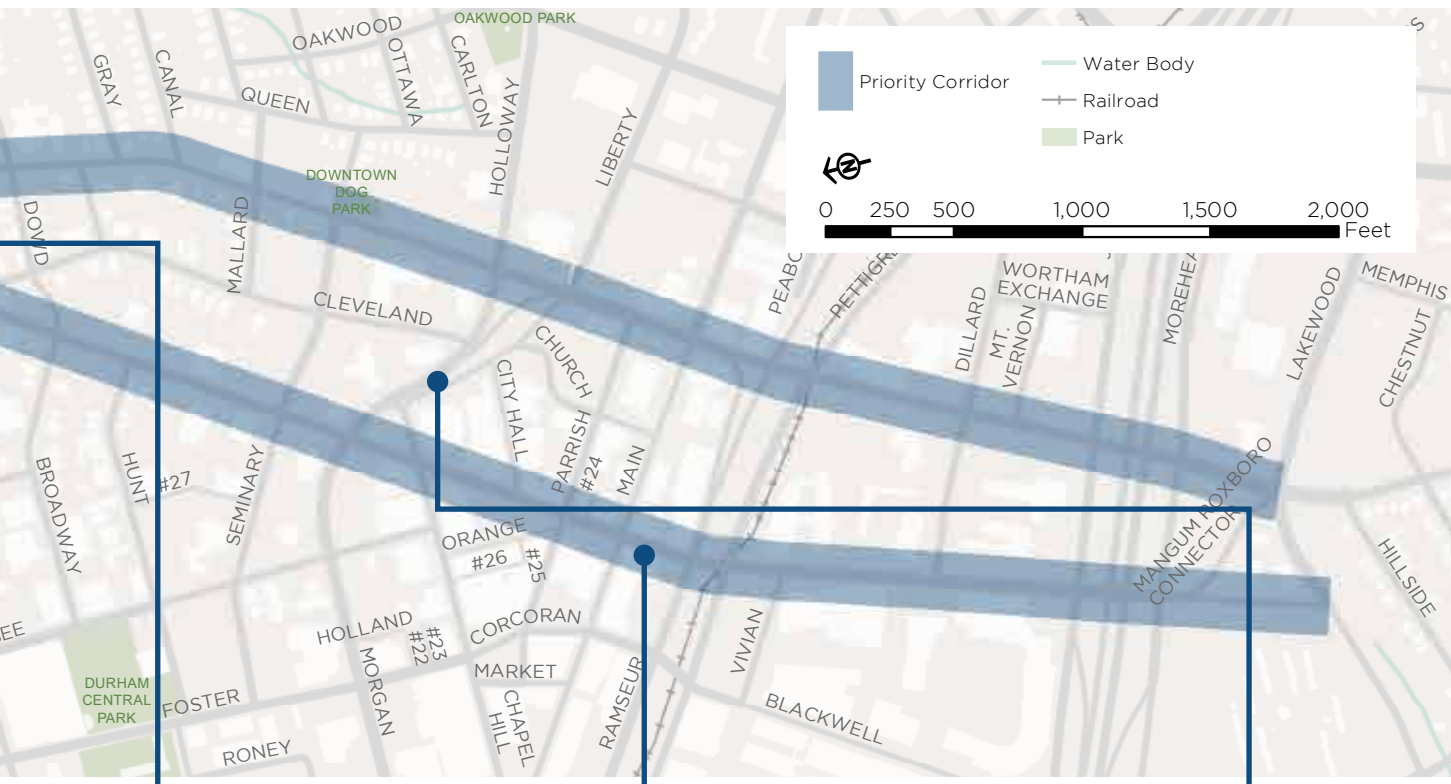
"The crossing at Roxboro/Knox St is impossible as a pedestrian or bicyclist during rush hour or at any hour for children. It is the only reason I can't allow my kids to go to Duke Park on their own, a 8 min walk from our house."

"Traffic needs to be slowed down on Mangum St!...I'm often walking less than 3' away from a car going 45+ mph. I can feel the surge of the air push me when a speeding car goes by. And safe sidewalks are needed on both sides of both streets - there's often a lot of trash and or broken or uneven pavement on the sidewalk."



Engagement at a Back-to-School event

"They need to be two-way *and* they need to have bike lanes. Too many of your proposed plans have on-street parking preserved, as if it were an ironclad requirement, when everything else seems open to discussion. Why?"



“North Roxboro and Mangum are too big, wide and fast. Neighborhoods are cut off from Durham b/c of these roads and their design.”

“The sidewalk on the east side of Mangum near Bar Virgile and parking deck is cracked, crumbled, truly a mess.”

“Crossings should always have a walk signal. Too many require a beg button for the walk signal to appear, requiring a full light cycle. Also, make these streets two way, and slow them down.”

Community Engagement Summary



Online
Surveys

240



Paper
Surveys

174



Community
Events +
Presentations

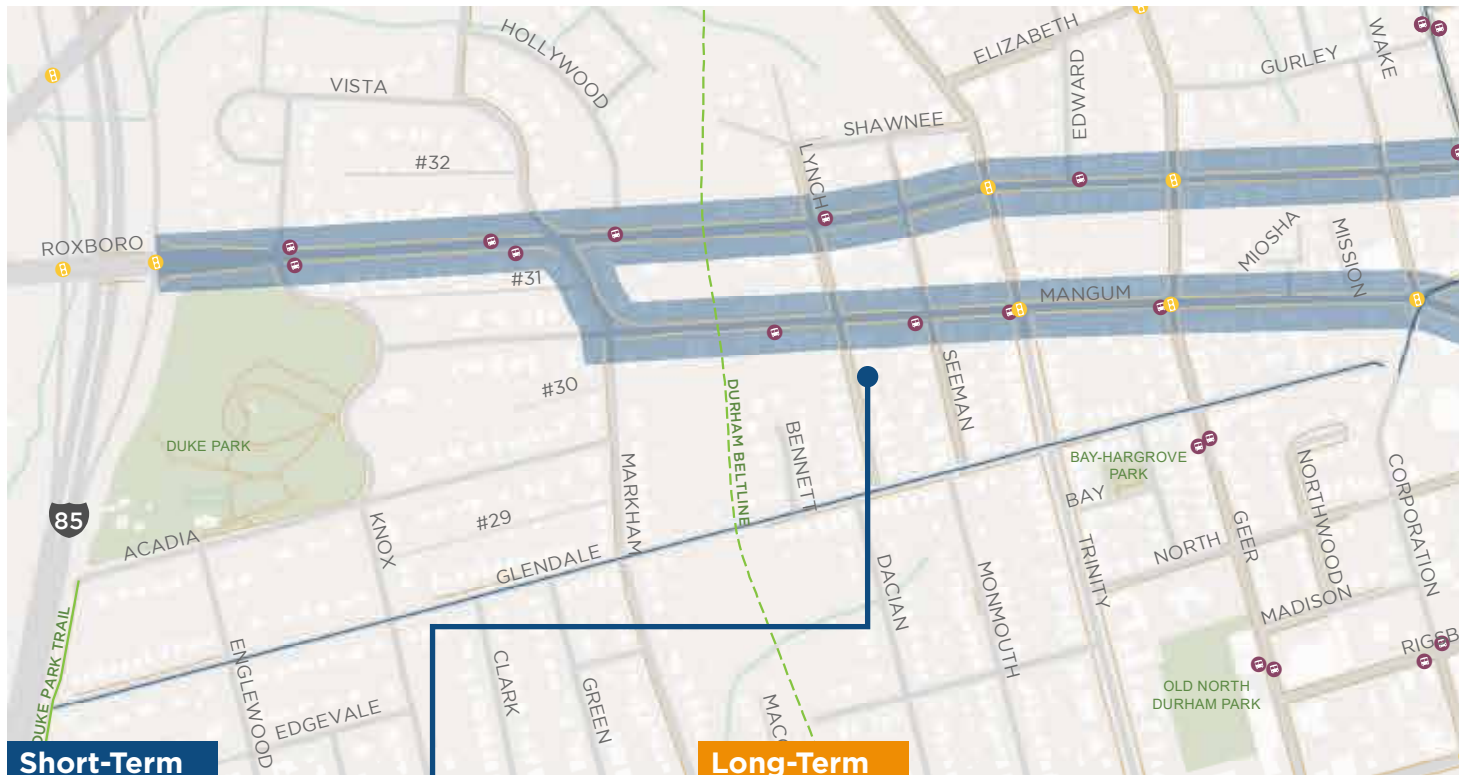
9

Themes

- Make these two-way streets
- Traffic calming
- Replace parking with bike lanes



MANGUM ST, ROXBORO ST



Short-Term

Crossing Mangum St and Roxboro St is challenging due to current traffic volumes and speeds, especially at uncontrolled locations. Upgrade existing crossings with high-visibility crosswalks and curb extensions. Evaluate the need for new mid-block crossing locations through field observation and public engagement.

Long-Term

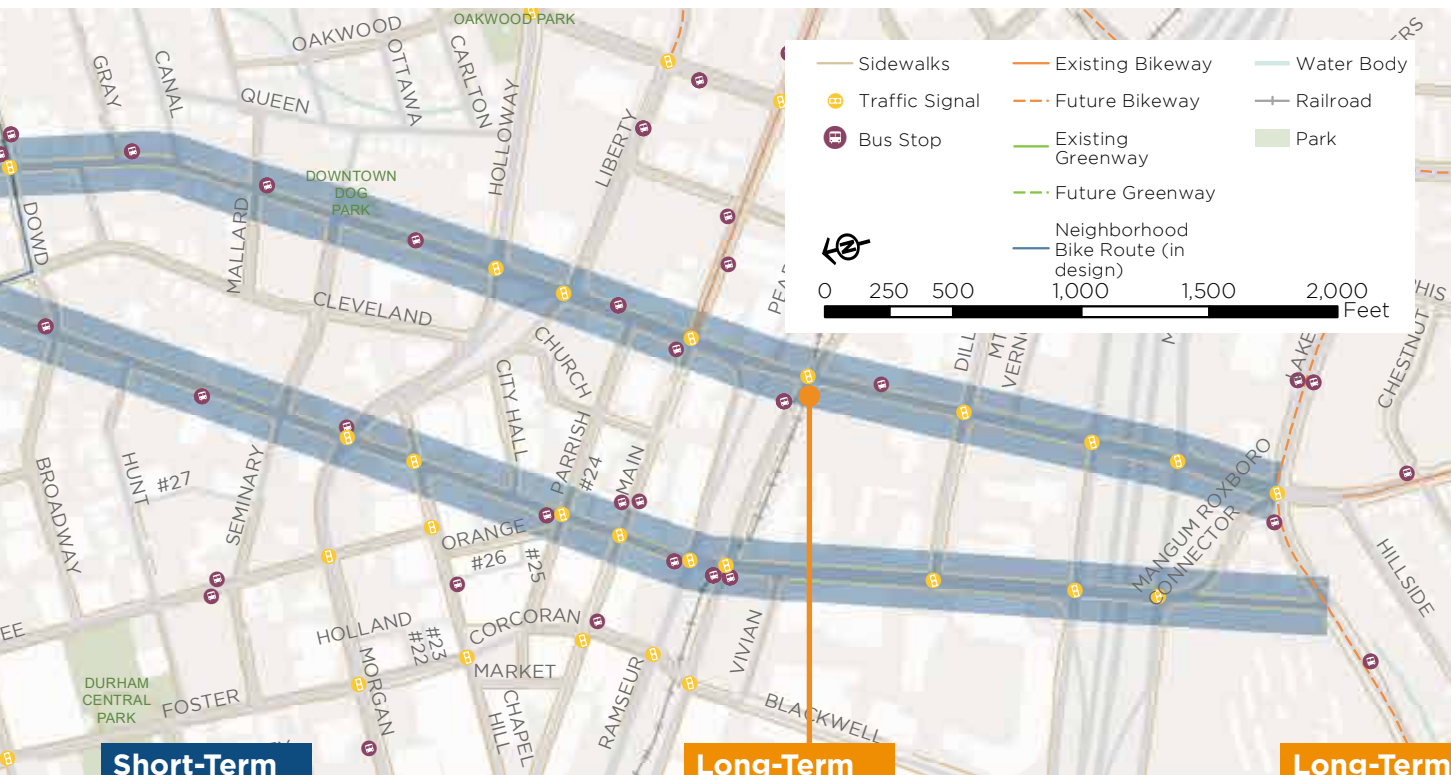
Explore the potential for high-frequency transit, such as a dedicated bus lane, transit signal priority, and bus rapid transit. One-way traffic with a dedicated bus lane could be considered as part of the Durham County Transit Plan.

Short-Term Recommendations

- Retain one-way traffic
- Improve bus stop amenities
- Implement curb management practices to balance on-street parking + loading zones in high-use areas
- Implement a speed management plan with a target speed of 25 mph.
- Repair sidewalks
- Convert a travel lane or parking lane to a bike lane with a buffer where feasible.
- Improve pedestrian crossings:
 - » High visibility crosswalks
 - » Leading pedestrian intervals
 - » Banning right turn on red
 - » Enhancing pedestrian signal timing

Long-Term Recommendations

- Convert the entire section of roadways to two-way traffic:
 - » Cross-section will vary based on context and opportunities
- Improve bicycle connections:
 - » Bicycle facilities may not be continuous and may be consolidated onto one corridor.
 - » Connect to Glendale neighborhood bicycle route and Belt Line Trail
- Widen sidewalks in high-use areas
- Explore potential for high frequency transit



Short-Term

Explore feasibility of adding bike lanes with flexible delineator posts

- Corporation and Morgan
- Roxboro St (between Lakewood Avenue and Elliot St.)
- Mangum St (between Pettigrew and Morehead)

Long-Term

Constrained cross-section under the North Carolina Railroad on Roxboro St will need to be evaluated in more detail during the design process. Two-way conversion may not be feasible without major bridge reconstruction.

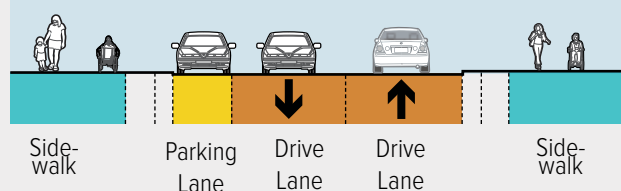
Long-Term

Convert a travel or parking lane to a bike lane with a buffer where feasible.

Long-Term Vision

The graphic below represents an section of a potential long-term vision. Further traffic analysis, design, and engagement is needed to determine the ultimate cross-section of the corridor. Due to shifting constraints and opportunities the cross-section varies at different points along the corridor.

Mangum St: Dillard St to Corporation St



Planning-Level Cost Estimate*

Construction Estimate.....\$5,000,000

Design Estimate.....\$740,000

**These cost estimates are subject to change during design and do not include right-of-way acquisition or intersection reconfiguration that will be needed with a two-way conversion project.*

Roxboro St: Dillard St to Elliott St

