DRAFT

SOUTH CHURTON STREET
MULTIMODAL CORRIDOR STUDY

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Prepared by:

Prepared by Town of Hillsborough Planning and Economic Development Division and North Carolina Department of Transportation Integrated Mobility Division with Stantec Consulting Services and Alta Planning and Design.

Acknowledgment:

This project would not be possible without the help from the Project Management Team:

- **Stephanie Trueblood**
  Town of Hillsborough: Public Space & Sustainability
- **Shannan Campbell**
  Town of Hillsborough: Economic Development & Zoning
- **Terry Hackett**
  Town of Hillsborough: Stormwater & Permitting
- **Bryant Green**
  Town of Hillsborough: Environmental Engineering Supervisor
- **Catherine Wright**
  Town of Hillsborough: Communications
- **Cheryl Sadgrove**
  Town of Hillsborough: Communications
- **Chuck Edwards**
  North Carolina Department of Transportation, Division 7
- **Brian Key**
  North Carolina Department of Transportation, Division 7
- **Patrick Wilson**
  North Carolina Department of Transportation, Division 7
- **Colin Mellor**
  North Carolina Department of Transportation, Project Management Unit
- **Nick Morrison**
  North Carolina Department of Transportation, Integrated Mobility Division

Thank you.

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"Thank you for your careful and thoughtful approach to the plan. Looks good & meets many needs of those who live, work, drive, and walk here.

- Final Open House attendee

"I want to see something that would beautify the corridor, not just cramming more and more stuff in there.

- Open House 2 attendee

"Less cars, more plants, more art, more resources for people who need it."

- Community Survey

What is a multimodal corridor study?

What does "multimodal" mean?

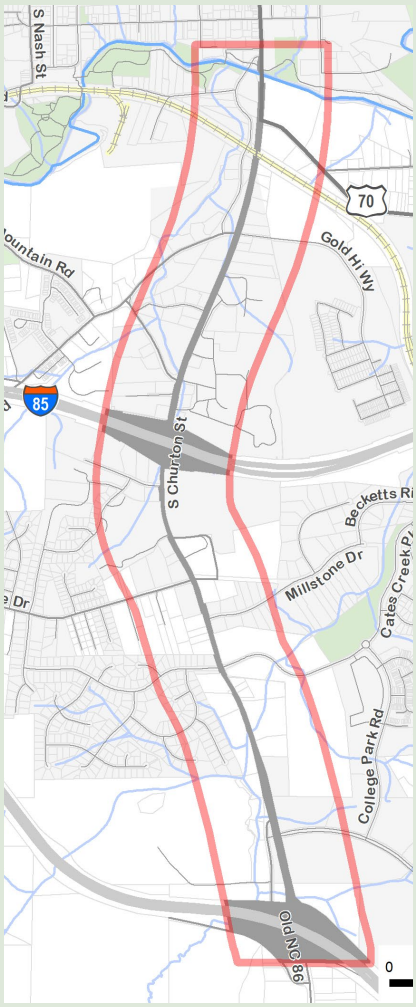
A multimodal street is designed for all users, not just drivers. This includes people walking, biking, and using transit. A multimodal version of South Churton Street would be easier, more convenient, and safer to cross the corridor, walk to businesses, or bike to and from destinations along the street.

This approach is not one size fits all – it's a process. Redesign of a roadway must be tailored to existing and future travel needs, as well as the surrounding development and land uses of the corridor and the community.

What is a "corridor study"?

The purpose of the South Churton Street Multimodal Corridor Study is to develop design concepts that (1) convey the Town's interests and (2) accomplish the goals of the NCDOT state-funded project. Objectives of this study are to create:

- **A safe corridor:** a design concept that incorporates safety countermeasures for all users at all levels of design.
- **An accessible corridor:** universal design principles improve accessibility for all users.
- **A multimodal corridor:** multimodal treatments should be developed for the length of the study area.
- **A sustainable corridor:** sustainability initiatives and best practices are incorporated throughout the project.



What was examined during this study?

Data analysis highlighted problems on South Churton Street.

Historic Districts: At the northern end of our study area, this corridor enters Hillsborough's historic downtown.

Demographics: Vulnerable groups live in the neighborhoods immediately south of I-85 along the corridor, notably higher proportions than the Orange County average for a) minority/BIPOC status (black, indigenous, persons of color) (50%), b) zero car households (16%), and c) households living below the poverty line (40%).

Land Use: Properties along South Churton Street include commercial, residential, office, and civic land uses, though all reflect its automobile-oriented design.

Natural Resources: This corridor is within the Cates Creek and Eno River watershed, with one flood hazard culvert crossing.

Utilities: Electrical transmission lines along the west side of the corridor are present, and an electrical substation easement crosses the northern portion of the corridor, near Orange Grove Road.

Crash Data: Fatal or severe injury crashes occur at a higher rate (1.34 times) along South Churton Street than along similar roads in North Carolina.

The community told us – we listened.

The project team held four in-person meetings to get feedback from the community. The team received vital feedback on project principles and objectives, which was used to refine key themes and principles that guide subsequent design phases of the planning process.

In addition to in-person meetings, the public shared their feedback through an online survey and an interactive map. We received **over 940 survey responses** throughout the project!

Focus groups shared innovative ideas and potential solutions.

Focus group discussions were conducted with several stakeholder groups along South Churton Street. These virtual meetings provided local insights and perspectives not captured by quantitative data while identifying areas of concern from everyday users of this corridor.

What are the study findings?

Finalized Guiding Principles

Car-centric corridors like South Churton Street need safe design treatments that improve walking and biking. Engineering design concepts were influenced by public engagement and data analysis, helping establish our five guiding principles:

1. **The safety of all users is paramount**
2. **Address reoccurring congestion issues**
3. **Right-size South Churton Street**
4. **Embrace environmental stewardship and sustainability**
5. **The corridor must support surrounding uses through attractive urban design**

A Concept Design

Discussed in detail in the full "Recommendations" chapter, the concept design shows how South Churton Street might be redesigned. This is a context-sensitive design that addresses multimodal needs of the corridor. The concept design includes:

- **Sidewalk along the entire corridor**
- **Shared use path from Mayo Street to I-40**
- **Midblock crossing with Pedestrian Hybrid Beacon**
- **Roundabout options at certain intersections** (Mayo Street, Rebecca Drive, Orange Grove Road)
- **Intersection redesign** (Cates Creek Parkway, John Earl Street)

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INTRODUCTION

CHAPTER 01

Introduction

South Churton Street and US 70 intersection.

The primary entrance to Hillsborough's downtown deserves an engineering redesign, one that is safe for all modes of travel and welcoming to visitors.

South Churton Street is the main north/south corridor through Hillsborough, connecting its neighborhoods, visitors and employees to downtown. More than 22,000 vehicles per day utilize this corridor, though few pedestrians or bicyclists are observed.

In prior years, the N.C. Department of Transportation (NCDOT) similarly examined the roadway capacity elements of South Churton Street and developed conceptual engineering designs to widen the corridor. The purpose of this project was to relieve traffic congestion and delays while providing north-south pedestrian and bicycle connectivity. Town administration, however, sought an alternative design option that serves the needs of the local community without a significant acquisition of additional rights-of-way (property).

This is a study about South Churton Street. Our Complete Streets planning process examines the transportation elements of the corridor, seeking a common vision for redesign and redevelopment along this important street. We have examined the approximately 2.8-mile section of South Churton Street from the I-40 interchange to the US 70-A intersection. The concepts and cross-sections developed by this process, in partnership with residents, town staff, and NCDOT Division staff, are intended to inform, but not replace, the State Transportation Improvement Program (STIP) project for South Churton Street (U-5845).

This Chapter Covers:

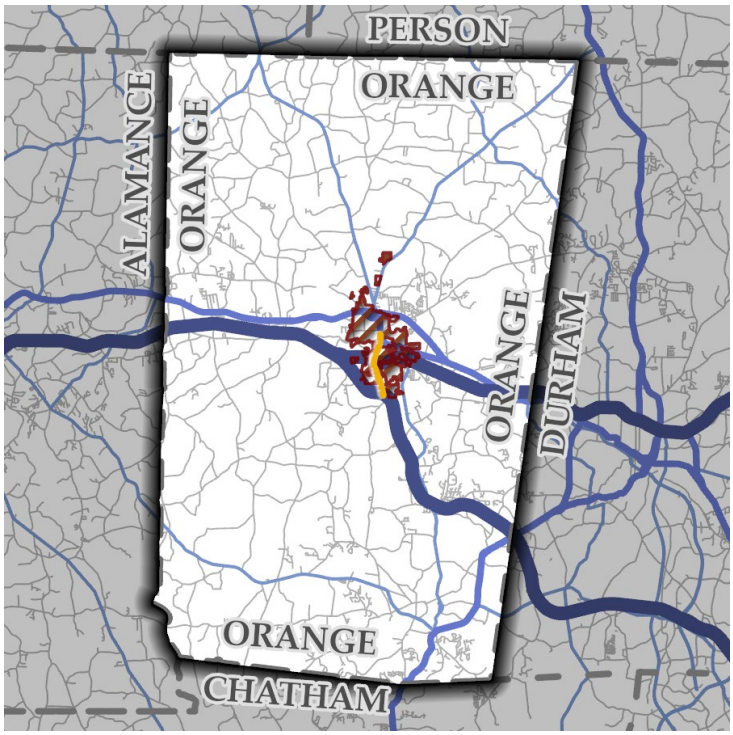
- About the Plan and Process
- Guiding Principles
- Plan and Policy Review

Multimodal refers to all forms of travel, including vehicular, freight, walking, biking, and transit.

About this Plan and Process

Where is the corridor?

South Churton Street is important to Hillsborough. It is the central "spine" of Hillsborough, connecting the town's neighborhoods to the downtown commercial district. It serves as NC 86 and US 70 Bus north of the Eno River. Within the study area, it is owned and maintained by the North Carolina Department of Transportation (NCDOT) and is one of the more heavily traveled roads in town. South Churton Street is the primary entrance into town from both interstates (I-40 and I-85), as well as neighboring towns to the south, Chapel Hill, Carrboro, and others.



NCDOT's Plans for South Churton Street

The current State Transportation Improvement Program (STIP) project proposes widening South Churton Street from I-40 to Orange Grove Road (U-5845), for the purpose(s) of:

- Relieving traffic congestion and delays on South Churton Street
- Providing north-south pedestrian and bicycle connectivity

In 2018-19, NCDOT prepared design alternatives, gathered feedback, and developed engineering concepts for a modified 'Alternative 4' widening project. A locally preferred alternative or typical cross section was not designated by the town at this time, and therefore the STIP project was paused. Town administration believes that a well-designed South Churton Street serves both the needs of the local community and the wider transportation network. Multimodal service and safety are paramount to the developing corridor. A quality design that enhances safety, improves traffic flow (at lower speeds), and allows for a beautiful entryway to town is needed.

Purpose

The purpose of the South Churton Street Multimodal Corridor Study is to develop design concepts that (1) convey the Town's interests and (2) accomplish the goals of the state-funded project. Objectives of this study are to create:

- **A safe corridor:** a design concept that incorporates safety countermeasures for all users at all levels of design.
- **An accessible corridor:** universal design principles improve accessibility for all users.
- **A multimodal corridor:** multimodal treatments should be developed for the length of the study area.
- **A sustainable corridor:** sustainability initiatives and best practices are incorporated throughout the project.

The concepts and cross sections were developed and refined with NCDOT partners and will inform the STIP project (U-5845) of the town's goals and preferred design treatments.

Planning Process

This plan was conducted in three phases (Figure 1.1):

Figure 1.1: Generalized Project Schedule.

Phase 1 - Outreach and Data Analysis

The first phase centered on data collection, preliminary review of the corridor, and beginning the public engagement process. The team worked with stakeholders to define the project purpose and goals. A website, survey, and online map helped collect (digital) public comments. Phase one included two public meetings held in June 2023, where community input was sought, and the planning team shared initial transportation observations. Key takeaways from this phase informed the development of the Preferred Access Plan (PAP), the foundation for future design work.

Phase 2 - Discussion and Draft Recommendations

Phase two began immediately following the Outreach and Data Analysis phase. The team condensed data, public comments, and background information to inform preliminary planning, engineering, and design recommendations. Many of these draft recommendations were developed during a multi-day design workshop in September 2023. This workshop served as a large, interactive planning event providing stakeholders the opportunity to review and influence concept designs in real-time. During phase two, the initial concept design for the corridor was first sketched and refined with our partners.

Phase 3 - Final Recommendations and Reporting

The final phase documented the work of the planning process. Using plans, materials and designs produced throughout the study, the final report shares design recommendations, data analysis that informed those recommendations, and the planning process itself. This document serves as a resource for the Town of Hillsborough and stakeholders in subsequent engineering phases of this complete streets process.

The final public open house was held in December 2023, presenting the final recommendations, closing the project and capping a productive collaboration between the community, NCDOT and local planning agencies.

Guiding Principles

This planning process follows a set of guiding principles which were informed by data analyses (Chapter 2: Investigation) and public outreach (Chapter 3: Engagement).

Key themes emerged, which align with the town's vision and strategy from the Comprehensive Sustainability Plan (CSP), influenced decisions between competing or conflicting interests during the design process, and informed the following guiding principles:

1. **Safety of all users is paramount.**
2. **Right-size South Churton Street for all users.**
3. **Address reoccuring congestion issues.**
4. **Incorporate environmental stewardship and sustainability.**
5. **Support surrounding land uses through attractive urban design.**

Plan and Policy Review

This study was shaped by the significant planning efforts the town has completed to date, as well as the prior NCDOT roadway capacity analysis. A brief summary of the following are included to provide context and links to more information.

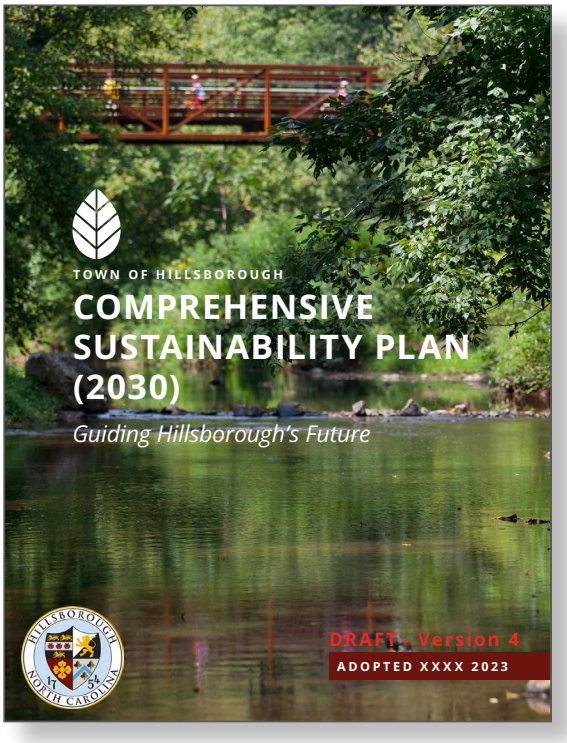
PLANS REVIEWED
Comprehensive Sustainability Plan (2023)*
Future Land Use Plan (2013)*
NCDOT Plans (various)

**Town plans are available for review here: https://www.hillsboroughnc.gov/government/plans/*

Comprehensive Sustainability Plan (2023)

The Comprehensive Sustainability Plan (CSP) establishes goals, strategies, and actions to guide the town toward a sustainable future and centers around eight focus areas. Transportation and connectivity are one of these eight focus areas, detailing infrastructure needs as well as proposed improvements for access and mobility. Each chapter contains themes surrounding equity, affordability, safety, connectivity, and health, along with specific strategies and actions.

- **GOAL:** guide future plans and development while transitioning to clean energy, balancing environmental stewardship, resiliency, and racial justice with smart, strategic growth that will allow for a thriving economy and high quality of life for the community.
  - *Transition to clean energy*
  - *Environmental stewardship*
  - *Resiliency*
  - *Racial justice*



ZONING AND LAND USE

Much of the South Churton Street corridor is identified as a "potential growth area," straddling both the (Eno) River sewer basin and the Elizabeth Brady sewer basin. The CSP notes that the Elizabeth Brady sewer basin has more capacity at present to accommodate new development. Planned growth and development will influence or expedite water and sewer capacity improvements, as identified within the CSP, suggesting these are potential limiting factors for redevelopment opportunities along South Churton Street.

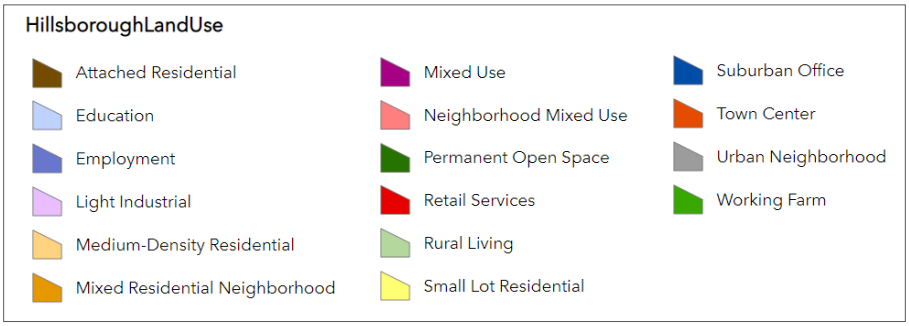
- **IMPACT TO THIS STUDY:** redevelopment of property along South Churton Street should consider wastewater capacity differences between the Eno River and Elizabeth Brady basins.

FUTURE LAND USE PLAN (2013)

The CSP incorporates, updates, and/or replaces several plans that precede it, including Hillsborough's Future Land Use Plan. The plan provides additional context about expected future growth, defining 16 unique land use categories.

South Churton Street's expected future land use reflects much of the existing development. North of I-85, land uses are predominantly retail businesses (red) with some mixed-use development (magenta) anticipated near the future train station. Of note, the proposed site for the station is presently zoned as Agricultural Residential (AR). South of I-85, future land uses within the designated "growth area" of the Sustainability Plan include retail services, mixed-use development similar to a village center, and "employment area," which anticipates a number of potential commercial and light industrial uses.

View and explore the Future Land Use Plan HERE.



***Future Land Use Map (2013)**, showing a number of uses along South Churton Street, including Mixed Use, Retail Services, General Employment, Suburban Office, and even Permanent Open Space.*

Noted Goals, Strategies, and Actions:

1. Invest in public projects that reinforce preferred future land use and growth patterns.
   - Upgrade and maintain existing infrastructure and facilities.
2. Align land use and development regulations with preferred future land use and growth patterns.
   - Incorporate green infrastructure and low-impact development practices.

ENVIRONMENTAL & NATURAL SYSTEMS

The South Churton Street corridor intersects two water bodies – the Eno River and Cates Creek (which is a tributary of the Eno River). Rainfall and stormwater runoff from this corridor will eventually flow into these sensitive bodies of water. Also located along the corridor is the Cates Creek Hardpan Forest, a 7-acre natural area, designated by the North Carolina Natural Heritage Program (NHP).

IMPACT TO THIS STUDY: designs should avoid impacts to sensitive natural areas and explore ways to implement green infrastructure to mitigate stormwater runoff quantity and quality. runoff impacts.

Noted Goals, Strategies, and Actions:

1. Invest in public projects that protect the environment and natural systems.
    - Implement green infrastructure projects on town-owned and maintained properties.

TRANSPORTATION & CONNECTIVITY

This chapter notes future widening of Churton Street as an existing boulevard that needs improvement, and redesign of the I-85 interchange as future projects in the 2050 Metropolitan Transportation Plan (MTP). Other nearby projects impacting the corridor include new location roadways connecting to the Collins Ridge development, as well as the proposed Amtrak train station. The GoTriangle Transit Plan re-routes the existing Route 420 providing service to Hillsborough onto Churton Street rather than its current route along NC 86/70 to the east.

The plan highlights the following transportation priorities in order of importance:

- Improving multimodal connectivity
- Relieving traffic congestion
- Expanding sidewalk infrastructure and access

The CSP recommends connecting sidewalks along the entirety of South Churton Street, from just south of Margaret Lane to the I-40 interchange. To provide bicycle connectivity, the CSP recommends constructing on-road facilities such as bike lanes, along with developing the Ridgewalk Greenway to extend southward near the Eno River and connect with Cates Creek Parkway.

- **IMPACT TO THIS STUDY:** Hillsborough's vision for Churton Street is a major, multimodal thoroughfare that connects neighbors and residents within Hillsborough and the region. Conceptual designs will expand upon multimodal recommendations from the CSP.

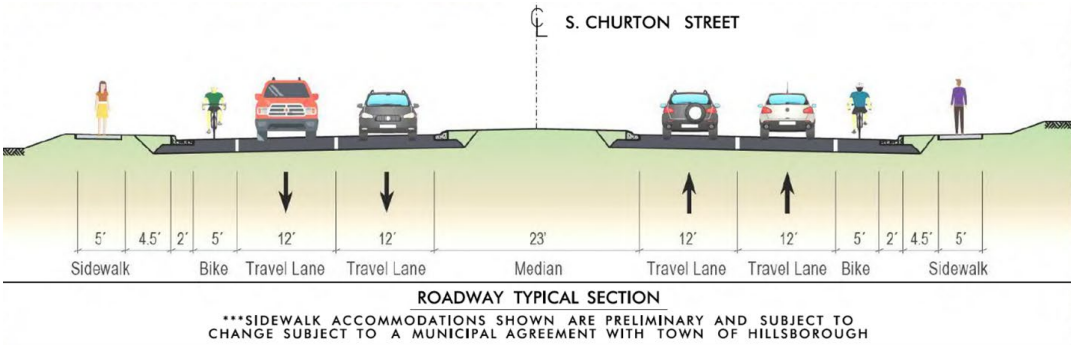
North Carolina Department of Transportation Project #U-5845

As a state-owned route, the NCDOT has examined the existing traffic capacity of this corridor, reviewed potential future traffic deficiencies, and prepared alternatives that improve traffic capacity, operations, and multimodal connections. These strategies are reflected in the STIP-funded projects U-5845 (corridor) and I-5967 (Interstate 85 exit ramps). Improvements to the I-85 interchange at South Churton Street are under construction. Improvements to the corridor, however, are still being developed and finding consistency between the department's objectives and the town's preferred alternative is one of the key goals of this planning study.

U-5845 proposes widening South Churton Street from its existing two-lane and three-lane cross-section to a consistent four-lane, median-divided roadway that can meet current and future (2040 design year) traffic demand projections. A 23-foot center median and 5-foot on-street painted bike lanes were recommended for this proposed 45 mph corridor. Standard 5-foot sidewalks are also provided along both sides north of I-40. At the Orange Grove Road signalized intersection, the road would transition to a two-lane cross-section as South Churton Street approaches downtown Hillsborough.

Notable in this design:

- Right-of-Way Impacts: Widening the roadway to a four-lane, median divided cross-section will require taking significant amounts of property for adjacent properties along the corridor.
- Multimodal considerations: For a roadway with higher traffic volumes and a design speed of 45 mph, on-street bike lanes are not considered safe accommodations per the FHWA Bikeway Selection Guide (2019).
- Sustainability impacts: The design lacks green infrastructure for managing stormwater, and widening the roadway will generate more runoff.



NCDOT proposed roadway typical section U-5845.

INVESTIGATION

CHAPTER 02

Investigation

South Churton Street heading north towards I-85.

This study seeks to improve the overall mobility of all users. is The vision for South Churton Street is to be a safe and efficient roadway for motorists, transit users, bicyclists and pedestrians as a complete street, which aligns with the town's sustainability and mobility goals.

This chapter examines South Churton Street as it currently exists, including environmental features, demographics, land uses, natural resources, utilities, modes of travel, and crashes.

This Chapter Covers:

- Environmental context
- Built context
- Transportation context

Environmental Context

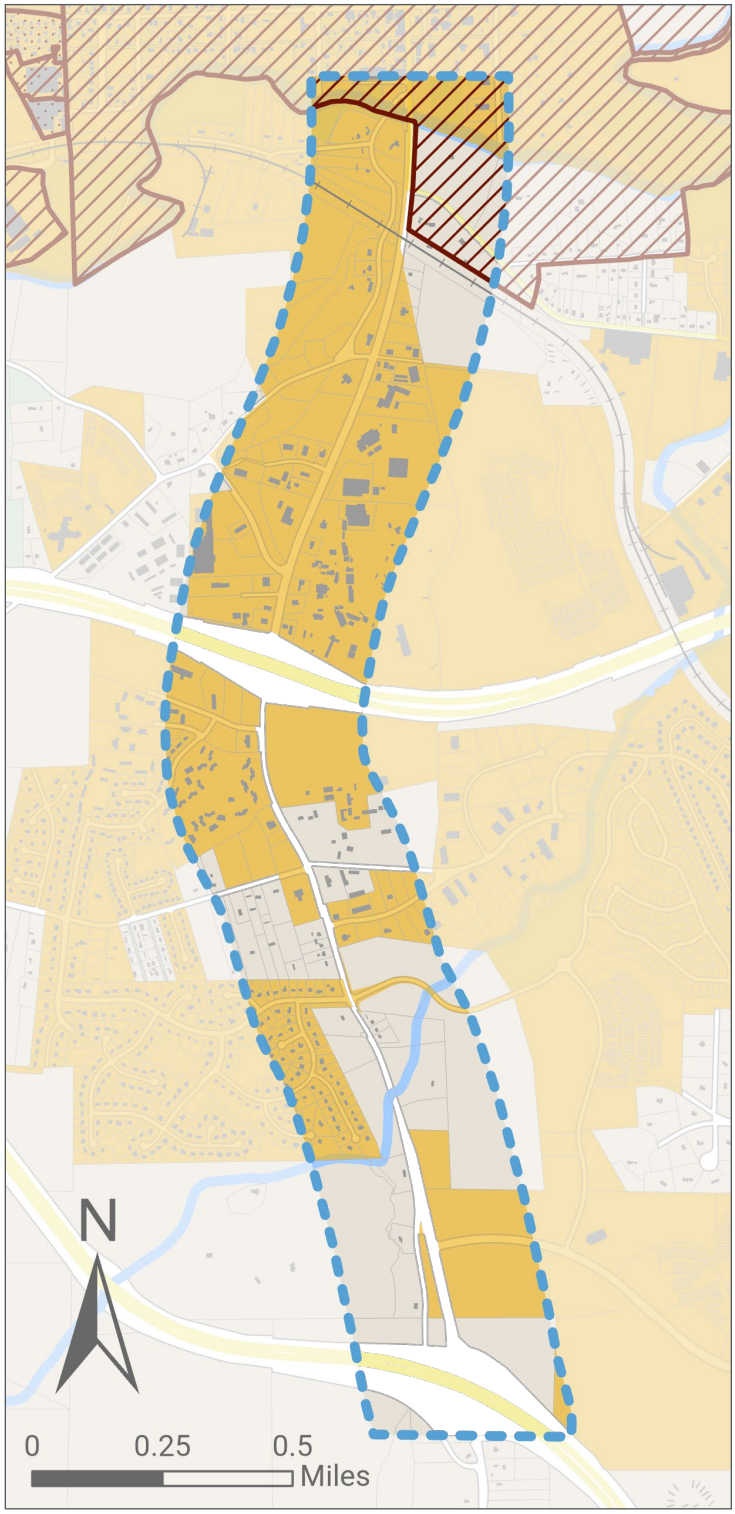


Figure 2.1: Municipal boundaries and historic districts.

Municipal Boundaries and Historic Districts

Beginning at the southern end of the study area, South Churton Street transitions from lower-density and rural Orange County into suburban, automotive-oriented land uses. Portions of the roadway are within Hillsborough and Orange County jurisdictions, a pattern which may change over time as properties are developed and annexed into the Town of Hillsborough. At its northern extent, South Churton Street serves as a gateway Hillsborough's historic downtown, a slow-speed, denser urban area with walkable storefronts and public spaces.

Demographics

Along South Churton Street, there remain unmet mobility needs for some vulnerable populations, also referred to as transportation disadvantaged. These groups reside within the neighborhoods immediately south of I-85 along the corridor (Fig. 2.2). A review of the NCDOT Transportation Disadvantage Index (TDI) suggests that residents in this vicinity are more likely to be Black, Indigenous, People of Color (BIPOC), have higher rates of poverty, or lack household access to a vehicle than Orange County or state averages.

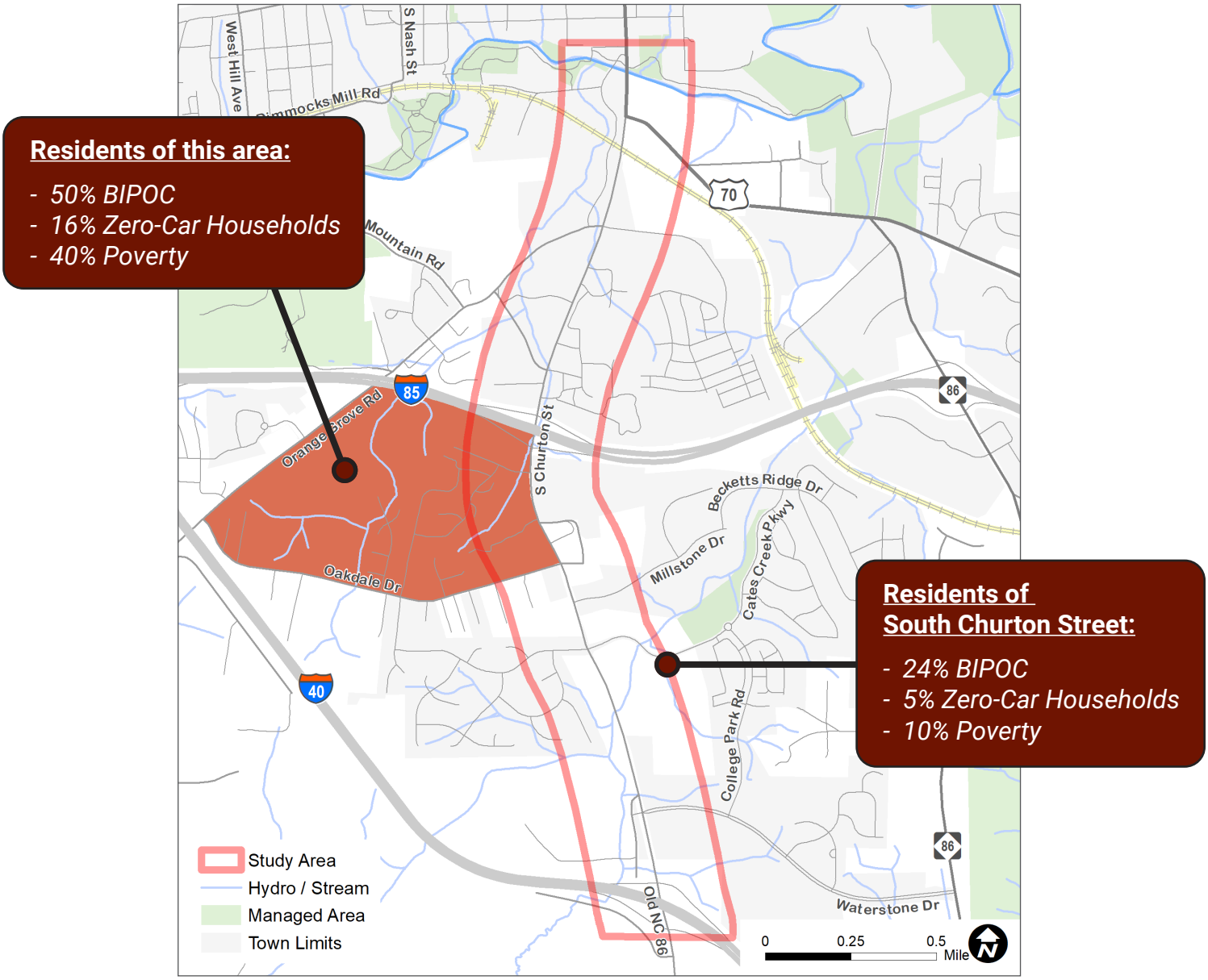


Figure 2.2: Transportation-Disadvantaged Populations Index, South Churton Street.

Land Use

Existing land uses along South Churton Street reflect its automobile-oriented design. Between I-40 and I-85, retail and commercial properties dominate the landscape with numerous driveways and curb cuts, each representing a potential point of conflict with pedestrians or other vehicles. Building setbacks along South Churton Street vary in depth from the roadway creating a very broad visual landscape for drivers, which can lead to distraction or confusion and contribute to safety issues. Residential neighborhoods are prevalent behind the corridor, with more residential development planned or under construction.

With homes near daily needs (like groceries or medical), the potential demand for biking or walking is greater, and so is the need for connected sidewalks and safe crossings. The South Churton Street corridor also lacks shaded areas, particularly in the northern section between the interchanges. Fewer shade trees contribute to an uncomfortable pedestrian environment, further discouraging active transportation like walking or biking.

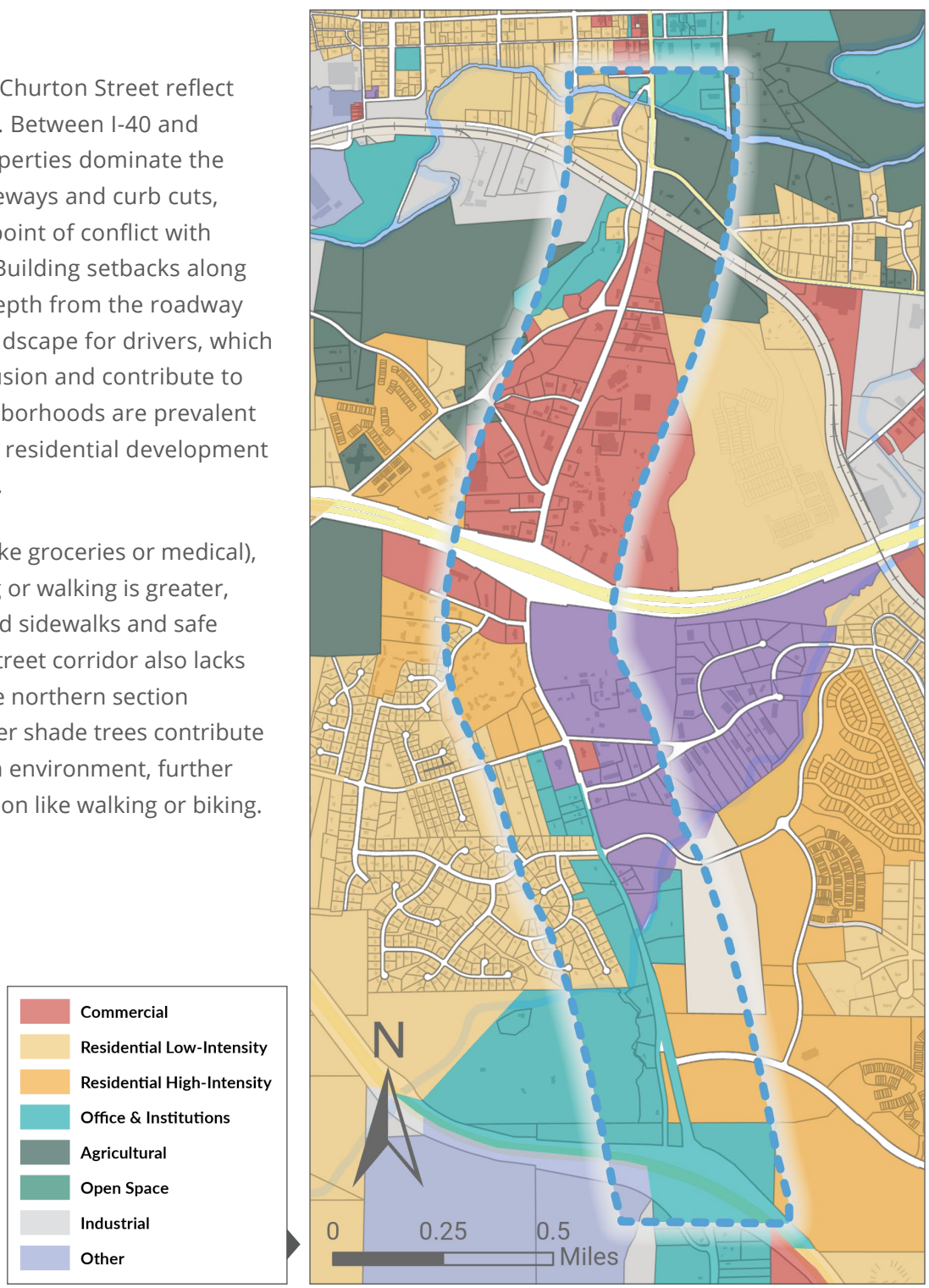


Figure 2.3: Land use map.

Natural Resources

Along the nearly three miles of corridor in the study area, a surprising number of natural resources are present, including streams, waterbodies, flood hazards, and designated natural heritage areas:

HYDROLOGY:

The Eno River is at the northernmost extent of the study area. Rainfall and stormwater runoff from much of this area drains into river and conservation of this resource is a central component of the Sustainability Plan. Further south, the corridor also crosses Cates Creek with two large culverts between Waterstone Drive and Cates Creek Parkway. Rainfall and stormwater runoff within this southern extent drains into Cates Creek, which then drains into the Eno River further downstream.

Stormwater runoff pollution is North Carolina's greatest water quality problem and of particular concern in Hillsborough due to the sensitive Eno River. The Eno River empties into the Falls Lake Reservoir, which is one of several drinking water supplies for the City of Raleigh. The reservoir becomes the Neuse River below the dam, which then flows downstream to become the drinking water supply for the communities of Clayton, Selma, Smithfield, Goldsboro, and Kinston, before emptying into the Pamlico Sound at New Bern. Maintaining water quality of the Eno River upstream has a valuable impact on the drinking water quality of North Carolina communities downstream.

Strategies for slowing and treating stormwater runoff are often termed "green infrastructure" and are discussed further in the Recommendations chapter (4), as well as the town's Comprehensive Sustainability Plan (Environment and Natural Systems chapter).

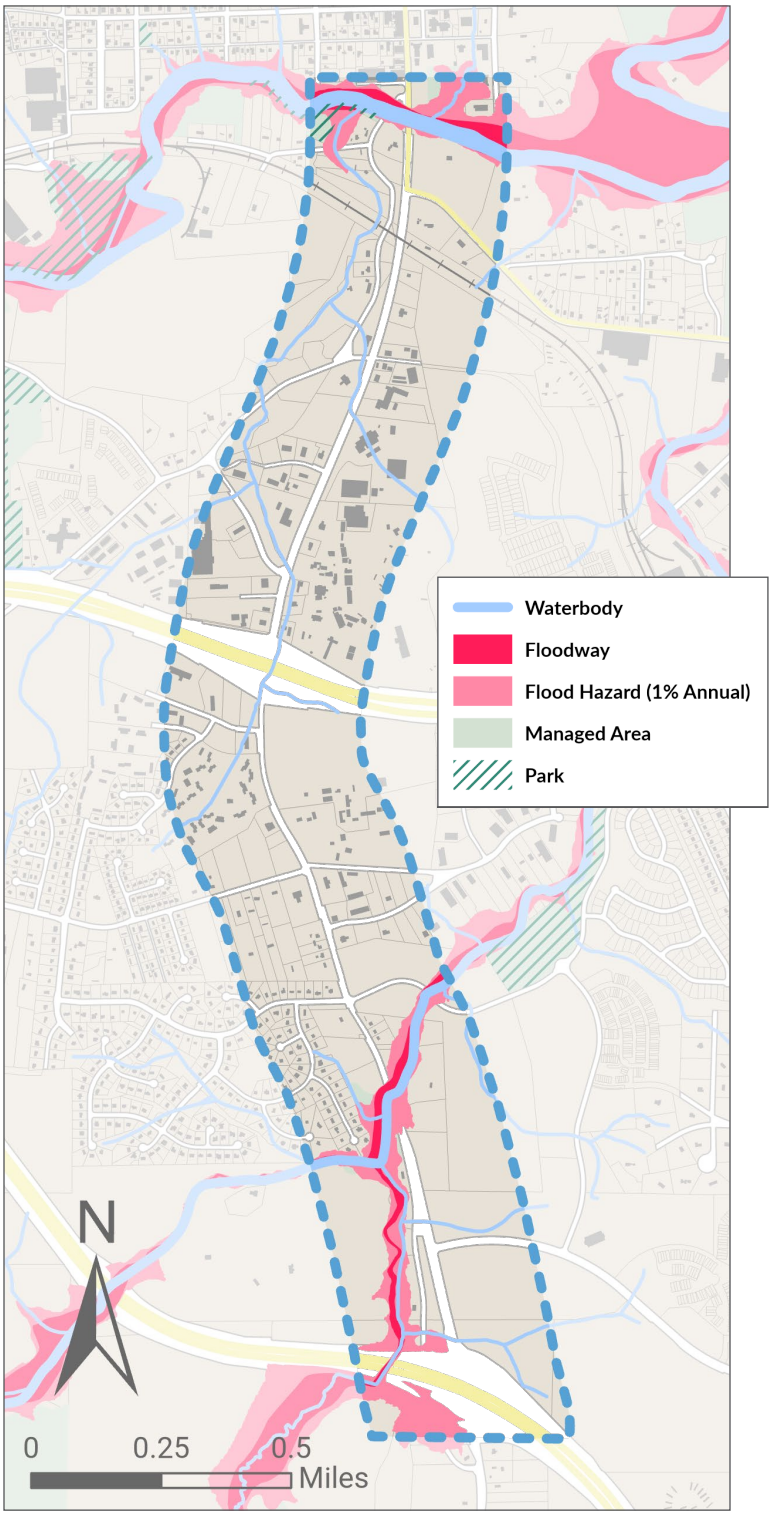


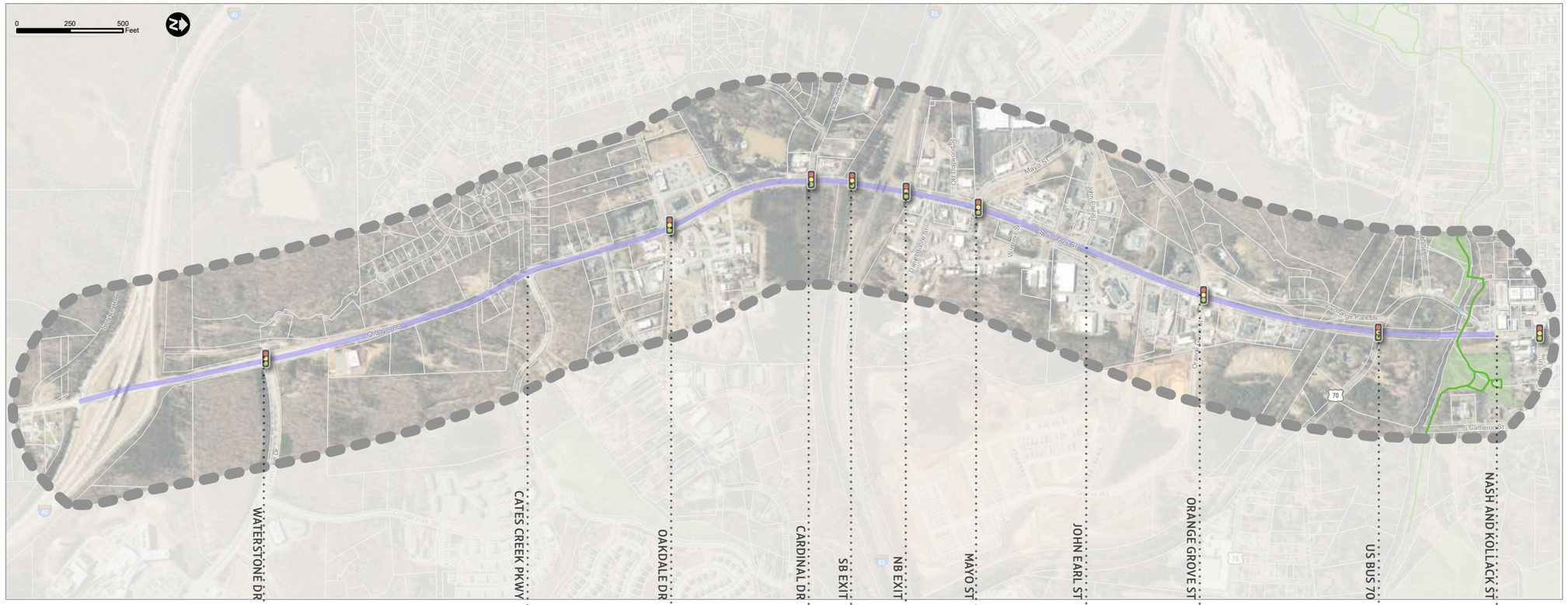
Figure 2.4: Natural systems.

NATURAL HERITAGE AREAS:

The Cates Creek Hardpan Forest is near Pointe Place along the west side of South Churton Street. This 7-acre designated natural area is inventoried within the N.C. Natural Heritage Program (NHP), provides information about the state's natural areas as part of conservation and development efforts. Currently, there are more than 2,500 designated natural areas in North Carolina across five different classifications of importance. The Cates Creek Hardpan Forest is classified as a 'General' rating, which is lowest level to qualify. For comparison, the Eno River aquatic habitat and Falls Lake are classified as 'Very High' (the second highest level). Later phases of the engineering design and construction of the South Churton Street project will involve strategies to avoid, minimize, and/or mitigate potential impacts to these natural areas.

Built Context

Figure 2.5: Corridor Profile, South Churton Street.



The **Corridor Profile** *depicts different elements of South Churton Street's built context to reveal relationships between its design and operations.*

Utilities & Rights of Way

Utilities & rights-of-way play a prominent role in corridor design, as they can represent significant constraints on the ultimate location of design treatments and retrofits. Like all major corridors, Churton Street is also home to utilities and power lines; knowing their location and conditions allows for their accounting in developing and evaluating design alternatives.

UTILITIES:

Figure 2.5 shows the location of major utilities. Power lines dot both sides of the corridor along Churton Street; many of these are "feeder" poles, relaying power to neighboring businesses and homes. Feeder lines are easier to relocate, and represent a soft constraint. Transmission lines are prevalent along the west side of the corridor, and represent a greater constraint. At the northern end of the corridor near Orange Grove Road, an existing utilities easement crosses Churton.

RIGHT-OF-WAY:

Right-of-Way varies significantly along the corridor. At its narrowest, between Cates Creek Parkway and I-85, the corridor is only 60' wide. Designs to widen the corridor could meet a challenge with property impacts in this section. Elsewhere, the corridor widens to between 100' to 120' of right-of-way, which permits greater consideration of multimodal and motor vehicle facilities.

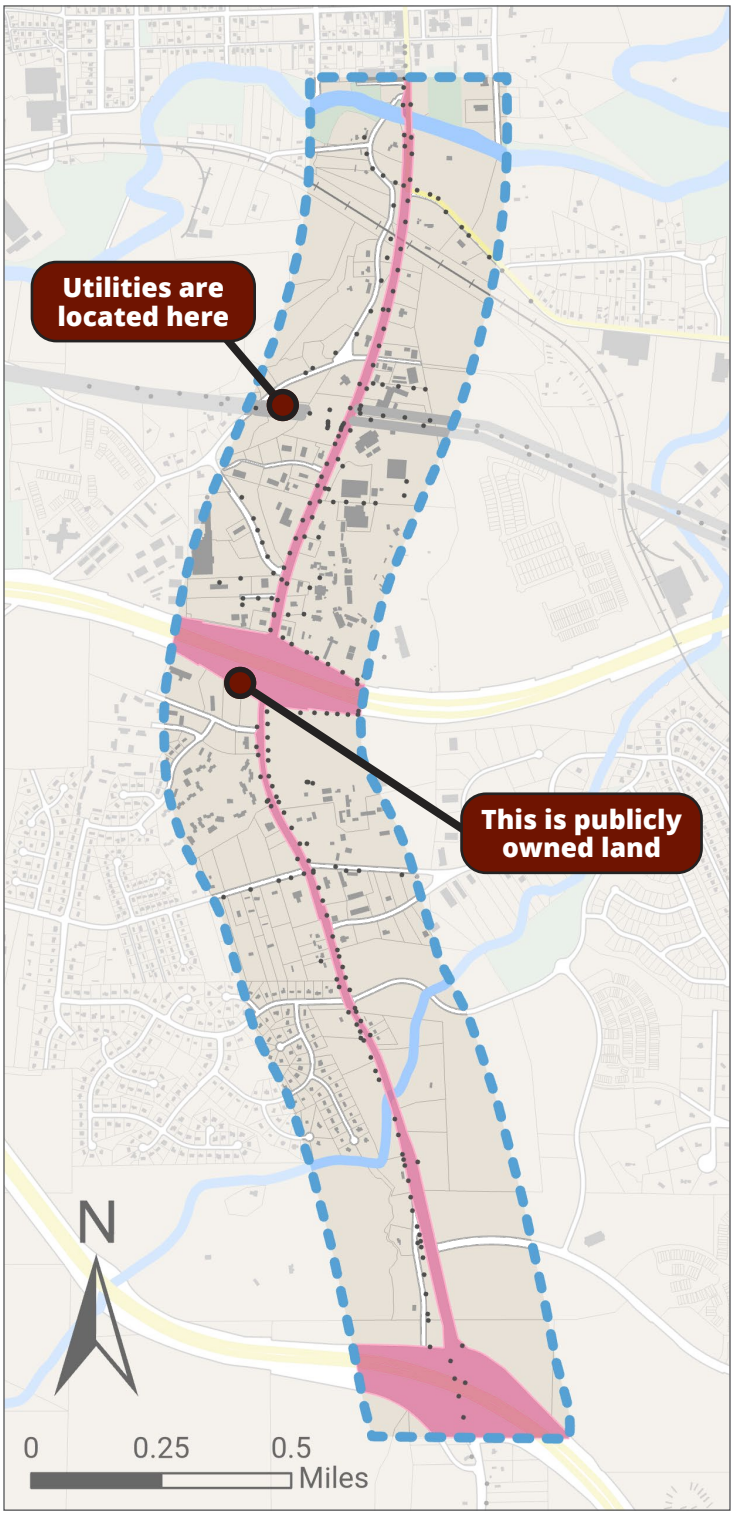


Figure 2.6: Utility easements and Right of Way.

Existing Cross-Sections

Churton Street has three primary cross-sections:

TWO-LANES
(Downtown to Orange Grove Road; Cates Creek Parkway to Waterstone Drive)

In this section of the corridor, the roadway profiles as a two-lane roadway with lower speeds as travelers navigate the transition to and from downtown. There are no sidewalks or bike facilities in this section despite the proximity of the Riverwalk and downtown.

THREE-LANES
(Orange Grove Road to Cates Creek Parkway)

This cross-section is the predominant cross-section for Churton Street and sees the bulk of traffic volumes during the day. Through much of the corridor, Churton Street features two travel lanes and a center two-way left-turn lane that becomes a left turn lane at key intersections. Bicycle and pedestrian facilities remain limited to non-existent in this section.

FOUR-LANES
(Waterstone Drive to Southern Extent / I-40)

This cross-section concentrates on the area closest to Waterstone Drive and the I-40 interchange. With two travel lanes in either direction, this area may also feature one or more turn lanes at the Waterstone Drive intersection. With University, hospital, and civic/ institutional developments in this area, Churton may see increased traffic volumes in the future.

Transportation Context

Vehicle Conditions

LEVEL OF SERVICE

Vehicular Level-of-Service (VLOS) categorizes corridor functionality for motor vehicles based on congestion and movement. Taking into account traffic speed and volume, travel times, pavement condition and type, travel lanes and roadway capacity, and traffic signal timing, VLOS combines data to rank users' perceived satisfaction with the facility. This aids in understanding how differing conditions impact motorists and identifying specific areas of concern for those users.

Churton's conditions vary progressing down the corridor. Nearest to Orange Grove Road, where traffic volumes are highest, the corridor experience modest congestion approaching roadway capacity during peak periods. Traveling south along the corridor, volumes decline beyond the interstate interchanges, reflecting the regional movement Churton facilitates – but also improving conditions for motor vehicles.

Multimodal Conditions

Bicyclists and pedestrians face difficult circumstances attempting to travel along or across Churton Street.

BIKING

With higher volumes and a posted speed limit of 45 miles per hour, biking conditions are at their most dangerous and stressful along Churton. Yet there are no dedicated facilities along the corridor, forcing anyone choosing to bike to travel in mixed traffic. At the northern extent of the corridor, Churton Street connects with the Hillsborough Riverwalk, creating a desirable connection for recreation or transportation, but without safe facilities, this connection represents a need unmet.

WALKING

Pedestrians face similar challenges. For much of the corridor, sidewalks are not present, and those that have been built have taken place through redevelopment and are disconnected from a broader network. This presents challenge for walking along Churton Street. Intersection conditions are also poor, presenting challenges in walking across the street. With a wide cross-section, crossing distances are high, yet all intersections lack refuge islands, and most lack basic crossing amenities such as crosswalks or pedestrian countdown signals.

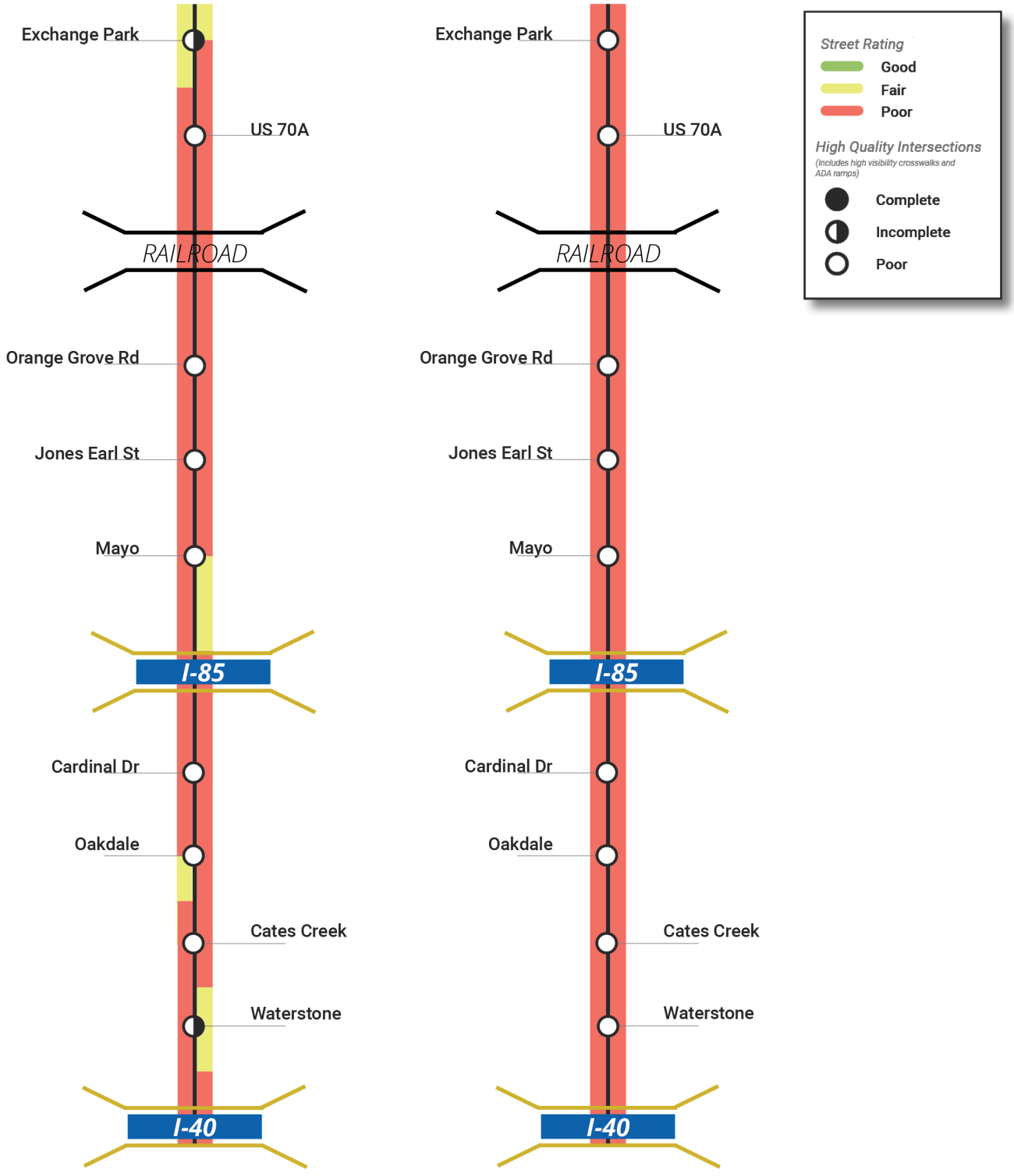


Figure 2.7: Multimodal conditions for pedestrians (left) and bicyclists (right).

Crashes & Safety

Crash analysis summaries tell us about broader safety trends along the corridor. Geospatial analyses highlight locations of particular concern, revealing specific intersections or corridors where roadway deficiencies may contribute to concentrations or patterns of crashes. Both are critical to understanding a roadway and how it serves, or fails to serve, its community.

Crashes are a concern along Churton Street, particularly between Orange Grove Road and the I-85 interchange where volumes are highest. These volumes, combined with a three-lane cross-section may indicate congestion is a contributing factor, backed up by the fact that **50% of all crashes on South Churton Street are rear-end (slowing or stopping) crashes**. Despite this, fatal and severe crashes (FSI) occur more often on Churton Street: **the corridor's FSI crash rate is 1.34 times higher than similar roads in North Carolina**.

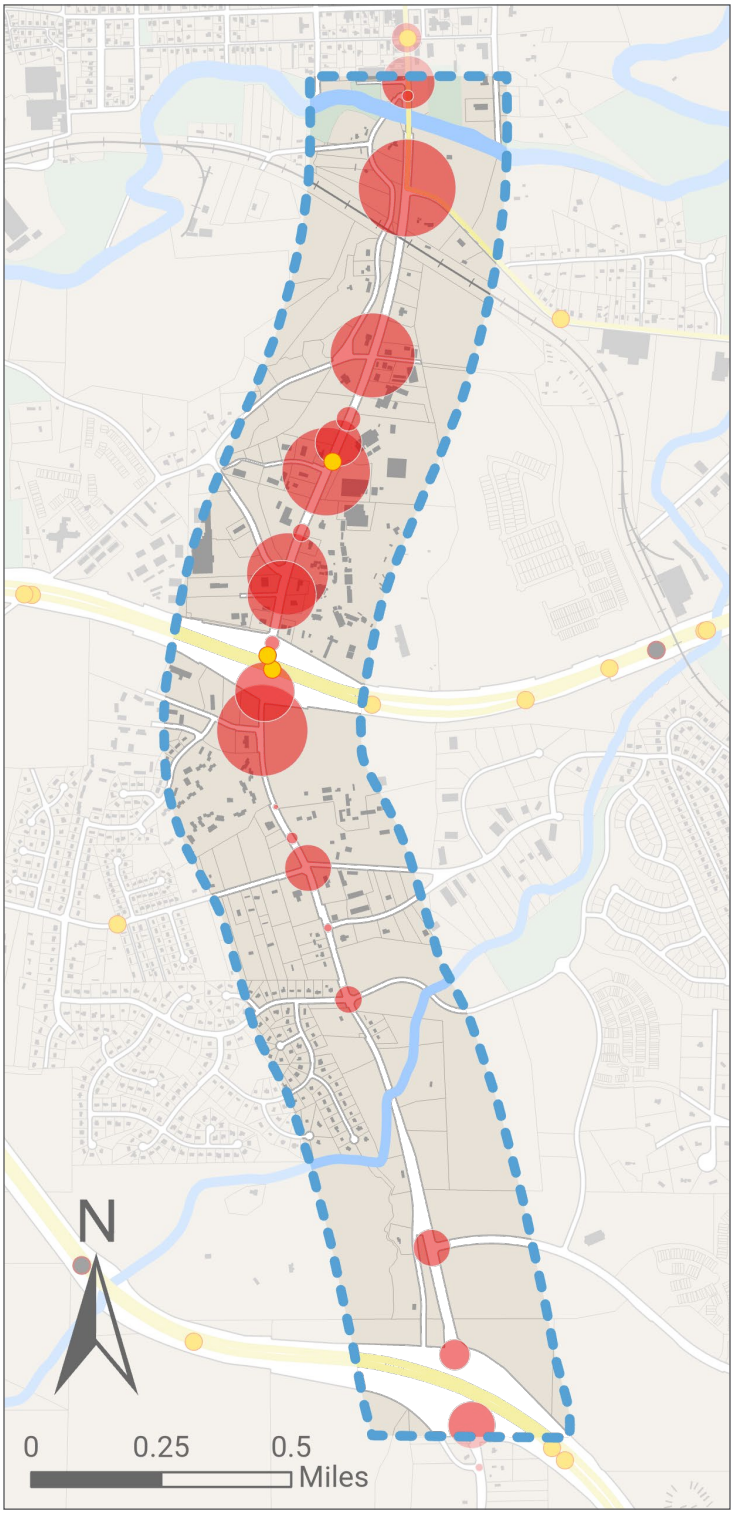


Figure 2.8: Crash map.

Finally, crashes aren't only a concern for motor vehicles. From 2007 to 2020, four bicycle- or pedestrian-involved crashes occurred in the study area. All pedestrian crashes were **non-fatal**. While none involved bicyclists, this may indicate that the lack of facilities and high speeds depress biking activity in the area.

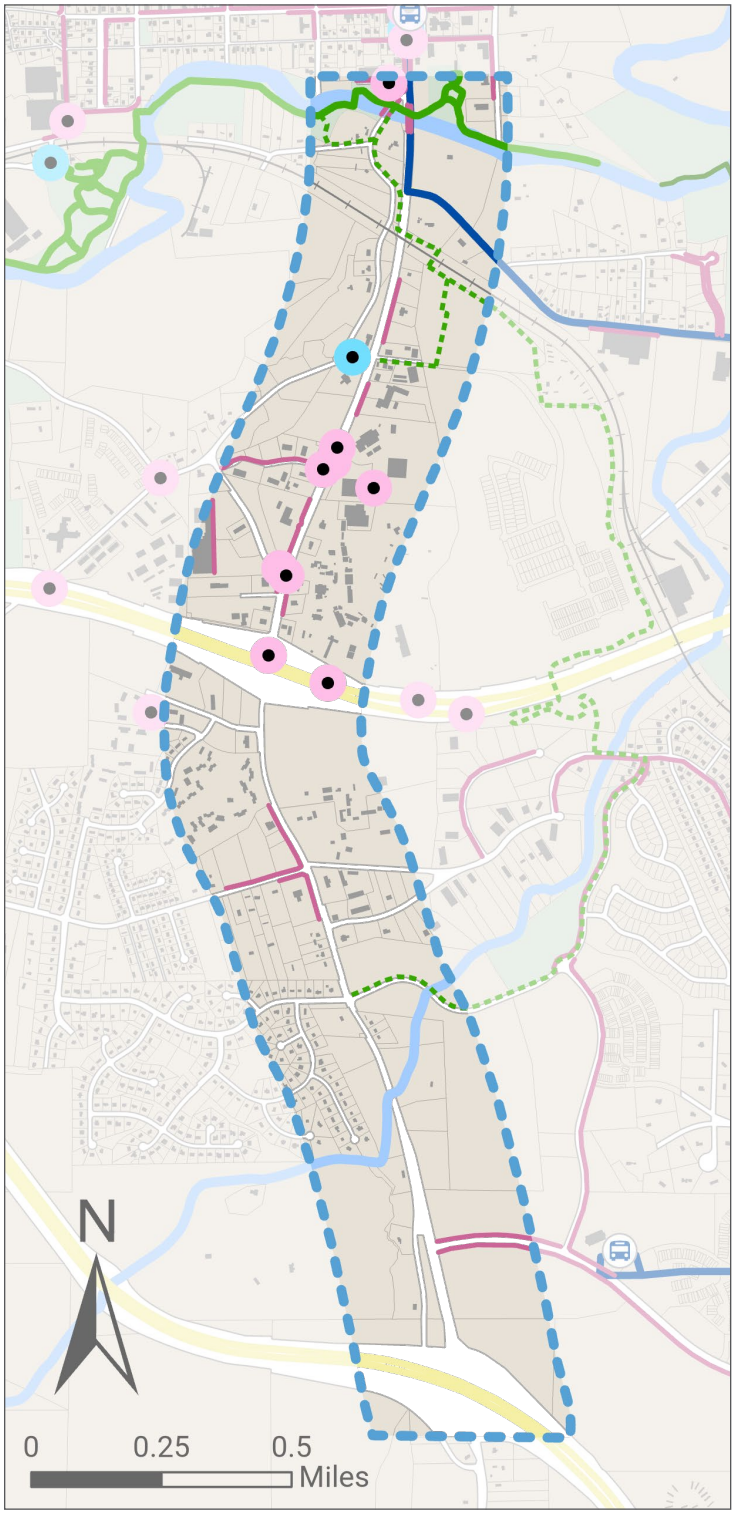


Figure 2.9: Crash map.

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ENGAGEMENT

CHAPTER 03

Engagement

View of Open House #1 in action.

Authentic public engagement plays an integral role in any design or study, as the results will impact the lives of community members and local businesses. Meaningful engagement leads to more appropriate plan recommendations and strengthens community support, making plan implementation more likely.

This chapter documents the public engagement process. In addition to data from the technical analyses, online engagement methods, public meetings, and stakeholder discussions revealed further insights. These perspectives describe the corridor more accurately, define community values, and establish priorities and preferences for how a reimagined South Churton Street should look, feel, and operate.

This Chapter Covers:

- Online Engagement
- Stakeholder Discussions
- In-Person Meetings
- Key Takeaways

Online Engagement

Project Webpage

Early in the process, the town launched a project webpage to provide residents, property and business owners, and other stakeholders with information on the planning process and ways for them to discuss the study. Ahead of public events, the town shared email blasts to subscribers to alert them to website updates and new event postings.

Figure 3.1: View of the South Churton Street Multimodal Corridor project webpage.
https://www.hillsboroughnc.gov/community/public-projects/south-churton-street-multi-modal-corridor/

Community Survey

The community survey, available in English and Spanish, was accessible on the project webpage and was open from May 2023 until September 2023. The goal of the survey was to generate community feedback to learn about key destinations, dangerous intersections, reoccurring problems, and desired improvements.

- General Survey: 926 total responses
- Spanish Survey: 14 total responses

Respondents identified the corridor's biggest problem **as a lack of safe alternatives to driving**. People also consistently reported that they felt safer while driving than they do when walking or riding a bike along South Churton Street.

91% of respondents feel unsafe walking along the corridor.

Interactive Map

An interactive map illustrated the public's key problem areas and points of interest within the corridor. Using the ArcGIS Online mapping platform, respondents identified needed intersection improvements, safety hazards, lighting issues, barriers to walking or biking, and more, marked with icons. This tool provided a different, and needed, perspective on these corridor-level issues that could not be fully captured through traditional survey methods or focus groups. A sample of representative comments are displayed in Figure 3.2.

33
map comments total

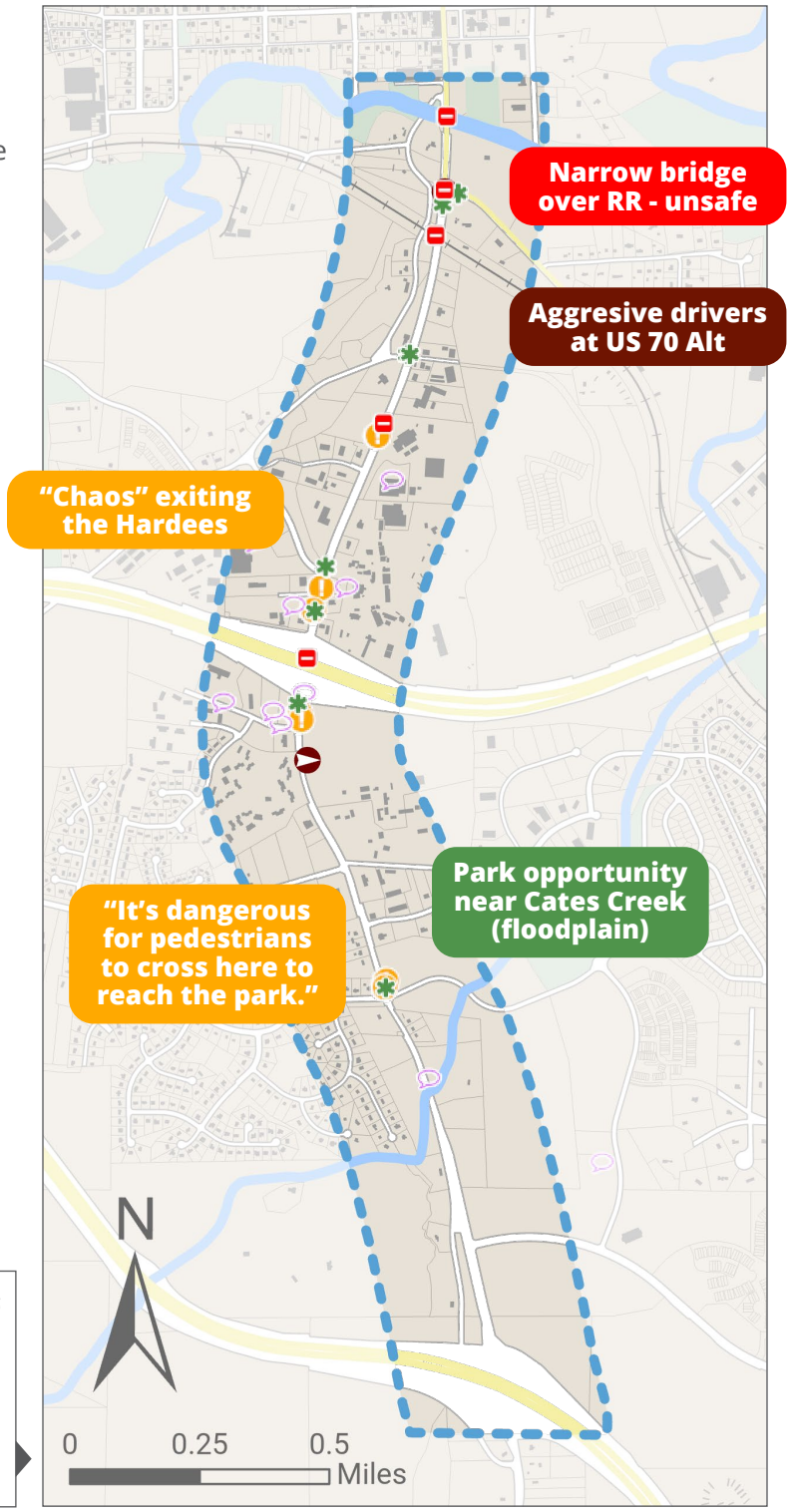


Figure 3.2: Interactive map with public comments.

Stakeholder Discussions

Project Management Team

The Project Management Team (PMT), comprised of technical staff, practitioners, and representatives of various groups who implement policy inside the study area, served as an advisory board for the project. Meeting virtually seven times, the PMT reviewed progress, gave direction and input, and provided feedback to the project team. PMT members also helped publicize the project webpage, survey, and public meeting opportunities to their constituents.

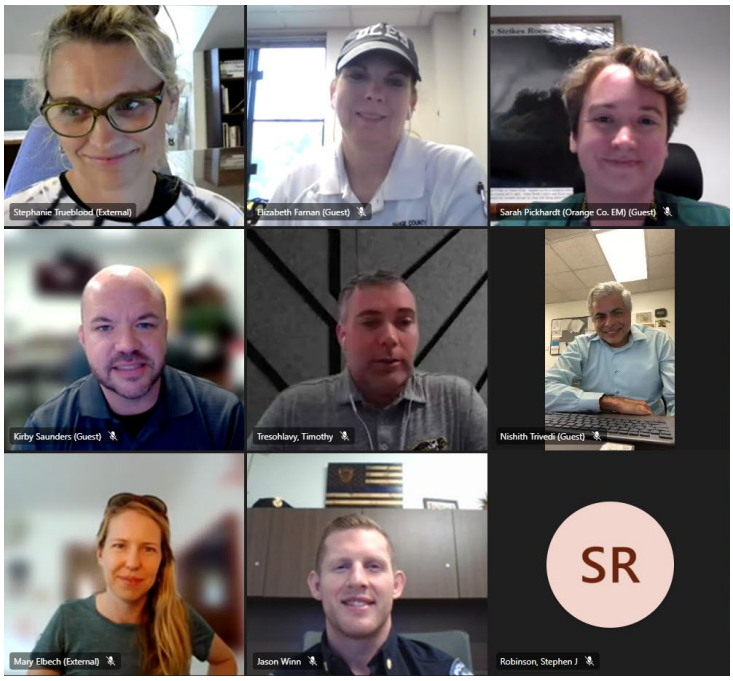
Focus Groups

Early on, focus group discussions were conducted with several stakeholder groups along South Churton Street. Meetings were held between July and September of 2023 as a series of one-hour, open-ended discussions, centering on a general topic. Group members were identified by town staff for their ability to offer innovative ideas and potential solutions. These meetings provided local insights and perspectives not captured by quantitative data while identifying areas of concern.

Six meetings were held with the following groups:

- Residents
- Developers and Chamber of Commerce
- Transit providers, biking and walking
- Town staff and officials
- Churton Street (I-40 to I-85) businesses and landowners
- Churton Street (I-85 to Downtown) businesses and landowners

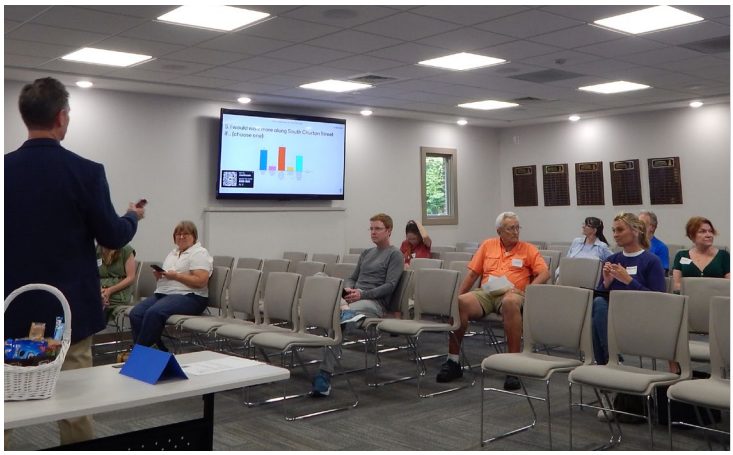
67
total attendees for all groups



In-Person Meetings

Open House #1 & #2

Open House events were held in-person, on Thursday June 15th and Tuesday June 20th, 2023, offering the first opportunities for the public to collaborate with the project team. The team received vital feedback on project principles and objectives, which was used to refine key themes and principles that guide subsequent design phases of the planning process.

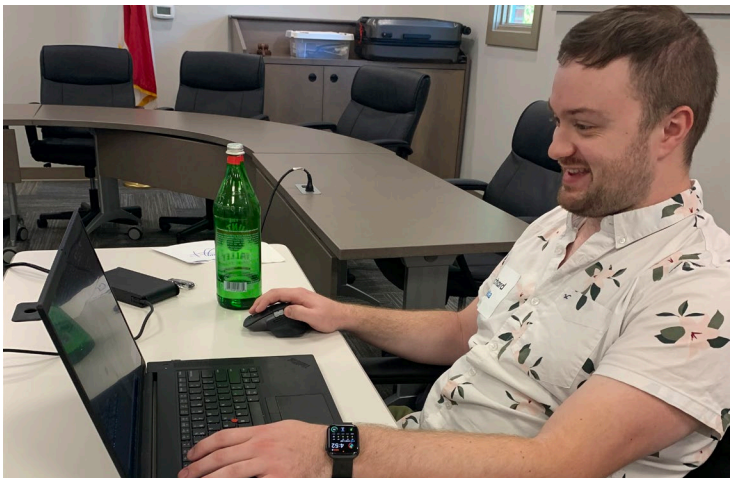


25+
total attendees for Open House #1 & #2

Design Workshop

The design workshop, held between Wednesday September 6th and Thursday September 7th, 2023, was the largest and most coordinated effort for the study. A multidisciplinary team of planners, urban designers, and engineers collaborated to generate and refine concepts for a redesigned, reimagined Churton Street that were based on concerns identified through data analysis and public engagement.

Stakeholder meetings were held concurrently during these two days, reviewing design nuances and potential tradeoffs, while evening presentations allowed additional community members to attend, provide feedback, and view the influence of their participation on the iterative concept design. Following the workshop, all materials produced during the week were viewable through the project webpage.

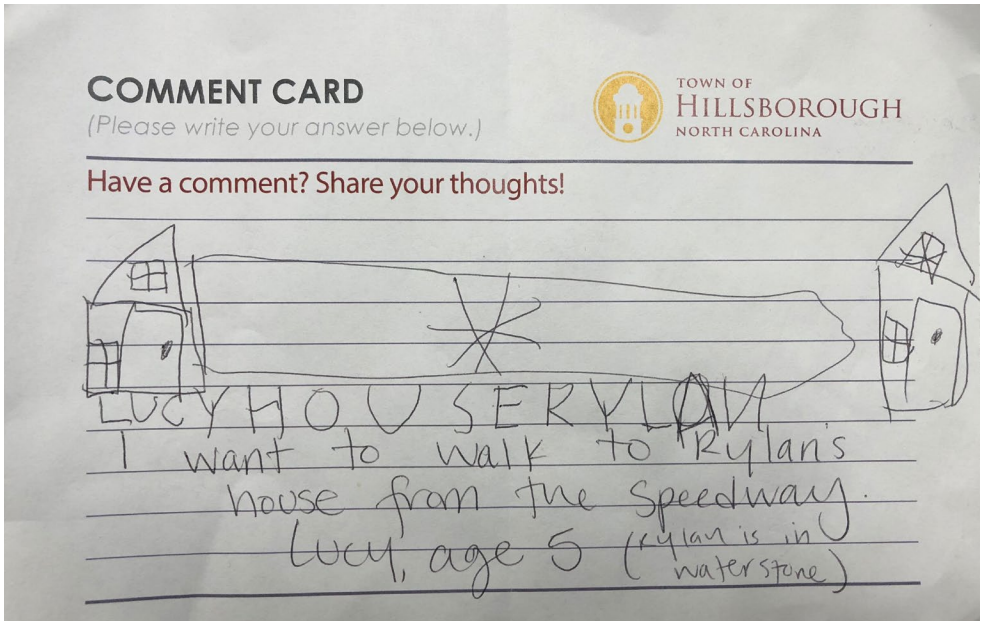


Final Open House

The final open house was held Tuesday December 12, 2023 and was well attended. Feedback was used to refine the conceptual design recommendations.

Digital flyer created for the Final Open House event.

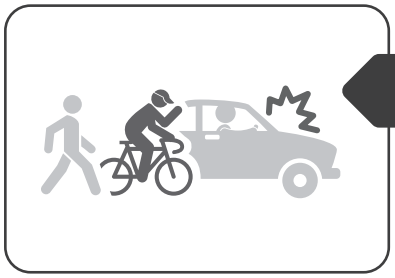
View of the Final Open House in action.



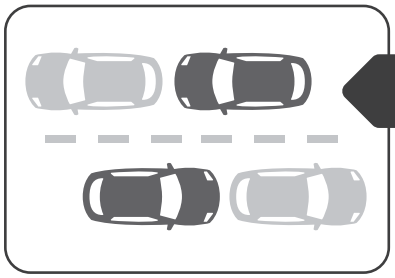
Comment card from a young attendee asking for more walkability.

Key Takeaways

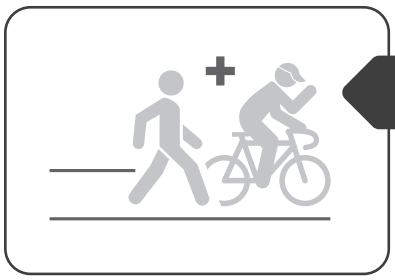
Chapter 2 (Investigation) and Chapter 3 (Engagement) examined the corridor's current operations, as well as the public perception of South Churton Street, providing the project team with insight on how the corridor serves its residents. From this data, a select number of important issues and observations emerged. These issues, summarized below, represent the key takeaways of this phase in the project.



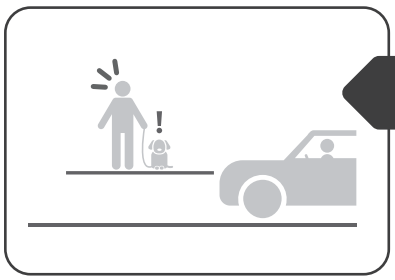
1. **The corridor is unsafe for biking and walking.**



2. **Reoccurring congestion issues, especially at intersections, hamper traffic operations.**



3. **Missing facilities are forcing users to drive.**



4. **Safe crossing opportunities are missing and prevent walking activity.**

5. **Expected future growth will further worsen conditions on the corridor.**

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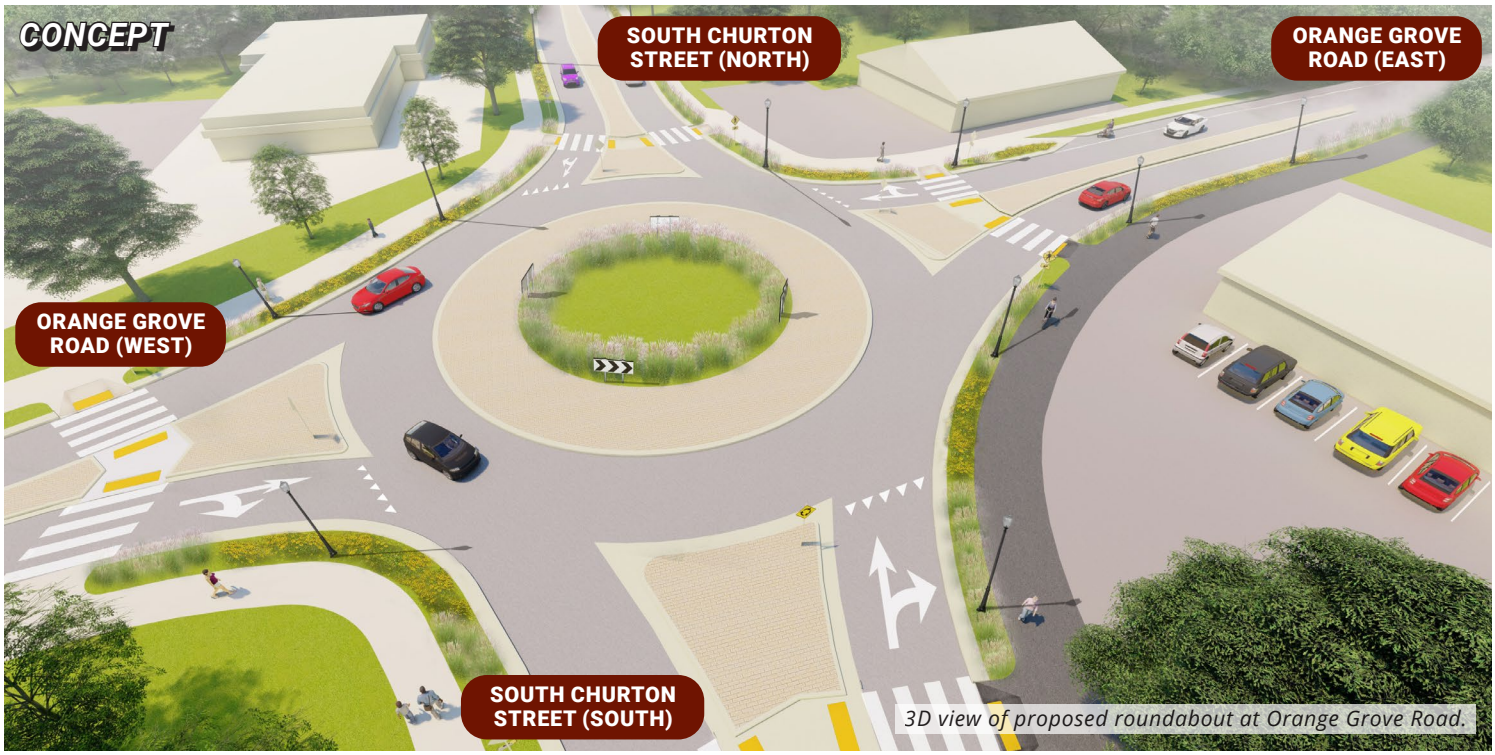
CHAPTER 04

RECOMMENDATIONS

Recommendations



3D view of proposed roundabout at Orange Grove Road.

This chapter defines the design elements of a multimodal corridor, describing how they align with the project vision, feedback received, and the conceptual design.

The project team blends a.) public engagement from chapter 3 with b.) data analysis from Chapter 2, and c.) industry best practices for Complete Streets to inform this recommendations chapter. All three elements are essential to the planning process.

This Chapter Covers:

- Guiding Principles
- Toolkit for Complete Streets
- Preferred Access Plan
- Design Recommendations

Guiding Principles

For car-centric corridors like South Churton Street, the addition of design treatments that improve walking and biking are key to improve functionality and safety for all users. Engineering design priorities were influenced by public engagement and data analysis, helping establish the five guiding principles below. These principles are different from a project purpose and needed because they help to describe the many competing interests that are influencing the future design of this corridor, its everyday use, and future development opportunities around the corridor.

Principle #1: The Safety of All Users is Paramount

Over several decades, South Churton has evolved into a destination corridor for commercial, residential and light industrial activity. In that same time frame, few physical improvements have been made for walking or biking, allowing the area to become increasingly dangerous for non-motorized travel.

Many comments received from the public were about safety-related issues, specifically the lack of connected sidewalks, missing intersection crossings and pedestrian signals, speeding vehicles and no bikeway treatments. Non-motorized travelers are vulnerable users as they are not surrounded by steel, glass, and safety equipment. Improving safety for all users means incorporating crash reduction strategies and improving the perception of safety, which may involve non-physical improvements.

Among survey respondents, 91% felt unsafe walking and 77% felt unsafe biking along the South Churton Street corridor, compared with 26% of drivers who felt unsafe.

FEEDBACK IS CLEAR: safety for bicyclists and pedestrians must be a priority.

Principle #2: Address Reoccurring Congestion Issues

About 22,000 vehicles per day drive along portions of this three-mile corridor, and there are peak periods when traffic congestion frequently contributes to delays for motorists. The level of congestion at some intersections causes vehicles to back up onto adjacent roads or driveways. Strategies to improve traffic operations (or flow) and roadway capacity (i.e., widening to add more lanes) are needed to address these recurring, inconvenient, traffic congestion issues.

Principle #3: Right-size South Churton Street

Today's safety and traffic congestion issues have been influenced by decades of residential and commercial development alongside insufficient transportation planning. Symptoms of poorly planned transportation infrastructure include:

- Extra driveways (frequency and placement)
- Lack of interconnected parking lots that provide cross access between adjacent properties
- Traffic signals that are not synchronized

These symptoms contribute to more vehicles along the main corridor, additional turning movements and higher chances of collisions, faster vehicle speeds, increased driver confusion and/or frustration.

The objective is for South Churton Street to be redesigned into a more Complete Street by greater exposure to incorporating traffic calming elements, improved sightlines, pedestrian-level lighting, access management best practices and policies for improved standards (e.g., stub out street requirements, shared driveways, enhanced connectivity) that coordinate future development.

Principle #4: Embrace Environmental Stewardship and Sustainability

The Town of Hillsborough has embraced environmental quality and the protection of its water resources, including the Eno River and Cates Creek. This study includes opportunities for integrating key environmental design treatments like stormwater best management practices along the median and roadside, planting street trees that provide shade beside sidewalks and reduce the urban heat index effect, and limiting excessive light pollution. These elements contribute to the Town's overall goals for promoting community health and function.

Principle #5: Support Surrounding Uses through Attractive Urban Design

There remains a substantial amount of land that is undeveloped or underdeveloped along South Churton Street, and land use must be coordinated with mobility needs. This corridor does not simply move vehicles into the Town of Hillsborough; it provides access to jobs, residential neighborhoods, parks or civic uses, sustains land values, and encourages redevelopment opportunities.

Investment in the public right of way will encourage future private investment along the corridor. Creating attractive and convenient destinations along the corridor through placemaking and quality urban design is paramount to the functionality of this corridor.

Toolkit for Complete Streets

Fundamentals of Complete Streets

Complete Streets are streets designed for everyone. According to the National Complete Streets Coalition:

"They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities."

A Complete Streets version of South Churton Street would make it easier to cross the corridor, walk to businesses, or bike to and from locations along the street safely.

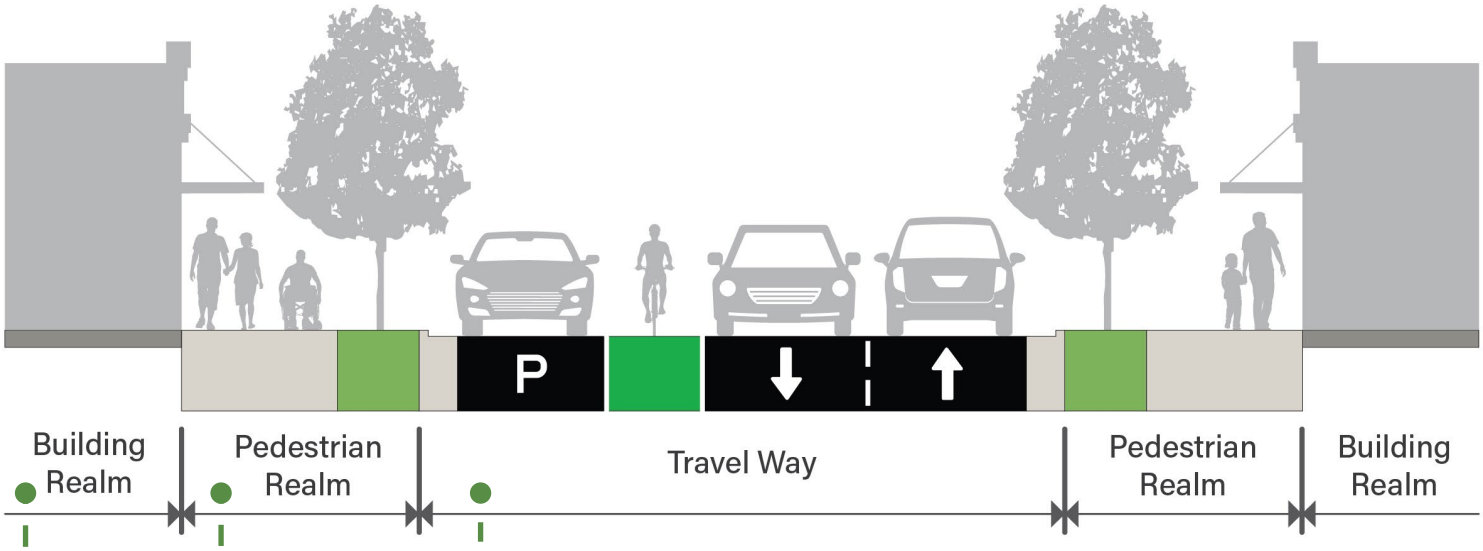
A Complete Streets approach is not one size fits all – it's a process. Redesign of a roadway must be tailored to existing and future travel demands in the specific community, along with surrounding development and land use.

A Complete Street:

- Considers all modes and users
- Provides safe travel options for users of all ages and abilities
- Accommodates both present and future needs
- Contributes to a community's environmental sustainability and resiliency
- Values public spaces and real estate holistically, considering direct and indirect costs
- Is a vibrant, attractive place in all seasons and contributes to an improved quality of life

Elements of a Complete Street

A Complete Streets approach identifies three zones, reflected in the graphic below: the travel way, the pedestrian realm, and frontage / setback. Each zone serves different users and mobility needs.



1

TRAVEL WAY:

The travel way is the area between curbs and is dedicated to on-street travel. This traditionally considers motor vehicles, but for Complete Streets it may also include bikes, e-bikes, scooters, and new forms of micromobility. On-street parking may also be found here, perhaps not along South Churton Street, but perhaps along adjacent streets.

2

PEDESTRIAN REALM:

The pedestrian realm is the area adjacent to the travel way, a space typically dedicated to pedestrians. It often includes furnishings like outdoor seating, lighting, street trees, and facilitates curbside uses like transit, rideshare or delivery access.

3

BUILDING REALM:

The building realm is adjacent to the pedestrian realm and home to the businesses, residences, and public spaces that give South Churton Street its identity. This edge may include window glazing, inviting facades and unique architecture.

Examples of Complete Street Treatments

A Complete Streets approach identifies three zones, reflected in the graphic below: the travel way, the pedestrian realm, and frontage / setback. Each zone serves different users and mobility needs.

PEDESTRIAN COUNTDOWNS:

- Ensure that signals are visible to pedestrians
- When possible, provide a walk interval for every traffic signal cycle
- Provide auditory (non-visual) guidance for pedestrians with sensory restrictions
- Marked crosswalks should be installed in conjunction with pedestrian signals

HIGH-VISIBILITY CROSSWALKS:

- Use solid white lines, 6 inches to 2 feet in width
- Minimum 6 feet width of walkway, and wider than the pedestrian facility it connects with

CENTER MEDIAN ISLANDS:

- Narrow travel lanes to reduce vehicle speeds
- Pedestrian refuge islands
- Widths range from 4 - 12 feet
- Mountable curb enables emergency response vehicles to pass

SIDEWALKS AND STREETSCAPE:

- Minimum 5 feet (6 feet preferred) pedestrian zone recommended
- Wide space provides room for street trees, benches, bike racks, and other enhancements that separate pedestrians from traffic

SHARED-USE PATH:

- Off-street facility, above the curb
- Shared for bicyclists and pedestrians
- Minimum 10 feet wide (ideally 12 feet or more)
- Separate from the curb with grass or plantings

STREET TREES:

- Space approximately 15- 30 feet apart
- Canopy shade trees cool the biking and walking environment
- Vertical height creates “side friction,” helping to slow vehicle speeds
- Use tree wells and soil cells to direct roots downward and prevent damage to sidewalks and curbing

Roundabouts

In the South Churton Street concept design, three intersections are recommended to be converted into roundabouts. Roundabouts are a powerful tool for calming traffic and improving safety, maintaining traffic flow, and can address several of the problems facing South Churton Street:

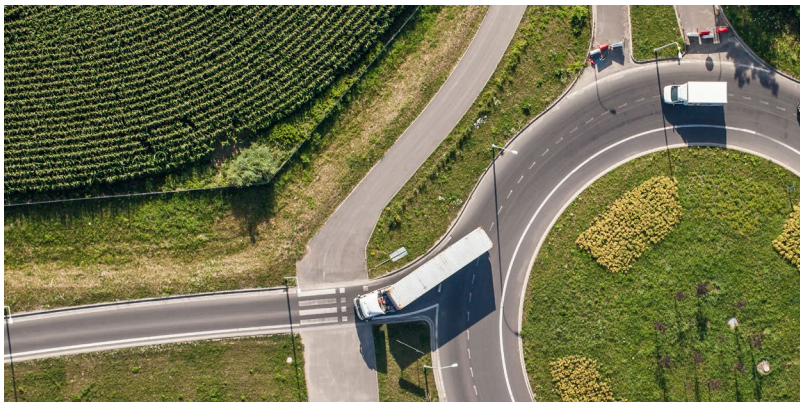
WHAT ADVANTAGES DO ROUNDABOUTS HAVE OVER SIGNALIZED INTERSECTIONS?

- **Continuous traffic flow:** With roundabouts, traffic only needs to yield before entering, rather than wait for a green light.
- **Traffic calming:** Drivers must slow down before entering the roundabout, typically reducing speeds to between 15 and 20 miles per hour.
- **Predictable movement:** Traffic flows counterclockwise, reducing the number of conflict points, and the potential for crashes.

HOW DO ROUNDABOUTS IMPACT LARGE VEHICLES, LIKE FIRE TRUCKS, OR AMBULANCES?

Well-designed roundabouts are no impediment to large vehicles. Modern roundabouts have several features to serve large vehicles without causing delays.

- **Aprons:** Traversable sections of the center island or even splitter medians.
- **Design vehicle standards:** Turning radii for large trucks can be accommodated in the size and shape of the roundabout.
- **Curb-to-curb width:** Curb widths at entrance and departure points from the roundabout can be widened to facilitate passing stopped vehicles.



Preferred Access Plan

The Preferred Access Plan (PAP) represents an initial blueprint or general framework for how the proposed corridor design treatments work together. As a planning tool, the PAP incorporates key design elements like connectivity, median treatments, driveway consolidation, and activity nodes for crossing the corridor. Activity nodes are intersections where pedestrians can safely cross the road, and are recommended for high quality intersection treatments such as high visibility crosswalks, pedestrian countdown timers, ADA-compliant curb ramps, and pedestrian-level lighting.

WALKSHEDS - the general distance or area that is reachable on foot for the average person, assuming 3-miles per hour walking speed. When an 1/8th mile walkshed is applied to safe crossing locations along the entire corridor, you can visualize that a person should not walk more than 2.5 minutes to cross.

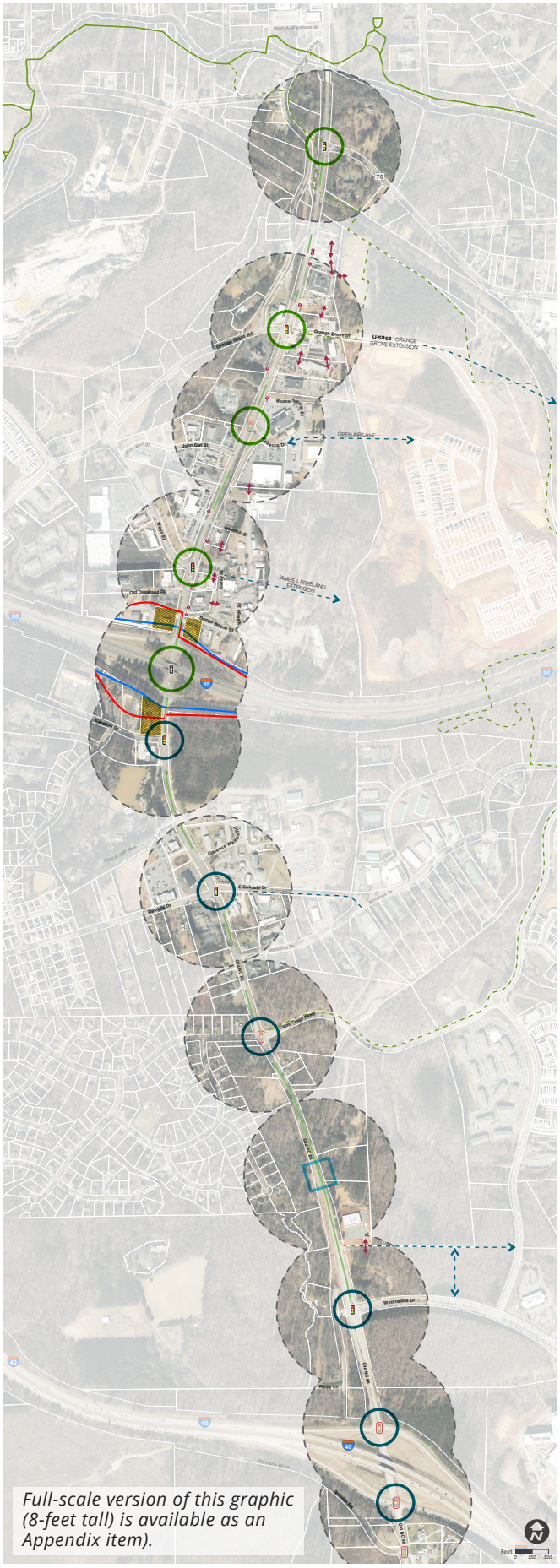


Figure 4.1: Preferred Access Plan.

Existing & Proposed Cross-Sections

The South Churton Street corridor does not have one consistent street cross-section. There are two different areas, with different street cross-sections. For the purpose of this study, we've chosen to present the existing and proposed treatments according to these two areas:

1. **Mayo Street to US 70 Business**
2. **I-40 to Mayo Street**

1. Mayo Street to US 70 Business

EXISTING

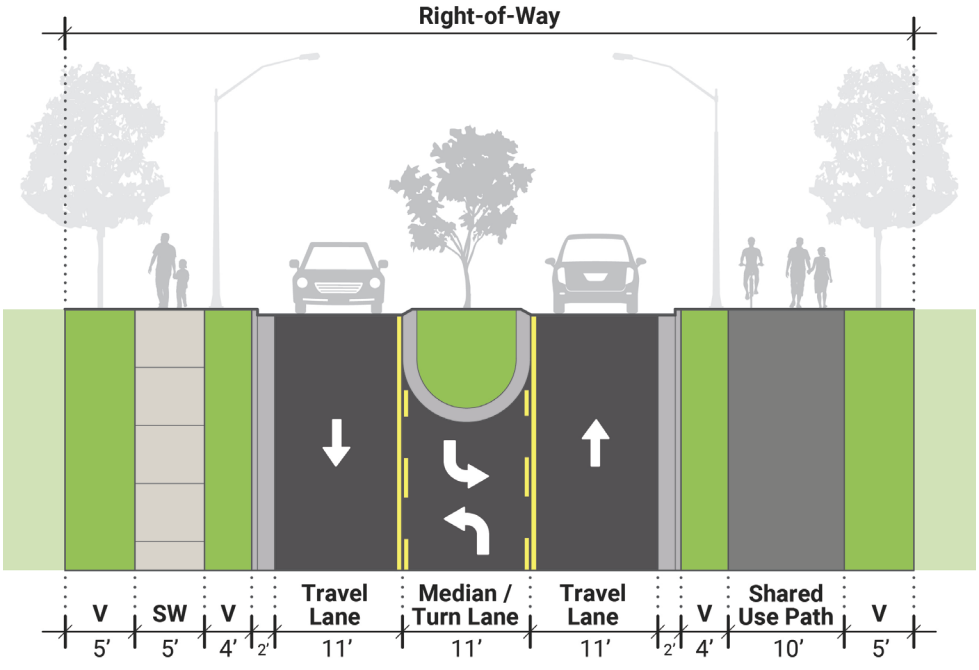
This section is currently 35 mph posted speed, with two travel lanes and a center turn lane (two-way left turn lane), as well as a right-turn lane approaching John Earl Street with a short section of curb and gutter. Roadside ditch and swale are predominant, and existing intersections or driveways are excessively wide. Many properties have more than one driveway access point, or one very large driveway than can be used by three cars or more at once.

There are short sections of existing sidewalks along the west side of South Churton Street in front of the Capital Ford dealership; however, these sidewalks are disconnected from intersection crossings.

An electric substation with overhead transmission lines and easement is present near Rebecca Drive, with many utility poles present, limited shoulder area, and a steep uphill slope along the west side of the corridor.

PROPOSED

The recommended typical cross-section for this portion of the corridor is two lanes, 11 feet wide with curb and gutter, and several locations for a median that is either concrete (mountable) or bioretention areas for stormwater, where possible. A combination of sidewalks (5 foot minimum) or side paths (10 foot minimum) are recommended along both sides of this section. This cross-section narrows to two lanes only at the railroad bridge crossing.



CONCEPT

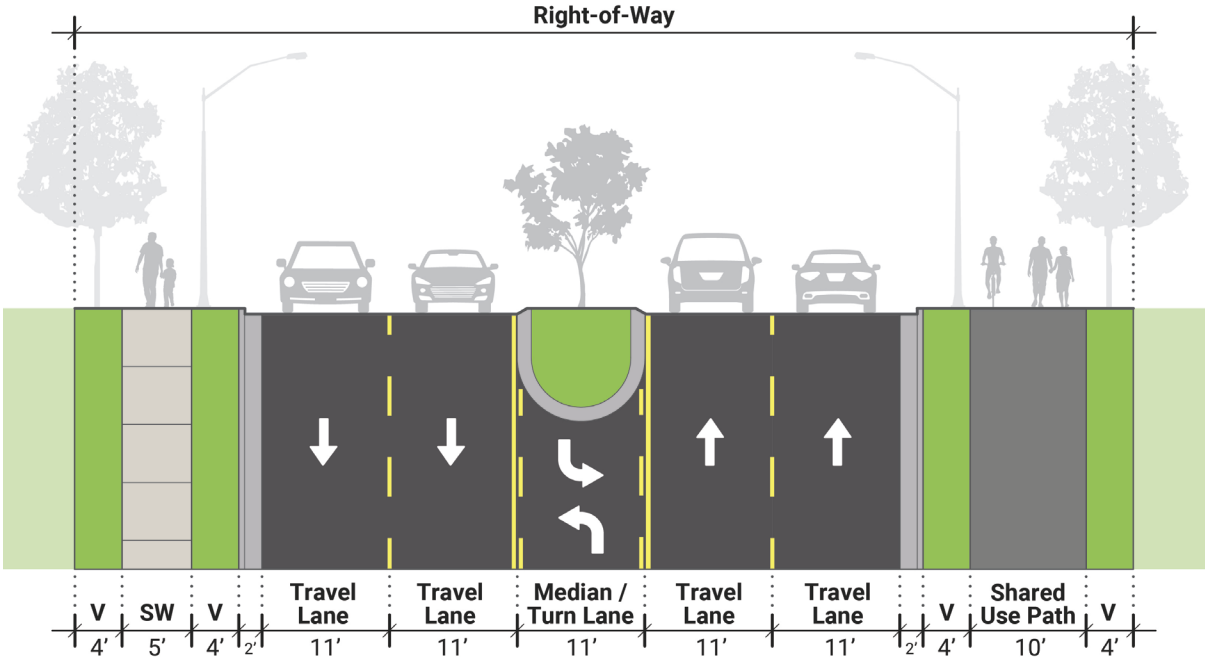
2. I-40 to Mayo Street

EXISTING

The existing corridor transitions from 45 to a 35 mph posted speed limit in this section, with two travel lanes and a center two-way left turn lane. Roadside ditch and swale are predominant. South of Cates Creek Parkway this corridor is two lanes with narrow shoulders and no center turn lane. The corridor transitions again near Waterstone Drive to four lanes, with planted medians, some sections of curb and gutter, sidewalks along the east side, and a traffic signal at Waterstone Drive that lacks pedestrian crosswalks.

PROPOSED

A consistent four lane cross-section is recommended for this portion of the corridor, with partial medians or bioretention areas, where appropriate. The proposed speed limit should be reduced to a consistent 35 mph, where feasible. Sidewalks along the west side, and a 10 foot wide side path are recommended along the east side to maintain connection with the planned Ridgewalk Greenway.



CONCEPT

Design Recommendations

Concept Design

The design considerations for the entire corridor study area are described first, followed by the concept design (15% to 20% level of detail), using MicroStation software. This section shows how the proposed cross-sections create a context-sensitive design that address the multimodal needs of the entire corridor. This concept is designed to scale so that the physical footprint and potential impacts to utilities and right-of-way (ROW) can be determined. It also provides specific intersection details.

Renderings and redevelopment opportunities complement the concept design. These visuals provide street-level perspectives of what the proposed treatments might look like, as well as imagery of built examples, where applicable.

Corridor-Wide Design Considerations and Recommendations

Optional Intersection Design:

- Mayo Street: Partial dual lane roundabout or traditional signalized intersection

Roundabout Design:

- Consider partial dual-lane roundabout at Mayo Street
- Consider single-lane roundabout at Rebecca Drive (southern)
- Consider single-lane roundabout at Orange Grove Road

Intersection Redesign:

- Add new traffic signal for Cates Creek Parkway
- Reconfigure intersection at John Earl Street

Non-signalized Intersections:

- Proposed midblock crossing with Pedestrian Hybrid Beacon (PHB) between Waterstone Drive and Cates Creek Parkway intersections

Design Vehicle:

- WB-40 truck (tractor-trailer, with 42’ long box)

Lane Width:

- Standard 11 foot travel lanes

Bike Facilities:

- Continuous 10 foot shared-use path along east side of the corridor (I-40 and Orange Grove Road)

Pedestrian Facilities:

- Continuous sidewalk (minimum 5 foot width) along west side
- Sidepath (minimum 10 feet wide) along east side between I-40 and Orange Grove Road
- Connect with planned Ridgewalk Greenway near Cates Creek Parkway and Orange Grove Road

LANDSCAPING -

This plan recommends:

- *Street trees to provide shade along curbside,*
- *Median trees and shrubs that don’t limit visibility for drivers,*
- *Maintenance will be assumed by the City of Hillsborough.*

NCDOT Roadside Environmental Unit manages landscaping within the public right-of-way.

Guidelines for planting within their right-of-way:

- *Guidelines for Planting within Highway Right-of-Way*

NCDOT’s approved trees and shrubs lists:

- *Trees.pdf (ncdot.gov)*
- *Shrubs.pdf (ncdot.gov)*

NORTHERN SEGMENT

Given the number of businesses in this segments of the corridor, it's recommended to consolidate driveways and segments of median to reduce dangerous left turns and encourage safer right-in, right-out movements. The intersection of John Earl Street is the exception, which will retain left-turn access for northbound vehicles.

Two roundabouts are proposed that will maintain traffic flow and allow access to businesses by performing a U-turn and right-in movement, rather than an unsafe left turn.

A proposed roundabout at Orange Grove Road is suggested to replace the existing traffic signal with the goal of slowing traffic, improving safety, maintaining traffic flow and decreasing vehicle delays. Installing the roundabout will likely require additional right of way.

The Mayo Street intersection is recommended for two potential treatments: a partial dual-lane roundabout or a traditional signalized intersection. This planning-level multimodal corridor study will proceed with both potential treatments and allow future engineering design to evaluate and determine the final design.

S «

SOUTHERN SEGMENT
(SHOWN ON PAGES 56 & 57)

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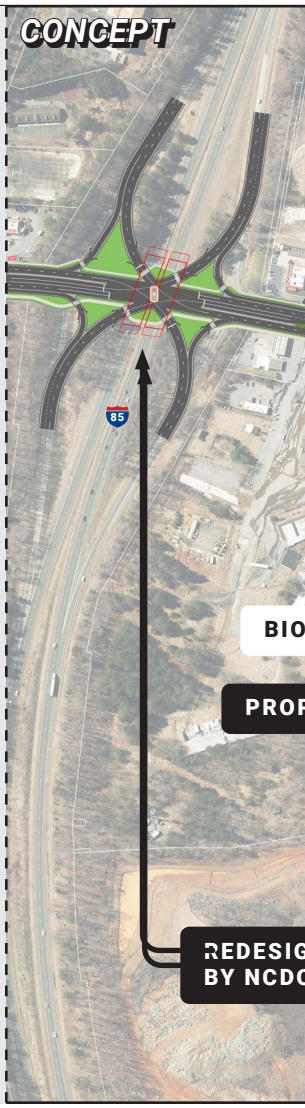


A sidepath 10’ to 12’ wide is proposed along the east side of this segment, and should be aligned to fit within the right-of-way, except at specific locations where permanent easements may be required. The sidepath is intended to accommodate walking and bicyclists while connecting with the proposed Ridgewalk Greenway near Orange Grove Road and future train station.

Significant topography constraints require that the shared-use path divert at Orange Grove Road and connect to the planned Ridgewalk Greenway. North of Orange Grove Road, sidewalks are recommended on both sides and should be a minimum width of 5 feet and ADA-compliant.

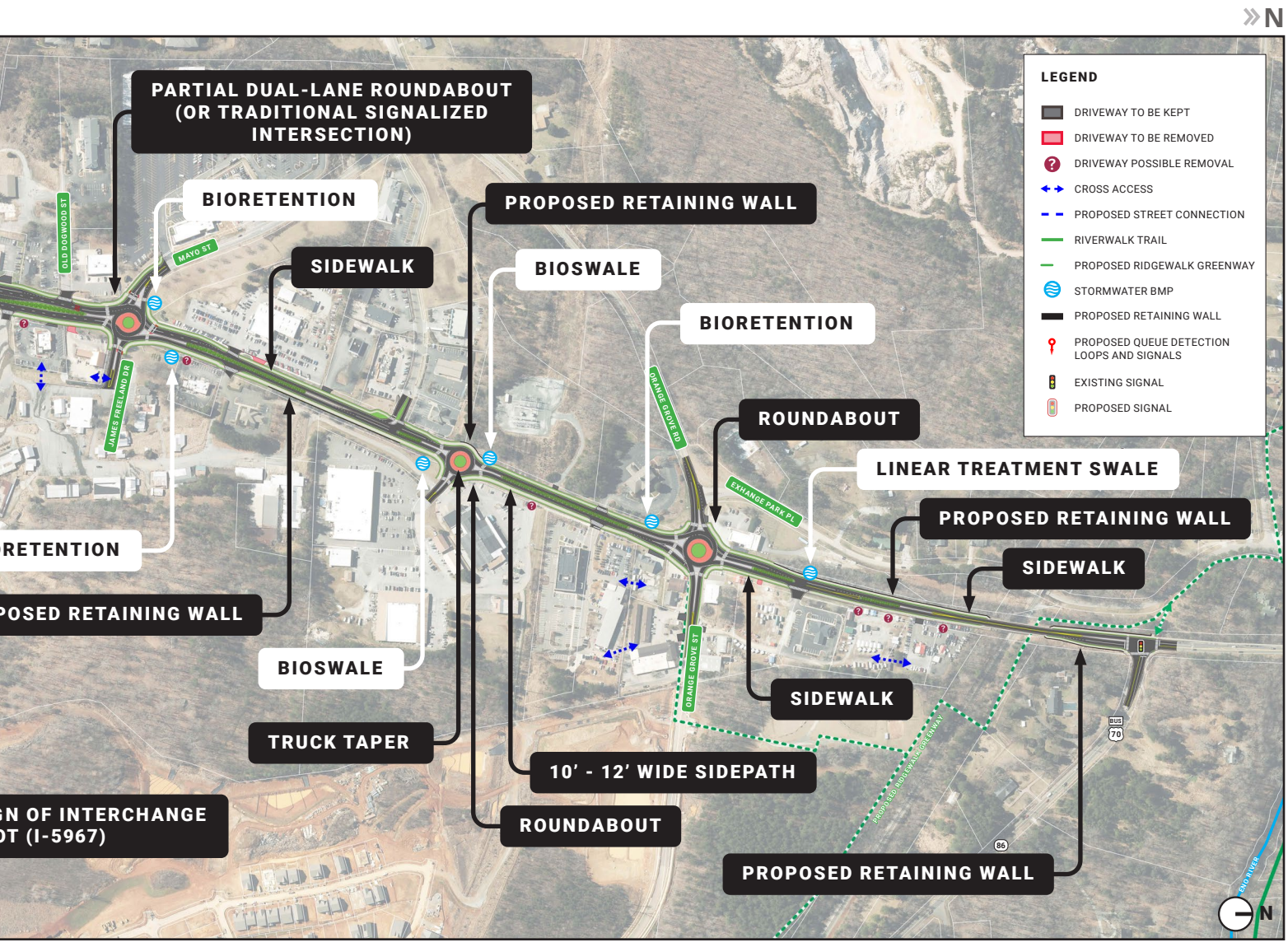


Figure 4.2: Concept Design, Northern Segment

SOUTHERN SEGMENT

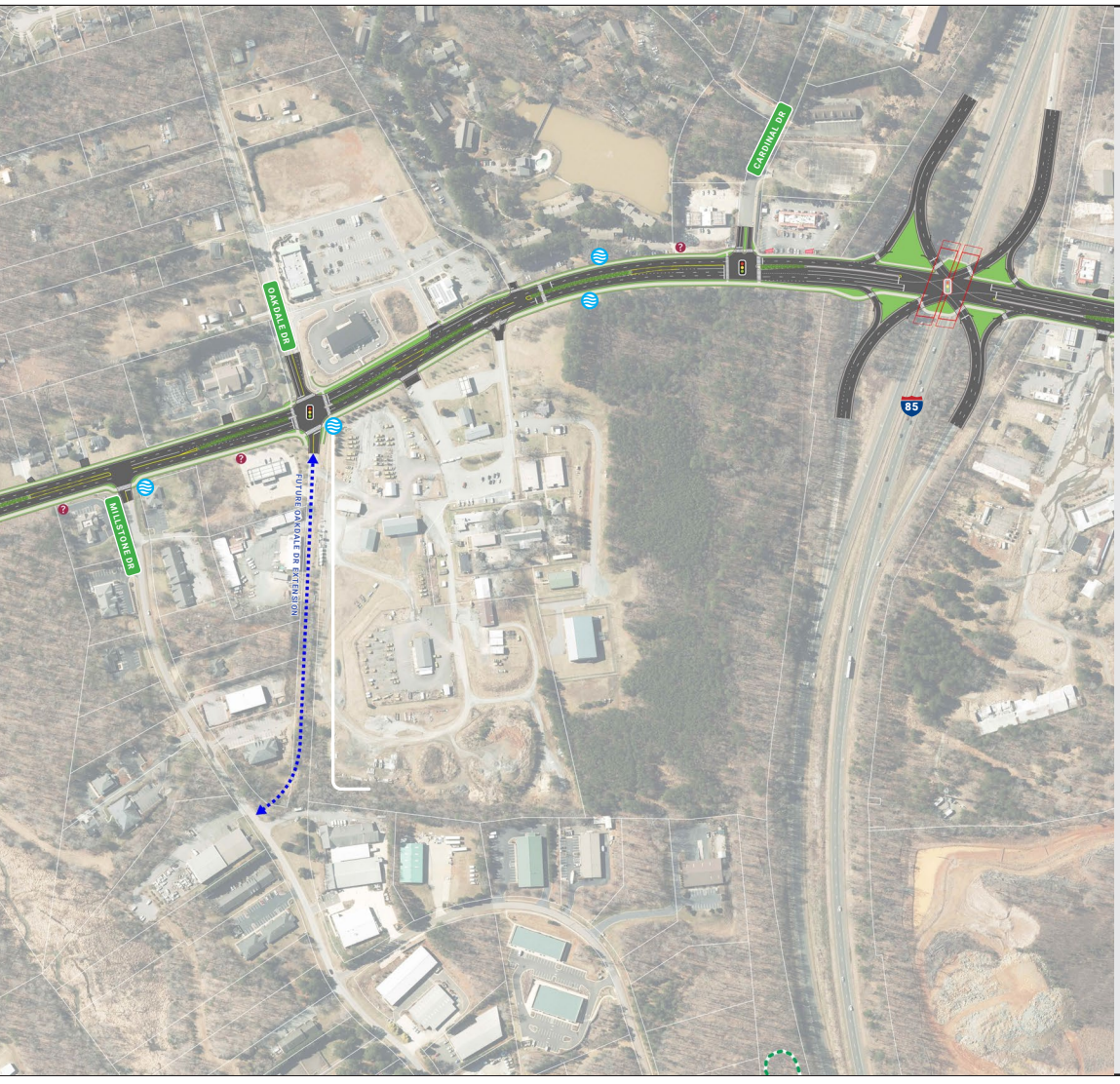
The I-85 interchange is under separate engineering design review as part of the I-5967 project, and therefore our recommendation is to incorporate this project's final design. At the time of this study, the proposed interchange being considered is a single-point urban interchange (SPUI), with a traffic signal at the center.

The southern segment is recommended for a consistent four-lane cross-section with partial medians, or bioretention areas, where appropriate. This area has high development potential and connects with many existing residential developments that generate vehicular traffic.

S «

The proposed speed limit should be reduced to a consistent 35 mph, where feasible. Sidewalks along the west side, and a 10' wide sidepath is recommended along the east side to maintain continuity and connection with the proposed Ridgewalk Greenway that travels through several residential communities.

A new traffic signal is proposed at the Cates Creek Parkway, and a midblock crossing is planned between the Waterstone Drive and Cates Creek Parkway signals. Two new traffic signals are proposed at the I-40 interchange ramps; however, NCDOT traffic operations will determine when these are needed.



NORTHERN SEGMENT (SHOWN ON PAGES 54 & 55)

Figure 4.3: Concept Design, Southern Segment

Rendering 1: Roundabout at Orange Grove Road

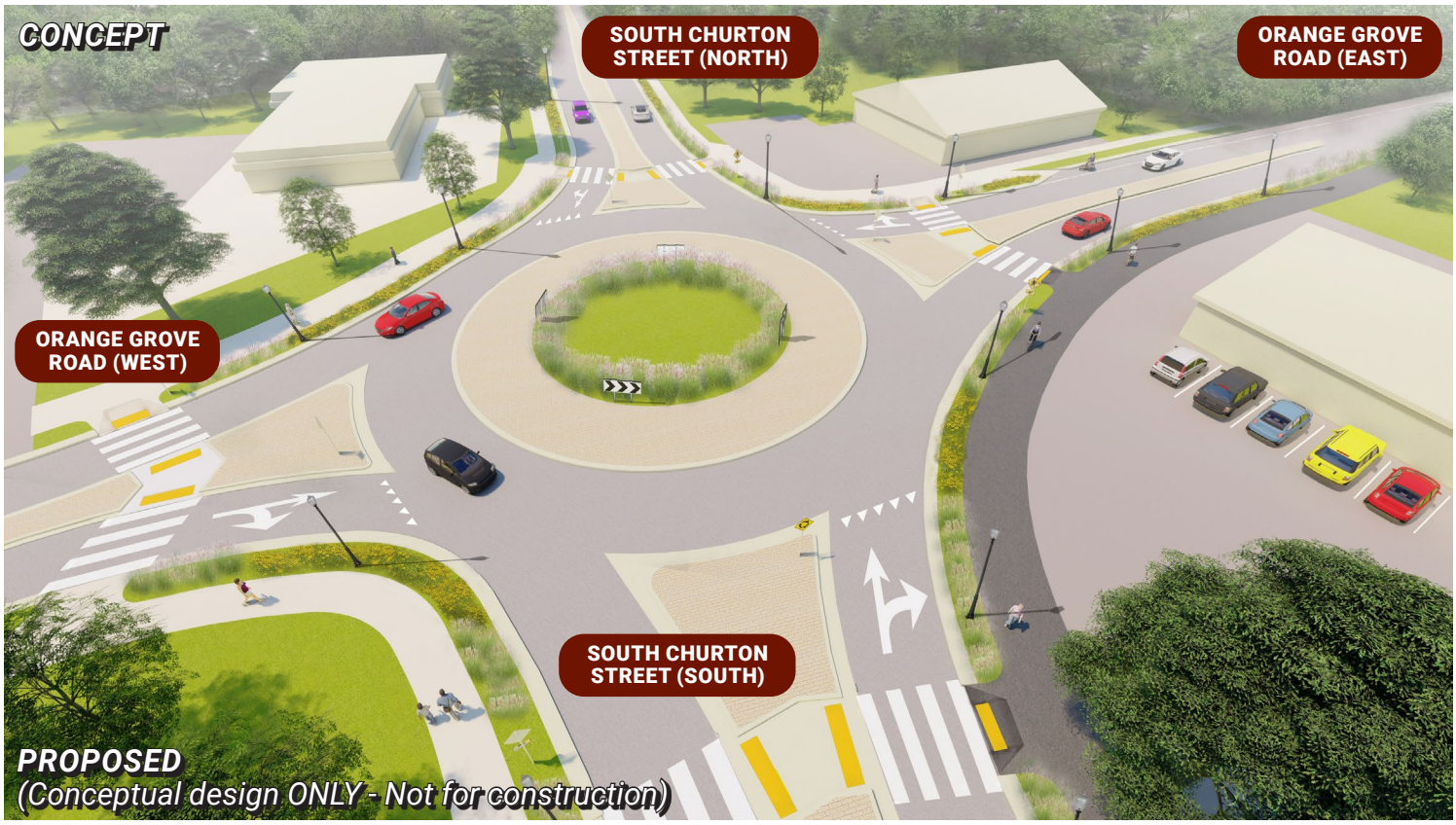
Orange Grove Road
Roundabout

Cates Creek Parkway
Intersection

N « » S

John Earl Street
Centerline

South Churton Street
Midblock Crossing



DESIGN CONSIDERATIONS:

- Regionally important collector road (to the west)
- Primary entrance and exit to Collins Ridge Development (to the east)
- Access to proposed Hillsborough train station
- Right of way constraints
- Existing development on all four corners
- Utility pole relocations
- Opportunity to begin slowing vehicles heading toward downtown
- Stormwater challenges at current signalized intersection
- Opportunity for bioretention
- Potential connection with proposed Ridgewalk Greenway

Rendering 2: Centerline at John Earl Street

Orange Grove Road
Roundabout

Cates Creek Parkway
Intersection

N « — **John Earl Street** Centerline — » S

South Churton Street
Midblock Crossing

DESIGN CONSIDERATIONS:

- Existing sidewalk segments to connect (or reconstruct)
- Opportunity to consolidate driveways for access management
- Utility pole relocations
- Topography challenges (both sides)
- Potential to reduce posted speed limit
- Opportunity for bioretention within the median (stormwater)
- Potential retaining wall needed on east side
- Well-lit pedestrian areas and shade trees

Rendering 3: Intersection at Cates Creek Parkway

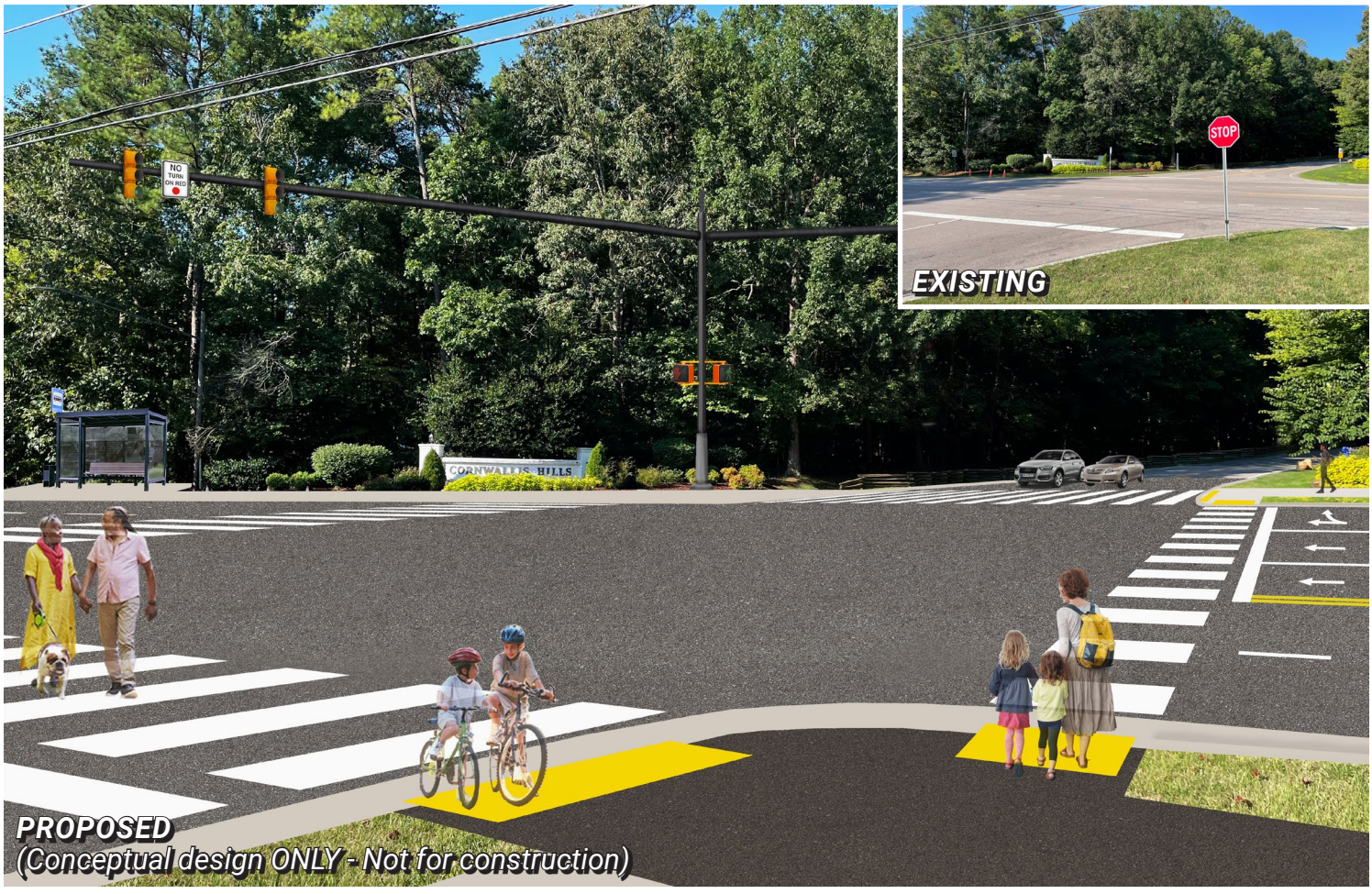
Orange Grove Road
Roundabout

Cates Creek Parkway
Intersection

N « — S »

John Earl Street
Centerline

South Churton Street
Midblock Crossing



DESIGN CONSIDERATIONS:

- Conversion of stop-control to traffic signal
- Improved visibility and sightlines for turning vehicles
- Addition of marked crosswalks
- Opportunity for bioretention
- Pedestrian countdown signals
- Potential for enhanced bus stop/shelter

Rendering 4: Midblock Crossing along South Churton Street

Orange Grove Road
Roundabout

Cates Creek Parkway
Intersection

N « — John Earl Street
Centerline — » S

South Churton Street
Midblock Crossing

DESIGN CONSIDERATIONS:

- Four lanes with landscaped median proposed
- Half-mile segment of roadway without a safe crossing
- Cates Creek Hardpan Forest (Natural Heritage Area)
- Pedestrian Hybrid Beacon (PHB)
- Potential to reduce traffic speeds and improve safety
- Regular maintenance needed for pedestrian refuge island, curb ramps, and lighting
- Reduce speed limit to 35 mph

Stormwater / Bioretention Recommendations


Bioswale / treatment swale


Bioretention


Bioretention /bioswale


Treatment swale

DESIGN CONSIDERATIONS:

- Capture and treat stormwater closer to its source
- Reduce quantity and quality of stormwater runoff
- Regular maintenance needed
- Opportunity to incorporate native vegetation

DRAFT

IMPLEMENTATION

CHAPTER 05

Implementation

This chapter addresses the question of "How do we get started?" with considerations for policy integration and potential funding opportunities.

Implementation is an often overlooked, yet essential, step to move from planning and design to construction. The previous chapters established a purpose, vision and conceptual recommendations built upon current conditions and public feedback.

This Chapter Covers:

- Cost Estimates (planning-level)
- Policy Considerations
- Potential Funding and Partnerships

Purpose of This Study

A reminder from Chapter 1: the purpose of the South Churton Street Multimodal Corridor Study is to develop design concepts that convey the town's interests and accomplish the goals of the state-funded project. The concepts and cross sections (from chapter 4) were developed and refined with NCDOT partners and will inform the STIP project (U-5845) about the town's goals and preferred design treatments.

Cost Estimates

This section identifies planning-level cost estimates that are separated into tangible, constructible segments of the corridor, and provide the estimated overall cost for design, construction fees, and contingency requirements. The redesigned I-85 interchange (NCDOT project I-5967) is not included within this cost estimate, as the department is concurrently preparing engineering design review for a proposed interchange reconfiguration, including considerations for a single-point urban interchange (SPUI).

The quantity of materials, like concrete or pavement, as well as the number or length of treatments such as traffic signals, retaining walls, bioswales, or crosswalks were itemized from Microstation design files. Unit cost estimates from 2023 construction projects approximated the material costs for each segment.

A word of caution: there has been high variability with the actual cost of materials and construction labor in recent years. Supply chain, availability of labor, and number of active construction projects all influence costs on a weekly or monthly basis.

Planning-level costs are shown by segment and include assumptions for engineering design (15%), construction, engineering, and inspection (CEI 30%), as well as contingency (30%) and NCDOT oversight (5%). As the project moves forward, final engineering design will incorporate field survey of existing slopes, utilities, and property boundaries, meaning that a more detailed final construction and right-of-way cost estimate will be prepared in the future as part of STIP project U-5845.

Planning-level Cost Estimate	*Northern Segment*	*Southern Segment*
Approximate location	North of I-85	South of I-85
Segment length	1.0 miles	1.6 miles
Estimated material costs	$13,200,000	$12,900,000
Design, construction, inspection costs	$8,600,000	$7,800,000
Cost Estimate Range	***$22M - $23.8M***	***$20M - 21.7M***
Potential utilities impact	*High*	*Low*
*Potential ROW impact**	*1.5 acres*	*6.5 acres*

Table 5.1: Project Cost Estimates, by segment, with assumptions.

Note: Planning-level costs represent the best information available at the time of this study. Estimates incorporate individual unit cost from 2023 construction estimates for materials, and assumptions for preliminary engineering (15%), construction engineering and inspection (15%), contingency (30%), and NCDOT oversight (5%).

**Potential impact to utilities and additional ROW is quantified, however, acquisition costs are not included.*

Future ROW acquisition will be necessary. The existing South Churton Street corridor has segments of ROW that are as narrow as 60-feet, and as wide as 120-feet. The recommended future cross-section includes segments that are 50-feet, 70-feet, and 90-feet wide.

A planning study's primary objective is to inform future development, so these individual decisions better align with, not hinder, the comprehensive vision for this Complete Streets corridor. This is most effectively accomplished through town policy, described in the next section.

Policy Considerations

This section identifies additional policy items to aid in the implementation of this plan's recommendations. These are not specific ordinance revisions, but rather planning-level strategies, or suggestions, to better align with project objectives. Policy ideas were compiled from discussions with stakeholders, peer reviews, and best practices with similar Complete Streets projects within, and outside of North Carolina.

Town Policy

The Town of Hillsborough continually incorporates plans and study recommendations into their strategic plan, budget development, and departmental priorities. The 2023 Comprehensive Sustainability Plan describes the importance, phasing, and strategy for implementation of many town plans or initiatives, and should remain the guiding document for town policy. The South Churton Street plan recommends the following policy considerations in the near- and mid-term:

- **Adopt a Complete Streets policy** that guides the design, construction, operation, and maintenance of streets, sidewalks, bikeways, and greenways. Consider provisions for access management, including the consolidation of adjacent driveways, and development requirements for providing property cross-access between complementary land uses.
- **Review the town's traffic calming policy** which outlines the guidelines and procedures for managing vehicle speeds along town owned residential streets. This policy is found within the Street Manual, under Appendix B.
- **Adopt a Vision Zero policy** that establishes a town commitment to the elimination of fatal and severe injury crashes along public roads in Hillsborough.
- **Develop a Safety Action Plan** that sets actionable goals for limiting risk factors that contribute to fatal crashes, and incorporating a Safe Systems Approach to transportation.
- **Dedicate funding** specifically earmarked for the local-match contribution of the South Churton Street project (TIP U-5845) from each annual Town budget. This can be completed in coordination with development of a local funding plan for priority transportation and connectivity projects (Comprehensive Sustainability Plan recommendation).

Looking further ahead, the Town of Hillsborough is preparing to rewrite the Unified Development Ordinance (UDO). This process would provide opportunities to add complementary policies or programs that align land use and development requirements with transportation needs, for example:

- **Adopt an Access Management policy** that directly relates to the Complete Streets policy, connecting this guidance with the UDO and Street Standards requirements.
- **Formalize maintenance agreements** for sidewalk, side path and greenway facilities to include routine inspection and reporting, debris removal, and landscaping upkeep. This agreement is also a requirement by NCDOT for incorporating multimodal facilities within design projects (TIP).
- **Establish a sidewalk payment in lieu program** that creates a fund for new construction and/or maintenance of sidewalks from new development projects.
- **Formalize street tree planting requirements** that guide the placement and species of trees to support the growth of the urban canopy along public roadways.
- **Review utility placement** along public ROW and in coordination with planned projects to promote consistency and limit potential impacts.

Topic / Consideration	*Timeline*	*Lead Department*	*Supporting Partners*	*Relates with*
Complete Streets Policy	Near-term	Public Space and Sustainability	Town Board	UDO Chapter 7 – Streets and Sidewalks – Appendix A
Traffic Calming Program	Mid-term	Public Space and Sustainability	Town Board, Public Works Division	Street Standard – Appendix B
Vision Zero Policy	Near-term	Public Space and Sustainability	Town Board, NCDOT Division 7	Commitment to safety
Safety Action Plan	Mid-term	Planning and Economic Development	Public Works Division	Vision Zero Policy
Dedicated funding for South Churton Street	Near-term	Town Board	NCDOT Division 7 - U-5845 project	Local funding plan and strategy
UDO re-write	Near-term	Planning and Economic Development		Private development requirements, and review process
Access Management Policy	Mid-term	Public Space and Sustainability	Town Board, Public Works Division	UDO re-write, Complete Streets Policy
Maintenance agreements	Mid-term	Public Space and Sustainability	Public Works Division	UDO re-write, Streets Standard
Sidewalk payment in lieu	Mid-term	Planning and Economic Development	Planning and Economic Development	UDO re-write, Complete Streets Policy
Street tree planting requirements	Mid-term	Planning and Economic Development	Planning and Economic Development	UDO re-write, Streets Standard
Utility placement	Long-term	Planning and Economic Development	Public Works Division	UDO re-write, Streets Standard

Table 5.2: Summary of Policy Considerations for the Town of Hillsborough.

Potential Funding and Partnerships

South Churton Street is also old NC-86 and maintained by NCDOT who will be a town partner moving forward. Conceptual design recommendations from this study will be integrated within the ongoing TIP project (U-5845) to follow the federally required National Environmental Policy Act (NEPA) project development process for public involvement, agency coordination, identification of potential impacts, selection of a locally preferred alternative, and/or mitigation strategy.

Funding and implementation can take one of two possible paths for the Town of Hillsborough:

Option A

> Fund this project through the traditional North Carolina Strategic Transportation Investments (STI) prioritization process, with the town providing only the required local match contribution (typically 20%).

Under this option, NCDOT steers the engineering and construction process. This includes the project timeline and agency coordination for the NEPA process, acquiring permits, public engagement and Title VI requirements. The department covers the project costs using federal funding (hence the NEPA project development process) and seeks reimbursement. This involves the following:

- Engineering design, public review and comment, and the creation of construction documents for the contractor bidding and selection process; and
- Construction, Engineering, Inspection (CEI) oversight of the prime contractor and subcontractors during construction.

The Town of Hillsborough would be responsible for funding their portion of the local match, which is typically 20% for roadways projects that make use of federal formula funds. North Carolina's Complete Streets Implementation Guide (2019) defines the local match requirements for bike, pedestrian and transit elements of a transportation project. Local requirements are determined by two primary elements:

- Documented within an approved plan: whether the facilities are part of the Comprehensive Transportation Plan (CTP), or a locally adopted plan that both (a) address a transportation need, and (b) meet NCDOT design standards (MUTCD, AASHTO Green Book, and NCDOT Roadway Design Manual)
- Identified need: whether the demand for bike, pedestrian and transit facilities are identified through the Complete Streets evaluation process

Facilities that do not meet these two criteria are labeled as "betterments" – requested improvements that exceed the recommendation or identified need.

- For facilities that are in a plan and the need is identified, NCDOT will pay 100% of these walking, biking or transit facilities.
- For those that are not in a plan but where need is identified, local matches depend on population. For Hillsborough, this match will be 10% of the additional cost to the project.
- For facilities that are not in a plan and where needs are not identified, the town must pay 100% of the cost for these multimodal improvements.

Option B

Fund the South Churton Street improvements through Capital Improvement Plan (CIP) funds.

This option may still rely on NCDOT, but the Town of Hillsborough would provide 100% of the funds to move the project to the top of NCDOT's prioritization list. This may involve issuing transportation bond(s), or use of general funds that come from property tax revenues.

Under this option, the NCDOT remains the party responsible for administering the project, and manages the same process as in Option A above. The difference between options relates to the proportion of costs that the Town of Hillsborough must pay, and the expedited timeline.

Maintenance

Under both options, the Town of Hillsborough and NCDOT must enter into an agreement during the project development process which will cover maintenance responsibilities after construction. The department will typically maintain facilities within the right of way that are not identified as betterments, such as roadway facilities and on-road bike facilities where need has been determined.

The town will be responsible for maintenance of all separated bike and pedestrian facilities that are above the curb, such as shared-use paths, sidewalks, grass strips, stormwater BMPs, and other plantings.

What happens if a local agreement can't be reached? If Hillsborough and NCDOT cannot come to a maintenance agreement, the department will proceed with evaluating whether on-road bike facilities may be incorporated into the roadway design.

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