

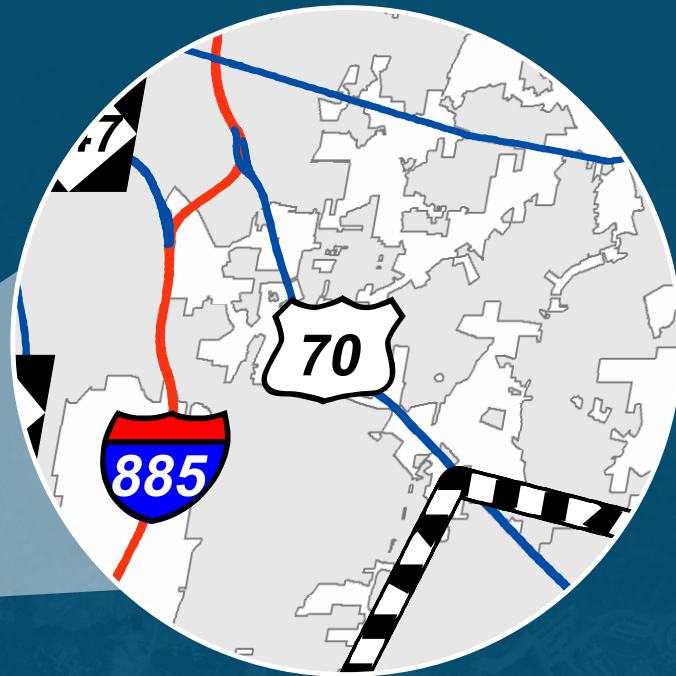
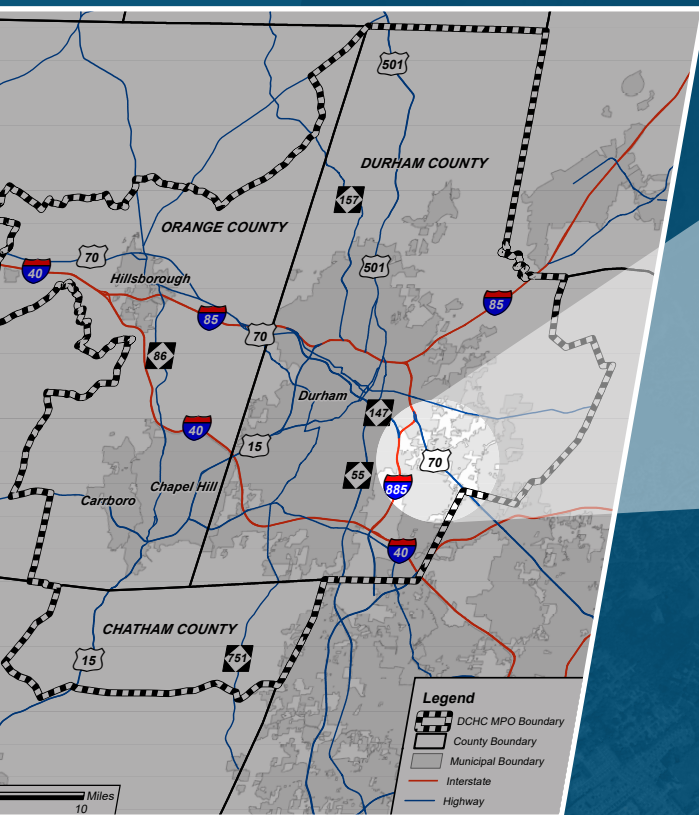
US 70 EAST CORRIDOR STUDY PHASE I REPORT SUMMARY

May 2024



The US 70 East Corridor Study is a long-term plan which will provide a framework for a safe, efficient, and equitable multimodal transportation system that offers a choice between public transit, pedestrian and bicycle use, and automotive travel. Creating a seamless connection between all modes of transportation ensures that transportation serves future development appropriately and equitably.

STUDY OVERVIEW



About the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization

The Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) is the regional organization responsible for transportation planning for the western part of the Research Triangle area in North Carolina. The DCHC MPO is comprised of the MPO Board, the Technical Committee (TC), local governments, and the State. The MPO Board is a policy body that coordinates and makes decisions on transportation planning issues.

The DCHC MPO urbanized area includes City of Durham, Durham County, Town of Chapel Hill, Town of Carrboro, Town of Hillsborough, Orange County, Northeast Chatham County.

The purpose of the study was the development of a locally preferred alternative concept to balance the needs of pedestrians, bicyclists, and transit riders with traffic and congestion related issues.

The US 70 East Corridor Study began in response to continued development along a 4-mile segment of US 70 between the I-885/US 70 interchange and Wake/Durham County line. US 70 between Durham and Raleigh serves a vital commuter corridor and direct link to Raleigh Durham Airport (RDU), with limited multimodal connections and alternatives to vehicular mobility today. STV was selected as the prime consultant, and Aidilisms as the sub-consultant for public engagement.

The DCHC MPO initiated this study in July 2022 as part of its work program. A Core Technical Team (CTT) comprised of representatives from City of Durham, Durham County, NCDOT, Go Triangle and MPO staff was charged with guiding the development of this study.

The purpose of the study was the development of a locally preferred alternative to balance the needs of pedestrians, bicyclists, and transit riders with automobile traffic and congestion related issues.

Phase 1 of the study identified two alternative concepts through public engagement and CTT guidance. These concepts will undergo additional analysis, refinement and public engagement as part of Phase 2 of the study.

The US 70 East Corridor Study achieved the following objectives:

1. Formulated a multimodal plan that incorporated highway, transit, pedestrian, and bicycle modes to sustain equitable mobility throughout the region.
2. Integrated the proposed future land uses and increased development densities identified in the The ENGAGE Durham Comprehensive Plan.
3. Considered community character and potential impacts throughout the planning process.
4. Supports the MPO goals and objectives, and complies with the MPO's long-range plan, the 2050 Metropolitan Transportation Plan (MTP).

Core Technical Team

The following local agencies helped guide the development of this study as a member of the Core Technical Team:



KEY THEMES



Throughout the study there were several key themes and issues identified to guide the study and its recommendations for the corridor.

They include the following:

- Walking & Biking
- Transit
- Highway
- Socioeconomic & Environmental



Walking & Biking

- Desire for improved bicycle pedestrian network within the study area today
- Limited opportunities to cross US 70 safely
- Very few bicycle and pedestrian destinations along US 70, mostly concentrated at the S. Miami Boulevard/Sherron Road intersection



Transit

- Limited fixed route service
- Corridor served by multiple transit agencies
- Limited bicycle and pedestrian access to existing transit



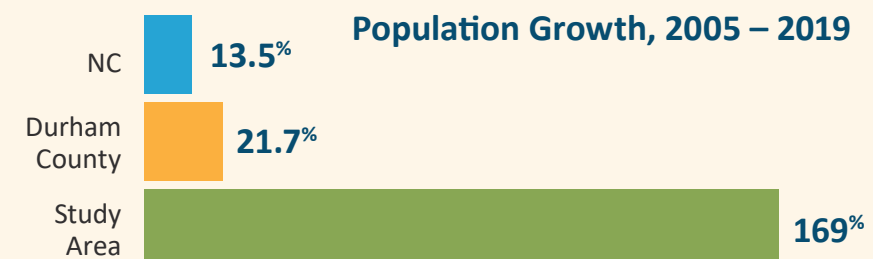
Highway

- US 70 is a vital commuter corridor between Raleigh and Durham
- Serves as a regional connection to Raleigh Durham Airport
- Substantial congestion exists today throughout the US 70 corridor area, concentrated at the S. Miami Boulevard/Sherron Road and Pleasant Drive intersections, especially during peak travel periods



Socioeconomic & Environmental

- Little Lick Creek and Lick Creek nutrient sensitive streams
- Minority owned businesses along the corridor
- Potential hazardous material sites along US 70



2,867

Proposed new dwelling units projected within Study area: 2020 – 2050



CORRIDOR VISION



The vision for the corridor was developed through the City’s ENGAGE Durham Comprehensive Plan which was adopted in October 2023 and refined by the Study’s Core Technical Team. Its vision is to provide a framework for a safe, efficient, and equitable multimodal transportation system along US 70 that offers a choice between public transit, pedestrian, and bicycle use, and automotive travel to create a seamless connection between different modes of transportation and ensures that transportation serves development in an appropriate matter.

The US 70 East Corridor Study aligned the DCHC MPO goals and objectives adopted in its long range transportation plan (2050 Metropolitan Transportation Plan) to help guide this planning process. Focus areas were then identified and measured against these goals.

DCHC MPO Goal	Performance Metrics
Promote safety, health & wellbeing	 Walkability
	 Bikeability
Promote & expand multimodal & affordable choices	 Walkability
	 Transit
Connect people & places	 Walkability
	 Bikeability
	 Vehicular Operations
Protect the human & natural environment & minimize climate change	 Greenspace
	 Walkability
	 Bikeability
Manage congestion & system reliability	 Vehicular Operations
	 Transit

ALTERNATIVE DEVELOPMENT



Strategy

- Guidance from a Core Technical Team, comprised of DCHC MPO, NCDOT, the City of Durham, Durham County, and Go Triangle
- Equitable stakeholder outreach through two rounds of public engagement, which included virtual and in-person meetings
- Online and printed surveys
- Corridor Analysis
- Follow framework in the City's ENGAGE Durham Comprehensive Plan to integrate future land uses
- Respect environmentally sensitive areas
- Support MPO goals and comply with its long-range transportation plan

Development of Multimodal Alternatives

Two alternative concepts for the corridor were developed from feedback received during public engagement activities and guidance from the study's Core Technical Team. **These two concepts feature a series of innovative intersections and signal improvements, are designed to improve traffic flow along the corridor, and will provide opportunities for vulnerable roads users — such as bicyclists and pedestrians — to cross US 70 safely.**

4-Lane Boulevard Section

- Median U-Turns at Pleasant Drive, S. Miami Boulevard/Sherron Road, and Page Road/Future Leesville Road Extension intersections
- Bowtie intersections with roundabouts at Pleasant Drive, between Copper Leaf Parkway and Angier Avenue, and Page Road
- New pedestrian crosswalks at Pleasant Drive, S. Miami Drive/Sherron Road, and Leesville Road
- Multiuse Path connections
- Bridged greenway crossing at Lick Creek Greenway and Brier Creek/East Fork Creek Trail
- Crosswalks and signal improvements at future developments at Copper Leaf Parkway, Hinsley Road and Sanders Avenue

4-Lane Boulevard Section – with Parallel Roads

- Bridged bicycle and pedestrian connection at Pleasant Drive and Future Glover Road Intersection
- Bowtie intersections with roundabouts at Pleasant Drive, between Copper Leaf Parkway and Angier Avenue, and Page Road
- Median U-Turns at the S. Miami Boulevard/Sherron Road, Angier Avenue/Future Angier Avenue Extension, Page Road/Future Leesville Road Extension intersections
- Multiuse Path connections along connecting roads to parallel road network
- Bridged greenway crossing at Lick Creek Greenway and Brier Creek/East Fork Creek Trail
- Crosswalks and signal improvements at future developments at Hinsley Road and Sanders Avenue, Page Road/Future Leesville Road Extension intersections

Performance Metrics

Walkability



- Improve sidewalk connectivity and make it easier and safer for pedestrians to cross
- Improve pedestrian experience and comfort
- Ability to provide pedestrian amenities on frontage roads and along roadways connecting to US 70

Bikeability



- Improved bicycle/trail network connectivity and provide greenway connections across US 70
- Improve bicyclist experience, safety, and comfort

Transit



- Accommodate future transit opportunities on frontage roads
- Allows for future BRT on US 70

Land Use



- Support future land uses in the Comprehensive Plan

Greenspace



- Commitment to greenspace

Vehicular Operations

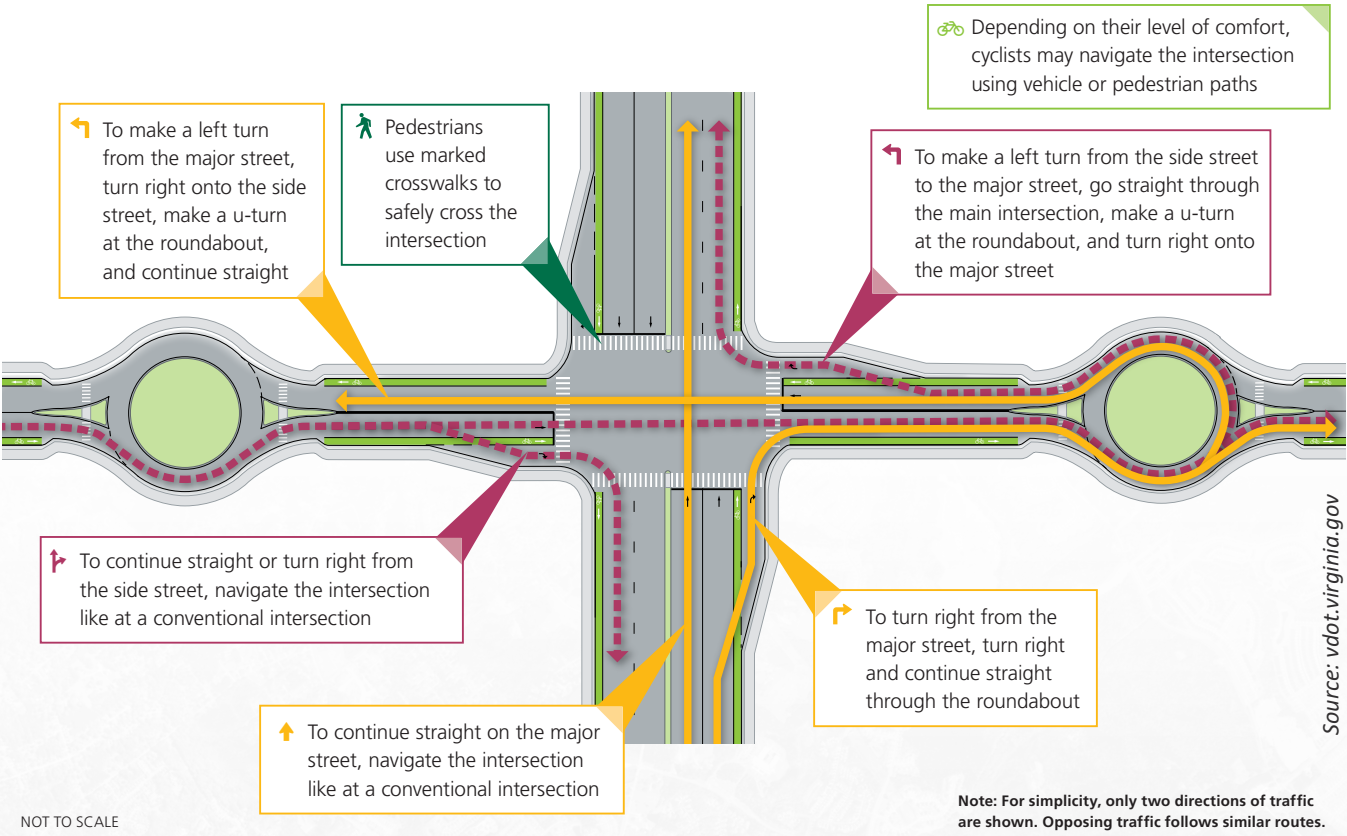


- Improve travel time along US 70
- Reduce delay

Reduced Conflict Intersections (RCI)

The Study Team developed two alternative concepts for the corridor that include a series of innovative Reduced Conflict Intersections (RCI) along US 70 to reduce travel delays, improve safety and handle heavier traffic volumes. The two types of innovative intersection designs selected for these concepts were median U-turns and bowtie intersections, as identified in the list on page 9 and on the map on page 17. Median U-Turn and bowtie intersections are creative solutions for improving mobility and safety along corridors experiencing increased congestion in urban areas. Two graphics that describe how to navigate these different RCIs are shown below.

Navigating a Bowtie Intersection



Features & Benefits of a Bowtie Intersection

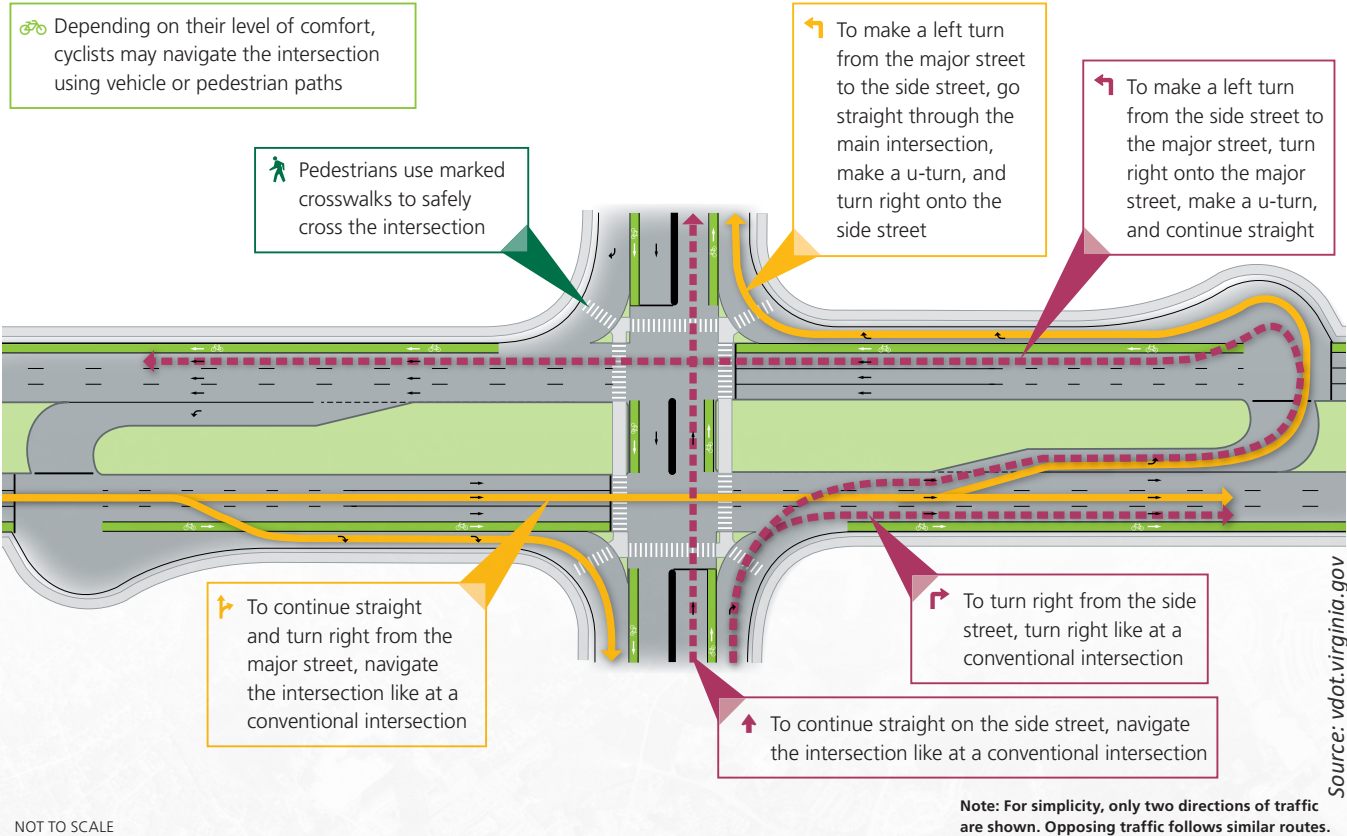
A Bowtie is an intersection where left-turn movements are completed at adjacent roundabouts on the side streets. Benefits include:

- **Improved Safety:** Reduces the number of conflict points where motorists, pedestrians and bicyclists may cross paths
- **Increased Efficiency:** Since there are no left turns at the main intersection, a bowtie has fewer traffic signal phases which reduces delay
- **Shorter Wait Times:** Fewer traffic signal phases result in less time stopped at the main intersection
- **Cost Effective:** More cost effective than adding additional through vehicular lanes

Facts About Reduced Conflict Intersections (NCDOT, 2019)



Navigating a Median U-Turn



Features & Benefits of a Median U-Turn

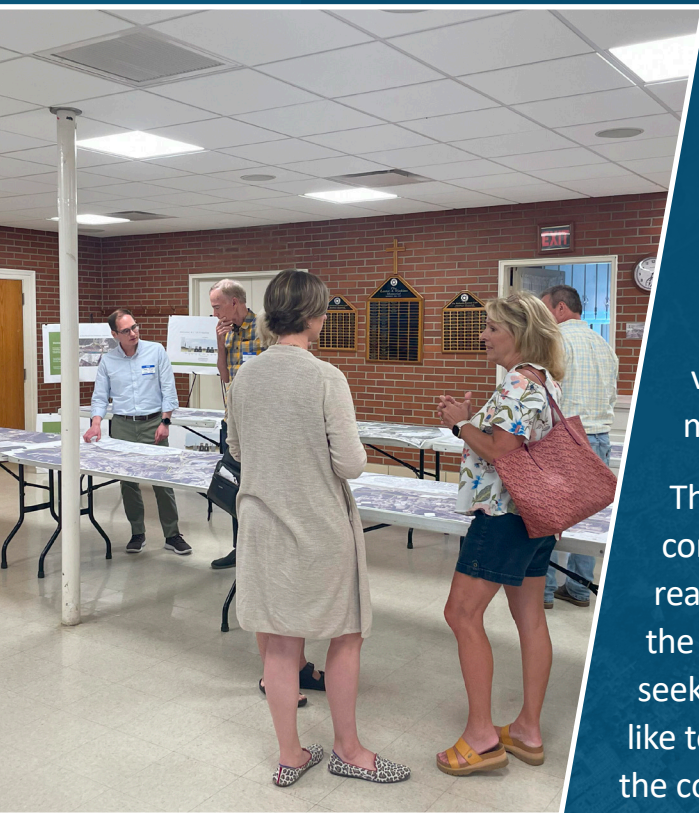
A median U-turn is an intersection design where left turns are precluded from the main intersection and rerouted to make U-turns at dedicated median openings downstream from the main intersection. Median U-turns can be signalized to provide mid-block crossings of bicyclists and pedestrians. Benefits include:

- **Improved Safety:** Reduces the number of conflict points where motorists, pedestrians and bicyclists may cross paths
- **Increased Efficiency:** Eliminates left-turn movements from the main intersection, allowing for fewer traffic signal phases and reduces delay
- **Shorter Wait Times:** Fewer traffic signal phases result in less time stopped at the main intersection
- **Cost Effective:** More cost effective than adding additional through vehicular lanes

STAKEHOLDER ENGAGEMENT

Effective engagement takes careful planning and acknowledgment. Each population within the US 70 corridor presents a unique opportunity to broaden the study team's understanding of who makes up the community. Equitable engagement is about building strong and sustainable relationships and partnerships and lifting underrepresented voices and incorporating them into the decision-making process.

The study team built trust by using established community ambassadors. These ambassadors reached out to minority owned businesses along the corridor and other community members to seek out feedback on how the community would like to be engaged, to learn more about issues within the community and how the study team could be of service to them during the study.



400+

Responses were received during the first round of public engagement

195

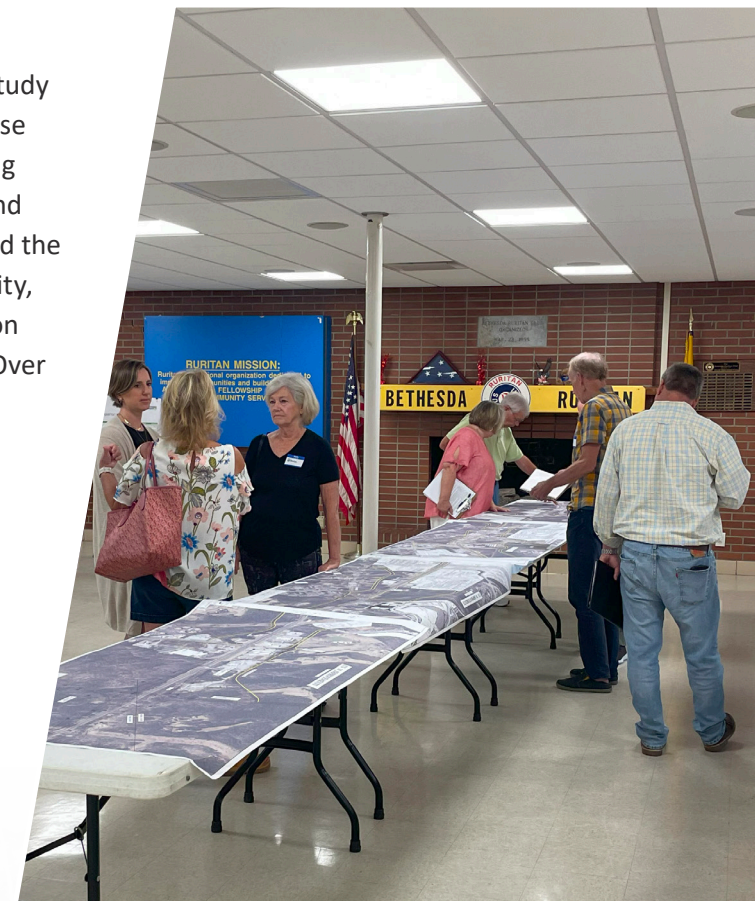
Responses were received during the second round of public engagement

First Round of Public Engagement

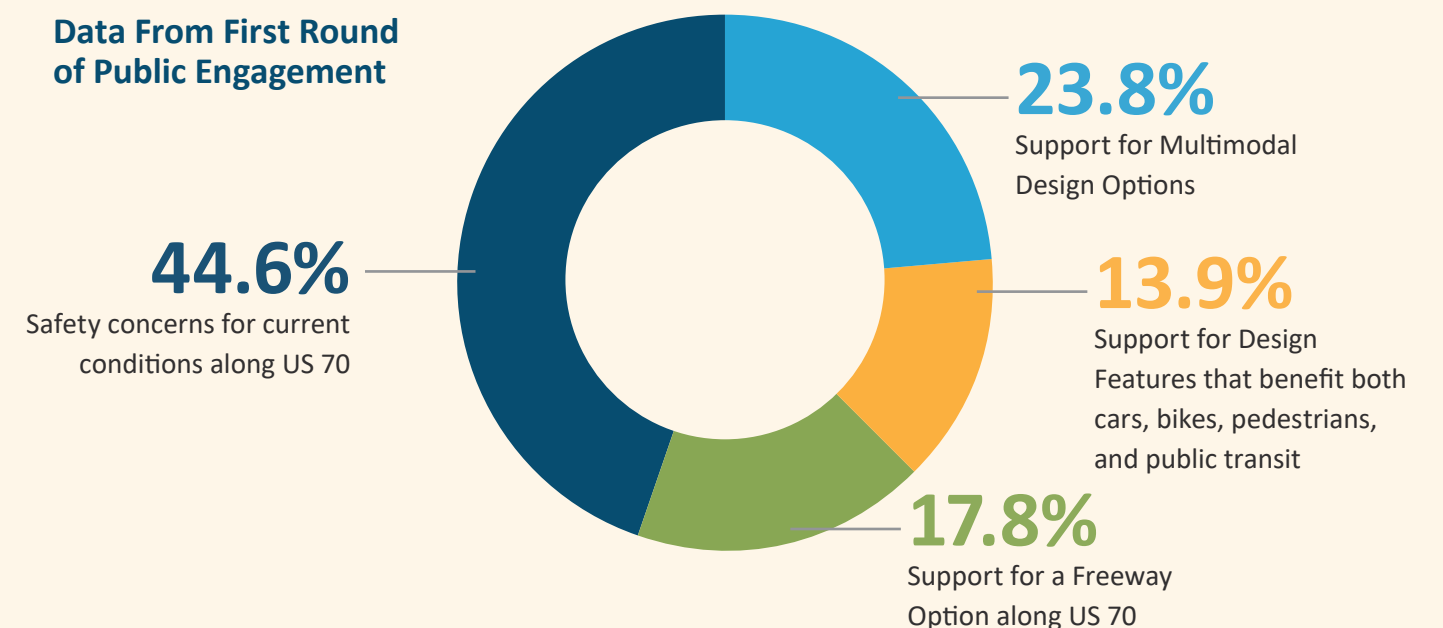
The first round of public engagement was conducted by the study team from November 2022 through January 2023. The purpose of the first round of public engagement was to present existing conditions and to clarify why the study is being undertaken and verify goals to be achieved by the plan. In order to understand the desires and needs of the diverse stakeholders in the community, feedback was received through a series of virtual and in person meetings with feedback captured through an online survey. Over 400 responses were received.

Key Take Aways:

- US 70 is a vital commuter corridor
- Concerns over increased traffic congestion linked to awareness of current and future increases in residential development
- Support for a freeway option for US 70
- Support for multimodal transportation options that benefit automobiles, bicyclists, pedestrians, and public transit



Data From First Round of Public Engagement



Second Round of Public Engagement

The study team’s second round of public engagement occurred between August 21 and September 18, 2023 to present the 4-Lane Boulevard and 4-Lane Boulevard with Parallel Roads alternatives to the public for their feedback. Through virtual and in-person meetings linked to an online survey, participants were asked to comment on the design features of both alternatives. Additional outreach to the over 50 businesses along the corridor was conducted, inviting them to participate in the upcoming meetings and survey. 195 survey responses were received.

Key Take Aways:

- For each intersection improvement presented, there was higher support for the design features of the 4-Lane Boulevard with Parallel Roads.
- Participants expressed safety concerns related to minimizing contact between bicyclists, pedestrians and vehicles and making the experience for all modes to be more pleasant.
- Participants expressed support for the greenway connections proposed at the Lick Creek Greenway and Brier Creek Trail.
- 22% of respondents expressed support for a freeway option for US 70.



4-LANE BOULEVARD WITH PARALLEL ROADS CONCEPT

4-Lane Boulevard with Parallel Roads

The 4-Lane Boulevard with Parallel Roads concept provides a comprehensive multimodal alternative for the entire corridor. This concept creates a balance between mobility and accessibility, with bridging for automobiles, bicycle and pedestrians at Pleasant Drive, the future Glover Road Extension and Lick Creek Fort Trail Greenway across US 70 to improve mode mobility, while including urban design that reduces the speed of vehicles and creates a more pedestrian friendly environment with planned bicycle and pedestrian facilities integrated into the future land uses along the corridor.

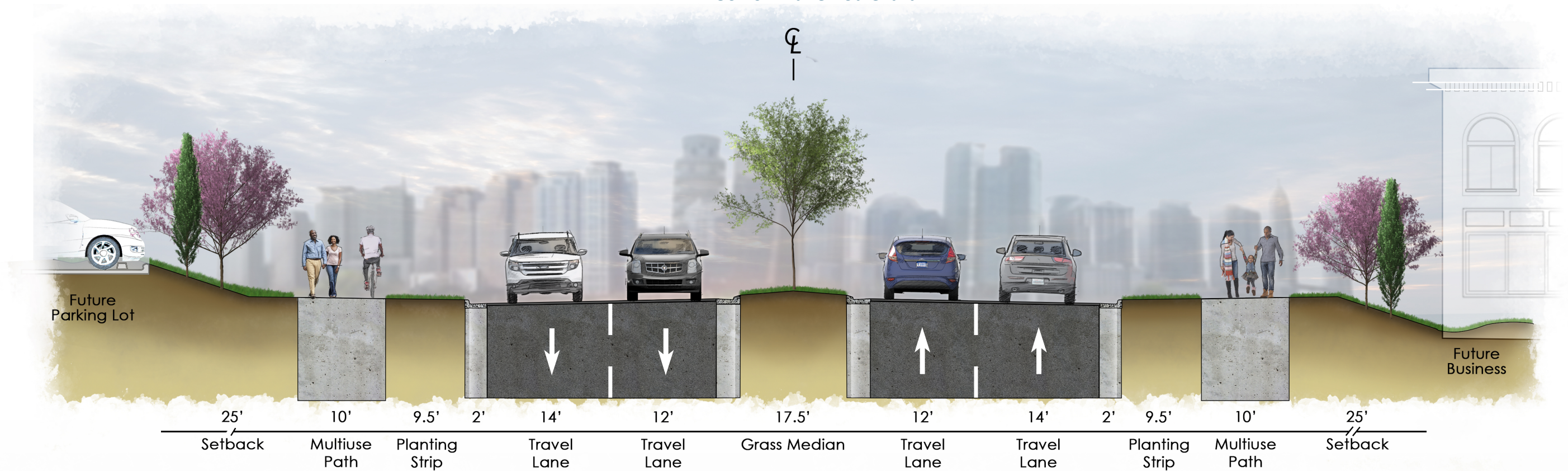
The full 4-Lane Boulevard with Parallel Roads concept design can be found in Appendix B.

Key Features of this Concept:

- This concept is a series of innovative Median U-Turn intersections, also referred to as a Reduced Conflict Intersection (RCI) corridor.
- These innovative intersection improvements yielded shorter travel times and higher average vehicle speeds along US 70.
- Removal of local traffic along US 70 further improves travel time.
- The elimination of 50 driveways along US 70 improves vehicular safety while the addition of frontage roads maintains access and in some cases creates bidirectional access to businesses.
- The addition of separated bicycle and pedestrian facilities along the mainline and parallel roads increases safety for vulnerable road users.



US 70 4-Lane Boulevard



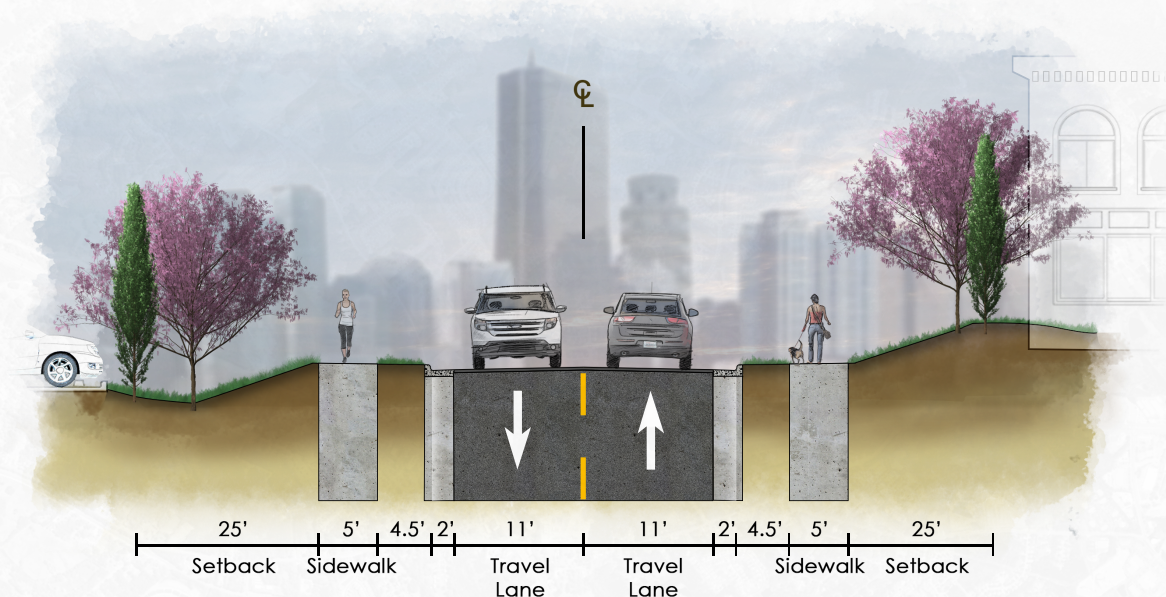
173.5' Right Of Way

DESIGN SPEED = 45 MPH

Benefits:

- Move high traffic volumes on US 70 by separating through traffic from local traffic
- Creating a needed bicycle and pedestrian space and traffic calming on parallel roads
- Increased greenspace with upgraded stormwater treatment to treat runoff leading to nutrient laden Lick Creek and Little Lick Creek
- Opportunities to add community space
- Offers sidewalks and bidirectional vehicular access to businesses
- Improves safety on US 70 by reducing conflict points through access management
- Better accommodates future transit opportunities on parallel roads and US 70
- Offers commercial development opportunities to serve adjacent neighborhoods
- Lick Creek Greenway and Brier Creek Trail/E. Fork Creek Trail connections crossing US 70

Parallel Road



DESIGN SPEED = 30 MPH

4-LANE BOULEVARD WITH PARALLEL ROADS CONCEPT

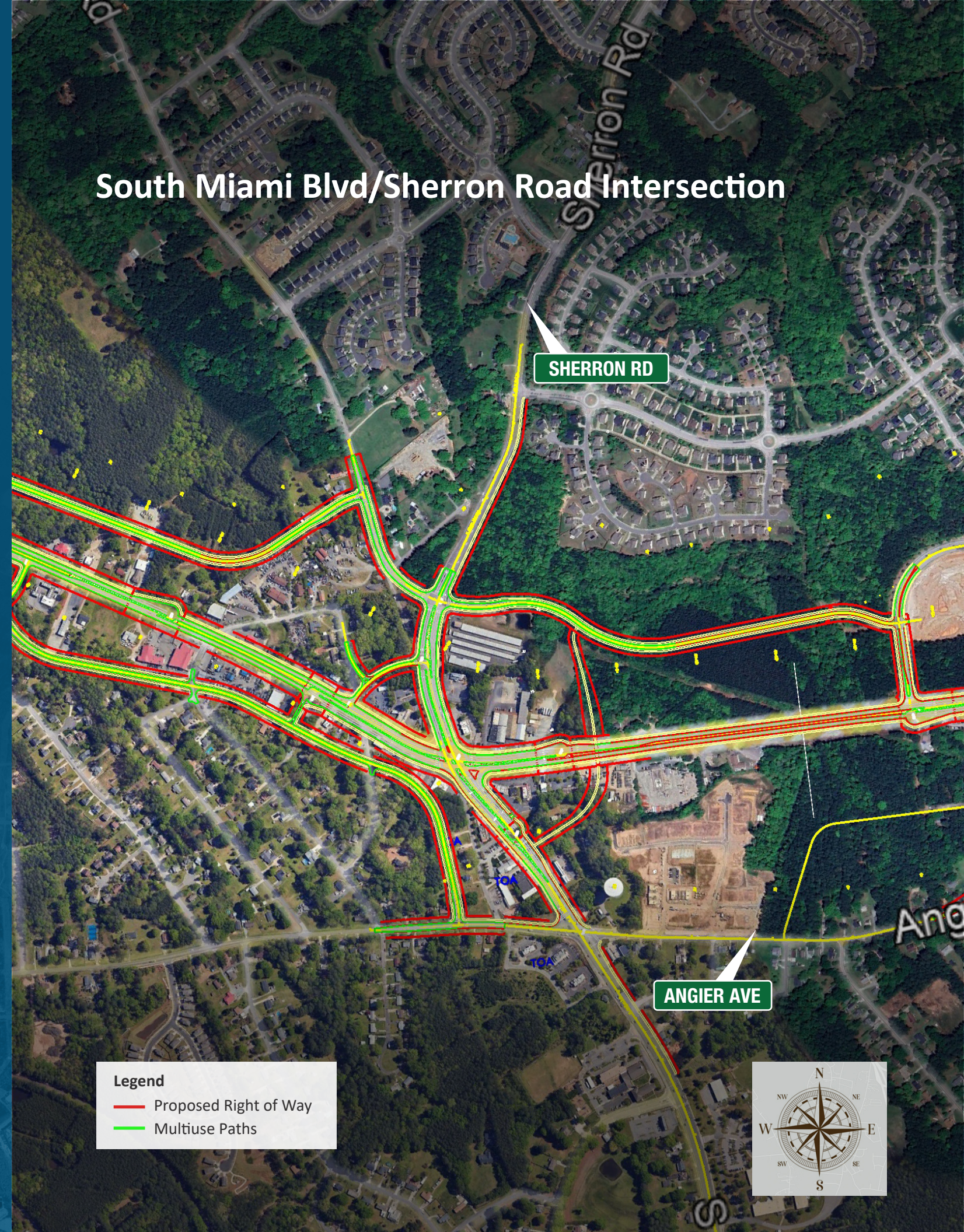
Key Features of Median U-Turn Intersection at South Miami Boulevard/Sherron Road

A Median U-Turn intersection is a type of road design where the left turns are restricted at the main intersection. Instead of making a left turn directly, drivers first make a U-turn at a designated median opening and then proceed through the intersection.

Benefits:

- **Safety:** Fewer conflict points mean reduced chances of collisions between vehicles and pedestrians or cyclists.
- **Shorter Crossing Distances:** Pedestrians can cross the road in two shorter stages, using the median as a refuge area.
- **Reduced Congestion:** By eliminating left-turn signal phases, the intersection operates more efficiently, benefiting all road users.
- **Pedestrian Bridge:** Grade separating is the safest way to cross over US 70 and enhances the pedestrian and bicyclist experience.

South Miami Blvd/Sherron Road Intersection



4-LANE BOULEVARD CONCEPT

Key Features of the 4-Lane Boulevard Concept

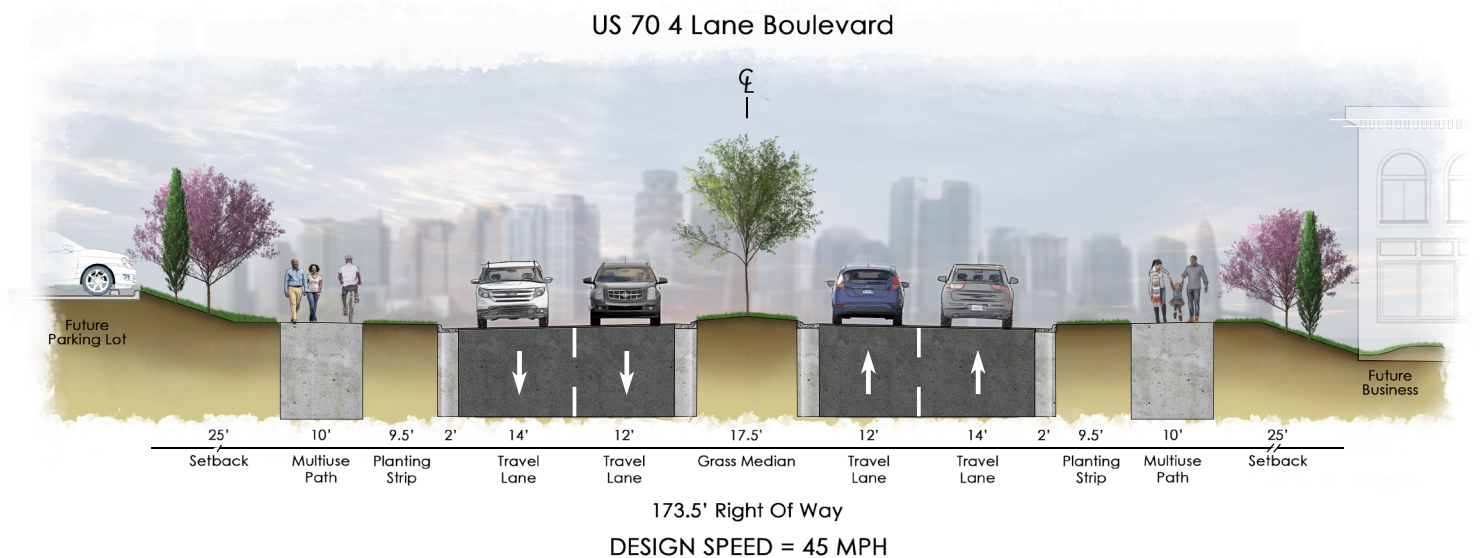
The typical section of the US 70 main line is identical in both the 4-Lane Boulevard concept and the 4-Lane Boulevard with Parallel Roads concept. **The main overall differences between the two concepts are:**

- The 4-Lane Boulevard concept does not have a parallel road network and therefore will not divert as much local traffic away from US 70 as the parallel road concept.
- The absence of parallel roads in the 4-Lane Boulevard concept means the only bicycle and pedestrian facilities are on the US 70 main line.
- The 4-Lane Boulevard concept does not include bridges at either Pleasant Drive and the Future Glover Road.

The key features of the 4-Lane Boulevard concept are:

- Median U-Turns at Pleasant Drive, S. Miami Boulevard/Sherron Road, and Page Road/Future Leesville Road Extension intersections
- Bowtie intersections with roundabouts at Pleasant Drive, between Copper Leaf Parkway and Angier Avenue, and Page Road
- New pedestrian crosswalks at Pleasant Drive, S. Miami Drive/Sherron Road, and Leesville Road
- Multiuse path connections
- Bridged greenway crossing at Lick Creek Greenway and Brier Creek/East Fork Creek Trail
- Crosswalks and signal improvements at future developments at Copper Leaf Parkway, Hinsley Road and Sanders Avenue

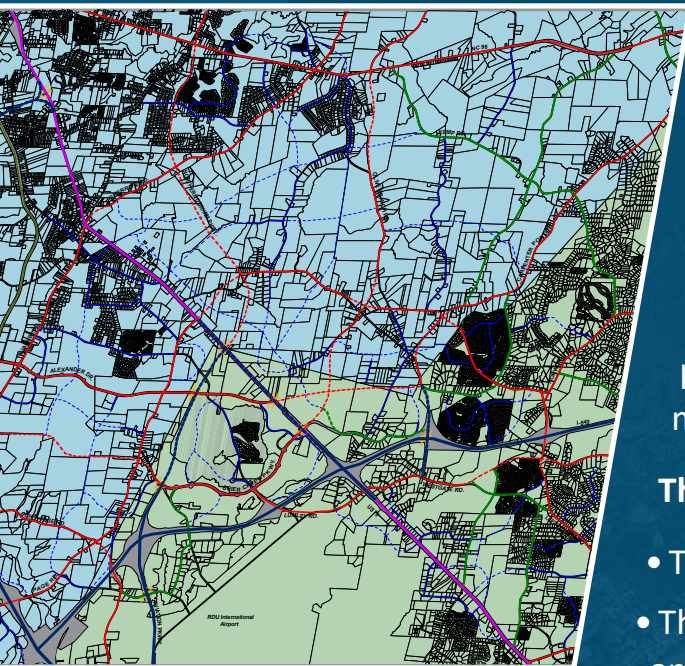
The full 4-Lane Boulevard concept design can be found in Appendix A.



Benefits:

- This concept is a series of innovative Median U-Turn intersections, also referred to as a Reduced Conflict Intersection (RCI) corridor. Creating needed bicycle and pedestrian facilities with a multiuse path.
- Enhancing safety by including crosswalks.
- Increased greenspace with upgraded stormwater treatment to treat runoff leading to nutrient laden Lick Creek and Little Lick Creek.
- Offers commercial development opportunities to serve adjacent neighborhoods.
- This concept does not include a parallel road network and therefore will have fewer implementation barriers and substantially lower costs than the concept with the parallel road network.
- Lick Creek Greenway and Brier Creek Trail/E. Fork Creek Trail connections crossing US 70.

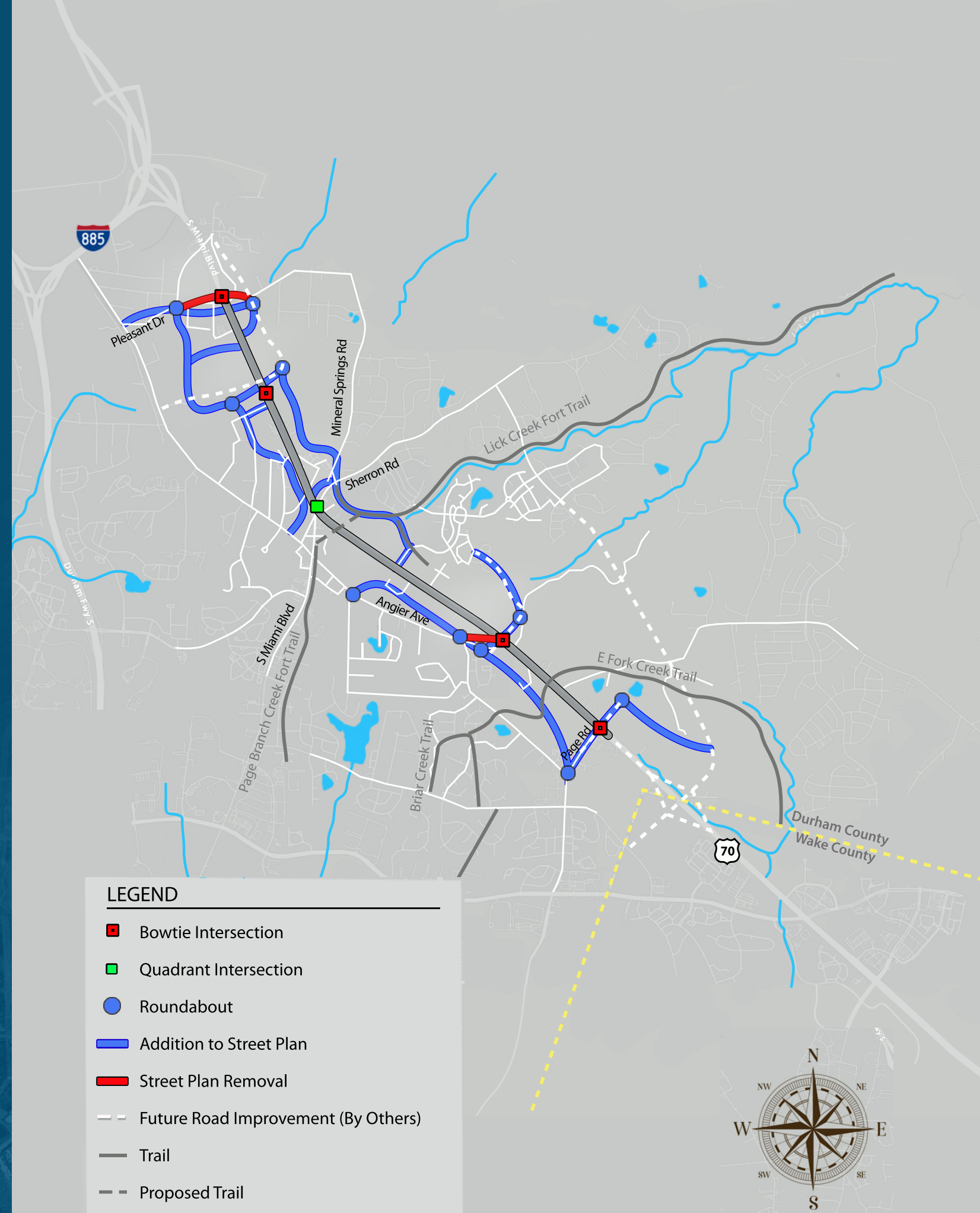
STREET PLAN RECOMMENDATIONS



In implementing the parallel road network associated with this alternative, this study proposes changes to an MPO plan or local collector street plan that reserves or dedicates the right-of-way for the parallel road network. These new streets give pedestrians and bicyclists other options to travel parallel to US 70, and would provide local streets near US 70 which has the potential to enable vibrant shopping districts and mixed-use neighborhoods.

These improvements could be funded and built by:

- The City, through the use of City funds.
- The City could work with NCDOT to secure funding and construct the improvements.
- Through agreements when large developments like apartments or shopping centers come in to the area, and the developer is required to construct the street improvements or the City can reimburse the developer for some of the cost.



IMPLEMENTATION

The Southeast Durham Focus Area Comprehensive Plan shows various land use types along the US 70 Corridor. In addition to industrial and highway commercial land uses, the comprehensive plan includes Mixed Residential Neighborhoods, Transit Opportunity Areas and 15-Minute Neighborhoods. Residents living in these areas can easily and safely walk, bike and roll within and around the different neighborhoods to access commercial areas or transit stops. The alternative concepts support mobility within the US 70 Corridor by:

- Providing sidewalk and bike connectivity within and outside of neighborhoods
- Providing safe opportunities for bicycles and pedestrians to cross US 70
- Providing opportunities for bicycle and pedestrian access to transit stops along the parallel roads
- Improving road connectivity with a mix of collector and local streets with multiple access points
- Trail connections between future neighborhoods for bike and pedestrian connections

Implementation Plan

- Conduct Phase 2 of the US 70 East Corridor Study, which will compare the alternative boulevard concepts from this study with the freeway (limited-access) concepts developed by NCDOT, and request public feedback on this comparison. Endorse a concept after this process is complete.
- Revise an MPO plan or local collector street plan to provide policy framework for implementing improvements through the site plan review of future developments.
- Partner with NCDOT to implement improvements by submitting relevant projects into the SPOT prioritization process and subsequently programming the projects in the State Transportation Improvement Program (STIP), the State and MPO process that funds transportation projects.
- Refinement of the transit component based on GoTriangle, GoDurham, county and regional studies [e.g., Freeway, Arterial, Street and Tactical (FAST)].

PHASE 2 & ADDITIONAL CONSIDERATIONS

Phase 1 of the study identified two alternative concepts through public engagement and guidance from a Core Technical Team. These concepts are considered high level and it is understood that further refinement may be needed, which could include a combination of elements from both alternative concepts.

Phase 2 of the study seeks to conduct further analysis of these concepts and administer additional public engagement to continue refinement and identify a locally-preferred concept. The following additional considerations will be part of this process:

- The DCHC MPO goals should be the basis for the analysis, evaluation, and selection of design alternatives in Phase 2.
- East of Miami Boulevard, include comfortable and safe bicycle and pedestrian crossings of US 70 that are both part of, or independent of, a proposed intersection or interchange.
- Design standards for bicycle and pedestrian facilities should be specified and incorporated as refinement of the alternative concepts continue in the next phase of the study.
- Bicycle and pedestrian facilities should continue to be evaluated to ensure they provide efficient access to destinations.
- Complete Streets elements should be considered for each alternative concept.
- Options to minimize property acquisitions, business, and residential relocations. Efforts should be made to contact property owners to determine ways to reduce negative impacts.





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