

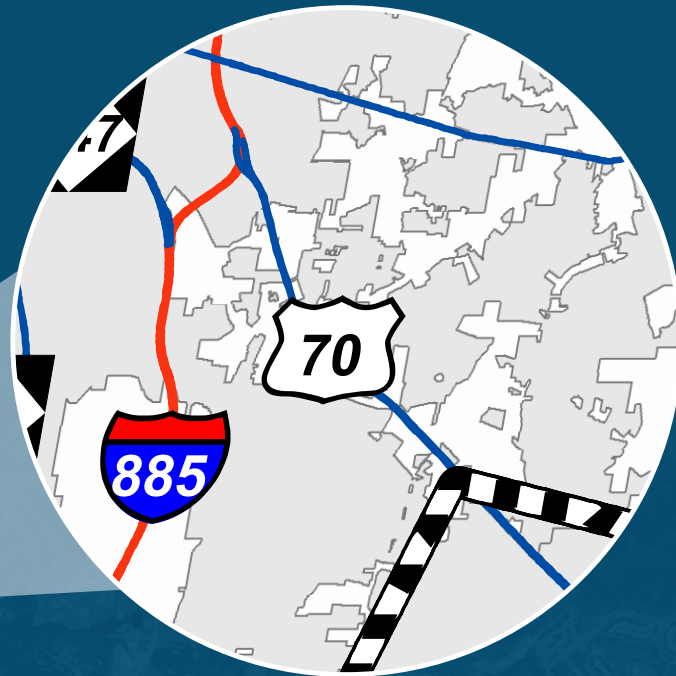
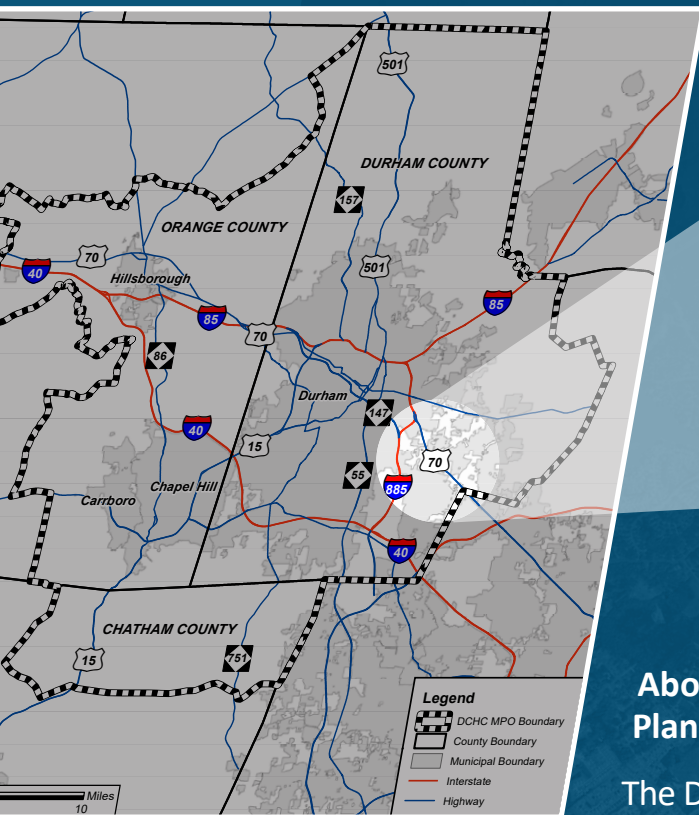
# US 70 EAST CORRIDOR STUDY REPORT SUMMARY

March 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 urbanized area includes:

- Durham County (entire county)
- A portion of Orange County including the Towns of Chapel Hill, Carrboro, and Hillsborough
- Northeast Chatham County

The purpose of the study was the development of a locally preferred alternative 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, 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 Durham-Chapel Hill-Carrboro 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 traffic and congestion related issues.

## 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. A plan that 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.

**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 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



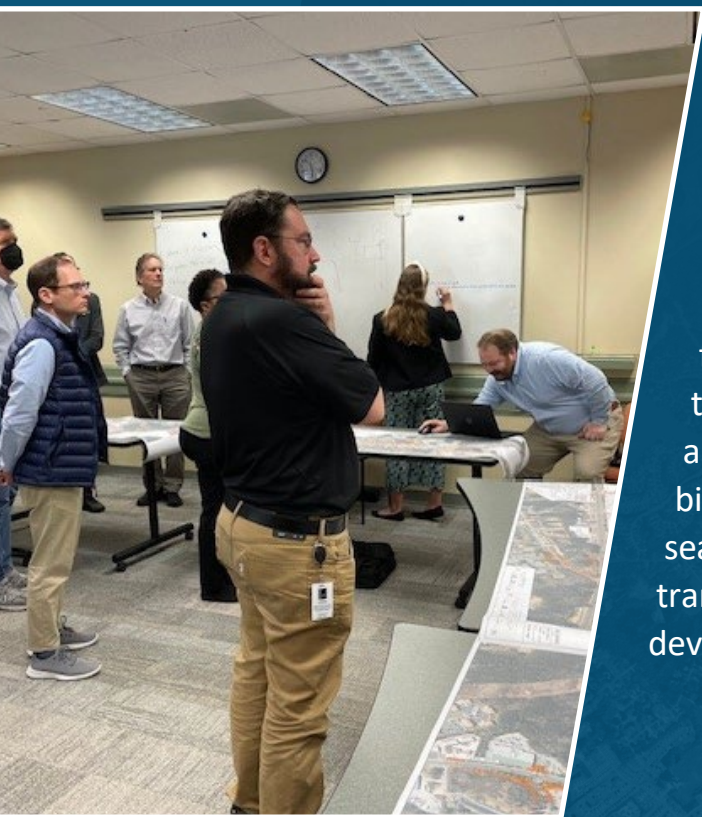
**2,867**

Proposed 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 were developed from feedback received during public engagement activities and guidance from the study's Core Technical Team. These two alternative 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 Angler Avenue, and Page Road
- New pedestrian crosswalks Pleasant Drive, S Miami Drive/Sherron Road, and Leesville Road
- Multiuse Path connections
- Bridged greenway crossing at Lick Creek Greenway and Briar 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 Angler 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
- Multiuse Path connections along connecting roads to parallel road network
- Bridged greenway crossing at Lick Creek Greenway and Briar Creek/East Fork Creek Trail
- Crosswalks and signal improvements at future developments at Hinsley Road and Sanders Avenue, Page Road/Future Leesville Road Extension

## 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
- Not preclude future BRT on US 70

### Land Use



- Support future land uses in the Comprehensive Plan

### Greenspace



- Increase greenspace

### Vehicular Operations



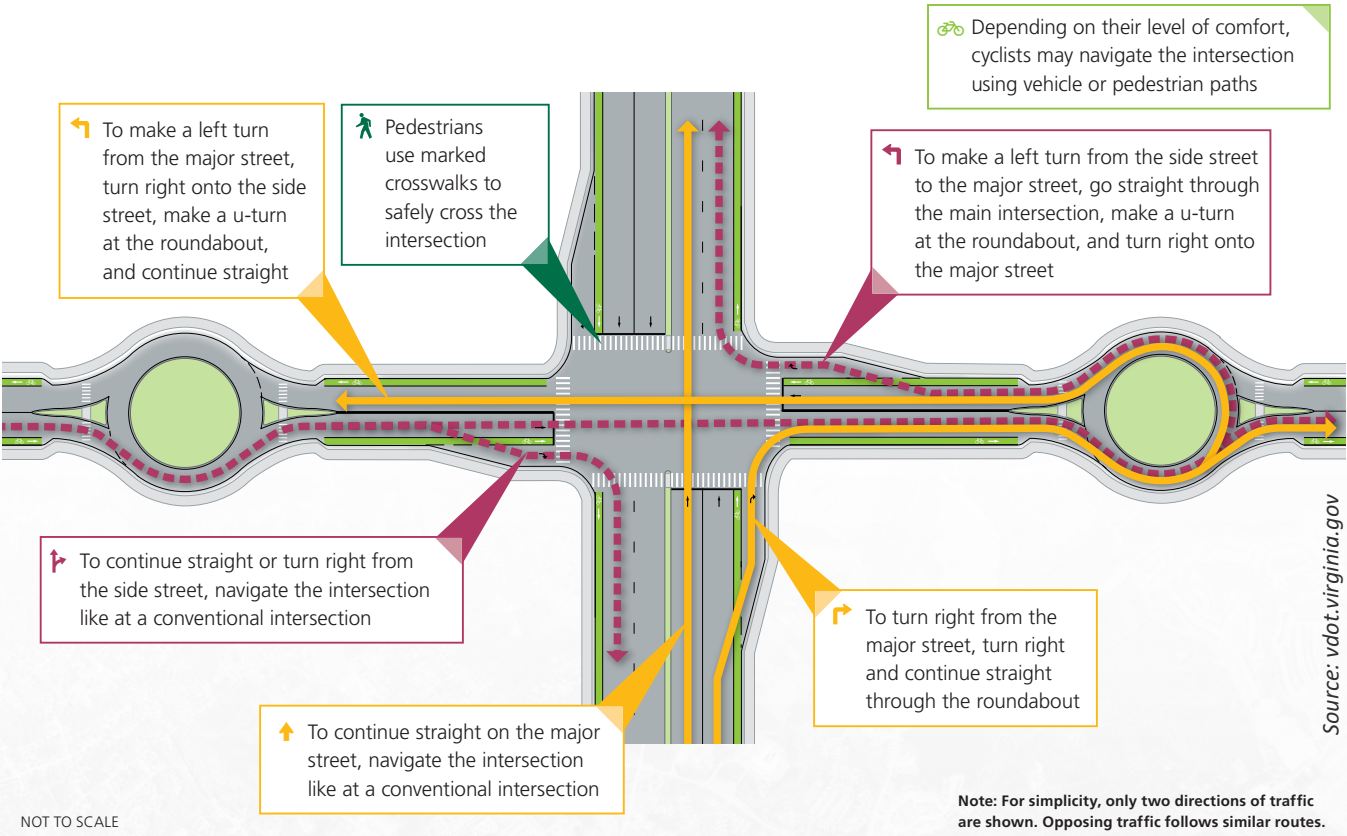
- Improve travel time along US 70
- Reduce delay



Reduced Conflict Intersections (RCI)

The Study Team developed two alternatives with a series of innovative Reduced Conflict Intersections (RCI) along US 70 to reduce travel delays, improve safety and handle heavier traffic volumes. Median U-Turn and bowtie intersections are creative solutions for improving mobility and safety along corridors experiencing increased congestion in urban areas.

Navigating a Bowtie Intersection



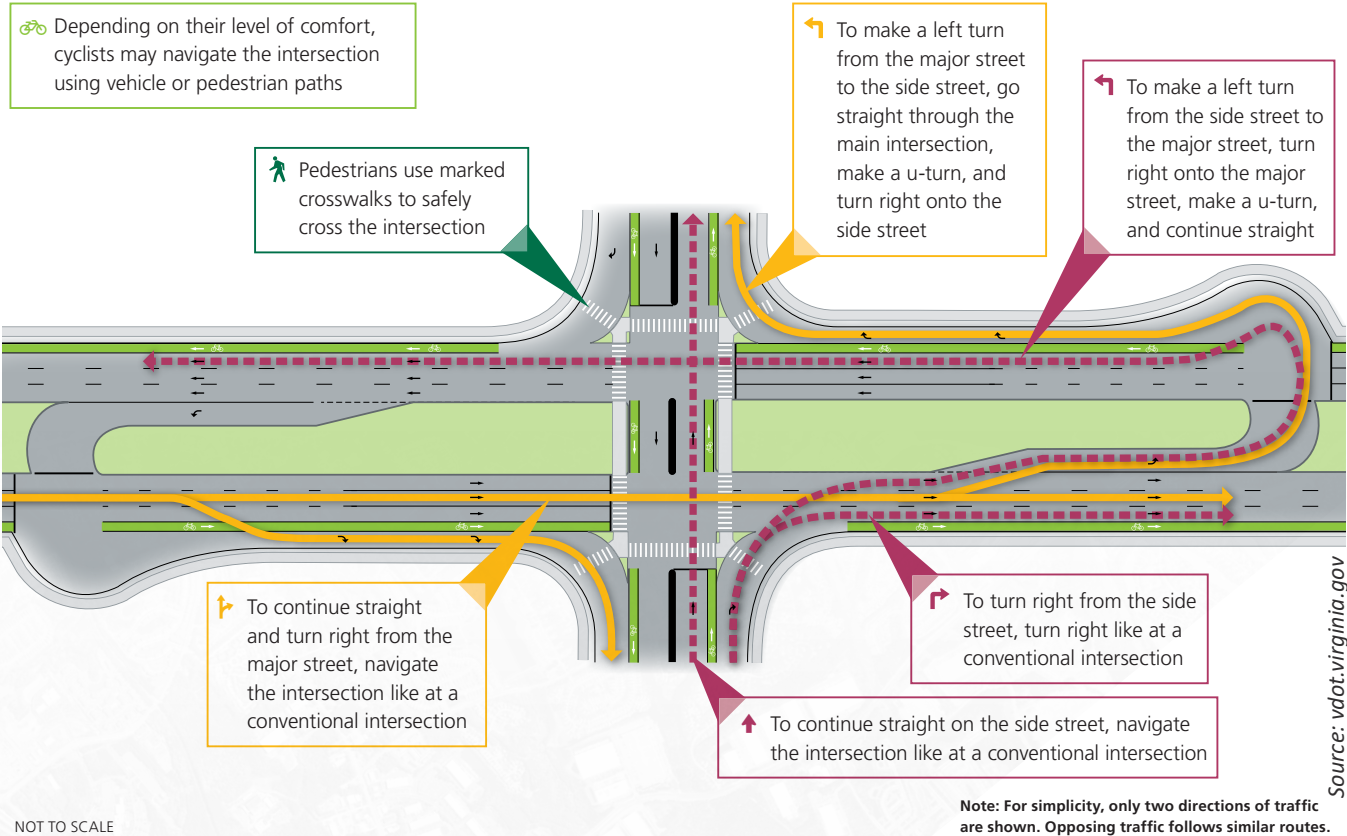
Features & Benefits of a Bowtie Intersection

- 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 acknowledgement. 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 incorporate them into the decision-making process.

The study team built trust by the use of established community ambassadors. These ambassadors reached out to all 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**

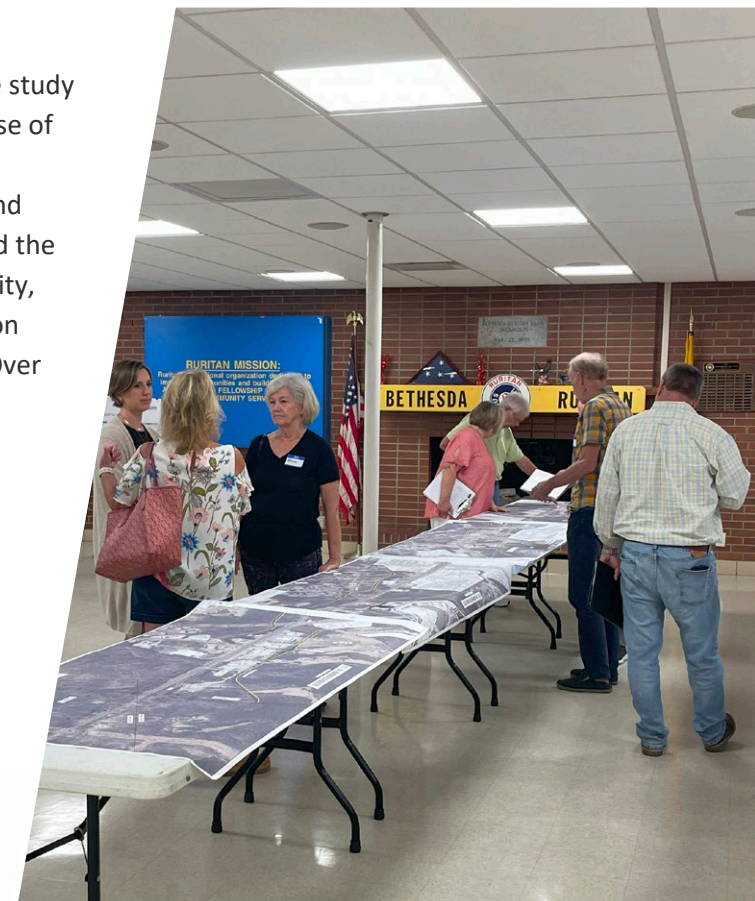
Responses were received during the second round of public engagement

## First Round of Public Engagement

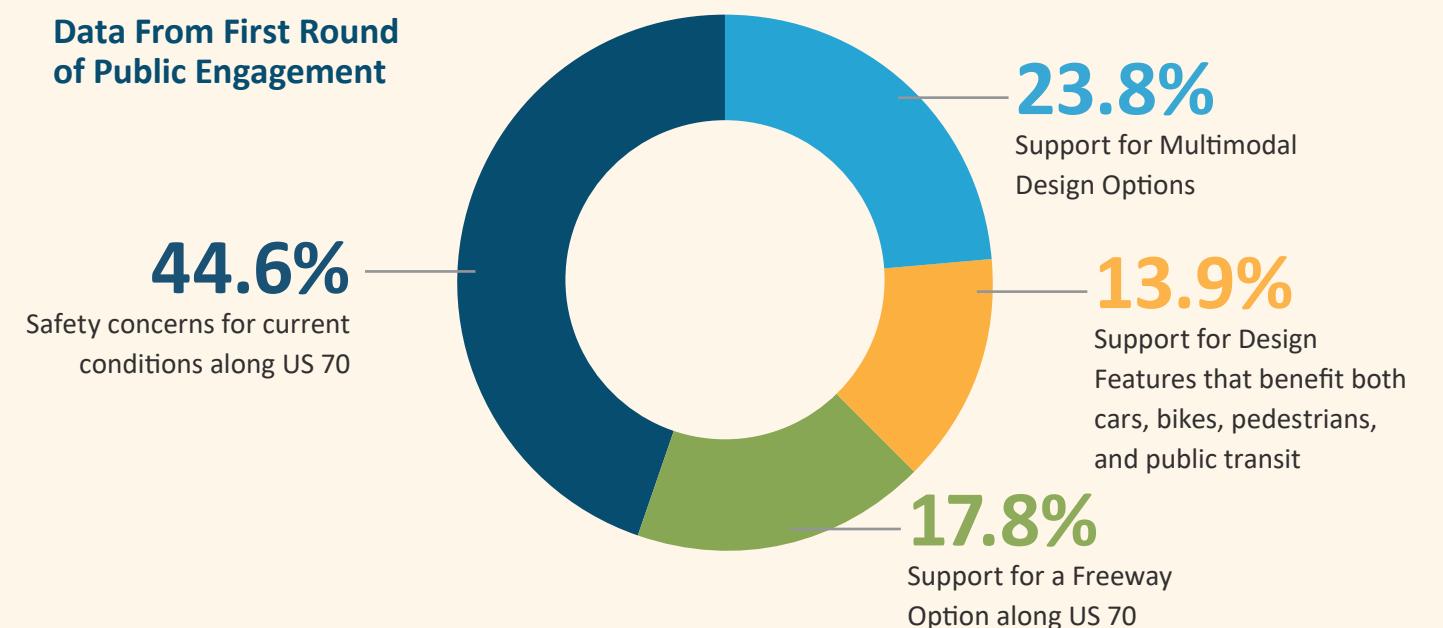
The first rounds of public engagement were conducted by the study team from November 2022 through January 2023. The purpose of the first round of public engagement was to present existing conditions and to clarify why the study is being undertaken and verify goals to be achieved by the plan. In order 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 increase 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 a second round of 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 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 Briar Creek Trail
- 22% of respondents expressed support for a freeway option for US 70





# RECOMMENDED CONCEPT

## 4-Lane Boulevard with Parallel Roads

The recommended concept provides a comprehensive multimodal alternative for the entire corridor. This concept creates a balance between mobility and accessibility, with bridging at Pleasant Drive, the future Glover Road Extension and Lick Creek Fork Trail Greenway across US 70 to improve mode mobility, but includes an 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.

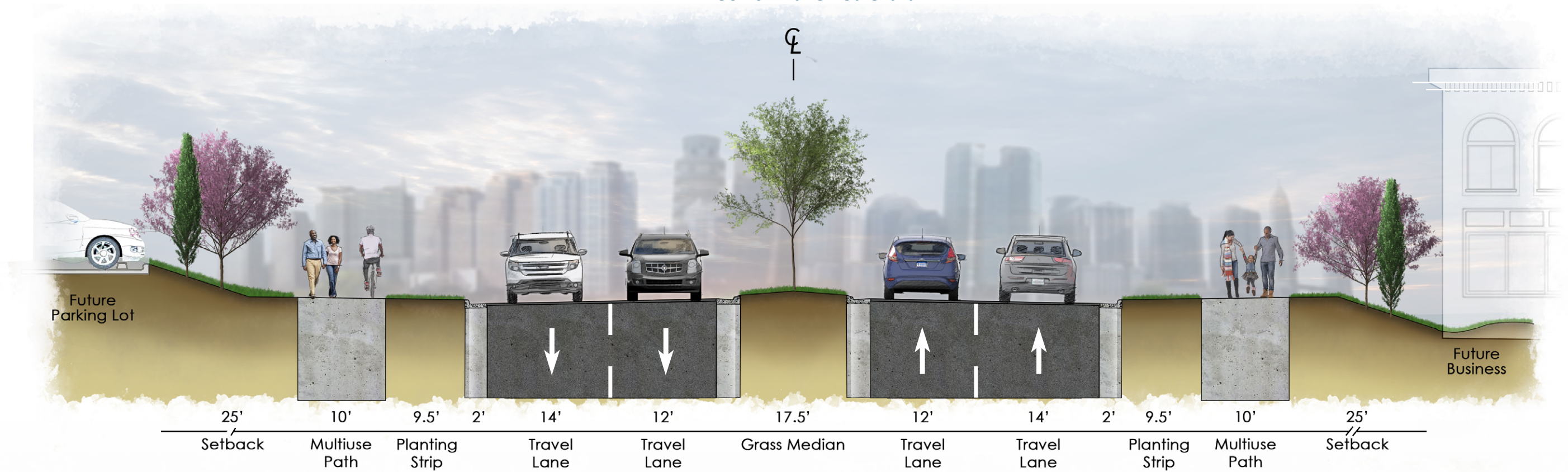
## Key Features of Recommended Concept:

- The recommended 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 and the addition of frontage roads 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



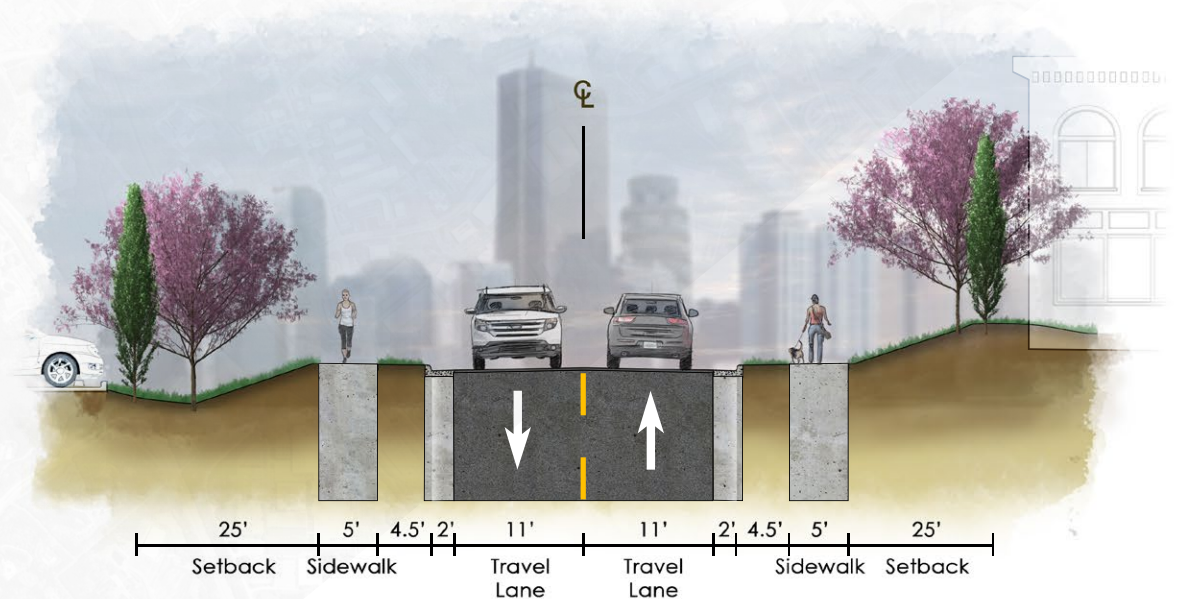
173.5' Right Of Way

DESIGN SPEED = 45 MPH

### Benefits:

- Move high traffic volumes on US 70 by separating through traffic from local traffic
- Creating a generous bicycle/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 Briar Creek Trail/E. Fork Creek trail connections crossing US 70

## Parallel Road



DESIGN SPEED = 30 MPH



# RECOMMENDED CONCEPT

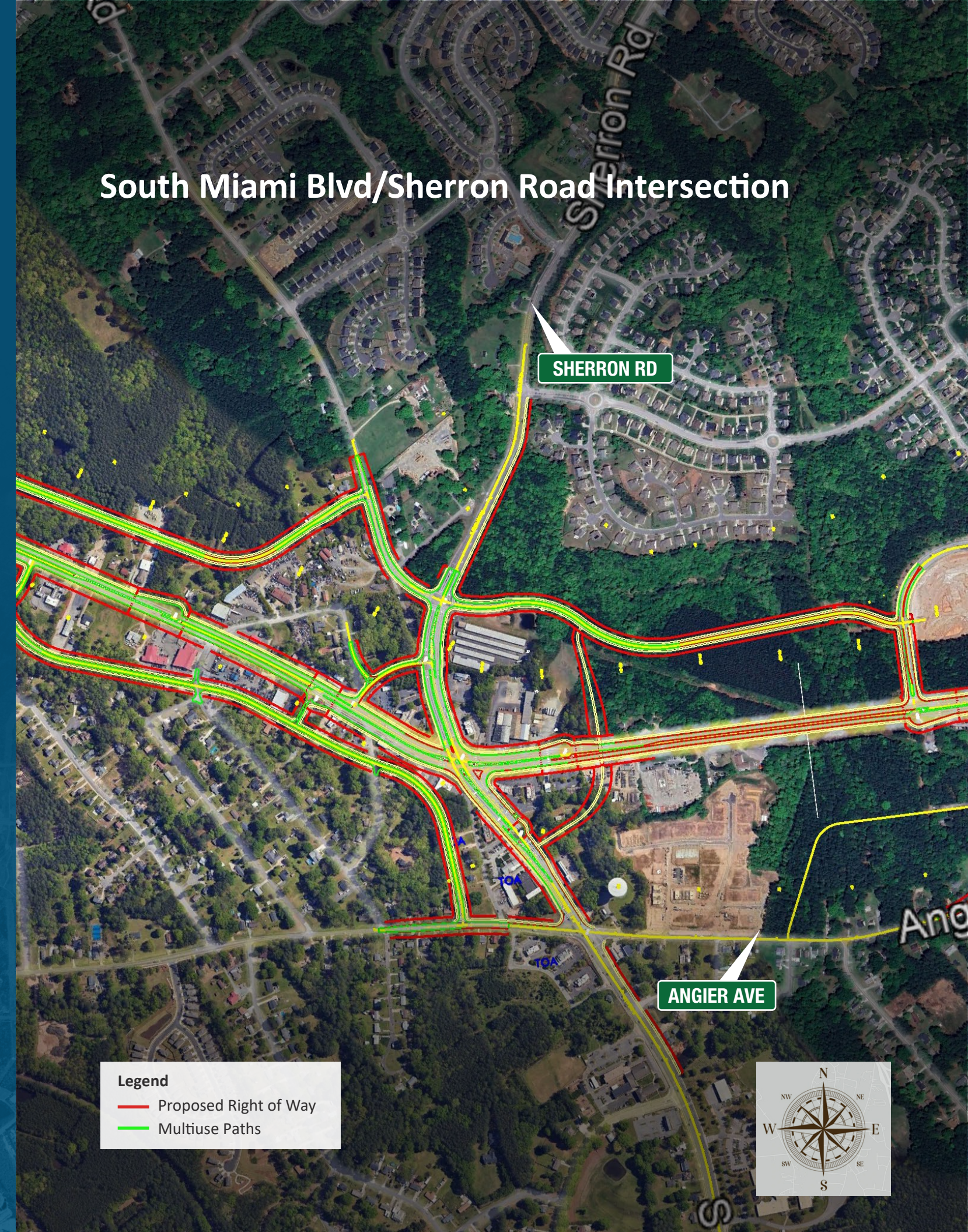
## Key Features of Median U-Turn Intersection at South Miami Boulevard/Sherron Road

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:

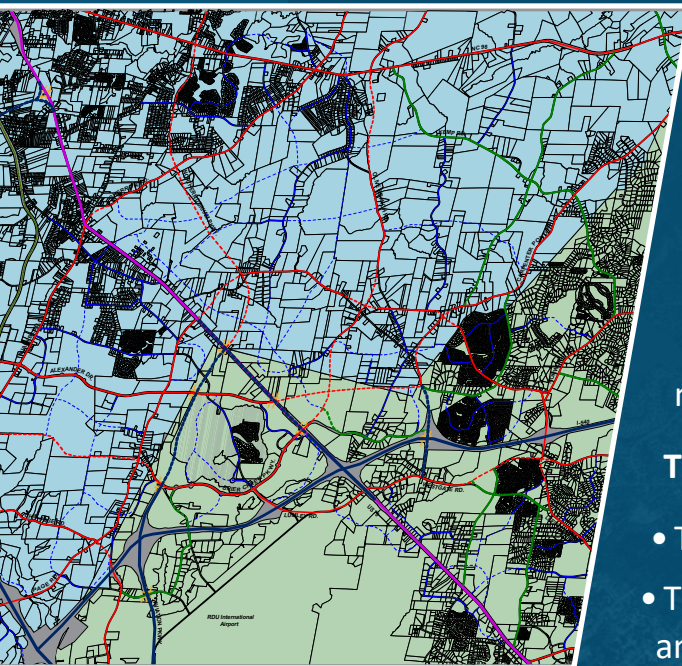
- **Safety:** Fewer conflict points mean reduced chances of collisions between vehicles and pedestrians or cyclists.
- **Shorter Crossing Distances:** Pedestrians can cross the road in two shorter stages, using the median as a refuge area.
- **Reduced Congestion:** By eliminating left-turn signal phases, 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/cyclists experience.

## South Miami Blvd/Sherron Road Intersection





# STREET PLAN RECOMMENDATIONS



In implementing the parallel road network associated with this alternative, this study proposes changes to the Wake-Durham Comprehensive Street System Plan. These new streets give pedestrians and bicyclists other options to travel other than US 70, and would provide smaller streets near US 70 which can become 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 4 Lane Boulevard with Parallel Road Concept supports 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

## Implementation Plan

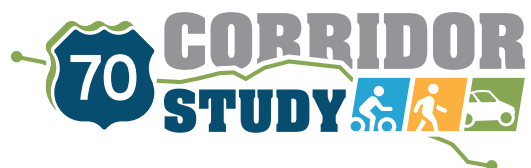
- Endorse the Study's recommended alternative for additional analysis. The additional analysis will be conducted during Phase 2 of the US 70 East Corridor Study, which will compare the concepts from this study with those developed by NCDOT
- Revise the Wake-Durham Comprehensive Street System Plan to provide policy framework for implementing improvements through future development in site plan review by developers
- 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 transit component related to ongoing GoTriangle and FAST Studies
- Conduct an additional phase of this study that compares the benefits and impacts of this recommended alternative, i.e., boulevard, with a freeway (limited-access) alternative, and request public feedback on this comparison







Doug Plachcinski  
Doug.Plachcinski@dchcmpo.org  
[dchcmpo.org/what-we-do/programs-plans/special-studies/us-70-corridor-study](https://dchcmpo.org/what-we-do/programs-plans/special-studies/us-70-corridor-study)





# APPENDICES

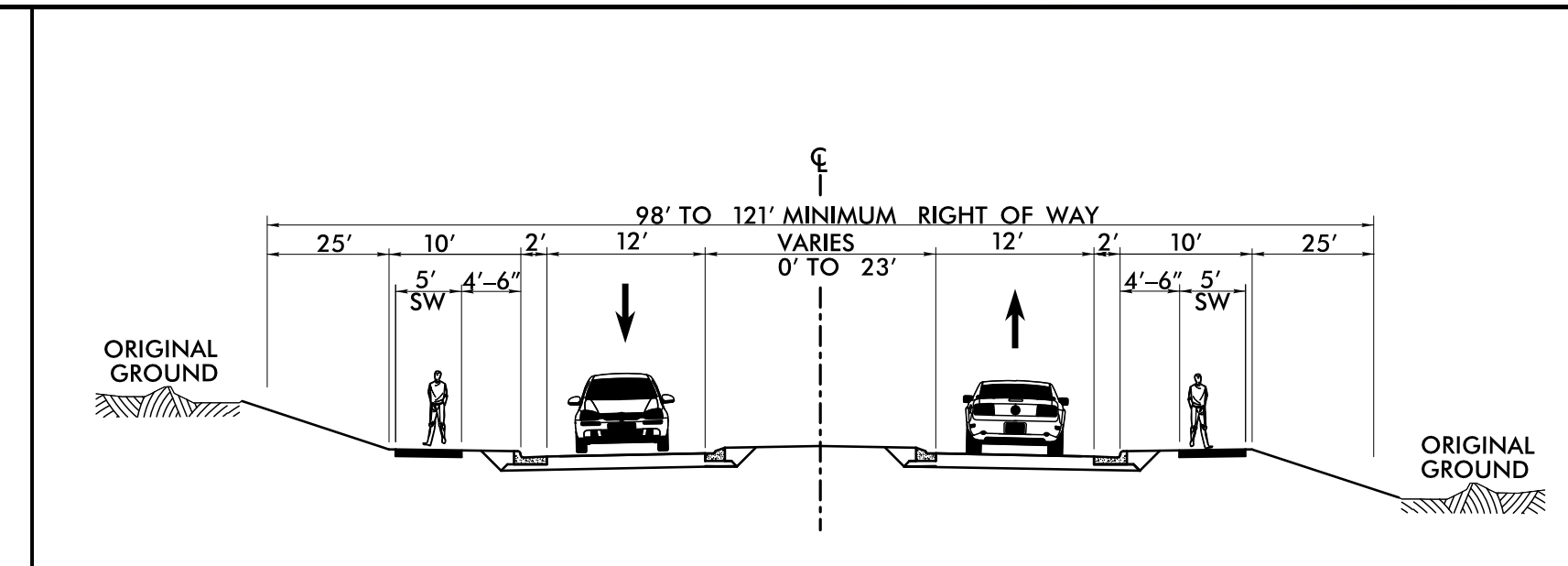
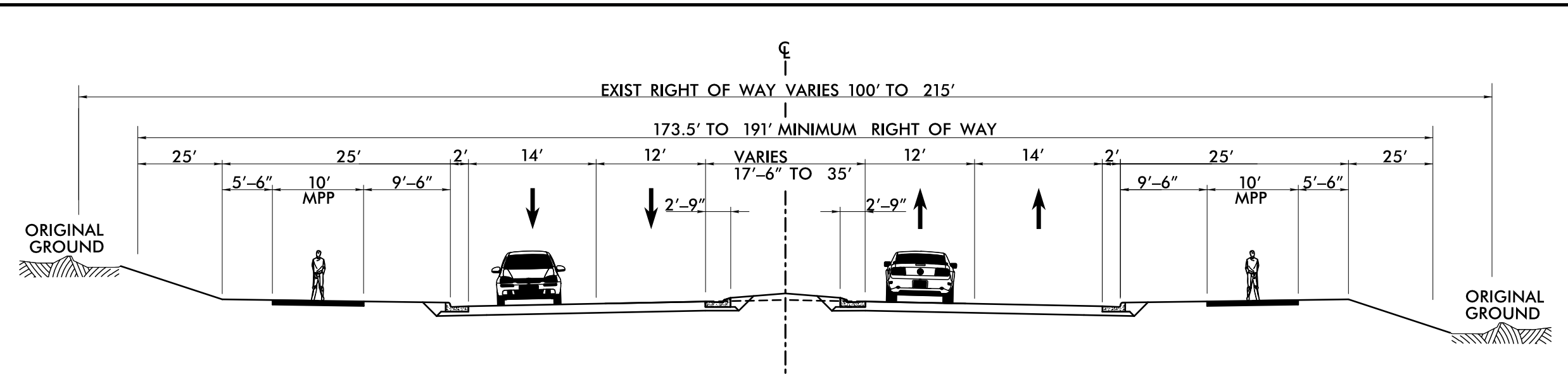




## **APPENDIX A**

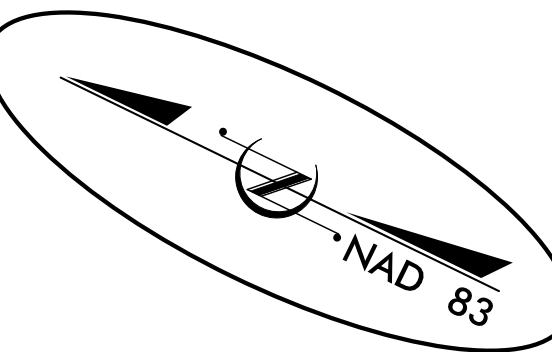
### **4 LANE BOULEVARD CONCEPT**





# US 70 IMPROVEMENTS

ROLL 1 OF 4



DESIGN CRITERIA
US 70
PRINCIPAL ARTERIAL
DS = 50 MPH
MIN RADIUS = 926 FT
e = 4 %

PROPOSED  
SIDEWALK & MUP

MATCHLINE -L- 61+00  
SEE ROLL 2 OF 4

MARCH 2024

NCONEMAP

PHOTOGRAMETRY

SCALE (ENGLISH)

100'

0'

100'

200'

50'

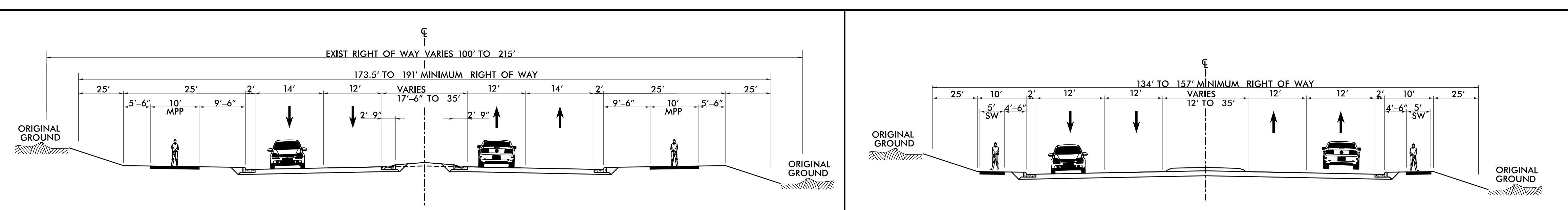
PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

STV

STV Engineers, Inc.  
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Suite 225  
Morrisville, NC 27560  
NC License Number F-0991





# US 70 IMPROVEMENTS

ROLL 2 OF 4

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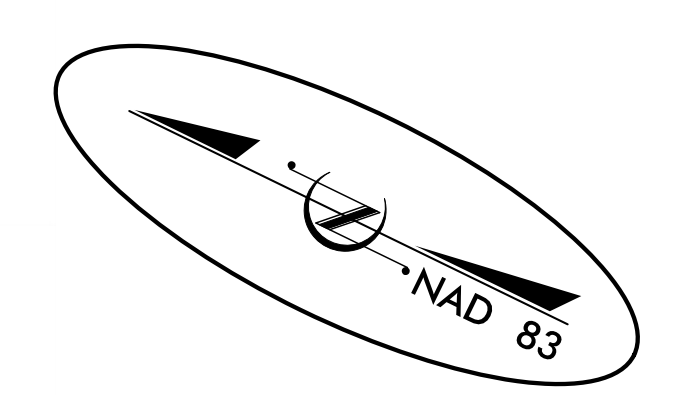
TIE TO FUTURE  
LICK CREEK TRAIL

MATCHLINE -Y2- 17+00  
SEE THIS SHEET

TRAIL CONNECTION

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MIN RADIUS = 926 FT
e = 4 %

PROPOSED  
SIDEWALK & MUP



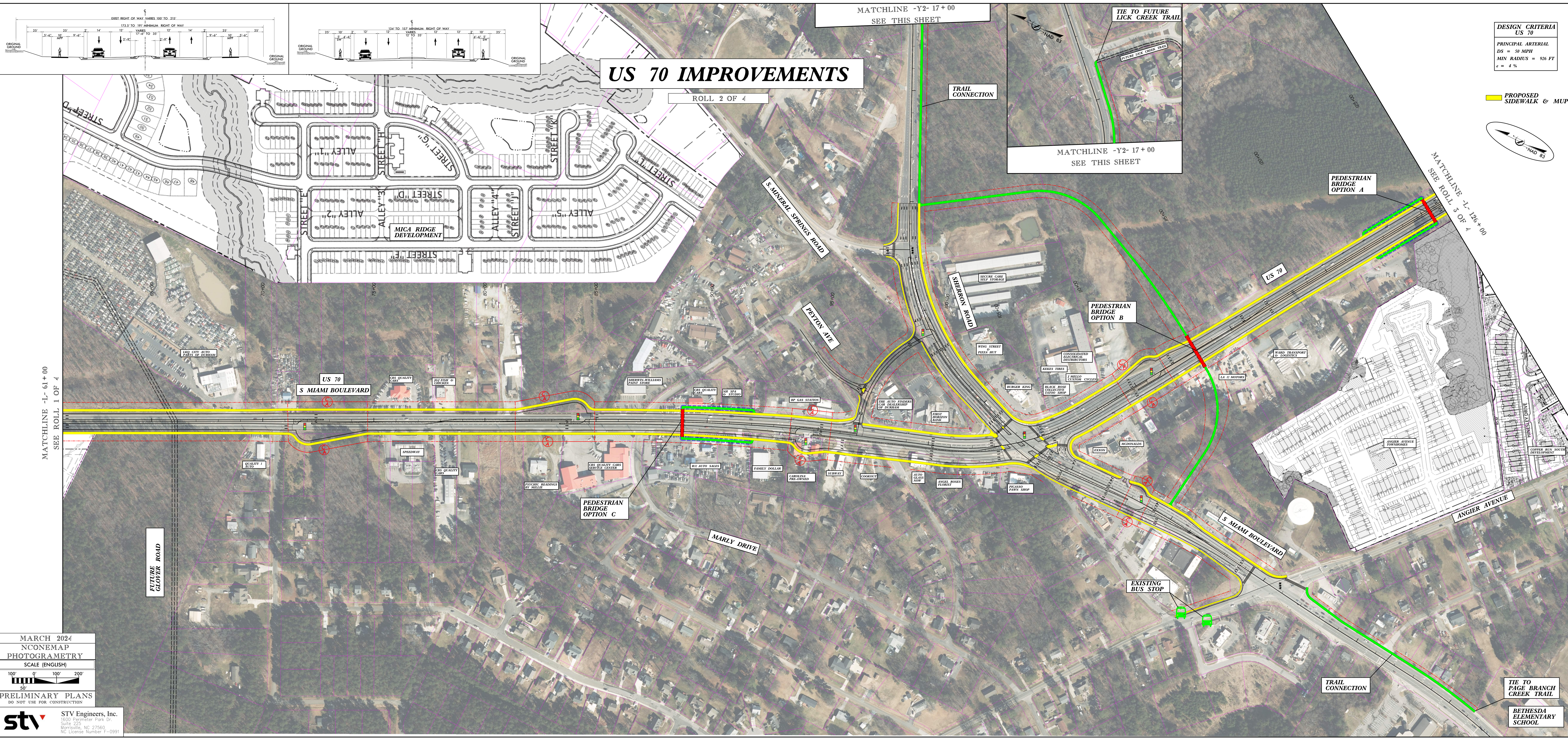
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SEE ROLL 1 OF 4

MATCHLINE -L- 126+00  
SEE ROLL 3 OF 4

MARCH 2024  
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PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

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Suite 225  
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# US 70 IMPROVEMENTS

ROLL 3 OF 4

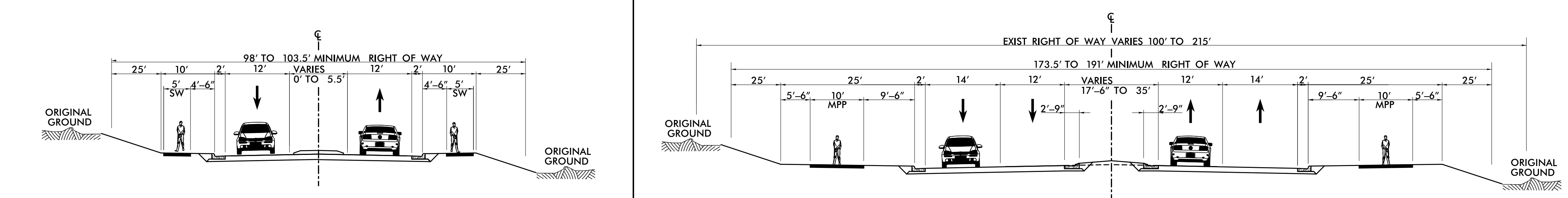
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SEE ROLL 2 OF 4

MATCHLINE -L- 188+00  
SEE ROLL 4 OF 4

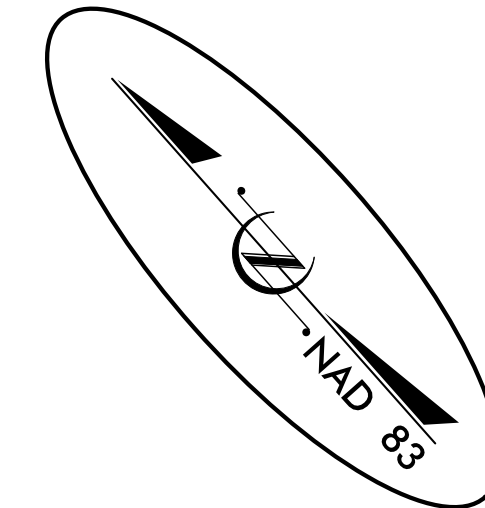
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**US 70**  
**PRINCIPAL ARTERIAL**  
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MIN RADIUS = 926 FT  
e = 4 %

**PROPOSED**  
**SIDEWALK & MUP**

MARCH 2024  
NCONEMAP  
PHOTOGRAMETRY  
SCALE (ENGLISH)  
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50'  
PRELIMINARY PLANS  
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# US 70 IMPROVEMENTS

ROLL 4 OF 4

MATCHLINE -L- 188+00  
SEE ROLL 3 OF 4

FUTURE  
DURHAM PKWY  
EXTENSION

DURHAM COUNTY  
WAKE COUNTY

END PROJECT  
TIE TO TIP PROJECT U-5518  
-L- STA. 216+75.00

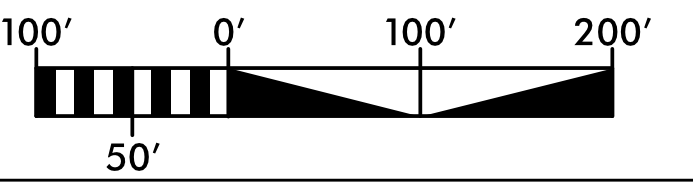
U-5518 PROJECT  
BY OTHERS

DESIGN CRITERIA  
US 70

PRINCIPAL ARTERIAL  
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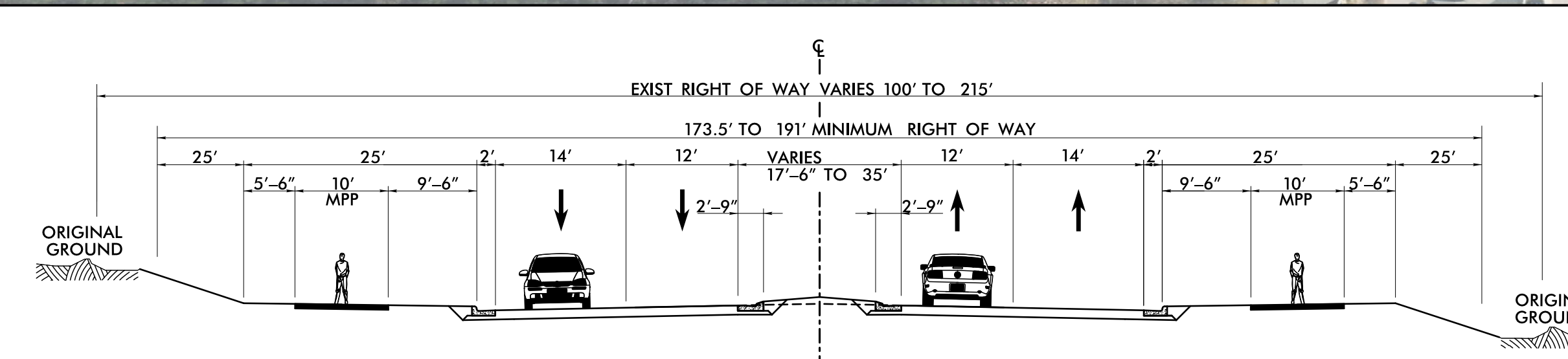
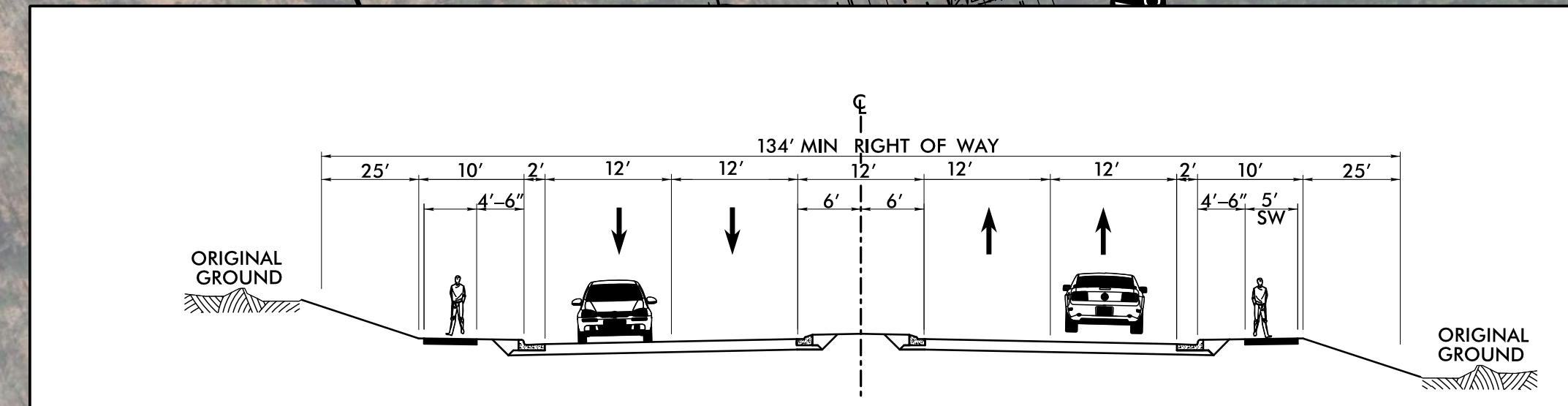
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SIDEWALK & MUP

MARCH 2024  
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PHOTOGRAMETRY  
SCALE (ENGLISH)



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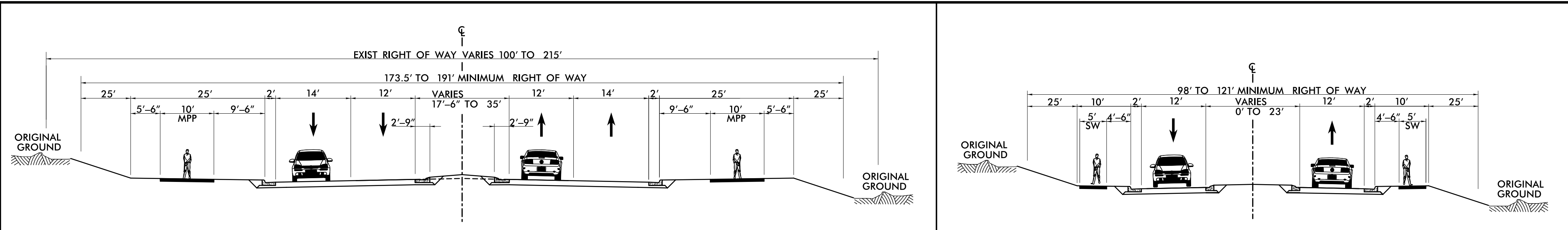




## **APPENDIX B**

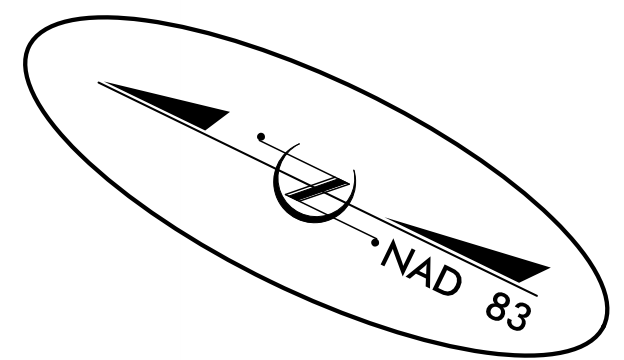
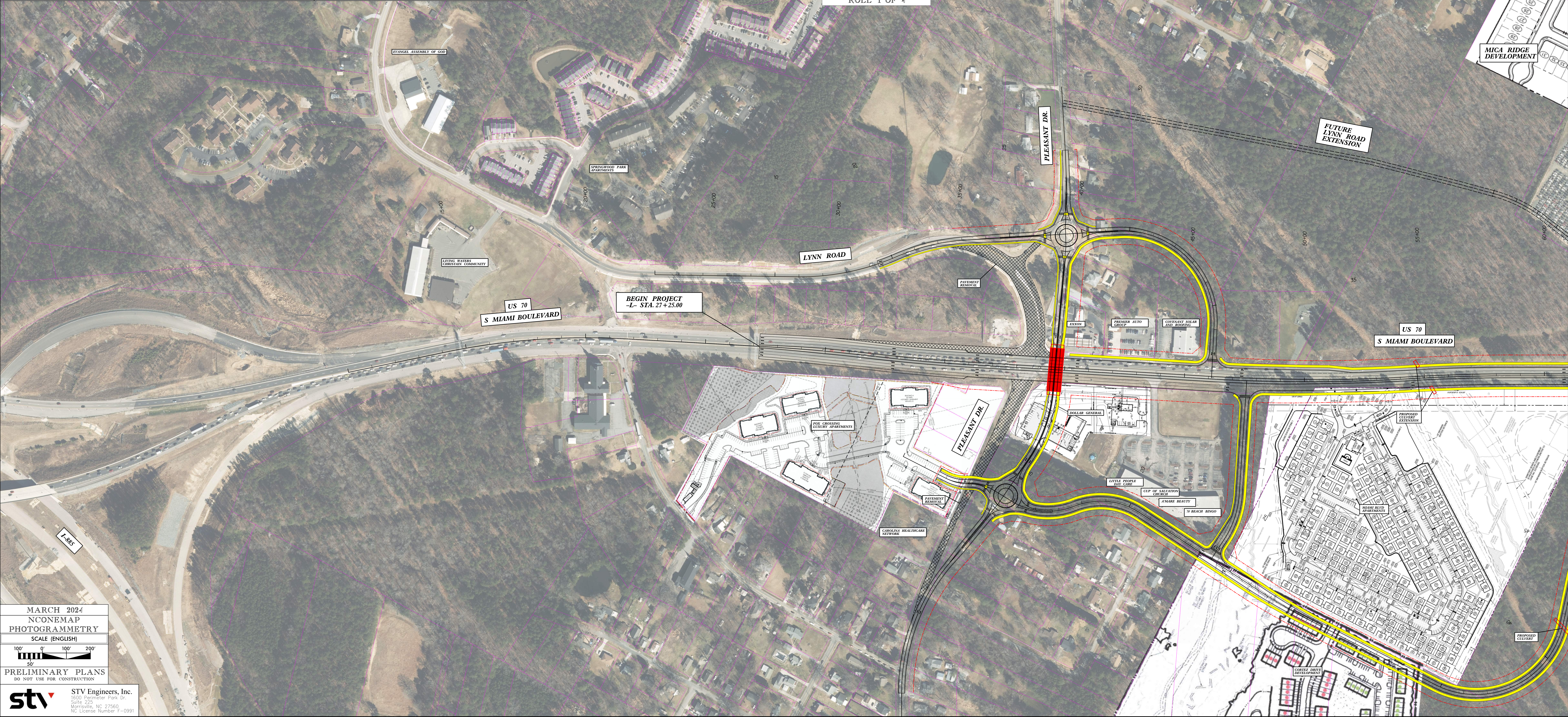
### **4 LANE BOULEVARD WITH PARALLEL ROADS CONCEPT**





# US 70 IMPROVEMENTS

ROLL 1 OF 4



DESIGN CRITERIA  
US 70

PRINCIPAL ARTERIAL  
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MIN RADIUS = 926 FT  
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PROPOSED  
SIDEWALK & MUP

MATCHLINE -L- 61+00  
SEE ROLL 2 OF 4

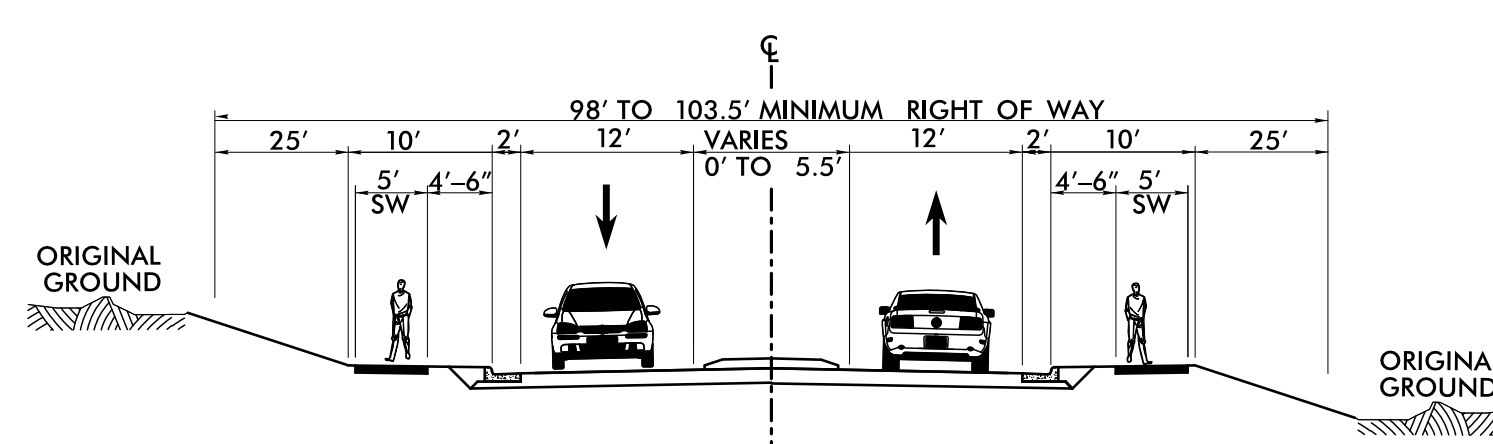
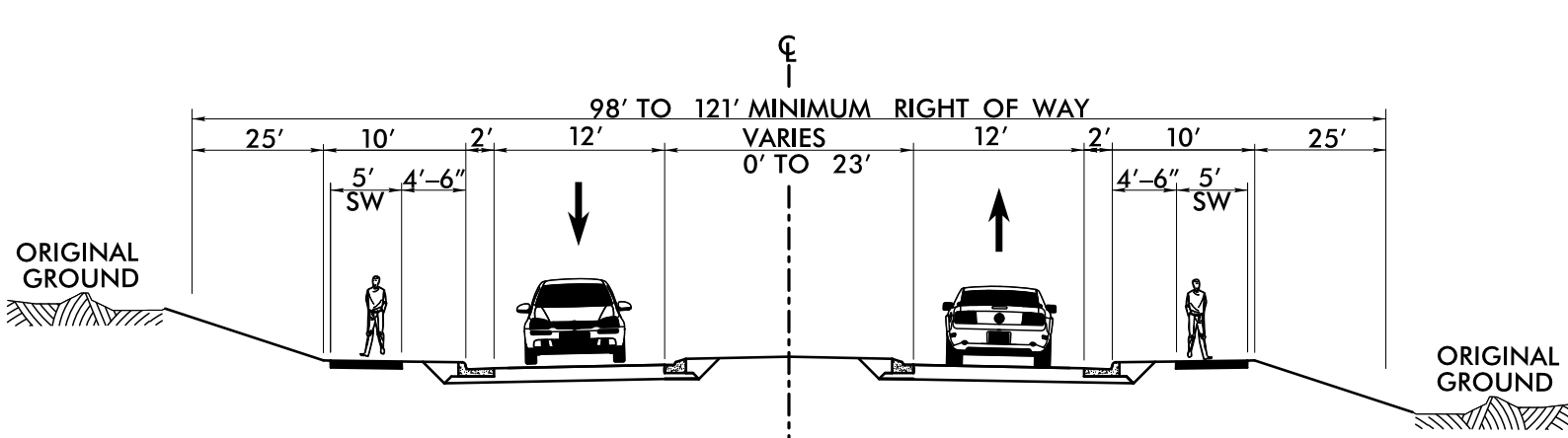
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PHOTOGRAMMETRY  
SCALE (ENGLISH)

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PRELIMINARY PLANS  
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# US 70 IMPROVEMENTS

ROLL 2 OF 4

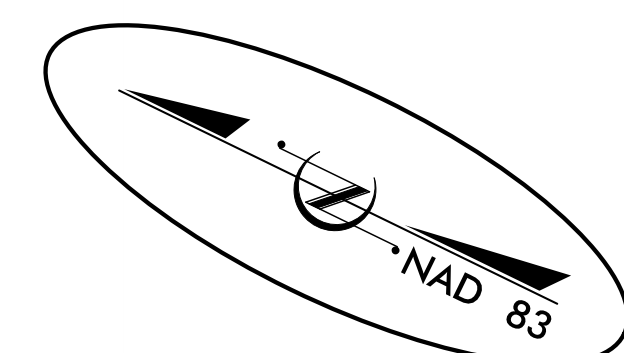
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SEE THIS SHEET

TIE TO FUTURE  
LICK CREEK TRAIL

MATCHLINE -Y2- 17+00  
SEE THIS SHEET

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US 70  
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PROPOSED  
SIDEWALK & MUP



MATCHLINE -L- 61+00  
SEE ROLL 1 OF 4

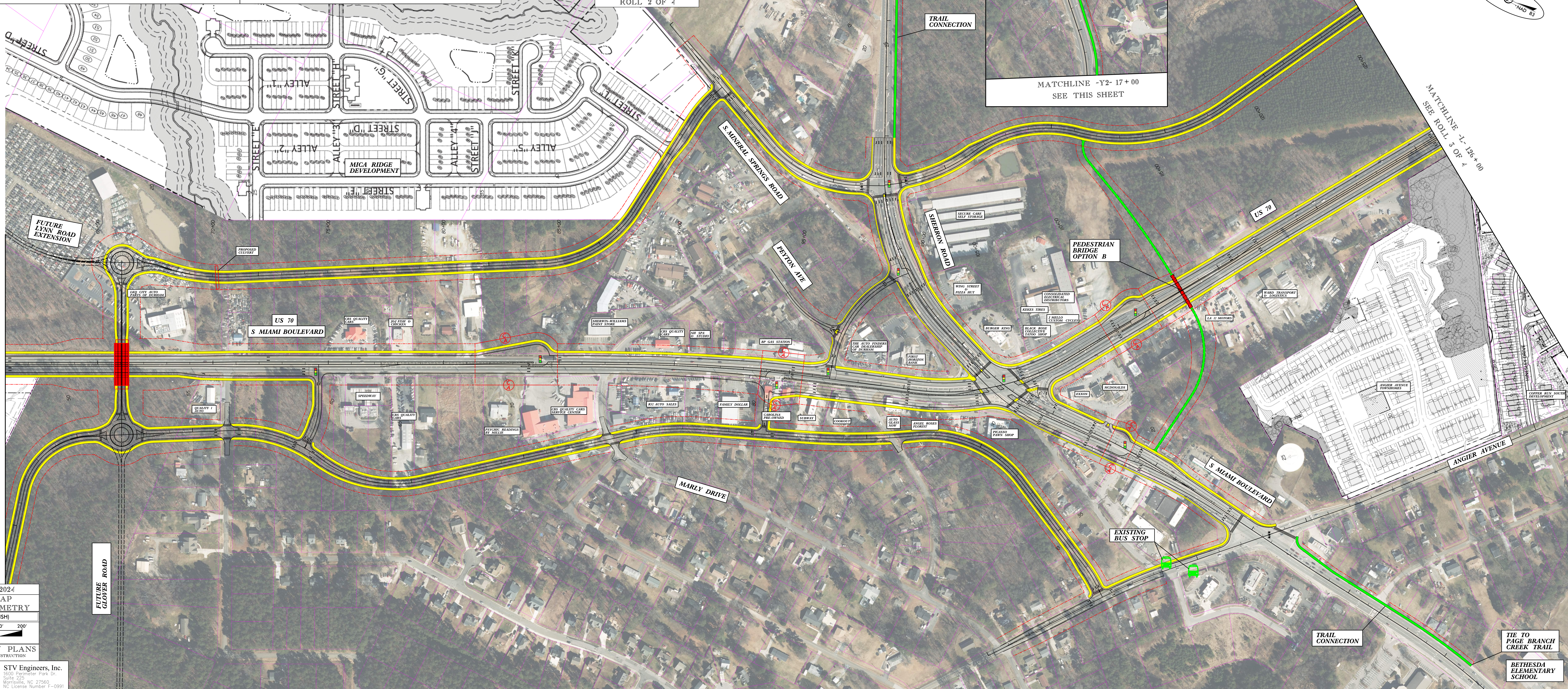
MATCHLINE -L- 126+00  
SEE ROLL 3 OF 4

MARCH 2024  
NCONEMAP  
PHOTOGRAMMETRY  
SCALE (ENGLISH)  
100' 0' 100' 200'  
50'

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION



STV Engineers, Inc.  
1600 Plummer Park Dr.  
Suite 225  
Morrisville, NC 27560  
NC License Number T-0991





# US 70 IMPROVEMENTS

ROLL 3 OF 4

MATCHLINE -L- 126+00  
SEE ROLL 2 OF 4

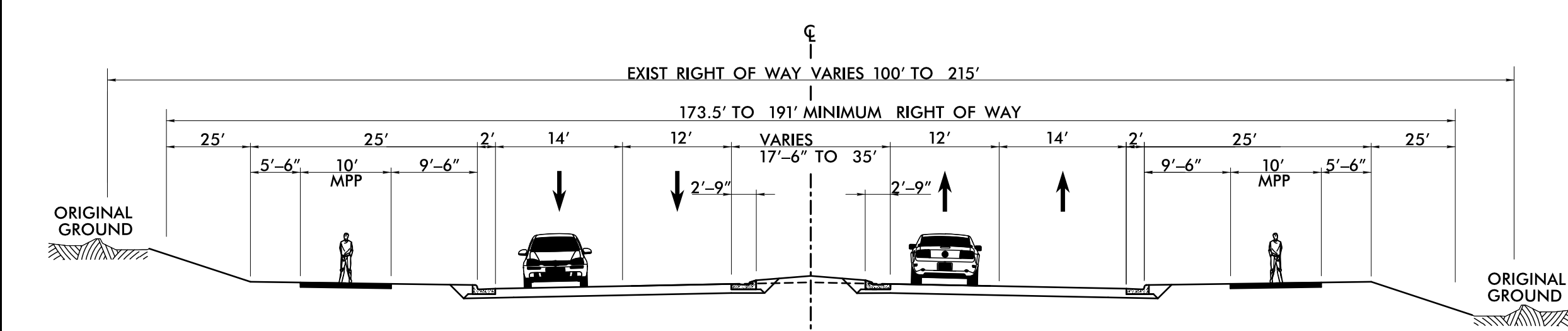
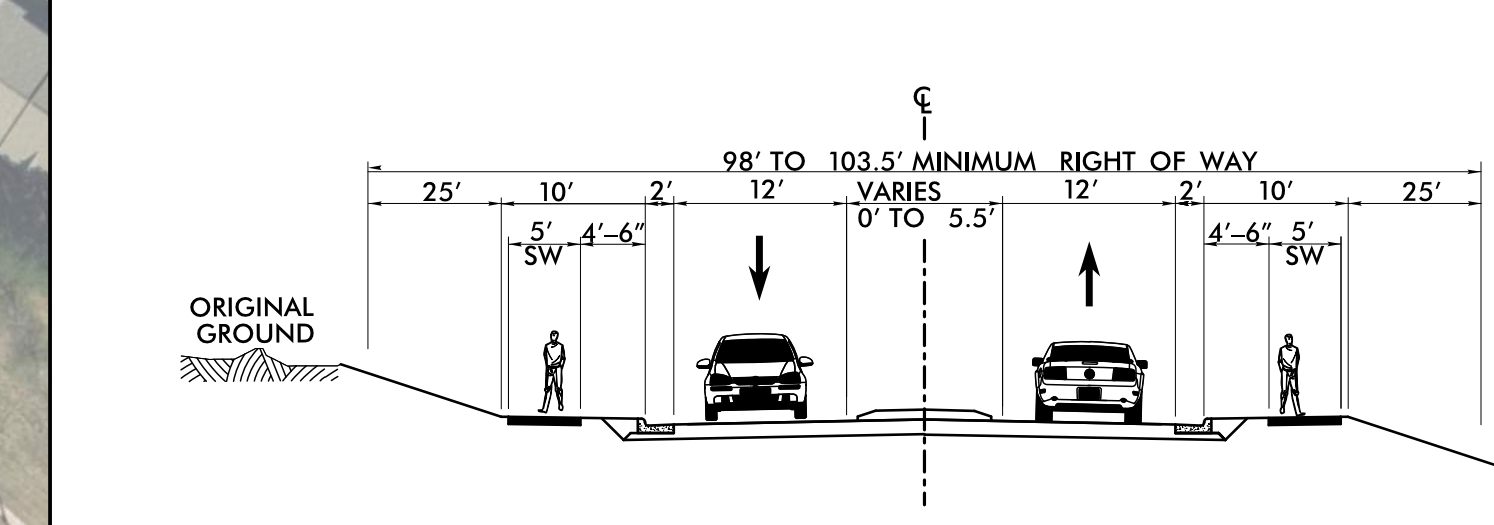
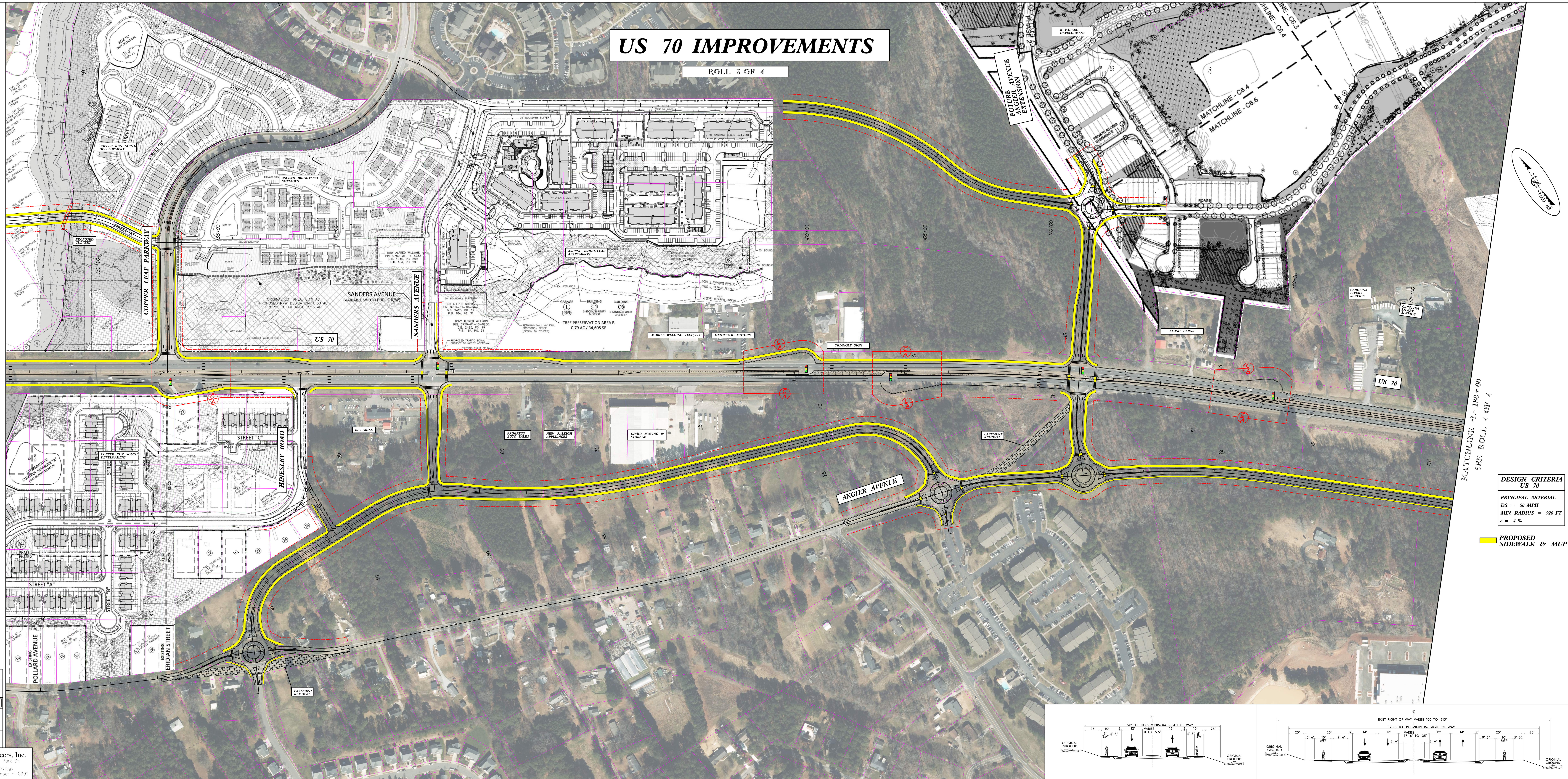
MATCHLINE -L- 188+00  
SEE ROLL 4 OF 4

DESIGN CRITERIA  
US 70  
PRINCIPAL ARTERIAL  
DS = 50 MPH  
MIN RADIUS = 926 FT  
e = 4 %

PROPOSED  
SIDEWALK & MUP

MARCH 2024  
NCONEMAP  
PHOTOGRAMMETRY  
SCALE (ENGLISH)  
100' 0' 100' 200'  
50'  
PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

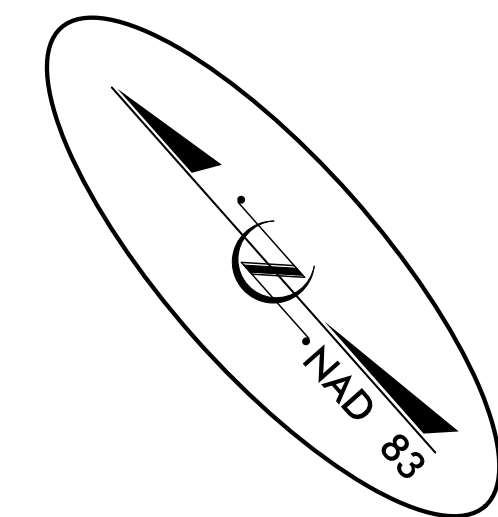
STV Engineers, Inc.  
1100 Perimeter Park Dr.  
Suite 225  
Morrville, NC 27560  
NC License Number F-0991





# US 70 IMPROVEMENTS

ROLL 4 OF 4



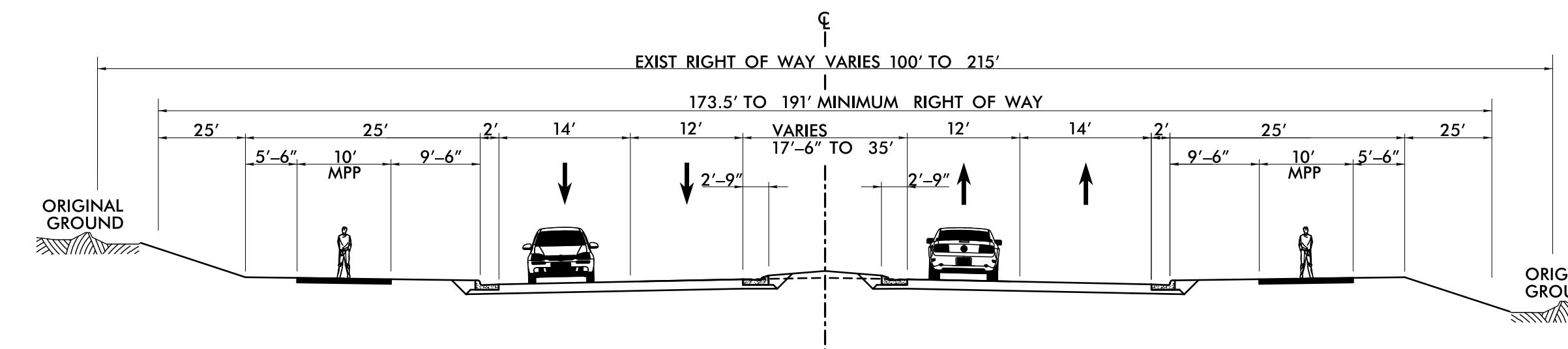
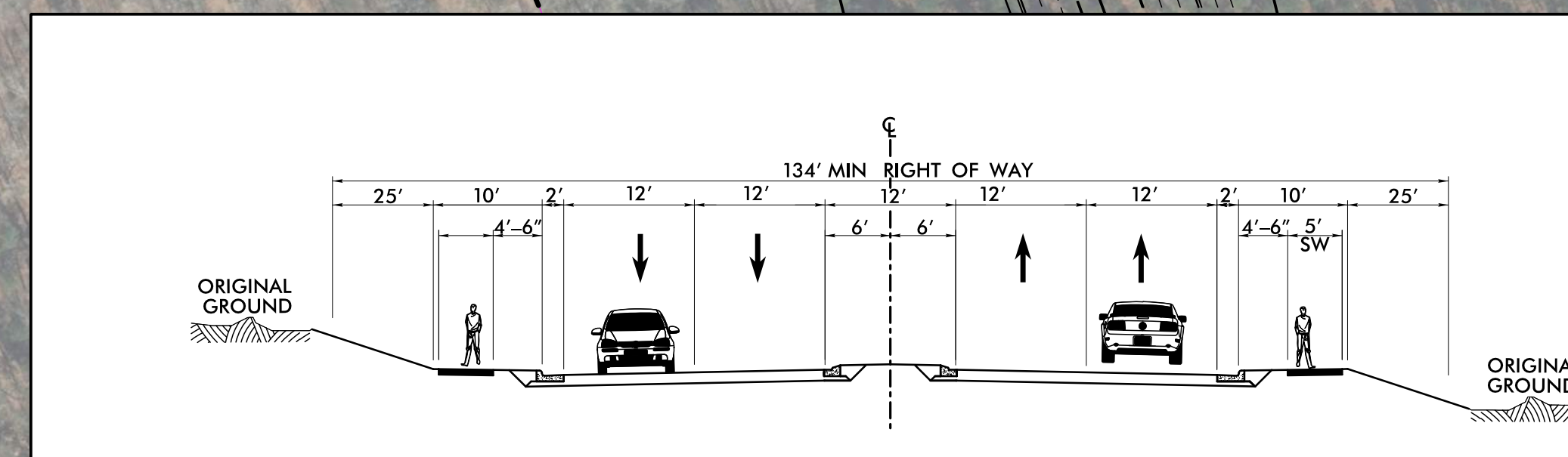
MATCHLINE -L- 188+00  
SEE ROLL 3 OF 4

MARCH 2024  
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DESIGN CRITERIA  
US 70  
PRINCIPAL ARTERIAL  
DS = 50 MPH  
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PROPOSED  
SIDEWALK & MUP







## **APPENDIX C**

### **4 LANE BOULEVARD CONCEPT COST ESTIMATE**



Route: US 70		Date:	3/6/2024
From East End Connector (I-885) to Future Durham Parkway Extension			
Typical Section: Median Divided 4 Lane Curb and Gutter			
County: Durham	 		
Prepared By: STV Inc.			
Requested By: DCHCMPO			

### CONSTRUCTION COST ESTIMATE (4 LANE BLVD)

<b>TOTAL</b>	<b>\$104,502,886</b>
<b>25% Contingency</b>	<b>\$26,125,721</b>
<b>PROJECT TOTAL</b>	<b>\$130,628,607</b>

#### US 70

Typical Section	Length(miles)		Price	Cost
6-Ln Shoulder W / Raised Median	0.291	Miles	\$14,100,000.00	\$4,106,625.00
4-Ln Curb & Gutter W / Blvd Grass Median	3.298	Miles	\$12,800,000.00	\$42,216,969.70
Adding Multi Use Path (10'W x 1 Mile)	6.596	Miles	\$650,000.00	\$4,287,660.98
Drainage(4 LN C&G raised Median)	3.298	Miles	\$1,125,000.00	\$3,710,475.85
Adding 2 @ 2' Paved Shoulders on C&G	3.298	Miles	\$400,000.00	\$1,319,280.30
Median U Turn Intersection	5.000	EA	\$2,000,000.00	\$10,000,000.00
			<b>TOTAL</b>	<b>\$65,641,011.84</b>

#### Pleasant Drive & Lynn Rd

Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	0.462	Miles	\$9,800,000	\$4,528,787.88
130' Single Lane Roundabout	2	EA	\$2,200,000.00	\$4,400,000.00
Adding 5' Sidewalk - One Side	0.462	Miles	\$300,000.00	\$138,636.36
Drainage(2 LN C&G)	0.462	Miles	\$650,000.00	\$300,378.79
			<b>TOTAL</b>	<b>\$9,367,803.03</b>

#### Sherron Rd / S Miami Blvd

Typical Section	Length(miles)		Price	Cost
6-Lane Curb & Gutter	0.483	Miles	\$12,800,000.00	\$6,177,939.39
Adding Multi Use Path (10'W x 1 Mile)	0.811	Miles	\$650,000.00	\$527,250.95
Adding 5' Sidewalk - One Side	0.386	Miles	\$300,000.00	\$115,931.82
Drainage(6 LN C&G) (Widening)	0.483	Miles	\$1,325,000.00	\$639,513.26
			<b>TOTAL</b>	<b>\$7,460,635.42</b>

#### Pedestrian Bridge (at Sherron/ Miami blvd)

Typical Section	Length(miles)		Price	Cost
10' Multi Use Path (New Location)	0.410	Miles	\$4,000,000.00	\$1,641,666.67
Bridge(Concrete)	2626	SF	\$225.00	\$590,850.00
			<b>TOTAL</b>	<b>\$2,232,516.67</b>



Copper Leaf Parkway				
Typical Section	Length(miles)		Price	Cost
2 lane Raised Median Widening	0.065	Miles	\$6,200,000.00	\$400,416.67
Drainage(2 LN C&G) (Widening)	0.065	Miles	\$525,000.00	\$33,906.25
			TOTAL	\$434,322.92

Angier Ave				
Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	0.398	Miles	\$9,800,000	\$3,903,295.45
130' Single Lane Roundabout	2	EA	\$2,200,000.00	\$4,400,000.00
Drainage(2 LN C&G)(New Location)	0.398	Miles	\$650,000.00	\$258,892.05
			TOTAL	\$8,562,187.50

Leesville Road				
Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	0.059	Miles	\$9,800,000	\$580,946.97
Drainage(2 LN C&G) (New Location)	0.059	Miles	\$650,000.00	\$38,532.20
			TOTAL	\$619,479.17

Page Road				
Typical Section	Length(miles)		Price	Cost
4-Lane Curb & Gutter	0.339	Miles	\$10,550,000	\$3,578,607.95
130' Single Lane Roundabout	2	EA	\$2,200,000.00	\$4,400,000.00
Adding Multi Use Path (10'W x 1 Mile)	0.195	Miles	\$650,000.00	\$126,799.24
Drainage(4 LN C&G) (Widening)	0.339	Miles	\$1,125,000.00	\$381,605.11
			TOTAL	\$8,487,012.31



Brier Creek Trail / East Fork Creek Trail Connection with at grade crossing at US 70				
Typical Section	Length(miles)		Price	Cost
10' Multi Use Path (New Location)	0.335	Miles	\$4,000,000.00	\$1,340,909.09
Adding Multi Use Path (10'W x 1 Mile)	0.549	Miles	\$650,000.00	\$357,007.58
			TOTAL	\$1,697,916.67



## **APPENDIX D**

### **4 LANE BOULEVARD WITH PARALLEL ROADS CONCEPT COST ESTIMATE**



Route: US 70		Date:	3/6/2024
From East End Connector (I-885) to Future Durham Parkway Extension			
Typical Section: Median Divided 4 Lane Curb and Gutter			
County: Durham	 		
Prepared By: STV Inc.			
Requested By: DCHCMPO			

### CONSTRUCTION COST ESTIMATE (4 LANE BLVD & PARALLEL ROADS)

PROJECT TOTAL	\$198,067,644
25% Contingency	\$49,516,911
PROJECT TOTAL	\$247,584,555

#### US 70

Typical Section	Length(miles)		Price	Cost
6-Ln Shoulder W / Raised Median	0.291	Miles	\$14,100,000.00	\$4,106,625.00
4-Ln Curb & Gutter W / Blvd Grass Median	3.298	Miles	\$12,800,000.00	\$42,216,969.70
Adding Multi Use Path (10'W x 1 Mile)	3.865	Miles	\$650,000.00	\$2,512,471.59
Drainage(4 LN C&G raised Median)	3.298	Miles	\$1,125,000.00	\$3,710,475.85
Adding 2 @ 2' Paved Shoulders on C&G	3.298	Miles	\$400,000.00	\$1,319,280.30
Median U Turn Intersection	4.000	EA	\$2,000,000.00	\$8,000,000.00
			TOTAL	\$61,865,822.44

#### Pleasant Drive

Typical Section	Length(miles)		Price	Cost
Bridge (Concrete)	10533	SF	\$225.00	\$2,369,925.00
2-Lane Curb & Gutter	0.463	Miles	\$9,800,000	\$4,539,738.64
130' Single Lane Roundabout	2	EA	\$2,200,000.00	\$4,400,000.00
Adding Multi Use Path (10'W x 1 Mile)	0.199	Miles	\$650,000.00	\$129,261.36
Adding 5' Sidewalk - One Side	0.251	Miles	\$300,000.00	\$75,284.09
Drainage(2 LN C&G)	0.463	Miles	\$650,000.00	\$301,105.11
			TOTAL	\$11,815,314.20

#### Lynn Road

Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	0.353	Miles	\$9,800,000	\$3,461,553.03
Adding Multi Use Path (10'W x 1 Mile)	0.181	Miles	\$650,000.00	\$117,566.29
Adding 5' Sidewalk - One Side	0.140	Miles	\$300,000.00	\$42,102.27
Drainage(2 LN C&G)	0.353	Miles	\$650,000.00	\$229,592.80
			TOTAL	\$3,850,814.39



Glover Road				
Typical Section	Length(miles)		Price	Cost
Bridge (Concrete)	11650	SF	\$225.00	\$2,621,250.00
2-Lane Curb & Gutter	0.142	Miles	\$9,800,000	\$1,392,045.45
130' Single Lane Roundabout	2	EA	\$2,200,000.00	\$4,400,000.00
Adding Multi Use Path (10'W x 1 Mile)	0.243	Miles	\$650,000.00	\$157,772.73
Drainage(2 LN C&G)	0.142	Miles	\$650,000.00	\$92,329.55
			TOTAL	\$8,571,068.18

Sherron Rd / S Miami Blvd				
Typical Section	Length(miles)		Price	Cost
6-Lane Curb & Gutter	0.483	Miles	\$12,800,000.00	\$6,177,939.39
Adding Multi Use Path (10'W x 1 Mile)	0.811	Miles	\$650,000.00	\$527,250.95
Adding 5' Sidewalk - One Side	0.386	Miles	\$300,000.00	\$115,931.82
Drainage(6 LN C&G)	0.483	Miles	\$1,325,000.00	\$639,513.26
			TOTAL	\$7,460,635.42

Pedestrian Bridge (at Sherron/ Miami blvd)				
Typical Section	Length(miles)		Price	Cost
10' Multi Use Path (New Location)	0.287	Miles	\$4,000,000.00	\$1,147,727.27
Bridge (Concrete)	2626	SF	\$225.00	\$590,850.00
			TOTAL	\$1,738,577.27

Copper Leaf Parkway				
Typical Section	Length(miles)		Price	Cost
2 lane Raised Median Widening	0.177	Miles	\$6,200,000.00	\$1,095,568.18
Adding Multi Use Path (10'W x 1 Mile)	0.080	Miles	\$650,000.00	\$51,704.55
Adding 5' Sidewalk - One Side	0.081	Miles	\$300,000.00	\$24,431.82
Drainage(2 LN C&G)	0.177	Miles	\$525,000.00	\$92,769.89
			TOTAL	\$1,264,474.43

Angier Ave				
Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	0.572	Miles	\$9,800,000	\$5,607,159.09
130' Single Lane Roundabout	2	EA	\$2,200,000.00	\$4,400,000.00
Adding Multi Use Path (10'W x 1 Mile)	0.931	Miles	\$650,000.00	\$605,189.39
Adding 5' Sidewalk - One Side	0.069	Miles	\$300,000.00	\$20,568.18
Drainage(2 LN C&G)	0.572	Miles	\$650,000.00	\$371,903.41
			TOTAL	\$11,004,820.08

Leesville Road				
Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	0.128	Miles	\$9,800,000	\$1,256,553.03
Drainage(2 LN C&G)	0.128	Miles	\$650,000.00	\$83,342.80
			TOTAL	\$1,339,895.83



Page Road				
Typical Section	Length(miles)		Price	Cost
4-Lane Curb & Gutter	0.339	Miles	\$10,550,000	\$3,578,607.95
130' Single Lane Roundabout	2	EA	\$2,200,000.00	\$4,400,000.00
Adding Multi Use Path (10'W x 1 Mile)	0.195	Miles	\$650,000.00	\$126,799.24
Drainage(4 LN C&G)	0.339	Miles	\$1,125,000.00	\$381,605.11
			TOTAL	\$8,487,012.31

Parallel Road 1 (West of US 70 from Pleasant Dr to Angier Ave)				
Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	2.126	Miles	\$9,800,000	\$20,835,950.76
Adding Multi Use Path (10'W x 1 Mile)	4.252	Miles	\$650,000.00	\$2,763,952.65
Drainage(2 LN C&G)	2.126	Miles	\$650,000.00	\$1,381,976.33
			TOTAL	\$24,981,879.73

Parallel Road 2 (East of US 70 from Future Glover Rd to Copper Leaf Parkway)				
Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	1.393	Miles	\$9,800,000	\$13,655,037.88
Adding Multi Use Path (10'W x 1 Mile)	2.787	Miles	\$650,000.00	\$1,811,382.58
Drainage(2 LN C&G)	1.393	Miles	\$650,000.00	\$905,691.29
			TOTAL	\$16,372,111.74

Parallel Road 3 (West of US 70 from Angier Ave to Page Rd)				
Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	2.069	Miles	\$9,800,000	\$20,273,750.00
130' Single Lane Roundabout	2	EA	\$2,200,000.00	\$4,400,000.00
Adding Multi Use Path (10'W x 1 Mile)	4.138	Miles	\$650,000.00	\$2,689,375.00
Drainage(2 LN C&G)	2.069	Miles	\$650,000.00	\$1,344,687.50
			TOTAL	\$28,707,812.50

Parallel Road 4 (East of US 70 from Leesville Rd to future Durham Pkwy)				
Typical Section	Length(miles)		Price	Cost
2-Lane Curb & Gutter	0.794	Miles	\$9,800,000	\$7,782,462.12
Adding Multi Use Path (10'W x 1 Mile)	1.056	Miles	\$650,000.00	\$686,193.18
Drainage(2 LN C&G)	0.794	Miles	\$650,000.00	\$516,183.71
			TOTAL	\$8,984,839.02

Brier Creek Trail / East Fork Creek Trail Connection with at grade crossing at US 70				
Typical Section	Length(miles)		Price	Cost
10' Multi Use Path (New Location)	0.282	Miles	\$4,000,000.00	\$1,128,787.88
Adding Multi Use Path (10'W x 1 Mile)	0.760	Miles	\$650,000.00	\$493,778.41
			TOTAL	\$1,622,566.29