

APPENDIX B

ADDITIONAL INFORMATION ON ALTERNATIVES ANALYSIS

- Table B-1: Record and History of US 74 Alternatives Page B-1
- Alternatives Analysis Figures from Draft EIS and Final EIS Page B-3

Table B-1 presents a summary of the analysis of US 74 alternatives throughout the project development process.

The maps included in this appendix are reproduced from the Draft EIS and Final EIS. They show the progression of alternatives development from Preliminary Corridor Segments (including alternatives located to the north and south of existing US 74 as well as along existing US 74) to Preliminary Study Alternatives to Detailed Study Alternatives and finally to the Preferred Alternative.

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Table B-1. Record and History of US 74 Alternatives in the Monroe Connector/Bypass EIS

IMPROVE EXISTING ALTERNATIVE	DOCUMENTED IN/DATE	ALTERNATIVE DESCRIPTION in DRAFT EIS	1 st SCREENING (Qualitative)	2 nd SCREENING (Qualitative)	3 rd SCREENING (Quantitative)	ADDITIONAL EXAMINATION OF ALTERNATIVE
Transportation System Management (TSM) Alternatives	<ul style="list-style-type: none"> • <i>Alternatives Development and Analysis Report</i> (April 2008, Section 1.2.3, pp. 1-7 – 1-9) • <i>Draft EIS</i> (March 2009, Section 2.2.2.3, pp. 2-6 – 2-8; 2-12; 2-13) • <i>Final EIS</i> (May 2010, Section 1.2.2.1, pp. 1-7 – 1-9) • <i>Final EIS</i> (May 2010, Section 3.3.2, p. 3-9, 3-12 – 3-15) 	<p>TSM are activities that maximize efficiency of the present transportation system, including traffic signal timing and intersection improvements.</p> <p>No new location component to this alternative concept.</p>	<p>Screened alternative against elements of the P&N. Conclusion:</p> <ul style="list-style-type: none"> - Meets only two of three elements of P&N (enhance mobility and capacity and still maintains access to properties along US 74) - Does not provide for high-speed regional travel - Does not provide long-term solutions - Much lower level of improvement in mobility and capacity 	<p>This alternative was not carried forward to the 2nd or 3rd screening in the Draft EIS.</p>		<p>TSM Concept 2 was developed and evaluated by NCDOT in the Final EIS to incorporate the recommendations in the <i>US 74 Corridor Study</i> (Stantec, July 2007). Includes the original TSM Alternative and improvements labeled “long-term improvements” (to be implemented by 2015) in the <i>US 74 Corridor Study</i>. Conclusion:</p> <ul style="list-style-type: none"> - Does not provide for high speed (>50 mph) regional travel - Does not provide long-term solutions for the design year of 2035
Improve Existing US 74 as a Standard Arterial Widening	<ul style="list-style-type: none"> • <i>Alternatives Development and Analysis Report</i> (April 2008, Section 1.2.5, p. 1-11) • <i>Draft EIS</i> (March 2009, Section 2.2.2.5, pp. 2-9 – 2-10; 2-12; 2-13) • <i>Final EIS</i> (May 2010, Section 1.2.2.1, p. 1-8) • <i>US 74 Corridor Analysis Scenarios</i> (HNTB, December 2010) 	<p>Adding 2- to 4- lanes to create an 8-lane arterial facility. Signalized intersections and driveways would remain.</p> <p>No new location component to this alternative concept.</p>	<p>Screened alternative against elements of the P&N. Conclusion:</p> <ul style="list-style-type: none"> - Meets only one of three elements of P&N (maintains access to properties along US 74) 	<p>This alternative was not carried forward to the 2nd or 3rd screening in the Draft EIS.</p>		<p>After the Final EIS and at the request of the USACE, NCDOT prepared a year 2035 comparative planning level analysis of four Upgrade Existing US 74 corridor scenarios to determine if acceptable corridor levels of service would be provided in the design year 2035 (US 74 Corridor Analysis Scenarios, HNTB, December 2010). One of the scenarios included a Widen to 6-Lane (No Superstreet) scenario that assumed widening the entire corridor to a 6-lane section while maintaining other roadway characteristics. Conclusion:</p> <ul style="list-style-type: none"> - Analysis concluded that this scenario would not provide acceptable levels of service in the US 74 corridor in 2035.
Improve Existing US 74 as a Superstreet	<ul style="list-style-type: none"> • <i>Alternatives Development and Analysis Report</i> (April 2008, Section 1.2.6, p. 1-12 – 1-13) • <i>Draft EIS</i> (March 2009, Section 2.2.2.5, pp. 2-9 – 2-10; 2-12; 2-13) • <i>Final EIS</i> (May 2010, Section 1.2.2.1, p. 1-8) • <i>US 74 Corridor Analysis Scenarios</i> (HNTB, December 2010) 	<p>Involves conversion of existing facility to a superstreet. Configuration adds capacity at intersections by restricting left turns and through movements from cross-streets.</p> <p>In the December 2010 analysis two Superstreet concepts were evaluated: 1) Superstreet Existing, which assumed maintaining existing 4-lane and 6-lane sections and upgrading to high speed principal arterials at 45 and 55 mph posted speeds and 2) Superstreet to 6-Lanes, which assumed widening the entire US 74 corridor to a 6-lane section and upgrading to high-speed principal arterials at 45 and 55 mph.</p> <p>No new location component to this alternative concept.</p>	<p>Screened alternative against elements of the P&N. Conclusion:</p> <ul style="list-style-type: none"> - Meets two of three elements of P&N (enhance mobility and capacity and still maintains access to properties along US 74) - Does not provide long-term solutions - Much lower level of improvement in mobility and capacity 	<p>This alternative was not carried forward to the 2nd or 3rd screening in the Draft EIS.</p>		<p>TSM Concept 2 incorporated Superstreet design elements. See entry above for TSM Alternatives.</p> <p>After the Final EIS and at the request of the USACE, NCDOT prepared a year 2035 comparative planning level analysis of four Upgrade Existing US 74 corridor scenarios to determine if acceptable corridor levels of service would be provided in the design year 2035 (US 74 Corridor Analysis Scenarios, HNTB, December 2010). Two of the scenarios included the superstreet concept: Superstreet Existing and Superstreet to 6-lanes. Conclusion:</p> <ul style="list-style-type: none"> - Analysis concluded that these scenarios would not provide acceptable levels of service in the US 74 corridor in 2035. - The Superstreet 6-Lane scenario provided the highest corridor capacity compared to the other scenarios, but most of the corridor would operate with greatly reduced average travel speeds (i.e., would not provide for high speed regional travel).

Table B-1. Record and History of US 74 Alternatives in the Monroe Connector/Bypass EIS

IMPROVE EXISTING ALTERNATIVE	DOCUMENTED IN/DATE	ALTERNATIVE DESCRIPTION in DRAFT EIS	1 st SCREENING (Qualitative)	2 nd SCREENING (Qualitative)	3 rd SCREENING (Quantitative)	ADDITIONAL EXAMINATION OF ALTERNATIVE
<p>Improve Existing US 74 as a Controlled-Access Highway</p>	<ul style="list-style-type: none"> • <i>Alternatives Development and Analysis Report</i> (April 2008, Section 1.2.7, p. 1-13) • <i>Upgrade Existing US 74 Alternatives Study</i> (HNTB, March 2009) • <i>Draft EIS</i> (March 2009, Section 2.2.2.5, , Section 2.4.4.3) • <i>Final EIS</i> (May 2010, Section 1.2.2.1, p. 1-8 – 1-10) • <i>Final EIS</i> (May 2010, Section 3.3.2, pp. 3-7 -3-8) 	<p>Upgrading existing US 74 from I-485 to between the towns of Wingate and Marshville to controlled-access freeway with a free alternate route, as required, in form of frontage roads. Concept assumed a 6-lane freeway section with 2-lane, one-way frontage roads on either side to provide access to adjacent properties.</p> <p>No new location component to this concept.</p>	<p>Screened alternative against elements of the P&N. Conclusion:</p> <ul style="list-style-type: none"> - Meets all three elements of P&N - Reasonableness of alternative not clearly determined 	<p>Preliminary Corridor Segments (PCS) were developed and evaluated individually to determine if impacts would make the segment impractical or unreasonable to implement.</p> <p>Conclusion:</p> <ul style="list-style-type: none"> - Reasonableness of alternative not clearly determined - Remaining PCSs used to form end-to-end Preliminary Study Alternatives (PSAs). PSA G included as a preliminary alternative that would improve existing US 74 	<p>3rd screening used to identify alternatives that should be carried forward as Detailed Study Alternatives (DSAs) in the Draft EIS.</p> <p>Quantitative comparison/evaluation of 25 PSAs based on 20 impact categories/factors. Factors coordinated with local, regional, state, and federal regulatory and resource agencies. Conclusion regarding PSA G (Improve Existing US 74):</p> <ul style="list-style-type: none"> - PSA G would have significant human environment impacts, substantial disruption during construction, and more impacts to streams compared to new location PSAs - PSA G would result in impacts to 499 businesses along existing US 74; or about 11 percent of the total businesses in Union County. 	<p>In response to agency comments requesting further study of PSA G, NCDOT completed additional quantitative updates to studies of PSA G in the Draft EIS for traffic operations, costs, and impacts for comparison to the DSAs. Updated PSA G would have frontage roads operating at LOS F, would have higher costs and construction time than DSAs, and still have significant impacts to businesses (481). Perennial stream impacts would be less than for the DSAs, but intermittent stream impacts would be greater.</p> <p>Also in response to agency comments, NCDOT developed Revised PSA G* and quantitatively evaluated it in the Draft EIS. Revised PSA G modified PSA G to reduce impacts and costs, and improve operations. The revised alternative still resulted in significant (235) business relocations (5.5 percent of Union County businesses) and, compared to the DSAs, 20-23 percent higher costs and much greater construction time. Perennial stream impacts would be less than the DSAs, but intermittent stream impacts would be greater.</p> <p>Conclusion:</p> <ul style="list-style-type: none"> - Additional evaluation confirmed PSA G and Revised PSA G would not be reasonable or practicable and should not be considered as DSAs.
<p>New Location/Improve Existing Roadways Hybrid</p>	<ul style="list-style-type: none"> • <i>Alternatives Development and Analysis Report</i> (April 2008, Section 1.2.9, p. 1-14) • <i>Draft EIS</i> (March 2009, Section 2.2.2.7, pp. 2-11 – 2-26) 	<p>Building a portion of the project on new location and improving some combination of existing roadways (US 74 or other roadways) for the remainder of the project.</p> <p>The facility type for both portions would be a controlled-access highway.</p>	<p>Screened alternative against elements of the P&N. Conclusion:</p> <ul style="list-style-type: none"> - Meets all three elements of P&N - Reasonableness of alternative not clearly determined 	<p>Preliminary Corridor Segments (PCS) developed for additional analyses in response to agency comments. PSAs developed for comparison and evaluation to determine whether a PCS was viable and reasonable to carry forward into 3rd quantitative screening.</p> <p>Conclusion:</p> <ul style="list-style-type: none"> - Various Hybrid PCSs warranted further comparison and evaluation 	<p>Quantitative comparison/evaluation based on 20 impact categories/factors. Factors coordinated with local, regional, state, and federal regulatory and resource agencies. 8 of the 25 PSAs were New Location/Improve Existing Roadways Hybrids. Conclusion:</p> <ul style="list-style-type: none"> - PSAs E,F, E1, F1, E2, F2, E3, and F3 (all 8 hybrids) eliminated due to significant business relocation impacts (207-317) - Comparatively greater impacts to streams, minor road crossings, hazardous material sites, construction costs - Not reasonable based on impacts, and not carried forward as DSAs 	<p>No additional evaluation of this alternative.</p>

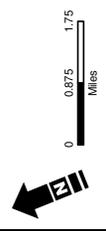
*Like PSA G, Revised PSA G option included US 74 as a tolled, controlled access 6-lane freeway facility with one-way two-lane frontage roads on either side to allow access to adjacent facilities. Difference was combination of two typical sections, which included 1) narrower curb and gutter sections in areas with higher concentrations of businesses as well as retaining walls to maintain the narrow section at interchanges or cross-streets. 2) wider typical section used in less developed sections, including wider areas at interchanges or crossovers to accommodate ramps. Approximately 7.6 miles of Revised PSA G (or 38 percent of the 19.7-mile long alternative) would be on retaining walls (substantial adverse visual impact).

- Legend**
- Major Roads
 - Minor Roads
 - Streams
 - Lakes
 - Subdivisions
 - Project Study Area
 - County Boundary



Mecklenburg and Union Counties
 North Carolina Counties

Source: Mecklenburg County and Union County GIS
 Map Printed March 2009.



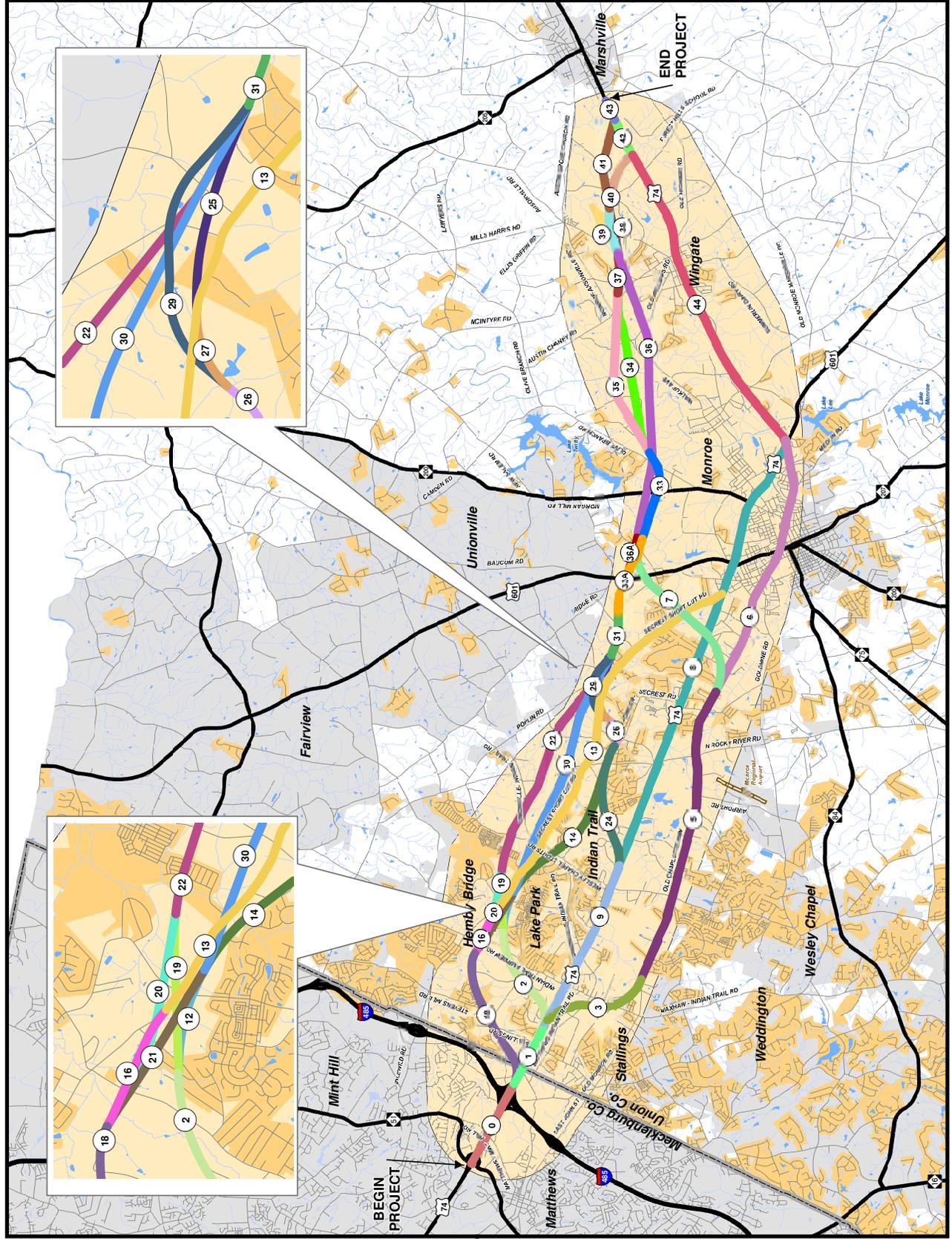
TURNPIKE AUTHORITY

STIP PROJECT
 NO. R-3329/R-2559
 Mecklenburg County and Union County

**MONROE CONNECTOR/
 BYPASS**

**PRELIMINARY
 CORRIDOR SEGMENTS**

Figure 2-1



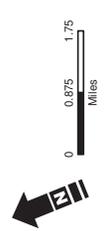
from Draft EIS

- Legend**
- Major Roads
 - Minor Roads
 - Streams
 - Lakes
 - Subdivisions
 - Project Study Area
 - County Boundary

Note: Dashed Segment Lines depict those segments that were modified as a result of early public involvement activities.



Mecklenburg and Union Counties
 Source: Mecklenburg County and Union County GIS
 Map Printed March 2009.

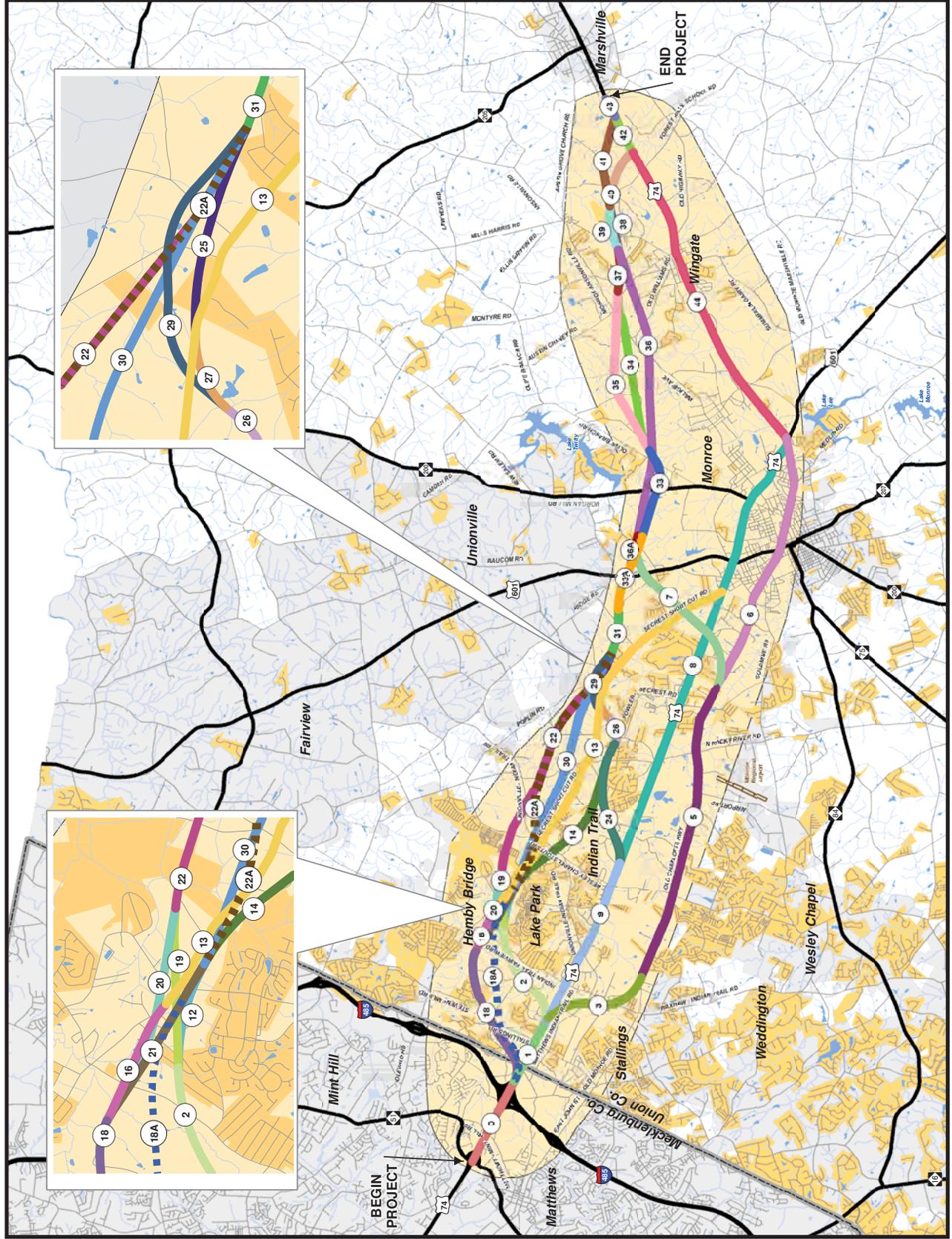


TURNPIKE AUTHORITY
 STIP PROJECT
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 Mecklenburg County and Union County

**MONROE CONNECTOR/
 BYPASS**

**PRELIMINARY
 CORRIDOR SEGMENTS
 REVISED**

Figure 2-3

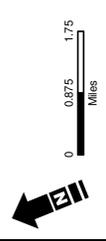


- Legend**
- Preliminary Corridor Segments
 - Major Roads
 - Minor Roads
 - Streams
 - Lakes
 - Subdivisions
 - Project Study Area
 - County Boundary



Mecklenburg and Union Counties
 North Carolina Counties

Source: Mecklenburg County and Union County GIS
 Map Printed March 2009.



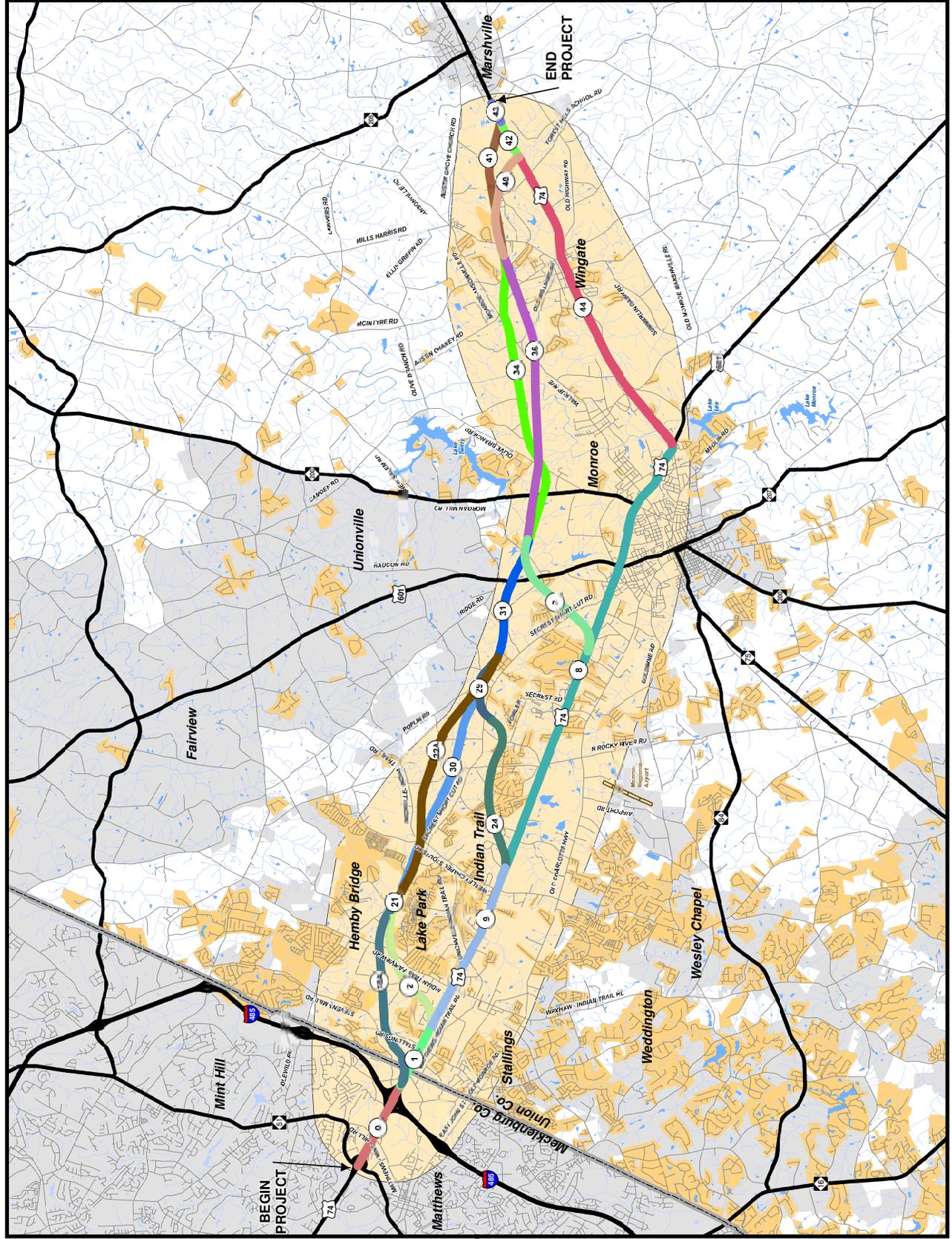
turnpike Authority
 SOUTH CAROLINA

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**MONROE CONNECTOR/
 BYPASS**

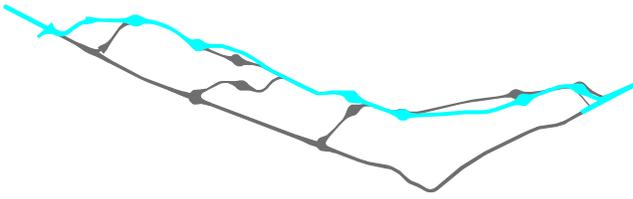
**PRELIMINARY
 CORRIDOR SEGMENTS
 FOR QUANTITATIVE
 THIRD SCREENING**

Figure 2-5



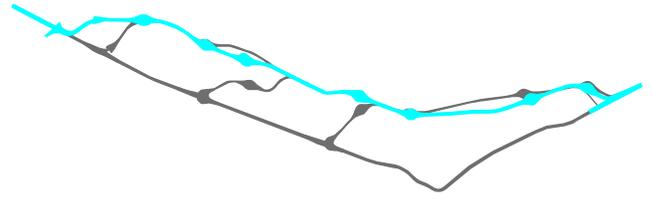
Alternative A

(Segments 0, 18A, 21, 22A, 31, 36, 40, 42 and 43)



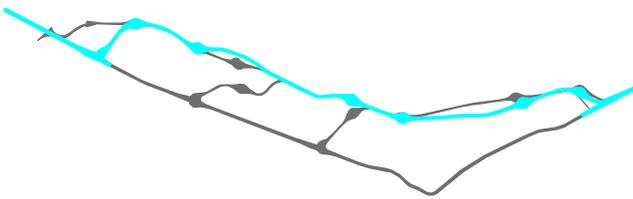
Alternative B

(Segments 0, 18A, 21, 30, 31, 36, 40, 42 and 43)



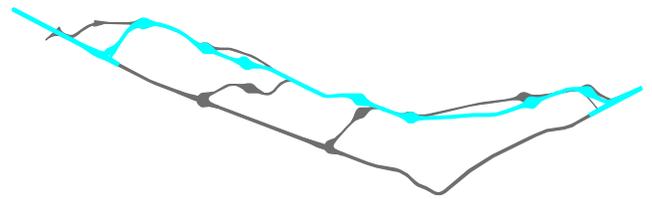
Alternative C

(Segments 0, 1, 2, 21, 22A, 31, 36, 40, 42 and 43)



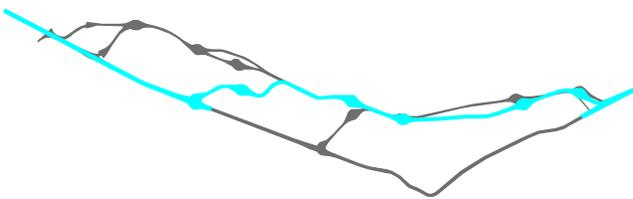
Alternative D

(Segments 0, 1, 2, 21, 30, 31, 36, 40, 42 and 43)



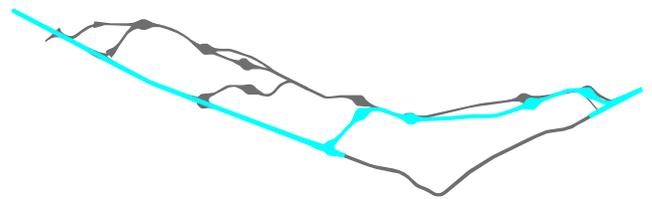
Alternative E

(Segments 0, 1, 1A, 9, 24, 29, 31, 36, 40, 42 and 43)



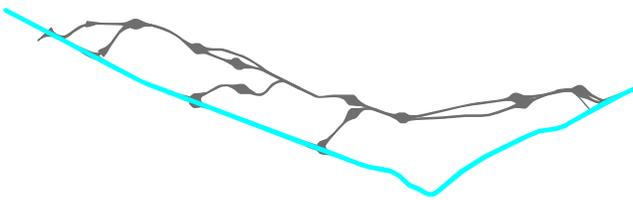
Alternative F

(Segments 0, 1, 1A, 9, 9A, 8, 8A, 7, 36, 40, 42 and 43)



Alternative G

(Segments 0, 1, 1A, 9, 9A, 8, 8A, 44, 42 and 43)



MONROE CONNECTOR / BYPASS

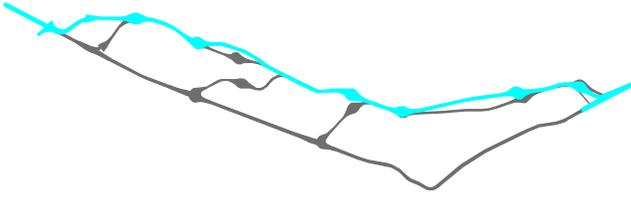
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PRELIMINARY STUDY
ALTERNATIVES

Figure 2-6a

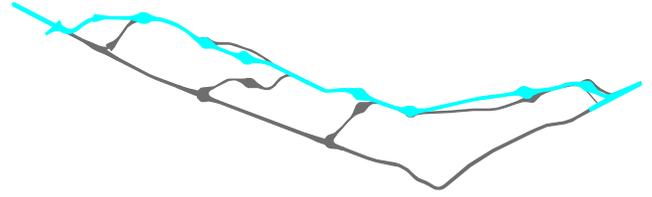
Alternative A1

(Segments 0, 18A, 21, 22A, 31, 34, 40, 42 and 43)



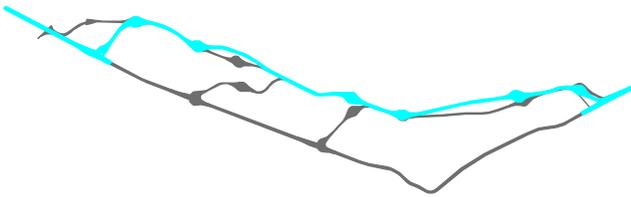
Alternative B1

(Segments 0, 18A, 21, 30, 31, 34, 40, 42 and 43)



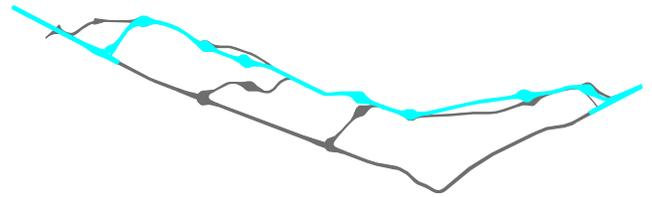
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(Segments 0, 1, 2, 21, 22A, 31, 34, 40, 42 and 43)



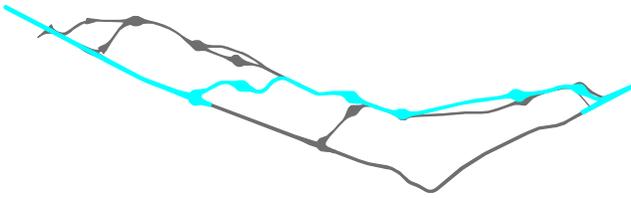
Alternative D1

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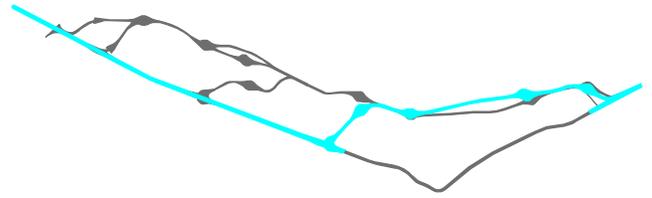
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Alternative F1

(Segments 0, 1, 1A, 9, 9A, 8, 8A, 7, 34, 40, 42 and 43)



MONROE CONNECTOR / BYPASS

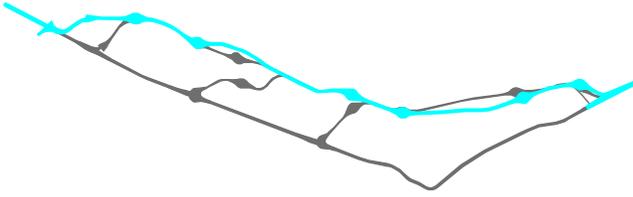
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PRELIMINARY STUDY
ALTERNATIVES

Figure 2-6b

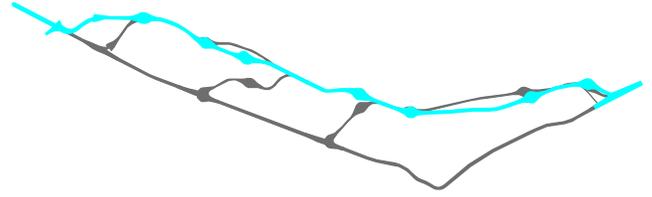
Alternative A2

(Segments 0, 18A, 21, 22A, 31, 36, 41, and 43)



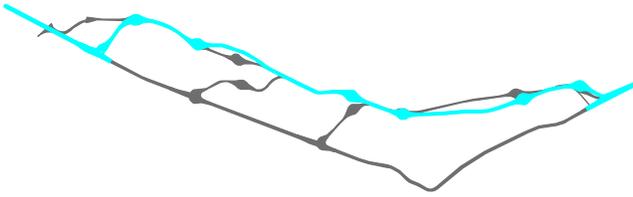
Alternative B2

(Segments 0, 18A, 21, 30, 31, 36, 41 and 43)



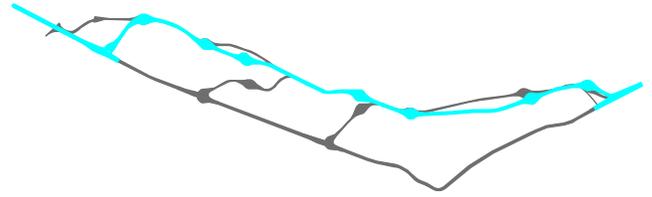
Alternative C2

(Segments 0, 1, 2, 21, 22A, 31, 36, 41 and 43)



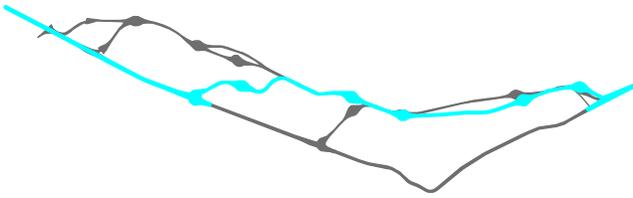
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(Segments 0, 1, 2, 21, 30, 31, 36, 41 and 43)



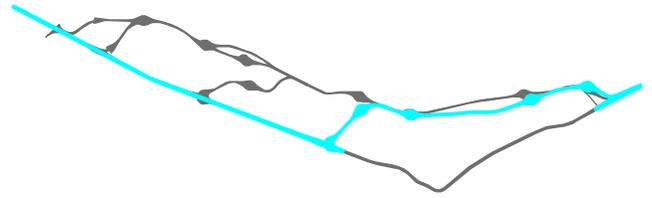
Alternative E2

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Alternative F2

(Segments 0, 1, 1A, 9, 9A, 8, 8A, 7, 36, 41 and 43)



MONROE CONNECTOR / BYPASS

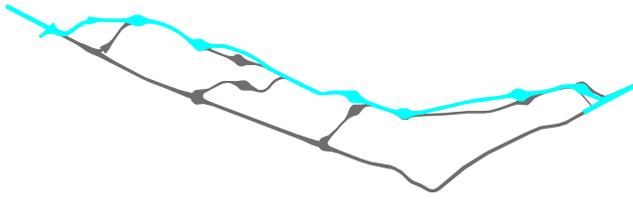
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Mecklenburg County and Union County

PRELIMINARY STUDY
ALTERNATIVES

Figure 2-6c

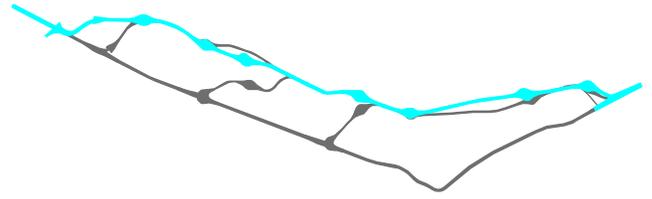
Alternative A3

(Segments 0, 18A, 21, 22A, 31, 34, 40, 42, and 43)



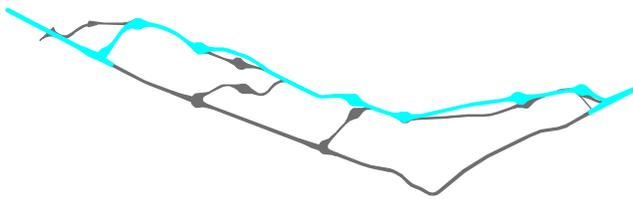
Alternative B3

(Segments 0, 18A, 21, 30, 31, 34, 41 and 43)



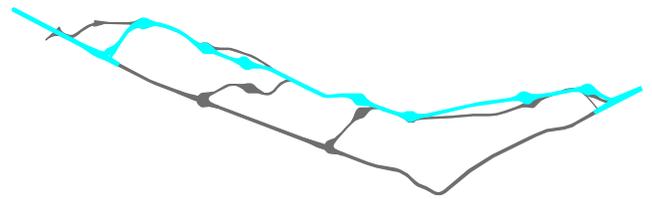
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(Segments 0, 1, 2, 21, 22A, 31, 34, 41 and 43)



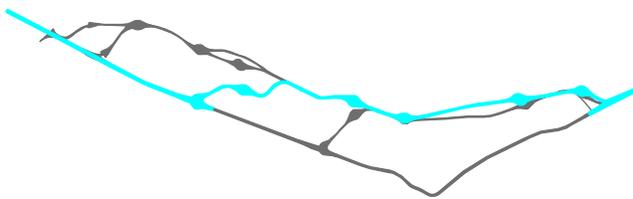
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(Segments 0, 1, 2, 21, 30, 31, 34, 41 and 43)



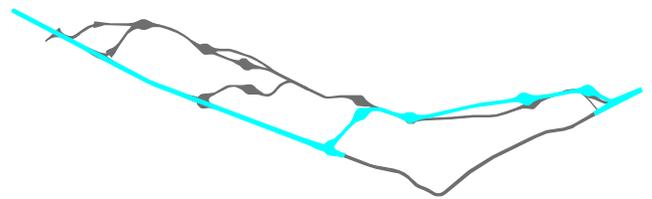
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Alternative F3

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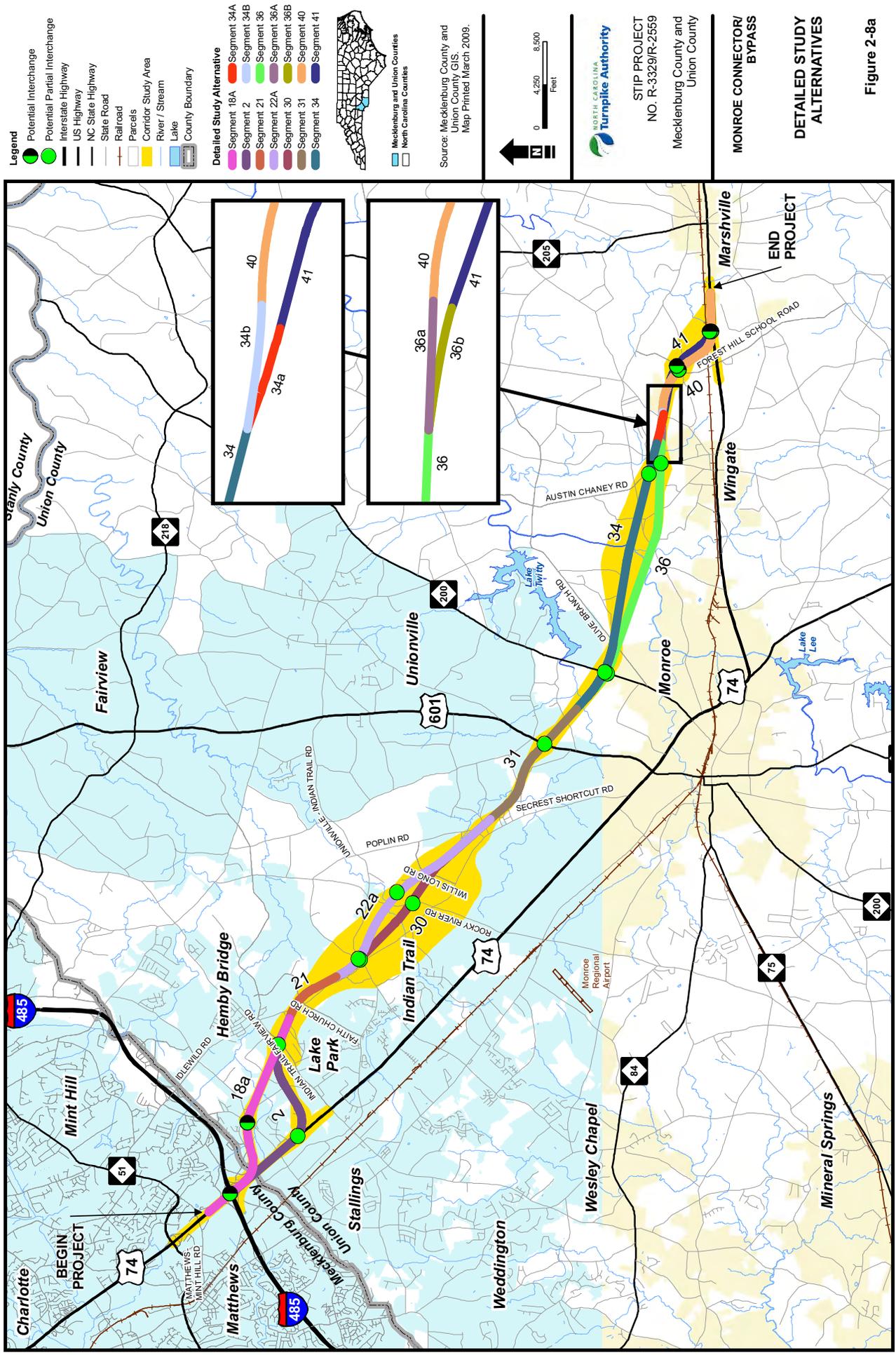


MONROE CONNECTOR / BYPASS

STIP PROJECT NO. R-3329 / R-2559
Mecklenburg County and Union County

PRELIMINARY STUDY
ALTERNATIVES

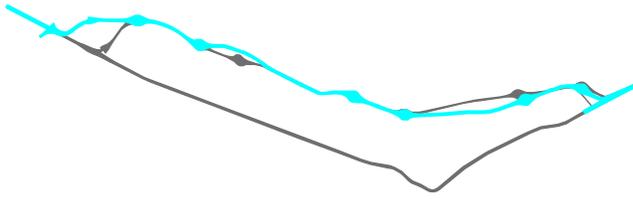
Figure 2-6d



from Draft EIS

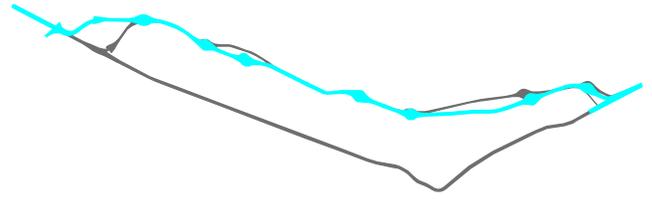
Alternative A

(Segments 18A, 21, 22A, 31, 36, 36A, and 40)



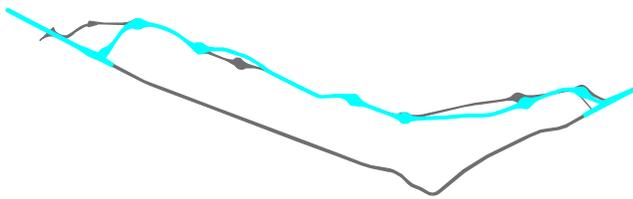
Alternative B

(Segments 18A, 21, 30, 31, 36, 36A, and 40)



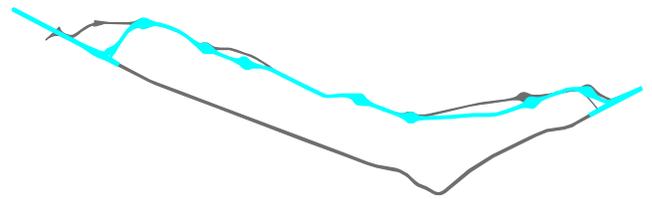
Alternative C

(Segments 2, 21, 22A, 31, 36, 36A, and 40)



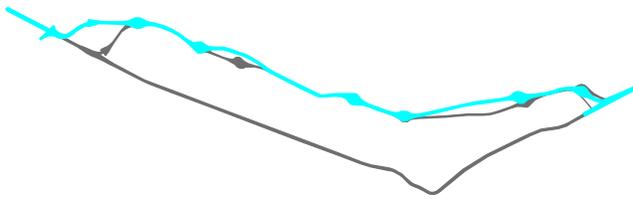
Alternative D

(Segments 2, 21, 30, 31, 36, 36A, and 40)



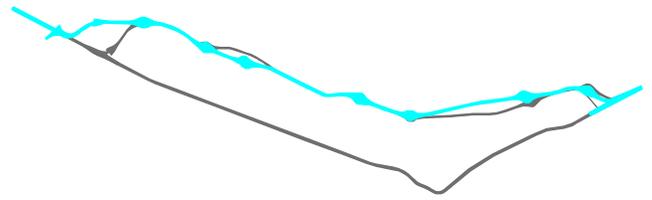
Alternative A1

(Segments 18A, 21, 22A, 31, 34, 34B, and 40)



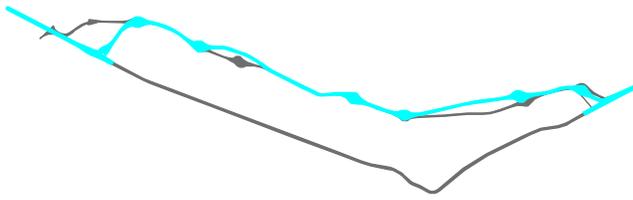
Alternative B1

(Segments 18A, 21, 30, 31, 34, 34B, and 40)



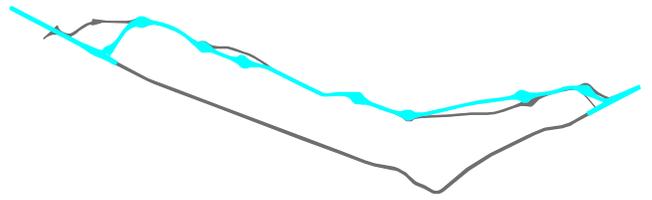
Alternative C1

(Segments 2, 21, 22A, 31, 34, 34B, and 40)



Alternative D1

(Segments 2, 21, 30, 31, 34, 34B, and 40)



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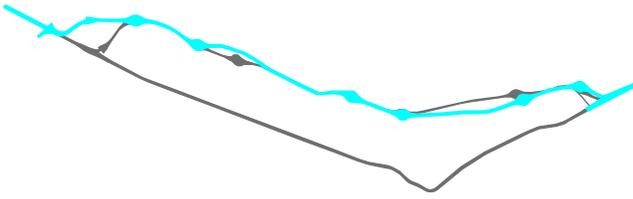
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FIGURE 2-8b

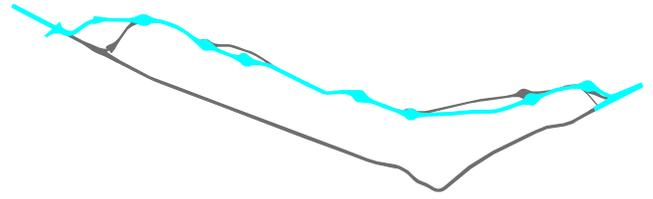
Alternative A2

(Segments 18A, 21, 22A, 31, 36, 36B and 41)



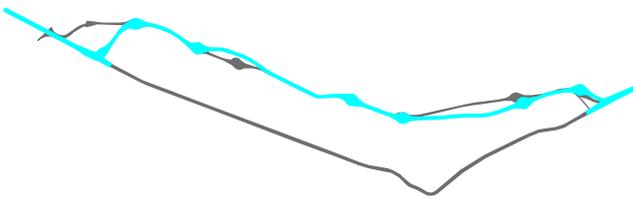
Alternative B2

(Segments 18A, 21, 30, 31, 36, 36B and 41)



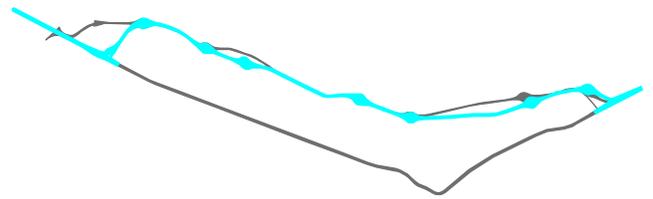
Alternative C2

(Segments 2, 21, 22A, 31, 36, 36B, and 41)



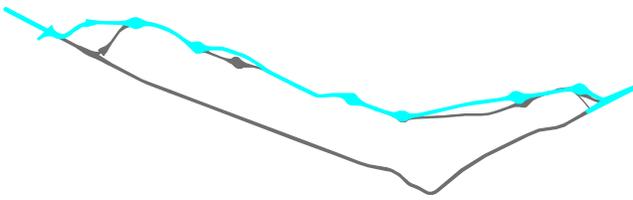
Alternative D2

(Segments 2, 21, 30, 31, 36, 36B, and 41)



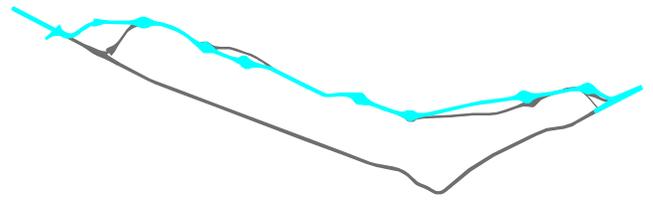
Alternative A3

(Segments 18A, 21, 22A, 31, 34, 34A, and 41)



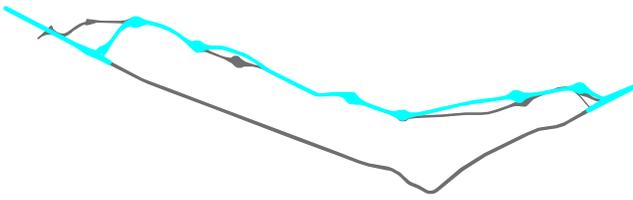
Alternative B3

(Segments 18A, 21, 30, 31, 34, 34A, and 41)



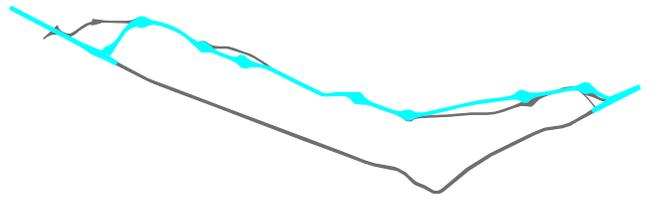
Alternative C3

(Segments 2, 21, 22A, 31, 34, 34A, and 41)



Alternative D3

(Segments 2, 21, 30, 31, 34, 34A, and 41)

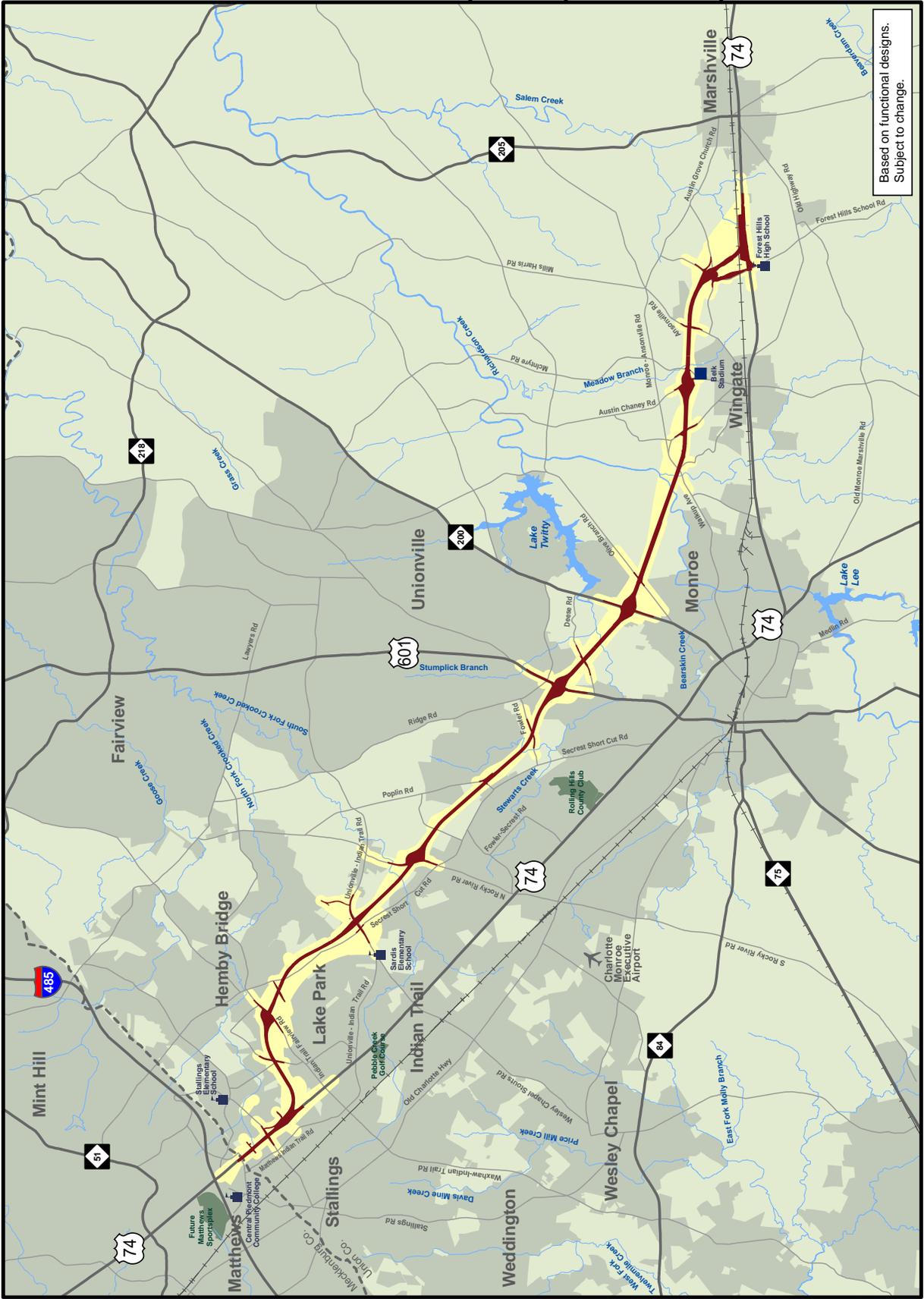


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FIGURE 2-8c



Legend

- Preferred Alternative Right of Way
- Preferred Alternative Study Corridor
- County Line
- Lakes
- Streams
- Interstates & Highways
- Local Roads
- Railroad



Source: Mecklenburg County and Union County GIS
 Map printed: February 2010



NORTH CAROLINA
Turnpike Authority

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PREFERRED ALTERNATIVE DSA D

Figure 2-1

Based on functional designs.
 Subject to change.

from Final EIS