

# FEASIBILITY STUDY

## FS-0210B

**Widening SR 1501 (Idlewild Road) From  
SR 1520 (Fairview Road/Indian Trail Road) To I-485**

**Mecklenburg/Union County**

**Division 10**



Prepared by the  
Program Development Branch  
N. C. Department of Transportation

A handwritten signature in black ink, appearing to read "Henry U. Escaluka", written over a horizontal line.

Henry U. Escaluka  
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Feasibility Studies Unit Head

7/2/12  
Date

# **Widening SR 1501 (Idlewild Road) From SR 1520 (Fairview Road/Indian Trail Road) To I-485**

## **Mecklenburg/Union County**

### **FS-0210B**

#### ***I. General Description***

This feasibility study describes the widening of SR 1501 (Idlewild Road) from SR 1520 (Fairview Road/Indian Trail Road) to I-485, a distance of 2.3 miles. Widen Idlewild Road from a two-lane road to a multi-lane facility. Utilize existing alignment and the project location map is shown on Figure 1. As part of this study, three different alternatives were investigated and the associated costs with the breakdowns are described below:

\* ***ALTERNATE A:*** Four-lane divided curb and gutter section and 30 feet raised grass median. The proposed right-of-way is variable with a minimum of 130 feet with additional right-of-way where needed.

\* ***ALTERNATE B:*** Four-lane divided with shoulder section and 30-foot raised grass median. The proposed right-of-way is variable with a minimum of 150 feet with additional right-of-way where needed.

\* ***ALTERNATE C:*** Six-lane divided curb and gutter section and 30-foot raised grass median. The proposed right-of-way is variable with a minimum of 150 feet with additional right of way where needed.

This study is the initial step in the planning and design process for this project and is not to be considered the product of exhaustive environmental or design investigations. The purpose of the study is to describe the problem, recommend a treatment including costs, and identify potential problem areas that deserve consideration in the planning and design phases.

## ***II. Background***

The primary purpose of this project is to provide traffic operations and safety improvements to Idlewild Road from Indian Trail Road to I-485.

This project is recommended and supported by the MUMPO in conjunction with the Department of Transportation. Also, this project is included in the MUMPO 2030 Long-Range Transportation Plan.

In the North Carolina Statewide Functional Classification System, Idlewild Road is designated as collector.

As it exists now, this section of Idlewild Road primarily is a two-lane shoulder section with variable pavement width depending on the location, additional widening is provided at intersections in order to accommodate auxiliary turn lanes. The posted speed limit varies between 35-mph and 45-mph.

The land immediately surrounding the project area; that is, north-west of Stevens Mill Road up to I-485 is mostly undeveloped woodlands with few scattered businesses. Further south-east of Stevens Mill Road up to Indian Trail-Fairview Road is predominantly single-family homes with some businesses.

At the western end of the project, planning for TIP Project U-4913, the widening of Idlewild Road from its existing pattern to a multilane facility between I-485 to Stevens Mill Road is currently in progress and section 1 of this study overlaps this project. If U-4913 progresses thru planning, design and construction, the recommendations of this study may require modification.

## ***III. Traffic and Safety***

There are three existing signals within the project limits. They are located at Indian Trail- Fairview Road, Stevens Mill Road and on Idlewild market Driveway.

The current year (2011) Average Daily Traffic (ADT) within the project limits ranges from 15,400 vehicles per day (vpd) at the west end (I-485) to

14,200 vpd at the east (Indian Trail-Fairview Road) end of the project. For the design year 2035, the estimated traffic volumes within the project limits ranges from 24,200 vehicles per day (vpd) at the west end (I-485) to 19,100 vpd at east (Indian Trail-Fairview Road ) end of the project. Truck traffic is estimated to make up 6% of the ADT traffic.

During the three-year period from January 1, 2006 through December 31, 2008, there were 147 accidents reported within the project limits. 89 of these crashes were property damage only accidents, 58 were injury crashes and there were no fatalities as a result of these accidents. The accident rate for this 2.3 mile portion of roadway was 355.39 accidents per 100 million vehicle miles of travel (acc/100mvm), which was considerably lower than the 2006-2008 statewide rate of 413.78 accidents/100 mvm for two-lane undivided primary routes.

The most prevalent accident types along this corridor are as follows: approximately 48 percent of accidents were rear end; slow or stop, 12 percent were with left turn; same roadway and 12 percent were angle accidents. Individually, all other accident types are approximately twenty eight (28) percent or less of total accidents. Improvements to upgrade this section of roadway to a multilane facility should reduce the likelihood of these types of accidents.

#### ***IV. Description of Alternatives***

The construction cost estimate shown below for each alternative includes the installation of a five (5) foot sidewalk on both sides of the road within the project limits. This sidewalk is estimated to cost an additional \$300,000 per side. All alternatives specified that the outside lane(s) be 14 foot in width to permit the sharing of lane for bicycle.

##### ***ALTERNATE A, sections 1 thru 3:***

**Section 1-** is the widening of Idlewild Road from I-485 to 700 feet southeast of Stevens Mill Road. The proposed cross section is a four-lane divided curb and gutter section with a 30-foot raised grass median, 86-foot wide face to face of curbs with 15-foot berms on a minimum of 130-feet of right-of-way along existing alignment. The length of this segment is approximately 4500-feet. See figures 1 and 2.

For Alternative A, Section #1, zero resident relocation and zero business relocations are expected. The total cost of this segment is estimated to be \$19,600,000 with \$6,700,000 for construction, \$12,400,000 for utility relocation and \$500,000 for right-of-way.

**Section 2-** is the widening of Idlewild Road from 700 feet southeast of Stevens Mill Road to 3000 feet southeast of Stevens Mill Road. The proposed cross section is a four lane divided curb and gutter section with 30-foot raised grass median, 86-foot wide face to face of curbs with 15-foot berms on a minimum 130-foot of right-of-way along existing alignment. The length of this segment is approximately 2300-feet. See figures 1 and 2.

For Alternative A, Section #2, zero resident relocation and zero business relocations are expected. The total cost of this segment is estimated to be \$6,900,000 with \$2,300,000 for construction, \$4,400,000 for utility relocation and \$200,000 for right-of-way.

**Section 3-** is the widening of Idlewild Road from 3000 feet southeast of Stevens Mill Road to southeast of Indian Trail Road. The proposed cross section is a four-lane divided curb and gutter section with 30-foot raised grass median, 86-foot wide face to face of curbs with 15-foot berms on a minimum 130-foot of right-of-way along existing alignment. The length of this segment is approximately 5100-feet. See figures 1 and 2.

For Alternate A, Section #3, it is anticipated that there will be twenty (20) residences and one (1) business will be impacted due to this project. The total cost of this segment is estimated to be \$13,800,000 with \$6,200,000 for construction, \$3,400,000 for utility relocation and \$4,200,000 for right-of-way.

Total Construction (Alternate A, Sections 1 thru 3).....	\$15,200,000
Total Right-of-Way (Alternate A, Sections 1 thru 3).....	\$4,900,000
Total Utility Relocations (Alternate A, Sections 1 thru 3).....	\$20,200,000
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Total Project Cost (Alternate A, Sections 1 thru 3).....	\$40,300,000

***ALTERNATE B, sections 1 thru 3:***

**Section 1-** is the widening of Idlewild Road from I-485 to 700 feet southeast of Stevens Mill Road. The proposed cross section is a four-lane divided shoulder section, 88-foot wide edge to edge of pavement including 5-foot paved shoulders and a 30-foot raised grass median on a minimum of 150-foot of right-of-way along existing alignment. The length of this segment is approximately 4500-feet. See figures 1 and 2.

For Alternate B, Section #1, zero resident relocation and zero business relocations are expected. The total cost of this segment is estimated to be \$19,600,000 with \$6,500,000 for construction, \$12,400,000 for utility relocation and \$700,000 for right-of-way.

**Section 2-** is the widening of Idlewild Road from 700 feet southeast of Stevens Mill Road to 3000 feet southeast of Stevens Mill Road. The proposed cross section is a four-lane divided shoulder section, 88-foot wide edge to edge of pavement including 5-foot paved shoulders and a 30-foot raised grass median on a minimum of 150-foot of right-of-way along existing alignment. The length of this segment is approximately 2300-feet. See figures 1 and 2.

For Alternate B, Section #2, zero resident relocation and zero business relocations are expected. The total cost of this segment is estimated to be \$7,000,000 with \$2,300,000 for construction, \$4,400,000 for utility relocation and \$300,000 for right-of-way.

**Section 3-** is the widening of Idlewild Road from 3000 feet southeast of Stevens Mill Road to southeast of Indian Trail Road. The proposed cross section is a four-lane divided shoulder section, 88-foot wide edge to edge of pavement including 5-foot paved shoulders and a 30-foot raised grass median on a minimum of 150-foot of right-of-way along existing alignment. The length of this segment is approximately 5100-feet. See figures 1 and 2.

For Alternate B, Section #3, it is anticipated that there will be twenty (20) residences and one (1) business will be impacted due to this project. The total cost of this segment is estimated to be \$14,700,000 with \$6,100,000 for construction, \$3,400,000 for utility relocation and \$5,200,000 for right-of-way.

Total Construction (Alternate B, Sections 1 thru 3).....	\$14,900,000
Total Right-of-Way (Alternate B, Sections 1 thru 3).....	\$6,200,000
Total Utility Relocations (Alternate B, Sections 1 thru 3)...	\$20,200,000
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Total Project Cost (Alternate B, Sections 1 thru 3).....	\$41,300,000

***ALTERNATE C, sections 1 thru 3:***

**Section 1-** is the widening of Idlewild Road from I-485 to 700 feet southeast of Stevens Mill Road. The proposed cross section is a six-lane divided curb and gutter section with 30-foot raised grass median, 86-foot wide face to face of curbs with 15-foot berms on a minimum of 150-foot of right-of-way along existing alignment. The length of this segment is approximately 4500-feet. See figures 1 and 2.

For Alternate C, Section #1, zero resident relocation and zero business relocations are expected. The total cost of this segment is estimated to be \$21,200,000 with \$8,100,000 for construction, \$12,400,000 for utility relocation and \$700,000 for right-of-way.

**Section 2-** is the widening of Idlewild Road from 700 feet southeast of Stevens Mill Road to 3000 feet southeast of Stevens Mill Road. The proposed cross section is a four-lane divided curb and gutter section with 30-foot raised grass median, 86-foot wide face to face of curbs with 15-foot berms on a minimum of 150 feet of right-of-way along existing alignment. The length of this segment is approximately 2300-feet. See figures 1 and 2.

For Alternate C, Section #2, zero resident relocation and zero business relocations are expected. The total cost of this segment is estimated to be \$7,800,000 with \$3,100,000 for construction, \$4,400,000 for utility relocation and \$300,000 for right-of-way.

**Section 3-** is the widening of Idlewild Road from 3000 feet southeast of Stevens Mill Road to southeast of Indian Trail Road. The proposed cross section is a six-lane divided curb and gutter section with 30-foot raised grass median, 86-foot wide face to face of curbs with 15-foot berms on a minimum of 150-foot of right-of-way along existing alignment. The length of this segment is approximately 5100-feet. See figures 1 and 2.

For alternative C, Section #3, it is anticipated that there will be twenty (20) residences and one (1) business will be impacted due to this project. The total cost of this segment is estimated to be \$16,500,000 with \$7,900,000 for construction, \$3,400,000 for utility relocation and \$5,200,000 for right-of-way.

Total Construction (Alternate C, Sections 1 thru 3).....	\$19,100,000
Total Right-of-Way (Alternate C, Sections 1 thru 3).....	\$6,200,000
Total Utility Relocations (Alternate C, Sections 1 thru 3)...	\$20,200,000
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Total Project Cost (Alternate C, Sections 1 thru 3).....	\$45,500,000

*Under all alternates, the utility relocation costs are anticipated to be significant because of the potential impacts along the facility. During later planning and design phases, a best fit solution should be fully investigated when more detailed survey data is available because considerable cost reductions maybe possible.*

*\*Note: The above costs do not include the cost of converting the I-485/Idlewild Road interchange into a Diverging Diamond Interchange (DDI) as discussed below.*

### ***V). Other Considerations***

Given the available information, we anticipate traffic operational issues with the existing I-485/Idlewild Road interchange. Therefore, we did consider modifications to this interchange and it appears that a six lane diverging diamond interchange (DDI) in conjunction with the six lane widening recommended in Alternative 3 would adequately accommodate the 2035 design year traffic volumes. The total cost to convert and widen the existing interchange into a six lane DDI is estimated to be \$7,500,000 with \$7,300,000 for construction and \$200,000 for utility relocation.

### ***VI). Recommendations***

It is recommended to improve Idlewild Road to a multi-lane facility with curb and gutter. Three different alternatives were investigated and the associated costs with the breakdowns are described in section IV above.



The cost difference between the four-lane divided curb and gutter section, four-lane divided shoulder section with option for future widening and the six-lane divided curb and gutter section; all with 30-foot raised grass median, ranges between \$5.0 million and \$4.0 million respectively; in favor of the four-lane section(s). Although 150-foot right-of-way is utilized for both the four-lane divided shoulder section with option for future widening and the six-lane curb and gutter sections. However, in 2035 design year, our analyses indicates that the four-lane shoulder section (Alternate "B") will operate at a level of service "F" while the six-lane curb and gutter section (Alternate "C") would accommodate the projected traffic volume and operating at an acceptable level of service "D" or better with appropriate intersection improvements. Therefore, due to these factors, the six-lane divided cross-sections (Alternate "C") is desirable, but Alternative B, four-lane divided shoulder section on six-lane right-of-way is considered an acceptable interim improvement.

Total Costs of desirable six-lane widening including the I-485 interchange is estimated to be \$53,000,000 with \$26,400,000 for construction, \$6,200,000 for Right-of-Way and up to \$20,400,000 for utility relocation. The total Costs of interim four-lane widening including the I-485 interchange is estimated to be \$46,500,000 with \$19,900,000 for construction, \$6,200,000 for Right-of-Way and up to \$20,400,000 for utility relocation. However, when more detailed survey data is available during later planning and design stages, a best fit solution should be fully investigated in order to reduce the anticipated utility relocation costs.

## ***VII). Additional Comments***

An exhaustive environmental screening was not conducted for this study. However, the following information summarizes conclusions about the project study area based on existing data.

There are no properties listed on the National Register of Historic Places within the immediate vicinity of the proposed improvements. There are also no known archaeological sites within the project study area.

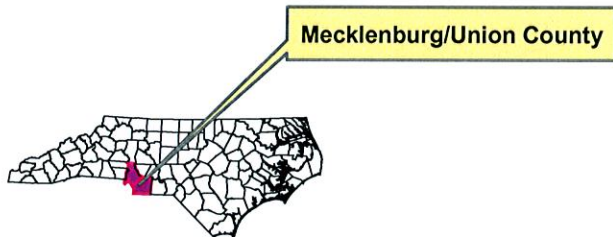
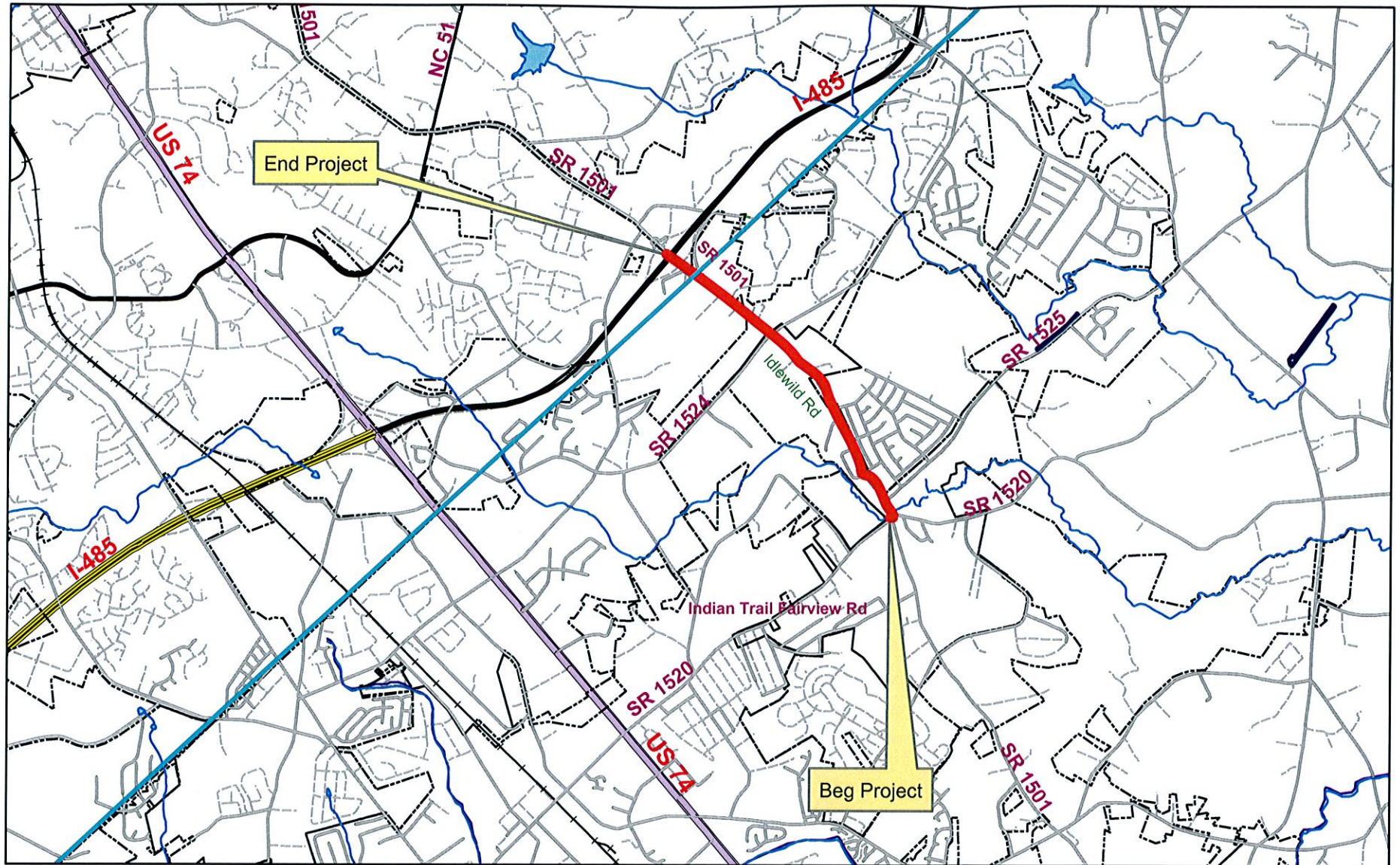
According to the National Heritage Program GIS data base, there were no Threatened or Endangered species identified within the immediate project area. The proposed project corridor crosses wetlands associated with the

North Fork Crooked Creek, therefore, permits with the U.S. Army Corps of Engineers may be necessary.

Bicycle accommodations are currently provided under all alternatives studied for this project.

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## Figure 1



 Project Limits



FIGURE 2  
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END PROJECT  
ALT. A, B & C

BEGIN PROJECT  
ALT. A, B & C

Idlewild Rd. (SR 1501)

Existing Idlewild Rd. Alignment  
 Proposed Alignment Alt. A, B & C  
 130' Proposed R/W  
 Scale = 400:1

FS 0210B  
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 SR 1520 (Fairview Rd/Majan Trail Rd) to I-485

CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

1501

