

FEASIBILITY STUDY

**Widening of SR 1997 (Fayetteville Road)
From I-95 to E. 22nd Street
and
SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road)
From SR 1997 (Fayetteville Road) to NC 41 (E. Elizabethtown Road)**


Robeson County


Division 6

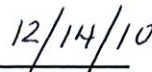
FS-0806A



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


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I. General Description

This feasibility study describes the proposed widening of SR 1997 (Fayetteville Road) from I-95 to E. 22nd Street, a distance of approximately 2.7 miles and the proposed widening of SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road) from SR 1997 (Fayetteville Road) to NC 41 (E. Elizabethtown Road), a distance of approximately 2.0 miles. The project location is shown on Figure 1. As part of the study, several different cross-sections were investigated, the details of which are as follows:

- SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road)
 - ◆ Four-lane divided curb and gutter section on 120 feet of right of way.
 - ◆ Four-lane divided shoulder section on 150 feet of right of way.
- SR 1997 (Fayetteville Road)
 - ◆ Six-lane divided curb and gutter section on 150 feet of right of way.

This is the initial step in the planning and design process for this project and is not the product of exhaustive environmental or design investigations. The purpose of this study is to describe the proposed project including cost, and to identify potential problems that may require consideration in the planning and design phases.

II. Background

The purpose of this project is to improve the traffic safety and operations along SR 1997 (Fayetteville Road) and SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road).

SR 1997 (Fayetteville Road) is designated as a principal arterial in the North Carolina Statewide Functional Classification System and as a major thoroughfare in the November 1995 Lumberton Thoroughfare Plan. SR 1997 varies from a three-lane section to a five-lane section with pavement widths varying from 36 feet to 84 feet from edge of pavement to edge of pavement. Curb and gutter and shoulders are used along SR 1997.

SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road) is designated urban local route in the North Carolina Statewide Functional Classification System and as a minor thoroughfare in the November 1995 Lumberton Thoroughfare Plan. SR 1984/SR 2033 currently is a two-lane shoulder section with pavement width of 24 feet from edge of pavement to edge of pavement.

The following Transportation Improvement Program (TIP) project is located within the project corridor:

- I-4413: Replace Bridge No. 36, widen US 301 to multilanes from Jackson Court to SR 1791, and revise I-95 interchange (Exit 22) and install signal.

Bridge No. 36 is the only bridge in the project study area, and is a two-lane bridge, 28 feet wide and 260 feet long which crosses over I-95. Bridge No. 36 was built in 1959 and has a sufficiency rating of 49 out of 100.

It is anticipated that this project will have several railroad impacts, since the proposed improvements will intersect the CSX Railway 'SEA' line. At these locations there is one track that carries approximately one freight train per day at average speeds of 10 miles per hour. The proposed impacts are as follows:

- The existing at-grade railroad crossing with SR 1984 (Linkhaw Road) will be upgraded to accommodate a proposed multi-lane section.
- The existing at-grade railroad crossing with NC 211 (N. Roberts Avenue) will be upgraded to accommodate a proposed multi-lane section.

III. Traffic and Safety

There are existing traffic signals located at the following intersections within the project study area:

- SR 1997 (Fayetteville Road) and I-95 southbound ramp
- SR 1997 and I-95 northbound ramp
- SR 1997 and Jackson Court/Wintergreen Drive
- SR 1997 and shopping center driveway
- SR 1997 and SR 1005 (Barker Ten Mile Road)/Liberty Hill Road
- SR 1997 and Oakridge Boulevard
- SR 1997 and Farringdon Street
- SR 1997 and SR 1984 (Linkhaw Road)
- SR 1997 and NC 211 (N. Roberts Avenue)
- SR 1997 and Godwin Avenue/E. 24th Street

The current year Average Daily Traffic (ADT) along SR 1997 (Fayetteville Road) is estimated to range from 11,700 vehicles per day (vpd) to 36,500 vpd. For the design year 2035, the traffic volume along SR 1997 is estimated to range between 19,000 vpd to 59,300 vpd. Truck traffic is estimated to be up to 6 percent of the daily traffic.

The current year Average Daily Traffic (ADT) along SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road) is estimated to range from 4,800 vehicles per day (vpd) to 11,900 vpd. For the design year 2035, the traffic volume along SR 1984/SR 2033 is estimated to range between 7,600 vpd to 18,900 vpd. Truck traffic is estimated to make up approximately 3 percent of the daily traffic.

The existing segment of SR 1997 (Fayetteville Road) operates at a level of service (LOS) F under current traffic volumes. All intersections along SR 1997 except for the intersection of SR 1997 and NC 211 (N. Roberts Avenue) operate at a LOS D or better. If no improvements are made in the 2035 design year, it is projected that SR 1997 will continue to operate at a LOS F. With the proposed improvements, all intersections along SR 1997 except for NC 211 are projected to operate at a LOS D or better. In order to achieve a LOS D at the NC 211 intersection, significant improvements well beyond the scope of this project are needed.

The existing segment of SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road) operates at a level of service (LOS) E under current traffic volumes. If no improvements are made in the 2035 design year, it is projected that SR 1984/SR 2033 will operate at a LOS F. With the proposed improvements, SR 1984/SR 2033 is projected to operate at a LOS D or better.

Between 2006 and 2009, 579 crashes were reported along SR 1997 (Fayetteville Road). The crash rate for SR 1997 is 719.69 crashes per 100 million vehicle miles (crashes/100MVM) traveled. This rate is significantly higher than the statewide rate of 501.90 crashes/100MVM and critical rate of 543.61 crashes/100MVM for four-lanes with continuous left turn lane urban secondary route. There were 187 non-fatal injury crashes, 389 property damage only crashes, and 3 fatal crashes. The most prevalent types of crashes were Rear End (47%), Angle (24%), and Sideswipe (15%).

Between 2006 and 2009, 50 crashes were reported along SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road). The crash rate for SR 1984/SR 2033 is 258.31 crashes per 100 million vehicle miles (crashes/100MVM) traveled. This rate is significantly lower than the statewide rate of 413.78 crashes/100MVM for two-lane undivided urban secondary route. There were 15 non-fatal injury crashes, 35 property damage only crashes, and no fatal crashes. The most prevalent types of crashes were Rear End (36%) and Angle (32%).

IV. Description of Alternatives

It is proposed to widen SR 1997 (Fayetteville Road) from I-95 to E. 22nd Street, a distance of approximately 2.7 miles and to widen SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road), a distance of approximately 2.0 miles. The project location is shown on Figure 1.

SR 1997 (FAYETTEVILLE ROAD) - SECTION 1: This section along SR 1997 is from I-95 to Farrington Street, a distance of approximately 1.4 miles.

Cross-section: Six-lane divided curb and gutter section, 106 feet from face to face of curb, with 12-foot travel lanes, a 30-foot raised grass median, 15-foot berms, and 5-foot sidewalks on 150 feet of right of way.

With this proposed cross-section, it is anticipated that there will be zero (0) residences and zero (0) businesses relocated due to this project. The total cost of this alternative, including right of way, utility relocation, and construction, is estimated to be \$16,200,000.

Right-of-way.....	\$7,400,000
Utility Relocation.....	\$200,000
<u>Construction.....</u>	<u>\$8,600,000</u>
Total Cost (SR 1997 (Fayetteville Road) - Section 1).....	\$16,200,000

In addition to the widening of SR 1997, the following intersection improvements are recommended and included in the costs shown above:

- SR 1997 (Fayetteville Road) and Jackson Court/Wintergreen Drive
 - convert the existing full movement intersection into a right in/right out intersection
 - addition of southbound left turn lane on SR 1997
- SR 1997 and SR 1005 (Barker Ten Mile Road)/Liberty Hill Road
 - addition of southbound right turn lane on SR 1997
 - addition of northbound left turn lane on SR 1997
 - addition of westbound left turn lane on SR 1005
 - addition of eastbound dual right turn lanes on Liberty Hill Road
- SR 1997 and Farrington Street
 - addition of southbound right turn lane on SR 1997
 - addition of eastbound left turn lane on Farrington Street

SR 1997 (FAYETTEVILLE ROAD) - SECTION 2: This section along SR 1997 is from Farrington Street to E. 22nd Street, approximately 1.3 miles.

Cross-section: Six-lane divided curb and gutter section, 106 feet from face to face of curb, with 12-foot travel lanes, a 30-foot raised grass median, 15-foot berms, and 5-foot sidewalks on 150 feet of right of way.

With this proposed cross-section, it is anticipated that there will be zero (0) residences and six (6) businesses relocated due to this project. The total cost of this alternative, including right of way, utility relocation, and construction, is estimated to be \$21,500,000.

Right-of-way.....	\$8,800,000
Utility Relocation.....	\$300,000
Construction.....	\$14,400,000
Total Cost (SR 1997 (Fayetteville Road) - Section 2).....	\$21,500,000

In addition to the widening of SR 1997, the following intersection improvements are recommended and included in the costs shown above:

- SR 1997 (Fayetteville Road) and SR 1984 (Linkhaw Road)
 - addition of southbound left turn lane on SR 1997
 - addition of northbound right turn lane on SR 1997
 - addition of westbound right turn lane on SR 1984
- SR 1997 and NC 211 (N. Roberts Avenue)
 - addition of dual southbound left turn lanes on SR 1997
 - addition of southbound right turn lane on SR 1997
 - addition of dual eastbound left turn lanes on NC 211
 - addition of eastbound thru lane on NC 211
 - addition of eastbound right turn lane on NC 211
 - addition of westbound right turn lane on NC 211
 - addition of westbound thru lane on NC 211
- SR 1997 and Godwin Avenue/E. 24th Street and N. Cedar Street
 - consider a dual lane roundabout

SR 1984/SR 2033 (LINKHAW ROAD/HORNETS ROAD):

Cross-section (SR 1997 (Fayetteville Road) to Hillcrest Drive): Four-lane divided curb and gutter section, 75 feet from face to face of curb, with 12-foot travel lanes, a 23-foot raised grass median, 15-foot berms, and 5-foot sidewalks on 110 feet of right of way.

Cross-section (Hillcrest Drive to NC 41 (E. Elizabethtown Road)): Four-lane divided shoulder section, 79 feet from edge of pavement to edge of pavement, with 12-foot travel lanes, a 23-foot raised grass median, and 8-foot shoulders (4 feet of which are paved) on 150 feet of right of way.

With these cross-sections, it is anticipated that there will be zero (0) residences and zero (0) businesses relocated due to this project. The total cost of this alternative, including right of way, utility relocation, and construction, is estimated to be \$13,000,000.

Right-of-way.....	\$2,400,000
Utility Relocation.....	\$500,000
Construction.....	\$10,100,000
Total Cost (SR 1984(Linkhaw Road)/SR 2033(Hornets Road).....	\$13,000,000

In addition to the widening of SR 1984/SR 2033, the following intersection improvements are included in the coasts shown above:

- SR 2033 (Hornets Road) and NC 41 (E. Elizabethtown Road)
 - addition of westbound left turn lane on NC 41
 - addition of westbound thru lane on NC 41
 - addition of eastbound left turn lane on NC 41
 - addition of eastbound thru lane on NC 41

V. Community Issues

A detailed investigation was not conducted for this feasibility study, however possible impacts to Lumberton Senior High School are anticipated. Meadowbrook Cemetery is located in the project study area.

Maps at the Survey and Planning Branch of the North Carolina State Historic Preservation Office were used to determine if any historic properties on the National Register of Historic Places (NRHP) or state study lists exist within the proposed project corridor. No properties within the project study area were found to be potentially historic properties.

VI. Natural Environment Issues

The following is a preliminary review of environmental issues that might have a potential impact to the project. The information obtained for the environmental screening is from a Geographic Information System (GIS) database. The purpose of the environmental screening is to identify potential environmental issues early in the process.

Stream Classification

The proposed project study area is located in the Lumber River Basin. SR 1997 (Fayetteville Road) crosses several water bodies in the project corridor. Spreading Oak Branch, Ivey Branch, and Meadow Branch have a stream classification of C Sw. These water bodies will likely need to be surveyed and have the appropriate coordination with the North Carolina Department of Environment and Natural Resources (NCDENR) and the U.S. Army Corps of Engineers (USACE) during any environmental document study.

Wetlands

SR 1997 (Fayetteville Road) crosses wetlands associated with Spreading Oak Branch, Ivey Branch, and Meadow Branch. Permitting with the U.S. Army Corps of Engineers (USACE) will likely need to be obtained before construction of the project, and appropriate mitigation measures should be taken if deemed necessary. A portion of the project study area is located in a 100 and 500-year floodplains.

Threatened and Endangered Species

Carolina Sunrose was identified as a potential endangered species within the project study area.

VII. Recommendations

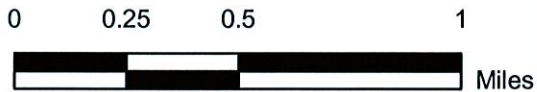
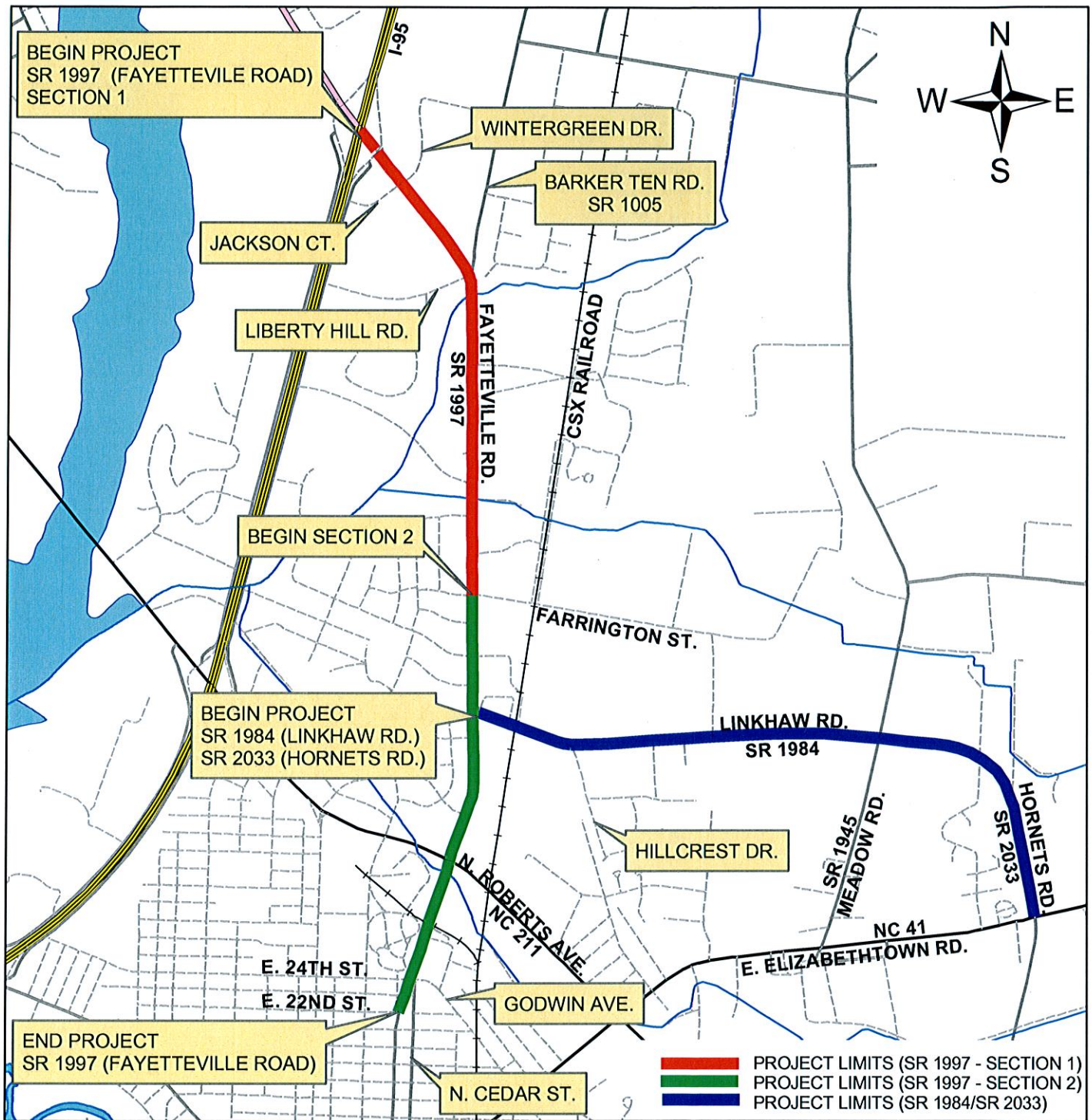
SR 1997 (Fayetteville Road) Section 1: It was found that the six-lane divided curb and gutter section would be able to accommodate the projected 2035 design year traffic volumes at an acceptable level of service.

SR 1997 (Fayetteville Road) Section 2: It was found that the six-lane divided curb and gutter section would not be able to accommodate the projected 2035 design year traffic volumes. However, all of the intersections except for the intersection with NC 211 (N. Roberts Avenue) will operate at an acceptable level of service. Additional intersection improvements beyond the scope of this project would be required at NC 211 to achieve a LOS D.

SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road): It was found that the four-lane divided part curb and gutter, part shoulder section would be able to accommodate the projected 2035 design year traffic volumes with an acceptable level of service.

The total combined estimate for SR 1997 (Fayetteville Road), a six-lane divided curb and gutter section, with 12-foot travel lanes, a 30-foot raised grass median, 15-foot berms, and 5-foot sidewalks on 150 feet of right of way and the recommended intersection improvements is \$37,700,000.

The total estimate for SR 1984 (Linkhaw Road)/SR 2033 (Hornets Road), a four-lane divided curb and gutter section, with 12-foot travel lanes, a 23-foot raised grass median, 15-foot berms, and 5-foot sidewalks on 110 feet of right of way, a four-lane divided shoulder section, with 12-foot travel lanes, a 23-foot raised grass median, and 8-foot shoulders (4 feet of which is paved) on 150 feet of right of way and the recommended intersection improvements is \$13,000,000.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROGRAM DEVELOPMENT BRANCH

FS-0806A

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FROM I-95 TO E. 22ND STREET

AND

SR 1984 (LINKHAW ROAD)/SR 2033 (HORNETS ROAD)
FROM SR 1997 (FAYETTEVILLE ROAD) TO NC 41 (E. ELIZABETHTOWN ROAD)

ROBESON COUNTY

DIVISION 6

FIGURE 1