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FEASIBILITY STUDY

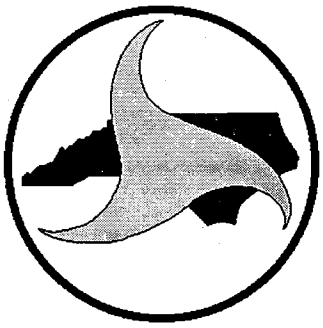
Fayetteville

Raeford Road (US 401 Business)
From East of Skibo Road (US 401 Bypass)
To All-American Freeway (SR 1007)

Cumberland County

Division 6

FS-9906C U-4405



Prepared by the
Programming and TIP Branch
Division of Highways
N. C. Department of Transportation

Derrick W. Lewis, P.E.
Acting Head of Feasibility Studies

1/24/2000
Date

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Cumberland County

FS-9906C

I. General Description

This feasibility study describes improvements to Raeford Road (US 401 Business) from east of Skibo Road (US 401 Bypass) to the All-American Freeway (SR 1007) interchange. The project area is shown in Figure 1.

In November of 1997, the Fayetteville MPO requested a feasibility study for the widening of Raeford Road from Skibo Road to Ireland Drive (SR 1219). However, from a logical termini perspective, the proposed widening of Raeford Road should be extended an additional 0.22 of a mile (0.35 Km) to the All-American Freeway. It should be noted that the City of Fayetteville has indicated that they would like the scope of work to be limited to intersection improvements along Raeford Road between Skibo Road and Ireland Drive. Therefore, we evaluated three alternates ranging from isolated intersection improvements to the widening of Raeford Road.

Alternate 1

Alternate 1 proposes to provide localized intersection improvements to both the Hope Mills Road (NC 59) and Ireland Drive intersections with Raeford Road. The recommended Hope Mills Road intersection geometry is shown in Figure 2, while the recommended Ireland Drive intersection geometry is shown in Figure 3. It is anticipated that there will be no residences or businesses relocated with this project. The total cost of the project, including construction and right-of-way, is estimated to be $7,500,000.

Construction	$ 3,800,000
Right-of-way	$ 3,700,000
Total Cost	$ 7,500,000

Alternate 2

Alternate 2 proposes to widen Raeford Road from just east of the Skibo Road to east of the Ireland Drive, a distance of 1.78 miles (2.86 km). This alternate also includes the intersection improvements recommended in Alternate 1. The recommended cross section is a six-lane divided curb and gutter section; 92 feet (28.0 m) wide face to face of curbs, with a 16-foot (4.9-m) raised grass

median and 10-foot (3.0-m) berms. The required right-of-way width is 120 feet (36.6 m) with additional right of way at some intersections to accommodate auxiliary turn lanes. It is anticipated that there will be no residences or businesses relocated due to this alternate. The total cost of the project, including construction and right-of-way, is estimated to be $16,700,000.

Construction	$ 10,800,000
Right-of-way	$ 5,900,000
Total Cost	$ 16,700,000

Alternate 3
(Preferred)

Along with the intersection improvements proposed for Alternate 1, Alternate 3 also proposes to widen Raeford Road from just east of the Skibo Road intersection to the All American Freeway southbound ramp terminal intersection, a distance of 2.0 miles (3.2 km). The recommended cross section is a six-lane divided curb and gutter section; 92 feet (28.0 m) wide face to face of curbs, with a 16-foot (4.9-m) raised grass median and 10-foot (3.0-m) berms. The required right-of-way width is 120 feet (36.6 m) with some additional right of way at some intersections to accommodate auxiliary turn lanes. It is anticipated that there will be no residences or businesses relocated due to this alternate. The total cost of the project, including construction and right-of-way, is estimated to be $17,900,000.

Construction	$ 11,400,000
Right-of-way	$ 6,500,000
Total Cost	$ 17,900,000

Currently, Raeford Road is an existing seven-lane undivided curb and gutter facility with an accident rate 2.5 times larger than the statewide average for urban United States Routes. Traffic studies, comparing two-way-left-turn-lane (TWLTL) facilities with divided facilities, indicate that a significant reduction in accidents can be expected when a raised median is provided. It is also true that divided facilities significantly improve the flow of through traffic along a facility. Therefore, from a traffic operational and safety perspective, Alternate 3 is preferred because it addresses the operational and safety deficiencies of the existing seven-lane section and improves the traffic signal operation. If it is determined that Alternate 3 can not be implemented under this project, Alternate 1 could be considered an interim improvement because it will provide some isolated traffic safety and operational benefits. However, this improvement will not address the issues associated with the existing seven-lane section.

This study 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 costs, and to identify potential problems that may require consideration in the planning and design phases.

II. Need for Project

The purpose of this project is to improve the traffic safety and operations of this section of Raeford Road. The City of Fayetteville and the Fayetteville Urban Area MPO support improvements within this corridor. However, the City of Fayetteville has indicated that they would like the scope of work to be intersection improvements between Skibo Road and Ireland Drive.

Raeford Road (US 401 Business) is designated as a major thoroughfare in the Fayetteville Thoroughfare Plan and as a principal arterial in the North Carolina Statewide Functional Classification System.

Raeford Road is an existing seven-lane curb and gutter facility, 74 feet (22.55 m) wide face to face of curb. This section of Raeford Road appears to have mostly commercial development adjacent to the roadway with a great deal of residential development behind the commercial development.

There are eight existing traffic signals along this section of Raeford Road. The existing traffic signals are at the following intersections: Skibo Road, Sandalwood Drive (SR 1187), Hope Mills Road, Brighton Road, Montclair Road, Ireland Drive, Ferncreek Drive, and the All-American Freeway ramp.

Currently, there are a couple of large cross pipes under this section of Raeford Road. At the Skibo Road intersection, two 60-inch (1.5-m) corrugated metal pipes carry a tributary of Beaver Creek under Raeford Road (US 401 Business). To the west of the Ireland Drive intersection, three 4-foot (1.2-m) reinforced concrete pipes carry Buckhead Creek under Raeford Road (US 401 Business).

TIP Project U-2207 is the widening of Skibo Road from Raeford Road to Bragg Boulevard (NC 24). It is currently under construction and completion is expected in September of 2000.

TIP Project U-2308B is the widening of Hope Mills Road and some minimal improvements to the Raeford Road intersection are included in this project. The right-of-way acquisition is currently under way and construction is scheduled in December of 2000.

TIP Project U-3846 is the widening of Raeford Road from Wildwood Street to Duke Street in order to provide additional auxiliary turn lanes at the Skibo Road intersection. This project currently has the right-of-way acquisition scheduled for October of 2002 and construction scheduled for October of 2003.

TIP Project U-2811 is the widening of Ireland Drive from Cumberland Road to Raeford Road. Currently, this project is in the unfunded projects section of the 2000-2006 TIP.

The current year Average Daily Traffic (ADT) along Raeford Road is estimated to be between 37,400 to 44,900 vehicles per day (vpd). For the design year 2025, the estimated traffic volumes on Raeford Road will range between 51,000 and 65,000 vpd. Truck traffic is estimated to make up eight percent of daily traffic.

Currently, this section of Raeford Road functions with a poor "F" level of service (LOS). Even with the proposed intersection improvements in adjacent TIP projects, this section of Raeford Road is still expected to function at a poor "F" LOS in the 2025 design year. While isolated intersection improvements recommended in this study will provide a "D" LOS or better (2025 design year) at these specific intersections, they do not address the overall traffic safety and operational issues of the existing seven-lane section. However, if this facility is converted to a six-lane divided section and the proposed intersection improvements are provided, this section of Raeford Road should function at a "D" LOS or better in the 2025 design year.

During the three-year period from September 1995 through August 1998, there were 572 accidents reported on Raeford Road (US 401 Business) within the project limits. There were 438 injuries reported as a result of these accidents, with no fatalities. The accident rate along Ramsey Street within the project limits is 826.54 accidents per 100 million vehicle miles (acc/100mvm). This compares with the 1995 to 1997 statewide rate of 329.65 acc/100mvm for urban United States undivided roadways.

III. Discussion of Alternates

This feasibility study describes improvements to Raeford Road from east of Skibo Road to the All-American Freeway interchange. The project area is shown in Figure 1.

In November of 1997, the Fayetteville MPO requested a feasibility study for the widening of Raeford Road from Skibo Road to Ireland Drive. From a logical termini perspective, the proposed widening of Raeford Road should be extended an additional 0.22 of a mile (0.35 Km) to the All-American Freeway. However, it should be noted that the City of Fayetteville has indicated that they would like the scope of work to be limited to intersection improvements along Raeford Road between Skibo Road and Ireland Drive. Therefore, this feasibility study includes three different alternates for improvements to this section of Raeford Road.

Alternate 1

Alternate 1 proposes to provide localized intersection improvements to both the Hope Mills Road and Ireland Drive intersections with Raeford Road. No improvements to Skibo Road are included in this alternate because TIP project U-3846 is proposing at-grade intersection improvements. The next step at the Skibo Road junction would be an interchange and is considered well beyond the scope of this project.

The recommended Hope Mills Road / Raeford Road intersection geometry is shown in Figure 2. We expect that these improvements will impact approximately 1000 feet (304.8 m) of Raeford Road west of the intersection. It is also estimated that approximately 400 feet (121.9 m) of Hope Mills Road south of the intersection will be impacted, while a 1000 feet (304.8 m) of Raeford Road east of the intersection is impacted. The total cost of the project, including construction and right-of-way, is estimated to be $3,200,000.00.

Construction	$ 1,700,000
Right-of-way	$ 1,500,000
Total Cost	$ 3,200,000

The recommended Ireland Drive / Raeford Road intersection geometry is shown in Figure 3. We expect that these improvements will impact approximately 400 feet (122 m) of Raeford Road west of the intersection. It is also estimated that approximately 1000 feet (304.8 m) of Ireland Drive south of the intersection will be impacted, while a 1000 feet (304.8 m) of Raeford Road east of the intersection is impacted. The total cost of the project, including construction and right-of-way, is estimated to be $4,300,000.00.

Construction	$ 2,100,000
Right-of-way	$ 2,200,000
Total Cost	$ 4,300,000

It is anticipated that there will be no residences or businesses relocated with this project. The total cost of the project, including construction and right-of-way, is estimated to be $7,500,000.00.

Construction	$ 3,800,000
Right-of-way	$ 3,700,000
Total Cost	$ 7,500,000

Alternate 2

Alternate 2 proposes to widen Raeford Road from just east of the Skibo Road to east of the Ireland Drive, a distance of 1.78 miles (2.86 km). This alternate also includes the intersection improvements recommended in Alternate

1. The recommended cross section is a six-lane divided curb and gutter section; 92 feet (28.0 m) wide face to face of curbs, with a 16-foot (4.9-m) raised grass median and 10-foot (3.0-m) berms. The required right-of-way width is 120 feet (36.6 m) with additional right of way at some intersections to accommodate auxiliary turn lanes. It is anticipated that there will be no residences or businesses relocated due to this alternate. The total cost of the project, including construction and right-of-way, is estimated to be $16,700,000.

Construction	$ 10,800,000
Right-of-way	$ 5,900,000
Total Cost	$ 16,700,000

Alternate 3
(Preferred)

Along with the intersection improvements proposed for Alternate 1, Alternate 3 also proposes to widen Raeford Road from just east of the Skibo Road intersection to the All American Freeway southbound ramp terminal intersection, a distance of 2.0 miles (3.2 km). The recommended cross section is a six-lane divided curb and gutter section; 92 feet (28.0 m) wide face to face of curbs, with a 16-foot (4.9-m) raised grass median and 10-foot (3.0-m) berms. The required right-of-way width is 120 feet (36.6 m) with some additional right of way at some intersections to accommodate auxiliary turn lanes. It is anticipated that there will be no residences or businesses relocated due to this alternate. The total cost of the project, including construction and right-of-way, is estimated to be $17,900,000.

Construction	$ 11,400,000
Right-of-way	$ 6,500,000
Total Cost	$ 17,900,000

Currently, Raeford Road is an existing seven-lane undivided curb and gutter facility with an accident rate 2.5 times larger than the statewide average for urban United States Routes. Traffic studies, comparing two-way-left-turn-lane (TWLTL) facilities with divided facilities, indicate that a significant reduction in accidents can be expected when a raised median is provided. It is also true that divided facilities significantly improve the flow of through traffic along a facility. Therefore, from a traffic operational and safety perspective, Alternate 3 is preferred because it addresses the operational and safety deficiencies of the existing seven-lane section and improves the traffic signal operation. If it is determined that Alternate 3 can not be implemented under this project, Alternate 1 could be considered an interim improvement because it will provide some traffic operational and safety benefits. However, this improvement will not address the issues associated with the existing seven-lane section.

A transportation benefit analysis was not completed for this project because the proposed improvements are beyond the capabilities of the benefit

analysis package developed by the Statewide Planning Branch. If the facility is converted to a six-lane divided facility as recommended, the improvements should yield significant benefits especially in the reduction of accidents.

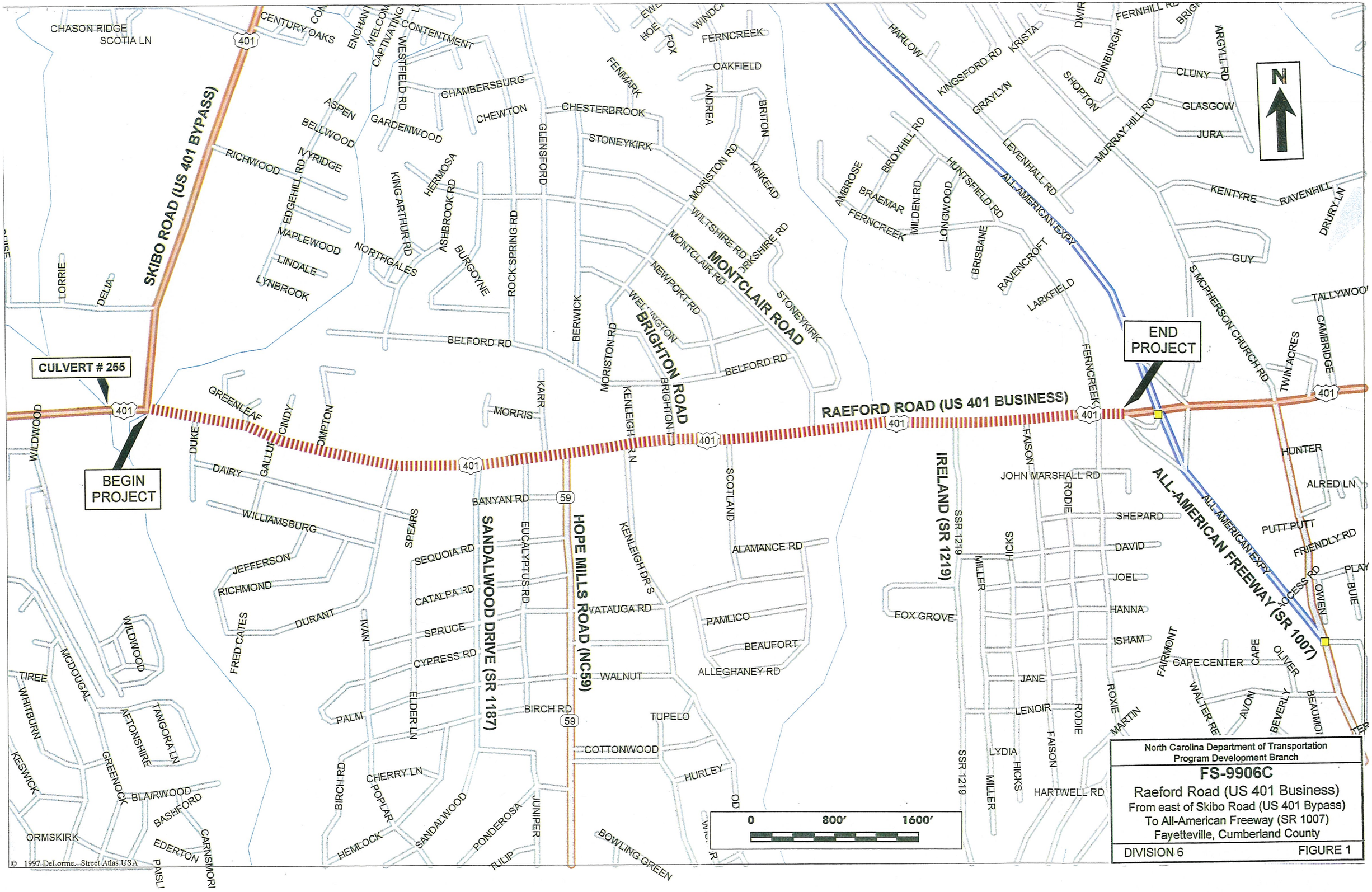
IV. Additional Comments

An environmental screening was not conducted for this study. No historic properties are anticipated. However, some wetlands will likely be encountered at the Beaver Creek and Buckhead Creek crossings, and a Corps of Engineers Section 404 Permit is anticipated. In addition, this section of Beaver Creek, within the project corridor, is a Class C waterway. This waterway is part of the Cape Fear River Basin.

Based on maps at the Department of Environment, Health & Natural Resources - Natural Heritage Section, one threatened or endangered species was identified in the project corridor. In the area near the Skibo Road (US 401 Bypass)/Raeford Road (US 401 Business) intersection, a Crotalus Admanteus (Eastern Diamondback Rattlesnake) has been previously detected in this area.

The NCDOT Division of Bicycle and Pedestrian Transportation indicated that no special bicycle accommodations are needed under this project.

The Traffic Congestion and Engineering Operations Unit has indicated that intelligent transportation system (ITS) improvements may be likely along this corridor. However, the ITS study for Fayetteville is still on going and the exact type and quantity of devices has not been determined.



North Carolina Department of Transportation
Program Development Branch

FS-9906C

Raeford Road (US 401 Business)
From east of Skibo Road (US 401 Bypass)
To All-American Freeway (SR 1007)
Fayetteville, Cumberland County

DIVISION 6 FIGURE 1

Raeford Road (US 401 Business) / Hope Mills Road (NC 59)
Proposed Intersection Geometry

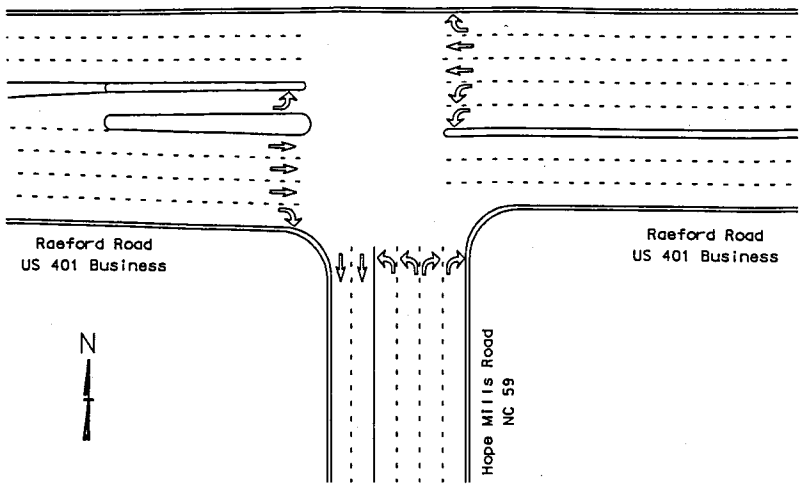


Figure 2
Scale 1 Inch = 100 Feet

Raeford Road (US 401 Business) / Ireland Drive (SR 1219)
Proposed Intersection Geometry

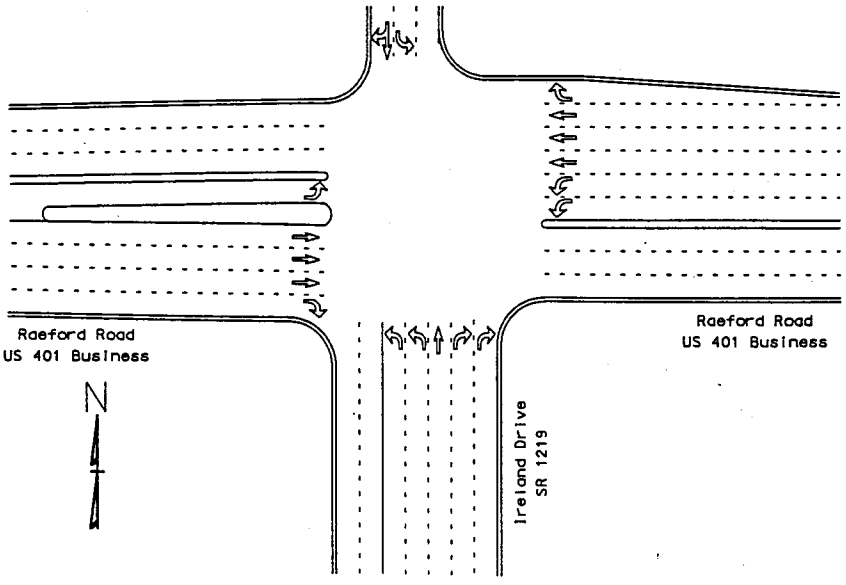


Figure 3
Scale 1 Inch = 100 Feet