



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

JAMES B. HUNT JR.
GOVERNOR

E. NORRIS TOLSON
SECRETARY

March 31, 1998

MEMORANDUM TO: Mr. Clark Jenkins, Member, Board of Transportation
Mr. D. R. Dupree, Division Engineer, Division 4
Mr. David D. King
Mr. W. H. Webb, P.E.
Mr. J. M. Lynch, P.E. (6) Attention: Roberto Canales, P.E.
Congestion Management Engineer
Mr. J. B. Williamson
Mr. H. F. Vick, P.E. (2)
Mr. R. L. Hill, P.E.
Mr. G. T. Shearin, P.E.
Mr. M. R. Poole, P.E.
Mr. A. L. Avant (2)
Mr. J. D. Lane
Mr. T. A. Peoples, P.E.
Mr. David Smith, P.E.

FROM: David G. Modlin, Ph.D., P.E.
Head of Feasibility Studies

A handwritten signature in cursive script, appearing to read "David G. Modlin".

SUBJECT: Feasibility Study # R-2581, US 158 from SR 1405 (East of Littleton) to I-95 (South of Roanoke Rapids), Halifax County.

Our staff has completed a feasibility study for the subject proposed project. This brief analysis suggests improvements that would be logical if the project were to be funded. A copy of our report is attached for your information.

DGM/joa

Attachment

cc: Mr. L. A. Sanderson, P.E.
Mr. D. R. Morton, P.E.
Mr. David W. Conner, Sr., P.E.



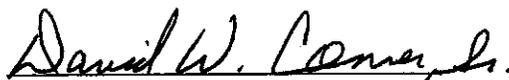
FEASIBILITY STUDY

**US 158
From SR 1405 (East of Littleton)
To I-95 (South of Roanoke Rapids)
Halifax County**

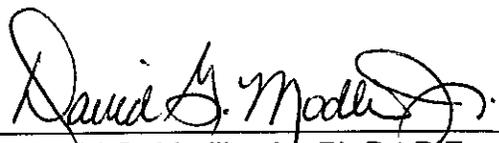
Division 4

R-2581

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



David W. Conner, Sr., P.E.
Highway Planning Engineer



David G. Modlin, Jr., Ph.D., P.E.
Head of Feasibility Studies

2/26/98
Date

R-2581

US 158
From SR 1405 (East of Littleton)
To I-95 (South of Roanoke Rapids)
Halifax County

Division 4

I. General Description

This preliminary study describes recommended improvements to US 158 in Halifax County. It is recommended that US 158 be widened from approximately 0.3 miles (0.5 km) east of SR 1405 (on the east side of Littleton) to approximately 0.2 miles (0.3 km) east of SR 1426 (on the west side of Roanoke Rapids) and a new bypass, on new location, be constructed from 0.2 miles (0.3 km) east of SR 1426 to I-95. The project has a length of approximately 16 miles (25.8 km). For a location map, please see Figure 1.

The recommended cross section is a 4-lane, divided, shoulder section with two 12-foot (3.6-m) wide travel lanes in each direction, a 46-foot (14.0-m) wide median, 2-foot (0.6-m) wide paved inside shoulders, and 10-foot (3.0-m) wide outside shoulders of which 4 feet (1.2 m) are paved.

It is recommended that the project be constructed on a 250-foot (76.2-m) wide right-of-way and access should be limited to one access per parcel. It is estimated that the project will require the relocation of 132 residences and 18 businesses.

The total cost for right-of-way and construction is estimated to be \$72,200,000 as follows:

Right-of-Way	\$28,100,000
Construction	44,100,000
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Total Cost	\$72,200,000

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. Need For Project

The purpose of this project is to improve the traffic carrying capacity of US 158 and to improve the roadway to the standards of the North Carolina Intrastate System. US 158 is a part of the Intrastate System, which is defined and funded by the North Carolina Highway Trust Fund.

Existing US 158 is designated as a principle arterial on the North Carolina Statewide Functional Classification System and a portion of it is designated as a major thoroughfare in the Roanoke Rapids Thoroughfare Plan. An alignment similar to the recommended bypass portion of this project is also included as a major thoroughfare in the Roanoke Rapids Thoroughfare Plan.

The project route is generally rural in nature and is characterized by woodlands, farmlands, light density residential development, and rolling terrain. There are scattered residences along the roadway and some commercial development at major intersections. William R. Davie Middle School is located on the south side of the roadway at SR 1428. There is an existing water tower and a solid waste collection facility located on the north side of the existing roadway at SR 1413.

Along the recommended project route, existing US 158 is generally a 2-lane roadway with a 12-foot (3.6-m) wide travel lanes, 2-foot (0.6-m) wide paved shoulders, and 6-foot (1.8-m) to 8-foot (2.4-m) wide soil shoulders.

There is one structure located along the recommended project route. Culvert #16, over Deep Creek, is located approximately 1.1 miles (1.8 km) west of SR 1424. Culvert # 16 is a quadruple 12-foot (3.6-m) by 12-foot (3.6-m) reinforced concrete box culvert which is 55 feet (16.8 m) long. The culvert was constructed in 1970 and has a sufficiency rating of 95.4 out of a possible 100 points.

From the west project terminus to SR 1413, the existing roadway generally parallels the abandoned Seaboard Coastline Railroad bed. Along the majority of this section, the roadway could be widened asymmetrically to the north and the previously disturbed railroad bed could be utilized.

The 1994 Average Daily Traffic (ADT) estimate, on US 158, is approximately 6,300 vehicles per day (vpd) from the west project terminus to the point where it is recommended that the bypass begin. The design year (2020) estimate is approximately 12,500 vpd. Current and future truck volumes are estimated to total about 11% of the traffic volumes.

The current Level Of Service (LOS) is estimated to be Level D from the west project terminus to point where it is recommended that the bypass begin. Without improvements, it is estimated that the Level of Service will deteriorate to Level E prior to the design year. With the recommended improvements, the LOS is expected to improve to a Level A which should prevail through the design year.

During the period from July 1, 1994, through June 30, 1997, there were 154 accidents reported on US 158 between SR 1405 and SR 1426. This resulted in an accident rate of 166 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide average of 155 Acc/100 MVM for all rural US routes during 1996. There were no fatalities reported during the period and 82 of the accidents resulted in non-fatal injuries. The most prevalent accident types were rear-end (33.1%), ran off

road (20.1%), and animal (11.0%). The recommended improvements should reduce the potential for these types of accidents.

In lieu of following the existing alignment of US 158 from approximately 0.2 miles (0.3 km) east of SR 1426 to I-95, the recommended alignment is a bypass on new location. This recommendation is based on the fact that the existing roadway from NC 125 to I-95 is a 7-lane facility which is currently acting at or near capacity. To add additional traffic from an improved US 158 from west of this segment would only compound the existing problem. The proposed bypass, as included in the Roanoke Rapids Thoroughfare Plan, should provide some relief to the existing problems.

III. Detailed Description

It is recommended that US 158 be widened from approximately 0.3 miles (0.5 km) east of SR 1405 (on the east side of Littleton) to approximately 0.2 miles (0.3 km) east of SR 1426 (on the west side of Roanoke Rapids) and a bypass of Roanoke Rapids be constructed, on new location, from 0.2 miles (0.3 km) east of SR 1426 to I-95. The project has a length of approximately 16 miles (25.8 km). For a location map, please see Figure 1.

A detailed description of the recommended project is as follows:

1. From approximately 0.3 miles (0.5 km) east of SR 1405 (on the east side of Littleton) to approximately 0.2 miles (0.3 km) east of SR 1426 (on the west side of Roanoke Rapids), widen the existing roadway to a 4-lane, divided, shoulder section with two 12-foot (3.6-m) wide travel lanes in each direction, a 46-foot (14.0-m) wide median, 2-foot (0.6-m) wide paved inside shoulders, and 10-foot (3.0-m) wide outside shoulders of which 4 feet (1.2 m) are paved.
2. Construct a bypass of Roanoke Rapids from approximately 0.2 miles (0.3 km) east of SR 1426 to I-95. The recommended cross section is a 4-lane, divided, shoulder section with two 12-foot (3.6-m) wide travel lanes in each direction, a 46-foot (14.0-m) wide median, 2-foot (0.6-m) wide paved inside shoulders, and 10-foot (3.0-m) wide outside shoulders of which 4 feet (1.2 m) are paved.
3. Construct a cul-de-sac on existing US 158 at approximately 0.3 miles (0.5 km) east of SR 1426 and construct a new connector from existing US 158 to the bypass at approximately 0.5 miles (1.0 km) east of SR 1426.
4. Construct a new connector from existing NC 48 to SR 1686
5. Construct a new diamond interchange at I-95 located approximately 1.0 miles (1.6 km) south of the existing US 158 interchange and approximately 1.0 miles (1.6 km) north of the existing NC 125 interchange.
6. Upgrade the existing traffic signal at SR 1426 and install new signals at NC 48 and NC 125.

It is recommended that the project be constructed on a 250-foot (76.2-m) wide right-of-way and access should be limited to one access per parcel. It is estimated that the project will require the relocation of 132 residences and 18 businesses.

The total cost for right-of-way and construction is estimated to be \$72,200,000 as follows:

Right-of-Way	\$28,100,000
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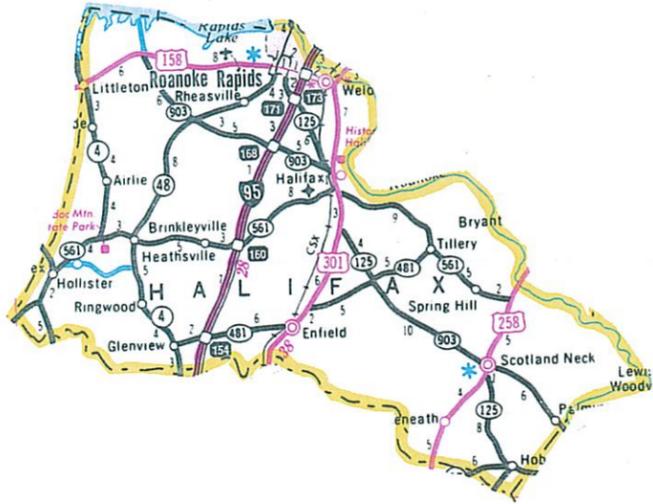
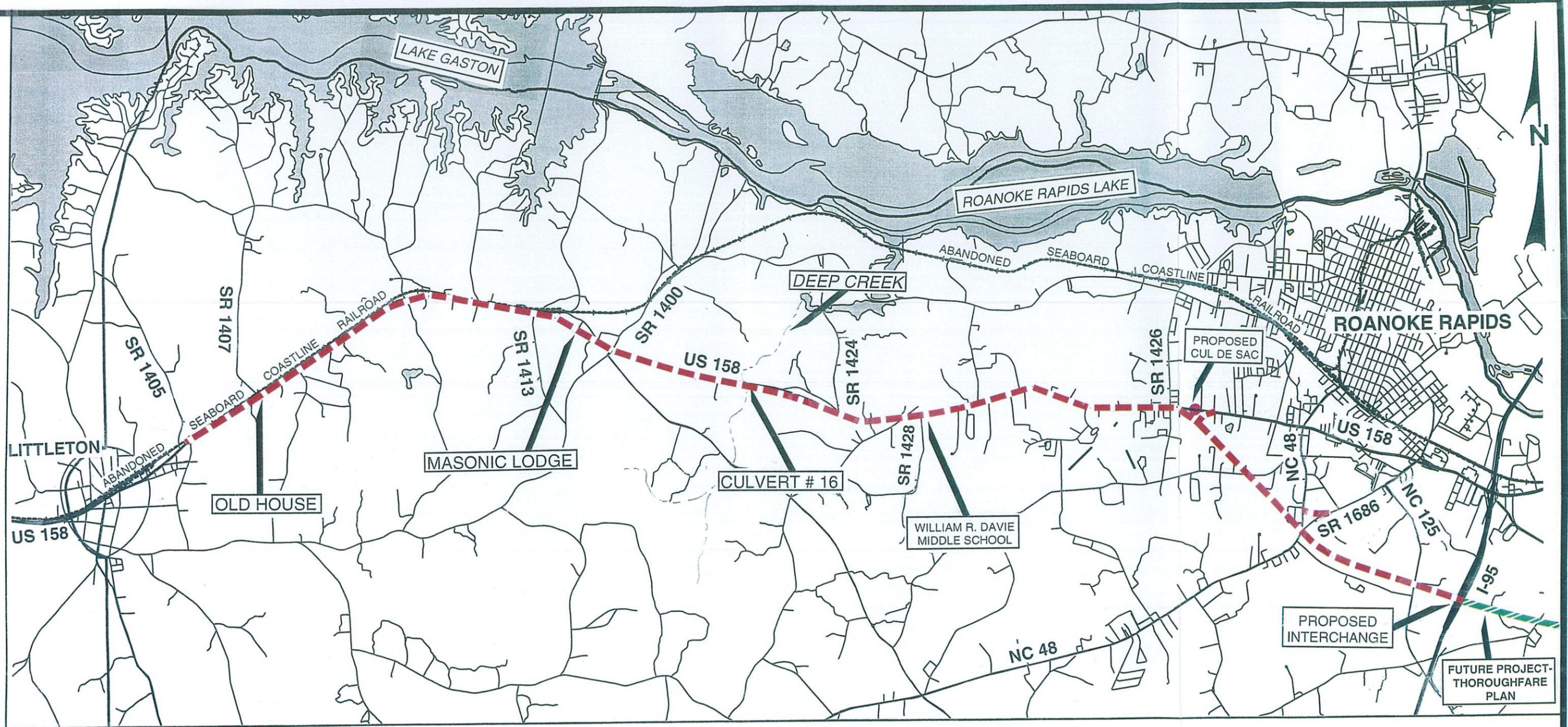
IV. Other Comments

An environmental screening was not conducted for this study; however, due to the construction potential in the area of Deep Creek, Corps of Engineers permits and wetlands mitigation will be required. The cost for wetland mitigation is not included as part of the above estimated project costs.

No provisions for bicycles have been included in this project.

There is an old house located on the south side of US 158 at SR 1407. Although not included on the National Register of Historical Places, at this time, the house may have historical significance.

There is a Masonic Lodge located on the south side of US 158 at approximately 0.5 miles (0.8 km) west of SR 1400. Although not included on the National Register of Historical Places, at this time, the building may have historical significance.



North Carolina Department of Transportation
 Program Development Branch

R-2581
 US 158
 from SR 1405 (East of Littleton)
 to I-95 (South of Roanoke Rapids)

Halifax County

DIVISION 4 FIGURE 1