

FEASIBILITY STUDY

Burlington
Chapel Hill Road (NC 54)
From Church Street (US 70)
to
Maple Avenue (NC 49/NC 100)
Alamance County
U-2907

Prepared by
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I. GENERAL DESCRIPTION

This preliminary study describes proposed improvements to Chapel Hill Road (NC 54) in Burlington. Also, a short segment of O'Neal Avenue, a non system street, near the west project terminal will be improved. For a location map, please see Figure 1. It is proposed to widen O'Neal Avenue from Church Street (US 70) to Chapel Hill Road and widen Chapel Hill Road from O'Neal Avenue to Maple Avenue (NC 49/NC 100). The total project length is 3.6 miles.

A 5-lane curb and gutter section (64 feet face to face) with two travel lanes in each direction and a center turn lane, is proposed for the entire project length on a 100 foot wide right of way.

The widening will retain and utilize the existing alignment to the extent possible and will be generally symmetrical to the centerline of the existing O'Neal Avenue and Chapel Hill Road.

It is estimated that there will be no residences or businesses relocated as a result of this project.

The total cost for right of way, construction, and incident management is estimated to be \$ 7,600,000.

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 and accident experience of Chapel Hill Road in Burlington. The project was requested by the Alamance County Transportation Advisory Committee and has been endorsed by the City of Burlington and Alamance County.

Chapel Hill Road is designated a major thoroughfare on the Alamance County Urban Area Thoroughfare Plan and a major arterial in the North Carolina Statewide Functional Classification System.

Development on Chapel Hill Road is generally dense residential development between O'Neal Avenue and Mebane Street, dense commercial development from Mebane Street to Tucker Street and medium density mixed residential/commercial development between Tucker Street and Maple Avenue. Development on O'Neal Avenue is generally light density commercial development.

Chapel Hill Road is generally a 2-lane, 2-way, 24 foot wide, shoulder section with 4 foot wide soil shoulders. There is approximately 100 feet of curb and gutter section west of Mebane Street and 200 feet east.

O'Neal Avenue is a 3-lane, 2-way, curb and gutter section (39 feet wide from face to face of curbs).

The eastern project terminal is the signalized intersection at Maple Avenue. The north leg on Maple Avenue is 60 feet wide and the south leg is 64 feet wide (including a 4 foot median). Both the north and south legs consists of one combination thru-right lane, one thru lane, one left turn lane, and two exit lanes. The Chapel Hill Road leg is widened at this intersection and includes one right turn lane, one thru lane, one left turn lane, and two exit lanes.

The intersection of O'Neal Street and Church Street is signalized. Church Street at this location is a 5-lane curb and gutter, median divided section (68 feet face to face and 4 foot median). Each of the Church Street legs include one thru-right lane, one thru lane, one left turn lane, and two exit lanes. The O'Neal Street leg consists of one thru-right lane, one left turn lane, and one exit lane.

In addition to the project terminals, the intersections with SR 1363 (Mebane Street), SR 1154 (Tucker Street), and Corporation Parkway are signalized.

There is one culvert located on Chapel Hill Road located immediately west of SR 1154 (Tucker Street). The culvert is a quadruple 8 foot by 12 foot reinforced box culvert, was constructed in 1931, and has a sufficiency rating of 97.3.

The 1993 Average Daily Traffic (ADT) on Chapel Hill Road is estimated to be 12,300 vehicles per day (vpd). The design year (2015) volume on Chapel Hill Road is estimated to be 17,500 vpd.

The Level Of Service (LOS) is currently estimated to be a level E on Chapel Hill Road. With the proposed improvements the LOS is expected to improve to a level B which should prevail through the design year. Without these improvements it is estimated that a level F will be reached prior to the design year.

During the period from August 1, 1989 through July 31, 1992, there were 175 accidents reported on Chapel Hill Road between Church Street and Maple Avenue. This resulted in an accident rate of 640.1 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide average of 266.5 Acc/100 MVM for all urban NC routes during 1992. There were no fatalities reported during the period, but 95 of the accidents resulted in injuries. The most prevalent accident types were rear-end (53.21%), angle (20.0%), and left turn (15.4%). The wider cross section with center turn lane proposed will reduce the potential for these types of accidents.

This project is strategically located along the I-40/I-85 corridor and has been suggested by the Division Engineer as a potential alternate route for incident management use.

III. RECOMMENDATIONS

It is proposed to widen O'Neal Avenue from Church Street to Chapel Hill Road and widen Chapel Hill Road from O'Neal Avenue to Maple Avenue. The total project length is 3.6 miles. For a location map, please see Figure 1.

A 5-lane curb and gutter section (64 feet face to face) with two travel lanes in each direction and a center turn lane, is proposed for the entire project length on a 100 foot wide right of way.

The widening will retain and utilize the existing alignment to the extent possible and will be generally symmetrical to the centerline of the existing O'Neal Avenue and Chapel Hill Road.

Also, as shown on Figure 2, it is proposed to: (1) construct a cul-de-sac immediately southeast of the existing intersection of Church Street and Chapel Hill Road, (2) eliminate the existing connector between O'Neal Avenue and Chapel Hill Road located at Trail Two, and (3) remove a section of pavement on existing Chapel Hill Road immediately southeast of Highview Street. Construction of this project and project U-2906 will eliminate the need for the traffic signal at the existing intersection of Church Street, Chapel Hill Road, and NC 62.

Chapel Hill Road at the western project terminal, and Maple Avenue at the eastern project terminal, should each include the following lanes: one combination thru-right turn lane, one thru lane, one left turn lane, and two exit lanes. The traffic signals at the terminals and at Mebane Street, Tucker Street, and Corporation Parkway will require additional signal heads.

It is recommended that costs associated with traffic signal revisions to accommodate future incident management systems along the I-40/I-85 corridor be included in this project.

It is estimated that there will be no residences or businesses relocated as a result of this project.

The total cost for right of way, construction, and incident management is estimated to be \$ 7,600,000 as follows:

Right of Way Cost	\$ 2,800,000
Construction Cost	4,700,000
Incident Management Cost	100,000
Total Cost	\$ 7,600,000

V. OTHER COMMENTS

The NCDOT Bicycle Program has identified Chapel Hill Road as a roadway which does not have need for special accommodations for bicycles.

An environmental screening was not conducted for this study, however, no wetlands or historic properties were identified.