

FEASIBILITY STUDY

Apex
NC 55 (Williams Street)
From US 1 to US 64
Wake County
U-2901

Prepared by
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I. GENERAL DESCRIPTION

This preliminary study describes proposed improvements to NC 55 (Williams Street) in and near Apex. It is proposed to widen NC 55, including the bridge spanning US 1 (Bridge #71), from US 1 to US 64, a distance of approximately 3.2 miles. Please see Figure 1 for the project location. A 5 lane curb and gutter cross section (68 feet wide from face to face of curbs) is recommended on a 100 foot wide right of way, providing two travel lanes in each direction and a two way center turn lane.

Also, it is proposed to replace Bridge #R48, the existing CSX Railway bridge over NC 55 located between Hughes Street and Salem Street.

It is recommended that these improvements be implemented in two stages. Stage I includes right of way acquisition for the entire project and construction of the improvements between US 1 and Hunter Street (SR 1160), a distance of approximately 2.0 miles. Stage II includes the improvements from Hunter Street to US 64, a distance of approximately 1.2 miles.

The total estimated cost including construction and right of way is \$ 12,800,000. It is estimated there will be no residences and one business relocated due to this project.

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 the study is to describe the problem, recommend a treatment including costs, and 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 carrying capacity and accident experience of NC 55. The project was requested by the Town of Apex and appears to have strong support from neighboring communities.

NC 55 is designated a Major Thoroughfare on the Greater Raleigh Urban Area Thoroughfare Plan. It is classified a Major Collector in the North Carolina Statewide Functional Classification System. Development on NC 55 is primarily medium to heavy density commercial and light density institutional development. The commercial development includes fast food

restaurants, service marts, garages, etc. and the institutional development includes a new post office, a park, Chamber of Commerce, and a medical complex. The Apex Middle School is located on the east side of NC 55 between James Street and Mason Street.

NC 55 is a two lane roadway with pavement generally 24 feet to 26 feet wide and soil shoulders varying in width from 6 feet to 10 feet. The roadway has been widened at US 1, James Street, Hughes Street, and Salem Street to accommodate turning movements. NC 55 from Hughes Street to Salem Street has curb and gutter on both sides and a pavement width of 35 feet (curb to curb).

There are two highway bridges and one railroad bridge within the project limits. Near the southern project terminal, Bridge # 71 carries NC 55 over US 1. Bridge # 71 is 233 feet long with a clear deck width of 28 feet. This bridge was built in 1962 and has a sufficiency rating of 70.6 out of a possible 100 points. Near the northern project terminal Bridge # 10 carries NC 55 over US 64. Bridge # 10 is 248 feet long with a clear deck width of 68 feet. This bridge was built in 1973 and has a sufficiency rating of 81.4.

The railroad bridge (Bridge # R48) is located between Hughes Street and Salem Street and carries the CSX Railroad over NC 55. There is 40 feet between the bridge abutments and the roadway is 36 feet wide at this point.

The intersection of NC 55 and the southbound exit ramp from US 1 is controlled with a traffic signal. Other intersections that have been signalized include James Street (SR 1157), Hughes Street, and Salem Street (SR 1011). The approaches on NC 55 at each of these intersections have been widened to provide left turn lanes.

The Average Daily Traffic (ADT) on NC 55 is estimated to be 12,500 vehicles per day (vpd) and 23,000 vpd for the years 1991 and 2015 (the design year) respectively.

NC 55 is currently operating at a Level of Service (LOS) D based on 1991 traffic volumes, and by the year 2015 (the design year) will be operating at LOS E. With the proposed improvements, a LOS B will be attained and LOS C will prevail through the design year.

During the period from January 1, 1989 through May 31, 1992 there were 169 accidents reported on NC 55 within the project terminals. This resulted in an accident rate of 418.8 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide average of 266.4 Acc/100 MVM for all urban NC routes during 1991. There was 1 fatality reported during the period and 51 of the accidents resulted in non-fatal injuries. The most prevalent accident types were rear end (41%), angle (16%), and left-turn (14%).

The wider cross section with center turn lane proposed for NC 55 will reduce the potential for these types of accidents.

III. RECOMMENDATIONS

It is proposed to widen NC 55, including the bridge spanning US 1 (Bridge # 71), from US 1 to US 64, a distance of approximately 3.2 miles. Please see Figure 1 for the project location. A 5 lane curb and gutter cross section (68 feet wide from face to face of curbs) is recommended on a 100 foot wide right of way, providing two travel lanes in each direction and a two way center turn lane.

The existing railroad bridge (Bridge # R48) located between Hughes Street and Salem Street should be replaced with a new bridge that will provide a minimum of 68 feet of clear roadway width for NC 55.

At the southern project terminal Bridge # 71 should be widened by 40 feet to provide a clear deck width of 68 feet and the full width of roadway widening should extend south of the northbound US 1 ramps for a distance of approximately 200 feet, then taper to the existing 3 lane section on NC 55. All of the interchange ramps will require some geometric and grade revisions due to the widening of NC 55.

At the northern project terminal Bridge # 10 will not require widening, however it should be restriped to provide two travel lanes in each direction and a center turn lane. The full width of roadway widening should extend north of the southbound ramps for a distance of approximately 500 feet, then taper to the existing two lane roadway. All of the interchange ramps will require some geometric and grade revisions due to the widening of NC 55.

The existing curb and gutter located approximately 2600 feet north of Salem Street on the west side of NC 55 at the new postal facility and park entrance should be utilized to the extent possible, and the widening in this area should be on the east side of NC 55 to avoid taking park land.

Revisions to the existing traffic signals will be required at the US 1 northbound ramps, and at the James Street, Hughes Street, and Salem Street intersections.

It is recommended that these improvements be implemented in two stages. Stage I includes right of way acquisition for the entire project and construction of the improvements between US 1 and Hunter Street (SR 1160), a distance of approximately 2.0 miles. Stage II includes the improvements from Hunter Street to US 64, a distance of approximately 1.2 miles.

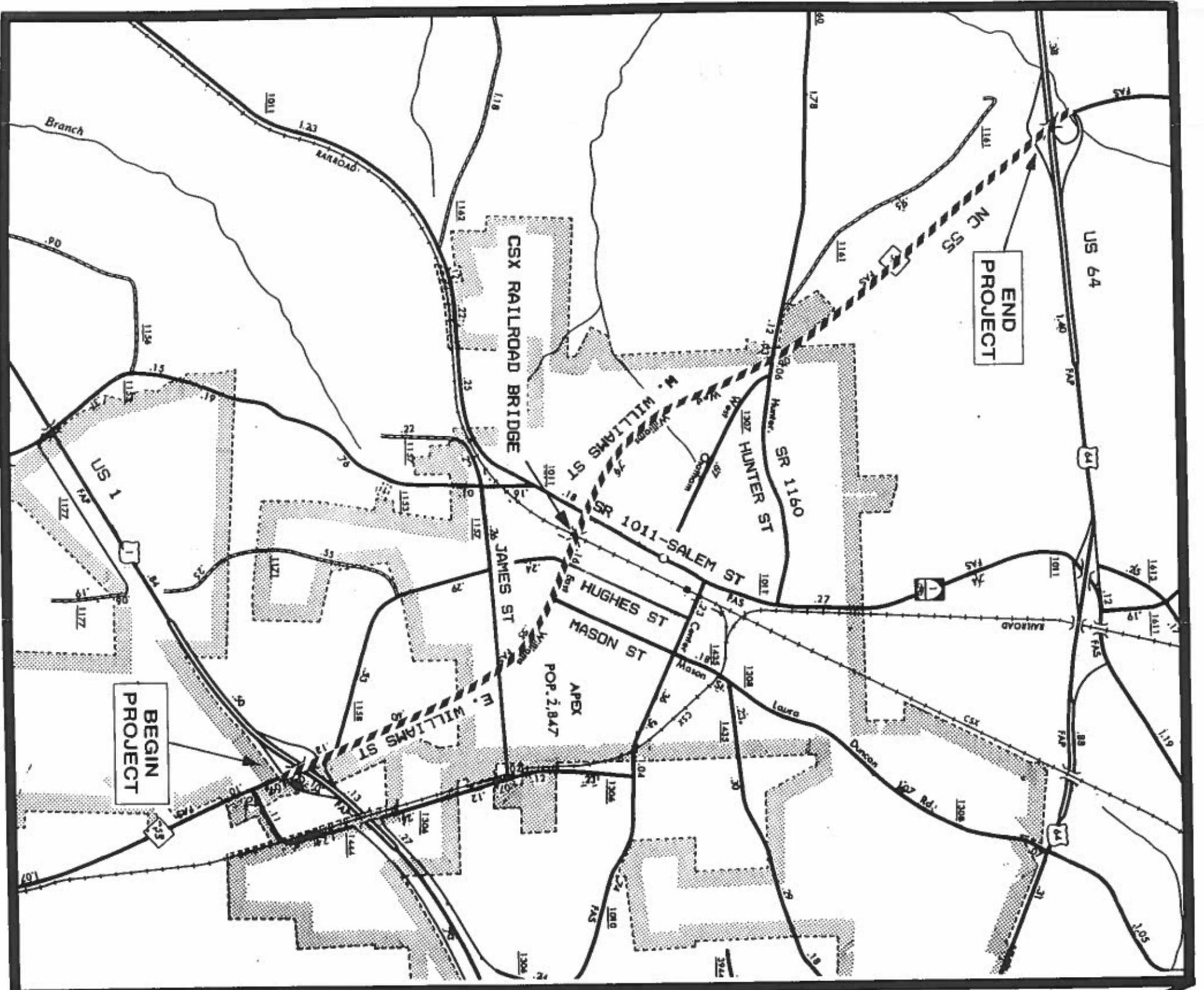
It is estimated there will be no residences and one business relocated due to this project. The total estimated cost including construction and right of way is \$ 12,800,000 as follows:

STAGE I	
Construction	\$ 8,000,000
Right of Way	2,800,000
Stage I Cost	\$ 10,800,000
STAGE II	
Construction	\$ 2,000,000
Stage II Cost	\$ 2,000,000
TOTAL COST	\$ 12,800,000

V. OTHER COMMENTS

An environmental screening was not conducted for this study.

The proposed 68 foot cross section should include 14 foot wide outside lanes to accommodate bicycles as suggested by the bicycle program.



FEASIBILITY STUDIES UNIT
 FIGURE 1. VICINITY MAP
 NC 55
 FROM US 1 TO US 64
 WAKE COUNTY
 U-2901 DIV. 5 FIGURE 1

