



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

JAMES B. HUNT JR.  
GOVERNOR

E. NORRIS TOLSON  
SECRETARY

March 31, 1998

MEMORANDUM TO: Ms. Margaret Kluttz, Member, Board of Transportation  
Mr. D. B. Waters, Division Engineer, Division 9  
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

SUBJECT: Feasibility Study # U-3803, China Grove, Proposed Intersection  
Realignment, US 29A at NC 152 and SR 1337, Rowan 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. Kim L. So



FEASIBILITY STUDY

China Grove

Proposed Intersection Realignment  
US 29A at NC 152 and SR 1337

Rowan County

Division 9

U-3803

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



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Kim L. So  
Highway Planning Engineer



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

2/26/98

Date

## FEASIBILITY STUDY

### China Grove

#### Proposed Intersection Realignment US 29A at NC 152 and SR 1337

#### Rowan County

#### U-3803

### I. GENERAL DESCRIPTION

This feasibility study evaluates the potential for the realignment of the intersections on US 29A (Main Street) at NC 152 (West Church Street) and SR 1337 (Church Street) in China Grove, Rowan County (see Figure 1). The two alternates evaluated in this study are shown in Figure 1.

Alternate 1 calls for the realignment of SR 1337 (Church Street) from US 29A to a location approximately 150 feet (45.8 m) east of the Southern Railway. It is estimated that this alternate would require the relocation of 1 residence and 1 business. The estimated cost for Alternate 1 is \$997,000 (\$397,000 for right-of-way and \$600,000 for construction).

In Alternate 2, NC 152 (West Church Street) from US 29A to a location approximately 700 feet (213.5 m) west would be shifted south to realign with SR 1337 at US 29A. It is estimated that this alternate would require the relocation of 2 residences and 2 businesses. The estimated cost for Alternate 2 is \$969,000 (\$494,000 for right-of-way and \$475,000 for construction).

### II. NEED FOR PROJECT

This project was requested by Division 9. The studied realignment is needed to improve safety and eliminate a redundant signal. The signalized intersections along US 29A at NC 152 and SR 1337, located in the center of China Grove, are only 150 feet (45.8 m) apart (see Figure 1). Traffic going from SR 1337 to NC 152 and vice versa have to share the 150-foot (45.8-m) left-turn lane on US 29A. The vehicle storage length between these 'dog-leg' intersections is insufficient.

On the Statewide Functional Classification System, both US 29A and SR 1337 within the studied area are classified as urban minor arterials while NC 152 is classified as urban other principal arterial.

US 29A, NC 152 and SR 1337 within the project study area are 2-lane curb and gutter sections with a left-turn lane. The face-to-face width of the roadways is 34 feet (10.4 m), 36 feet (11 m), and 40 feet (12.2 m) respectively.

During the period from March, 1994, through February, 1997, there were 24 accidents reported at these intersections. This resulted in an accident rate of 146.07 accidents per 100 million vehicle miles (acc/100mvm). Rear-end collisions accounted for a majority of the accidents (38%). The recommended improvements are expected to reduce the accident rate.

The Southern Railway has two tracks crossing SR 1337 within the study area. These tracks are part of the proposed high speed rail corridor. The tracks carry 32 trains per day at a speed of 50-65 miles per hour (80-105 kmh). The exposure index, a product of the design year traffic and the number of trains per day, at this location is 163,000 which exceeds the threshold of 30,000 that warrants a grade separation in an urban area. However, it is not feasible to construct a grade separation with the required vertical clearance at the current location due to the proximity of the railroad tracks to US 29A.

### III. STUDIED IMPROVEMENTS

The two alternative improvements studied involve either the realignment of SR 1337 (Alternate 1) or the realignment of NC 152 (Alternate 2).

#### **Alternate 1**

Approximately 700 feet (213.5 m) of SR 1337, from its intersection with US 29A to about 150 feet (45.8 m) east of Southern Railway, would be shifted north to realign with NC 152 (see Figure 1). The realignment would have the same typical section as the existing SR 1337 with a recommended 60-foot (18.3-m) wide right of way. SR 1337 between the existing intersection with US 29A and the railroad tracks would be closed at each end. The traffic signal at the intersection of SR 1337 and US 29A would be removed.

A new railroad crossing signal and gates would be required. Even though the exposure index at the railroad crossing exceeds the threshold that warrants a grade separation, it is not feasible to maintain an at-grade intersection with US 29A and provide a grade separation at the railroad crossing due to the short distance (550 feet (167.8 m)) between US 29A and the railroad tracks.

It is estimated that this alternate would require the relocation of 1 residence and 1 business. The estimated cost for Alternate 1 is \$997,000 (\$397,000 for right-of-way and \$600,000 for construction).

## Alternate 2

NC 152 from US 29A to a location approximately 700 feet (213.5 m) west would be shifted south to realign with SR 1337 (see Figure 1). The new alignment would have same typical section as the existing NC 152 with a recommended right of way width of 60 feet (18.3 m). The relocated section of NC 152 would be converted into a dead-end street with a cul-de-sac. The traffic signal at the current intersection with US 29A would be removed.

It is estimated that this alternate would require the relocation of 2 residences and 2 businesses. The estimated cost for Alternate 1 is \$969,000 (\$494,000 for right-of-way and \$475,000 for construction).

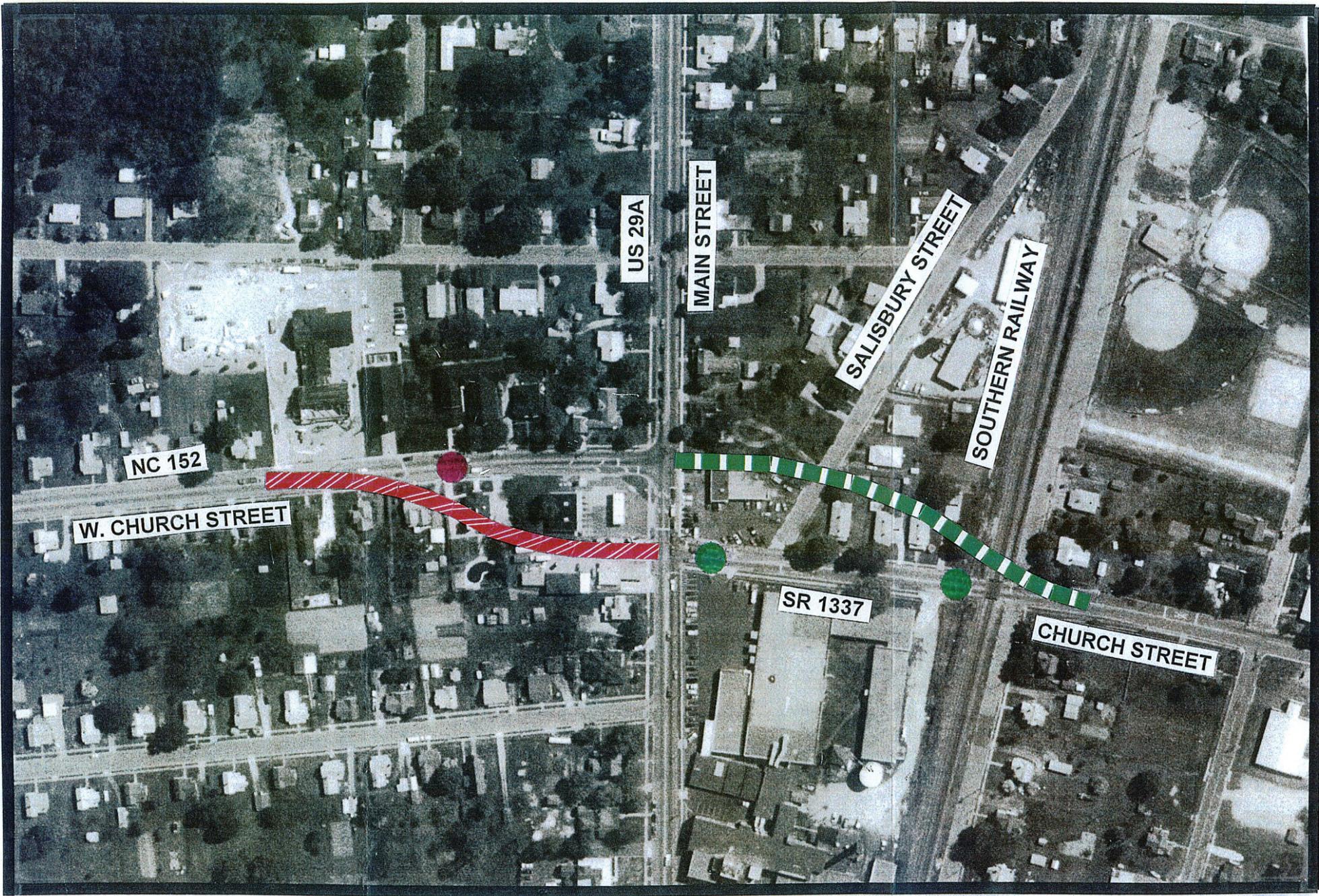
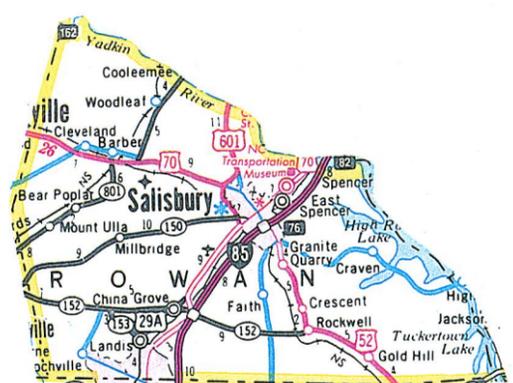
Summary of cost estimates:

	<u>Alternate 1</u>	<u>Alternate 2</u>
Right-of-Way	\$ 397,000	\$ 494,000
Construction	\$ 600,000	\$ 475,000
Total Cost	\$ 997,000	\$ 969,000

## **IV. OTHER COMMENTS AND CONCERNS**

No historical or architecturally significant sites have been identified within the project study area. It is not anticipated that this project will require any environmental permits.

Based on maps available at the Department of Environment, Health, and Natural Resources - Natural Heritage Section, no threatened or endangered species were identified in the project corridor.



LEGEND	
	ALTERNATE 1
	CUL-DE-SAC (ALT. 1)
	ALTERNATE 2
	CUL-DE-SAC (ALT. 2)



NC DEPARTMENT OF TRANSPORTATION  
FEASIBILITY STUDIES UNIT

**U-3803**

Intersection Realignment  
US 29 A at NC 152 and SR 1337

China Grove  
Rowan County

DIVISION 9

FIGURE 1