FEASIBILITY STUDY

AT-GRADE RAILROAD CROSSING
MT. OLIVET ROAD

KANNAPOLIS
CABARRUS COUNTY

DIVISION 10

FS 0010A

U-4701

Feasibility Studies Unit
Program Development Branch
Division of Highways
N.C. Department of Transportation

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12/6/07
Date

FS-OO10A

Kannapolis

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I. Introduction

This feasibility study describes the removal of the existing at-grade railroad crossing on Winecoff School Road (SR 1790) between S. Main Street (SR 1008 and formerly US 29A) and Ridge Avenue (SR 2001) and replacing it with a new crossing resulting from the extension of Mt. Olivet Road westward to S. Main Street. Mt. Olivet Road will be extended approximately 350 feet (107 meters) to S. Main Street. The project location is shown in Figure 1.

II. Executive Summary

Should this project be funded, it is recommended that Mt. Olivet Road be extended to S. Main Street, (formerly US 29A) as a three-lane curb and gutter section, 40 feet (12.2 meters) wide face-to-face of curbs. A rubberized at-grade crossing with the Norfolk Southern railroad, with four-quadrant gates is also recommended at this location. To ensure the orderly assignment of traffic movements and help minimize queue lengths, coordinated traffic signals, with railroad preemption, are recommended for the intersections with S. Main Street and Ridge Avenue. Please see Figure 3.

As part of this project, the existing at-grade crossing at Winecoff School Road and Norfolk Southern Railroad, aka Cook's Crossing, would be completely removed.

It is estimated that the recommended 100-foot (30.5-meter) right of way for Mt. Olivet Road Extension will require 2 residential relocations and no business relocations. The estimated total cost for the right of way and construction of the new at-grade crossing and the removal of the existing Cook's Crossing is $ 2,240,000.00 as follows:

Construction	$ 1,900,000.00
Right of way	330,000.00
Removal of Cook's Crossing	10,000.00
Total Cost	$ 2,240,000.00

This project is proposed as an interim project to relieve congestion and short queue lengths at the existing Cook's Crossing. Should this project be implemented, its ultimate removal is anticipated upon the completion of the proposed railroad grade separation project at Universal Street or Dakota Street (FS-0010B). Based on the estimated cost of the proposed Mt. Olivet Road Extension, its interim status and the required residential relocations, it is our recommendation that funding be applied to the permanent solution proposed in FS-0010B.

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 feasible treatment including estimated costs, and identify potential problem areas that deserve consideration in the planning and design phases.

III. Purpose and Need for the Project

There are 55 daily trains utilizing the tracks at Cook's Crossing. Of these, 49 are daily freight and 6 are passenger trains with a maximum speed of approximately 60 miles per hour (97 kmph). In 1997, a ***Traffic Separation Study*** was completed for Kannapolis. For the past 10 years of recorded accident data, all of the crossings in Kannapolis have had train / vehicle collisions except for East "C" Street. Fatalities have occurred at five of the crossings, with two each having occurred at Winecoff School Road (Cook's Crossing), Universal Street and East 22nd Street. The recommendation to close Cook's Crossing at Winecoff School Road and replace it with a crossing at Mt. Olivet Road Extension with enhanced safety considerations arose from the Kannapolis ***Traffic Separation Study***. The ***Traffic Separation Study*** also recommends a railroad grade separation project at Universal Street or at Dakota Street. The proposed new at-grade crossing at Mr. Olivet Road (FS-0010A) is intended as a temporary solution that would improve rail-crossing conditions until such time as the proposed grade separation project could be completed.

IV. Existing Conditions

Mt. Olivet Road is a local facility, Ridge Avenue is a Minor Thoroughfare and S. Main Street is a Major Thoroughfare as shown on the Cabarrus-South Rowan Thoroughfare Plan (map dated February 21, 1996). Mt. Olivet Road is not functionally classified on the North Carolina Statewide Functional Classification System. Ridge Avenue is classified as an Urban Collector and S. Main Street is classified as an Urban Minor Arterial.

The development along both Ridge Avenue and S. Main Street is a mix of residential, commercial and light industrial. In the immediate proximity of the project, the Mt. Olivet Road and Ridge Avenue are residential, the area immediately west of the tracks is vacant and a major utility substation is on the west side of S. Main Street. The substation will not be impacted by the proposed

project. It is estimated that two residential dwellings will be impacted by the project.

Mt. Olivet Road and Ridge Avenue are two-lane roadways with approximate 10-foot (3.0-meter) wide travel lanes and narrow grass shoulders. S. Main Street in the project area is a two-lane roadway with approximate 12-foot (3.7-meter) travel lanes and narrow grass shoulders.

The existing intersection of S. Main Street and Winecoff School Road is signalized. The existing intersection of Mt. Olivet Road and Ridge Avenue is stop controlled on Mt. Olivet Road. The intersection will function under stop control but it is recommended that traffic signals be considered at both this intersection and at the new intersection created by the extension of Mt. Olivet Road to S. Main Street. The cost of these traffic signals is included in the project cost; however, the Area Traffic Engineer will determine if signalization is warranted during the later design phases of this project.

The current average daily traffic (ADT) within the project limits varies from 3,500 vehicles per day (vpd) on the south leg of Ridge Avenue, 3,800 vpd on Mt. Olivet Road, 6,600 vpd on Cook's Crossing, to 14,300 vpd on the south leg of S. Main Street. By moving the crossing to the proposed Mt. Olivet Road Extension, the volumes are similar with the exception that 8,300 vpd are estimated to use the relocated crossing. The design year 2025 estimated volumes are 6,500 vpd on Mt. Olivet Road, 6,000 – 7,000 vpd on Ridge Avenue, 15,100 vpd on the extension of Mt. Olivet Road at the rail crossing, and 16,000 – 17,500 vpd on S. Main Street.

Level of service (LOS) is a measure of congestion. LOS A is found under very light traffic conditions and LOS F is found under the most heavy traffic conditions. LOS D is an acceptable level of congestion in urban settings. Currently, the Winecoff School Road / S. Main Street intersection is operating at LOS D. With the crossing removed the LOS improves to LOS C.

The Ridge Avenue / Winecoff School Road intersection is unsignalized, controlled somewhat by the passage of trains. The leg on the east side of the tracks has very limited queue length and as a result, traffic backs up on Ridge Avenue, particularly the north approach during peak hours (See Figure 2).

With the extension of Mt. Olivet Road to S. Main Street and with current traffic, the Mt. Olivet Road / Ridge Avenue intersection is estimated to operate at LOS B with a traffic signal and at LOS C as stop-controlled on Mt. Olivet Road. The proposed Mt. Olivet Road / S. Main Street intersection is estimated to operate at LOS C under current traffic. Both intersections are estimated to operate at LOS D in the 2025 design year.

During the period from September 1, 1996 through August 31, 1999, there were 34 accidents on Winecoff School Road between S. Main Street (SR 1008 and formerly US 29A) and S. Ridge Avenue – Cook's Crossing. During this period,

there were no reported fatalities. Fatalities have previously been reported at Cook's Crossing (Kannapolis ***Traffic Separation Study***). There were 16 personal injury accidents reported during this period. The most prevalent accident types were angle (35 %), rear end (21 %) and left turn-same road (12 %). The increased queue length provided by the new crossing will hopefully reduce these types of accidents and help reduce the backup on Ridge Avenue. The attached photo, Figure 2, illustrates the congestion currently experienced at Cook's Crossing at Ridge Avenue during the afternoon peak hour.

V. Recommendation

Should this project be funded, it is recommended that Mt. Olivet Road be extended to S. Main Street, (formerly US 29A) as a three-lane curb and gutter section, 40 feet (12.2 meters) wide face-to-face of curbs. A rubberized at-grade crossing with the Norfolk Southern railroad, with four-quadrant gates is also recommended. To ensure the orderly assignment of traffic movements and help minimize queue lengths, coordinated traffic signals, with railroad preemption, are recommended at the intersections with S. Main Street and Ridge Avenue. Please see Figure 3.

At the existing intersection of Mt. Olivet Road and Ridge Avenue, a left turn lane is recommended on the east approach of Mt. Olivet Road and a right turn lane on the north approach and a left turn lane on the south approach on Ridge Avenue. At the proposed intersection with S. Main Street, the grade on S. Main Street must be raised approximately 3.2 feet (1.0 meter) to make the grade from the railroad to S. Main Street adequate for heavy truck traffic.

Once the extension of Mt. Olivet Road is completed, the existing at-grade crossing at Winecoff School Road and Norfolk Southern Railroad, Cook's Crossing, would be completely removed. The existing traffic signal at Winecoff School Road and S. Main Street would be reworked in order to remove one of the movements. As a safety consideration, it is recommended that appropriate temporary barriers be placed to alert motorists familiar with Cook's Crossing that the crossing has been removed.

It is estimated that the recommended 100-foot (30.5-meter) right of way for Mt. Olivet Road Extension will require 2 residential relocations and no business relocations. The estimated total cost for the right of way and construction of the new at-grade crossing and the removal of the existing Cook's Crossing is $ 2,240,000.00 as follows:

Construction	$ 1,900,000
Right of way	330,000
Removal of Cook's Crossing	10,000
Total Cost	$ 2,240,000

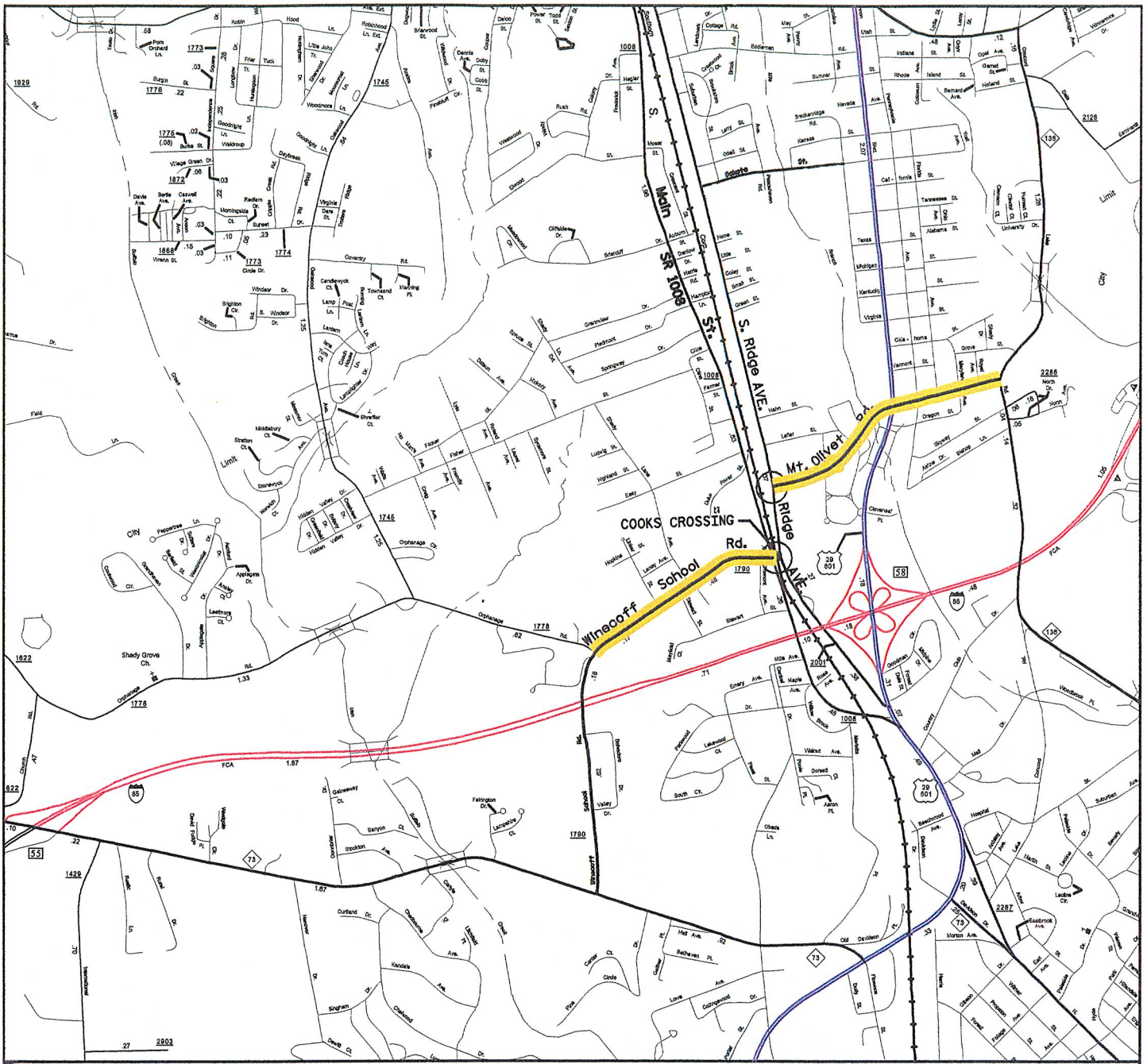
This project is proposed as an interim project to relieve congestion and short queue lengths at the existing Cook's Crossing. Should this project be implemented, its removal is anticipated upon the completion of the proposed railroad grade separation project at Universal Street or Dakota Street (FS-0010B).

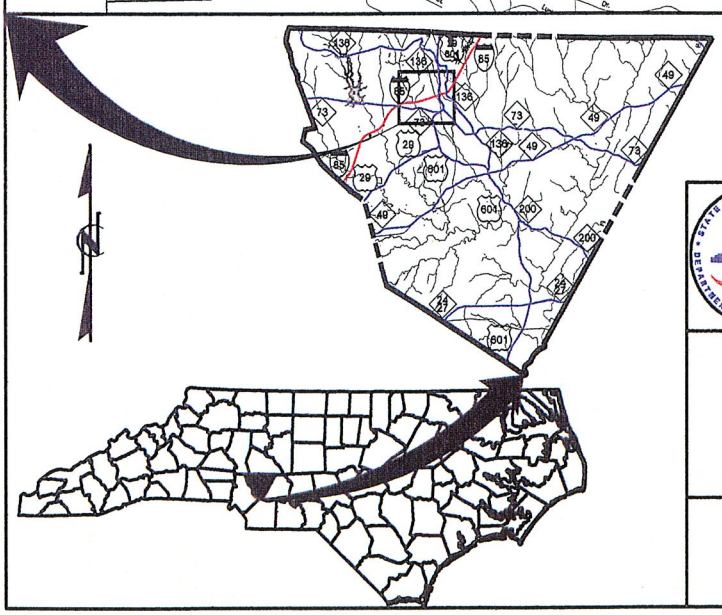
VI. Other Comments

An environmental screening by a certified environmentalist was not conducted for this study. However, based on maps at the Department of Environment, Health and Natural Resources – Natural Heritage Section, no threatened or endangered species were identified in the project corridor. In addition, no wetlands or historic properties are anticipated to be impacted by this project.

No special accommodations for bicycles or pedestrians are recommended on this project.

There is a question concerning the actual width of right of way owned by Norfolk Southern Railroad. The right of way shown in Figure 3 is 100 feet (30.5 meters). The right of way allegedly owned could be 200 feet (71.0 meters) which would include portions of the existing S. Main Street roadway. Owing to the significant number of obvious encroachments within a 200-foot right of way, the actual railroad right of way will need to be verified during later planning and design stages.





NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIROMENTAL ANALYSIS BRANCH

COOKS CROSSING / MT. OLIVET RD.
KANNAPOLIS
CABARRUS COUNTY
FS-0010A

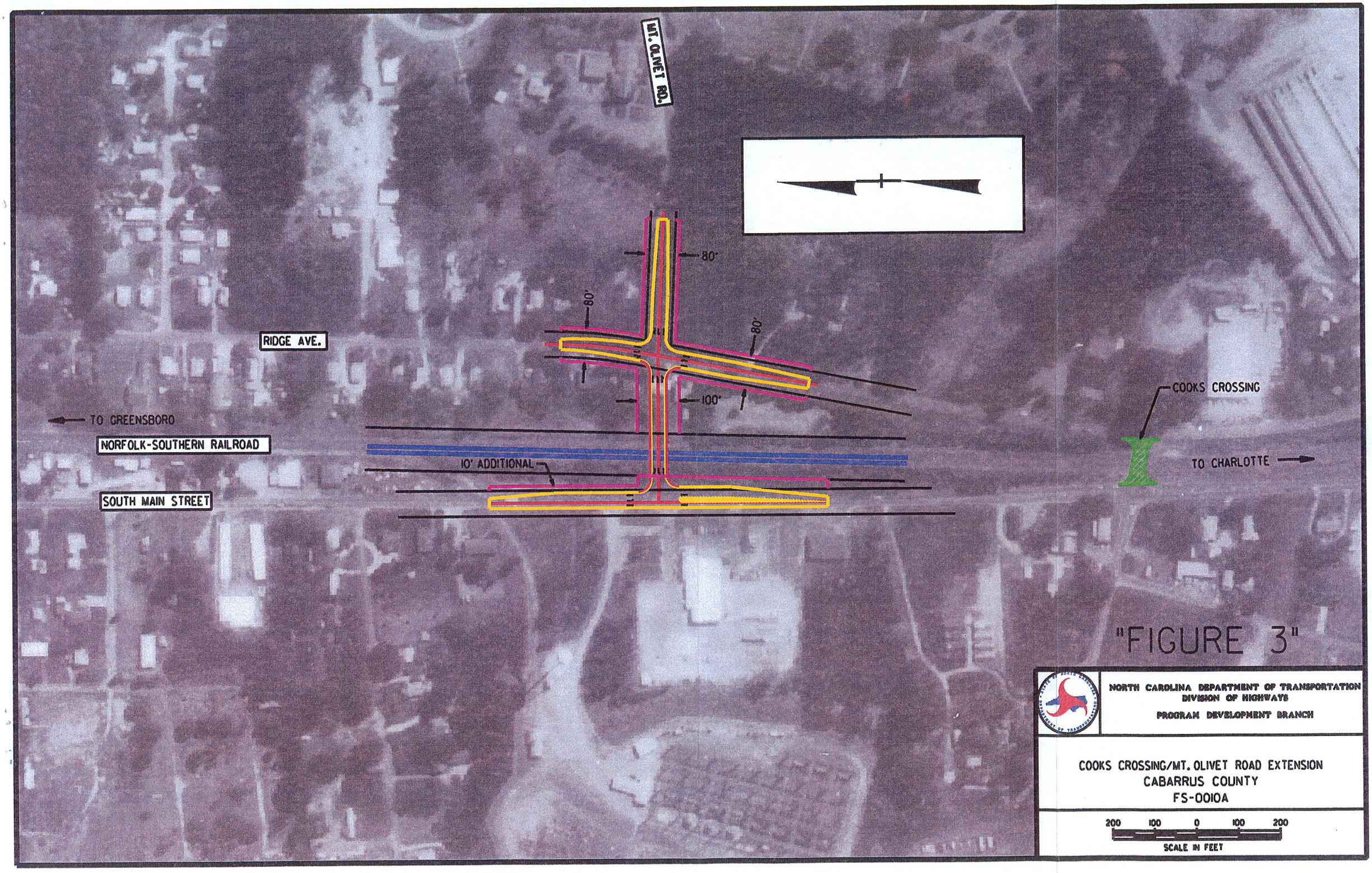
VICINITY MAP

0 .5 1
GRAPHIC SCALE (MILES)

FIGURE 1

Cooks Crossing
Traffic Queue on Ridge Avenue

Figure 2
Ridge Avenue Southbound
At Cook's Crossing


MT. OLIVET RD.
RIDGE AVE.
TO GREENSBORO
NORFOLK-SOUTHERN RAILROAD
SOUTH MAIN STREET
10' ADDITIONAL
80'
80'
80'
100'
COOKS CROSSING
TO CHARLOTTE
"FIGURE 3"
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROGRAM DEVELOPMENT BRANCH
COOKS CROSSING/MT. OLIVET ROAD EXTENSION
CABARRUS COUNTY
FS-0010A
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