



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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SECRETARY

July 21, 2004

MEMORANDUM TO: Mr. Thomas Betts, Jr., Member, Board of Transportation
Mr. Jim Trogdon, P.E., Division Engineer, Division 4
Mr. David King
Mr. Calvin Leggett, P.E.
Mr. Kevin Lacy, P.E. (3) Attention: Jim Dunlop, P.E.
Mr. John Williamson
Dr. Gregory Thorpe (2)
Ms. Deborah Barbour, P.E.
Mr. Jay Bennett, P.E.
Mr. Mike Bruff, P.E.
Mr. Art McMillan, P.E.
Mr. A. L. Avant
Mr. Ray McIntyre, P.E.
Mr. Doug Lane
Mr. Omar Sultan
Mr. W. Lee Smith, III
Mr. James Daughtry
Mr. Darryl Best

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FROM: Ms. Nicole M. Hackler
Feasibility Studies Unit

Nicole M. Hackler

SUBJECT: Feasibility Study FS-0204C; Wayne Memorial Drive (SR 1556) from south of East New Hope Road (SR 1003) to north of Stoney Creek Church Road (SR 1547) in Goldsboro; Wayne County

Our staff has completed a feasibility study for the proposed project referenced above. 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.

NMH/nmh

Attachment

cc: Mr. Len Sanderson, P.E.

FEASIBILITY STUDY

Wayne Memorial Drive (SR 1556)
From South Of East New Hope Road (SR 1003)
To North Of Stoney Creek Church Road (SR 1547)

Wayne County

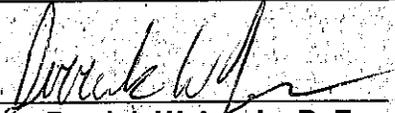
Division 4

FS-0204C

Prepared For:

N.C. Department of Transportation



 Derrick W. Lewis, P. E. Feasibility Studies Unit Head	<u>7/20/04</u> Date
 Nicole M. Hackler Feasibility Studies Engineer	<u>7/20/04</u> Date

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 T. Peacock, Jr., P. E. Senior Associate	 B. Keith Skinner, P. E. Associate	<u>7/19/04</u> Date
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Wayne Memorial Drive (SR 1556) From South Of East New Hope Road (SR 1003) To North Of Stoney Creek Church Road (SR 1547)

**Wayne County
Division 4
FS-0204C**

I. General Description

This feasibility study addresses improvements to Wayne Memorial Drive (SR 1556) from south of East New Hope Road (SR 1003) to north of Stoney Creek Church Road (SR 1547). See Figure 1 for a vicinity map showing the project's location. The study area includes existing 4-legged intersections at East New Hope Road (SR 1003), Tommy's Road (SR 1571) and two intersections for the ramp terminals at the proposed T.I.P. Project R-2554B (US 70 Goldsboro Bypass). Existing 3-legged intersections are also located within the study limits at Cassedale Drive, Best Avenue, Woodside Drive (SR 1622), Gurley Avenue (SR 1642) and Stoney Creek Church Road (SR 1547). This study proposes a multi-lane roadway with 12' travel lanes and 4' full depth paved shoulders within a state maintained right-of-way of 150'. This study also includes approximately 2000' of -Y-Line widening along East New Hope Road (SR 1003) and approximately 2000' of widening along Tommy's Road (SR 1571) to accommodate required turning lanes and to provide acceptable levels-of-service at the intersections with Wayne Memorial Drive. The total length of the project is 1.7 miles measured along Wayne Memorial Drive (SR 1556).

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 this study is to describe the proposed project, including costs, and to identify potential problems that may require consideration in the planning and design phases.

II. Need for Project

Wayne Memorial Drive (SR 1556) connects a large portion of rural northeastern Wayne County and western Greene County to the City of Goldsboro. Traffic projections for this roadway are expected to increase by 36% from the current year to year 2030. This anticipated increase in traffic is due to general population growth of the area and direct access to the proposed T.I.P. Project R-2554B (US 70 Goldsboro Bypass). A proposed interchange, located approximately 2000' north of Tommy's Road (SR 1571) will provide access to and from the US 70 Goldsboro Bypass. The bypass will also promote development in the area and will allow safer and timelier access to Wayne Community College, the County Hospital, and other facilities within the City of Goldsboro utilizing Wayne Memorial Drive (SR 1556).

The project area is primarily residential with a few businesses located along the length of the project. This study identifies probable impacts to properties within the proposed footprint. More detailed impacts will be identified and evaluated in later design stages.

III. Adjacent Projects

There are two (2) proposed NCDOT projects adjacent to the study project area; T.I.P. Projects R-2554B and U-3611. Project R-2554B is a nine (9) mile portion of the US 70 Goldsboro Bypass which is a four-lane median divided facility designed to interstate standards. Construction for this project is scheduled to begin in 2007 and is to be completed by 2010. Project U-3611 is a widening project along East New Hope Road (SR 1003) from Wayne Memorial Drive (SR 1556) to Miller's Chapel Road (SR1713). Project U-3611 is not funded by the current Transportation Improvement Program (T.I.P.).

Both T.I.P. Projects (R-2554B and U-3611) will have construction limits that may overlap with the proposed widening of Wayne Memorial Drive under this study. Therefore, detailed and careful adjacent project coordination and planning will be necessary in later design stages.

IV. Studied Alternatives

This Feasibility Study evaluated two alternatives, each of which will widen Wayne Memorial Drive (SR 1556) from south of East New Hope Road (SR 1003) to north of Stoney Creek Church Road (SR 1547). Refer to Figure 1 for project location and Figure 2 for proposed typical sections for each alternative. The following section describes each of the two studied alternatives and the proposed improvements associated with each.

Alternative 1

Alternative 1 begins approximately 1000' south of the existing signalized intersection of Wayne Memorial Drive (SR 1556) and East New Hope Road (SR 1003) and continues north along Wayne Memorial Drive (SR 1556) to approximately 800' north of Stoney Creek Church Road (SR 1547). This alternative proposes to widen Wayne Memorial Drive (SR 1556) from the existing 20' wide 2-lane section to a 60' wide 5-lane roadway with 12' travel lanes, 4' paved shoulders and roadside ditches within a state maintained right-of-way of 150'. At the beginning of the project existing Wayne Memorial Drive (SR 1556) is a 5-lane curb and gutter section. Therefore for continuity, proposed widening to the south of East New Hope Road (SR 1003) will include proposed 2'-6" concrete curb and gutter in lieu of an open shoulder section with roadside ditches. Additional widening will also be required along both East New Hope Road (SR 1003) and Tommy's Road (SR 1547) to accommodate required turning lanes and to provide acceptable levels-of-service at the intersections with Wayne Memorial Drive (SR 1556). Proposed widening for Wayne Memorial Drive (SR 1556) and Tommy's Road (SR 1571) will be symmetrical. However, widening for East New Hope Road (SR 1003) should occur to the south to minimize impacts to Thompsons Church. It should be noted that this project was extended to north of Stoney Creek Church Road (SR 1547) at the suggestion of the County Manager of Wayne County, Mr. W. Lee Smith, III. This project extension allows for much needed improvements to the Wayne Memorial Drive (SR 1556)/Stoney Creek Church Road (SR 1547) intersection including an exclusive right turn lane from Stoney Creek Church Road (SR 1547) onto Wayne Memorial Drive (SR 1556) for southbound traffic going into Goldsboro.

Proposed construction on Wayne Memorial Drive (SR 1556) as part of the proposed T.I.P. Project R-2554B (US 70 Goldsboro Bypass) will include widening Wayne Memorial Drive (SR 1556) from the 20' wide 2-lane section to 36' wide 3-lane section within the limits of the proposed interchange. The proposed interchange will also include a bridge on Wayne Memorial Drive (SR 1556) over the US 70 Bypass. Under this study the bridge on Wayne Memorial Drive (SR 1556) will be widened from 3 lanes to 5 lanes. Also included in this study is the work required for revising the ramp terminals on Wayne Memorial Drive (SR 1556) to tie to the new five-lane section. Ramp work will include additional required storage lengths for turning lanes and signal modifications.

The existing 60' of right-of-way will be increased to 150' for the new five-lane section along Wayne Memorial Drive (SR 1556). Additional right-of-way will not be needed in the area of the US 70 Goldsboro Bypass interchange because it will have already been purchased under project R-2554B. Most of the right-of-way purchased under R-2554B will be controlled-of-access. Right-of-way for Wayne Memorial Drive (SR 1556) will not be controlled, however, proposed concrete islands adjacent to intersections will help to alleviate congestion and promote safety by limiting turning movements to right-in/right-out movements. For East New Hope Road (SR 1003) the proposed concrete islands should extend from the intersection approximately 500' to the North and South along the mainline and approximately 500' to the East and West along the -Y- Line. For Tommy's Road (SR 1571) the proposed concrete islands should extend from the intersection approximately 500' to the South along the mainline and approximately 500' to the East and West along the -Y- Line. In the vicinity of the proposed US 70 Bypass interchange the mainline concrete islands should begin at the Wayne Memorial Drive/Tommy's Road intersection and continue to the southern most ramp terminal of the proposed interchange. The mainline concrete island should begin again at the northern most ramp terminal and continue to the intersection of Wayne Memorial Drive/Woodside Drive. The total length of Alternative 1 is 1.7 miles measured along Wayne Memorial Drive (SR 1556).

It is anticipated that Alternative 1 improvements will require the relocation of seven (7) residences and zero (0) businesses. The total cost, including construction and right-of-way, is estimated to be \$13,400,000.

Construction.....	\$ 9,000,000
<u>Right-of-way.....</u>	<u>\$ 4,400,000</u>
Total Cost.....	\$13,400,000

Alternative 2

Alternative 2 is identical to Alternative 1 with the exception of the section between East New Hope Road (SR 1003) and Tommy's Road (SR 1571). Alternative 2 proposes that this section, approximately 2700' in length, be widened from the existing 20' wide 2-lane section to a 4-lane divided roadway with 12' travel lanes, a 16' raised grass island and 4' full depth paved shoulders. Alternative 2 proposes that the remaining sections of Wayne Memorial Drive (SR 1556) be widened to a 60' 5-lane roadway with 12' travel lanes, 4' full depth paved shoulders and roadside ditches. All intersecting road improvements are identical to those described in Alternative 1. This roadway will be constructed within a 150' state maintained right-of-way. This divided section will help to alleviate congestion and promote safety by limiting turning movements to right-in/right-out. The raised median island will also serve as an area for plantings, which will enhance this section of Wayne Memorial Drive (SR 1556). The total length of Alternative 2 is 1.7 miles measured along Wayne Memorial Drive (SR 1556).

It is anticipated that Alternative 2 improvements will require the relocation of seven (7) residences and zero (0) businesses. The total cost, including construction and right-of-way, is estimated to be \$13,700,000.

Construction.....	\$ 9,300,000
<u>Right-of-way.....</u>	<u>\$ 4,400,000</u>
Total Cost.....	\$13,700,000

V. Traffic Operations

The base year 2003 Average Daily Traffic (ADT) on Wayne Memorial Drive (SR 1556) ranges from 6,000 to 12,600 vehicles per day (vpd). The estimated design year 2030 ADT projections range from 15,400 to 35,000 vpd. The projected percentage of truck traffic is 3% (2% Duals and 1% TTST's) for both 2003 and 2030-year traffic.

Based on an analysis utilizing the Highway Capacity Software (HCS), with the proposed widening, Wayne Memorial Drive (SR 1556) will operate at a level of service LOS A with the 2003-year traffic volumes and an LOS C with the 2030-year traffic volumes.

This project will require improvements to the major intersecting roads in order to achieve satisfactory accessibility, mobility and levels of service. The major intersecting roads that will require upgrades, the proposed types of improvements, and the resulting traffic operations measurements are as follows:

Intersection	Alternative	Type of Improvement	Delay (sec./veh.)		LOS	
			2003-yr	2030-yr	2003-yr	2030-yr
Wayne Memorial Drive/East New Hope Road	Alt. 1 & 2	Add Exclusive Right Turn Lane, Dual Left Turn Lanes, Signal Modification	31	91	C	F
Wayne Memorial Drive/Tommy's Road	Alt. 1 & 2	Add Exclusive Right Turn Lane, Dual Left Turn Lanes, Signal Modification	35	58	C	E
Wayne Memorial Drive/US 70 Bypass Ramps C & D	Alt. 1 & 2	Add Exclusive Right Turn Lane, Left Turn Lane, Signal Modification	N/A	25	N/A	C
Wayne Memorial Drive/US 70 Bypass Ramps A & B	Alt. 1 & 2	Add Exclusive Right Turn Lane, Left Turn Lane, Signal Modification	N/A	47	N/A	D

As shown in Table 1 above, only two intersections within the study limits will operate at levels of service worse than the acceptable level D for signalized intersections by the year 2030. Utilizing straight-line interpolation, we can predict at what year the intersections will operate at what is considered unacceptable levels of service (LOS E, delay greater than 55 seconds).

TABLE 2 – YEAR FOR LEVEL OF SERVICE E		
Intersection	Alternative	Year
Wayne Memorial Drive/East New Hope Road	Alt. 1 & 2	2025
Wayne Memorial Drive/Tommy's Road	Alt. 1 & 2	2030

It is important to note that three through lanes in each direction are required along Wayne Memorial Drive (SR 1556) to provide levels of service D or better at the intersections of Wayne Memorial Drive/East New Hope Road and Wayne Memorial Drive/Tommy's Road utilizing the design year traffic volumes. This type of improvement would require additional widening for a substantial length along Wayne Memorial Drive and is considered to be beyond the scope of this project.

During the period from July 1, 2000 through June 30, 2003 there were 32 accidents reported on Wayne Memorial Drive (SR 1556) within the study limits resulting in an accident rate of 190.15 accidents per 100 million vehicle miles (Acc/100MVM). The statewide average for Urban Primary Routes for the period the year 2000 to year 2002 was 286.66 Acc/100MVM. There were no fatalities reported within the study limits during this period, however 15 of the accidents resulted in injuries. Forty-one percent of the reported accidents were rear end collisions; 13% were "angle" type accidents; and 9% were accidents caused by left turning movements. The proposed improvements should reduce the potential for these types of traffic accidents.

VI. Project Costs & Recommendations

The following table shows the total project cost for each of the two alternatives studied in this report.

Table 3 - Project Costs By Alternatives			
Alternative	Right-of-Way Cost	Construction Cost	Total Section Cost
Alternative 1	\$4,400,000	\$9,000,000	\$13,400,000
Alternative 2	\$4,400,000	\$9,300,000	\$13,700,000

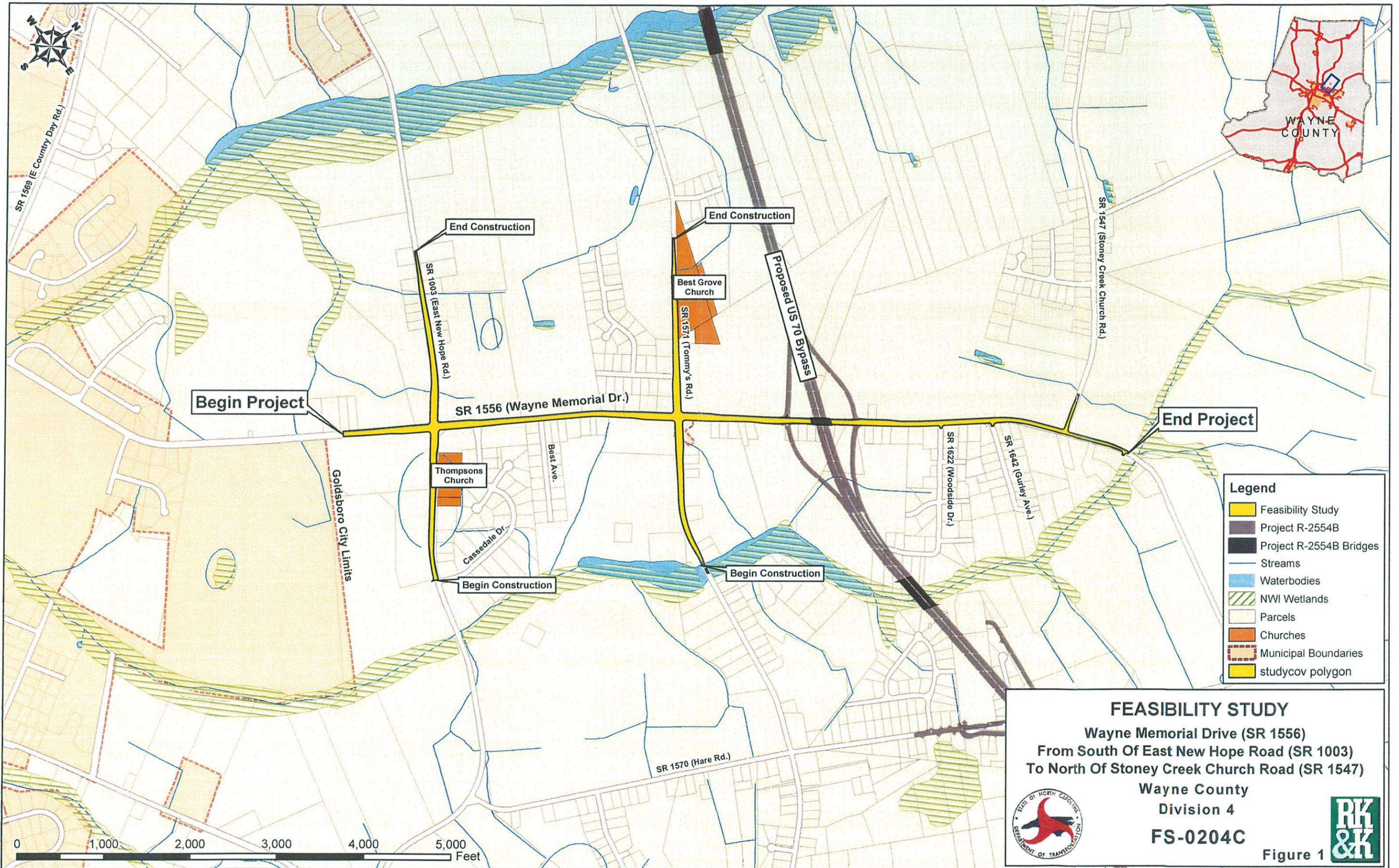
Both Alternatives for this project are similar in that they improve capacity and safety of the existing roadway by widening and improving intersections within the study area. However, Alternative 2 provides additional improvement by providing a 16' raised grass island between East New Hope Road (SR 1003) and Tommy's Road (SR 1571). The proposed island for Alternative 2 will eliminate left turns in and out of adjacent properties as well as provide the opportunity for enhanced landscaping within the grassed median. This restriction of turning movements will increase roadway

safety, promote mobility, and improve traffic operations and capacity. Therefore, Alternative 2 is the recommended alternative for this study.

VI. Additional Comments

A detailed environmental study was not conducted for this feasibility study. However, an environmental screening did result in the following possible occurrences, which will need to be further evaluated in later stages of the development of this project:

- The National Wetland Inventory Mapping indicates that this project (all Alternatives) should not impact wetlands.
- Department of Natural Resources – National Heritage Section indicates that there are no occurrences of threatened or endangered species located within a two-mile radius of the project area.
- There were no environmental justice issues observed along the project corridor during the development of this study. A more detailed investigation of environmental justice issues will be required in the later planning phases of this project.



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Figure 1

