FEASIBILITY STUDY

US 52

from NC 65 in Winston-Salem
to US 52/I-77 Connector in Surry County

Forsyth, Stokes, and Surry Counties

R-3441

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

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I. GENERAL DESCRIPTION

This preliminary study describes alternate options to upgrade existing US 52 to Interstate standards from NC 65 in Winston-Salem to the US 52/I-77 Connector in Surry County. The proposed project would tie to TIP Project U-2826 at the south terminus and to TIP Project R-98 at the north terminus. The length of the studied project is approximately 21.3 miles (34.4 km).

Three general scenarios were investigated: (1) Upgrade existing US 52 to Interstate standards including rehabilitating/reconstructing the pavement and replacing/widening deficient structures; (2) Upgrade existing US 52 without improving existing pavement; and (3) Upgrade US 52 without improving existing pavement and requesting design exceptions for deficient structures.

The existing cross section is a four-lane, median-divided, controlled access facility. The right of way is 260 feet (79.2 m) from NC 65 to Tom's Creek and 250 feet (76.2 m) from Tom's Creek to the US 52/I-77 Connector. The median generally varies between 36 and 40 feet (11.0 to 12.2 m). Left and right shoulders are 12 feet (3.7 m) including 4-foot (1.2-m) paved from NC 65 to the Forsyth County line; 8-foot (2.4-m) paved outside and 2-foot (0.6-m) paved inside from SR 1112 at the Forsyth County line to SR 1815 in Surry County; and 10 feet (3.0 m) outside including 4-foot (1.2 m) paved and 4 feet (1.2 m) paved inside from SR 1815 to the US 52/ I-77 Connector. The alternates studied do not attempt to create additional capacity but rather maintain the existing cross section with improvements that will allow the corridor to be signed as an Interstate Corridor.

The estimated costs of the three studied alternates ranged from $ 27,300,000 to $ 76,200,000.

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 problem, recommend a

treatment including costs, and identify potential problem areas that require special consideration in the planning and design phases.

II. NEED FOR PROJECT

The proposed improvements to US 52 are needed to bring the existing roadway geometry up to Interstate standards in anticipation of the corridor being designated as I-74. With I-74 anticipated to use either US 52 through Winston-Salem or the Eastern Belt and with the US 52/I-77 Connector under construction in Surry County, the existing US 52 corridor (or the new I-74 corridor) will provide an attractive alternate to the current I-77/I-40 combination for destinations to and east of Winston-Salem. Particularly, this route will become more attractive to truck traffic.

On the Statewide Functional Classification System, US 52 is currently classified as an Other Principal Arterial.

Traffic projections for the existing US 52 corridor take into consideration the US 52/I-77 Connector (R-98) and the designation of the existing US 52 corridor as I-74. Current volumes range from 35,500 vehicles per day (vpd) north of NC 65 to 22,000 vpd near Pilot Mountain. In the year 2020, Average Daily Traffic (ADT) is estimated to range from 105,000 vpd near NC 65 to 61,200 vpd near Pilot Mountain. The existing 4-lane divided cross section will not provide a satisfactory Level of Service at design year traffic volumes. At design year traffic volumes, 6- and 8-lane divided freeway sections will be required to provide satisfactory levels of service.

Existing land use along the corridor is limited to development at existing interchanges. Outside the urbanized areas, the land use is predominantly agricultural or woodland.

III. STUDY ALTERNATES

Three general scenarios were investigated: (1) Upgrade existing US 52 to Interstate standards including rehabilitating/reconstructing the pavement and replacing/widening deficient structures; (2) Upgrade existing US 52 without improving existing pavement; and (3) Upgrade US 52 without improving existing pavement and requesting design exceptions for deficient structures.

The existing cross section is a four-lane, median-divided, controlled access facility. The right of way is 260 feet (79.2 m) from NC 65 to Tom's Creek and 250 feet (76.2 m) from Tom's Creek to the US 52/I-77 Connector. The median generally varies between 36 and 40 feet (11.0 to 12.2 m). The alternates studied do not attempt to create

additional capacity but rather maintain the existing cross section with improvements that will allow the corridor to be signed as an Interstate Corridor.

The cost estimates for Alternates 1 and 2 made the following assumptions with regard to structures:

1. If the sufficiency rating is less than 70, replace,

2. If the sufficiency rating is greater than 70 and less than 80, rehabilitate the deck, and

3. If the sufficiency rating is greater than 80, nothing.

All deficient structures under Alternates 1 and 2, will be corrected to meet minimum Interstate width and horizontal and vertical clearance standards.

Additionally, based on the estimated design year volumes, structures carrying roadways over US 52 needing replacement are estimated to provide an ultimate 8-lane cross section on US 52 in Forsyth County; in Stokes and Surry Counties, a 6-lane cross section on US 52. Structure No. 347 in Forsyth County is currently scheduled for replacement (R-2201). The estimated costs for R-2201 are not included in this study but have been estimated by the above assumptions. Structure lengths are based on a 22-foot (6.7-m) median.

The estimates for Alternate 3 assume that only the minimum work will be done and that design exceptions will be sought for all geometrically deficient structures.

Please see Table 1 which lists all the structures within the study corridor and their critical geometric parameters.

Alternate 1

Alternate 1 provides a complete package to bring existing US 52 up to Interstate design standards. The menu of actions estimated include widening shoulders, adding paved shoulders, remove and reset guardrail, providing double-faced guardrail in the median, providing shoulder drains, refurbishing interchange signs, and remarking the pavement. Included in Alternate 1 is the rehabilitation and reconstruction of the existing pavement as necessary. Also, all deficient structures will be corrected under the assumptions outlined above. Minor right of way adjustments will be required to replace structures crossing over US 52.

Construction	$ 72,200,000
Right of Way	4,000,000
Total	$ 76,200,000

Alternate 2

Alternate 2 provides for the same improvements as outlined in Alternate 1 with the exception of rehabilitating and reconstructing the existing pavement.

Construction	$ 51,500,000
Right of Way	4,000,000
Total	$ 55,500,000

Alternate 3

Alternate 3 provides for no pavement or structure work. Under this alternate, design exceptions will be sought for all structures not meeting Interstate standards. Only 3 of 22 existing structures currently meet Interstate standards. All additional work items outlined under Alternate 1 would need to be done to meet minimum Interstate geometric design standards.

Construction	$ 27,300,000
Right of Way	-0-
Total	$ 27,300,000

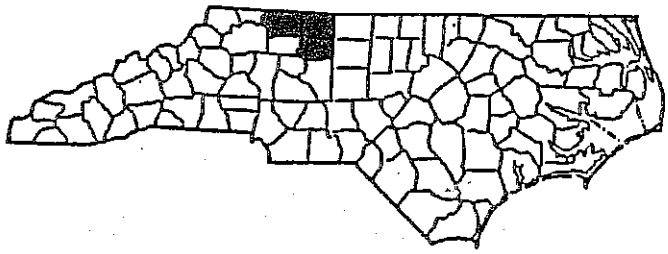
Table 1
Construction Cost Estimates
(in 1996 dollars)

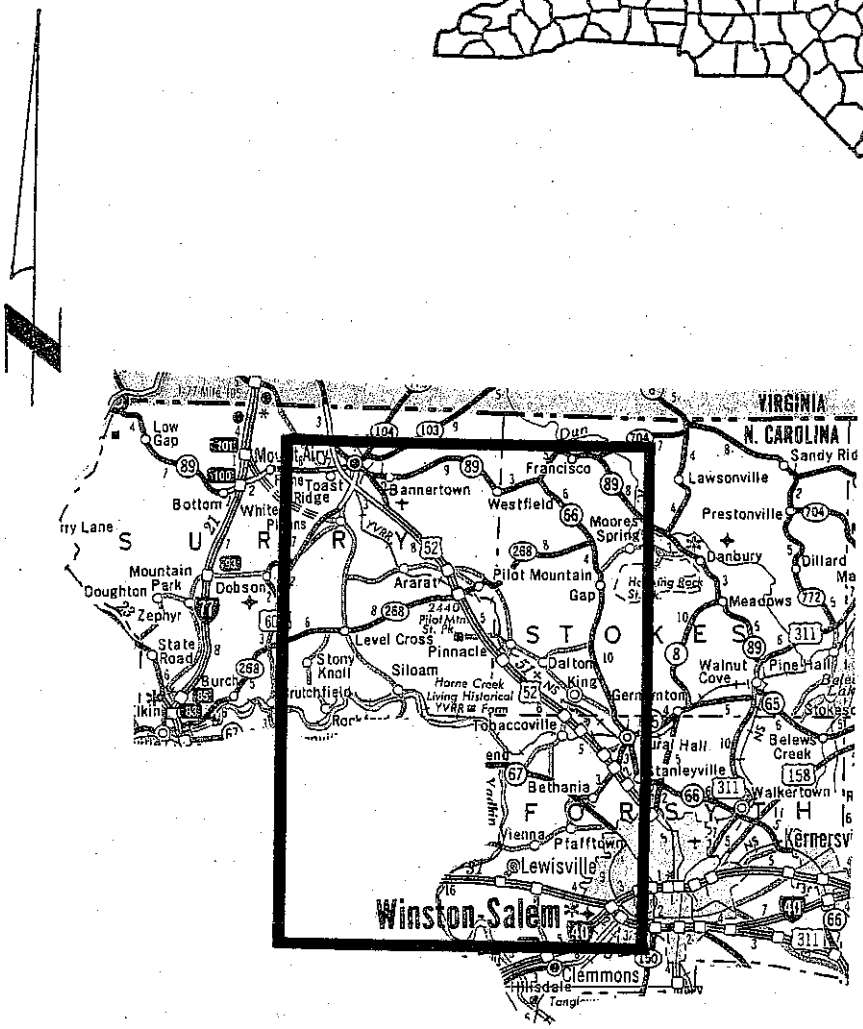
County Length	Forsyth 5.0 mi	Stokes 6.5 mi	Surry 9.8 mi	Total 21.3 mi
Min. Interstate standards	6,500,000	8,600,000	12,200,000	27,300,000
Pavement Rehab./Recons.	4,800,000	6,300,000	9,600,000	20,700,000
Structures on US 52	2,100,000	1,800,000	5,000,000	8,900,000
Structures over US 52	1,500,000	2,600,000	3,300,000	7,400,000
w/ approaches	1,400,000	2,400,000	4,100,000	7,900,000
Totals	$16,300,000	$21,700,000	$34,200,000	$72,200,000

TABLE 2

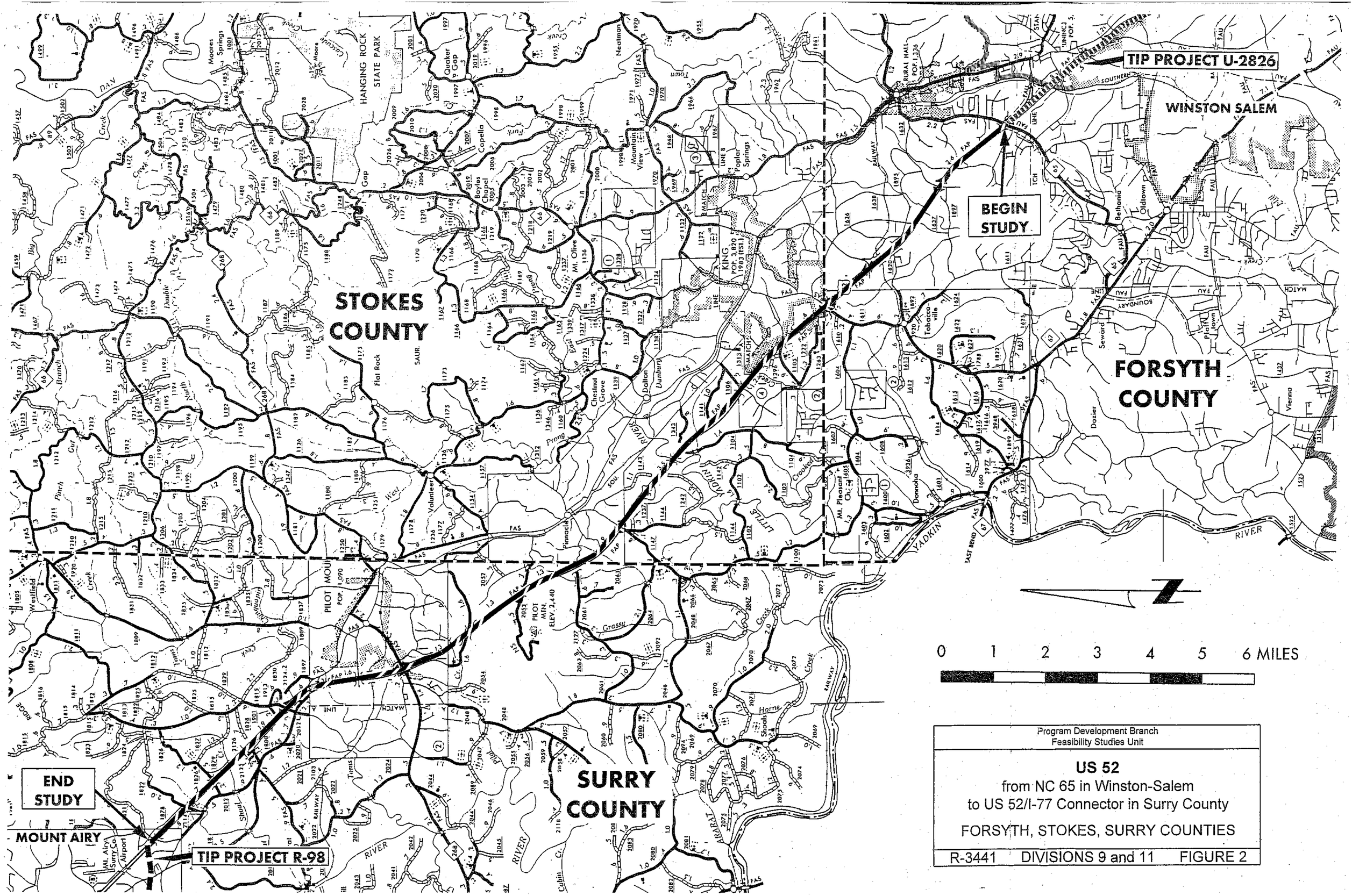
Structures in the Study Corridor
from NC 65 to US 52/I-77 Connector

Structure Number	Route Carried	Suff. Rating	Width Over	Clearances V	Clearances R	Clearances L	County
315	SR 1632	79.0		14 11	10.8	16.3	Forsyth
C318	US 52	----	----	----------	----------	----------	Forsyth
319	US 52	48.3	28.0				Forsyth
335	US 52	63.0	28.0				Forsyth
343	US 52	72.3	28.0				Forsyth
344	US 52	79.5	44.1				Forsyth
428	SR 1634	89.5		17 01	11.8	16.2	Forsyth
347	SR 1611	67.0		14 06	8.3	16.1	Forsyth
10	SR 1105	62.9		15 03	9.2	16.7	Stokes
23	SR 1106	67.4		15 06	8.5	16.3	Stokes
29	US 52	47.1	28.0				Stokes
30	US 52	49.2	28.0				Stokes
52	SR 1147	74.5		15 01	7.6	15.3	Stokes
16	US 52	61.8	28.0				Surry
8	US 52	63.8	28.0				Surry
C44	US 52	----	----	----------	----------	----------	Surry
48	US 52	63.8	28.0				Surry
55	US 52	77.1	28.0				Surry
83	SR 2097	86.0		15 04	12.5	17.0	Surry
155	NC 268	78.0		14 06	9.5	17.0	Surry
97	US 52	73.4	28.0				Surry
100	US 52	71.3	28.0				Surry
119	SR 2049	53.3		14 03	8.5	17.0	Surry
122	US 52	77.2	28.0				Surry
126	US 52	77.2	28.0				Surry
342	US 52	75.2	28.0				Surry
156	SR 1815	48.9		14 07	7.5	5.0	Surry
C158	US 52	----	----	----------	----------	----------	Surry
160	US 52	93.2	40.0				Surry
163	US 52	93.2	40.0				Surry
169	SR 1822	88.8		15 09	18.0	99.9	Surry
171	SR 1774	84.9		15 06	18.0	99.9	Surry





Program Development Branch Feasibility Studies Unit		
US 52 from NC 65 in Winston-Salem to US 52/I-77 Connector in Surry County FORSYTH, STOKES, SURRY COUNTIES		
R-3441	DIVISIONS 9 and 11	FIGURE 1



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R-3441 DIVISIONS 9 and 11 FIGURE 2