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FEASIBILITY STUDY

US 74

INTERCHANGE JUSTIFICATION STUDY

AT SR 1141 NEAR RUTHERFORDTON

RUTHERFORD COUNTY

Prepared by
Planning and Environmental Branch
Division of Highways
N. C. Department of Transportation

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Bridge Project Planning Engineer,
Unit Head

5/21/91
Date

for H. Franklin Vick

L. J. Ward, P. E., Manager
Planning and Environmental

US 74
INTERCHANGE JUSTIFICATION STUDY
AT SR 1141 NEAR RUTHERFORDTON
RUTHERFORD COUNTY

The Planning and Environmental Branch has studied the feasibility of providing an interchange or a grade separation on US 74 at SR 1141 in Rutherford County south of Rutherfordton (see Figure 1). US 74 is under construction under Transportation Improvement Program Project R-99.

Summary

Based on a road user analysis, provision of an additional interchange or grade separation is not warranted.

Basis For Request

Under TIP project R-99, US 74 will be constructed in a location so as to intersect SR 1141 approximately 1/4 mile from SR 1148. SR 1141 would be terminated on either side of US 74 to allow for placement of fill material to support US 74. The studied interchange is being requested by residents near the Town of Rutherfordton and the Rutherford County Economic Development Commission who have requested SR 1141 remain open and access to US 74 provided. A petition and several letters of support are attached in the Appendix (see A-1 through A-5).

SR 1141

SR 1141 (Gray's Creek Church Road) is a 22-foot gravel surface road in the vicinity of US 74. The priority for paving SR 1141 near US 74 is 110 out of 250. However, SR 1141 has a 22-foot paved roadway width in the vicinity of Gray's Creek Church. Development in the area consists of approximately 50 residences, Gray's Creek Church, and the Cleghorn Golf and Country Club.

The current traffic volume on SR 1141 is 300 vehicles per day (vpd). By the year 2010 the volume is expected to increase to 500 vpd (see Figure 4). Current traffic volume would be 900 vpd and the year 2010 volume would be 1500 vpd if the interchange was in place (see Figure 3).

Studied Alternative 1

Preliminary design studies indicate a full diamond-type interchange (Alternative 1) with a relocation of SR 1148 and extension of SR 1141 would be most feasible at this location (see Figure 2-A). The total estimated cost for Alternative 1 is approximately $5,300,000 which includes $4,950,000 for construction and $350,000 for right-of-way acquisition.

Studied Alternative 2 (Grade Separation)

Alternative 2 was also studied (see Figure 2-B) to provide improved access to the area. Instead of terminating SR 1141 and backfilling to furnish adequate vertical alignment for US 74, the possibility of providing a grade separated facility to allow SR 1141 to remain open was studied. To provide a grade separated facility where SR 1141 would cross US 74 would require a large amount of fill material to be removed. Additionally, 2 structures would have to be constructed to bridge US 74 over SR 1141. The total estimated cost for Alternative 2 is approximately $1,030,000 which includes $1,000,000 for construction and $30,000 for right-of-way acquisition. Although this proposed grade separation would provide for access along SR 1141, only limited benefits would result.

Also, although SR 1141 would be closed to traffic near US 74, motorists would still have other alternatives to cross US 74 in the area. SR 1148 will have two grade separated crossings of US 74 just over a half mile from where SR 1141 intersects SR 1148. Motorists will continue to have access to either side of US 74 by using SR 1148, SR 1143, SR 1141, SR 1005, and SR 1004 (see Figure 1). Therefore, the studied Alternative 2 of providing a grade separated facility is not justifiable.

Possible Environmental Impacts

Some possible negative environmental consequences would result from the construction of Alternative 1 or Alternative 2. This includes disruption of wetlands, plant and animal life, and stream siltation among others. If the project were to be implemented, a full environmental investigation would be required.

Economic Analysis For Proposed Interchange

Estimates of 1990 and 2010 traffic movements with and without the studied interchange are shown in Figures 3 and 4.

Applying the traffic centroids shown in Figure 1, a roaduser benefit-cost analysis yielded possible annual savings of $203,962 (see Figure 5). The resulting benefit cost ratio of 0.38 indicates the interchange is not economically justifiable.

Interchange Spacing

The studied interchange would be approximately 1.5 miles from the nearest interchange to the west (SR 1145) and approximately 3.4 miles from the nearest interchange to the west (US 221). It would be located in an area designated as rural in nature.

Provision of the studied interchange would lower the average spacing between interchanges in the area to 2.5 miles, which is below the 8 mile desirable average spacing for interchanges in rural areas.

The minimum distance to the nearest interchange would be 1.5 miles, which is below the desirable minimum distance of 3 miles between interchanges in rural areas (see Figure 6).

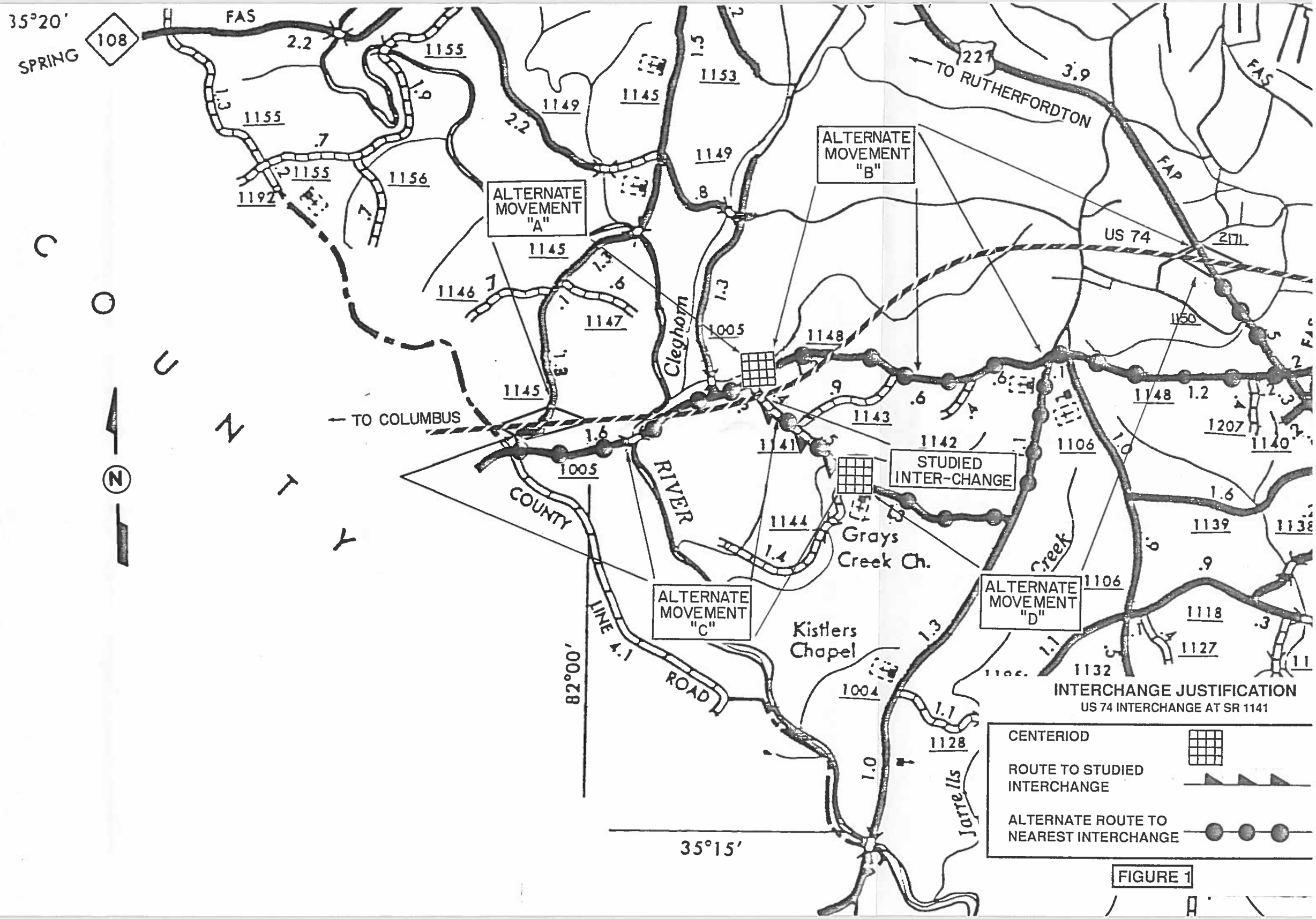
Access to US 74 for residents along SR 1141 would be provided at the SR 1145 interchange and the US 221 interchange.

Conclusions

Although limited benefits would be derived from provision of the studied interchange (Alternative 1) and/or the grade separated facility (Alternative 2), existing development and traffic demand do not warrant an expenditure of $5,300,000 for Alternative 1 or $1,030,000 for Alternative 2. Therefore, it is recommended that neither the interchange nor the grade separated facility be provided at this time, and that SR 1141 be terminated as planned under T.I.P. project R-99.

EL/sdt

FIGURES



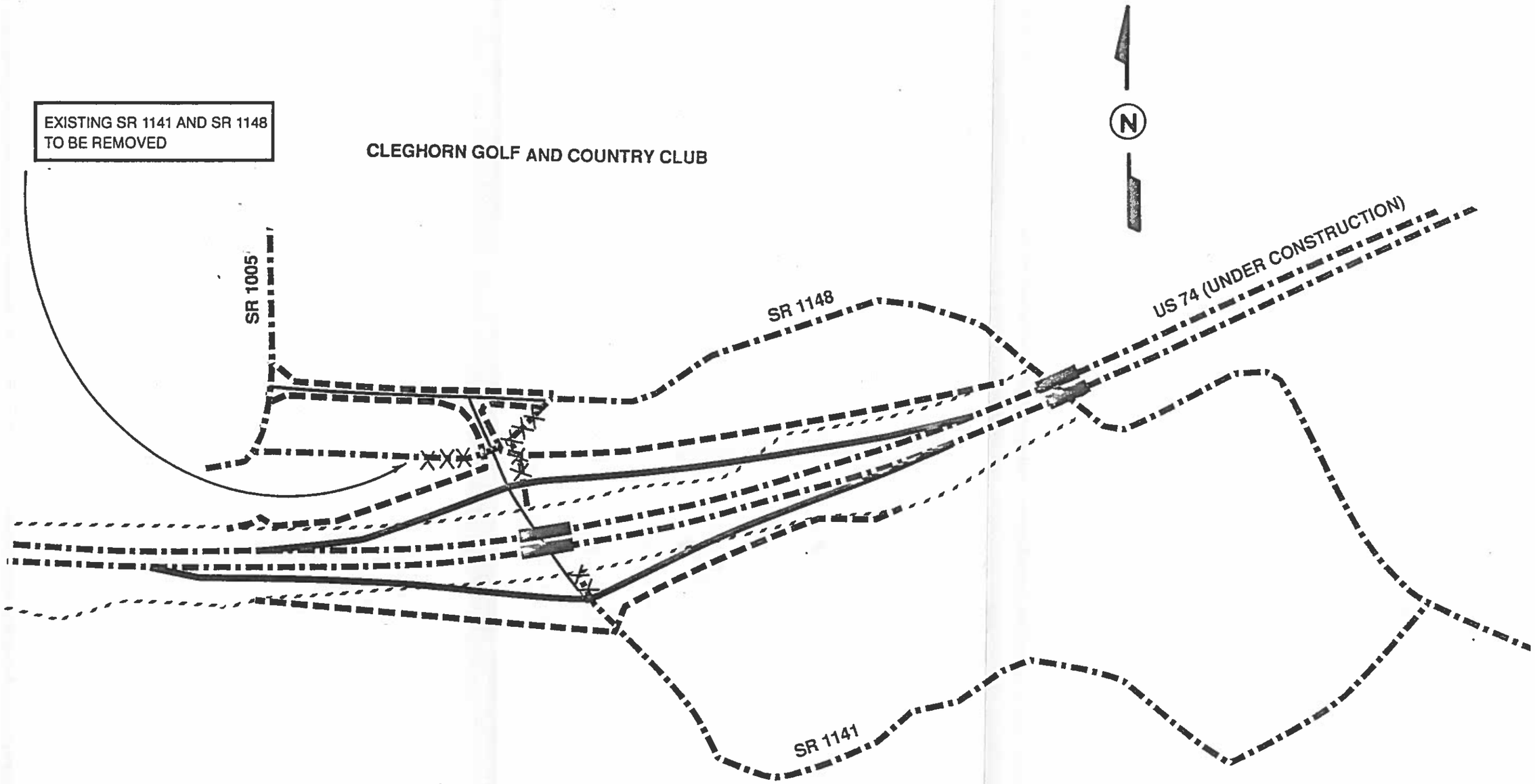
INTERCHANGE JUSTIFICATION
US 74 INTERCHANGE AT SR 1141

CENTERIOD

ROUTE TO STUDIED INTERCHANGE

ALTERNATE ROUTE TO NEAREST INTERCHANGE

FIGURE 1



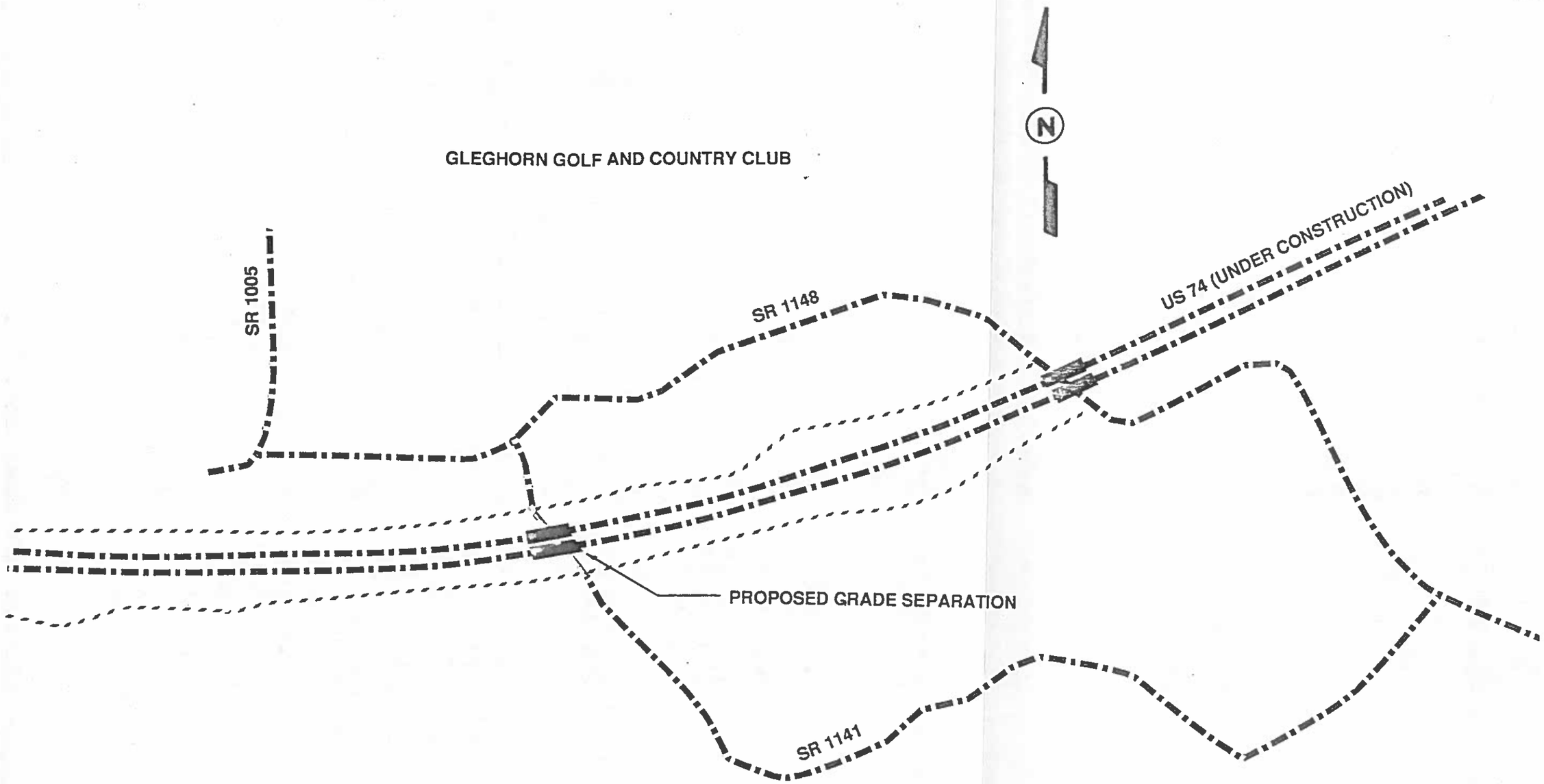
LEGEND

- PROPOSED RIGHT-OF-WAY
- PROPOSED IMPROVEMENTS
- EXISTING RIGHT-OF-WAY
- EXISTING CONDITIONS

NORTH CAROLINA DEPARTMENT O
TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND ENVIRONMENTAL
BRANCH

US 74
PROPOSED INTERCHANGE
AT SR 1141

3/91 ALTERNATIVE 1 FIGURE 2-A



LEGEND

EXISTING RIGHT-OF-WAY

EXISTING CONDITIONS

NORTH CAROLINA DEPARTMENT
TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND ENVIRONMENTAL
BRANCH

US 74
PROPOSED GRADE SEPARATION
AT SR 1141

3/91 ALTERNATIVE 2 FIGURE 2-B

ESTIMATED 1990/2010 ADT'S IN HUNDREDS
PROPOSED US 74 FROM SR 1145 TO SR 1148
WITH INTERCHANGE AT SR 1141
(ALTERNATIVE 1)

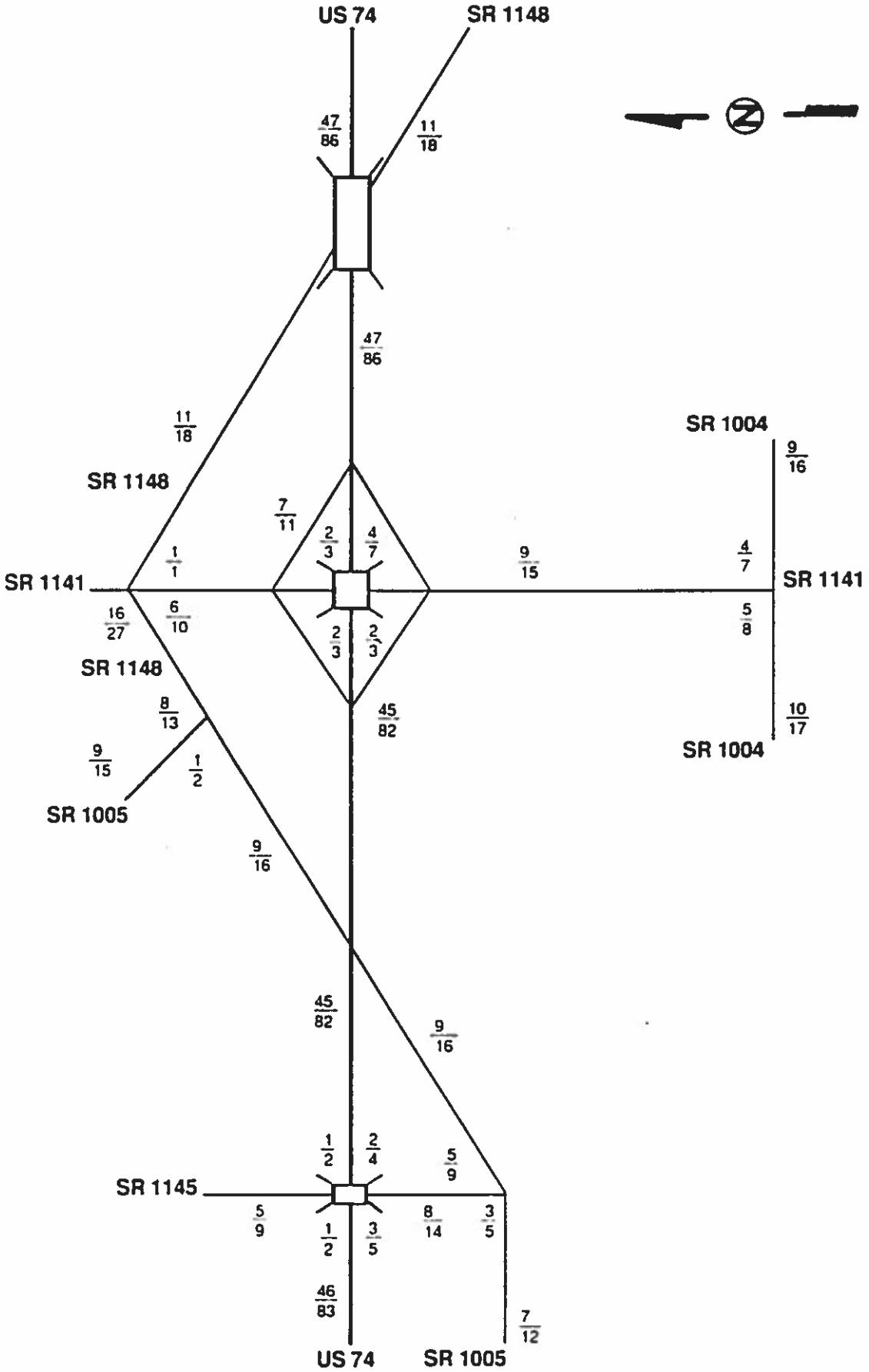


FIGURE 3

ESTIMATED 1990/2010 ADT'S IN HUNDREDS
PROPOSED US 74 FROM SR 1145 TO SR 1148
WITH GRADE SEPARATION AT SR 1141
(ALTERNATIVE 2)

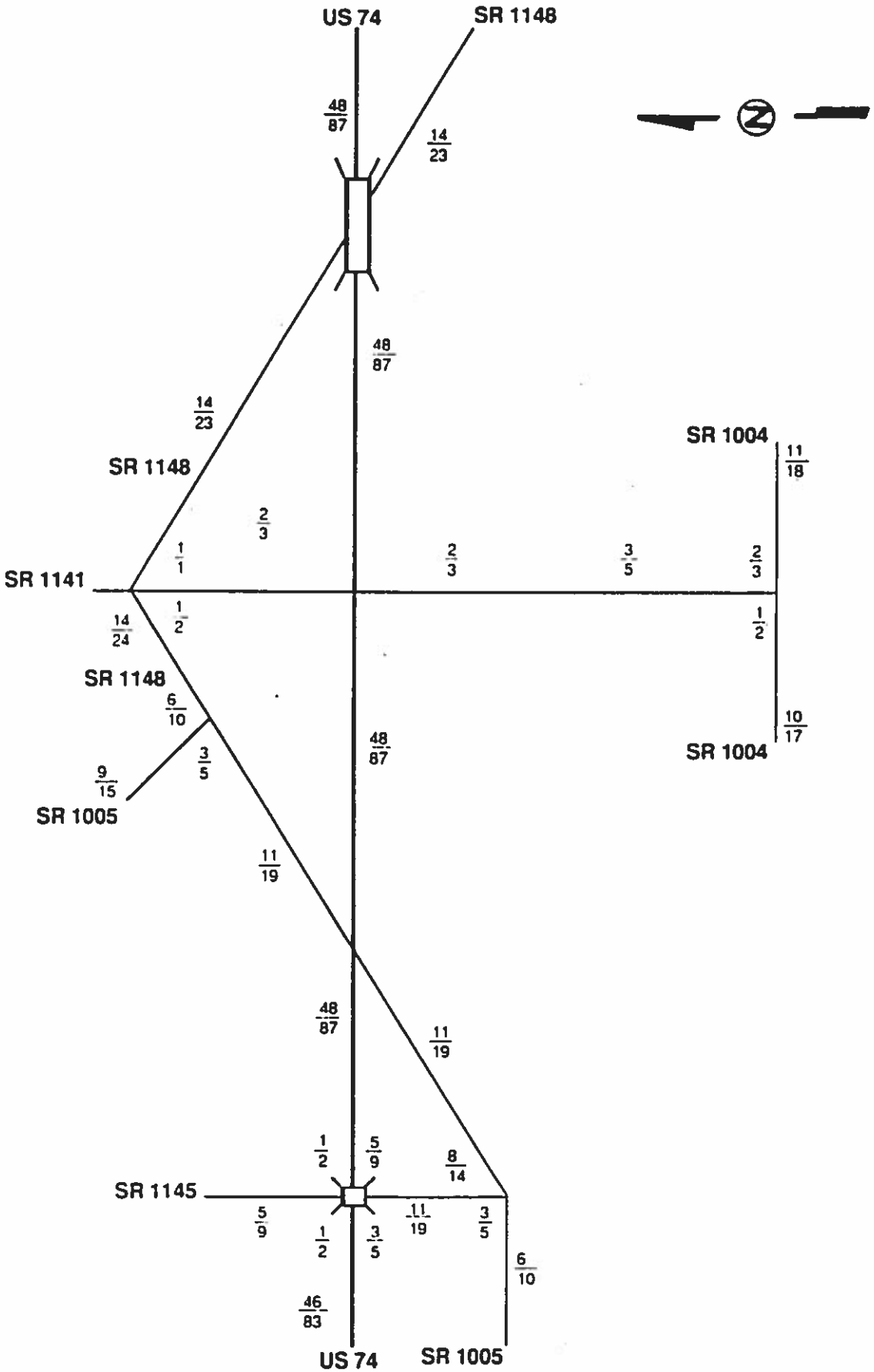
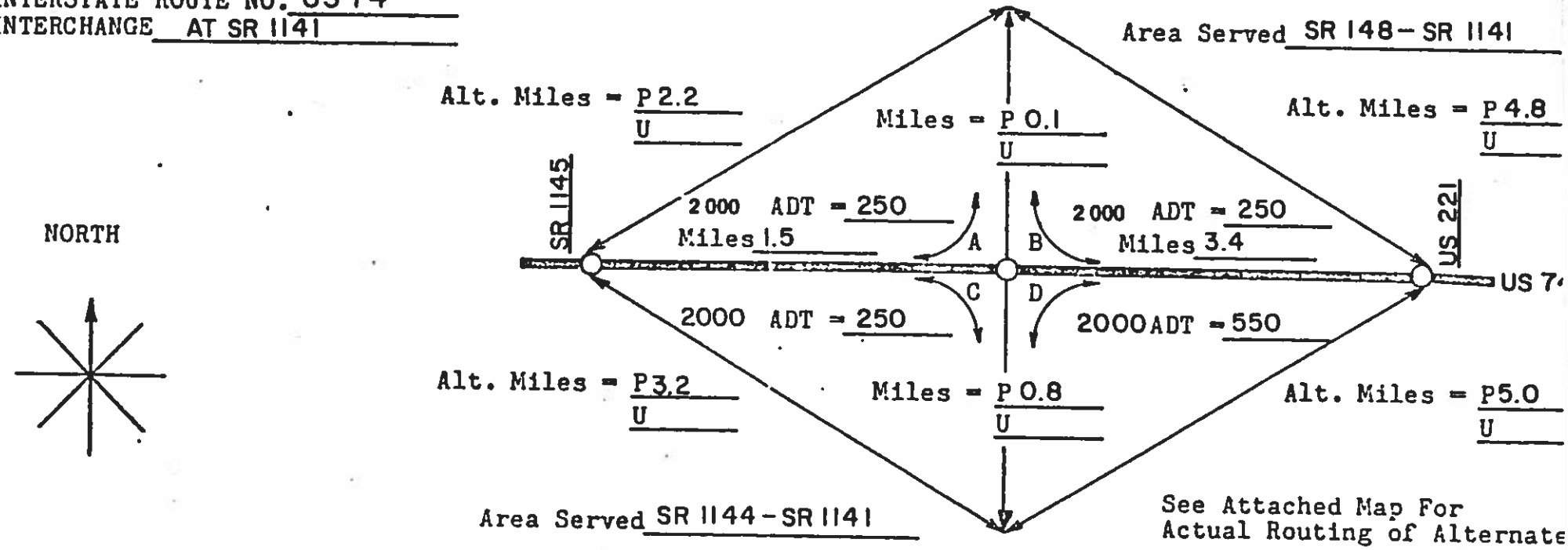


FIGURE 4

WORKSHEET FOR DETERMI_NG BENEFIT-COST RATIO

INTERSTATE ROUTE NO. US 74
INTERCHANGE AT SR 1141



See Attached Map For Actual Routing of Alternate

ROAD USER SAVINGS = (FJ + GK) + (HR) – (EL + FM + GN) (PQ):
Refer to Procedure For Discussion of Formula Factors

Quadrant	Without Interchange F	J	G	K	H	R	With Interchange E	L	F	M	G	N	Q	P	Road User Savings
A =	.35	0	.30	2.2	.07	1/4	.35	0.1	.26	1.5	.30	0	(365)	(2 50)	= $ 29,428
B =	.35	0	.30	4.8	.07	3/4	.35	0.1	.26	3.4	.30	0	(365)	(2 50)	= $ 52,332
C =	.35	0.8	.30	2.4	.07	1	.35	0.6	.26	1.5	.30	0.2	(365)	(2 50)	= $ 31,664
D =	.35	0	.30	5.0	.07	1 1/2	.35	0.6	.26	3.4	.30	0.2	(365)	(5 50)	= $ 90,538

Algebraic sum of annual road user savings = $ 203,962

Cost of providing ramps = $ 5,300,000

Annual capitalization and maintenance cost ($ 5,300,000 x 0.10) = $ 530,000

Interchange benefit-cost ratio 203,962 ÷ 530,000 = 0.38

The interchange is [ ] is not [X]

FIGURE 5

INTERCHANGE SPACING JUSTIFICATION

Interstate Route No. US 74 Interchange AT SR 1141 TYPE AREA: RURAL

Section: SR 1145 TO US 221

Interchange: Exists [ ] Proposed [X]

Average Interchange Spacing in Section 2.5 Mi. ; Desirable 8.0 M

Distance to Nearest Interchange in Area 1.5 Mi. ; Desirable 3.0 M

Further Justification: Not Req'd [ ] Req'd [X]

Description of Crossroads

System: N. C. Trunk Route [ ] Feeder [ ]

F.A.P. F.A.S. [ ] State [X] Other X

Further Justification: Not Req'd [ ] Req'd [X] Subminimum Space

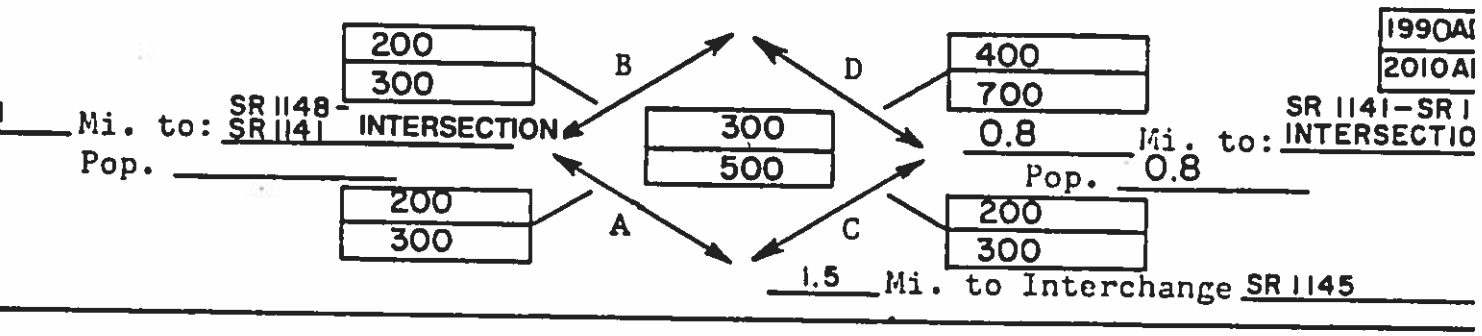
Condition: Paved [ ] Unpaved [X]

No. of Lanes: 2

Grade Separation Would [ ] Would Not [X] Exist Without Ram

Interchange ADT Traffic and Environment

3.4 Mi. to Interchange US 221



This Interchange Does Not [X] Does [ ] Create Abnormal Interference with Interstate Traffic

Parallel Routes: Adequate [X] Inadeq. [ ]

Economically Improvable: Yes [X] No [ ]

Summary of Benefit-Cost Ratio

Cost of Providing Interchange $ 530,000

Interchange Benefit-Cost Ratio 0.38

Interchange is Justified Yes [ ] No [X]

Is Justified on Compelling Public Need

FIGURE 6

APPENDIX

July 27, 1990

Dept. of Transportation
Mr. George Wells
P. O. Box 25201
Raleigh, North Carolina 27611

Dear Mr. Wells,

We the following property owners and residents in the Grey's Creek-Cleghorn area, feel that our area has grown and developed in the past 10 to 12 years so much that we need to keep Grey's Creek Church road, state road #1141 open and it would be the best place for the interchange in the area.

With the planned closing of Grey's Creek Church Road, it will make the residents drive 6 or 7 miles a day extra to get to their work. It will also do the same for some of the people going to Grey's Creek Church, who now live on the north side of where Highway 74 is going.

There has been at least 50 residences built in the area since the D. O. T. made their plans in the late 70's. With no interchange at Grey's Creek Church road, this will make all the traffic going East have to drive 6 or 7 miles on 2 lane roads with heavy traffic to get on the four lane Highway 74, also with Grey's Creek rd. closed, it will cause the Golf and other traffic using Poors Ford road and Grey's Creek Rd. to and coming from S. C. to drive approximately 4 miles per trip more to get to Cleghorn Golf Course . See attached map.

HA REALTY, INC.
OF RUTHERFORDTON

351 Charlotte Rd., Rutherfordton, NC 28139
(704) 287-7400

August 8, 1990

RECEIVED
AUG 9 1990
STATE HIGHWAY
ADMINISTRATOR

Mr. George Wells
Dept. of Transportation
P. O. Box 25201
Raleigh, North Carolina 27611

Dear Mr. Wells,

I have been appointed the point man to try and keep Grey's Creek Church Rd. open and have an interchange built at the intersection. Enclosed is a petition and map and letter that will explain what we are trying to do.

I have the original petition forms if you need them. Please feel free to call me or write me for anymore information needed.

We have sent copies to the following:

Mr. J. T. Peacock
Chief Engineer
P. O. Box 25201
Raleigh, N. C. 27611

Mr. David Brown
9 Walnut St.
Asheville, N. C. 28801

Mr. Jim Bishop
46 Haywood St.-Suite 300
Ashville, N. C. 28801

Mr. Gene Edmonds
P. O. Box 3279
Asheville, N. C. 28802

Mr. Franklin Goode
Rutherfordton, N. C. 28139

Thank you for your consideration in this matter.

Sincerely,

George E. Holland

George E. Holland

REALTOR®
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MLS

CHIEF ENGINEER PRECONSTRUCTI
RECEIVED FILE Rutherf
R-99
AUG 30 1990
HWY
P & E
R/W
TRF
AUT
PVT
Take Appropriate Act
Prepare Reply Using Your Signature
Prepare Reply For My Signature
Prepare Reply For Gov'n Signature
For Your Information
Suspense 9-10-

Rutherford COUNTY

Rutherford County Economic Development Commission
Rt. 2, Box 41-B, Rutherfordton, N. C. 28139 (7[illegible])

August 27, 1990

Mr. J. T.Peacock
Chief Engineer
P. O. Box 25201
Raleigh, North Carolina 27611

Dear Mr. Peacock:

I feel that the interchange on Grays Creek Church Road, (Rd. No. 1141), that Mr. George Holland has written you about is very important to Rutherford County. We, the Economic Development Commission of Rutherford County, are working toward making Rutherford County a destination for retirees. The area in question will play an important role in this endeavor.

If there is anything that our Commission can do to help in this project, please call on us.

Sincerely,

Allen Jobe

Allen Jobe
Executive Director

AJ/mw

A. Clyde Tomblin, Chairman

Charles L. Benedict ■ J. D. Cooley ■ Ron Giles ■ Leonard Hollifield ■ Carson Burns ■ Frankie McWhorter ■ Thomas A. Roberts ■ Ernest W. Ross

Grays Creek Baptist Church

ROUTE 4
RUTHERFORDTON, NORTH CAROLINA 28139

CHIEF ENGINEER PRECONSTRUCTION
RECEIVED FILE R-99

NOV 2 6 1990

HWY __ __ Take Appropriate Action
P & E ✓ __ Prepare Reply Using Your Signature
R/W __ ✓ Prepare Reply For My Signature
TRF __ __ Prepare Reply For Sec's Signature
AUT __ __ Prepare Reply For Gov's Signature
PVT __ __ For Your Information
✓ Suspense 12-[illegible]

November 18, 1990

North Carolina Department of Transportation
Mr. J. T. Peacock
Post Office Box 25201
Raleigh, North Carolina 27611

Ref: State Road #1141, Gray's Creek Road
State Road #1144, Jim Dobbins Road

Dear Mr. Peacock:

This letter is sent to you in hopes that Road #1141, Gray's Creek Road (located in Rutherford County off Poor's Ford Road), could be kept open. It is located in front of the Gray's Creek Baptist Church and would, in our opinion, be an injustice to dead end. The road is already there, and we feel there is a need to the community and the church to keep it available. Please re-consider.

Also, we would like to bring to your attention Road #1144, Jim Dobbins Road, located beside the church. It is approximately a mile long dirt road with about 13 houses and several property owners. The dust from the road clouds the air and settles on the church property and the homes. Since we live in a modern age, shouldn't this road be paved, especially since the church has paved the parking lot? Many motorists travel through the church's paved parking area to avoid what they can of the dusty dirt road.

Thank you for your time. We hope to hear favorable news soon. Please don't hesitate to contact us if more information is needed.

Respectfully yours,

Boyce E. Jones Pharis M. Bailey
James W. Dobbins
David E. Cordell
Fred Morrow

The Deacons of the Gray's Creek Baptist Church

LES H TAYLOR
STRICT, NORTH CAROLINA

Congress of the United States
House of Representatives
Washington, DC 20515

March 7, 1991

Secretary Thomas J. Harrelson
Department of Transportation
North Carolina - Highway Building
1 South Wilmington Street
Raleigh, NC 27601-1494

Secretary Harrelson:

I have received a request from a number of citizens in Rutherford County who have asked that I contact you on their behalf requesting that you consider keeping State Road Number 1141, also known as Gray's Creek Church Road located in Rutherford County, open instead of closing it in the construction of the new highway 74.

I will appreciate very much your investigating this matter to determine if it is feasible or practical to keep this road open for the benefit of the many citizens who use this road and will be somewhat inconvenienced if it is closed.

Thank you very much for your assistance in this matter.

Kindest regards,

Charles H. Taylor

Charles H. Taylor
Member of Congress

CHT/nmd

RECEIVED
MAR 11 1991
DEPARTMENT OF TRANSPORTATION
OFFICE OF THE SECRETARY