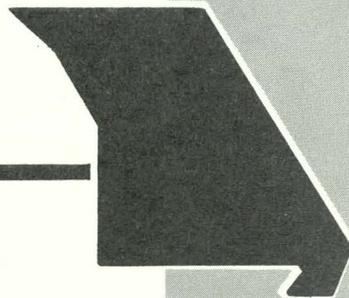


6-64

FEASIBILITY REPORT
OF
ROUTE 63
MACON BYPASS

FILE COPY

MISSOURI STATE HIGHWAY DEPARTMENT



DIVISION OF
HIGHWAY PLANNING

MISSOURI STATE HIGHWAY DEPARTMENT

Inter-Department Correspondence

August 5, 1964

HIGHWAY PLANNING - Long Range Planning and
Advance Programming
Feasibility Study of Route 63
Macon Bypass

Mr. M. J. Snider:

Interest has been expressed in the adding of the Route 63 Macon Bypass project to the Five-Year Right-of-Way and Construction Program. In order to determine the feasibility of recommending this project to you, and you in turn to the Commission for their approval, we have assembled the attached information. These data summarize an Origin and Destination Survey, an Economic Analysis, a Travel Time Study and an Accident Analysis.

From the Economic Analysis it may be noted that the benefit to cost ratio is extremely low. The annual rate of return on our investment also is very low when compared to normal rates of return on highway investments. These low values are in a large part accounted for by the substantial scope and type of improvement being proposed when compared to the relatively light volumes of usage. They are further substantiated by the high average speeds permitted on the existing facility as determined by our Travel Time studies.

Based on the Highway Capacity Manual and other sources of information relative to traffic capacities on streets and highways, it becomes apparent that there is no congestion on the existing Route 63 in Macon.

After consideration of these analyses and data presented, we are of the judgment that this project is not economically justified for inclusion in the Right-of-Way and Construction Program at the present time. Your review of this information will be appreciated.


James R. Turner
Division Engineer
Highway Planning

US 63 - MACON

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RESUME OF INFORMATION

Discussion

Sheet

1. An economic analysis was made of the benefits of the Route 63 Bypass. Some of the basic assumptions used in this analysis are listed below and include the construction of the Route 36 Bypass of Macon which is on the current Five-Year Right-of-Way and Construction Program. The "benefit-cost" ratio for the construction of the bypass is calculated to be 0.4 with a "rate of return" of 0.5 percent on the proposed investment. When this rate of return is compared to the normally accepted rate of 5 percent on highway investments, this represents an annual loss of 4.5 percent.

Listed below are economic analyses calculated on other proposed bypasses.

Location	B. C. R.	Rate of Return
Route 24, Paris BP	2.30	13.6%
Route 54, Fulton BP	1.32	7.4%
Route 36, Macon BP	1.60	10.0%

- 2-3-4 Sketches have been included to show the three alternates considered in the origin and destination survey.
- 5-6 Illustration sketches are included indicating 1983 traffic. Alternate 1 is considering a Route 63 bypass without a Route 36 bypass. The alternate 2 is a Route 36 bypass without a Route 63 bypass.
- 7-8 Alternate 3 considers a bypass for both 36 and 63. Traffic shown is for 1983.
- 9 The 1963 ADT is shown for Route 63 in the case of Alternate 3.
- 10 A Travel Time Study was made on the present Route 63 between the two extremities of the proposed relocation which validated the speeds used in our economic analysis. It makes it quite apparent that little delay is experienced at either of the two stop signs on Route 63. In addition it was found that a very high average speed is afforded by present Route 63 through the City of Macon as well as throughout the entire limits of the proposed relocation.

11 The accident experience on Route 63 in Macon was reviewed for the years 1962 and 1963. While the accident rate per million vehicle miles is slightly higher than the average for the entire state on the state highway system, over 37 percent of all the accidents have property damage of \$100 or less. After reviewing the accident experience and noting the relatively even distribution of the accidents along the existing route between the north and south city limits, it cannot be deducted that the accident situation is of a serious nature.

12-13 Accidents are listed by the number of injured, deaths, road conditions, etc.

MACON COUNTY

Route 63 Bypass of Macon

Summary of the Economic Analysis

I. Basic Assumptions

1. Route 36 Bypass of Macon is in service as presently programmed.
2. That there will be full diamond interchanges at the intersections of Route 36 Bypass - Route 63 and Route 36 Bypass - Route 63 Bypass.
3. That there will be a half diamond interchange to the north at the intersection of Route 63 Bypass and Vine St.
4. That the improvement of Vine St. to handle the increased volume of traffic will be financed by the City of Macon.
5. The construction of a full diamond interchange at Bypass 36 and existing 63 will eliminate the need for stop signs on existing 63 at existing 36.

II. Results of the 20 Year Analysis

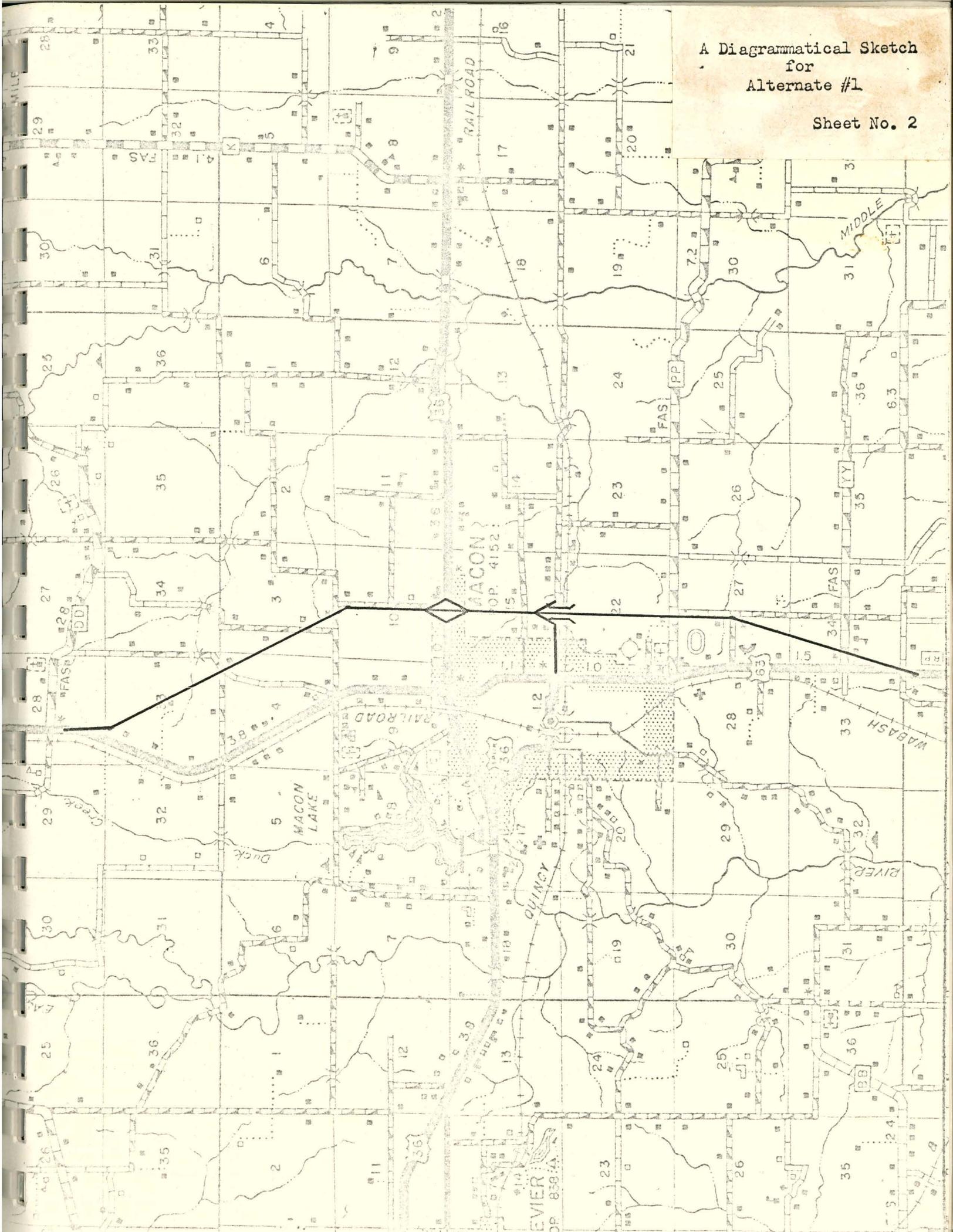
1. Annual Vehicle Miles
 - Without the Bypass = 16, 109, 640
 - With the Bypass = 16, 030, 070
 - Savings in Vehicle Miles = 79, 570
2. Annual Road User Costs
 - Without the Bypass = \$2, 068, 090
 - With the Bypass = \$2, 007, 865
 - Saving in Road User Costs = \$60, 225
3. Annual Capital and Maintenance Cost
 - Without Bypass = \$13, 125
 - With Bypass = \$159, 282
 - Difference = \$146, 157
4. Benefit-Cost Ratio = 0.4
5. Rate of Return = 0.5%.

Note:

With the consideration of cost for stops at Vine St. 4-way stop; the Benefit-Cost Ratio will be 0.44 and the Rate of Return 0.7%.

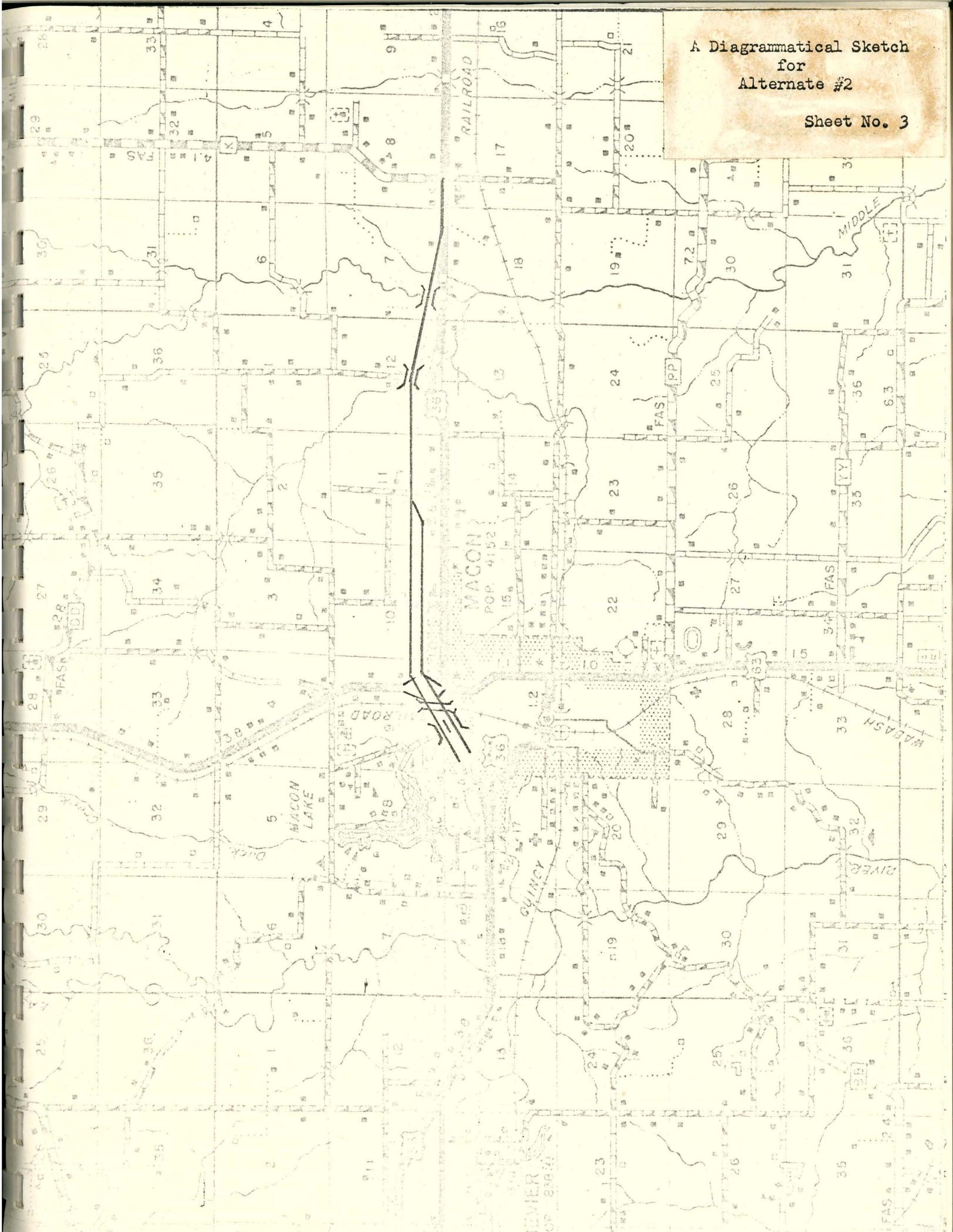
A Diagrammatic Sketch
for
Alternate #1

Sheet No. 2



A Diagrammatic Sketch
for
Alternate #2

Sheet No. 3



MACON
POP. 4152

MACON LAKE

RAILROAD

MIDDLE

WABASH

QUINCY

RIVER

SEWER
POP. 8384

FAS

FAS

FAS

FAS

FAS

DICK

DICK

FAS

FAS

FAS

FAS

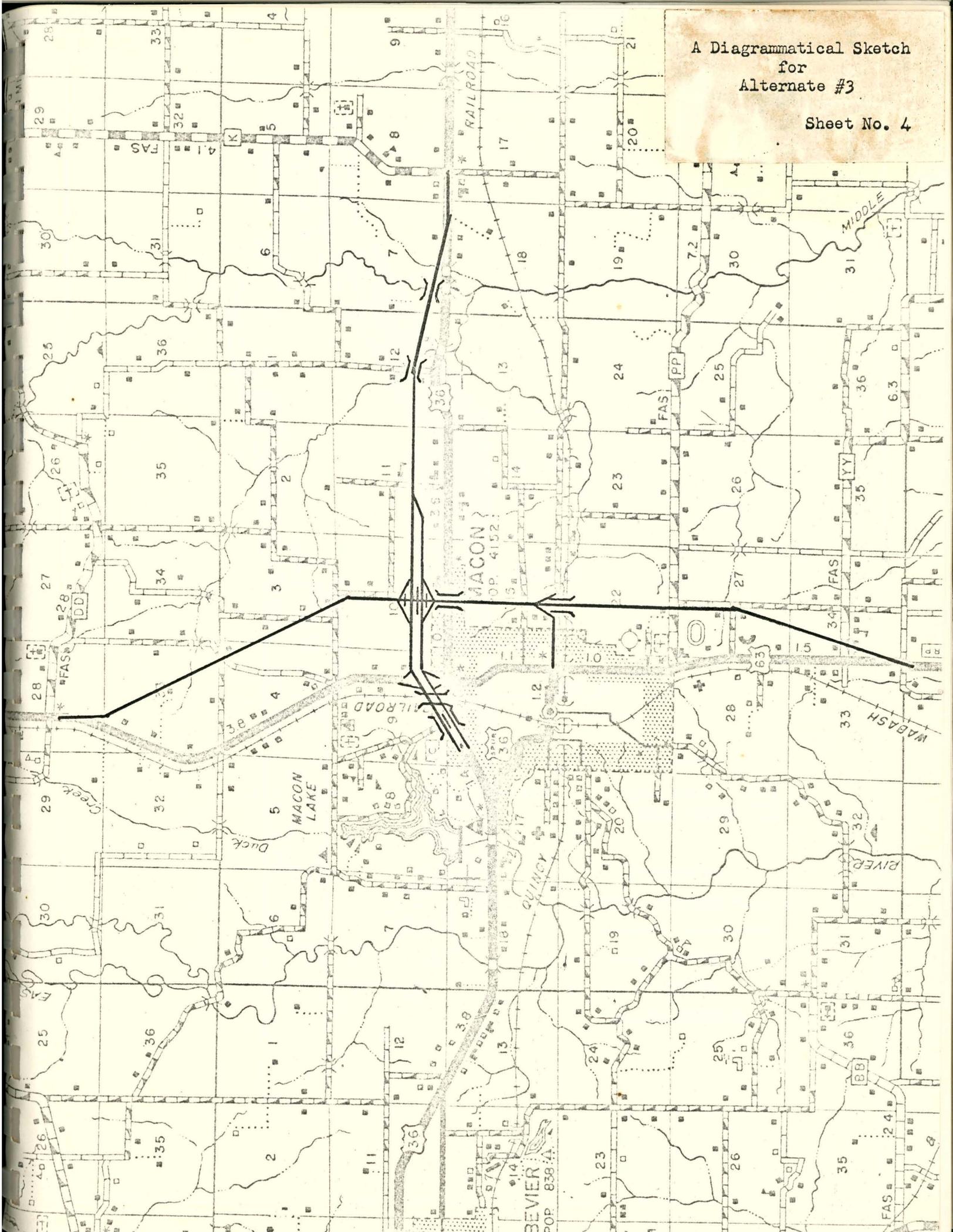
FAS

FAS

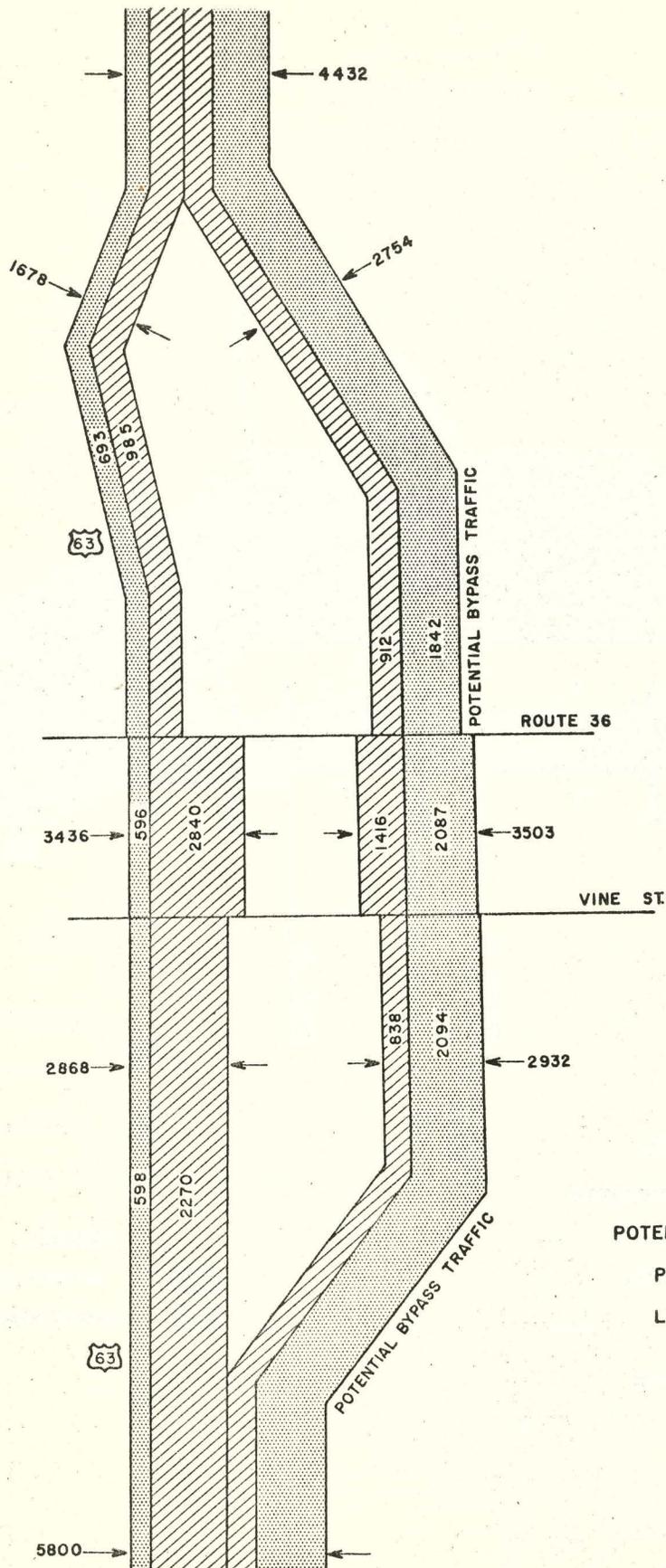
ROAD

A Diagrammatical Sketch
for
Alternate #3

Sheet No. 4



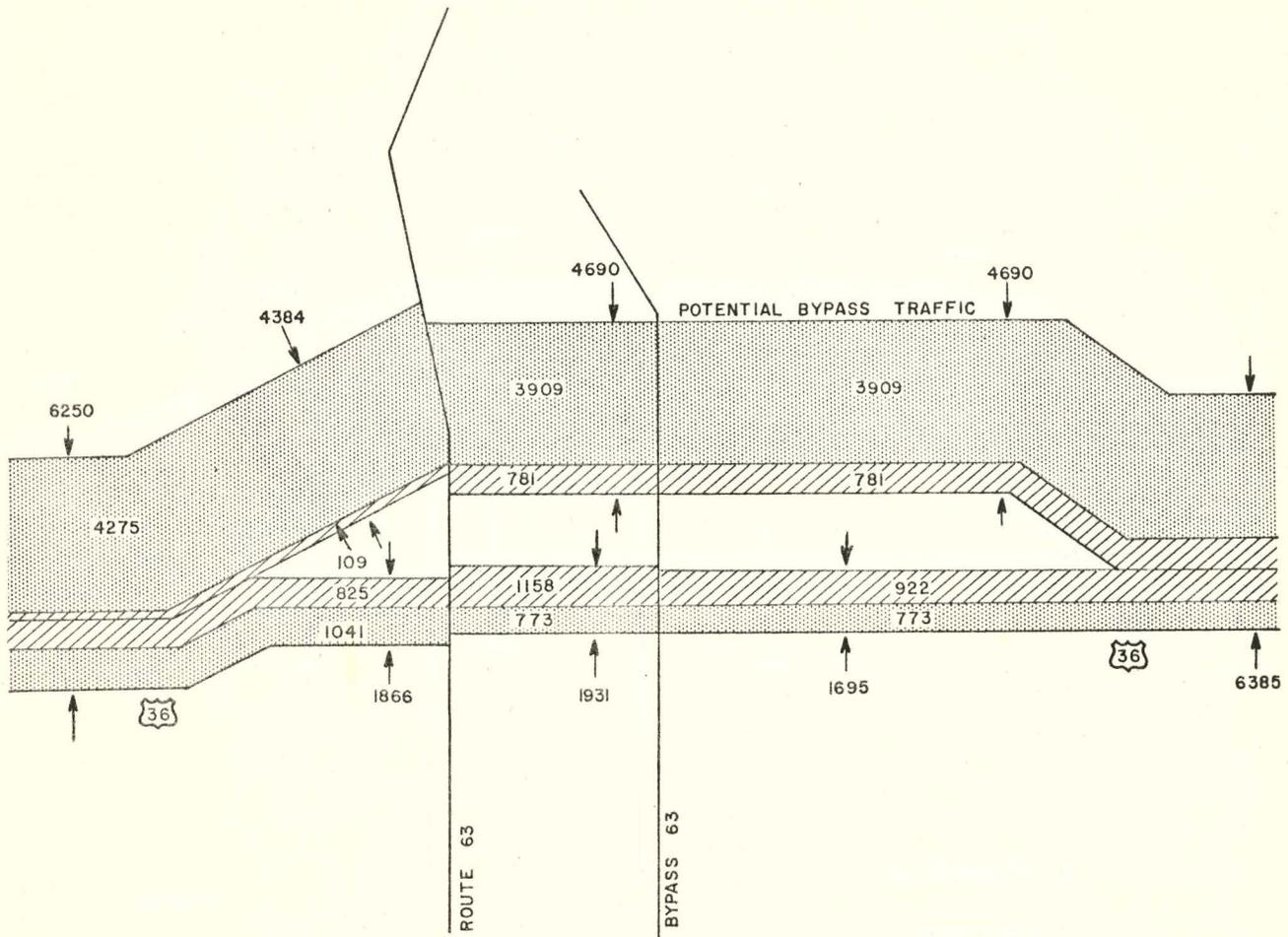
July 17, 1964



LEGEND
LOCAL TRAFFIC 
THROUGH TRAFFIC 

ALTERNATE I
POTENTIAL TRAFFIC ON ROUTE 63
PROPOSED IMPROVEMENTS
LOCAL & THROUGH TRIPS
1983 ADT
MACON, MISSOURI

July 17, 1964

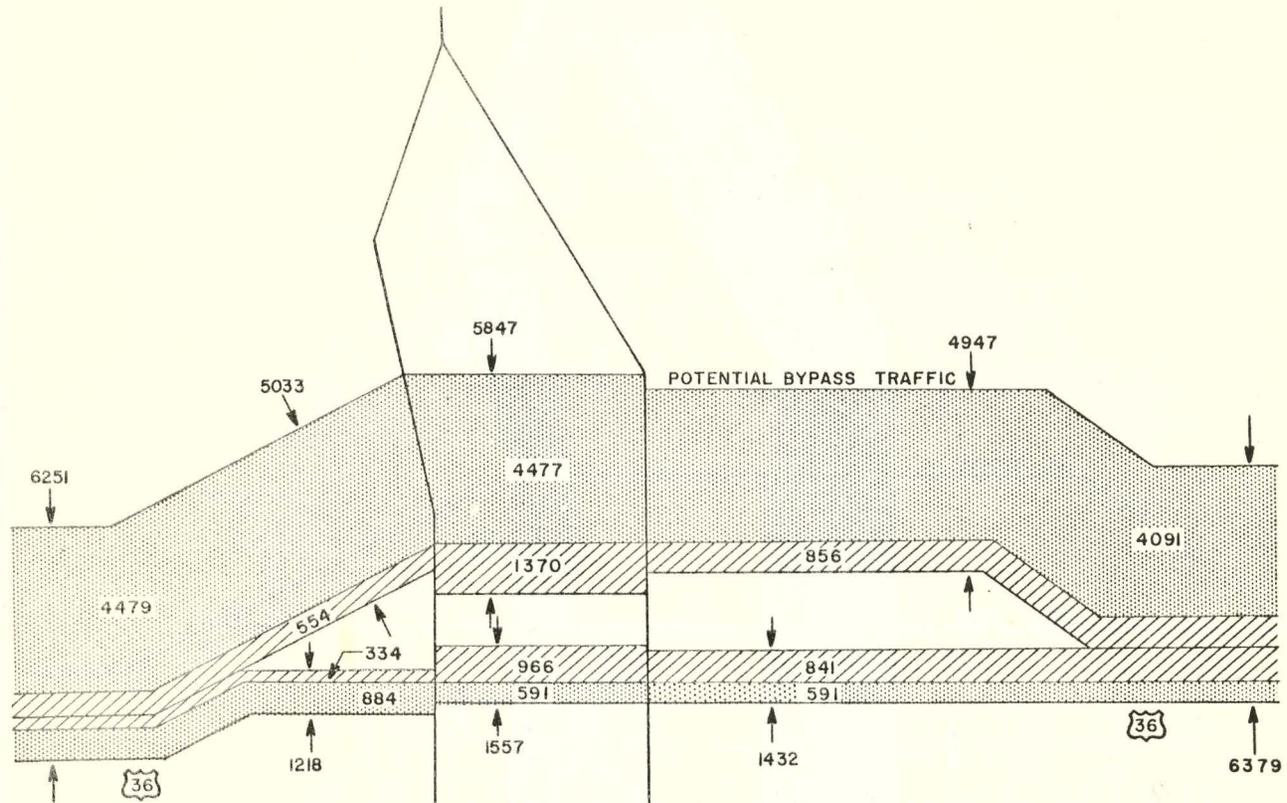


LEGEND
 LOCAL TRAFFIC 
 THROUGH TRAFFIC 

ALTERNATE 2
 POTENTIAL TRAFFIC ON ROUTE 36
 PROPOSED IMPROVEMENTS
 LOCAL & THROUGH TRIPS
 1983 ADT

MACON, MISSOURI

July 17, 1964



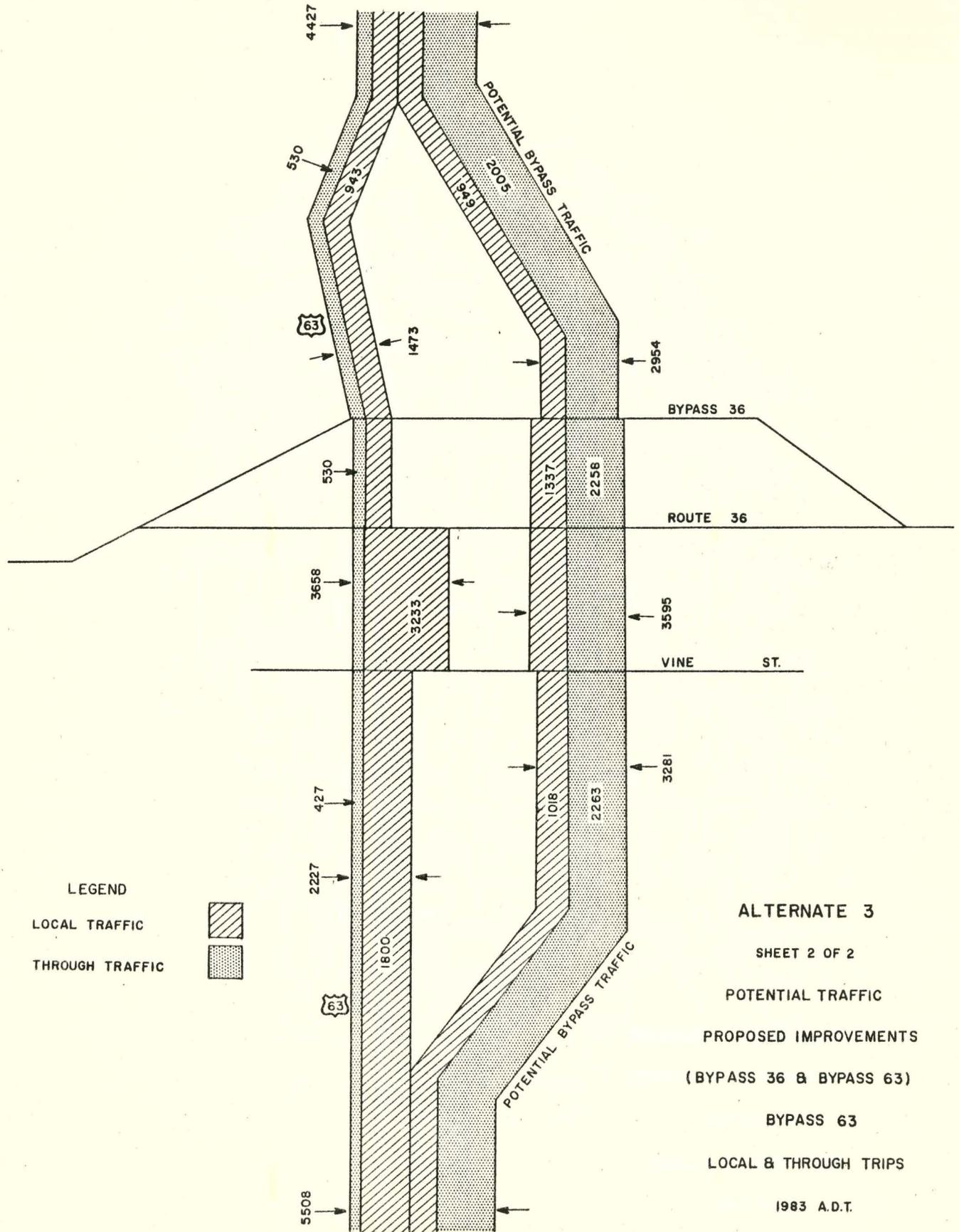
LEGEND
 LOCAL TRAFFIC 
 THROUGH TRAFFIC 

ROUTE 36

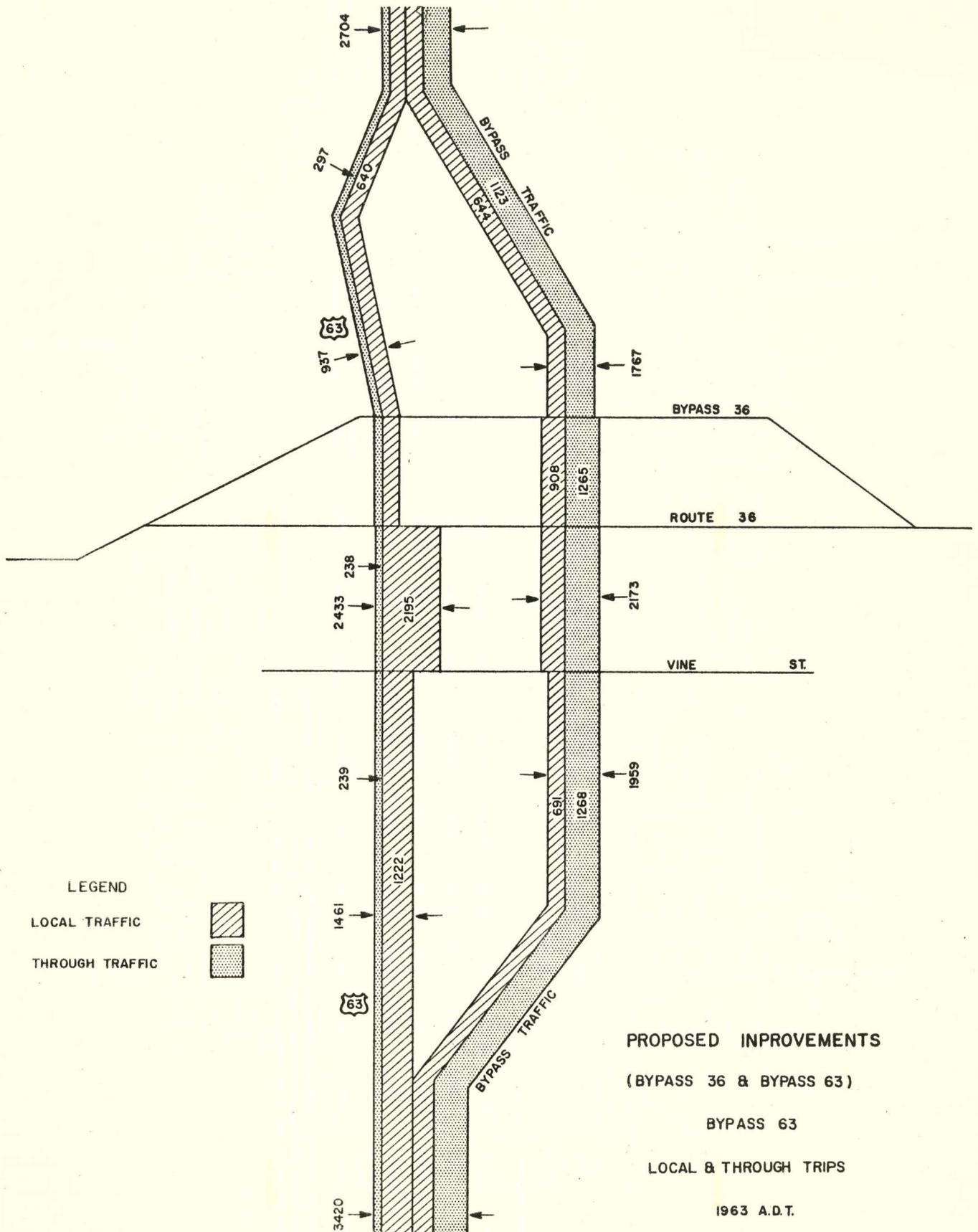
BYPASS 63

ALTERNATE 3
 SHEET 1 OF 2
 POTENTIAL TRAFFIC
 PROPOSED IMPROVEMENTS
 (BYPASS 36 & BYPASS 63)
 BYPASS 36
 LOCAL & THROUGH TRIPS
 1983 A.D.T.
 MACON, MISSOURI

July 24, 1964



July 24, 1964



TRAVEL TIME STUDY
US 63 - Macon, Mo.

Travel time on US 63:

- Section 1 From the south Jct. of the proposed relocation to the south city limits of Macon.
- 2 From the south city limits to the north city limits of Macon.
- 3 From the north city limits of Macon to the north Jct. of the proposed relocation.

Section	Miles	7:30 A.M.	7:45	8:00	8:15	8:30	8:47	10:20	10:30	10:40	11:45	12:00 P.M.	12:07	12:12	12:19	12:40	1:05	Average	
																		Time	MPH
1	2.10	1.49	2.20	2.39	2.03	2.01	2.04	1.69	1.98	2.09	2.02	2.10				2.38	2.07	2.04	61.8
2	2.29	4.67	4.22	4.12	3.36	3.92	4.09	4.18	3.78	3.94	3.89	4.30	4.04	4.06	3.35	4.07	3.42	3.96	34.7
3	3.81	3.94	4.15	3.85	4.18	4.07	3.97	4.02	3.37	3.43	3.35					3.77	4.08	3.85	59.4
Total	8.20	10.10	10.57	10.36	9.57	10.00	10.10	9.89	9.13	9.46	9.26					10.22	9.57	9.85	49.9

Time delay in seconds at 4-way stops.

Vine St.	11.0	7.1	6.6	7.3	6.9	7.0		9.8	12.3	15.1	13.9	18.2	8.4	6.8	7.2	6.7	9.6
US 36	16.0	10.4	5.6	10.1	8.6	8.4		7.2	10.2	7.6	11.1	7.6	11.5	6.9	9.1	8.9	9.3

MISSOURI STATE HIGHWAY DEPARTMENT

Division of Highway Planning

RURAL HIGHWAY SERVICE RATING WORK SHEET

Date 5/29/62

District 2

Route 63

County Macon

Data Sheet No. 45 Mi. Post 20.2 To 22.4 Sec. Length 2.2 Mi.

Sec. No. 3 Sec. Location Thru Macon

1. GEOMETRICS

Roadway	Surface	Shoulder	Base
Number of Lanes <u>2</u>	Type <u>AC</u>	Type <u>E</u>	Type <u>AC</u>
Divided <u>No</u>	Width <u>24</u> Ft.	Width <u>3</u> Ft.	Thickness <u>4</u> In.
Direction _____			

2. AVERAGE DAILY TRAFFIC

A.D.T. 1961 5100
Percent Commercial 7

3. SIGHT DISTANCE

Passing Sight Distance 4 %

4. ACCIDENTS

	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	Total	Avr. Per Yr. <u>15.25</u>
Yearly Accidents	<u>16</u>	<u>13</u>	<u>7</u>	<u>25</u>	<u>61</u>	
Fatalities	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>		Avr. /Mi./Yr. <u>6.932</u>

5. SURFACE CONDITION

Rated <u>1962</u>	Rating
Maintenance (10)	<u>9</u>
Surface (15)	<u>13</u>
Estimated Life (10)	<u>10</u>
Ridability (9)	<u>8</u>
Total	<u>40</u>
Index <u>9</u>	

6. ACCIDENTS

Accidents Per Million Vehicle Mi. Per Yr. 1,861,500
 $= \frac{6.932}{(\text{Acc. Per Mi.})} \times 10^6 \div \frac{(5100 \times 365)}{\text{A.D.T.}}$
 $= \underline{3.72}$
 Index 3

11. OPERATING SPEED

Design 55.0
Actual 35 - 54 Index 1
Difference -20.0

12. INDEX RATING

Item 5 9
Item 6 3
Item 11 1
Array No. 139

13. SERVICE RATING

Controlled by
Speed limit

