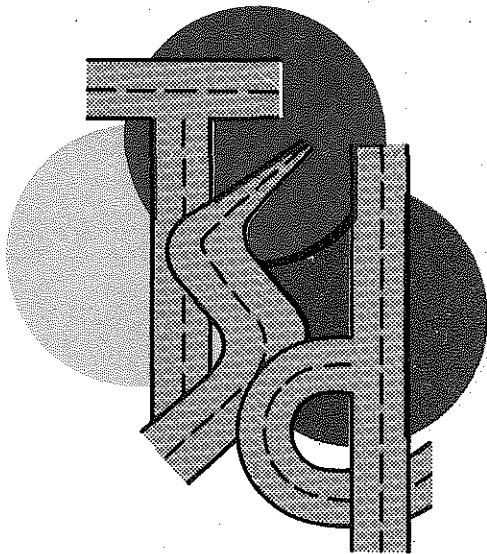


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Report TSD-239-76

A TRAFFIC ACCIDENT ANALYSIS

IN OTTAWA COUNTY



TRAFFIC and SAFETY DIVISION

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**MICHIGAN DEPARTMENT OF STATE HIGHWAYS
AND TRANSPORTATION**

Michigan Department
of
State Highways and Transportation

Report TSD-239-76
A TRAFFIC ACCIDENT ANALYSIS
IN OTTAWA COUNTY

JOSEPH L. MESZAROS
TRAFFIC ENGINEERING SERVICES

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John P. Woodford

PREPARED BY

Safety Programs - Community Assistance
Traffic and Safety Division
Michigan Department of State Highways and Transportation

in cooperation with
The Michigan Office of Highway Safety Planning
and
The U.S. Department of Transportation
Federal Highway Administration

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"The opinions, findings and conclusions expressed in this publication are those of the authors and not necessarily those of the State or U.S. Department of Transportation, Federal Highway Administration."

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FHWA Project MCD-76-001A

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INTRODUCTION

The Highway Safety Act of 1966 was enacted by the Congress of the United States in order to promote highway safety. Highway safety standards were then developed to assure the orderly implementation of the Act.

Purpose

Highway Safety Standard 4.4.13, Traffic Engineering Services, is one of those standards. The purpose of Standard 4.4.13 is

"to assure the full and proper application of modern traffic engineering principles and uniform standards for traffic control to reduce the likelihood and severity of traffic accidents."

One of the goals of this standard is identifying specific locations which have a high accident experience as a basis for establishing priorities for eliminating or reducing accidents.

The State of Michigan is involved in the above activity on the state trunkline system. Many city and county agencies, however, lack the financial and technical prerequisites necessary to pursue similar programs. To improve the overall evaluation of the accident picture in Michigan, the Michigan Department of State Highways and Transportation requested and received through the Office of Highway Safety Planning in the Department of State Police, a federally funded project entitled "Traffic Engineering Services for Cities and Counties".

Under this program the Departments' personnel will provide the expertise for each participating city and county. A traffic engineering evaluation of the factors contributing to traffic accidents and recommendations to correct these conditions will be made.

Scope

The intent of this program is to improve traffic safety on all Michigan streets and highways by expanding the traffic engineering evaluation of factors causing accidents, and by providing uniform standards for traffic control to reduce the frequency and severity of traffic accidents.

Study Procedures

The study procedures for this project involve a review of high accident locations. The Department of State Police, also operating under a federal grant, is responsible for identifying and locating the high accident locations to be studied. After the basic data is collected at these locations, the Department of Transportation conducts an accident analysis and technical evaluation from which remedial recommendations are formulated.

Funding

The implementation of the proposed recommendations is the responsibility of Ottawa County. Financial assistance may be obtained through the Highway Safety Act of 1973. (Appendix 1) This Act was established to provide funding for implementation of safety improvement projects aimed at the elimination or reduction of traffic accidents. Further information on this program may be obtained by contacting the Local Government Division of the Michigan Department of State Highways and Transportation.

Study Area

Ottawa County is located on the west side of the state (Figure 1). It is bordered on the north by Muskegon County, on the east by Kent County, on the south by Allegan County, and on the west by Lake Michigan.

The road system in Ottawa County, according to the Twenty-Third Annual Progress Report as compiled by the Local Government Division of the Michigan Department of State Highways and Transportation, is made up of 100.55 miles of state trunkline, 373.24 miles of county primary roads and 1091.83 miles of county local roads, for a total of 1565.62 miles of roadway (Figure 2).

FIGURE 1

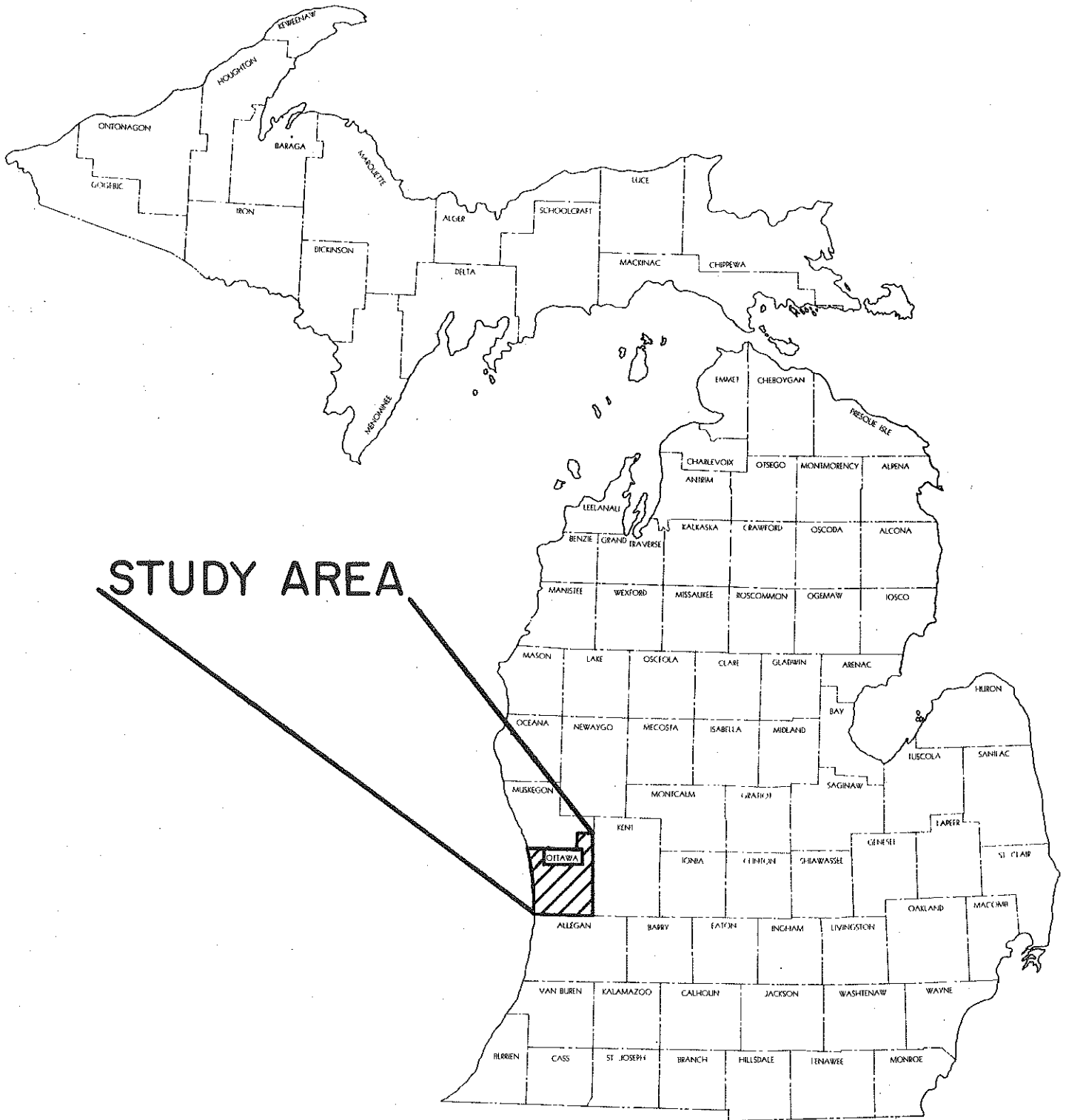
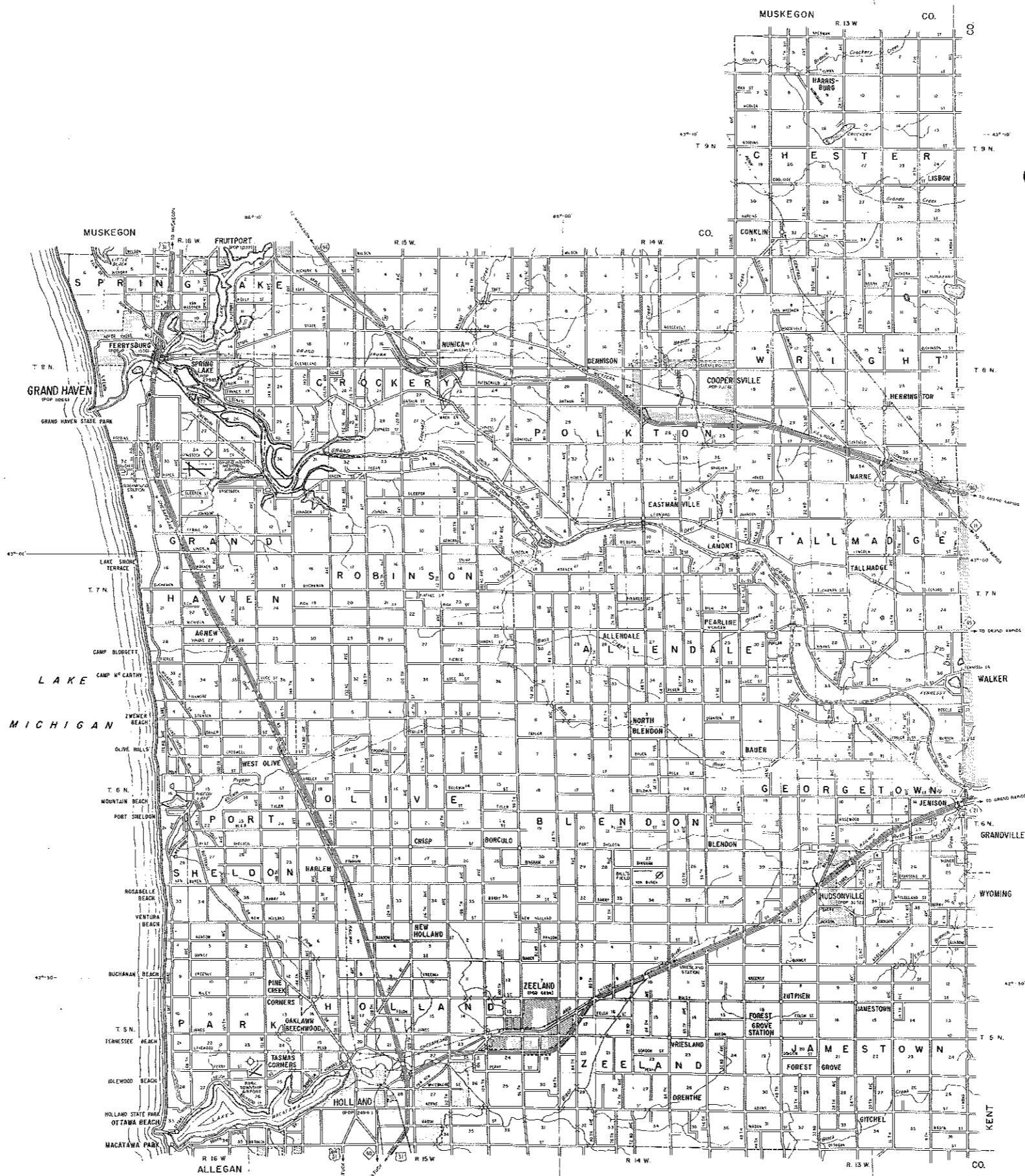


FIGURE 2
COUNTY PRIMARY ROAD SYSTEM



KEY TO COUNTIES



OTTAWA COUNTY
MICHIGAN
STATE HIGHWAY COMMISSION
DEPARTMENT OF STATE HIGHWAYS
DATA OBTAINED FROM
HIGHWAY PLANNING SURVEY
CONDUCTED IN COOPERATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS
SCALE 1" = 2.75 MILES
POLYCONIC PROJECTION

TRAFFIC ENGINEERING ANALYSIS

Collection and Analysis of Field Data

The Department of State Police examined their records and transmitted to the Traffic and Safety Division of the Michigan Department of State Highways and Transportation a list of 16 high accident locations (Figure 3) on the county road system. An automated system of locating accidents on local roads has not yet been established on a statewide basis; therefore, the high accident locations for Ottawa County were determined by manually extracting and compiling those locations with the highest number of accidents in the period 1971-1973.

The sixteen high accident locations accounted for 348 accidents during this three-year period. Traffic volumes on the County Primary Road System in Ottawa County vary from moderate in outlying areas to heavy around the city of Holland. It is understandable then that the high concentration of accidents will be in the area around the city of Holland (Figure 4).

The second portion of the data collection, which is the responsibility of the Department of State Highways and Transportation, involves the following basic steps: 1) conducting a field investigation at each location; 2) preparing collision diagrams and physical condition diagrams for each location; 3) obtaining traffic counts and conducting speed studies where necessary; 4) preparing a warrant graph and capacity analysis for signalized locations; and 5) conducting skidometer tests at locations where wet and skidding accidents occur.

The analysis portion involves the examination of the summarized facts and field data from the viewpoint of a highway traffic engineer. Special attention is focused on the effect the highway environment may have had on the accident. Thus at each high accident location, individual accident reports were reviewed in detail and collision diagrams were prepared in order to identify accident patterns and to locate the accident in relation to the geometrics of the intersection. This analysis results in the formulation of remedial recommendations at each location presented in the form of a condition diagram.

County Wide Recommendations

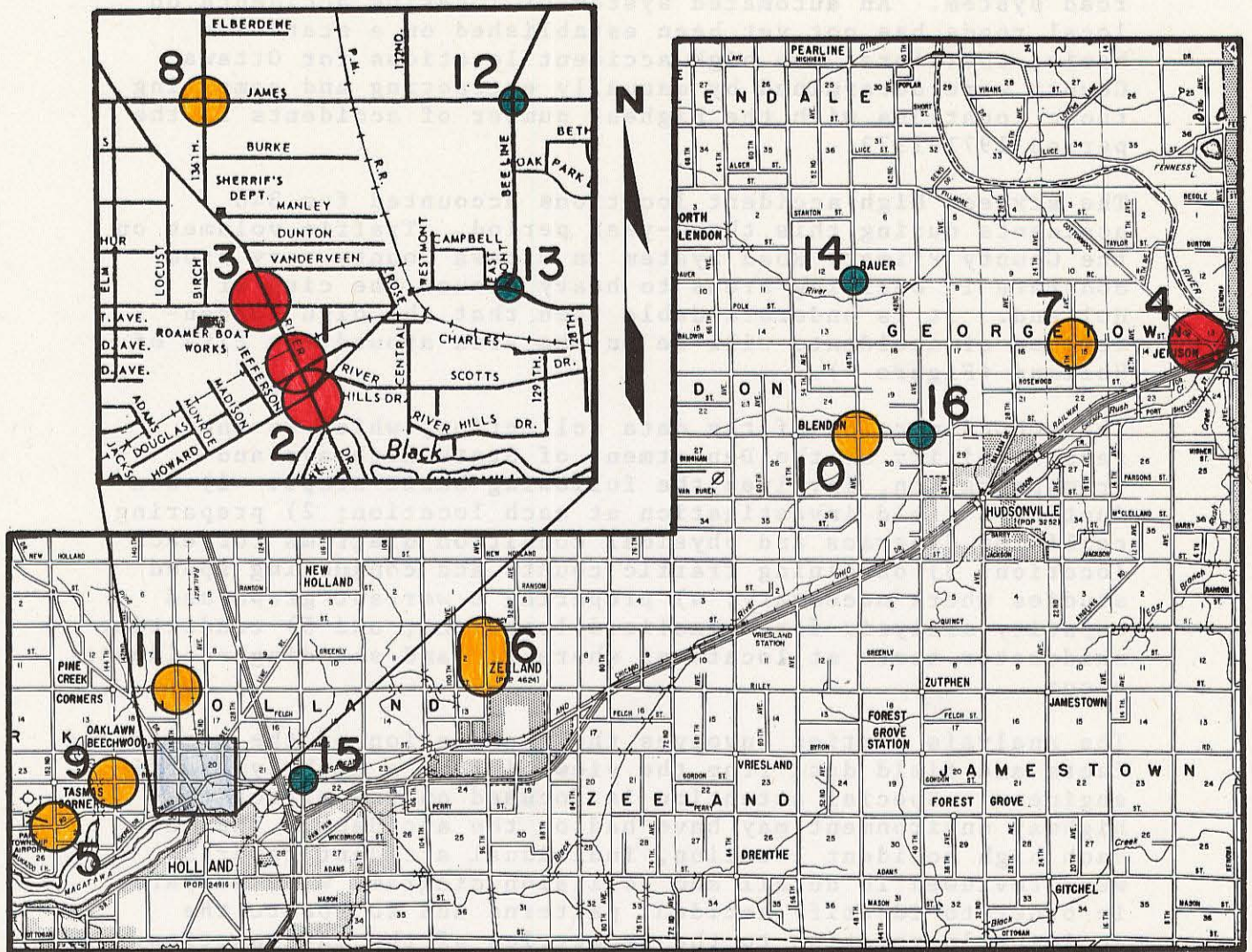
Clear Vision Areas

In order to provide ample sight distance at intersections, the corners of these intersections must not be overgrown with foliage nor have other obstructions. Although sometimes buildings or other permanent obstacles create inadequate visibility, most of the time removable objects such as trees, signs, or parked vehicles prohibit adequate sight distances. It is therefore recommended

SPOT MAP OF HIGH ACCIDENT LOCATIONS IN OTTAWA COUNTY

(1971 - 1973)

FIGURE 3



LEGEND

- 0 - 14 ACC.
- 15 - 34 ACC.
- 35 AND UP



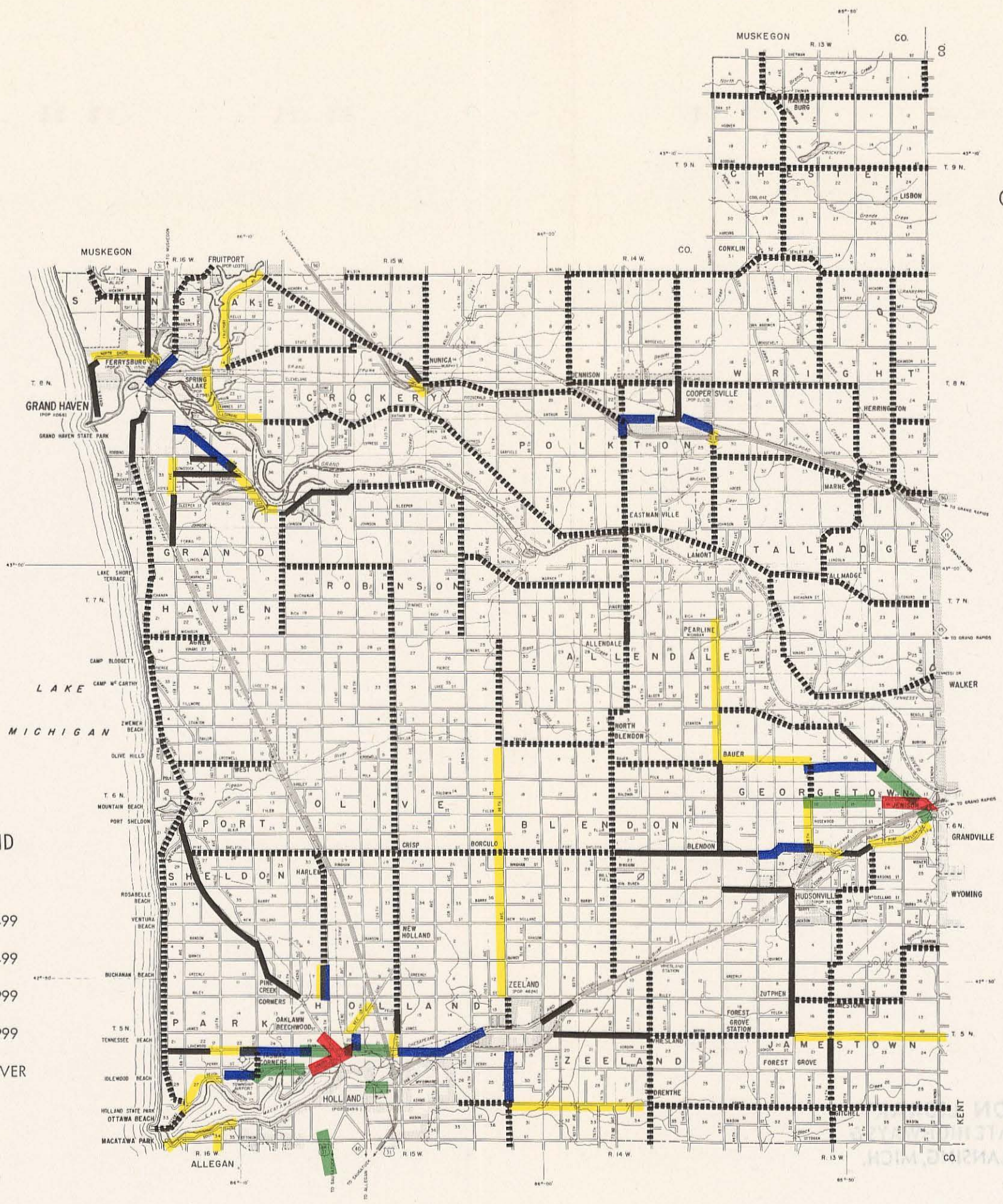
KEY TO COUNTIES

FIGURE 4

OTTAWA COUNTY A.D.T. MAP

LEGEND
TRAFFIC FLOW BAND

.....	0 - 999
————	1000 - 1499
————	1500 - 2499
————	2500 - 3999
————	4000 - 6999
————	7000 - OVER



OTTAWA COUNTY
MICHIGAN
STATE HIGHWAY COMMISSION
DEPARTMENT OF STATE HIGHWAYS
DATA OBTAINED FROM
HIGHWAY PLANNING SURVEY
CONDUCTED IN COOPERATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS
SCALE 1" = 2.75 MILES
POLYCONIC PROJECTION

TERRITORIES AND CORPORATE LIMITS REVISED JANUARY 1969

that Ottawa County not only establish a program to create clear vision corners at all intersections, but also begin a maintenance program to insure that all corners are kept clear of obstacles.

Estimated Costs

Since final construction plans are not available, the lump sum of \$7.50 per square foot of pavement has been used in estimating the construction costs. The costs for all other recommendations are based on Department unit prices and using Department personnel for the work.

High Accident Locations

After our analysis of the 16 high accident locations was completed, engineering recommendations were formulated for 4 of these locations. This report will discuss in detail only these four locations. The high accident locations and the average accident rates for each location during the study period (1971-1973) are as follows:

	<u>Location</u>	<u>Accidents</u>	<u>Average Accident Rate (ACC/MV)</u>
*1.	River Ave. and Douglas Ave.	52	1.9
*2.	River Ave. and Howard Ave.	43	1.5
*3.	River Ave. and Lakewood Blvd.	40	1.9
*4.	Baldwin St. and Cottonwood Dr.	35	2.2
5.	Ottawa Beach Rd. and 152nd Ave.	19	1.8
6.	96th Ave. between Quincy St. and Riley St.	18	5.7
7.	Baldwin St. and 20th Ave.	17	NA
8.	James St. and 136th Ave.	16	2.3
9.	Lakewood Blvd. and Division Ave.	15	2.2
10.	Port Sheldon St. and 48th Ave.	15	4.1
11.	Riley St. and 136th Ave.	15	2.3
12.	James St. and Beeline Ave.	14	3.4
13.	Lakewood Blvd. and Beeline Ave.	14	1.0
14.	Bauer Rd. and 48th Ave.	13	NA
15.	Lakewood Blvd. and 120th Ave.	13	1.2
16.	Port Sheldon St. and 40th Ave.	9	2.1

*Locations discussed in the body of the report

RIVER AVENUE AT DOUGLAS STREET

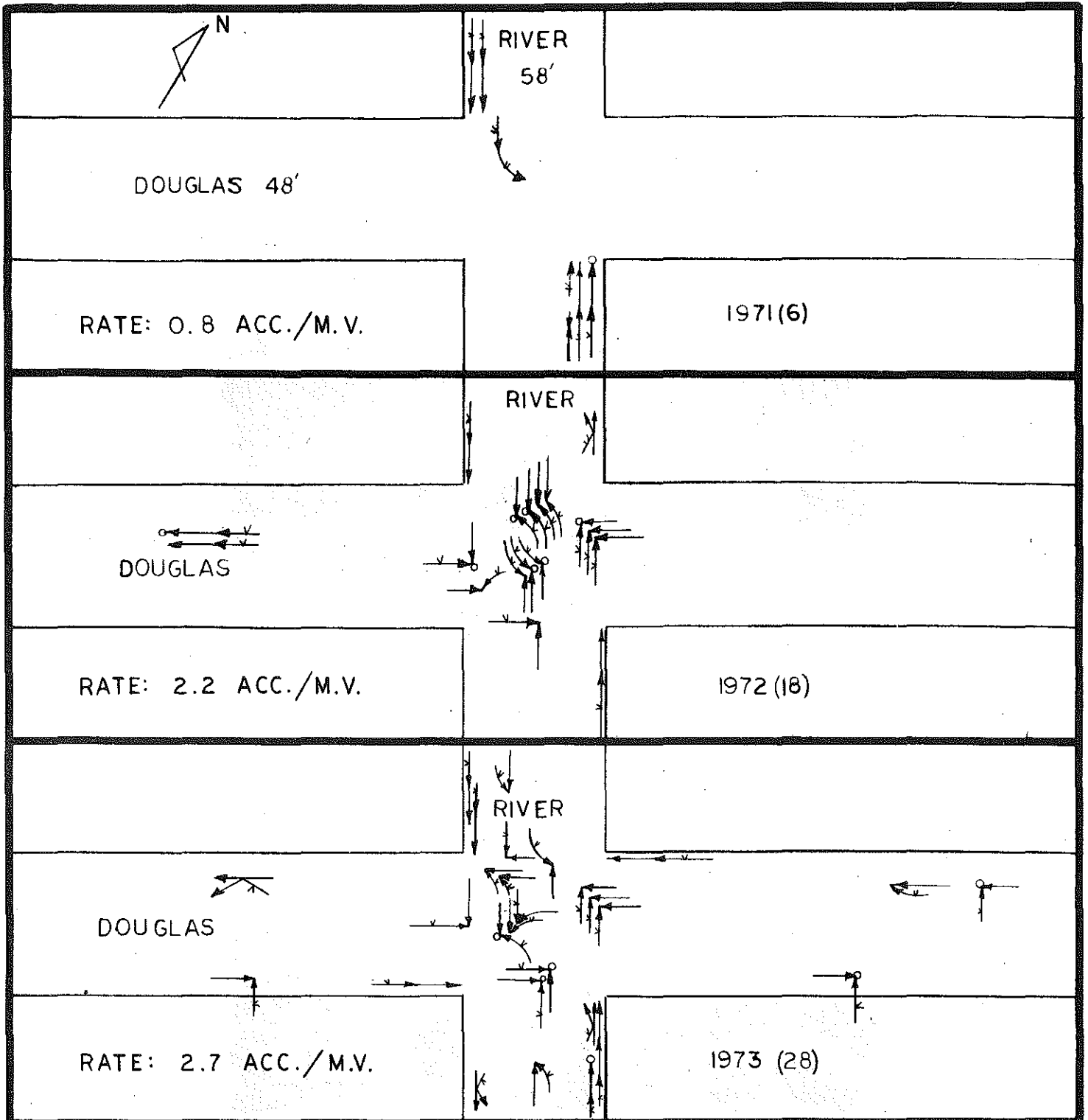
Operational Analysis:

River Avenue and Douglas Street form a right-angle intersection operating under traffic signal control. The right-of-way assignment is based on a 60-second cycle with a 65-35 percent split favoring River Avenue. Yellow clearance intervals of 7 percent (4.2 seconds) are provided.

Accidents:

<u>Type</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Total</u>
Right-Angle	-	5	10	15
Rear End	5	4	6	15
Head On-Left Turn	-	7	2	9
Turning	-	1	7	8
Misc.	<u>1</u>	<u>1</u>	<u>3</u>	<u>5</u>
Total	6	18	28	52

The miscellaneous accident types included three side swipes and one improper backing. The accident rate was 1.8 ACC/MV. Seven of the right-angle accidents involved northbound River Avenue traffic (violators) which failed to stop for the traffic signal.



LEGEND		MICHIGAN DEPARTMENT OF STATE HIGHWAYS TRAFFIC AND SAFETY DIVISION	
Stop & Go Signal		Stop Sign	S T
Flashing Beacon		Yield Sign	Y T
Fatal		Pedestrian	
Injury		Tree	
Skidding		Out of Control	
Jackknife		Driver Intent	
Overturned		Deer	
Backing		Violator	
		Location RIVER AT DOUGLAS HOLLAND TWP OTTAWA CO.	
		Period: 1971 THRU 1973 1.9 ACC./M.V.	
		Accidents - Total 52 P.D. 38	
		Injury 14 (7) Fatal 0 ()	
		C.S. _____ Miles _____ Drawn DJM	
		Plan No. LOCATION 1 Date 3-28-74	



NORTHBOUND RIVER AVENUE



SOUTHBOUND RIVER AVENUE

Figure 6



EASTBOUND DOUGLAS STREET



WESTBOUND DOUGLAS STREET

Figure 7

RECOMMENDATIONS

	<u>Type</u>	<u>Estimated Cost</u>
1.	Erect overhead Lane-Use Control signs on each approach on River Avenue.	\$4,148.00
2.	Apply pavement markings including pavement arrows to aid in defining the operation of each lane.	
3.	Provide a 2 percent (1.2 seconds) all red interval for River Avenue which will help alleviate the right-angle accident problem at this location.	70.00
4.	Interconnect this signal with the signals along River Avenue at Howard Avenue and Lakewood Boulevard to provide progression. (Figure 9) This should reduce the rear-end pattern.	50.00
5.	Erect an illuminated case sign over the intersection designating the permitted left turns.	400.00
6.	Change the signal placement, unless special phasing is anticipated for northbound to southbound left turns, for this location as shown in figure 8.	2,000.00
	Total	\$6,668.00

RIVER AVENUE, OTTAWA COUNTY

35 M.P.H.

14

240 400%

210 350%

180 300%

150 250%

120 200%

90 150%

60 100%

30 50%

0 0%

CYCLE LENGTH = 60 SEC.

HOWARD AVE.

310

DOUGLAS AVE.

1058

LAKWOOD RD.

65-35

65-35

60-40

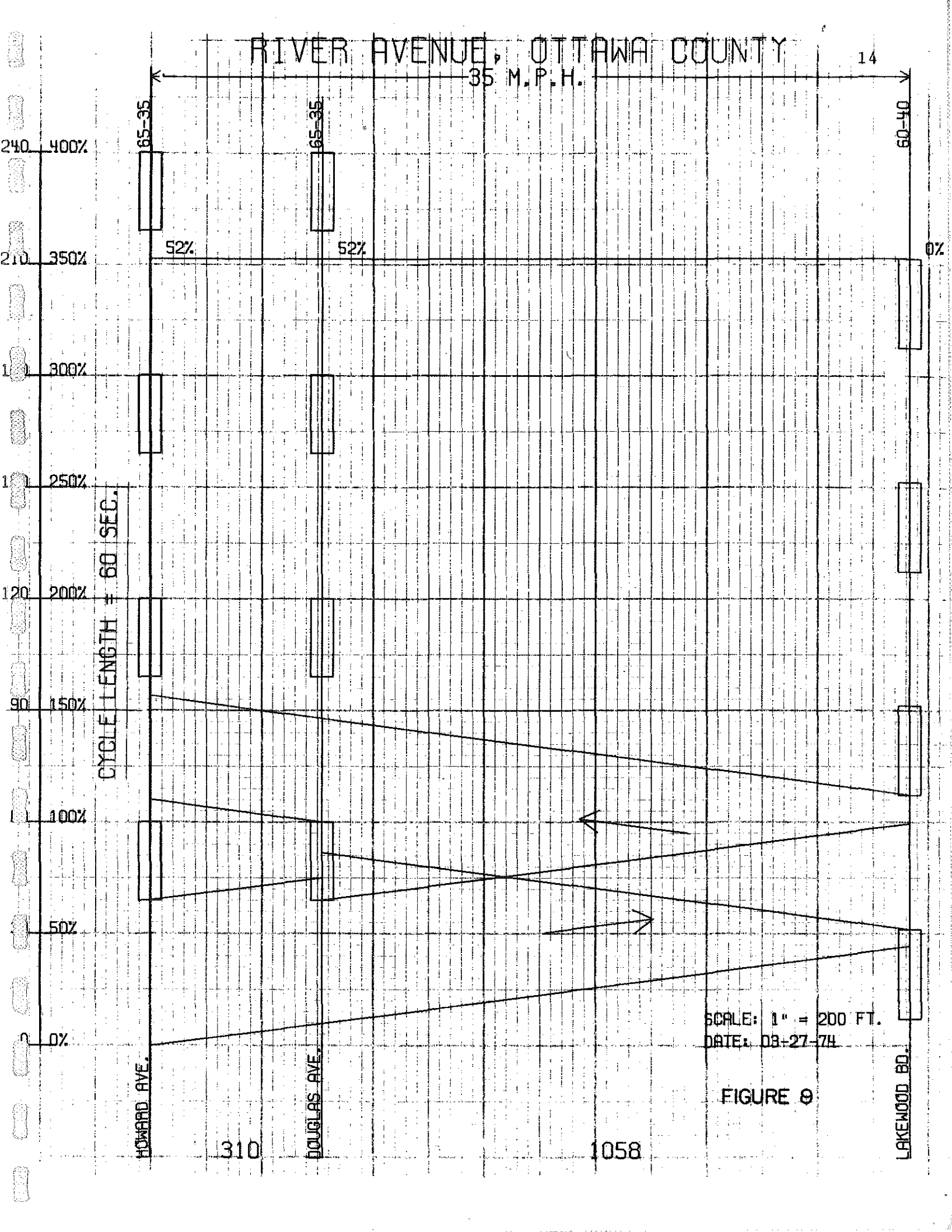
52%

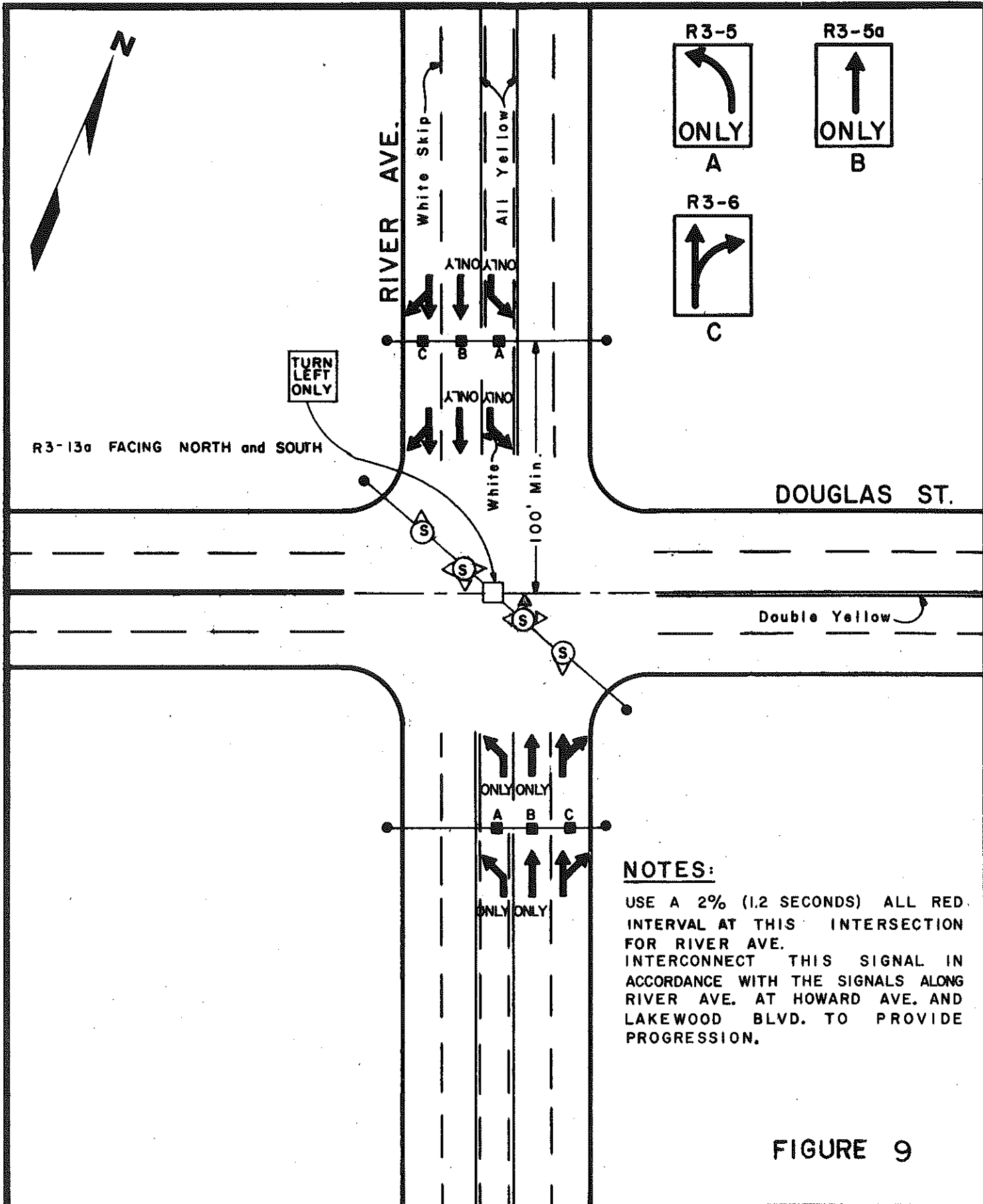
52%

0%

SCALE: 1" = 200 FT.
DATE: 03-27-74

FIGURE 9





NOTES:

USE A 2% (1.2 SECONDS) ALL RED INTERVAL AT THIS INTERSECTION FOR RIVER AVE. INTERCONNECT THIS SIGNAL IN ACCORDANCE WITH THE SIGNALS ALONG RIVER AVE. AT HOWARD AVE. AND LAKEWOOD BLVD. TO PROVIDE PROGRESSION.

FIGURE 9

STATE OF MICHIGAN DEPARTMENT OF STATE HIGHWAYS TRAFFIC & SAFETY DIVISION	AUTH. NO.		DRAWN DFK	
	CONT. SEC.		DATE 3-25-75	
	REF.		SCALE	
	SHEET	OF	PLAN	

RIVER AVENUE AT HOWARD STREET

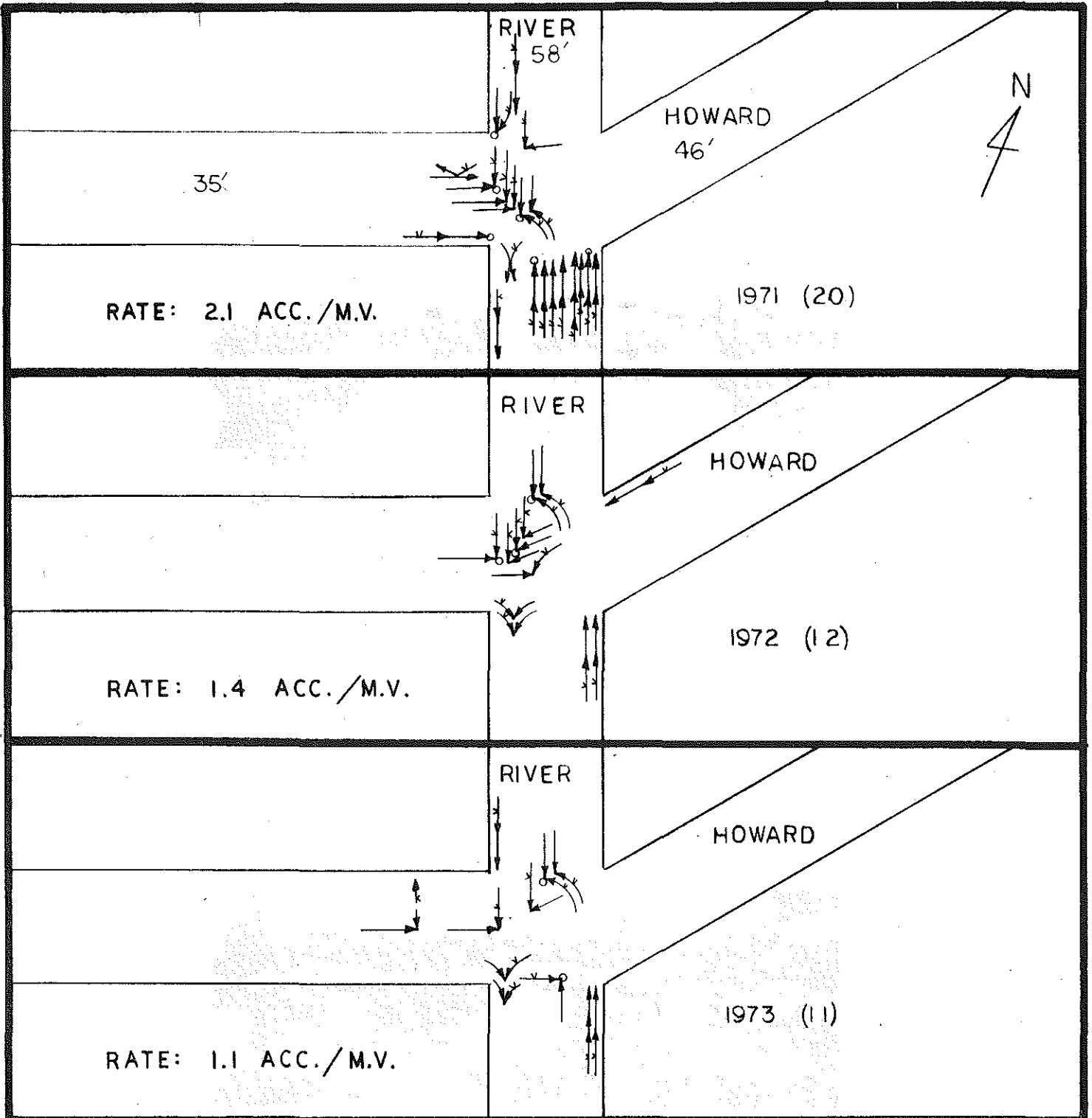
Operational Analysis:

River Avenue and Howard Street form a right-angle intersection operating under traffic signal control. The right-of-way assignment is based on a 60-second cycle with a 65-35 percent split favoring River Avenue. Yellow clearance intervals of 7 percent (4.2 seconds) are provided.

Accidents:

<u>Type</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Total</u>
Rear End	11	3	3	17
Right-Angle	4	4	3	11
Head On-Left Turn	2	3	2	7
Turning	2	2	2	6
Misc.	<u>1</u>	<u>-</u>	<u>1</u>	<u>2</u>
Total	20	12	11	43

The miscellaneous types include one backing and one side swipe accident. The accident rate was 1.43 ACC/MV. Ten of the right-angle accidents involved southbound River Avenue traffic (violators) which failed to stop for the traffic signal.



LEGEND		MICHIGAN DEPARTMENT OF STATE HIGHWAYS TRAFFIC AND SAFETY DIVISION	
Stop & Go Signal	Stop Sign S T	Location RIVER AT HOWARD HOLLAND TWP. OTTAWA CO	
Flashing Beacon	Yield Sign Y T		
Fatal	Pedestrian	Period: 1971 THRU 1973	1.5 ACC./M.V.
Injury	Tree	Accidents - Total 43	P.D. 32
Skidding	Out of Control	Injury 11 ()	Fatal 0 ()
Jackknife	Driver Intent	C.S. _____ Miles _____	Drawn DJM
Overtaken	Deer	Plan No. LOCATION 2	Date 3-27-74
Backing	Violator		



NORTHBOUND RIVER AVENUE



SOUTHBOUND RIVER AVENUE

Figure 11



EASTBOUND HOWARD STREET

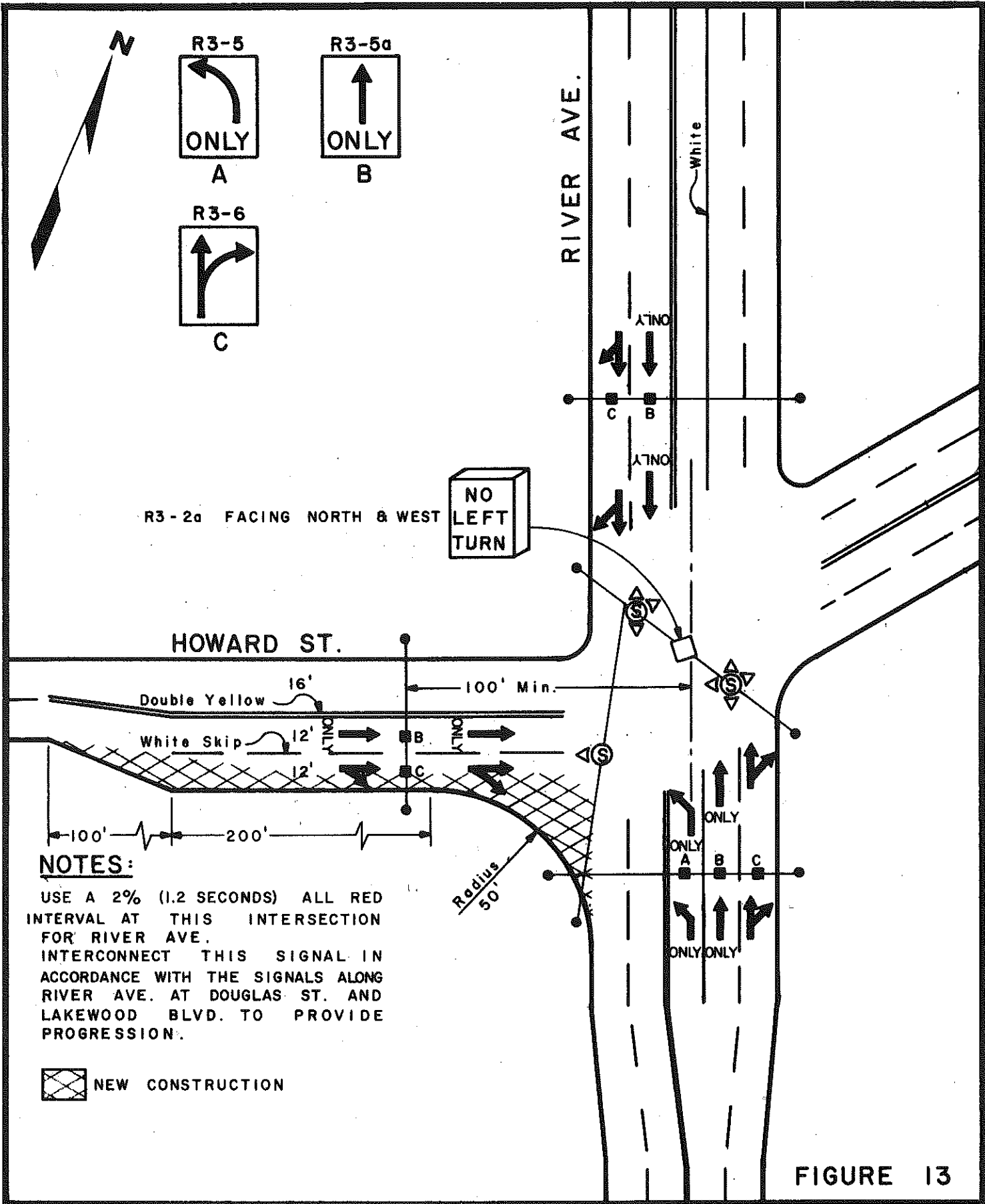


WESTBOUND HOWARD STREET

Figure 12

RECOMMENDATIONS

	<u>Type</u>	<u>Estimated Cost</u>
1.	Erect overhead Lane-Use Control signs on River Avenue and the west leg of Howard Street.	\$6,350.00
2.	Apply pavement markings including pavement arrows to aid in defining the operation of each lane.	540.00
3.	Provide a 2 percent (1.2 seconds) all red clearance interval in the signal timing for River Avenue. This will help alleviate the right-angle accident problem at this intersection.	35.00
4.	Interconnect this signal with the signals on River Avenue at Douglas Avenue and Lakewood Boulevard to provide progression (Figure 9) which will reduce the rear-end accidents.	50.00
5.	Provide a right-turn lane in the southwest quadrant with a control radius of 50 feet. This will permit more turning maneuverability as vehicles turn right from the west leg of Howard Avenue and turn left from the east leg of Howard Avenue and aid in preventing side swipe accidents.	20,000.00
6.	Install new panel with the legend "Left-turn lane" in existing case sign for River Avenue traffic.	50.00
	Total	<hr/> \$27,025.00



NOTES:

USE A 2% (1.2 SECONDS) ALL RED INTERVAL AT THIS INTERSECTION FOR RIVER AVE.
 INTERCONNECT THIS SIGNAL IN ACCORDANCE WITH THE SIGNALS ALONG RIVER AVE. AT DOUGLAS ST. AND LAKEWOOD BLVD. TO PROVIDE PROGRESSION.


 NEW CONSTRUCTION

FIGURE 13

STATE OF MICHIGAN DEPARTMENT OF STATE HIGHWAYS TRAFFIC & SAFETY DIVISION	AUTH. NO.	DRAWN DFK
	CONT. SEC.	DATE 3-26-75
	REF.	SCALE
	SHEET OF	PLAN

RIVER AVENUE AT LAKEWOOD BOULEVARD

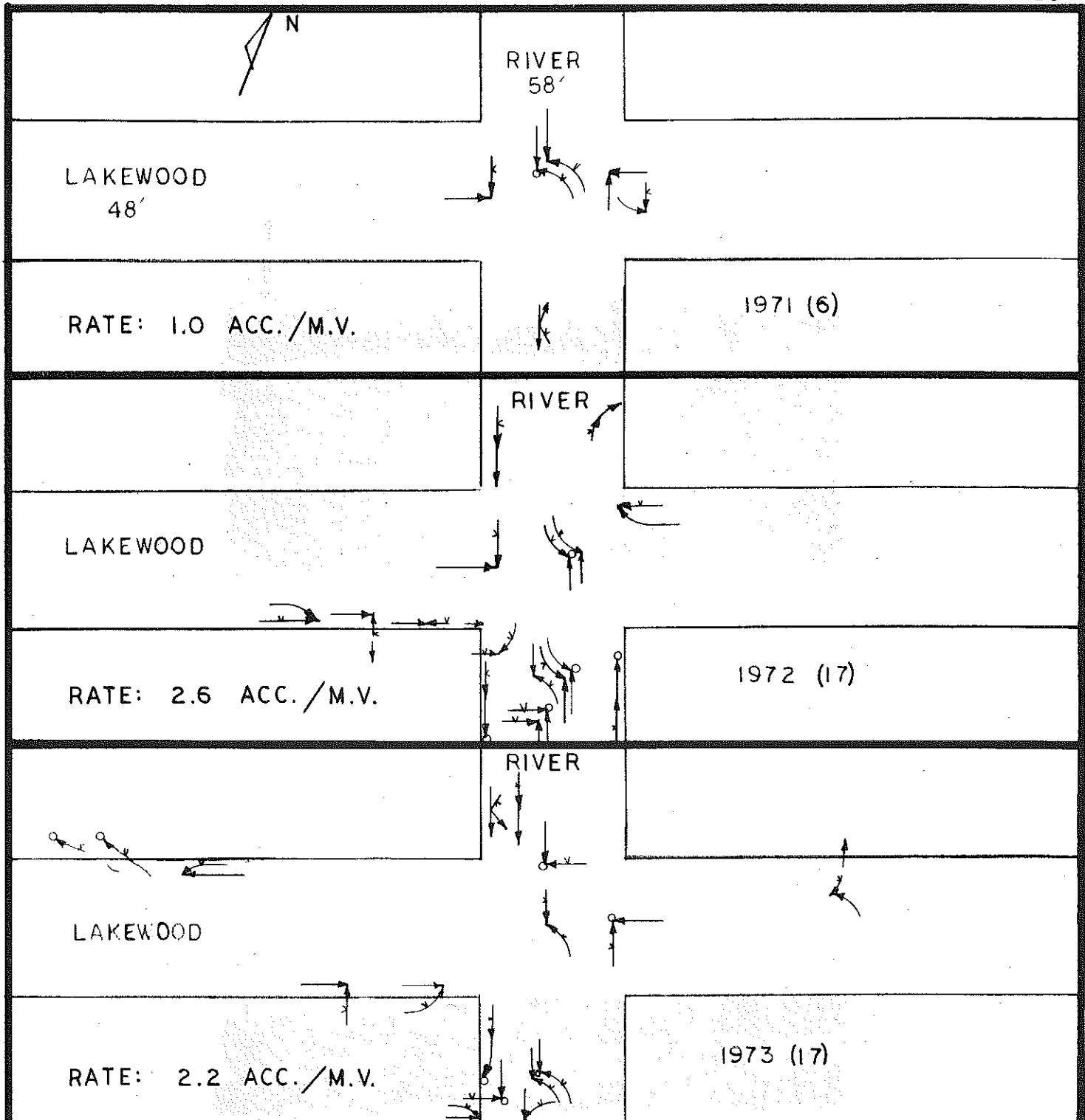
Operational Analysis:

River Avenue and Lakewood Boulevard form a right-angle intersection operating under signal control. The right-of-way assignment is based on a 60-second cycle with a 60-40 percent split favoring River Avenue. Yellow clearance intervals of 7 percent (4.2 seconds) are provided.

Accidents:

<u>Type</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Total</u>
Head On-Left Turn	2	5	3	10
Right-Angle	2	3	4	9
Turning	1	3	4	8
Rear End	-	4	2	6
Misc.	<u>1</u>	<u>2</u>	<u>4</u>	<u>7</u>
Total	6	17	17	40

The miscellaneous accident types included three improper bakings, two ran off roadways and two side swipes. The accident rate was 1.9 ACC/MV.



LEGEND		MICHIGAN DEPARTMENT OF STATE HIGHWAYS TRAFFIC AND SAFETY DIVISION	
Stop & Go Signal Flashing Beacon	Stop Sign S T Yield Sign Y T	Location RIVER AT LAKEWOOD HOLLAND TWP. OTTAWA CO.	
Fatal Injury Skidding Jackknife Overturned Backing	Pedestrian Tree Out of Control Driver Intent Deer Violator	Period: 1971 THRU 1973 1.9 ACC./M.V. Accidents - Total 40 P.D. 27 Injury 13 () Fatal 0 () C.S. _____ Miles _____ Drawn DJM Plan No. LOCATION 3 Date 3-28-74	



NORTHBOUND RIVER AVENUE



SOUTHBOUND RIVER AVENUE

Figure 15



EASTBOUND LAKEWOOD BLVD.

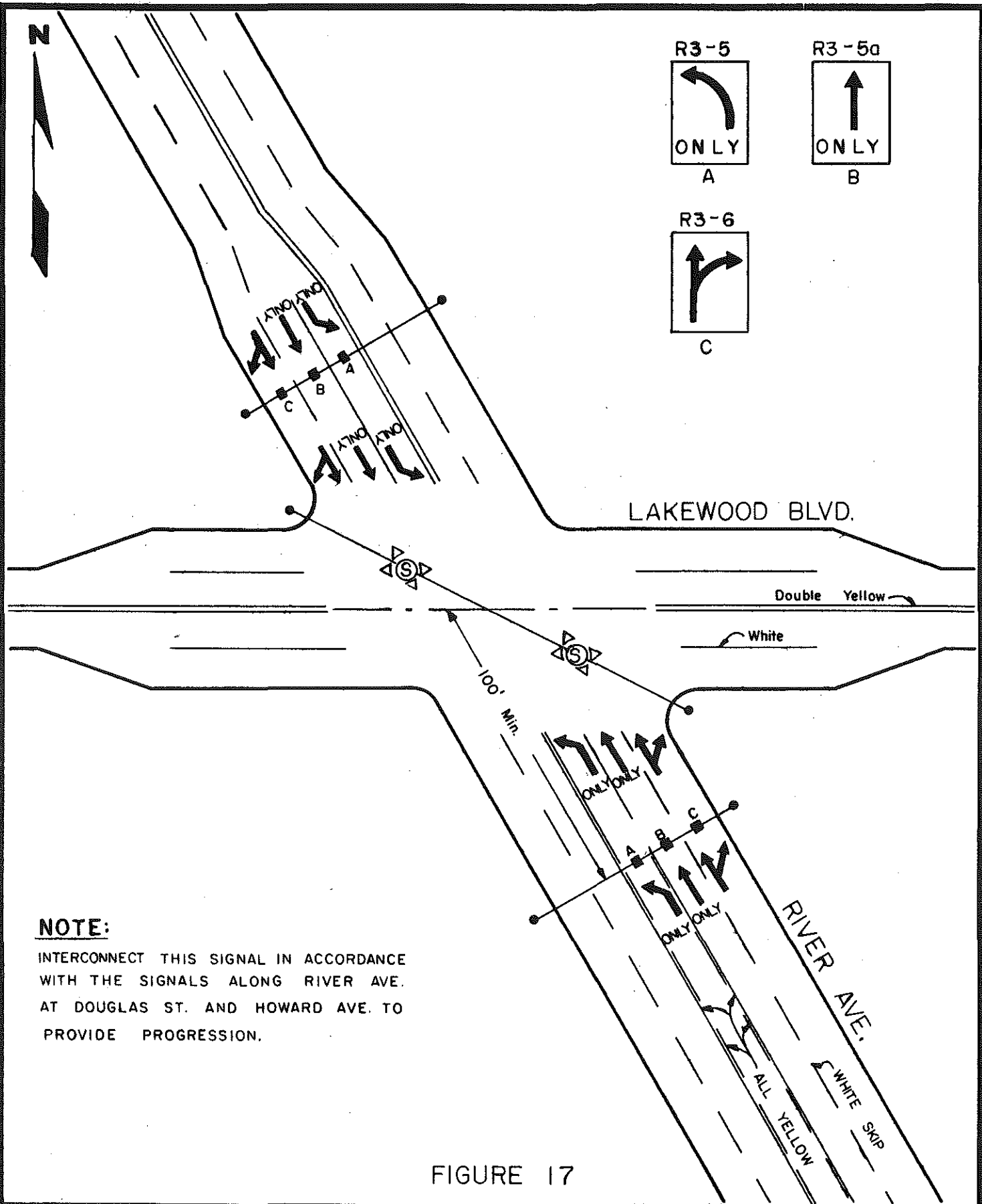


WESTBOUND LAKEWOOD BLVD.

Figure 16

RECOMMENDATIONS

<u>Type</u>	<u>Estimated Costs</u>
1. Erect overhead Lane-Use Control signs on each approach on River Avenue.	\$4,300.00
2. Apply pavement markings including pavement arrows to aid in determining the function of each lane.	350.00
3. Interconnect this signal with the other signals on River Avenue at Howard Avenue and Douglas Avenue to provide progression (Figure 9) which will reduce the rear end accidents.	50.00
4. Erect an illuminated case, with the legend left-turn lane, for north and southbound River Avenue.	400.00
	<hr/>
Total	\$5,100.00



NOTE:

INTERCONNECT THIS SIGNAL IN ACCORDANCE WITH THE SIGNALS ALONG RIVER AVE. AT DOUGLAS ST. AND HOWARD AVE. TO PROVIDE PROGRESSION.

FIGURE 17

STATE OF MICHIGAN DEPARTMENT OF STATE HIGHWAYS TRAFFIC & SAFETY DIVISION	AUTH. NO.	DRAWN DFK
	CONT. SEC.	DATE 3-26-75
	REF.	SCALE
	SHEET OF	PLAN

BALDWIN STREET AT COTTONWOOD DRIVE AND SCHOOL STREET

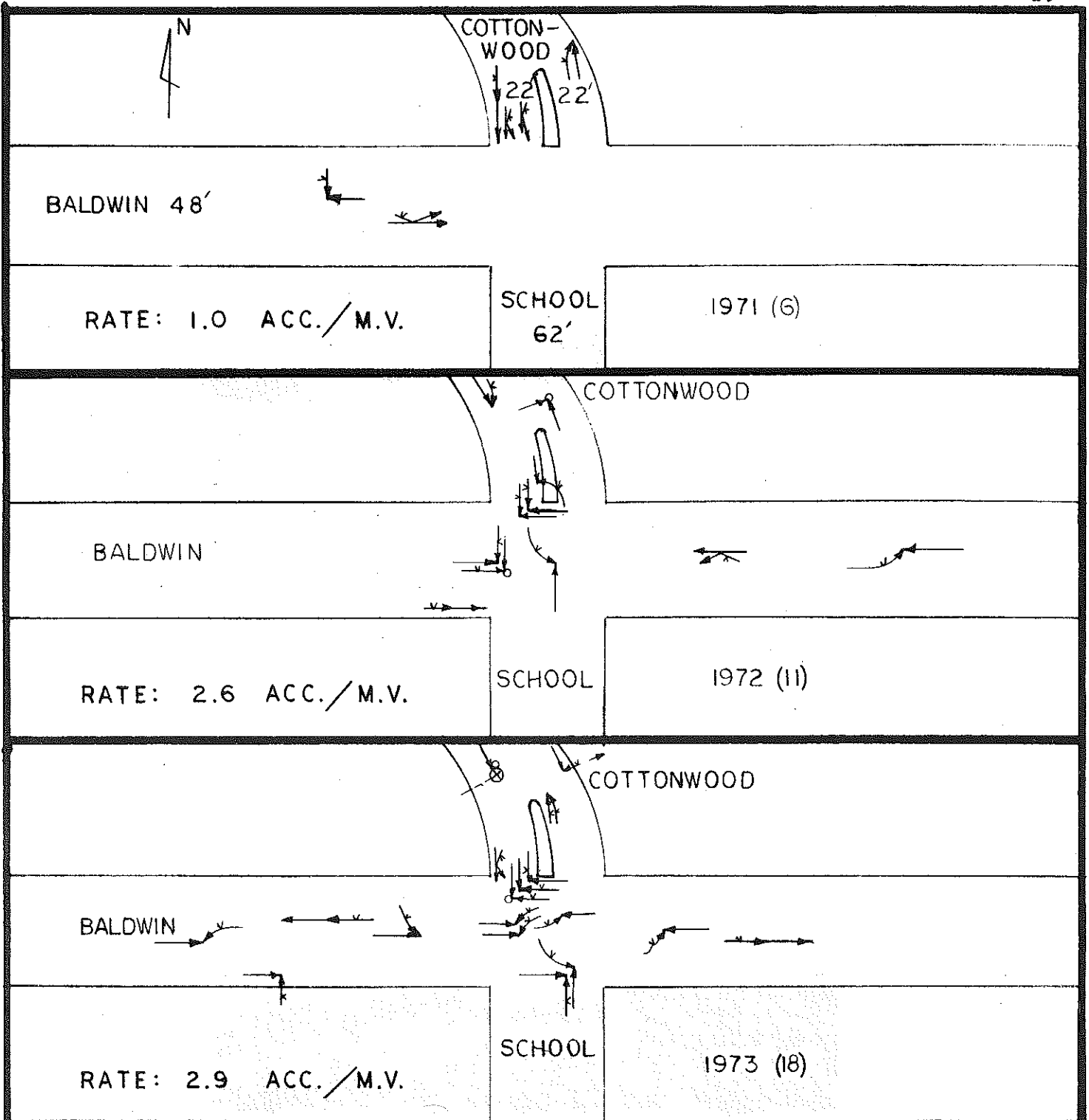
Operational Analysis:

















Baldwin Street, Cottonwood Drive and School Street form a right-angle intersection operating under traffic signal control. The right-of-way assignment is based on a 70-second cycle with a 64-36 percent split favoring Baldwin Street. Yellow clearance intervals of 6 percent (4.2 seconds) are provided.

<u>Type</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Total</u>
Right-Angle	1	5	6	12
Head On-Left Turn	-	3	6	9
Sideswipe	3	1	1	5
Rear End	1	1	2	4
Misc.	<u>1</u>	<u>1</u>	<u>3</u>	<u>5</u>
Total	6	11	18	35

The miscellaneous accident types included three improper turns, one improper backing and one involving a pedestrian. The accident rate was 2.2 ACC/MV.

A recent traffic count indicates that 95 percent of the vehicles on the east leg of Baldwin Street, between the hours of 3 p.m. and 6 p.m., are in the curb lane. A capacity analysis indicates a deficiency on this leg.



<p align="center">LEGEND</p>	<p align="center">MICHIGAN DEPARTMENT OF STATE HIGHWAYS TRAFFIC AND SAFETY DIVISION</p>
<p>Stop & Go Signal  Stop Sign  S T</p> <p>Flashing Beacon  Yield Sign  Y T</p>	<p>Location BALDWIN AT COTTONWOOD & SCHOOL GEORGETOWN TWP. OTTAWA CO.</p> <p align="right">FIGURE 18</p>
<p>Fatal  Pedestrian  (X)</p> <p>Injury  Tree </p> <p>Skidding  Out of Control </p> <p>Jackknife  Driver Intent </p> <p>Overtaken  Deer </p> <p>Backing  Violator </p>	<p>Period: <u>1971 THRU 1973</u> <u>2.2</u> ACC./M.V.</p> <p>Accidents - Total <u>35</u> P.D. <u>31</u></p> <p>Injury <u>4</u> () Fatal <u>0</u> ()</p> <p>C.S. _____ Miles _____ Drawn <u>DJM</u></p> <p>Plan No. <u>LOCATION 4</u> Date <u>3-29-74</u></p>



EASTBOUND BALDWIN STREET



WESTBOUND BALDWIN STREET

Figure 19



NORTHBOUND SCHOOL STREET



SOUTHBOUND COTTONWOOD DRIVE

Figure 20

RECOMMENDATIONS

<u>Type</u>	<u>Estimated Cost</u>
1. Prohibit the left turn from westbound Baldwin Street between 3 p.m. and 6 p.m. This will alleviate the congestion and capacity problem experienced at this intersection. Install an overhead case sign with the legend "No Left Turn Between 3 p.m. - 6 p.m." and a post-mounted sign for the far left-hand corner with the same legend.	\$400.00
2. Provide a 2 percent (1.2 seconds) all red interval in the signal timing for each roadway. This will help alleviate the right-angle accident problem.	35.00
3. Apply pavement markings, including center lines, lane lines and pavement arrows, at this intersection.	140.00
4. Change the signal placement, unless special phasing is anticipated for the eastbound and westbound left turns, for this location as shown in figure 21.	
Total	<hr/> \$575.00

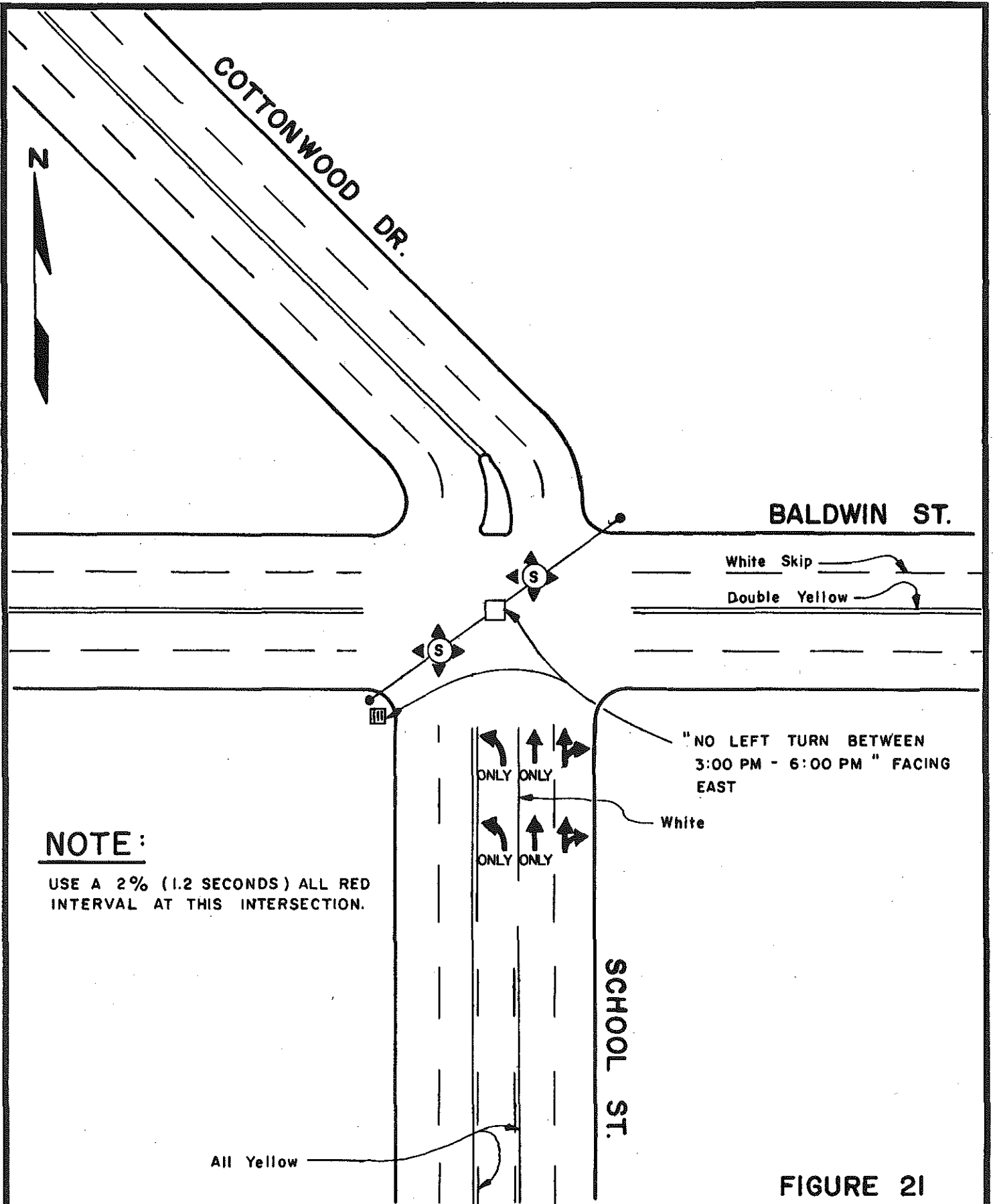


FIGURE 21

STATE OF MICHIGAN DEPARTMENT OF STATE HIGHWAYS TRAFFIC & SAFETY DIVISION	AUTH. NO.	DRAWN DFK
	CONT. SEC.	DATE 3-25-75
	REF.	SCALE
	SHEET OF	PLAN

SUMMARY OF RECOMMENDATIONS

The Department of State Police submitted 16 high accident locations for Ottawa County to the Michigan Department of State Highways and Transportation. After an indepth study of these locations, we formulated recommendations for four of them. The recommendations are as follows:

<u>Location Number</u>	<u>Location Description and Cost Estimate</u>	<u>Recommendation</u>
1.	River Avenue at Douglas Street \$6,668.00	Erect overhead Lane-Use Control signs on River Avenue. Apply pavement markings. Provide an all red interval to follow the River Avenue yellow clearance interval. Interconnect this signal with the signals along River Avenue at Howard Avenue and Lakewood Boulevard. Erect an illuminated case sign and change signal face placement.
2.	River Avenue at Howard Street \$27,025.00	Erect overhead Lane-Use Control signs on River Avenue and the west leg of Howard Street. Apply pavement markings. Provide an all red interval to follow the River Avenue yellow clearance interval. Interconnect this signal with the other signals on River Avenue at Douglas Avenue and Lakewood Boulevard. Construct a right-turn lane in the southwest quadrant with a 50-foot control radius. Add left-turn panel to case sign.
3.	River Avenue at Lakewood Boulevard \$5,100.00	Erect overhead Lane-Use Control signs for each approach on River Avenue. Apply pavement markings. Interconnect this signal with the other signals on River Avenue at Douglas Avenue and Howard Avenue. Erect illuminated case sign.
4.	Baldwin Street at Cottonwood Drive and School Street \$2,575.00	Prohibit the left turn from westbound Baldwin Street between 3 p.m. - 6 p.m. Provide an all red interval for both roadways. Apply pavement markings. Change signal placement.
	Total	\$41,368

APPENDIX I

HIGHWAY SAFETY ACT OF 1973

Section	Highway System	Types of Projects	Finance Federal-State
203 Rail-Highway Grade Crossings	Federal-aid (Except Inter- state)	Protective Devices; Signs & Markings; Crossing Illumination & Surface Improvements	90-10
205 Pavement Marking Demon- stration Program	All Highways (Except Inter- state)	Centerline & Edgeline Markings; Establishing & Painting "NO PASSING" zones	100
209 Projects for High Hazard Locations	Federal-aid (Except Inter- state)	Intersection widening, Channelization, & sig- nalization; Skid-prone location correction	90-10
210 Program For Elimination of Roadside Obstacles	Federal-aid (Except Inter- state)	Guardrail end treat- ments; Breakaway signs; Crash cushions; Tree Removal; Culvert headwall corrections	90-10
230 Federal-aid Safer Roads Demonstration Program	Non Federal- aid	Pavement Marking, sign- ing, eliminate roadside obstacles, eliminate hazards @ railway crossings & projects for high hazard locations	90-10

The projects eligible for consideration for funding under Section 209 are:

Loc. #1	River Avenue at Douglas Street
Loc. #2	River Avenue at Howard Street
Loc. #3	River Avenue at Lakewood Boulevard
Loc. #4	Baldwin Street at Cottonwood Drive and School Street