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Michigan Department of

STATE HIGHWAYS AND TRANSPORTATION

COLOR CARD SURVEY

M-43 & M-89
VILLAGE OF RICHLAND
KALAMAZOO COUNTY

JULY 1977

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MICHIGAN DEPARTMENT
OF
STATE HIGHWAYS AND TRANSPORTATION

COLOR CARD SURVEY

M-43 & M-89
VILLAGE OF RICHLAND
KALAMAZOO COUNTY

JULY 1977

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POST OFFICE BOX 30050, LANSING, MICHIGAN 48909

JOHN P. WOODFORD, DIRECTOR

August 8, 1977

Mr. Sam F. Cryderman
Deputy Director
Bureau of Transportation Planning

Dear Mr. Cryderman:

This report "Color Card Survey, M-43 and M-89, Village of Richland, Kalamazoo County" describes a card survey that was conducted on M-43 and M-89 and the results of that survey. The survey was conducted in this area because the Michigan Department of State Highways and Transportation (MDSH&T) has programmed projects on these routes.

The report concludes that a bypass of Richland should be given consideration by the Task Group that is conducting the M-43 and M-89 study. This was based on the information obtained in the card survey which showed large percentages of traffic traveling through Richland on M-43 and between M-43 south of Richland and M-89 east of Richland which did not stop in Richland. In addition, traffic forecasts contained in TAR 70, Supplement #1, M-89 and TAR 195, Supplement #1, M-43 (Gull Road) show that the traffic volumes are expected to increase substantially on these routes in the next 20 years.

It should be noted that this type of survey was found to be very effective. The field work was conducted in one day with almost 100 percent of the inbound vehicles that passed through the survey station during the 14 hours of the survey being interviewed. This was possible because each vehicle had to be stopped only for a few seconds in order to obtain the necessary information. Following the field work, it took less than two weeks to have the information key punched and tabulated and ready for analysis.

It is, therefore, recommended that this type of survey be considered in areas where information is desired relating to direction of travel, specific route used and amount of through traffic. This report was prepared by Rodney J. Haan with assistance from Peter Coscarelli and Craig Iansiti under the supervision of William C. Hartwig.

Sincerely,

Richard J. Lilly
Acting Administrator
Multi-Regional Planning Division



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SUMMARY

The purpose of this report is to describe a color card survey that was conducted on M-43 and M-89 in the Richland area and the results of that survey. The survey was conducted for the purpose of collecting information from drivers of vehicles related to direction of travel, specific route used and whether or not a stop was made in Richland.

Four stations were operated on M-43 and M-89 outside of Richland for 14 hours on Thursday, June 9, 1977. All vehicles entering the Richland area were stopped and given a colored card and told that the card would be picked up when and if he left the Richland area via M-43 or M-89. All vehicles leaving the Richland area on these routes were also stopped and asked if they had a survey card. If they had a survey card, they were asked if a stop had been made in Richland.

Of all the vehicles passing the location of the stations in a 24 hour period, 85 percent did so during the 14 hours of the survey. Also, 94.8 percent of all these vehicles were either cars or pickups. The percentage of vehicles passing through the interview stations while they were in operation and the percent of vehicles that were either cars or pickups did not vary significantly between stations.

There were 9,965 survey cards handed out and 8,074, or 81 percent, were returned. This means that 81 percent of all the vehicles entering Richland on either M-43 or M-89 came back out on one of these routes. There were 4,902 cards, or 49 percent of the total, which indicated that they did not stop in Richland.

Therefore, 49 percent of all vehicles entering Richland on either M-43 or M-89 pass through without stopping.

The largest traffic movement was by 3,307 vehicles which went into and/or came out of Richland on M-43 southwest of Richland.

The second largest traffic movement was 2,951 vehicles which traveled through Richland on M-43. Of these, 2,300, or 78 percent, did not stop in Richland.

The third largest traffic movement was 2,126 vehicles which traveled between M-89 east of Richland and M-43 southwest of Richland. Of these, 1,555, or 73 percent, did not stop in Richland.

The information collected in the card survey showed that there is a significant amount of traffic which passes through Richland on M-43 and M-89 without stopping. Traffic forecasts for these routes indicate that by 1995 the Average Daily Traffic will be over 16,000 vehicles. It is therefore concluded that a bypass of Richland be given consideration by the Michigan Department of State Highways and Transportation Task Group which has been organized for the purpose of making recommendations for improvements to M-43 and M-89.

INTRODUCTION

The purpose of this report is to describe a color card survey that was conducted on M-43 and M-89 in the Richland area and the results of that survey. The survey was scheduled in this area because the Michigan Department of State Highways and Transportation (MDSH&T) has programmed projects on these routes.

Routes M-43 and M-89 intersect in the center of the Village of Richland. Route M-43 is located in a north/southwest direction connecting Kalamazoo and Hastings. Route M-89 is located in a east/west direction connecting Battle Creek and Allegan. The exact location of these routes is shown in Exhibit 1.

The purpose of the survey was to collect information from drivers of vehicles related to direction of travel, specific route used, and whether or not a stop was made in Richland. This information will be used by a Task Group made of individuals from various divisions within the MDSH&T to develop alternative proposals and make recommendations for improvements to these routes.

REGIONAL LOCATION

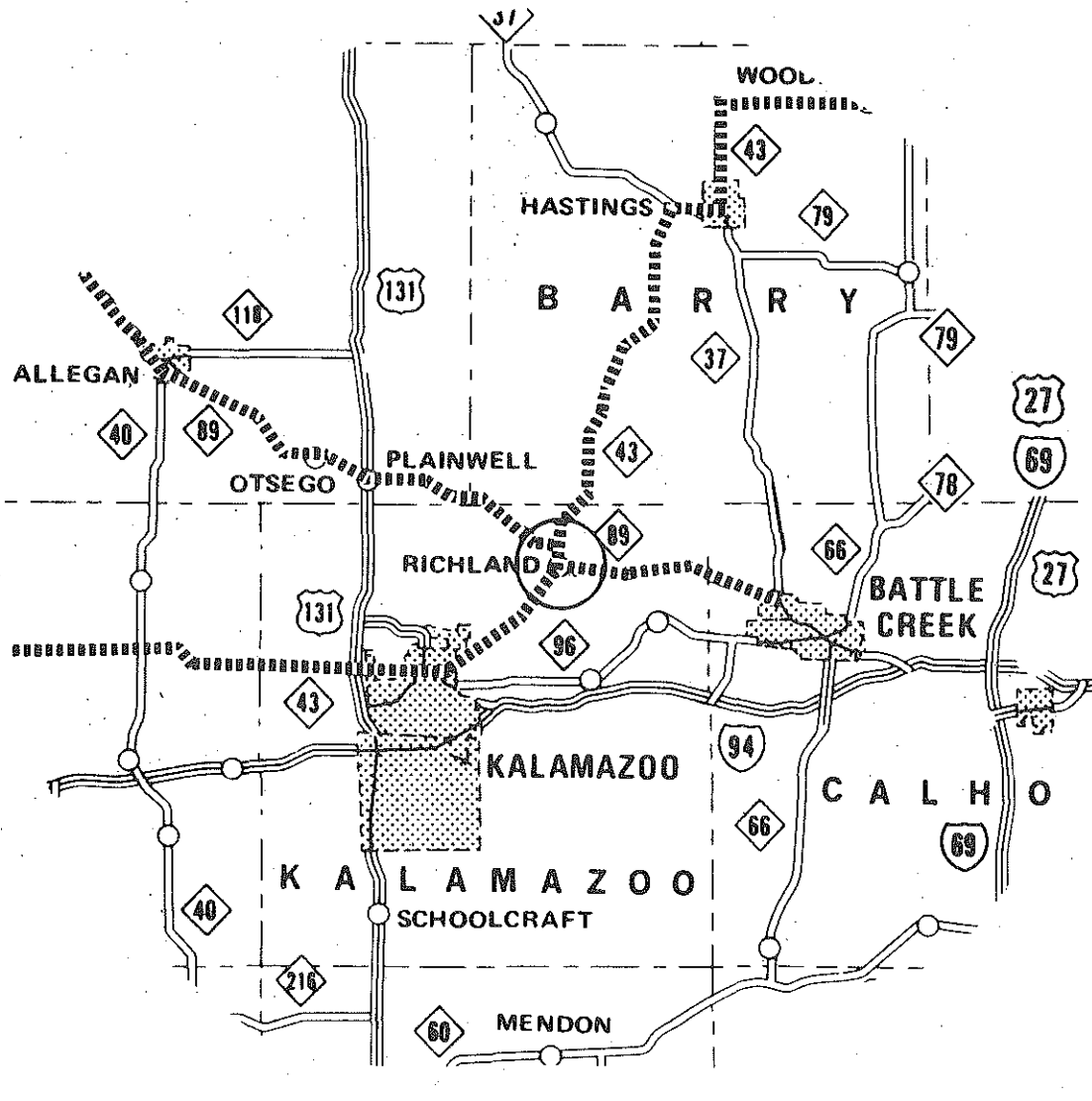


EXHIBIT I

I. DESCRIPTION OF SURVEY

A color card survey was conducted in the Richland area on Thursday, June 9, 1977. Four stations were operated for a period of 14 hours from 6 a.m. to 8 p.m. In selecting locations for the stations, consideration was given to previously proposed locations for alternative bypass corridors which were presented in Engineering Report 1804. This resulted in some stations being located several miles outside of Richland. The locations of the four stations is shown in Exhibit 2.

All vehicles entering the Richland area via M-43 or M-89 were stopped and given a colored card. (See Exhibit 3) Different colors were used for each station. The driver was told that the card would be picked up at a station when and if he went out of the Richland area on a state trunkline. All vehicles leaving the Richland area via M-43 or M-89 were also stopped and asked if they had a survey card. If they had a survey card, they were asked if a stop had been made in Richland. The survey card was then collected and the response to that question and type of vehicle recorded on the survey card.

The number of cards handed out by hour period at each station was recorded and the cards which were collected were grouped by hour period. Classification counts, in which the number and vehicle type were recorded by hour periods, were taken during the time of the survey and for the remaining ten hours so that a 24 hour classification count would be available. Machine counts were taken on M-43 and M-89 at 15 locations during the week of the survey.

INTERVIEW STATIONS

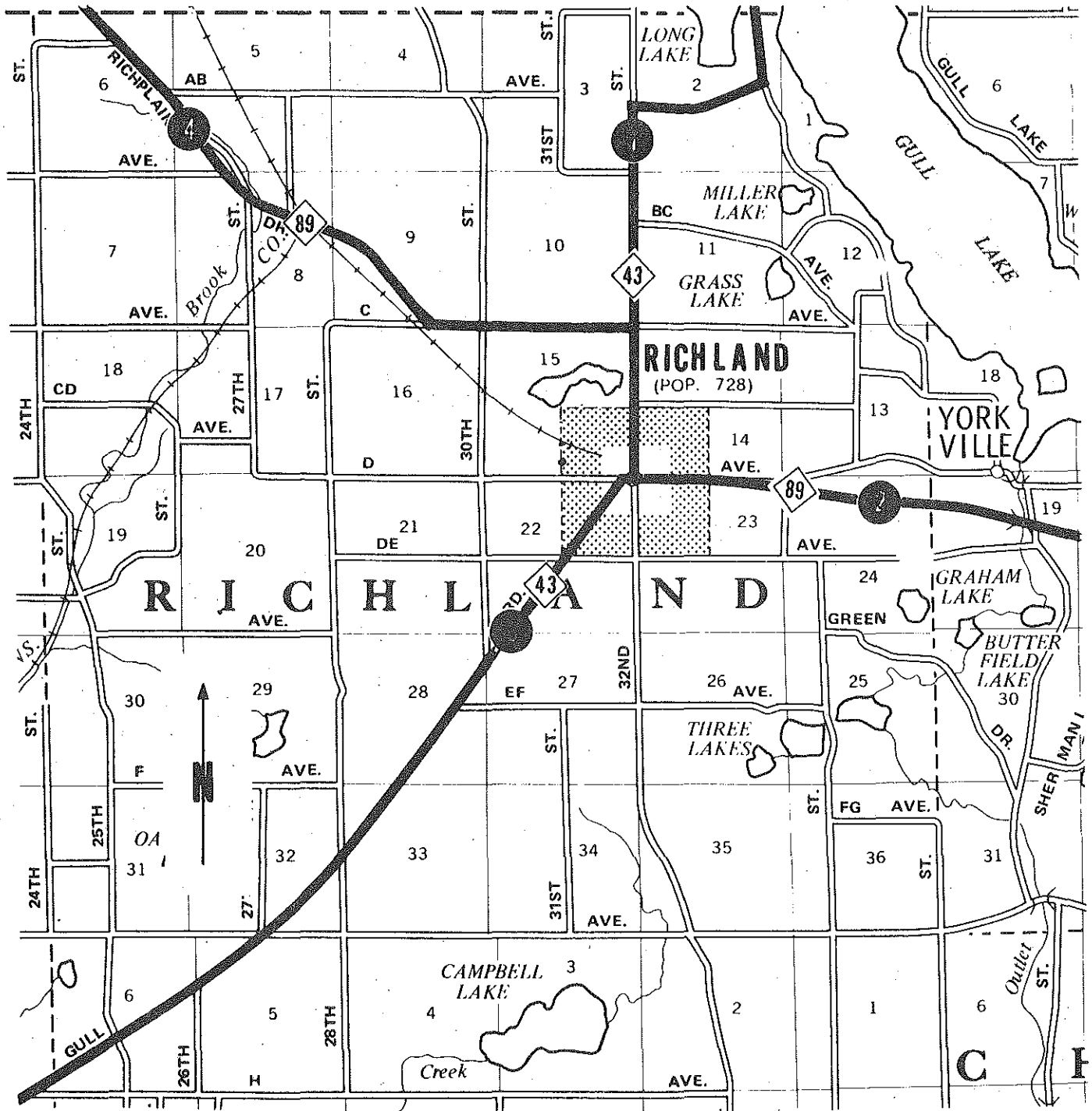


EXHIBIT 2

SURVEY CARD

MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

A study is being made of travel habits in this area.

To GET THE FACTS all vehicles are being stopped at each entrance to this community in order to provide the basis for planning improved highways.

WILL YOU KINDLY LEAVE THIS CARD AT OUR EXIT STATION WHEN YOU LEAVE THE COMMUNITY.

- THANK YOU FOR YOUR COOPERATION -

To Be Filled In By Interviewer.

STOP	Y		N
VEHICLE TYPE	C/P	SU	C

Nº 04501

EXHIBIT 3

II. SURVEY DATA

The 24 hour classification count totals and the 14 hour classification count totals for each interview station are shown in Exhibit 4. These totals were compared to determine the percentage of vehicles that passed through the stations during the hours when the survey was being conducted. The percentage for each of the stations were very similar ranging from 83.5 percent for Station 2, located on M-89 east of Richland, to 86.9 percent for Station 4, located on M-89 west of Richland. The average for all four stations was 85.1 percent. It can be assumed that the 24 hour distribution would not differ significantly from the distribution obtained in the survey because of the high percentage of the vehicles which passed through the station during the survey. Therefore, the survey information was not expanded to 24 hour traffic.

A comparison was made of the number of cards handed out at each station and the number of those cards returned. Of those returned, the number which indicated that they had not stopped in Richland was also tabulated. This information is also shown in Exhibit 4.

The cards which were returned represent vehicles which entered Richland on either M-43 or M-89 and left by one of these routes. The percentage of cards returned from each of the stations was fairly consistent. The station located on M-89 west of Richland had the lowest percent with 74 percent of the cards handed out at that station returned. The station located on M-43 north of Richland had the highest percent returned with

CLASSIFICATION COUNTS

<u>Station*</u>	<u>24 Hour Total</u>	<u>14 Hour Total</u>	<u>Percent</u>
1	5,338	4,494	84.2
2	6,039	5,042	83.5
3	10,273	8,842	86.1
4	2,438	2,118	86.9
Total	24,088	20,496	85.1

CARD SURVEY RESPONSE

<u>Station*</u>	<u>Cards Distributed</u>	<u>Cards¹ Returned</u>	<u>Percent</u>	<u>Not Stop</u>	<u>Percent</u>
1	2,310	1,991	86	1,390	60
2	2,542	2,111	83	1,234	49
3	4,113	3,232	79	1,836	45
4	1,000	740	74	442	44
Total	9,965	8,074	81	4,902	49

*Station 1 - M-43 North of Richland
 Station 2 - M-89 East of Richland
 Station 3 - M-43 Southwest of Richland
 Station 4 - M-89 West of Richland

1 = Cards returned at all stations which were distributed
 at one station

86 percent. The average for all four stations indicates that 81 percent of all the vehicles entering Richland on either M-43 or M-89 left on one of these routes.

Based on the response from this survey, 49 percent of all vehicles entering Richland on either M-43 or M-89 pass through without stopping. The percentage for all four stations ranged from 44 percent for Station 4 on M-89 west of Richland to 60 percent for Station 1 on M-43 north of Richland.

The number of vehicles which were not cars or pickups was recorded at each station during the classification counts and are shown in Exhibit 5. This data shows that the percentage of these vehicles was similar at Station 1, 2, and 3, ranging from 4.2 percent at Station 1 on M-43 north of Richland to 5.4 percent at Station 2 on M-89 east of Richland. Station 4 on M-89 west of Richland had a somewhat higher percentage with 9.0 percent.

A comparison was made with the outbound 14 hour classification count totals for vehicles outbound which were not cars or pickups and the number of survey cards received from these type vehicles. This information is shown in Exhibit 5. It was found that a large percentage of the vehicle which were not cars or pickups which were outbound through stations on M-43 north (90.3 percent) and M-89 east (96.3 percent) had survey cards. A fairly high percentage of the vehicles which were not cars or pickups which were outbound through stations on M-43 south (74.7 percent) and M-89 west (74.7 percent) also had survey cards. This indicates that a high percentage of the vehicles which were not cars or pickups passed through Richland on M-43 and M-89.

The response from the drivers of the vehicles which were

TYPE OF VEHICLE

<u>Station*</u>	<u>24 Hour Classification Count</u>	<u>No. of Vehicles Not Cars or Pickups</u>	<u>Percent</u>
1	5,338	225	4.2
2	6,039	327	5.4
3	10,273	478	4.7
4	2,438	221	9.0
TOTAL	24,088	1,251	5.2

VEHICLES NOT CARS OR PICKUPS
PASSING THROUGH RICHLAND

<u>Station*</u>	<u>14 Hr. Classification Count Outbound Vehicles Not Cars or Pickups</u>	<u>Outbound Vehicles Not Cars or Pickups with Cards</u>	<u>Percent</u>	<u>Outbound Vehicles Not Cars or Pickups Did Not Stop</u>	<u>Percent</u>
1	72	65	90.3	51	70.8
2	108	104	96.3	64	59.3
3	196	138	70.4	74	37.8
4	91	68	74.7	52	57.1
TOTAL	467	375	80.3	241	51.6

- *Station 1 - M-43 North of Richland
- Station 2 - M-89 East of Richland
- Station 3 - M-43 Southwest of Richland
- Station 4 - M-89 West of Richland

EXHIBIT 5

not cars or pickups to the question as to whether or not a stop was made in Richland is also shown in Exhibit 5. By comparing the number of responses who said they did not stop to the classification count totals for outbound non-car or pickups, it is possible to determine the percentage of these vehicles that passed through Richland on M-43 or M-89 without stopping. Slightly more than 50 percent of all the vehicles which were not cars or pickups leaving Richland on M-43 or M-89 had not stopped in Richland.

III. DISTRIBUTION OF VEHICLES AT INTERVIEW STATIONS

A chart showing the distribution of the trunkline traffic is shown in Exhibit 6. This chart shows the distribution of vehicles at each station and whether or not a stop was made in Richland. A flow chart showing this information is shown in Exhibit 7.

The largest traffic movement was 3,307 vehicles which went into and/or came out of Richland on M-43 southwest of Richland. The second largest traffic movement was 2,951 vehicles which traveled through Richland on M-43. Of these, 2,300, or 78 percent, did not stop in Richland. The third largest traffic movement was 2,126 vehicles which traveled between M-89 east of Richland and M-43 southwest of Richland. Of these, 1,555, or 73 percent, did not stop in Richland.

The remaining portion of this section will analyze the traffic at each interview station.

DISTRIBUTION OF TRUNKLINE TRAFFIC

STATION 1

<u>Station</u>	<u>Stopped</u>	<u>Percent</u>	<u>Did Not Stop</u>	<u>Percent</u>	<u>Total</u>	<u>Percent</u>
1	1,105*	100	0	0	1,105*	25
2	98	44	127	56	225	5
3	651	22	2,300	78	2,951	67
4	<u>22</u>	<u>17</u>	<u>110</u>	<u>83</u>	<u>132</u>	<u>3</u>
Total	1,876	43	2,537	57	4,413	100

STATION 2

1	98	44	127	56	225	5
2	1,761*	100	0	0	1,761*	35
3	571	27	1,555	73	2,126	43
4	<u>143</u>	<u>16</u>	<u>735</u>	<u>84</u>	<u>878</u>	<u>18</u>
Total	2,573	52	2,417	48	4,990	100

STATION 3

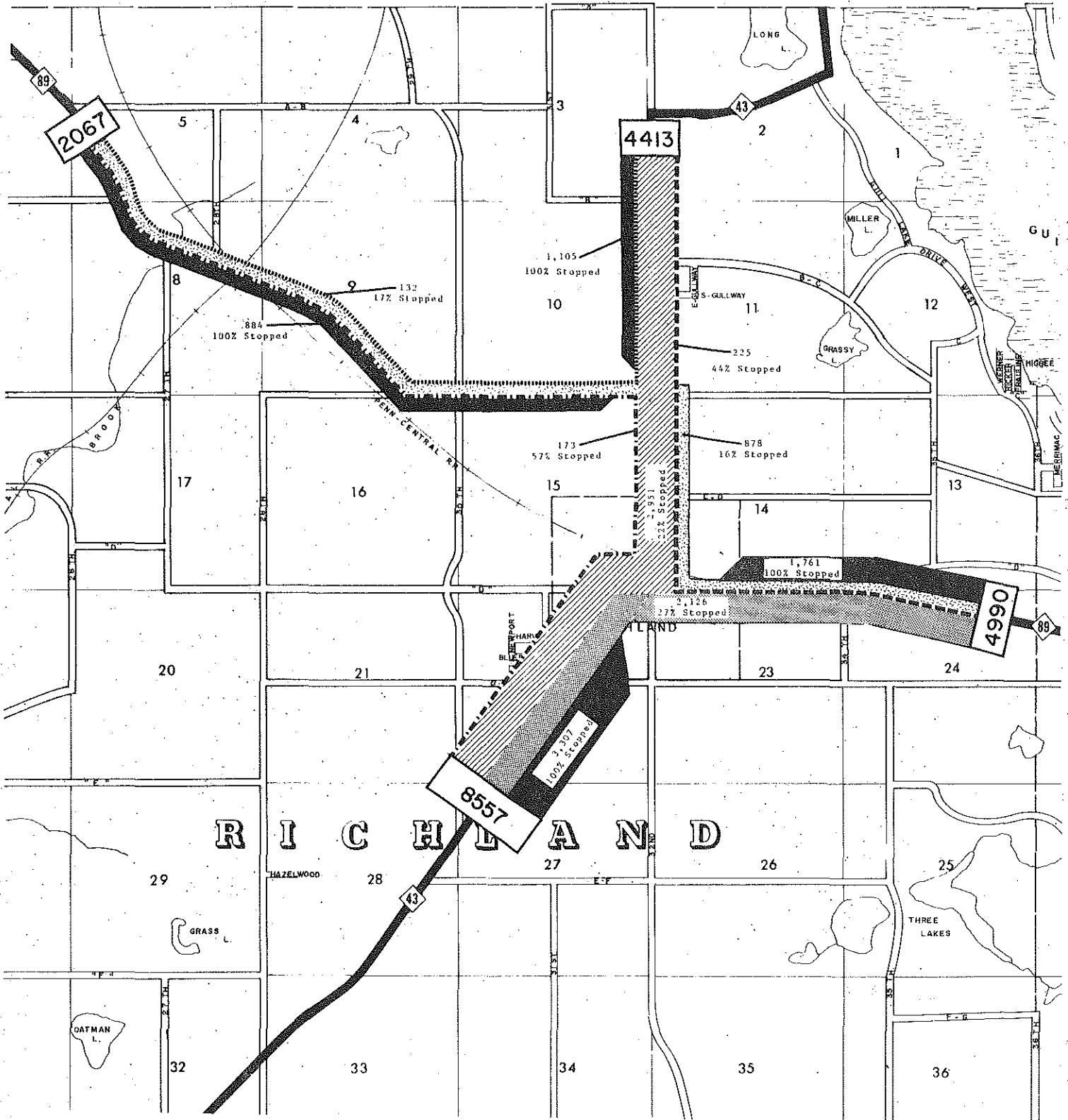
1	651	22	2,300	78	2,951	34
2	571	27	1,555	73	2,126	25
3	3,307*	100	0	0	3,307*	39
4	<u>98</u>	<u>57</u>	<u>75</u>	<u>43</u>	<u>173</u>	<u>2</u>
Total	4,627	54	3,930	46	8,557	100

STATION 4

1	22	17	110	83	132	6
2	143	16	735	84	878	43
3	98	57	75	43	173	8
4	<u>884*</u>	<u>100</u>	<u>0</u>	<u>0</u>	<u>884*</u>	<u>43</u>
Total	1,147	55	920	45	2,067	100

*Vehicles which went into and/or came out of Richland through that Interview Station.

TRAFFIC FLOW DIAGRAM



SOURCE: 1977 CARD SURVEY
 VOLUMES = 14 HOUR TRAFFIC
 MDSH&T



EXHIBIT 7

STATION 1 - (M-43 North of Richland)

During the 14 hour card survey, 4,413 vehicles passed through Station 1. Of this total, 2,537 vehicles, or 57 percent, did not stop in Richland.

Of all the vehicles passing through Station 1, 2,951, or 67 percent, remained on M-43 and passed through Station 3, located south of Richland. Of the vehicles traveling between these two stations, 2,300, or 78 percent, did not stop in Richland.

The other significant movement through Station 1 was by vehicles which went into and/or came out of Richland; 1,105, or 25 percent, made that type of movement.

STATION 2 - (M-89 East of Richland)

During the 14 hour card survey, 4,990 vehicles passed through Station 2, the second highest total of the four stations. Of this total, 2,417, or 48 percent, did not stop in Richland.

Of all the vehicles passing through Station 2, 2,126, or 43 percent, traveled through Station 3 located on M-43 south of Richland. Of the vehicles traveling between these two stations, 1,555, or 78 percent, did not stop in Richland.

The other significant movement through this station was by vehicles which went into and/or came out of Richland; 1,761, or 35 percent, made this type of movement.

The movement of traffic between Station 2 and Stations 1 and 4 was insignificant with 4 percent and 18 percent respectively of the total.

STATION 3 - (M-43 Southwest of Richland)

During the 14 hour card survey, 8,557 vehicles passed through this interview station. This was the largest number to pass through any of the stations and was 41 percent of all the vehicles that passed through the four interview stations. Of this total, 3,930, or 46 percent, did not stop in Richland.

There was no single predominant movement through this station to any of the other stations. Instead, the movement was divided into three directions. The largest movement was by vehicles that went into and/or came out of Richland; 3,307, or 39 percent, made this movement.

The second major movement through this station was to Station 1, located on M-43 north of Richland. Of the total, 2,951, or 34 percent, stayed on M-43 through Richland with 2,300, or 78 percent, not stopping in Richland.

The third major movement through this station was to Station 2, located on M-89 east of Richland. Of the total number of vehicles passing through this station, 2,126, or 25 percent, made that movement. Of the total number of vehicles making this movement, 1,555, or 73 percent, did not stop in Richland.

STATION 4 - (M-89 Northwest of Richland)

During the 14 hour card survey, 2,067 vehicles passed through this station. This was the lowest number to pass through any of the four stations.

There were two major movements through this station with both having 43 percent of the total traffic. One was through Station 2, located on M-89 east of Richland and the other was by vehicles which went into and/or out of Richland. Of the vehicles traveling through Richland on M-89, 735, or 84 percent, did not stop.

IV. TRAFFIC COUNTS

Traffic counts were taken at 15 locations on M-43 and M-89 for seven consecutive days from June 6 through June 12, 1977. The purpose of these counts was to determine how much the traffic volume fluctuated during the days of the week at the various locations. The locations where these counts were taken is shown in Exhibit 8 and the counts are shown in Exhibit 9.

In general, these counts shown that traffic on M-43 and M-89 at this time of the year is lowest during the weekend. It then gradually starts increasing on Monday and Tuesday and reaches a peak on Friday. The survey was conducted on Thursday, a day which the counts show to have high volumes but not the highest. Therefore, the results from the survey should be a good representation of the traffic on these state trunklines.

TRAFFIC COUNT LOCATIONS



EXHIBIT 8

1977 TRAFFIC COUNTS

Monday June 6 - Sunday June 12

STATION	1	2	3	4	5
Mon.	19619	15506	11514	No Count	10435
Tues.	23224	15725	12223	11689	11041
Wed.	24142	15404	11849	11638	10705
Thurs.	23283	16422	12115	12650	10770
Fri.	25783	18403	13161	10651	12000
Sat.	19827	16895	10879	8534	10096
Sun.	14812	11892	8693	No Count	8129

STATION	6	7	8	9	10
Mon.	10022	12085	9230	5485	10417
Tues.	10519	12721	9863	5930	10833
Wed.	10242	12200	9364	5834	11715
Thurs.	10436	12564	10058	6139	11662
Fri.	11479	13818	10921	6742	12218
Sat.	9801	11968	9268	6229	10836
Sun.	7651	8945	6792	5014	8491

STATION	11	12	13	14	15
Mon.	No Count	2566	2335	No Count	3979
Tues.	8875	2560	2500	5549	3973
Wed.	11241	2454	2417	5690	4064
Thurs.	12410	2698	2640	5338	4132
Fri.	13860	2943	2827	5978	4628
Sat.	12146	2795	2726	No Count	4176
Sun.	10124	2586	2614	No Count	3520

EXHIBIT 9

CONCLUSION

It is the conclusion of this report that a bypass of Richland be given consideration by the MDSH&T Task Group which has been organized for the purpose of making recommendations for improvements to M-43 and M-89. This conclusion is based on the information obtained from the card survey and traffic forecasts contained in TAR 70, Supplement #1, M-89, and TAR 195, Supplement #1, M-43 (Gull Road).

The card survey found that there is a major movement of traffic through Richland on M-43. A significant portion of this traffic, 78 percent, does not stop in Richland. Another major movement of traffic which should be given consideration when alternative bypass corridors are developed is between M-43 south of Richland and M-89 east of Richland. A significant portion of this traffic, 73 percent, also does not stop in Richland.

Traffic forecasts for M-43 south of Richland indicate that the Average Daily Traffic will increase from 9,000 in 1975 to 16,800 by 1995. Average Daily Traffic on M-43 north of Richland will increase from 8,300 in 1975 to 16,200 by 1995. Average Daily Traffic on M-89 east of Richland is expected to increase from 7,800 in 1975 to 16,600 by 1995.

Therefore, because such a large percentage of the traffic on M-43 and M-89 does not stop in Richland and traffic volumes are forecasted to be over 16,000 on both M-43 and M-89 in the Richland area, it would be desirable to remove trunkline traffic from the Village of Richland if possible.