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EVALUATION OF THE INTERSTATE 80 EMERGENCY REPORTING SYSTEM

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Final Report

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Division of Research and Demonstration
In Cooperation With
U.S. Department of Transportation
Federal Highway Administration

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16. Abstract

An Emergency Reporting System was installed on Interstate Route 80 in Morris County between Netcong and Denville, New Jersey and became fully operational in June 1977. The total system consists of 56 phones oppositely spaced at approximately one-half mile intervals and is 13.3 miles in length. The phones are capable of Two-way voice communications and are connected by land wire to the central console located in the Netcong Police Barracks.

The Interstate Route 80 System was studied from June 1977 through June 1978. During this period 6226 motorists needed aid of which 1598 used the system. Mechanical problems, flat tire, and out of gas were the three types of aid with the most requests. A comparison of effectiveness was made of The Interstate 80 System to a voiceless system which was located along Interstate Route 287 in New Jersey. The most pronounced differences were that The Interstate 80 System had very few "Gone on Arrival" calls and costs were approximately three times higher than the Interstate 287 System.

A questionnaire distributed to motorists needing aid to determine vehicle stopped times has a low return rate causing a comparison to The Interstate 287 System Time data to be impossible.

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EVALUATION OF I-80 EMERGENCY REPORTING SYSTEM

I. SUMMARY

An Emergency Reporting System was installed on Interstate Route 80 in Morris County between Netcong and Denville, New Jersey and became fully operational in June of 1977. The total system consists of 56 phones oppositely spaced at approximately one-half mile intervals and is 13.3 miles in length. The phones are capable of two-way voice communications and are connected by land wire to the central console located in the Netcong Police Barracks

The effectiveness of the I-80 system was determined by comparing the system's usage data to that of the Emergency Call System which was located along Interstate Route 287. The I-287 system (which did not provide two-way communication) was located in Somerset County and was 8.2 miles in length.

The I-80 system was studied from June 1977 through June 1978 when there were 323 million vehicle miles (mvm) traveled in the study area. During this period, there were 6,226 motorists needing aid (MNA) of which 1,598 used the system. This gives rates of 19.3 MNA/mvm and 5.0 MNA using the system. Thus, 26 percent of the MNA used the system The I-287 system, which was studied for 57 days in 1971, experienced higher rates -- 26.8 MNA/mvm and 7.0 MNA/mvm using the system, but the percent of MNA using the system was 26 percent, the same as the I-80 system.

During the study period of both systems, "mechanical problems" was the highest type of aid with the most requests, followed by "flat tires" and "out of gas." These three types of requested aid comprised 88 percent of the use of the I-80 system and 92 percent of the use of

the I-287 system

The most pronounced difference between the two systems is noted when "gone on arrival" calls are compared. "Gone on arrival" are calls which are responded to by a service vehicle or State Trooper, but the MNA has already left the scene. During the 13 months that the I-80 system was studied, only seven "gone on arrivals" were reported while during the 57 days that the I-287 system was studied, there were 369 requests classified as "gone on arrival."

The I-80 system had installation and maintenance costs which were approximately three times larger than the costs for the I-287 system. However, the I-287 system was not in operation during the winter months as was the I-80 system. Also, the I-80 system had many problems with the underground cable which, if buried farther away from the traveled way, would have reduced the maintenance cost by half.

Questionnaires were distributed to MNA in the I-80 study area by State Police patrol during the month of February and from the middle of April through June 1978. The purpose was to determine first contact, time to first contact, and total time that motorists were stopped However, only 12 of the 1,175 questionnaires were returned. Due to this poor return, estimates of duration of disablement and subsequent comparison to I-287 data was not possible.

CONCLUSIONS & RECOMMENDATIONS

The State Police are pleased with the operation of the Emergency Reporting System for two main reasons. First, there are very few "Gone on Arrival" calls and, therefore, manpower is not lost in sending emergency equipment unnecessarily. Second, the voice system does not require a trooper to be sent to the scene to determine the type of need when a call for aid is received as he does with a system like the I-287 E.C.S. The trooper is then available for other services. It can be assumed during the study period alone, over 300 hours of trooper's time were saved for other purposes because they did not need to answer calls for aid.

The New Jersey Department of Transportation's Electrical Bureau, who maintains the system, also found the system to be acceptable in that it provided good voice communication and the system was able to be kept in continuous operation. However, this system is expensive on a per basis largely because of the high maintenance costs and the low use of the system. Therefore, due to the questionable cost effectiveness, the Electrical Bureau has recommended that the system not be expanded.

A voice system such as the ERS is more advantageous than a non-voice system (such as the I-287 E.C.S.) and only voice should be considered for motorist aid systems at this time. The question of whether to install motorist aid systems cannot be definitely answered on the basis of the results of this study because of the lack of time response data. However, it could be assumed that an aid system would at least reduce time to first contact for most motorists needing aid and that it would give motorists a feeling of security and safety knowing that, if they do have a problem, help in the form of a police dispatcher is at most only a quarter mile away

Due to the inability to get motorists to return the questionnaires,

a part of the data pertaining to the value of the ERS, in terms of time saved, was not obtained. Two methods can be suggested for future use in obtaining this data. The first would be to station a person at the State Police barracks who, when a call would be received, would go to the site of a motorist in need of aid and interview them. The second would be to take the license plate numbers of motorists in need of aid from the State Police log sheet. Then, with the help of the Division of Motor Vehicles, determine the owner of the vehicle and then call and administer the questionnaire over the telephone. Both of these methods would be more expensive than the mail back questionnaire but would probably provide better results.

Finally, during the study period, citizen band radios became very popular as a means of reporting MNA to the State Police. Therefore, it is suggested that if further study is performed it would be necessary to determine what effect the CB radio has on aiding MNA and on emergency reporting systems such as the I-80 ERS

INTRODUCTION AND BACKGROUND

Many motorist aid systems have been evaluated in the past to determine their dependability and usefulness to the stranded motorist. These systems range from the Florida FLASH system, actuated by passing motorists flashing their headlights at a light sensitive transmitter, to wireless two-way voice and telephone systems. All of these systems have the same goal which is to reduce the time the disabled motorist is on the shoulder of the highway. Some systems also help the police in determining the type and urgency of the need for assistance.

This project's objectives were to provide pertinent data to the Federal Highway Administration for use in determining the effectiveness of the two-way land wire telephone Emergency Reporting System (ERS) on Interstate Route 80 and to provide a comparison of this system's usage data to that of the New Jersey Two-Wire Emergency Call System which was located along Interstate Route 287

The Interstate Route 80 Emergency Reporting System is located in Morris County between Denville and Netcong, New Jersey as shown in Figure 1. This location is mostly a rural wooded area. The total system includes 56 phones and is 13.3 miles in length. The phones oppositely spaced along the highway at approximately one-half intervals. The system became fully operational in June of 1977.

There are advance signs (Figure 2) at the beginning of the system in both directions and at every on ramp (Figure 3) within the system's area to notify motorists of its existence

The phones (Figure 4) are connected by land wire which was installed underground along the shoulder of I-80 by the plowed-in method

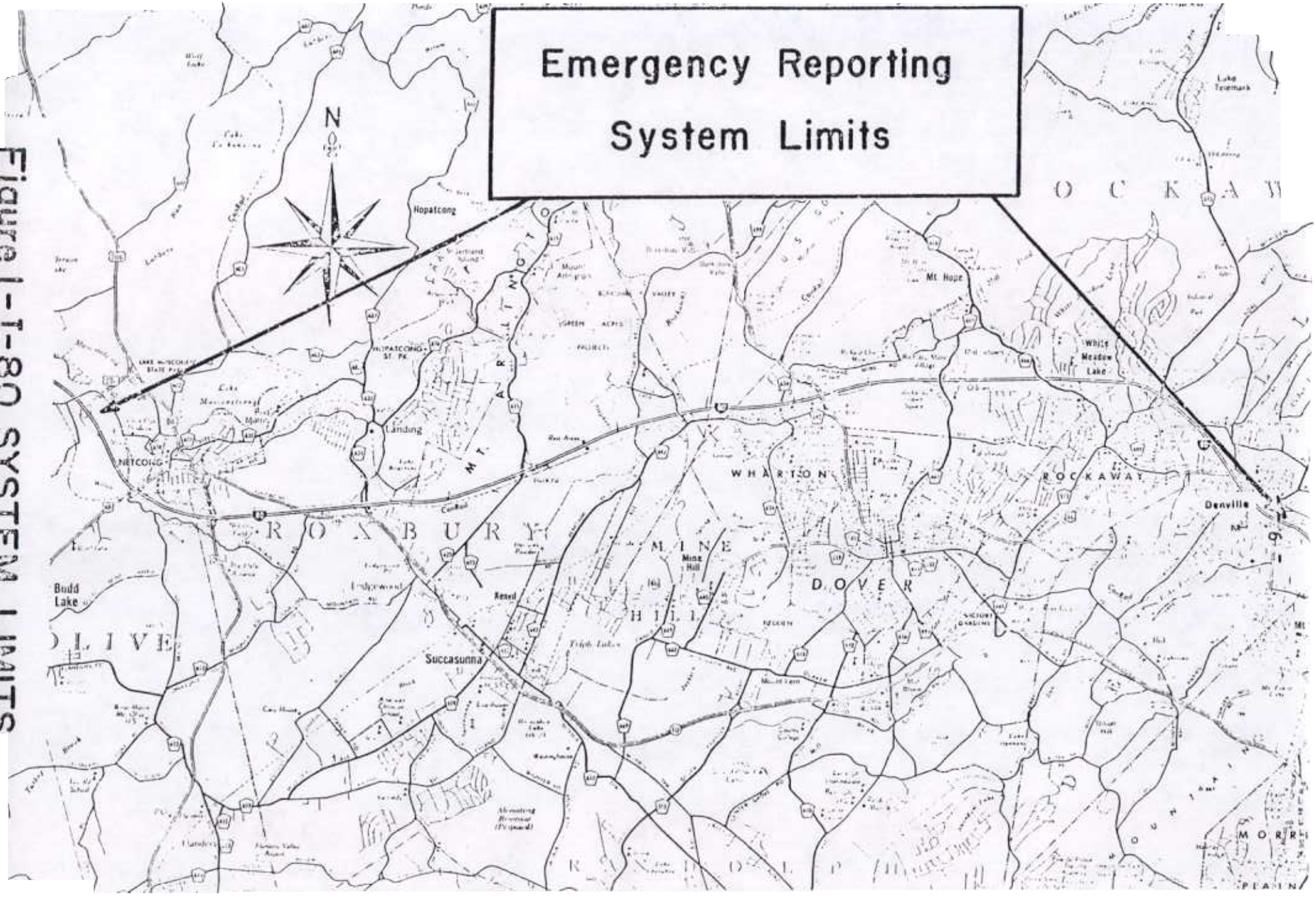

Figure I-1-80 SYSTEM LIMITS

FIGURE 2 - I-80 SYSTEM'S ADVANCED SIGNING

FIGURE 3 - I-80 SYSTEM'S RAMP SIGNING

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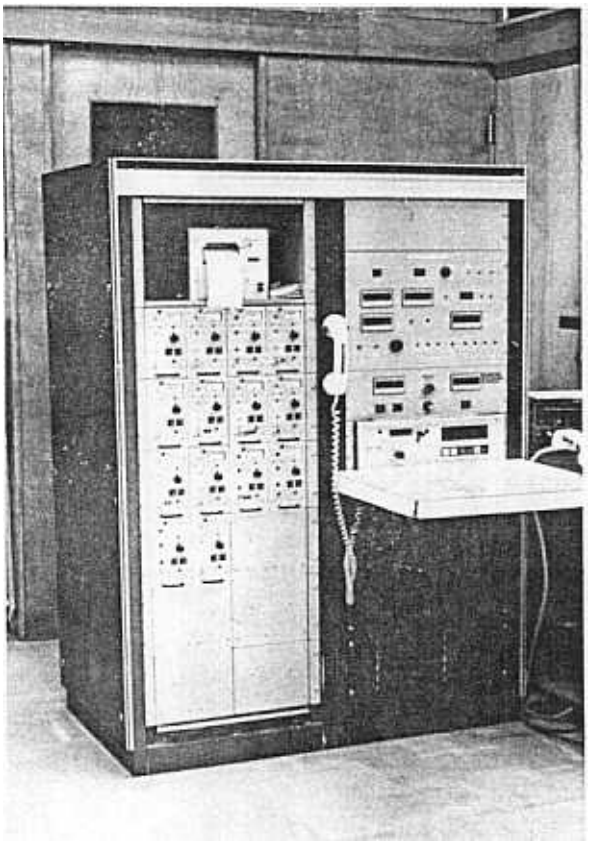

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There are 16 circuits, four along each side of the roadway in either direction from a central console. Every fourth phone is connected to the same circuit, thus making up a party line. The system has the potential of being extended in both directions to reach a total system distance of 35 miles.

The system's console (Figure 5) is located in the Netcong State Police Barracks and is manned by State Police personnel. The system has the capability of determining the operational status of each phone either by a manual routine or by automatic programming. When a phone is picked up by a motorist, the location of the phone is identified on the console and an audio alarm is sounded. The system also has the capacity of identifying the location of another incoming call if the dispatcher is already hooked up with a motorist needing aid. The State Police dispatcher records on the breakdown log sheet all incoming calls on the ERS along with the patrolling troopers' incident reports and any telephone incident reports.

The Interstate Route 287 system was located in Somerset County and was 8.2 miles in length. Four hundred and twenty-five reflective push button switches were placed on delineator posts which were spaced at 200 feet intervals on both sides of the highway. This system was also a land wire system which had a central monitoring location. However since this system was not a voice system, a State Trooper had to be dispatched to the vicinity of the emergency call to determine the type of need required. The system was in use for 57 consecutive days during the summer of 1971, during which an extensive evaluation was performed.

A report entitled Two-Wire Emergency Call System gives a more detailed description of the system's location, operation, and evaluation.

The results of the Route 80 system evaluation will be compared to the results of the studies performed on the Route 287 system.

PROCEDURE

This project recorded data for the operation of the ERS on a 13.3 section of Interstate 80 for a period of 13 months. Three sources of information were used to collect the pertinent data. They are the Police dispatcher's daily log sheet and a NJDOT permanent volume count station within the study section. A motorist questionnaire was tried but yielded no useful information except perhaps to indicate little concern of the public with the ERS

The central console located in the Netcong State Police Barracks is manned around the clock by police personnel. When a motorist needing aid (MNA is detected either by the use of the ERS or by a patrolling officer, the State Police dispatcher logs in the data about the stoppage on the Aid to Motorist Report (Figure 6). If the ERS was used, it is noted in the "Trooper" column of the report. From this log sheet, the following data about all stoppages in the study area was obtained for analysis:

1. nature of assistance required
2. date
3. time of day
4. location of disabled motorists
5. whether the ERS was used

This information was used along with traffic volume information to provide the rate of MNA by type of aid required.

The traffic volume information was obtained from a permanent count station (with loop detectors located within the study area approximately six miles from the eastern end. This station gives hourly volume counts which are tabulated for three weeks in the eastbound direction and one

STATION	NEW JERSEY STATE POLICE AIDS TO MOTORIST REPORT	MONTH and YEAR	SHEET NUMBER

1	2	3	4	5	6	7	8	9	10	11	12	13
Aid Number	Date	Time	Roadway	Mile Post	Municipality	Year and Make	Registration Number/ State	Type Of Service	Service	Time Called	Trooper	Completed

FIGURE 6 - I--80 LOG SHEET

S.P. 493 (1-78)

week in the westbound direction per month. Sample counts throughout the study area were used to adjust the basic count information to an average volume for the 13.3 miles of roadway within the ERS limits

Stamped, self-addressed motorists' questionnaires (Figure 7) were distributed by the State Police to all stopped motorists during February and from mid-April through June 1978. These questionnaires were intended to provide information pertaining to:

1. who was the first to contact the MNA
2. when was first contact made
3. duration of motorist's stoppage
4. type of aid requested, and
5. cost of repairs.

This data would have been used to determine the effectiveness of the I-80 ERS in reducing the stopped times for MNA. However, due to the small return of these questionnaires, which will be discussed later this information was unobtainable.

V. RESULTS AND DISCUSSION

The I-80 ERS became fully operational in June 1977. From June 1977 through June 1978, a period of 13 months, there were approximately 323 million vehicle miles through the 13.3 mile system length. During this same time period, 6,226 stoppages were logged on the State Police dispatcher's log sheet. This gives an overall rate of 19.3 MNA per million vehicle miles (mvm). Also, 1,598 of these MNA used the ERS, which yields the rate of 5.0 MNA/mvm. Thus, approximately 26 percent of all MNA within the study area used the ERS

Figure 8 shows the use of the ERS the total MNA, and the percent

THIS QUESTIONNAIRE WAS DEVELOPED TO AID IN EVALUATING THE EFFECTIVENESS OF THE EMERGENCY CALL SYSTEM. YOUR ASSISTANCE BY COMPLETING AND RETURNING THIS QUESTIONNAIRE WILL BE APPRECIATED.

INSTRUCTIONS

1. Write the month, day and year of your need for help on Route 80.
2. Write the time of day that you had a need for help and circle either AM or PM.
3. Circle the direction you were traveling on Route 80 when your need for help occurred.
4. Circle the type of your motor vehicle. Then write the year and make of the vehicle.
5. Check the reason why you were in need of help.

PLEASE ANSWER THE QUESTIONS ON BOTH SIDES OF THIS PAGE, THEN FOLD AND PLACE IN THE PRE-ADDRESSED, POSTAGE-PAID ENVELOPE.

1. Date you Stopped____/____/____
2. Time you Stopped_____ AM PM
3. Direction of Travel (East) (West)
4. Year and Make of: Car Year_____ Make_____
   Van
   Truck
   Motorcycle
   Other (specify)_____
5. Why was your vehicle stopped?

   ____Mechanical problem ____Low on oil ____Accident
   ____Flat tire ____Medical ____Overheated
   ____Out of gas ____Fire
   ____Other (Describe)__ _____

(OVER)

FIGURE - DISABLED MOTORIST'S QUESTIONNAIRE

6. f the telephone Emergency Call System was used to report your need for help, on line a indicate the time of day that you first used the system. If the system was not used, write on line b the time of day the State Police patrol arrived to offer you help.

7 f contact was made with any other person before the State Police patrol arrived to assist you, check the appropriate line in part a and write the time of this contact on line b.

8. On line a write the time the service vehicle arrived to begin repair on your disabled vehicle. If the service vehicle repaired your vehicle on Route 80, write on line b the time he finished these repairs. If the service vehicle had to tow your vehicle off Route 80, write on line c the time he towed you away.

9. For statistical information please write the total amount you were charged by the service agency and circle either yes or no to indicate if you belong to any group which will pay service charges, such as AAA.

If you have any comments about the Emergency Call System and how it can be improved, please write them in the space provided.

6. Did you use the telephone Emergency Call System?

   a. If yes, at what time?

   b. If no, at what time did State Police patrol arrive?_____

7. Was any other contact made prior to State Police arrival?_____

   a. If yes, by whom?

      Passing Motorist Passing Service Vehicle
      Walk to commercial phone
      Other (Describe)_____

      _____

   b. Time of prior contact_____

What time did the service vehicle:

   a. Arrive?_____

   b. Finish repairs on your car?_____

   c. Tow your car off highway_____

9. Total cost for service: $_____

Do you belong to any group, such as AAA, which will pay service charges?

Yes No

10. Comments:

FIGURE 7 - CONTINUED

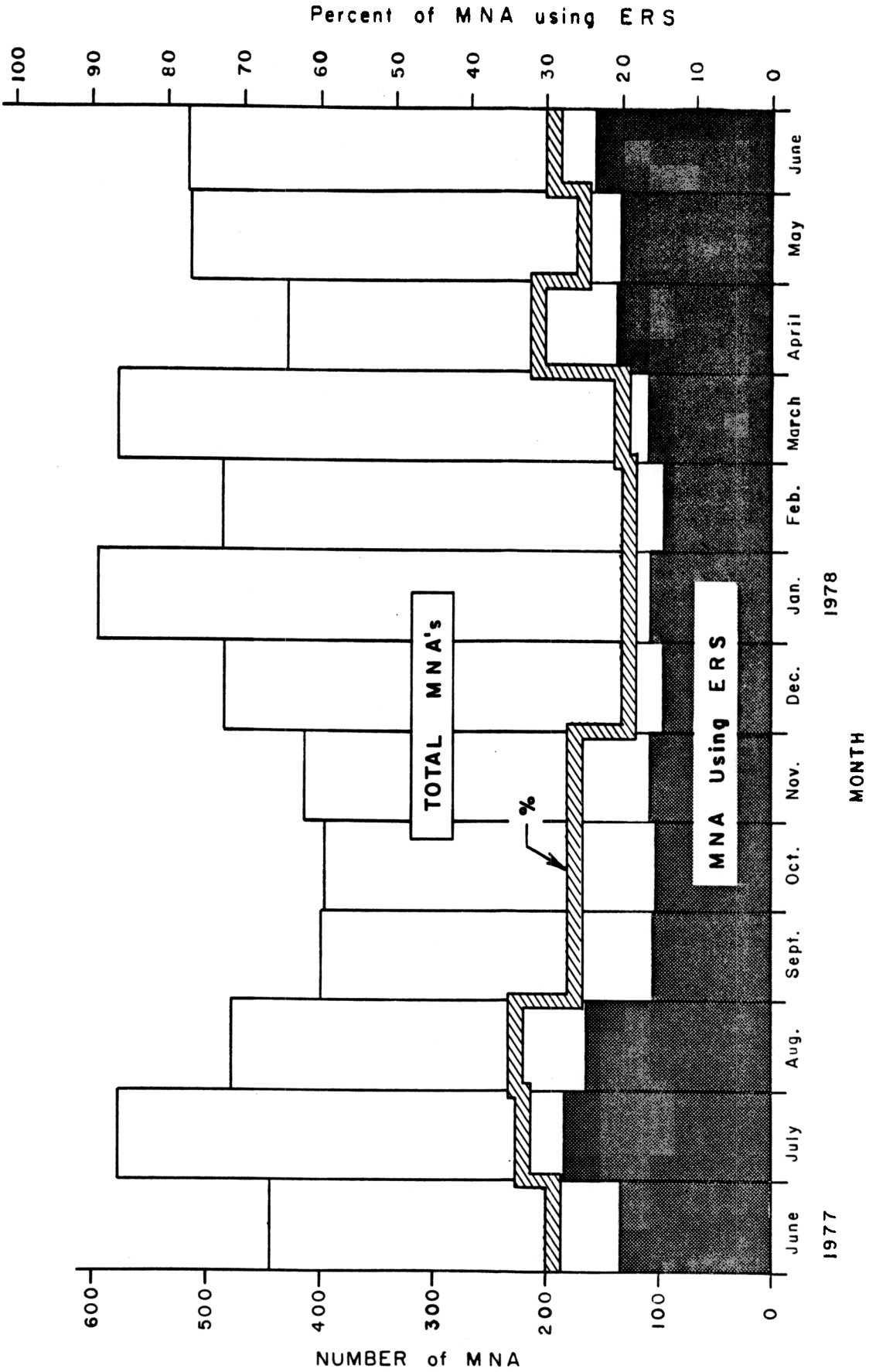


Figure 8 Monthly Use Of Route 80 Emergency Reporting System

of MNA who used the ERS by month. The highest number of MNA using the ERS (187) occurred during the month of July, while the highest percentage of MNA using the ERS (34 percent occurred during August. The highest number of MNA (585) and the lowest percentage of MNA using the ERS (19 percent) occurred in January. The trend seems to indicate that a larger percentage of MNA use the ERS during the summer months than during the winter months.

Figure 9 shows the rates of MNA and MNA using the system by month. The rate for MNA is considerably higher for the winter months. The National Weather Bureau reported that the winter of 1977-78 had the fourth largest snowfall since this statistic was first recorded in 1888. From accident reports it was found that during the winter months, 67 percent of the vehicle accidents within the system's limits occurred on a snowy or icy roadway, while during the summer months only approximately 30 percent occurred on a wet roadway. The assumption can therefore, be made that due to the extreme weather conditions, breakdowns which would not occur in the summer (such as getting stuck in snow and snow related accidents increased the winter months' rate. This could also explain the low percentage of MNA using the ERS during the winter months, since motorists may decide to stay with their vehicle rather than leaving it to walk to the nearest phone which, while only a quarter of a mile away, may be out of sight.

Figure 10 represents the use of the ERS, the total MNA, and the percent of MNA using the ERS by day. The highest number of MNA (988) and the highest number of MNA using the ERS (263) occurred on Friday. The highest percentage of MNA using the ERS (28 percent occurred on Sunday, while the lowest percentage (23 percent) occurred on Tuesday

Figure 9 — Monthly Rates Of Route 80 Emergency Reporting System

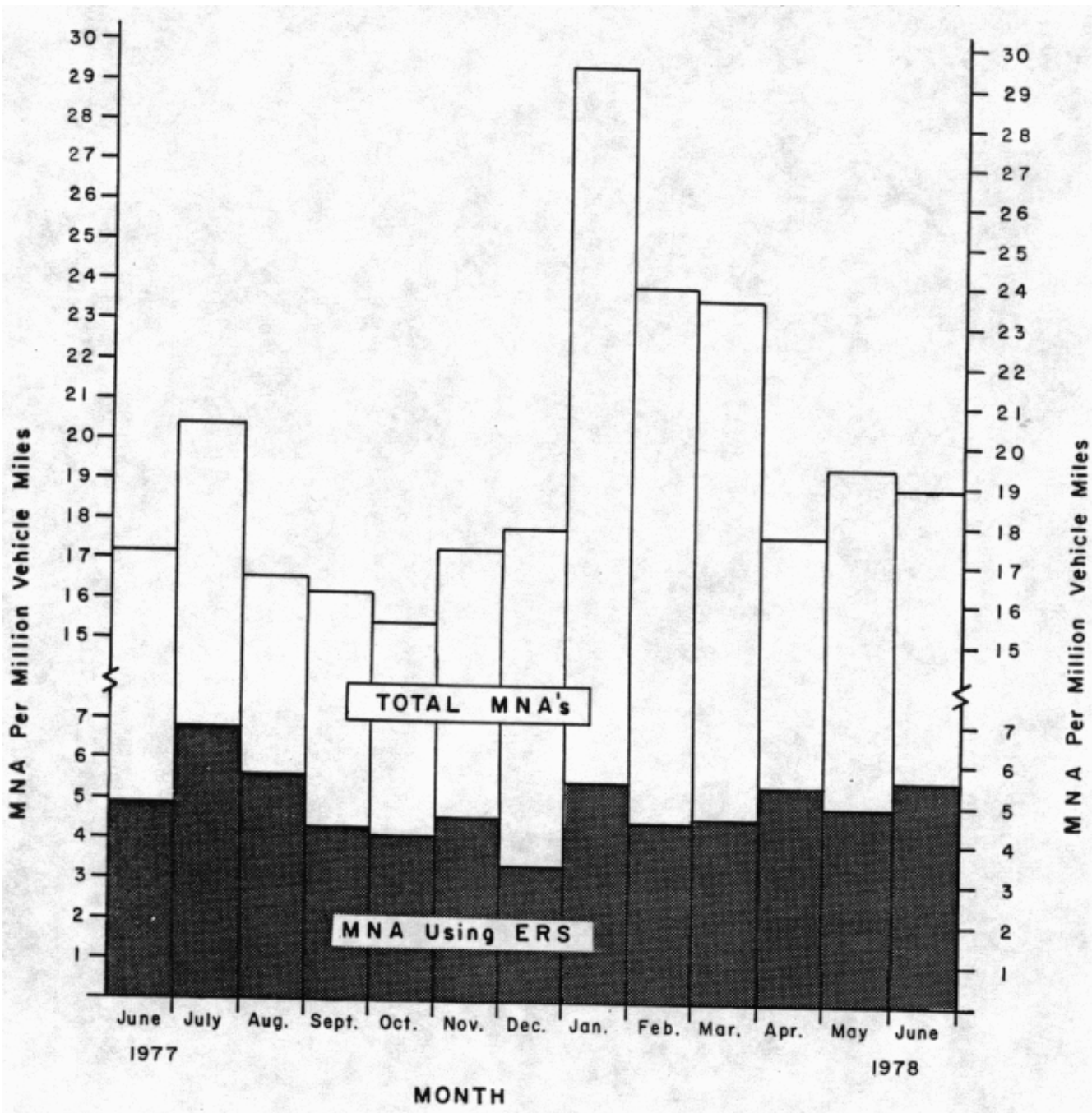


Figure Daily Route Emergency Reporting System

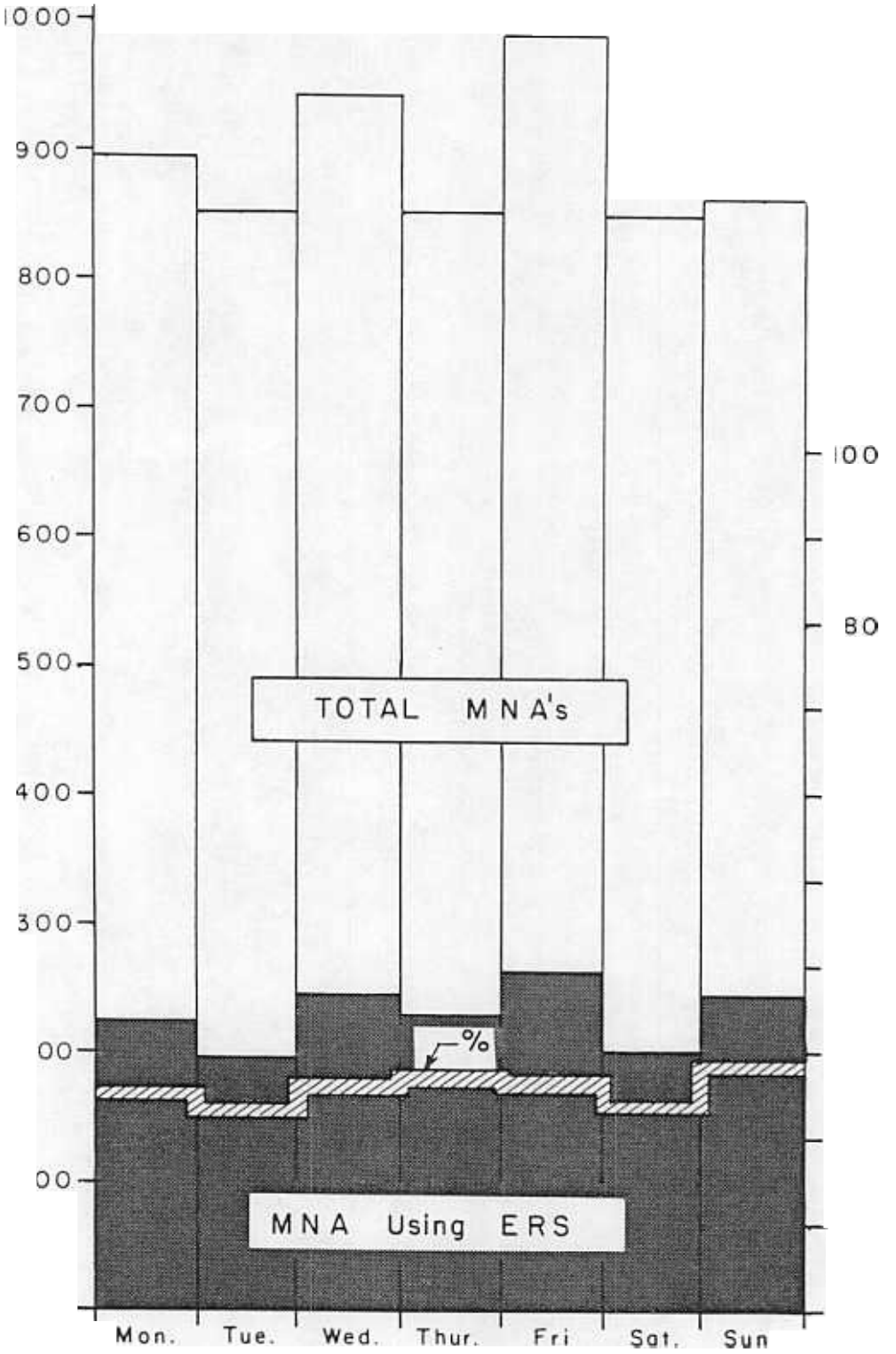


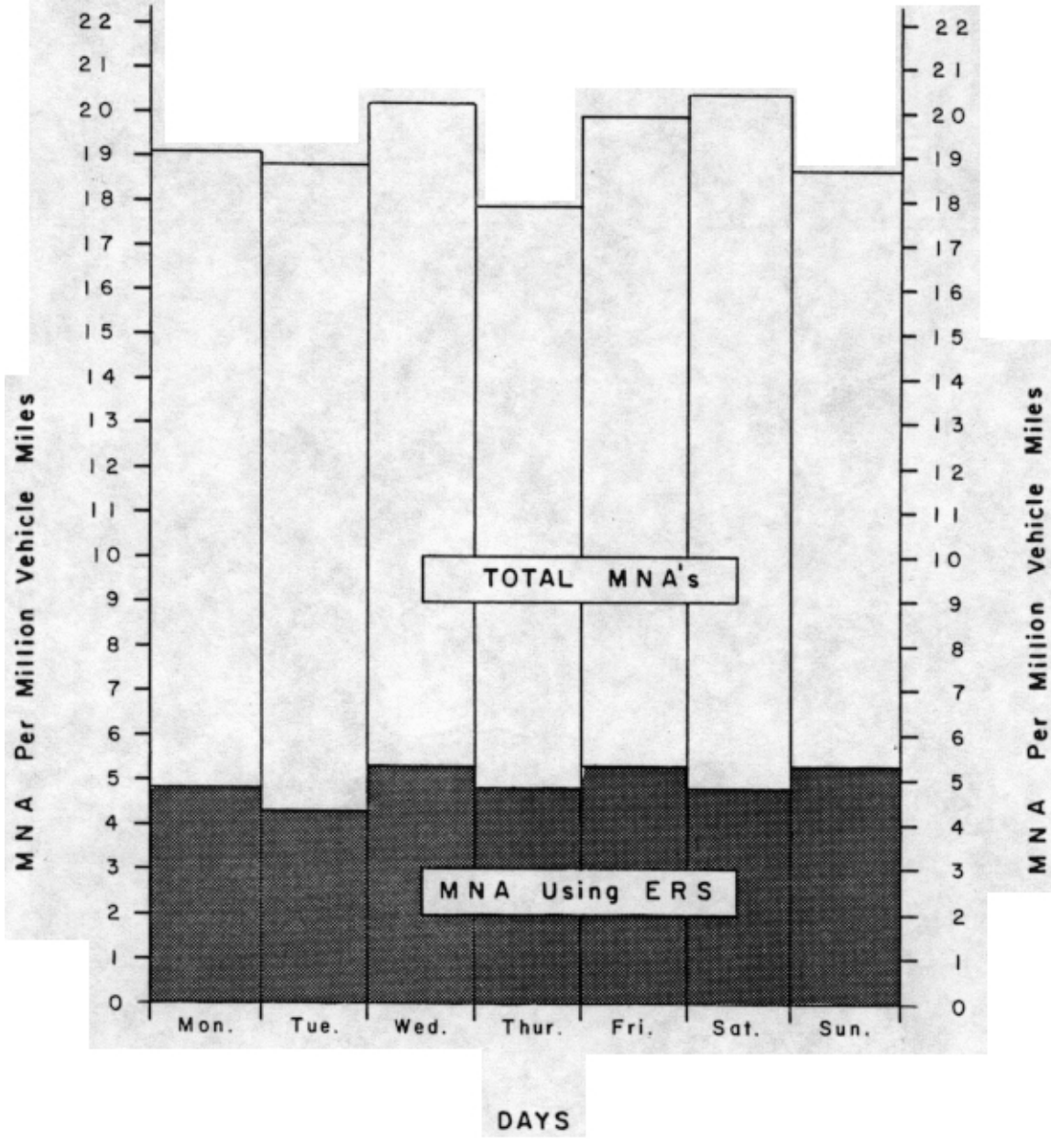
Figure 11 shows the rates of MNA and MNA using the ERS.

The breakdown of the use of the ERS by time of day is shown in Figure 12. The highest number of MNA (491 occurred from 4 to 5 p.m., while the highest number of using the ERS (126) occurred in two hours, 3 to 4 p.m. and 4 to 5 p.m. The highest percentage of MNA using the ERS (33 percent occurred from 11 a.m. to 12 noon, while the lowest percentage (14 percent occurred from 1 to 2 a.m. Figure 13 shows the rates by hour of MNA and MNA using the ERS. As can be seen, the early morning hours of 12 to 5 a.m. have a much higher rate for MNA than th rest of the day.

Figure 14 reports the use of the ERS, total MNA, and the percent of MNA using the ERS by type of breakdown. It can be seen that the highest number of MNA (2,638) and the highest use of the ERS (869) are for mechanical breakdowns. Sixty-one percent of the motorists recorded as "relay message" used the ERS, while 41 percent of the motorists categorized as "out of gas" used the ERS

A major question concerning the data collected is that no motorist who was involved in an accident was recorded as using the ERS. A few possible causes should be mentioned for this occurrence, although no substantiating data for these causes is available. First, motorists involved in an accident may feel obligated to stay with their vehicles after the incident or may be injured and unable to walk to the nearest ERS phone. Secondly, the level of State Police patrol surveillance with the aid of the increased number of citizen band radios on the highway may be enough to detect and provide assistance quickly to the site of an accident. However, no records are kept by the State Police on CB radio calls dealing with MNA. This occurrence may also be due to the

Figure 11 — Daily Rates Of Route 80
Emergency Reporting System



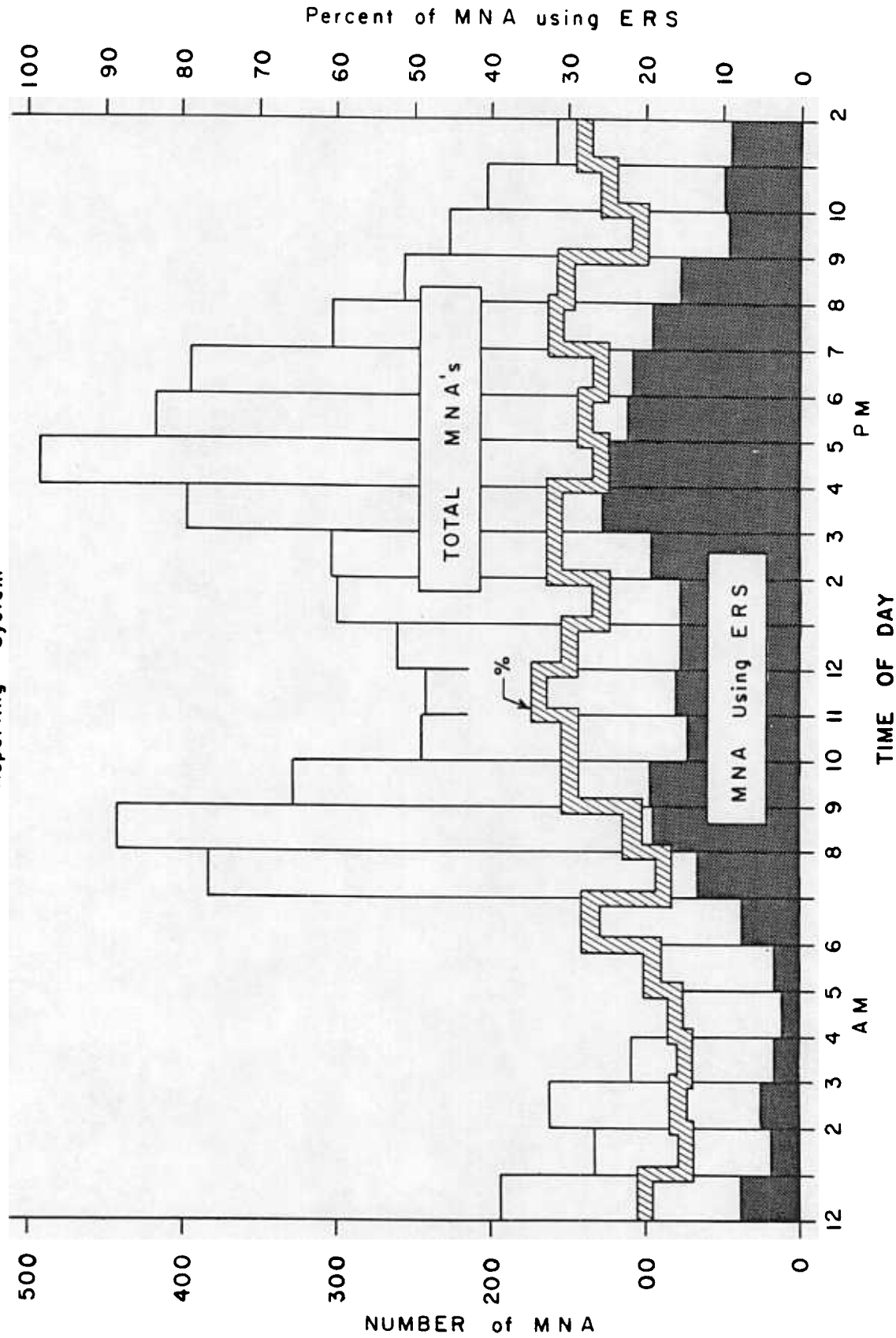


Figure 12 — Hourly Use Of Route 80 Emergency Reporting System

Figure 13 - Hourly Rates of Route 80 Emergency Reporting System

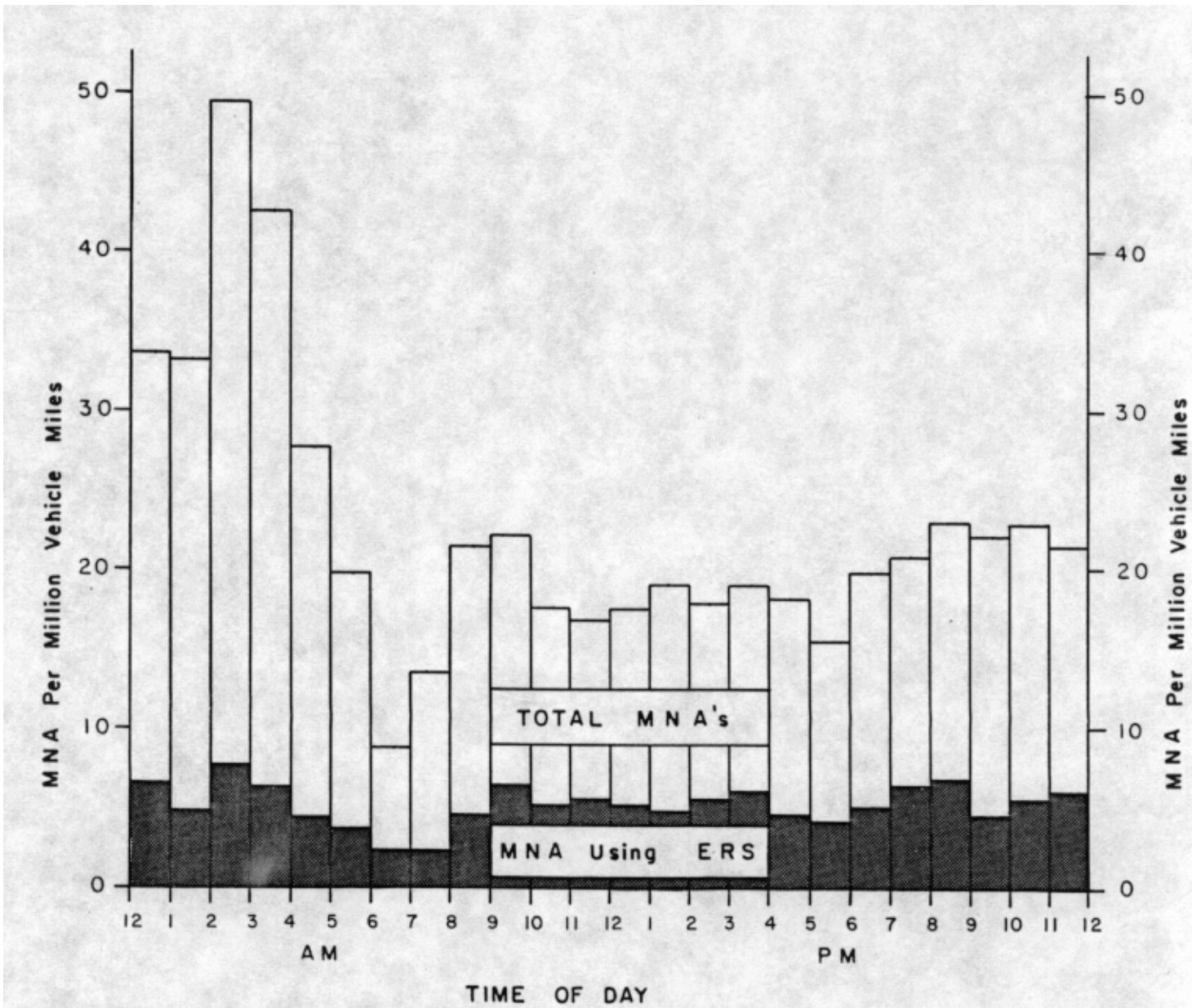
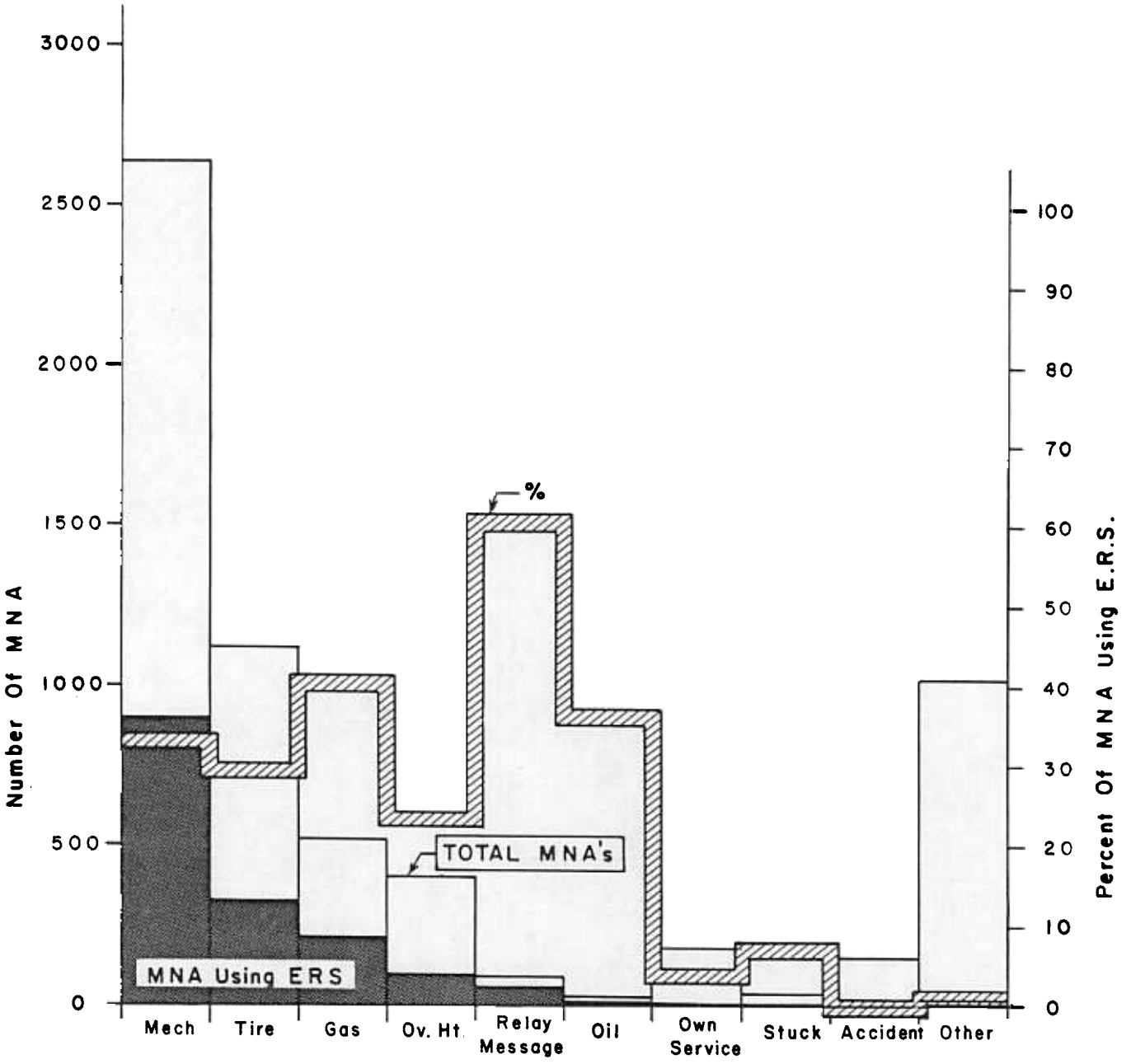


Figure 14 — Use By Type Of Route 80 Emergency Reporting System



method that is employed in recording the use of the ERS. The column marked "Trooper Reporting" on the log sheet (Figure 6) is completed with the trooper's name when a patrolling trooper reports an MNA or with ERS when the system has been used. However, since the name of the State Trooper who was at the scene of an accident is an important piece of data for future use, the dispatcher may have recorded the responding trooper's name whether the ERS was used or not.

Figure 15 represents the location by direction of MNA and MNA who used the ERS. Each section has an ERS phone located at its midpoint. As can be seen, the total number of MNA by direction are very similar. However, one location is of particular interest. That is milepost 32 where rest areas are located on both sides of Route 80. At this one location, there were 657 MNA or approximately 11 percent of the total MNA. Two assumptions can be made about this occurrence. First, motorists who stop at the rest area may not know they have a problem until they return to their vehicle and secondly, that motorists with lesser problems who know where the rest area is located may force their vehicle to make it to the rest area where it will be safely away from the traffic flow rather than stop on the shoulder of the roadway.

Also at this location, 259 of the MNA used the ERS which is 16 percent of the total use of the ERS. This also denotes that almost 40 percent of the MNA at this location used the ERS which is well above the 26 percent for the entire system length. This could be due both to the fact that the motorist knows that his vehicle is safely off the highway and the accessibility of the ERS phone, which is located on the shoulder adjacent to the rest area.

Figure 15 Use Of I-80 Emergency Reporting System By Location

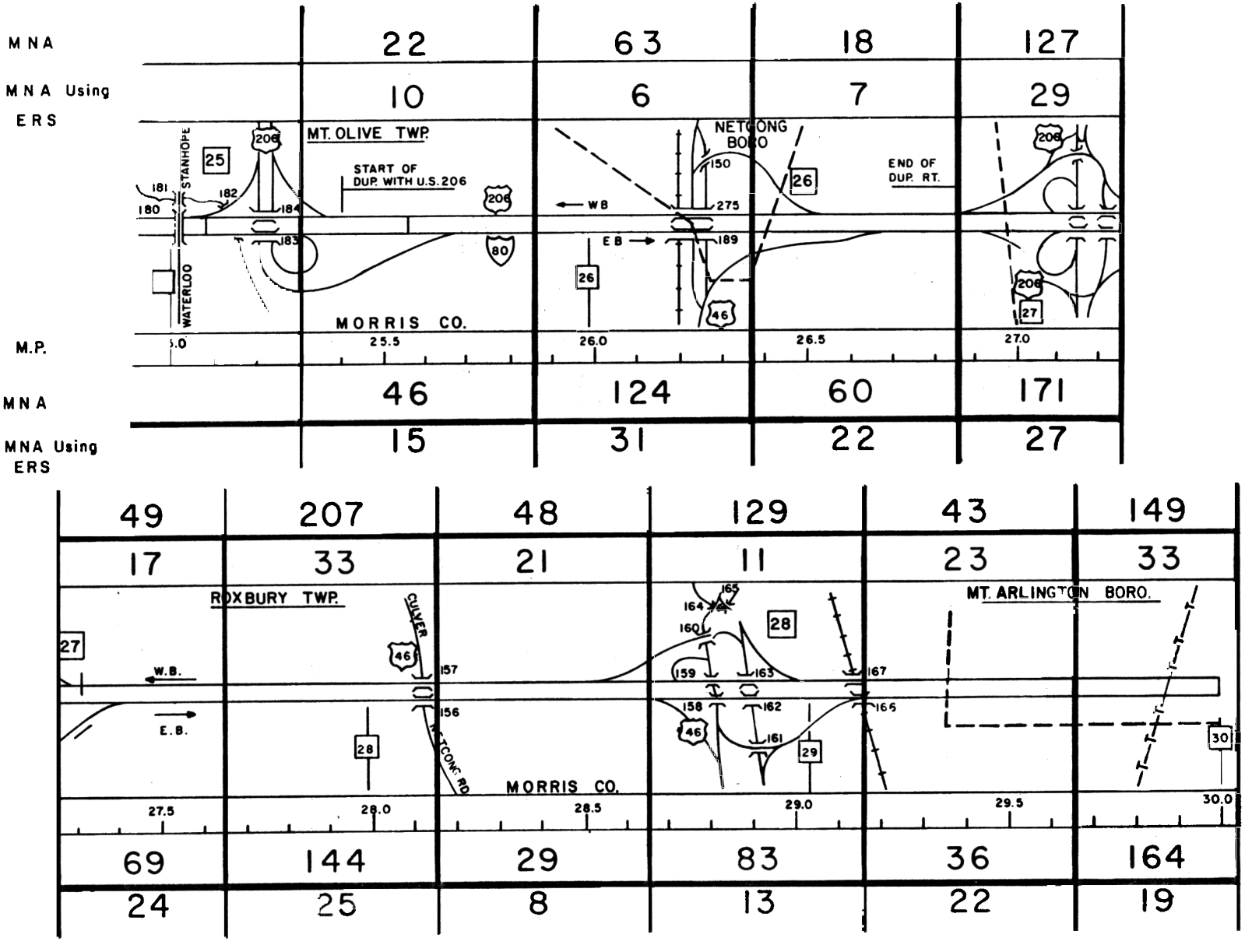
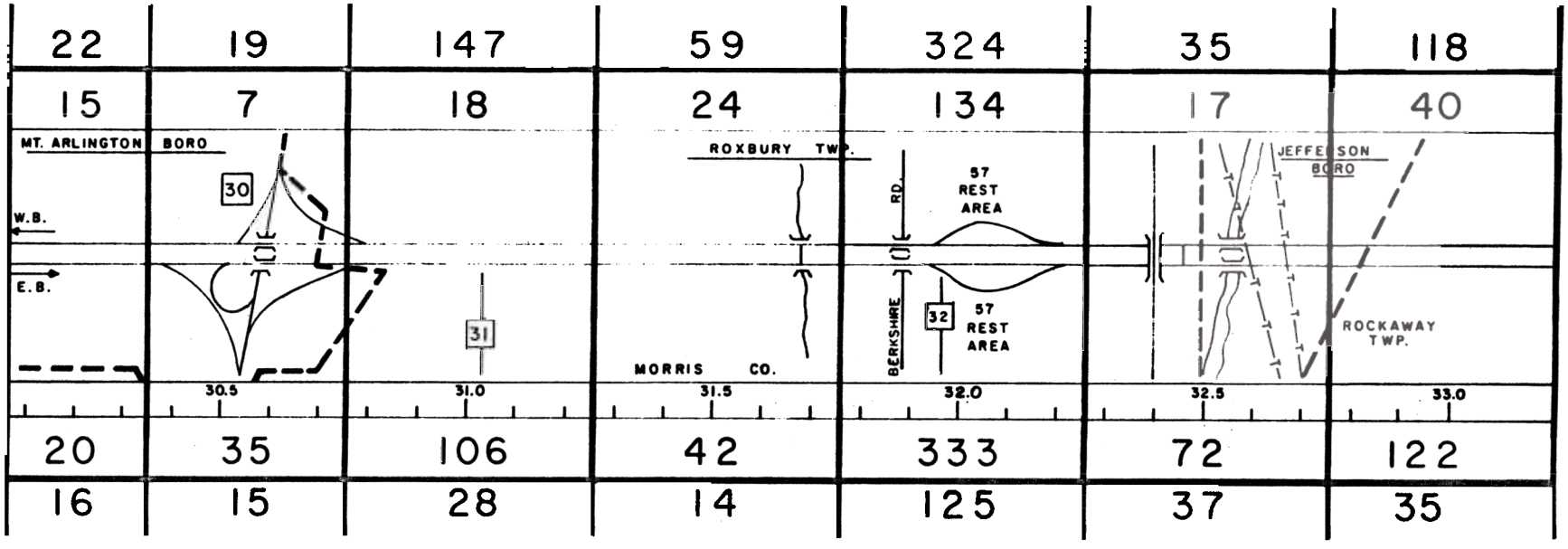


Fig. 15 - Cont'd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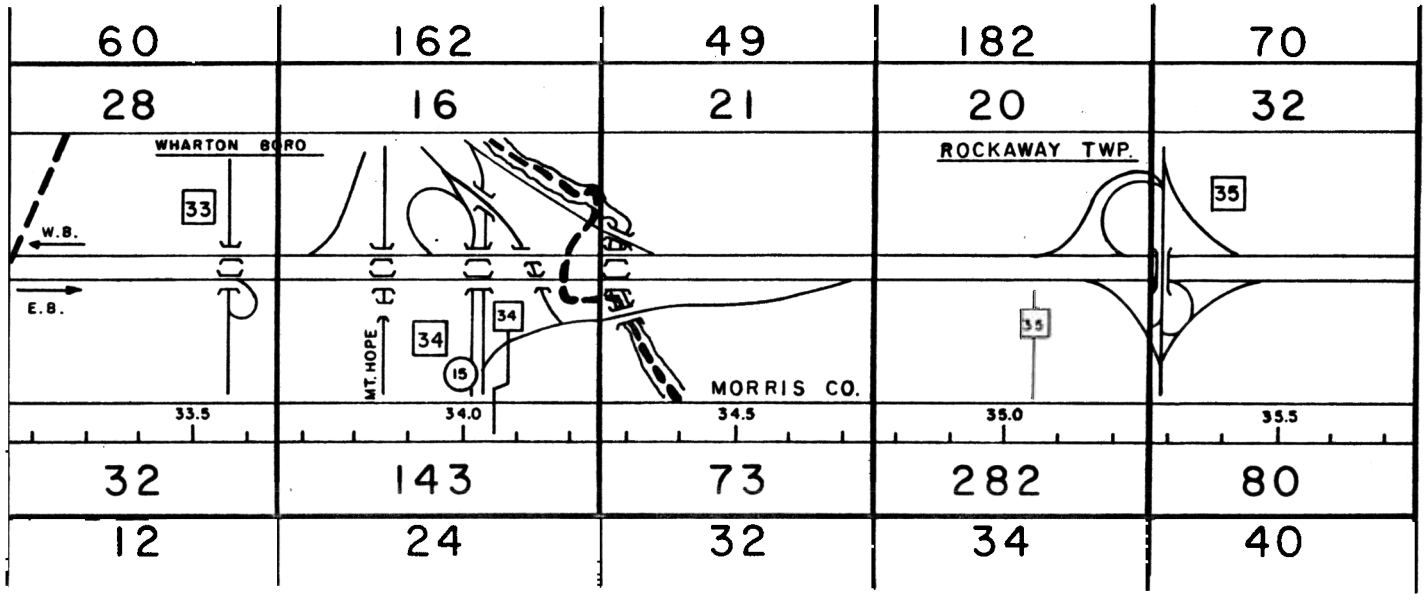
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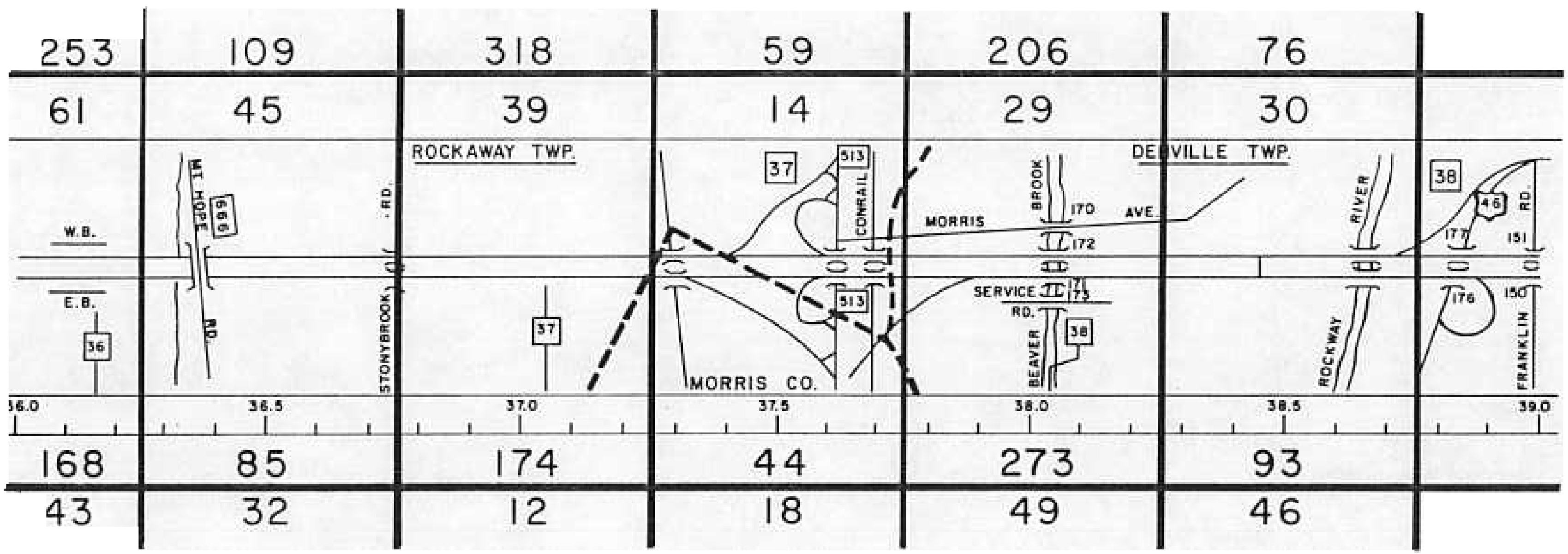
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DENVILLE TWP.
W.B.
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36
MT HOPE RD.
666
STONYBROOK RD.
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CONRAIL
513
MORRIS AVE.
BROOK
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172
SERVICE RD.
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BEAVER
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RIVER
ROCKWAY
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MORRIS CO.
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During the month of February 1978, 285 questionnaires (see Figure 7 were distributed by State Police to all MNA within the 13.3 mile system limits. The questionnaires were accompanied by a postage paid, addressed envelope. The information to be obtained from the questionnaires was first contact of the MNA, time to first contact, and total stopped time. Of the questionnaires distributed, only five were returned to NJDOT. Due to the poor return of questionnaires, a letter signed by Russell H. Mullen, then Acting Commissioner of NJDOT, was procured (Figure 16). This letter was included with the questionnaires urging the public to fill out and return the questionnaire and even had a telephone number to call if the motorist had any questions. This package was distributed from April 19 through June of 1978 to 890 MNA within the study section. No phone calls were received and only seven of the questionnaires were returned. Thus, a comprehensive compilation of data could not be obtained.

Some assumptions can be made about the poor return of the questionnaires. First, this may show that MNA are apathetic about <u>how</u> they receive aid just as long as aid is received. Also, MNA may not have or take the time to complete the questionnaire immediately and do not remember the data requested, such as time of day, when he reaches his destination. It appears that to obtain information for this type of study, a surveillance procedure such as used for the I-287 system study, although more costly, would be more successful than the voluntary questionnaire response method. The I-287 surveillance procedure consisted of stationing observers along the roadway during the daylight hours for a period of two weeks and patrolling the roadway in vehicles during the nighttime hours for a week

Russell H. Mullen
~~ACTING COMMISSIONER~~
COMMISSIONER
Acting Commissioner

STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION
1035 PARKWAY AVENUE
TRENTON, N.J. 08625

Dear Motorist:

You have been given the enclosed questionnaire because your vehicle was stopped along Interstate Route 80 and you needed help before you could continue your trip. Most of us have experienced automobile problems which have forced us to stop along the side of the road and I am aware of the concern you have.

As you may be aware, we have installed emergency telephones along the side of the road in the vicinity of where you were stopped. My hope is that these phones permit motorists to obtain whatever help is needed as quickly as possible. Even if you did not use the emergency telephones, we would like you to answer the enclosed questionnaire so that we can determine how well any service was provided to you.

Your assistance in replying to this questionnaire will enable us to determine what the needs of the motoring public are so that we can then develop the necessary things so that your stop along the road will be as short as possible.

For any information about this study, cal (609) 984-2874 collect.

Thank you in advance for your assistance.

Sincerely,

Russell H. Mullen
Acting Commissioner
of Transportation

FIGURE 16 - LETTER ACCOMPANYING QUESTIONNAIRE

Table 1 is a comparison of the I-80 ERS rates with corresponding rates from the I-287 Emergency Call System (ECS). As can be seen, the I-287 ECS had rates for both total MNA and MNA using the ERS which are approximately 40 percent higher than the I-80 ERS rates. However, the percent of MNA who used the systems are very similar. Both systems were used by 26 percent or about one out of every four who needed aid.

TABLE 1

COMPARISON OF THE RATES FOR THE
I-80 ERS AND I-287 ECS

	MNA Using ERS/MVM	Total MNA/MVM	Percent of MNA Using ERS
I-80	5.0	19.3	26
I-287	7.0	26.8	26

It should be noted that the I-287 study determined all MNA whether reported to the dispatcher or not, while the I-80 study determined the MNA of only the aids reported to the dispatcher. This could explain the higher rates of total MNA for the I-287 system. Also, the spacing of the system stations were much closer for the I-287 ECS. This could explain the higher rates of use of the I-287 system.

The data on MNA who used the systems grouped by type of aid required is also very similar as shown in Table 2.

For both systems, mechanical problems were by far the number one type of aid requested. This was followed by flat tire and out of gas. These three types of aid represented 88 percent of all the calls received on the I-80 system and 92 percent of all the calls on the I-287 system.

TABLE 2

COMPARISON OF I-80 ERS AND
I-287 ECS BY TYPE OF AID REQUIRED

	I-80		I-287	
	Number	Percent	Number	Percent
Mechanical	869	55	100	59
Flat Tire	327	20	30	18
Out of Gas	210	13	25	15
Other	185	12	15	8
TOTAL	1,591	100	170	100
Gone On Arrival	7		369	

The most pronounced difference between the two systems concerning the available data is the "gone on arrival" calls. "Gone on arrival" calls are calls which were responded to by a service vehicle but resulted in no contact with an MNA. During the 13 months of operation of the I-80 ERS, only seven requests for aid ended with a "gone on arrival" classification. During the 57 days that the I-287 ECS was in operation, there were 369 calls which ended with this classification.

Since the I-80 ERS is a two-way voice system, it can be assumed that pranksters and vandals are more discouraged from bothering with this system than with the I-287 voiceless ECS. Also, less time and resources were used for the I-80 ERS answering calls where no aid was needed

The installation and maintenance costs for the two systems are compared in Table 3. As can be seen, the I-80 ERS is approximately three times more costly than the I-287 ECS. However, when comparing the maintenance costs it must be remembered that the I-287 system was only operational during two summer months and was not exposed to the

elements during the winter. Also, the I-80 system had many problems with the underground cable buried under the shoulder being damaged by roadside construction. The maintenance costs for the I-80 ERS would have been cut in half if the cable had been buried further away from the roadway.

Finally, during the study period citizen band radios became very popular as a means of reporting MNA to the State Police. Therefore, it is suggested that a study be performed to determine what effect the CB radio has on aiding MNA and on emergency reporting systems such as the I-80 ERS

TABLE 3

COMPARATIVE COSTS OF
I-80 ERS AND I-287 ECS

	I-287* (ACTUAL)	I-287 (COMPARABLE 1976 FIGURE, 7% INFLATION RATE)	I-80** (ACTUAL)
Installation Cost	$83,600	$117,300	$500,000
Installation Cost/ Mile	10,200	14,300	37,600
Installation Cost/ Call Station	200	300	8,900
Maintenance Cost	1,000	1,400	43,200
Maintenance Cost/ Mile Month	60	85	250
Maintenance Cost/ Call	6	8	27

*Installed in 1971, 8.2 miles, 425 stations, operated two months, 170 calls.

**Installed in 1976, 13.3 miles, 56 stations, operated 13 months, 1,598 calls.

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