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Statewide ★ Transportation Analysis & Research

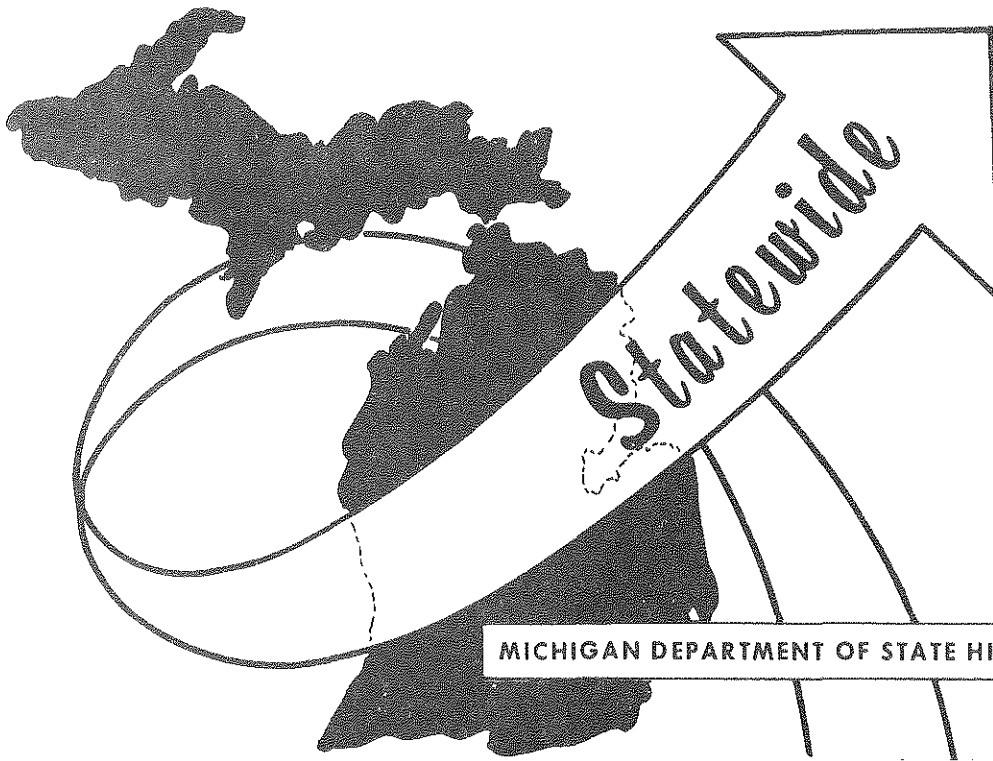
MICHIGAN'S
TRANSPORTATION MODELING SYSTEM

GRAPHIC DISPLAY OF ACCIDENT DATA

Report no. 19

DECEMBER 1972

STATEWIDE RESEARCH AND DEVELOPMENT



MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

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OF

**STATE HIGHWAYS AND TRANSPORTATION
BUREAU OF TRANSPORTATION PLANNING**

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STATE HIGHWAYS BUILDING - POST OFFICE DRAWER K - LANSING, MICHIGAN 48904

December 11, 1972

Mr. Sam F. Cryderman
Engineer of Transportation Planning
Transportation Planning Division

Dear Mr. Cryderman:

The following report was prepared in cooperation with Mr. Stan Lingeman of the Accident Analysis Unit to assist his unit in analyzing certain types of highway accidents.

Techniques available with the Statewide Forecasting Model to graphically display accident data are explained. It should be noted that these methods are not limited to accident data and could be a valuable asset to those desiring a quick overview of large amounts of other highway-related data.

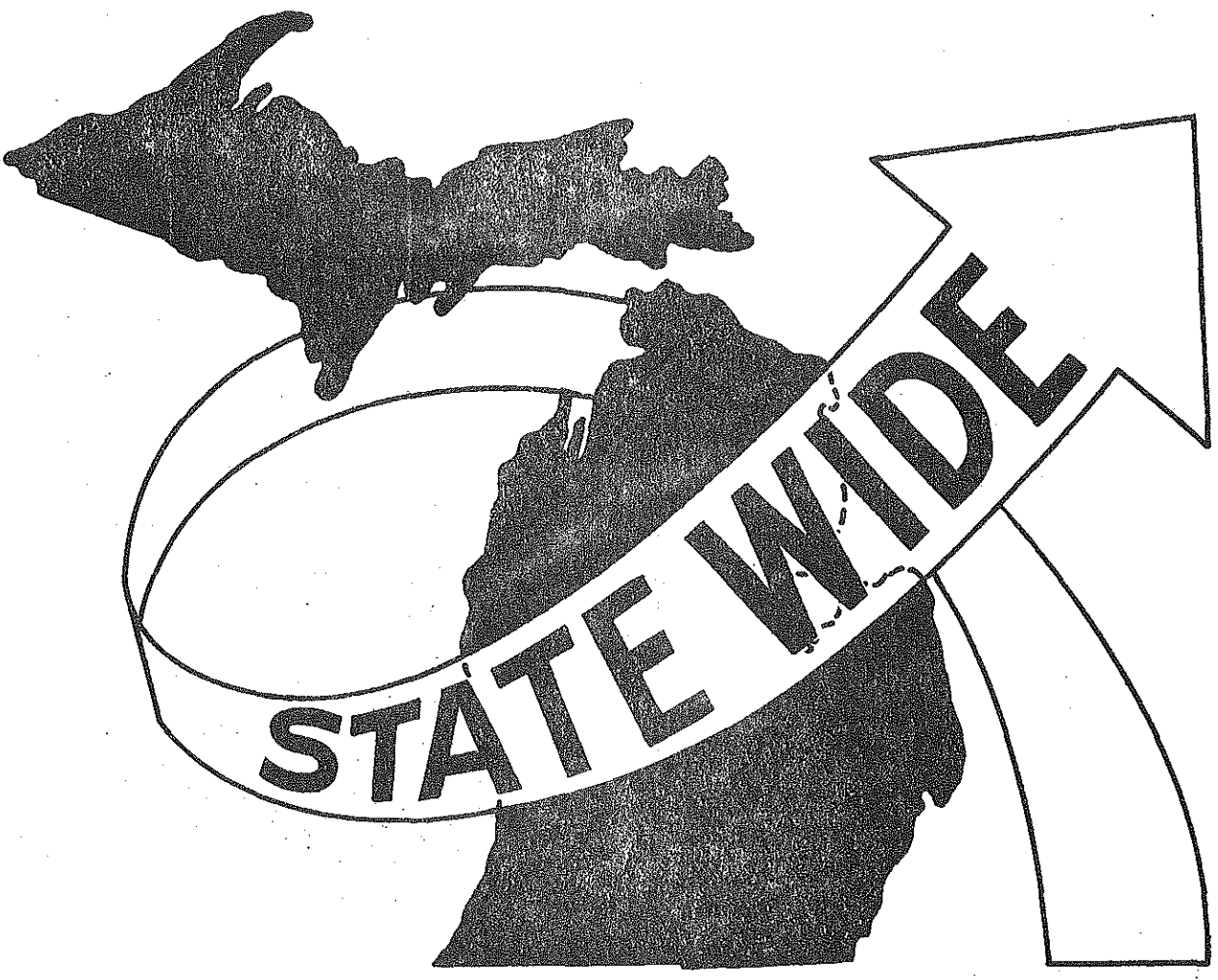
Sincerely,

A handwritten signature in cursive script that reads "Keith E. Bushnell".

Keith E. Bushnell
Engineer of Transportation
Survey and Analysis Section



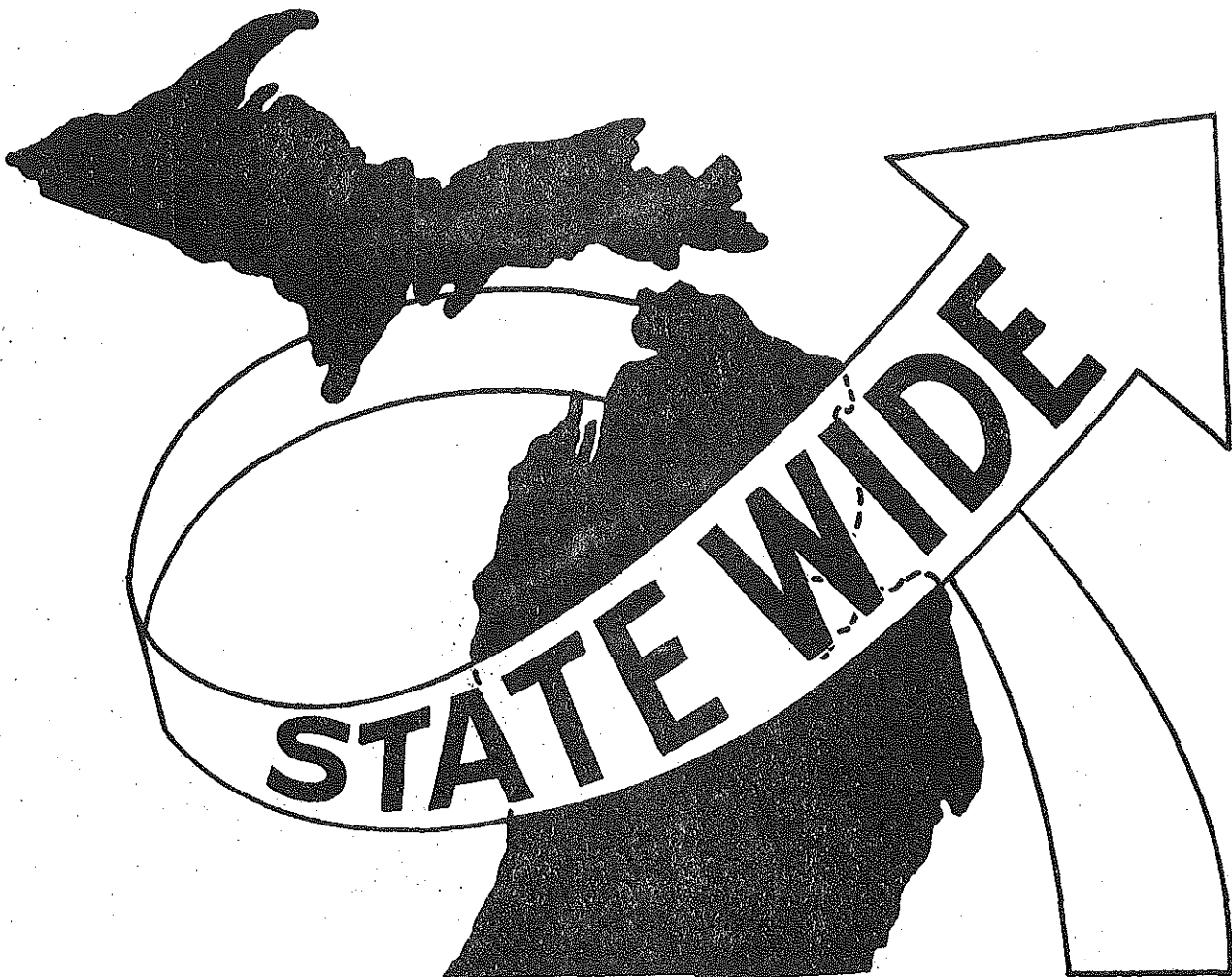
INTRODUCTION



INTRODUCTION

The information in the following pages was prepared for the Accident Analysis Unit to assist them in analyzing selected wet surface accidents and to illustrate the possible additional uses of the Statewide Forecasting Model to display accident information.

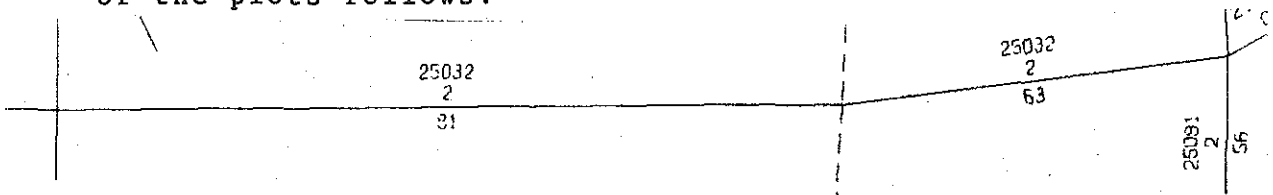
GRAPHIC DISPLAY
OF
ACCIDENT DATA



GRAPHIC DISPLAY
OF
ACCIDENT DATA

Selected accidents involving a wet surface were matched (using control section and mileage point) with the highway links in the Statewide Forecasting Model. The number of accidents and accident rate (per 10^8 veh.-mi.) were computed for each link in the Statewide Forecasting Network for the entire state. It should be emphasized that this is an automated process requiring minimal manpower.

To more vividly display this information, the highway network with the associated accident information was plotted on the Cal Comp plotter. A sample section of the plots follows:

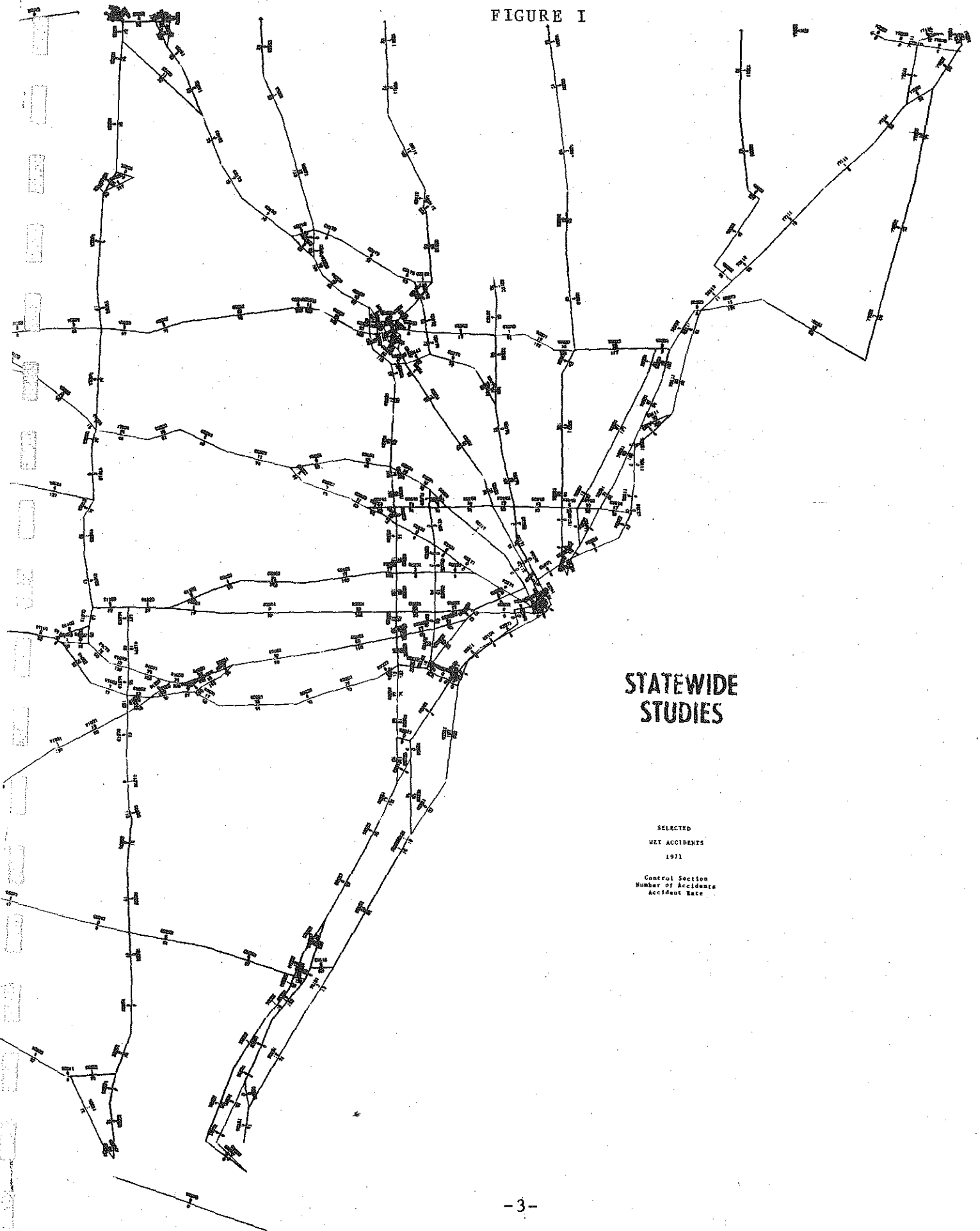


The top number is the control section. The next number is the total number of selected wet accidents which occurred on this section of road. The bottom number is the accident rate.

Figure I shows a section across Michigan just above the Indiana border. Figure II shows the area just above figure I. If desired, the entire state could be presented.

This accident information has been available in list form by control sections; however, it is then not readily known which control sections are physically next to each

FIGURE I



STATEWIDE STUDIES

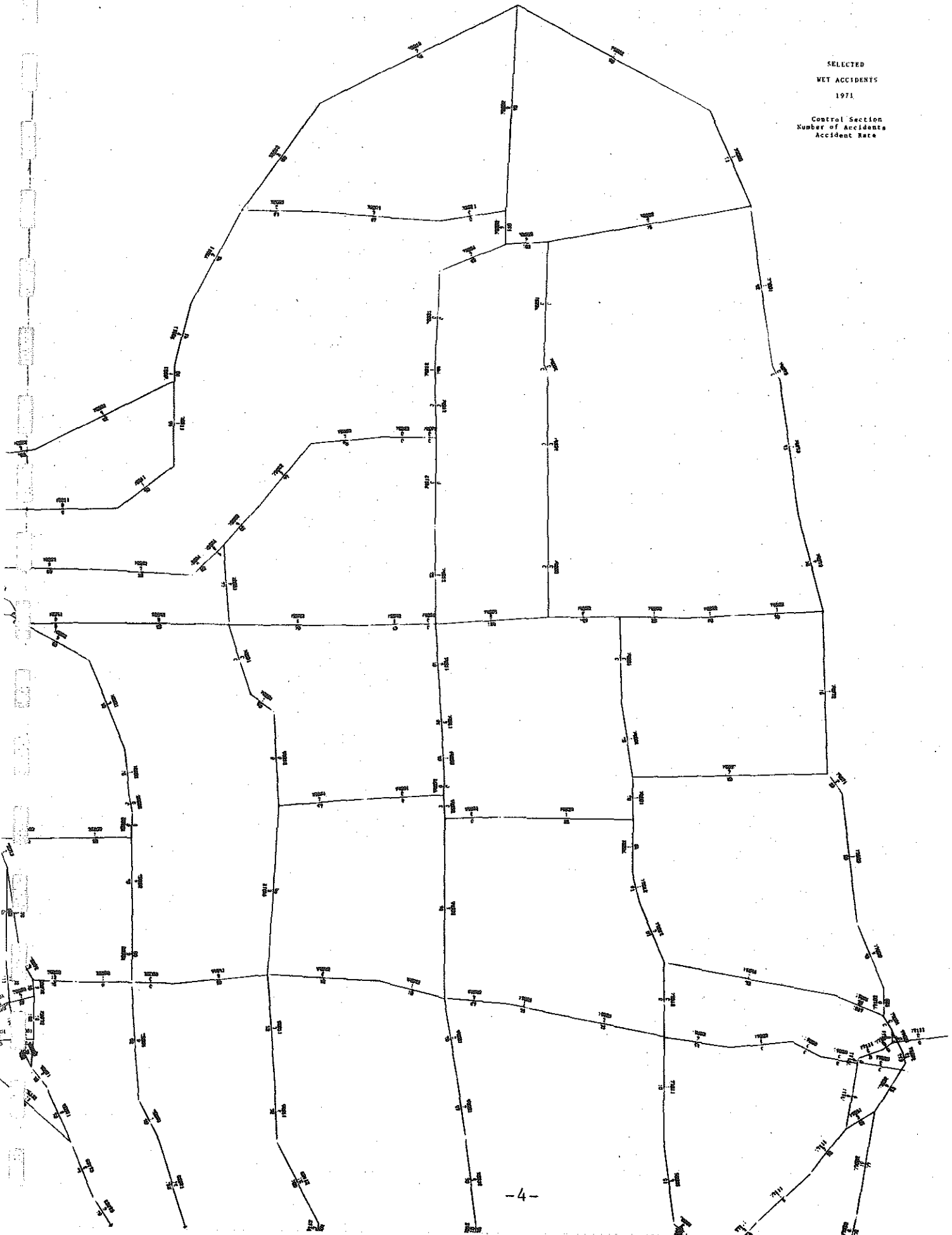
SELECTED
KEY ACCIDENTS
1971

Control Section
Number of Accidents
Accident Rate

FIGURE II

STATEWIDE STUDIES

SELECTED
WET ACCIDENTS
1971
Control Section
Number of Accidents
Accident Rate



other in the road system. The plots obviously solve this problem and allow a quick over view of the state. The plots, therefore, greatly facilitate the spotting of high accident locations.

As a further aid to analysis, a recent development called "band-width" plotting has been implemented. Band-width plotting allows the width of a link to vary from one to ten lines depending upon the value of specified data related to each link. Figure III shows the relative magnitude of the accident rates as they appear on each link of the Statewide Forecasting Network for the lower peninsula.

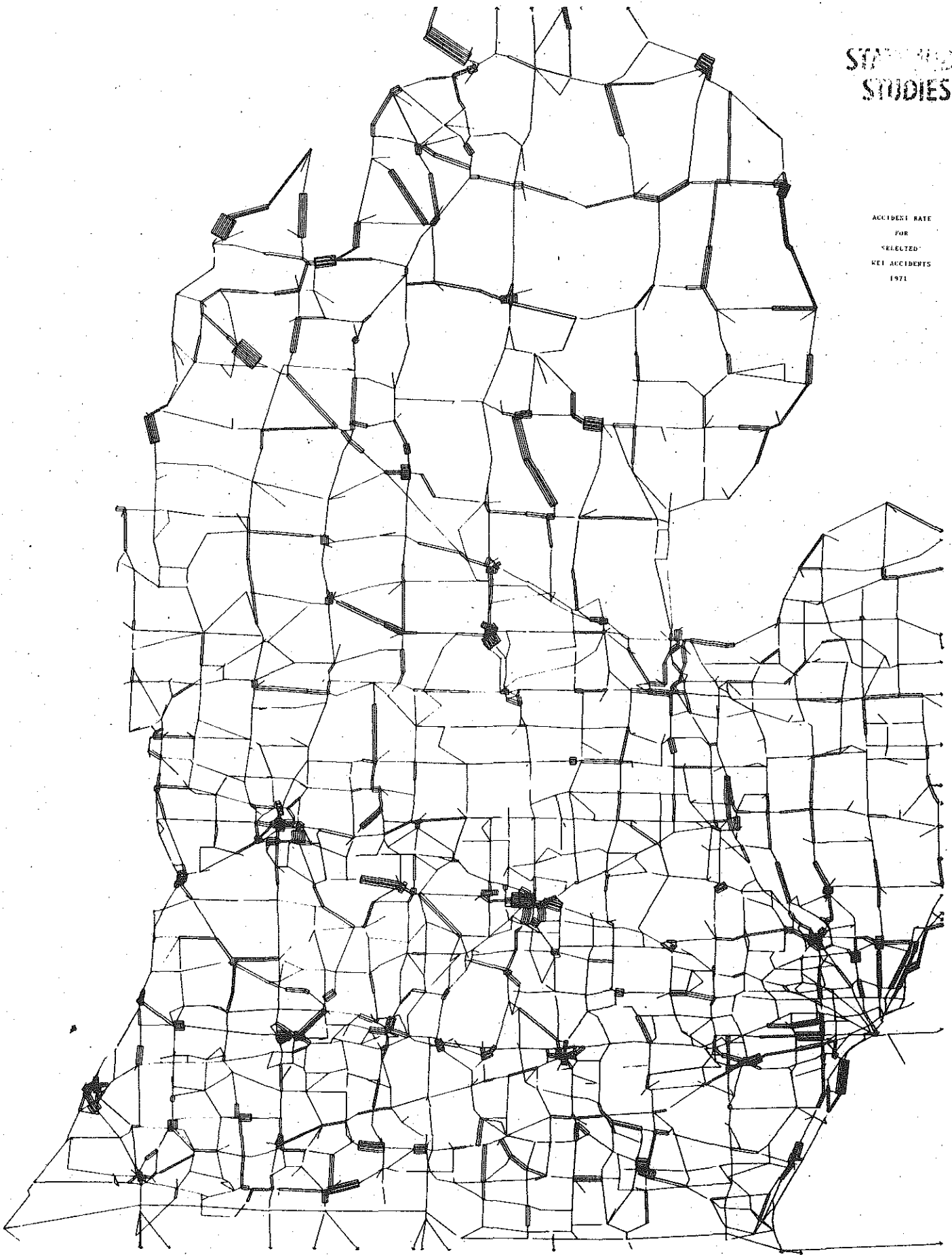
The magnitudes are plotted according to the following table:

<u>Band Width</u> <u>(No. of lines)</u>	<u>Accident Rate Range</u> <u>(per 10⁸ Veh.-Mi.)</u>
1	0 - 50
2	51 - 100
3	101 - 150
4	151 - 200
5	201 - 250
6	251 - 300
7	301 - 350
8	351 - 400
9	401 - 450
10	451 - 500

FIGURE III

STATEWIDE
STUDIES

ACCIDENT RATE
FOR
"SELECTED"
KEY ACCIDENTS
1971



Other information could also be plotted using band-width. Figure IV shows the range of accident rates for the entire state. A segment one line wide corresponds to an accident rate between 0 and 100 accidents per hundred million vehicle miles. Each additional line represents an increase of 100.

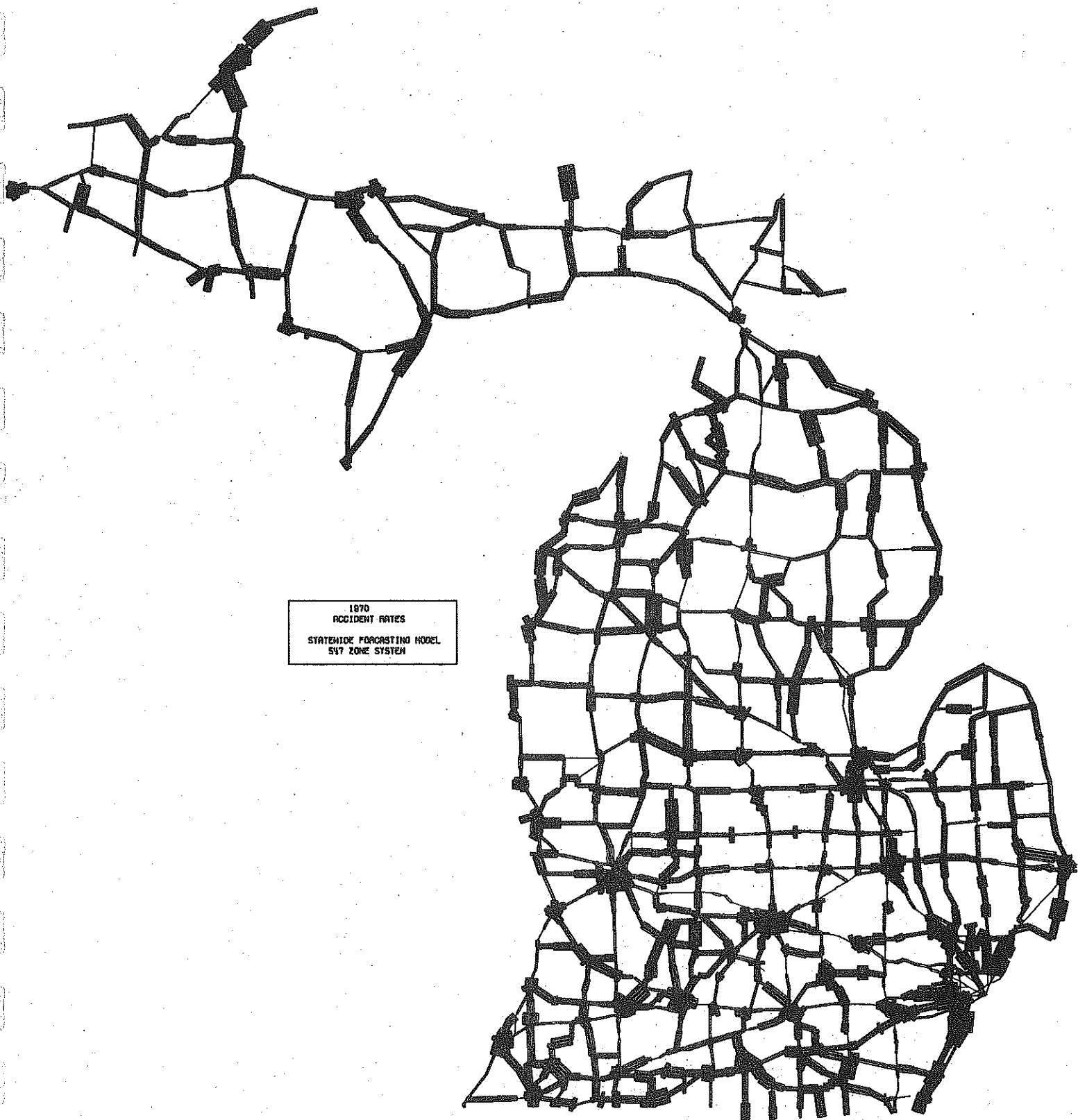
The band-width plot allows one to quickly view the state as a whole and determine problem areas and possible trends.

Since this report represents a preliminary attempt to illustrate the use of the Statewide network in graphically displaying information, there are certain limitations which should be noted. The Statewide network consisted of a preliminary 1970 highway system, while the accident information was for 1971. This difference causes some control section mismatch between the two files. Also, the way in which some control sections are numbered in urban one-way streets is different for the two files. The accident rates were computed using 1965 AADT's.

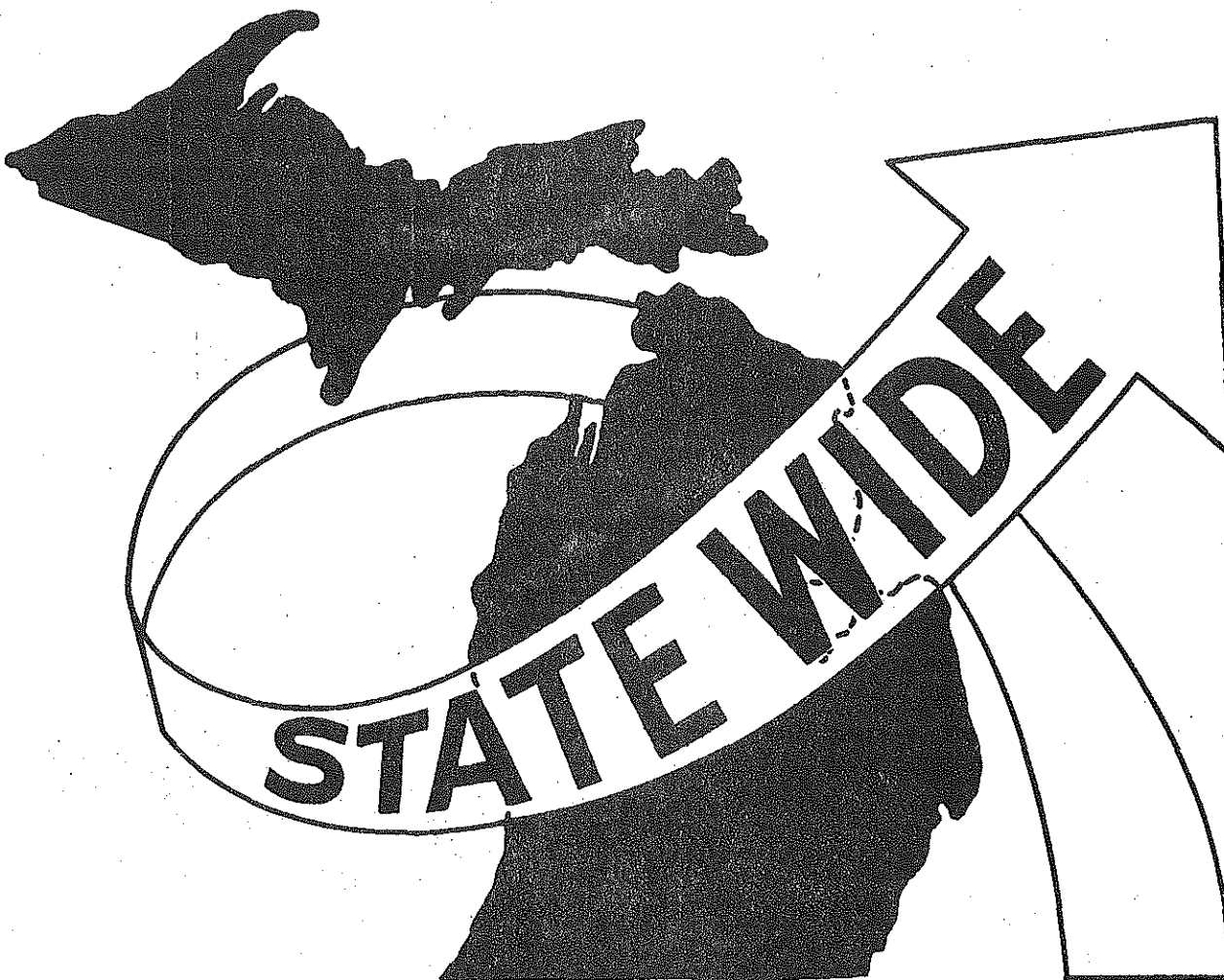
Even with these limitations, these plots should provide a valuable improvement over traditional listings in trying to determine problem areas and trends.

Anyone desiring to display other types of highway information is encouraged to contact the Statewide Research and Development Section.

FIGURE IV



APPENDIX



GRAPHIC DISPLAY FLOWCHART

