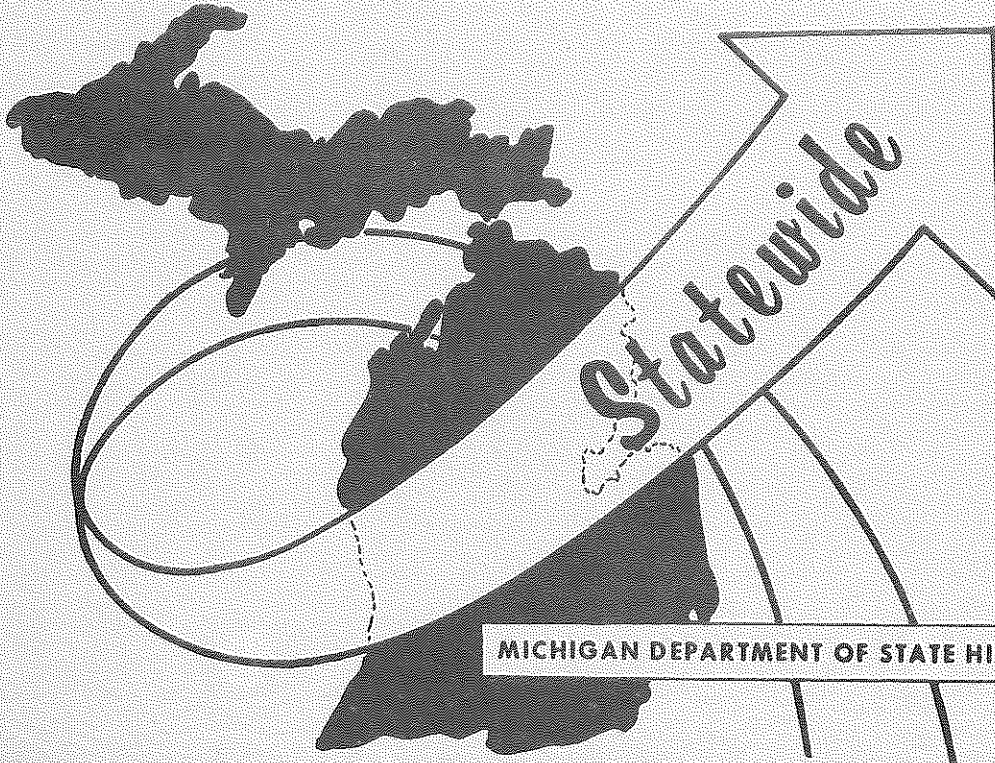


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Statewide Transportation Analysis & Research

MICHIGAN'S
STATEWIDE TRANSPORTATION
MODELING SYSTEM

Report no. 10
GRAPHIC DISPLAY
OF
FIXED-OBJECT ACCIDENT DATA



MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

MICHIGAN DEPARTMENT

OF

STATE HIGHWAYS AND TRANSPORTATION
BUREAU OF TRANSPORTATION PLANNING

MICHIGAN'S
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STATE HIGHWAY COMMISSION

E. V. Erickson
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Peter B. Fletcher

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HIGHWAY COMMISSION

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STATE OF MICHIGAN



WILLIAM G. MILLIKEN, GOVERNOR

DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

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

JOHN P. WOODFORD, DIRECTOR

April 3, 1975

Sam F. Cryderman
Deputy Director
Transportation Planning

Dear Mr. Cryderman:

The following pages serve to document information requested by and transmitted to the Traffic and Safety Division to assist them in the roadside safety improvement program.

Graphic display of fixed-object accident experience was provided using elements of the Statewide Transportation Modeling System. This information was provided by Alan R. Friend in cooperation with Allen Lampela and Don Mercer of the Standards and Development Unit of the Traffic and Safety Division.

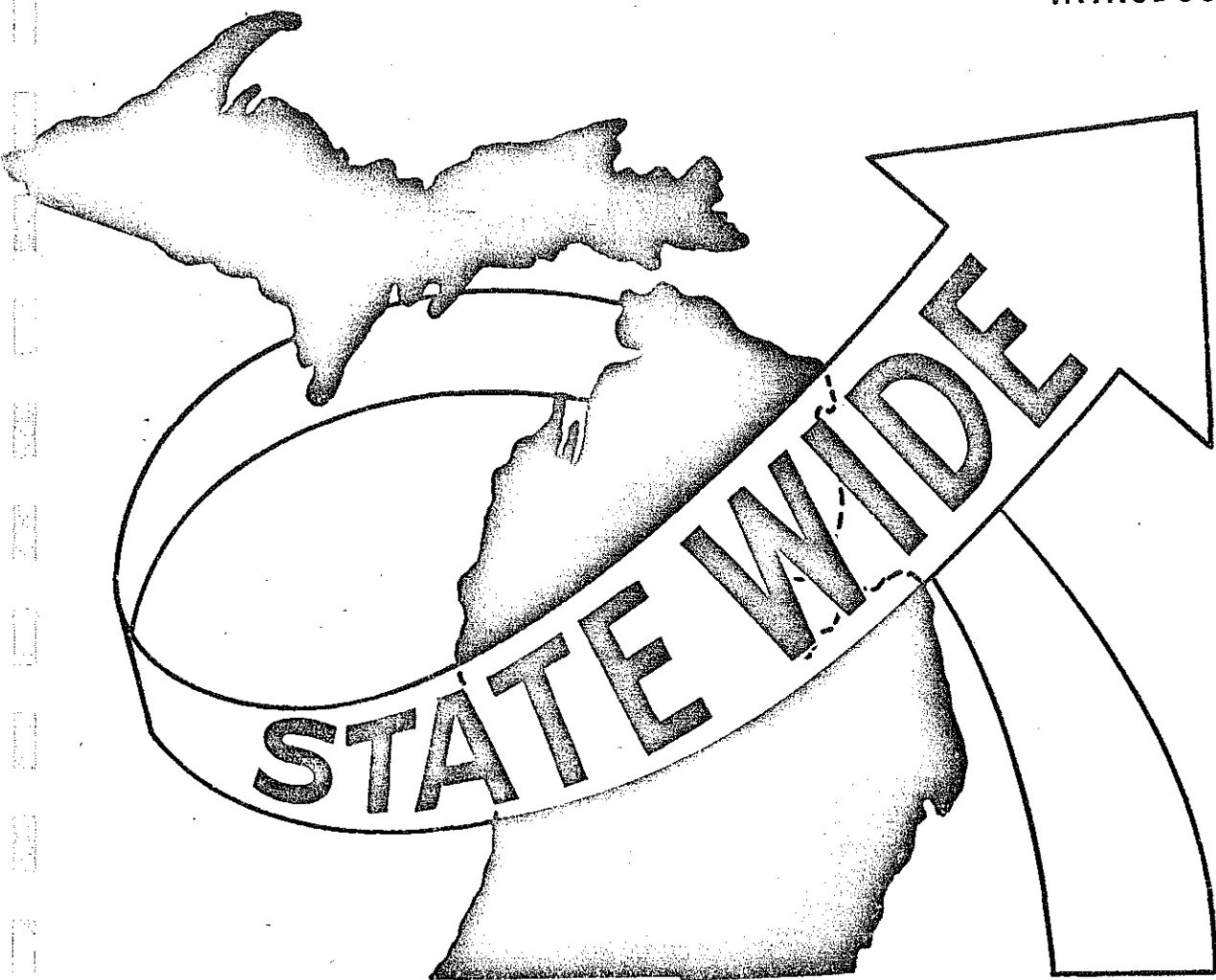
Sincerely,

A handwritten signature in cursive script that reads "R. J. Lilly".

R. J. Lilly, Administrator
Highway Planning Division



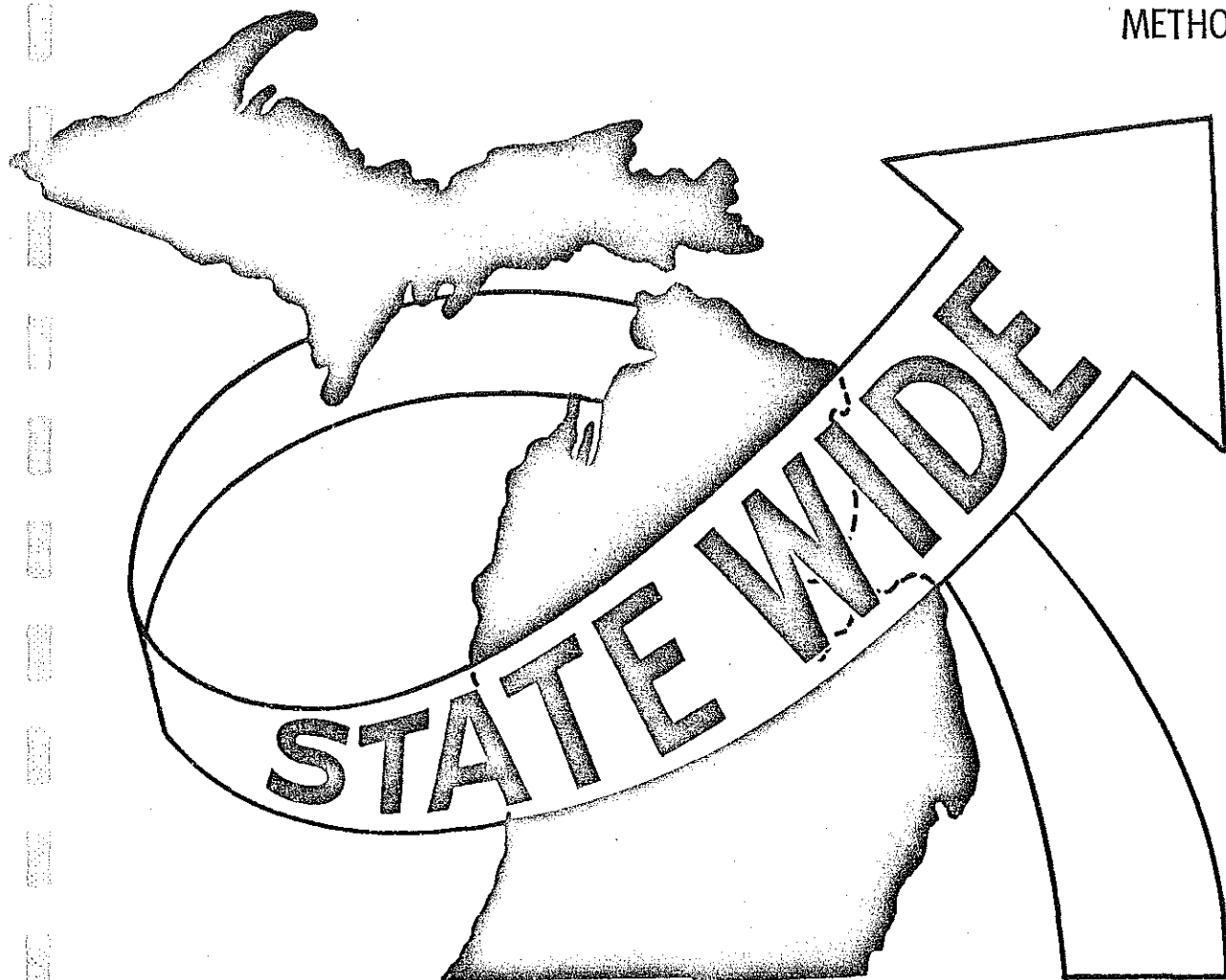
INTRODUCTION



INTRODUCTION

The following pages were prepared as documentation for information prepared using the Statewide Transportation Modeling System to assist the Standards and Development Unit of the Traffic and Safety Division in analyzing fixed-object accidents and a special subset of fixed-object accidents, guard-rail accidents.

METHODS

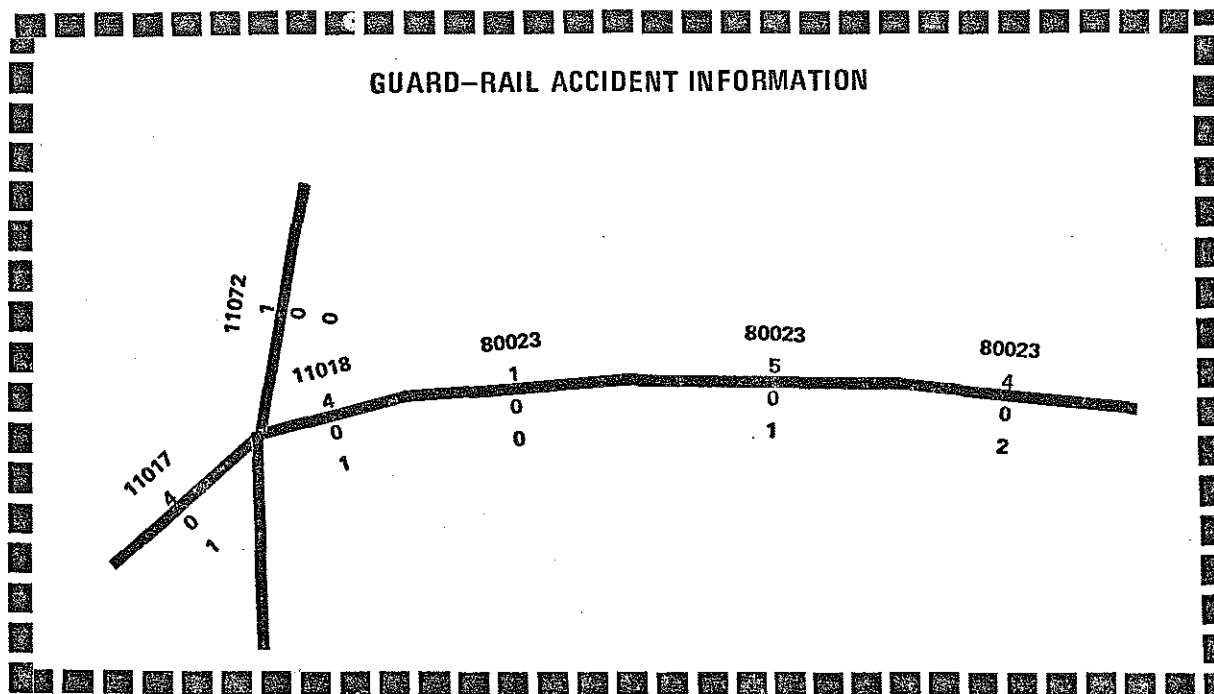


METHODS

Information regarding fixed-object accidents was selected from three accident master files (1971 thru 1973) and matched (using control-section and mile point) with the highway links on a 1970 network from the Statewide Transportation Modeling System.

This process is an automated routine which scans the over 100,000 accidents on the accident master and tabulates fixed-object and guard-rail accidents for all statewide model trunkline links in the State. The approximate computer processor time for one accident master file was 10 minutes.

To more vividly display this information the highway network with the associated accident information was plotted on the Xynetics plotter. A sample section along I-94 near Watervliet follows:

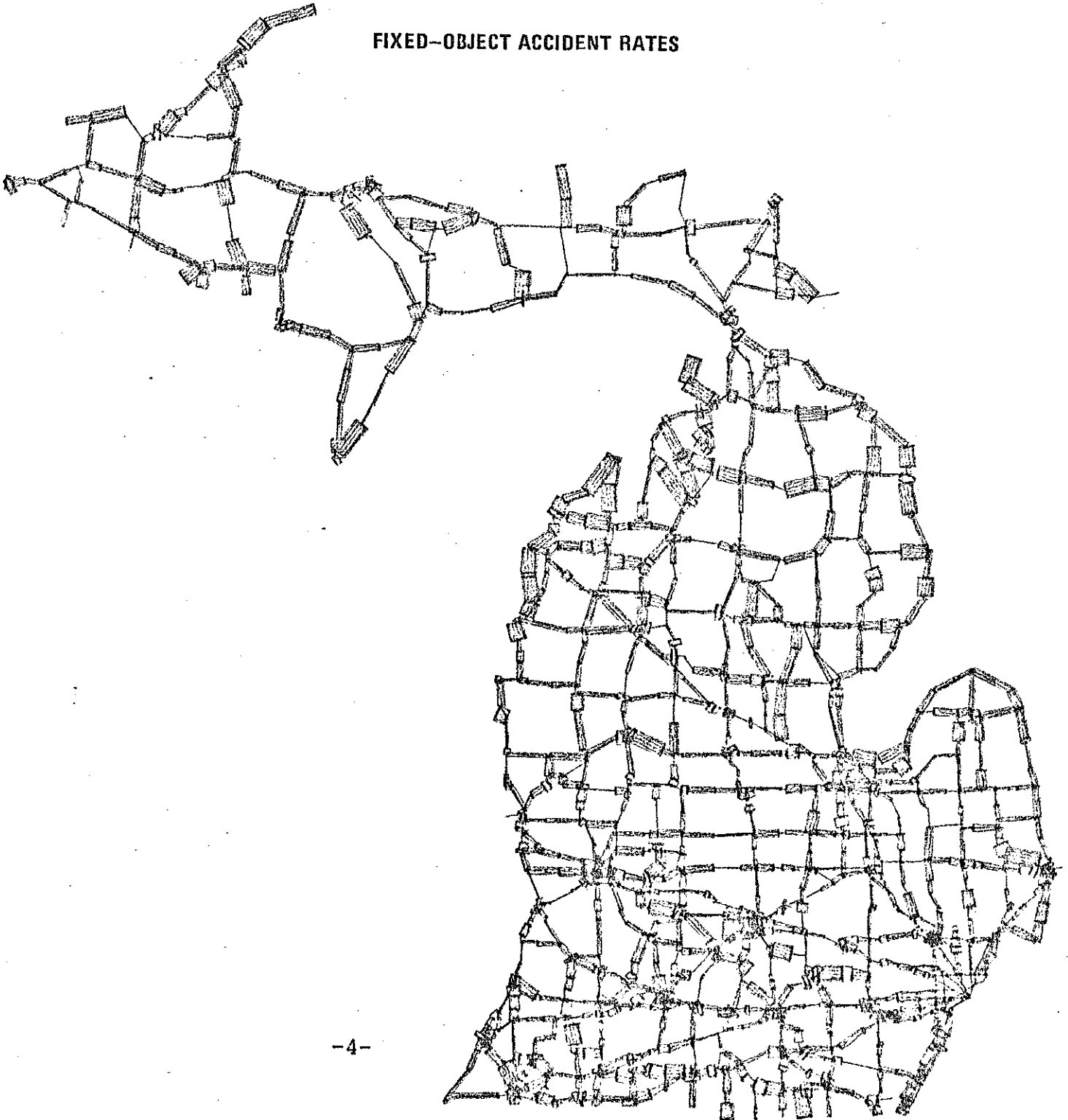


The top number is the control-section. The next number is the total number of guard-rail accidents which occurred on the road segment. The third number is the number of guard-rail fatal accidents, and the bottom figure is the number of guard-rail injury accidents. While this information is often available in list form by control-section, it is difficult in that form to quickly obtain the general picture of an area. The plots obviously facilitate the location and comparison of high-accident areas. Four plots were completed to cover the entire state.

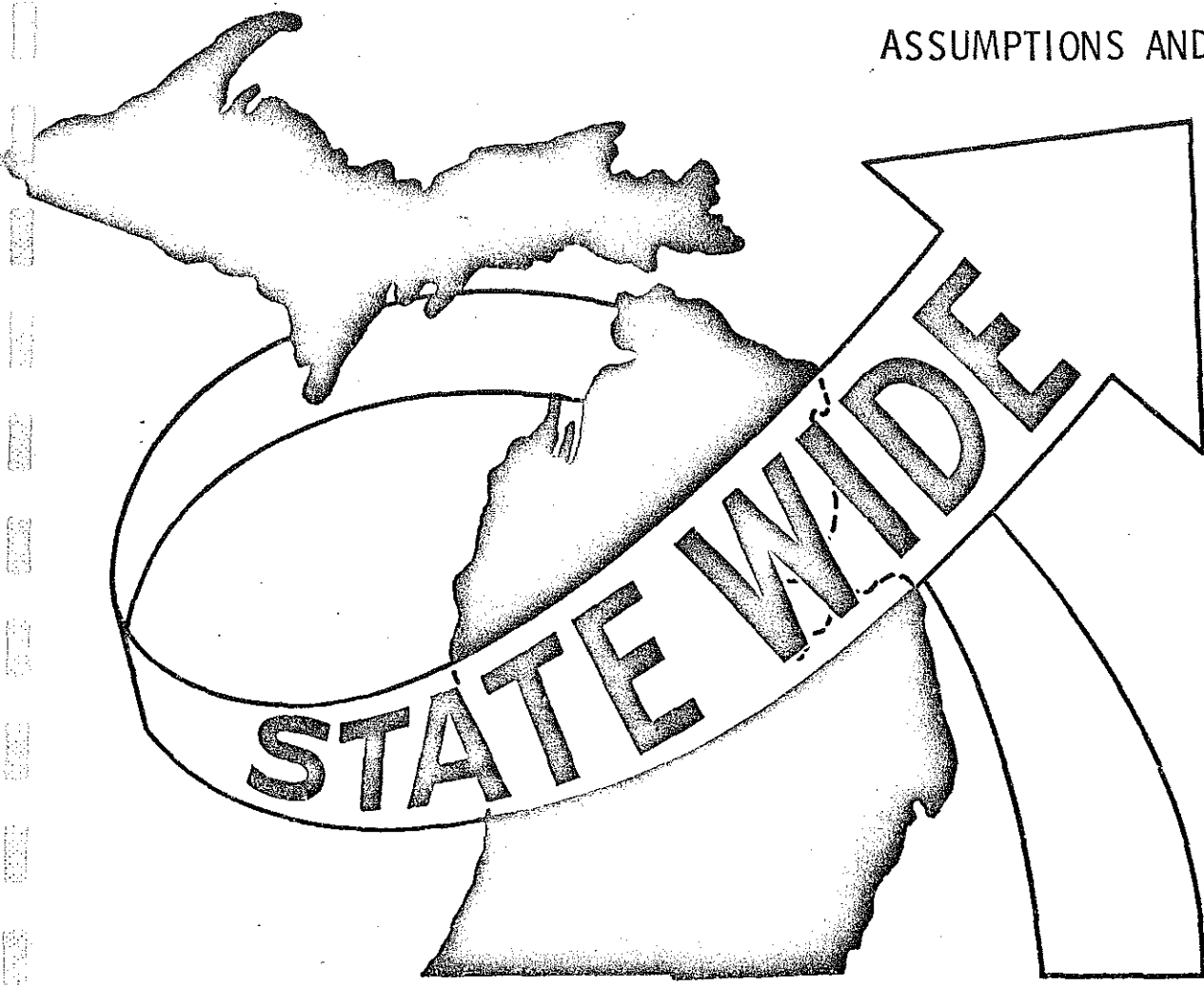
For developing a very quick overview of the entire state the bandwidth plotting technique is often very helpful. Figure A shows the relative magnitude of the 1973 fixed-object accident rates for each highway link. The width of a link varies from 1-10 lines depending on the accident rate. Each line represents a rate of 25 (fixed-object accidents per 10^8 vehicle-miles). Therefore, one line represents rates from 0 to 25, two lines from 26 to 50, and so on to a maximum of 10 lines which represents rates of 225 and over.

FIGURE A

FIXED-OBJECT ACCIDENT RATES



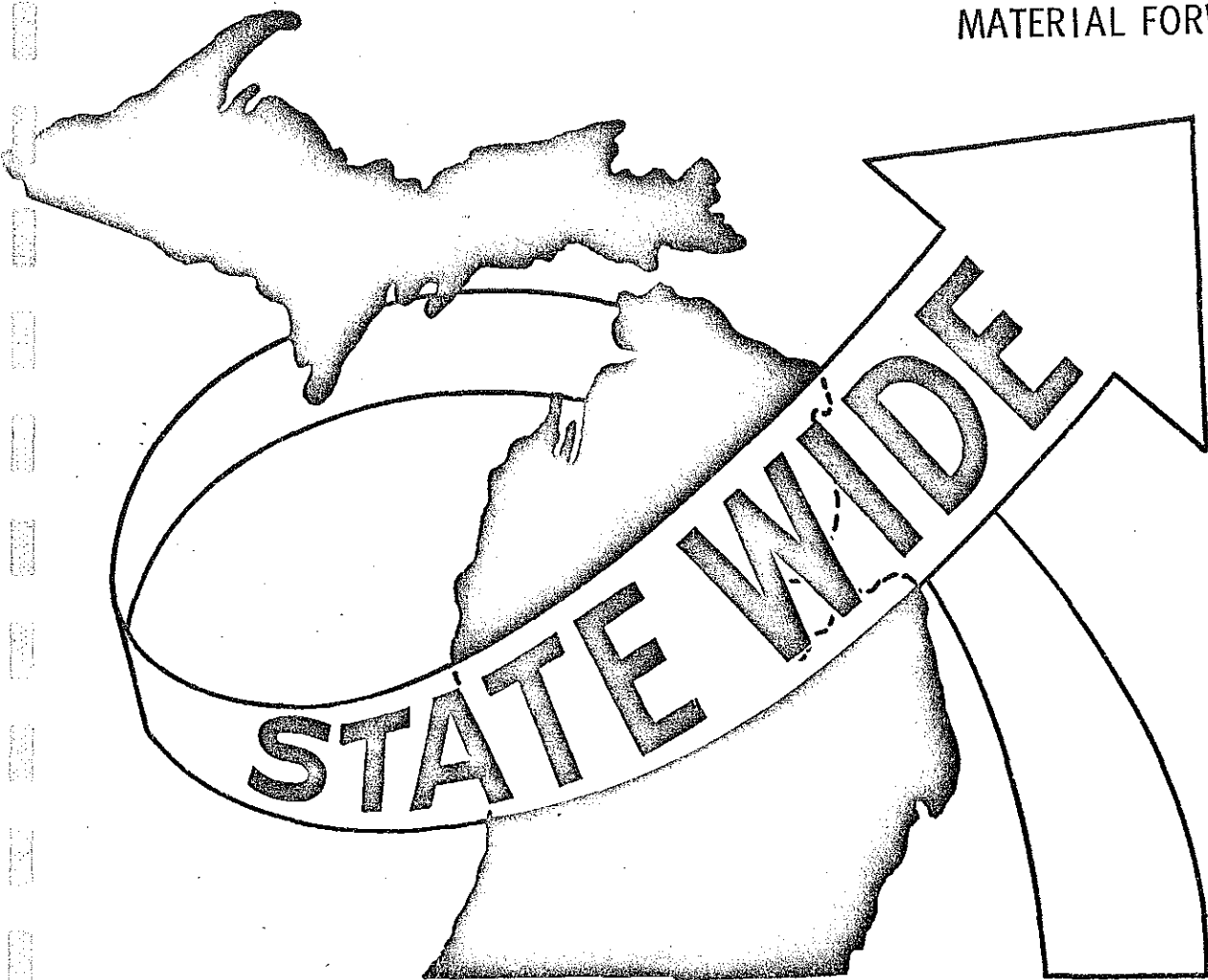
ASSUMPTIONS AND PRECAUTIONS



ASSUMPTIONS AND PRECAUTIONS

The highway network used was based upon a 1970 road system while the accident data was for 1971, 1972, and 1973. This difference causes some control-section mismatch between the two files. Also, the way mileage points are recorded on one-way streets is different for the two files. All mismatched accidents are printed so that the degree of mismatch in an area can be checked. If necessary the number of accidents on any link in the network file can be updated.

MATERIAL FORWARDED



MATERIALS FORWARDED
TO
STANDARDS AND DEVELOPMENT UNIT
TRAFFIC AND SAFETY DIVISION

Guard-rail accident information plots - 1973

Fix-object accident rate bandwidth plots - 1971, 1972, 1973

List of mismatched accidents

1973 - all

1971, 1972 - fixed-object only