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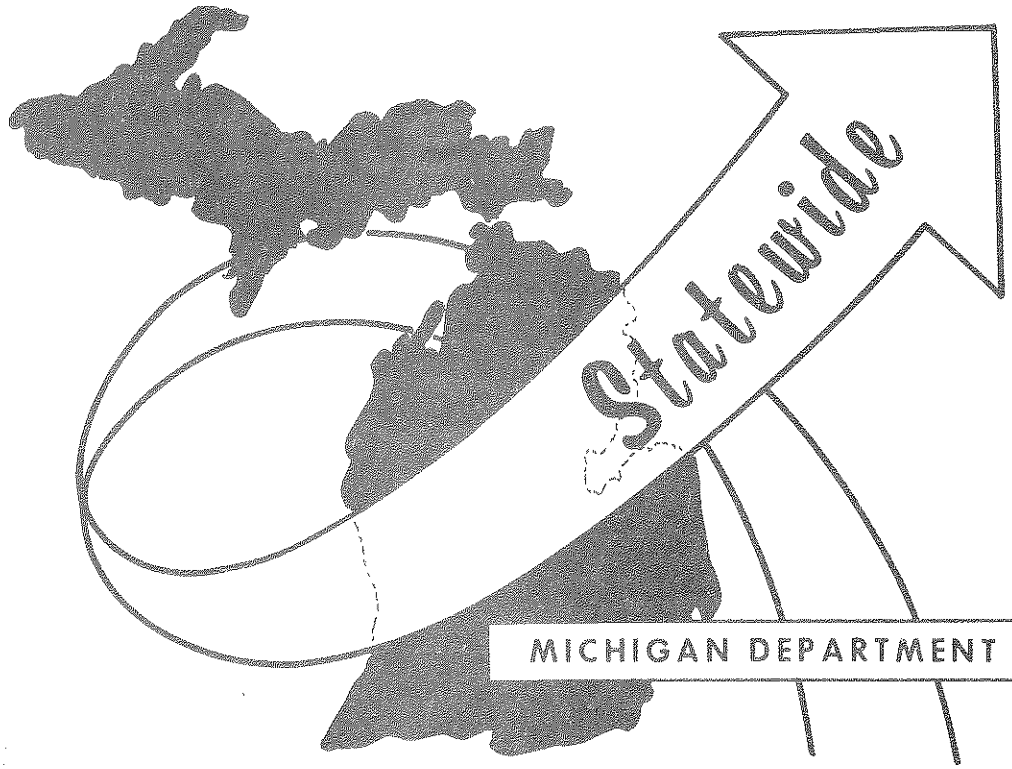
Statewide Transportation Analysis & Research

EXTERNAL O & D PROCEDURES MANUAL

Vol. V-B



MICHIGAN DEPARTMENT OF STATE HIGHWAYS

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

IN COOPERATION WITH

THE U.S. DEPARTMENT OF TRANSPORTAITON

FEDERAL HIGHWAY ADMINISTRATION

EXTERNAL ORIGIN-DESTINATION

ANALYSIS PROCESS PROCEDURES

Vol. V-B

May, 1972

TRANSPORTATION PLANNING DIVISION
STATEWIDE STUDIES UNIT

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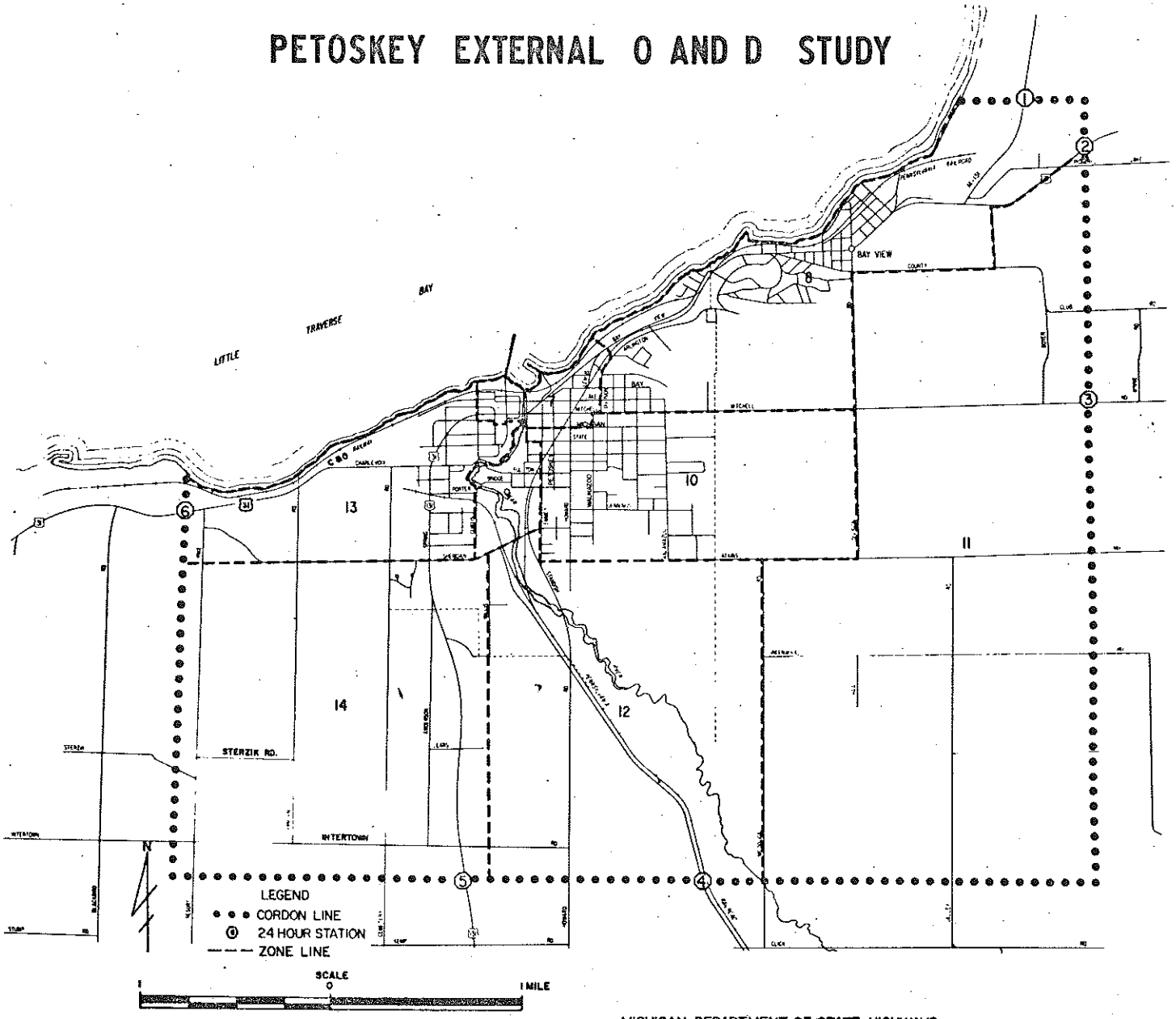
INTRODUCTION

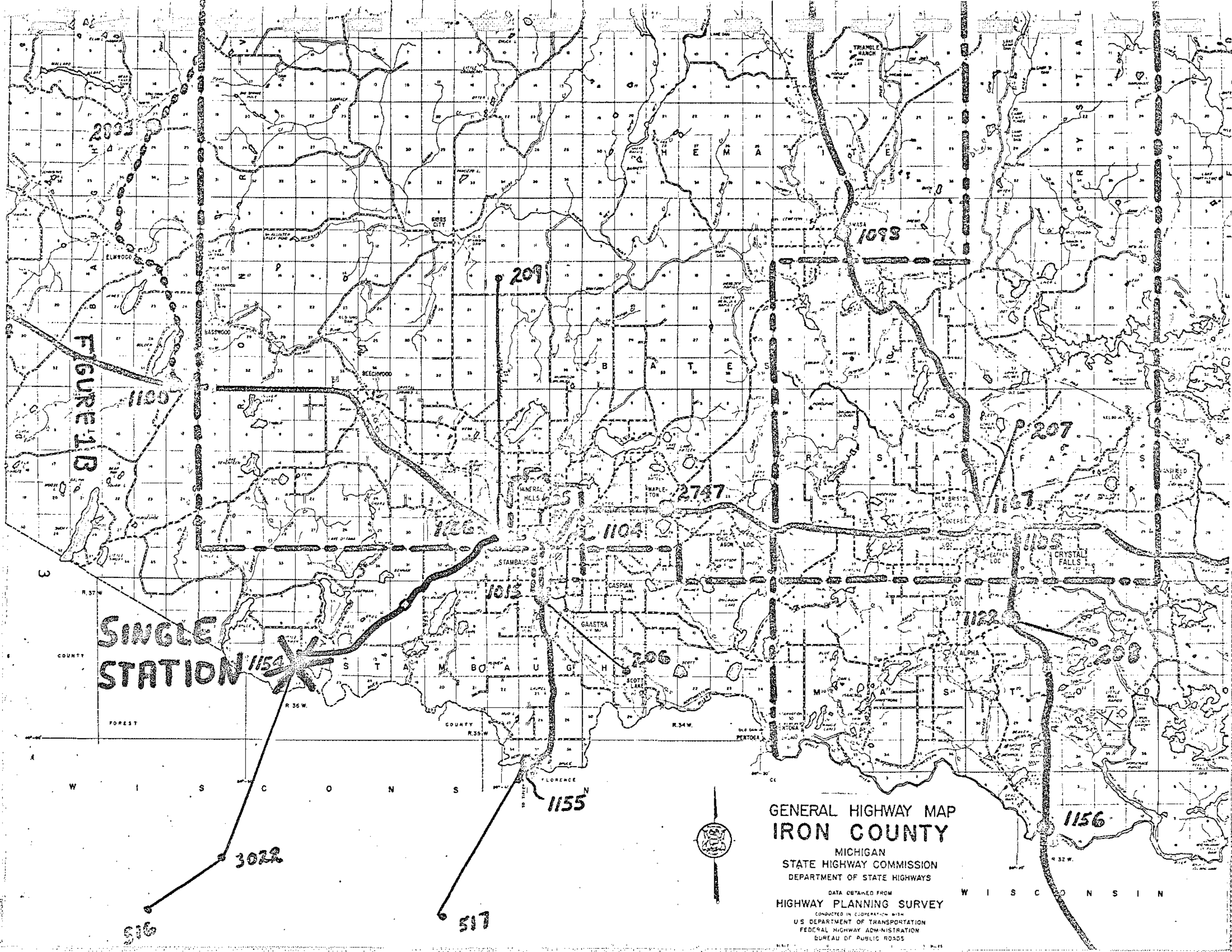
The Single Station Rural Origin-Destination Surveys have always been quite similar to the External Origin-Destination Surveys. These studies collect similar data and use similar interview forms and techniques. The External Origin-Destination (EOD) Surveys are characterized by several interview stations surrounding a study area (see figure 1A) as compared to a Single Station Origin-Destination (SSOD) Survey which use one station on a major road (See figure 1B). Because of the similarities the new procedures recently developed (See "Single Station Origin-Destination Procedures Manual" January 1972) will be used as a basis for preparing EOD reports. These new computerized techniques help to reduce many of the previously manual tasks in the preparation of edited data, tables, and maps. Since the SSOD process will provide the basis for the use of this manual, the reader must be familiar with the SSOD procedures manual mentioned above.

PETOSKEY EXTERNAL O AND D STUDY



MICHIGAN DEPARTMENT OF STATE HIGHWAYS

FIGURE 1A


GENERAL HIGHWAY MAP
IRON 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
FIGURE 1B
SINGLE STATION
2093
1100
209
1098
207
2747
1104
1126
1163
1165
1015
1122
206
208
1154
1155
1156
3022
516
517
ELMWOOD
BASSWOOD
BEECHWOOD
GIBBS CITY
AMASA
STAMBAUGH
CASPIAN
GAASTRA
MAPLETON
ALPHA
CRYSTAL FALLS
FLORENCE
PENTOGA
SCOTT LAKE
TRIANGLE RANCH
W I S C O N S I N
R.37 W.
R.36 W.
R.35 W.
R.34 W.
R.32 W.

EXTERNAL ORIGIN-DESTINATION ANALYSIS PROCESS PROCEDURES

General Description

An EOD is taken using the same interview form and coding practices as a SSOD. This allows us to use the same computer programs for data editing expansion, and data presentation as is used in the new SSOD process. The SSOD editing process uses a standard placefile to automatically decode the alpha origins and destinations into numeric codes. (Statewide zone number and six position external place code.) Because the EOD data is coded to greater detail in the study area than the SSOD process allows, the standard nationwide placefile must be updated. The new places in the study area are added with a new six position place code which will represent the internal zones. The Statewide Model Zone numbers will remain unchanged so that the data from study to study will be maintained in a common zone system. The Statewide Model Zone Numbers also allows us to take advantage of the already existing networks and tree files to use in analyzing the data. Figures 2 and 3 indicate the present 547 zone system.

Figure 4 from the SSOD procedures shows the five main phases of the basic survey process. A flow chart for the EOD is seen in figure 5. Again it can be seen that

Figure 2

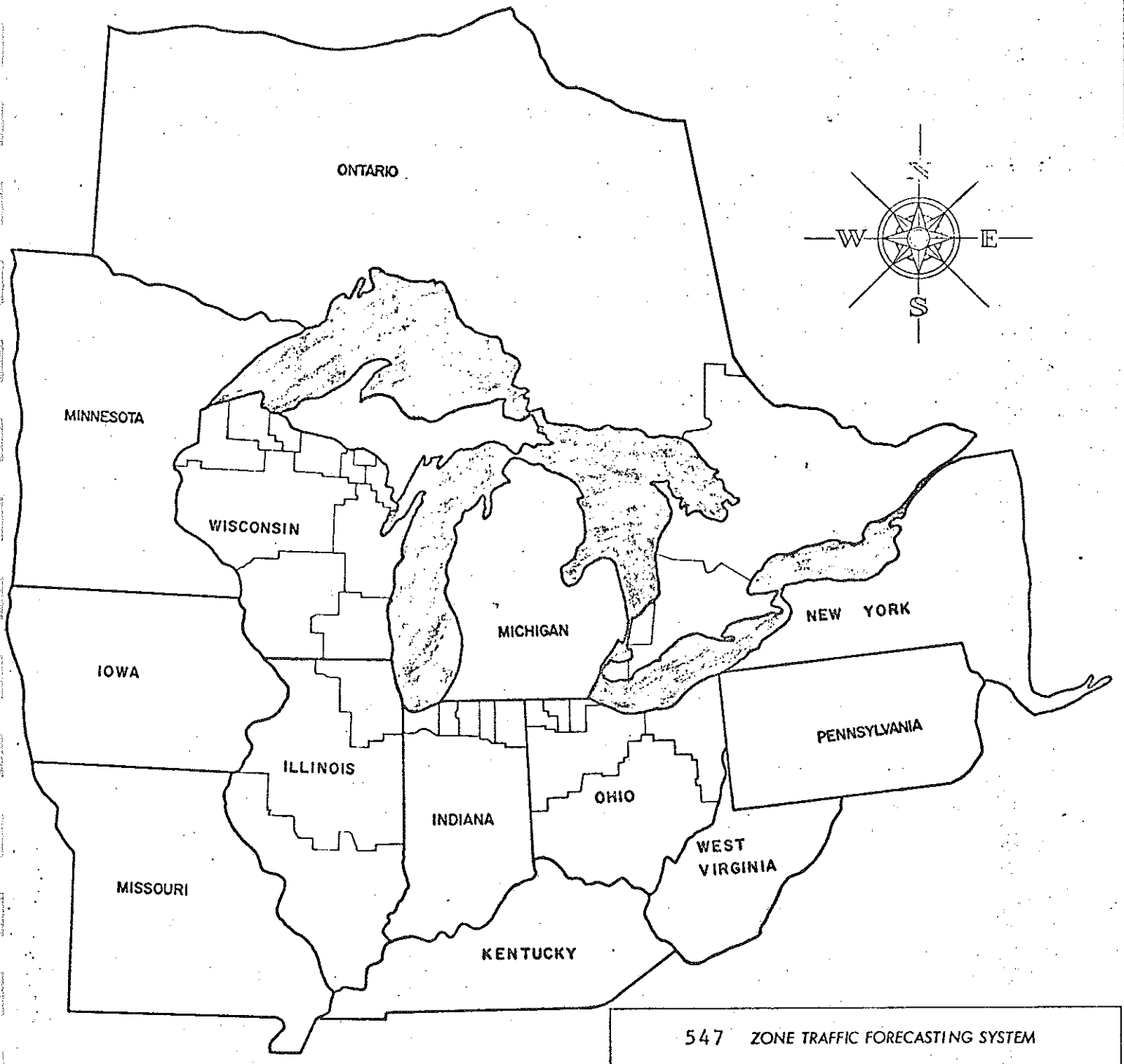


FIGURE 2

INSTATE ZONES

Figure 3

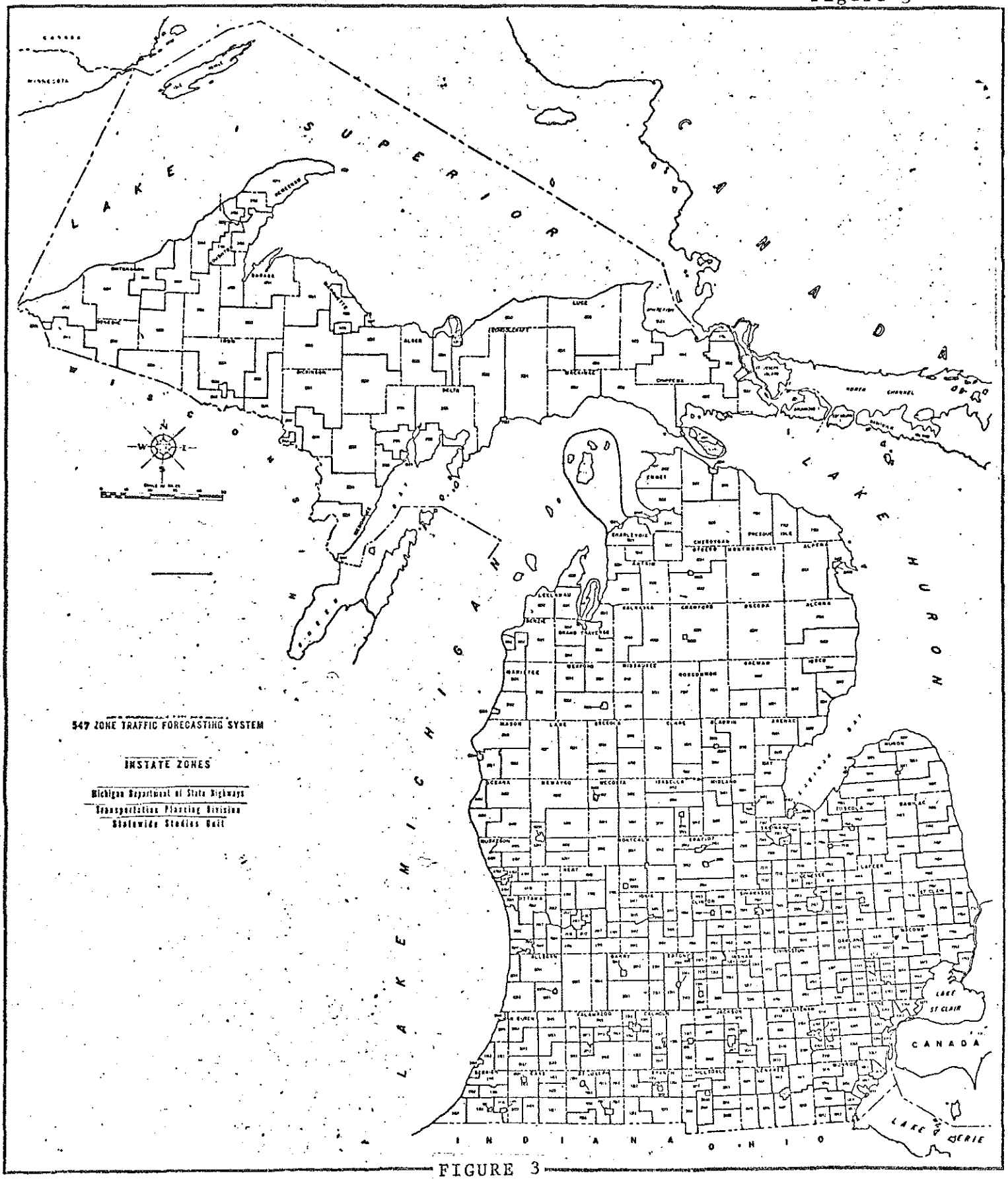


FIGURE 3

GENERAL FLOW CHART

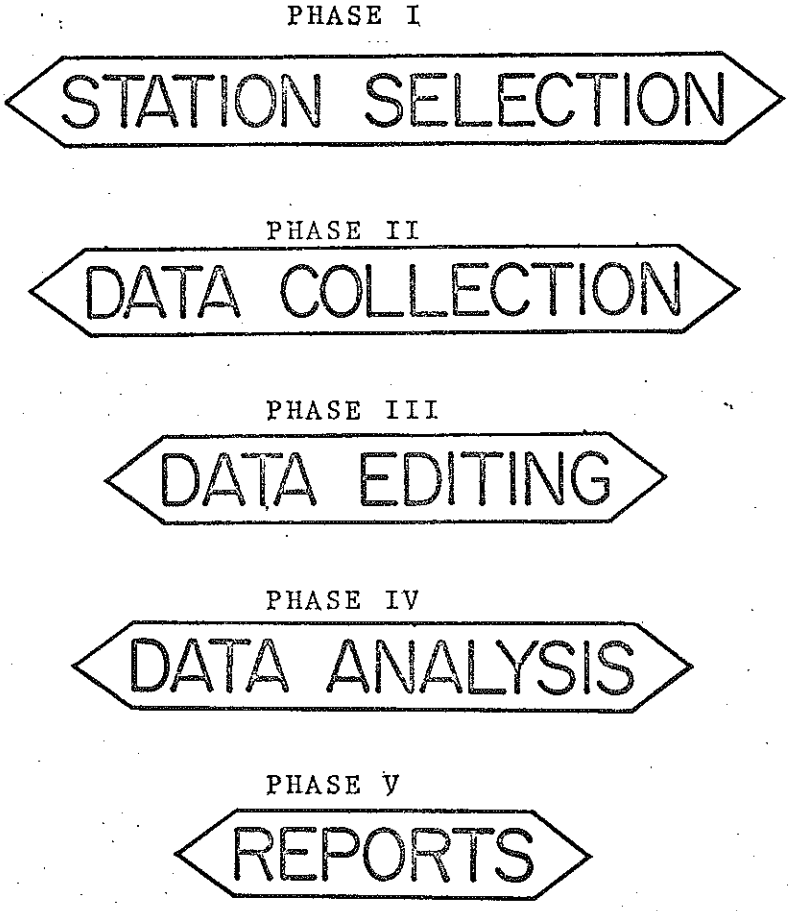


FIGURE 4

EXTERNAL ORIGIN-DESTINATION PROCESS-FLOW CHART

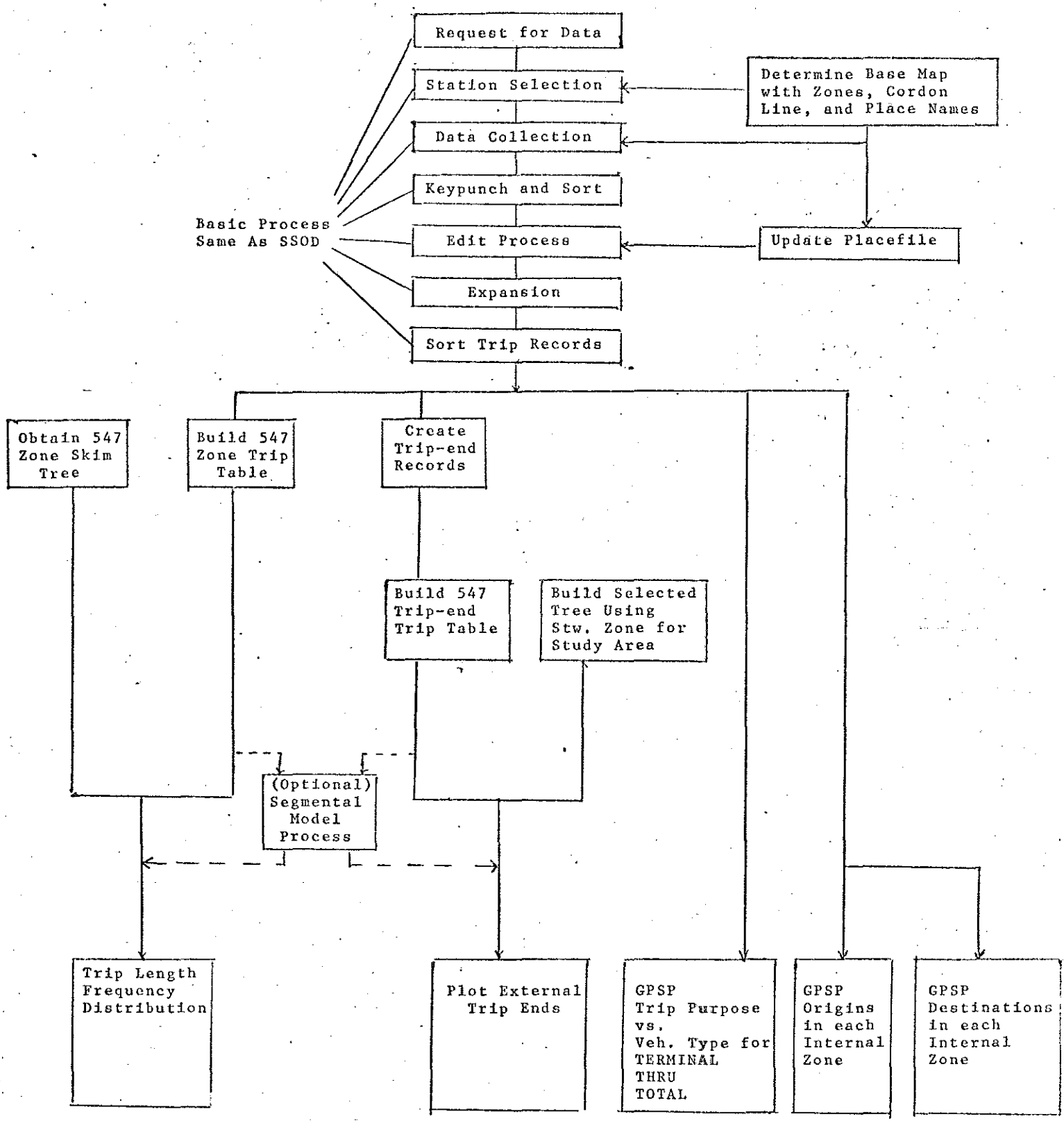


Figure 5

the EOD process is essentially the same as the SSOD. Because of the multiple stations three activities are needed for the EOD which are not required by the SSOD. These areas include preparation of a base map with the zones, cordon line, and place names, the updating of the placefile, and a summary of internal trips.

PHASE I

STATION SELECTION

When an external origin destination survey is requested the analysis unit responsible for that area of the state should prepare an urban area map for the Origin-Destination Unit indicating the station locations and zone boundaries within the cordon line. To use auto-coding (see SSOD manual) these new "places" must be added to the standard place file used in editing. This updating will be discussed later in the section on editing. The analysis unit and the O-D unit should cooperated in producing meaningful place names which do not duplicate names already occurring in the standard placefile.

The cordon line is usually chosen to coincide with a political boundary, normally the city limits. The zone boundaries are usually broken by major industrial areas, shopping centers, schools, the central business district, and any other special places of interest. For most studies 05 to 20 zones would be sufficient. Figure 6 shows a typical base map.

Base maps for the Statewide Model 547 zone system may also be helpful. (See figure 7) These maps may be obtained on a county basis from the Statewide Studies Unit.

Completed base map(s) may then be sent to graphics for final preparation.

FIGURE 6

CITY OF
HASTINGS
BARRY COUNTY
T 3 N R 8 W
POP 6501-1970 CENSUS

ZONE LINE
CORDON LINE
STATION

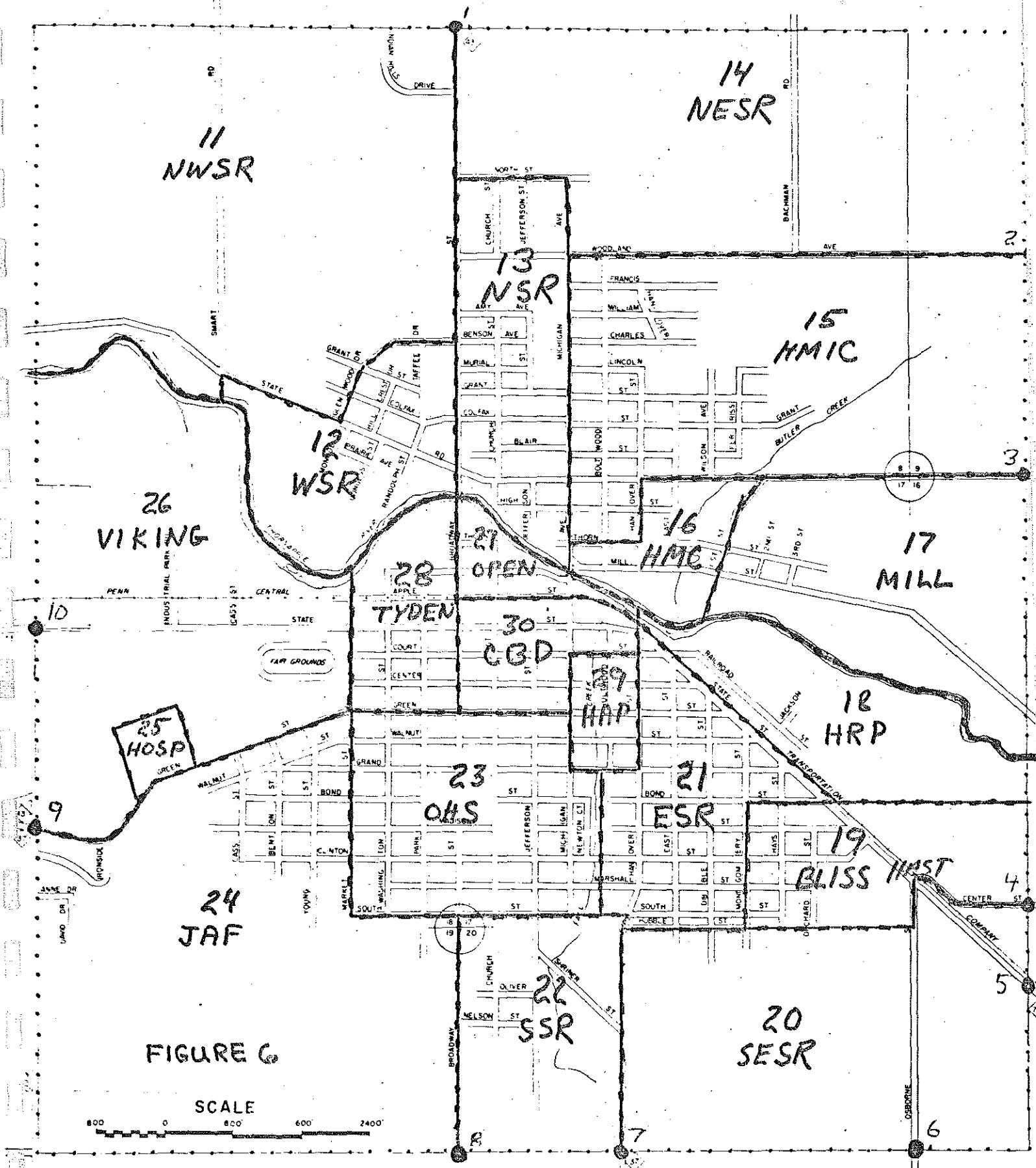
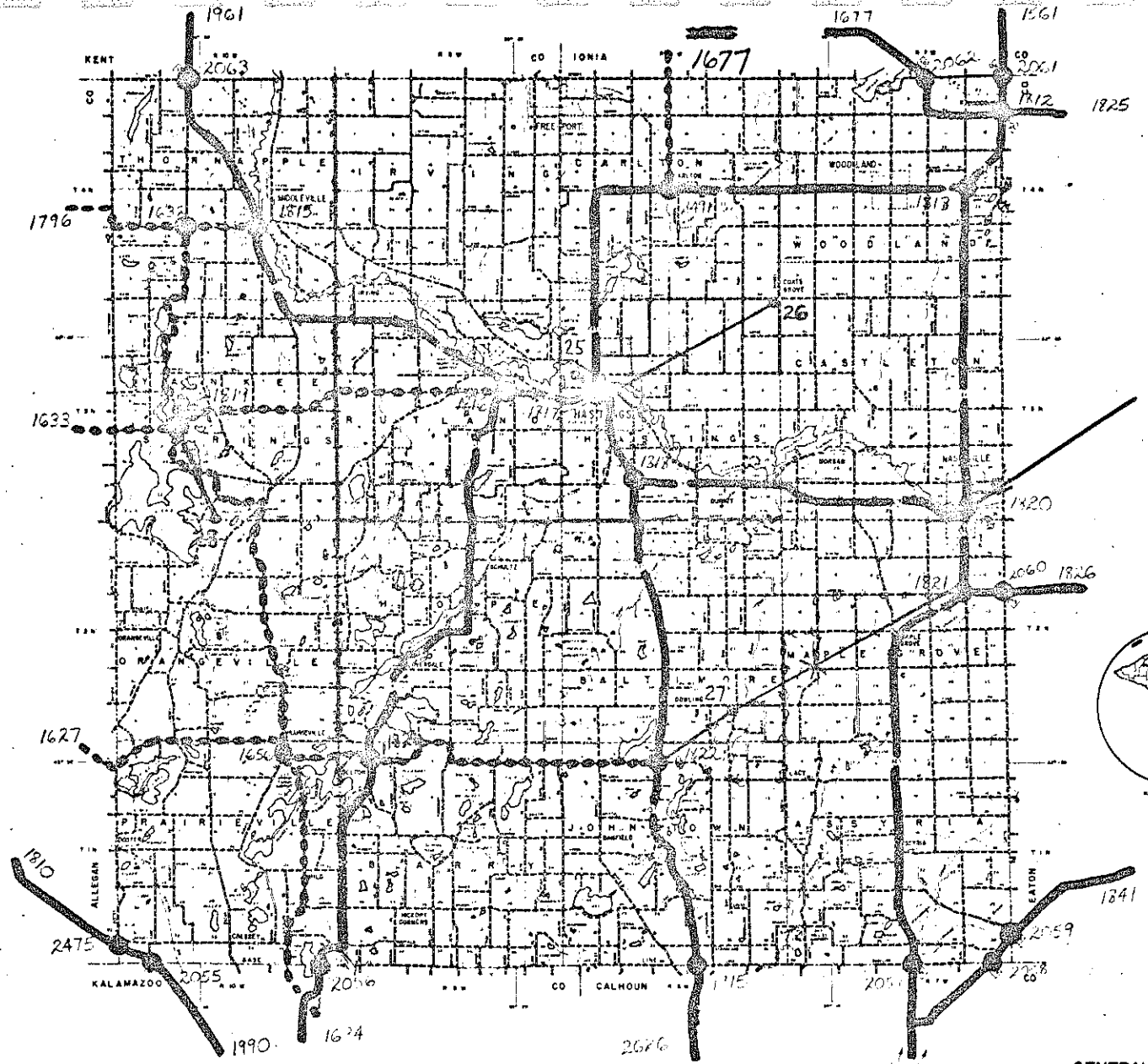


FIGURE 6



LEGEND

ROADS

ROAD SYSTEM DESIGNATION

AIRPORTS

RAIL ROADS

HIGHWAY BRIDGES

DRAINAGE

NAVIGATION

DAMS

BOUNDARIES

CITY AND VILLAGE

FIGURE 7

GENERAL HIGHWAY MAP

BARRY 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

KEY TO COUNTIES

FIGURE 7

PHASE II

DATA COLLECTION

The data collection process will be essentially the same as the SSOD. The same interview forms, interview techniques, and coding procedures are used. This includes the use of auto-coding of places and the preparation of a difficult spelling list, dualing list, and standard abbreviations. For details refer to the SSOD procedures manual. One additional piece of data collected is the station of exit or entrance for thru trips. Also, ground counts taken with portable traffic counters may be obtained for major city streets.

PHASE III

EDITING

In addition to the actual editing, this section will deal with the steps immediately before and after the editing. The following steps will be discussed:

1. Keypunch data.
2. Sort data for editing.
3. Edit data.
4. Expand data.
5. Sort data by zone for analysis.

KEYPUNCH DATA

As with the SSOD, interviews should be separated by station. At present interviews for the same station which are taken on different days must be separated into two batches before sending to keypunch. The separate batch concept was designed for more complete editing with as little change to the programs as possible. This process may be reviewed in the future to eliminate the need for separate batches.

SORT DATA FOR EDITING

As with the SSOD program Q01041 is run for each batch to properly sort records for editing.

EDIT DATA

The actual process of editing is the same as in the SSOD with one exception. Because of the detailed zones we have created in the study area, we must expand the standard

nationwide placefile to include these new places.

Figure 8 shows a flow chart for updating the place file. Note that the standard placefile is a disk file which is stored on tape. This tape must be requested by the user to be loaded to a disk file before running either the disk update program (Q17125) or the edit program (Q01043).

To illustrate this process an example from the Hasting EOD will be used. Figure 6 shows the base map with zone numbers and the name for each zone. Since all origins and destinations in the city will be coded to these zones, the place names must be added to the placefile. This update is accomplished using the standard Disk Add and Delete Program (Q17125).

The information to be included in each new record should be:

1. Alphabetic place name (no hypens, periods, etc.)
2. 6 position place code.
   A. First digit should be "6" to indicate an internal zone.
   B. Next two digits should be the county no.
   C. The last three positions should be the internal zone number
3. Statewide Model Zone number (547 system) which represents the study area.

Figure 9 is an example of the output from Q17125 for Hastings showing the 20 internal places which were added for Hastings. Note that the statewide zone number is the same for all entries since the zone representing Hastings in the Statewide Model is 25. The internal zone numbers begin

UPDATE STANDARD NATIONWIDE PLACEFILE

FOR EXTERNAL ORIGIN-DESTINATION SURVEYS

Obtain Reel Number of latest placefile from Statewide Studies Unit.

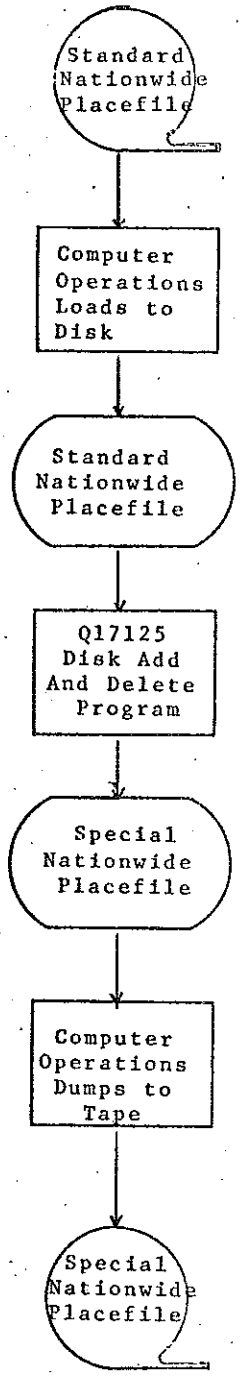


Figure 8

		CBD 608030	
RECORD ADDED	XAHAP	608029	0025
RECORD ADDED	XATyDEN	608028	0025
RECORD ADDED	XADPEN	608027	0025
RECORD ADDED	XAVIKING	608026	0025
RECORD ADDED	XAHOSP	608025	0025
RECORD ADDED	XAJAF	608024	0025
RECORD ADDED	XADHS	608023	0025
RECORD ADDED	XASSR	608022	0025
RECORD ADDED	XAESR	608021	0025
RECORD ADDED	XASESR	608020	0025
RECORD ADDED	XABLISS HAST	608019	0025
RECORD ADDED	XAHRP	608018	0025
RECORD ADDED	XAMILL	608017	0025
RECORD ADDED	XAHMC	608016	0025
RECORD ADDED	XAHMIC	608015	0025
RECORD ADDED	XANESR	608014	0025
RECORD ADDED	XANSR	608013	0025
RECORD ADDED	XAWSR	608012	0025
RECORD ADDED	XANWSR	608011	0025

FIGURE 9

with 11 and end with 30. The first ten are reserved for the ten station numbers. The deck set-up for this run is shown in figure 10. For more detailed information see the program run documentation for the Disk Add and Delete Program (Q17125).

Once the placefile has been updated editing may begin using the same procedures as the SSOD. Each external station is sent through in the same batches created for the pre-edit sort. When two (or more) batches exist for one station, the records should be merged after the final editing is completed.

EXPAND DATA

After editing, the expansion process may begin. The expansion process is essentially the same as in the SSOD process. Preliminary expansion with program Q01046 uses the edited data tape and the manual classification count cards. The station number on the classification count cards must match the station number on the edited records. Because the process is being based on the SSOD, the edit program has automatically inserted a station number of "01". Thus, the EOD station numbers on the edited records are all "01" instead of the correct corresponding station number. On the other hand, the classification count cards are likely to have the correct station numbers. Therefore, either all classification - count - card station numbers must be changed

? EXECUTE Q17125/HT etc ....

? DATA QC17125.

XANWSR	608011	0025
XAWSR	608012	0025
XAHSR	608013	0025
XANESR	608014	0025
XAHMIC	608015	0025
XAHMC	608016	0025
XAMILL	608017	0025
XAHRP	608018	0025
XAGLISS HAST	608019	0025
XASESR	608020	0025
XAESR	608021	0025
XASSR	608022	0025
XAUHS	608023	0025
XAJAF	608024	0025
XAHOSP	608025	0025
XAVIKING	608026	0025
XAOPEN	608027	0025
XATYDEN	608028	0025
XAHAP	608029	0025
XAC8D	608030	0025

? END

FIGURE 10

to "01" or all of the trip data must be changed to reflect the correct station number. The latter would be preferable. This problem will be corrected in the future.

For expansion purposes the station can be specified as a 16-hour or a 13-hour station regardless of the actual number of hours of interviews as long as the starting and ending hours are correctly specified on the expansion parameter card.

The final expansion program (Q01047) is then run using the output from the preliminary expansion program.

SORT DATA

When expansion is completed the records should be sorted by statewide desination zone within statewide origin zone.

At this point the basic trip file for each station is completed. A total master file should be created by merging all stations onto one tape which should also be sorted.

PHASE IV

DATA ANALYSIS

Four basic computer outputs will serve as a basis for the final EOD report. These outputs are:

1. General purpose summary (GPSP) of trip purpose and vehicle type for terminal, thru, and total trips.
2. General purpose summary of the number of trips going into or out of each internal zone.
3. Trip length frequency distribution.
4. Plot of external trip ends.

Outputs are obtained for each station in addition to the combined stations. At present the process is defined such that each station is run through the computer programs as separate executions. It is possible in some cases to use the master tape with the combined data to obtain particular reports (GPSP'S) for each station with one (long) computer run. This concept is being considered for the future.

General Purpose Summary of Trip Purpose and Vehicle Type.

Program: TPGPSP (Q01429)

Input: Trip details

Deck Setup: Deck should be setup to print a table of trip purpose and vehicle type for through, terminal, and total trips. Through trips are differentiated from terminal trips by the presence of a valid station number in the field of exit or entrance.

See figure 11-1 for sample deck setup.

Output: One execution of the program will produce the 3 desired tables. See figures 11-2 thru 11-6.

General Purpose Summary of Internal Trips

Program: TPGPSP (Q01429)

Input: Trip details

Deck Setup: Two setups are required, one for origins, one for destinations. One deck should be setup to print the number of origins in each internal zone for the outbound traffic. The other deck should be setup to print the number of destinations in each internal zone for the inbound traffic. The analyst must determine from the geographic location of the station the inbound and outbound directions since directions are coded as cardinal directions. Figure 12-1 shows the two deck setups.

Output: One table showing the number of origins in each internal zone and one table showing the number of destinations for each internal zone. A zone map should be included with these tables. A sample of the origin table is shown in figures 12-2 through 12-5.

FIGURE II-1

```
? END.
CRIT6011   TRIP PURPOSE              $   093   093     1      6
CRIT5011   VEHICLE TYPE              $   089   089     1      8
CRIT4021   EXIT-ENT STAT                 121   122
CRIT4011   EXIT-ENT STAT                 121   122    01     10
FCTR2011   24-HOUR FACTOR               197   200     1      1     -2
KEYS1011   FORM NUMBER                  007   007
GENERAL PURPOSE SUMMARY HAST-02 (082624)
 $OPTION INFILE = $$END
? DATA QC01429
? FILE FILE8 = QT01010
? EXECUTE   Q01429/HY.00                                          HY ARF
```

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER

COMPUTER SERVICE REQUEST

Form 2350 F (Rev. 11/67)

Please run for production program(s) HAST Q01429

Date Submitted

Distribution ☐ Normal ☐ Other ARF

Special Instructions (Use when deviating from abstract)

IN: CPU, 2 min.

QT01010 = 467

out: Printer

Output Needed: (Check one) ☐ 24 Hrs. ☐ 3 Days ☐ 1 Week ☐ Other

Oper. Inits. J

Run Date 2-13

TYPE	NUM	CARD	SEQ	IDENTIFICATION	CD	COL.38	COL.44	COL.50	COL.56	COL.62	COL.68	COL.74	COL.80
KEYS	1	1	1	FORM NUMBER		7	7	0	0	-0	-0	0	0
FCTR	2	1	1	24-HOUR FACTOR		197	200		1		1		-2
CRIT	4	1	1	EXIT-ENT STAT		121	122	01	10				
CRIT	4	2	1	EXIT-ENT STAT		121	122						
CRIT	5	1	1	VEHICLE TYPE	S	89	89	1	8				
CRIT	6	1	1	TRIP PURPOSE	S	93	93	1	6				

FIGURE II-2

THIS TABLE IS BASED ON THE FOLLOWING KEY SELECTION

FORM NUMBER = COLUMNS 7, 7;

EXIT-ENT STAT = COLUMNS 121,122

RANGES 01 ,10 ;
, ;

V E H I C L E T Y P E

TRIP PURPOSE	RANGES	1 1	2 2	3 3	4 4	5 5	6 6	7 7	8 8	TOTAL TOT %
T R I P P U R P O S E	1 1 ROW % COL % TOT %									
	2 2 ROW % COL % TOT %									
	3 3 ROW % COL % TOT %									
	4 4 ROW % COL % TOT %									
	5 5 ROW % COL % TOT %									
	6 6 ROW % COL % TOT %									
	TOTAL TOT %									

FACTOR ID	LOCATION FROM	LOCATION TO	OPERATION	CONSTANT
24-HOUR FACTOR	197	200	1	0.01000

FIGURE II-3

FORM NUMBER = 6

EXIT-ENT STAT = 01 TO 10

VEHICLE TYPE

TRIP PURPOSE	RANGES	1 1	2 2	3 3	4 4	5 5	6 6	7 7	8 8	TOTAL TOT %
	1	58.78	1.07	15.03	0.00	0.33	0.88	0.00	0.00	76.09
	1	77.25	1.41	19.75	0.00	0.43	1.16	0.00	0.00	43.66
		41.66	52.20	50.47	0.00	71.74	100.00	0.00	0.00	
		33.73	0.61	8.63	0.00	0.19	0.50	0.00	0.00	
	2	5.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.62
	2	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.23
		3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		3.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	3	13.28	0.00	2.51	0.00	0.00	0.00	0.00	0.00	15.79
	3	84.10	0.00	15.90	0.00	0.00	0.00	0.00	0.00	9.06
		9.41	0.00	8.43	0.00	0.00	0.00	0.00	0.00	
		7.62	0.00	1.44	0.00	0.00	0.00	0.00	0.00	
	4	2.91	0.98	0.70	0.00	0.00	0.00	0.00	0.00	4.59
	4	63.40	21.35	15.25	0.00	0.00	0.00	0.00	0.00	2.63
		2.06	47.80	2.35	0.00	0.00	0.00	0.00	0.00	
		1.67	0.56	0.40	0.00	0.00	0.00	0.00	0.00	
	5	48.23	0.00	6.93	0.00	0.13	0.00	0.00	0.00	55.29
	5	87.23	0.00	12.53	0.00	0.24	0.00	0.00	0.00	31.73
		34.18	0.00	23.27	0.00	28.26	0.00	0.00	0.00	
		27.68	0.00	3.98	0.00	0.07	0.00	0.00	0.00	
	6	12.27	0.00	4.61	0.00	0.00	0.00	0.00	0.00	16.88
	6	72.69	0.00	27.31	0.00	0.00	0.00	0.00	0.00	9.69
		8.70	0.00	15.48	0.00	0.00	0.00	0.00	0.00	
		7.04	0.00	2.65	0.00	0.00	0.00	0.00	0.00	
	TOTAL	141.09	2.05	29.78	0.00	0.46	0.88	0.00	0.00	174.26
	TOT %	80.97	1.18	17.09	0.00	0.26	0.50	0.00	0.00	

FIGURE II-4

FORM NUMBER = 6

EXIT-ENT STAT = TO

VEHICLE TYPE

TRIP PURPOSE	RANGES	1 1	2 2	3 3	4 4	5 5	6 6	7 7	8 8	TOTAL TOT %
	1	338.46	0.00	144.08	0.00	1.70	0.40	0.00	0.00	484.64
	1	69.84	0.00	29.73	0.00	0.35	0.08	0.00	0.00	35.93
		30.80	0.00	58.20	0.00	87.18	100.00	0.00	0.00	
		25.09	0.00	10.68	0.00	0.13	0.03	0.00	0.00	
	2	69.68	0.00	9.30	0.00	0.00	0.00	0.00	0.00	78.98
	2	88.22	0.00	11.78	0.00	0.00	0.00	0.00	0.00	5.86
		6.34	0.00	3.76	0.00	0.00	0.00	0.00	0.00	
		5.17	0.00	0.69	0.00	0.00	0.00	0.00	0.00	
	3	329.18	0.00	52.80	0.00	0.25	0.00	0.00	0.00	382.23
	3	86.12	0.00	13.81	0.00	0.07	0.00	0.00	0.00	28.34
		29.96	0.00	21.33	0.00	12.82	0.00	0.00	0.00	
		24.41	0.00	3.91	0.00	0.02	0.00	0.00	0.00	
	4	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17
	4	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
		0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	5	208.34	0.00	24.35	0.00	0.00	0.00	0.00	0.00	232.69
	5	89.54	0.00	10.46	0.00	0.00	0.00	0.00	0.00	17.25
		18.96	0.00	9.84	0.00	0.00	0.00	0.00	0.00	
		15.45	0.00	1.81	0.00	0.00	0.00	0.00	0.00	
	6	149.08	0.00	17.02	0.00	0.00	0.00	0.00	0.00	166.10
	6	89.75	0.00	10.25	0.00	0.00	0.00	0.00	0.00	12.31
		13.57	0.00	6.88	0.00	0.00	0.00	0.00	0.00	
		11.05	0.00	1.26	0.00	0.00	0.00	0.00	0.00	
	TOTAL	1098.91	0.00	247.55	0.00	1.95	0.40	0.00	0.00	1348.81
	TOT %	81.47	0.00	18.35	0.00	0.14	0.03	0.00	0.00	

FIGURE II-5

FORM NUMBER = 6

EXIT-ENT STAT = 01 TO

VEHICLE TYPE

TRIP PURPOSE RANGES	1 1	2 2	3 3	4 4	5 5	6 6	7 7	8 8	TOTAL TOT %
1	397.24	1.07	159.11	0.00	2.03	1.28	0.00	0.00	560.73
1	70.84	0.19	28.38	0.00	0.36	0.23	0.00	0.00	36.82
	32.04	52.20	57.37	0.00	84.23	100.00	0.00	0.00	
	26.08	0.07	10.45	0.00	0.13	0.08	0.00	0.00	
2	75.30	0.00	9.30	0.00	0.00	0.00	0.00	0.00	84.60
2	89.01	0.00	10.99	0.00	0.00	0.00	0.00	0.00	5.55
	6.07	0.00	3.35	0.00	0.00	0.00	0.00	0.00	
	4.94	0.00	0.61	0.00	0.00	0.00	0.00	0.00	
3	342.46	0.00	55.31	0.00	0.25	0.00	0.00	0.00	398.02
3	86.04	0.00	13.90	0.00	0.06	0.00	0.00	0.00	26.13
	27.62	0.00	19.94	0.00	10.37	0.00	0.00	0.00	
	22.48	0.00	3.63	0.00	0.02	0.00	0.00	0.00	
4	7.08	0.98	0.70	0.00	0.00	0.00	0.00	0.00	8.76
4	80.82	11.19	7.99	0.00	0.00	0.00	0.00	0.00	0.58
	0.57	47.80	0.25	0.00	0.00	0.00	0.00	0.00	
	0.46	0.06	0.05	0.00	0.00	0.00	0.00	0.00	
5	256.57	0.00	31.28	0.00	0.13	0.00	0.00	0.00	287.98
5	89.09	0.00	10.86	0.00	0.05	0.00	0.00	0.00	18.91
	20.69	0.00	11.28	0.00	5.39	0.00	0.00	0.00	
	16.85	0.00	2.05	0.00	0.01	0.00	0.00	0.00	
6	161.35	0.00	21.63	0.00	0.00	0.00	0.00	0.00	182.98
6	88.18	0.00	11.82	0.00	0.00	0.00	0.00	0.00	12.01
	13.01	0.00	7.80	0.00	0.00	0.00	0.00	0.00	
	10.59	0.00	1.42	0.00	0.00	0.00	0.00	0.00	
TOTAL	1240.00	2.05	277.33	0.00	2.41	1.28	0.00	0.00	1523.07
TOT %	81.41	0.13	18.21	0.00	0.16	0.08	0.00	0.00	

FIGURE II-6

FIGURE 12-1

```
END.
CRIT6011   CITY ORIGIN ZONES   S   109   110   11   30
CRIT5011   INTERNAL END            105   105   6    6
CRIT4011   OUTBOUND DIRECTION      096   096   5    5
FCTR2011   24-HOUR FACTOR          197   200        1         1        -2
KEYS1011   FORM NUMBER             007   007
GENERAL PURPOSE SUMMARY HAST-06 (082628)
$OPTION INFILE = 03END
? DATA QC01429
? FILE FILES = QT01010
? EXECUTE   Q01429/HY,00                                  HY ARF
```

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER

COMPUTER SERVICE REQUEST Form 2350 F (Rev. 11/67)

Please run for production program(s)

Date Submitted

```
END.
CRIT6011   CITY DESTIN ZONES   S   117   118   11   30
CRIT5011   INTERNAL END            113   113   6    6
CRIT4011   INBOUND DIRECTION       096   096   1    1
FCTR2011   24-HOUR FACTOR          197   200        1         1        -2
KEYS1011   FORM NUMBER             007   007
GENERAL PURPOSE SUMMARY HAST-06 *082628*
$OPTION INFILE = 03END
* DATA QC01429
* FILE FILES * QT01010
* EXECUTE   Q01429/HY,00                                  HY ARF
```

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER

COMPUTER SERVICE REQUEST Form 2350 F (Rev. 11/67)

Please run for production program(s) Q01429

Date Submitted 5/24/72

Distribution ☐ Normal ☒ Other ARF

Special Instructions (Use when deviating from abstract) CPU 1 min

I/Ø QT01010 = 469

Attributes:

Output Needed: (Check one) ☐ 24 Hrs. ☐ 3 Days ☐ 1 Week ☐ Other

Oper. Inits. 3

Run Date 5-25

TYPE	NUM	CARD	SEQ	IDENTIFICATION	CD	COL.38	COL.44	COL.50	COL.56	COL.62	COL.68	COL.74	COL.80
KEYS	1	1	1	FORM NUMBER		7	7	0	0	-0	-0	0	0
FCTR	2	1	1	24-HOUR FACTOR		197	200		1		1		-2
CRIT	4	1	1	OUTBOUND DIRECTION		96	96	5	5				
CRIT	5	1	1	INTERNAL END		105	105	6	6				
CRIT	6	1	1	CITY ORIGIN ZONES	S:	109	110	11	30				

FIGURE 12.2

FORM NUMBER = 6

OUTBOUND DIRECTION = 5 TO 5

I N T E R N A L   E N D

	RANGES	6 6	TOTAL TOT %
	11	6.19	6.19
	11	100.00	5.16
		5.16	
C		5.16	
I	12	1.22	1.22
	12	100.00	1.02
T		1.02	
		1.02	
Y			
	13	3.42	3.42
	13	100.00	2.85
		2.85	
O		2.85	
R	14	1.22	1.22
	14	100.00	1.02
I		1.02	
		1.02	
G			
	15	3.54	3.54
I	15	100.00	2.95
		2.95	
N		2.95	
	16	8.27	8.27
	16	100.00	6.90
Z		6.90	
		6.90	
O			
	17	2.44	2.44
N	17	100.00	2.04
		2.04	
E		2.04	
S	19	26.88	26.88
	19	100.00	22.42
		22.42	
		22.42	
	20	12.43	12.43
0	20	100.00	10.37
		10.37	
0		10.37	
0	21	8.29	8.29
	21	100.00	6.91
0		6.91	
		6.91	
0			
	23	7.20	7.20
0	23	100.00	6.01
		6.01	

FIGURE 12-3

0	24	3.42		3.42
	24	100.00		2.85
0		2.85		
		2.85		
0				
	25	1.35		1.35
0	25	100.00		1.13
		1.13		
0		1.13		
0	27	1.22		1.22
	27	100.00		1.02
0		1.02		
		1.02		
0				
	28	9.99		9.99
0	28	100.00		8.33
		8.33		
0		8.33		
0	30	22.81		22.81
	30	100.00		19.03
0		19.03		
		19.03		
0				
	TOTAL	119.89		119.89
	TOT %	100.00		

FIGURE 12-L

FIGURE 12-5

TOTAL RECORDS READ = 152
TOTAL RECORDS DROPPED = 0
TOTAL RECORDS MISSED = 152

Trip Length Frequency Distribution

This summary will be obtained using the Statewide Model 547 zone system. Before running the TLD program a trip table must be created.

Program: TPTRIP (Q01401)

Input: Trip details (sorted)

Deck Setup: The statewide zones should be used to create one trip table with all trips. See figure 13-1.

Output: A 547 zone trip table (tape)

The TLD program can now be run.

Program: TPTLD (Q01408)

Input:
1. Trip table from previous run
2. Latest 547 zone skim tree from Statewide Studies Unit.

Deck Setup: See Figure 13-2 for sample.

Output: Printer plot showing distribution of trip length in minutes on the verticle axis and the percent of trips making these trips of a given length on the horizontal axis. See figures 13-3 and 13-4.

FIGURE 13-1

```
? END.
(    T197,F4.2,      T157,I4,      T161,I4 )
 $OPTION NOPURP=T, READER=F$END
 $PARAM ZONES=583, NTABLE=1, PURP=0$END
  TT-547 ZONES      HASTINGS: DD-061 SS-062628
? DATA QC01401.
. FILE FILE9  = QT01010
. FILE FILE21 = QT01010/DDTT06
? EXECUTE   QC01401/HY.00          TP-TRIP          HY ARF
```

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER

COMPUTER SERVICE REQUEST

St. Form 2350 E (Rev. 11/67)

Please run for production program(s) SAT 6 — QC01401

Date Submitted

Distribution ☐ Normal ☐ Other ARF

Special Instructions (Use when deviating from abstract)

1

IN: QT01010 # 469 — CPU 8 min.

OUT: QT01010/DDTT06 664

Output Needed: (Check one) ☐ 24 Hrs. ☐ 3 Days ☐ 1 Week ☐ Other

Oper. Inits. J

Run Date 2-13

FIGURE 13-2

```
? END.
$OPTION PICK=F$END
$PARAM ZONES=[illegible], MAXP=[illegible], [illegible]
MICHIGAN STATEWIDE TRIP LENGTH FREQ DIST HAST STAT 02
? DATA QC01408.
? FILE FILE02 = QT01010/ØDTT02C
? FILE FILE21 = QT01E00/HASTSKM.
? EXECUTE   QU1408/HY.00                          HY ARF
```

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER

COMPUTER SERVICE REQUEST

Form 2350 F (Rev. 11/67)

STATEWIDE

Please run for production program(s): TLD STA 02

Date Submitted:

Distribution: ☒ Normal ☐ Other ARF [illegible] min.

Special Instructions (Use when deviating from abstract)

IN: QT01E00/HASTSKM = #(1762)

IN: QT01010/ØDTT02C = #(~~[illegible]~~ 439)

ØUT: PRINTER

Output Needed: (Check one) ☒ 24 Hrs. ☐ 3 Days ☐ 1 Week ☐ Other

Oper. Inits. 3

Run Date 4-2

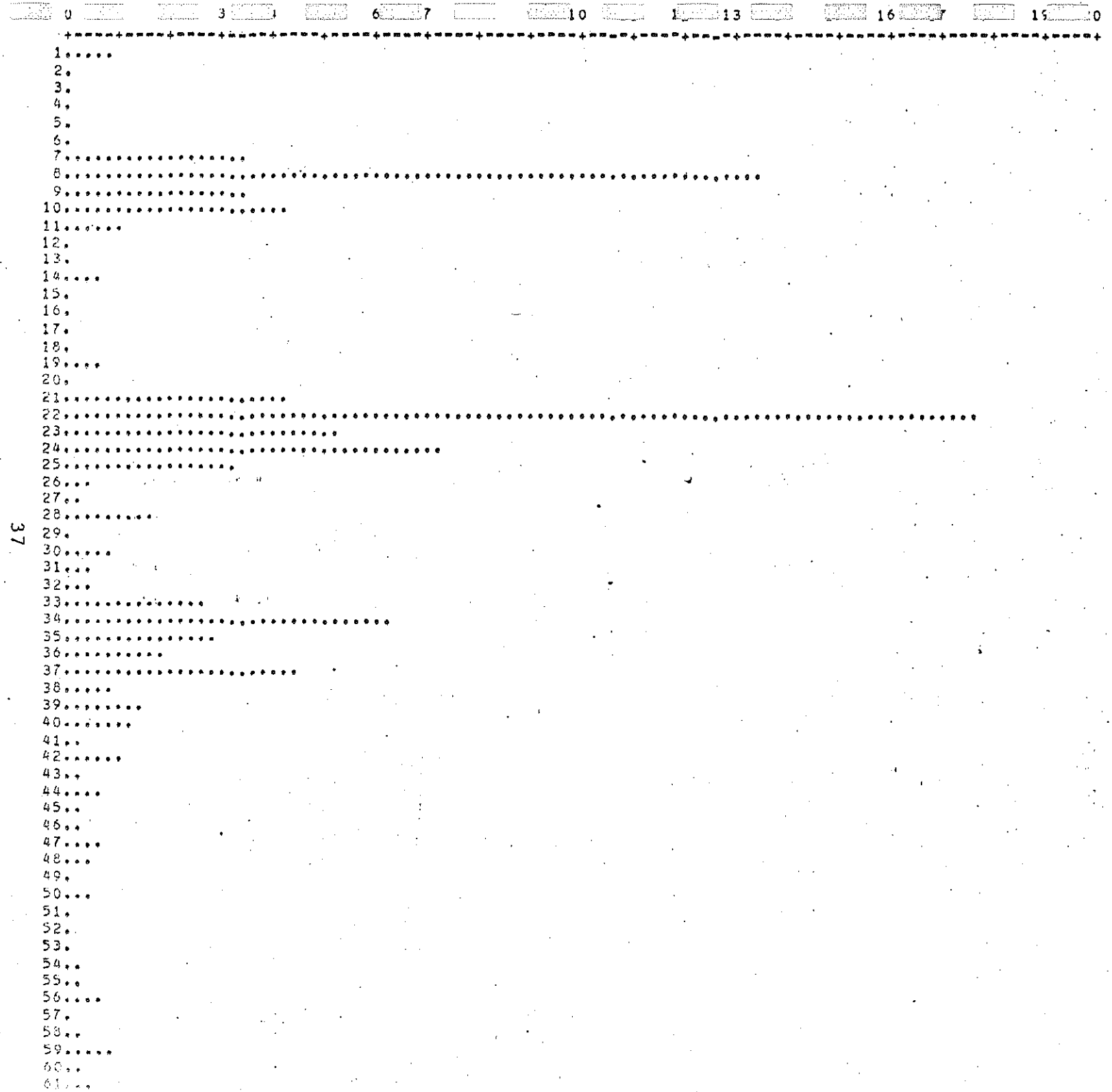

0 3 6 7 10 1 13 16 7 15 0
P.C. CUM. ACTUAL
1..... 0.785 0.785 12
2. 0.000 0.785 0
3. 0.065 0.851 1
4. 0.000 0.851 0
5. 0.000 0.851 0
6. 0.000 0.851 0
7..... 3.469 4.319 53
8..... 13.416 17.736 205
9..... 3.469 21.204 53
10..... 4.188 25.393 64
11..... 0.982 26.374 15
12. 0.000 26.374 0
13. 0.000 26.374 0
14.... 0.524 26.898 8
15. 0.000 26.898 0
16. 0.000 26.898 0
17. 0.000 26.898 0
18. 0.000 26.898 0
19.... 0.654 27.552 10
20. 0.000 27.552 0
21..... 4.254 31.806 65
22..... 17.605 49.411 269
23..... 5.105 54.516 78
24..... 7.134 61.649 109
25..... 3.141 64.791 48
26... 0.393 65.183 6
27.. 0.196 65.380 3
28..... 1.636 67.016 25
29. 0.065 67.081 1
30..... 0.720 67.801 11
31... 0.393 68.194 6
32... 0.458 68.652 7
33..... 2.683 71.335 41
34..... 6.217 77.552 95
35..... 2.814 80.366 43
36..... 1.898 82.264 29
37..... 4.319 86.584 66
38..... 0.851 87.435 13
39..... 1.374 88.809 21
40..... 1.113 89.921 17
41.. 0.196 90.118 3
42..... 0.916 91.034 14
43.. 0.196 91.230 3
44.... 0.654 91.885 10
45.. 0.196 92.081 3
46.. 0.131 92.212 2
47.... 0.524 92.736 8
48... 0.393 93.128 6
49. 0.065 93.194 1
50... 0.393 93.586 6
51. 0.000 93.586 0
52. 0.000 93.586 0
53. 0.000 93.586 0
54.. 0.196 93.783 3
55.. 0.131 93.914 2
56.... 0.524 94.437 8
57. 0.065 94.503 1
58.. 0.131 94.634 2
59..... 0.720 95.353 11
60.. 0.131 95.484 2
61... 0.393 95.877 6

FIGURE 13-3

207.			
208.			
209.	0.000	99.084	0
210.	0.000	99.084	0
211.	0.000	99.084	0
212.	0.000	99.084	0
213.	0.000	99.084	0
214.	0.000	99.084	0
215.	0.000	99.084	0
216.	0.000	99.084	0
217.	0.000	99.084	0
218.	0.000	99.084	0
219.	0.000	99.084	0
220.	0.000	99.084	0
221.	0.000	99.084	0
222.	0.000	99.084	0
223.	0.000	99.084	0
224.	0.065	99.149	1
225.	0.000	99.149	0
226.	0.000	99.149	0
227.	0.000	99.149	0
228.	0.000	99.149	0
229.	0.000	99.149	0
230.	0.000	99.149	0
231.	0.000	99.149	0
232.	0.000	99.149	0
233.	0.000	99.149	0
234.	0.000	99.149	0
235.	0.000	99.149	0
236.	0.000	99.149	0
237.	0.000	99.149	0
238.	0.000	99.149	0
239.	0.000	99.149	0
240.	0.000	99.149	0
241.	0.000	99.149	0
242.	0.000	99.149	0
243.	0.000	99.149	0
244.	0.000	99.149	0
245.	0.000	99.149	0
246.	0.000	99.149	0
247.	0.000	99.149	0
248.	0.000	99.149	0
249.	0.000	99.149	0
250.	0.000	99.149	0
251.	0.000	99.149	0
252.	0.000	99.149	0
253.	0.000	99.149	0
254.	0.000	99.149	0
255.....			
0.851	100.000		13

REMAINING VALUES ARE ALL ZERO

TOTAL TRIPS OVER MAXP = 13
TOTAL TRIPS OVER 255 = 13
VOLUME TABLE NUMBER = 201
SKIM TREE NUMBER = 101

FIGURE 13-4

Plot External Trip Ends

This plot will be on the 547 zone system. All trip records for each station will be modified to have the same origin (statewide zone) which represents the study area. Below is an example of how the trip records would be modified for the Hastings EOD. The Statewide Model Zone number for Hastings is 25.

	BEFORE		AFTER	
	STW ORG	STW DES	STW ORG	STW DES
Thru Trip	21	132	25	21
			25	132
Terminal Trip	25	132	25	132
Terminal Trip	164	25	25	164

These new records can be used to build a trip table which in turn can be used with a selected minimum path tree and a network to plot the number of trips which either began or ended at each statewide zone. Following are the detailed steps:

Program: Run a new program to create special trip end records (described above).

Note: This program was developed using the remote terminal. At this time the program has not officially been made available for on-site production. If program is required before such time, contact Statewide Studies Unit for program and run instructions.

A sample of this run is shown in figure 14-1.

Next,

Program: TPTRIP (Q01401)

Input: Trip records from the create-trip-end-records program mentioned above

FIGURE 14-1

```
STATUS Q01AF8←
SCHEDULED.
LOAD Q01KHW←
ERR: Q01KHW
P Q01AF7←

TO SPO NEED #3224(QT01010) AND OUTAPE MOUNTED--ARF SCHED MESS
TO SPO OUTAPE TO BE SAVED--YOU HAVE LABEL OR WILL HAVE SHORTLY
TO SPO PROGRAM QTTERM WILL ASK FOR QT01009, PLS IL MY TAPEIN
R QTTERM
 RUNNING
```

INPUT DATA

```
?TITLE CARD    HASTINGS  ZONE 25
? 00025                                                        0025
?99999
```

OUTPUT DATA

```
QTTERM                 CREATE TRIP END RECORDS               04-14-72

TITLE CARD    HASTINGS  ZONE 25


  PLOT ORIGIN:  0025
FOLLOWING TRIP-ENDS NOT USED TO CREATE NEW RECORDS
0025


NO READ =     18314      NO WRITTEN =     24170
```

```
 END QTTERM 1 MIN, 38.6 SEC.

TO SPO SAVE OUTAPE QT01009


BYE
 C&E USE 1.3 SEC.
 EXECUTE
#
```

Deck Setup: Same type of setup as required for building the trip table for TLD report.

Output: Trip end trip table tape (Actually a single rowed trip table since all origins are the same.)

Next,

3

Program: TPTREE (Q01403)

Input: Latest 547 network from Statewide Studies Unit

Deck Setup: Set up to create the selected tree which represents the study area. See figure 14-2.

Output: Minimum path tree tape

Next,

4

Program: Plot minimum path trees (Q01154)

Input:
1. Trip-end trip table from previous run
2. Latest 547 network from Statewide Studies Unit
3. Selected tree from previous run

Deck Setup: Set up to plot trip ends. Plotting of zone numbers is left to the discretion of the analyst. Also, the extent of the region to be plotted is left to the analyst's discretion. For example, the counties immediately surrounding the study area might be plotted for each stations data. In addition for the combined stations a plot of the whole state might be included. See figure 14-3 for deck setup.

Output: Plotter tape which will be plotted by computer operations. Sample plots can be seen in figures 14-4 thru 14-6.

FIGURE 14-2

```
? END
$SELECT DK(025)=1$
$ OPTION BUILD=T$                                    PICK=T$
$ PARAM ZONES = 547$                                 THRU=1000$
 HASTINGS SELECTED TREE  FOR CITY ZONES = 25
? DATA QC01403
? FILE FILE29 = QT01B00/STREHAS
? FILE FILE4 = QT01J00/4,
? FILE FILE5 = QT01J00/5,
? FILE FILE1 = QT01J00/CSEQV6
? EXECUTE   QC1403/HY,00      TTREE                  HY ARF
```

1 of 2

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER

COMPUTER SERVICE REQUEST

Form 2350 F (Rev. 11/67)

Please run for production program(s) QC1403

Date Submitted 4/26/72

Distribution ☐ Normal ☐ Other ARF

Special Instructions (Use when deviating from abstract)

IN: QT01J00/CSEQV6 # 2647 COPY = 2 mm

out QT01B00/STREHAS # 4516 into 2 of 2

Output Needed: (Check one) ☐ 24 Hrs. ☐ 3 Days ☐ 1 Week ☐ Other

Oper. Inits. 3

Run Date 4-29

FIGURE 14-3

```
? END.
$ OPTION IAF=1;
      MINXP=171.05; MAXXP=209.61; MINYP=110.30; MAXYP=141.09; SCA=0.91;
      MINXC=192.77; MAXXC=193.62; MINYC=125.97; MAXYC=126.85;
 $ PARAM TREE=211,ZON=205; NTABLE = 1;
  HASTINGS PLOT TRIP ENDS USING TREE 211 FOR STAT 06 - SURROUNDING CNTYS
? DATA QC01154;
? FILE FILE28 = QT01B00/STREHAS.
? FILE FILE21 = QT01009/TETT06C.
? FILE FILE3 = QT01A00/3.
? FILE FILE2 = QT01A00/2.
? FILE FILE1 = QT01A00/HAST215.
? EXECUTE    Q01154/HY.00                                          HY ARF
```

STATE OF MICHIGAN DEPARTMENT OF STATE HIGHWAYS MANAGEMENT SERVICES – DATA CENTER	COMPUTER SERVICE REQUEST	Form 2350 F (Rev. 11/67)

Please run for production program(s) Q01154 — Date Submitted 5/3/72

Distribution ☐ Normal ☐ Other ARF — cpu 3 min.

Special Instructions (Use when deviating from abstract)

IN: QT01A00 / HAST215 # 4351

IN: QT01009 / TETT06C # 1028

IN: QT01B00 / STREHAS # 631

OT: PLOTTER = 3947

Output Needed: (Check one) ☐ 24 Hrs. ☐ 3 Days ☐ 1 Week ☐ Other

Oper. Inits. 3 — Run Date 5-4

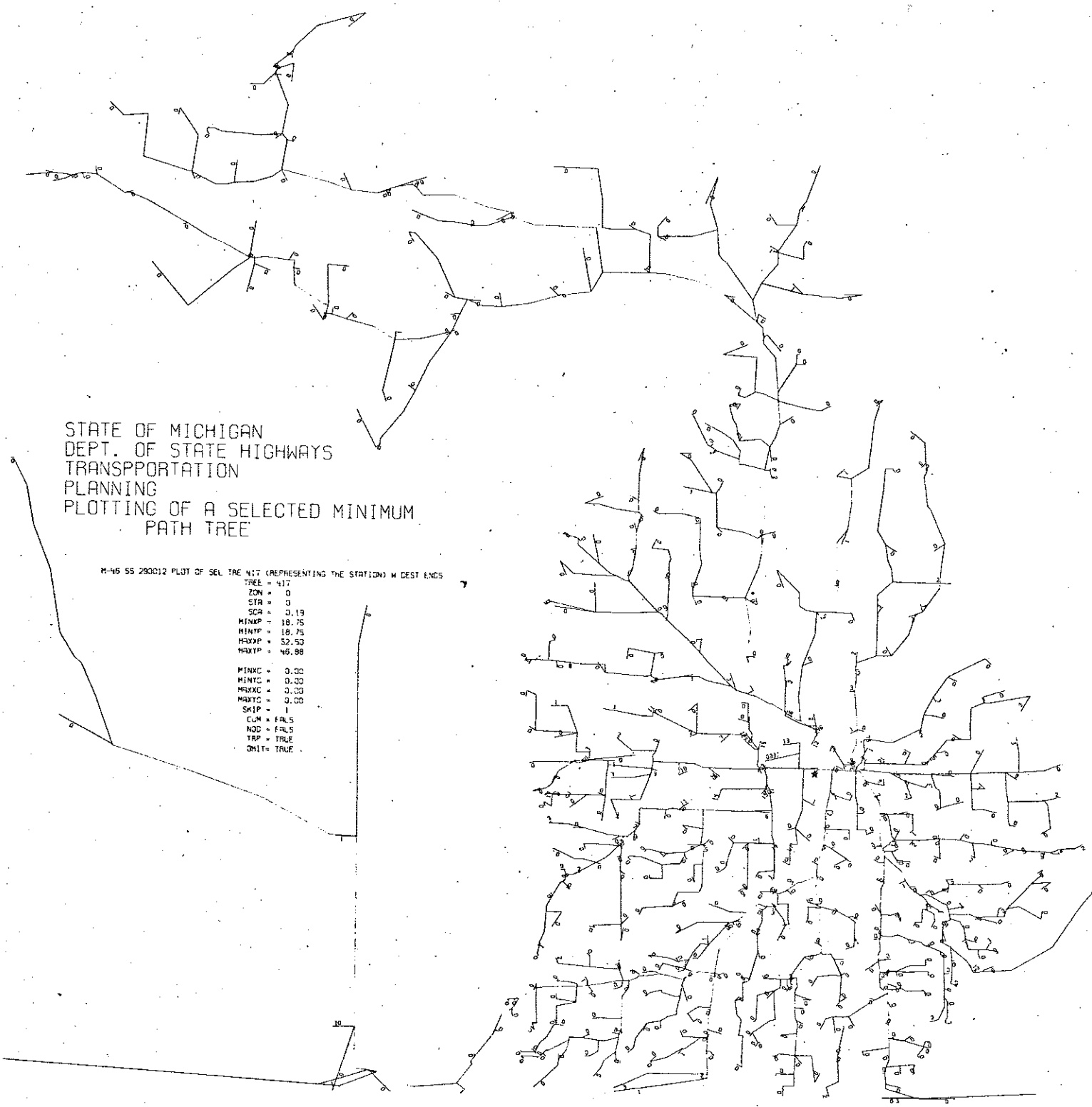

STATE OF MICHIGAN
DEPT. OF STATE HIGHWAYS
TRANSPPORTATION
PLANNING
PLOTTING OF A SELECTED MINIMUM
PATH TREE
M-46 SS 290012 PLOT OF SEL TRE 417 (REPRESENTING THE STATION) M DEST ENDS
TREE = 417
ZON = 0
STA = 0
SCA = 0.19
MINXP = 18.75
MINYP = 18.75
MAXXP = 52.50
MAXYP = 46.88
MINXC = 0.00
MINYC = 0.00
MAXXC = 0.00
MAXYC = 0.00
SKIP = 1
CUM = FALS
NOD = FALS
TRP = TRUE
OMIT= TRUE

FIGURE 14-4

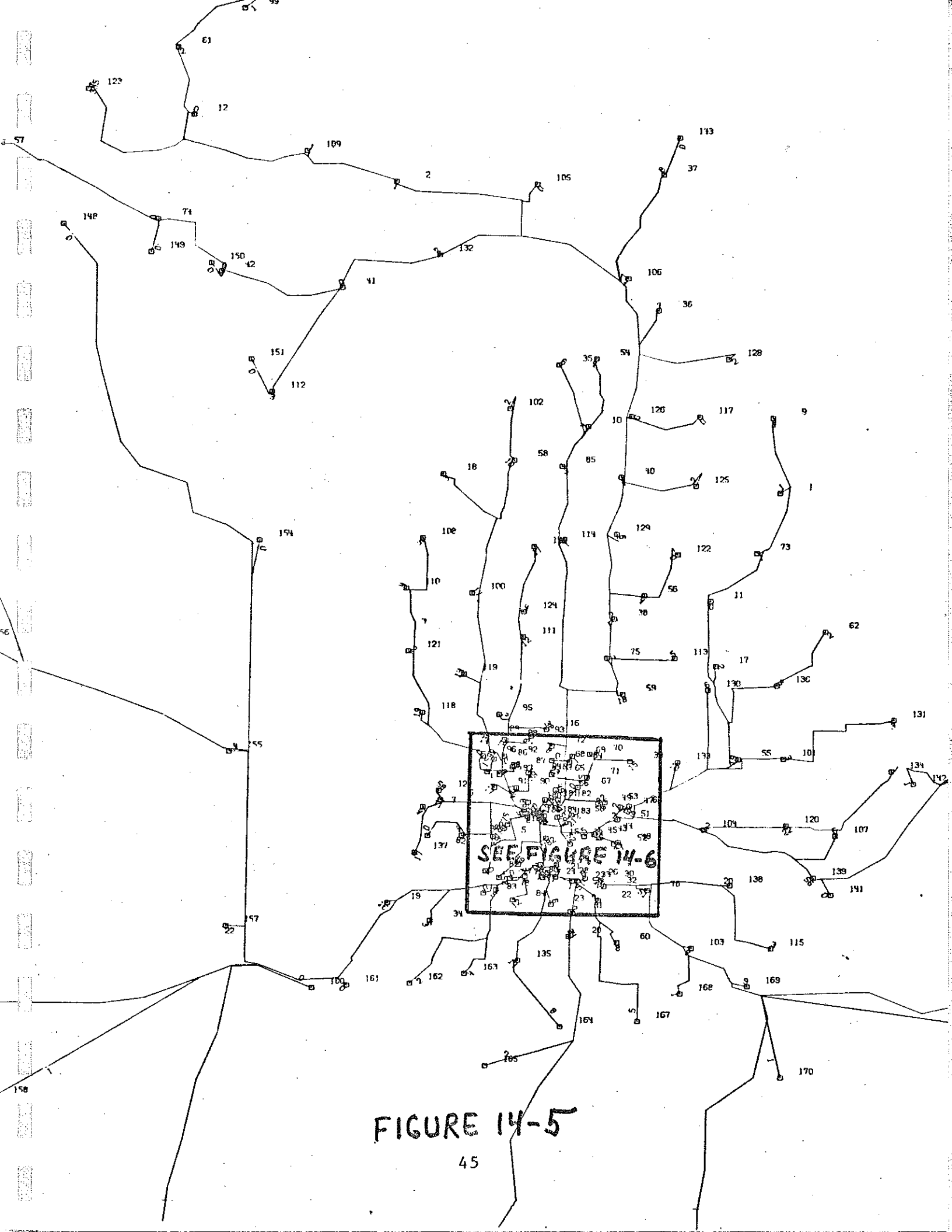


FIGURE 14-5

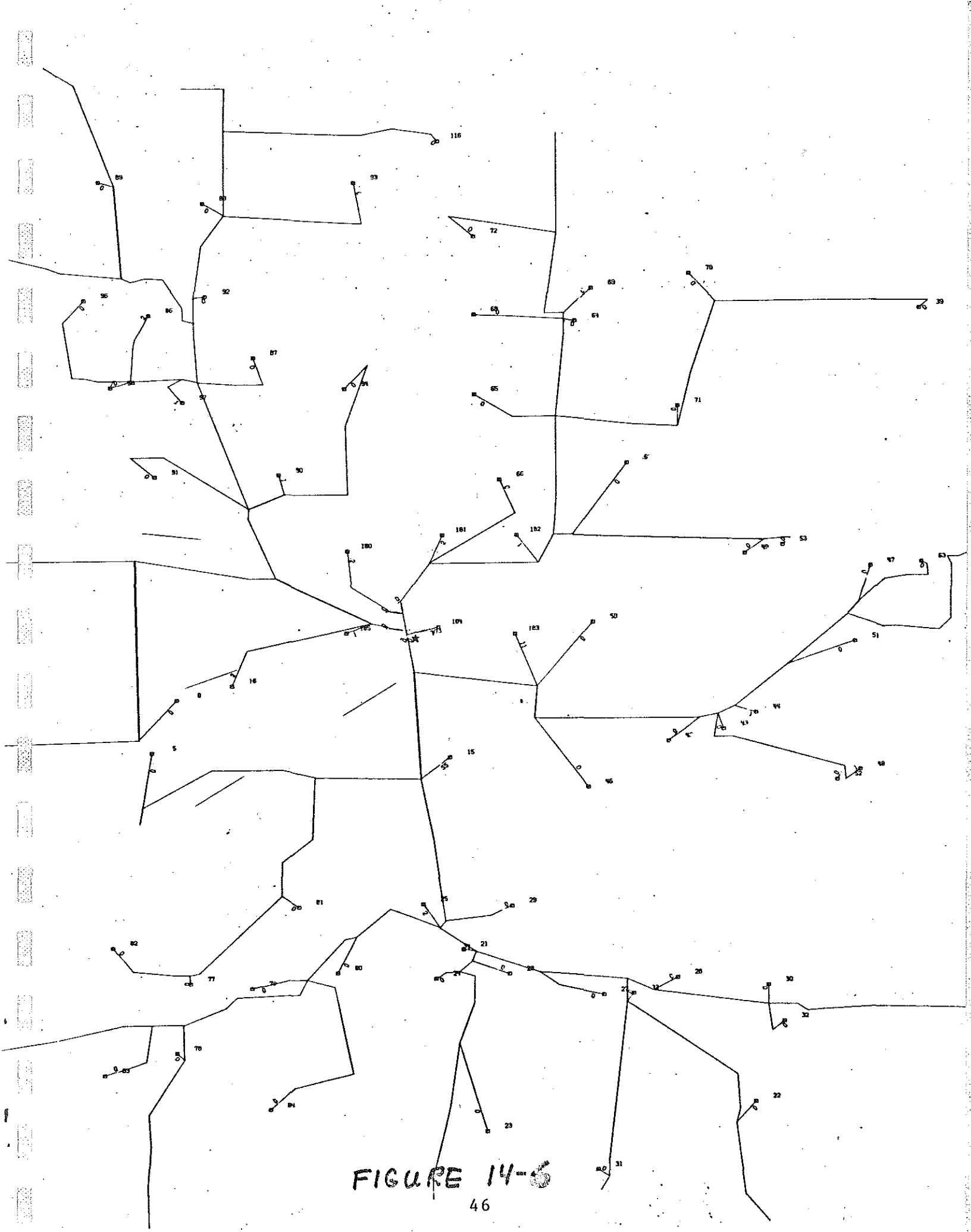


FIGURE 14-6

The basic outputs are now completed. Optionally, as with the SSOD, the "Segmental Model" process could have been used to reduce the 547 zone system to a smaller number of zones by automatically expanding zone size to the county level in selected area of the state and compressing the highway system to state trunklines. The basic steps involved are:

1. Run Segmental Model (Q01436) to create new network
2. Build and skim trees using the new network
3. Compress trip tables to same level of detail as the new network using TPSQZ (Q01414) and the output from Segmental Model
4. Run programs using this new zone system instead of the 547 zone system

Other options might include building trip tables on vehicle type or trip purpose.

At the analyst's option further manipualtion and summarization of the data may be required to meet special needs.

PHASE V

REPORT

The four basic types of computer outputs will be the basis for presenting the data in a final report. The following is suggested as a format for the final report.

1. Acknowledgments
2. Table of Contents
3. History of Area
4. Description of Survey Area
5. Field Procedures
6. Terminology
7. (Optional) Machine Counts on Major Streets
8. Use of Charts and Tables.

   An explanation to users on how to read GPSP tables, TLD's, etc.

9. Presentation of data for Combined Stations.

   A. Summary comments which analyst deems necessary to point out improtant features or problems of the combined data or study area. A base map for the area may be included.

   B. GPSP tables of trip purpose and vehicle type.

   C. GPSP tables of trips to and from internal zones along with a base map.

   D. Trip length frequency distribution tables.

   E. Trip-end plots.

10. Presentation of data for each Individual Station as above.

11. Appendix with Sample Interview Form and Manual Classification Count Form.

A sample report is shown in Appendix A. The appendix does not contain a completed report for a particular study but contains only samples from various sources for illustrative purposes only. One station was chosen to illustrate the computer summaries and plots. There would normally be a set for each station plus one for the combined data.

APPENDIX

EXTERNAL

ORIGIN-DESTINATION

SURVEY

SAMPLE REPORT

ACKNOWLEDGMENTS:

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

HIGHWAY COMMISSION

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Louis A. Fisher, Vice Chairman

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HISTORY

Emmet County is located at the northwestern tip of Michigan's Lower Peninsula. It was organized in 1853 and originally named Tonedagana, after an Ottawa Indian Chief. Emmet County was later named for Robert Emmet, who was an Irish patriot. Petoskey is located on the shores of Little Traverse Bay in Emmet County.

Petoskey was founded in 1875 and named after an Ottawa Indian Chief, Pet-o-sega, meaning Rising Sun. Petoskey developed at the mouth of the Bear River and became a shipping center for sailing vessels carrying lumber, hides and portland cement. Near the turn of the century great flocks of Passenger Pigeons darkened the skies for hours as they passed overhead travelling in search of food. The first migrations of wild pigeons into northern Michigan came in the spring of 1877. One of their nesting places was located on the shores of Round Lake, about five miles northeast of Petoskey. Since they were seemingly limitless in their numbers, they were killed by the millions and whole trainloads were shipped from Petoskey to markets in other parts of America.

Petoskey became known as a summer resort community. Hay Fever sufferers found that this climate was particularly well suited to them and many families established permanent summer homes in and around Petoskey. Petoskey's harbors also became well known as a home for many pleasure craft.

Petoskey is served by US-31, US-131 and M-131. Both Petoskey and the Little Traverse Bay region have been popular resort centers for generations. Being conveniently located via the above highways from the city, soon resort developments began to spring up – Walloon Lake to the south, Pickerel and other lakes to the east, Wequetonsing and Harbor Springs to the north.

The first community on US-31 to the northeast of Petoskey is Bay View. It was founded in 1875 by a group of Michigan Methodists as a camp meeting site. At the present time it consists of some 450 cottages, three hotels, several classroom buildings, dormitories, office buildings and other campus structures. Other attractions on this site are a complete water front and recreation complex, and the John M. Hall Auditorium, with a seating capacity of 2,000. The Bay View College of Liberal Arts and Music has summer sessions for those who wish to combine resorting and school work.

SURVEY AREA

Petoskey is a city of 6,630 people, located on the east shore of Little Traverse Bay at the mouth of the Bear River. Population within the entire study area is estimated at 7,430. This area is composed of the city of Petoskey and parts of Bear Creek and Resort Townships. The total area covers approximately 15 square miles.

FIELD PROCEDURE

Field work on the Petoskey Traffic Study was conducted during the month of July, 1967. The purpose was to accumulate data concerning the movement of people and goods by motor vehicle through, into and out of the study area.

Data for the study of external trips was obtained at a cordon of six interview stations established on all of the important roads leading into the study area. At each of these stations, vehicles were stopped and the drivers interviewed concerning the origin, destination and purpose of their trips. Manual vehicle classification counts were taken at the six stations for twenty-four hours.

Answers to the interview questions were recorded on Form O-D 4. One line of this form was used for each vehicle interviewed. A sample copy of Form O-D 4 is shown in Appendix . Both inbound and outbound vehicles were interviewed. They were recorded each hour at each station by direction of travel.

TERMINOLOGY AND DEFINITIONS

CENTRAL BUSINESS DISTRICT (CBD):	The zones comprising the concentrated commercial and retail business center of the city.
CORDON LINE:	A hypothetical line encompassing the area under study.
CORDON TRIP, TERMINAL TRIP:	A trip with one terminal outside the study area and one terminal inside the study area.
DESTINATION:	The place where a trip ends.
DOWNTOWN AREA:	The zones comprising the CBD and its commercial-residential fringe.
EXTERNAL:	Outside the study area.
EXTERNAL STATION:	A point on a highway at the limits of the study area at which the drivers of vehicles were interviewed.
EXTERNAL TRIP:	A trip with one or both of its terminals outside the study area.
INTERNAL:	Within the study area.
NONRESIDENT:	A person living outside the study area.
ORIGIN:	The place where the trip begins.
ORIGIN-DESTINATION ZONE,	A basic subdivision of the study area having a single or dominant land use, designated for purposes of tabulation and analysis.
RESIDENT:	A person living within the study area.
STUDY AREA:	The area enclosed by the cordon line.
THROUGH TRIP:	A trip passing through the study area with the terminals outside the study area.
TRIP:	One-way travel between an origin and destination.
TRIP TERMINAL:	The point where a trip begins or ends.

TRAFFIC VOLUMES

Many factors are responsible for the patterns of traffic volumes within a community. Such items as land use, street width, type and condition of street surface, parking restrictions, one or two way operation and signalization attract traffic to certain routes. The majority of motorists in the Petoskey Area voluntarily confine their travel to a small number of streets. These are: Spring Street – Bay View Drive (US-131, US-31, M-131, M-68), Charlevoix Avenue (US-31), Mitchell Street, Michigan Street, Lake Street, State Street, Emmet Street, Howard Street, Waukazoo Avenue, Kalamazoo Avenue, Lewis Street, Division Street, West Lake Street, Porter-Bridge Street, Division Road, Atkins Road, Greenwood Road and Standish Road.

Traffic volumes on these thoroughfares are small in the peripheral areas, gradually increasing as these routes converge upon the central area, and reaching their maximum in the Petoskey central business district. The highest traffic volume in the city (23,500 vehicles, July weekday) occurred at the west leg of the US-31, M-131, M-68, Mitchell Street and Bay View Drive, and Mitchell Street and Elizabeth Street.

Traffic decreases along US-31, M-131 and M-68. At the village of Bay View, the volume is 14,140 vehicles on the above route. Other streets and their approximate 24-hour July weekday volumes are Mitchell Street (11,560), Charlevoix Avenue (9,970), Emmet Street (4,770), Division Street (3,700), Waukazoo Avenue (3,640), Petoskey Street (3,370), Kalamazoo Avenue (3,170), Michigan Street (2,930), Division Road (2,480), Jennings Avenue (1,950), West Lake Street (1,680), and Porter, Bridge, Fulton Street (1,150).

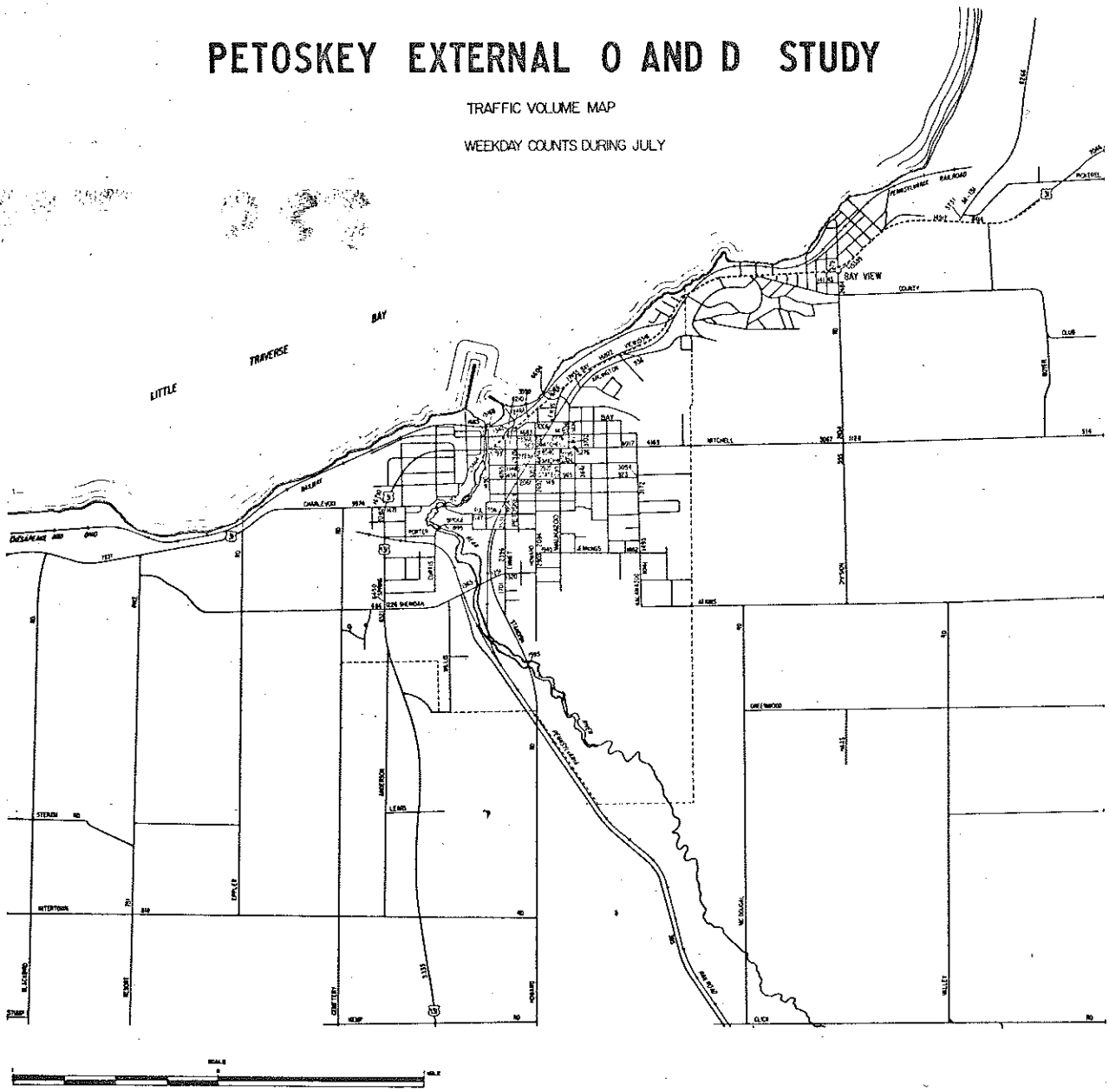
Traffic Composition on Major Routes or Roads in the Petoskey Area

Location of Traffic Count		Total	Through	Terminal	Local
Route or Road	Location	Volume	Volume	Volume	Volume
M-131	Station 1 North	4,710	1,423	3,287	0
US-31	Station 2 East	6,879	3,500	3,379	0
Mitchell Rd.	Station 3 East	779	115	664	0
River Rd.	Station 4 South	384	50	334	0
US-131	Station 5 South	5,172	2,396	2,776	0
US-31	Station 6 West	6,027	2,868	3,159	0
US-31, M-131, M-68	West leg of Jct. with Mitchell St. & Elizabeth St.	23,464	4,746	5,043	13,675
US-131	S. of Sheridan St.	6,521	2,396	2,872	1,253
US-131	N. of Sheridan St.	6,450	2,396	2,391	1,663
US-131	S. of US-31 (Charlevoix St.)	10,182	2,420	2,579	5,183
US-31, M-131, M-68	N.E. of Lewis St.	17,455	4,681	6,050	6,724
US-31, M-131, M-68	W. of US-31	14,917	4,709	6,666	3,542
Bridge St.	On bridge over Bear River	895	0	188	707
Sheridan St.	On bridge over Bear River	1,365	28	575	762
Kalamazoo Ave.	S. of State St.	3,172	0	67	3,105
Elizabeth St.	S. of US-31, M-131, M-68	4,150	22	380	3,748
Lewis St.	S. of US-31, M-131, M-68	4,604	0	3,432	1,172
Division Rd.	N. of Mitchell Rd.	2,434	28	48	2,358

PETOSKEY EXTERNAL O AND D STUDY

TRAFFIC VOLUME MAP

WEEKDAY COUNTS DURING JULY



USE OF TABLES AND CHARTS

USE OF GENERAL PURPOSE SUMMARY TABLES

Figure S1 shows the distribution of through trips by vehicle type and trip purpose.

The vehicle type codes are:

1 = Passenger cars without trailer
2 = Passenger cars with trailer
3 = Panel or pickup trucks without trailer
4 = Panel or pickup with trailer
5 = Other (larger) single unit trucks
6 = Truck combinations
7 = Buses
8 = Motorcycles

The trip purpose codes are:

1 = Work
2 = Personal business
3 = Shopping
4 = Vacation
5 = Other social or recreation
6 = All Other

The sample cell outlined represents 8.21 trips which were social-recreation (5) trips made by passenger cars without trailers (1). This first figure in each cell will always be the raw number of trips. The next figure indicates that 93.72 percent of the trips with trip purpose 5 were passenger cars without trailers. The next figure indicates that 51.83 percent of the trips with vehicle type 1 were social-recreation trips. The last figure in the cell indicates that 39.78 percent of all trips in the table were of this type (i.e. vehicle type = 1 and trip purpose = 5). The row total at the right shows that 8.76 trips or 42.44 percent were social-recreation trips (trip purpose = 5). The column total at the bottom shows that 15.84 trips or 76.74 percent were passenger cars without trailers (vehicle type = 1). The total number of trips (20.64) in this table is indicated at the lower right.

FORM NUMBER = 6

EXIT-ENT STAT = 01 TO 10

VEHICLE TYPE

TRIP PURPOSE	RANGES	1	2	3	4	5	6	7	8	TOTAL TOT %
	1	4.68	0.00	2.65	0.00	0.00	0.00	0.00	0.00	7.33
	1	63.85	0.00	36.15	0.00	0.00	0.00	0.00	0.00	35.51
		29.55	0.00	62.35	0.00	0.00	0.00	0.00	0.00	
T		22.67	0.00	12.84	0.00	0.00	0.00	0.00	0.00	
R	2	1.17	0.00	0.50	0.00	0.00	0.00	0.00	0.00	1.67
	2	70.06	0.00	29.94	0.00	0.00	0.00	0.00	0.00	8.09
I		7.39	0.00	11.76	0.00	0.00	0.00	0.00	0.00	
P		5.67	0.00	2.42	0.00	0.00	0.00	0.00	0.00	
	3	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61
	3	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.96
		3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P		2.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
U	5	8.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.76
	5	93.72	0.00	6.28	0.00	0.00	0.00	0.00	0.00	42.44
R		51.83	0.00	12.94	0.00	0.00	0.00	0.00	0.00	
P		39.78	0.00	2.66	0.00	0.00	0.00	0.00	0.00	
	6	1.17	0.00	0.55	0.55	0.00	0.00	0.00	0.00	2.27
O	6	51.54	0.00	24.23	24.23	0.00	0.00	0.00	0.00	11.00
		7.39	0.00	11.76	100.00	0.00	0.00	0.00	0.00	
S		5.67	0.00	2.42	2.66	0.00	0.00	0.00	0.00	
TOTAL		15.84	0.00	4.25	0.55	0.00	0.00	0.00	0.00	20.64
TOT %		76.74	0.00	20.59	2.66	0.00	0.00	0.00	0.00	

ACTUAL

RAW %

COLUMN %

TOTAL %

ROW TOTAL

COLUMN TOTAL

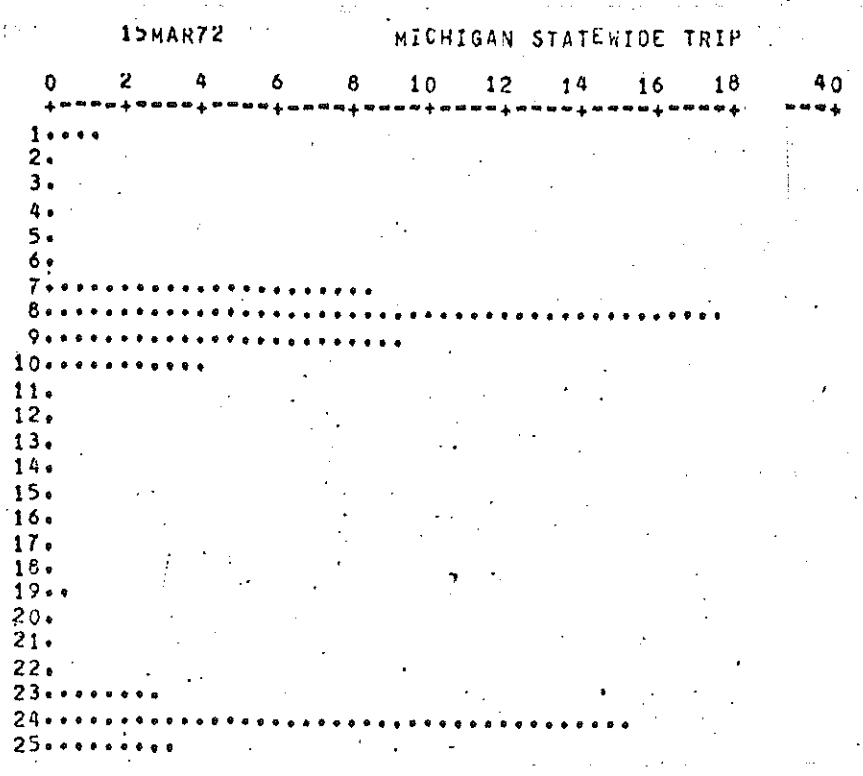
TOTAL TRIPS

A8

FIGURE 31

USE OF TRIP LENGTH FREQUENCY DISTRIBUTIONS

A section of a trip length frequency distribution graph is reproduced below.



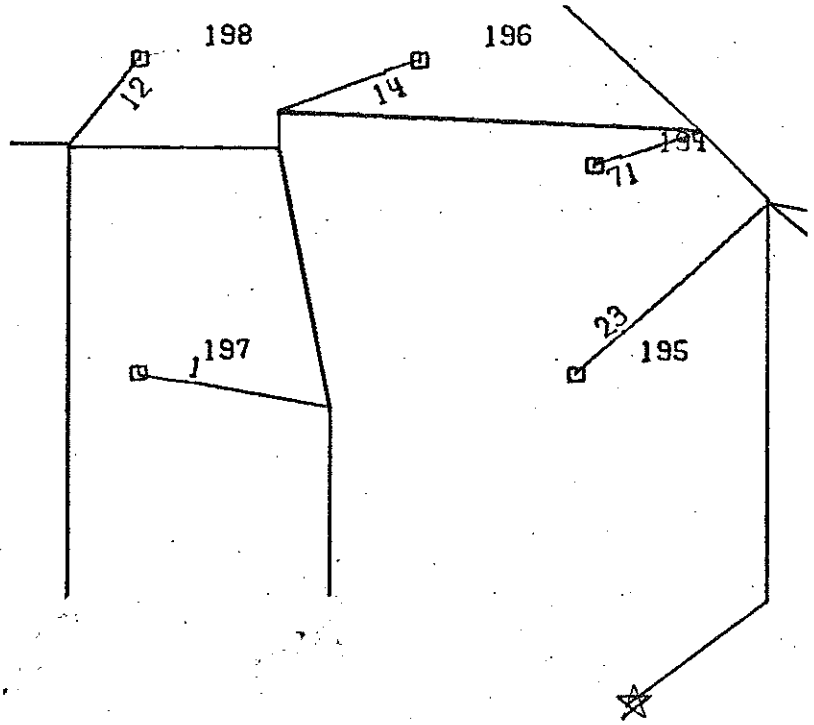
	P.C.	CUM.	ACTUAL
1	1.119	1.119	3
2	0.000	1.119	0
3	0.000	1.119	0
4	0.000	1.119	0
5	0.000	1.119	0
6	0.000	1.119	0
7	8.582	9.701	23
8	34.701	44.403	93
9	9.328	53.731	25
10	4.104	57.836	11
11	0.000	57.836	0
12	0.000	57.836	0
13	0.000	57.836	0
14	0.000	57.836	0
15	0.000	57.836	0
16	0.000	57.836	0
17	0.000	57.836	0
18	0.000	57.836	0
19	0.373	58.209	1
20	0.000	58.209	0
21	0.000	58.209	0
22	0.000	58.209	0
23	2.612	60.821	7
24	15.299	76.119	41
25	3.358	79.478	9

The vertical axis represents travel time in minutes while the horizontal axis is the percent of trips traveling this particular length of time. For example, 41 trips or 15.299 percent of the total were 24 minutes in length. The percent trips which were 24 minutes or less is 76.119.

Some statistical information such as mean and standard deviation are printed at the end of each table.

USE OF TRIP-END PLOTS

A small section of a trip-end plot is reproduced below.

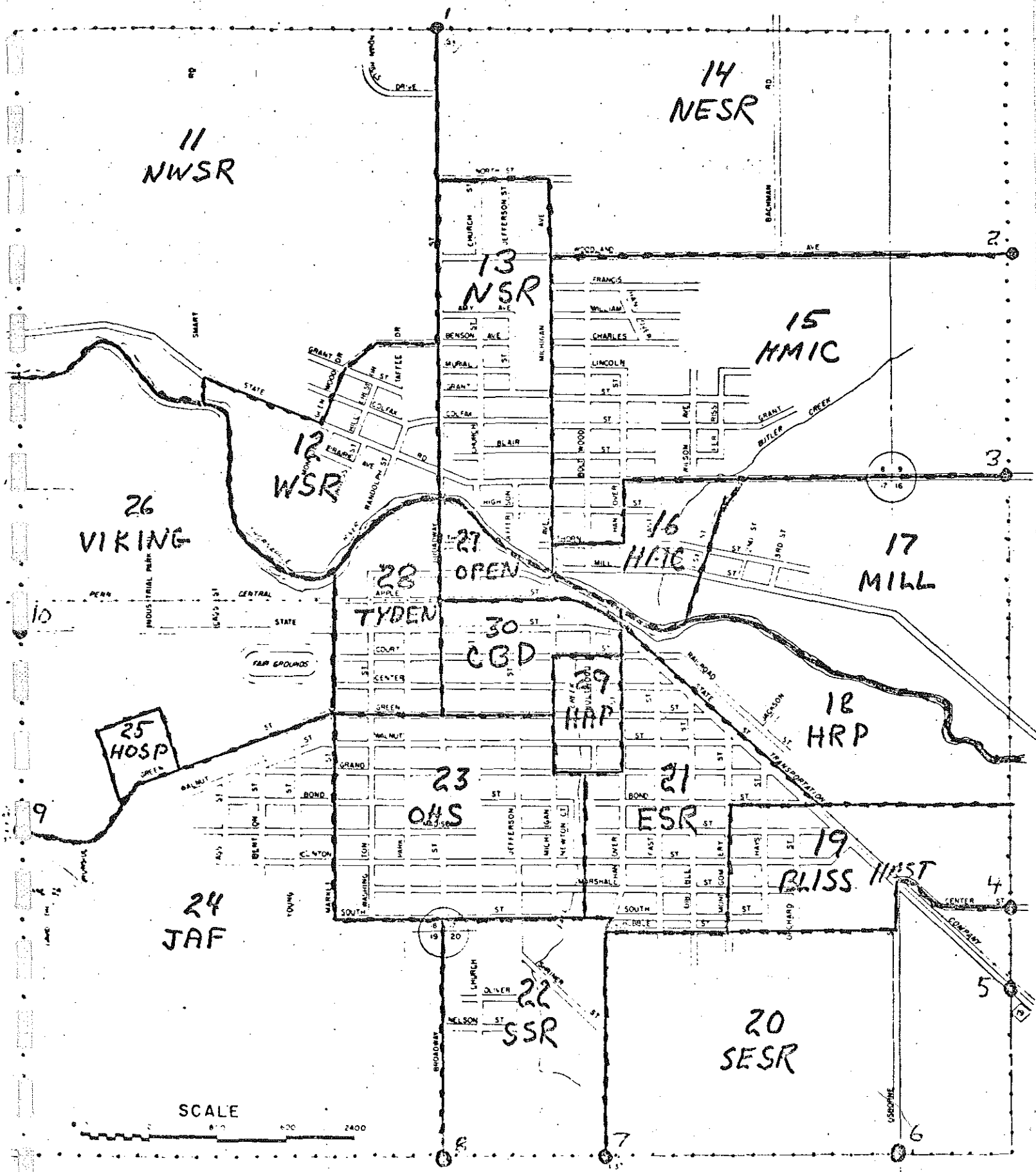


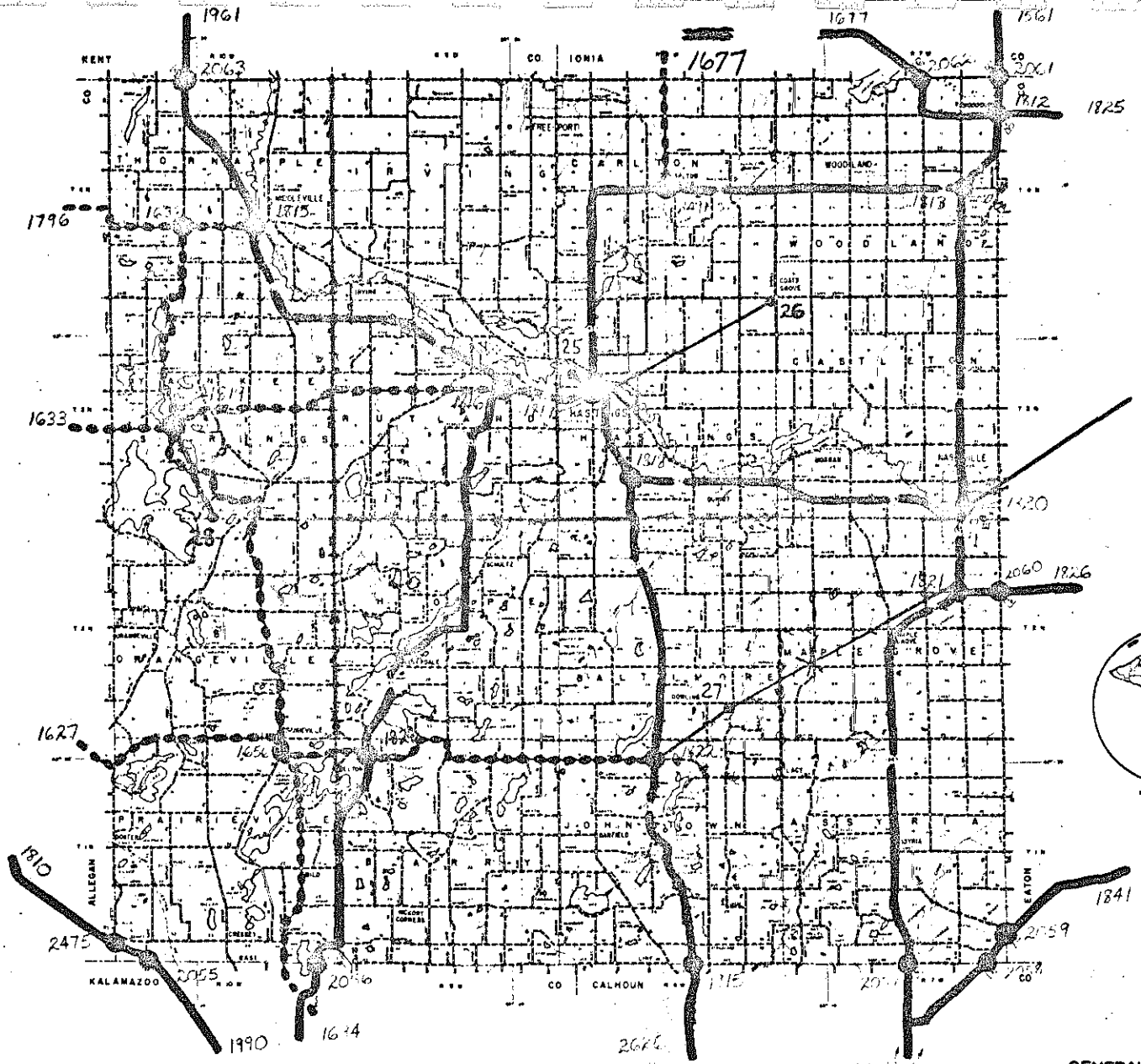
Each zone is represented by a small square. The zone number appears to the right and up slightly from the square. The number of trips to or from each zone is written along each line. For example, 23 trips went to or came from zone 195. The star in the lower right indicates that all trips went through this point on their way to or from each zone.

TOTAL TRIP CHARACTERISTICS

CITY OF HASTINGS
BARRY COUNTY
T 3 N R 8 W
POP 6571-1973 CENSUS

ZONE LINE
GORDON LINE
STATION





LEGEND

ROADS

ROAD SYSTEM DESIGNATION

AIRPORTS

RAILROADS

HIGHWAY BRIDGES

DRAINAGE

NAVIGATION

DAMS

BOUNDARIES

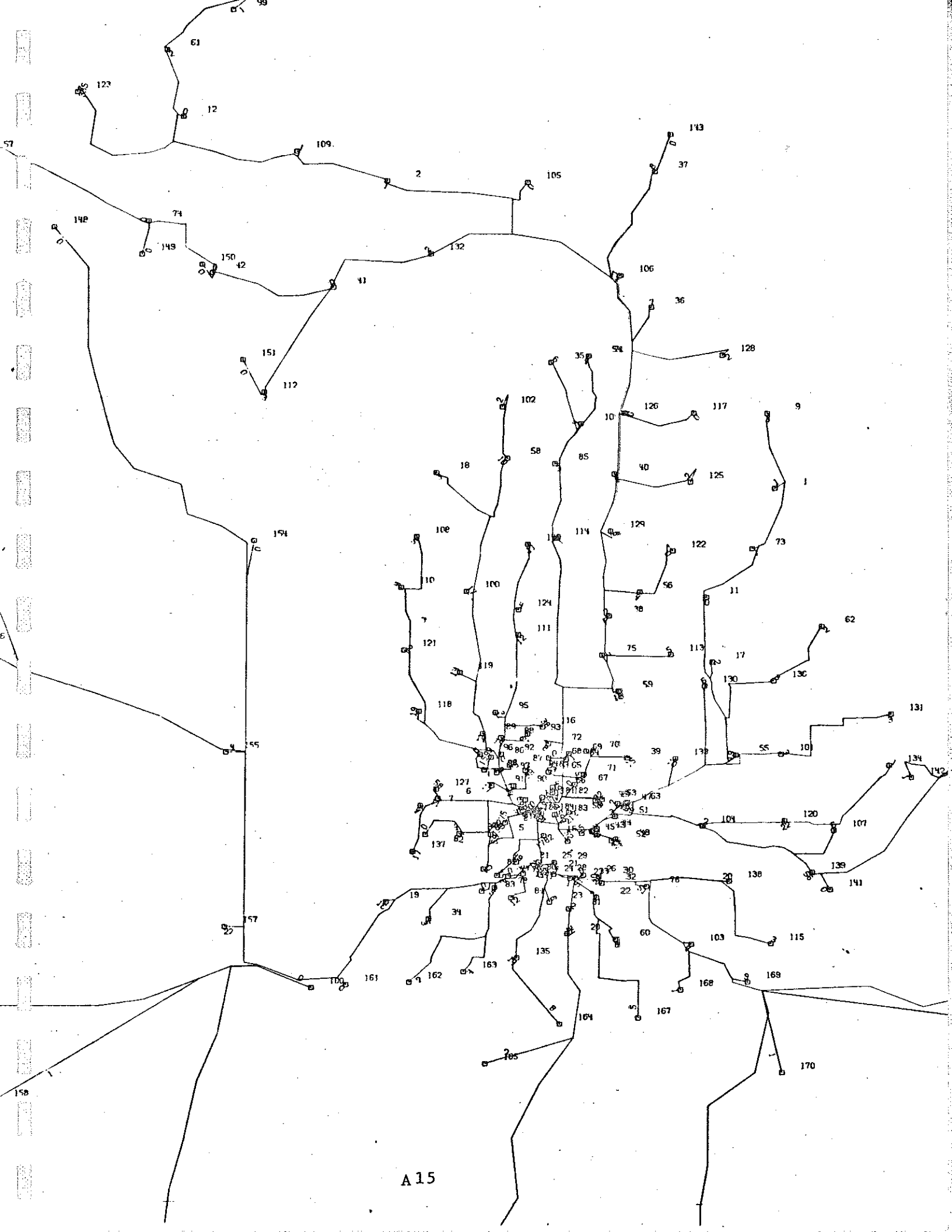
CITY AND VILLAGE

KEY TO COUNTIES

GENERAL HIGHWAY MAP
BARRY 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

1" = 2 MI. MILES



STATION 6

TRIP CHARACTERISTICS

HASTINGS

STATION 6

Station 6 is located on Osborne Street, a local street entering the city at the southeast parallel to M-37. Trips for station 6 (267) represent 6 percent of the total trips for all 10 stations. About 92 percent of the trips for station 6 were terminal trips. Out of all trips for station 6, 98 percent were either passenger cars (78 percent) or pickup trucks (20%). For all trips the two largest trip purposes were for work (46.5 percent) and social-recreation (25.1 percent).

Social-recreation was 24 percent for terminal trips versus 42 percent for through trips. Work trips were 47 percent for terminal versus 36 percent for through.

As might be expected most of the trips are short. About 58 percent are 10 minutes or less. About 20 percent were 23-25 minutes. Only four trips were over one hour. Of the terminal trips, 44 percent either began or ended in the three zones close to the station (zones 19, 20, 21). The next largest single trip terminal was the CBD with 17 percent. Most of the external trips went to the immediately surrounding area.

FORM NUMBER = 6

EXIT-ENT STAT = 01 TO 10

VEHICLE TYPE

TRIP USRS	RANGES	1	2	3	4	5	6	7	8	TOTAL TOT %
	1	4.68	0.00	2.65	0.00	0.00	0.00	0.00	0.00	7.33
	1	63.85	0.00	36.15	0.00	0.00	0.00	0.00	0.00	35.51
		29.55	0.00	62.35	0.00	0.00	0.00	0.00	0.00	
T		22.67	0.00	12.84	0.00	0.00	0.00	0.00	0.00	
R	2	1.17	0.00	0.50	0.00	0.00	0.00	0.00	0.00	1.67
	2	70.06	0.00	29.94	0.00	0.00	0.00	0.00	0.00	8.09
I		7.39	0.00	11.76	0.00	0.00	0.00	0.00	0.00	
P		5.67	0.00	2.42	0.00	0.00	0.00	0.00	0.00	
	3	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61
	3	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.96
		3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P		2.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
U	5	8.21	0.00	0.55	0.00	0.00	0.00	0.00	0.00	8.76
	5	93.72	0.00	6.28	0.00	0.00	0.00	0.00	0.00	42.44
R		51.83	0.00	12.94	0.00	0.00	0.00	0.00	0.00	
P		39.78	0.00	2.66	0.00	0.00	0.00	0.00	0.00	
	6	1.17	0.00	0.55	0.55	0.00	0.00	0.00	0.00	2.27
U	6	51.54	0.00	24.23	24.23	0.00	0.00	0.00	0.00	11.00
		7.39	0.00	12.94	100.00	0.00	0.00	0.00	0.00	
S		5.67	0.00	2.66	2.66	0.00	0.00	0.00	0.00	
	TOTAL	15.84	0.00	4.25	0.55	0.00	0.00	0.00	0.00	20.64
	TOT %	76.74	0.00	20.59	2.66	0.00	0.00	0.00	0.00	

FORM NUMBER = 6

EXIT-ENT STAT = TO

	RANGES	VEHICLE TYPE 1	2	3	4	5	6	7	8	TOTAL
	1	80.60	0.00	33.15	1.00	0.00	2.00	0.00	0.00	116.75
	1	69.04	0.00	28.39	0.86	0.00	1.71	0.00	0.00	47.38
		41.76	0.00	67.24	100.00	0.00	100.00	0.00	0.00	
T		32.71	0.00	13.45	0.41	0.00	0.81	0.00	0.00	
R	2	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	3.00
	2	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	1.22
I		0.00	0.00	6.09	0.00	0.00	0.00	0.00	0.00	
P		0.00	0.00	1.22	0.00	0.00	0.00	0.00	0.00	
	3	37.65	0.00	4.30	0.00	0.00	0.00	0.00	0.00	41.95
	3	89.75	0.00	10.25	0.00	0.00	0.00	0.00	0.00	17.03
P	4	19.51	0.00	8.72	0.00	0.00	0.00	0.00	0.00	
		15.28	0.00	1.75	0.00	0.00	0.00	0.00	0.00	
U	5	56.22	0.00	2.10	0.00	0.00	0.00	0.00	0.00	58.32
	5	96.40	0.00	3.60	0.00	0.00	0.00	0.00	0.00	23.67
R		29.13	0.00	4.26	0.00	0.00	0.00	0.00	0.00	
		22.82	0.00	0.85	0.00	0.00	0.00	0.00	0.00	
P	6	18.53	1.10	6.75	0.00	0.00	0.00	0.00	0.00	26.38
O	6	70.24	4.17	25.59	0.00	0.00	0.00	0.00	0.00	10.71
		9.60	100.00	13.69	0.00	0.00	0.00	0.00	0.00	
S		7.52	0.45	2.74	0.00	0.00	0.00	0.00	0.00	
	TOTAL	193.00	1.10	67.30	1.00	0.00	2.00	0.00	0.00	246.40
	TOT %	78.33	0.45	20.01	0.41	0.00	0.81	0.00	0.00	

FORM NUMBER = 6

EXIT-ENT STAT = 01 TO

V E H I C L E T Y P E

TRIP RANGES	1 1	2 2	3 3	4 4	5 5	6 6	7 7	8 8	TOTAL TOT %
1	85.28	0.00	35.80	1.00	0.00	2.00	0.00	0.00	124.08
1	68.73	0.00	28.85	0.81	0.00	1.61	0.00	0.00	46.46
	40.84	0.00	66.85	64.52	0.00	100.00	0.00	0.00	
T	31.94	0.00	13.41	0.37	0.00	0.75	0.00	0.00	
R 2	1.17	0.00	3.50	0.00	0.00	0.00	0.00	0.00	4.67
2	25.05	0.00	74.95	0.00	0.00	0.00	0.00	0.00	1.75
I	0.56	0.00	6.54	0.00	0.00	0.00	0.00	0.00	
	0.44	0.00	1.31	0.00	0.00	0.00	0.00	0.00	
P									
3	38.26	0.00	4.30	0.00	0.00	0.00	0.00	0.00	42.56
3	89.90	0.00	10.10	0.00	0.00	0.00	0.00	0.00	15.94
	18.32	0.00	6.03	0.00	0.00	0.00	0.00	0.00	
P	14.33	0.00	1.61	0.00	0.00	0.00	0.00	0.00	
U 5	64.43	0.00	2.65	0.00	0.00	0.00	0.00	0.00	67.08
5	96.05	0.00	3.95	0.00	0.00	0.00	0.00	0.00	25.12
R	30.65	0.00	4.95	0.00	0.00	0.00	0.00	0.00	
	24.13	0.00	0.99	0.00	0.00	0.00	0.00	0.00	
P									
6	19.70	1.10	7.30	0.55	0.00	0.00	0.00	0.00	28.65
U 6	68.76	3.84	25.48	1.92	0.00	0.00	0.00	0.00	10.73
	9.43	100.00	13.63	35.48	0.00	0.00	0.00	0.00	
S	7.38	0.41	2.73	0.21	0.00	0.00	0.00	0.00	
TOTAL	208.84	1.10	53.55	1.55	0.00	2.00	0.00	0.00	267.04
TOT %	78.21	0.41	20.05	0.58	0.00	0.75	0.00	0.00	

FORM NUMBER = 6

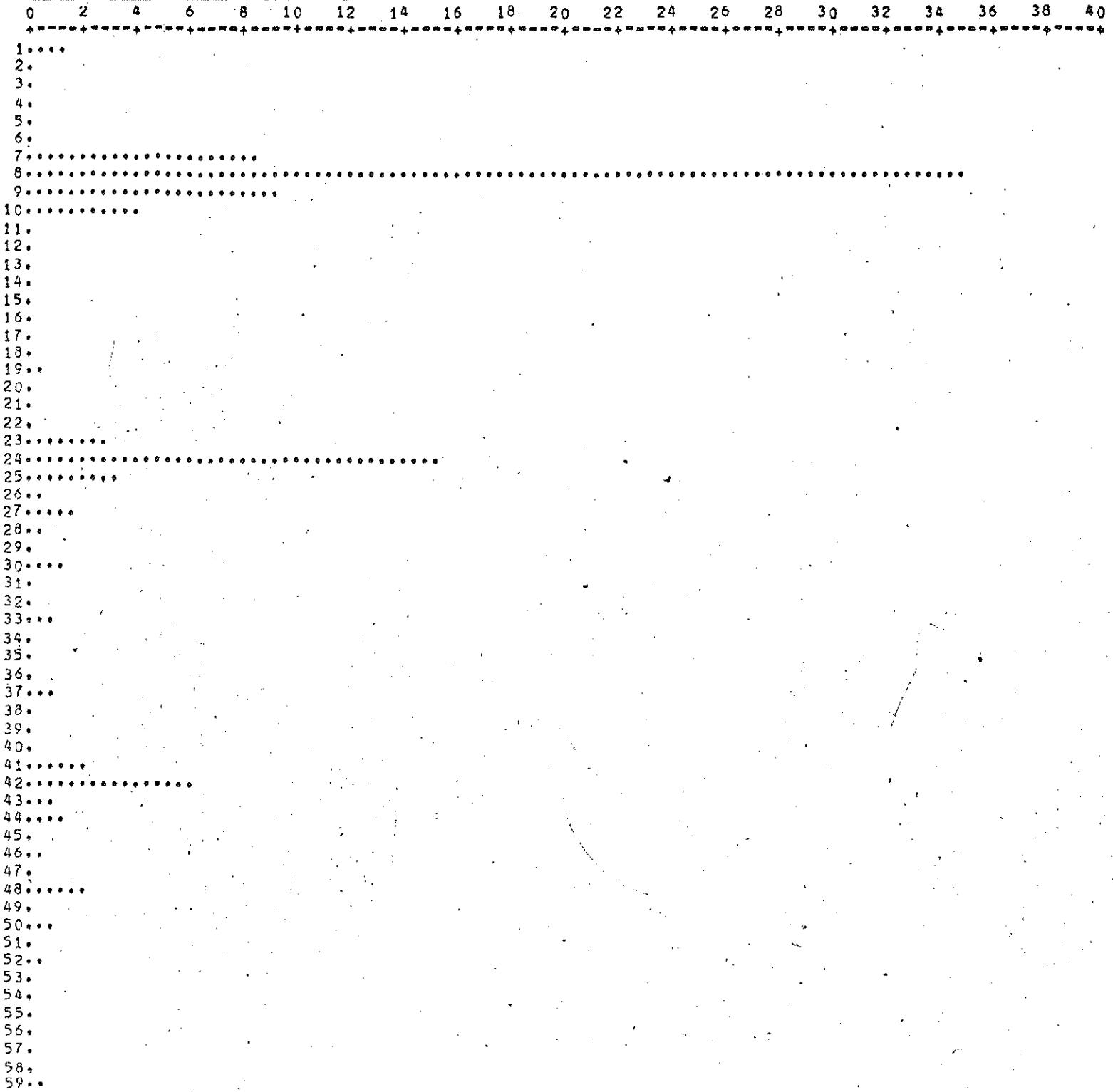
OUTBOUND DIRECTION = 5 TO 5

INTERNAL END

	RANGES	6 6	TOTAL TOT %
	11	6.19	6.19
	11	100.00	5.16
		5.16	
C		5.16	
I	12	1.22	1.22
	12	100.00	1.02
T		1.02	
Y		1.02	
	13	3.42	3.42
	13	100.00	2.85
		2.85	
O		2.85	
R	14	1.22	1.22
	14	100.00	1.02
I		1.02	
G		1.02	
	15	3.54	3.54
I	15	100.00	2.95
		2.95	
N		2.95	
	16	8.27	8.27
	16	100.00	6.90
Z		6.90	
O		6.90	
	17	2.44	2.44
N	17	100.00	2.04
		2.04	
E		2.04	
	19	26.88	26.88
S	19	100.00	22.42
		22.42	
		22.42	
	20	12.43	12.43
O	20	100.00	10.37
		10.37	
O		10.37	
O	21	8.29	8.29
	21	100.00	6.91
O		6.91	
		6.91	
O			
	23	7.20	7.20
O	23	100.00	6.01
		6.01	

0	24	3.42		3.42
	24	100.00		2.85
0		2.85		
		2.85		
0				
	25	1.35		1.35
0	25	100.00		1.13
		1.13		
0		1.13		
0	27	1.22		1.22
	27	100.00		1.02
0		1.02		
		1.02		
0				
	28	9.99		9.99
0	28	100.00		8.33
		8.33		
0		8.33		
0	30	22.81		22.81
	30	100.00		19.03
0		19.03		
		19.03		
0				
TOTAL		119.89		119.89
TOT %		100.00		

TOTAL RECORDS READ = 252
TOTAL RECORDS DROPPED = 0
TOTAL RECORDS MISSED = 152

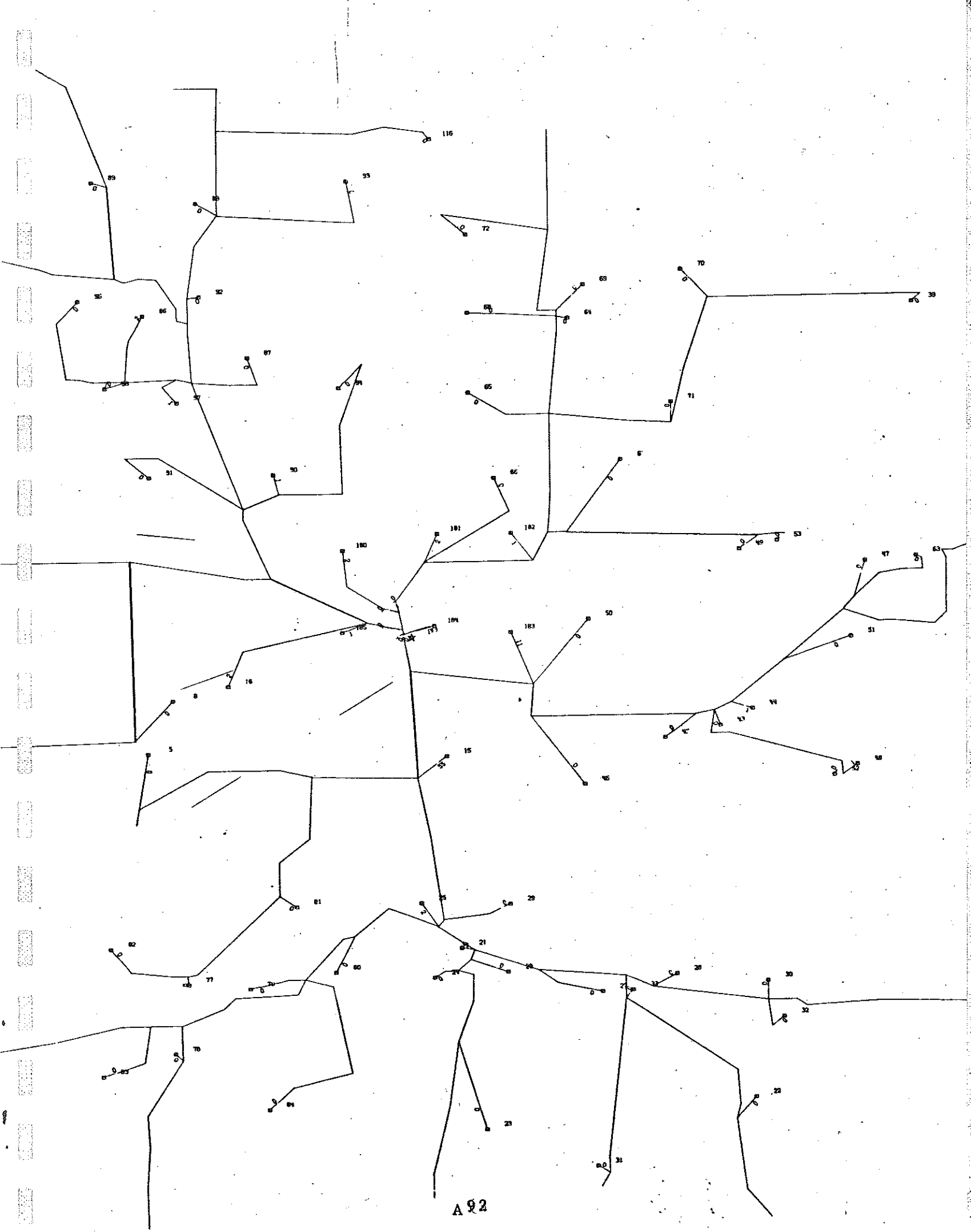


	P.C.	CUM.	ACTUAL
1	1.119	1.119	3
2	0.000	1.119	0
3	0.000	1.119	0
4	0.000	1.119	0
5	0.000	1.119	0
6	0.000	1.119	0
7	8.582	9.701	23
8	34.701	44.403	93
9	9.328	53.731	25
10	4.104	57.836	11
11	0.000	57.836	0
12	0.000	57.836	0
13	0.000	57.836	0
14	0.000	57.836	0
15	0.000	57.836	0
16	0.000	57.836	0
17	0.000	57.836	0
18	0.000	57.836	0
19	0.373	58.209	1
20	0.000	58.209	0
21	0.000	58.209	0
22	0.000	58.209	0
23	2.612	60.821	7
24	15.299	76.119	41
25	3.358	79.478	9
26	0.373	79.851	1
27	1.493	81.343	4
28	0.373	81.716	1
29	0.000	81.716	0
30	1.119	82.836	3
31	0.000	82.836	0
32	0.000	82.836	0
33	0.746	83.582	2
34	0.000	83.582	0
35	0.000	83.582	0
36	0.000	83.582	0
37	0.746	84.328	2
38	0.000	84.328	0
39	0.000	84.328	0
40	0.000	84.328	0
41	1.866	86.194	5
42	5.970	92.164	16
43	0.746	92.910	2
44	1.119	94.030	3
45	0.000	94.030	0
46	0.373	94.403	1
47	0.000	94.403	0
48	1.866	96.269	5
49	0.000	96.269	0
50	0.746	97.015	2
51	0.000	97.015	0
52	0.373	97.388	1
53	0.000	97.388	0
54	0.000	97.388	0
55	0.000	97.388	0
56	0.000	97.388	0
57	0.000	97.388	0
58	0.000	97.388	0
59	0.373	97.761	1
60	0.373	98.134	1

62.	0.000	98.507	0
63.	0.00	8.5	
64.	0.000	98.507	0
65.	0.000	98.507	0
66.	0.000	98.507	0
67.	0.000	98.507	0
68.	0.000	98.507	0
69.	0.000	98.507	0
70.	0.000	98.507	0
71.	0.000	98.507	0
72..	0.373	98.881	1
73.	0.000	98.881	0
74.	0.000	98.881	0
75.	0.000	98.881	0
76.	0.000	98.881	0
77.	0.000	98.881	0
78.	0.000	98.881	0
79.	0.000	98.881	0
80.	0.000	98.881	0
81.	0.000	98.881	0
82.	0.000	98.881	0
83.	0.000	98.881	0
84.	0.000	98.881	0
85.	0.000	98.881	0
86.	0.000	98.881	0
87.	0.000	98.881	0
88..	0.373	99.254	1
89..	0.373	99.627	1
90.	0.000	99.627	0
91..	0.373	100.000	1

REMAINING VALUES ARE ALL ZERO
NUMBER OF OBSERVATIONS= 268 SUM= 5077. MEAN= 18.944 VAR= 249.001 SD= 15.780

TOTAL TRIPS OVER MAXP = 0
TOTAL TRIPS OVER 255 = 0
VOLUME TABLE NUMBER = 201
SKIM TREE NUMBER = 101



APPENDIX A

STATE OF MICHIGAN
EPARTMENT OF STATE HIGHWAYS
RANSPORTATION PLANNING DIVISION

ORIGIN-DESTINATION OR MANUAL VEHICLE CLASSIFICATION

Form 1790
O-D 9

OUTE Woodland Ave (old M-43) LOCATION DESCRIPTION 0.3 mi E of Bachman CITY Hastings

FORM		COUNTY		STATEWIDE STA. NO.				O-D STA. NO.		YEAR		MONTH		DATE		DAY	O-D CITY	TYPE	SEQ
9		-	7	2	6	2	4	0	2	7	1	0	9	0	7	3	W		0
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Work Sheet

RECORDER Board-man D.

DO NOT ACCUMULATE

IN / OUT	DIRECT OF TRAVEL	TIME ENDING HOUR	TIME ENDING MIN.	PASSENGER CAR WITHOUT (1) TRAILER	PASSENGER CAR WITH (2) TRAILER	PANEL & PICK-UP (2 AXLE, 4 TIRE) WITHOUT (3) TRAILER	PANEL & PICK-UP (2 AXLE, 4 TIRE) WITH (4) TRAILER	ALL OTHER SINGLE UNIT TRUCKS WITHOUT TRAILER (5)	ALL TRUCK COMB. AND SINGLE UNIT TRUCK WITH TRAILER (6)	(7) ALL BUSES	(8) MOTOR CYCLE				TOTAL
22	23 24	25 26	27 28	29 30 31 32	33 34 35	36 37 38	39 40 41	42 43 44	45 46 47	48 49	50 51	52	53	54	
1	03	14	00	38		6		3							47
1	03	15	00	34		4		3							41
1	03	16	00	83		14		2							99
1	03	17	00	83		15									98
1	03	18	00	79		13		3	1						95
1	03	19	00	45		7			1						57
1	03	20	00	1 x		1									50
1															
2	07	14	00	37		8		2							47
2	07	15	00	42		6		5							53
2	07	16	00	66	1	5		3							73
2	07	17	00	56		6		1							57
2	07	18	00						1						1
2	07	19	00			1									1
2	07	20	00												

A 101

OD-1757

SINGLE STATION RURAL O-D STUDY

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
TRANSPORTATION AND PLANNING

STA. LOCATION AND NUMBER: C-

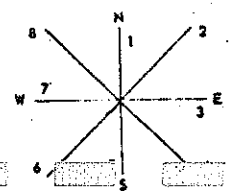
FORM NUMBER: 4 (1) | COUNTY NUMBER: 08 (2 3) | STATEWIDE NUMBER: 2624 (4 5 6 7) | HOUR PERIOD ENDING: 14 (8 9) | * DIRECTION: 3 (10) | DAY ** OF TRAVEL: 3 (11) | MO.: 09 (12 13) | DATE: 07 (14 15)

INTERVIEW NUMBER	VEH. TYPE	NO. IN VEH.	ORIGIN Where did this trip begin? (Co. or State)	DESTINATION Where will this trip end? (Co. or State)	WHERE IS VEHICLE GARAGED	TRIP PURPOSE	ROUTE OF EXIT OR ENT.
37	1	3	HOSP	CARLTON CTR	0002	5	
			437E WALNUT				
38	1	2	ESR	WOODLAND Bary	000	5	
39	1	3	KALAMAZOO	CARLTON CTR	0002	4	09
			Bullings & V+S Indiana				
40	1	1	CBD	EAST	0002	3	
					000		
					000		

A102

17 18 | 19 | 20 | 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 | 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 | 61 62 63 64 | 65 | 66 67

VEHICLE TYPE
1 PASSENGER CAR WITHOUT A TRAILER
2 PASSENGER CAR WITH A TRAILER
3 PANEL OR PICK-UP WITHOUT A TRAILER
4 PANEL OR PICK-UP WITH A TRAILER
5 THE GLE TRU
6 COMBINATIONS & TRUCKS WITH TRAILERS



DAY OF TRAVEL **

SUNDAY	1	THURSDAY	5
MONDAY	2	FRIDAY	6
TUESDAY	3	SATURDAY	7
WEDNESDAY	4		

GARAGED
1 ORIGIN
2 DESTINATION
3 OTHER

TRIP PURPOSE
1 WORK
2 PERS. BUSINESS
3 SHOPPING
4 VACATION
5 R SO REC
6 ALL OTHER