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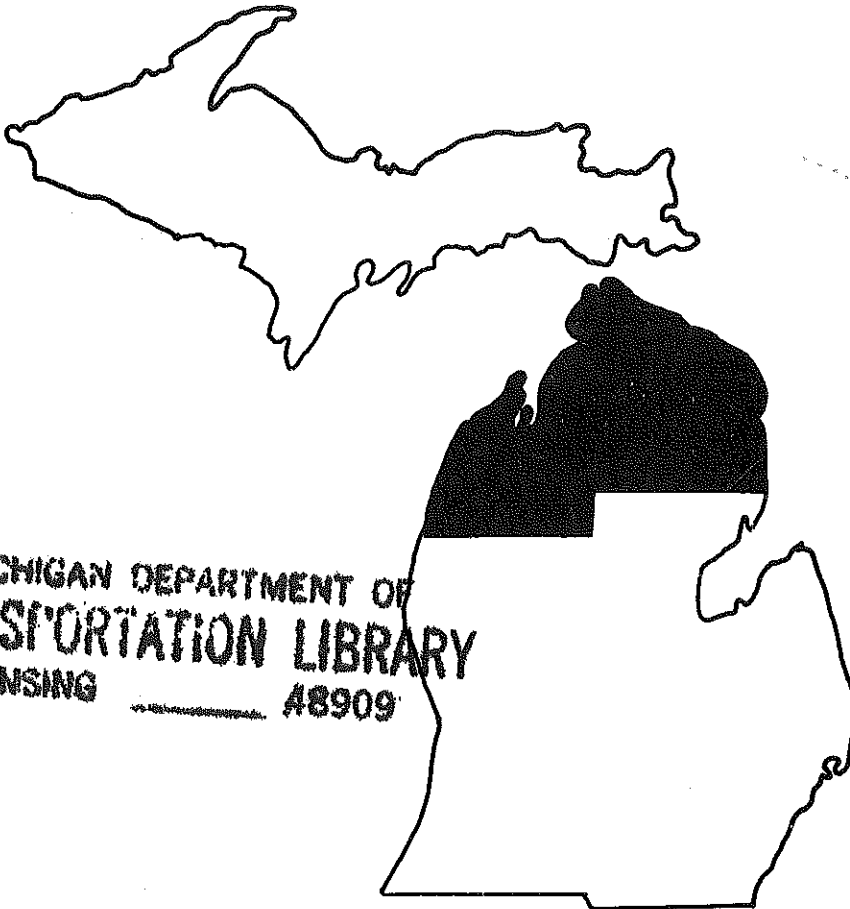
MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

TRAVERSE CITY AREA

External
Origin and Destination
Survey

Factual Data Report

July - August 1976



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OF
STATE HIGHWAYS and TRANSPORTATION

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Survey

Factual Data Report

July - August 1976

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JOHN P. WOODFORD, DIRECTOR

November 22, 1977

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

Dear Mr. Cryderman:

The Multi-Regional Planning Division of the Bureau of Transportation Planning has documented the results of the Traverse City Origin-Destination Survey. The purpose of the survey, conducted weekdays during July and August, 1976, was two-fold. First, it was necessary to determine the traffic patterns in the area to provide a sound basis for planning an efficient transportation system. And secondly, the data serves as an important update of an earlier survey conducted in 1966.

The report was prepared through the cooperative efforts of Gary Chapman, William Homrich, Gerard Fields and James Zimmerman. Direct guidance was provided by Thomas Pickens, Transportation Planner for the North Regional Planning Section, managed by John B. Ouder Kirk.

Sincerely,

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

Richard J. Lilly, Acting Administrator
Multi-Regional Planning Division



PREFACE

The purpose of this study was to collect current data on traffic movement interchanging and passing through the Traverse City Area.

The results of the origin and destination survey conducted during July and August of 1976 are contained herein. This report is a presentation of the expanded data in tabular form as developed from the survey only and does not purport to speculate, hypothesize nor forecast any alternative or master plan. However, the design of this document is to provide a tool whereby those involved in such activities may utilize it in attaining such ends.

Appendix "B" contains tables comparing the data from this study with a similar study conducted in this area in 1966.

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STUDY LOCATION

Traverse City is located at the south end of West Grand Traverse Bay in Grand Traverse County (See map). The city's 1970 census was 18,048, however, the area grows several times this figure during the summer due to the high recreational nature of the vicinity. In addition, the influx of visitors continues throughout the year because of the appeal to outdoor enthusiasts. State trunklines servicing this area are M-22, M-37, M-72, and US-31.

TERMINOLOGY AND DEFINITIONS

The following terms may be mentioned in the context of this report. A brief definition of each should enable a better understanding of the processes and concepts involved in this Origin-Destination Study.

Central Business District (CBD) --- The Zone or zones comprising the concentrated commercial and retail business center of a city.

Classification Counts --- A survey of vehicles in which those passing through the study area are placed in categories (passenger cars, single unit trucks, etc.).

Cordon Line --- An imaginary line around the area under study.

Destination --- The place where a trip ends.

External Station --- A point on a route crossing the cordon line at which the drivers of vehicles are interviewed and classification counts are taken.

Origin-Destination Survey --- A survey of vehicles in which those passing through the study area are stopped and drivers interviewed regarding the origin, destination and purpose of the trip.

Origin --- The place where a trip begins.

Origin - Destination Zone --- (Analysis Zone) a basic subdivision of the study area having a single or dominant land use, designed as such for purposes of tabulation and analysis.

Screenline --- A line through the study area on a natural or artificial division such as a river or railroad where all traffic crossing it is counted and classified for comparison with expanded survey data.

Study Area --- The geographical area selected for the origin and destination study.

Terminal Trip --- A trip with one end outside the study area and the other end inside the study area. (Beginning or ending at one of the internal analysis zones).

Through Trip --- A trip passing through the study area. (Both ends of the trip outside the cordon line).

Trip --- One-way travel between an origin and destination.

Trip Ends --- Each trip has two ends; an origin and a destination.

Trip Length-Average --- The value that is determined by summing all of the recorded trip lengths and dividing by the number of trips.

Trip Length-Median --- The value that is determined by dividing the trip length distribution so that an equal number of trips are on either side of it.

PART I.

DATA COLLECTION

FIELD PROCEDURE

Field work for the Traverse City External Origin-Destination Study was conducted during July and August of 1976. The purpose of the study was to collect traffic movement data interchanging with and passing through the Traverse City area during a summer average week day.

A cordon line was drawn around the greater Traverse City area enclosing the area to be studied. Where the cordon line crossed a road an external interview station was established. Seventeen stations were created and operated of which seven were on state trunklines. Several of the original established stations were not operated since preliminary counts indicated that traffic passing through these stations was minimal when compared to the remaining seventeen stations. A description of the stations may be found on the following page.

The study area having been defined by the cordon line was then sub-divided into analysis zones for the purpose of tabulation of trip data (see map). Various abbreviations were used initially to identify each zone for ease in coding an origin or destination. Zone identification is changed to a numerical designation when field work is completed for ease in tabulation of trip data (see diagram following map).

Each of the seventeen external stations was operated on a fourteen hour interview schedule (6:00A.M. to 8:00P.M.). During these hours vehicles were stopped and drivers interviewed as to the origin, destination and purpose of the trip. These interviews were made of vehicles traveling in each direction (inbound and outbound). In addition, manual classification counts were taken during the interviewing period as well as during the "off" interview hours (8:00P.M. to 6:00A.M.) to account for a 24-hour day.

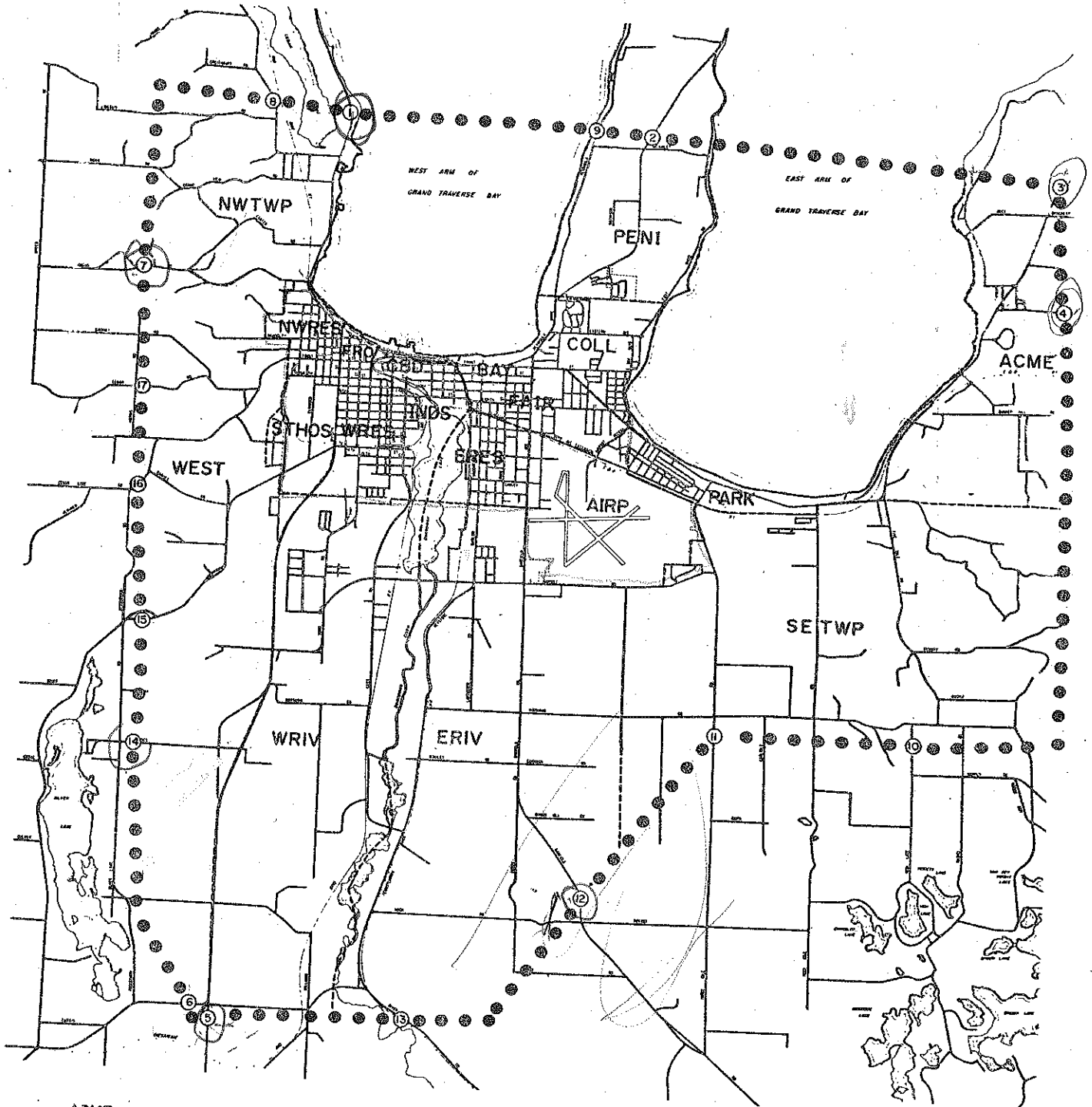
A sample interview form and a manual vehicle classification form may be found in Appendix "A".

After the field work was completed all data was edited, expanded, and processed according to standard origin-destination procedure. The tabular results follow.

STATION LOCATIONS

<u>STATION NUMBER</u>	<u>COUNTY</u>	<u>ROUTE</u>	<u>LOCATION</u>
1	Leelanau	M-22 N.	.9 Mi. N. of Cherry Bend Rd.
2	Grand Traverse	M-37 N.	.2 Mi. N. of McKinley Rd.
3	Grand Traverse	US-31 N.	.5 Mi. N. of Brackett Rd.
4	Grand Traverse	M-72 E.	.4 Mi. W. of Lautner Rd.
5	Grand Traverse	M-37 S.	.1 Mi. S. of US-31&M-37 S. Jct.
6	Grand Traverse	US-31 W.	.1 Mi. W. of US-31&M-37 S. Jct.
7	Leelanau	M-72 W.	.6 Mi. W. of M-22&M-72 W. Jct.
8	Leelanau	Cherry Bend Rd. (Co. Rd. 633)	.2 Mi. N. of Lincoln Rd.
9	Grand Traverse	Peninsula Drive	.2 Mi. N. of McKinley Rd.
10	Grand Traverse	High Lake Rd.	.3 Mi. S. of Hammond Rd.
11	Grand Traverse	Three Mile Rd.	.3 Mi. S. of Hammond Rd.
12	Grand Traverse	Garfield Rd.	.3 Mi. NW. of Potter Rd.
13	Grand Traverse	River Rd.	.8 Mi. SE. of River & Keystone Jct.
14	Grand Traverse	Silver Pines Rd.	.3 Mi. E. of Silver Lake Rd.
15	Grand Traverse	Silver Lake Rd.	.7 Mi. NE. of Zimmerman Rd.
16	Grand Traverse	Long Lake Rd.	.2 Mi. E. of Zimmerman Rd.
17	Grand Traverse	Cedar Run Rd.	.1 Mi. E. of Harris Rd.

TRAVERSE CITY AREA
EXTERNAL STATIONS
&
INTERNAL ZONES



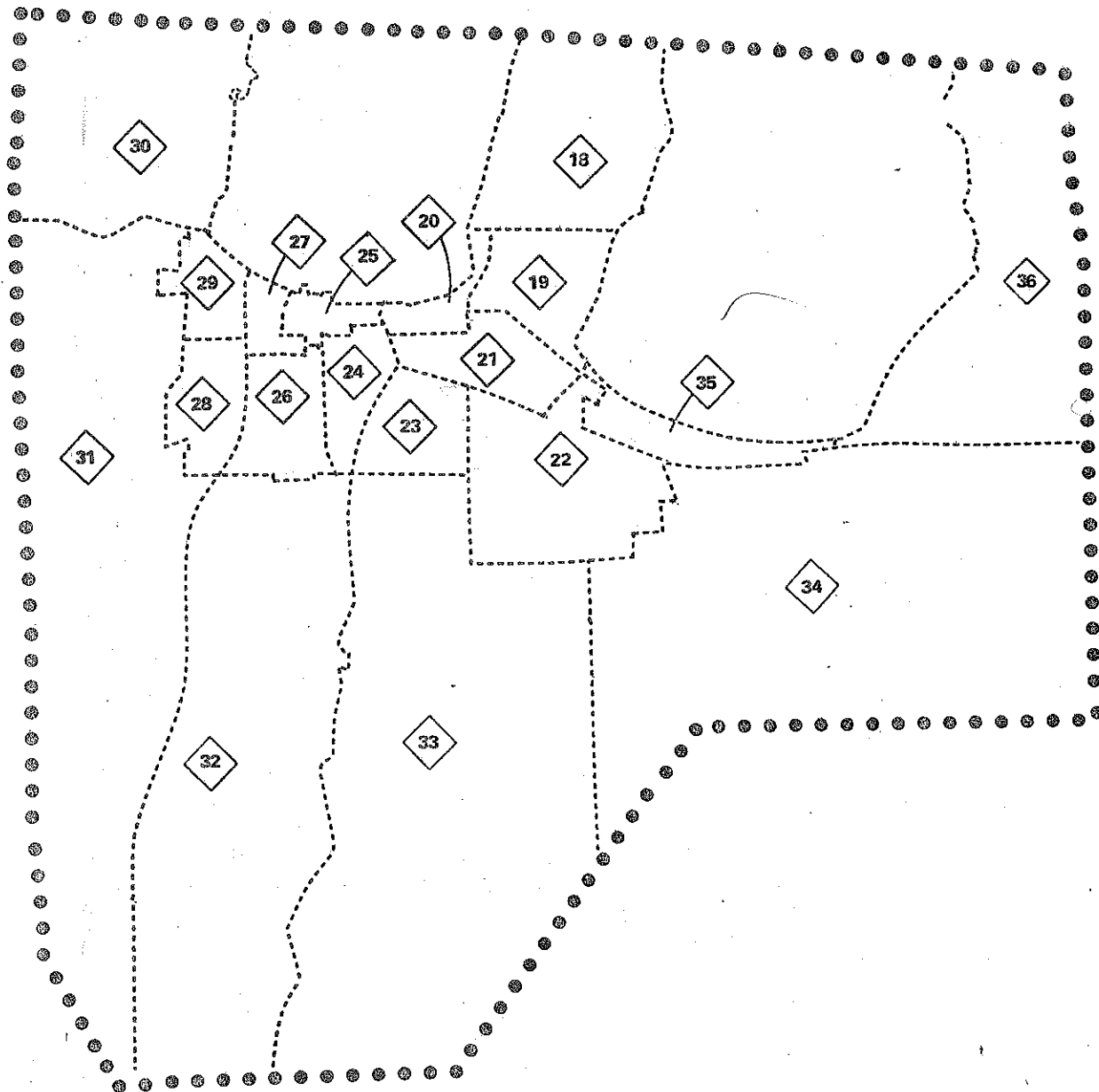
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ERES
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WEST
WRES
WRIV



LEGEND

- ● ● CORDON
- ZONE BOUNDARY
- ④ STATION NUMBER

TRAVERSE CITY AREA
INTERNAL ZONES



LEGEND

- • • CORDON LINE
- - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

TRIP DATA COMPARISON BY STATION
(CLASSIFICATIONS, INTERVIEWS and EXPANDED TRIPS)

<u>Station</u>	<u>24-Hour¹ Vehicle Classifications</u>	<u>14-Hour Interviews</u>	<u>Percent Interviewed</u>	<u>Expanded² Vehicle Trips</u>	<u>Percent expanded are of 24-Hour Classifications</u>
1	6695	2986	44.6	6764	101.0
2	3707	2624	70.8	3651	98.5
3	6496	2882	44.4	6499	100.0
4	7439	3184	42.8	7708	103.6
5	7220	2635	36.5	7233	100.2
6	8410	2923	34.8	8616	102.4
7	4930	1938	39.3	4792	97.2
8	2049	1484	72.4	1954	95.4
9	2253	1528	67.8	2104	93.4
10	2915	1919	65.8	2873	98.6
11	994	780	78.5	983	98.9
12	2779	1578	56.8	2871	103.3
13	1157	853	73.7	1101	95.2
14	841	649	77.2	829	98.6
15	5270	2264	43.0	5145	97.6
16	3830	2018	52.7	3742	97.7
17	<u>925</u>	<u>677</u>	73.2	<u>928</u>	100.3
TOTAL					
Vehicle Trips	67,910	32,922	48.5	67,793	99.8

¹Motorcycles and Bicycles have been removed and appear by station below. These two vehicle types are not interviewed so therefore cannot be expanded and do not appear in expanded vehicle trips.

<u>Station</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>TOTAL</u>
Motorcycles	49	28	72	46	86	92	26	26	26	40	10	15	13	12	36	41	8	626
Bicycles	<u>13</u>	<u>6</u>	<u>4</u>	<u>10</u>	<u>25</u>	<u>13</u>	<u>4</u>	<u>16</u>	<u>48</u>	<u>7</u>	<u>10</u>	<u>4</u>	<u>5</u>	<u>8</u>	<u>8</u>	<u>22</u>	<u>3</u>	206
TOTAL	62	34	76	56	111	105	30	42	74	47	20	19	18	20	44	63	11	832

²Due to the convention of certain computer programs, expanded vehicle trips may not correspond exactly with 24-Hour Classification Counts. This results because of truncation and rounding in each cell of a matrix following expansion.

EXPANDED VEHICLE TRIPS BY STATION
(THROUGH, TERMINAL and TOTAL)

Station	Expanded Vehicle Trips	Percent of Total Traffic	Terminal Trips	Percent Terminal	Through Trips	Percent Through
1	6764	10.0	5163 ³⁵⁶⁵	76.3	1601 ²⁰¹	23.7
2	3651	5.4	2883	79.0	768	21.0
3	6499	9.6	4390 ³⁷⁰⁰	67.5	2109 ⁴⁰	32.5
4	7708	11.4	6031 ⁵⁰¹⁴	78.2	1677 ²⁶	21.5
5	7233	10.7	5553 ⁴⁵³²	76.8	1680 ²⁷	23.2
6	8616	12.7	6380 ⁵¹¹¹	74.0	2236 ²¹	26.0
7	4792	7.1	3872 ³²⁵⁷	80.8	920 ¹¹	19.2
8	1954	2.9	1808	92.5	146	7.5
9	2104	3.1	1820	86.5	284	13.5
10	2873	4.2	2693	93.7	180	6.3
11	983	1.4	877	89.2	106	10.8
12	2871	4.2	2570	89.5	301	10.5
13	1101	1.6	872	79.2	229	20.8
14	829	1.2	773	93.2	56	6.8
15	5145	7.6	4790	93.1	355	6.9
16	3742	5.5	3512	93.9	230	6.1
17	928	1.4	850	91.6	78	8.4
TOTAL						
Vehicle Trips	67,793	100.0	54,837		12,956	
Adjusted ¹						
Vehicle Trips	61,315	100.0	54,837	89.4	6,478	10.6

¹ A through trip is counted both at the station of entrance and exit. To adjust for this double counting it was necessary to half-factor through trips.

(Handwritten notes and diagrams)
 NEW 90 (Zone 500) (Zone 1000) (Zone 1500)
 1976
 Coffee
 3139 66 30%
 25,130 59 46
 27,99 90 42
 30,33 44
 2214 20 15

PART II.

STRATIFIED STUDY RESULTS

ALL STATIONS

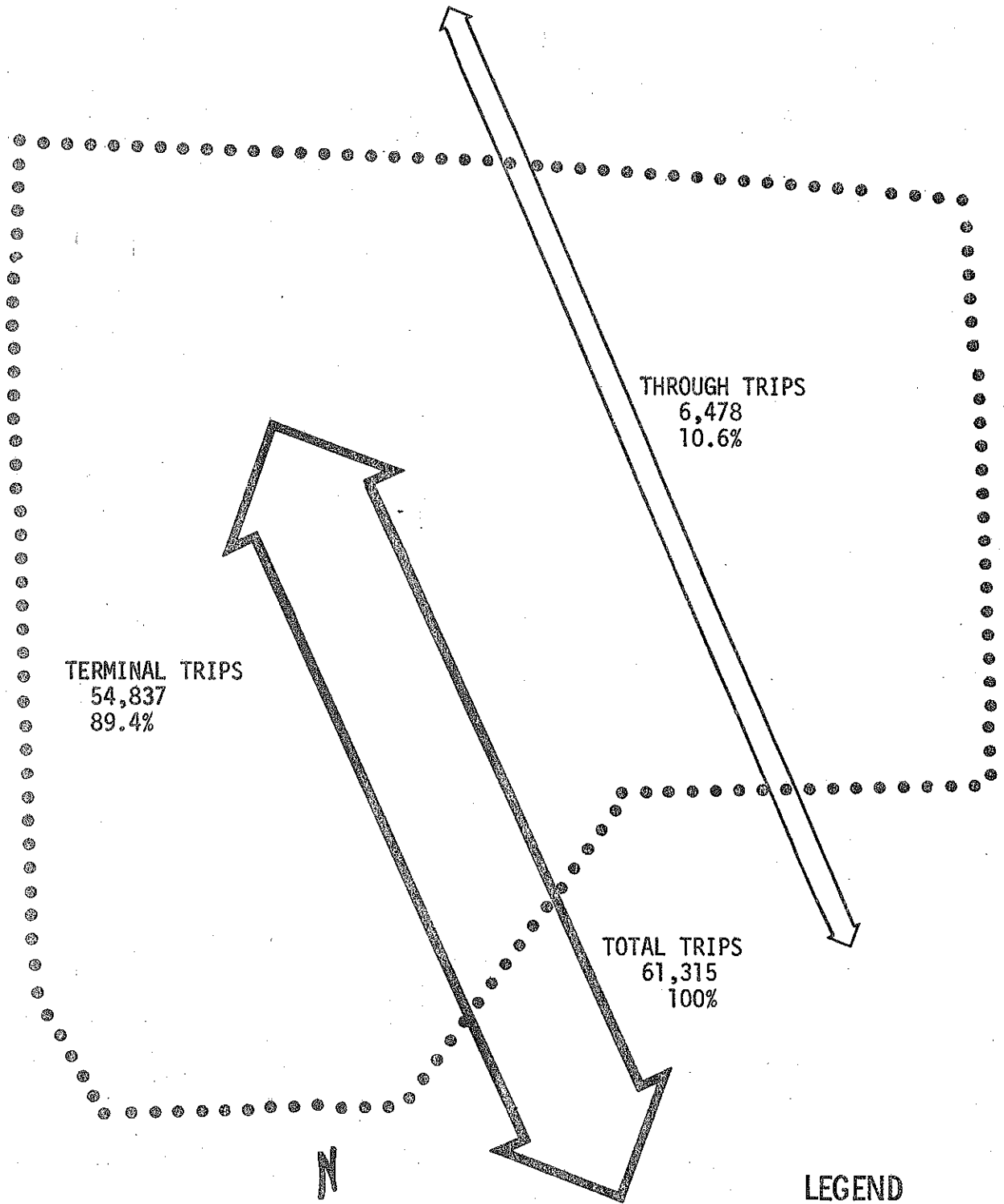
<u>LOCATION:</u>	Seventeen points on the Cordon Line.
<u>CLASSIFICATION:</u>	State Trunklines (7) and County Roads (10)
<u>TOTAL TRIPS:</u>	61315
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 48214 (78.6%)
<u>MAJOR TRIP PURPOSE:</u>	Work 24061 (39.3%)
<u>TRIP DISTRIBUTION:</u>	Terminal 54837 (89.4%) Through 6478 (10.6%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 10276 (18.8%)
<u>LONGEST TRIP:</u>	15 Hrs.
<u>AVERAGE TRIP LENGTH:</u>	55 Min.

ALL STATIONS
VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle Type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	48214	78.6	43384	90.0	4830	10.0
Passenger Car with Trailer	722	1.2	459	63.6	263	36.4
Panel or Pickup	8893	14.5	8084	90.9	809	9.1
Panel or Pickup with Trailer	334	.5	251	75.1	83	24.9
Other Single Unit Trucks	2241	3.7	1938	86.5	303	13.5
Combinations and Trucks with Trailers	<u>911</u>	<u>1.5</u>	<u>721</u>	<u>79.1</u>	<u>190</u>	<u>20.9</u>
TOTAL	61,315	100.0	54837	89.4	6478	10.6

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	24061	39.3	22370	93.0	1691	7.0
Personal Business	3678	6.0	3424	93.1	254	6.9
Shopping	11491	18.7	11216	97.6	275	2.4
Vacation	5896	9.6	3493	59.2	2403	40.8
Other Soc. or Rec.	9644	15.7	8141	84.4	1503	15.6
All Other	<u>6545</u>	<u>10.7</u>	<u>6193</u>	<u>94.6</u>	<u>352</u>	<u>5.4</u>
TOTAL	61,315	100.0	54,837	89.4	6,478	10.6

ALL STATIONS
TRIP MOVEMENTS



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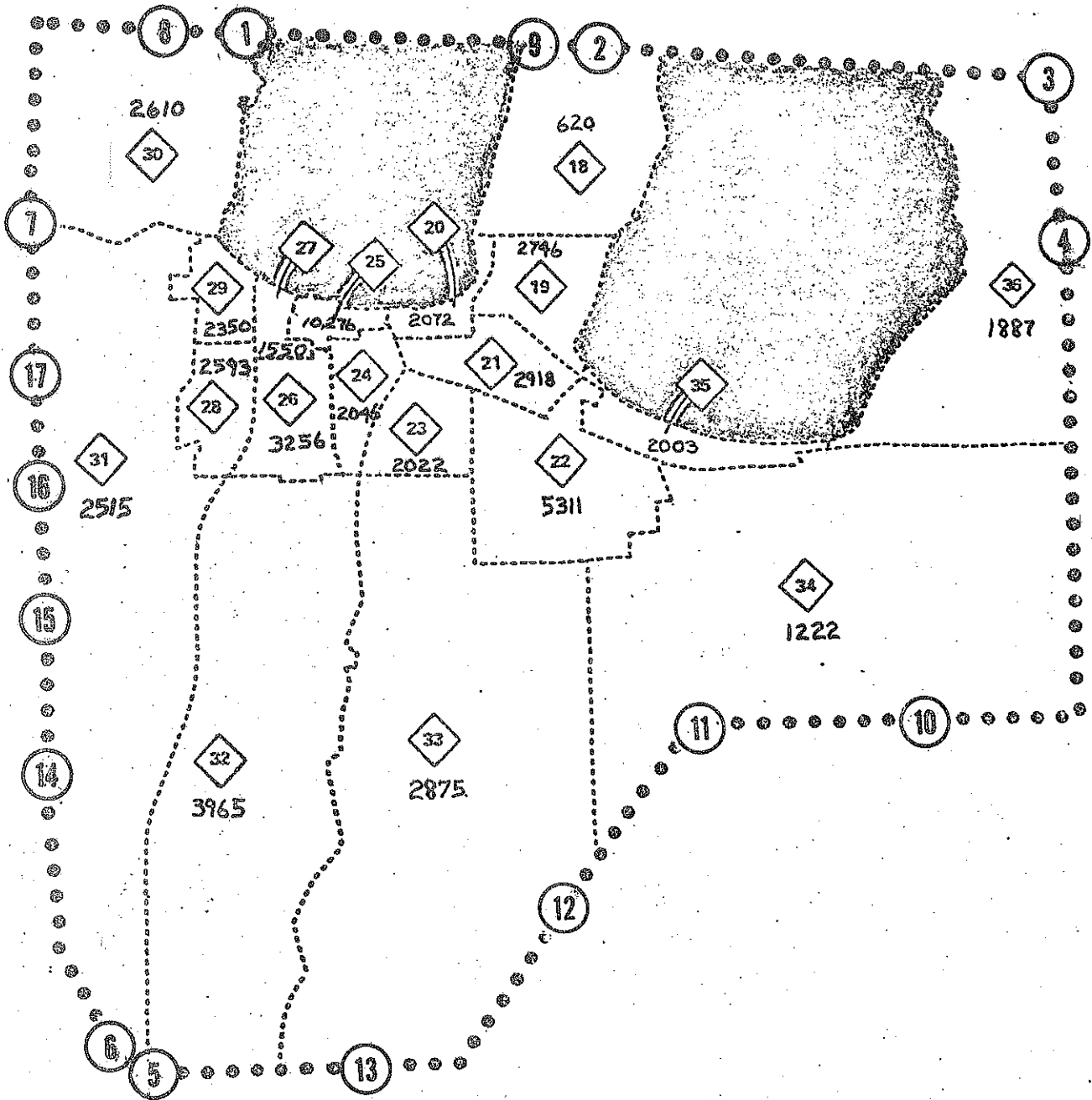
LEGEND

• • • CORDON LINE

ALL STATION TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	620	1.1
19	2746	5.0
20	2072	3.8
21	2918	5.3
22	5311	9.7
23	2022	3.7
24	2046	3.7
25	10,276	18.8
26	3256	5.9
27	1550	2.8
28	2593	4.7
29	2350	4.3
30	2610	4.8
31	2515	4.6
32	3965	7.2
33	2875	5.2
34	1222	2.2
35	2003	3.7
36	<u>1887</u>	<u>3.5</u>
TOTAL	54,837	100.0

ALL STATION TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- CORDON LINE
- - - - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

ALL STATIONS
TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	9801	16.0
10-20	16057	26.2
20-30	6604	10.8
30-40	7882	12.9
40-50	7237	11.8
50-60	2733	4.5
60-80	2350	3.8
80-100	1923	3.1
100-120	809	1.3
120-150	893	1.5
150-180	948	1.5
180-300	3024	4.9
300-420	761	1.2
420-540	145	.2
540-660	92	.2
660-780	30	} .1
780-900	26	
TOTAL	61,315	100.0

* Longest Trip = 15 Hrs. Average Trip Length = 55 Min.

* Median Trip Length = 20-30 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 1, M-22 N.

<u>LOCATION:</u>	.9 Miles North of Cherry Bend Road, Leelanau County.
<u>CLASSIFICATION:</u>	State Trunkline
<u>TOTAL TRIPS :</u>	6764
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 5472 (80.9%)
<u>MAJOR TRIP PURPOSE:</u>	Work 2637 (39%)
<u>TRIP DISTRIBUTION:</u>	Terminal 5163 (76.3%) Through 1601 (23.7%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 5, M-37 S. 409 (25.6%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 927 (18.8%)
<u>LONGEST TRIP:</u>	13 Hrs. 50 Min.
<u>AVERAGE TRIP LENGTH:</u>	1 Hr. 7 Min.

STATION 1

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	5472	80.9	4201	76.8	1271	23.2
Passenger Car with Trailer	48	0.7	7	14.6	41	85.4
Panel or Pickup	859	12.7	704	82.0	155	18.0
Panel or Pickup with Trailer	27	0.4	12	44.4	15	55.6
Other Single Unit Trucks	250	3.7	177	70.8	73	29.2
Combinations and Trucks with Trailers	108	1.6	62	57.4	46	42.6
TOTAL	6764	100.0	5163	76.3	1601	23.7

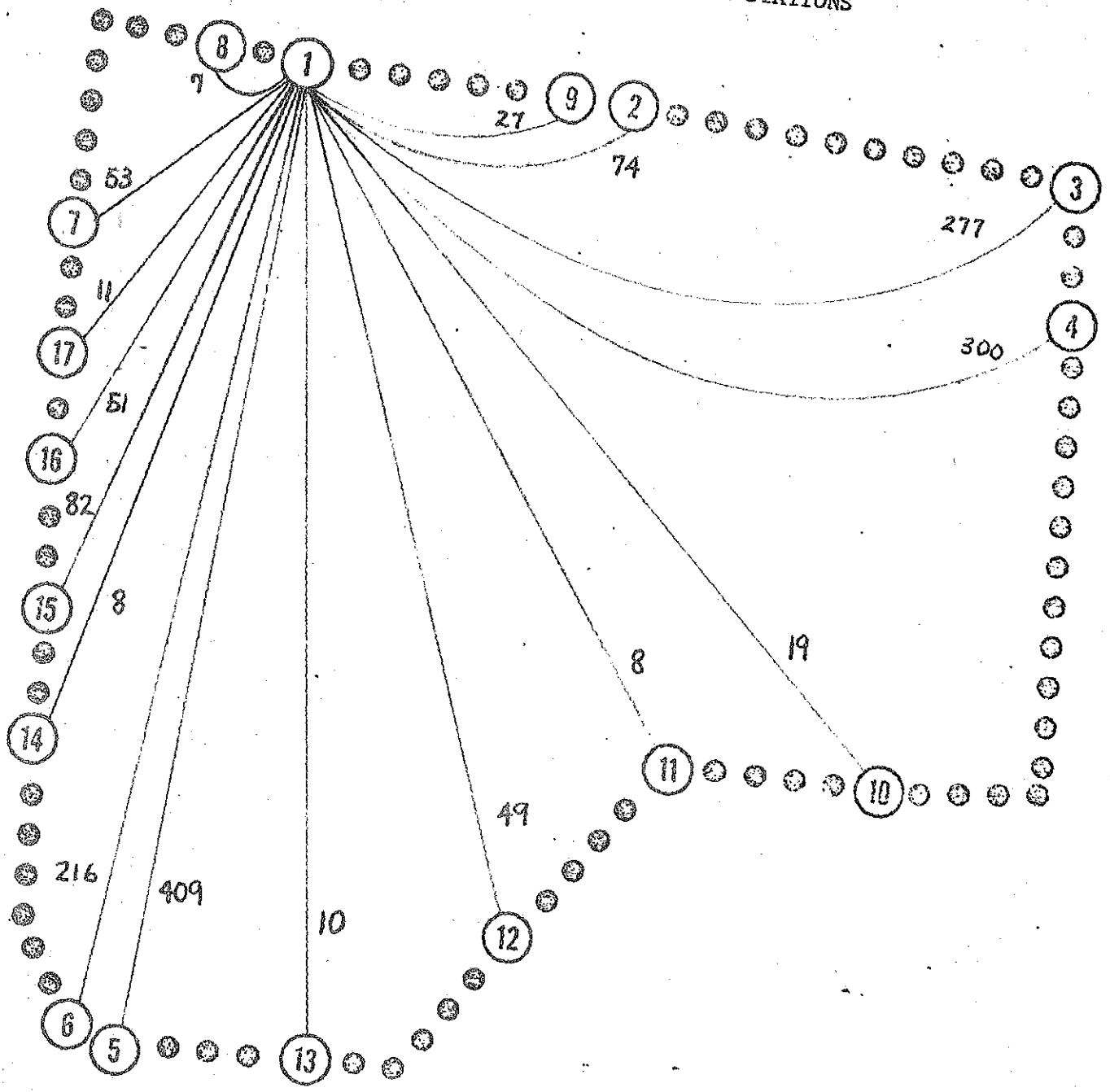
<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	2637	39.0	2198	83.4	439	16.6
Personal Business	512	7.6	411	80.3	101	19.7
Shopping	1159	17.1	1075	92.8	84	7.2
Vacation	764	11.3	275	36.0	489	64.0
Other Soc. or Rec.	1111	16.4	693	62.4	418	37.6
All Other	581	8.6	511	88.0	70	12.0
TOTAL	6764	100.0	5163	76.3	1601	23.7

STATION 1

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.		
2 M-37 N.	74	4.6
3 US-31 N.	277	17.3
4 M-72 E.	300	18.7
5 M-37 S.	409	25.6
6 US-31 W.	216	13.5
7 M-72 W.	53	3.3
8 Cherry Bend Rd. (Co. Rd. 633)	7	0.4
9 Peninsula Drive	27	1.7
10 High Lake Rd.	19	1.2
11 Three Mile Rd.	8	0.5
12 Garfield Rd.	49	3.1
13 River Rd.	10	0.6
14 Silver Pines Rd.	8	0.5
15 Silver Lake Rd.	82	5.1
16 Long Lake Rd.	51	3.2
17 Cedar Run Rd.	11	0.7
	<hr/>	<hr/>
TOTAL	1601	100.0

STATION 1
 TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND
 ●●● CORDON
 (4) STATION NUMBER



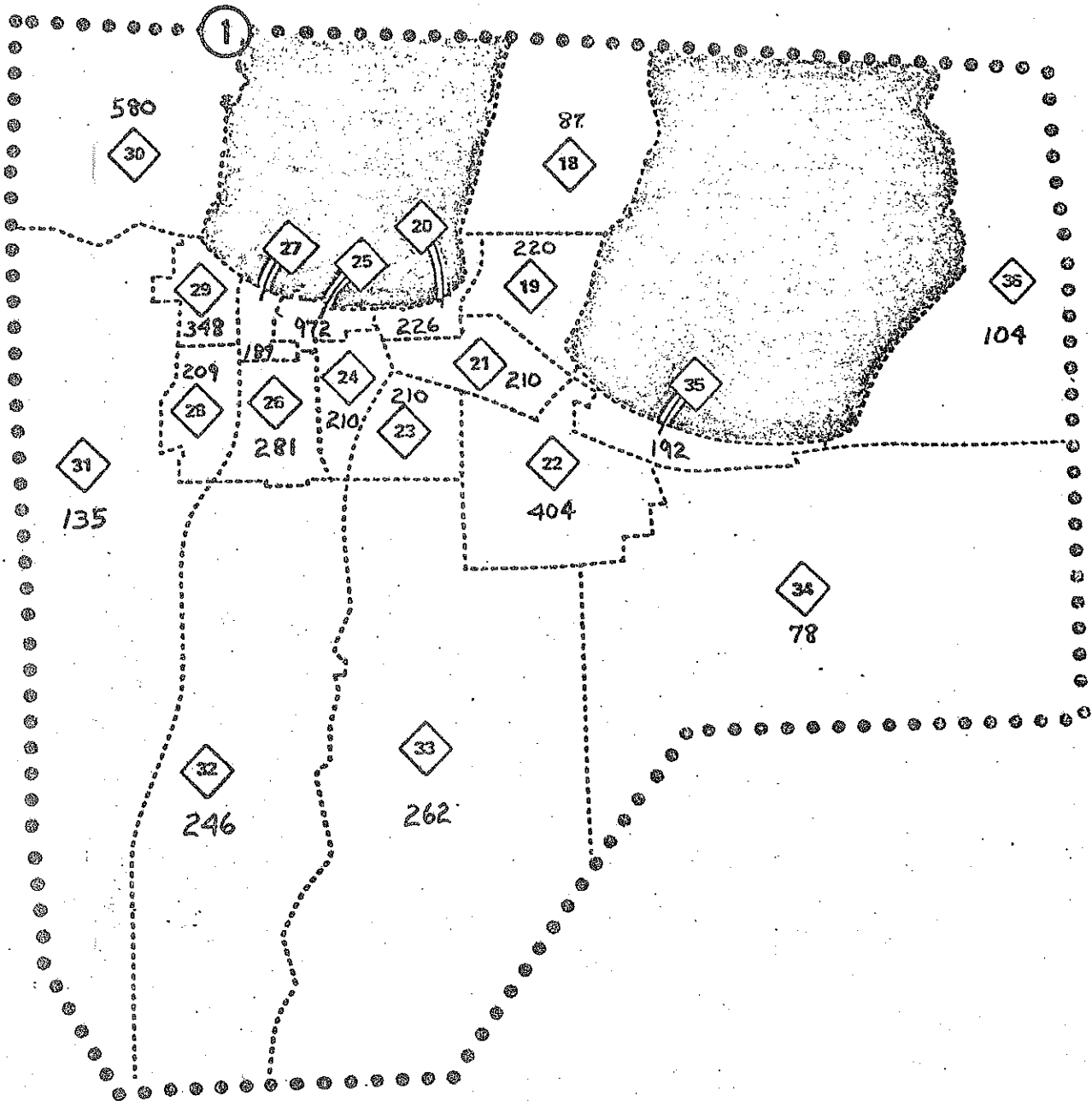
STATION 1

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	87	1.7
19	220	4.3
20	226	4.4
21	210	4.1
22	404	7.8
23	210	4.1
24	210	4.1
25	972	18.8
26	281	5.4
27	189	3.7
28	209	4.0
29	348	6.7
30	580	11.2
31	135	2.6
32	246	4.8
33	262	5.1
34	78	1.5
35	192	3.7
36	104	2.0
TOTAL	<u>5163</u>	<u>100</u>

STATION 1

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 1

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	270	4.0
10-20	1380	20.4
20-30	42	0.6
30-40	393	5.8
40-50	2622	38.8
50-60	799	11.8
60-80	336	5.0
80-100	77	1.1
100-120	112	1.6
120-150	111	1.6
150-180	67	1.0
180-300	365	5.4
300-420	163	2.4
420-540	14	0.2
540-660	11	0.2
660-780	0	0.0
780-900	2	0.1
TOTAL	6764	100.0

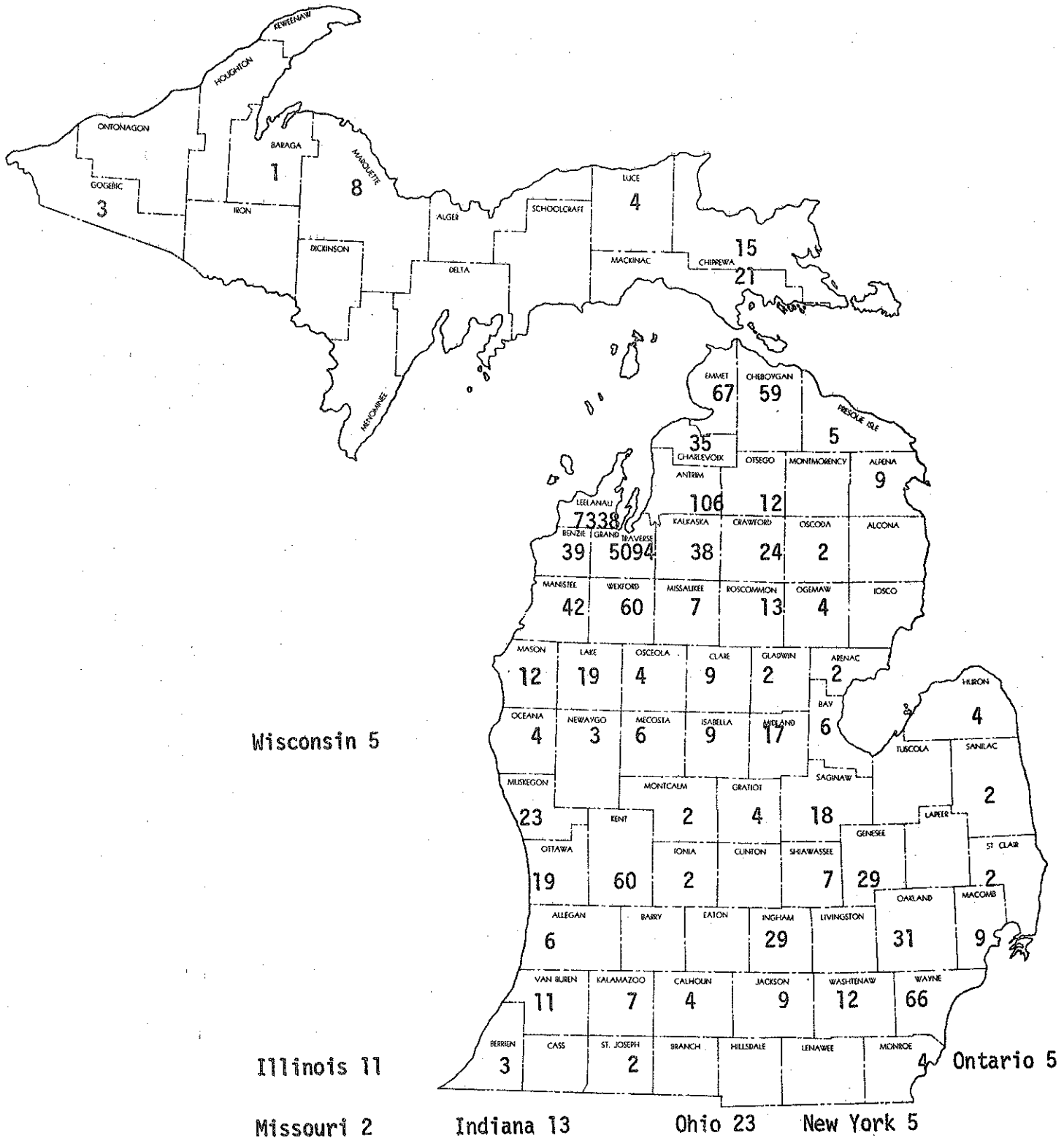
* Longest Trip = 13 Hrs. 50 Min. Average Trip Length = 1 Hr. 7 Min.

* Median Trip Length = 40-50 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 1
TRIP END SUMMARY

TOTAL: 6764 trips = 13528 trip ends.
8 trips had both their Origin and Destination in Grand Traverse County.



STATION 2, M-37 N.

<u>LOCATION:</u>	.2 Miles North of McKinley Road, Grand Traverse County
<u>CLASSIFICATION:</u>	State Trunkline
<u>TOTAL TRIPS:</u>	3651
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 2830 (77.5%)
<u>MAJOR TRIP PURPOSE:</u>	Work 1562 (42.8%)
<u>TRIP DISTRIBUTION:</u>	Terminal 2883 (79%) Through 768 (21%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 6, US-31 W. 125 (16.3%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 444 (15.4%)
<u>LONGEST TRIP:</u>	12 Hrs. 30 Min.
<u>AVERAGE TRIP LENGTH:</u>	29 Min.

STATION 2

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	2830	77.5	2302	81.3	528	18.7
Passenger Car with Trailer	20	0.5	13	65.0	7	35.0
Panel or Pickup	561	15.4	459	81.8	102	18.2
Panel or Pickup with Trailer	9	0.2	2	22.2	7	77.8
Other Single Unit Trucks	145	4.0	87	60.0	58	40.0
Combinations and Trucks with Trailers	86	2.4	20	23.3	66	76.7
TOTAL	3651	100.0	2883	79.0	768	21.0

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	1562	42.8	1232	78.9	330	21.1
Personal Business	187	5.1	170	90.9	17	9.1
Shopping	639	17.5	605	94.7	34	5.3
Vacation	365	10.0	180	49.3	185	50.7
Other Soc. or Rec.	619	17.0	450	72.7	169	27.3
All Other	279	7.6	246	88.2	33	11.8
TOTAL	3651	100.0	2883	79.0	768	21.0

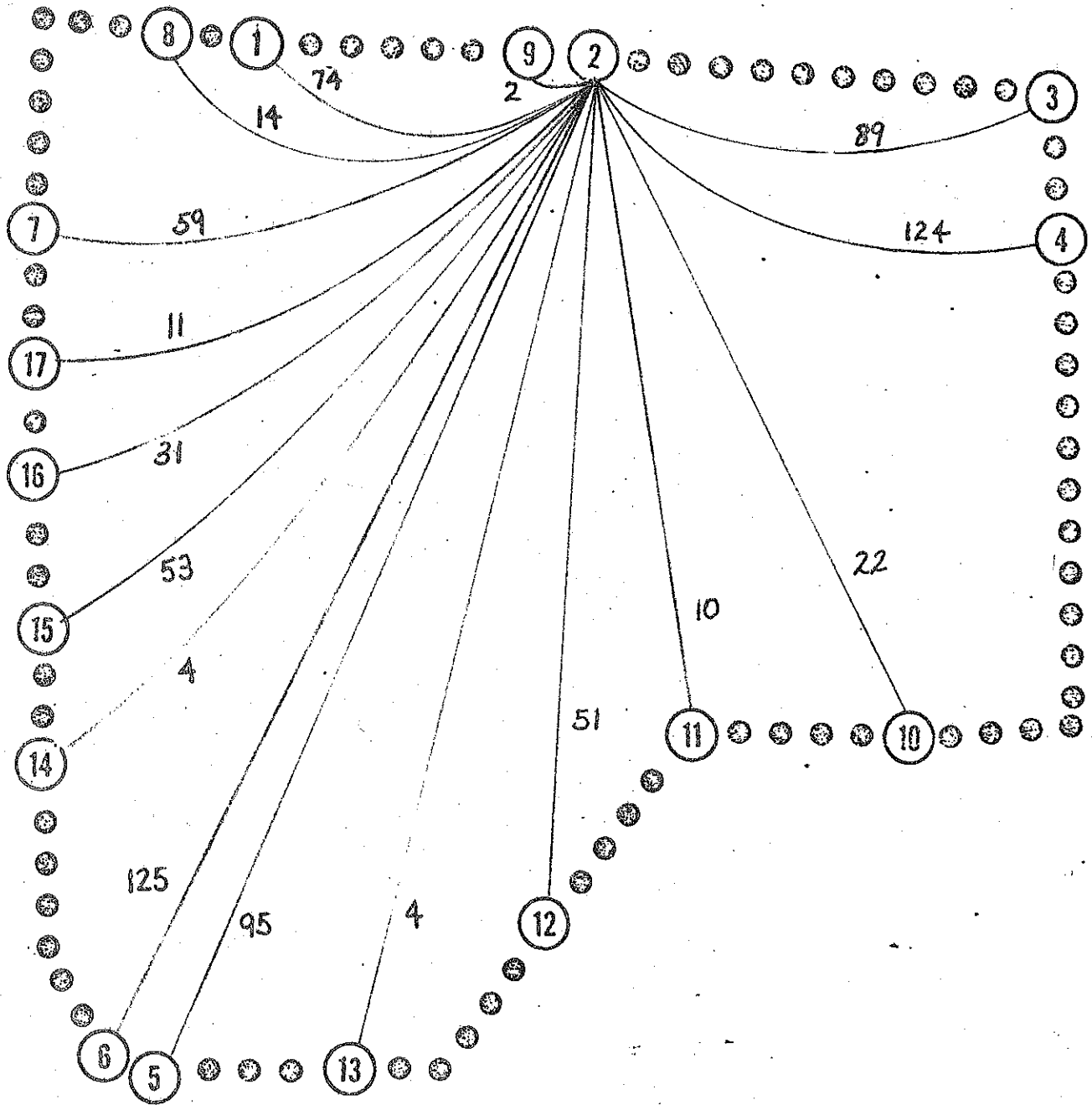
STATION 2

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	74	9.6
2 M-37 N.	_____	_____
3 US-31 N.	89	11.6
4 M-72 E.	124	16.1
5 M-37 S.	95	12.4
6 US-31 W.	125	16.3
7 M-72 W.	59	7.7
8 Cherry Bend Rd. (Co. Rd. 633)	14	1.9
9 Peninsula Drive	2	0.3
10 High Lake Rd.	22	2.9
11 Three Mile Rd.	10	1.3
12 Garfield Rd.	51	6.6
13 River Rd.	4	0.5
14 Silver Pines Rd.	4	0.5
15 Silver Lake Rd.	53	6.9
16 Long Lake Rd.	31	4.0
17 Cedar Run Rd.	11	1.4
	_____	_____
TOTAL	768	100.0

STATION 2

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND



CORDON



STATION NUMBER



N

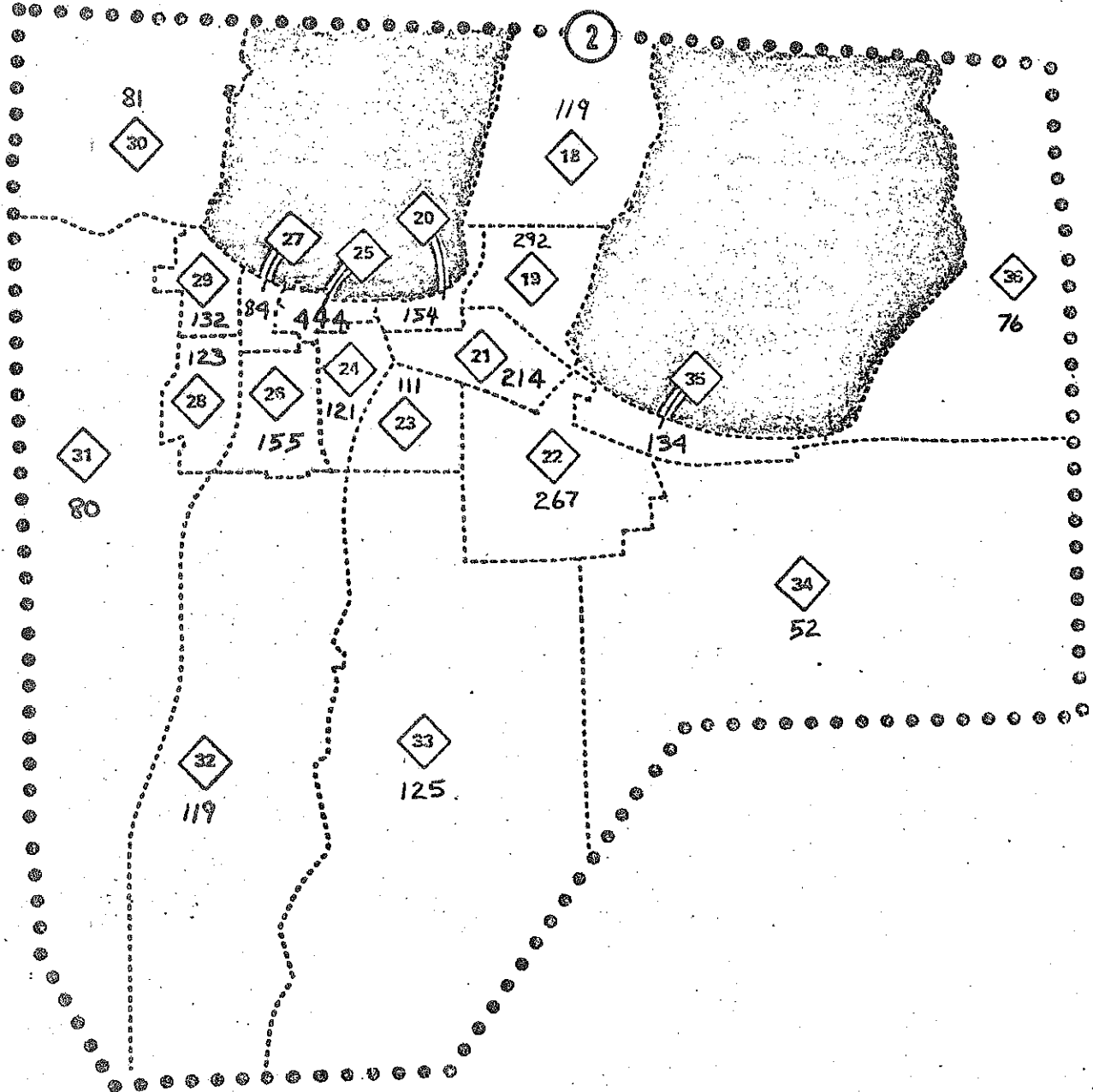
STATION 2

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	119	4.1
19	292	10.1
20	154	5.3
21	214	7.4
22	267	9.3
23	111	3.9
24	121	4.2
25	444	15.4
26	155	5.4
27	84	2.9
28	123	4.3
29	132	4.6
30	81	2.8
31	80	2.8
32	119	4.1
33	125	4.3
34	52	1.8
35	134	4.7
36	76	2.6
TOTAL	<u>2883</u>	<u>100</u>

STATION 2

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 2

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	2194	60.1
10-20	695	19.0
20-30	246	6.7
30-40	109	3.0
40-50	119	3.3
50-60	19	0.5
60-80	24	0.7
80-100	48	1.3
100-120	13	0.3
120-150	36	1.0
150-180	44	1.2
180-300	75	2.1
300-420	20	0.5
420-540	5	0.1
540-660	2	0.1
660-780	2	0.1
	<hr/>	<hr/>
TOTAL	3651	100.0

* Longest Trip = 12 Hrs. 30 Min. Average Trip Length = 29 Min.

* Median Trip Length = 1-10 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 3, US-31 N.

<u>LOCATION:</u>	.5 Miles North of Brackett Road, Grand Traverse County.
<u>CLASSIFICATION:</u>	State Trunkline
<u>TOTAL TRIPS:</u>	6499
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 5052 (77.7%)
<u>MAJOR TRIP PURPOSE:</u>	Work 2081 (32%)
<u>TRIP DISTRIBUTION:</u>	Terminal 4390 (67.5%) Through 2109 (32.5%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 6, US-31 W. 750 (35.6%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 825 (18.8%)
<u>LONGEST TRIP:</u>	14 Hrs. 10 Min.
<u>AVERAGE TRIP LENGTH:</u>	1 Hr. 51 Min.

STATION 3

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	5052	77.7	3460	68.5	1592	31.5
Passenger Car with Trailer	169	2.6	70	41.4	99	58.6
Panel or Pickup	815	12.5	593	72.8	222	27.2
Panel or Pickup with Trailer	62	1.0	36	58.1	26	41.9
Other Single Unit Trucks	284	4.4	177	62.3	107	37.7
Combinations and Trucks with Trailers	117	1.8	54	46.2	63	53.8
TOTAL	6499	100.0	4390	67.5	2109	32.5

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	2081	32.0	1634	78.5	447	21.5
Personal Business	409	6.3	340	83.1	69	16.9
Shopping	793	12.2	726	91.5	67	8.4
Vacation	1696	26.1	628	37.0	1068	63.0
Other Soc. or Rec.	943	14.5	589	62.5	354	37.5
All Other	577	8.9	473	82.0	104	18.0
TOTAL	6499	100.0	4390	67.5	2109	32.5

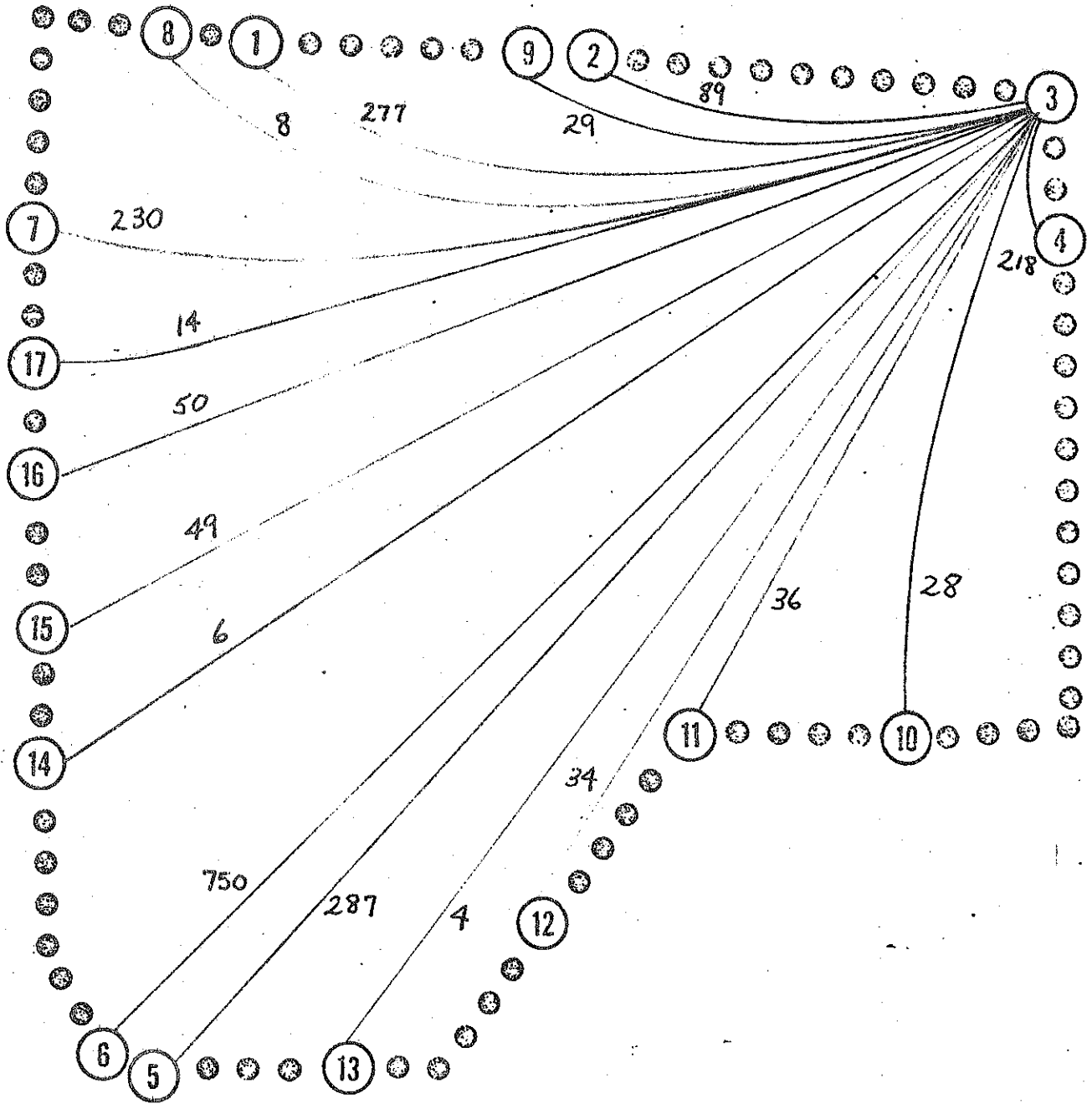
STATION 3

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	277	13.1
2 M-37 N.	89	4.2
3 US-31 N.		
4 M-72 E.	218	10.3
5 M-37 S.	287	13.6
6 US-31 W.	750	35.6
7 M-72 W.	230	10.9
8 Cherry Bend Rd. (Co. Rd. 633)	8	0.4
9 Peninsula Drive	29	1.4
10 High Lake Rd.	28	1.3
11 Three Mile Rd.	36	1.7
12 Garfield Rd.	34	1.6
13 River Rd.	4	0.2
14 Silver Pines Rd.	6	0.3
15 Silver Lake Rd.	49	2.3
16 Long Lake Rd.	50	2.4
17 Cedar Run Rd.	14	0.7
TOTAL	2109	100.0

STATION 3

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND



CORDON



STATION NUMBER



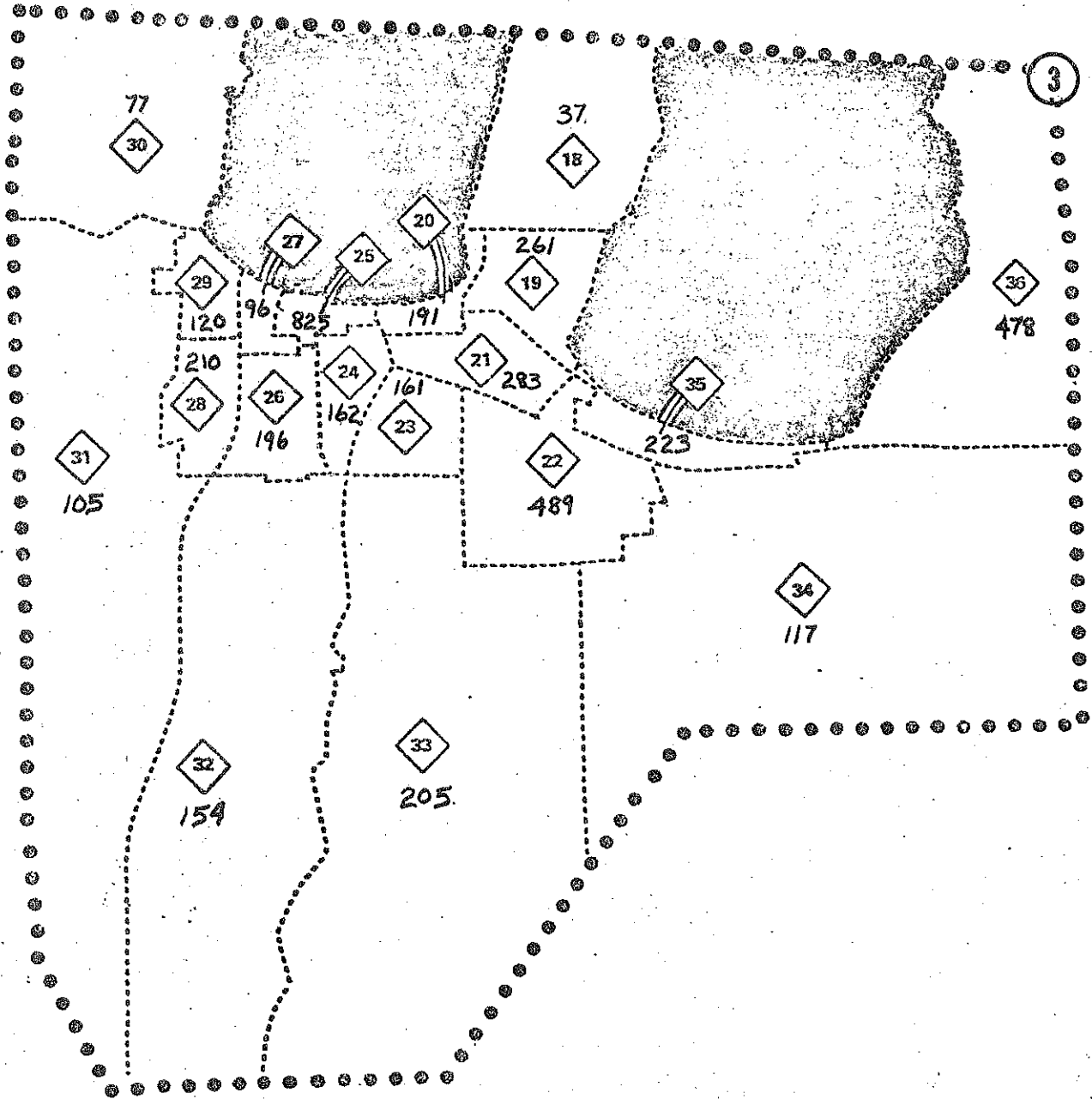
STATION 3

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	37	0.8
19	261	5.9
20	191	4.3
21	283	6.4
22	489	11.1
23	161	3.7
24	162	3.7
25	825	18.8
26	196	4.5
27	96	2.2
28	210	4.8
29	120	2.7
30	77	1.8
31	105	2.4
32	154	3.5
33	205	4.7
34	117	2.7
35	223	5.1
36	478	10.9
TOTAL	<u>4390</u>	<u>100</u>

STATION 3

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 3

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	269	4.1
10-20	378	5.8
20-30	238	3.7
30-40	1598	24.6
40-50	607	9.3
50-60	251	3.9
60-80	531	8.2
80-100	554	8.5
100-120	288	4.4
120-150	241	3.7
150-180	371	5.7
180-300	712	11.0
300-420	263	4.0
420-540	121	1.9
540-660	37	0.6
660-780	21	0.3
780-900	19	0.3
	<hr/>	<hr/>
TOTAL	6499	100.0

* Longest Trip = 14 Hrs. 10 Min. Average Trip Length = 1 Hr. 51 Min.

* Median Trip Length = 50-60 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 4, M-72 E.

<u>LOCATION:</u>	.4 Miles West of Lautner Road, Grand Traverse County.
<u>CLASSIFICATION:</u>	State Trunkline
<u>TOTAL TRIPS:</u>	7708
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 5917 (76.8%)
<u>MAJOR TRIP PURPOSE:</u>	Work 2872 (37.2%)
<u>TRIP DISTRIBUTION:</u>	Terminal 6031 (78.2%) Through 1677 (21.5%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 6, US-31 W. 378 (22.5%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 1154 (19.1%)
<u>LONGEST TRIP:</u>	13 Hrs. 20 Min.
<u>AVERAGE TRIP LENGTH:</u>	1 Hr. 29 Min.

STATION 4

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	5917	76.8	4613	78.0	1304	22.0
Passenger Car with Trailer	156	2.0	98	62.8	58	37.2
Panel or Pickup	1134	14.7	937	82.6	197	17.4
Panel or Pickup with Trailer	46	0.6	27	58.7	19	41.3
Other Single Unit Trucks	288	3.7	222	77.1	66	22.9
Combinations and Trucks with Trailers	167	2.2	134	80.2	33	19.8
TOTAL	7708	100.0	6031	78.2	1677	21.5

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	2872	37.2	2426	84.5	446	15.5
Personal Business	413	5.4	342	82.8	71	17.2
Shopping	1093	14.2	1050	96.1	43	3.9
Vacation	1284	16.7	633	49.3	651	50.7
Other Soc. or Rec.	1167	15.1	772	66.2	395	33.8
All Other	879	11.4	808	91.9	71	8.1
TOTAL	7708	100.0	6031	78.2	1677	21.5

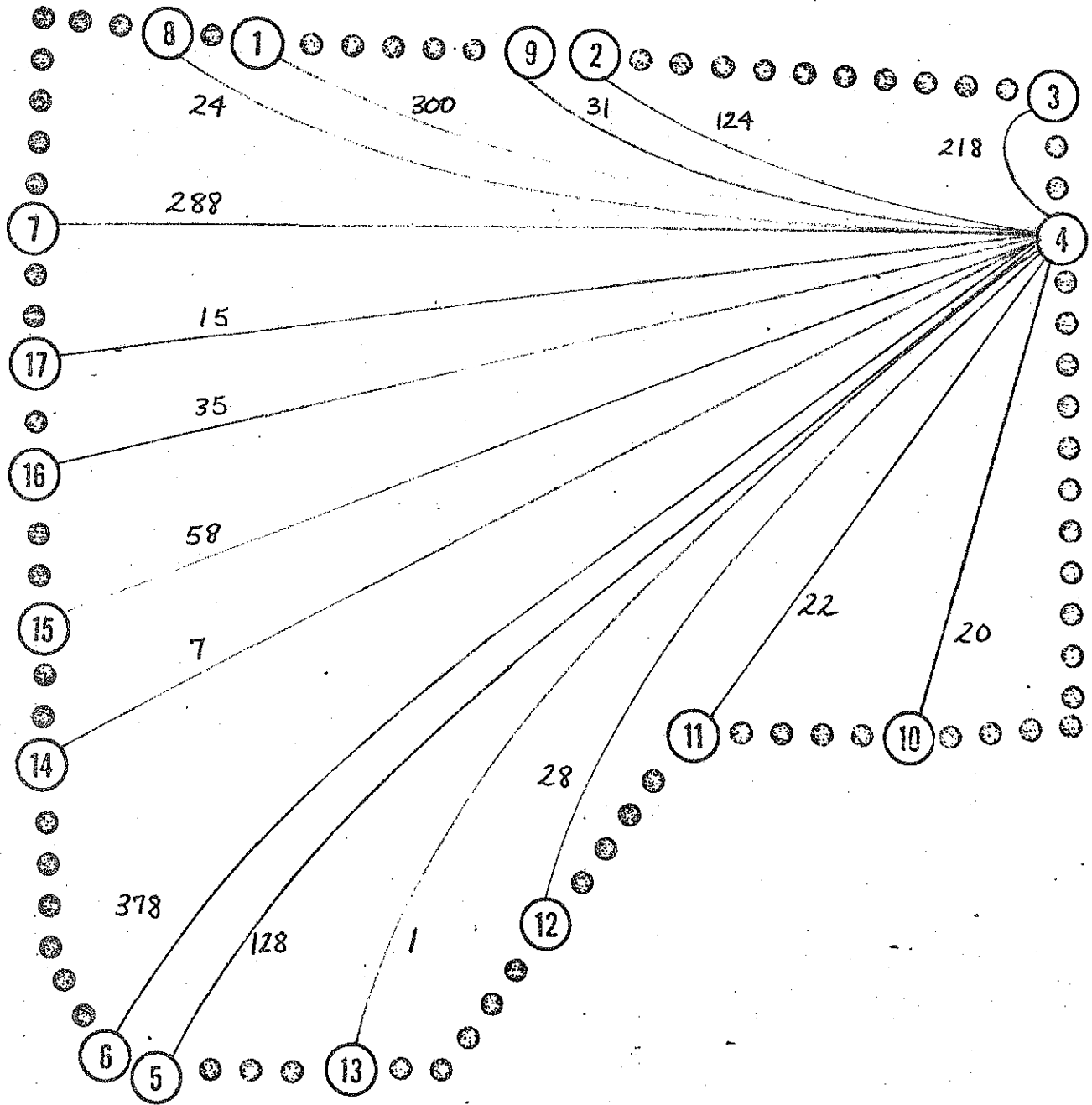
STATION 4

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	300	17.9
2 M-37 N.	124	7.4
3 US-31 N.	218	13.0
4 M-72 E.		
5 M-37 S.	128	7.6
6 US-31 W.	378	22.5
7 M-72 W.	288	17.2
8 Cherry Bend Rd. (Co. Rd. 633)	24	1.4
9 Peninsula Drive	31	1.8
10 High Lake Rd.	20	1.2
11 Three Mile Rd.	22	1.3
12 Garfield Rd.	28	1.7
13 River Rd.	1	0.1
14 Silver Pines Rd.	7	0.4
15 Silver Lake Rd.	58	3.5
16 Long Lake Rd.	35	2.1
17 Cedar Run Rd.	15	0.9
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TOTAL	1677	100.0

STATION 4

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND



CORDON



STATION NUMBER



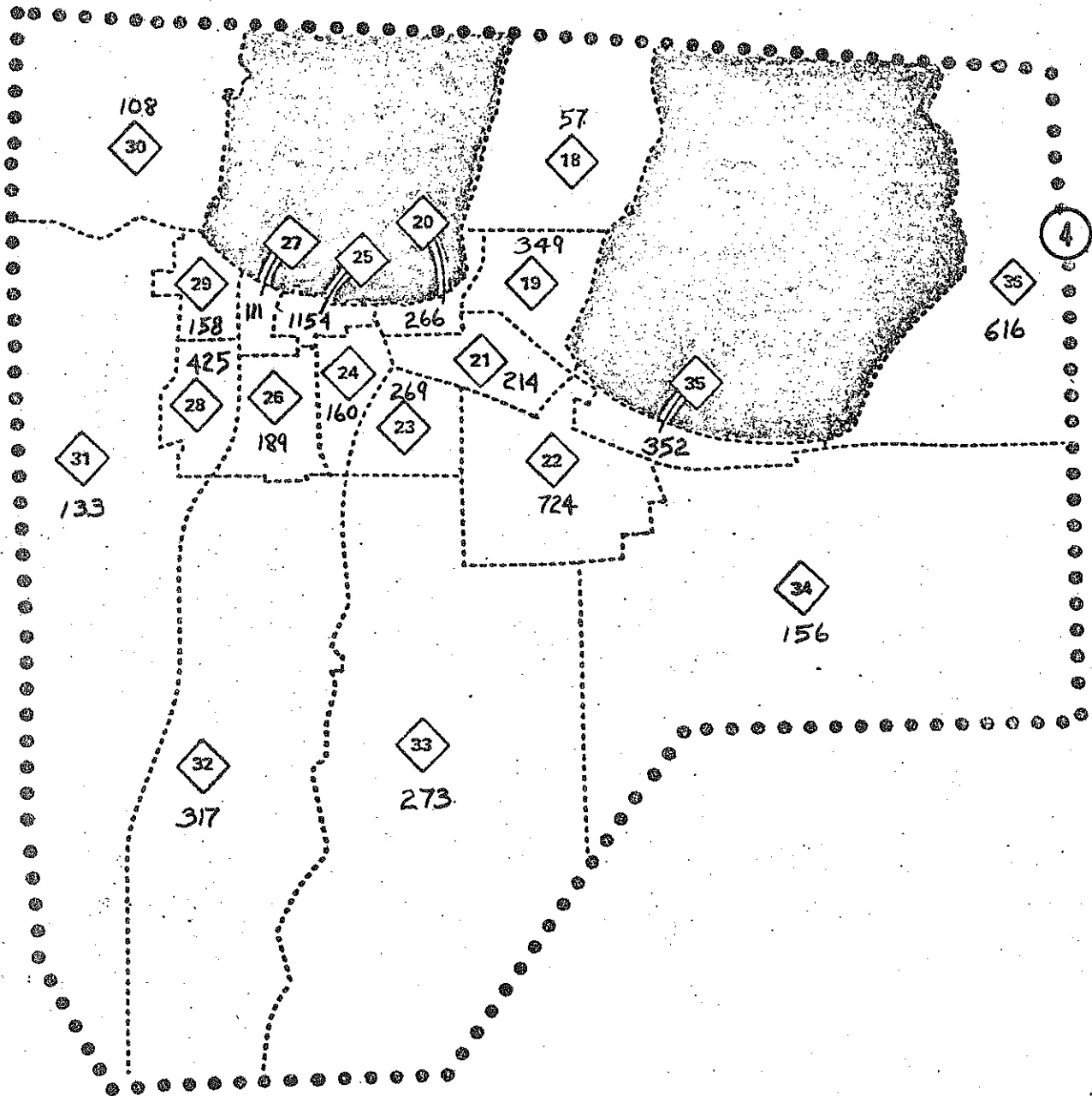
STATION 4

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	57	0.9
19	349	5.8
20	266	4.4
21	214	3.6
22	724	12.0
23	269	4.5
24	160	2.7
25	1154	19.1
26	189	3.1
27	111	1.8
28	425	7.1
29	158	2.6
30	108	1.8
31	133	2.2
32	317	5.3
33	273	4.5
34	156	2.6
35	352	5.8
36	616	10.2
TOTAL	<u>6031</u>	<u>100</u>

STATION 4

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 4
TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	374	4.8
10-20	995	12.9
20-30	195	2.5
30-40	1006	13.1
40-50	1519	19.7
50-60	646	8.4
60-80	525	6.8
80-100	551	7.1
100-120	320	4.1
120-150	291	3.8
150-180	236	3.1
180-300	789	10.2
300-420	213	2.8
420-540	19	0.2
540-660	22	0.3
660-780	5	0.1
780-900	2	0.1
TOTAL	7708	100.0

* Longest Trip = 13 Hrs. 20 Min. Average Trip Length = 1 Hr. 29 Min.

* Median Trip Length = 40-50 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 5, M-37 S.

<u>LOCATION:</u>	.1 Miles South of US-31 & M-37 South Junction, Grand Traverse County.
<u>CLASSIFICATION:</u>	State Trunkline
<u>TOTAL TRIPS:</u>	7233
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 5252 (72.6%)
<u>MAJOR TRIP PURPOSE:</u>	Work 2868 (39.6%)
<u>TRIP DISTRIBUTION:</u>	Terminal 5553 (76.8%) Through 1680 (23.2%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 6, US-31 W. 434 (25.8%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 946 (17%)
<u>LONGEST TRIP:</u>	13 Hrs. 10 Min.
<u>AVERAGE TRIP LENGTH:</u>	1 Hr. 38 Min.

STATION 5

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	5252	72.6	4123	78.5	1129	21.5
Passenger Car with Trailer	159	2.2	62	39.0	97	61.0
Panel or Pickup	1133	15.7	879	77.6	254	22.4
Panel or Pickup with Trailer	61	0.8	27	44.3	34	55.7
Other Single Unit Trucks	305	4.2	242	79.3	63	20.7
Combinations and Trucks with Trailers	323	4.5	220	68.1	103	31.9
TOTAL	7233	100.0	5553	76.8	1680	23.2

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	2868	39.6	2394	83.5	474	16.5
Personal Business	332	4.6	286	86.1	46	13.9
Shopping	1085	15.0	999	92.1	86	7.9
Vacation	995	13.8	426	42.8	569	57.2
Other Soc. or Rec.	1188	16.4	773	65.1	415	34.9
All Other	765	10.6	675	88.2	90	11.8
TOTAL	7233	100.0	5553	76.8	1680	23.2

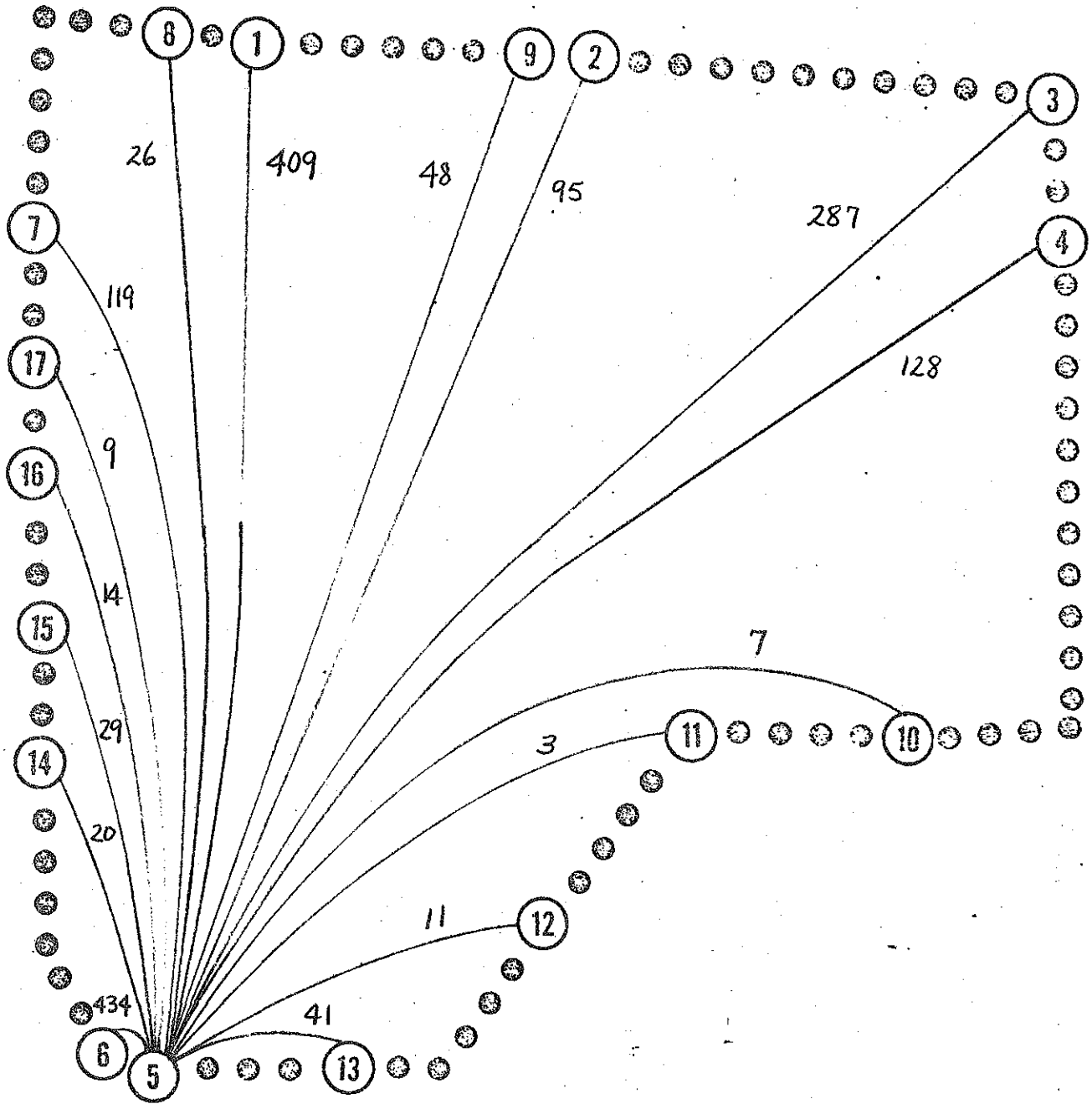
STATION 5

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	409	24.3
2 M-37 N.	95	5.7
3 US-31 N.	287	17.1
4 M-72 E.	128	7.6
5 M-37 S.	_____	_____
6 US-31 W.	434	25.8
7 M-72 W.	119	7.1
8 Cherry Bend Rd. (Co. Rd. 633)	26	1.5
9 Peninsula Drive	48	2.9
10 High Lake Rd.	7	0.4
11 Three Mile Rd.	3	0.2
12 Garfield Rd.	11	0.7
13 River Rd.	41	2.4
14 Silver Pines Rd.	20	1.2
15 Silver Lake Rd.	29	1.7
16 Long Lake Rd.	14	0.9
17 Cedar Run Rd.	9	0.5
	_____	_____
TOTAL	1680	100.0

STATION 5

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND
● ● ● CORDON
④ STATION NUMBER



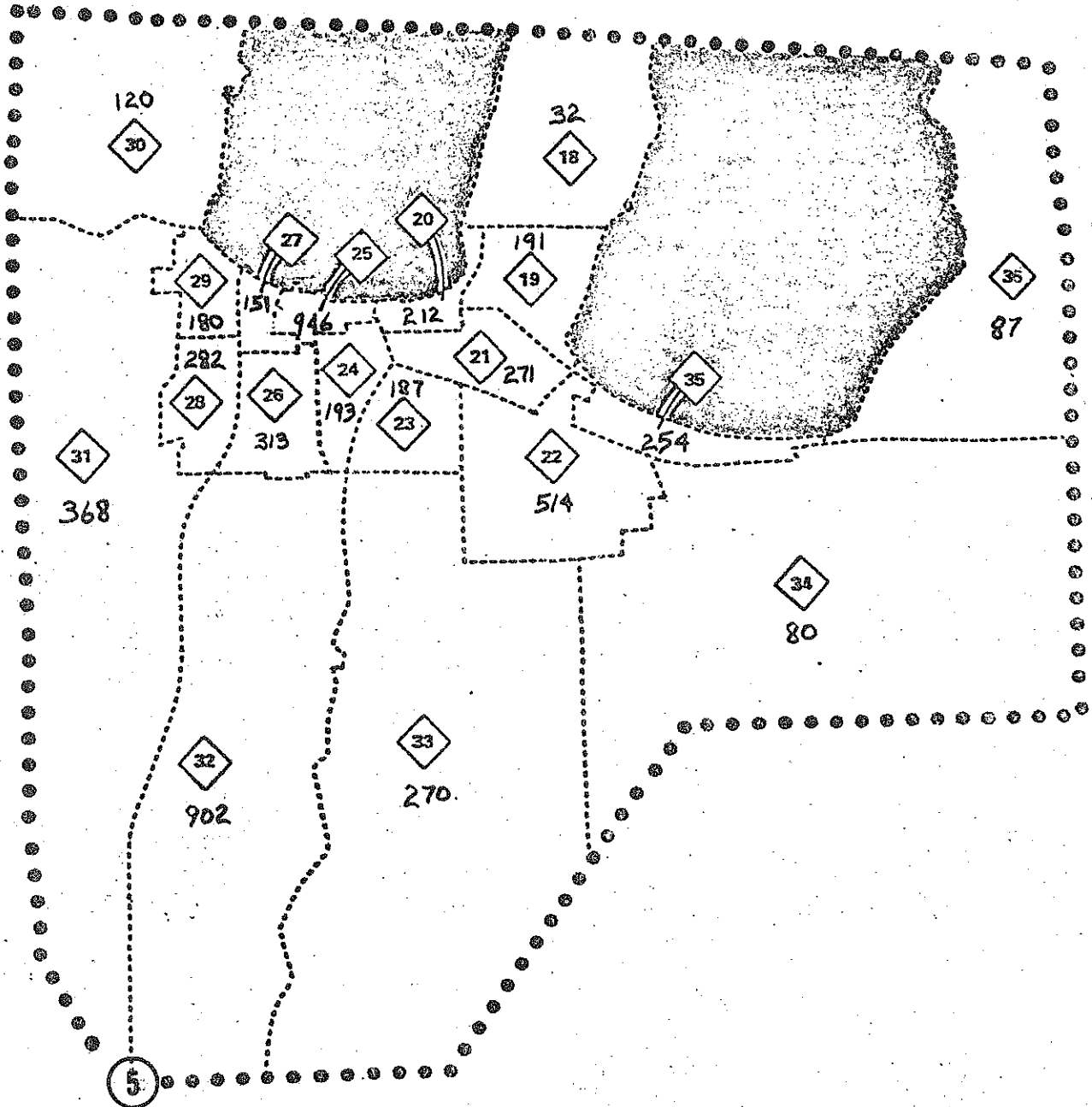
STATION 5

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	32	0.6
19	191	3.4
20	212	3.8
21	271	4.9
22	514	9.3
23	187	3.4
24	193	3.5
25	946	17.0
26	313	5.6
27	151	2.7
28	282	5.1
29	180	3.2
30	120	2.2
31	368	6.6
32	902	16.2
33	270	4.9
34	80	1.4
35	254	4.6
36	87	1.6
TOTAL	<u>5553</u>	<u>100</u>

STATION 5

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 5
TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	1067	14.8
10-20	1494	20.6
20-30	471	6.5
30-40	453	6.3
40-50	549	7.6
50-60	154	2.1
60-80	581	8.0
80-100	217	3.0
100-120	118	1.6
120-150	216	3.0
150-180	303	4.2
180-300	1267	17.5
300-420	254	3.5
420-540	37	0.5
540-660	40	0.6
660-780	9	0.1
780-900	3	0.1
 	<hr/>	<hr/>
TOTAL	7233	100.0

* Longest Trip = 13 Hrs. 10 Min. Average Trip Length = 1 Hr. 38 Min.

* Median Trip Length = 40-50 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 6, US-31 W.

LOCATION: .1 Miles West of US-31 & M-37 South
Junction, Grand Traverse County.

CLASSIFICATION: State Trunkline

TOTAL TRIPS: 8616

MAJOR VEHICLE TYPE: Passenger Car 6717 (78%)

MAJOR TRIP PURPOSE: Work 2774 (32.2%)

TRIP DISTRIBUTION: Terminal 6380 (74%)
Through 2236 (26%)

MAJOR THROUGH TRIP ATTRACTOR: Station 3, US-31 N. 750 (33.5%)

MAJOR TERMINAL TRIP ATTRACTOR: Zone 25 1317 (20.6%)

LONGEST TRIP: 15 Hrs.

AVERAGE TRIP LENGTH: 1 Hr. 11 Min.

STATION 6

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	6717	78.0	5103	76.0	1614	24.0
Passenger Car with Trailer	186	2.2	34	18.3	152	81.7
Panel or Pickup	1221	14.2	931	76.2	290	23.8
Panel or Pickup with Trailer	55	0.6	16	29.1	39	70.9
Other Single Unit Trucks	306	3.5	208	68.0	98	32.0
Combinations and Trucks with Trailers	131	1.5	88	67.2	43	32.8
TOTAL	8616	100.0	6380	74.0	2236	26.0

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	2774	32.2	2285	82.4	489	17.6
Personal Business	445	5.2	358	80.4	87	19.6
Shopping	1614	18.7	1528	94.7	86	5.3
Vacation	1526	17.7	548	35.9	978	64.1
Other Soc. or Rec.	1434	16.6	963	67.2	471	32.8
All Other	823	9.6	698	84.8	125	15.2
TOTAL	8616	100.0	6380	74.0	2236	26.0

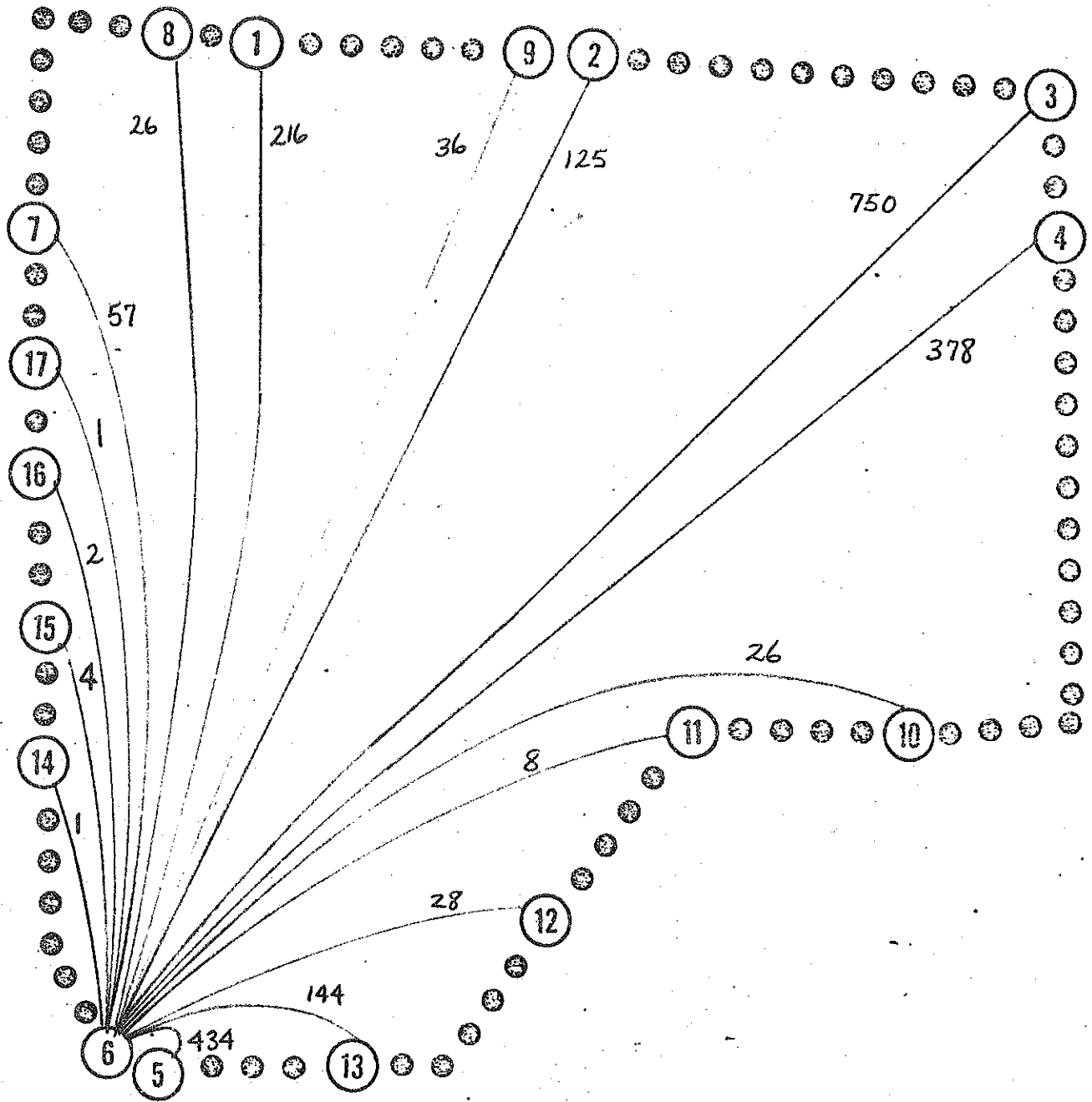
STATION 6

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	216	9.7
2 M-37 N.	125	5.6
3 US-31 N.	750	33.5
4 M-72 E.	378	16.9
5 M-37 S.	434	19.4
6 US-31 W.		
7 M-72 W.	57	2.5
8 Cherry Bend Rd. (Co. Rd. 633)	26	1.2
9 Peninsula Drive	36	1.6
10 High Lake Rd.	26	1.2
11 Three Mile Rd.	8	0.3
12 Garfield Rd.	28	1.2
13 River Rd.	144	6.4
14 Silver Pines Rd.	1	0.1
15 Silver Lake Rd.	4	0.2
16 Long Lake Rd.	2	0.1
17 Cedar Run Rd.	1	0.1
TOTAL	2236	100.0

STATION 6

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



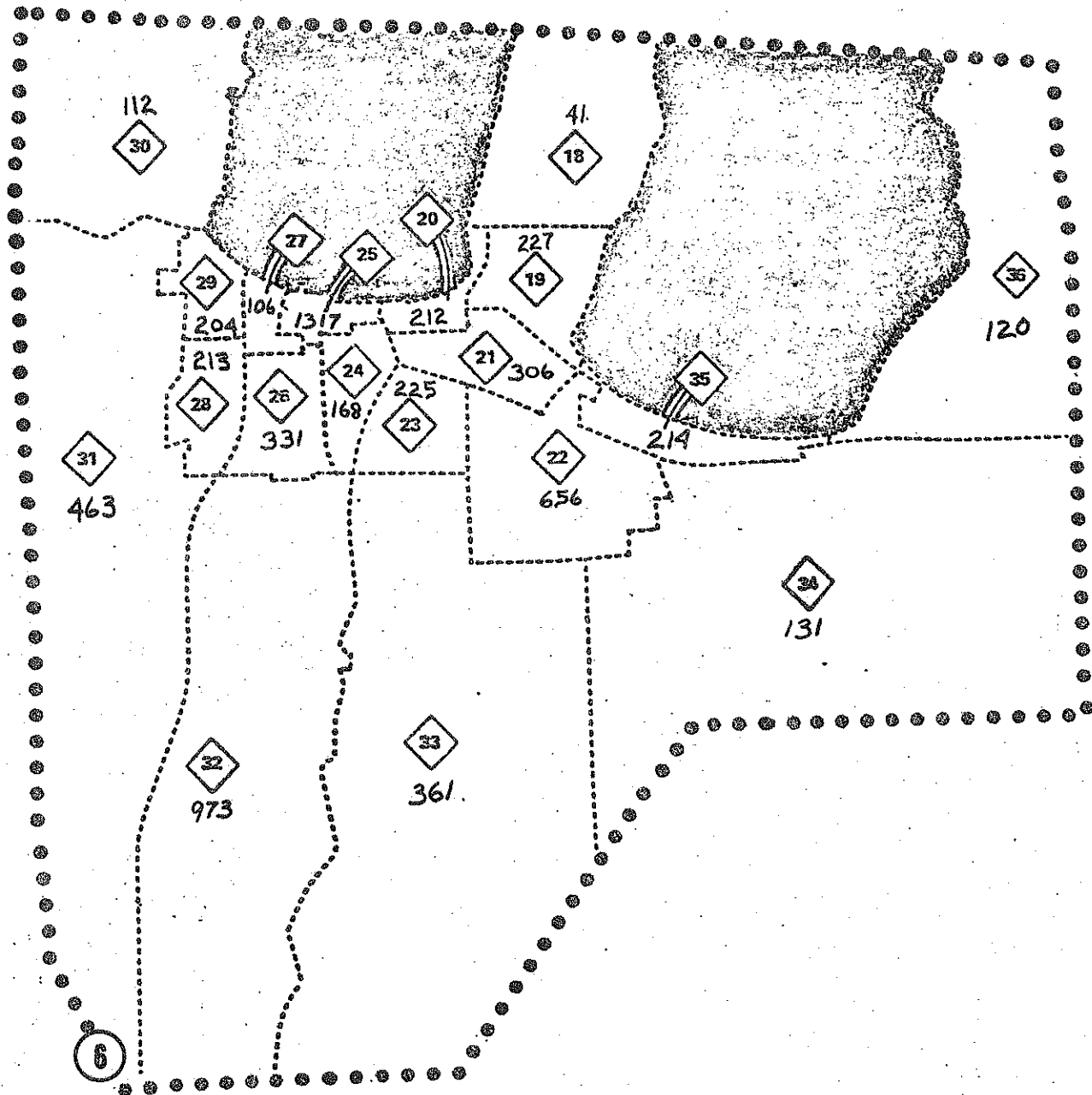
STATION 6

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	41	0.6
19	227	3.6
20	212	3.3
21	306	4.8
22	656	10.3
23	225	3.5
24	168	2.6
25	1317	20.6
26	331	5.2
27	106	1.7
28	213	3.3
29	204	3.2
30	112	1.8
31	463	7.3
32	973	15.2
33	361	5.7
34	131	2.1
35	214	3.3
36	120	1.9
TOTAL	<u>6380</u>	<u>100</u>

STATION 6

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- CORDON LINE
- ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 6

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	1493	17.3
10-20	2390	27.7
20-30	373	4.3
30-40	951	11.0
40-50	582	6.8
50-60	541	6.3
60-80	302	3.5
80-100	503	5.8
100-120	129	1.5
120-150	190	2.2
150-180	176	2.1
180-300	672	7.8
300-420	204	2.4
420-540	62	0.7
540-660	23	0.3
660-780	11	0.1
780-900	14	0.2
	<hr/>	<hr/>
TOTAL	8616	100.0

* Longest Trip = 15 Hrs. Average Trip Length = 1 Hr. 11 Min.

* Median Trip Length = 30-40 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 7, M-72 W.

<u>LOCATION:</u>	.6 Miles West of M-22 & M-72 West Junction, Leelanau County.
<u>CLASSIFICATION:</u>	State Trunkline
<u>TOTAL TRIPS:</u>	4792
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 3897 (81.3%)
<u>MAJOR TRIP PURPOSE:</u>	Work 1614 (33.7%)
<u>TRIP DISTRIBUTION:</u>	Terminal 3872 (80.8%) Through 920 (19.2%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 4, M-72 E. 288 (31.3%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 959 (24.8%)
<u>LONGEST TRIP:</u>	13 Hrs.
<u>AVERAGE TRIP LENGTH:</u>	1 Hr. 5 Min.

STATION 7

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	3897	81.3	3141	80.6	756	19.4
Passenger Car with Trailer	62	1.3	37	59.7	25	40.3
Panel or Pickup	550	11.5	482	87.6	68	12.4
Panel or Pickup with Trailer	36	0.7	22	61.1	14	38.9
Other Single Unit Trucks	187	3.9	139	74.3	48	25.7
Combinations and Trucks with Trailers	60	1.3	51	85.0	9	15.0
TOTAL	4792	100.0	3872	80.8	920	19.2

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	1614	33.7	1499	92.9	115	7.1
Personal Business	209	4.4	204	97.6	5	2.4
Shopping	975	20.3	960	98.5	15	1.5
Vacation	975	20.3	421	43.2	554	56.8
Other Soc. or Rec.	648	13.6	458	70.7	190	29.3
All Other	371	7.7	330	88.9	41	11.1
TOTAL	4792	100.0	3872	80.8	920	19.2

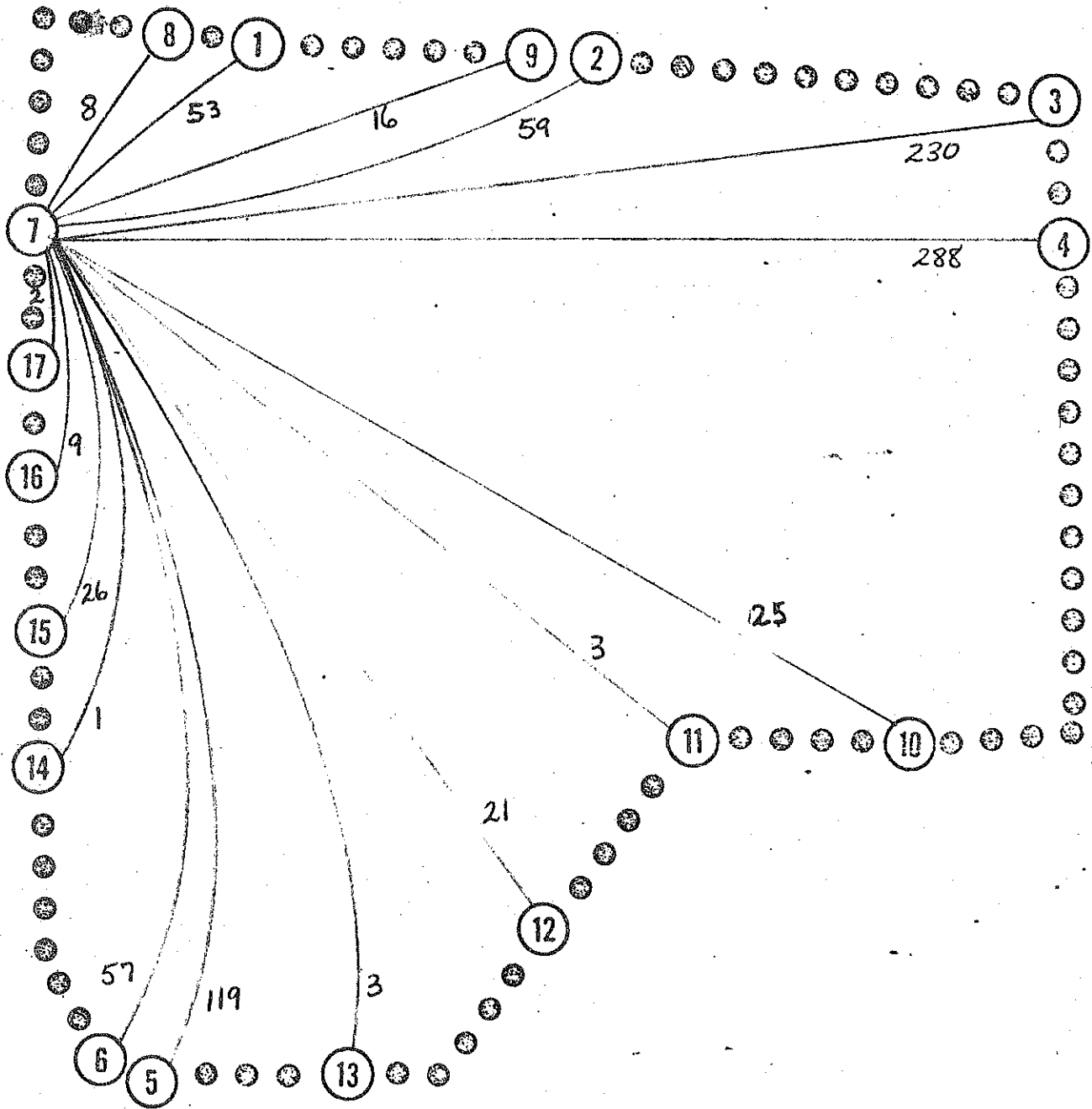
STATION 7

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	53	5.8
2 M-37 N.	59	6.4
3 US-31 N.	230	25.0
4 M-72 E.	288	31.3
5 M-37 S.	119	12.9
6 US-31 W.	57	6.2
7 M-72 W.	—	—
8 Cherry Bend Rd. (Co. Rd. 633)	8	0.9
9 Peninsula Drive	16	1.8
10 High Lake Rd.	25	2.7
11 Three Mile Rd.	3	0.3
12 Garfield Rd.	21	2.3
13 River Rd.	3	0.3
14 Silver Pines Rd.	1	0.1
15 Silver Lake Rd.	26	2.8
16 Long Lake Rd.	9	1.0
17 Cedar Run Rd.	2	0.2
 TOTAL	 <u>920</u>	 <u>100.0</u>

STATION 7

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



- LEGEND
- ● ● CORDON
 - ④ STATION NUMBER



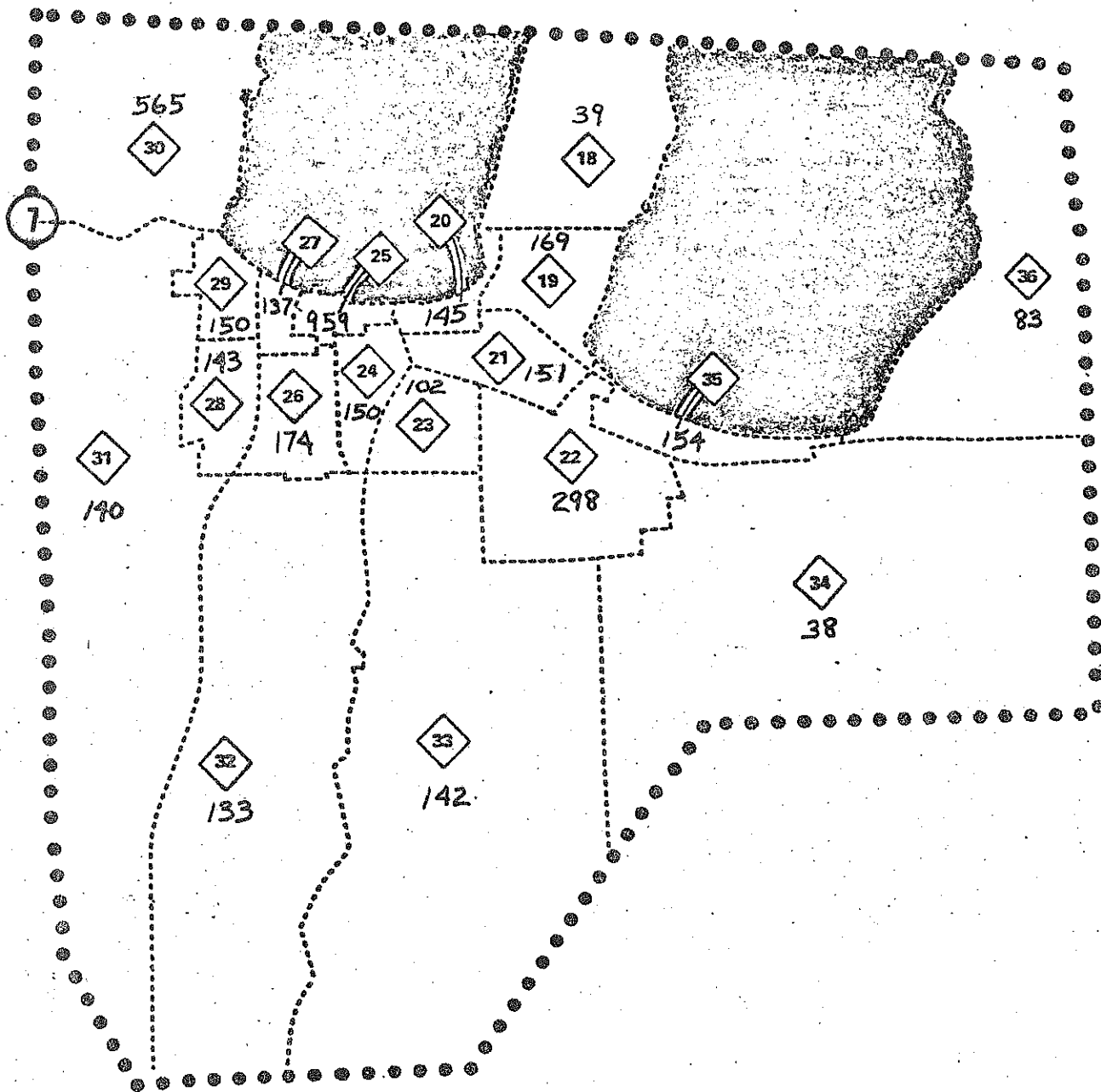
STATION 7

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	39	1.0
19	169	4.4
20	145	3.7
21	151	3.9
22	298	7.7
23	102	2.6
24	150	3.9
25	959	24.8
26	174	4.5
27	137	3.5
28	143	3.7
29	150	3.9
30	565	14.6
31	140	3.6
32	133	3.4
33	142	3.7
34	38	1.0
35	154	4.0
36	83	2.1
TOTAL	<u>3872</u>	<u>100</u>

STATION 7

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- CORDON LINE
- - - - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 7

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	204	4.3
10-20	882	18.4
20-30	43	0.9
30-40	1847	38.5
40-50	755	15.8
50-60	226	4.7
60-80	109	2.3
80-100	84	1.7
100-120	88	1.8
120-150	79	1.6
150-180	51	1.1
180-300	289	6.0
300-420	108	2.3
420-540	14	0.3
540-660	9	0.2
660-780	4	0.1
	<hr/>	<hr/>
TOTAL	4792	100.0

* Longest Trip = 13 Hrs. Average Trip Length = 1 Hr. 5 Min.

* Median Trip Length = 30-40 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 8, CHERRY BEND ROAD (CO. RD. 633)

<u>LOCATION:</u>	.2 Miles North of Lincoln Road, Leelanau County.
<u>CLASSIFICATION:</u>	County Road
<u>TOTAL TRIPS:</u>	1954
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 1557 (79.7%)
<u>MAJOR TRIP PURPOSE:</u>	Work 833 (42.6%)
<u>TRIP DISTRIBUTION:</u>	Terminal 1808 (92.5%) Through 146 (7.5%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 5, M-37 S. 26 (17.8%) Station 6, US-31 W. 26 (17.8%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 30 = 451 (24.9%)
<u>LONGEST TRIP:</u>	6 Hrs. 50 Min.
<u>AVERAGE TRIP LENGTH:</u>	35 Min.

STATION 8

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	1557	79.7	1451	93.2	106	6.8
Passenger Car with Trailer	33	1.7	25	75.8	8	24.2
Panel or Pickup	267	13.7	245	91.8	22	8.2
Panel or Pickup with Trailer	10	0.5	8	80.0	2	20.0
Other Single Unit Trucks	75	3.8	68	90.7	7	9.3
Combinations and Trucks with Trailers	12	0.6	11	91.7	1	8.3
TOTAL	1954	100.0	1808	92.5	146	7.5

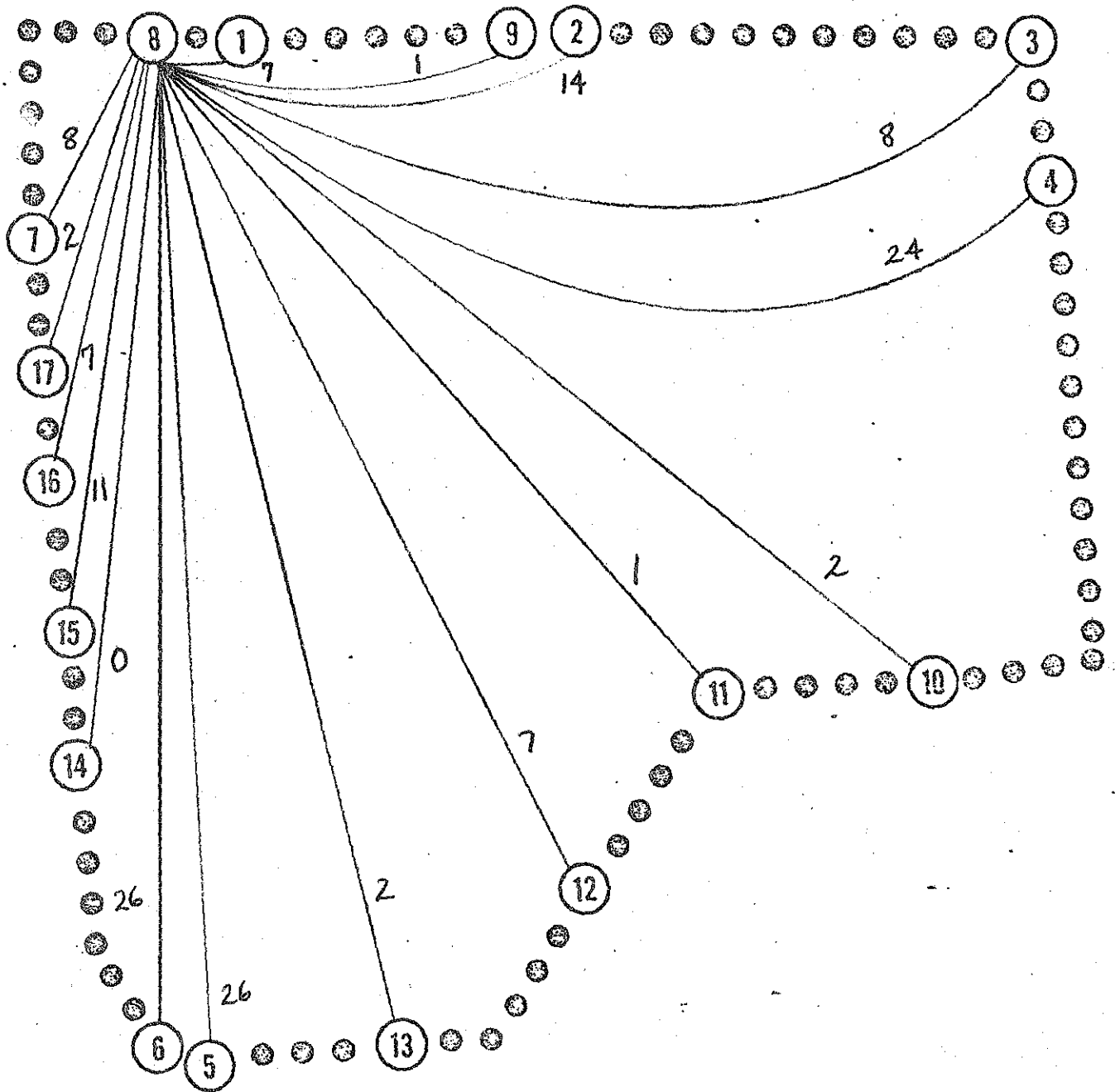
<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	833	42.6	782	93.9	51	6.1
Personal Business	130	6.7	122	93.8	8	6.2
Shopping	445	22.8	438	98.4	7	1.6
Vacation	56	2.9	22	39.3	34	60.7
Other Soc. or Rec.	279	14.3	243	87.1	36	12.9
All Other	211	10.7	201	95.3	10	4.7
TOTAL	1954	100.0	1808	92.5	146	7.5

STATION 8

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	7	4.8
2 M-37 N.	14	9.6
3 US-31 N.	8	5.5
4 M-72 E.	24	16.5
5 M-37 S.	26	17.8
6 US-31 W.	26	17.8
7 M-72 W.	8	5.5
8 Cherry Bend Rd. (Co. Rd. 633)		
9 Peninsula Drive	1	0.6
10 High Lake Rd.	2	1.4
11 Three Mile Rd.	1	0.6
12 Garfield Rd.	7	4.8
13 River Rd.	2	1.4
14 Silver Pines Rd.	0	0
15 Silver Lake Rd.	11	7.5
16 Long Lake Rd.	7	4.8
17 Cedar Run Rd.	2	1.4
TOTAL	146	100.0

STATION 8
 TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND
 ● ● ● CORDON
 (4) STATION NUMBER



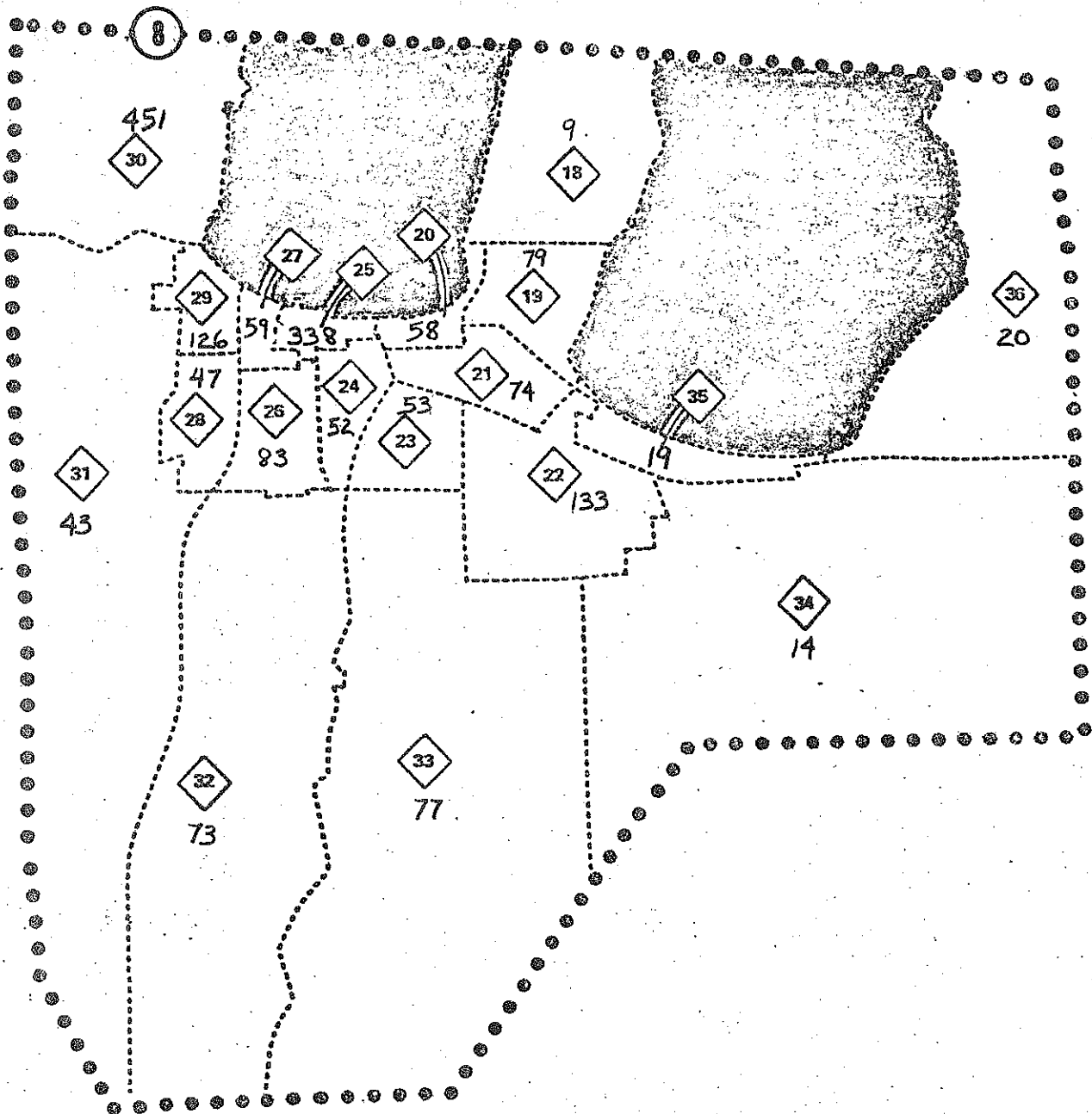
STATION 8

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	9	0.5
19	79	4.4
20	58	3.2
21	74	4.1
22	133	7.3
23	53	2.9
24	52	2.9
25	338	18.7
26	83	4.6
27	59	3.3
28	47	2.6
29	126	7.0
30	451	24.9
31	43	2.4
32	73	4.0
33	77	4.3
34	14	0.8
35	19	1.0
36	20	1.1
TOTAL	<hr/> 1808	<hr/> 100

STATION 8

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 8

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	318	16.3
10-20	879	45.0
20-30	14	0.7
30-40	225	11.5
40-50	344	17.6
50-60	87	4.5
60-80	18	0.9
80-100	10	0.5
100-120	12	0.6
120-150	1	0.1
150-180	2	0.1
180-300	28	1.4
300-420	16	0.8
	<hr/>	<hr/>
TOTAL	1954	100.0

* Longest Trip = 6 Hrs. 50 Min. Average Trip Length = 35 Min.

* Median Trip Length = 10-20 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 9, PENINSULA DRIVE

LOCATION: .2 Miles North of McKinley Road,
Leelanau County.

CLASSIFICATION: County Road

TOTAL TRIPS: 2104

MAJOR VEHICLE TYPE: Passenger Car 1799 (85.5%)

MAJOR TRIP PURPOSE: Work 746 (35.5%)

TRIP DISTRIBUTION: Terminal 1820 (86.5%)
Through 284 (13.5%)

MAJOR THROUGH TRIP ATTRACTOR: Station 5, M-37 S. 48 (16.9%)

MAJOR TERMINAL TRIP ATTRACTOR: Zone 25 306 (16.8%)

LONGEST TRIP: 12 Hrs.

AVERAGE TRIP LENGTH: 23 Min.

STATION 9

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	1799	85.5	1580	87.8	219	12.2
Passenger Car with Trailer	21	1.0	14	66.7	7	33.3
Panel or Pickup	217	10.3	178	82.0	39	18.0
Panel or Pickup with Trailer	4	0.2	4	100.0	0	0.0
Other Single Unit Trucks	54	2.6	40	74.1	14	25.9
Combinations and Trucks with Trailers	9	0.4	4	44.4	5	55.6
TOTAL	2104	100.0	1820	86.5	284	13.5

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	746	35.5	647	86.7	99	13.3
Personal Business	194	9.2	178	91.8	16	8.2
Shopping	413	19.6	385	93.2	28	6.8
Vacation	78	3.7	43	55.1	35	44.9
Other Soc. or Rec.	383	18.2	312	81.5	71	18.5
All Other	290	13.8	255	87.9	35	12.1
TOTAL	2104	100.0	1820	86.5	284	13.5

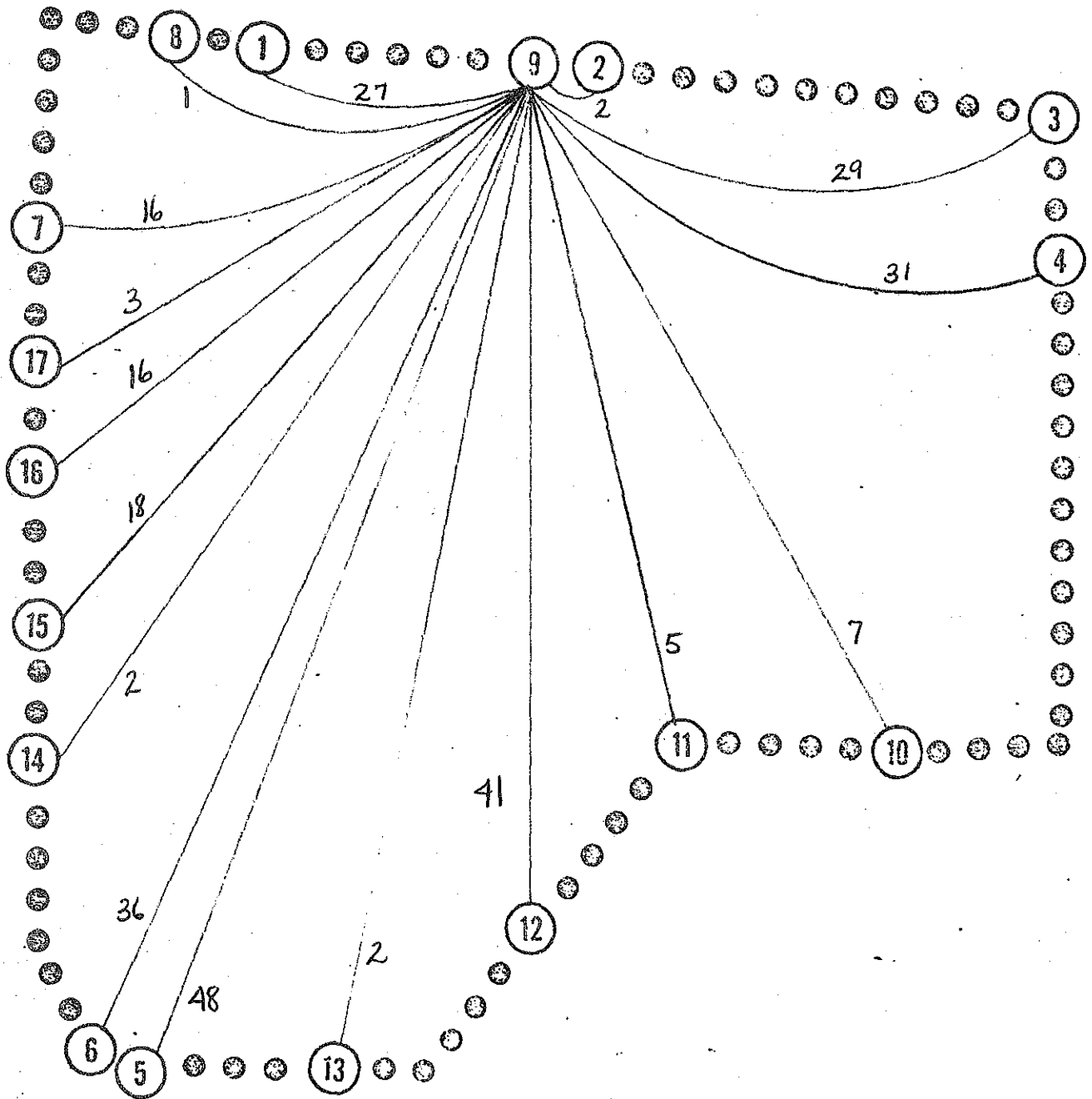
STATION 9

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	27	9.5
2 M-37 N.	2	0.7
3 US-31 N.	29	10.2
4 M-72 E.	31	10.9
5 M-37 S.	48	16.9
6 US-31 W.	36	12.7
7 M-72 W.	16	5.6
8 Cherry Bend Rd. (Co. Rd. 633)	1	0.4
9 Peninsula Drive		
10 High Lake Rd.	7	2.5
11 Three Mile Rd.	5	1.8
12 Garfield Rd.	41	14.4
13 River Rd.	2	0.7
14 Silver Pines Rd.	2	0.7
15 Silver Lake Rd.	18	6.3
16 Long Lake Rd.	16	5.6
17 Cedar Run Rd.	3	1.1
TOTAL	284	100.0

STATION 9

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND

- ● ● CORDON
- ④ STATION NUMBER



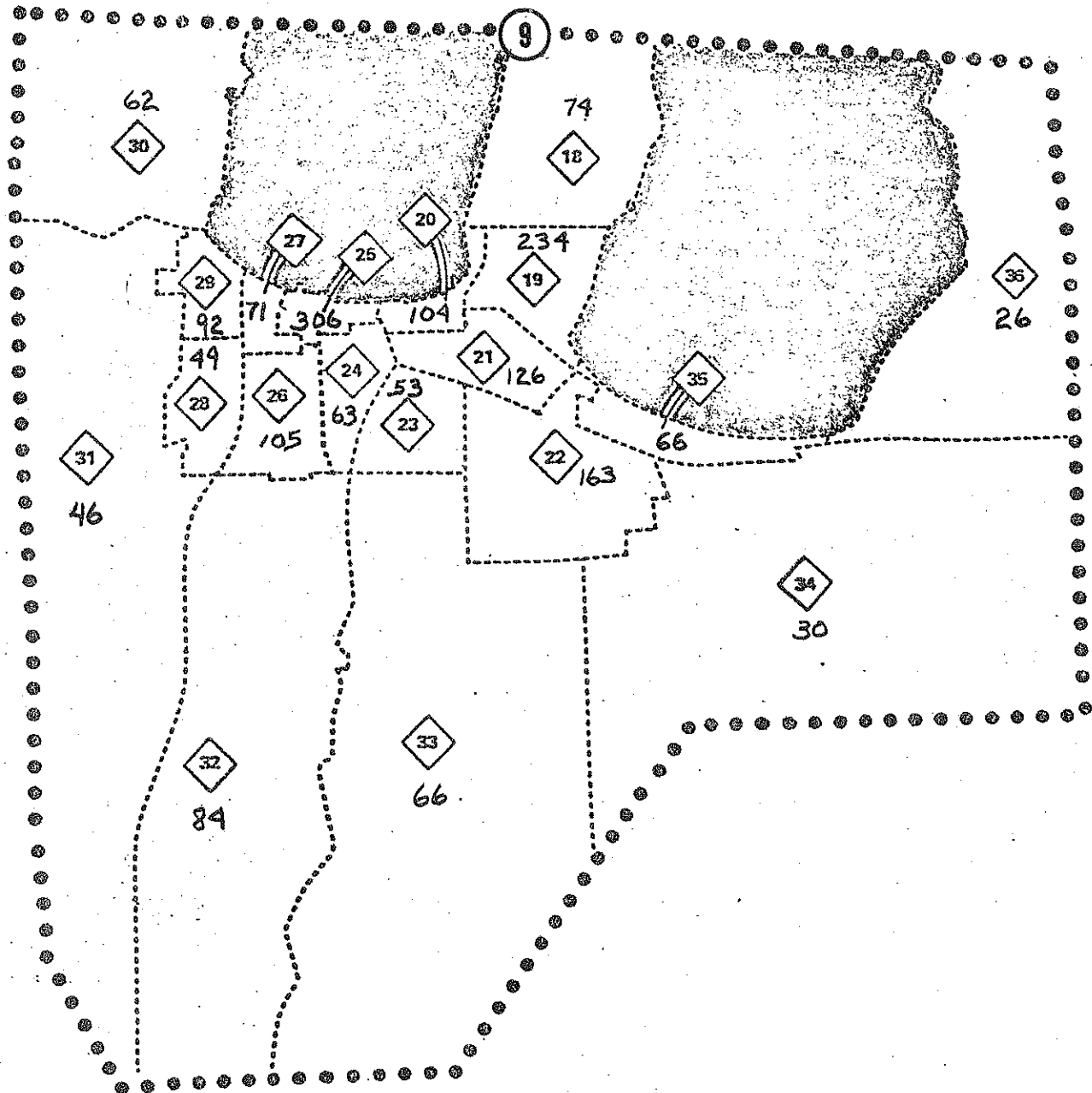
STATION 9

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	74	4.1
19	234	12.9
20	104	5.7
21	126	6.9
22	163	9.0
23	53	2.9
24	63	3.5
25	306	16.8
26	105	5.8
27	71	3.9
28	49	2.7
29	92	5.1
30	62	3.4
31	46	2.5
32	84	4.6
33	66	3.6
34	30	1.6
35	66	3.6
36	26	1.4
TOTAL	<u>1820</u>	<u>100</u>

STATION 9

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 9

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	1348	64.1
10-20	401	19.0
20-30	140	6.6
30-40	53	2.5
40-50	52	2.5
50-60	15	0.7
60-80	6	0.3
80-100	20	1.0
100-120	3	0.1
120-150	9	0.4
150-180	9	0.4
180-300	42	2.0
300-420	4	0.2
420-540	0	0.0
540-660	1	0.1
660-780	1	0.1
TOTAL	2104	100.0

* Longest Trip = 12 Hrs. Average Trip Length = 23 Min.

* Median Trip Length = 1-10 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 10, HIGH LAKE ROAD

<u>LOCATION:</u>	.3 Miles South of Hammond Road, Grand Traverse County.
<u>CLASSIFICATION:</u>	County Road
<u>TOTAL TRIPS:</u>	2873
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 2176 (75.7%)
<u>MAJOR TRIP PURPOSE:</u>	Work 1220 (42.5%)
<u>TRIP DISTRIBUTION:</u>	Terminal 2693 (93.7%) Through 180 (6.3%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 3, US-31 N. 28 (15.6%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 22 456 (16.9%)
<u>LONGEST TRIP:</u>	13 Hrs. 10 Min.
<u>AVERAGE TRIP LENGTH:</u>	37 Min.

STATION 10

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	2176	75.7	2048	94.1	128	5.9
Passenger Car with Trailer	17	0.6	17	100.0	0	0.0
Panel or Pickup	518	18.0	475	91.7	43	8.3
Panel or Pickup with Trailer	19	0.7	19	100.0	0	0.0
Other Single Unit Trucks	122	4.2	114	93.4	8	6.6
Combinations and Trucks with Trailers	21	0.8	20	95.2	1	4.8
TOTAL	2873	100.0	2693	93.7	180	6.3

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	1220	42.5	1161	95.2	59	4.8
Personal Business	124	4.3	118	95.2	6	4.8
Shopping	579	20.2	577	99.7	2	0.3
Vacation	90	3.1	59	65.6	31	34.4
Other Soc. or Rec.	578	20.1	512	88.6	66	11.4
All Other	282	9.8	266	94.3	16	5.7
TOTAL	2873	100.0	2693	93.7	180	6.3

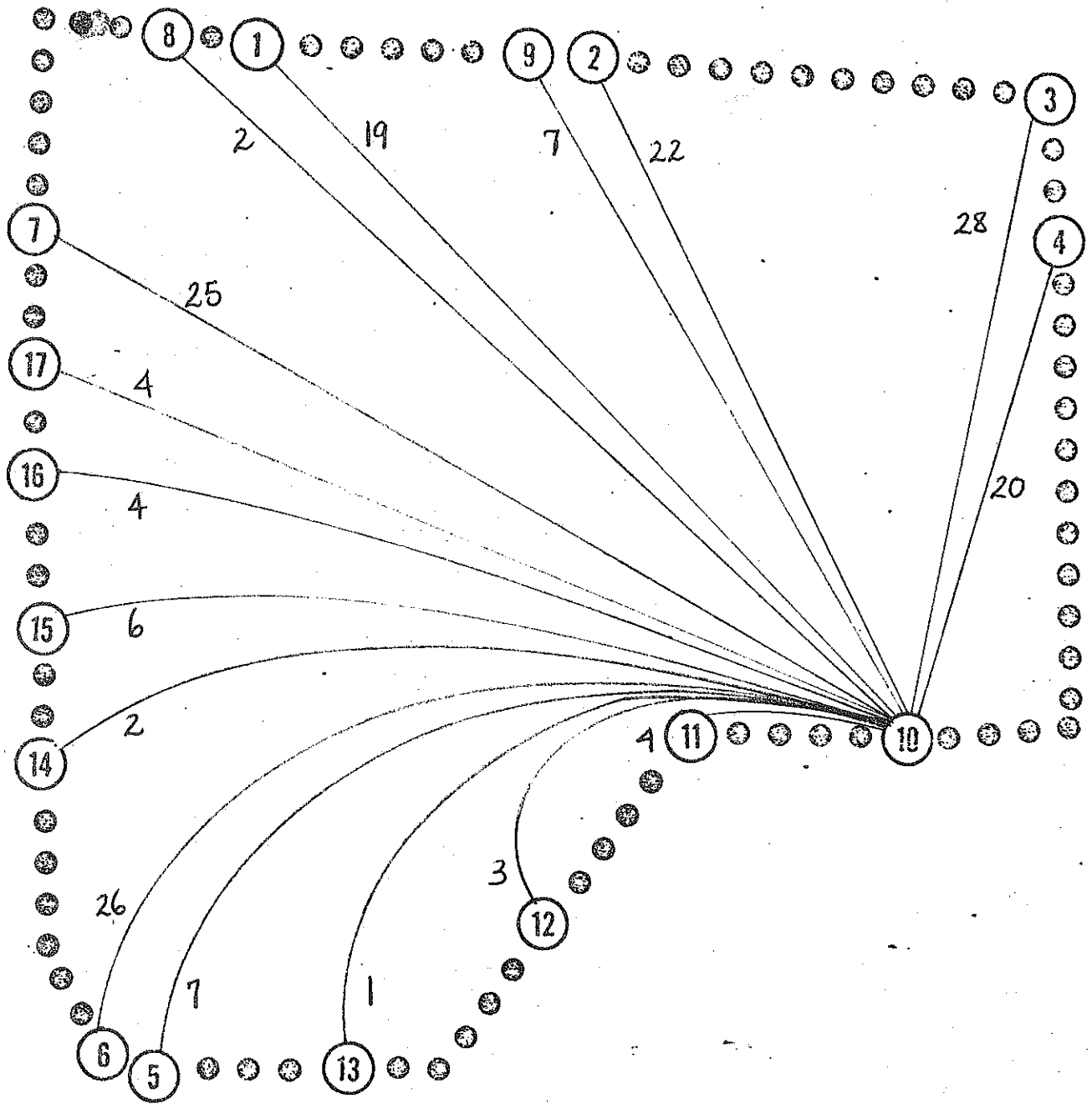
STATION 10

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	19	10.6
2 M-37 N.	22	12.2
3 US-31 N.	28	15.6
4 M-72 E.	20	11.1
5 M-37 S.	7	3.9
6 US-31 W.	26	14.4
7 M-72 W.	25	13.9
8 Cherry Bend Rd. (Co. Rd. 633)	2	1.1
9 Peninsula Drive	7	3.9
10 High Lake Rd.		
11 Three Mile Rd.	4	2.2
12 Garfield Rd.	3	1.7
13 River Rd.	1	0.6
14 Silver Pines Rd.	2	1.1
15 Silver Lake Rd.	6	3.3
16 Long Lake Rd.	4	2.2
17 Cedar Run Rd.	4	2.2
TOTAL	180	100.0

STATION 10

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND



CORDON



STATION NUMBER



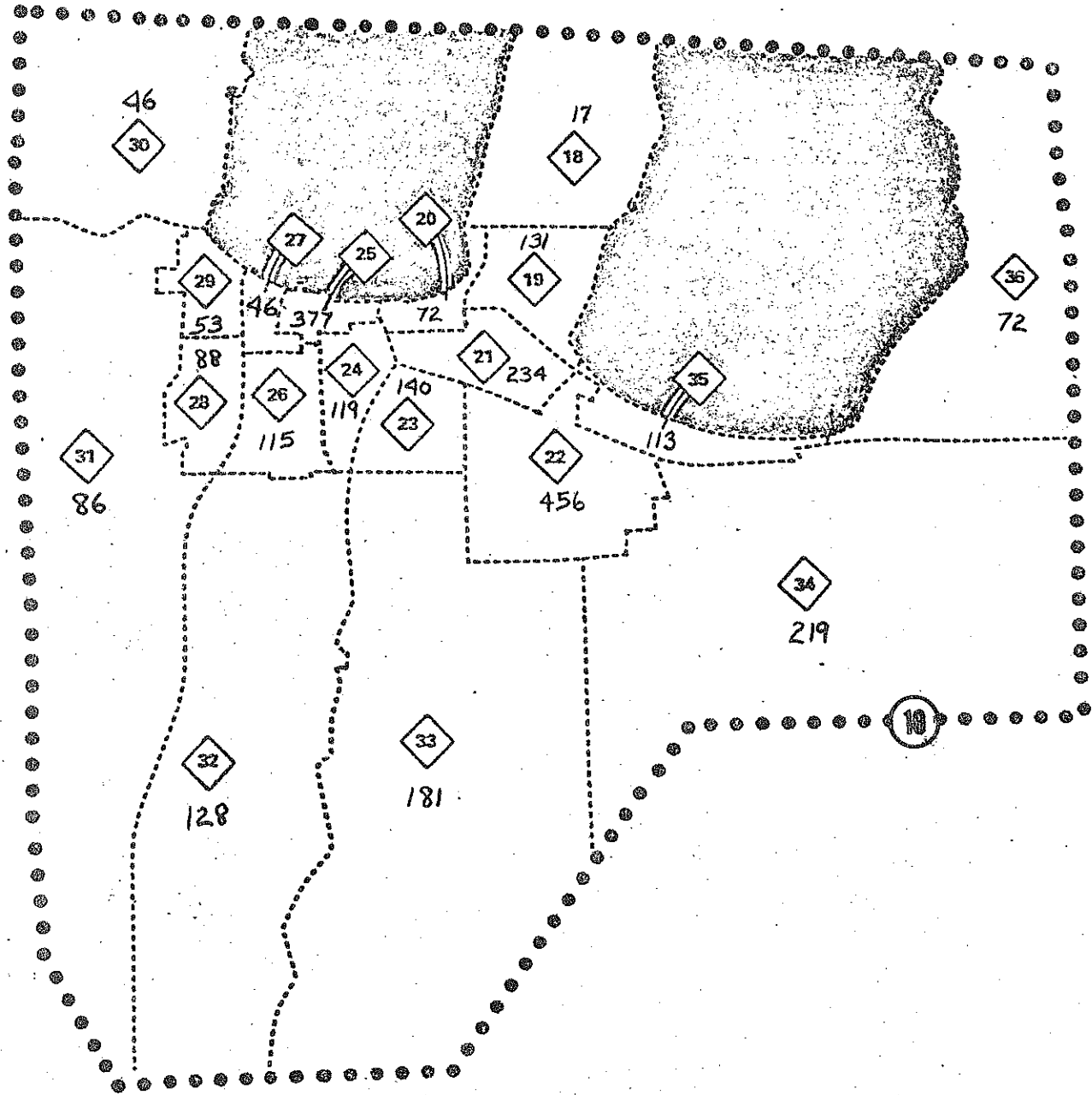
STATION 10

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	17	0.6
19	131	4.9
20	72	2.7
21	234	8.7
22	456	16.9
23	140	5.2
24	119	4.4
25	377	14.0
26	115	4.3
27	46	1.7
28	88	3.3
29	53	2.0
30	46	1.7
31	86	3.2
32	128	4.7
33	181	6.7
34	219	8.1
35	113	4.2
36	72	2.7
TOTAL	<u>2693</u>	<u>100</u>

STATION 10

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- - - ZONE LIMITS
- ◇ INTERNAL ZONES

STATION 10

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	282	9.8
10-20	49	1.7
20-30	1918	66.7
30-40	137	4.8
40-50	206	7.2
50-60	110	3.8
60-80	64	2.2
80-100	23	0.8
100-120	23	0.8
120-150	7	0.2
150-180	19	0.7
180-300	29	1.0
300-420	3	0.1
420-540	1	0.1
540-660	0	0.0
660-780	0	0.0
780-900	2	0.1
TOTAL	2873	100.0

* Longest Trip = 13 Hrs. 10 Min. Average Trip Length = 37 Min.

* Median Trip Length = 20-30 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 11, THREE MILE ROAD

<u>LOCATION:</u>	.3 Miles South of Hammond Road, Grand Traverse County.
<u>CLASSIFICATION:</u>	County Road
<u>TOTAL TRIPS:</u>	983
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 732 (74.5%)
<u>MAJOR TRIP PURPOSE:</u>	Work 410 (41.7%)
<u>TRIP DISTRIBUTION:</u>	Terminal 877 (89.2%) Through 106 (10.8%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 3, US-31 N. 36 (34%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 22 180 (20.5%)
<u>LONGEST TRIP:</u>	6 Hrs. 20 Min.
<u>AVERAGE TRIP LENGTH:</u>	35 Min.

STATION 11

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	732	74.5	667	91.1	65	8.9
Passenger Car with Trailer	5	0.5	4	80.0	1	20.0
Panel or Pickup	201	20.4	169	84.1	32	15.9
Panel or Pickup with Trailer	6	0.6	5	83.3	1	16.7
Other Single Unit Trucks	34	3.5	30	88.2	4	11.8
Combinations and Trucks with Trailers	5	0.5	2	40.0	3	60.0
TOTAL	983	100.0	877	89.2	106	10.8

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	410	41.7	365	89.0	45	11.0
Personal Business	48	4.9	40	83.3	8	16.7
Shopping	214	21.8	205	95.8	9	4.2
Vacation	21	2.2	13	61.9	8	38.1
Other Soc. or Rec.	143	14.5	119	83.2	24	16.8
All Other	147	14.9	135	91.8	12	8.2
TOTAL	983	100.0	877	89.2	106	10.8

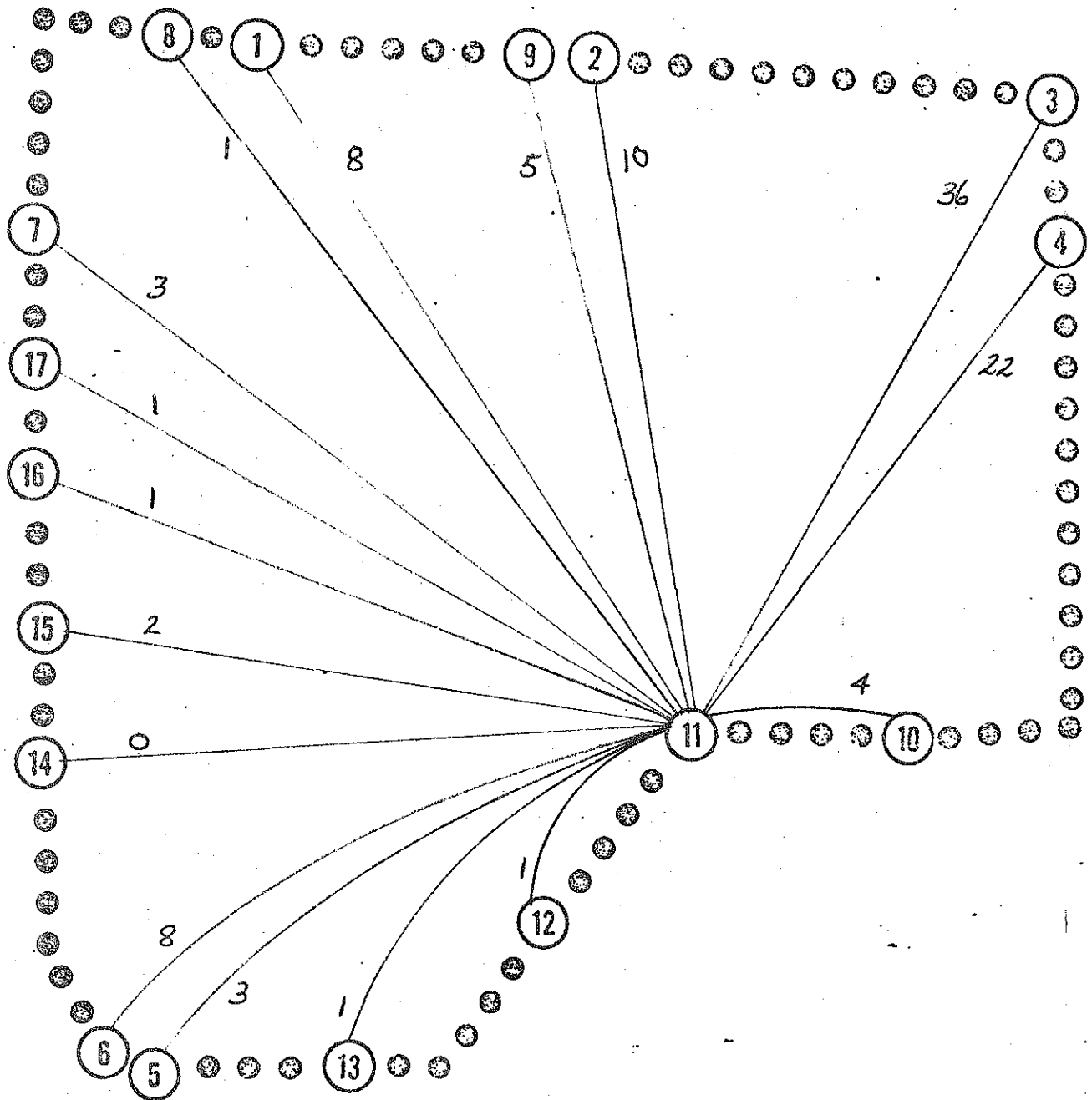
STATION 11

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	8	7.5
2 M-37 N.	10	9.4
3 US-31 N.	36	34.0
4 M-72 E.	22	20.7
5 M-37 S.	3	2.8
6 US-31 W.	8	7.5
7 M-72 W.	3	2.8
8 Cherry Bend Rd. (Co. Rd. 633)	1	1.0
9 Peninsula Drive	5	4.7
10 High Lake Rd.	4	3.7
11 Three Mile Rd.	-----	-----
12 Garfield Rd.	1	1.0
13 River Rd.	1	1.0
14 Silver Pines Rd.	0	0
15 Silver Lake Rd.	2	1.9
16 Long Lake Rd.	1	1.0
17 Cedar Run Rd.	1	1.0
TOTAL	106	100.0

STATION 11

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND
● ● ● CORDON
④ STATION NUMBER

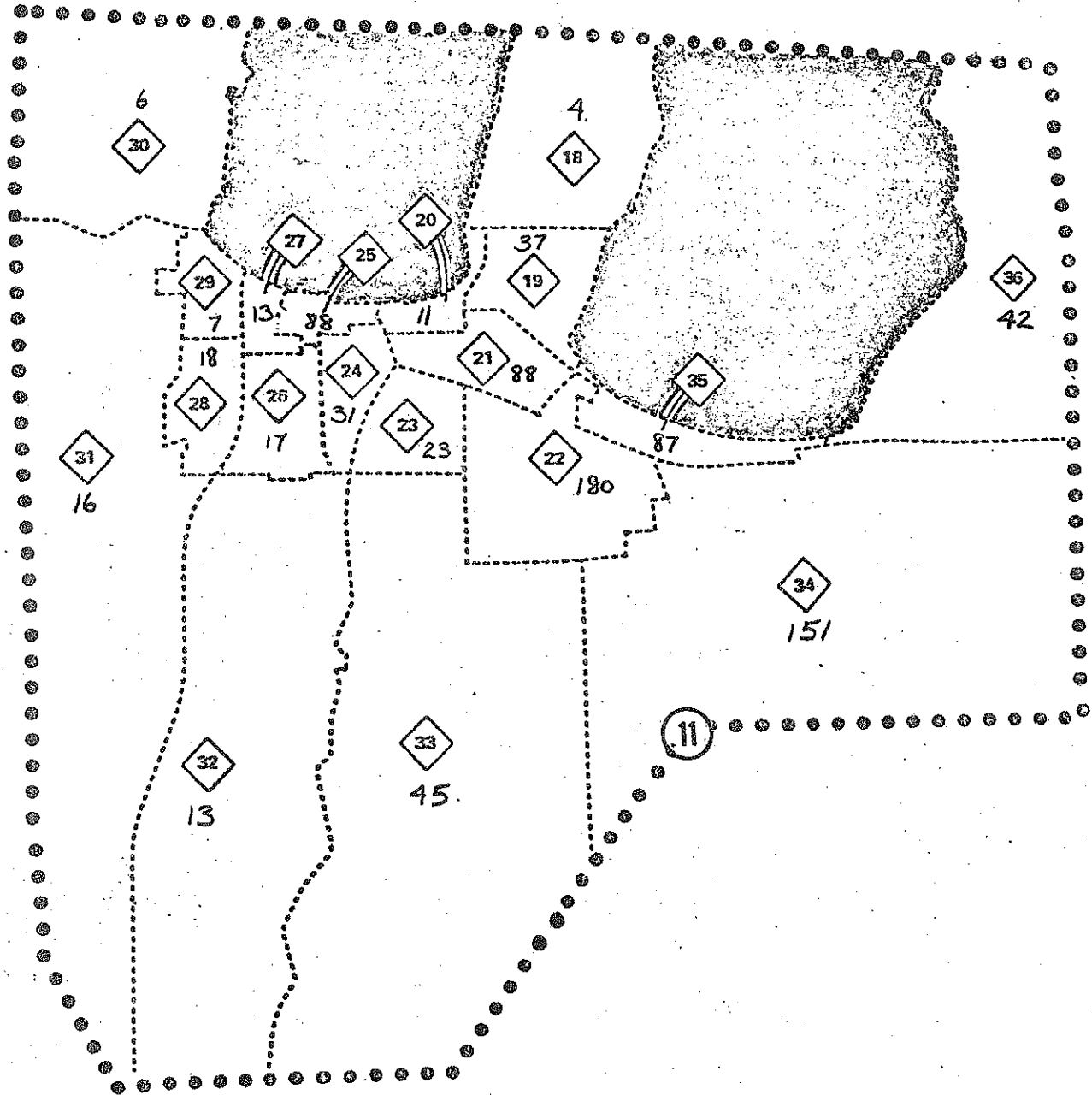
STATION 11

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	4	0.5
19	37	4.2
20	11	1.3
21	88	10.0
22	180	20.5
23	23	2.6
24	31	3.5
25	88	10.0
26	17	2.0
27	13	1.5
28	18	2.1
29	7	0.8
30	6	0.7
31	16	1.8
32	13	1.5
33	45	5.1
34	151	17.2
35	87	9.9
36	42	4.8
TOTAL	<u>877</u>	<u>100</u>

STATION 11

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- CORDON LINE
- ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 11

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	218	22.2
10-20	12	1.2
20-30	550	56.0
30-40	70	7.1
40-50	44	4.5
50-60	22	2.2
60-80	23	2.4
80-100	17	1.7
100-120	4	0.4
120-150	6	0.6
150-180	2	0.2
180-300	11	1.1
300-420	4	0.4
	<hr/>	<hr/>
TOTAL	983	100.0

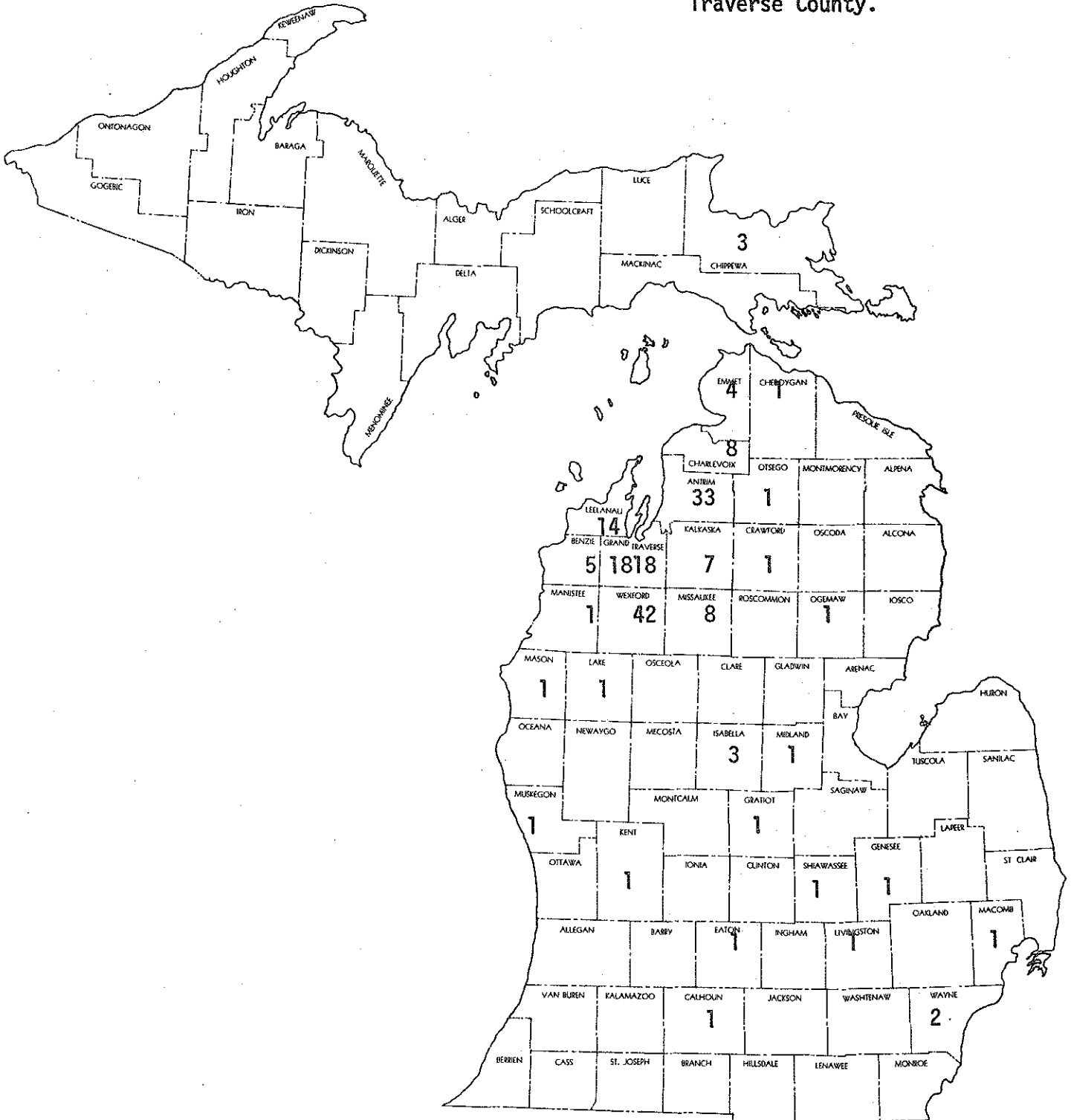
* Longest Trip = 6 Hrs. 20 Min. Average Trip Length = 35 Min.

* Median Trip Length = 20-30.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 11
TRIP END SUMMARY

TOTAL: 983 trips = 1966 trip ends. 838 trips had both their Origin and Destination in Grand Traverse County.



Indiana 1 Ohio 2

STATION 12, GARFIELD ROAD

<u>LOCATION:</u>	.3 Miles Northwest of Potter Road, Grand Traverse County.
<u>CLASSIFICATION:</u>	County Road
<u>TOTAL TRIPS:</u>	2871
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 2232 (77.7%)
<u>MAJOR TRIP PURPOSE:</u>	Work 1171 (40.8%)
<u>TRIP DISTRIBUTION:</u>	Terminal 2570 (89.5%) Through 301 (10.5%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 2, M-37 N. 51 (17%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 450 (17.5%)
<u>LONGEST TRIP:</u>	13 Hrs. 10 Min.
<u>AVERAGE TRIP LENGTH:</u>	50 Min.

STATION 12

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	2232	77.7	2017	90.4	215	9.6
Passenger Car with Trailer	31	1.1	19	61.3	12	38.7
Panel or Pickup	496	17.3	436	87.9	60	12.1
Panel or Pickup with Trailer	10	0.3	8	80.0	2	20.0
Other Single Unit Trucks	88	3.1	78	88.6	10	11.4
Combinations and Trucks with Trailers	14	0.5	12	85.7	2	14.3
TOTAL	2871	100.0	2570	89.5	301	10.5

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	1171	40.8	1086	92.7	85	7.3
Personal Business	210	7.3	185	88.1	25	11.9
Shopping	583	20.3	560	96.1	23	3.9
Vacation	166	5.8	104	62.7	62	37.3
Other Soc. or Rec.	419	14.6	326	77.8	93	22.2
All Other	322	11.2	309	96.0	13	4.0
TOTAL	2871	100.0	2570	89.5	301	10.5

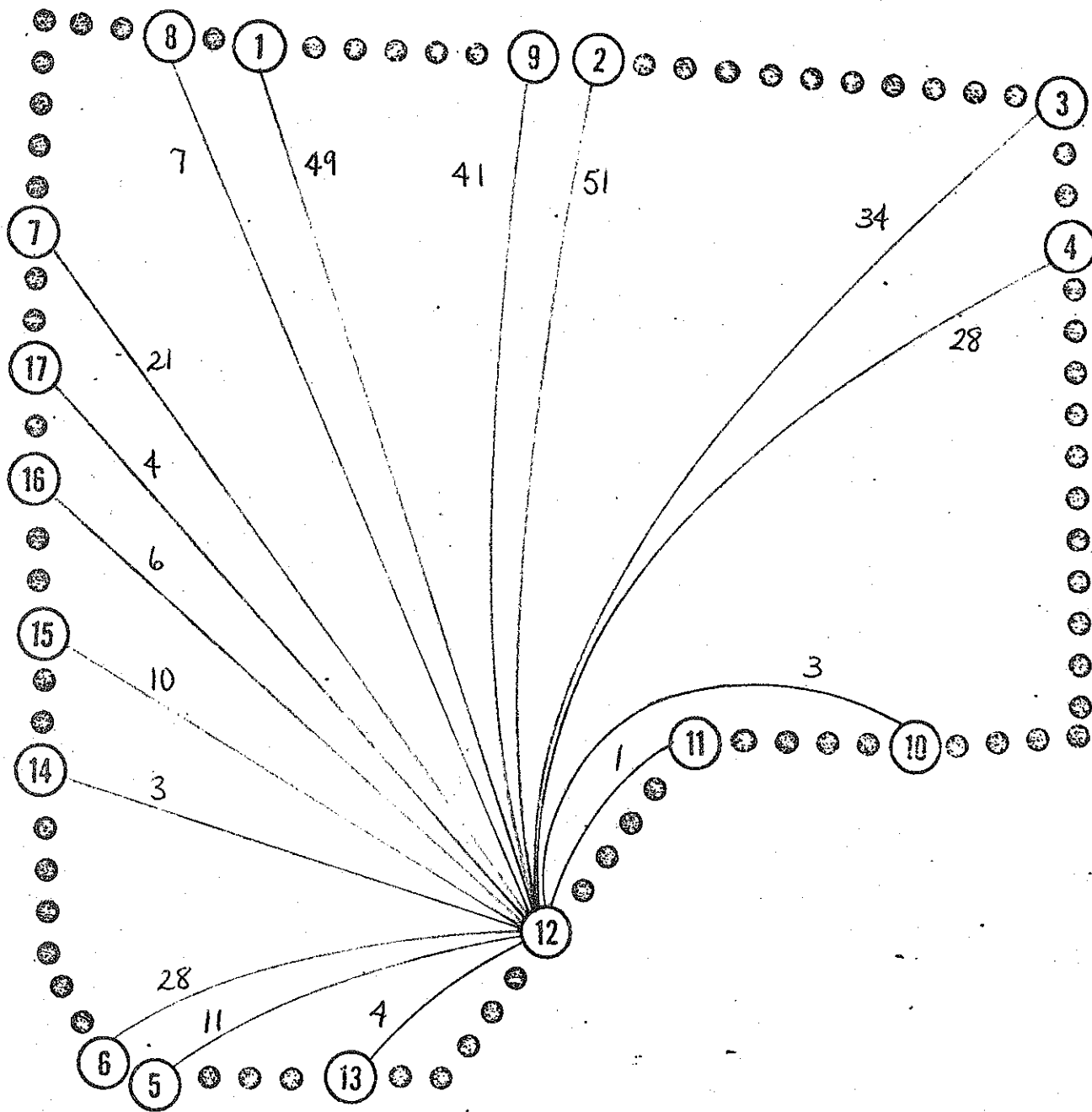
STATION 12

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	49	16.3
2 M-37 N.	51	17.0
3 US-31 N.	34	11.3
4 M-72 E.	28	9.3
5 M-37 S.	11	3.7
6 US-31 W.	28	9.3
7 M-72 W.	21	7.0
8 Cherry Bend Rd. (Co. Rd. 633)	7	2.3
9 Peninsula Drive	41	13.6
10 High Lake Rd.	3	1.0
11 Three Mile Rd.	1	0.3
12 Garfield Rd.		
13 River Rd.	4	1.3
14 Silver Pines Rd.	3	1.0
15 Silver Lake Rd.	10	3.3
16 Long Lake Rd.	6	2.0
17 Cedar Run Rd.	4	1.3
TOTAL	301	100.0

STATION 12

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND



CORDON



STATION NUMBER



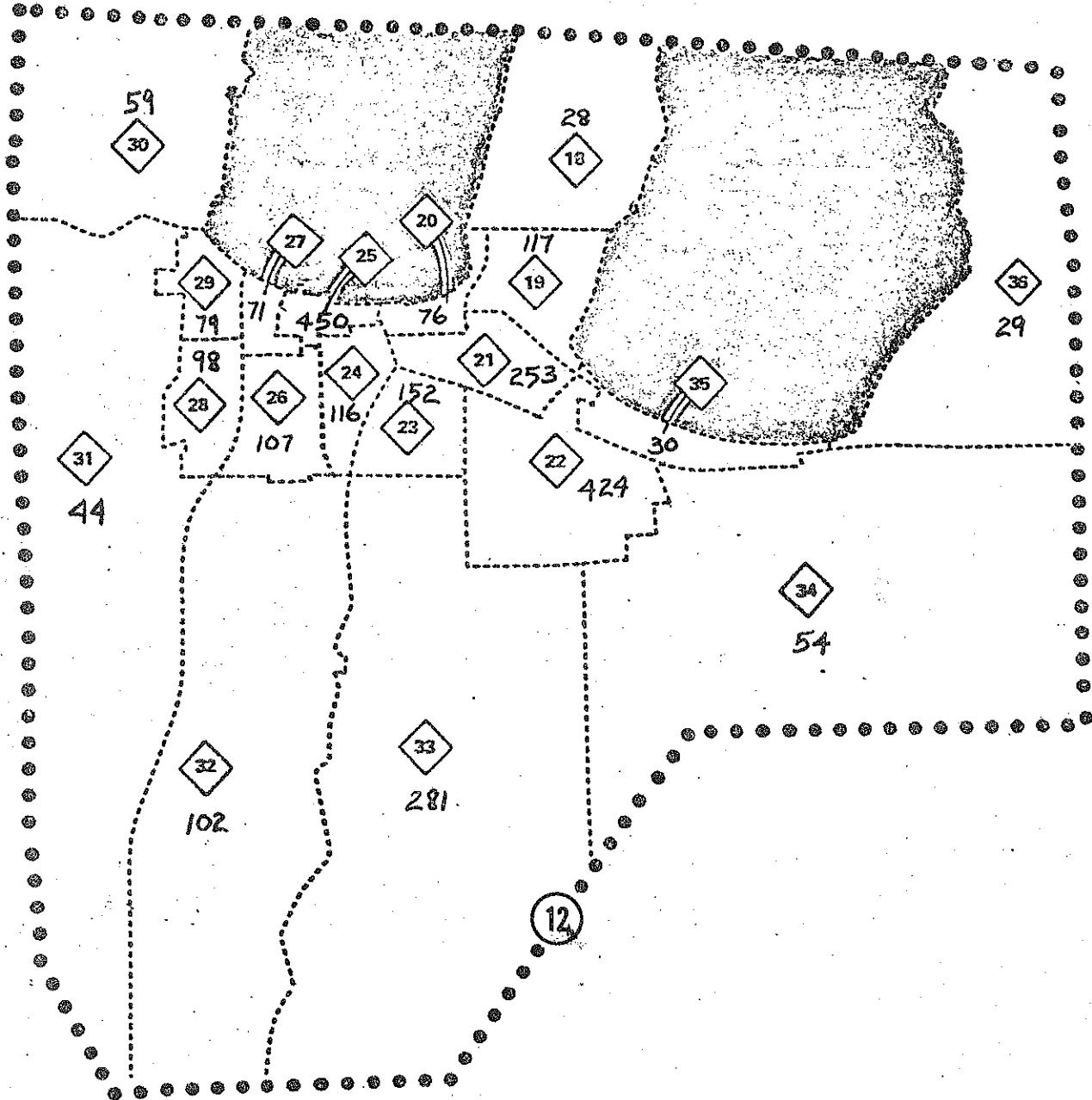
STATION 12

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	28	1.1
19	117	4.5
20	76	3.0
21	253	9.8
22	424	16.5
23	152	5.9
24	116	4.5
25	450	17.5
26	107	4.2
27	71	2.8
28	98	3.8
29	79	3.1
30	59	2.3
31	44	1.7
32	102	4.0
33	281	10.9
34	54	2.1
35	30	1.2
36	29	1.1
TOTAL	<u>2570</u>	<u>100</u>

STATION 12

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- • • CORDON LINE
- - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 12

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
	95	3.3
01-10		5.0
10-20	143	
20-30	1862	64.8
30-40	129	4.5
40-50	50	1.7
50-60	114	3.9
60-80	219	7.6
80-100	74	2.6
100-120	22	0.8
120-150	19	0.7
150-180	8	0.3
180-300	111	3.9
300-420	18	0.6
420-540	2	0.1
540-660	0	0.0
660-780	0	0.0
780-900	5	0.2
	<hr/>	<hr/>
TOTAL	2871	100.0

* Longest Trip = 13 Hrs. 10 Min. Average Trip Length = 50 Min.

* Median Trip Length = 20-30 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 13, RIVER ROAD

LOCATION: .8 Miles Southeast of River and Keystone Junction, Grand Traverse County.

CLASSIFICATION: County Road

TOTAL TRIPS: 1101

MAJOR VEHICLE TYPE: Passenger Car 829 (75.3%)

MAJOR TRIP PURPOSE: Work 514 (46.7%)

TRIP DISTRIBUTION: Terminal 872 (79.2%)
Through 229 (20.8%)

MAJOR THROUGH TRIP ATTRACTOR: Station 6, US-31 W. 144 (62.9%)

MAJOR TERMINAL TRIP ATTRACTOR: Zone 32 188 (21.6%)

LONGEST TRIP: 5 Hrs. 50 Min.

AVERAGE TRIP LENGTH: 31 Min.

STATION 13

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	829	75.3	646	77.9	183	22.1
Passenger Car with Trailer	8	0.7	3	37.5	5	62.5
Panel or Pickup	171	15.5	137	80.1	34	19.9
Panel or Pickup with Trailer	13	1.2	12	92.3	1	7.7
Other Single Unit Trucks	79	7.2	74	93.7	5	6.3
Combinations and Trucks with Trailers	1	0.1	0	0.0	1	100.0
TOTAL	1101	100.0	872	79.2	229	20.8

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	514	46.7	438	85.2	76	14.8
Personal Business	116	10.5	95	81.9	21	18.1
Shopping	139	12.6	121	87.1	18	12.9
Vacation	30	2.7	10	33.3	20	66.7
Other Soc. or Rec.	211	19.2	132	62.6	79	37.4
All Other	91	8.3	76	83.5	15	16.5
TOTAL	1101	100.0	872	79.2	229	20.8

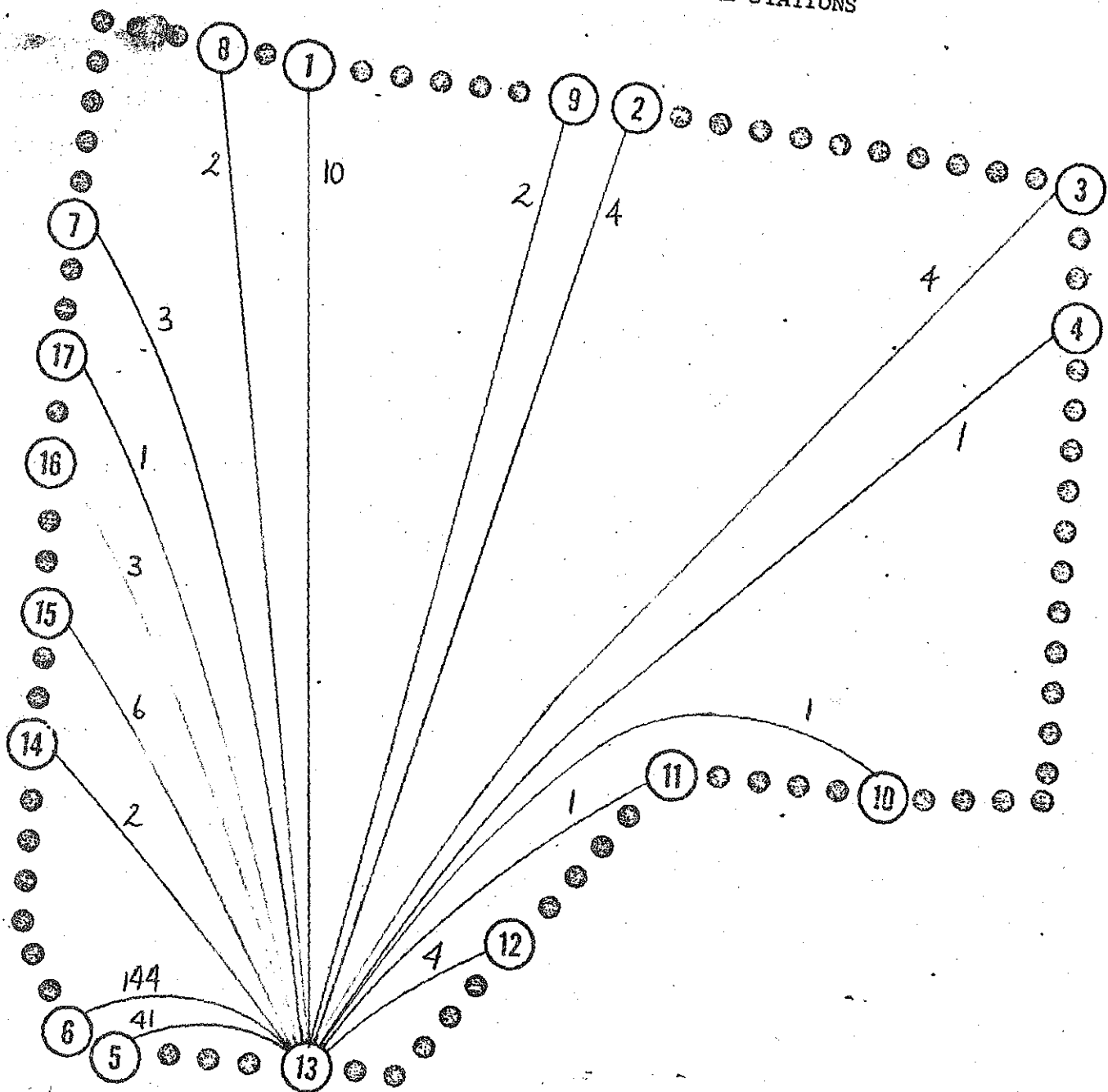
STATION 13

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	10	4.4
2 M-37 N.	4	1.7
3 US-31 N.	4	1.7
4 M-72 E.	1	0.4
5 M-37 S.	41	17.9
6 US-31 W.	144	62.9
7 M-72 W.	3	1.3
8 Cherry Bend Rd. (Co. Rd. 633)	2	0.9
9 Peninsula Drive	2	0.9
10 High Lake Rd.	1	0.4
11 Three Mile Rd.	1	0.4
12 Garfield Rd.	4	1.7
13 River Rd.		
14 Silver Pines Rd.	2	0.9
15 Silver Lake Rd.	6	2.7
16 Long Lake Rd.	3	1.4
17 Cedar Run Rd.	1	0.4
TOTAL	229	100.0

STATION 13

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND
● CORDON
④ STATION NUMBER



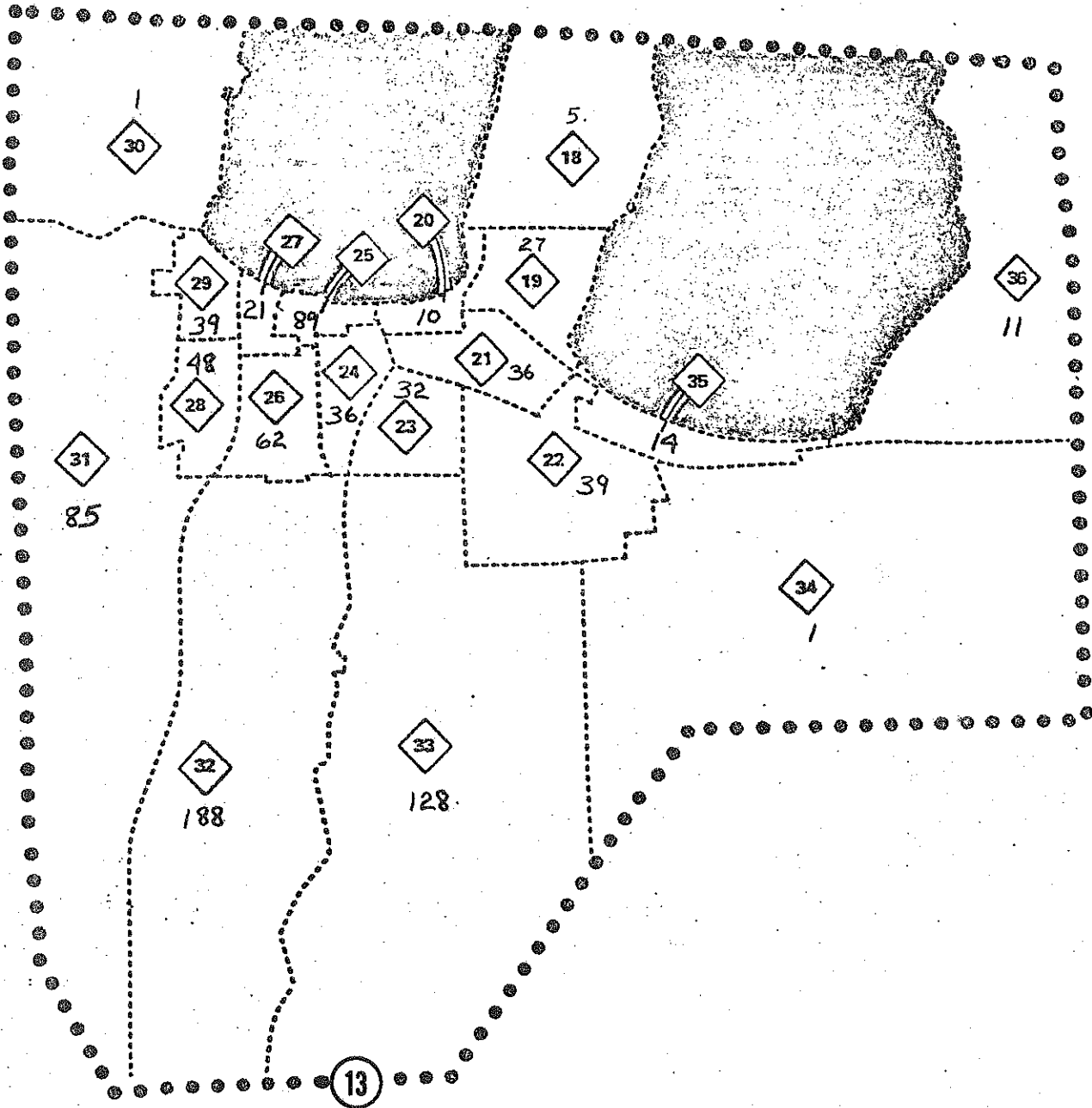
STATION 13

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	5	0.6
19	27	3.1
20	10	1.1
21	36	4.1
22	39	4.5
23	32	3.7
24	36	4.1
25	89	10.2
26	62	7.1
27	21	2.4
28	48	5.5
29	39	4.5
30	1	0.1
31	85	9.7
32	188	21.6
33	128	14.7
34	1	0.1
35	14	1.6
36	11	1.3
TOTAL	<u>872</u>	<u>100</u>

STATION 13

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 13

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	180	16.4
10-20	168	15.3
20-30	633	57.5
30-40	20	1.8
40-50	28	2.5
50-60	30	2.7
60-80	17	1.5
80-100	6	0.5
100-120	3	0.3
120-150	2	0.2
150-180	4	0.4
180-300	8	0.7
300-420	2	0.2
TOTAL	1101	100.0

* Longest Trip = 5 Hrs. 50 Min. Average Trip Length = 31 Min.

* Median Trip Length = 20-30 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 14, SILVER PINES ROAD

<u>LOCATION:</u>	.3 Miles East of Silver Lake Road, Grand Traverse County.
<u>CLASSIFICATION:</u>	County Road
<u>TOTAL TRIPS:</u>	829
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 618 (74.5%)
<u>MAJOR TRIP PURPOSE:</u>	Work 397 (47.9%)
<u>TRIP DISTRIBUTION:</u>	Terminal 773 (93.2%) Through 56 (6.8%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 5, M-37 S. 20 (35.7%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 32 172 (22.3%)
<u>LONGEST TRIP:</u>	6 Hrs. 20 Min.
<u>AVERAGE TRIP LENGTH:</u>	23 Min.

STATION 14

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	618	74.5	572	92.6	46	7.4
Passenger Car with Trailer	11	1.3	10	90.9	1	9.1
Panel or Pickup	160	19.3	155	96.9	5	3.1
Panel or Pickup with Trailer	7	0.9	5	71.4	2	28.6
Other Single Unit Trucks	27	3.3	26	96.3	1	3.7
Combinations and Trucks with Trailers	6	0.7	5	83.3	1	16.7
TOTAL	829	100.0	773	93.2	56	6.8

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	397	47.9	380	95.7	17	4.3
Personal Business	44	5.3	41	93.2	3	6.8
Shopping	135	16.3	130	96.3	5	3.7
Vacation	11	1.3	5	45.5	6	54.5
Other Soc. or Rec.	142	17.1	126	88.7	16	11.3
All Other	100	12.1	91	91.0	9	9.0
TOTAL	829	100.0	773	93.2	56	6.8

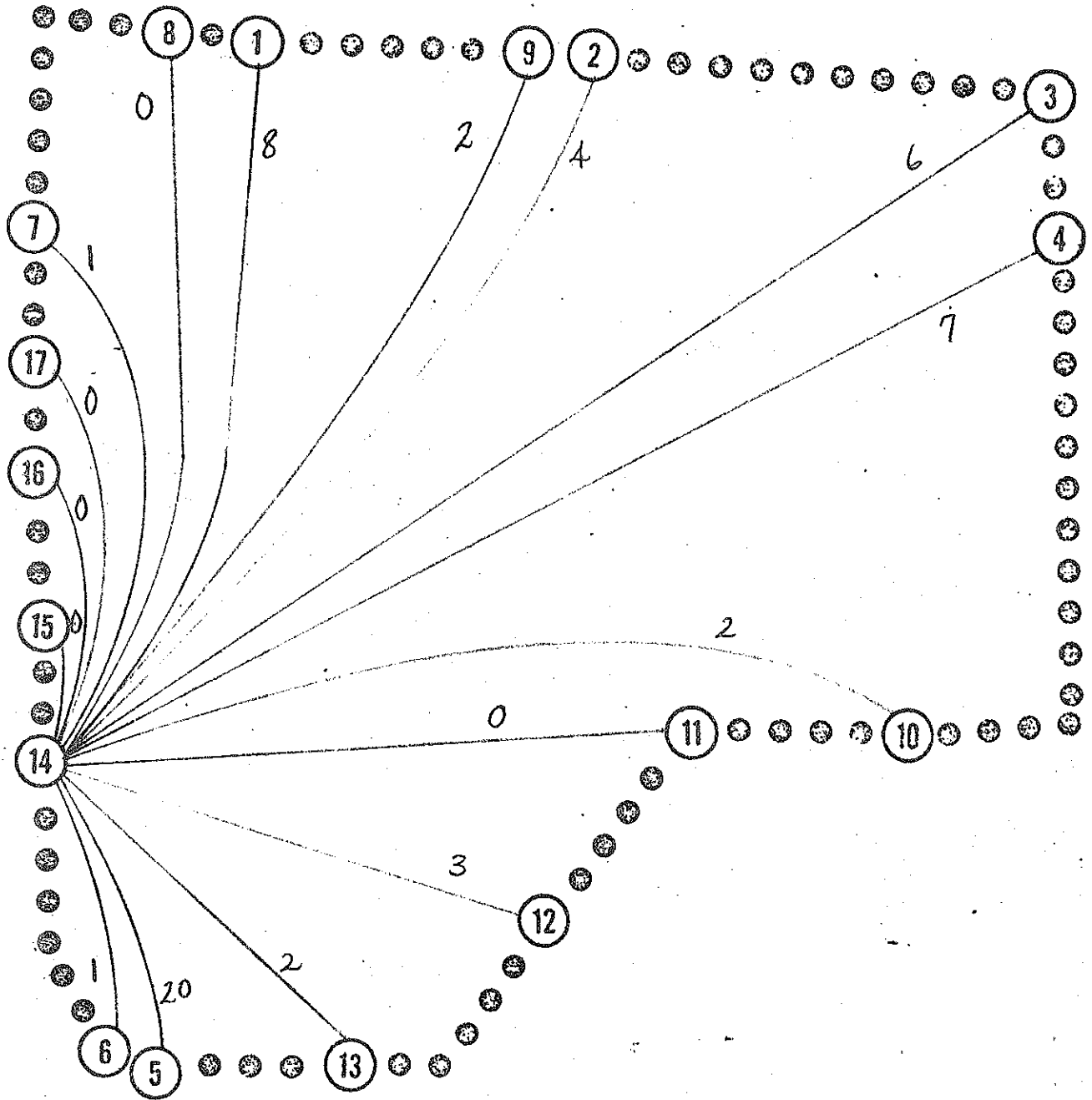
STATION 14

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	8	14.2
2 M-37 N.	4	7.1
3 US-31 N.	6	10.7
4 M-72 E.	7	12.5
5 M-37 S.	20	35.7
6 US-31 W.	1	1.8
7 M-72 W.	1	1.8
8 Cherry Bend Rd. (Co. Rd. 633)	0	0
9 Peninsula Drive	2	3.6
10 High Lake Rd.	2	3.6
11 Three Mile Rd.	0	0
12 Garfield Rd.	3	5.4
13 River Rd.	2	3.6
14 Silver Pines Rd.		
15 Silver Lake Rd.	0	0
16 Long Lake Rd.	0	0
17 Cedar Run Rd.	0	0
TOTAL	56	100.0

STATION 14

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND
● ● ● CORDON
④ STATION NUMBER

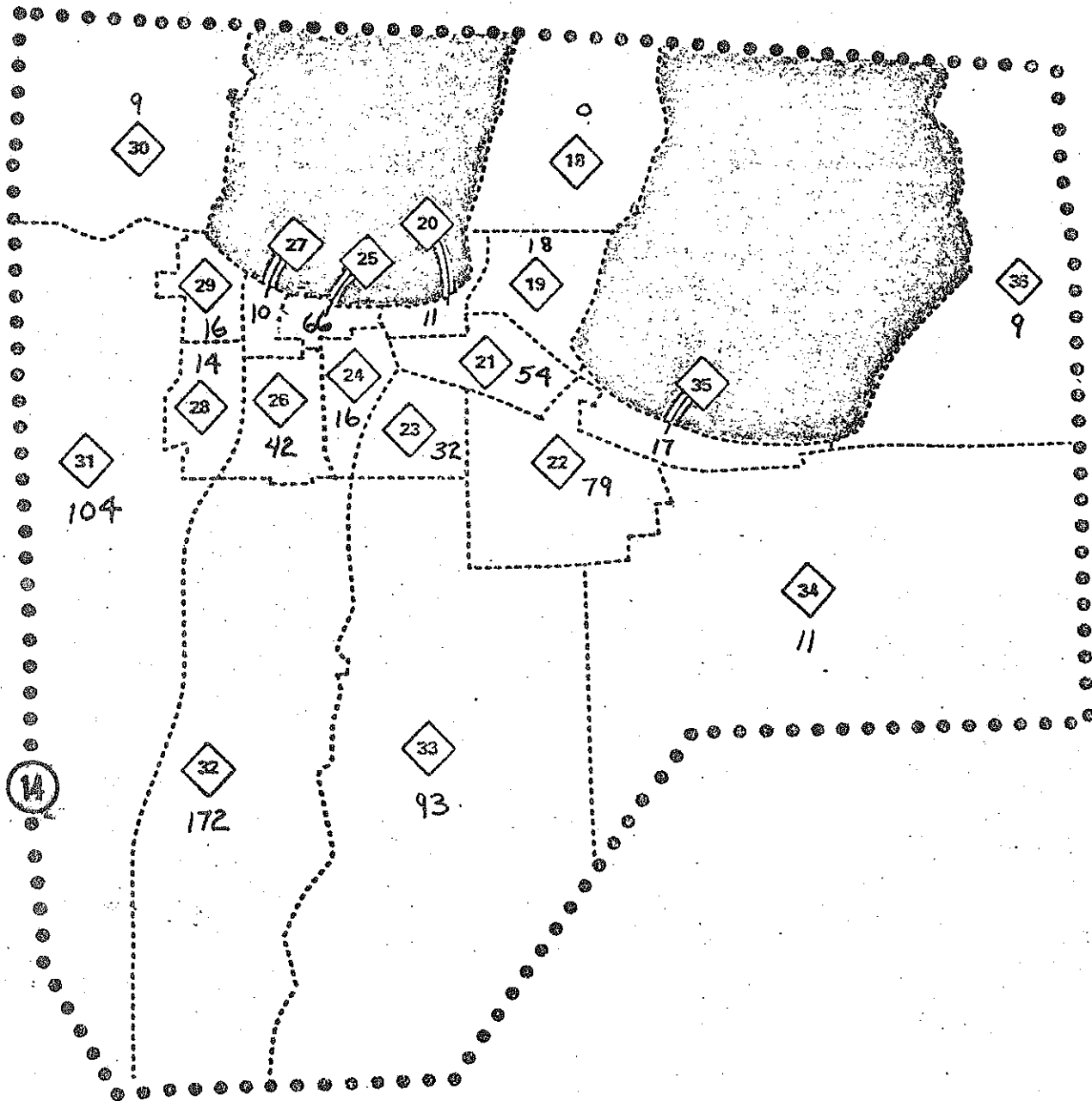
STATION 14

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	0	0
19	18	2.3
20	11	1.4
21	54	7.0
22	79	10.2
23	32	4.1
24	16	2.1
25	66	8.5
26	42	5.4
27	10	1.3
28	14	1.8
29	16	2.1
30	9	1.2
31	104	13.5
32	172	22.3
33	93	12.0
34	11	1.4
35	17	2.2
36	9	1.2
TOTAL	<u>773</u>	<u>100</u>

STATION 14

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 14

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	352	42.5
10-20	352	42.5
20-30	40	4.8
30-40	38	4.6
40-50	16	1.9
50-60	7	0.8
60-80	6	0.7
80-100	1	0.1
100-120	1	0.1
120-150	3	0.4
150-180	2	0.3
180-300	9	1.1
300-420	2	0.2
	<hr/>	<hr/>
TOTAL	829	100.0

* Longest Trip Length = 6 Hrs. 20 Min. Average Trip Length = 23 Min.

* Median Trip Length = 10-20 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 15, SILVER LAKE ROAD

LOCATION: .7 Miles Northeast of Zimmerman Road,
Grand Traverse County.

CLASSIFICATION: County Road

TOTAL TRIPS: 5145

MAJOR VEHICLE TYPE: Passenger Car 4324 (84%)

MAJOR TRIP PURPOSE: Work 1971 (38.3%)

TRIP DISTRIBUTION: Terminal 4790 (93.1%)
Through 355 (6.9%)

MAJOR THROUGH TRIP ATTRACTOR: Station 1, M-22 N. 82 (23.1%)

MAJOR TERMINAL TRIP ATTRACTOR: Zone 25 1178 (24.6%)

LONGEST TRIP: 8 Hrs.

AVERAGE TRIP LENGTH: 29 Min.

STATION 15

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	4324	84.0	4048	93.6	276	6.4
Passenger Car with Trailer	17	0.3	10	58.8	7	41.2
Panel or Pickup	668	13.0	622	93.1	46	6.9
Panel or Pickup with Trailer	9	0.2	7	77.8	2	22.2
Other Single Unit Trucks	114	2.2	91	79.8	23	20.2
Combinations and Trucks with Trailers	13	0.3	12	92.3	1	7.7
TOTAL	5145	100.0	4790	93.1	355	6.9

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	1971	38.3	1875	95.1	96	4.9
Personal Business	285	5.5	271	95.1	14	4.9
Shopping	1102	21.4	1074	97.5	28	2.5
Vacation	139	2.7	68	48.9	71	51.1
Other Soc. or Rec.	996	19.4	887	89.1	109	10.9
All Other	652	12.7	615	94.3	37	5.7
TOTAL	5145	100.0	4790	93.1	355	6.9

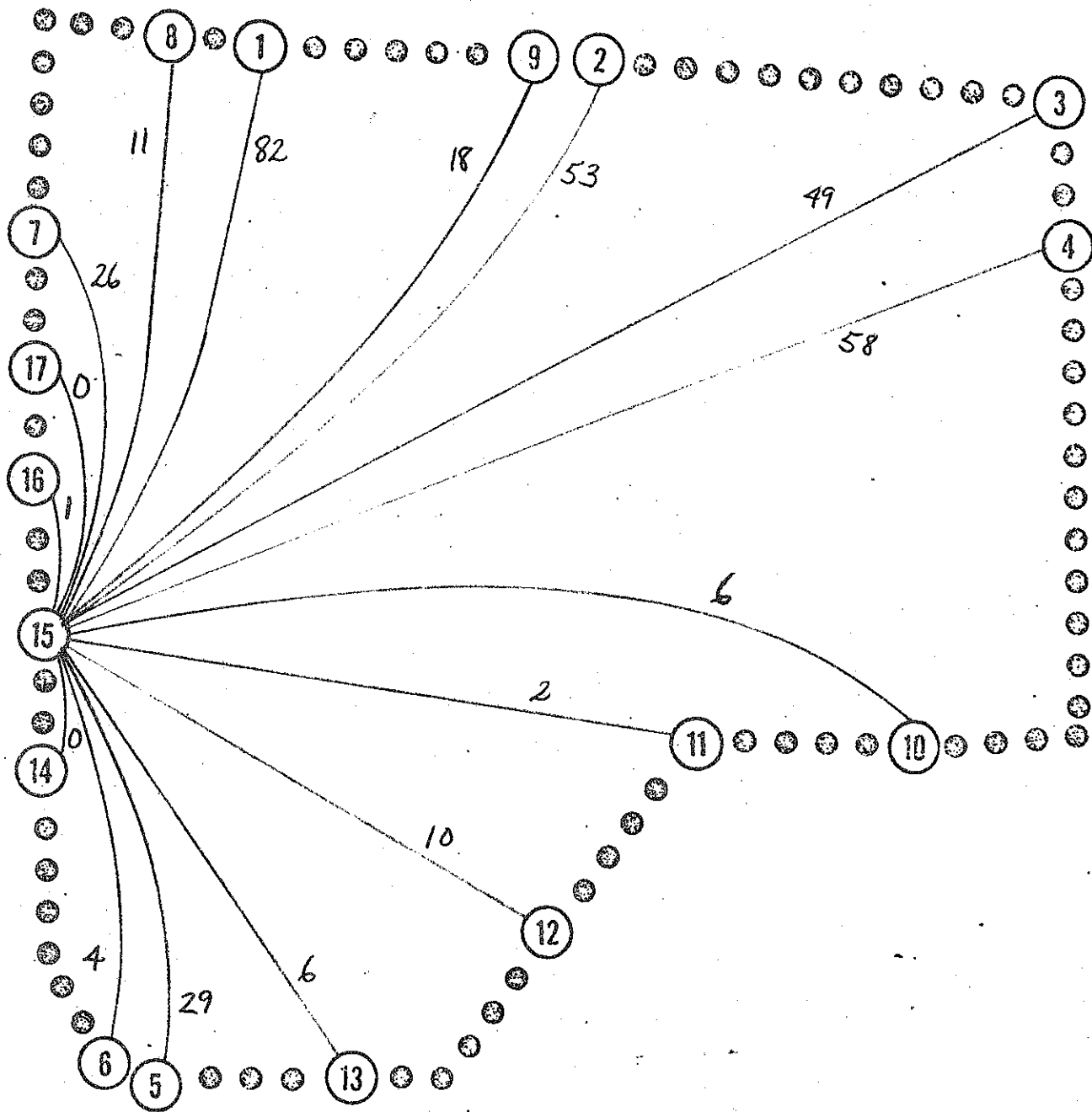
STATION 15

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	82	23.1
2 M-37 N.	53	14.9
3 US-31 N.	49	13.8
4 M-72 E.	58	16.3
5 M-37 S.	29	8.2
6 US-31 W.	4	1.1
7 M-72 W.	26	7.3
8 Cherry Bend Rd. (Co. Rd. 633)	11	3.1
9 Peninsula Drive	18	5.1
10 High Lake Rd.	6	1.7
11 Three Mile Rd.	2	0.6
12 Garfield Rd.	10	2.8
13 River Rd.	6	1.7
14 Silver Pines Rd.	0	0
15 Silver Lake Rd.	1	0.3
16 Long Lake Rd.	0	0
17 Cedar Run Rd.	0	0
TOTAL	355	100.0

STATION 15

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND

- ● ● CORDON
- ④ STATION NUMBER



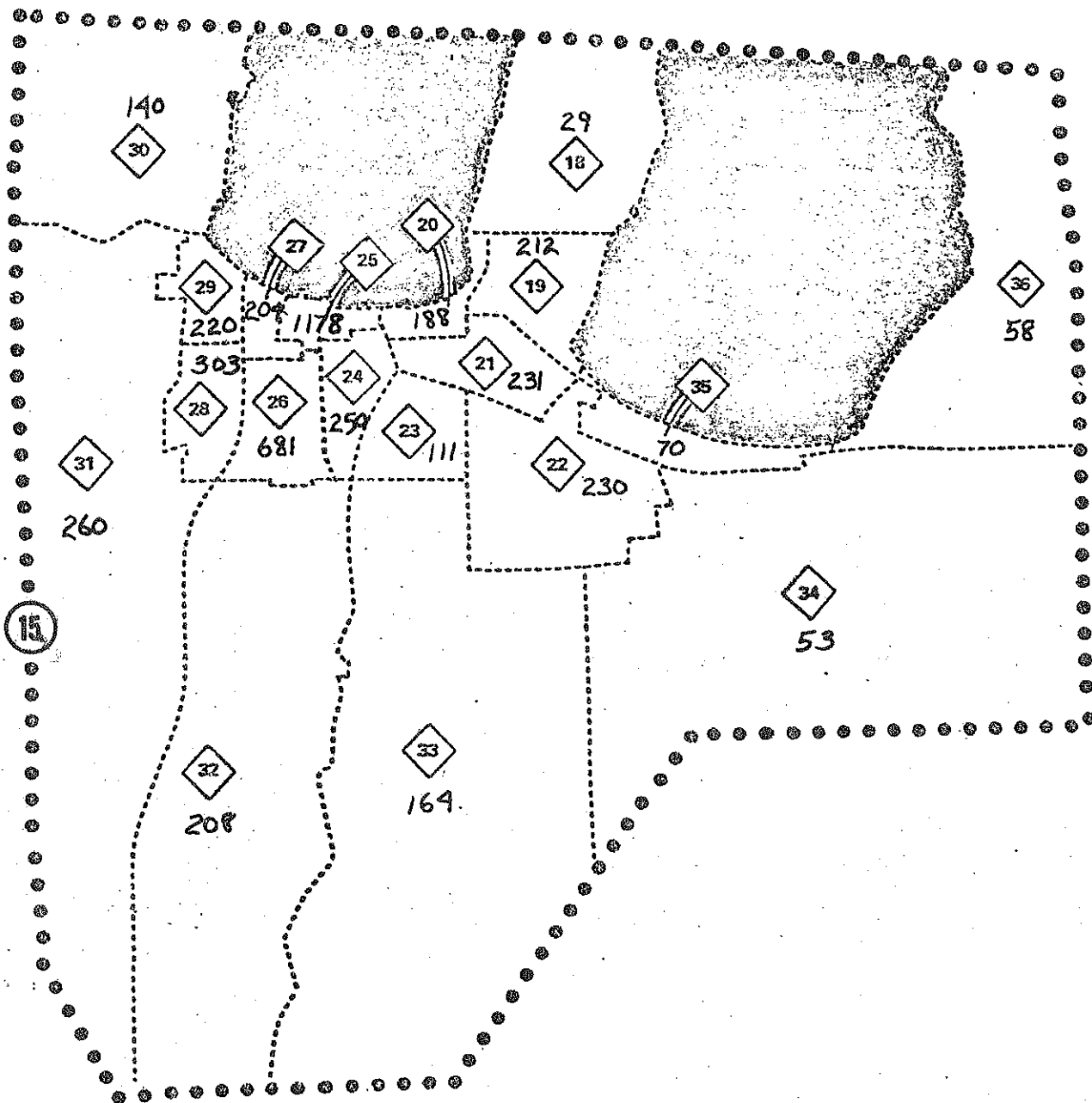
STATION 15

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	29	0.6
19	212	4.5
20	188	3.9
21	231	4.8
22	230	4.8
23	111	2.3
24	250	5.2
25	1178	24.6
26	681	14.2
27	204	4.3
28	303	6.3
29	220	4.6
30	140	2.9
31	260	5.4
32	208	4.4
33	164	3.4
34	53	1.1
35	70	1.5
36	58	1.2
TOTAL	<u>4790</u>	<u>100</u>

STATION 15

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- - - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 15

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	588	11.4
10-20	3447	67.0
20-30	137	2.6
30-40	377	7.3
40-50	173	3.4
50-60	171	3.3
60-80	31	0.6
80-100	96	1.9
100-120	24	0.5
120-150	14	0.3
150-180	23	0.4
180-300	58	1.1
300-420	2	0.1
420-540	4	0.1
	<hr/>	<hr/>
TOTAL	5145	100.0

* Longest Trip = 8 Hrs. Average Trip Length = 29 Min.

* Median Trip Length = 10-20 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 16, LONG LAKE ROAD

<u>LOCATION:</u>	.2 Miles East of Zimmerman Road, Grand Traverse County.
<u>CLASSIFICATION:</u>	County Road
<u>TOTAL TRIPS:</u>	3742
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 2941 (78.6%)
<u>MAJOR TRIP PURPOSE:</u>	Work 1656 (44.3%)
<u>TRIP DISTRIBUTION:</u>	Terminal 3512 (93.9%) Through 230 (6.1%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 1, M-22 N. 51 (22.2%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 611 (17.4%)
<u>LONGEST TRIP:</u>	9 Hrs. 20 Min.
<u>AVERAGE TRIP LENGTH:</u>	29 Min.

STATION 16

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Passenger Car	2941	78.6	2766	94.0	175	6.0
Passenger Car with Trailer	37	1.0	31	83.8	6	16.2
Panel or Pickup	562	15.0	531	94.5	31	5.5
Panel or Pickup with Trailer	37	1.0	34	91.9	3	8.1
Other Single Unit Trucks	138	3.7	125	90.6	13	9.4
Combinations and Trucks with Trailers	27	0.7	25	92.6	2	7.4
TOTAL	3742	100.0	3512	93.9	230	6.1

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	1656	44.3	1586	95.8	70	4.2
Personal Business	216	5.8	211	97.7	5	2.3
Shopping	623	16.6	610	97.9	13	2.1
Vacation	92	2.5	49	53.3	43	46.7
Other Soc. or Rec.	739	19.7	657	88.9	82	11.1
All Other	416	11.1	399	95.9	17	4.1
TOTAL	3742	100.0	3512	93.9	230	6.1

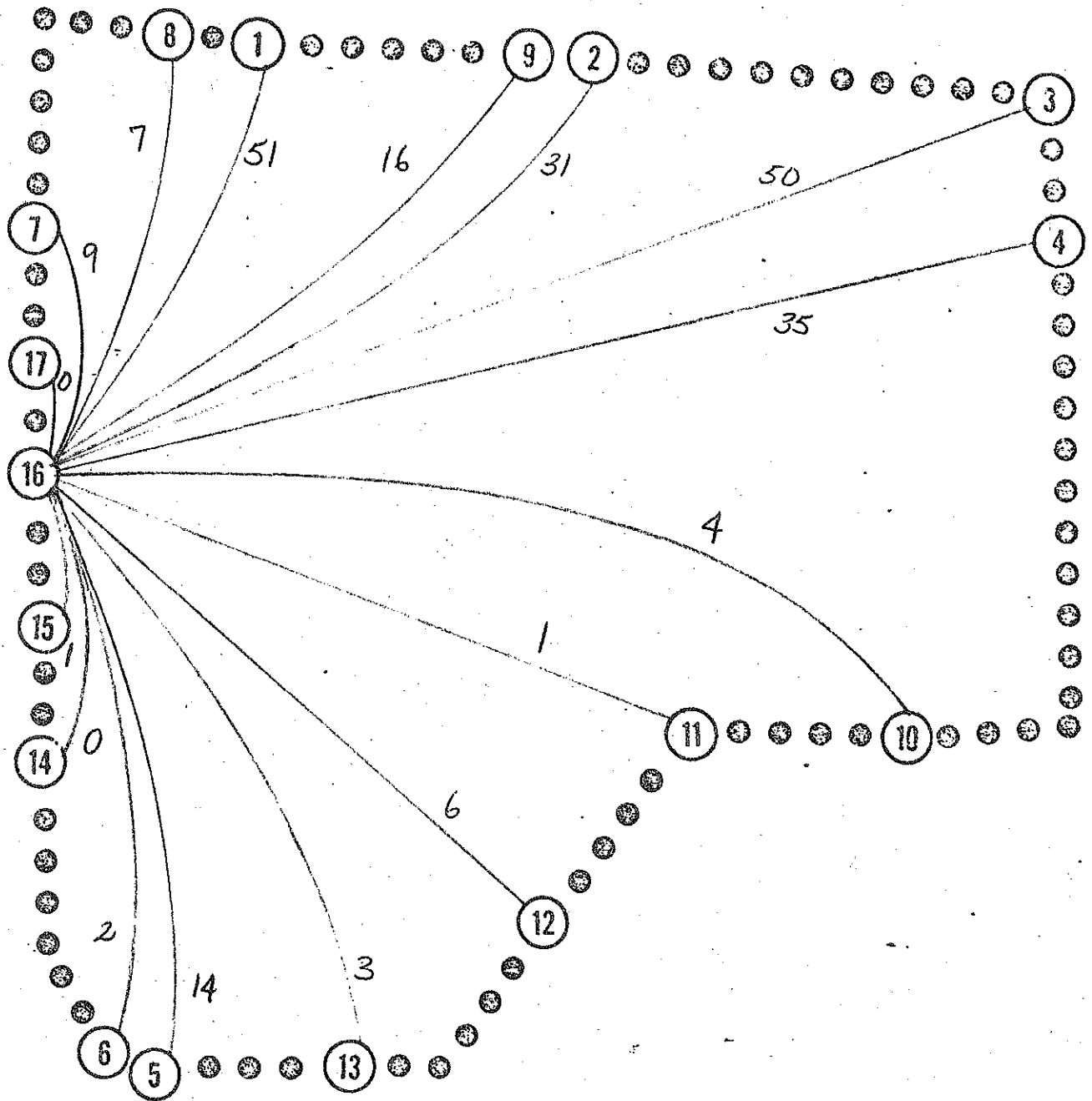
STATION 16

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	51	22.2
2 M-37 N.	31	13.5
3 US-31 N.	50	21.7
4 M-72 E.	35	15.2
5 M-37 S.	14	6.1
6 US-31 W.	2	0.9
7 M-72 W.	9	3.9
8 Cherry Bend Rd. (Co. Rd. 633)	7	3.1
9 Peninsula Drive	16	7.0
10 High Lake Rd.	4	1.7
11 Three Mile Rd.	1	0.4
12 Garfield Rd.	6	2.6
13 River Rd.	3	1.3
14 Silver Pines Rd.	0	0
15 Silver Lake Rd.	1	0.4
16 Long Lake Rd.		
17 Cedar Run Rd.	0	0
TOTAL	230	100.0

STATION 16

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND
● ● ● CORDON
④ STATION NUMBER



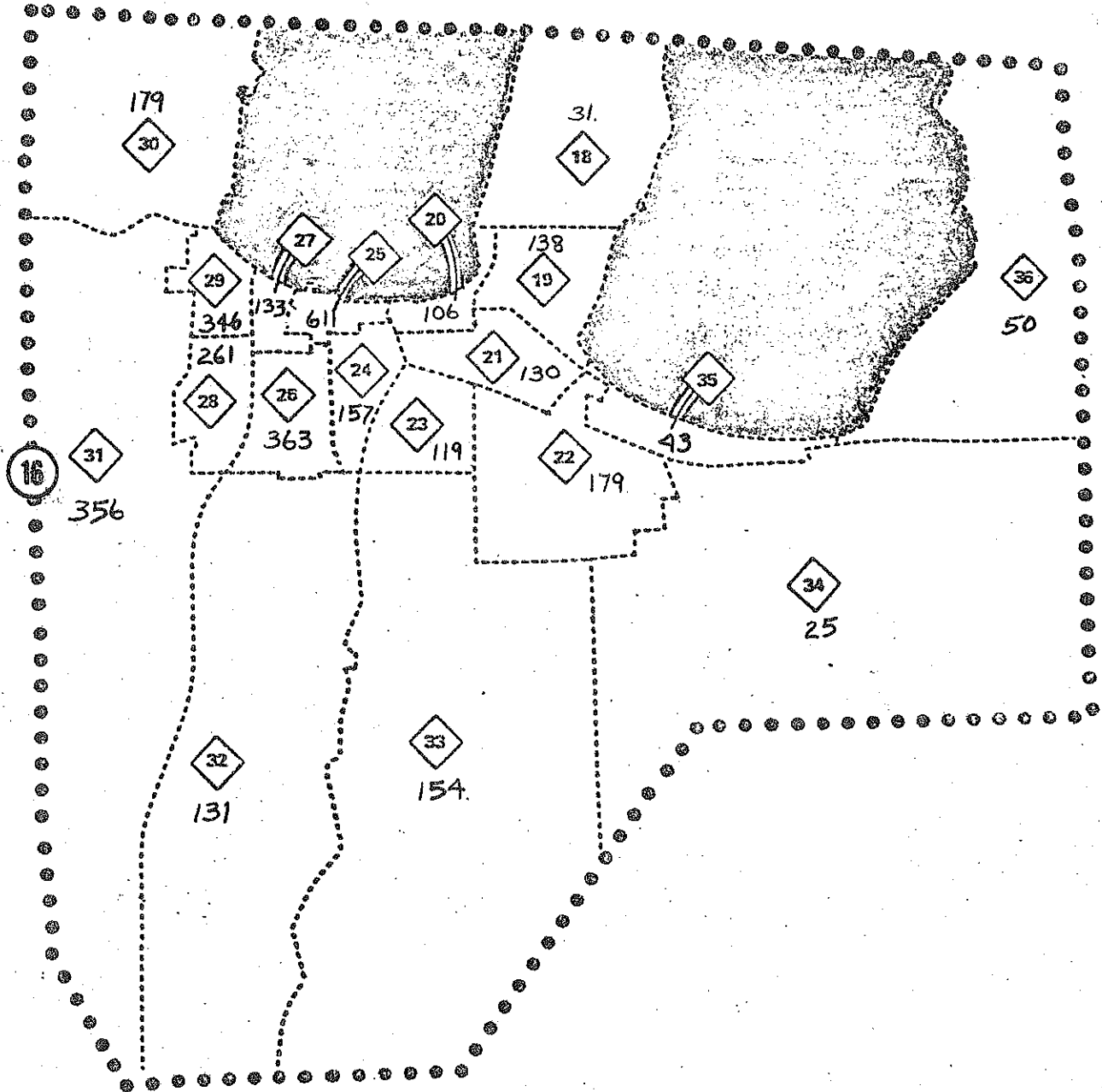
STATION 16

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	31	0.9
19	138	3.9
20	106	3.0
21	130	3.7
22	179	5.1
23	119	3.4
24	157	4.5
25	611	17.4
26	363	10.3
27	133	3.8
28	261	7.4
29	346	9.9
30	179	5.1
31	356	10.2
32	131	3.7
33	154	4.4
34	25	0.7
35	43	1.2
36	50	1.4
TOTAL	<u>3512</u>	<u>100</u>

STATION 16

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 16

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	540	14.4
10-20	2180	58.2
20-30	74	1.9
30-40	635	16.9
40-50	86	2.3
50-60	66	1.8
60-80	35	0.9
80-100	29	0.8
100-120	21	0.6
120-150	16	0.4
150-180	14	0.4
180-300	37	1.0
300-420	6	0.2
420-540	1	0.1
540-660	2	0.1
	<hr/>	<hr/>
TOTAL	3742	100.0

* Longest Trip = 9 Hrs. 20 Min. Average Trip Length = 29 Min.

* Median Trip Length = 10-20 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

STATION 17, CEDAR RUN ROAD

<u>LOCATION:</u>	.1 Miles East of Harris Road, Grand Traverse County.
<u>CLASSIFICATION:</u>	County Road
<u>TOTAL TRIPS:</u>	928
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 699 (75.3%)
<u>MAJOR TRIP PURPOSE:</u>	Work 425 (45.8%)
<u>TRIP DISTRIBUTION:</u>	Terminal 850 (91.6%) Through 78 (8.4%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 4, M-72 E. 15 (19.2%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 25 156 (18.4%)
<u>LONGEST TRIP:</u>	6 Hrs. 20 Min.
<u>AVERAGE TRIP LENGTH:</u>	30 Min.

STATION 17

VEHICLE TYPE AND TRIP PURPOSE

<u>Vehicle type</u>	<u>Vehicles</u>	Percent of		<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
		<u>Total</u>					
Passenger Car	699	75.3		646	92.4	53	7.6
Passenger Car with Trailer	6	0.6		5	83.3	1	16.7
Panel or Pickup	168	18.1		151	89.9	17	10.1
Panel or Pickup with Trailer	7	0.8		7	100.0	0	0.0
Other Single Unit Trucks	47	5.1		40	85.1	7	14.9
Combinations and Trucks with Trailers	1	0.1		1	100.0	0	0.0
TOTAL	928	100.0		850	91.6	78	8.4

<u>Trip Purpose</u>	<u>Vehicles</u>	Percent of		<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
		<u>Total</u>					
Work	425	45.8		382	89.9	43	10.1
Personal Business	59	6.4		52	88.1	7	11.9
Shopping	175	18.8		173	98.9	2	1.1
Vacation	10	1.1		9	90.0	1	10.0
Other Soc. or Rec.	147	15.8		129	87.8	18	12.2
All Other	112	12.1		105	93.7	7	6.3
TOTAL	928	100.0		850	91.6	78	8.4

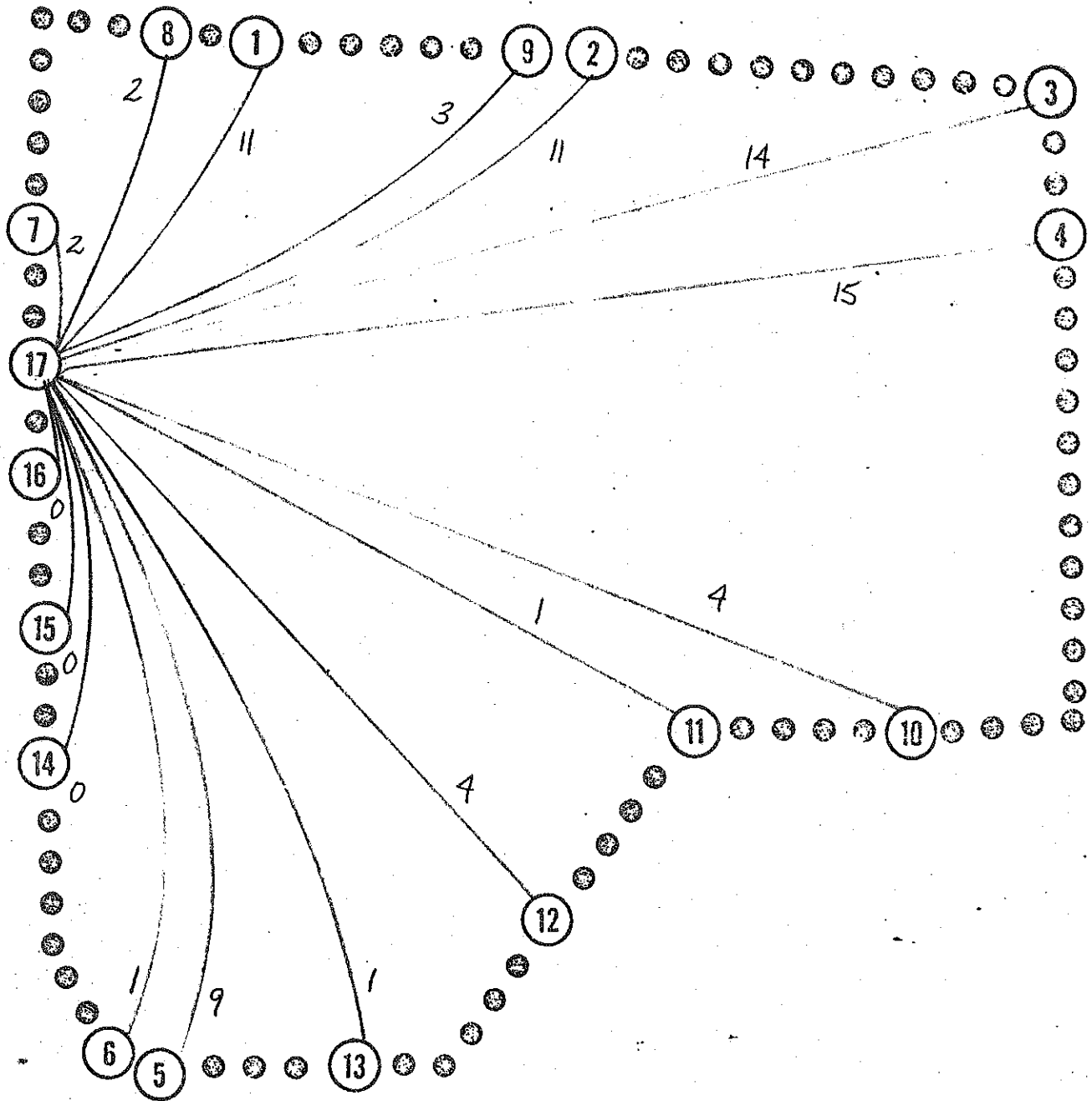
STATION 17

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 M-22 N.	11	14.1
2 M-37 N.	11	14.1
3 US-31 N.	14	18.0
4 M-72 E.	15	19.2
5 M-37 S.	9	11.5
6 US-31 W.	1	1.3
7 M-72 W.	2	2.6
8 Cherry Bend Rd. (Co. Rd. 633)	2	2.6
9 Peninsula Drive	3	3.8
10 High Lake Rd.	4	5.1
11 Three Mile Rd.	1	1.3
12 Garfield Rd.	4	5.1
13 River Rd.	1	1.3
14 Silver Pines Rd.	0	0
15 Silver Lake Rd.	0	0
16 Long Lake Rd.	0	0
17 Cedar Run Rd.	_____	_____
TOTAL	78	100.0

STATION 17

TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



LEGEND

- ● ● CORDON
- ④ STATION NUMBER



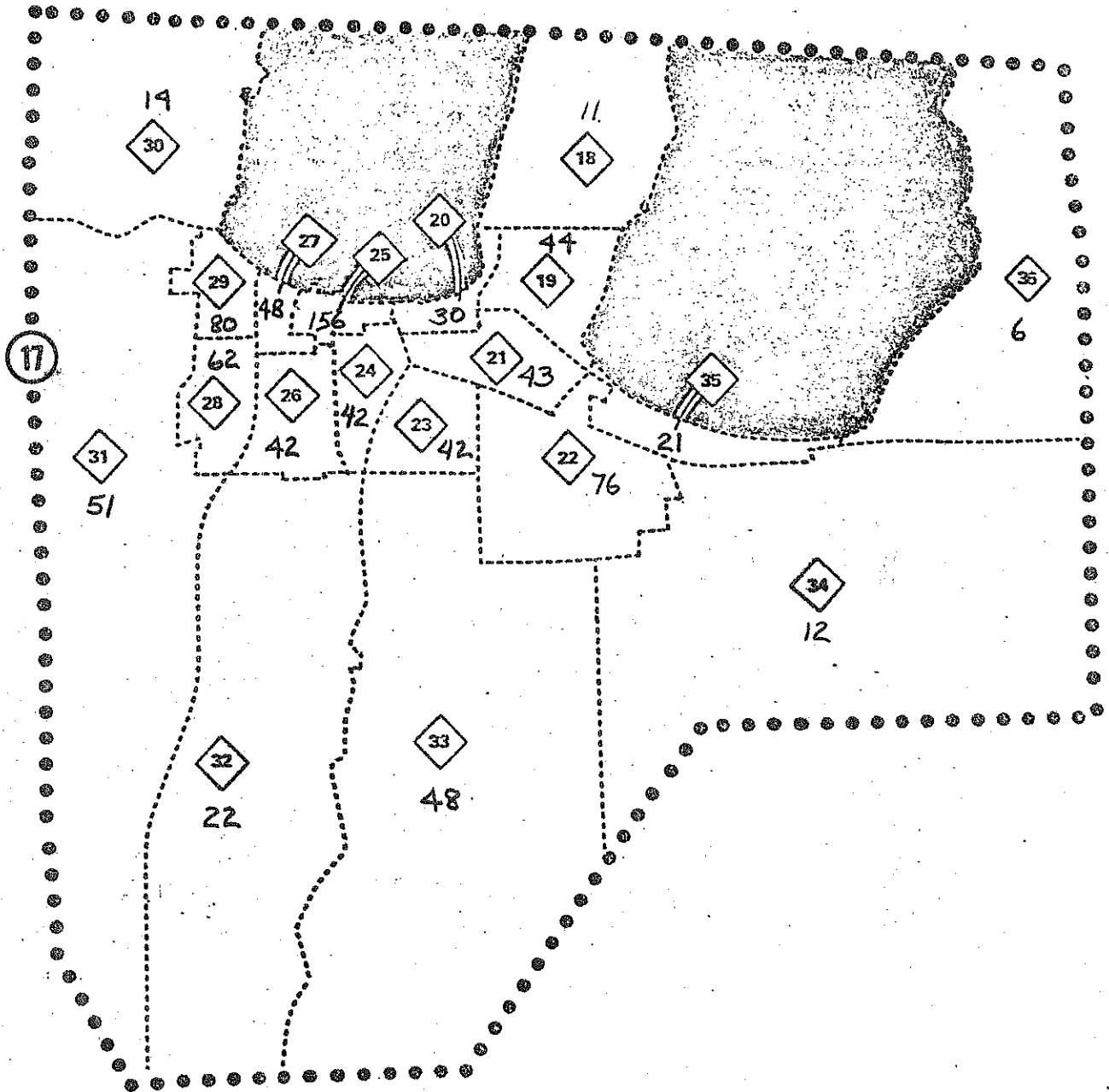
STATION 17

TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL. ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
18	11	1.3
19	44	5.2
20	30	3.5
21	43	5.1
22	76	8.9
23	42	4.9
24	42	4.9
25	156	18.4
26	42	4.9
27	48	5.7
28	62	7.3
29	80	9.4
30	14	1.7
31	51	6.0
32	22	2.6
33	48	5.6
34	12	1.4
35	21	2.5
36	6	0.7
TOTAL	<u>850</u>	<u>100</u>

STATION 17

TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ● ● CORDON LINE
- - - ZONE LIMITS
- ◇ 00 INTERNAL ZONES

STATION 17		
<u>TRIP LENGTHS</u>		
<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	87	9.4
10-20	449	48.4
20-30	25	2.7
30-40	293	31.6
40-50	40	4.3
50-60	13	1.4
60-80	2	0.2
80-100	4	0.4
100-120	5	0.6
120-150	3	0.3
150-180	0	0.0
180-300	5	0.6
300-420	1	0.1
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TOTAL	927	100.0

* Longest Trip = 6 Hrs. 20 Min. Average Trip Length = 30 Min.

* Median Trip Length = 10-20 Min.

* Due to the convention of the computer program, these values can be approximated only in 10 minute intervals.

PART III.
APPENDICES

APPENDIX "A"

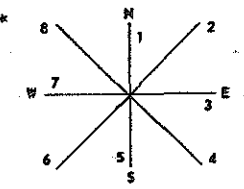
SINGLE STATION RURAL O-D STUDY

STA. LOCATION AND NUMBER

FORM NUMBER	6	COUNTY NUMBER		STATEWIDE NUMBER		HOUR PERIOD ENDING		* DIRECTION		DAY ** OF TRAVEL		MO.		DATE	
	1		2 3		4 5 6 7		8 9		10		11		12 13		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.
					0 0 0		
					0 0 0		
					0 0 0		
-198-					0 0 0		
					0 0 0		
					0 0 0		
					0 0 0		
					0 0 0		

- 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 OTHER SINGLE UNIT TRUCKS
 - 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 OTHER SOC. OR REC.
 - 6 ALL OTHER

ROUTE _____ LOCATION DESCRIPTION _____ CITY _____

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

RECORDER _____

DO NOT ACCUMULATE

IN OUT	DIRECT OF TRAVEL			TIME ENDING				PASSENGER CAR					PANEL & PICK-UP (2 AXLE, 4 TIRE)				ALL OTHER SINGLE UNIT TRUCKS			ALL TRUCK COMB. AND SINGLE UNIT TRUCK WITH TRAILER (6)			(7) ALL BUSES		(8) MOTOR CYCLE		TOTAL						
				HOUR	MIN.			WITHOUT (1) TRAILER		WITH (2) TRAILER			WITHOUT (3) TRAILER		WITH (4) TRAILER		WITHOUT TRAILER (5)			TRUCK WITH TRAILER (6)			48	49	50	51							
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	55
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DAY OF WEEK: Col. 17

STATION TYPE: Col. 20

Sunday	1	Thursday	5	Cordon Line Station	2
Monday	2	Friday	6	Screen Line Station	1
Tuesday	3	Saturday	7	Single Station	3
Wednesday	4			S. W. Winter Class.	4

TRUCK IDENTIFICATION

DIRECTION OF TRAVEL: Cols. 23 - 24

Northbound	01	Westbound	07
Northeastbound	02	Northwestbound	08
Eastbound	03	North - South (2-Way)	09
Southeastbound	04	East - West (2-Way)	10
Southbound	05	Northeast - Southwest (2-Way)	11
Southwestbound	06	Northwest - Southeast (2-Way)	12

TIME ENDING: Cols. 25 - 28

TIME	HOUR	MIN.
	Cols. 25 - 26	Cols. 27 - 28
1:05 AM	01	05
2:13 AM	02	13
etc.		
12:00 Noon	12	00
etc.		
3:15 PM	15	15
etc.		
11:45 PM	23	45
etc.		

Panel and Pickup (2 axle, 4 tire)

Light 2-axle, 4-tire trucks of less than one ton rated capacity, including:

- a. Panel and pickups standard type, including mini-vans (Ford Econoline, Volkswagon, etc.)
- b. Pickup trucks carrying a cab high (sleeper style) camper.

All Other Single Unit Trucks

Heavy 2-axles or more (dual tires or super singles) equal to or greater than one ton rated capacity, including:

- a. All multistop or standup delivery trucks (primarily designed for moving rural and urban goods.)
- b. All large 4-tire trucks with flatbed, dump or other heavy cargo bodies.
- c. Pickups and panels, having heavy truck type hubs or axles, or are noticeably larger and longer than the standard type.
- d. Heavy 2-axle trucks with a higher than cab camper body.
- e. Truck tractor without trailer.

Truck Combinations

Truck and/or truck tractor (power unit) pulling semi-trailer or full trailer combinations.

APPENDIX "B"

SELECTED COMPARISONS of 1966 and 1976 O-D STUDIES

The cordon line for each of the studies was almost identical. Some of the original stations that were operated have a slight change in actual location in the 1976 study when compared to the 1966 study but not enough to affect any comparison drawn between the studies' data. Also, three of the stations that were operated in 1966 were not operated in 1976 due to low volumes.

The screenline, although used specifically for the 1966 O-D study, was machine counted during the 1976 O-D study. A comparison of this data will give the observer a feel for east-west traffic movement inside the study area.

CORDON LINE STATIONS

<u>1976 STATION NUMBER</u>	<u>1966 STATION NUMBER</u>	<u>ROUTE</u>	<u>1966 LOCATIONS</u>
1	1	M-22 North	.9 miles north of Cherry Bend Rd.
2	2	M-37 North	.2 miles south of McKinley Rd.
3	3	US-31 North	.5 miles north of Brackett Rd.
4	*4	M-72 East	.4 miles west of Lautner Rd.
5	5	M-37 South	.1 miles south of south junction US-31 and M-37
6	6	US-31 West	.1 miles west of south junction US-31 and M-37
7	7	M-72 West	.6 miles west of Junction M-22 and M-72
8	8	Cherry Bend Rd.	.2 miles north of Lincoln Rd.
9	9	Peninsula Dr.	#.1 miles south of McKinley Rd.
12	10	Garfield Rd.	.3 miles northwest of Potter Rd.
15	11	Silver Lake Rd.	#.2 miles northeast of Zimmerman Rd.
16	12	Long Lake Rd.	#.1 miles east of Zimmerman Rd.
17	13	Cedar Run Rd.	.1 miles east of Harris Rd.
N.O.	14	East Shore Rd.	.1 miles south of McKinley Rd.
N.O.	+15	Brackett Rd.	.3 miles east of US-31
10	16	High Lake Rd.	.3 miles south of Hammon Rd.
11	17	Three Mile Rd.	.3 miles south of Hammon Rd.
13	18	River Rd.	.8 miles southeast of Keystone Rd.
14	19	Silverpines Rd.	#.2 miles east of Silver Lake Rd.
N.O.	20	Harris Rd.	.2 miles west of Long Lake Rd.

*Station was not operated. M-72 east was under construction.

+Temporary M-72 east.

#Indicates difference in exact location of station for the 1976 study.
See page 8 for comparison.

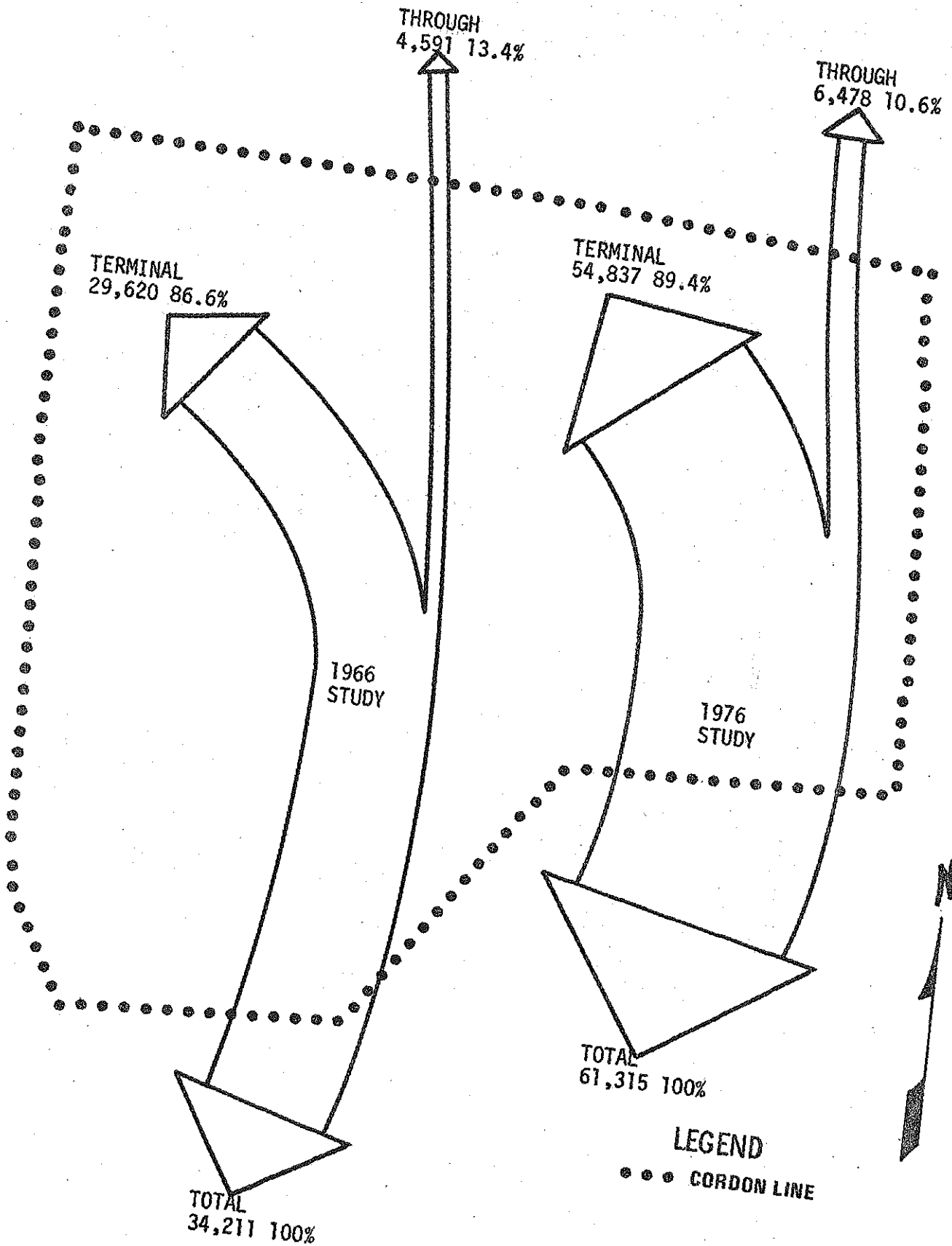
EXPANDED VEHICLE TRIPS BY STATION
1966 V.S. 1976

<u>ROUTE</u>	<u>1966</u>	<u>% OF TOTAL</u>	<u>1976</u>	<u>% OF TOTAL</u>	<u>% INCREASE 1966 TO 1976</u>
M-22 N.	4207	10.8	6764	10.0	59.1
M-37 N.	2534	6.5	3651	5.4	46.3
US-31 N.	4876	12.6	6499	9.6	33.2
M-72 E.	*N.O.	—	7708	11.4	—
M-37 S.	3884	10.0	7233	10.7	85.9
US-31, W.	5140	13.3	8616	12.7	63.6
M-72 W.	3119	8.0	4792	7.1	58.1
Cherry Bend Rd.	1100	2.8	1954	2.9	86.3
Peninsula Dr.	1468	3.8	2104	3.1	53.5
Garfield Rd.	1509	3.9	2871	4.2	84.2
Silver Lake Rd.	1978	5.1	5145	7.6	166.4
Long Lake Rd.	1868	4.8	3742	5.5	105.0
Cedar Run Rd.	433	1.1	928	1.4	113.6
East Shore Rd.	129	.3	N.O.	—	—
Brackett Rd.	*3875	10.0	N.O.	—	—
High Lake Rd.	1358	3.5	2873	4.2	114.7
Three Mile Rd.	442	1.1	983	1.4	124.9
River Rd.	487	1.3	1101	1.6	137.6
Silver Pines Rd.	293	.8	829	1.2	187.0
Harris Rd.	102	.3	N.O.	—	—
	<u>38,802</u>	<u>100.0</u>	<u>67,793</u>	<u>100.0</u>	
	<u>-4591</u>		<u>-6478</u>		
⁺ Adjusted Vehicle Trips	34,211	100.0%	61,315	100.0%	79.6%

+ A through trip is counted both at the station of entrance and exit.
To adjust for this double counting it was necessary to half-factor through trips.

* Brackett Rd. served as a detour while M-72 E. was under construction.

TRIP MOVEMENTS
1966 Vs 1976



SCREENLINE STATIONS

<u>STATION NUMBER</u>	<u>ROUTE</u>	<u>LOCATION</u>
1	Front St.	.25 miles west of Hope St.
2	State St.	.25 miles east of Railroad St.
3	Washington St.	.25 miles east of Railroad St.
4	Alley "A"	.25 miles east of Railroad St.
5	Webster St.	.25 miles east of Railroad St.
6	Alley "B"	.25 miles east of Railroad St.
7	East Eighth St.	.25 miles east of Railroad St.
*8	South Airport Rd.	.5 miles west of Barlow Rd.
*9	Cass Rd.	.1 miles west of Keystone Rd.
*10	Keystone Rd.	.4 miles southwest of junction of Keystone and River Rds.

*These locations are on bridges over the Boardman River.

SCREENLINE TOTAL VEHICLE MACHINE COUNT COMPARISON

<u>ROUTE</u>	<u>1966 MACHINE COUNT</u>	<u>% OF TOTAL</u>	<u>1976 MACHINE COUNT</u>	<u>% OF TOTAL</u>	<u>% INCREASE BY STATION</u>
Front St.	27145	52.1	40132	53.6	47.8
State St.	2576	5.0	3671	4.9	42.5
Washington St.	979	1.9	970	1.3	- 0.9
Alley "A"	76	.1	72	.1	- 5.2
Webster St.	789	1.5	579	.8	-26.6
Alley "B"	261	.5	205	.3	-21.5
East Eighth St.	15103	29.0	18643	24.9	23.4
South Airport Rd.	3235	6.2	5673	7.6	75.4
Cass Rd.	577	1.1	1230	1.6	113.2
Keystone Rd.	<u>1356</u>	<u>2.6</u>	<u>3647</u>	<u>4.9</u>	169.0
	52,097	100.0	74,822	100.0	43.6

NOTE: The Airport Road extention was constructed after the 1966 study.