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# MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

Alpena Area  
External  
Origin and Destination  
Survey

Factual Data Report  
May, 1979

MICHIGAN DEPARTMENT OF  
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MICHIGAN DEPARTMENT  
OF  
TRANSPORTATION

Alpena Area  
External  
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Factual Data Report  
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JOHN P. WOODFORD, DIRECTOR

Mr. Sam F. Cryderman  
Bureau of Transportation Planning

Dear Mr. Cryderman:

The Multi-Regional Planning Division of the Bureau of Transportation Planning has documented the results of the Alpena Area External Origin-Destination Survey. The survey was conducted on weekdays during June and July in 1976.

The purpose of the survey was two-fold. First, it was necessary in order to determine traffic patterns in the area. This information will serve as a basis for planning an efficient transportation system. Secondly, the data gathered will serve as an important update of an earlier survey conducted in Alpena in 1962.

The report was prepared by Larry A. Miller, Transportation Engineer, assisted by Thomas E. Pickens, Transportation Planner and Steve Serdel, Engineer Trainee. New computer data processing techniques were developed by Larry A. Miller as a result of this report preparation, for which Mr. John Stone provided extensive technical assistance. This process is now in general use for other such reports prepared throughout the Division, saving considerable processing time. Report typing was done by Naomi Harvey. This combined effort is the responsibility of the North Region Planning Section under the supervision of John B. Ouder Kirk.

Sincerely,

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

Richard J. Lilly, Administrator  
Multi-Regional Planning Division



## PREFACE

The results of the weekday origin and destination survey conducted during late June and early July of 1976 are contained herein. This report is a presentation of the expanded data in tabular form developed from the survey information and does not attempt to speculate, hypothesize nor forecast any alternative or master plan. This document is designed, however, 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 1962.

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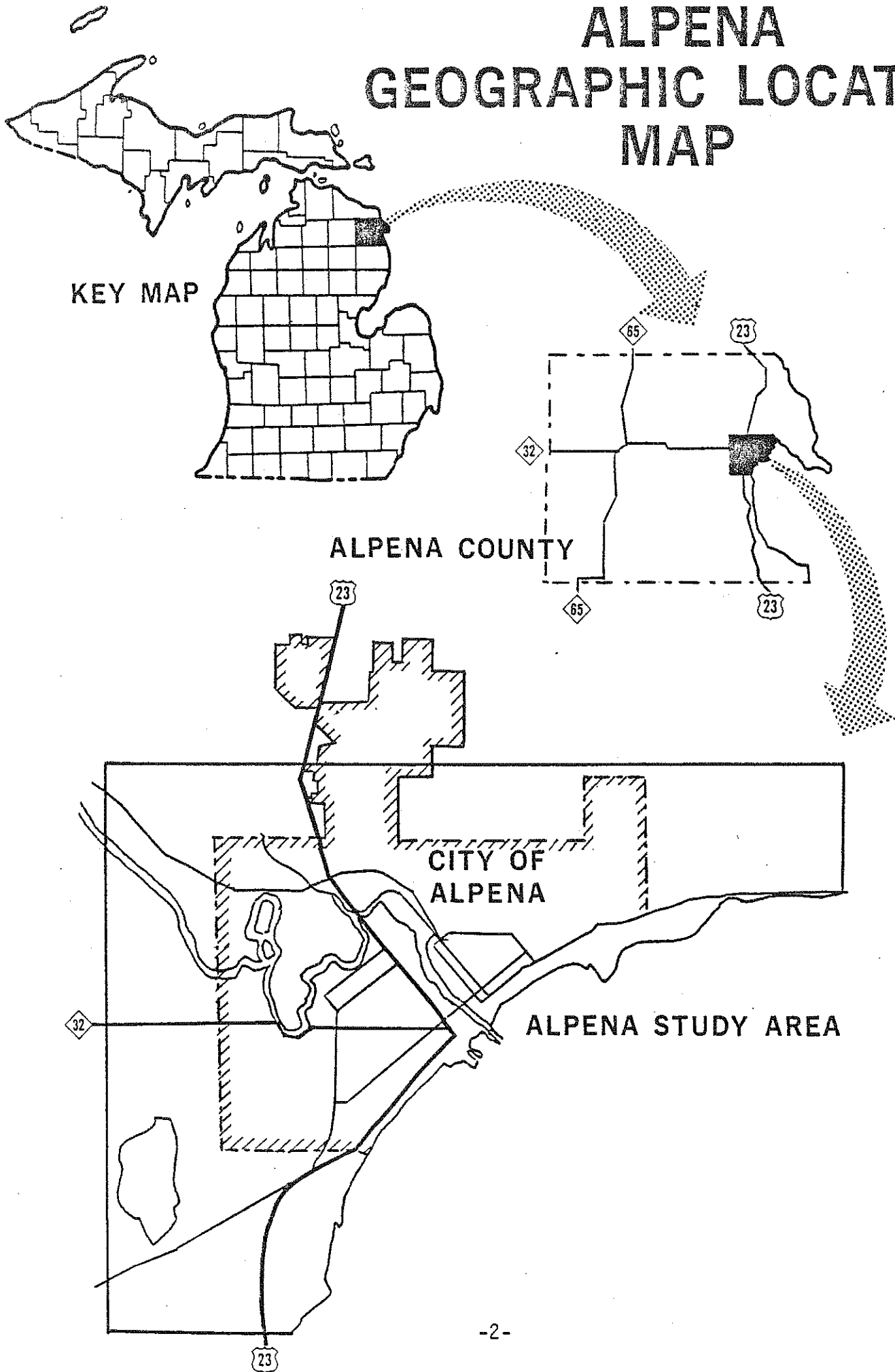
## STUDY LOCATION

The City of Alpena is located at the northern end of Thunder Bay in Alpena County (see map). The city's 1970 census was 13,805. The Northeast Regional Council of Governments has projected a 1980 estimated population of approximately 14,600, a 5.8% increase.

In addition to being the home of the world's largest open-pit limestone quarry and single-unit cement mill, the area is also experiencing growing tourism, sport fishing and hunting interests.

State trunklines servicing this area are US-23 north and south, and M-32 westerly.

# ALPENA GEOGRAPHIC LOCATION MAP



## 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

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## FIELD PROCEDURE

The Alpena External Origin-Destination Survey began with field work, conducted during June, 1976. The Survey's purpose was to collect data on traffic movement into, out of, and through the Alpena area. This data, as assembled and analyzed in this report will serve as a basic tool for planning and developing an efficient road network in the area.

A cordon line was drawn around the Alpena area, enclosing the predominant urbanized area. Each road crossed by this cordon line was a potential location for an interview station. An interview station was not set up on roads where preliminary traffic counts showed volumes negligible, when compared to the other locations. Stations were thus established at seven roads, including stations on US-23, both north and south of the city limits, and one on M-32 west of the Alpena city limits.

These seven external stations were operated for ten hours. During this time vehicles were stopped and drivers were asked their origin, destination and purpose of the trip. Interviews were made for both inbound, and outbound directions at each station. Additionally, vehicle classification counts were manually made, both during the interviews and during the remainder of that twenty-four hour day.

The study area within the cordon line boundary was sub-divided into a number of zones for further analysis. Zones were created based on predominant land use types, i.e. residential, industrial, commercial, etc. A sampling of trips inbound or outbound from these zones was recorded.

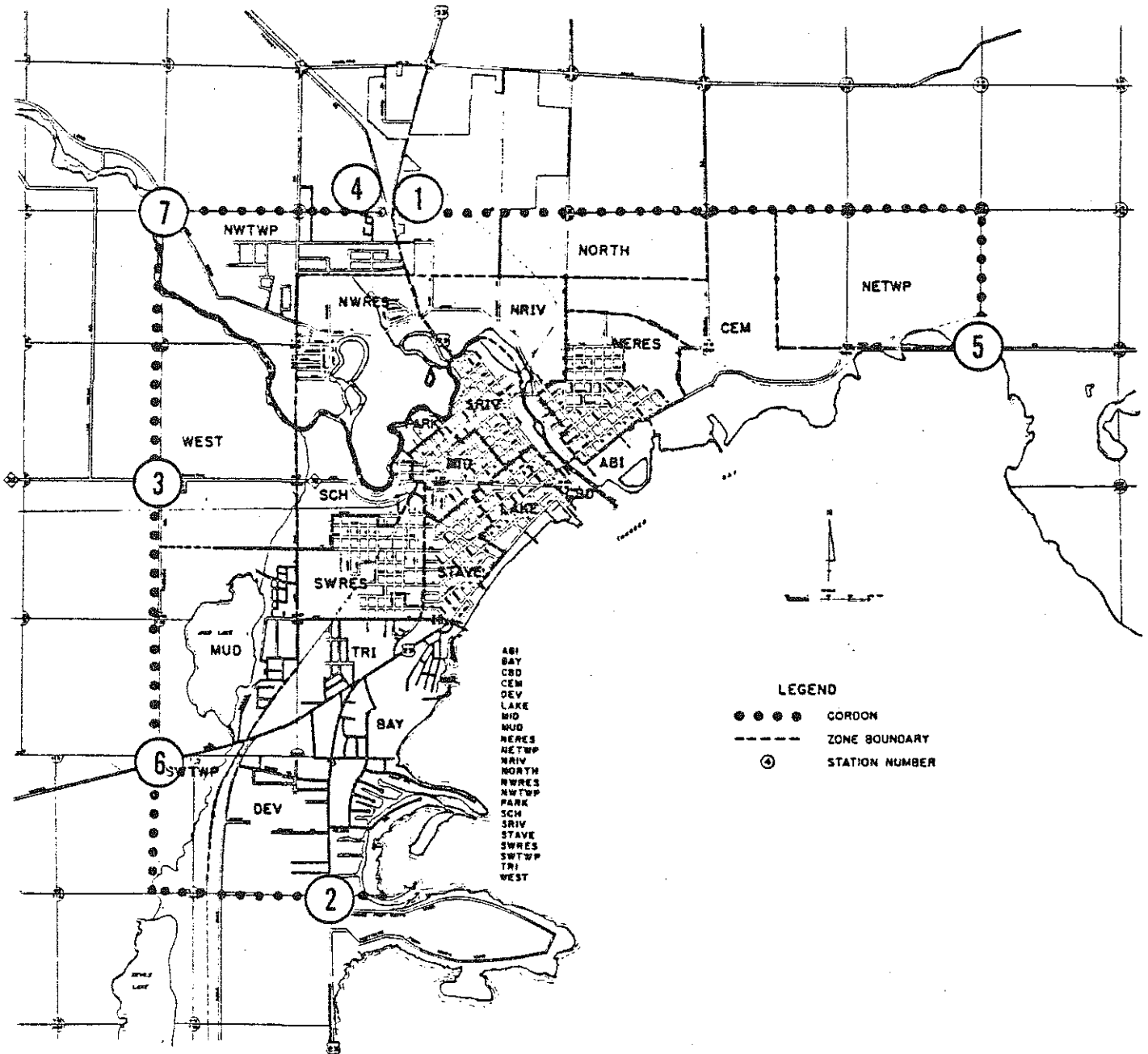
Generally, zoning in this manner more clearly categorizes trips by purpose, thereby resulting in a better understanding of traffic patterns and their intensity.

Sample interview forms for both interviews and Manual Vehicle Classification Counts appear in the Appendix.

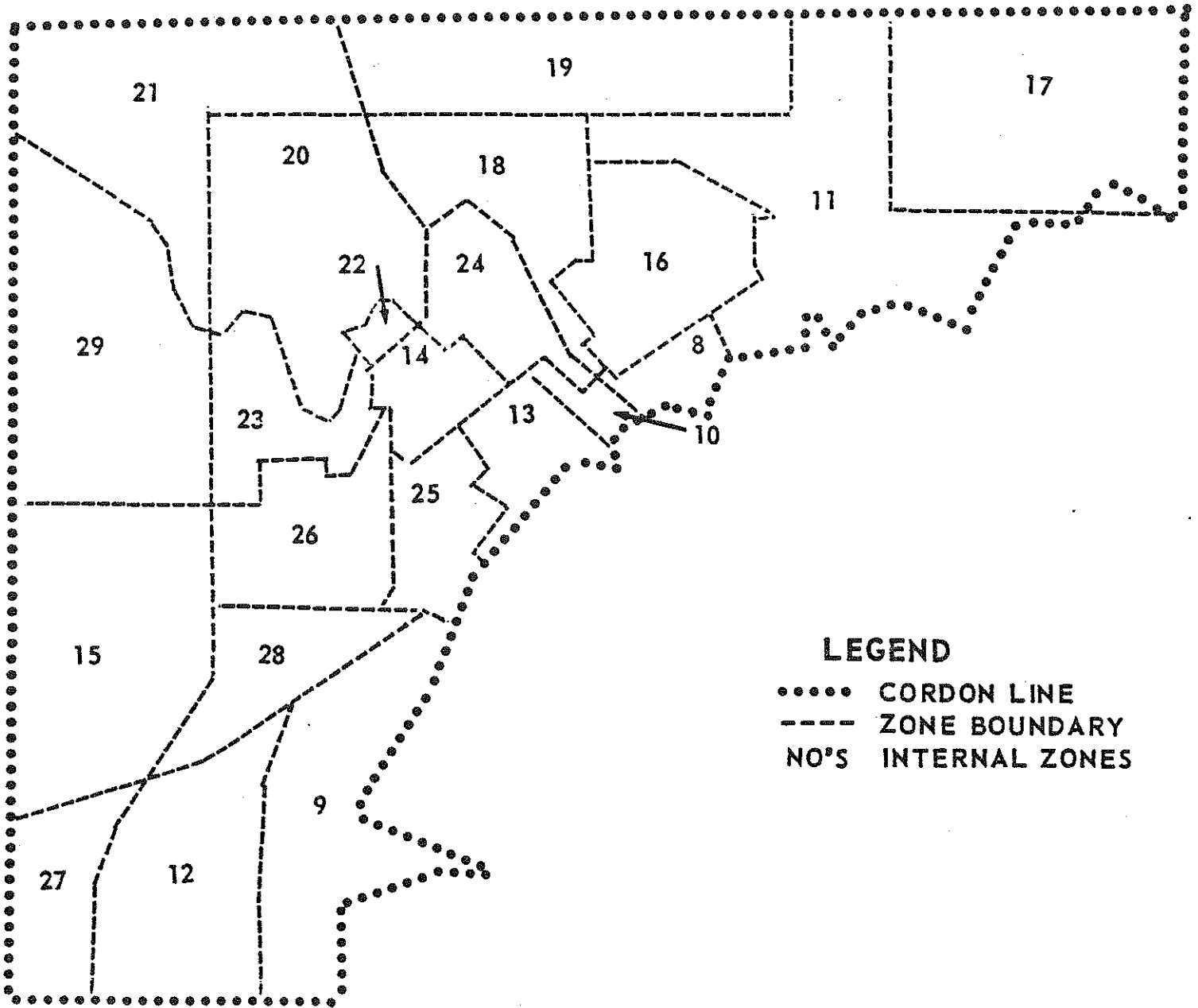
## STATION LOCATIONS

<u>Station Number</u>	<u>Route or Street</u>	<u>Location</u>
1	US-23 North	0.1 Mi. North of Detroit-Mackinac Railroad, North of French Road
2	US-23 South	1.0 Mi. South of Bear Point Road
3	M-32	300' West of Elizabeth St.
4	On French Road	0.4 Mi. Northwest of US-23
5	(Misery Bay Road)	1.5 Mi, East of Huron Portland Cement Co.
6	On Werth Road	0.7 Mi. Southwest of Piper Road
7	On Long Rapids Road	1.2 Mi. Northwest of Genschaw Road

ALPENA CITY AREA  
EXTERNAL STATIONS  
&  
INTERNAL ZONES



ALPENA CITY AREA  
INTERNAL ZONES



**LEGEND**

- ..... CORDON LINE
- ZONE BOUNDARY
- NO'S INTERNAL ZONES

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

<u>Station</u>	<u>24-Hour<sup>1</sup> Vehicle Classifications</u>	<u>10-Hour Interviews</u>	<u>Percent Interviewed</u>	<u>Expanded<sup>2</sup> Vehicle Trips</u>	<u>Percent expanded are of 24-Hour Classifications</u>
1	7,927	1,769	22.3	7,929	100.0
2	6,625	2,417	36.5	6,622	99.9
3	6,039	1,508	25.0	6,042	100.0
4	1,451	752	51.8	1,453	100.1
5	321	182	56.7	322	100.3
6	2,412	361	15.0	2,412	100.0
7	2,373	285	12.0	2,370	99.9
<b>TOTAL</b>					
Vehicle Trips	27,148	7,274	26.8	27,150	100.0

<sup>1</sup>Motorcycles 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>TOTAL</u>
Motorcycles	<u>50</u>	<u>52</u>	<u>20</u>	<u>24</u>	<u>4</u>	<u>0</u>	<u>22</u>	<u>172</u>
Bicycles	<u>10</u>	<u>0</u>	<u>13</u>	<u>24</u>	<u>0</u>	<u>0</u>	<u>6</u>	<u>53</u>
TOTAL	<u>60</u>	<u>52</u>	<u>33</u>	<u>48</u>	<u>4</u>	<u>0</u>	<u>28</u>	<u>225</u>

<sup>2</sup>Due 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)

<u>Station</u>	<u>Expanded Vehicle Trips</u>	<u>Percent of Total Traffic</u>	<u>Terminal Trips</u>	<u>Percent Terminal</u>	<u>Through Trips</u>	<u>Percent Through</u>
1	7,929	29.2	6,511	82.1	1,418	17.9
2	6,622	24.4	5,482	82.7	1,140	17.3
3	6,042	22.2	5,259	87.0	783	13.0
4	1,453	5.4	1,273	87.6	180	12.4
5	322	1.2	280	86.9	42	13.1
6	2,412	8.9	2,073	85.9	339	14.1
7	2,370	8.7	2,076	87.6	294	12.4
TOTAL						
Vehicle Trips	27,150	100.0	22,954	84.5	4,196	15.5
Adjusted <sup>1</sup> Vehicle Trips	25,052	100.0	22,954	91.6	2,098	8.4

<sup>1</sup> 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.



PART II.  
STRATIFIED STUDY RESULTS

ALL STATIONS

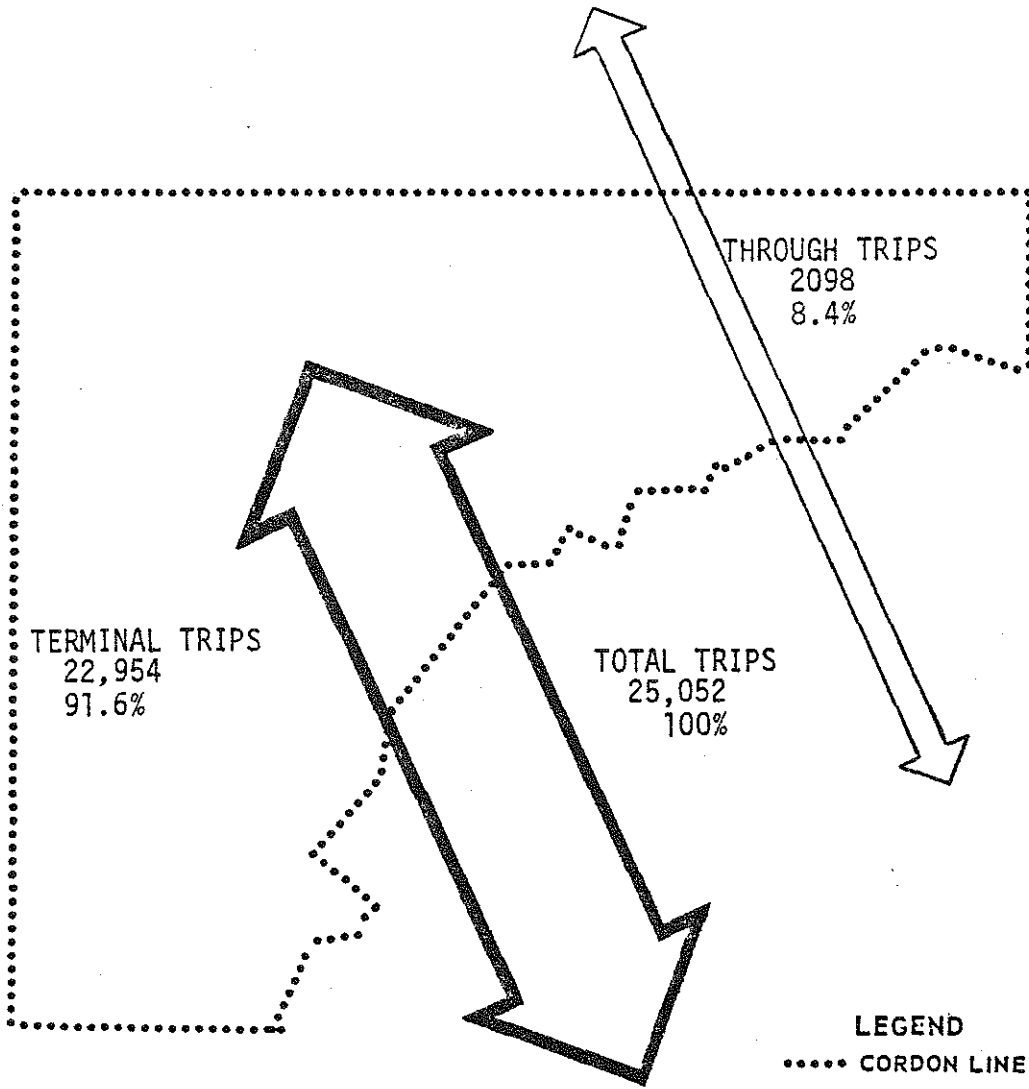
<u>LOCATION:</u>	Seven points on the Cordon Line
<u>CLASSIFICATION:</u>	State Trunklines (3) and County Roads (4)
<u>TOTAL TRIPS:</u>	25,052
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 17,938 (71.6%)
<u>MAJOR TRIP PURPOSE:</u>	Work 11,808 (47.1%)
<u>TRIP DISTRIBUTION:</u>	Terminal 22,954 (91.6%) Through 2,098 (8.4%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 10, 3,805 (16.6%)
<u>LONGEST TRIP:</u>	15 Hrs., 20 Min.
<u>AVERAGE TRIP LENGTH:</u>	36 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	17,938	71.6	16,556	92.3	1,382	7.7
Passenger Car with Trailer	331	1.3	283	85.5	48	14.5
Panel or Pickup	4,707	18.8	4,288	91.1	419	8.9
Panel or Pickup with Trailer	132	0.5	101	76.5	31	23.5
Other Single Unit Trucks	1,347	5.4	1,187	88.1	160	11.9
Combinations and Trucks with Trailers	<u>597</u>	<u>2.4</u>	<u>539</u>	<u>90.3</u>	<u>58</u>	<u>9.7</u>
TOTAL	25,052	100.0	22,954	91.6	2,098	8.4

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	11,808	47.1	10,854	91.9	954	8.1
Personal Business	2,919	11.7	2,698	92.4	221	7.6
Shopping	4,958	19.8	4,818	97.2	140	2.8
Vacation	753	3.0	417	55.4	336	44.6
Other Soc. or Rec.	2,530	10.1	2,230	88.1	300	11.9
All Other	<u>2,084</u>	<u>8.3</u>	<u>1,937</u>	<u>92.9</u>	<u>147</u>	<u>7.1</u>
TOTAL	25,052	100.0	22,954	91.6	2,098	8.4

ALL STATIONS  
TRIP MOVEMENTS

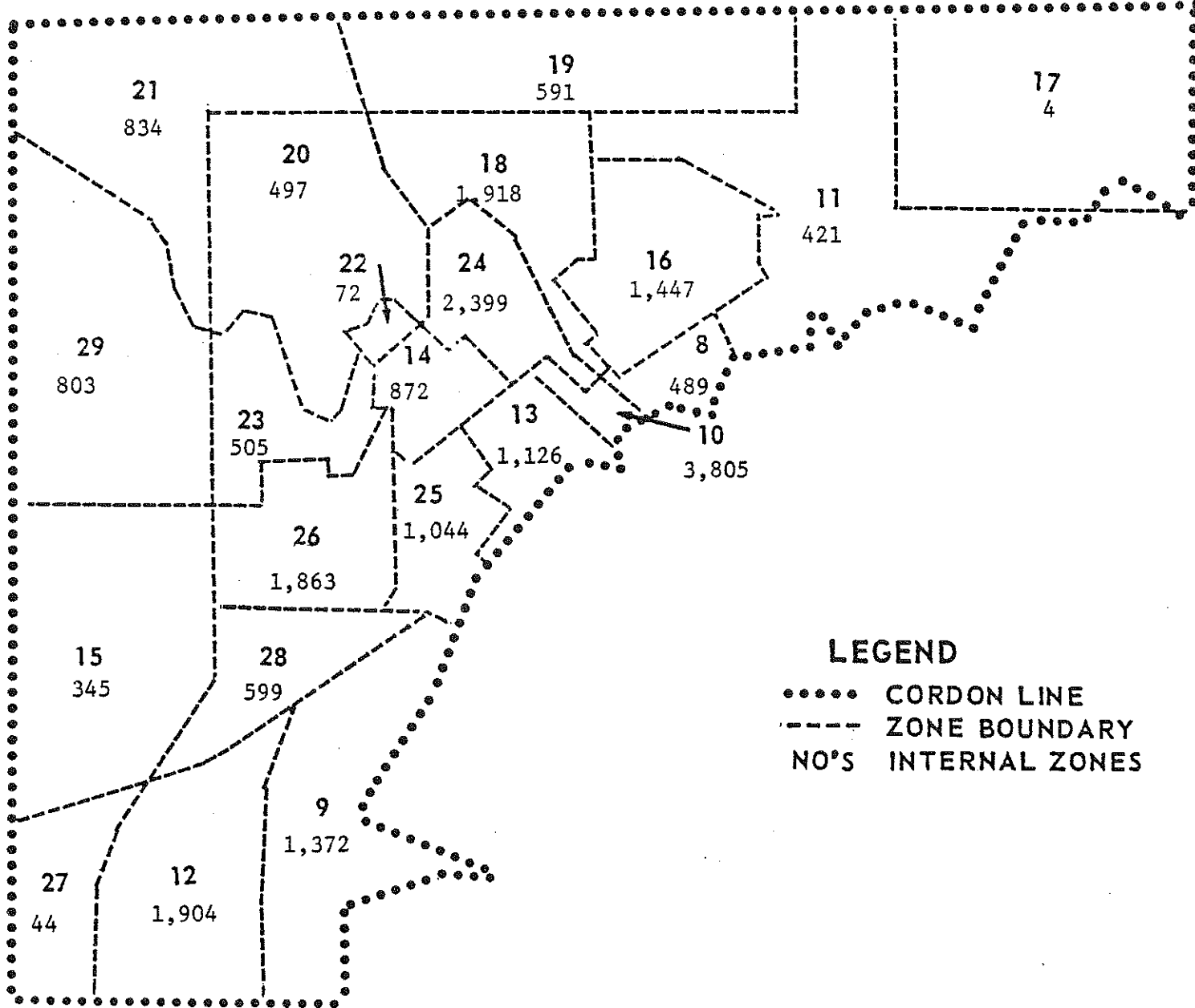


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ALL STATION TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
8	489	2.1
9	1372	6.0
10	3805	16.6
11	421	1.8
12	1904	8.3
13	1126	4.9
14	872	3.8
15	345	1.5
16	1447	6.3
17	4	0.0
18	1918	8.4
19	591	2.6
20	497	2.2
21	834	3.6
22	72	0.3
23	505	2.2
24	2399	10.5
25	1044	4.5
26	1863	8.1
27	44	0.2
28	599	2.6
29	<u>803</u>	<u>3.5</u>
TOTAL	22,954	100.0

ALL STATION TRAFFIC INTERCHANGING WITH INTERNAL ZONES



LEGEND

- ..... CORDON LINE
- ZONE BOUNDARY
- NO'S INTERNAL ZONES

ALL STATIONS  
TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	11,997	47.9
10-20	0	0.0
20-30	6,451	25.7
30-40	0	0.0
40-50	2,256	9.0
50-60	1,053	4.2
60-80	1,124	4.5
80-100	269	1.1
100-120	143	0.6
120-150	300	1.2
150-180	269	1.1
180-300	767	3.1
300-420	295	1.2
420-540	59	0.2
540-660	48	0.2
660-780	9	0.0
780-900	10	0.0
900 Up	2	0.0
TOTAL	25,052	100.0

\*Longest Trip = 15 Hrs. 20 Min. Average Trip Length = 36 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  
US-23 NORTH

LOCATION: 0.1 Mi. North of Detroit-Mackinac  
Railroad, North of French Road

CLASSIFICATION: State Trunkline

TOTAL TRIPS: 7,929

MAJOR VEHICLE TYPE: Passenger Car 5,759 (72.6%)

MAJOR TRIP PURPOSE: Work 3,777 (47.6%)

TRIP DISTRIBUTION: Terminal 6,511 (82.1%)  
Through 1,418 (17.9%)

MAJOR THROUGH TRIP ATTRACTOR: Station 2, U-S-23 S. 777 (54.8%)

MAJOR TERMINAL TRIP ATTRACTOR: Zone 10, 1,146 (17.6%)

LONGEST TRIP: 13 Hrs. 20 Min.

AVERAGE TRIP LENGTH: 39 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	5,759	72.6	4,806	83.5	953	16.5
Passenger Car with Trailer	58	0.7	36	62.1	22	37.9
Panel or Pickup	1,583	20.0	1,273	80.4	310	19.6
Panel or Pickup with Trailer	30	0.4	21	70.0	9	30.0
Other Single Unit Trucks	373	4.7	280	75.1	93	24.9
Combinations and Trucks with Trailers	<u>126</u>	<u>1.6</u>	<u>95</u>	<u>75.4</u>	<u>31</u>	<u>24.6</u>
TOTAL	7,929	100.0	6,511	82.1	1,418	17.9

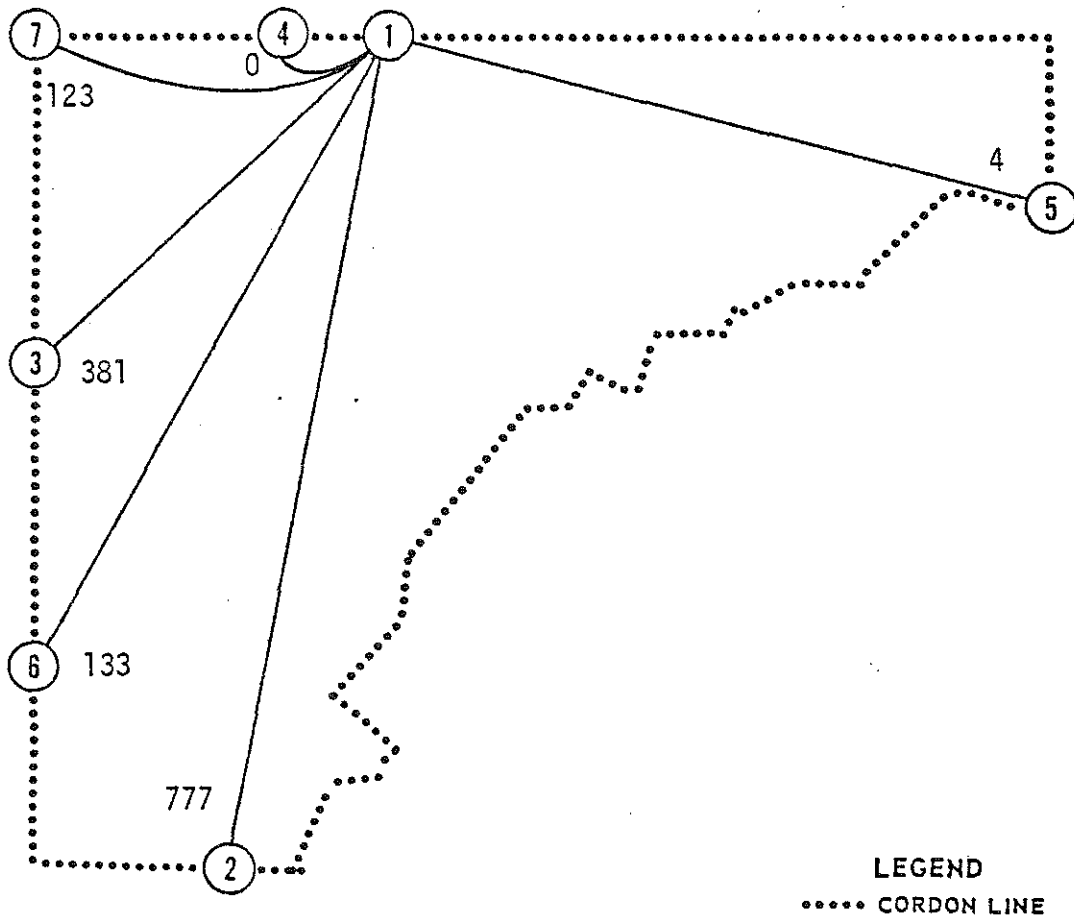
<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	3,777	47.6	3,163	83.7	614	16.3
Personal Business	939	11.9	791	84.2	148	15.8
Shopping	1,331	16.8	1,282	96.3	49	3.7
Vacation	459	5.8	154	33.6	305	66.4
Other Soc. or Rec.	913	11.5	672	73.6	241	26.4
All Other	<u>510</u>	<u>6.4</u>	<u>449</u>	<u>88.0</u>	<u>61</u>	<u>12.0</u>
TOTAL	7,929	100.0	6,511	82.1	1,418	17.9

## STATION 1

## THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 US-23 North		
2 US-23 South	777	54.8
3 M-32	381	26.8
4 On French Road	0	0.0
5 On North Point Road (Misery Bay Road)	4	0.3
6 On Werth Road	133	9.4
7 On Long Rapids Road	123	8.7
TOTAL	1,418	100.0

STATION 1  
TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS

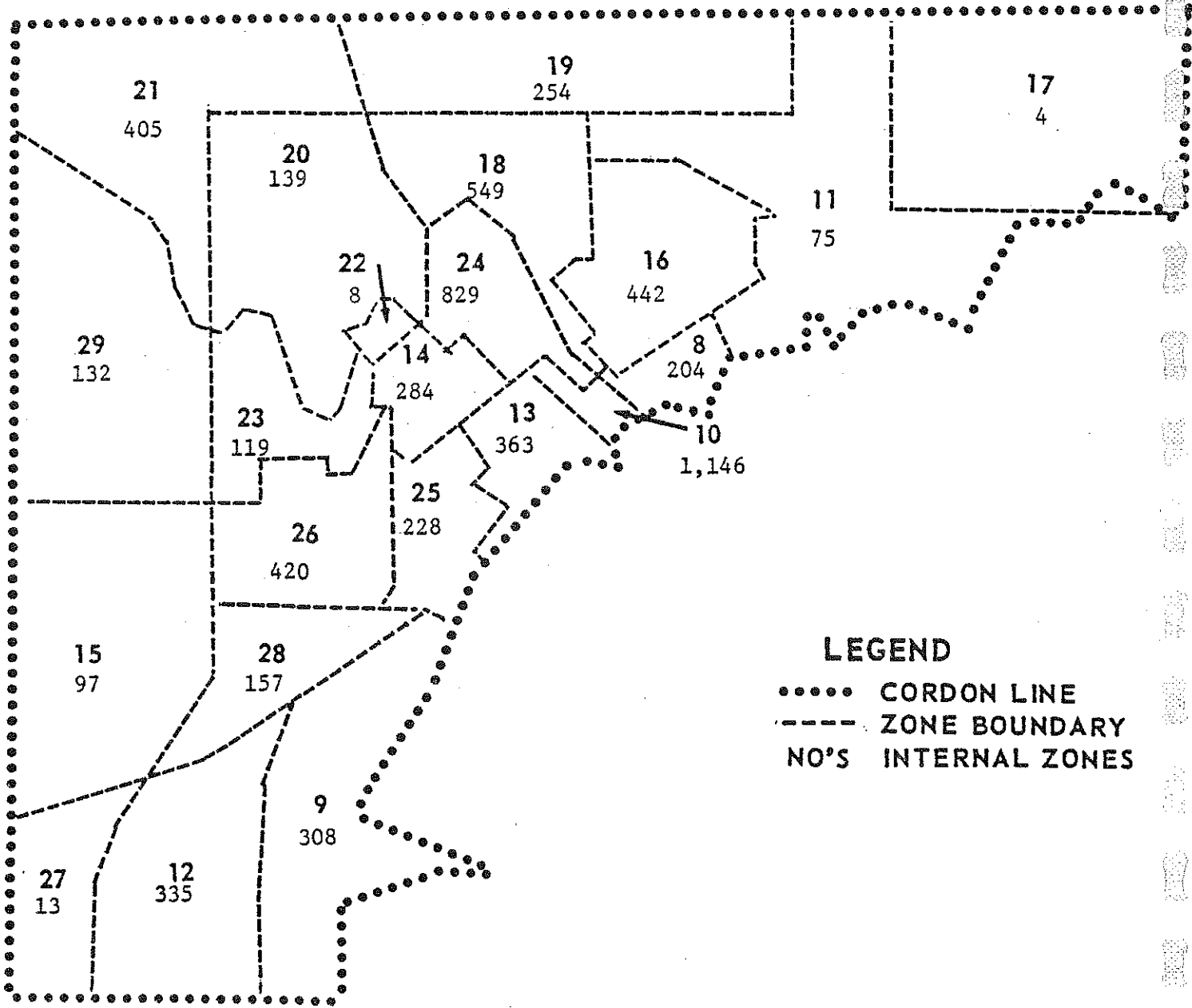


## STATION 1

## TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
8	204	3.1
9	308	4.7
10	1146	17.6
11	75	1.2
12	335	5.2
13	363	5.6
14	284	4.4
15	97	1.5
16	442	6.8
17	4	0.1
18	549	8.4
19	254	3.9
20	139	2.1
21	405	6.2
22	8	0.1
23	119	1.8
24	829	12.7
25	228	3.5
26	420	6.5
27	13	0.2
28	157	2.4
29	<u>132</u>	<u>2.0</u>
TOTAL	6511	100.0

STATION 1  
 TRAFFIC INTERCHANGING WITH INTERNAL ZONES



**LEGEND**  
 ..... CORDON LINE  
 - - - - ZONE BOUNDARY  
 NO'S INTERNAL ZONES

## STATION 1

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	4940	62.3
10-20	0	0.0
20-30	7358	17.1
30-40	0	0.0
40-50	356	4.5
50-60	305	3.8
60-80	96	1.2
80-100	87	1.1
100-120	108	1.4
120-150	133	1.7
150-180	75	0.9
180-300	239	3.0
300-420	140	1.8
420-540	16	0.2
540-660	53	0.7
660-780	9	0.1
780-900	<u>14</u>	<u>0.2</u>
TOTAL	7929	100.0

\*Longest Trip = 13 Hrs. 20 Min. Average Trip Length = 39 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 2  
US-23 SOUTH

<u>LOCATION:</u>	1.0 Mi. South of Bear Point Road
<u>CLASSIFICATION:</u>	State Trunkline
<u>TOTAL TRIPS:</u>	6,622
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 5,021 (75.8%)
<u>MAJOR TRIP PURPOSE:</u>	Work 2,708 (40.9%)
<u>TRIP DISTRIBUTION:</u>	Terminal 5,482 (82.8%) Through 1,140 (17.2%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 1, U-S-23 N. 734 (64.4%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 10, 868 (15.8%)
<u>LONGEST TRIP:</u>	15 Hrs. 20 Min.
<u>AVERAGE TRIP LENGTH:</u>	1 Hr. 00 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	5,021	75.8	4,270	85.0	751	15.0
Passenger Car with Trailer	63	1.0	29	46.0	34	54.0
Panel or Pickup	1,061	16.0	823	77.6	238	22.4
Panel or Pickup with Trailer	57	0.9	35	61.4	22	38.6
Other Single Unit Trucks	240	3.6	181	75.4	59	24.6
Combinations and Trucks with Trailers	<u>180</u>	<u>2.7</u>	<u>144</u>	<u>80.0</u>	<u>36</u>	<u>20.0</u>
TOTAL	6,622	100.0	5,482	82.8	1,140	17.2

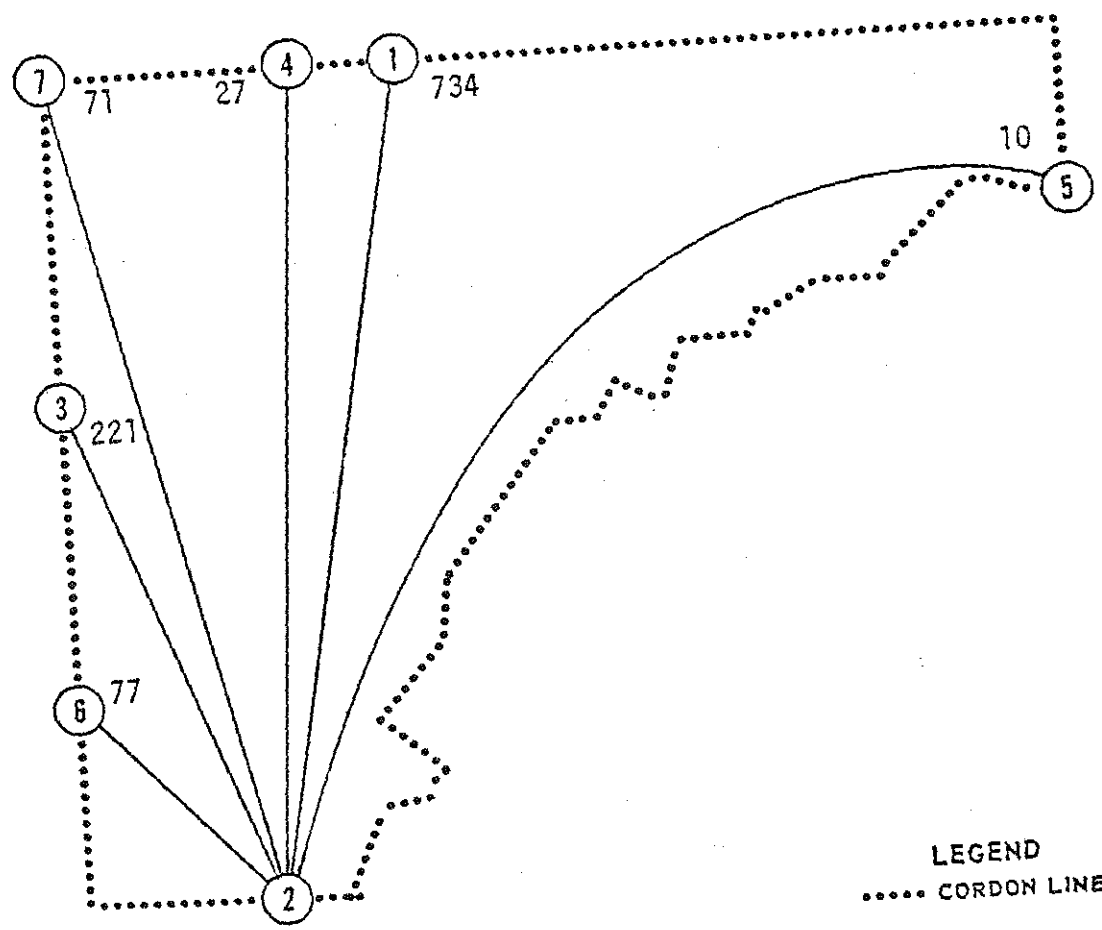
<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	2,708	40.9	2,268	83.8	440	16.2
Personal Business	921	13.9	820	89.0	101	11.0
Shopping	1,260	19.0	1,191	94.5	69	5.5
Vacation	461	7.0	148	32.1	313	67.9
Other Soc. or Rec.	766	11.6	620	80.9	146	19.1
All Other	<u>506</u>	<u>7.6</u>	<u>435</u>	<u>86.0</u>	<u>71</u>	<u>14.0</u>
TOTAL	6,622	100.0	5,482	82.8	1,140	17.2

STATION 2

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 US-23 North	734	64.4
2 US-23 South	—	—
3 M-32	221	19.4
4 On French Road	27	2.4
5 On North Point Road (Misery Bay Road)	10	0.9
6 On Werth Road	77	6.7
7 On Long Rapids Road	<u>71</u>	<u>6.2</u>
TOTAL	1,140	100.0

STATION 2  
TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS



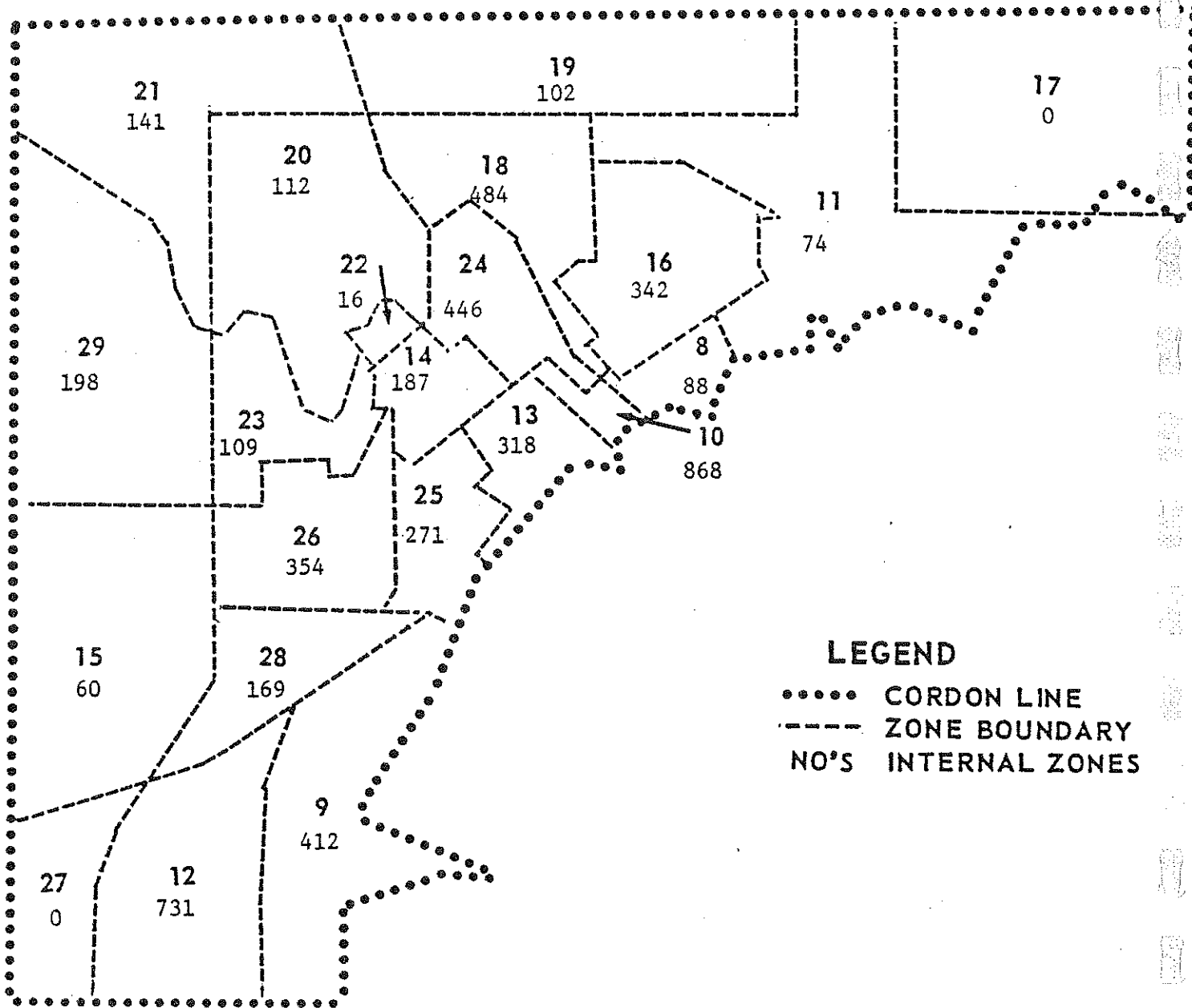
LEGEND  
..... CORDON LINE

## STATION 2

## TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
8	88	1.6
9	412	7.5
10	868	15.8
11	74	1.4
12	731	13.3
13	318	5.8
14	187	3.4
15	60	1.1
16	342	6.2
17	—	—
18	484	8.8
19	102	1.9
20	112	2.1
21	141	2.6
22	16	0.3
23	109	2.0
24	446	8.1
25	271	4.9
26	354	6.5
27	—	—
28	169	3.1
29	<u>198</u>	<u>3.6</u>
TOTAL	5482	100.0

STATION 2  
 TRAFFIC INTERCHANGING WITH INTERNAL ZONES



**LEGEND**  
 ..... CORDON LINE  
 - - - - - ZONE BOUNDARY  
 NO'S INTERNAL ZONES

STATION 2

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	3300	49.8
10-20	0	0.0
20-30	151	2.3
30-40	0	0.0
40-50	1587	24.0
50-60	3	0.1
60-80	452	6.8
80-100	93	1.4
100-120	23	0.3
120-150	63	1.0
150-180	198	3.0
180-300	503	7.6
300-420	175	2.6
420-540	42	0.6
540-660	15	0.2
660-780	6	0.1
780-900	5	0.1
900 Up	6	0.1
TOTAL	6622	100.0

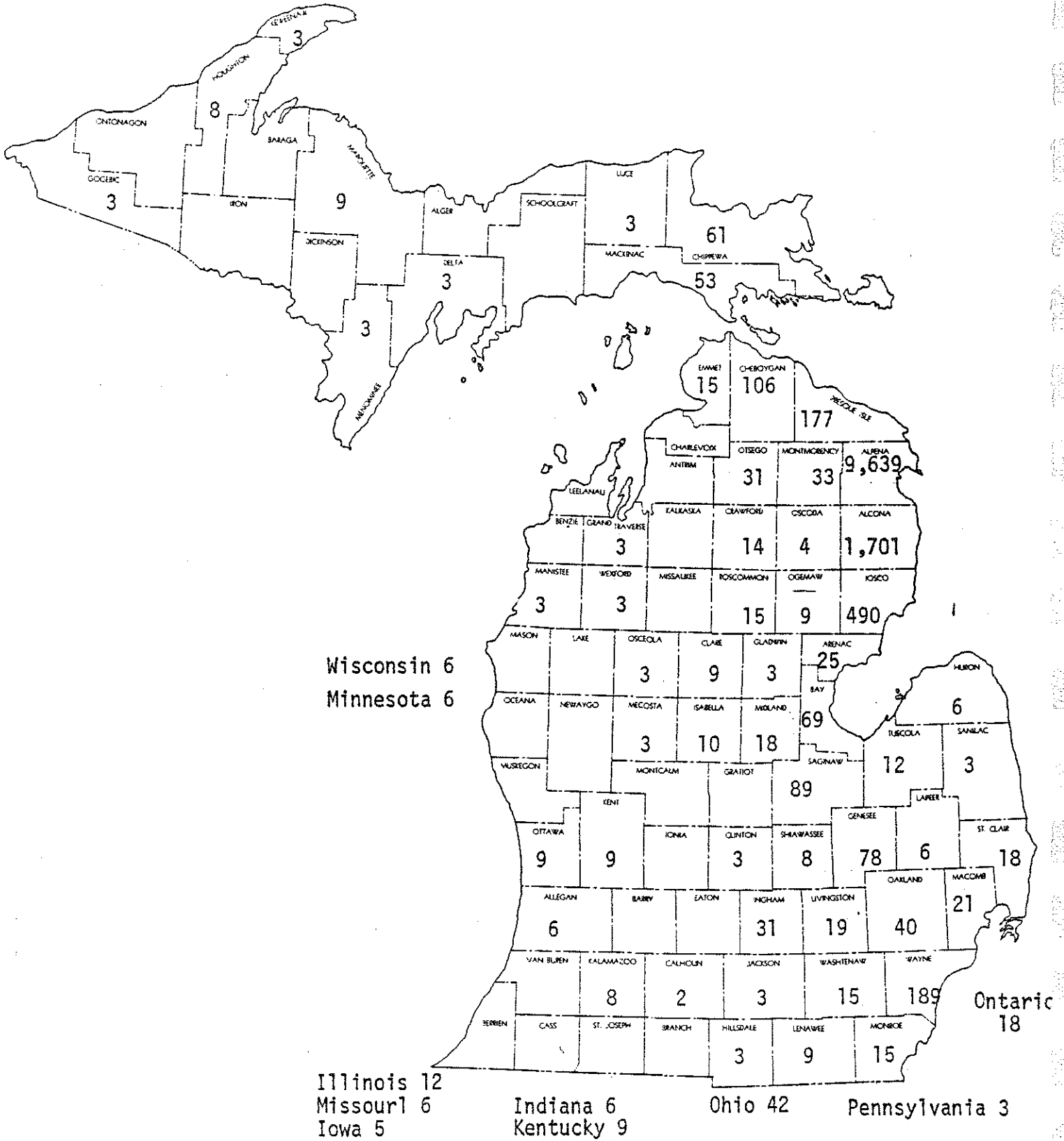
\*Longest Trip = 15 Hrs. 20 Min. Average Trip Length = 1 Hr. 00 Min.

\*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 2  
Trip End Summary

Total: 6622 trips = 13,244 trip ends.  
3438 trips had both their Origin and Destination in Alpena County.



STATION 3  
M-32 WEST

<u>LOCATION:</u>	300' West of Elizabeth St.
<u>CLASSIFICATION:</u>	State Trunkline
<u>TOTAL TRIPS:</u>	6,042
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 4,238 (70.1%)
<u>MAJOR TRIP PURPOSE:</u>	Work 2,871 (47.5%)
<u>TRIP DISTRIBUTION:</u>	Terminal 5,259 (87.0%) Through 783 (13.0%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 1, U-S-23 N. 380 (48.5%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 10, 765 (14.6%)
<u>LONGEST TRIP:</u>	9 Hrs. 10 Min.
<u>AVERAGE TRIP LENGTH:</u>	48 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	4,238	70.1	3,722	87.8	516	12.2
Passenger Car with Trailer	53	0.9	41	77.4	12	22.6
Panel or Pickup	1,139	18.9	981	86.1	158	13.9
Panel or Pickup with Trailer	33	0.5	29	87.9	4	12.1
Other Single Unit Trucks	429	7.1	363	84.6	66	15.4
Combinations and Trucks with Trailers	<u>150</u>	<u>2.5</u>	<u>123</u>	<u>82.0</u>	<u>27</u>	<u>18.0</u>
TOTAL	6,042	100.0	5,259	87.0	783	13.0

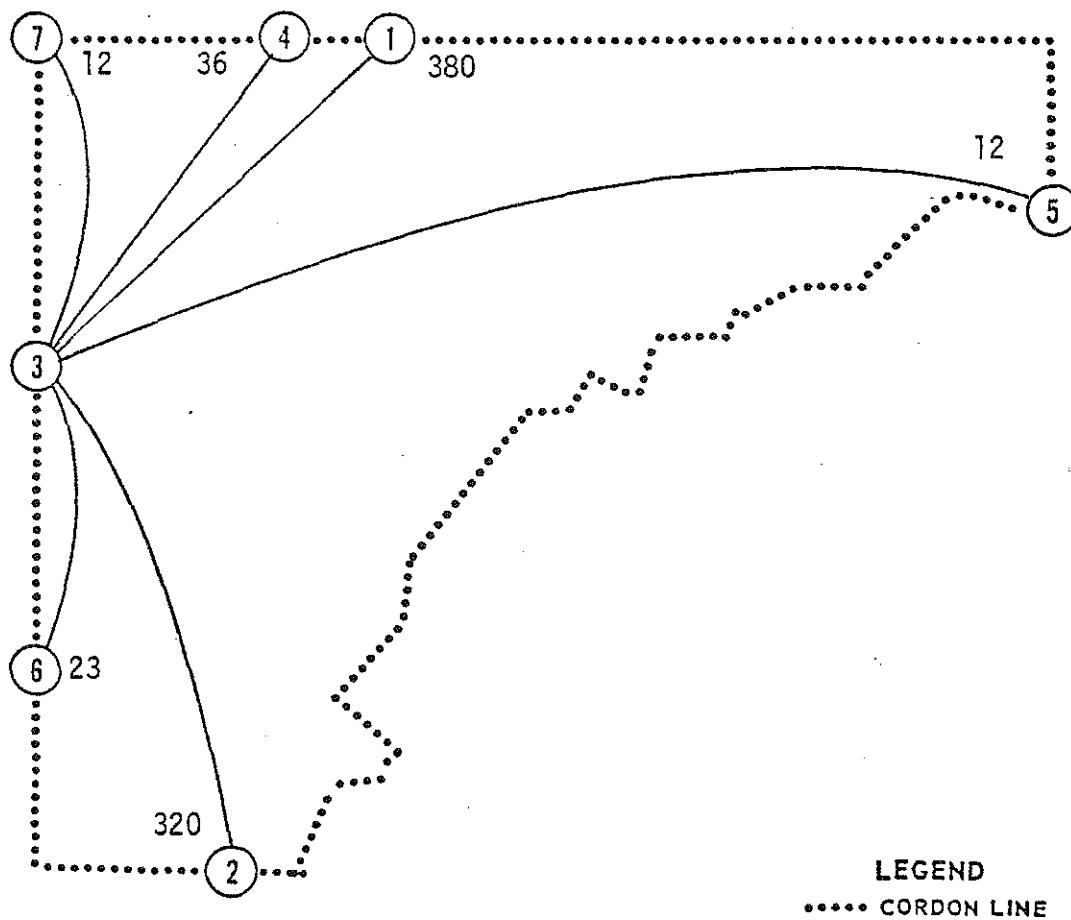
<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	2,871	47.5	2,453	85.4	418	14.6
Personal Business	740	12.2	640	86.5	100	13.5
Shopping	1,115	18.5	1,074	96.3	41	3.7
Vacation	151	2.5	100	66.2	51	33.8
Other Soc. or Rec.	516	8.5	428	82.9	88	17.1
All Other	<u>649</u>	<u>10.8</u>	<u>564</u>	<u>86.9</u>	<u>85</u>	<u>13.1</u>
TOTAL	6,042	100.0	5,259	87.0	783	13.0

## STATION 3

## THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

EXTERNAL STATIONS	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 US-23 North	380	48.5
2 US-23 South	320	40.9
3 M-32	—	—
4 On French Road	36	4.6
5 On North Point Road (Misery Bay Road)	12	1.5
6 On Werth Road	23	3.0
7 On Long Rapids Road	<u>12</u>	<u>1.5</u>
TOTAL	783	100.0

STATION 3  
TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS

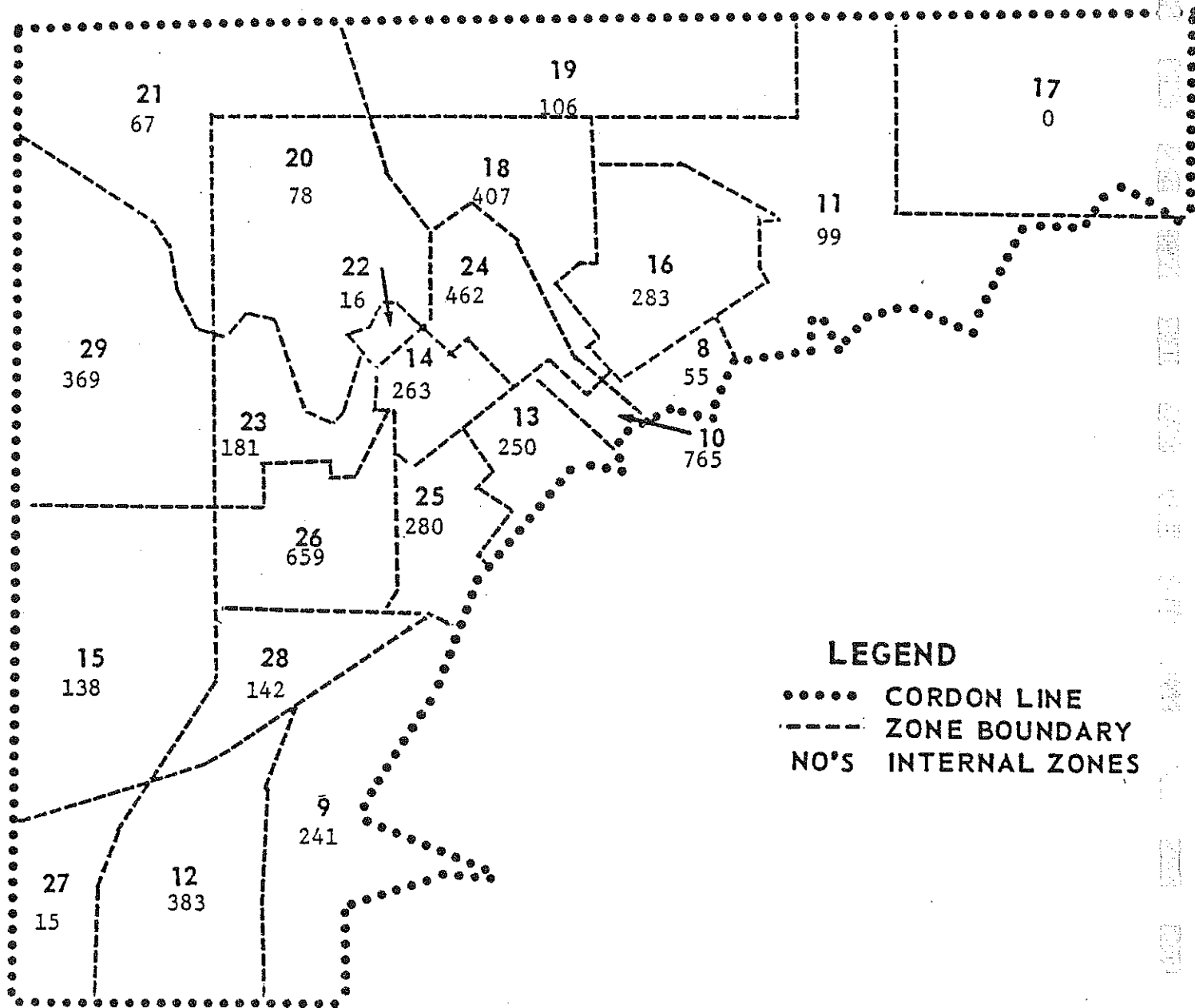


## STATION 3

## TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
8	55	1.0
9	241	4.6
10	765	14.6
11	99	1.9
12	383	7.3
13	250	4.8
14	263	5.0
15	138	2.6
16	283	5.4
17	—	—
18	407	7.7
19	106	2.0
20	78	1.5
21	67	1.3
22	16	0.3
23	181	3.4
24	462	8.8
25	280	5.3
26	659	12.5
27	15	0.3
28	142	2.7
29	<u>369</u>	<u>7.0</u>
TOTAL	5259	100.0

STATION 3  
 TRAFFIC INTERCHANGING WITH INTERNAL ZONES



## STATION 3

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	1360	22.5
10-20	0	0.0
20-30	2581	42.7
30-40	0	0.0
40-50	46	0.7
50-60	718	11.9
60-80	625	10.3
80-100	147	2.4
100-120	36	0.6
120-150	137	2.3
150-180	41	0.7
180-300	248	4.1
300-420	83	1.4
420-540	16	0.3
540-660	4	0.1
660-780	0	0.0
780-900	0	0.0
TOTAL	<u>6042</u>	<u>100.0</u>

\*Longest Trip = 9 Hrs. 10 Min. Average Trip Length = 48 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 4  
FRENCH ROAD

<u>LOCATION:</u>	0.4 Mi. Northwest of US-23
<u>CLASSIFICATION:</u>	County Road
<u>TOTAL TRIPS:</u>	1,453
<u>MAJOR VEHICLE TYPE:</u>	Passenger Car 1,088 (74.9%)
<u>MAJOR TRIP PURPOSE:</u>	Work 644 (44.3%)
<u>TRIP DISTRIBUTION:</u>	Terminal 1,273 (87.6%) Through 180 (12.4%)
<u>MAJOR THROUGH TRIP ATTRACTOR:</u>	Station 3, M-32 W. 66 (36.7%)
<u>MAJOR TERMINAL TRIP ATTRACTOR:</u>	Zone 24, 211 (16.6%)
<u>LONGEST TRIP:</u>	9 Hrs. 10 Min.
<u>AVERAGE TRIP LENGTH:</u>	12 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	1,088	74.9	966	88.8	122	11.2
Passenger Car with Trailer	6	0.4	6	100.0	0	0.0
Panel or Pickup	288	19.8	252	87.5	36	12.5
Panel or Pickup with Trailer	13	0.9	8	61.5	5	38.5
Other Single Unit Trucks	57	3.9	41	71.9	16	28.1
Combinations and Trucks with Trailers	<u>1</u>	<u>0.1</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>100.0</u>
TOTAL	1,453	100.0	1,273	87.6	180	12.4

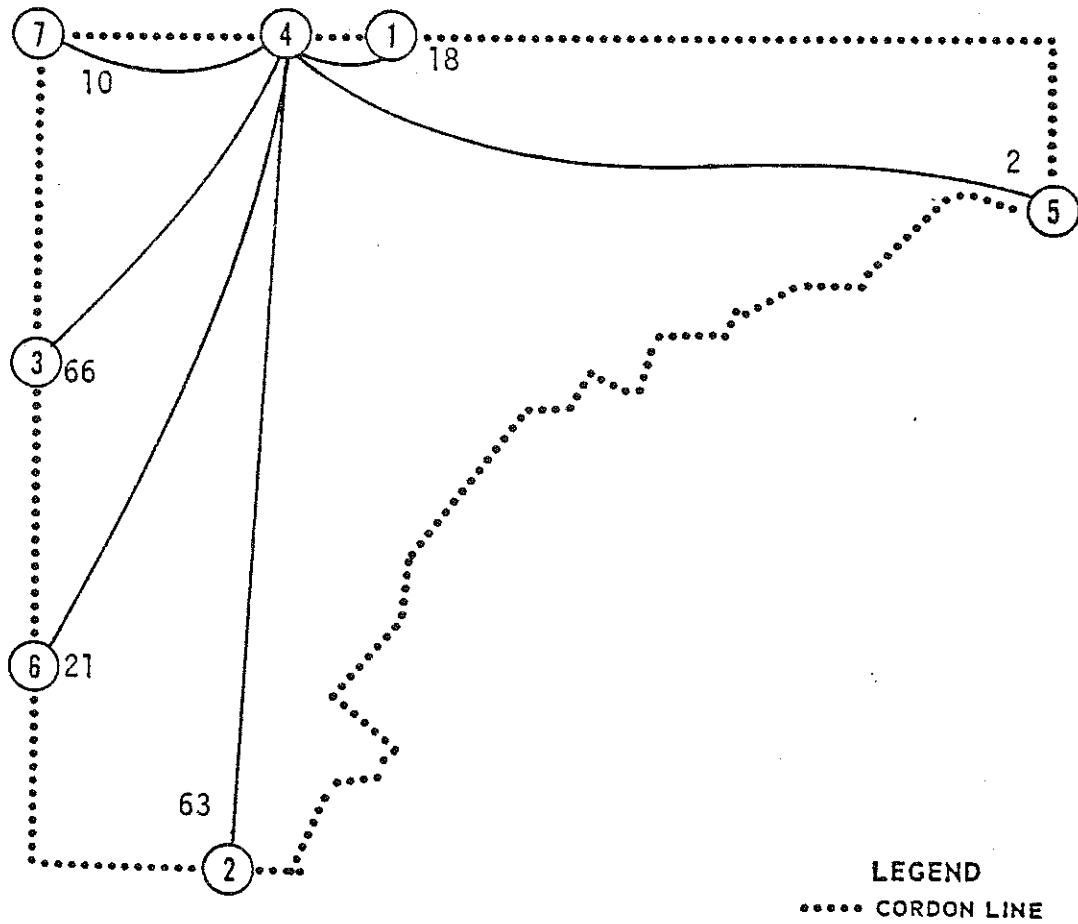
<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	644	44.3	573	89.0	71	11.0
Personal Business	201	13.8	172	85.6	29	14.4
Shopping	246	16.9	226	91.9	20	8.1
Vacation	4	0.3	0	0.0	4	100.0
Other Soc. or Rec.	236	16.3	190	80.5	46	19.5
All Other	<u>122</u>	<u>8.4</u>	<u>112</u>	<u>91.8</u>	<u>10</u>	<u>8.2</u>
TOTAL	1,453	100.0	1,273	87.6	180	12.4

STATION 4

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 US-23 North	18	10.0
2 US-23 South	63	35.0
3 M-32	66	36.7
4 On French Road	—	—
5 On North Point Road (Misery Bay Road)	2	1.1
6 On Werth Road	21	11.7
7 On Long Rapids Road	<u>10</u>	<u>5.5</u>
TOTAL	180	100.0

STATION 4  
TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS

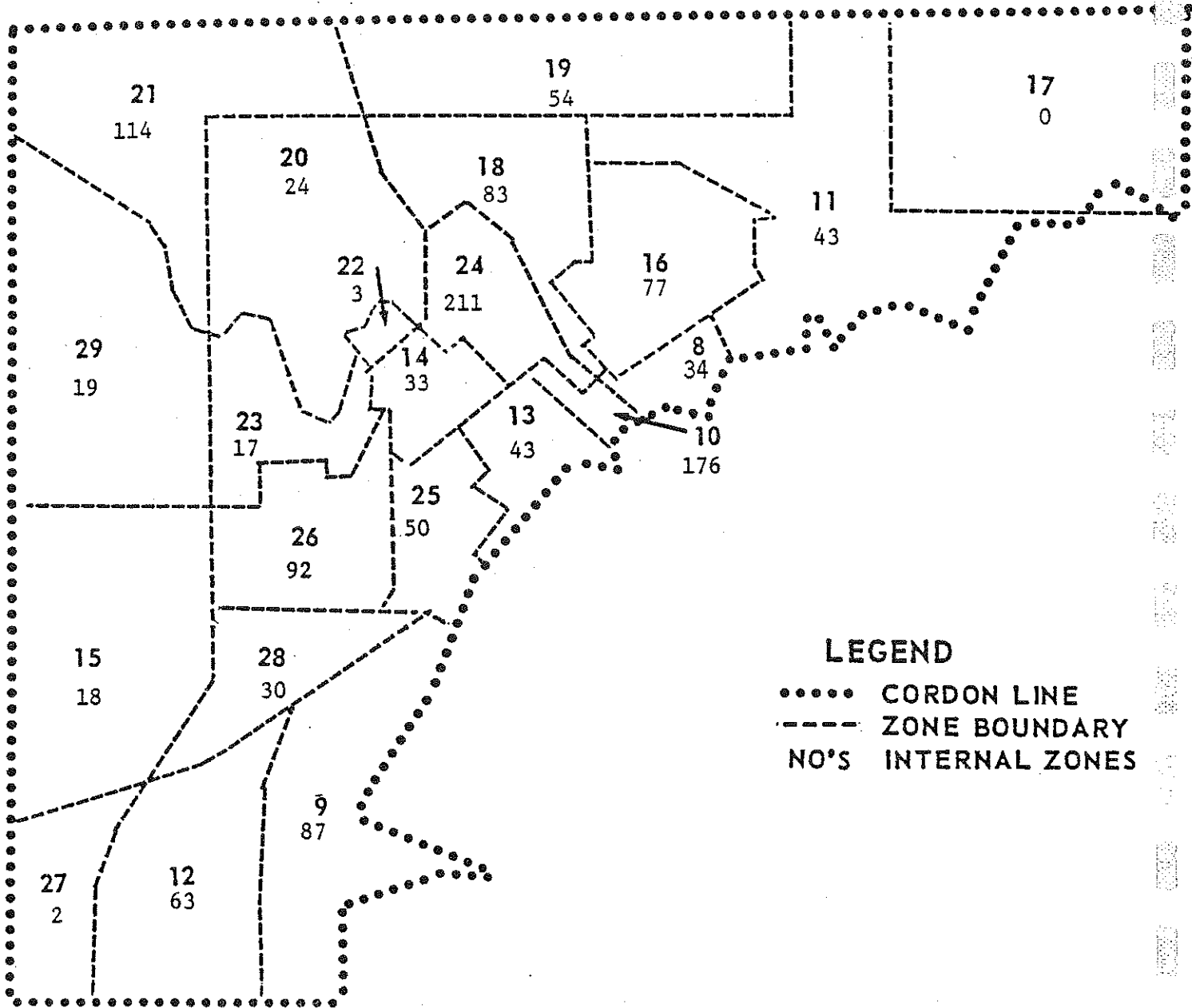


## STATION 4

## TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
8	34	2.7
9	87	6.8
10	176	13.8
11	43	3.4
12	63	5.0
13	43	3.4
14	33	2.6
15	18	1.4
16	77	6.0
17	—	—
18	83	6.5
19	54	4.2
20	24	1.9
21	114	9.0
22	3	0.2
23	17	1.3
24	211	16.6
25	50	3.9
26	92	7.2
27	2	0.2
28	30	2.4
29	<u>19</u>	<u>1.5</u>
TOTAL	1273	100.0

STATION 4  
 TRAFFIC INTERCHANGING WITH INTERNAL ZONES



## STATION 4

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	1285	88.4
10-20	0	0.0
20-30	93	6.4
30-40	0	0.0
40-50	27	1.9
50-60	2	0.1
60-80	12	0.8
80-100	4	0.3
100-120	0	0.0
120-150	10	0.7
150-180	0	0.0
180-300	14	1.0
300-420	0	0.0
420-540	4	0.3
540-660	2	0.1
660-780	0	0.0
780-900	<u>0</u>	<u>0.0</u>
TOTAL	1453	100.0

\*Longest Trip = 9 Hrs. 10 Min. Average Trip Length = 12 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 5  
MISERY BAY ROAD

LOCATION: 1.5 Mi. East of Huron Portland  
Cement Co.

CLASSIFICATION: County Road

TOTAL TRIPS: 322

MAJOR VEHICLE TYPE: Passenger Car 243 (75.5%)

MAJOR TRIP PURPOSE: Other Soc. or Rec. 112 (34.8%)

TRIP DISTRIBUTION: Terminal 280 (87.0%)  
Through 42 (13.0%)

MAJOR THROUGH TRIP ATTRACTOR: Station 1, U-S-23 N. 16 (38.1%)

MAJOR TERMINAL TRIP ATTRACTOR: Zone 16, 58 (20.7%)

LONGEST TRIP: 4 Hrs. 40 Min.

AVERAGE TRIP LENGTH: 11 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	243	75.5	221	90.9	22	9.1
Passenger Car with Trailer	3	0.9	3	100.0	0	0.0
Panel or Pickup	70	21.7	53	75.7	17	24.3
Panel or Pickup with Trailer	0	0.0	0	0.0	0	0.0
Other Single Unit Trucks	5	1.6	3	60.0	2	40.0
Combinations and Trucks with Trailers	<u>1</u>	<u>0.3</u>	<u>0</u>	<u>0.0</u>	<u>1</u>	<u>100.0</u>
TOTAL	322	100.0	280	87.0	42	13.0

<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	111	34.5	96	86.5	15	13.5
Personal Business	36	11.2	32	88.9	4	11.1
Shopping	38	11.8	38	100.0	0	0.0
Vacation	0	0.0	0	0.0	0	0.0
Other Soc. or Rec.	112	34.8	91	81.3	21	18.7
All Other	<u>25</u>	<u>7.7</u>	<u>23</u>	<u>92.0</u>	<u>2</u>	<u>8.0</u>
TOTAL	322	100.0	280	87.0	42	13.0

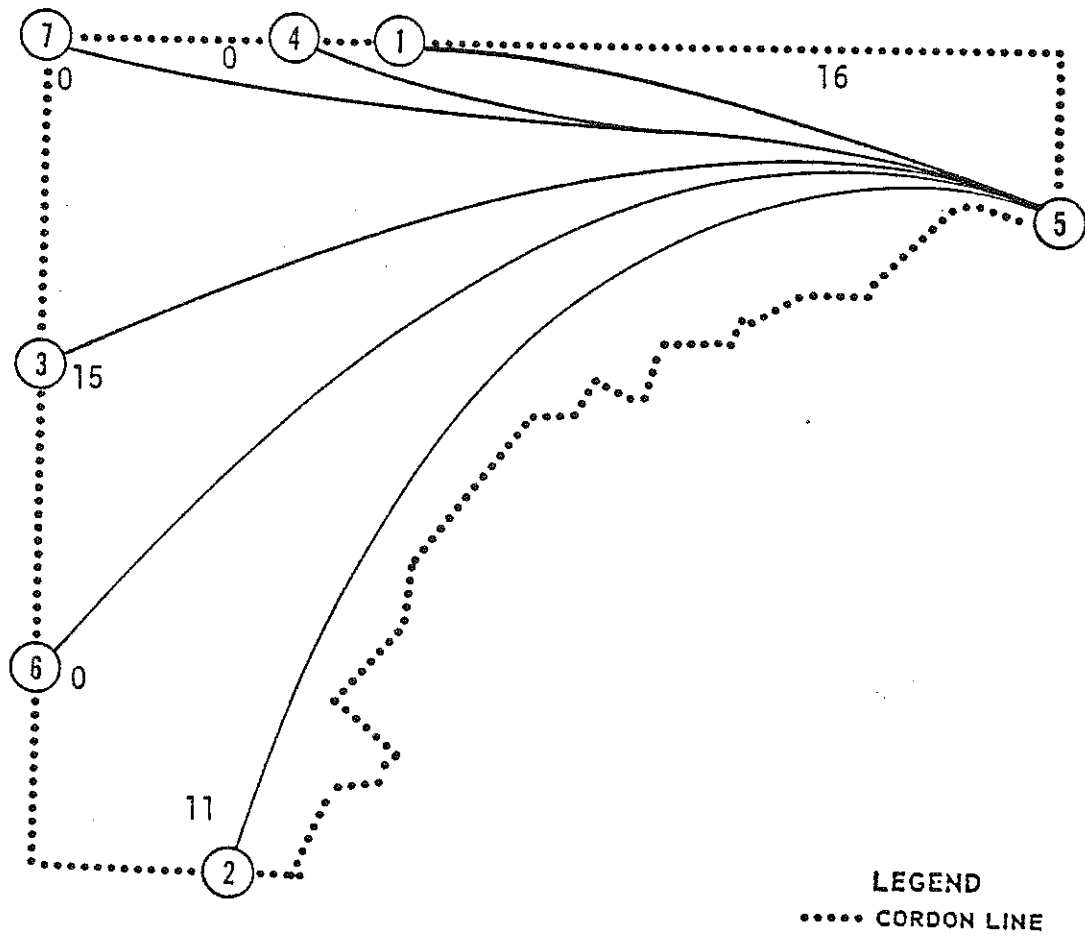
STATION 5

THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 US-23 North	16	38.1
2 US-23 South	11	26.2
3 M-32	15	35.7
4 On French Road	—	—
5 On North Point Road (Misery Bay Road)	—	—
6 On Werth Road	—	—
7 On Long Rapids Road	—	—
TOTAL	42	100.0

MICHIGAN DEPARTMENT OF  
**TRANSPORTATION LIBRARY**  
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STATION 5  
TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS

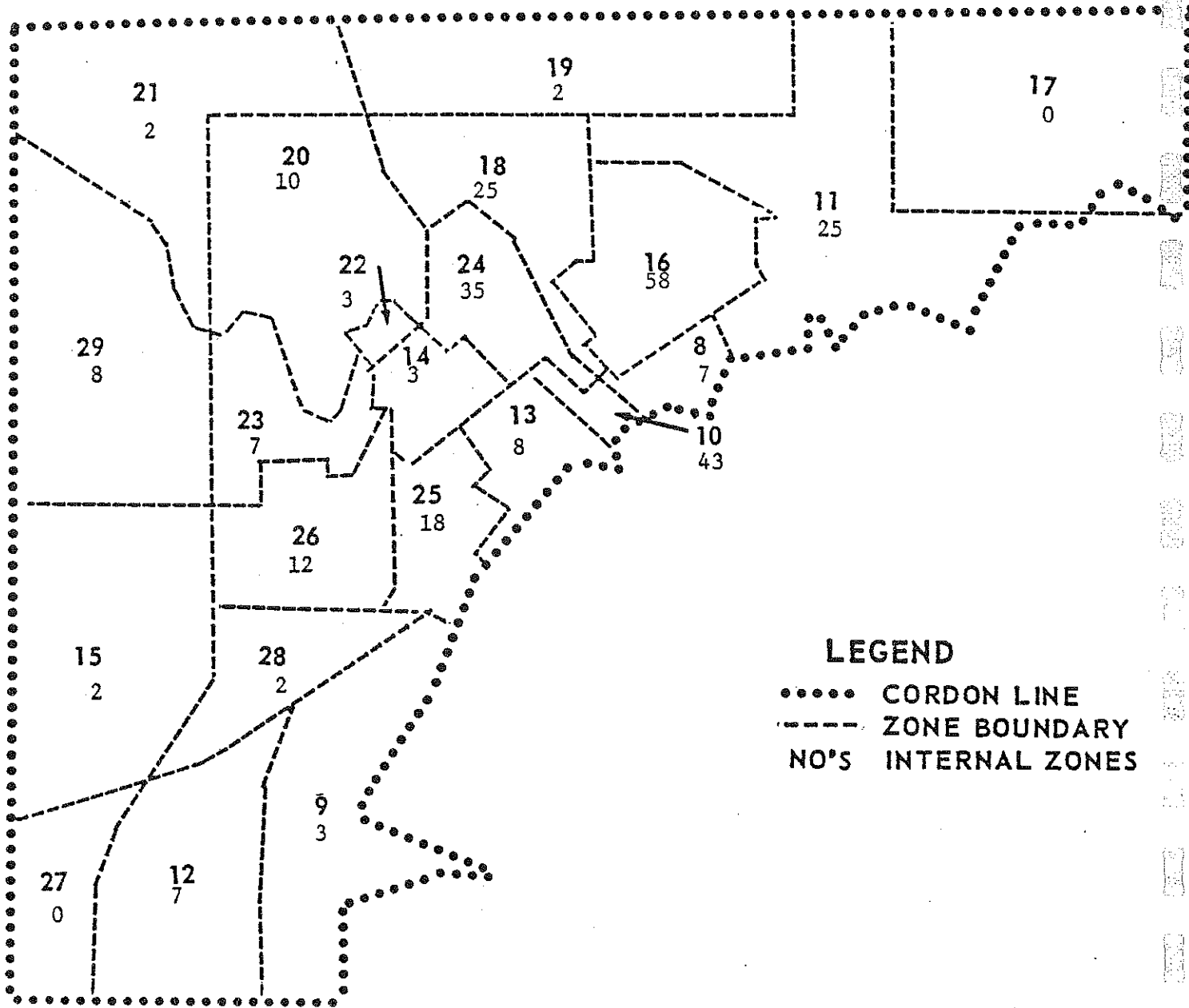


## STATION 5

## TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
8	7	2.5
9	3	1.1
10	43	15.3
11	25	8.9
12	7	2.5
13	8	2.9
14	3	1.1
15	2	0.7
16	58	20.7
17	—	—
18	25	8.9
19	2	0.7
20	10	3.6
21	2	0.7
22	3	1.1
23	7	2.5
24	35	12.5
25	18	6.4
26	12	4.3
27	—	—
28	2	0.7
29	<u>8</u>	<u>2.9</u>
TOTAL	280	100.0

STATION 5  
 TRAFFIC INTERCHANGING WITH INTERNAL ZONES



**LEGEND**

- ..... CORDON LINE
- ZONE BOUNDARY
- NO'S INTERNAL ZONES

## STATION 5

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	301	93.5
10-20	0	0.0
20-30	9	2.8
30-40	0	0.0
40-50	2	0.6
50-60	0	0.0
60-80	0	0.0
80-100	0	0.0
100-120	0	0.0
120-150	4	1.2
150-180	0	0.0
180-300	6	1.9
300-420	0	0.0
420-540	0	0.0
540-660	0	0.0
660-780	0	0.0
780-900	<u>0</u>	<u>0.0</u>
TOTAL	322	100.0

\*Longest Trip = 4 Hrs. 40 Min. Average Trip Length = 11 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 6  
WERTH ROAD

LOCATION: 0.7 Mi. Southwest of Piper Road

CLASSIFICATION: County Road

TOTAL TRIPS: 2,412

MAJOR VEHICLE TYPE: Passenger Car 1,243 (51.5%)

MAJOR TRIP PURPOSE: Work 1,785 (74.0%)

TRIP DISTRIBUTION: Terminal 2,073 (85.9%)  
Through 339 (14.1%)

MAJOR THROUGH TRIP ATTRACTOR: Station 1, U-S-23 N. 218 (64.3%)

MAJOR TERMINAL TRIP ATTRACTOR: Zone 12, 358 (17.3%)

LONGEST TRIP: 5 Hrs. 40 Min.

AVERAGE TRIP LENGTH: 26 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	1,243	51.5	1,020	82.1	223	17.9
Passenger Car with Trailer	181	7.5	153	84.5	28	15.5
Panel or Pickup	412	17.1	412	100.0	0	0.0
Panel or Pickup with Trailer	0	0.0	0	0.0	0	0.0
Other Single Unit Trucks	379	15.7	311	82.1	68	17.9
Combinations and Trucks with Trailers	<u>197</u>	<u>8.2</u>	<u>177</u>	<u>89.8</u>	<u>20</u>	<u>10.2</u>
TOTAL	2,412	100.0	2,073	85.9	339	14.1

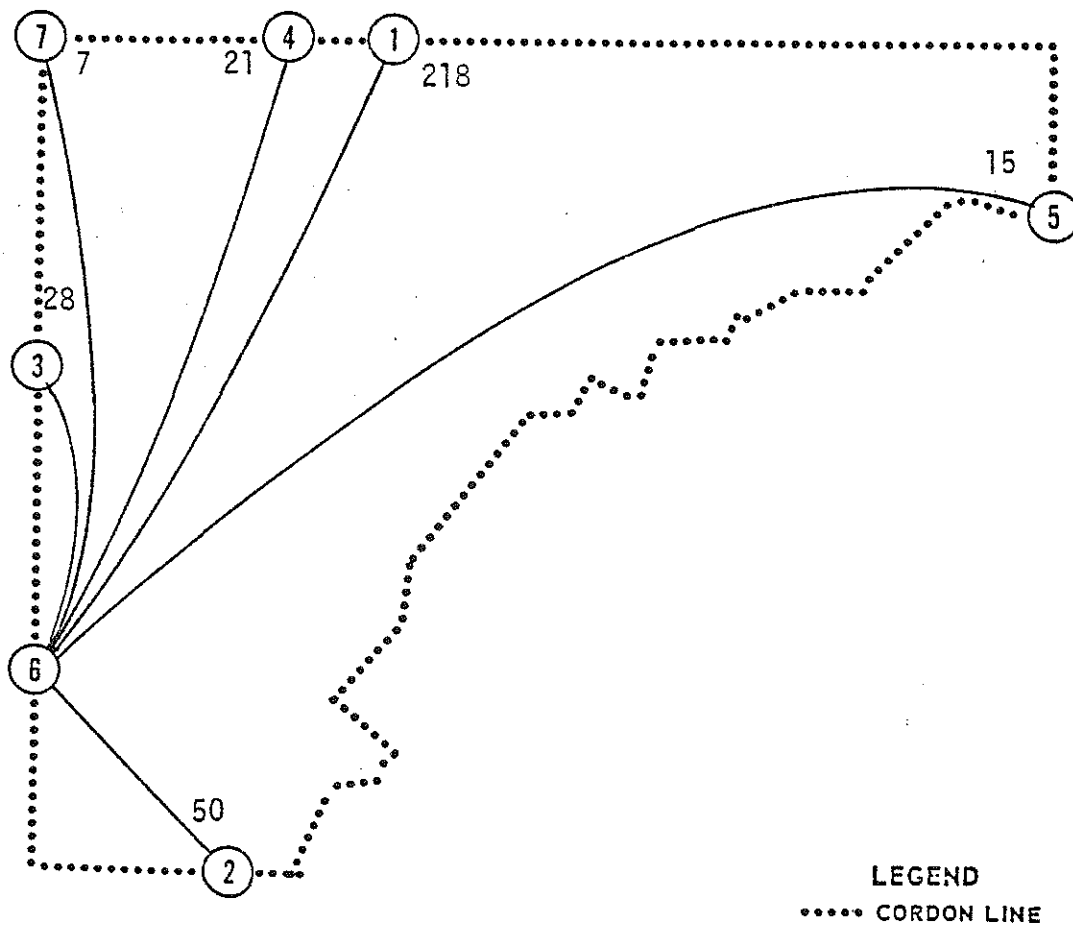
<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	1,785	74.0	1,590	89.1	195	10.9
Personal Business	6	0.2	0	0.0	6	100.0
Shopping	529	22.0	436	82.4	93	17.6
Vacation	0	0.0	0	0.0	0	0.0
Other Soc. or Rec.	70	2.9	41	58.6	29	41.4
All Other	<u>22</u>	<u>0.9</u>	<u>6</u>	<u>27.3</u>	<u>16</u>	<u>72.7</u>
TOTAL	2,412	100.0	2,073	85.9	339	14.1

## STATION 6

## THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 US-23 North	218	64.3
2 US-23 South	50	14.7
3 M-32	28	8.3
4 On French Road	21	6.2
5 On North Point Road (Misery Bay Road)	15	4.4
6 On Werth Road	—	—
7 On Long Rapids Road	<u>7</u>	<u>2.1</u>
TOTAL	339	100.0

STATION 6  
TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS

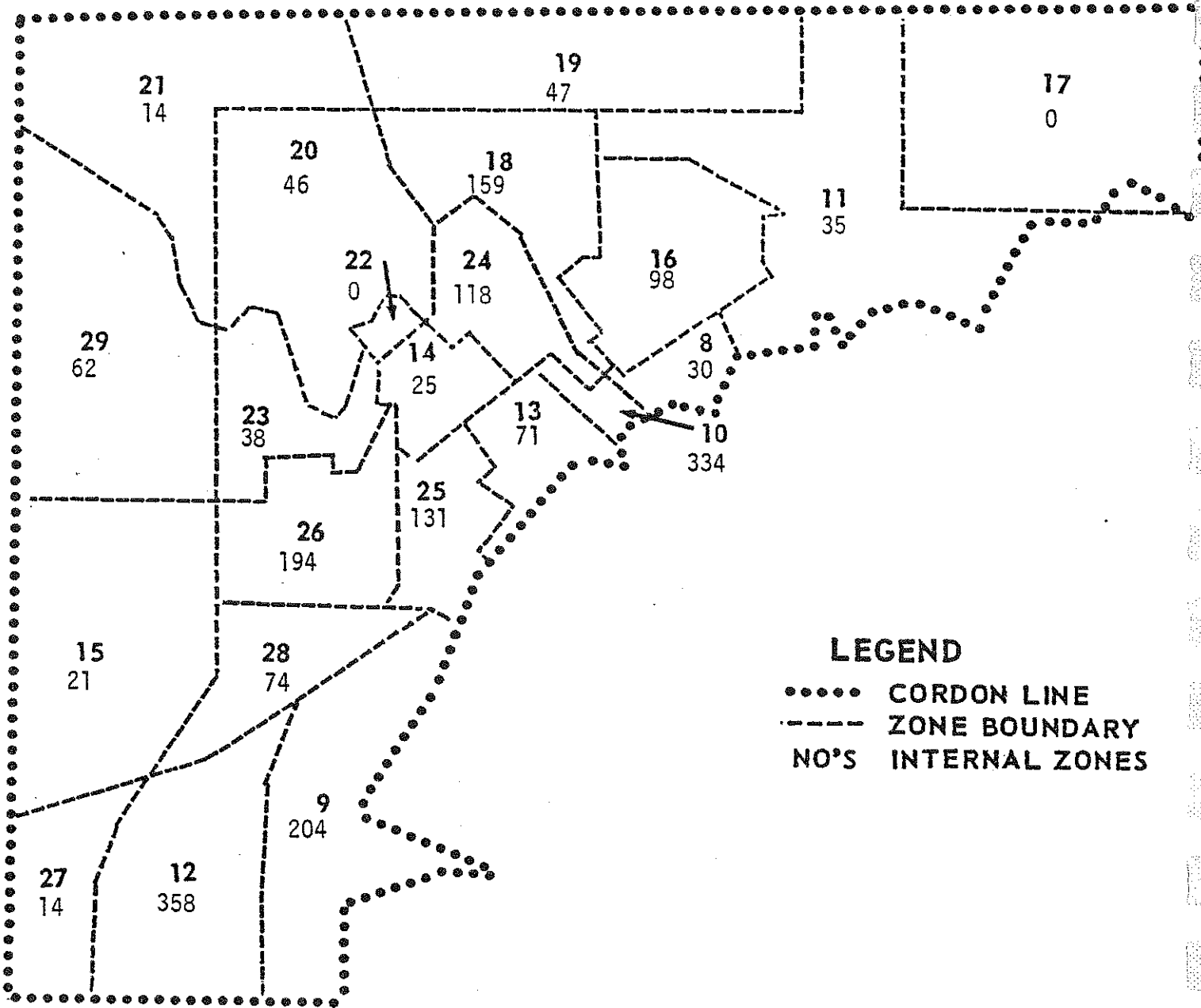


## STATION 6

## TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
8	30	1.4
9	204	9.8
10	334	16.1
11	35	1.7
12	358	17.3
13	71	3.4
14	25	1.2
15	21	1.0
16	98	4.7
17	—	—
18	159	7.7
19	47	2.3
20	46	2.2
21	14	0.7
22	—	—
23	38	1.8
24	118	5.7
25	131	6.3
26	194	9.4
27	14	0.7
28	74	3.6
29	<u>62</u>	<u>3.0</u>
TOTAL	2073	100.0

STATION 6  
TRAFFIC INTERCHANGING WITH INTERNAL ZONES



**LEGEND**

- ..... CORDON LINE
- ZONE BOUNDARY
- NO'S INTERNAL ZONES

## STATION 6

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	814	33.8
10-20	0	0.0
20-30	1072	44.4
30-40	0	0.0
40-50	399	16.5
50-60	7	0.3
60-80	57	2.4
80-100	8	0.3
100-120	0	0.0
120-150	0	0.0
150-180	21	0.9
180-300	20	0.8
300-420	14	0.6
420-540	0	0.0
540-660	0	0.0
660-780	0	0.0
780-900	<u>0</u>	<u>0.0</u>
TOTAL	2412	100.0

\*Longest Trip = 5 Hrs.40 Min. Average Trip Length = 26 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 6  
Trip End Summary

Total: 2412 trips = 4824 trip ends.  
1871 trips had both their Origin and Destination in Alpena County.



STATION 7  
LONG RAPIDS ROAD

LOCATION: 1.2 Mi. Northwest of Genschaw Road

CLASSIFICATION: County Road

TOTAL TRIPS: 2,370

MAJOR VEHICLE TYPE: Passenger Car 1,727 (72.9%)

MAJOR TRIP PURPOSE: Work 866 (36.6%)

TRIP DISTRIBUTION: Terminal 2,076 (87.6%)  
Through 294 (12.4%)

MAJOR THROUGH TRIP ATTRACTOR: Station 1, U-S-23 N. 129 (43.9%)

MAJOR TERMINAL TRIP ATTRACTOR: Zone 10, 473 (22.8%)

LONGEST TRIP: 5 Hrs. 20 Min.

AVERAGE TRIP LENGTH: 24 Min.

DEPARTMENT OF  
LIBRARY  
48909



## 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	1,727	72.9	1,551	89.8	176	10.2
Passenger Car with Trailer	15	0.6	15	100.0	0	0.0
Panel or Pickup	573	24.2	494	86.2	79	13.8
Panel or Pickup with Trailer	31	1.3	8	25.8	23	74.2
Other Single Unit Trucks	24	1.0	8	33.3	16	66.6
Combinations and Trucks with Trailers	<u>0</u>	<u>0.0</u>	<u>0</u>	<u>0.0</u>	<u>0</u>	<u>0.0</u>
TOTAL	2,370	100.0	2,076	87.6	294	12.4

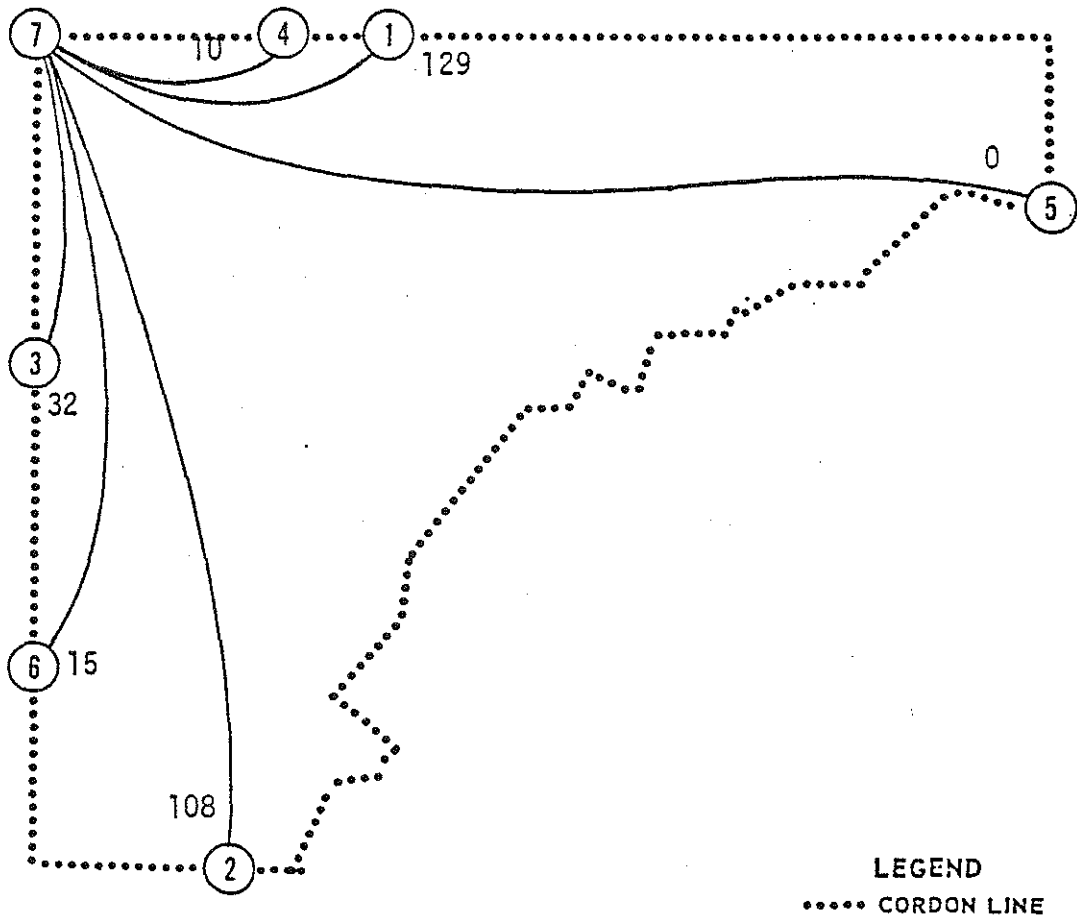
<u>Trip Purpose</u>	<u>Vehicles</u>	<u>Percent of Total</u>	<u>Terminal</u>	<u>%</u>	<u>Through</u>	<u>%</u>
Work	866	36.6	711	82.1	155	17.9
Personal Business	296	12.5	243	82.1	53	17.9
Shopping	579	24.4	571	98.6	8	1.4
Vacation	15	0.6	15	100.0	0	0.0
Other Soc. or Rec.	216	9.1	188	87.0	28	13.0
All Other	<u>398</u>	<u>16.8</u>	<u>348</u>	<u>87.4</u>	<u>50</u>	<u>12.6</u>
TOTAL	2,370	100.0	2,076	87.6	294	12.4

## STATION 7

## THRU TRIPS INTERCHANGING WITH EXTERNAL STATIONS

<u>EXTERNAL STATION</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
1 US-23 North	129	43.9
2 US-23 South	108	36.7
3 M-32	32	10.9
4 On French Road	10	3.4
5 On North Point Road (Misery Bay Road)	—	—
6 On Werth Road	15	5.1
7 On Long Rapids Road	—	—
TOTAL	294	100.0

STATION 7  
TRAFFIC INTERCHANGING WITH EXTERNAL STATIONS

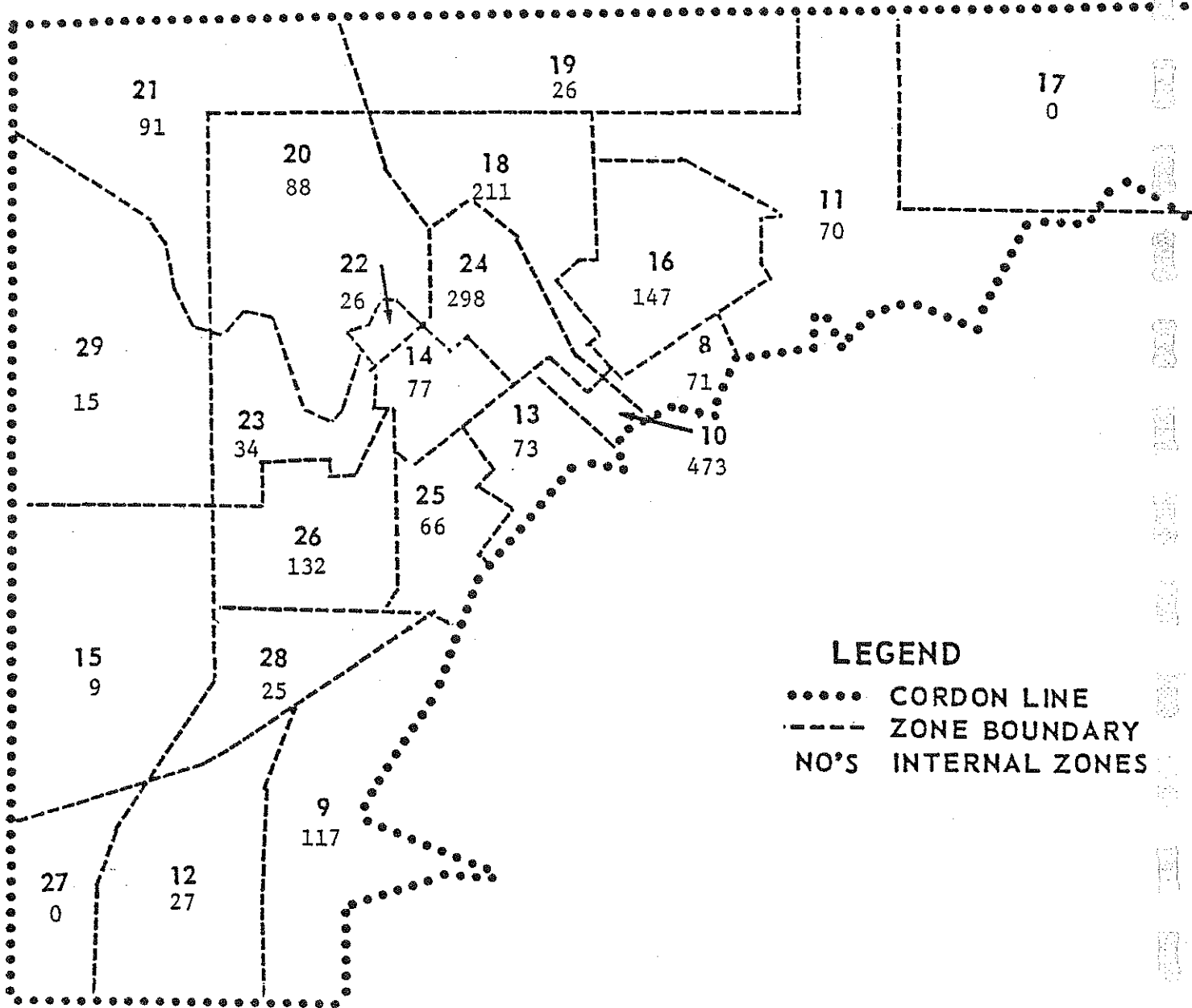


## STATION 7

## TERMINAL TRIPS INTERCHANGING WITH INTERNAL ZONES

<u>INTERNAL ZONE</u>	<u>VEHICLES</u>	<u>PERCENT OF TOTAL</u>
8	71	3.4
9	117	5.6
10	473	22.8
11	70	3.4
12	27	1.3
13	73	3.5
14	77	3.7
15	9	0.4
16	147	7.1
17	—	—
18	211	10.2
19	26	1.3
20	88	4.2
21	91	4.4
22	26	1.3
23	34	1.6
24	298	14.3
25	66	3.2
26	132	6.4
27	—	—
28	25	1.2
29	<u>15</u>	<u>0.7</u>
TOTAL	2076	100.0

STATION 7  
 TRAFFIC INTERCHANGING WITH INTERNAL ZONES



## STATION 7

TRIP LENGTHS

<u>MINUTES</u>	<u>NO. OF TRIPS</u>	<u>PERCENT OF TOTAL</u>
01-10	475	20.0
10-20	0	0.0
20-30	1743	73.6
30-40	0	0.0
40-50	17	0.7
50-60	22	0.9
60-80	36	1.5
80-100	28	1.2
100-120	0	0.0
120-150	18	0.8
150-180	16	0.7
180-300	7	0.3
300-420	8	0.3
420-540	0	0.0
540-660	0	0.0
660-780	0	0.0
780-900	<u>0</u>	<u>0.0</u>
TOTAL	2370	100.0

\*Longest Trip = 5 Hrs. 20Min. Average Trip Length = 24 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 7  
Trip End Summary

Total: 2370 trips=4740 trip ends.  
2005 trips had both their Origin  
and Destination in Alpena County.



PART III.  
APPENDICES



APPENDIX "A"

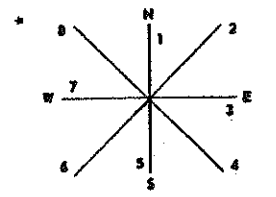
FORM NUMBER	6	COUNTY NUMBER	1	2	3	STATEWIDE NUMBER	4	5	6	7	HOUR PERIOD ENDING	8	9	* DIREC-TION	10	DAY ** OF TRAVEL	11	MO.	12	13	DATE	14	15
-------------	---	---------------	---	---	---	------------------	---	---	---	---	--------------------	---	---	--------------	----	------------------	----	-----	----	----	------	----	----

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	D.W. or F.P.S.	ROUTE OF EXIT OR ENT.
-83-							

16 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 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



DAY OF WEEK: Col. 17

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

STATION TYPE: Col. 20

**TRUCK IDENTIFICATION**

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-axes 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.

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.		

APPENDIX "B"

## 1962 & 1976 O&D STUDY COMPARISONS

The cordon line for each study was almost identical. Actual locations of the stations operated in 1976 varied so slightly from those of 1962, that those variations were not enough to affect any comparisons drawn between the two studies. Two of the stations operated in 1962 were not operated in 1976 due to low traffic volumes.

A comparison of this data will give the observer a feel for changes from 1962 to 1976, in traffic flow patterns and volumes passing through and interchanging with the study area.

CORDON LINE STATIONS

<u>1962 Station Number</u>	<u>1976 Station Number</u>	<u>ROUTE</u>	<u>LOCATION</u>
1	1	US-23 North	0.1 Mi. North of Detroit-Mackinac Railroad, North of French Rd.
2	2	US-23 South	1.0 Mi. South of Bear Point Road
3	3	M-32	300 Ft. West of Elizabeth St.
4	4	French Rd.	0.4 Mi. Northwest of US-23
Not Operated	5	Long Lake Rd.	NW Corner, Section 14
Not Operated	6	Wessel Rd.	NE Corner, Section 14
5	7	Misery Bay Rd.	1.5 Mi. East of Huron Portland Cement Co.
6	8	Werth Rd.	0.7 Mi. Southwest at Piper Rd.
7	9	Long Rapids Rd.	1.2 Mi. Northwest of Genschaw Rd.

EXPANDED VEHICLE TRIPS BY STATION  
1962 Vs. 1976

<u>ROUTE</u>	<u>1962</u>	<u>% OF TOTAL</u>	<u>1976</u>	<u>% OF TOTAL</u>	<u>% INCREASE 1962 TO 1976</u>
US-23 North	5166	28.1	7929	29.2	53.5
US-23 South	4628	25.2	6622	24.4	43.1
M-32	3794	20.6	6042	22.3	59.3
French Rd.	841	4.6	1453	5.3	72.8
Long Lake Rd.	188	1.0	—	—	—
Wessel Rd.	86	0.5	—	—	—
Misery Bay Rd.	192	1.0	322	1.2	67.7
Werth Rd.	2236	12.1	2412	8.9	7.9
Long Rapids Rd.	<u>1262</u>	<u>6.9</u>	<u>2370</u>	<u>8.7</u>	<u>87.8</u>
	18,393	100.0	27,150	100.0	
	<u>-1,746</u>		<u>-2,098</u>		
* Adjusted Vehicle Trips 16,647			25,052		50.5

\* 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.



TRIP MOVEMENTS  
1962 Vs. 1976

