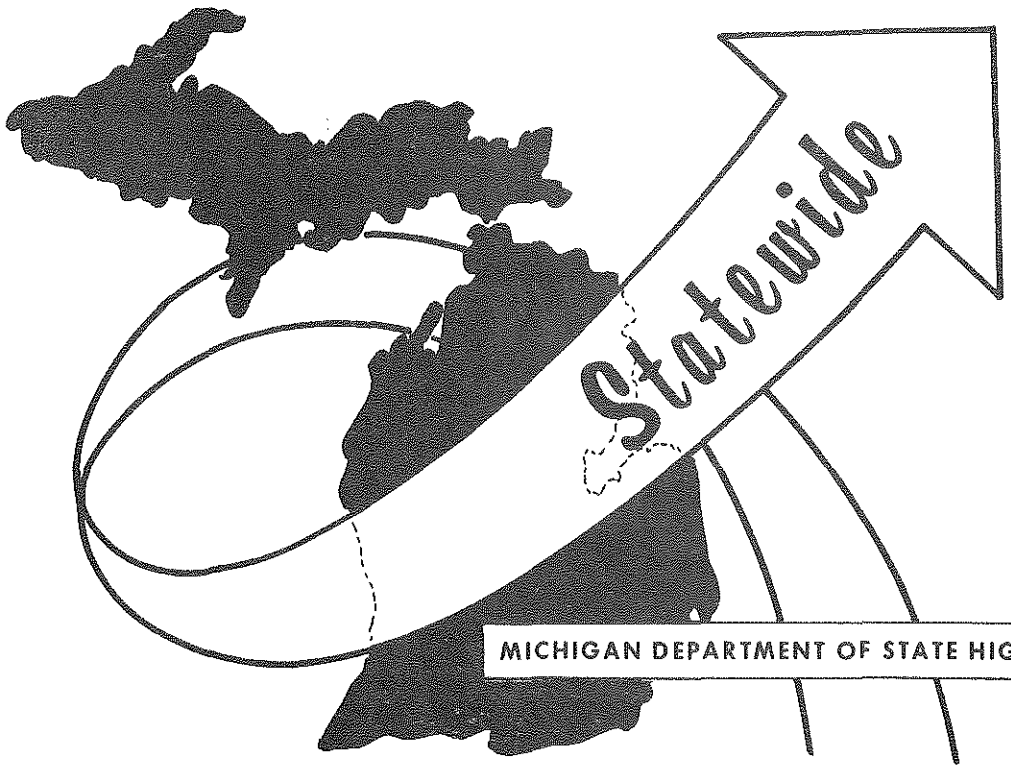
Statewide Transportation Analysis & Research

MICHIGAN'S
STATEWIDE TRAFFIC FORECASTING
MODEL

VOL. V-PART A

TRAVEL MODEL DEVELOPMENT
REFORMATION-TRIP
DATA BANK PREPARATION
May 1972



MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

In Cooperation With

The U.S. Department of Transportation

Federal Highway Administration

MICHIGAN'S STATEWIDE TRAFFIC FORECASTING MODEL

VOL. V-PART A

TRAVEL MODEL DEVELOPMENT
REFORMATION-TRIP
DATA BANK PREPARATION

May 1972

Transportation Planning Division
Statewide Studies Unit

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Al Friend:	Programming
W. Thomas Franklin:	Computer Production
Dale Stanaway:	Graphics & Presentation

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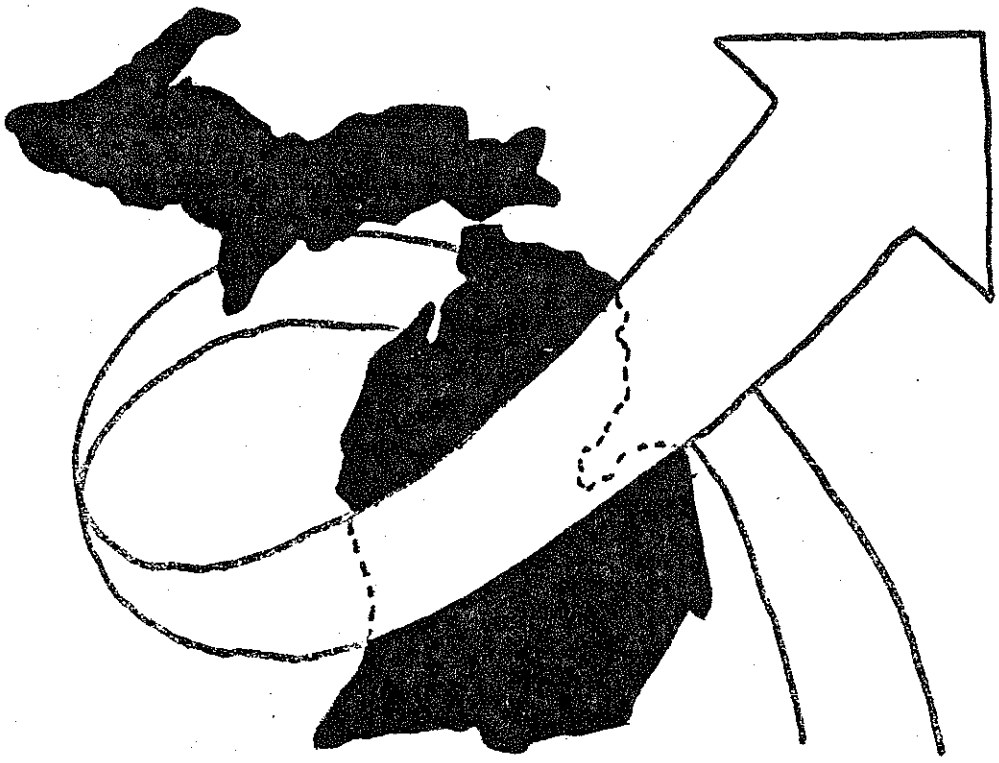
PREFACE



PREFACE

This is the fifth in a series of reports dealing with the development of a statewide traffic forecasting model for the State of Michigan. The previous are as follows:

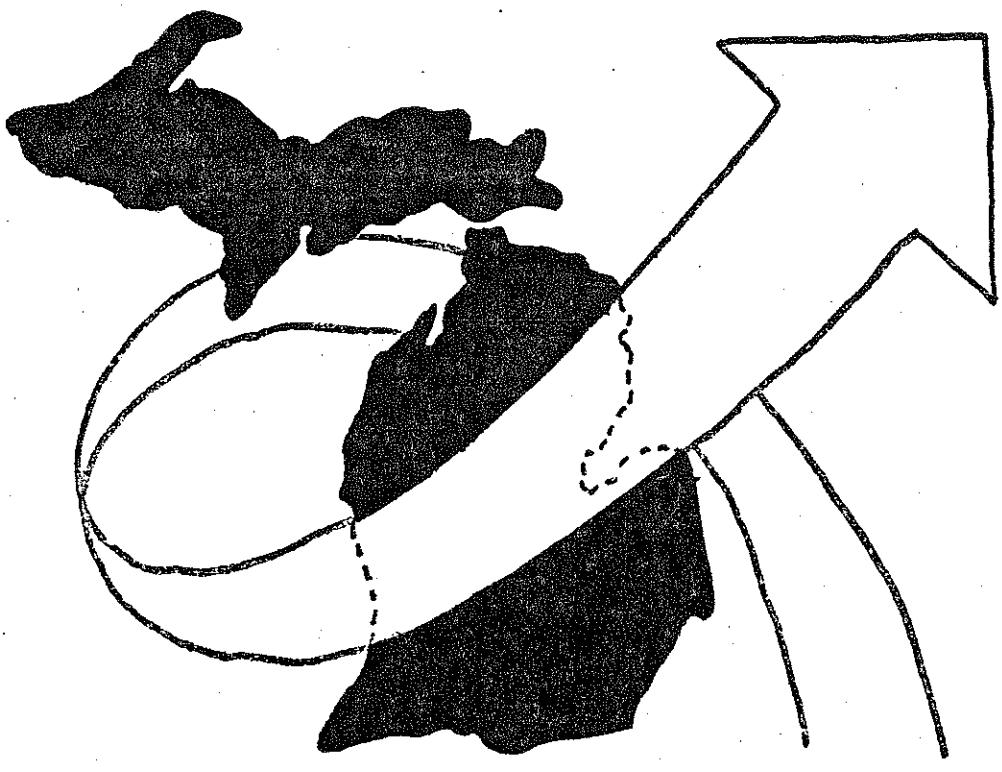
Volume I	Objectives and Work Programs
Volume II	Development of Network Models
Volume III	Multi-level Highway Network Generator-Segmental Model
Volume IV	Preliminary Model Calibration

Volume V will deal with the preparation of an origin-destination trip data bank, the development of a social-economic data bank, and the complex analysis process required to develop calibrated trip generation-distribution models at the statewide level. Because of the complexity of this process, Volume V will be sub-divided into the following five parts:

A. REFORMATION -- Trip Data Bank Preparation
B. Social - Economic Data Bank Development
C. Travel Characteristics' Analysis -- Preliminary Model Selection
D. Trip Generation Model Calibration
E. Trip Distribution Model Calibration

This report is Volume V - Part A. It will deal with the processes required to develop an origin-destination trip data bank. These processes are concerned with the selection of the data to be used, the preparation of correctly formated data, the problems incurred as the result of using multi-city urban data, and finally the reformation of the data for travel characteristics' analysis.

INTRODUCTION



INTRODUCTION

In July 1964, Arthur D. Little, Inc., Consultants, was retained to develop a highway requirements model for the State of Michigan. In latter 1966, the consultants completed a preliminary trip generation-distribution model for the Michigan Department of State Highways.

There are several approaches which might be used when obtaining travel information for use in developing a statewide traffic forecasting model. Listed below are a few of these approaches:

A. New external urban origin-destination data collection specifically for use in model development,

B. Use of previously collected single station rural origin-destination travel data,

C. New 1-2% statewide travel survey data, and

D. Use of previously collected urban origin-destination travel data.

Each of these approaches has its advantages and disadvantages. The method used depends directly on the condition of existing data resources and on each individual state's ability to collect new travel data. Michigan has chosen the latter approach, since origin-destination data has previously been collected for over forty urban areas in the state. This amounts to approximately 160 of the preliminary model's 540 analysis zones.

The data that Arthur D. Little used was obtained from ten Origin-Destination Studies (1960-1963) that had been

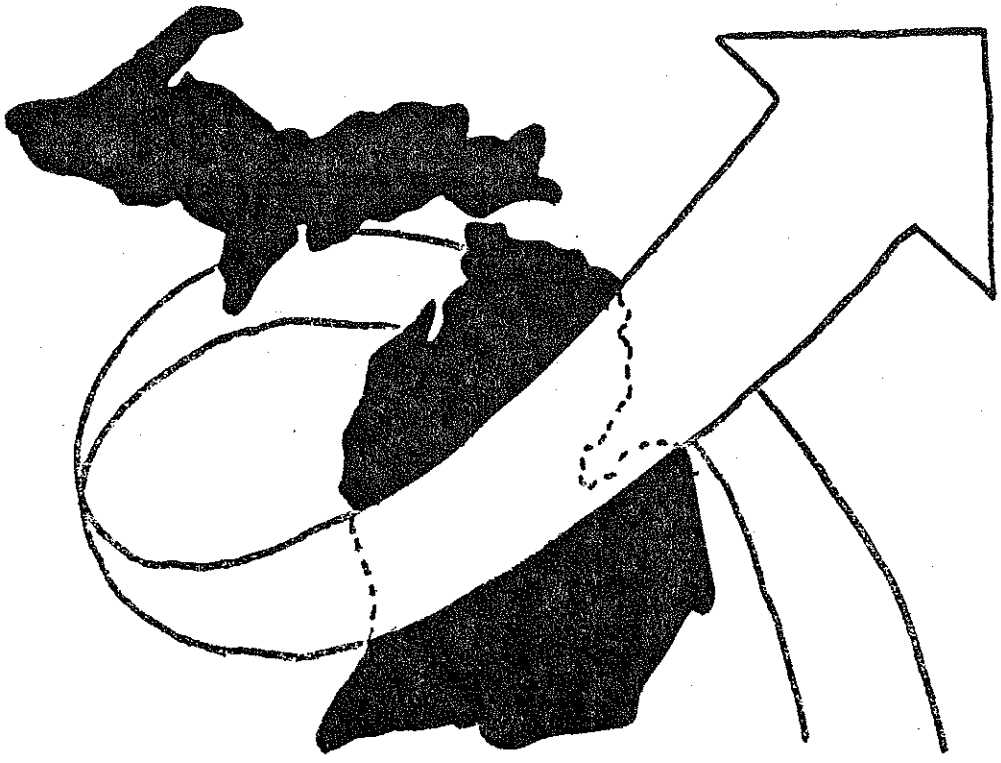
conducted by the Michigan Department of State Highways, and Detroit data obtained from the Detroit Area Transportation Study (1953). Since that time thirteen additional Major Origin-Destination Studies, three special studies (Tri-County, TALUS, Port Huron), and five Minor Origin-Destination Studies have been completed. The consultants had recommended that any new data be used to update and/or revise the preliminary trip generation-distribution model that Arthur D. Little had developed. "The first completed model must always be understood to represent the start of a new product, rather than the final version."[1]

The basic problem confronting any state using this approach is the fact that many of these studies often use different data collection formats and varying coding symbols from year to year. This report will deal with the basic data processing problems encountered while developing a standardized travel data bank for the State of Michigan's trip generation-distribution model calibration process.

All potential model users should note that the data collection or preparation process is often pushed aside as being one of the more insignificant tasks in the total model development. In reality this often becomes one of the most perplexing tasks in the total statewide model development process and in many situations becomes the single cause for a project falling behind schedule.

[1]Appendix I, A Computer Model for Determining Future Highway Requirements of the State of Michigan, Vol. I, ADL, Inc., 1966. Page 159.

Development Costs



TRIP DATA BANK DEVELOPMENT COSTS

The development of this travel data bank began with a comprehensive survey of the amount and form of travel data available within the Michigan Department of State Highway. The results of this survey follows.

Ten study areas' data was available on 80 character hollorith cards. (500,000 RECORDS)

Thirteen study areas' data was available on magnetic tape. (1,500,000 RECORDS)

Ten minor study areas' data was available on magnetic tape. (100,000 RECORDS)

Three special study areas' data was available on magnetic tape each with different formats. (530,000 RECORDS)

Each of these basic trip data sources involved different data formats, and totally different coding symbols were used from year to year. All of the data was not even on magnetic tape which created additional problems. In the case of the special studies, the data had been created on computer equipment completely different from the department's seven track tape Burroughs machine..

A flow chart (Figure 1) of the process necessary to correct all of the various problems just mentioned appears on the following page. Before this project was completed it required the time of two highway transportation analysts and a computer programmer. One of the analysts worked full-time on the project for just under one year and the other two individuals spent more than a third of their time on

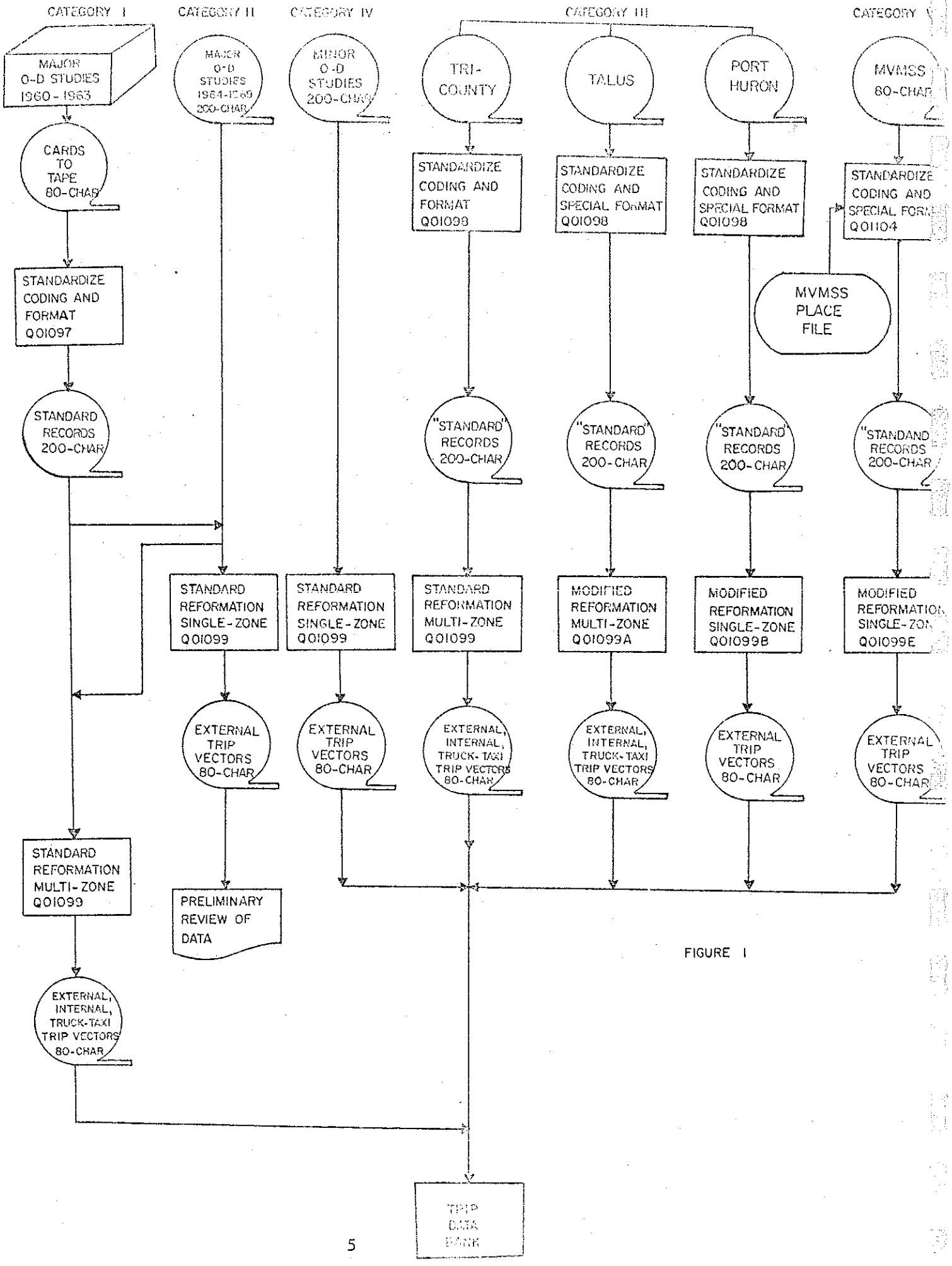
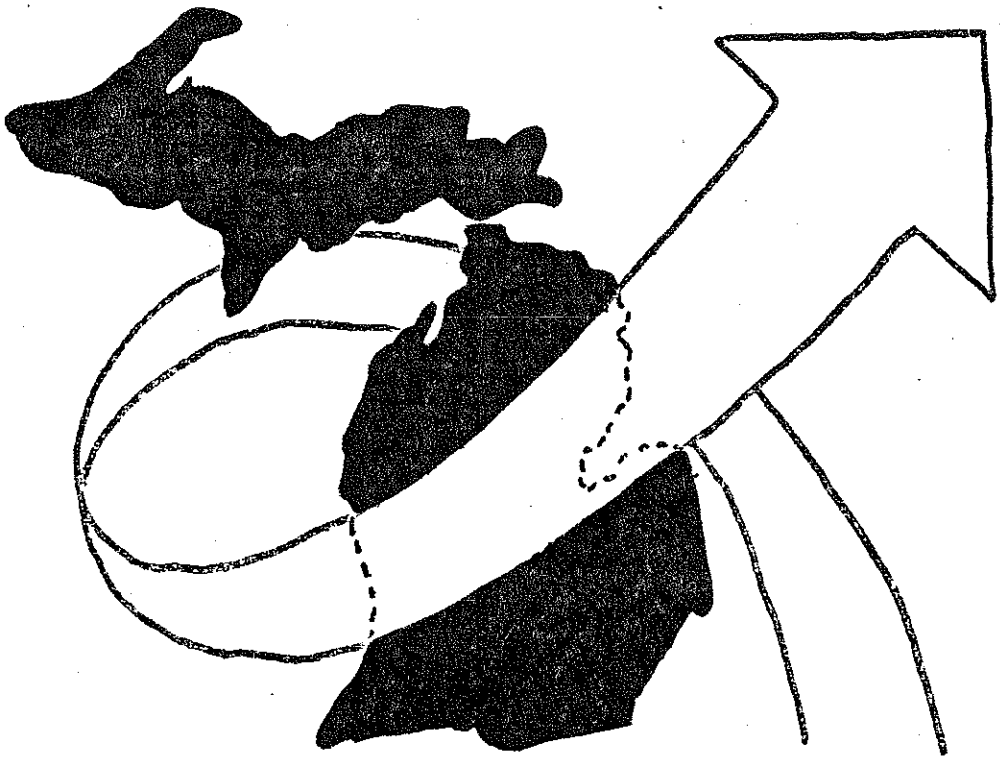

CATEGORY I
CATEGORY II
CATEGORY IV
CATEGORY III
CATEGORY V
MAJOR O-D STUDIES 1960 - 1963
MAJOR O-D STUDIES 1964-1969 200-CHAR
MINOR O-D STUDIES 200-CHAR
TRI-COUNTY
TALUS
PORT HURON
MVMSS 80-CHAR
CARDS TO TAPE 80-CHAR
STANDARDIZE CODING AND FORMAT Q01099
STANDARDIZE CODING AND SPECIAL FORMAT Q01098
STANDARDIZE CODING AND SPECIAL FORMAT Q01098
STANDARDIZE CODING AND SPECIAL FORM Q01104
STANDARDIZE CODING AND FORMAT Q01097
MVMSS PLACE FILE
STANDARD RECORDS 200-CHAR
"STANDARD" RECORDS 200-CHAR
"STANDARD" RECORDS 200-CHAR
"STANDARD" RECORDS 200-CHAR
"STANDAND RECORDS 200-CHAR
STANDARD REFORMATION SINGLE-ZONE Q01099
STANDARD REFORMATION SINGLE-ZONE Q01099
STANDARD REFORMATION MULTI-ZONE Q01099
MODIFIED REFORMATION MULTI-ZONE Q01099A
MODIFIED REFORMATION SINGLE-ZONE Q01099B
MODIFIED REFORMATION SINGLE-ZON Q01099E
EXTERNAL TRIP VECTORS 80-CHAR
EXTERNAL TRIP VECTORS 80-CHAR
EXTERNAL, INTERNAL, TRUCK-TAXI TRIP VECTORS 80-CHAR
EXTERNAL, INTERNAL, TRUCK-TAXI TRIP VECTORS 80-CHAR
EXTERNAL TRIP VECTORS 80-CHAR
EXTERNAL TRIP VECTORS 80-CHAR
STANDARD REFORMATION MULTI-ZONE Q01099
PRELIMINARY REVIEW OF DATA
EXTERNAL, INTERNAL, TRUCK-TAXI TRIP VECTORS 80-CHAR
TRIP DATA BANK

FIGURE I

the project for just under one year and the other two individuals spent more than a third of their time on the project. Completion of the development of a reliable standardized travel data bank took fourteen months elapse time and approximately eighteen man-months of labor. The elapse time could have been shortened with additional man-power, but many of the problems encountered were of the type that just could not be planned for ahead of time.

The best use of time spent during the project was the initial familiarization with the data base and the development of a very thorough flow chart of each of the necessary steps required to standardized the data base. The following sections will deal with each individual step necessary to develop the standardized travel data base.

Data Selection & Preparation



DATA SELECTION AND PREPARATION

At the present time, there is data available from twenty-three Major Origin-Destination Studies, three Special Origin-Destination Studies, and five External Origin-Destination Studies. There is also the possibility of using Mississippi Valley Screen Data for five cities, which have a pseudo-cordon of Mississippi Valley Screenline Stations.

Because of data format differences, the Major Origin-Destination Studies must be divided into two groups -- those conducted from 1960 to 1963 and those conducted from 1964 to 1969. The cities involved in each of the five categories are listed below. Locations are illustrated on the following map. (Figure 2)

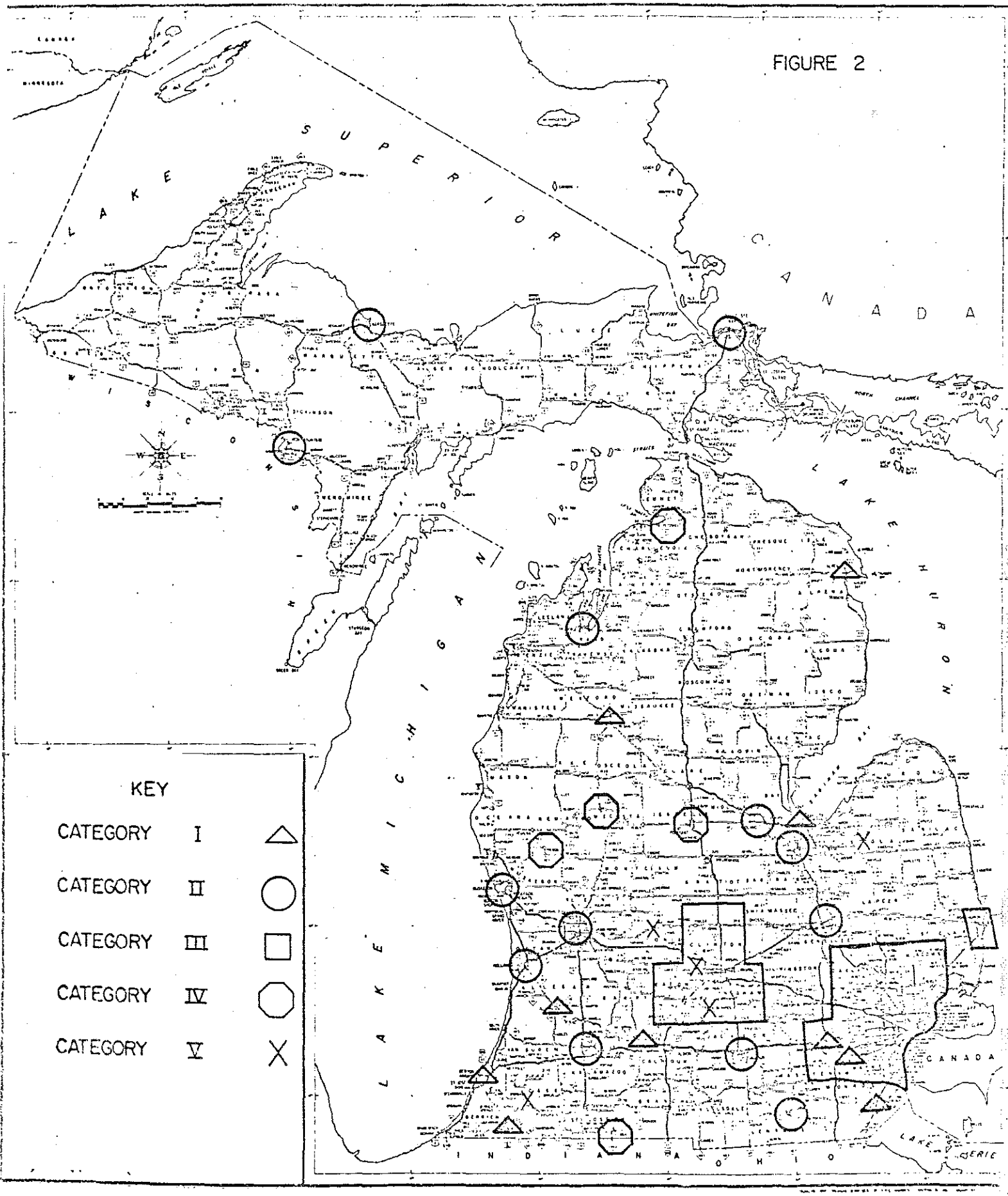
I. Major Origin-Destination Studies (1960-1963)

1. Ann Arbor - 1960
2. Ypsilanti - 1960
3. Benton Harbor-St. Joseph - 1960
4. Battle Creek - 1961
5. Allegan - 1961
6. Cadillac - 1961
7. Monroe - 1962
8. Alpena - 1962
9. Bay City - 1962
10. Niles - 1963

II. Major Origin-Destination Studies (1964-1969)

1. Sault Ste. Marie - 1964
2. Muskegon - 1964
3. Grand Rapids - 1965
4. Saginaw - 1965
5. Flint - 1966
6. Traverse City - 1966
7. Kalamazoo - 1966
8. Adrian-Tecumseh - 1967
9. Jackson - 1967

FIGURE 2


LAKE SUPERIOR
CANADA
LAKE MICHIGAN
LAKE HURON
CANADA
INDIANA OHIO
LAKE ERIE
KEY
CATEGORY I
CATEGORY II
CATEGORY III
CATEGORY IV
CATEGORY V

10. Holland-Zeeland - 1967
11. Iron Mountain - 1968
12. Marquette - 1968
13. Midland - 1969

III. Special Origin-Destination Studies

1. Tri-County (Lansing) - 1964-Tri-County Regional Planning Commission
2. TALUS (Detroit) - 1965 - Detroit Regional Transportation and Land Use Study, Center of Urban Studies, Dearborn, Michigan
3. Port Huron - 1967 - Center of Urban Studies Dearborn, Michigan

IV. External Origin-Destination Studies

1. Petoskey - 1967
2. Big Rapids - 1968
3. Sturgis - 1968
4. Fremont - 1969
5. Mt. Pleasant - 1970

V. Mississippi Valley Screen Stations

1. Ionia - 1963
2. Dowagiac - 1966
3. Caro - 1966
4. Eaton Rapids - 1966
5. Grand Ledge - 1966

In data preparation the first obstacle to be overcome is the differences in data formats. Each category---and each city in catetory III---has its individual record form A standard format must be agreed upon and the data must be converted to this standard.

The 200-character combined format is used for all current Origin-Destination Studies. This format is compatible with computer programs used in the transportation planning area of the Michigan Department of State Highways.

This format was in use for the cities in the second category--Major Origin-Destination Studies (1964-1969)--which involves the most data. Therefore, the 200-character combined format (Figure 3a-3b) will be considered the standard.

Coding must also be standardized. Again the second category will be used as the standard. The standard coding for the external, internal, and truck-taxi records is included in Appendix A.

The first category--Major Origin-Destination Studies (1960-1963)--involves almost 500,000 external/internal/truck-taxi trip records. This trip data was originally on 80-column Hollerith cards. These cards had to be transferred to tape in the 80-column format (Figure 4a-4b-4c). A special computer program was written to reformat the data to the 200-character combined format and to standardize the coding. The only coding change was in Vehicle Type Code for the external records as follows:

Category I Code	Vehicle Type	Standard Code
1	Passenger Car	1
2	Single Unit-Single Rear Tire	2
3	Single Unit-Dual Rear Tire	3
4	Single Unit-3 Axle	4
5	TT-ST Combinations	5
6	TT-ST-TR or TK-TR Combinations	7
7	Bus (Not C.C.)	8
8	Taxi	9
9	Compact Cars	1
0	Small Cars	1

Code 6 in Vehicle Type of the Category I coding was a combination of code 6 (TK-TR Combinations) and code 7

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 3a

Form 2350-C

Input/Output RECORD – TITLE O/D Combined PROGRAM NO. O/D Series PAGE 001

CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION	
1	O	Key word		41		Person 1	Indtry	81		Person number cntl	
2	D			42			Occupn	82		Sample number	IAS-Int
3				43				83			External
4				44			Age	84			Truck/tr
5		City number		45		Person 2	Sex-race	85		Trip number	Internal
6				46			Indtry	86			
7		Form number		47			Occupn	87			
8		IAS continued form		48				88			
9		Residence	Tract	49			Age	89		Mode of travel	
10				50		Person 3	Sex-race	90		Number in vehicle	Internal
11				51			Indtry	91			
12			Block	52			Occupn	92		Travel purpose	From
13				53				93			To
14				54			Age	94		Station number	
15		Month		55		Person 4	Sex-race	95			
16				56			Indtry	96		Direction	
17		Day		57			Occupn	97		Starting time	Hour
18		Structure type		58				98			
19		Cars at address	Own	59			Age	99			Minute
20			Co-own	60		Person 5	Sex-race	100			
21			Total	61			Indtry	101			
22		Car mileage	Trx or Car4	62			Occupn	102			
23			Car3	63				103			
24			Car2	64			Age	104			
25			Car1	65		Person 6	Sex-race	105			
26		Persons at address		66			Indtry	106			
27				67			Occupn	107			
28		Persons over the age of 5 years		68				108			
29				69			Age	109			
30		Years at residence		70		Person 7	Sex-race	110			
31				71			Indtry	111			
32		Rent or own		72			Occupn	112			
33		Residential value		73				113			
34				74			Age	114			
35				75		Person 8	Sex-race	115			
36		Education of head of household		76			Indtry	116			
37				77			Occupn	117			
38		Persons employed		78				118			
39		Income		79			Age	119			
40			Sex-race	80		Person number		120			
								121			
								122			
								123			
								124			
								125			
								126			
								127			
								128			
								129			
								130			
								131			
								132			

DATE: 17 September 1968

RECORD NO: HT01002 TAPE DENSITY: _____

RECORD LENGTH: 200 char. BLOCKING: 20

PAPER FORMS: _____ NO. OF COPIES: _____

COLOR OF CARDS: _____ LINED or UNLINED: _____

VOLUME OF DATA: _____

SPECIAL INSTRUCTIONS:

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Form 2350

Figure 3b

Input/Output RECORD - TITLE O/D Combined PROGRAM NO. O/D Series PAGE 003

CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION	
1		Ending time	Hour	41		Garaged		81		Destinat'n	District
2				42		Parking		82			
3			Minute	43		Person		83			Zone
4				44		Car pool		84			
5		Origin	Tract	45		Person trip information (*)	1 - more trips	85		Intermediat stop location	Sector
6				46				86			
7				47			no trips	87			
8			Block	48				88			District
9				49			unknown trips	89			
10				50				90			Zone
11		Land use @ Origin		51		Compact cars (*)		91			
12				52				92			
13		Destination	Tract	53				93			
14				54				94		1 hour expansion factor	
15				55				95			
16			Block	56				96			
17				57				97		FINAL Expansion factor	
18				58				98			
19		Land use © Destin.		59				99			
20				60				100			
21		Station of exit or entrance		61				101			
22				62				102			
23		Stops in area		63				103			
24		Stop purpose		64				104			
25		Intermediate stop location	Tract	65		Residence	Sector	105			
26				66				106			
27				67			District	107			
28			Block	68				108			
29				69				109			
30				70			Zone	110			
31		Registration		71				111			
32		Industry and business		72		Origin	Sector	112			
33				73				113			
34				74				114			
35		Total trips		75			District	115			
36				76				116			
37				77			Zone	117			
38		Capacity		78				118			
39				79			Sector	119			
40				80				120			
								121			
								122			
								123			
								124			
								125			
								126			
								127			
								128			
								129			
								130			
								131			
								132			

DATE: 31 October 1968

RECORD NO: HT01002 TAPE DENSITY: _____

RECORD LENGTH: 200 char BLOCKING: 20

PAPER FORMS: _____ NO. OF COPIES: _____

COLOR OF CARDS: _____ LINED or UNLINED: _____

VOLUME OF DATA: _____

SPECIAL INSTRUCTIONS: (*) applies to Sault Ste. Marie and Muskegon files only.

[illegible]
JOHN C. MACKIE, COMMISSIONER
OFFICE OF ENGINEERING – TRAFFIC DIVISION

METROPOLITAN AREA TRAFFIC STUDY

Form 1599
O-D4
(Rev. 3/61)

EXTERNAL INTERVIEW

Date Hour Period ____ to ____ A.M. P.M.	City 2	Station 3 4	Day of Travel 5	Hour Period Ending 6 7	Inbound 1 – White Outbound 2 – Pink	Direction of Travel 8

1	2	3	4	5	6	7	8	9	10	11	12	13	Code Box 61
											Intermediate Stop		
Interview Number	State of Registration	Vehicle Type	No. in Vehicle	Where did this trip begin? Origin	Where will this trip end? Destination	Trip Purpose	Where is this vehicle garaged?	Screen	Route of Exit or Ent.	Stops in area	Purpose	Location	
	1 Michigan 2 Other (write in)					X	5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)					X	5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)					X	5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)					X	5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)					X	5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)					X	5 Other 6			1 Yes 2 No X Not Stated			
9 10 11	12	13	14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29	30 31 32 33 34 35	36	37 38	39	41	42 43 44 45 46 47	61

1. Passenger Car
2. Single Unit – Single Rear Tire
3. Single Unit – Dual Rear Tire
4. Single Unit – 3 Axle
5. TT-ST Combination
6. TT-ST-TR or TK-TR
7. Bus Not C.C.
8. Taxi
9. Compact Cars
0. Small Cars

1. Work
2. Pers. Business
3. Shopping
4. Vacation
5. Other Soc. or Rec.
6. All Other

1. Course of Work
2. Transact Business
3. Social–Recreation
4. Eating
5. Gas – Oil Service
6. Serve Passenger
7. Secure Lodging
8. Shopping

Figure 4a

O-D3
(Rev. 3/61)

INTERNAL TRIP REPORT

CITY (2) WARD OR TRACT (3 4) BLOCK (5 6 7 8) SAMPLE NUMBER (9 10)

DAY OF TRAVEL: 1. Sunday 2. Monday 3. Tuesday 4. Wednesday 5. Thursday 6. Friday 7. Saturday (11)

1	2	3	4	5	6	7	8		9		10	11	12	13	14
INDUSTRY AND OCCUPATION	SEX AND RACE	PERSON NUMBER	TRIP NUMBER	WHERE DID THIS TRIP BEGIN? (ORIGIN)	WHERE DID THIS TRIP END? (DESTINATION)	MODE OF TRAVEL	TIME OF START	TIME OF ARRIVAL	TRIP PURPOSE TO	TRIP PURPOSE FROM	FOR DRIVERS ONLY NO. IN CAR	FOR DRIVERS ONLY KIND OF PARK.	FOR DRIVERS ONLY SCREEN	LAND USE Destination	CAR POOL 1. YES 2. NO
							___ AM ___ PM	___ AM ___ PM							
							___ AM ___ PM	___ AM ___ PM							
							___ AM ___ PM	___ AM ___ PM							
							___ AM ___ PM	___ AM ___ PM							
							___ AM ___ PM	___ AM ___ PM							
12 13 14	15	16 17	18 19	20 21 22 23 24 25	26 27 28 29 30 31	32	33 34 35 36	37 38 39 40	41	42	43	44	45	48 49	50

14

1 MALE WHITE
2 FEMALE WHITE
3 MALE COLORED
4 FEMALE COLORED
5 MALE OTHER
6 FEMALE OTHER

1 AUTO DRIVER
2 AUTO PASS.
3 BUS PASS.
4 TAXI PASS.
5 TRUCK PASS.

TRIP PURPOSE
1 WORK
2 TRANSACT BUSINESS
3 SHOPPING
4 SCHOOL
5 SOCIAL, RECREATION
6 CHANGE MODE OF TRAVEL
7 EAT MEAL
8 MEDICAL - DENTAL
9 SERVE PASSENGER
0 HOME

KIND OF PARKING
1 STREET FREE
2 STREET METERED
3 LOT FREE
4 LOT PAID
5 LOT MUNICIPAL
6 PARKING GARAGE
7 SERVICE-REPAIR
8 RESIDENCE PROPERTY
9 NOT PARKED
Y CRUISING

LAND USE
SEE "LAND USE" MANUAL FOR THE ABOVE CODES

Figure 4b

Form 1599
O-D8

Figure 4c

MICHIGAN STATE HIGHWAY DEPARTMENT
OFFICE OF ENGINEERING - TRAFFIC DIVISION

Sheet_____ of _____ Sheets

METROPOLITAN AREA TRAFFIC STUDY
CODING SHEET FOR TRUCKS AND TAXIS

City	Serial No.				Garaged						Ind.-Bus.			Type	Cap'y			Day	Tot. Trips		
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

TRIP DATA

Trip No.			ORIGIN Ward Tract		ORIGIN Block				Time of Leaving				DESTINATION Ward Tract		DESTINATION Block				Time of Arrival				Screen
24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47

Coded ________ Date ________ Checked ________ Date ________

(TT-ST-TR Combinations) of the standard codes for Vehicle Type. After reviewing vehicle classification counts, TT-ST-TR Combinations (code 7) were found to occur almost eight times to every one time for TK-TR Combinations (code 6). Therefore, standard code 7 was chosen to more accurately represent TT-ST-TR of TK-TR Combinations. Code 9 (compact cars) and code 0 (small cars) were both changed to standard code 1 passenger cars).

The second category--Major Origin-Destination Studies (1964-1969)--involves over 1,500,000 external/internal/ truck-taxi trip records. This trip data was relatively free of problems. The data was in the 200 character combined format, so no reformating was needed. The coding was standard for all cities except Sault Ste. Marie and Muskegon, which had the same coding change in the Vehicle Type Code for the external records as the data in Category 1 (see above). Other than this revision, the data for the second category was unchanged.

In Category III, each city had format and coding changes which had to be considered. A special computer program was written to convert the external trip records to the standard format and coding. This program had to be revised twice: once to handle the internal trip records, and once to convert the truck-taxi trip records for Tri-County, TALUS, and Port Huron.

The Tri-County Study involved 58,000 external trip records, 33,000 internal trip records, and 7,300 truck-taxi

trip records. Appendix B contains the tape formats and coding used by Tri-County for the external, internal, and truck-taxi records. All of these trip records had to be converted to the 200-character combined format and the standardized coding.

The external records were the first to be converted. Figures 5a - 5b are the 200-character format for the external trip records. Coding changes were made in Vehicle Type, Trip Purpose, and Land Use as follows:

Tri-County Code	VEHICLE TYPE	Standard Code
1	Passenger	1
2	Single Unit-Single Rear Tire	2
3	Single Unit-Dual Rear Tire	3
4	Single Unit-3 or 4 Axle	4
5	TT-ST Combinations	5
6	TT-ST-TR or TK-TR Comb.	7
7	Bus (not C.C.)	8
8	Taxi	9

This Vehicle Type coding change is the same as the Vehicle Type coding change for the data of Category I.

Tri-County	TRIP PURPOSE	Standard Code
1	Work	1
2	Shopping	3
3	Personal Business	2
4	School	6
5	Social, Recreation	5
6	Vacation	4
7	Change Mode of Travel	6
8	Eat Meal	6
9	Home	6
0	All Other	6

The standard codes for Trip Purpose consisted of six codes while the Tri-County codes for Trip Purpose included

Figure 5a

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Form 2350G

Tri-County

Tape RECORD - TITLE External PROGRAM NO. _____ PAGE 1 of 2

CHAR		FIELD DESCRIPTION
1	Ø	Keyword
2	D	
3		
4		
5		City No.
6		Tri-County ="11"
7	4	Form No.
8		
9		Residence
10		
11		
12		
13		
14		
15		
16		
17		Day
18		
19		
20		
21		
22		
23		
24		
25		
26		
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29		
30		
31		
32		
33		
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69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		Interview #
83		
84		
85		
86		
87		
88		
89		Mode of Travel
90		
91		
92		
93		Trip Purpose
94		
95		Station
96		Direction
97		
98		
99		
100		
101		
102		
103		
104		
105		
106		
107		
108		
109		
110		
111		
112		
113		
114		
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SPECIAL INSTRUCTIONS:

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 5b

Tri-County

Form 2350G

RECORD – TITLE External PROGRAM NO. _____ PAGE 2 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1		Ending Hr.	41		Garaged	81		
2			42			82		
3			43		Screen	83		Dest Zone Des. – Zone
4			44			84		
5			45			85		
6		Org. Tract	46			86		
7			47			87		
8			48			88		
9		Block	49			89		
10			50			90		
11			51			91		
12			52			92		
13			53			93		
14		Tract	54			94		1 Hour Exp. Factor
15		Des.	55			95		
16			56			96		
17		Block	57			97		
18			58			98		24 Hour Exp. Factor
19			59			99		
20		L-U-Destin.	60			100		
21			61			101		
22		Ext – Ent	62			102		
23		Stops	63			103		
24		Stop Purpose	64			104		
25			65			105		
26			66			106		
27		Inter Stop Loc.	67			107		
28			68			108		
29			69			109		
30			70			110		
31		Registration	71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76		Orig. Zone	116		
37			77		Org – Zone	117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
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						131		
						132		

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SPECIAL INSTRUCTIONS:

10 codes. The four codes--School, Change Mode, Eat Meal, and Home--that did not agree with the standard codes were assigned standard Code 6 (All Other). This was the only possible solution because the remaining Tri-County codes matched the standard codes exactly.

Tri-County Code	LAND USE	Standard Code
1	Residential	10
2	Manufacturing I	20
3	Manufacturing II	30
4	Transportation, Comm. & Utilities	40
5	Trade	50
6	Services	60
7	Cultural, Entertainment, & Rec.	70
8	Resource Prod. & Extraction	80
9	Undeveloped Land & Water Areas	90

The standard land-use code consists of a two-digit code. The first digit signifies a major division of land-use. The second digit signifies a subdivision of the major category. For example, the code 12 represents residential-(1), group quarters-(2). The Tri-County code used only the major division codes 1-9. These codes were multiplied by ten to convert them to the standard land-use codes.

The Tri-County internal trip records were converted to the 200-character combined format (figures 6a-6b). The Tri-County internal trip record coding was converted to the standard coding.

Coding changes were made in Mode of Transportation, Trip Purpose, and Parking as follows:

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 6a
Tri-County

Form 2350G

Tape RECORD – TITLE Internals PROGRAM NO. Q01098 PAGE 1 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1	Ø		41			81		Person Number
2	D		42			82		
3			43			83		
4			44			84		
5	1	City Number	45			85		
6	1		46			86		Trip Number
7	3	Form Number	47			87		
8			48			88		
9		Residence – Census Tract	49			89		Mode of Transp.
10			50			90		
11			51			91		
12		Residence – Traffic Zone	52			92		Origin Purpose
13			53			93		Dest. Purpose
14			54			94		
15		Month	55			95		
16			56			96		
17		Day	57			97		Start Time – Hour
18			58			98		
19			59			99		Start Time – Minute
20			60			100		
21			61			101		
22			62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77			117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
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						124		
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OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 6b

Form 2350G

Tape RECORD - TITLE Tri-County Internals PROGRAM NO. Q01098 PAGE 2 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1 01		Arrival Time — Hour	41			81		
2			42		Parking	82		
3		Arrival Time — Minute	43			83		
4			44			84		Destination Zone
5		Origin Zone (Tract)	45			85		
6			46			86		
7			47			87		
8			48			88		
9			49			89		
10			50			90		
11		Origin Land Use	51			91		
12			52			92		
13		Destination Zone (Tract)	53			93		
14			54			94		
15			55			95		
16			56			96		
17			57			97		
18			58			98		24 Hour Factor
19		Destination Land Use	59			99		
20			60			100		
21			61			101		
22			62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77		Origin Zone	117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
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						132		

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SPECIAL INSTRUCTIONS:

Tri-County Code	MODE OF TRANSPORTATION	Standard Code
1	Auto Driver	1
2	Auto Passenger	2
3	Bus Passenger	3
4	School Bus	6
5	Taxi Passenger	4
6	Truck Passenger	5
7	Walk	0

The standard code and the Tri-County code consisted of the same modes of transportation, only the numbers assigned to each mode of travel were different.

Tri-County	TRIP PURPOSE	Standard Code
1	Work	1
2	Personal Business	2
3	Medical-Dental	8
4	School	4
5	Social-Eat	5
6	Change Mode	6
7	Shopping	3
8	Recreation	5
9	Home	0
0	Business	2

There existed some minor differences in trip purposes. The standard coding had a code Transact Business (2) which was a combination of Tri-County code Personal Business (2) and Business (0). Standard code 5 (Social, Recreation) replaced Tri-County - Social-Eat (5) and Recreation (8). There was a separate code for Eat Meal (7) in the standard coding, which was omitted.

Tri-County Code	PARKING	Standard Code
1	Street Free	1
2	Street Meter	2
3	Lot Free	3
4	Lot Paid	4
5	Garaged Free	6
6	Garaged Paid	6
7	Service or Repair	7
8	Resident Property	8
9	Cruising	Y
0	Not Parked	9

There were very few changes in the Parking codes. Tri-County code 5 (Garaged Free) and code 6 (Garaged Paid) were combined to concur with standard code 6 (Parking Garage). "Lot Municipal," standard code 5 was omitted because there was no comparable type of parking among the Tri-County codes. "Cruising" and "Not Parked" required only a change in the alphanumeric designations.

The last type of records to be converted to the standard format were the truck-taxi trip records. The 200-character combined format is illustrated in figures 7a-7b. The truck-taxi trip record coding had to be standardized.

Coding changes were made in only two areas, Vehicle Type and Trip Purpose as follows:

Tri-County	VEHICLE TYPE	Standard Code
1	Truck	See Truck Type
2	Taxi	9

Tri-County	TRUCK TYPE	Standard Code
1	Single Unit, Single Rear Tire	2
2	Single Unit, Dual Rear Tire	3
3	Single Unit, 3 Axle	4

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 7a

Tri-County

Form 2350G

Tape RECORD - TITLE Truck & Taxis PROGRAM NO. 001098 PAGE 1 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1	C		41			81		
2	D		42			82		
3		Key Word	43			83		Sample Number
4			44			84		
5	1		45			85		
6	1	City Number	46			86		
7	3	Form Number	47			87		Trip Number
8			48			88		
9		Zone Garaged (7 or 8)	49			89		Vehicle Type
10			50			90		
11		Co. No.	51			91		
12		Zone or Twp. & Place	52			92		Origin Purpose
13			53			93		Dest. Purpose
14			54			94		
15			55			95		
16			56			96		
17		Day of Travel	57			97		
18			58			98		Start Time: Hour
19			59			99		Start Time: Minute
20			60			100		
21			61			101		
22			62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77			117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
						131		
						132		

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SPECIAL INSTRUCTIONS:

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 7b

Form 2350G

Tri-County

Tape RECORD - TITLE Truck - Taxis PROGRAM NO. Q01098 PAGE 2 of 2

CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1 01		Arrival Time	Hour	41			81		
2				42			82		
3			Minute	43			83		Destination Zone
4				44			84		
5		Origin	Zone (Tract)	45			85		
6				46			86		
7				47			87		
8				48			88		
9				49			89		
10				50			90		
11		Origin Land Use		51			91		
12				52			92		
13		Destination	Zone (Tract)	53			93		
14				54			94		
15				55			95		
16				56			96		
17				57			97		
18				58			98		24 - Hour Factor
19		Dest. Land Use		59			99		
20				60			100		
21				61			101		
22				62			102		
23				63			103		
24				64			104		
25				65			105		
26				66			106		
27				67			107		
28				68			108		
29				69			109		
30				70			110		
31				71			111		
32				72			112		
33				73			113		
34				74			114		
35				75			115		
36				76			116		
37				77		Origin Zone	117		
38				78			118		
39				79			119		
40				80			120		
							121		
							122		
							123		
							124		
							125		
							126		
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							130		
							131		
							132		

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SPECIAL INSTRUCTIONS:

4	TT-ST Combination	5
5	TT-ST-TR or TK-TR Comb.	7
6	Other	6

In the Tri-County coding scheme Vehicle Type consisted of two codes--Vehicle Type and Truck Type. If Vehicle Type was coded Truck (1), Truck Type had to be converted to the standard code. Tri-County code 5 (TT-ST-TR or TK-TR Combinations) was a combination of standard code 6 (TK-TR Combinations) and code 7 (TT-ST-TR Combinations). Standard code 7 was selected to represent Tri-County code 5 for reasons previously explained in Category I external Vehicle Type coding. Tri-County truck-taxi coding for Truck Type had a code 6 (Other). This code was arbitrarily assigned standard code 6 (TK-TR Combinations). This decision allowed the representation of all the standard truck codes. If Tri-County Vehicle Type was coded Taxi (2), this was converted to standard code 9 (Taxi).

Tri-County Code	TRIP PURPOSE	Standard Code
01	Work	1
02	Personal Business	3
03	Medical-Dental	3
04	School	3
05	Social-Eat Meal	3
06	Change Travel Mode	7
07	Shopping	2
08	Recreation and Ride	3
09	Home	3
10	Serve Passenger	3
11	Picking Up Goods	4
12	Delivering Goods	5
13	Pick Up and Deliver Goods	6
14	To Base of Operation	8
15	Service	7

Tri-County coding for trip purpose consisted of a more detailed breakdown than the standard coding. Tri-County codes 02,03,04,05,08,09, and 10 were combined to form standard code 3 (Personal Business). Tri-County codes 06 and 15 were converted to standard code 7 (Service and Other Work Connected). For the remaining Tri-County codes only numerical designations were changed to agree with the standard codes. The standard code 9 (Vacation) was omitted, because there was no realistic counterpart in the Tri-County coding.

The Detroit Regional Transportation and Land-Use Study (TALUS) involved 23,000 external trip records, 307,000 internal trip records and 39,000 truck-taxi trip records. Appendix C contains the tape formats and coding used by TALUS for the external, internal, and truck-taxi records. Port Huron Origin-Destination Study involved 28,000 external trip records, 23,000 internal trip records, and 4,000 truck-taxi trip records. These trip records had the same tape format and coding as the TALUS records (Appendix C).

The external records were converted to the 200-character combined format with three minor exceptions. The origin zone and destination zone were placed in the area designated origin tract-block and destination tract-block. This was done because TALUS zones contained 4 digits and the space provided for zone in the Standard format would accomodate

only 3 digits. TALUS and Port Huron used an 8-digit tract-block code. This origin and destination tract-block code was placed in a filler area of the 200-character combined format. The TALUS and Port Huron residence tract-block was omitted from the 200-character format because of space limitations. TALUS coding contained 8 digits and the standard format provided only 6 digits. Figures 8a-8b provide the new 200-character combined format for the TALUS and Port Huron external trip records.

The changes involved in converting the TALUS and Port Huron external records to the standard coding were more extensive than the coding changes in the previous cities. Coding changes were made in responses for Day of Week, Vehicle Type, Hour Period, Trip Purpose, and Stop Purpose as follows:

C.U.S. Code	DAY OF WEEK	Standard Code
1	Monday	2
2	Tuesday	3
3	Wednesday	4
4	Thursday	5
5	Friday	6
6	Saturday	7
7	Sunday	1

Only the numerical designations for the Day of Week had to be changed.

C.U.S. Code	VEHICLE TYPE	Standard Code
1	Passenger Car - Michigan	1
2	Passenger Car - Non-Michigan	1
3	Single Unit-Single Rear Tire	2
4	Single Unit - Dual Rear Tire	3
5	Single Unit - 3 or more axles	4
6	Combinations	5
7	Bus	8
8	Taxi	9

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES DIVISION
DATA PROCESSING SECTION

Figure 8a
Port Huron

Form 2350G

Tape RECORD – TITLE TALUS Externals PROGRAM NO. _____ PAGE 1 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1	Ø		41			81		
2	D	Key Word	42			82		Interview
3			43			83		Number
4			44			84		
5		City No. TALUS 16	45			85		
6		Port Huron = 25	46			86		
7		Form Number	47			87		
8			48			88		
9			49			89		Mode of Travel
10			50			90		
11			51			91		No. in Vehicle
12			52			92		
13			53			93		To Purpose
14			54			94		
15			55			95		Station No.
16		Month	56			96		Direction
17		Day	57			97		
18			58			98		Start Hour
19			59			99		
20			60			100		
21			61			101		
22			62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77			117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
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SPECIAL INSTRUCTIONS:

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OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 8b

Port Huron

Form 2350G

Tape RECORD - TITLE TALUS Externals PROGRAM NO. 001098 PAGE 2 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION
1			41				81		
2			42				82		
3			43				83		
4			44				84		
1 05			45		Origin	Area	85		
6			46				86		
7		Origin	47			Tract	87		
8			48				88		
9		Zone	49			Tag	89		
10			50				90		
11		Origin Land Use	51			Block	91		
12			52				92		
13			53		Destination	Area	93		
14			54				94		
15			55			Tract	95		
16			56				96		
17			57			Tag	97		
18			58				98		24 Hour Factor
19		Destination Land Use	59			Block	99		
20			60				100		
21			61				101		
22		Exit-Entrance	62				102		
23			63				103		
24		Stop Purpose	64				104		
25			65				105		
26			66				106		
27			67				107		
28			68				108		
29			69				109		
30			70				110		
31			71				111		
32			72				112		
33			73				113		
34			74				114		
35			75				115		
36			76				116		
37			77				117		
38			78				118		
39			79				119		
40			80				120		
							121		
							122		
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SPECIAL INSTRUCTIONS:

The Center for Urban Studies code 6 (combinations) is a combination of standard codes 5 (TT-ST combinations), 6 (TK-TR combinations) and 7 (TT-ST-TR combinations). Again vehicle classification counts were reviewed. Standard code 5 (TT-ST combinations) was the prevalent code - occurring 8 times as often as code 6 (TK-TR combinations) and code 7 (TT-ST-TR combinations) combined. For this reason, standard code 5 was selected to represent C.U.S. code 6 (combinations).

C.U.S. Code	Hour Period	Standard Code
12M - 01A	Midnight	01
01A - 02A		02
.		.
.		.
.		.
11A - 12N	Noon	12
12N - 01P		13
.		.
.		.
.		.
11P - 12M		24

The Center for Urban Studies coded Hour Period using a twelve-hour clock and A, P, N, and M to represent AM, PM, noon, and midnight. These codes had to be converted to the 24-hour clock-military time--which is used in the standard coding.

C.U.S. Code	Trip Purpose	Standard Code
1	Home	6
2	Work	1
3	Personal Business	2
4	Social-Recreation	4
5	Eat Meal	6
6	Shopping	3
7	School	6
8	Change Mode	6
9	Serve Passenger	6

The Center for Urban Studies used a more detailed classification of Trip Purpose for Port Huron and TALUS than the standard coding. Trip Purposes 1 (Home), 5 (Eat Meal), 7 (School), 8 (Change Mode), and 9 (Serve Passenger) were grouped together under standard code 6 (All Others). The Center for Urban Studies code for "Social-Recreation" (4) is a combination of two standard codes--"Vacation" (4) and "Other Social-Recreation" (5). At the present time, standard code 4 (Vacation) will represent "Social-Recreation." At a later date, trip length will determine the division of this category into "Vacation" (4) and "Other Social-Rec." (5). The remaining codes were identical to the standard codes, only the numerical designations had to be changed.

C.U.S. Code	Stop Purpose	Standard Code
1	Course of Work	1
2	Personal Business	2
3	Shopping	8
4	Vehicle Service	5
5	Secure Lodging	7
6	Serve Passenger	6
7	Eat Meal	4
8	Recreation	3

For the category Stop Purpose all of the Center of Urban Studies Codes corresponded to the standard codes. Only the numerical designations had to be changed.

The TALUS and Port Huron internal records were converted to the 200 character combined format with three minor exceptions. The origin zone and destination zone were placed in the area designated Origin Tract-Block, as

previously explained with the external records. As with the external records, the origin and destination tract-block was placed in a filler area of the 200-character combined format. The interview number was placed in the residence tract-block area. The TALUS and Port Huron internal records' format is given in figures 9a-9b.

The TALUS and Port Huron Internal Trip Record coding had to be converted to the standard internal coding (Appendix A). These coding changes involved Mode of Travel, Trip Purpose, Parking and Day of Week as follows:

C.U.S. Code	Mode Of Travel	Standard Code
1	Auto Driver	1
2	Auto Passenger	2
3	Truck Passenger	5
4	Taxi Passenger	4
5	Bus Passenger	3
6	School Bus Passenger	6
7	Railroad Passenger	
8	Air Passenger	
9	Other to Work	

The Center for Urban Studies codes 1-6 for Mode of Travel corresponded to standard codes 1-6, with a few differences in numerical designations. Center for Urban Studies codes 7-9 had no corresponding standard code. When these codes occurred, the standard code on the 200-character combined format was left blank.

C.U.S. Code	Trip Purpose	Standard Code
1	Home	0
2	Work	1
3	Personal Business-Medical	2
4	Social-Recreation	5
5	Eat Meal	7
6	Shopping	3
7	School	4
8	Change Mode	6
9	Serve Passenger	9

CHIGAN DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES DIVISION
DATA PROCESSING SECTION

Figure 9a
Port Huron

Form 2350G

Tape RECORD – TITLE TALUS Int. PROGRAM NO. 001098 PAGE 1 of 2

CHAR		FIELD DESCRIPTION
1	Ø	
2	D	
3		Key Word
4		
5		City No. TALUS16
6		Port Huron = 25
7	3	Form Number
8		
9		
10		
11		Interview Number
12		
13		
14		
15		
16		Month
17		Day
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
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66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		Person No.
82		
83		
84		
85		
86		
87		Trip Number
88		
89		Mode of Travel
90		
91		No. in Vehicle
92		Origin Purpose
93		Destin. Purpose
94		
95		
96		
97		Start Time Hour
98		
99		Start Time Min.
100		
101		
102		
103		
104		
105		
106		
107		
108		
109		
110		
111		
112		
113		
114		
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130		
131		
132		

DATE: _____

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SPECIAL INSTRUCTIONS:

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 9b

Form 2350G

Port Huron

Tape RECORD – TITLE TALUS Internals PROGRAM NO. Q01098 PAGE 2 of 2

CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION
1 01				41				81		
2		Ending Time	Hour	42		Parking		82		
3				43				83		
4			Minute	44				84		
5		Origin Zone		45		Origin	Area	85		
6				46				86		
7				47			Tract	87		
8				48				88		
9				49			Tag	89		
10				50				90		
11				51			Block	91		
12		Origin Land Use		52				92		
13		Destination Zone		53		Destination	Area	93		
14				54				94		
15				55			Tract	95		
16				56				96		
17				57			Tag	97		
18				58				98		24 Hour Factor
19				59			Block	99		
20		Destin. Land Use		60				200		
21				61				101		
22				62				102		
23				63				103		
24				64				104		
25				65				105		
26				66				106		
27				67				107		
28				68				108		
29				69				109		
30				70				110		
31				71				111		
32				72				112		
33				73				113		
34				74				114		
35				75				115		
36				76				116		
37				77				117		
38				78				118		
39				79				119		
40				80				120		
								121		
								122		
								123		
								124		
								125		
								126		
								127		
								128		
								129		
								130		
								131		
								132		

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SPECIAL INSTRUCTIONS:

In the standard coding Center for Urban Studies code 3 (Personal Business-Medical) was divided into "Transact Business" (2) and "Medical-Dental) was divided into "Transact Business) was selected to represent Center for Urban Studies "Personal Business-Medical" (3). The remaining codes differed only in numerical representation.

C.U.S. Code	Parking	Standard Code
1	Free	1
2	Paid - Meter	2
3	Paid - Other	4

The standard coding consisted of twelve categories. (Lot Paid), Standard code 4, was selected to replace Center for Urban Studies code 3 (Paid-Other). The remaining two C.U.S. codes were exactly the same as the standard codes.

C.U.S. Code	Day of Week	Standard Code
1	Monday	2
2	Tuesday	3
3	Wednesday	4
4	Thursday	5
5	Friday	6

Only the numerical representation of the Day of Week had to be revised.

The TALUS and Port Huron Truck-Taxi records had to be converted to the 200-character combined format. The same exceptions were true for the Truck-Taxi Trip Records as were true for the Internal Trip Records. Figures 10a - 10b provide the new 200-character combined format for the TALUS and Port Huron Truck-Taxi Trip Records. Coding changes were needed in two categories -- Trip Purpose and Day of Week.

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 10a
Port Huron

Form 2350G

Tape RECORD - TITLE TALUS TK-TX PROGRAM NO. Q01098 PAGE 1 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1	Ø		41			81		
2	D		42			82		
3		Key Word	43			83		
4			44			84		
5		City No. 16 TALUS	45			85		
6		25 Pt. Huron	46			86		
7	8	Form Number	47			87		Trip Number
8			48			88		
9			49			89		Mode of Travel
10		Interview	50			90		
11		No.	51			91		
12			52			92		Purpose / From
13			53			93		To
14			54			94		
15			55			95		
16		Month	56			96		
17		Day	57			97		
18			58			98		Starting Time / Hour
19			59			99		
20			60			100		Minute
21			61			101		
22			62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77			117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
						131		
						132		

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SPECIAL INSTRUCTIONS:

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
OFFICE SERVICES DIVISION
DATA PROCESSING SECTION

Figure 10b

Form 2350G

Port Huron

Tape RECORD - TITLE TALUS TK-TX PROGRAM NO. Q 01098 PAGE 2 of 2

CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION		CHAR		FIELD DESCRIPTION
1		Ending Time	Hour	41				81		
2				42				82		
3			Minute	43				83		
4				44				84		
5				45		Origin	Area	85		
6				46				86		
7				47				87		
8				48			Tract	88		
9				49			Tag	89		
10				50				90		
11		Origin Land Use		51				91		
12				52			Block	92		
13		Destination Zone		53		Destination	Area	93		
14				54				94		
15				55				95		
16				56			Tract	96		
17				57			Tag	97		24 Hour Factor
18				58				98		
19		Dest. Land Use		59			Block	99		
20				60				100		
21				61				101		
22				62				102		
23				63				103		
24				64				104		
25				65				105		
26				66				106		
27				67				107		
28				68				108		
29				69				109		
30				70				110		
31				71				111		
32				72				112		
33				73				113		
34				74				114		
1 35		Total Trips		75				115		
36				76				116		
37				77				117		
38				78				118		
39				79				119		
40				80				120		
								121		
								122		
								123		
								124		
								125		
								126		
								127		
								128		
								129		
								130		
								131		
								132		

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SPECIAL INSTRUCTIONS:

These coding changes are as follows:

C.U.S. Code	TRIP PURPOSE	Standard Code
1	Pick up Goods	4
2	Deliver Goods	5
3	Pick up and Deliver	6
4	Service	7
5	Garaging Address & Base of Oper.	1
6	Base of Operations Only	8
7	Garaging Address Only	1
8	Personal Business	3
9	Shopping	2
A	Recreation	9

Center for Urban Studies codes 5 (Garaging Address and Base of Operations) and 7 (Garaging Address Only) were assigned standard code 1 (To and From Work). The alphanumeric designations were changed for the remaining Center for Urban Studies codes.

C.U.S. Code	Day of Week	Standard Code
1	Monday	2
2	Tuesday	3
3	Wednesday	4
4	Thursday	5
5	Friday	6

The numerical representations had to be revised. This was the only change to Day of Week.

One problem was encountered in converting the TALUS trip description records had no Vehicle Type. The taxi trip records could be distinguished from the truck trip records by a deck number, but the type (light or heavy) of truck could not be determined. According to Arthur D. Little, Inc.'s preliminary travel analysis, a separate trip generation-distribution model was needed for heavy trucks.[2]

[2]Appendix I, A Computer Model for Determining Future Highway Requirements of the State of Michigan, Vol. I, ADL, Inc. 1966, Page 35.

Further breakdown of the truck trip records was necessary. This presented a definite problem which had to be solved. Total trip weight was available from the TALUS truck trip records. It was decided that trip weight would differentiate light trucks from heavy trucks. After reviewing Michigan Department of State Highways' weight studies, the division point was determined at five tons. Any truck whose total trip weight was less than 10,000 lbs. was considered a light truck. Light trucks could be considered either standard code 2 (Single Unit-Single Rear Tire) or standard code 3 (Single Unit-Dual Rear Tire). Light trucks were assigned standard code 2 for identification purposes. Any truck whose total trip weight was greater than five tons was considered a heavy truck. Again only for identification purposes, standard code 5 (TT-ST combinations) was assigned to represent heavy trucks.

Category IV - External Origin-Destination Studies - consists of external trip data for five cities. These cities did not have an internal or truck-taxi trip survey. This is the reason for considering them as a separate category. 80,000 external trip records are involved in Category IV. These five studies were already in the 200-character combined format. The coding used was also standard. No conversions were necessary for the data in Category IV.

The final category - Mississippi Valley Screen Stations consisted of travel data from five cities. Each of these

cities had a pseudo-cordon of at least four Mississippi Valley Screen Stations. Over 35,000 external trip interviews were involved in Category V. These interviews were taken using the Mississippi Valley Multiple Screenline Station interview forms (Figure 11). This data had never been edited. A computer program was written to edit and reformat this data. This program edited the Mississippi Valley data for invalid trip purpose, invalid vehicle type, invalid direction, etc. This program also replaced the origin-destination longitude and latitude with a statewide zone number through use of a place-code file. The data was reformated to a somewhat standard format. Figures 12a - 12b provide the new 200-character combined format for the Mississippi Valley data.

The only coding change for the Mississippi Valley data involved Vehicle Type as follows:

Category V Code	Vehicle Type	Standard Code
11	Passenger Car - Local	
12	Passenger Car - Other	1
13	Passenger Car - Out-of-State	1
21	Single Unit Truck - Single Rear	2
22	Single Unit Truck - Dual Real	3
23	Single Unit Truck - 3 Axles	4
33	TT-ST -3 Axles	5
34	TT-ST - 4 Axles	5
45	TT-ST-TR - 5 Axles	7
46	TT-ST-TR - 6 Axles	7
54	TK-TR - 4 Axles	6
55	TK-TR - 5 Axles	6
62	Regular Bus - 2 Axles	8
63	Regular Bus - 3 Axles	8
64	School Bus	8

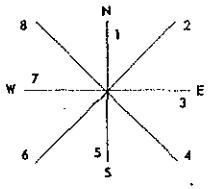
The only difference between the Category V codes and the Standard codes were concerned with numerical designations.

STATE 2 1 (3 4) YEAR (5) SCREEN LINE (6 7 8 9)

STATION NO. _____ (10 11) DIRECTION (12)

HOUR PERIOD BEGINNING _____ AM _____ PM (13 14)

EXPANSION FACTOR HR (55 56) 24 HR (57 58)



S[illegible] OF MICH[illegible]
DEPARTMENT OF STATE HIGHWAYS

Form MVC 1574
(Rev. 5-63)

SHEET _____ OF _____

LOCATION _____

DAY _____ DATE _____ 19 _____

REGISTRATION	VEHICLE TYPE	NO. IN VEH.	ORIGIN WHERE DID THIS TRIP BEGIN? City or Village	State	DESTINATION WHERE WILL THIS TRIP END? City or Village	State	TRIP PURPOSE	WHERE IS VEHICLE GARAGED?	CONTROL POINT, AZIMUTH	REMARKS
								O other D		
								O other D		
								O other D		
								O other D		
								O other D		
								O other D		
								O other D		
								O other D		
								O other D		

15 16 17 | 18 19 | 20 | 21 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 | 63

1-1 Pass. Car Local
1-2 Pass. Car Other
1-3 Pass. Car Out-of-State
2-1 S.U. Truck Single rear
2-2 S.U. Truck Dual rear
2-3 S.U. Truck 3 Axles
3-3 TT-ST 3 Axles
3-4 TT-ST 4 Axles
and etc.
4-5 TT-ST-TR 5 Axles
4-6 TT-ST-TR 6 Axles
and etc.
5-4 TK-TR 4 Axles
5-5 TK-TR 5 Axles
and etc.
6-2 Reg. Bus 2 Axles
6-3 Reg. Bus 3 Axles
6-4 School Bus

1 Work
2 Pers. Business
3 Shopping
4 Vacation
5 Other Soc. or Rec.
6 All Other

At Origin
At Destination
Specify Other

Recorder _____

FIGURE 11

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES DIVISION
DATA PROCESSING SECTION

Form 2350G

Figure 12a

Tape RECORD - TITLE Miss.Valley PROGRAM NO. _____ PAGE 1 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1	5	Key Word	41			81		
2	5		42			82		
3			43			83		Interview Number
4			44			84		
5			45			85		
6			46			86		
7	7	Form Number	47			87		
8			48			88		
9			49			89		Vehicle Type
10			50			90		
11			51			91		No in Vehicle
12			52			92		
13			53			93		Trip Purpose (to
14			54			94		
15			55			95		Station Number
16		Month	56			96		Direction Travel
17		Day-of-Travel	57			97		
18			58			98		
19			59			99		
20			60			100		
21			61			101		
22			62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77			117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
						131		
						132		

DATE: 8/69

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VOLUME OF DATA: _____

SPECIAL INSTRUCTIONS:

Figure 12b

Tape RECORD - TITLE Miss. Valley PROGRAM NO. _____ PAGE 2 of 2

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1		Ending Hour	41			81		
2			42			82		
3			43			83		
4			44			84		
5		Origin	45		Statewide Station No.	85		
6			46			86		
7			47			87		
8			48			88		
9			49		Vehicle Garaged	89		
10			50			90		
11			51			91		
12			52			92		
13		Destination	53		Day	93		1 Hour Exp. Factor
14			54			94		
15			55		Year	95		
16			56			96		
17			57		Statewide Zone of Origin	97		24 Hour Exp. Factor
18			58			98		
19			59			99		
20			60			100		
21			61		Statewide Zone of Destination	101		
22			62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77			117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
						131		
						132		

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SPECIAL INSTRUCTIONS:

After using the computer program written to edit and reformat the Mississippi Valley data, records that did not pass the edit had to be reviewed and corrected. In some cases, this review included going back to the original interview forms to correct the data. Figure 13 is an example of a single page of the error listing obtained from the edit program. This sheet also shows the corrections made to the trip records. All records that have an *(asterisk) on the right side had to be changed. Most of these records did not pass the edit because of origin/destination longitude and/or latitude even though they were valid trips through the original station. The only way to use these records was to change the station to allow the longitude and/or latitude to pass the edit. Therefore, the trip records for Category V are valid for analysis of trip exchange to/from the study city from/to other areas. These records can never be analyzed accurately by station of exit or entrance. The records on the example sheet that are crossed out were not corrected, because they are through trip records -- the study city is neither the origin or destination. At this time we are not concerned with through trips.

After these corrections, the data was ready for the next work phase -- the reformation of all the data for travel characteristics analysis.

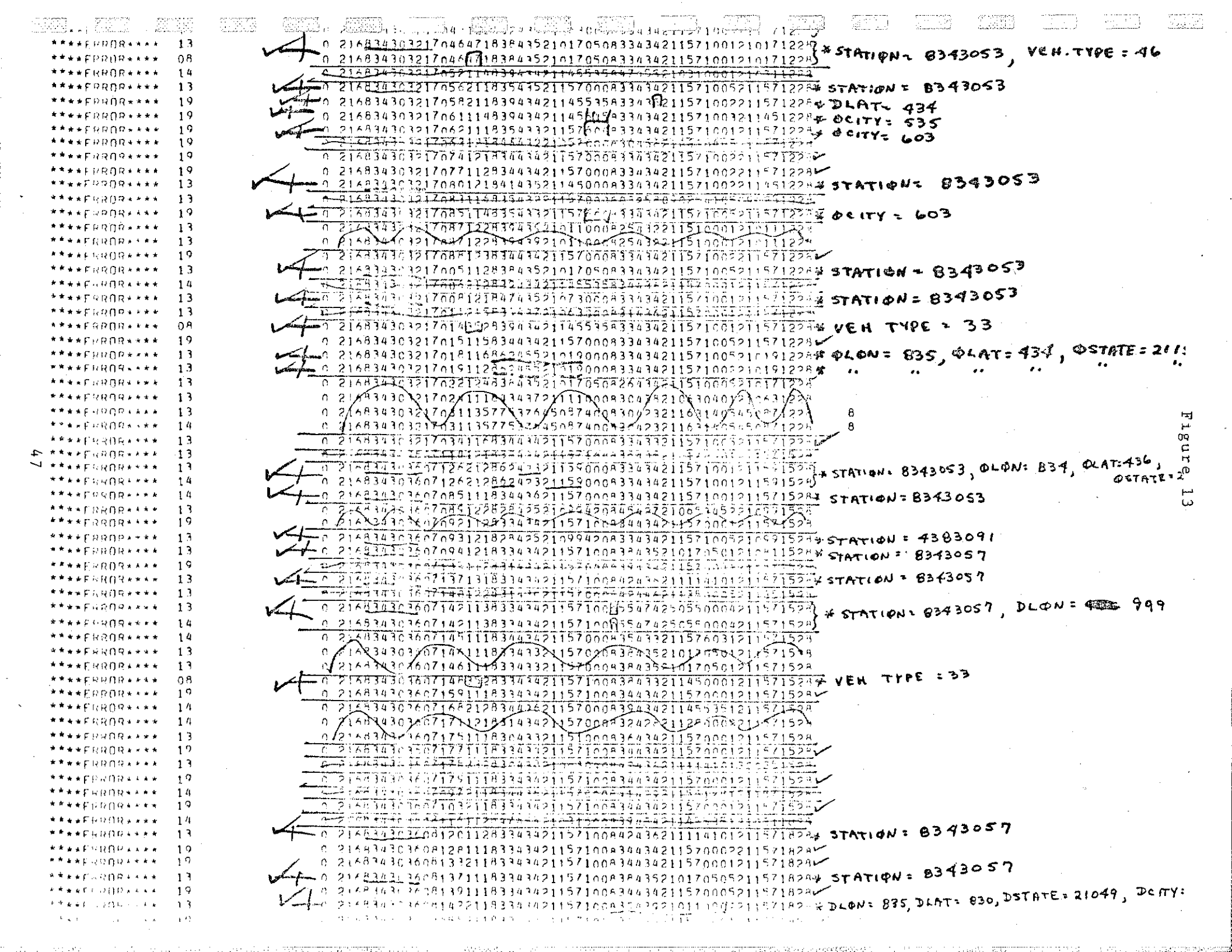
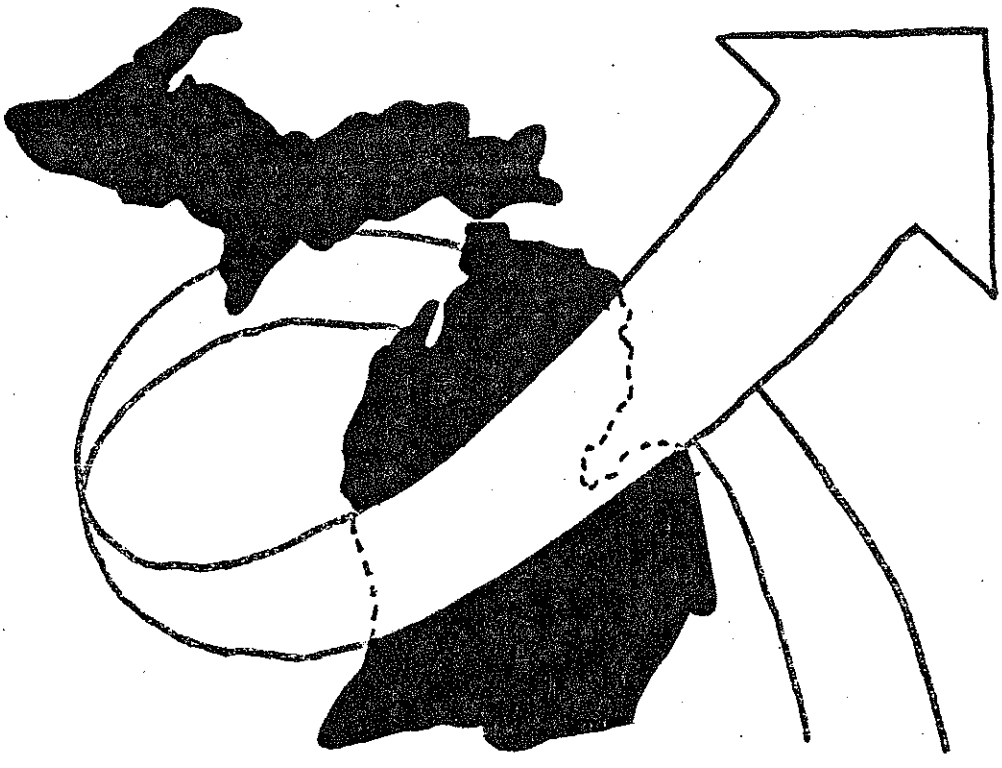

****ERROR**** 13
****ERROR**** 08
****ERROR**** 14
****ERROR**** 13
****ERROR**** 19
****ERROR**** 19
****ERROR**** 19
****ERROR**** 19
****ERROR**** 19
****ERROR**** 13
****ERROR**** 19
****ERROR**** 13
****ERROR**** 13
****ERROR**** 19
****ERROR**** 13
****ERROR**** 14
****ERROR**** 13
****ERROR**** 13
****ERROR**** 08
****ERROR**** 19
****ERROR**** 13
****ERROR**** 13
****ERROR**** 13
****ERROR**** 13
****ERROR**** 13
****ERROR**** 14
****ERROR**** 14
****ERROR**** 13
****ERROR**** 19
****ERROR**** 13
****ERROR**** 13
****ERROR**** 13
****ERROR**** 14
****ERROR**** 14
****ERROR**** 13
****ERROR**** 13
****ERROR**** 08
****ERROR**** 19
****ERROR**** 14
****ERROR**** 14
****ERROR**** 13
****ERROR**** 19
****ERROR**** 13
****ERROR**** 19
****ERROR**** 14
****ERROR**** 19
****ERROR**** 14
****ERROR**** 13
****ERROR**** 19
****ERROR**** 19
****ERROR**** 13
****ERROR**** 19
****ERROR**** 13
* STATION = 8343053, VEH. TYPE = 46
* STATION = 8343053
* DLAT = 434
* DCITY = 535
* DCITY = 603
* STATION = 8343053
* DCITY = 603
* STATION = 8343053
* STATION = 8343053
* VEH TYPE = 33
* DLON = 835, DLAT = 434, DSTATE = 21
* " " " " " "
8
8
* STATION = 8343053, DLON: 834, DLAT: 436, DSTATE =
* STATION = 8343053
* STATION = 4383091
* STATION = 8343057
* STATION = 8343057
* STATION = 8343057, DLON = 999
* VEH TYPE = 33
* STATION = 8343057
* STATION = 8343057
* DLON = 835, DLAT = 830, DSTATE = 21049, DCITY:

Figure 13

Relevant Data



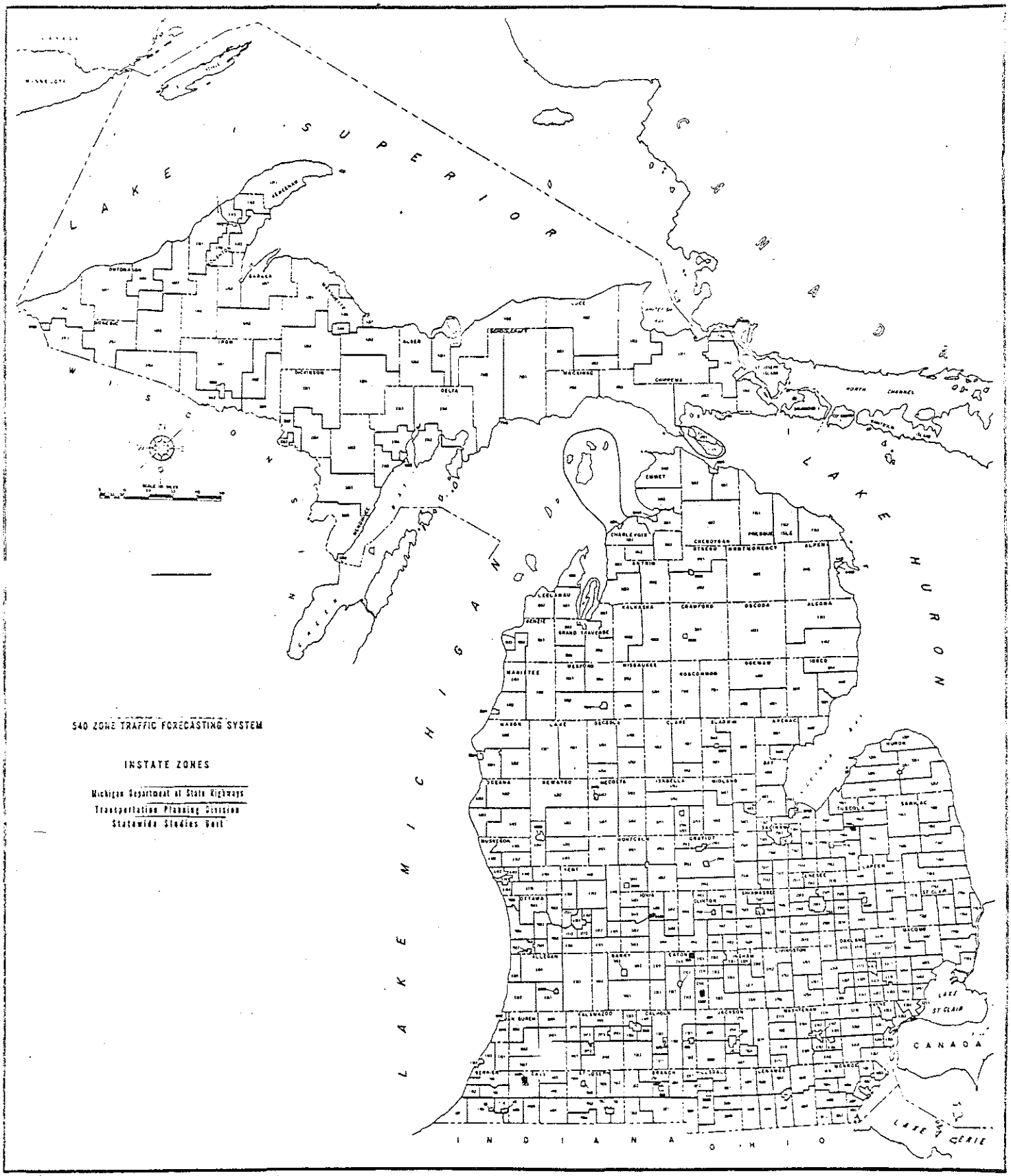
RELEVANT DATA

The travel data bank of external/internal/truck-taxi trip records is now complete for the available study data. The coding has been standardized for all of the studies involved. All of the trip data is in the standard 200-character format with minor format changes in the TALUS, Port Huron, Tri-County, and Mississippi Valley Screenline Station data, which have been previously explained.

When Arthur D. Little, Inc., began analysis of their data bank, they used only the external non-through trip data. It has been decided that the internal and truck-taxi records should be used to adjust the cordon lines of the origin-destination studies to the statewide zonal system (figure 14). This method will allow more accurate analysis and comparison of the trip data to the zonal system and generated trip tables. The final trip records to be used in the analysis phase of the trip generation-trip distribution update will consist of all external non-through trip records, all internal auto driver and pick-up driver trip records, and all truck-taxi trip records.

In addition to the primary task of creating a travel survey analysis data bank the secondary goal of the reformation process was the creation of a unified trip data bank for the State of Michigan. This type of data bank

FIGURE 14


LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ST CLAIR
LAKE ERIE
CANADA
INDIANA
OHIO
540 ZONE TRAFFIC FORECASTING SYSTEM
INSTATE ZONES
Michigan Department of State Highways
Transportation Planning Division
Statewide Studies Unit

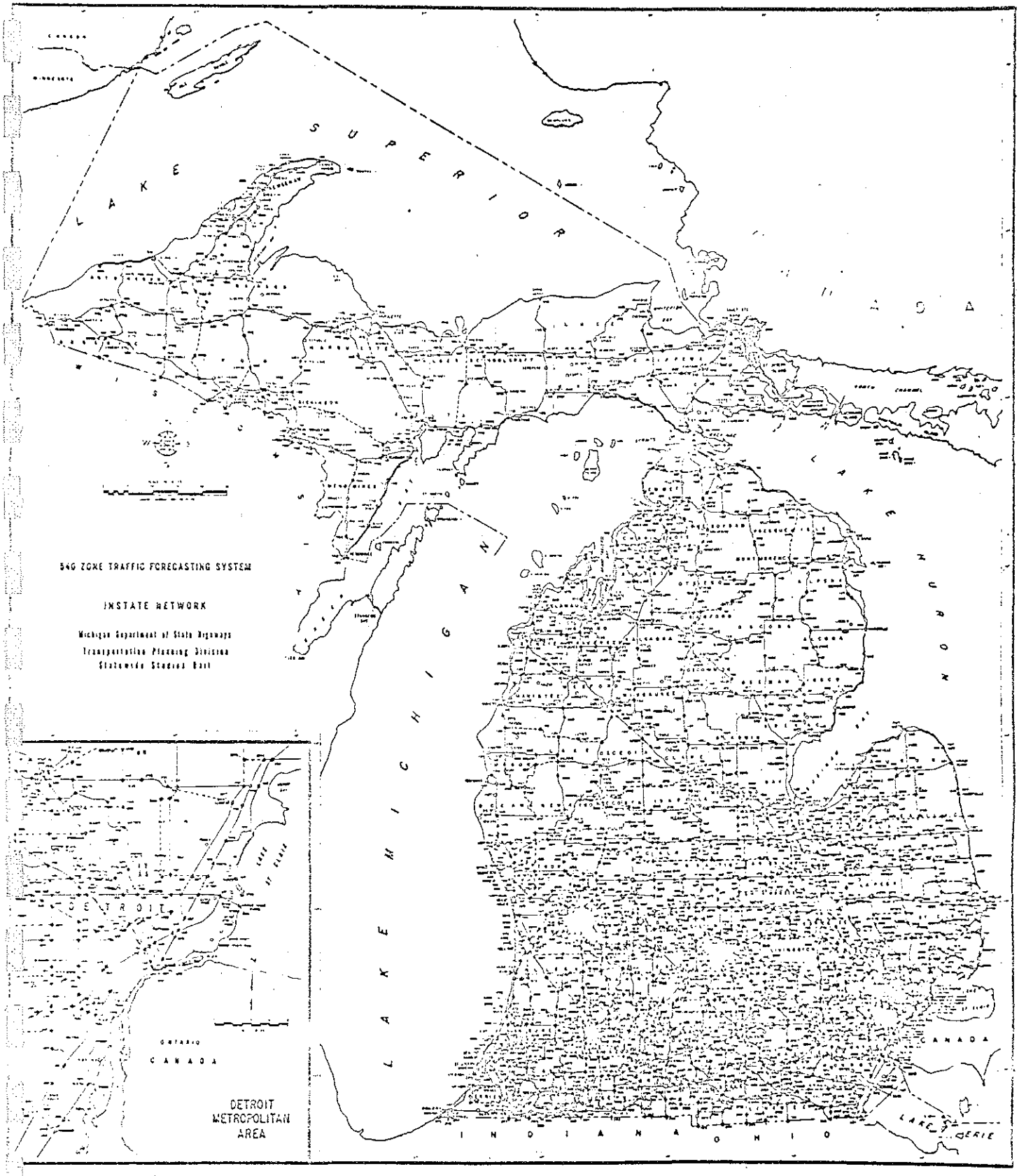
could be used for many types of research projects. To these ends, a few more modifications had to be made in the data format. Since all of the information available from the 200-character combined format O-D record is not pertinent to the structuring of a statewide trip data bank--and hence a statewide model--the usable data was transferred and the 200-character record was compressed to an 80-character record. The choice of an 80-character record was made for two reasons: the size of the trip data necessitated saving as much tape space as possible, and the 80-character record is required by a recently developed, sophisticated package of transportation planning computer programs.

Arthur D. Little, Inc. selected direction, where garaged, vehicle type, and trip purpose as the relevant data for analysis.[3] In addition to these pertinent bits of data, we decided to include station of exit or entrance for analysis purposes. There are two reasons for this decision. The first reason is to enable analysis of travel on only highways and county roads which are included in the network of the statewide model (Figure 15). The second reason is to allow seasonal adjustment on various road types.

Before the process of reformation begins, the external trip records have to be edited for the elimination of through-trips. A through-trip is a record which has neither origin nor destination within the study area. At the present time,

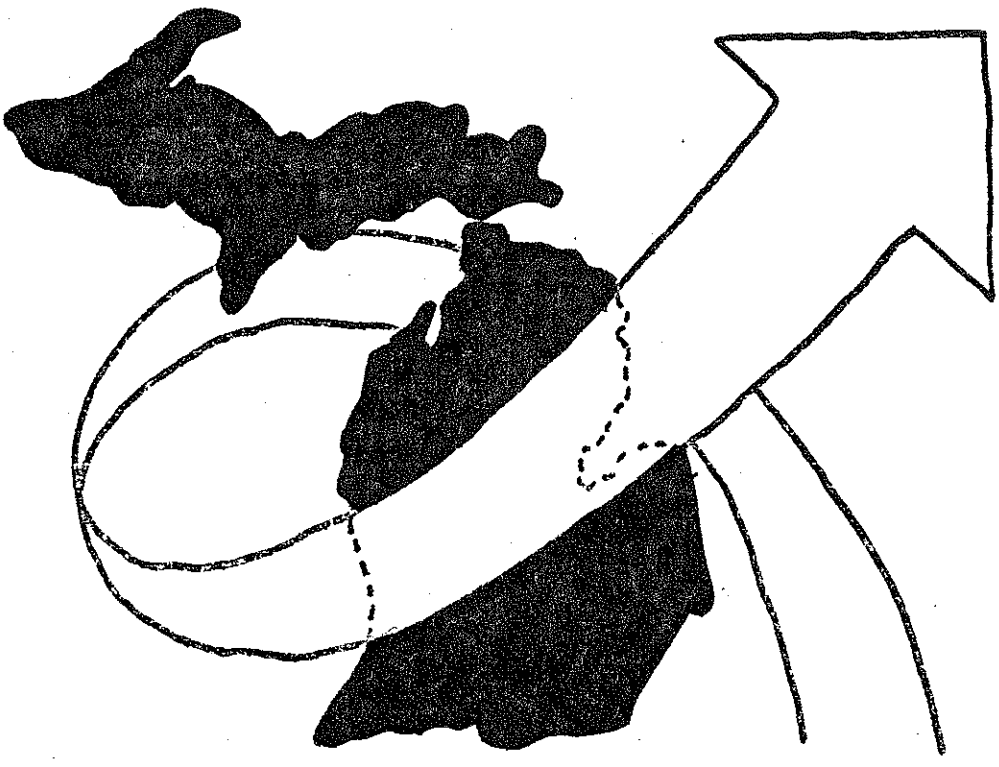
[3]Appendix I, A Computer Model for Determining Future Highway Requirements of the State of Michigan, Vol., A.D.L. Inc., Page 29.

FIGURE 15


LAKE SUPERIOR
CANADA
LAKE MICHIGAN
INDIANA
OHIO
CANADA
LAKE ERIE
549 ZONE TRAFFIC FORECASTING SYSTEM
INSTATE NETWORK
Michigan Department of State Highways
Transportation Planning Division
Statewide Studies Unit
DETROIT
ONTARIO
CANADA
DETROIT METROPOLITAN AREA

these records are not useful to the development of the trip generation-trip distribution model. The through-trips records were eliminated from the trip data bank and saved. They will be available, if necessary, for travel path analysis at some future date.

REFORMATION PROCESS



THE REFORMATION PROCESS

Now that the relevant data has been decided upon, the next step is the conversion of the original origin and destination of each trip record to the statewide zones used in the model. For each trip record, the statewide zones were recorded for the internal and external trip ends and the direction--i.e., into the origin-destination study area or out of it--was noted. Intrazonal trip records were rejected.

Trip records having identical combinations of form number, vehicle type, trip purpose, direction, where garaged, station of exit or entrance, and internal and external statewide zones (see trip vector tape description in Appendix D) were combined into a single trip record. These records will be used along with the skim trees of the statewide network to produce a set of vectors for each origin-destination study. These vectors will be used for trip-length frequency distribution in the travel characteristics analysis phase.

One other problem had to be solved. Some external trip records had external ends that specified only a county in Michigan. These county-level trip records had to be apportioned among the statewide zones making up a county. This apportionment was based only on zonal population as no additional variables were available at this time.

A computer program was specially written to convert the origin and the destination to statewide zones,

condense the relevant data, sum identical records and split county-level records. This program accomplishes the entire Reformation process. The inputs to the program are as follows for each origin-destination study area:

1. A file of external cordon trips (on tape);
2. A file of internal and truck-taxi trips (on tape);
3. A file of origin-destination study zone numbers paired with their corresponding statewide zone number (on Hollorith cards);
4. A file detailing for each county the population percentages of the statewide zones comprising that county (on Hollorith cards).

The first two inputs have already been discussed; the last three need some elaboration.

A. Zone-to-Zone Conversion Cards

The area within an origin-destination survey is divided into O-D zones. In these areas, the Statewide zones have been constructed so that each O-D zone within the cordon lies in one and only one Statewide zone (Figure 16). This deck is an equivalence table whereby the program finds the Statewide zone corresponding to the internal O-D zone of external records and for both origin and destination zones in internal or truck-taxi records. Note that there is an option which allows the program to use the Statewide zone corresponding to the central business district as the internal end of all external trips (see Appendix D). This will be discussed more fully in the section entitled "Single-Zone Reformation."

As an example of how the equivalences are obtained, refer briefly to the area base map of the Alpena study area

(Figure 16). A sample set of equivalences would be the following:

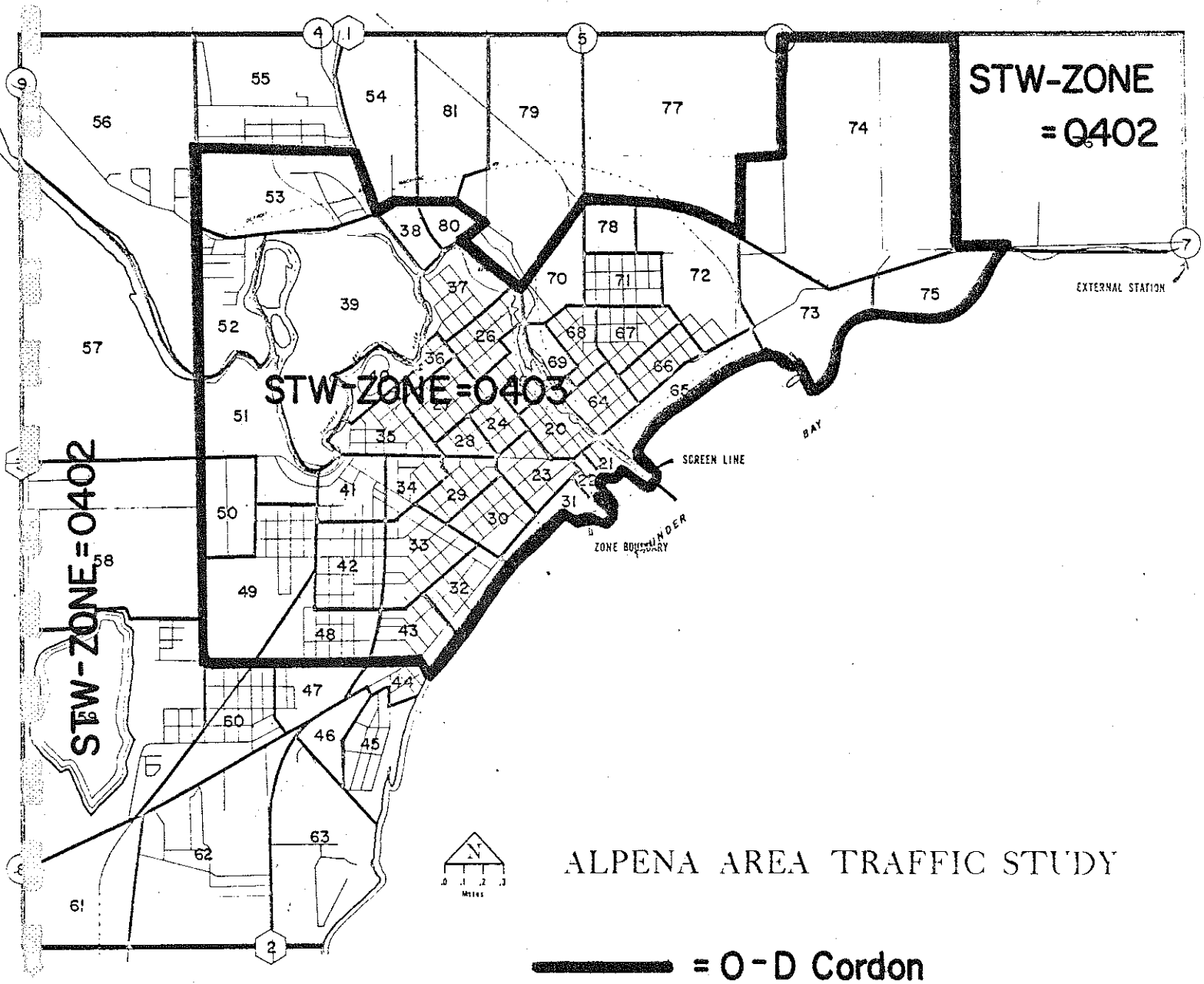
O-D ZONE NUMBER	STATEWIDE ZONE NUMBER
20	0403
21	0403
.	.
.	.
.	.
43	0403
44	0402
45	0402
46	0402
47	0402
48	0403
etc.	

B. Tract-block Conversion Cards

The external tract-block coding for all of the studies except TALUS, Port Huron, and the Mississippi Valley Screenline Stations consisted of a six-digit code. The first digit of the tract-block code was a seven, eight or nine with the exception of the Ann Arbor and Ypsilanti studies where zero, one, and two were external codes for Ann Arbor and three, four, and five were external codes for Ypsilanti. A seven signified that the external end of the trip was in the adjacent ring of Michigan counties. An eight signified that the external end of the trip was outside the adjacent counties but still in Michigan. A nine signified an out-of-state trip end. The TALUS and Port Huron external coding consisted of the same system except eight-digit codes were used. The Mississippi Valley Screenline Stations used longitude and latitude for the origin and destination coding. This was converted to statewide zones when these

FIGURE 16

AREA BASE MAP



records were reformatted as previously explained.

For the "7" codes, the remaining five digits pinpoint the county, township, and city or village. The statewide zonal equivalences can then be determined just as they are within the cordon for the zone-to-zone conversion. To get the equivalences, it was necessary to go to the master coding manual of tract-block codes for each study. This gave the city or village and township for contiguous counties; the Statewide zone equivalents were then found from a county map using a Statewide zone boundary overlay. On the next two pages are a copy of a portion of the coding supplement for the Alpena study (Figure 17) and a map of Alcona County (Figure 18). Alpena County, in this example is the county in which the study was originally taken and Alcona County is a county adjacent to the study county; therefore, all trips that had an origin or destination in Alcona County would originally have received a "7" code A sample set of tract-block to statewide zone equivalences derived from the sample page would be:

TRACT-BLOCK	STATEWIDE ZONE
701021	0101
701071	0101
701092	0102
701093	0102

The procedure for coding an origin or destination lying outside the ring of contiguous states is basically the same whether it lies in Michigan (an "8" code) or outside

Figure 17

Complete codes follow:

TOWNSHIP, CITY AND VILLAGE CODE FOR ALCONA COUNTY

Code	City or Village, etc.	Township	No.
701010		Alcona	01
701011	Black River		
701012	Hubbard Lake (The lake not the village)		
701020		Caledonia	02
701021	Spruce		
701030		Curtis	03
701031	Alcona Dam Pond (Bamfields Dam)		
701032	Bamfields		
701033	Bryant		
701034	Cheviers		
701035	Curtisville		
701036	Glennie		
701037	Wallace		
701040		Greenbush	04
701041	Cedar Lake		
701042	Greenbush		
701050		Gustin	05
701051	Gustin		
701052	Killmaster		
701060		Harrisville	06
701061	Harrisville		
701062	Springport (Note Springport in Jackson Co.)		
701070		Howes	07
701071	Barton City		
701072	Lincoln		
701080		Haynes	08
701081	Alcona		
701082	Sturgeon Pt.		
701090		Mikado	09
701091	Alvin		
701092	Kurtz		
701093	Mikado		
701100		Millen	10
701110		Mitchell	11
701111	Curran		
701112	Hardy		
701113	McGinn		
701114	Russell		

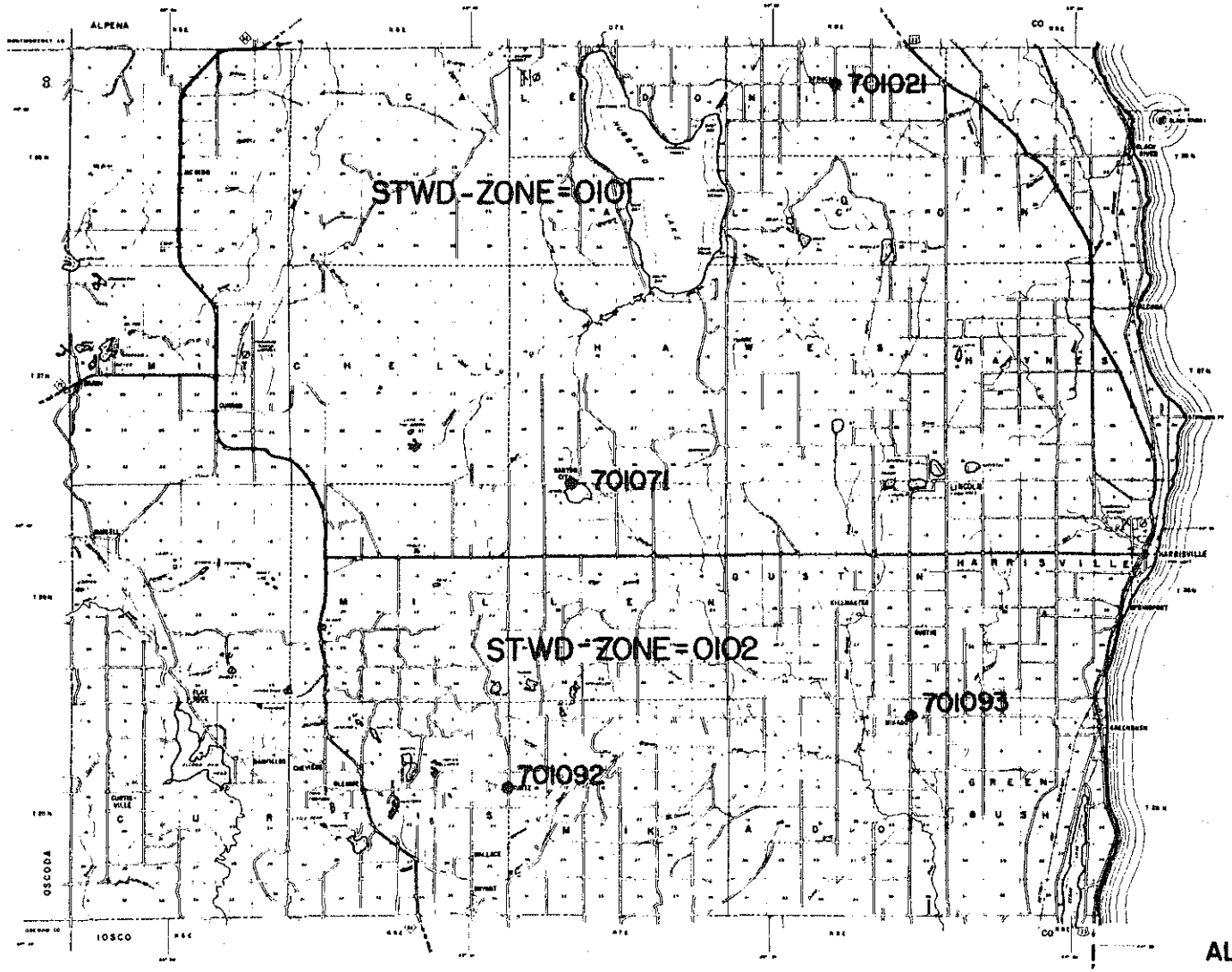

ALPENA
701021
STWD-ZONE=0101
701071
HARRISVILLE
STWD-ZONE=0102
701093
701092
OSCODA
IOSCO
GREEN
BUSH
= Statewide Zone Boundaries
ALCONA COUNTY
MICHIGAN
STATE HIGHWAY COMMISSION
DEPARTMENT OF STATE HIGHWAYS
HIGHWAY PLANNING SURVEY
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS
ALCONA COUNTY

FIGURE 18

Michigan (a "9" code). The coder must find the county of origin or destination from a map and then go to a master county-code list to obtain the six-digit O-D code. A sample of such a master list for out-of-state counties appears on the following page (Figure 19). For example, suppose a trip has its destination in Sandusky, Ohio; the coder would determine from a map that the county of destination was Sandusky County, which has county code 94172X. The corresponding statewide zone is 9441. So in the tract-block equivalence, tract-block 94172X is equivalent to statewide zone 9441. Fo an in-state non-adjacent county, the statewide equivalent is the number (1-83) of the county; followed by "00". For instance the statewide code for Alcona County is 0100; that for Wexford County, 8300. These in-state trips which ocntain "00" in the last two positions of the statewide zone will be the only trip records that enter the county-split routine in the reformation program.

Since the model is, by nature, Michigan-oriented, and in order to reduce complexity as much as possible, it was decided to use data only for trips having both origin or destination either in Michigan or in the surrounding ring of states and provinces. Any other trips are not permitted to go through Reformation; the computer program prints out records belonging to such trips, but they are not written on the reformed tape. A sample of a reformation program listing of these trips appears in figure 20a - 20b.

Figure 19

COMPLETE COUNTY CODE FOR OHIO

CODE	COUNTY	CODE	COUNTY
94101X	Adams	94145X	Licking
94102X	Allen	94146X	Logan
94103X	Ashland	94147X	Lorain
94104X	Ashtabula	94148X	Lucas
94105X	Athens	94149X	Madison
94106X	Auglaize	94150X	Mahoning
94107X	Belmont	94151X	Marion
94108X	Brown	94152X	Medina
94109X	Butler	94153X	Meigs
94110X	Carroll	94154X	Mercer
94111X	Champaign	94155X	Miami
94112X	Clark	94156X	Monroe
94113X	Clermont	94157X	Montgomery
94114X	Clinton	94158X	Morgan
94115X	Columbiana	94159X	Morrow
94116X	Coshocton	94160X	Muskingum
94117X	Crawford	94161X	Noble
94118X	Cuyahoga	94162X	Ottawa
94119X	Darke	94163X	Paulding
94120X	Defiance	94164X	Perry
94121X	Delaware	94165X	Pickaway
94122X	Erie	94166X	Pike
94123X	Fairfield	94167X	Portage
94124X	Fayette	94168X	Preble
94125X	Franklin	94169X	Putnam
94126X	Fulton	94170X	Richland
94127X	Gallia	94171X	Ross
94128X	Geauga	94172X	Sandusky
94129X	Greene	94173X	Scioto
94130X	Guernsey	94174X	Seneca
94131X	Hamilton	94175X	Shelby
94132X	Hancock	94176X	Stark
94133X	Hardin	94177X	Summit
94134X	Harrison	94178X	Trumbull
94135X	Henry	94179X	Tuscarawas
94136X	Highland	94180X	Union
94137X	Hocking	94181X	Van Wert
94138X	Holmes	94182X	Vinton
94139X	Huron	94183X	Warren
94140X	Jackson	94184X	Washington
94141X	Jefferson	94185X	Wayne
94142X	Knox	94186X	Williams
94143X	Lake	94187X	Wood
94144X	Lawrence	94188X	Wyandot
		94100X	Unknown

ERROR	001099	184110612 90139X0006 0020310030		001379o139X00	000000000
ERROR	001099	184140522 0260490111 90207X0005		0011190207X00	000000000
ERROR	001099	184150624 0060010056 90400X0006		0012990400X00	000000000
ERROR	001099	184140524 0270260127 90400X0005		0011990400X00	000000000
ERROR	001099	184140523 0270260127 90434X0005		0010290434X00	000000000
ERROR	001099	184120312 9050110003 0060010056		0012590501100	000000000
ERROR	001099	184141523 0030320072 90503X0015		0011290503X00	000000000
ERROR	001099	184141512 90900X0015 0280230152		0015090900X00	000000000
ERROR	001099	184151612 90913X0016 0260400114		0012790913X00	000000000
ERROR	001099	184140512 90913X0005 0270260127		0012090913X00	000000000
ERROR	001099	184140612 90928X0006 0270010126		0013790928X00	000000000
ERROR	001099	184140612 91674X0006 0270290128		0013791674X00	000000000
ERROR	001099	184140612 91674X0006 0270290128		0013791674X00	000000000
ERROR	001099	184150612 91677X0006 0040100066		0010591677X00	000000000
ERROR	001099	184140523 0270290128 91695X0005		0010291695X00	000000000
ERROR	001099	184151221 0250330106 92236X0012		0011392236X00	000000000
ERROR	001099	184140523 0120110054 92513X0005		0010292513X00	000000000
ERROR	001099	184120623 0090060081 92700X0006		0022592700X00	000000000
ERROR	001099	184140321 0050070073 92700X0003		0011292700X00	000000000
ERROR	001099	184140523 0030160070 92900X0005		0011992900X00	000000000
ERROR	001099	184350314 92900X0003 0270020125		0010892900X00	000000000
ERROR	001099	184140623 0260240115 92910X0006		0010892910X00	000000000
ERROR	001099	184150512 92911X0005 0030140069		0011592911X00	000000000
ERROR	001099	184140624 0270290128 92996X0006		0012792996X00	000000000
ERROR	001099	184140612 92996X0006 0270020125		0013792996X00	000000000
ERROR	001099	184140514 92996X0005 0010080024		0010292996X00	000000000
ERROR	001099	184131512 93500X0015 0260210119		0015493500X00	000000000
ERROR	001099	184140523 0090060081 93500X0005		0012593500X00	000000000
ERROR	001099	184140511 93500X0005 0130020041		0014993500X00	000000000

Figure 20a

ERROR	001099	184140511 93731X0005 0230240100		0012093731X00	000000000
ERROR	001099	184150612 94224X0006 0090010080		0013994224X00	000000000
ERROR	001099	184510523 0090160050 94402X0005		0014094402X00	000000000
ERROR	001099	184150512 94422X0005 0230210099		0011994422X00	000000000
ERROR	001099	184141012 94435X0010 0270290128		0011194435X00	000000000
ERROR	001099	184151512 94451X0015 0270260127		0015494451X00	000000000
ERROR	001099	184141011 94610X0010 0250320106		0011494610X00	000000000
ERROR	001099	184130623 0090050081 9510810006		0012795108100	000000000
ERROR	001099	184141512 95700X0015 0270020125		0015095700X00	000000000
ERROR	001099	184240324 0270290128 97003X0003		0010597003X00	000000000
ERROR	001099	184141514 97010X0015 0270290128		0010897010X00	000000000
ERROR	001099	184110524 0250330106 97100X0005		0011997100X00	000000000

Figure 20b

C. County-Split Cards

For out-of-state counties, no information is lost in coding the statewide equivalents at the county level: out-of-state statewide zones are multi-county in nature. However, an in-state county contains many zones. Therefore the program needs some method of assigning a trip end with a county-level equivalence to one of the statewide zones within the county. Based on the theory that most trips are generated by a zone in direct proportion to the population of that zone, the program apportions county-level trip ends to the various Statewide zones within the county in accordance with the ratio of the 1965 population of the zone to the 1965 population of the county.[1] As an illustration, suppose that in the Alpena study it was found that 250 trips went from statewide zone 0403 (central business district of Alpena) to Clare county. Clare county contains three zones (1801, 1802, 1803). Zone 1801 has 30.9% of the county population zone 1802 contains 38.9% of the population, and zone 1803 contains the remaining 30.2%. Therefore, zone 1801 would be assigned 30.9% of the 250 trips, or 77.25 trips; zone 1802 would get 97.25 trips, and 75.50 trips would be assigned to zone 1803.

[1] Interpolated, using Preliminary Projections for Small Areas in Michigan: Working Paper No. 9, State Resource Planning Program, Michigan Dept. of Commerce, November, 1966.

Unlike the zone-to-zone conversion deck or the tract-block conversion decks, the same county split deck may be used for every run, with one caution: although no trip end in the county of the study should be coded with a county-level code "00", occasionally it does happen. If the O-D coder knows that a trip end lies within the county of the study but for some reason does not know the precise O-D zone involved, he may use a special code for "unknown"; this code is obviously county-level in nature. Therefore, it is necessary to insure that the county-split routine sends no trips to the central business district of the study area. This is accomplished by modifying the population card for the county of the study to appear as though the CBD has no population. The process is referred to as re-normalization -- i.e., making the factors add to 1 even though we treat the CBD as vacant -- and the actual formula used for each state-wide zone in the study county (except the zone containing the CBD, of course) is

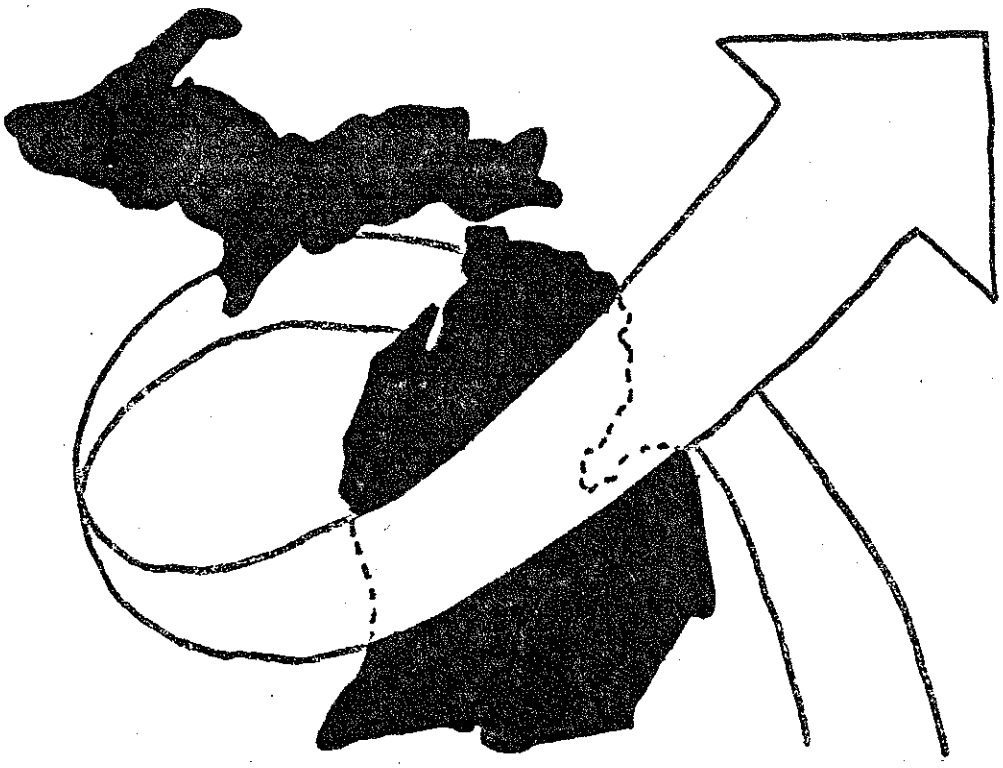
$$\text{new factor} = \frac{\text{old factor}}{1 - (\text{factor of CBD Zone})}$$

As an illustration, consider Alpena County. The CBD of the Alpena O-D Study has statewide zone number 0403. In running the Alpena reformation, then, the following changes would have to be made in the county-split deck on the card for county 04 (Alpena):

ZONE	OLD FACTOR	NEW FACTOR	
0401	.215 (21.5%)	.215/(1 - .475)	= .410
0402	.310 (31.0%)	.310/(1 - .475)	= .590
0403	.475 (47.5%)	set to	.000
		TOTAL	1.000

TYPES OF
REFORMATION

A. SINGLE-ZONE
B. MULTI-ZONE
C. MODIFIED



SINGLE ZONE, MULTI-ZONE, AND MODIFIED REFORMATIONS

The travel data analysis process used to develop a statewide traffic forecasting model was approached from two directions.

1. Treating each individual origin-destination study as a single zone in the proposed statewide zonal structure even though the actual study area may have included several statewide model zones.

2. Sub-dividing the original origin-destination study data in sub-sets that coinsided exactly with the actual statewide model zonal structure.

For example Figure 21 is a map of Saginaw County showing the study area for the Saginaw O-D. Note that there is no one-to-one match between the model zone system and the study area but with the first approach the whole region would be treated as a single model zone (7301).

In Figure 22 the Saginaw O-D study area has been subdivided in parts which coinside exactly with model zones. Only study data for model zones that are completely contained within the study area would be returned for analysis purposes.

With the first approach (Single Zone Reformation) only the external cordon trip records are necessary during the analysis phase. The second approach (Multi-Zone Reformation) requires that the analyst also use the internal and truck and taxi records in order to obtain travel data between zones 7301, 7303, 7304 and 7307 in Figure 22.

The single zone reformation was used to obtain a preliminary review of trip data file and as a check on the tract-block coding errors.

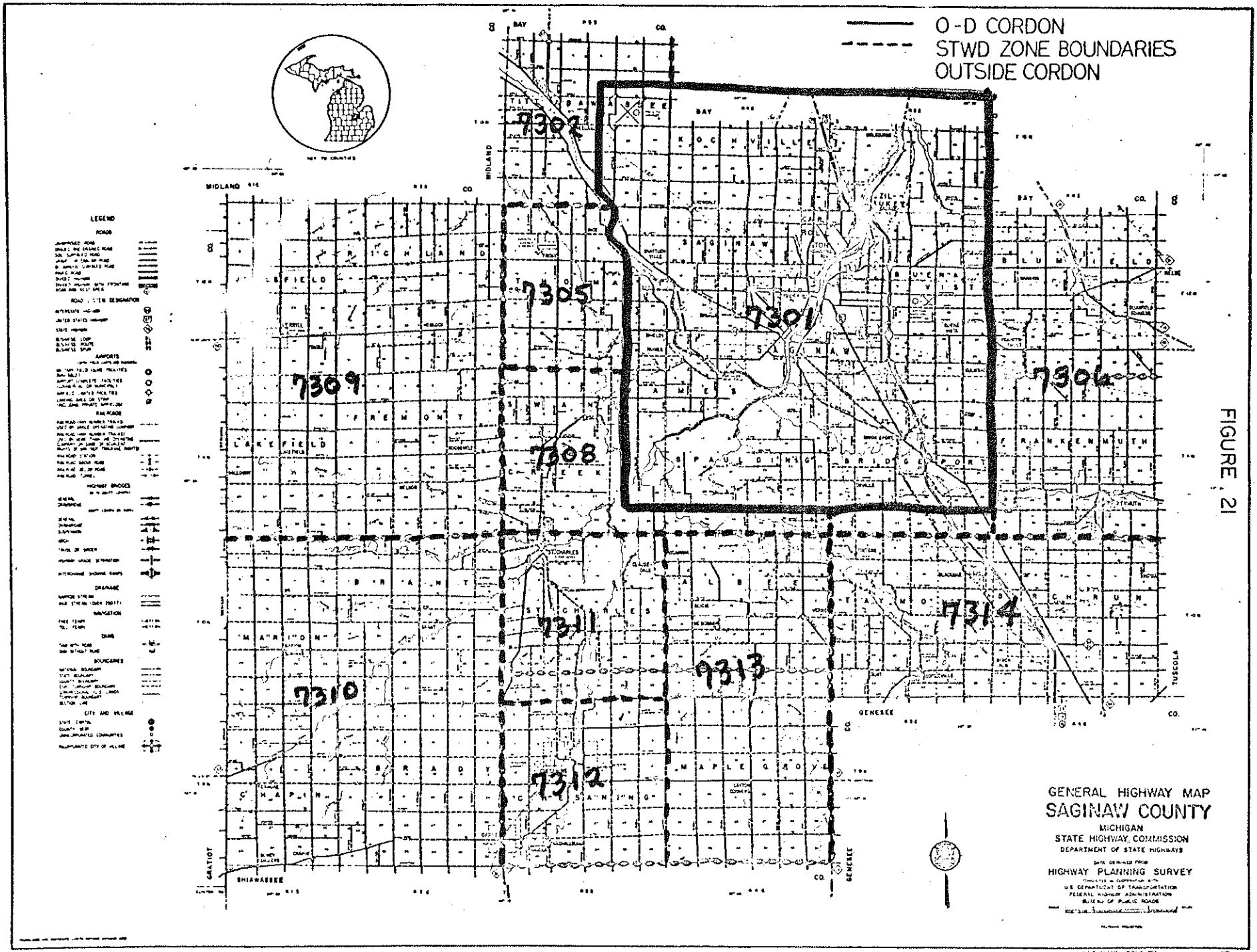

O-D CORDON
STWD ZONE BOUNDARIES OUTSIDE CORDON
7302
7305
7301
7309
7306
7308
7311
7314
7313
7310
7312
GENERAL HIGHWAY MAP
SAGINAW COUNTY
MICHIGAN
STATE HIGHWAY COMMISSION
DEPARTMENT OF STATE HIGHWAYS
HIGHWAY PLANNING SURVEY

FIGURE 21

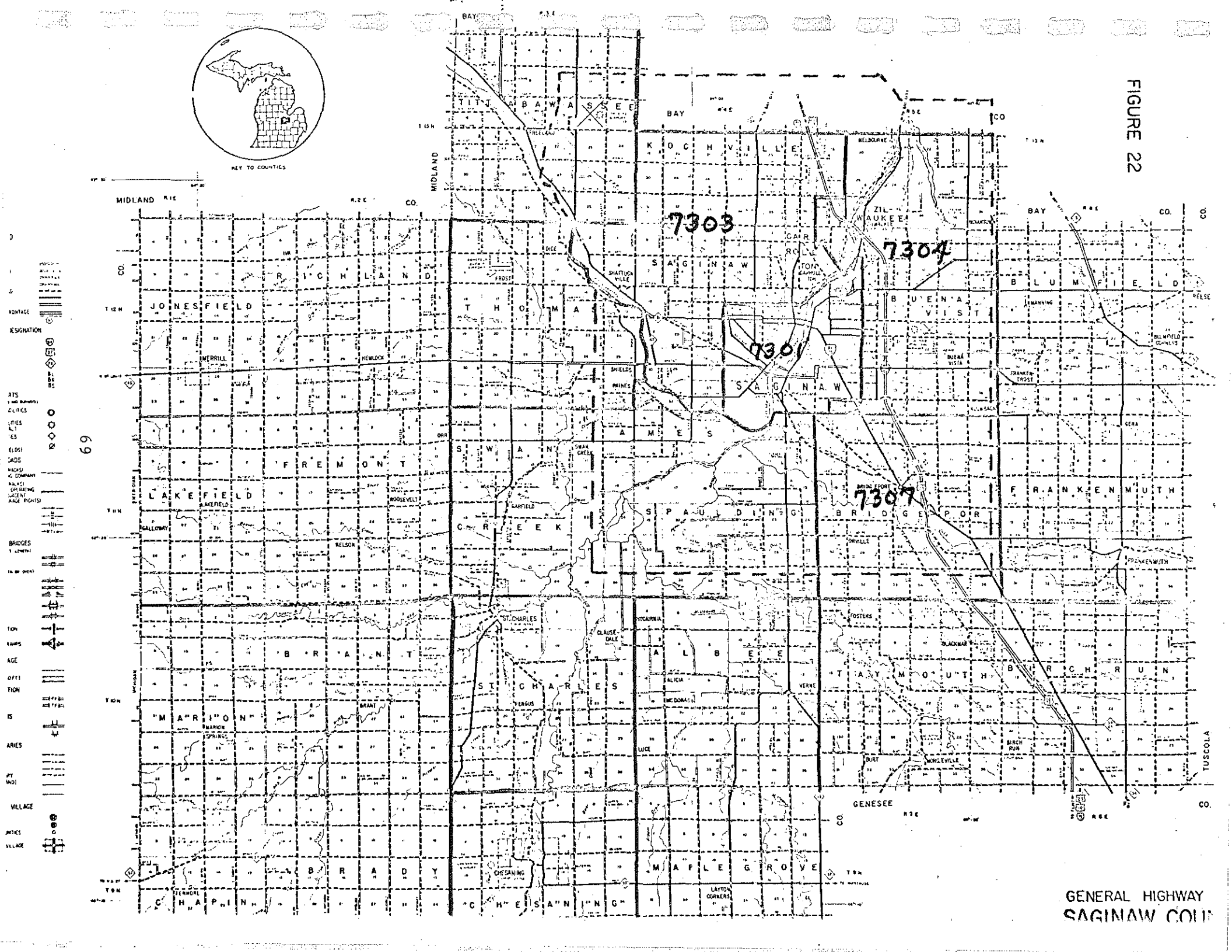


FIGURE 22

GENERAL HIGHWAY

SAGINAW COU

A. SINGLE-ZONE REFORMATION

To get a preliminary look at the data, each O-D study area was initially treated as a single zone; that is, the internal end of every external trip was assumed to be the statewide zone containing the CBD (referred to as the "city-zone"). In this form of the Reformation, there is no need to use internal trips records (since intra-zonal trips are not considered). Moreover, since the internal end of each trip is pre-set, a zone-to-zone conversion deck is not needed; the user must, however, supply the necessary control card in the deck set-up just as if he were including a zone-to-zone deck.

In this single-zone reformation process, many coding errors were discovered which had to be eliminated before the final multi-zone reformation could be run. Foremost among these were errors in the tract-block codes in the original O-D records. When the program reads a tract-block code, it searches the tract-block equivalence file for a matching code; is no such code is found, the record is printed out in error. Figure 23 is such an error listing. All "7" and "8" tract-block errors must be corrected in order for the reformation program to run. A new tract-block conversion card must be made and included with the original tract-block conversion cards. This new card must have the incorrect tract-block code and the statewide zone for the correct tract-block code. The analyst must determine what the tract-block code

should have been and make up new conversion cards. For example the new cards for the first few errors on Figure 15 would be:

TRACT-BLOCK	STATEWIDE ZONE
705 W	0500
705001	0501
705063	0503
705092	0503

The correct tract-block code as determined by the analyst was written on the listing for reference (Figure 23) and the error listing saved.

In order to keep a check on the number of trips included in each data file both before and after reformation, control totals (number of cordon trips) were monitored and recorded. The control totals of each file were checked for reasonableness before the file was designated as having completed reformation.

B. MULTI-ZONE REFORMATION

In multi-zone reformation, different statewide zones lying within the same O-D cordon could be distinguished. This made possible the use of internal and truck-taxi data as well as external records. The resulting file of trip vectors is then able to include data for trips between parts of the study area.

Here again, coding errors caused trouble. Sometimes the coder assigned an O-D zone which did not appear in the original coding manual; this necessitated the creation of

TRIPS WITH NO STW ZONE — RECORD TYPE EXTERNALS — PHASE - 1

ERROR	001099	184150324 0260220112 705 W 0003	70500X	0500	0500	00108705 W 00	000000000
ERROR	001099	184121523 0060010056 7050010015	705010			0011670500100	000000000
ERROR	001099	184131523 0090050081 7050630015	705060			0017970506300	000000000
ERROR	001099	184141514 7050630015 0270290128				0018170506300	000000000
ERROR	001099	184150112 7050920001 0100020087	705072			0011870509200	000000000
ERROR	001099	184150312 7051520003 0260620109	705142			0018070515200	000000000
ERROR	001099	184131523 0090060081 7057440015	705144			0018170574400	000000000
ERROR	001099	184130614 7100730006 0040140067	710023			0012171007300	000000000
ERROR	001099	184211011 7150720010 0080010080	705072			0011271507200	000000000
ERROR	001099	184150624 0090010077 7200220006	728022			0012972002200	000000000
ERROR	001099	184251021 0230200098 7200320010	728032			0011272003200	000000000
ERROR	001099	184131014 7221010010 0090050081	728101			0011472210100	000000000
ERROR	001099	184151611 7230310016 0270320149	728031			0013072303100	000000000
ERROR	001099	184131023 0090060081 7230510010	728051			0011572305100	000000000
ERROR	001099	184151212 7250820012 0090060081	728082			0010872508200	000000000
ERROR	001099	184121523 0060010056 7251320015	728132			0017772513200	000000000
ERROR	001099	184111523 0080030080 728 0015	72800X	2800	2800	00100728 00	000000000
ERROR	001099	184131623 0080020080 7280 0016	72800X	"	"	001337280 00	000000000
ERROR	001099	184251321 0230130099 7280 0013				001557280 00	000000000
ERROR	001099	184111823 0090160050 7280010018	728010			0014472800100	000000000
ERROR	001099	184111823 0060010056 7280010018				0014472800100	000000000
ERROR	001099	184110523 0020040032 72802X0005	728020			0015872802X00	000000000
ERROR	001099	184110623 0030310078 7280280006	728082			0011472802800	000000000
ERROR	001099	184112011 7280520020 0050110074	728032			0018072805200	000000000
ERROR	001099	184140624 0130050041 7280520006				0022572805200	000000000
ERROR	001099	184111511 7280620015 0260630108	~~728072~~ 728060			0013972806200	000000000
ERROR	001099	184211223 0090010077 7280830012	728080			0010372808300	000000000
ERROR	001099	184110512 7280830005 0020220046				0011272808300	000000000
ERROR	001099	184151523 0090060081 7281 0015	728100			001077281 00	000000000

Figure 23

a new equivalence card using the new O-D zone and the appropriate statewide zone. Sometimes an equivalence card was inadvertently omitted. In either case, the program prints out "INVALID OD-ZONE ON ZONE-TO-ZONE CARDS))))))))))0000000000."

On the next three pages are examples of three possible multi-zone reformation printer outputs. Figure 24 is an example, of a restart in phase 2; this would occur, for example, after the error described above. Figure 25 is an example of a Fatal error message in phase 3. The remedy is to resort the county-split cards and restart at phase 3 (see Appendix D). Figure 26 is an example of a completed run. The data for Cadillac would then go into the trip data bank.

Again, control totals were monitored for each study area and their reasonableness checked. On no occasion did investigation of the control totals indicate a program malfunction.

C. MODIFIED REFORMATION

In a previous section of this report dealing with the reformating of trip tape files and ths standardization of codes not all of the travel data bank discrepancies could be resolved. Because of this, the "Reformation" computer program had been written in one standard version plus five modifications of the standard. These programs were labeled Q01099 A, B, C, D, E. The trip data from the following cities was acceptable to the standard reformation program Q01099:

```
* 001099 * DD STATEWIDE * REFORMATION      :001099 RESTART:PHASE 2      ADRIAN 20 1967                21528
          RESTART INT                                  RECORD TYPE INT-TRX                          PHASE - 00


* 001099 * DD STATEWIDE * REFORMATION      :001099 RESTART:PHASE 2      ADRIAN 20 1967                21528
          RESTART INT                                  RECORD TYPE INT-TRX                          PHASE - 2

NO. OF RECORDS WRITTEN=    4591INT    1248TRX        NO. OF RECORDS READ=   59232


* 001099 * DD STATEWIDE * REFORMATION      :001099 RESTART:PHASE 2      ADRIAN 20 1967                21528
          TRIP SUM & CNTY SPLIT                        RECORD TYPE EXT-INT-TRX                      PHASE - 3

NO. OF RECORDS WRITTEN=    6977                       NO. OF RECORDS READ=   27366

SUM OF FACTORS = 0065969.72
```

Figure 24

* 001099 * IN STATEMENT * REFORMATION :001099 NORMAL ALPENA OR 1962

REFORMAT & ZONE CONVERT RECORD TYPE EXTERNALS PHASE - 1

NO. OF RECORDS WRITTEN= 14028 NO. OF RECORDS READ= 14041

* 001099 * IN STATEMENT * REFORMATION :001099 NORMAL ALPENA OR 1962

REFORMAT & ZONE CONVERT RECORD TYPE INT-TRX PHASE - 2

NO. OF RECORDS WRITTEN= 1397INT 3007RX NO. OF RECORDS READ= 43068

* 001099 * IN STATEMENT * REFORMATION :001099 NORMAL ALPENA OR 1962

FATAL ERROR 001099 CNTY-ZN-CARDS OUT OF SORT-1 0000000000

NO. OF RECORDS WRITTEN= 1523 NO. OF RECORDS READ= 15725

SUM OF FACTORS = 0019472.79

Figure 25

```
*  Q01099  *  OD STATEWIDE  *  REFORMATION        :Q01099 NORMAL              CADILLAC 06 1961

           REFORMAT & ZONE CONVERT                          RECORD TYPE EXTERNALS                    PHASE - 1

NO. OF RECORDS WRITTEN=    8155                      NO. OF RECORDS READ=    8171
```

```
*  Q01099  *  OD STATEWIDE  *  REFORMATION        :Q01099 NORMAL              CADILLAC 06 1961

           REFORMAT & ZONE CONVERT                          RECORD TYPE INT-TRX                      PHASE - 2

NO. OF RECORDS WRITTEN=      0INT       0TRX          NO. OF RECORDS READ=   15747
```

```
*  Q01099  *  OD STATEWIDE  *  REFORMATION        :Q01099 NORMAL              CADILLAC 06 1961

           TRIP SUM & CNTY SPLIT                            RECORD TYPE EXT-INT-TRX                  PHASE - 3

NO. OF RECORDS WRITTEN=    2831                      NO. OF RECORDS READ=    8155

SUM OF FACTORS = 0009269.83
```


Figure 26

Sault Ste. Marie - 1964
Muskegon - 1964
Grand Rapids - 1965
Saginaw - 1965
Flint - 1966
Traverse City - 1966
Kalamazoo - 1966
Adrian - Tecumseh - 1967
Jackson - 1967
Benton Harbor - St. Joseph - 1960
Battle Creek - 1961
Allegan - 1961
Cadillac - 1961
Monroe - 1963
Iron Mountain - 1968
Holland - 1967
Midland - 1969
Marquette - 1968
Petosky - 1967
Big Rapids - 1968
Mt. Pleasant - 1970
Sturgis - 1968
Fremont - 1969
Tri-County - 1964
Niles - 1963
Bay City - 1962
Alpena - 1962

Reformation program Q01099A was defined to handle the tract-block and zonal coding problems for TALUS. As previously explained TALUS's external tract-block codes were eight digits long and could not be reformatted to the standard 200-character records. The same type of problem was involved with TALUS's internal zones: The zone numbers were too large for the area defined in the standard 200-character format. Therefore the external tract-block and internal zone for each TALUS record were assigned to areas of the 200-character record which were not usually used. This change required a modification of the standard reformation program to accept the TALUS non-standard 200-character format. The standard reformation program accepted origin-destination internal zones numbered from 1-420. This also had to be modified since TALUS had 1446 internal zones.

Reformation program Q01099B was very similar to Q01099A. Port Huron had the same tract-block coding problem as TALUS.

With the Port Huron records, only the eight-digit tract-block code was moved to a non-standard area on the 200-character record format. The standard reformation program was modified to accept the Port Huron non-standard record.

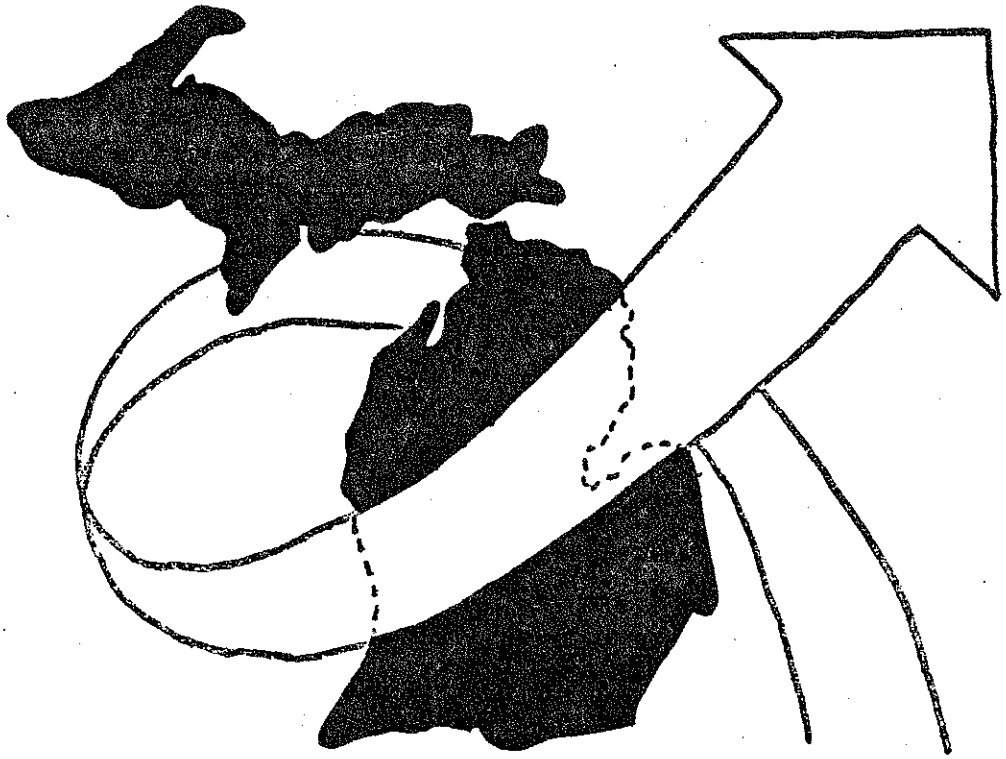
Reformation program Q01099C and Q01099D were the same type of modification of the standard reformation program. The original program required a "7", "8", or "9" in the first position of the tract-block code for the external end of a trip. As previously explained, Ann Arbor and Ypsilanti had other codes denoting an external end. Q01099C was a modification for Ann Arbor which accepted "0", "1", "2", "7", "8", and "9" as external tract-block codes. Q01099D was the modification for Ypsilanti which accepted "3", "4", "5", "7", "8", and "9" as external tract-block codes.

Reformation program Q01099E was a modification of the original reformation program which was required for the Mississippi Valley Screen Stations data. When the data for the Mississippi Valley Screen Station was standardized and reformatted to the 200-character record format, the latitude and longitude were replaced by a six-digit tract-block code for the origin and the destination in the standard places of the 200-character format and a statewide zone for the origin and the destination in the standard places of the 200-character format and a statewide zone for the origin and the destination was placed in a non-standard area of the 200-character format (see figure 12a - 12b When these records were used in the reformation program, the origin and the

destination did not have to be converted to statewide zones, since this information was already available on the record. Only those records which had a specified statewide zone (the zone of the study area) as either the origin or the destination were allowed to go through the reformation process. The reformation process for the Mississippi Valley Screen Station data was considerably shorter than the reformation process. The reformation process for the Mississippi Valley Screen Station data was considerably shorter than the reformation process for the other data. The modification Q01099E only had to compress the relevant data and sum identical records.

This completes the reformation process for all of the study areas' data. We now have a complete trip data bank. All of the data has been standardized and is in a workable form.

Conclusion



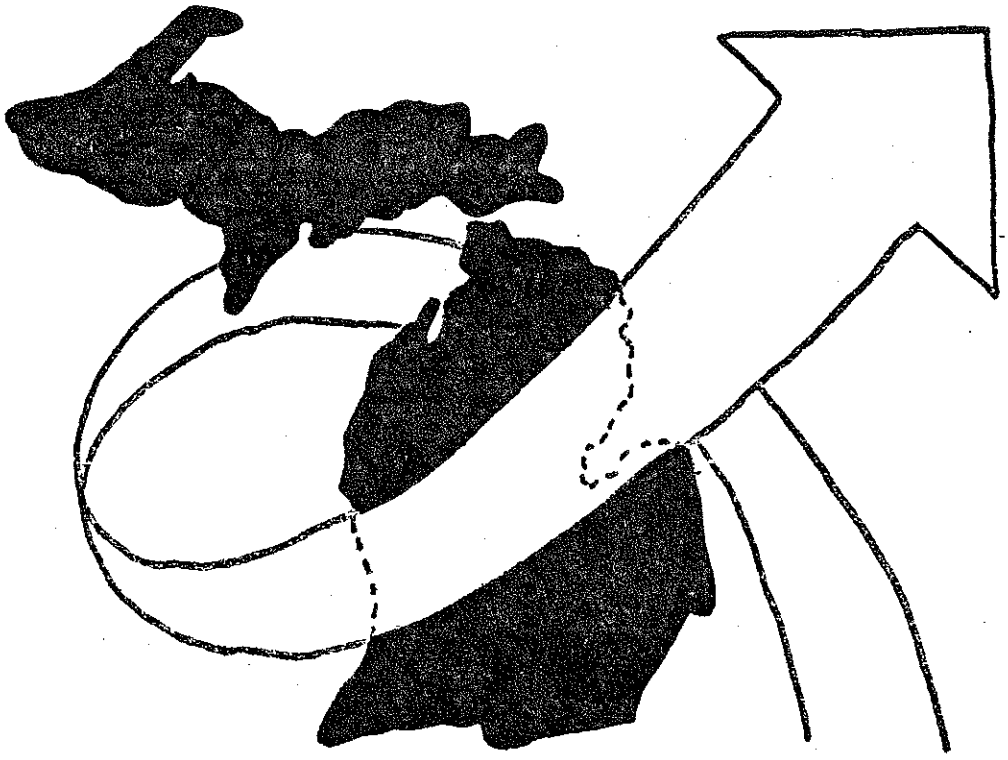
CONCLUSION

With a complete trip data bank, a large portion of the preliminary work for Travel Model Development has been accomplished. The next phase of preliminary work to be completed is the Social-Economic Data Bank Development which will be discussed in Volume V - Part B. With both data banks complete, thorough analysis of travel characteristics can be completed and a preliminary travel model or models selected. This will be discussed in Volume V - Part C. Once a preliminary model(s) has been selected, the final phases of the project will be underway -- the calibration of the trip generation and trip distribution model. The calibration process will be covered in two separate reports -- Volume V - Part D and Part E.

APPENDIX A

STANDARD CODING

A. EXTERNAL RECORD
B. INTERNAL RECORD
C. TRUCK-TAXI RECORD



EXTERNAL CODING

CODING INSTRUCTIONS AND MASTER CODES

Metropolitan Area Traffic Study

SECTION III

EXTERNAL INTERVIEW - FORM 1599 O-D & CARD NO. 3

General

The coding spaces across the top of this form are for coding that information which applies to all of the trips recorded on the form. This includes City, Form Number, Hour Period Ending, Direction of Travel, Station Number, and Day of Travel. (as much coding as possible will be done by the interviewers)

The body of the form contains numbered inquiries and coding spaces for six individual trips.

The coding spaces on the form are numbered to correspond to the proper columns on the tabulating card. These numbers appear beneath the coding spaces and across the bottom of the form.

Following are the complete coding instructions for the External Interview Form, identified by column numbers and field headings as they appear on the tabulating card. The complete codes to be used are either included in the proper paragraphs of this Section, or listed in the Local Geographic Code, Section VII.

Reviewing

Before any coding of the External Interview Form is done, the following operation must be performed:

a. Remove the forms from the Hourly Summary Envelope and check each form against the envelope. The City, Hour Period, the External Station Number, must correspond to those listed on the envelope, and the Day of week listed on the envelope must correspond to the day as entered on the form.

b. Call to the attention of the supervisor any errors or omissions, and have them corrected by him.

c. Number in consecutive order the trips recorded for the hour period, beginning with one. (Inbound starting with one and Outbound starting with one) The serial number is subsequently coded as described under Inquiry 1, coding Cols. 10-12.

d. List on the left hand side on the front of envelope the actual number of trips recorded, (interviews) for that hour. After the coding is completed list on the envelope the number of interviews thrown out. The difference would be the number coded for that hour.

Cols. 1-2; City Number

The City code is a two place code and is printed on the form in code columns 1 and 2.

Col. 3; Form Number

The Form number (or code) "4" is printed on the form in code column 3.

Cols. 4-5; Interview Period

This is the hour period recorded on the first line of the form; the hour of ending of this period is coded in the spaces provided on this form, according to the following complete code.

This code is based on the twenty-four hour system of timekeeping, which means that the designation A.M. and P.M. are dropped and the hours are numbered consecutively from one to twenty-four; thus 1:00 P.M. becomes 13:00, etc.

HOUR PERIOD			CODE (COLS. 4-5)
12 PM (Midnight)	to	1 AM	01
1 AM	"	2 "	02
2 "	"	3 "	03
3 "	"	4 "	04
4 "	"	5 "	05
5 "	"	6 "	06
6 "	"	7 "	07
7 "	"	8 "	08
8 "	"	9 "	09
9 "	"	10 "	10
10 "	"	11 "	11
11"	"	12 Noon	12
12"	"	1 PM	13
1 PM	"	2 "	14
2 "	"	3 "	15
3 "	"	4 "	16
4 "	"	5 "	17
5 "	"	6 "	18
6 "	"	7 "	19
7 "	"	8 "	20
8 "	"	9 "	21
9 "	"	10 "	22
10 "	"	11 "	23
11"	"	12 Midnight	24

For Classification code 12 Midnight to 1 AM 00 - 01

Col. 6: Direction of Travel

The direction of travel "INBOUND" - Code 1 and "OUTBOUND" - Code 2 is printed on the form.

Cols. 7-8: Station Number

The station number is entered in this space by the interviewer. Check the station number and make sure that this number corresponds to the number on the envelope.

Enter in the coding columns 7 and 8 the proper station number and prefix a zero in front of all numbers from 1 to 9 inclusive.

A complete code showing number and location of all external interview stations for the current study will be found in the Local Geographic Code, Section VII.

Col. 9: Day of Travel

The day of travel will be determined from the date of interview as recorded on the first line of the form, and coded as follows:

Day of Week	Code (Col. 9)
Sunday	1
Monday	2
Tuesday	3
Wednesday	4
Thursday	5
Friday	6
Saturday	7

Cols. 10-11-12: Interview Number

The interviews for each hour period (by directions) will be consecutively numbered; prefix two zeros to numbers 1 to 9 inclusive, and prefix one zero to number 10 to 99 inclusive.

Complete Code as follows:

Interview Number	Code (Cols. 10-11-12)
1	001
2	002
3	003
etc.	
10	010
11	011
12	012
etc.	
100	100
101	101
102	102
etc.	

Col. 13; State of Registration

Enter in the coding space the number circled by the interviewer under Inquiry 2.

State of Registration	Code Col. 13
Michigan	1
*Other	2
Not Stated	X

*Includes all other states, District of Columbia, U. S. Government, Canada, Mexico, etc.

Col. 14; Vehicle Type

Enter in the coding space the number listed by the interviewer under Inquiry 3. The code is as follows:

Vehicle Types	Code Col. 14
Passenger Car	1
Single Unit-Single Rear Tire	2
Single Unit-Dual Rear Tire	3
Single Unit-3 or 4 Axle	4
TT-ST Combinations	5
TK-TR Combinations	6
TT-ST-TR Combinations	7
Bus (not C.C.)	8
Taxi	9

Cols. 15-16; Number in Vehicle

This information is coded by the interviewer under inquiry 4; he will prefix a zero to numbers from 1 to 9 inclusive. Code "XX" if no number is given.

Number in Vehicle	Code Cols. 15-16
1	01
2	02
3	03
etc.	
10	10
11	11
12	12
etc.	

Cols. 17-18-19-20-21-22; Trip Origin

Cols. 25-26-27-28-29-30; Trip Destination

For coding instructions and explanation of coding procedure see Section II, item numbered (1) and (2); for complete codes see Local Geographic Code, Section VII in this manual.

Cols. 23-24; Land Use

The Land Use Code for through trips (trips starting and ending outside the area) will always be "YY". The Land Use Code applies to inbound trips with destination within the area or outbound trips with origins within the area. For complete codes see "Land Use" Section V, revised January, 1966.

Col. 31; Where the Vehicle is Garaged

Inquiry 8 is where the vehicle is normally kept or garaged. If the interviewer circles the 5 it is garaged at the origin, and if 7 is circled, it is garaged at the destination. "Other" means that the vehicle is garaged at neither the origin nor the destination and the interviewer will note the address under "Other" in the space allowed in inquiry 8. Complete code follows:

Vehicle Garaged At	Code Col. 31
Within the Cordon	1
Outside the Cordon at Origin	2
Outside the Cordon at Destination	3
Outside the Cordon at Neither the Origin nor Destination	4

Col. 32; Purpose of Trip

This information is coded by the interviewer under inquiry 9.

Complete code is as follows:

Purpose	Code Col. 32
Work	1
Personal Business	2
Shopping	3
Vacation	4
Other Social or Recreation	5
All Others	6

Col. 33; Screen

See complete code and instructions in Section III, item number (4). The code for "Non-driver trips" will not apply to the External Interview form and therefore Col. 33 can never be coded "0".

Cols. 34-35; Route of Exit or Entrance

Under inquiry 11, "Route of Exit or Entrance" will be listed in one of the following ways:

a. For through traffic interviewed when inbound, the intended route of exit, by route number or road name.

b. For through traffic interviewed when outbound, the actual route of entrance by route number or road name.

c. For traffic with one terminus within the area the word "None".

Coding will be done by entering in the proper spaces the number of the external station which is located on the designated route, for conditions "a" and "b", or the symbols "XX" for condition "c". Where the route of exit or entrance is not stated by the interviewer, the coding supervisor will determine a logical route by referring to the Origin, Destination and Station. The Route so determined will be coded.

The external station number will be determined by referring to the Area Base Map and Supplement to this manual.

For condition "a", the route of exit taken in conjunction with the destination of the trip, will indicate the station of exit.

For condition "b", the route of entrance taken in conjunction with the origin of the trip, will indicate the station of entrance.

The station of exit or entrance can never be the same as the station of interview on the second line of the interview form.

The complete code for external stations will be found in the Local Geographic Code, Section VII.

Station of Exit or Entrance	Code (Cols. 34-35)
1	01
2	02
etc.	
10	10
11	11
etc.	
None	XX

If code columns 34-35 are coded "XX", columns 36 thru 43 will be left blank.

Col. 36; Stops in Area

Enter in the coding space the number the number circled by the interviewer under this inquiry; if no number is circled code "X".

If the numeral "1" is circled, check the "Intermediate Stop" inquiry to make sure that an intermediate stop has been recorded. An intermediate stop should be listed only if the numeral "1" is circled; in all cases where this rule is violated consult the coding supervisor.

When a numeral other than "1" is circled under this inquiry, the remaining

inquiries on the form should be blank and no coding will be necessary.

Stops in Area	Code Col. 36
Yes	1
No	2
Not Stated	X

Intermediate Stop

The inquiries for purpose and location of intermediate stop should contain entries only when the numeral "1" under "Stops in Area" is circled.

Only intermediate stops within the Study Area should be listed. If stops are listed which lie outside the Study Area, refer the matter to the coding supervisor. No intermediate stops outside the Study Area will be coded.

Col. 37; Intermediate Stop Purpose

Enter in the coding space the number listed by the interviewer under Inquiry 13.

Purpose of Stop	Code Col. 37
Course of Work	1
Transact Business	2
Social-Recreation	3
Eating	4
Gas-Oil-Service	5
Serve Passenger	6
Secure Lodging	7
Shopping	8
Unknown or not stated	X

Cols. 38-39-40-41-42-43; Intermediate Stop Location

The location of intermediate stop as recorded on the form should always be within the limits of the Study Area. The location will be coded according to the instructions given in Section II, item numbered (1) and (2). The complete code for locations will be found on the Area Base Map and in the Local Geographic Code, Section VII in this manual.

EXTERNAL TRIP REPORT

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

MARQUETTE–ISHPEMING–NEGAUNEE
TRANSPORTATION STUDY – 1968

City Number 27 (1 2) | Form Number 4 (3) | Hour Period Ending ( ) AM or ( ) PM ____ to ____ (4 5) | In Bound 1 (6) | Station (7 8) | Day of Travel ____ (9)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Interview Number	State of Registration	Veh. Type	No. in Vehicle	Where did this trip begin? Origin	Land Use	Where will this trip end? Destination	Where is vehicle garaged?	Trip Purpose	Screen	Route of Exit or Ent.	Stops in area	Purpose	Stop Location
	1 Mich. 2 Other										1 Yes 2 No		
	1 Mich. 2 Other										1 Yes 2 No		
	1 Mich. 2 Other										1 Yes 2 No		
	1 Mich. 2 Other										1 Yes 2 No		
	1 Mich. 2 Other										1 Yes 2 No		
	1 Mich. 2 Other										1 Yes 2 No		
10 11 12	13	14	15 16	17 18 19 20 21 22	23 24	25 26 27 28 29 30	31	32	33	34 35	36	37	38 39 40 41 42 43

DESTINATION

Vehicle Garaged At

1. Within the cordon
2. Outside the cordon at origin
3. Outside the cordon at destination
4. Outside the cordon at neither origin or destination

1. Passenger Car
2. Single Unit-Single Rear Tire
3. Single Unit-Dual Rear Tire
4. Single Unit-3 or 4 Axle
5. TT-ST Combination
6. TK-TR Combination
7. TT-ST-TR Combination
8. Bus Not C.C.
9. Taxi

1. Work
2. Pers. Business
3. Shopping
4. Vacation
5. Other Soc. or Rec.
6. All Other

1. Course of Work
2. Transact Business
3. Social–Recreation
4. Eating
5. Gas–Oil Service
6. Serve Passenger
7. Secure Lodging
8. Shopping

DAY OF TRAVEL

1 Sun. 4 Wed.
2 Mon. 5 Thur.
3 Tue. 6 Fri.
7 Sat.

06

INTERNAL CODING

CODING INSTRUCTIONS AND MASTER CODES

Metropolitan Area Traffic Study

SECTION II

INTERNAL TRIP REPORT - FORM 1599 - O-D 3 & CARD NO. 2

General

Across the top of the form are numbered coding spaces for information which applies to all trips recorded on the sheet. This includes City Number, Form Number, Tract Number, Block Number and Sample Number.

The body of the form contains numbered inquiries for five individual trips. As many sheets are used as are needed to record all trips and the sheets are numbered consecutively in the upper right corner.

The coding spaces on the form are numbered to correspond to the proper columns on the tabulating card. These numbers appear beneath the coding spaces and across the bottom of the form.

Following are the complete coding instructions identified by column numbers and field headings as they appear on the tabulating card. Each paragraph or item of the instructions is numbered for reference.

The complete codes are either included in the proper paragraphs of this Section, or listed in the local geographic code, Section VII, as noted.

(1) Cols. 1-2: City Number

The City Code is a two place code and is printed on the form in code column 1 and 2.

Col. 3: Form number

The Form Number (or code) "3" is printed on the form in code column 3.

Cols. 4-5-6-7-8-9: Residence Tract and Block

This will be transcribed from the Interview Address Summary. See Section I, item 4, for explanation and the local geographic code, Section VII for the complete code.

Cols. 10-11: Sample Number

This will be transcribed from the Interview Address Summary. See Section I, item 5 for code and explanation.

Cols. 12-13: Person Number

The person number has been transcribed by the interviewer from the Interview Address Summary. Code the number in the coding spaces provided, prefixing a zero to all numbers from 1 to 9 inclusive. See Section I, item 2 and 18 for the nineth person.

Person Number	Code Cols. 12-13		One Summary Sheet (form OD-2) code box 4 blank
1	01		one sheet
2	02		" "
3	03		" "
		etc.	Two Summary Sheets (form OD-2) with Code Col. 4 coded "1"
9	09		two sheets
10	10		" "
		etc.	Three Summary Sheets (form OD-2) with Code Col. 4 coded "2"
17	17		Three sheets
18	18		" "

Cols. 14-15; Person's Trip Number

The trips for each person must be numbered individually, beginning with number 1 for each person. Code the recorded trip number in the proper spaces and prefix a zero to all numbers from 1 to 9 inclusive.

Person's Trip No.	Code Cols. 14-15
1	01
2	02
3	03
etc.	
10	10
11	11
12	12
etc.	

Col. 16; Mode of Travel

Enter in the coding space the number listed by the interviewer under Inquiry 3. This may be coded by the interviewer in the field. The complete code is as follows:

Mode of Travel	Code Col. 16
Walk to Work	0
Auto Driver	1
Auto Passenger	2
Bus Passenger	3
Taxi Passenger	4
Truck Passenger	5
School Bus Passenger	6

Cols. 17-18-19-20-21-22; Trip Origin

Cols. 25-26-27-28-29-30; Trip Destination

The coding of places of origin and destination involves the use of five codes, as follows:

1. Tract and Block code for the Study Area.
2. Township, City and Village Code for the surrounding counties.
3. County Code for Michigan
4. County Code for all other States.
5. Country Code

(2) Coding Procedure for Origins and Destinations

1. The Study Area

For coding locations within the Study Area, the Area Base Map, the local telephone and city directories, and the complete Tract and Block Code will be needed for reference.

If the origin or destination is listed as "Home" ("H" circled by the interviewer) code cols. 17 thru 22 or code cols. 25 thru 30 will be left blank.

If the location is listed by house number and street, or by the names of intersecting streets, find the indicated location on the Area Base Map and enter in the coding spaces the Tract and Block numbers for that location.

When the location is indicated by the name of a bank, store, or other large building or well known place, it will be necessary to refer to the directory for the street address, and then to the map for Tract and Block numbers.

2. The County

For coding locations within the county or counties surrounding the Study Area, the County Base Map and the complete Township, City and Village Code will be needed for reference.

When the location is indicated by city or village, enter the proper code numbers directly from the Township, City and Village Code. When the location is indicated by the name of a small inhabited place not listed in the code, locate the place on the County Base Map and enter the code for the township in which it is located.

When location is given by road name or route number and mileage from a city or village, fix the location by the same method and enter the code for the township in which it lies.

3. The State of Michigan

Required references will be an adequate map of the State and the complete County Code.

From the map, find the county in which the given location lies, and enter the code for that county from the complete County Code in the Supplement to this manual.

4 & 5 Outside of the State

Required references will be adequate maps of all the States.

Locations outside the State of Michigan will be given by city and state, or city and country. All locations will be coded by state and county. From the map find the county in which location lies and enter the code for that state and county.

Cols. 23-24; Land Use at the Origin

Cols. 31-32; Land Use at the Destination

If the origin or destination is listed as "Home" ("H" is circled by the interviewer) code cols. 23-24 or code cols. 31-32 will be left blank.

Land Use applies to origins and destinations within the study area, origins and destinations outside the study area will be coded "YY". For complete codes see "Land Use Section" revised January 1966.

(3) Cols. 33-34-35-36; Time of Leaving

Cols. 37-38-39-40; Time of Arrival

All times as listed by the interviewer must be converted to the twenty-four consecutively numbered hours, instead of twelve-hour A.M. period and a twelve-hour P.M. period.

A.M. times and 12 Noon - 1 P.M. are coded directly except that a zero is prefixed where necessary to complete a four column code.

P.M. times beginning with 1 P.M. are converted for coding by adding 1200 to the time listed.

The first minute after midnight which is the first minute of the new day is coded 0001, and midnight which is the last minute of the day, is coded 2400. The complete code follows:

Time	Code (Cols. 33-36; 37-40)
12 Mid. to 12:59 AM	2400 to 0059
1:00 AM to 1:59 AM	0100 to 0159
2:00 AM to 2:59 AM	0200 to 0259
3:00 AM to 3:59 AM	0300 to 0359
4:00 AM to 4:59 AM	0400 to 0459
5:00 AM to 5:59 AM	0500 to 0559
6:00 AM to 6:59 AM	0600 to 0659
7:00 AM to 7:59 AM	0700 to 0759
8:00 AM to 8:59 AM	0800 to 0859
9:00 AM to 9:59 AM	0900 to 0959
10:00 AM to 10:59 AM	1000 to 1059
11:00 AM to 11:59 AM	1100 to 1159
12 Noon to 12:59 PM	1200 to 1259
1:00 PM to 1:59 PM	1300 to 1359
2:00 PM to 2:59 PM	1400 to 1459
3:00 PM to 3:59 PM	1500 to 1559
4:00 PM to 4:59 PM	1600 to 1659
5:00 PM to 5:59 PM	1700 to 1759
6:00 PM to 6:59 PM	1800 to 1859
7:00 PM to 7:59 PM	1900 to 1959
8:00 PM to 8:59 PM	2000 to 2059
9:00 PM to 9:59 PM	2100 to 2159
10:00 PM to 10:59 PM	2200 to 2259
11:00 PM to 11:59 PM	2300 to 2359

Cols. 41-42: Purpose of Trip - From-To

Enter in coding spaces 41 and 42 the numbers listed by the interviewer under Inquiry 9. (This may be coded by the interviewers). The exact purpose of the trip is indicated by the two numbers in terms of trip origin (Col. 41) and trip destination (Col. 42). There are ninety-nine possible trip combinations that may appear in this two-column code. The hundredth combination, "00" or Home to Home is impossible for the reason that such a round trip must be broken up and recorded as two trips.

All of the possible trip combinations may be decided by referring to the following key:

From Code (Col. 41)	Purpose	To Code (Col. 42)
1	Work	1
2	Transact Business	2
3	Shopping	3
4	School	4
5	Social, Recreation	5
6	Change Mode of Travel	6
7	Eat Meal	7
8	Medical - Dental	8
9	Serve Passenger	9
0	Home	0
X	Unknown	X

Examples:

Code	Translation
40	From School to Home
55	From Social to Social
71	From Eating Meal to Work
03	From Home to Shopping

Inquiries 10-11-12: For Drivers Only

All passenger trips and "Walk to Work" trips, will be coded "0" by the interviewer in the coding spaces for Cols. 43, 44 and 45.

In cases where trip reports are incorrect in this respect, submit them to the supervisor for correction.

When Inquiry 3, Col. 16, is coded "1", Cols., 43, 44 and 45 cannot be coded "0"'s.

Col. 43, Person in Car

For passenger trips and "Walk to Work" trips code "0" in the coding space; for driver trips enter in the coding space the number listed, if less than nine; if the number is nine or more, code "9". The complete code is as follows:

No. of Persons in Car	Code (Col. 43)
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9 or more	9
Non-driver Trips	0
Unknown	X

Col. 44; Parking

Enter in the coding space the number listed by the interviewer under Inquiry 11. For passenger trips and "Walk to Work", code "0". The code for kind of parking is as follows:

Kind of Parking	Code (Col. 44)
Street Free	1
Street Metered	2
Lot Free	3
Lot Paid	4
Lot Municipal	5
Parking Garage	6
Service or Repair	7
Residence Property	8
Not Parked	9
Cruising	Y
Unknown	X
Non-Driver Trips	0

(4) Col. 45: Screen

No entry is made by the interviewer under Inquiry 12. The purpose of the inquiry is as follows:

Certain tests must be applied to the interview data to determine if representative results are being obtained from the study.

One of these tests is made by means of a screen line, which is a line established through the study area in such a way that all of the actual traffic passing from one part of the area to the other crosses the screen line and may readily be counted and classified.

If it can be determined also how many trips of the designated sample have passed across the screen, this figure can be expanded by the proper factor and the accuracy of the sampling method can be tested by comparing this total with the actual counts obtained in the manner above described.

The operation of measuring the number of trips across the screen line is performed as follows:

The established screen line is shown upon the Area Base Map. The origin and destination of each "Auto Driver" trip is then located on the map by the coders, and if origin and destination lie on opposite sides of the screen line then that trip is coded as passing the screen.

All passenger trips are coded "0" in the coding space for Col. 45; driver trips passing the screen are coded "1" and driver trips not passing the screen are coded "X", according to the following code:

Screen	Code (Col. 45)
Passing Screen	1
Not Passing Screen	X
Non-driver Trips	0

Col. 46: Car Pool

Code "1" for car pool trips (driver or auto passenger trips only).

Code "2" for non car pool trips (also "walk to work", bus, taxi and truck passenger trips).

Enter in coding box number 46 the number listed by the interviewer under Inquiry 13. If unknown code "X".

Form 1599
O-D 3
(Rev. 4/68)

INTERNAL TRIP REPORT

NEGAUNEE AREA
TRANSPORTATION STUDY— 1968

Sheet _____ of _____

City Number [2][7] 1–2 | Form Number [3] 3 | Tract Number [ ][ ][ ] 4–6 | Block No. [ ][ ][ ] 7–9 | Sample Number [ ][ ] 10–11

1	2	3	4	5	6	7	8		9		10	11	12	13
PERSON NUMBER	TRIP NUMBER	MODE OF TRAVEL	WHERE DID THIS TRIP BEGIN? (ORIGIN)	LAND USE ORIGIN	WHERE DID THIS TRIP END? (DESTINATION)	LAND USE DESTINATION	TIME OF START	TIME OF ARRIVAL	TRIP PURPOSE FROM	TRIP PURPOSE TO	FOR DRIVERS ONLY NO. IN CAR	FOR DRIVERS ONLY KIND OF PARK.	FOR DRIVERS ONLY SCREEN	CAR POOL 1. YES 2. No
			H		H		AM / PM	AM / PM						
			H		H		AM / PM	AM / PM						
			H		H		AM / PM	AM / PM						
			H		H		AM / PM	AM / PM						
			H		H		AM / PM	AM / PM						
12	13	14	15	16	17 18 19 20 21 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

MODE OF TRAVEL
0. Walk To Work
1. Auto Driver
2. Auto Pass.
3. Bus Pass.
4. Taxi Pass.
5. Truck Pass.
6. School Bus

LAND USE
See "Land Use" Manual for the above codes.

TRIP PURPOSE
1. Work
2. Transact Business
3. Shopping
4. School
5. Social Recreation
6. Change Mode of Travel
7. Eat Meal
8. Medical-Dental
9. Serve Passenger
0 Home

KIND OF PARKING
1. Street Free
2. Street Metered
3. Lot Free
4. Lot Paid
5. Lot Municipal
6. Parking Garage
7. Service-Repair
8. Residence Property
9. Not Parked
Y Cruising

TRUCK-TAXI CODING

CODING INSTRUCTIONS AND MASTER CODES

Metropolitan Area Traffic Study

SECTION IV

Trip Report For Trucks & Taxis - Form 1599 O-D 8 & Card No. 4

General:

The Trip Report for Trucks and Taxis presents in tabular form the information as recorded by the interviewers or as logged by the vehicle operators. This form lists in order all travel performed by the sample vehicle for the specified day.

This information must first be reduced to usable form and then transcribed to an intermediate coding sheet for use by the key-punch operator.

The intermediate coding sheet Form O-D 8, illustrated herewith, contains coding boxes arranged under the same field headings and column numbers as appear on the tabulating card.

Pre-Coding Operations on Form O-D 7

Before the information on the Trip Report form can be transcribed to the coding sheet, certain operations must be performed to make the data usable as follows:

1. Serial numbering(interview number) of Truck Reports and Taxi Reports separately
2. Assignment of trips and trip numbers
3. Checking trips across the screen line.

Interview Number

Arrange the Taxi Trip Reports by ownership; that is, group together the taxis operated by each company. Number the Trip Reports consecutively, beginning with one.

Arrange the Truck Trip Reports by ownership; that is group together all trucks owned and operated by one firm or one individual. Number the Trip Reports consecutively beginning with one.

Assigning Trip Terminals and Trip Numbers

Delivery trucks for dairies, laundries, department stores, wholesale dealers and many other businesses and occupations travel more or less regular and roundabout routes, making stops in nearly every block or possibly several stops in certain blocks.

It is obviously not practical to consider each of these stops as the ending of one trip and the beginning of another; on the other hand, round trips do not lend themselves to study and analysis. Therefore it becomes necessary to break down these roundabout trips into a series of individual trips of reasonable length and directness.

The following general rules for such adjustments apply also to taxi trips, which usually consist of roundabout circuits with many stops.

a. All truck and taxi trips shall be traced out from point to point on the Area Base Map. By this means it will be possible to determine which points represent logical trip terminals.

b. Choose these points logically and consistently; each individual trip as selected should be reasonably direct. A definite change in direction usually should be chosen as the ending of one trip and the beginning of another.

c. For comparatively short round trips, choose the point farthest from the starting point as the destination of one trip and the origin of another.

d. In general try to maintain a length of trip of approximately one-half mile, if other conditions permit.

e. On Form OD-7, draw heavy red lines across the sheet to indicate the terminals chosen for each trip.

f. Number the trips consecutively down the right margin of Form OD-7 and on the last sheet for the vehicle in question enter the total trips in the space provided at the lower right corner.

Screen Line

Locate on the Area Base Map the origin and destination of each trip as finally determined. If origin and destination lie on opposite sides of the screen line indicated on the map, then the trip crossed the screen and this fact should be indicated by writing "Yes" in the column on Form OD-7 headed "For Office Use".

If origin and destination of the trip lie on the same side of the screen line, the trip did not cross the screen, and this is indicated by writing "No" in the same column.

Coding from Form OD-7 to Form OD-8

The information listed in the upper left portion of Form OD-7 is transferred by coding to the upper part of Form OD-8.

The information in the upper right portion of Form OD-7 is for the use of the interviewer only, and is not coded.

The trip information in the body of Form OD-7 is transferred by coding to the body of Form OD-8, with exception of "Total Trips", which is coded into the upper line of Form OD-8.

A new code sheet is started for each vehicle, and all the trips for that vehicle are coded in order on succeeding lines in the body of the form. When the number of trips for one vehicle exceeds the number of lines on the sheets, a second sheet is used, or as many as are necessary to record all the trips. The heading (Cols. 1 through 25) is duplicated on each sheet, and the sheets are numbered in the upper right corner. If three sheets are used for one vehicle they are numbered "Sheet 1 of 3 sheets; Sheet 2 of 3 sheets; and Sheet 3 of 3 sheets".

Each vehicle must be represented by a code sheet, whether or not any trips were made; in the case of no trips, or trips unknown only the heading and the Trip Number (Cols. 1 through 28) are coded as explained later.

Coding shall be done according to the following instructions and complete codes.

Cols. 1-2; City Number

The City Code is a two-place code and has been printed on the form.

EXAMPLES:

City Number	Code Cols. 1-2
Grand Rapids	14
Saginaw	15
Detroit	16
Flint	17
Traverse City	18
Kalamazoo	19
Adrian	20
Jackson	21
Iron Mountain	22
etc.	

Col. 3; Form Number

The Form Number (or code) "8" is printed on the form in code column 3.

Col. 4; Miles Driven per Year

From Truck and Taxi Interview Form OD-7 "Miles Driven per Year" (actual miles driven) code in code column 4 (Form OD-8) the miles driven per year as follows:

Miles Driven per Year	Code Col. 4
Under 5,000 Miles	1
5,001 to 7,500 Miles	2
7,501 to 10,000 Miles	3
10,001 to 15,000 Miles	4
15,001 to 20,000 Miles	5
20,001 to 30,000 Miles	6
30,001 to 50,000 Miles	7
50,001 to 75,000 Miles	8
75,001 to 100,000 Miles	9
Over 100,000 Miles	0
Unknown or not Reported	X

Cols. 5-6-7-8; Interview Number

The interview number is coded directly from Form OD-7. For trucks, prefix sufficient zeros to fill all coding spaces; for taxis, code "X": in column 5 and code "0" in the intervening spaces.

Interview Number	Code Cols. 5-6-7-8
"Trucks"	
1	0001
2	0002
3	0003
etc.	
10	0010
11	0011
12	0012
etc.	
"Taxis"	
1	X001
2	X002
3	X003
etc.	
10	X010
11	X011
12	X012
etc.	

Cols. 9-10-11-12-13-14; Owned or Garaged At

All vehicles normally will be garaged within the Study Area, with the possible exception of interstate or intrastate highway freight vehicles, which may have permanent termini within the Study Area although owned or garaged elsewhere.

Coding garage addresses will be done as describe in Section 11, items numbered (2). The complete codes for location will be found in the Local Geographic Code, Section VII.

Cols. 15-16-17; Industry and Business

Both industry and business shall be coded. Where the industry only or the business only is recorded on the Trip Report, it will be a simple matter in most cases to determine the nature of the of the other classification from a study of the attached code or by checking with the recored owner of the vehicle.

The industry classification of the following code is identical with the industry classification of the Industry and Occupation Code contained in Section 1, paragraphs 19 and 20. It is a broad general classification

designed to cover all phases of industrial activity within a limited number of categories.

The business classification gives a more detailed breakdown of the various activities embraced within the industry classifications. Due to the general nature of all such codes, certain specific activities may not be represented by code numbers. In this case the activity in question shall be coded under the most nearly comparable classification. It is important that this be done in a consistent manner, always assigning the same activity, where it recurs, to the same classification.

This is a three-column code, with the first column representing industry and the other two columns representing business. The codes for the two classifications, industry and business can be used only in the groupings shown in the code. Industry code "0" can be used only with Industry code. Business codes "00" and "01" through "04"; "1" can be used only with Business codes "05" through "09", etc.

Industry and Business Code

Code (Col. 15)	Industry	Code (Cols. 16-17)	Business
0	Agriculture, Forestry Fishing	00	Farming and Truck Gardening
		01	Commercial Fishing
		02	Fruit Growing
		03	Tree Nurseries
		04	Not Otherwise Classified
1	Mining and Mineral Extraction	05	Stone, Sand and Gravel
		06	Salt and Brine
		07	Petroleum, Natural Gas
		08	Metallic Ores
		09	Not Otherwise Classified

Code (Col. 15)	Industry	Code (Cols. 16-17)	Business
2	Construction & Related Maintenance	10	General Contractors-Bldg., Highway, etc.
		11	Carpentering
		12	Concreting, Excavating and Grading
		13	Electrical
		14	Heating, Plumbing, Ventilation & Well Drilling
		15	Plastering, Lathing, and Insulation
		16	Painting, Paper Hanging & Decorating
		17	Roofing, Eavestroughing & Sheet Metal
		18	Flooring, Masonry, Tile, Weather Stripping, Glass & Glazing
		19	Not Otherwise Classified
3	Manufacturing & Processing	20	Food and Kindred Products - Candy Popcorn, Soft Drinks, etc.
		21	Beer, Wine, Liquor, Malt, etc.
		22	Textile Mill Products and Other Fiber Manufactures - Wadding, Rugs, Twine, Felt Goods, Hosiery, Knitted Underwear and Gloves
		23	Apparel and Finished Materials Made from Fabrics and Similar Materials
		24	Furniture and Finished Lumber Products; Mattresses, Bedsprings, Boxes, Posts, Barrels
		25	Paper, Pulp and Allied Products
		26	Printing, Publishing and Allied Manufactures - Bookbinding, Engraving
		27	Chemicals and Allied Products-Tallow, Compressed Gas, Cosmetics, Soap, Glycerin, Paint, etc.
		28	Petroleum and Coal Products; Fuel Oil
		29	Leather and Leather Products
		30	Stone, Clay and Glass Products
		31	Metals and Metal Products-except Machinery; includes stoves, Furnaces, Castings, etc.
		32	Electrical Machinery and Products
		33	Machinery (except Electrical); Refrigerating and Air-Conditioning Equipment, Machine Tools, etc.

Code (Col. 15)	Industry	Code (Cols. 16-17)	Business
3	Manufacturing and Processing	34	Automobiles and Transportation Equipment, Motorcycles, Railroad and Street Car Equipment
		35	Salt, Chlorides, Bromides
		39	Not Otherwise Classified
4	Transportation, Communication and Other Public Utilities	40	General Trucking
		41	Moving and Furniture Storage
		42	Railway Express
		43	Postal Service
		44	Railroad and Street-Railway
		45	Telephone and Telegraph
		46	Gas and Electricity
		47	Contract Hauling, Common Carrier Trucks, Highway Freight
		48	Taxicabs
		49	Not Otherwise Classified
5	Wholesale and Retail Trade	50	Groceries, Meats, Poultry and Egg Dealers
		51	Dairy Products
		52	Fruits and Vegetables
		53	Other Food Products; Candy, Soft Drinks, etc.
		54	Tobacco and Tobacco Products
		55	General Merchandise and Apparel: Dept. and Variety Stores, Clothing, Millinery, Shoes, Sporting Goods, etc.
		56	Furniture (Household), Radio, Includes Curtains, Draperies, China, Glass, Musical Instruments, Carpets, Rugs, Appliances
		57	Motor Vehicles, Motorcycles, Motorboats, Accessories, Parts, Tires, Batteries. Includes New and Used.
		58	Filling Stations, Dealers in Petroleum Products, Except Fuel Oil
		59	Lumber Building, Includes Heating and Plumbing Equipment, Paint, Glass, Wallpaper, Electrical Wiring, etc.
		60	Hardware and Machinery, Power Tools, Fencing, etc.
		61	Eating and Drinking Places; Includes Restaurants, Ice Cream Stands, Taverns, etc.
		62	Drugstores, Liquor Stores, Beer and Wine Dealers
		63	Fuel, Ice, Fuel Oil, Bottled Gas
		64	Hay, Grain and Feeds, Farm and Garden Supplies

Code (Col. 15)	Industry	Code (Cols. 16-17)	Business
5	Wholesale and Retail Trade	65	Florists
		66	Office, Store and School Supplies; Books, Photographic Supplies, Luggage, Paper Products
		67	Chemicals and Allied Products- Soap, Oxygen, Acetylene, etc.
		68	Junk and Salvage Dealers; Second Hand Stores
		69	Not Otherwise Classified
6	Personal Service	70	Cleaning, Dyeing, Pressing and Alterations
		71	Laundries, Towel Service, Linen Supply
		72	Hotels, Hospitals, Funeral Directors, Cemeteries
		74	Miscellaneous - Shoe Repair Barber shops, Beauty Parlors, etc.
7	Amusement Recreation and Related Serviced	75	Amusement Parks, Bowling Alleys, Pool Parlors, Race Tracks, Sight-Seeing, Theaters, Motion-Picture Houses, Ball Parks, etc.
8	Professional and Related Service	76	Educational, Religious and Social Welfare Organizations, Research & Technical Laboratories, etc.
		77	Business Services - Coin Operated Machine Rental & Repair, Advertising Agencies, Sign Painting Shops, Window Cleaning Service, etc.
		78	Automotive - Storage Garages, Parking Lots, Service Garages, Radiator Repair, Tire Repair, etc.
		79	Radio Repair Shops
		80	Upholstering and Furniture Repair
		81	Other Repair Services - Electrical Appliances, Refrigerator Service, Piano Tuning, etc.
9	Government	82	Federal, State, County or Municipal Agencies, Except Postal Service and Government Owned Utilities
X	Industry not Otherwise Classified	83	Miscellaneous Services, Warehousing, Landscape Gardening, etc.
		90	Business not Otherwise Classified
Y	Industry not Reported	95	Business not Reported
Y	Personal Transportation	YY	Trucks not used in any Business "To and from Work", "Shopping", "Personal Business" and "Vacation"

Cols. 19-20-21: Capacity

The capacity shall be coded according to the following tabulation, to form a three-column code. Taxis shall be coded "XXX".

Capacity in Tons	Code (Cols. 19-20-21)	Capacity in Tons	Code (Cols. 19-20-21)
1/4	001	5 1/2	052
1/2	002	5 3/4	053
3/4	003	6	060
1	010	6 1/4	061
1 1/4	011	6 1/2	062
1 1/2	012	6 3/4	063
1 3/4	013	7	070
2	020	7 1/4	071
2 1/4	021	7 1/2	072
2 1/2	022	7 3/4	073
2 3/4	023	8	080
3	030	8 1/4	081
3 1/4	031	8 1/2	082
3 1/2	032	8 3/4	083
3 3/4	033	9	090
4	040	9 1/4	091
4 1/4	041	9 1/2	092
4 1/2	042	9 3/4	093
4 3/4	043	10	100
5	050	etc.	
5 1/4	051	Not Given	XXX
		Taxi	XXX

Col. 22: Day of Week

Code as follows:

Day of Travel	Code (Col. 22)
Sunday	1
Monday	2
Tuesday	3
Wednesday	4
Thursday	5
Friday	6
Saturday	7
Not Stated	X

Col. 18: Types of Trucks

The truck types as listed on the Trip Report Form shall be classified under five general headings for coding, in order to correspond to the classifications used on the External Interview form. The five classifications, with their code numbers are:

2. Single unit trucks with single rear tire.
   Consists of all single unit trucks, panel, pickups, refrigerator and tank trucks with 2 axles.

3. Other single unit trucks with dual rear tire.
   Consists of all single unit trucks other than those listed under (2) above, including refrigerator and tank trucks with 2 axles.

4. All single units with 3 or 4 axles.

5. Combinations of tractor-truck and semi-trailers.

6. Combinations of trucks and trailers.

7. Combinations of tractor-trucks, semi-trailers and trailers.

9. Taxicabs will be coded "9".

   The other classifications in vehicle types do not apply, passenger cars and buses.

Truck Type	Code Col. 18
Single Unit - Single Rear Tire	2
Single Unit - Dual Rear Tire	3
Single Unit - 3 or 4 Axle	4
TT-ST Combinations	5
TK-TR Combinations	6
TT-ST-TR Combinations	7
Taxi	9

Cols. 23-24-25; Total Trips

The total trips for the truck or taxi for the specified day will be the number listed at the bottom of the last Trip Report sheet for the vehicle in question. The coder shall check this total against the last trip number before coding.

Prefix two zeros to numbers 1 to 9 inclusive and prefix one zero to numbers 10 to 99 inclusive to complete a three column code; code "000" for no trips, and code "XXX" for trips unknown or incomplete.

Total Trips	Code (Cols. 23-24-25)
None	000
1	001
2	002
3	003
etc.	
10	010
11	011
12	012
etc.	
100	100
101	101
102	102
etc.	
Unknown	XXX

Cols. 26-27-28; Trip Number

The trips performed by the truck or taxi are numbered consecutively on the Trip Report form, and shall be coded as shown in the tabulation below. Note carefully the use of "X" which is explained below; in all cases, prefix sufficient zeros to complete a three-column code.

Trip Number	Code (Cols. 26-27-28)
Trips Unknown	XXX
No Trips	X00
1	X01
2	002
3	003
etc.	
10	010
11	011
12	012
etc.	
100	100
101	101
102	102
etc.	

When it is unknown whether the vehicle made trips, columns 26, 27 and 28 shall be coded "XXX" and the balance of the line and sheet shall be left blank.

When no trips have been made by the vehicle, code "X00" in columns 26, 27 and 28 and leave the balance of line and sheet blank.

The first trip of each vehicle making trips shall be coded "X01" followed by the coding of all other data for that trip; succeeding trips shall be coded "002", "003", etc.

When Cols. 23-25 are coded "000" cols. 26-28 must be coded "X00".

Col. 29: Trip Purpose

Enter in the coding space Col. 29 the number listed under "Trip Purpose" by the interviewer on form OD-7.

The complete code is as follows:

Trip Purpose	Code Col. 29
To & from Work	1
Shopping	2
Personal Business	3
Pick up Goods	4
Deliver Goods	5
Pick up and Deliver Goods	6
Service & Other Work Connected	7
To Base of Operation	8
Vacation	9

Cols. 30-31-32-33-34-35; Origin

Cols. 38-39-40-41-42-43; Destination

For coding instructions and explanation of coding procedure see Section II, item numbered (1) and (2).

Cols. 36-37; Land Use at the Origin

Cols. 44-45; Land Use at the Destination

Land Use applies to origins and destinations within the study area, origins and destinations outside the study area will be coded "YY". For complete codes see "Land Use Manual" revised January 1966.

Cols. 46-47-48-49; Time of Leaving

Cols. 50-51-52-53; Time of Arrival

See Section II, item numbered (3).

Col. 54; Screen

See Section II, item numbered (4). The code term "0" for non-driver trips will not apply.

Form 1599
O-D7
(Rev. 2/65)

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

Sheet____ of ____Sheets

Miles Driven Per Year _____ Trip Report For Trucks ☐ For Taxis ☐ Sample No. _____

City of _____ *
*

Interview No. _____ Owner _____

Garaged at _____ Address _____

Industry & Business _____ License No. _____

Vehicle Type
Single Unit-Single Rear Tire
Single Unit-Dual Rear Tire
Single Unit 3 or 4 Axle
TT-ST Comb.
TK-TR Comb.
TT-ST-TR Comb.

Make _____ Year _____

Rated Capacity _____ Date of Travel _____

Day of the Week _____ Trips for 24 Hours Starting At 6:00 A.M. _____

Enter here the address of the beginning of the first trip. (First sheet only) Trip No.	Trip Purpose	Land Use	Time of Leaving	Time of Arrival	For Office Use Only *	
				XXXX		
Enter below each stop in the order made: 1			XXXX			
Same				XXXX	XXXX	XXXX
2			XXXX			
Same				XXXX	XXXX	XXXX
3			XXXX			
Same				XXXX	XXXX	XXXX
4			XXXX			
Same				XXXX	XXXX	XXXX
5			XXXX			
Same				XXXX	XXXX	XXXX
6			XXXX			
Same				XXXX	XXXX	XXXX
7			XXXX			
Same				XXXX	XXXX	XXXX
8			XXXX			
Same				XXXX	XXXX	XXXX
9			XXXX			
Same				XXXX	XXXX	XXXX
10			XXXX			
Same				XXXX	XXXX	XXXX
11			XXXX			
Same				XXXX	XXXX	XXXX
12			XXXX			
Same				XXXX	XXXX	XXXX
			XXXX			

Use as many sheets as necessary, and enter the last address on the next sheet.

1. To & From Work
2. Shopping
3. Pers. Business
4. Pick Up Goods
5. Deliver Goods
6. Pick Up and Deliver Goods
7. Service & Other Work Connected with Business
8. To Base of Operation
9. Vacation

INTERVIEWER

Form 1599
O-D 8
Rev. 4/68)

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

Sheet ____ of ____

MARQUETTE–ISHPEMING–NEGAUNEE–TRANSPORTATION STUDY–1968

CODING SHEET FOR TRUCK AND TAXIS

City Number	Form No.
2 7	8
1 2	3

Miles driven per year	Interview No.	Garaged	Ind-Bus.	Type	Capacity	Day	Total Trips
4	5 6 7 8	9 10 11 12 13 14	15 16 17	18	19 20 21	22	23 24 25

Trip No.	Trip Purpose	ORIGIN		Land Use	DESTINATION		Land Use	Time of Leaving	Time of Arrival	Screen
		Tract	Block		Tract	Block				
26 27 28	29	30 31 32 33 34 35		36 37	38 39 40 41 42 43		44 45	46 47 48 49	50 51 52 53	54

1. To & From Work
2. Shopping
3. Pers. Business
4. Pick Up Goods
5. Deliver Goods
6. Pick Up and Deliver Goods
7. Service & Other Work Connected with Business
8. To Base of Operation
9. Vacation

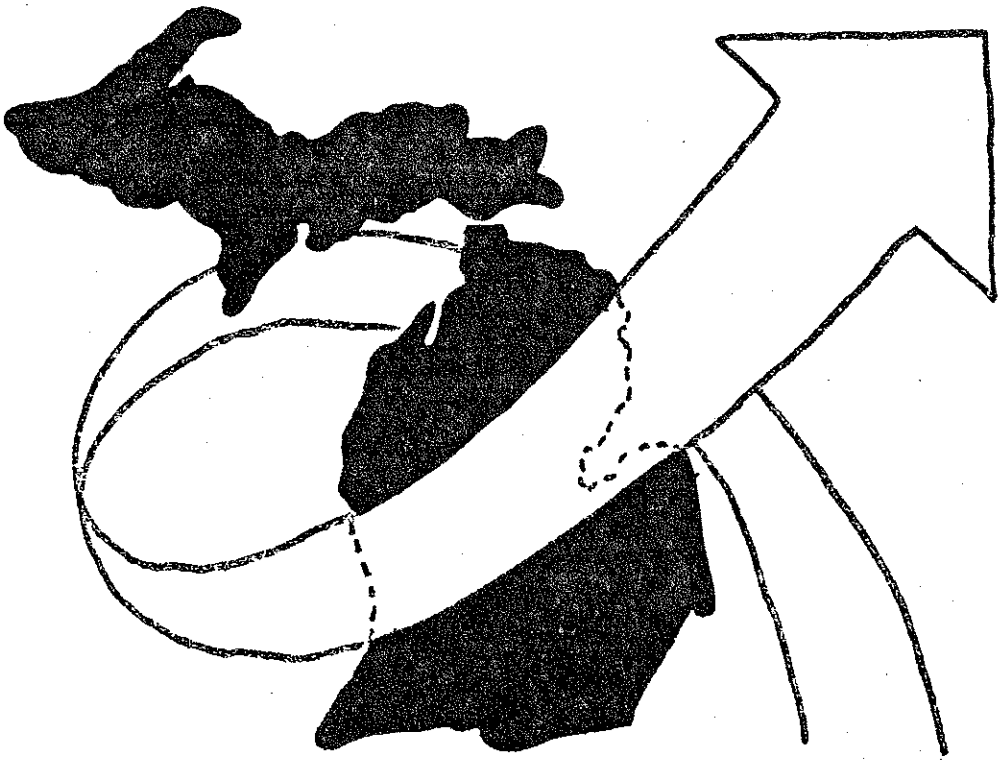
Coded _____ Date _____

Checked _____ Date _____

APPENDIX B

TRI-COUNTY CODING

A. EXTERNAL
B. INTERNAL
C. TRUCK-TAXI



EXTERNAL CODING

...PARTMENT OF STATE HIGHWAYS
...DATA PROCESSING SECTION

Trip-County

Form 23040

RECORD TITLE [illegible] PROGRAM NO. _____ PAGE _____

CHAR	FIELD DESCRIPTION	CHAR	FIELD DESCRIPTION	CHAR	FIELD DESCRIPTION
1		42		83	
2		43		84	
3		44	Location of Intermediate Stop	85	
4		45		86	
5		46		87	
6		47		88	
7		48		89	
8		49		90	
9		50		91	
10		51		92	
11		52		93	
12		53		94	
13		54		95	
14		55		96	
15		56		97	
16		57		98	
17	Trip Origin	58		99	
18		59	Farm Use	100	
19		60		101	
20		61	Vehicle Garaged	102	
21		62	Land Use	103	
22		63	Zone No. (Centroid of Origin	104	
23		64		105	
24	Trip Destination	65		106	
25		66		107	
26		67	Zone No. (Centroid of Destination	108	
27		68		109	
28		69	Purpose of Trip	110	
29		70		111	
30		71		112	
31	Vehicle Classes	72		113	
32		73		114	
33		74		115	
34		75		116	
35		76	Hour Factor	117	
36		77		118	
37	Route of	78	24-Hour Factor	119	
38		79		120	
39		80		121	
40				122	
				123	
				124	
				125	
				126	
				127	
				128	
				129	
				130	
				131	
				132	

DATE: _____

RECORD NO: _____ TAPE DENSITY: _____

RECORD LENGTH: _____ BLOCKING: _____

PAPER FORMS: _____ NO OF COPIES: _____

COLOR OF CARDS _____ LINED or UNLINED: _____

[illegible] OF DATA _____

Be sure to initial every interview form.

The shoulders of the highway are very narrow at some locations. Safety is the first consideration. Therefore each interviewer should be on the alert to prevent accidents. At such locations all interviews shall be made on the right side of the vehicle and not on the driver's side, in order that the interviewer will not be in the traffic lane.

External Interview Form O-D 4 (See Appendix III)

Before actual operations begin, the date and station number should be entered on almost as many forms as are estimated to be required for the operation of a station. The other items on line 1 of the form can be filled in by the interviewer.

1. Interview Number: This number will be filled in by coders.

2. State of Registration: If a vehicle carries a Michigan license, circle number (1); if Michigan license is not carried, circle number (2) for "other" and write the name of the State in which the vehicle is licensed in the space provided. For vehicles licensed in Canada, circle (2) and enter the word "Canada."

3. Type of Vehicle: At the bottom of column 3 is a description of vehicle types. Insert in the space the number that corresponds to the vehicle type.

4. Number of Persons in Vehicle: Enter number of persons including the driver. This applies to commercial vehicles, as well as passenger cars.

5. & 6. Origin and Destination: For places outside of Michigan, the name of the city and State should be entered. For places inside Michigan enter the name of city or town, or if rural, the highway number and distance from the nearest town. For nearby places outside the internal survey area, enter highway number or road name and

the distance from the city limits. For those inside the area, the exact street address must be secured. A round trip shall be considered as two trips, and therefore the places of beginning and ending should never be the same In cases where several places could be considered the place of beginning or ending, the farthest from the interview station should be used.

7. Trip Purpose: From the list at the bottom of the form enter the number which describes the major purpose for making the trip. However, it will be noted on the external trip report form that "From" and "To" with regard to trip purpose. are not included and that "Home" is not shown as a trip purpose. This departure from the method of recording trip purpose in the internal survey should be carefully noted.

   In the external survey, the purpose for each trip is recorded on the "To" basis only, with the exception of those trips made to get home, which should be classified according to the purpose from which they originate. For example, a person enroute home is interviewed at an external station after having been shopping. The trip purpose, in this case, should be recorded "Shopping" (Item 8). Likewise, if a person were returning home from work, the trip purpose should be recorded as "Work" and the numeral 1 would be inserted in the space provided.

8. Where is This Vehicle Owned or Regularly Garaged?: Where the address of the vehicle owned or garaged corresponds with either address in "5" or "6", circle the corresponding address. If other than the addresses given at "5" or "6", write in the correct address. In the case of commercial vehicles the place where the vehicle is garaged shall be entered.

   (a) In cases where the area being studied embraces two or more incorporated places, and for vehicles owned or garaged within the area, include the name of the city as part of the home address.

   (b) For those owned or garaged close to but outside of the area of the study, enter the name of the city, village or township.

(c) For other locations within the State, enter the name of the county.

(d) For locations outside of the State the name of the city or town and the state or country.

9. Screen: Data in this column not to be entered by interviewer.

10. Route of Exit or Entrance: This inquiry applies to "through" traffic only. For outbound vehicles, enter the name or number of the route by which the vehicle entered the survey area. For inbound vehicles, enter the name or number of the route by which the vehicle will leave the area. Do not enter the word "none" unless you are positive that the vehicle does not leave the area. If in doubt as to whether the address given by the driver is inside or outside of the study area do not guess at a designated route of exit or entrance but leave the inquiry space blank. The office checker will fill in the missing information by reference to the map of the area.

11. Stops in Area: This inquiry also applies only to through traffic. If one or more stops within the area were made by an outbound vehicle, or are contemplated for an inbound vehicle, circle "1" in this column. If no stops were made by an outbound vehicle, or are contemplated for an inbound vehicle, circle "1" in this column. If no stops were made or are contemplated, circle "2". If no definite answer can be obtained circle "x".

12. Intermediate Stop:

(a) Purpose: Insert the number which indicates the purpose of the intermediate stop from the code which appears at the bottom of the form.

(b) Location: The location of the intermediate stop shall be entered by street name and number or by name of some well known building or landmark.

Instructions to Traffic Recorder

The traffic recorder shall be located off the highway, at a distance and in a

[illegible] STATE HIGHWAY DEPARTMENT
[illegible] C. MACKIE COMMISSIONER
OFFICE OF DESIGN - TRAFFIC DIVISION

METROPOLITAN AREA TRAFFIC STUDY

EXTERNAL INTERVIEW

CLINTON, EATON AND INGHAM

City Number 1 1 (1 2)	Station (3 4)	Date	Day of Travel ____ (5)	Hour Period ( ) AM or ( ) PM ____ to ____	Hour Period Ending (6 7)	Inbound 1 – White Outbound 2 – Blue (8)

1	2	3	4	5	6	7		8	9	10	11	12	13	
Interview Number	State of Registration	Vehicle Type	No. in Vehicle	Where did this trip begin? Origin	Where will this trip end? Destination	Trip Purpose	Land Use	Where is this vehicle garaged?	Screen	Route of Exit or Ent.	Stops in area	Intermediate Stop Purpose	Intermediate Stop Location	Code Box 61
	1 Michigan 2 Other (write in)							5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)							5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)							5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)							5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)							5 Other 6			1 Yes 2 No X Not Stated			
	1 Michigan 2 Other (write in)							5 Other 6			1 Yes 2 No X Not Stated			
9 10 11	12	13	14 15	16 17 18 19 20 21	22 23 24 25 26 27	28	29	30 31 32 33 34 35	36	37 38	39	41	42 43 44 45 46 47	61

1. Passenger Car
2. Single Unit–Single Rear Tire
3. Single Unit–Dual Rear Tire
4. Single Unit–3 Axle
5. TT-ST Combination
6. TT-ST-TR or TK-TR
7. Bus Not C.C.
8. Taxi

DAY OF TRAVEL

( ) 1 Sun.
( ) 2 Mon.
( ) 3 Tue.
( ) 4 Wed.
( ) 5 Thur.
( ) 6 Fri.
( ) 7 Sat.

TRUCKS ONLY

1. To & From Work
2. Shopping
3. Pers. Business
4. Pick Up Goods
5. Deliver Goods
6. Pick Up and Deliver Goods
7. Service & Other Work Connected with Business
8. To Base of Operation
9. Vacation

OTHER THAN TRUCKS

1. Work
2. Shopping
3. Pers. Business
4. School
5. Social, Recreation
6. Vacation
7. Change Mode of Travel
8. Eat Meal
9. Home
0. All Other

HOUR ENDING

( ) 1 ( ) 2 ( ) 3
( ) 4 ( ) 5 ( ) 6
( ) 7 ( ) 8 ( ) 9
( ) 10 ( ) 11 ( ) 12

1. Course of Work
2. Transact Business
3. Social–Recreation
4. Eating
5. Gas–Oil Service
6. Serve Passenger
7. Secure Lodging
8. Shopping

4
59
FORM NUMBER

INTERNAL CODING

FORMAT OF HOME SURVEY TRIP TAPE RECORD

Column Number	Description of Data	Codes
Identification Data		
1-2	Survey Number	Cols. 1-2 contain the following codes: 02-Trip made by household resident 22-Trip made by group quarters resident
3-7	Household Number	Actual number in cols. 3-6; col. 7 contains the following codes: 1-A 2-B 3-C 0-No letter given
Location Data		
8-10	Census Tract Number of Residence	Col. 8 contains following codes: 0-Ingham County 2-Eaton County 1,4-Clinton County Cols. 9-10 contain actual census tract number assigned by the Bureau of the Census for the tracted area; for the untracted area the accompanying "Jurisdiction Code List" applies.
11-12	Governmental Unit of Residence	See "Jurisdiction Code List."
13-15	Traffic Zone of Residence	Code must be "001-411."
16-23	Grid Coordinates of Residence	Actual coordinates coded.
Household Data		
24	Number of Cars Owned	Actual number.
25	Actual or Estimated	Col. 25 contains the following codes: Blank-Cars owned reported by respondent 1-Cars owned estimated by interviewer
26	Income (Respondent's Estimate)	Col. 26 contains the following codes: 1-Without income 2-Under $3,000 3-$3,000 - $4,999 4-$5,000 - $6,999 5-$7,000 - $9,999 6-$10,000 - $14,999 7-$15,000 - $24,999 8-$25,000 & over 9-Not given

27	Actual or Estimated	Col. 27 contains the following codes: Blank-Income reported by respondent 1-Income estimated by interviewer
28	Kind of Building Lived in by Respondent	Col. 28 contains the following codes: 1-Single family 2-Two family 3-Three and over family 4-Rooming house 5-Hotel/motel 6-Institution 7-Trailer 8-Row house 9-Residential and other 0-Other +-Not given
29-30	Total Persons in Household	Cols. 29-30 contain actual number of persons living in that housing unit.
Person Data		
31-32	Person Number	Cols. 31-32 contain a unique person number for each person living in that housing unit.
33-34	Age of Respondent	Cols. 33-34 contain actual age or 00 which indicates age was not given.
35	Sex	Col. 35 contains the following codes: 1-Male 2-Female 0-Not given
36	Race	Col. 36 contains the following codes: 1-White 2-Other 0-Not given
37-38	Occupation of Respondent	Cols. 37-38 contain the following codes: 00-Professional, technical and kindred workers 01-Farmers, and farm managers 02-Managers, officials and proprietors, except farm 03-Clerical and kindred workers 04-Sales workers 05-Craftsmen, foremen and kindred workers 06-Operatives and kindred workers 07-Private household workers 08-Other service workers

		09-Farm laborers and foremen 10-Laborers, other than farm 90-Not in the labor force; unemployed, retired, housewife, student, not applicable 99-No answer
39-41	Educational Level Attained by Respondent	Col. 39 contains the following codes: 1-8-Elementary grade level attained 9-Not in this column Col. 40 contains the following codes: 1-4-High school level attained 9-Not in this column Col. 41 contains the following codes: 1-5-College level attained 9-Not in this column 000-Not given, does not apply 099-No schooling
42	Marital Status	Col. 42 contains the following codes: 1-Married 2-Widowed 3-Divorced 4-Separated 5-Never married 9-Not applicable, not household head 0-Not given
43	Relationship of Respondent to Head of Household	Col. 43 contains the following codes: 1-Head of household 2-Spouse 3-Son 4-Daughter 5-Other male, related (father, son-in-law) 6-Other female, related 7-Other male, not related 8-Other female, not related 0-Relationship not given
44	Is the Respondent a Driver of a Car or Truck?	Col. 44 contains the following codes: 1-Yes 2-No 9-Not applicable (under 5 years of age) 0-Not given
45	Is the Respondent Employed?	Col. 45 contains the following codes: 1-Full-time employment 2-Part-time employment

		3-Not employed 4-Student 9-Not applicable (under 18 years of age) 0-Not given
46-47	Land Use Code of Industry Where Respondent Works	Cols. 46-47 contain the codes presented in the Standard Land Use Coding Manual, published by HUD and BPR in 1965, or "00" which indicates land use was not given or not applicable. (See table, abstracted from Manual, entitled "Standard Land Use Classifications.")
48-50	Traffic Zone In Which Industry Is Located	Cols. 48-50 contain "001-411" industry is located in the Region; if industry is outside the Region, cols. 49-50 contain the county code indicated on the accompanying list entitled "Complete County Code for Michigan" and Col. 48 contains the following codes: 7-Ten counties surrounding Region 8-Counties in remainder of State or the three counties in the Tri-County Region 9-States other than Michigan Cols. 48-50 contain blanks or "0" if no data was available.
Trip Data		
51-52	Trip Number	Cols. 51-52 contain a number for each trip made by each individual. Coded by a two digit consecutive number for purposes of identification (01=first trip, 02=second trip).
53-55	Zone of Trip Origin	Cols. 53-55 contain "001-411" if trip origin is in the Region; if trip origin is outside the Region, cols. 54-55 contain the county code indicated in the accompanying list entitled "County Code for Michigan" if col. 53 contains the following codes: 7-Ten counties surrounding Region 8-Counties in remainder of State or the three counties in the Tri-County Region If col. 53 contains a "9," which indicates a state other than Michigan, then cols. 54-55 contain the state code indicated in the accompanying list entitled "State Code for the United States," or the country code indicated in the accompanying list entitled "Country Code."
56-58	Zone of Trip Destination	Cols. 56-58 contain "001-411" if trip destination is in the Region; if trip destination is outside the Region, cols. 57-58 contain the county code indicated in the accompanying list entitled

		"County Code for Michigan" if col. 56 contains the following codes: 7-Ten counties surrounding Region 8-Counties in remainder of State or the three counties in the Tri-County Region If col. 56 contains a "9," which indicates a state other than Michigan, then cols. 57-58 contain the state code indicated in the accompanying list entitled "State Code for the United States," or the country code indicated in the accompanying list entitled "Country Code."
59-61	Start Time	Cols. 59-61 contain the time that the trip began from zone of origin; cols. 59-60 contain the hour (military time) and col. 61 contains tenths of hours. For example, 1:06 p.m. would be coded 131 in cols. 59-61.
62-64	Arrival Time	Cols. 62-64 contain the time that the trip ended at the zone of destination; cols. 62-63 contain the hour (military time) and col. 64 contains tenths of hours.
65-66	Land Use of Trip Origin	Cols. 65-66 contain the codes presented in the Standard Land Use Coding Manual, published by HUD and BPR in 1965. (See table, abstracted from Manual, entitled "Standard Land Use Classifications.")
67-68	Land Use of Trip Destination	Cols. 67-68 contain same codes as cols. 65-66.
69	Purpose Trip Origin	Col. 69 contains the following codes: 1-Work 2-Personal business 3-Medical-Dental 4-School 5-Social-Eat meal 6-Change travel mode 7-Shopping 8-Recreation and ride 9-Home 0-Business +-Serve passenger
70	Purpose of Trip Destination	Col. 70 contains same codes as col. 69.
71	Mode of Transportation	Col. 71 contains the following codes:

		1-Auto driver 2-Auto passenger 3-Bus passenger 4-School bus passenger 5-Taxi passenger 6-Truck passenger 7-Walk to work 8-No answer
72	Car Available	Col. 72 contains the following codes: 1-Yes 2-No 3-Not given 0-Not applicable
73-74	Car Occupancy	Cols. 73-74 contain the actual number of people in the car including the driver or the following codes: -- -Not given ++ -Not applicable
75	Parking	Col. 75 contains following codes concerning type of parking facility used: 1-Street free 2-Street meter 3-Lot free 4-Lot paid 5-Garaged free 6-Garage paid 7-Service or repairs 8-Residential property 9-Cruised 0-Not parked -- -Not given ++ -Not applicable
76	Day of Travel	Col. 76 contains the following codes: 1-Sunday 7-Saturday 8-Weekday
77	Month of Travel	Col. 77 contains the following codes: 4-April 5-May 6-June 7-July
Factor 78-80	Expansion Factor	Cols. 78-80 contain the number, to nearest tenth, which expands the sample data to 100%.

81 Record Mark Record Mark

In addition, the Home Survey Trip Tape has the following characteristics which the user needs to know:

1. Tape recording density (high-556 BPI)
2. Tape blocking factor (10)
3. Sort sequence (by survey number, household number, person number, trip number)
4. Record count excluding padding (44288)
5. Header and trailer labels (none)
6. Padding characters (all 9's)

TRUCK-TAXI CODING

FORMAT OF TRUCK-TAXI SURVEY TAPE RECORD

Column Number	Description of Data	Codes
Identification Data		
1-2	Survey Number	Each record has a "1" in col. 1 and "0" in col. 2.
3-6	Sample Number	Actual number in cols. 3-6.
7	Vehicle Type	Col. 7 contains the following codes: 1-Truck 2-Taxi
8-13	Zone Garaged	Cols. 9-10 contain the county code indicated on the accompanying list entitled "County Code for Michigan" and col. 8 contains the following codes: 7-Ten counties surrounding Region 8-Counties in remainder of State or the three counties in Tri-County Region Cols. 11-13 contain "001-411" if truck or taxi is garaged in the Tri-County Region; if garaged outside the Region, cols. 11-12 contain the township code or "00" and col. 13 contains the city, village or place code.
14	Truck Type	Col. 14 contains the following codes: 1-Single unit, single rear tire 2-Single unit, dual rear tire 3-Single unit, three axle 4-TT-ST-combination 5-TT-ST-TR or TK-TR 6-Other 0-Not given (not applicable if taxi)
15	Day of Travel	Col. 15 contains the following codes: 2-Monday 3-Tuesday 4-Wednesday 5-Thursday 6-Friday 0-Not given, question not applicable
16-18	Total Mileage	Cols. 16-18 contain the actual number of miles or the following codes: 000-No mileage this day, no mileage in this area 001-One mile (or less than one mile) 998-Mileage not given 999-Not applicable

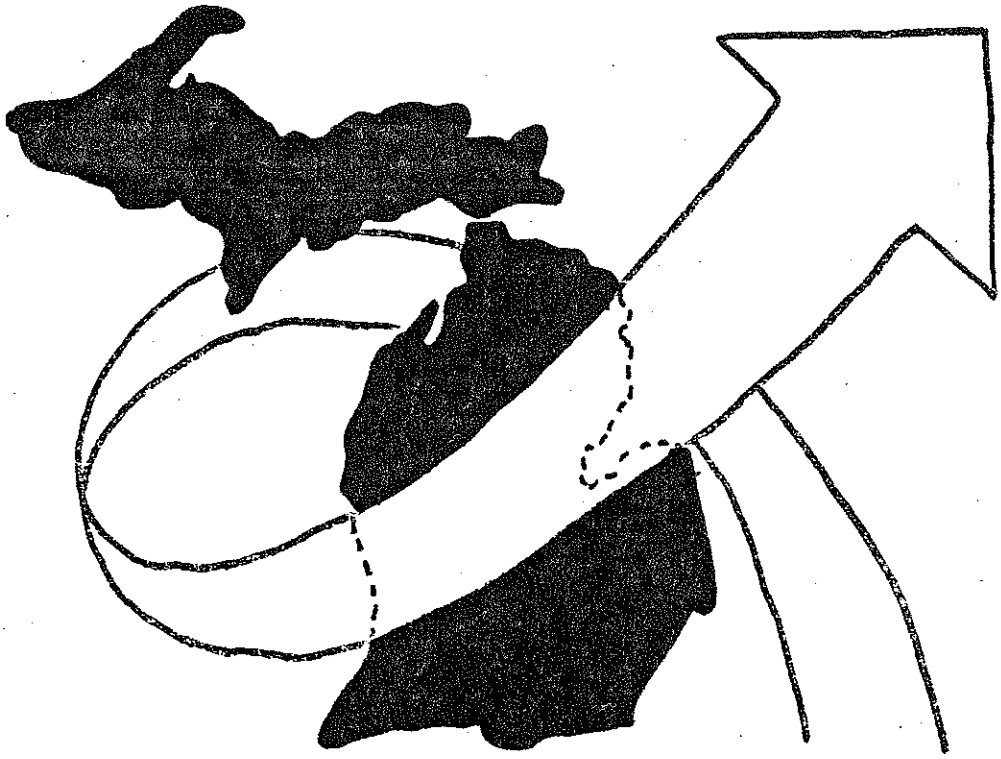
19	Actual or Estimated Mileage	Col. 19 contains the following codes: 1-Actual 2-Estimated 0-Not given, not applicable
20	Status of Interview	Col. 20 contains the following codes: 1-Complete 2-Refusal 3-Vehicle sold, replaced 4-Vehicle sold, not replaced 5-Vehicle junked, not replaced 6-Out of service 7-Moved 8-Garaged out of Region 9-Incomplete - everything but mileage is given +-No contact - tried 3 or 4 times, but could not reach the person 0-Location of truck unknown
21-23	Trip Number	Cols. 21-23 contain the following codes: 001-First trip 002-Second trip, etc. 000-No trips, this vehicle
24-26	Zone of Trip Origin	Cols. 24-26 contain "001-411" if trip origin is in the Region; if trip origin is outside the Region, cols. 25-26 contain the county code indicated in the accompanying list entitled "County Code for Michigan" if col. 24 contains the following codes: 7-Ten counties surrounding Region 8-Counties in remainder of State or the three counties in the Tri-County Region If col. 24 contains "9," which indicates a state other than Michigan, then cols. 25-26 contain the state code indicated in the accompanying list entitled "State Code for the United States," or the country code indicated in the accompanying list entitled "Country Code."
27-28	Land Use at Trip Origin	Cols. 27-28 contain the codes presented in the Standard Land Use Coding Manual, published by HUD and BPR in 1965. (See table, abstracted from Manual, entitled "Standard Land Use Classifications.") 00-Not given or not applicable

29-31	Zone of Trip Destination	Cols. 29-31 contain "001-411" if trip destination is in the Region; if trip destination is outside the Region, cols. 30-31 contain the county code indicated in the accompanying list entitled "County Code for Michigan" if col. 29 contains the following codes: 7-Ten counties surrounding Region 8-Counties in remainder of State or the three counties in the Tri-County Region. If col. 29 contains "9," which indicates a state other than Michigan, then cols. 30-31 contain the state code indicated in the accompanying list entitled "State Code for the United States," or the country code indicated in the accompanying list entitled "Country Code."
32-33	Land Use at Trip Destination	Cols. 32-33 contain the same codes as cols. 27-28.
34-35	Purpose of Trip Origin	Cols. 34-35 contain following codes: 01-Work 02-Personal business 03-Medical-dental 04-School 05-Social-Eat Meal 06-Change travel mode 07-Shopping 08-Recreation and ride 09-Home 10-Serve passenger 11-Picking up goods 12-Delivering goods 13-Picking up and delivering goods 14-To base of operation 15-Service and other work-connected business 00-Not given
36-37	Purpose of Trip Destination	Cols. 36-37 contain same codes as cols. 34-35.
38-40	Start Time	Cols. 38-40 contain the time that the trip began from zone of origin; cols. 38-39 contain the hour (military time) and col. 40 contains tenths of hours. For example, 1:06 p.m. would be coded "131" in cols. 38-40.

APPENDIX C

TALUS & PORT HURON CODING

A. EXTERNAL
B. TALUS INTERNAL
C. PT. HURON INTERNAL
D. TRUCK-TAXI



41-43	Arrival Time	Cols. 41-43 contain the time that the trip ended at the zone of destination; cols. 41-42 contain the hour (military time) and col. 43 contains tenths of hours.
44	Screenline Area of Trip Origin	Col. 44 contains the following codes: 1-Screenline area one which consists primarily of Eaton County 2-Screenline area two which consists primarily of Ingham County 3-Screenline area three which consists primarily of Clinton County Blank-Trip origin was outside of Region
45	Screenline Area of Trip Destination	Col. 45 contains the following codes: 1-Screenline area one which consists primarily of Eaton County 2-Screenline area two which consists primarily of Ingham County 3-Screenline area three which consists primarily of Clinton County Blank-Trip destination was outside of Region
46-77	Blank	Blank
78-80	Expansion Factor	Cols. 78-80 contain the number, to nearest tenth, which expands the sample data to 100%.
81	Record Mark	Record Mark

In addition, the Truck-Taxi Survey Tape has the following characteristics which the user needs to know:

1. Tape recording density (high-556 BPI)
2. Tape blocking factor (10)
3. Sort sequence (by vehicle type, sample number, trip number)
4. Record count excluding padding (7355)
5. Header and trailer labels (none)
6. Padding characters (all 9's)

EXTERNAL CODING

DATE:

TAPE OR PRINT LAYOUT--CENTER FOR URBAN STUDIES

RECORD TITLE: EXTERNAL TRIP INBOUND (COMPUTER) ALSO 535 External Trip Records

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1	5	Deck Number	41		Origin Zone (cont.)	81		Origin Screenline
2	3		42			82		Dest. Screenline
3	4		43		Blank	83		Blank
4		Station # (Compound Int. #)	44			84		Station Zone Number
5			45			85		
6		Month (Date)	46			86		
7			47			87		
8		Week (Date)	48			88		
9		Day (Date)	49			89		
10		Hour (Time)	50			90		
11			51		Purpose (Origin)	91		
12		AM-PM (Time)	52		Land Use (Origin)	92		
13		Interview # (Compound Int. #)	53			93		
14			54		Area (Origin)	94		
15			55		Tract (Dest. Tract And Block)	95		
16		Vehicle Type	56			96		
17		# in Vehicle	57			97		
18		Garaged At	58		Tag (Dest. Tract And Block)	98		
19		Route of Exit	59		Block (Dest. Tract And Block)	99		
20			60			100		
21		Purpose of Stop	61			101		
22		Commodity	62		Destination Zone	102		
23			63			103		
24			64			104		
25		Blank	65			105		
26			66		Blank	106		
27			67			107		
28		16 Hour Expansion Factor	68			108		
29			69			109		
30			70			110		
31		Area (Origin Tract And Block)	71			111		
32		Tract (Origin Tract And Block)	72			112		
33			73			113		
34			74		Purpose (Dest.)	114		
35		Tag (Origin Tract And Block)	75		Land Use (Dest.)	115		
36		Block (Origin Tract And Block)	76			116		
37			77		Blank	117		
38			78		24 Hour Expansion Factor	118		
39		Origin Zone	79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
						131		
						132		
						133		
						134		
						135		

PROJECT NO.:

TAPE NO.:

RECORD NO.:

RECORD COUNT:

RECORD LENGTH:

BLOCKING:

Center for Urban Studies
The University of Michigan
Dearborn Campus

PORT HURON

EXTERNAL TRIP

DECK 534 - 535

Column Number	Description
1-3	DECK NUMBER 534. Inbound 535. Outbound
4-15	COMPOUND INTERVIEW NUMBER
4-5	STATION NUMBER
6-9	DATE
6-7	Month 01. January 02. February ...
8	Week of month 1. First 2. Second ... 5. Fifth
9	Day 1. Monday 2. Tuesday ... 7. Sunday
10-12	TIME
10-11	Hour 01. One o'clock 02. Two o'clock ... Coded to the hour during which interview was conducted; e.g., interview taken at 4:35, code is 04.

(continued)

Column Number	Description
10-12	TIME CONTINUED
12	A.M. or P.M. A. A.M. P. P.M. M. Midnight N. Noon
13-15	INTERVIEW NUMBER
16	VEHICLE TYPE 1. Passenger car - Michigan 2. Passenger car - non-Michigan 3. Pick-up, panel or single unit - single rear tire 4. Single unit - dual rear tires 5. Single unit - three or more axles 6. Combinations 7. Bus 8. Taxi -. N.A.
17	NUMBER IN VEHICLE 1. One 2. Two ... 9. Nine or more -. N.A.
18	GARAGED AT 1. Within cordon 2. Outside cordon at origin 3. Outside cordon at destination 4. Other
19-20	ROUTE OF EXIT Original Station Numbers

Column Number	Description
21	PURPOSE OF STOP

If passenger vehicle

1. Course of work
2. Personal business
3. Shopping
4. Vehicle service
5. Secure lodging
6. Serve passenger
7. Eat meal
8. Recreation
-. N.A.

If truck

1. Pick up goods
2. Deliver goods
3. Pick up and delivery
4. Service, other work connected
5. Garage, base of operation
6. Base of operations only
7. Garage only
8. Personal business
9. Shopping
A. Recreation (vacations)

22-24	COMMODITY

Standard Commodity code

25-27	BLANK
28-30	16 HOUR EXPANSION FACTOR
31	AREA
32-34	TRACT
35	TAG
36-38	BLOCK NUMBER
39-42	ORIGIN ZONE

same as 531 (column 39 - P -- column 40-42 = zone number 0000 - ext.)

43-50	BLANK

Column Number	Description
51	ORIGIN TRIP PURPOSE

If passenger car

1. Home
2. Work
3. Personal business - medical
4. Social - recreation
5. Eat meal
6. Shopping
7. School
8. Change mode
9. Serve passenger

If truck

1. Pick up goods
2. Deliver goods
3. Pick up and delivery
4. Service, other work connected
5. Garage, base of operation
6. Base of operations only
7. Garage only
8. Personal business
9. Shopping
A. Recreation (vacations)

52-53	ORIGIN LAND USE

Standard Land Use code

54	AREA DESTINATION TRACT
55-57	DESTINATION TRACT NUMBER
58	TAG
59-61	BLOCK NUMBER
62-65	DESTINATION ZONE
62	P - PHATS 0000 - External
63-65	001-099
66-73	BLANK

TALUS INTERNAL CODING

Column Number	Description
74	DESTINATION TRIP PURPOSE

If passenger car

1. Home
2. Work
3. Personal business - medical
4. Social - recreation
5. Eat meal
6. Shopping
7. School
8. Change mode
9. Serve passenger

If truck

1. Pick up goods
2. Deliver goods
3. Pick up and delivery
4. Service, other work connected
5. Garage, base of operation
6. Base of operations only
7. Garage only
8. Personal business
9. Shopping
A. Recreation (vacations)

75-76	DESTINATION LAND USE

Standard Land Use code

77	BLANK
78-80	24 HOUR EXPANSION FACTOR
81	ORIGIN SCREENLINE AREA

N. North
S. South

82	DESTINATION SCREENLINE AREA

N. North
S. South

83	BLANK
84	P
85-87	STATION ZONE NUMBER

TRANSPORTATION AND LAND USE STUDY
STANDARD LAYOUT FORM

RECORD TITLE: LINKED INTERNAL TRIPS FILE NO: 835

POS.	DESCRIPTION		POS	DESCRIPTION		POS	DESCRIPTION
1 2 3	DECK 835		41 42	DISTRICT ZONE OF ORIGIN (CONT.)		81 82 83	
4	SOURCE	INTERVIEW NUMBER	43	ORIGIN SCREENLINE		84	
5 6 7 8 9	SERIAL		44	DEST. SCREENLINE		85	
			45	COMMON VEHICLE TYPE		86	
			46	TYPE OF TRIP		87	
			47 48 49 50	DISTRICT ZONE OF RESIDENCE		88 89 90	
10 11	PERSON NUMBER		51	PURPOSE	ORIGIN	91	
12 13	TRIP NUMBER		52 53	LAND USE		92 93	
14	MODE OF TRAVEL		54	AREA	DESTINATION TRACT AND CLOCK	94	
15	NO. IN VEHICLE		55 56 57	TRACT		95 96 97	
16	PARKING TYPE		58	TAG		98	
17 18	HOURS	TIME LEFT 24 HOUR CLOCK	59 60 61	BLOCK		99 100 101	
19 20	1/100's OF HOUR		62 63 64 65	DISTRICT ZONE OF DESTINATION		102 103 104 105	
21	AM OR PM						
22 23	HOURS	TIME ARRIVED 24 HOUR CLOCK	66 67 68 69 70 71	BLANK		106 107 108 109 110 111	
24 25	1/100's OF HOUR						
26	AM OR PM		72	GENERAL PURPOSE		112	
27 28 29 30	MONTH WEEK DAY	DATE OF TRAVEL	73	HOME BASED FLAG		113	
			74 75 76	PURPOSE LAND USE	DESTINATION	114 115 116	
31	AREA	ORIGIN TRACT AND BLOCK	77	INTERVIEW TAG		117	
32 33 34	TRACT		78 79 80	EXPANSION FACTOR		118 119 120	
35	TAG					121 122 123 124 125 126 127 128 129 130 131 132 133 134 135	
36 37 38	BLOCK						
39 40	DISTRICT ZONE OF ORIGIN						

COMMENTS:

Detroit Regional Transportation
and Land Use Study
File Description
Linked Internal Trip Record

Position	Field	Code
(1-3)	Deck Identification	Constant 835 for this file.
(4-9)	Interview No.	Identifies (together with position 77 a unique household, the unit of the travel survey sample). Records from the Ann Arbor update are coded "v" in position 4.
(10-11)	Person Number	Persons interviewed within a household are numbered beginning with "01" for the household head. May not be a dense set due to linking.
(12-13)	Trip Number	Trips recorded for each person are numbered in sequence of occurance beginning with "01". May not be a dense set due to linking.
(14)	Mode of Travel	1. Auto Driver 2. Auto Passenger 3. Truck Passenger 4. Taxi Passenger 5. Bus Passenger 6. School Bus Passenger 7. Railroad Passenger 8. Air Passenger 9. Other to work -. N.A.
(15)	Persons in Car	Actual number of persons in car coded only for auto driver trips - mode "1".
(16)	Parking Code.	Coded for auto driver trips only - mode "1". 1. Free 2. Paid-Meter 3. Paid-Other +. Inappropriate (Other than auto driver) -. N.A.

Position	Field	Code
(17-21)	Time Trip began	The respondents report on the time this trip began, converted to a 24 hour clock basis. Records with times unknown are coded 0059 in this field.
(17-18)	Hour	Coded: Actual hour on a 24 hour clock.
(19-20)	Hundredths of an hour	Integeral minutes from original interview schedule converted to hundredths of an hour.
(21)	Time Code	Coded: A. AM P. PM N. Noon M. Midnight
(22-26)	Time Arrived	See positions 17-21
(27-30)	Date of Travel	Month, week, and day on which this trip was mode.
(27-28)	Month	Coded: 08. August, 1965 09. September, 1965 10. October, 1965 11. November, 1965 12. December, 1965 01. January, 1966 02. February, 1966
(29)	Week	Coded: Actual sequence number of week defined as Monday through Sunday. Numbers 1-6 are possible.

Position	Field	Code
(30)	Day	Coded: 1. Monday 2. Tuesday 3. Wednesday 4. Thursday 5. Friday
(31-38)	1960 Tract and Block of Trip Origin	The first column is a county area code: 1. Wayne County 2. Oakland County 3. Macomb County *4. Washtenaw County 5. Monroe County 6. St. Clair County Columns two through five contain the census tract and the last three columns contain the block. Locations outside the cordon line are identified by a 7, 8, or 9 in the first column. The remaining columns do not contain a census tract and block, but rather contain a code for the civil division of the location. For a full explanation of this coding see: External Location Coding, Dearborn: Center for Urban Studies, November, 1966. *The borderline sections of Livingston County within the Cordon Line are coded "45" in the first two columns.
(39-42)	TALUS Analysis Zone of Trip Origin	County — First Column Super District — First Two Columns District — First Three Columns Zone — All Four Columns

Position	Field	Code
(43)	Origin Screenline Code	Area of trip origin in relation to screenlines coded: 1. South of 14 Mile and east of Merriman - Orchard Lake screenlines. 2. South of 14 Mile and west of Merriman - Orchard Lake screenlines. 3. North of 14 Mile screenline. 4. Outside of cordon line.
(45)	Common Vehicle Type	This code is common to all travel survey files. Coded: 1. Auto Driver 2. Truck Driver 3. Taxi Driver 4. Auto Passenger 5. Truck Passenger 6. Taxi Passenger 7. Bus Passenger 8. School Bus Passenger 9. Rail, Air Passenger 0. Walk to work -. N.A.
(46)	Type of Trip	1. Cordon trip - one trip end inside study area and one outside. 2. Through trip - both ends of the trip are outside the study area. 3. Internal - both ends of a trip are within the study area.
(47-50)	TALUS Analysis Zone of Residence	See positions 39-42.

Position	Field	Code
(51)	Origin Purpose	1. Home 2. Work 3. Personal Business-Med. 4. Social-Recreation 5. Eat Meal 6. Shopping 7. School 8. Change Mode 9. Serve Passenger
(52-53)	Origin Land Use	See Appendix 1
(54-61)	1960 Tract and Block of Destination	See code for positions 31-38.
(62-65)	TALUS Analysis Zone of Trip Destination	See code for positions 39-42.
(66-71)	Blank	
(72)	General Purpose	1. Home based work 2. Home based personal business 3. Home based social recreation 4. Home based shopping 5. Home based school 6. Non home based
(73)	Home Based Flag	Blank. Non-Home based trip. 1. Trip origins is zone of residence. 2. Trip destination is zone of residence.
(74)	Destination Purpose	See code for position 51.
(75-76)	Destination Land Use	See Appendix 1.
(77)	Interview Tag	See code for positions (4-9)
(78-80)	Expansion Factor	The value by which each trip is multiplied to obtain a representation of the total universe.

External Location Coding

An eight digit location code analogous to the eight digit census tract-block code has been devised for use in coding trip terminals outside the Travel Survey cordon line.

The code is divided into three distinct segments:

1. A one digit area code (7, 8, or 9) denoting proximity to the study area.

2. A three digit code indicating county or state.

3. A four digit code indicating a more precise location within county or state.

"7" Area Codes

A location coded to the "7" area is in a county immediately adjacent to or within the TALUS seven county region. In addition to Michigan counties, this area also includes the Counties of Essex, Kent, and Lambton in Ontario. Locations within this area are coded with as much detail as possible. A three digit IBM numerical county code* follows the initial "7" area code. The fifth and sixth digits indicate the township, while the last two indicate the city, village, or unincorporated place of the trip terminal.

Example:	Area	County	Township	Village
	7	147	02	02

The interpretation of this code is: a location within an adjacent county (7); the county is St. Clair (147); the terminal is located within Brockway Township (02); and more precisely, within the village of Yale (02).

"8" Area Codes

A location coded to the "8" area is within Michigan, but not in a "7" area Michigan county. Like the "7" area code, the second through fourth digits indicate the county by means of the IBM code. Within the "8" area, however, the last four digits are considered as a unit and represent the city generating the trip. This city code is an expanded version of the four digit IBM numerical city code.

Example:	Area	County	City
	8	141	1530

This code indicates that the trip-end being coded is within Michigan, but not near the study area (8). It is in Presque Isle County (141), at or near Rogers City (1530).

"9" Area Codes

All trip terminals not coded to the "7" or "8" areas are put in the "9" area. Codes have been developed for all major locations in the United States and Canada. Any trip-ends to or from locations in Mexico will receive a single code. The three digits following the "9" area designation indicate the location's state, while the remaining four digits represent it's county.

Example:	Area	State	County
	9	035	0143

This code indicates the trip-end is outside of Michigan (9); it is in the state of Oklahoma (035); in Tulsa County (0143).

* IBM Corp., Reference Manual Numerical Code for States, Counties and Cities of the United States, (1961).

DATE:

TAPE OR PRINT LAYOUT--CENTER FOR URBAN STUDIES

RECORD TITLE: INTERNAL TRIP (COMPUTER)

CHAR		FIELD DESCRIPTION	
1	5	Deck Number	
2	3		
3	3		
4		Source	Interview
5			
6			
7			
8			
9			
10		Person Number	
11			
12		Trip Number	
13			
14		Mode of Travel	
15		# in Vehicle	
16		Parking	
17		Hour	Time Left
18			
19		Minute	
20			
21		AM or PM	
22		Hour	Time Arrived
23			
24		Minute	
25			
26		AM or PM	
27		Month	Date
28			
29		Week	
30		Day of Week	
31		Area	Origin Tract And Block
32		Tract	
33			
34			
35		Tag	
36		Block	
37			
38			
39		Origin Zone	
40			

CHAR		FIELD DESCRIPTION	
41		Origin Zone (cont.)	
42			
43		Blank	
44			
45			
46			
47			
48			
49			
50			
51		Purpose	Origin
52		Land Use	
53			
54		Area	Dest. Tract And Block
55		Tract	
56			
57			
58		Tag	
59		Block	
60			
61			
62		Destination Zone	
63			
64			
65			
66		Blank	
67			
68			
69			
70			
71			
72			
73			
74		Purpose	Dest.
75		Land Use	
76			
77		Blank	
78		Expansion Factor	
79			
80			

CHAR		FIELD DESCRIPTION
81		Origin Screenline
82		Dest. Screenline
83		Blank
84		
85		Residence Zone
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
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PROJECT NO.:

TAPE NO.:

RECORD NO.:

RECORD COUNT:

RECORD LENGTH:

BLOCKING:

PORT HURON INTERNAL CODING

Center for Urban Studies
The University of Michigan
Dearborn Campus

PORT HURON

INTERNAL TRIP FILE

DECK 533

Column Number	Description
1-3	DECK (533)
4-9	INTERVIEW NUMBER
10-11	PERSON NUMBER

Only person number used in 532 is allowable

12-13	TRIP NUMBER

01. First trip
02. Second trip
...
99. Ninety-ninth trip

14	MODE OF TRAVEL

1. Auto driver
2. Auto passenger
3. Truck passenger
4. Taxi passenger
5. Bus passenger
6. School bus passenger
9. Other
+. Walk
-. N.A.

15	NUMBER IN VEHICLE

1-9 - one through nine or more only if mode (column 14) is coded "1." All others coded + .

16	PARKING

1. Free
2. Paid - meter
3. Paid - other
+. Inap., not auto driver
-. N.A.

Column Number	Description
17-21	TIME LEFT
17-20	Hour and minute e.g. - 2:30 - 0230 4:45 - 0445 10:15 - 1015
21	A.M. or P.M. A. A.M. P. P.M. N. Noon M. Midnight
22-26	TIME ARRIVED
22-25	Hour and minute same as time left
26	A.M. or P.M. same as time left
27-30	DATE
27-28	Month
29	Week
30	Day
31-38	ORIGIN TRACT AND BLOCK
31-34	Area code and tract number
31	6. Internal same as in 531
35	Tag
36-38	Block number
39-42	ORIGIN ZONE same as in 531
43-50	BLANK

Column Number	Description
51	TRIP PURPOSE 1. Home 2. Work 3. Personal business - medical 4. Social - recreation 5. Eat meal 6. Shopping 7. School 8. Change mode 9. Serve passenger
52-53	LAND USE Standard Land Use code --. N.A.
54	AREA (DESTINATION) G. Internal
55-57	TRACT (DESTINATION) same as 531
58	TAG
59-61	BLOCK NUMBER
62-65	DESTINATION ZONE
62	P.
63-65	001 - 099
66-73	BLANK
74	PURPOSE (DESTINATION) same as column 51
75-76	LAND USE Standard Land Use code
77	BLANK
78-80	EXPANSION FACTOR

Column Number	Description
81	ORIGIN SCREENLINE AREA N. North S. South
82	DESTINATION SCREENLINE AREA N. North S. South
83-84	BLANK
85-88	RESIDENCE ZONE coded same as other zone information
89-90	BLANK

TRUCK - TAXI CODING

TRANSPORTATION AND LAND USE STUDY
STANDARD LAYOUT FORM

RECORD TITLE: Truck/Taxi Trip Record FILE NO: 537/539

POS.	DESCRIPTION		POS	DESCRIPTION		POS	DESCRIPTION
1	Deck No.		41	Origin Zone (Cont.)		81	
2	537= Truck Trip		42			82	
3	539=Taxi Trip		43	Origin Screenline		83	
4	Interview Number		44	Destin. Screenline		84	
5			45	Common Veh. Type		85	
6			46	Blank		86	
7			47			87	
8			48			88	
9	Trip Number		49			89	
10			50			90	
11			51	Origin Purpose		91	
12	Commodity		52	Origin Land Use		92	
13			53			93	
14			54	Area	1960 Tract Block or Loc. Code of Destin.	94	
15	Total Trip Weight		55	Tract		95	
16			56			96	
17	Time Started	Hour	57			97	
18			58	Tag		98	
19		Minute	59	Block		99	
20			60			100	
21		Code	61			101	
22	Time Arrived	Hour	62	Destination Zone		102	
23			63			103	
24		Minute	64			104	
25			65			105	
26		Code	66	Blank		106	
27	Date of Travel	Month	67			107	
28			68			108	
29		Week	69			109	
30		Day	70			110	
31	1960 Tract Block or Loc. Code of Origin	Area	71			111	
32		Tract	72			112	
33			73			113	
34			74	Destin. Purpose		114	
35		Tag	75	Destination Land Use		115	
36		Block	76			116	
37			77	Blank		117	
38			78	Expansion Factor		118	
39	Origin Zone		79			119	
40			80			120	
						121	
						122	
						123	
						124	
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						133	
						134	
						135	

COMMENTS:

Detroit Regional Transportation
and Land Use Study
File Description
Commercial Vehcile Trip Record

Pos	Field	Code
(1-3)	Deck Identification	Coded: 537. Record is from the truck and special vehicle inventory. 539. Record is from the taxi inventory.
(4-8)	Interview Number	Identifies a unique vehicle, the unit of this sample.
(9-11)	Trip Number	Trips recorded for each vehicle are numbered in sequence of occurance beginning with "01".
(12-14)	Commodity	For trucks the type of commodity transported is recorded as a three digit code. See Appendix 5.
(15-16)	Total Trip Weight	For each vehicle trip the total weight of commodity and vehicle is coded to the nearest 1000 pounds, e.g., 11250 would be coded "11".
(17-21	Time Trip Started at Origin	The five column field for each time is coded exactly in hours and minutes with leading zeros. The first two columns are hour and the next two are minutes. The fifth column contains an A for AM, P for PM, N for noon, or M for midnight. Examples: 12:01 AM Coded — 1 2 0 1 A 2:30 PM coded — 0 2 3 0 P 12 Midnight coded — 1 2 0 0 M ++++ = Unknown
(22-26)	Time Trip arrived at Destination	See Code for Pos. 17-21.
(27-30)	Date of Travel	Month, Day, and Week on Which This Trip was made.
(27-28)	Month	Coded: 08. August, 1965 09. September, 1965 10. October, 1965 11. November, 1965 12. December, 1965 01. January, 1966 12. February, 1966

Pos	Field	Code
(29)	Week	Coded: Actual sequence number of week in month defined as Monday through Sunday. Numbers 1-6 are possible.
(30)	Day	Coded: 1. Monday 2. Tuesday 3. Wednesday 4. Thursday 5. Friday
(31-38)	1960 Tract and Block of Trip Origin	The first column is a county area code: 1. Wayne County 2. Oakland County 3. Macomb County *4. Washtenaw County 5. Monroe County 6. St. Clair County Columns two through five contain the census tract and the last three columns contain the block. Locations outside the cordon line are identified by a 7, 8, or 9 in the first column. The remaining columns do not contain a census tract and block, but rather contain a code for the civil division of the location. For a full explanation of this coding see: Appendix 6. *The borderline sections of Livingston County within the Cordon Line are coded "45" in the first two columns.
(39-42)	TALUS Analysis Zone of Trip Origin	County — First Column Super District — First Two Columns District — First Three Columns Zone — All Four Columns ++++ = Area outside of Cordon Line.
(43)	Origin Screenline Code	Area of Trip Origin in relation to screenlines coded: 1. South of 14 mile and east of Merriman - Orchard Lake screenlines.

Pos	Field	Code
		2. South of 14 Mile and West of Merriman - Orchard Lake Screenlines. 3. North of 14 Mile Screenline. 4. Outside of Cordon Line.
(44)	Destination Screenline Code	See Position 43.
(45)	Common Vehicle Type	This code is common to all travel survey files. Coded: 1. Auto Driver 2. Truck Driver 3. Taxi Driver 4. Auto Passenger 5. Truck Passenger 6. Taxi Passenger 7. Bus Passenger 8. School Bus Passenger 9. Rail, Air Passenger 0. Walk to Work -. N.A.
(46-50)	Blank	Not Used.
(51)	Origin Purpose	Coded: 1. Pick up Goods 2. Deliver Goods 3. Pick up and Deliver Goods 4. Service and Other Work Connected Business 5. Garaging Address and Base of Operations 6. Base of Operations Only 7. Garaging Address Only 8. Personal Business 9. Shopping A. Recreation (including Vacation)
(52-53)	Origin Land Use	See Appendix 1.
(54-61)	1960 Tract and Block of Destination	See Code for Positions 31-38.
(62-65)	TALUS Analysis Zone of Trip Destination	See Code for Positions 39-42.
(66-73)	Blank	Not Used.
(74)	Destination Purpose	See Code for Position 51.

Pos	Field	Code
(75-76)	Destination Land Use	See Appendix I.
(77)	Blank	Not Used.
(78-80)	24 Hour Expansion Factor	The value by which each trip is multiplied to obtain a representation of the total universe of trips.

Commodity Code

				Where Used	
000	Empty Trucks	043	Soybeans		
001	Wheat	049	Apples		
003	Corn	051	Bananas	Deck No.	Col. No.
007	Oats	053	Berries, Fresh	514	76-78
009	Barley and Rye	055	Cantaloupes,	515	76-78
011	Rice		Melons, N.O.S.	517	59-61
013	Grain N.O.S.	057	Grapes	519	59-61
015	Flour	059	Lemons, Citrus	534	22-24
017	Meal, Corn	061	Oranges & Grapefruit	535	22-24
021	Cereal Foods	063	Peaches	537	12-14
023	Mill Products N.O.S.	065	Pears	539	12-14
025	Hay	067	Watermelons		
027	Straw	069	Fruits N.O.S.		
029	Tobacco, unmanufactured	075	Coffee		
033	Cotton, Bales	077	Cabbage		
035	Cotton Linters, Noils	079	Celery		
	and Regins	081	Lettuce		
037	Cottonseed	083	Onions		

085 Potatoes
087 Tomatoes
089 Vegetables N.O.S.
097 Peanuts
101 Sugar beets
103 Malt N.O.S.
105 Flaxseed
107 Seed and Farm Supplies, N.O.S.
199 Florist, Flowers, Nursery, Shrubs, Trees, Sod, Nuts, Agricultural Prod. N.O.S.
201 Horses and Mules
203 Cattle
207 Sheep
211 Hogs, Swine
215 Meats
219 Meat Products, N.O.S. Packing-House Prod.
221 Margarine
223 Live Poultry
225 Dressed Poultry
227 Eggs
229 Butter
231 Cheese
233 Cream, Milk, Ice Cream and Dairy Products, N.O.S.
237 Wool
239 Hides, Skins, and Pelts
241 Leather
243 Fish or Sea Food, Fresh or Frozen
299 Animals & Animal Products, N.O.S. - Fats, Grease, Bones
301 Coal
307 Coke
309 Iron Ore
311 Aluminum Ore and Concentrates
319 Ores
323 Clay and Bentonite
325 Industrial Sand
327 Gravel, Sand
329 Stone
333 Rough Stone
337 Crude Petroleum
339 Asphalt
341 Salt
345 Sulphus
399 Top Soil, Mining Products, N.O.S., Earth-Road Contracting
401 Logs
403 Posts, Poles, Piling
405 Fuel Wood
409 Pulpwood
411 Lumber, Shingles, Lath
413 Wooden boxes, Crates, and Cooperage Materials
415 Veneer, Plywood and Builtup Wood
417 Turpentine
499 Sawdust, Forest Products N.O.S.
501 Gasoline
503 Fuel Oil, Bituminous Road Material, Road Oil
505 Grease and Oils, Lubricating
507 Petroleum Products, N.O.S.
509 Compressed Gases
517 Vegetable Oils
519 Oils
525 Rubber Goods, N.O.S.
527 Chemicals, N.O.S.
531 Acids
533 Sodium-Soda Products
535 Alcohol
539 Fertilizers, Manure
541 Insecticides and Fungicides
547 Paints, Putty, Varnish, Stains
549 Plastics
553 Drug Store Supplies
557 Aluminum
561 Copper, Brass, Aluminum Products
563 Lead and Zinc - Bar, Ingot and Pig
567 Magnesium Metal and Alloy
571 Metals and Alloys N.O.S., Forgings
581 Iron and Steel Rails and Wire - Woven and Not Woven - N.O.S.
583 Iron and Steel Products - Metal Products
585 Cast Iron Pipe and Fittings
587 Iron and Steel Pipe and Fittings, N.O.S.
589 Tanks, N.O.S.
591 Agricultural Implements, N.O.S.
593 Agricultural Implement Parts
595 Construction Machinery, Machinery and Parts
597 Machinery Parts
601 Business and Office Machines
607 Railroad Supplies
609 Rails and Railway Track Material, Iron and Steel
611 Camping Equipment
613 Automobiles
617 Tractors
619 Military Vehicles

623 Automotive Supplies, N.O.S., Tow Truck Service
625 Airplane Parts
627 Tires and Tire Repair
631 Explosives
633 Cement, Natural and Portland
635 Cement
639 Bricks, Cinder Blocks, Cement Blocks, Building Blocks
641 Refractories
643 Artificial Stone
645 Lime
647 Plaster
649 Sewer Pipe and Drain Tile
651 Broken or Ground Bricks, Blocks, Crockery and Glass
655 Paper Collection, Scrap Paper and Rags
657 Newsprint Paper
663 Paper Bags
665 Stationery, Wall Paper, Paper and Paper Articles, N.O.S.
667 Magazines, Newspapers, Powwer Advertising
669 Paperboard, Fibreboard
671 Wallboard
673 Building Paper and Prepared Roofing Materials
675 Insulating Materials
679 Building Materials, NOS.
681 Building and Houses, Fabricated & Portable
685 Batteries, Signs, Elec. Motors, Radios, Lighting-Gas, Elec, Radio, Service and Supply
687 Fuel and Heat Installations, Plumbing and Heating Materials
689 Bathroom and Lavatory Fixtures and Sinks
691 Hardware, N.O.S.
695 Glass and Glassware
697 Glass Bottles, Jars, and Pickling Glasses
701 Chinaware
703 Woodenware
705 Household Utensils
707 Refrigerators and Service, Ice Boxes
709 Cleaning and Dyeing, Laundry, Laundry Equipment
711 Stoves and Parts
713 Rugs
715 House Furnishings and Furniture, N.O.S. Mattress, Store Fixtures, Upholstery
717 Furniture Parts
719 Tools and Workers
721 Abrasives, other than Crude
723 Burlap
727 Cotton, Cloth, and Fabrics
729 Dry Goods
733 Cloth and Fabric
737 Shoes
739 Luggage
741 Athletic, Gymnasium, Playground and Sporting Equipment
743 Games and Toys
745 Liquors
747 Wine
749 Beer
751 Distilled Water, Soft Beverages
753 Ice
755 Syrup and Molasses
759 Sugar
761 Candy
763 Food Products - Canned or Packaged - Not Frozen; Mixed Groceries
765 Food Products, N.O.S. - Frozen
769 Soap and Washing Compound
771 Matches
773 Feed, Chicken Feed
777 Cigars, Cigarettes, Manufactured Tobacco
783 Containers, Fibreboard and Paperboard
785 Cans, Containers, N.O.S.
787 Containers, Returned Empty
789 Iron Scrap
793 Slag
797 Ashes, Cinders, Waste Materials, Garbage Junk, Rubbish, Scrap Metals
799 Manufactures and Miscellaneous, N.O.S. - Clothing, Packing Mat., Film, Etc.
900 Express, Air, Railway - Railway Freight
901 Hotel Supplies
999 Mixed Merchandise

Land Use

Residential	Where Used	
	Deck No.	Col. No.
11. Single-family residing (except mobile home)	513	57-58
12. Two-family residing	514	38-39, 70-71
13. Multiple-family residing - walk-up	515	48-49, 70-71
14. Multiple-family residing - elevator	517	57-58
15. Group quarter residing	519	57-58
16. Residential hotels	526	52-53, 75-76
17. Mobile home residing	533	52-53, 75-76
18. Transient residing	534	52-53, 75-76
19. Residing, N.E.C.	535	52-53, 75-76
	537	52-53, 75-76
Manufacturing	539	52-53, 75-76
20. Food and kindred products - manufacturing		
21. Tobacco products - manufacturing		
22. Textile mill products - manufacturing		
23. Apparel and other finished products made from fabrics (excluding leather) and similar materials - manufacturing		
24. Lumber and wood products (except furniture) - manufacturing		
25. Furniture and fixtures - manufacturing		
26. Paper and allied products - manufacturing		
27. Printing, publishing, and allied industries		
28. Chemicals and allied products - manufacturing (paints, cosmetics and drugs)		
29. Petroleum refining and related industries		
30. Rubber and miscellaneous plastic products - manufacturing		
31. Leather and leather products - manufacturing		
32. Stone, clay and glass products - manufacturing		
33. Primary metals industries		
34. Fabricated metals products - manufacturing (excluding ordinance)		
35. Non-electrical machinery - manufacturing (tool & die)		
36. Electrical machinery, equipment & supplies - manufacturing		
37. Transportation equipment & supplies - manufacturing		
38. Professional, scientific & controlling instruments; photographic & optical goods; watches & clocks - manufacturing		
39. Miscellaneous manufacturing (including ordinance, excluding tobacco products)		
Trade Activity		
50. Wholesale trade - food		
51. Wholesale trade - non-food (scrap metal)		

52. Retail trade - building materials and hardware (excluding farm equipment)
53. Retail trade - general merchandise (department store, dime store)
54. Retail trade - food (grocery store)
55. Retail trade - automotive, marine craft, aircraft and accessories
56. Retail trade - apparel and accessories
57. Retail trade - furniture, home furnishings, and equipment
58. Retail trade - eating activity (restaurant)
59. Other retail trade (drug store, liquor, bookstore, sporting goods, garden, flower shop, jewelry, camera shop.) If shopping center and store NA, code to predominant store; if none, code to grocery.
5A. Retail trade - farm equipment
5B. Retail trade - drinking activity (bars)

Services

60. Mixed service - no predominance (general office building)
61. Finance, insurance, and real estate
62. Personal services (barber shop, beauty parlor)
63. Administrative service activities (Ford Central Office Administrative Building, City Hall)
64. Installation and repair service activities
65. Consulting service activities
66. Medical service activities
67. Public safety activities (police, firemen)
68. Custom service (creative industries, auto body design, metal plating, heat treating)
69. Miscellaneous services (including Post Office)

Cultural & Education

70. Educational services
71. Museum, library and public display
72. Public assembly, miscellaneous purposes
73. Social-political organization activities
77. Worship activities
78. Cemeterial activity
79. Other cultural and educational activities

Recreational and Entertainment

A1. Natural outdoor recreational activities, low intensity development (except water)
A2. Casual outdoor recreational activity (except water) - parks, picnicking
A3. Highly organized outdoor sports activity (except water and golf courses) - baseball or football games
A4. Amusement park activities

A5. Golf course activities
A6. Outdoor water recreation activities (water surface only - swimming, boating)
A7. Outdoor recreation, N.E.C.
A8. Indoor sports and games (hockey game)
A9. Indoor entertainment assembly (movies, theater)

Transportation, Communication and Utilities

40. Railroad transportation right-of-way
41. Mass transit right-of-way (except railroad)
42. Highway and street right-of-way
43. Motor vehicle facility - including truck and bus terminal parking - excluding freight terminal
44. Automobile parking activities
45. Aircraft transportation (except freight terminals)
(46) Marine craft right-of-way (navigable waterways)
47. Marine craft transportation (excluding right-of-way and freight terminals) All boats.
48. Communication right-of-way
49. Communication (excluding right-of-way) - telephone company
4A. Utility right-of-way
4B. Gas and electric utility (except right-of-way)
4C. Water & waste utility (except right-of-way)
4D. Other transportation, communication, and utilities right-of-way, N.E.C.
4E. Other transportation, communication, and utilities, N.E.C. (excluding right-of-way and sanitary land fill)

Resource Production and Extraction

81. Agricultural activities
82. Agricultural related services (including animal husbandry)
83. Commercial forestry and related services
84. Commercial fishing activities
85. Strip mining and/or quarrying
86. Subterranean mining
87. Fluid resource extraction
89. Resource production and extraction, N.E.C.

Unused Land and Water

91. Unused land - excluding developed with structure and non-commercial forest
92. Non-commercial forest development
93. Unused water areas, N.E.C.
94. Unused land - developed with structure for residing
95. Unused land - developed with structure for manufacturing
96. Unused land - developed with structure for transportation, communication, and utilities
97. Unused land - developed with structure for trade
98. Unused land - developed with structure for service

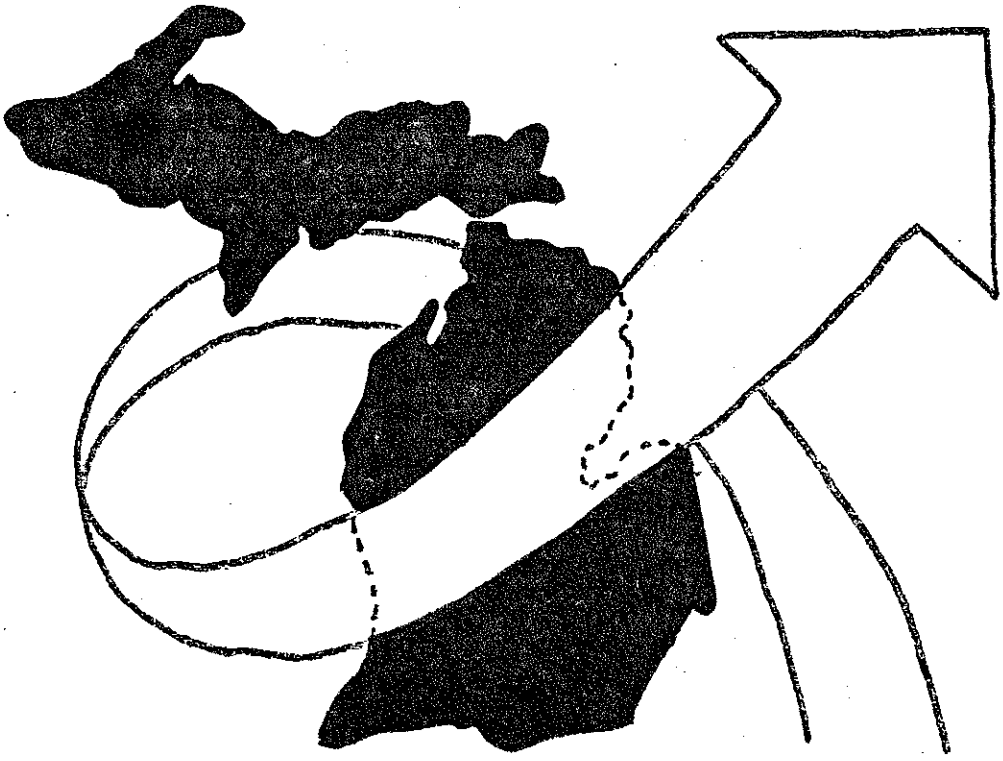
99. Unused land - developed with structure for cultural and educational activity
9A. Unused land - developed with structure for resource production and extraction
9B. Unused land - developed with structure for storage, distribution, and contract construction
9C. Unused land - developed with structure for recreation
9D. Unused land - developed with structure, N.E.C.

Storage, Distribution and Contract Construction

01. Closed storage activity
02. Open storage activity
03. Junk yard and/or demolition activity
04. Rail freight terminal activity
05. Truck freight terminal activity
06. Marine freight terminal activity
07. Air freight terminal activity
08. General contract construction
09. Sanitary land fill activity
0A. Storage, distribution, and contract construction, N.E.C.

APPENDIX D

OPERATION OF REFORMATION PROGRAM



OD STATEWIDE REFORMATION
Q01099

This program will use origin-destination trip information to create an 80-character trip record for use in the statewide model (510 zone or 2300 zone). There are three main phases:

Phase 1

Read external-cordon trips, convert to statewide zones, and reformat.

Phase 2

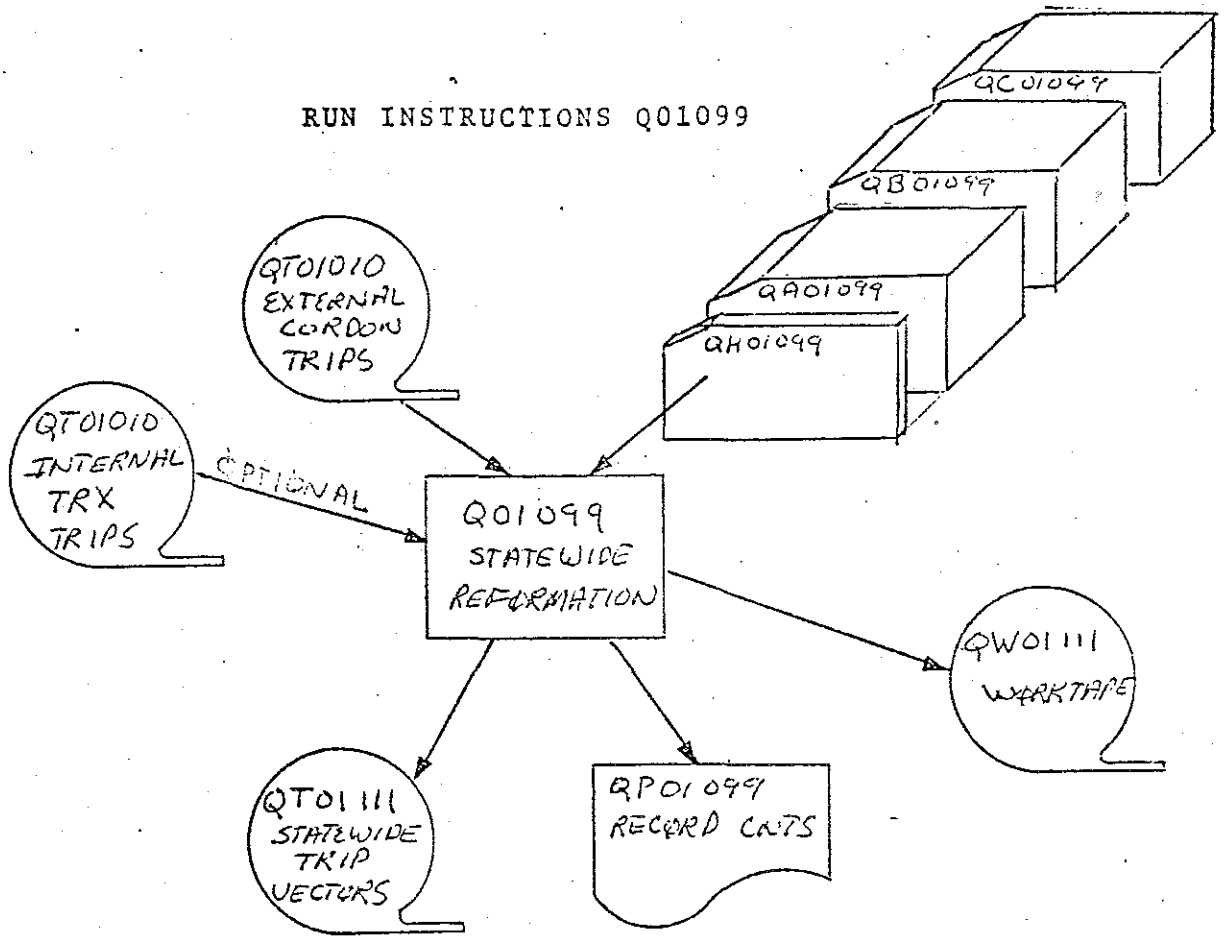
Read internal and truck-taxi records, convert to statewide zones, and reformat.

Phase 3

Read all reformated records, sum like records, and write to a final tape. Any records with a county-level statewide zone are split according to user-supplied criteria.

Program may be restarted at Phase 2 or Phase 3. An option exists to skip Phase 2.

Conversion tables for converting OD zone or OD tract-bloc to statewide zones are supplied by user.



All input cards and tape labels will be supplied by user. Card files must be in order as shown above, and should be run from psuedo-reader.

If two input tapes are used, the external cordon trips should be mounted first. Tapes are used one at a time.

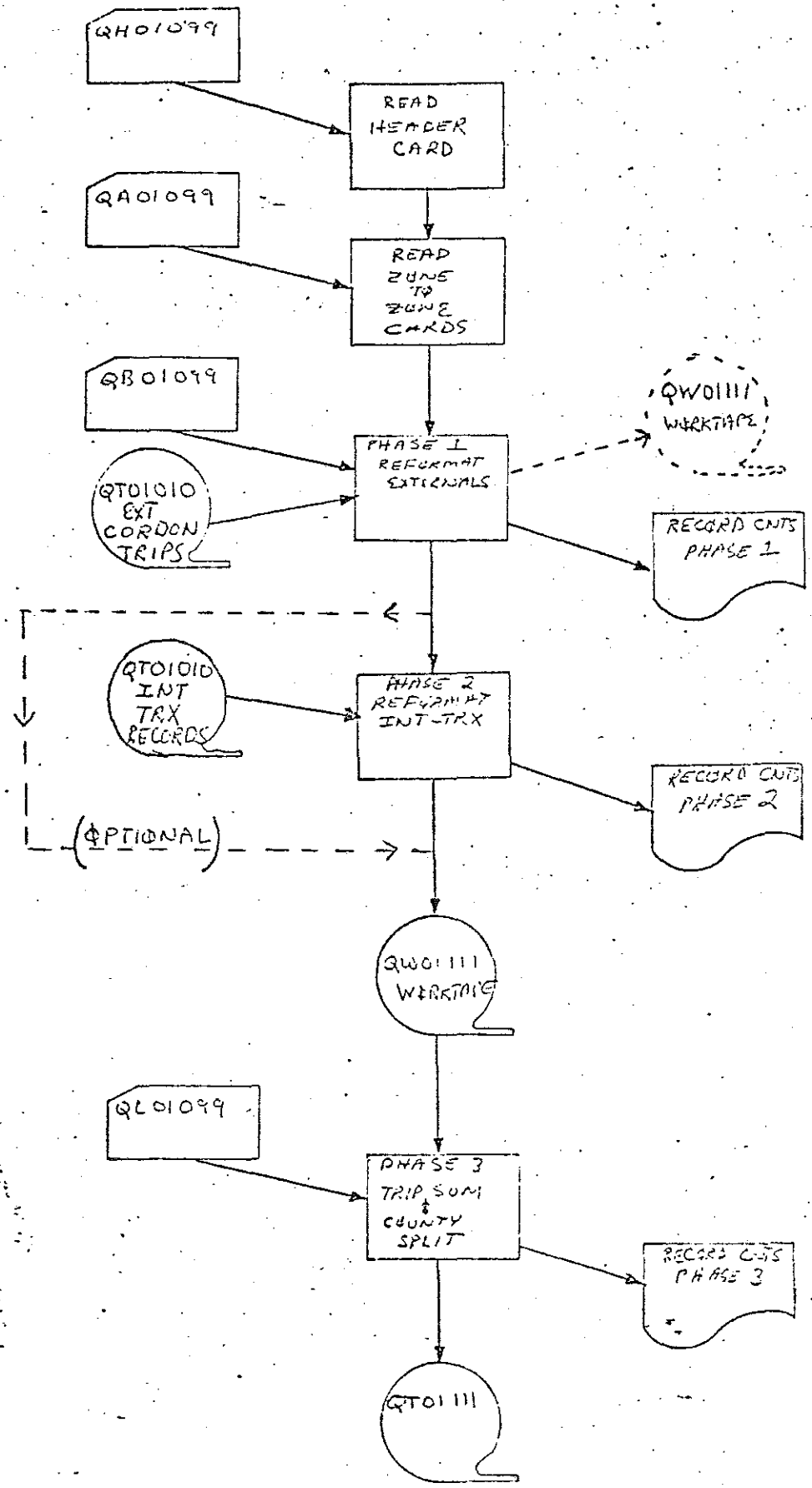
Printer output will be forced to printer back-up disk by program.

Save work tape QW01111.

Program Failure

There are two restart points. A SPO message will indicate when restart points have been reached. If Phase 1 has not been completed, the job must be re-executed from the beginning. See attached for restart at Phase 2 or Phase 3. Save printer disk output is possible.

NORMAL RUN


QH01099
READ HEADER CARD
QA01099
READ ZONE TO ZONE CARDS
QB01099
QW01111 WRKTAPE
PHASE 1 REFORMAT EXTERNALS
QT01010 EXT CORDON TRIPS
RECORD CNTS PHASE 1
QT01010 INT TRX RECORDS
PHASE 2 REFORMAT INT-TRX
RECORD CNTS PHASE 2
OPTIONAL
QW01111 WRKTAPE
QL01099
PHASE 3 TRIP SUM & COUNTY SPLIT
RECORD CNTS PHASE 3
QT01111

HEADER CARD
QH01099

Col.

1-7 = "Q01099Ø"

8-23 = "NORMALØØØØØØØØØØ"
or
"RESTART:PHASEØ2Ø"
or
"RESTART:PHASEØ3Ø"

24-29 = Blank

30-49 = City Name (optional)

50-53 = CITY-ZN

If blank
INT-STW-ZONE for externals = zone from ZONE-ZONE Conversion Table

EXT-STW-ZONE for externals = second zone in TB card (Col. 19-22)

If not blank must be numeric
INT-STW-ZONE for externals = CITY-ZN

EXT-STW-ZONE for externals = first zone in TB card (Col. 14-17)

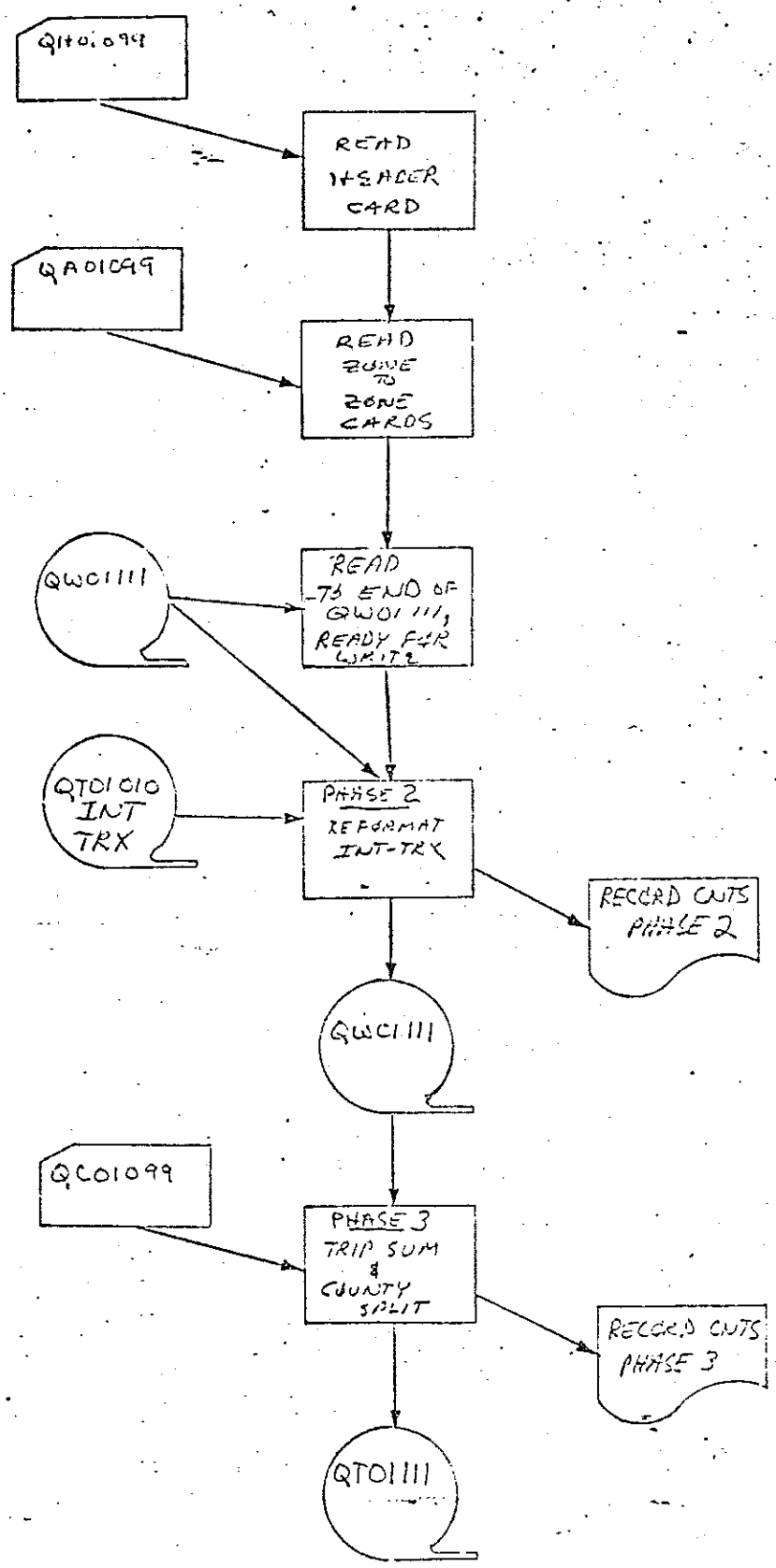
54-71 = Blank

72-76 = Numeric (Restart Phase 2 only). The number of external records written on work tape QW01111.
or
Ø (All runs except Restart Phase 2).

77-80 = "SKIP" (to skip Phase 2)
or
Ø (to complete Phase 2)

QUIUTT.

RESTART: PHASE 2



Program Q01099

INSTRUCTIONS - RESTART: PHASE 2

Input:	Work Tape	QW01111	
	Header Card	QH01099	
	Cards	QA01099	
	Cards	QC01099	
	Tape	QT01010	INT & TRX Records

For Phase 2 restart there must be two changes made in header card (QH01099):

Col. 8-23 = "RESTART:PHASEØ2Ø"

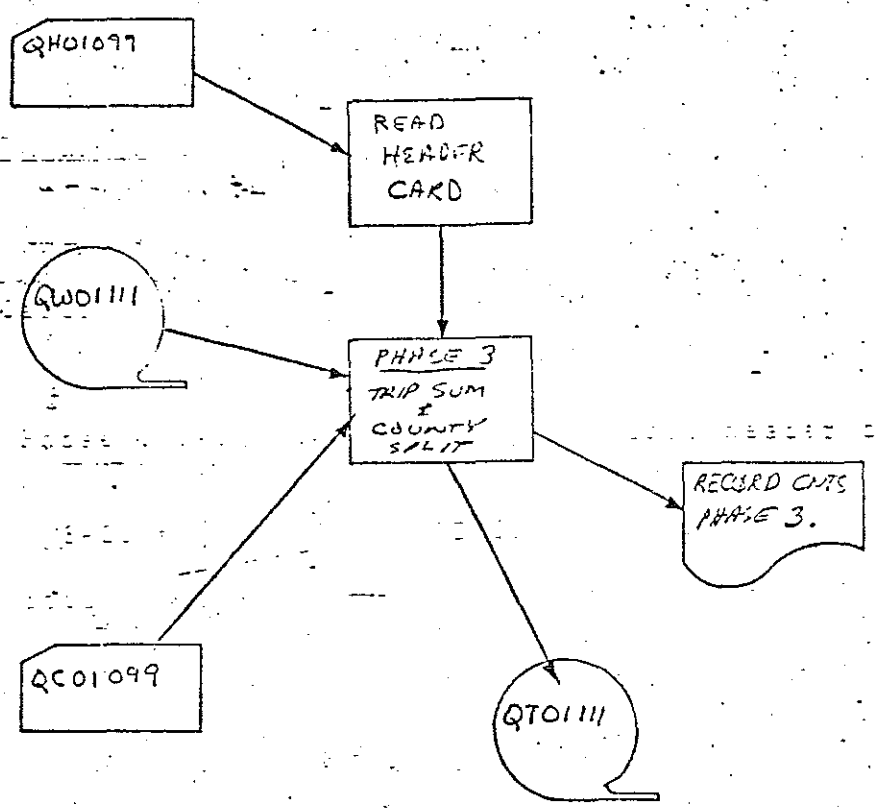
72-76 = Number of records indicated in SPO message.

All other columns should be the same as the original header card.

See attached flowchart.

QTC177

RESTART : PHASE 3



PORGRAM Q01099

INSTRUCTIONS - RESTART: PHASE 3

Input: Work Tape QW01111
Header Card QH01099
Cards QC01099

For Phase 3 restart, duplicate original header card except:

Col. 8-23 = "RESTART:PHASEb3b"

See attached flowchart.

CONVERSION CARDS
Q01099

QA01099
ZONE-TO-ZONE CARDS

Converts OD zones to statewide zones. See attached format. Cards need not be in sort.

QB01099
TB-TO-ZONE CARDS

Converts OD Trac-Bloc to statewide zones. See attached format. Cards must be in sort by OD-Trac-Bloc.

QC01099
CNTY-SPLIT-CARDS

See attached format. These cards create new statewide zones for county level zone numbers (zone ends in "00"). The percent of trips to be assigned to each new zone is coded in the factor fields. The first factor field is for the first zone in this county; the second factor field is for the second zone in this county, etc.

To expand the number of zones for a county beyond 18, a maximum of six cards may be used. The card number (Col. 6) must be appropriately coded.

Example: For county zone = 6300 we wish 5.5% of trips to be assigned to first zone (6301), 60% of trips for second zone (6302), and 35.5% for the third zone (6303).

County split card would be coded as follows:

Col.	1-4	= "6300"
	6	= "1"
	8-10	= "055"
	12-14	= "600"
	16-18	= "345"
	20-22	= "999"

If there are not enough trips available to allow each zone to have at least one trip, the largest zones will be filled first until no whole trips are available; and the splitting routine will end.

Cards must be in sort by zone (major) and card number (minor).

ERROR MESSAGES
Q01099

All errors are fatal except as noted in Number 8.

1. MISSING HEADER CARD

   There was no header for file QH01099.

2. INVALID RUNTYPE ON HEADER CARD

   Runtype was not one of the following:
   (a) "NORMAL "
   (b) "RESTART:PHASE 2 "
   (c) "RESTART:PHASE 3 "

3. INVALID PROGRAM NUMBER

   Program number was not "Q01099"

4. INVALID OD-ZONE ON ZONE-TO-ZONE CARDS

   OD zone was <1 or >420.

5. INVALID STW-ZONE ON ZONE-TO-ZONE CARDS

   Statewide zone from file QA01099 was not numeric.

6. TRACT-BLOC-TO-ZONE CARDS NEEDED

   There were no cards for file QB01099.

7. INVALID STW-ZONE ON TB-CARDS

   Statewide zone from file QB01099 was not numeric.

8. TRIPS WITH NO STW ZONE

   External records which do not have a corresponding tract-block card are listed. For Michigan codes, this is a fatal error; for outstate codes, it is not a fatal error.

9. INVALID CARD-NO ON CNTY-ZN-CARDS

   Card number (file QC01099) was <1 or >6.

10. NO CNTY-ZN CARD FOR FOLLOWING ZONE

A county zone on work file could not find a match in card file QC01099. If the zone printed is zero it may indicate that an OD zone (INT-TRX) had no statewide equivalent loaded.

11. INVALID FACTOR PCT FOUND ON CNTY-ZN CARDS

A factor from file QC01099 was not numeric.

12. CNTY-ZN-CARDS OUT OF SORT-1

County zone numbers in file QC01099 were not in ascending sort.

13. CNTY-ZN-CARDS OUT OF SORT-2

Card number from file QC01099 was out of sort.

14. CNTY-ZN-CARDS OUT OF SORT-3

Program was expecting another card of percents for a particular zone, but next card had a new zone number.

15. INVALID CITY-ZN

City Zone field on header was not numeric.

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES DIVISION
DATA PROCESSING SECTION

Form 2350G

Card In RECORD - TITLE Header PROGRAM NO. 001099 PAGE 1 of 1

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1	Q	PROGRAM ID	41		CITY NAME (CONT)	81		
2	0		42			82		
3	1		43			83		
4	0		44			84		
5	9		45			85		
6	9		46			86		
7		FILLER	47			87		
8	N	RUN TYPE	48			88		
9	O		49			89		
10	R		50		CITY ZONE	90		
11	M		51			91		
12	A		52			92		
13	L		53			93		
14			54		FILLER	94		
15			55			95		
16			56			96		
17			57			97		
18			58			98		
19			59			99		
20			60			100		
21			61			101		
22		23	62			102		
23			63			103		
24		FILLER	64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30		CITY NAME	70			110		
31			71			111		
32			72		NUMBER OF EXTERNALS	112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77		SKIP CODE	117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
						131		
						132		

DATE: 2/70

RECORD NO: QH01099

RECORD LENGTH: 80

PAPER FORMS: _____

COLOR OF CARDS: _____

VOLUME OF DATA: _____

TAPE DENSITY: _____

BLOCKING: _____

NO. OF COPIES: _____

LINED or UNLINED: _____

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MANAGEMENT SERVICES DIVISION
DATA PROCESSING SECTION

Form 2350G

ZONE TO ZONE

CARD IN RECORD - TITLE CARDS PROGRAM NO. Q01099 PAGE

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1		FILLER	41			81		
2		OD ZONE	42			82		
3			43			83		
4			44			84		
5		FILLER	45			85		
6		STATEWIDE ZONE	46			86		
7			47			87		
8			48			88		
9			49			89		
10		FILLER	50		FILLER	90		
11			51			91		
12			52			92		
13			53			93		
14			54			94		
15			55			95		
16			56			96		
17			57			97		
18			58			98		
19			59			99		
20			60			100		
21			61			101		
22			62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77			117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
						131		
						132		

DATE: 2/70

RECORD NO: QA01099

TAPE DENSITY:

RECORD LENGTH:

BLOCKING:

PAPER FORMS:

NO. OF COPIES:

COLOR OF CARDS:

LINED or UNLINED:

VOLUME OF DATA:

SPECIAL INSTRUCTIONS:

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MANAGEMENT SERVICES DIVISION
DATA PROCESSING SECTION

Form 2350G

CARD IN ____ RECORD – TITLE TRACT-BLOC TO ZONE PROGRAM NO. Q01099 PAGE ____

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1		FILLER	41		FILLER	81		
2			42			82		
3			43			83		
4			44			84		
5			45			85		
6			46			86		
7		TRACT BLOC	47			87		
8			48			88		
9			49			89		
10			50			90		
11			51			91		
12			52			92		
13		FILLER	53			93		
14		STATEWIDE ZONE 510 SYSTEM	54			94		
15			55			95		
16			56			96		
17			57			97		
18			58			98		
19		STATEWIDE ZONE 2300 SYSTEM	59			99		
20			60			100		
21			61			101		
22			62			102		
23		FILLER	63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28			68			108		
29			69			109		
30			70			110		
31			71			111		
32			72			112		
33			73			113		
34			74			114		
35			75			115		
36			76			116		
37			77			117		
38			78			118		
39			79			119		
40			80			120		
						121		
						122		
						123		
						124		
						125		
						126		
						127		
						128		
						129		
						130		
						131		
						132		

DATE: 2/70

RECORD NO: QB01099

TAPE DENSITY: ____

RECORD LENGTH: 80

BLOCKING: ____

PAPER FORMS: ____

NO. OF COPIES: ____

COLOR OF CARDS: ____

LINED or UNLINED: ____

VOLUME OF DATA: ____

SPECIAL INSTRUCTIONS:

HIGAN DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES DIVISION
DATA PROCESSING SECTION

Form 2350G

CARD-IN RECORD – TITLE COUNTY SPLIT PROGRAM NO. Q01099 PAGE 1 of 1

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1		STATEWIDE (COUNTY LEVEL) ZONE	41		FACTOR 9	81		
2			42			82		
3			43		FILLER	83		
4			44		FACTOR 10	84		
5		FILLER	45			85		
6		CARD NO.	46			86		
7		FILLER	47		FILLER	87		
8		FACTOR 1	48		FACTOR 11	88		
9			49			89		
10			50			90		
11		FILLER	51		FILLER	91		
12		FACTOR 2	52		FACTOR 12	92		
13			53			93		
14			54			94		
15		FILLER	55		FILLER	95		
16		FACTOR 3	56		FACTOR 13	96		
17			57			97		
18			58			98		
19		FILLER	59		FILLER	99		
20		FACTOR 4	60		FACTOR 14	100		
21			61			101		
22			62			102		
23		FILLER	63		FILLER	103		
24		FACTOR 5	64		FACTOR 15	104		
25			65			105		
26			66			106		
27		FILLER	67		FILLER	107		
28		FACTOR 6	68		FACTOR 16	108		
29			69			109		
30			70			110		
31			71		FILLER	111		
32		FACTOR 7	72		FACTOR 17	112		
33			73			113		
34			74			114		
35		FILLER	75		FILLER	115		
36		FACTOR 8	76		FACTOR 18	116		
37			77			117		
38			78			118		
39		FILLER	79		FILLER	119		
40			80			120		
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Form 2350G

WORK TAPE
STW TRIP

TAPE RECORD – TITLE VECTORS PROGRAM NO. 01099 PAGE

CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION	CHAR		FIELD DESCRIPTION
1		CITY NUMBER	41			81		
2			42			82		
3		FORM NUMBER	43			83		
4		VEHICLE TYPE	44			84		
5		TRIP PURPOSE	45			85		
6		STATION NUMBER	46			86		
7			47			87		
8		DIRECTION	48			88		
9		GARAGED	49			89		
10		ORIGIN AREA(CUS)	50			90		
11		ORIGIN TRACT BLOC	51			91		
12			52			92		
13			53			93		
14			54			94		
15			55			95		
16			56		FILLER	96		
17		ORIGIN ZONE	57			97		
18			58			98		
19			59			99		
20			60			100		
21		DEST. AREA(CUS)	61			101		
22		DEST. TRACT BLOCK	62			102		
23			63			103		
24			64			104		
25			65			105		
26			66			106		
27			67			107		
28		DEST. ZONE	68			108		
29			69		INTERNAL STATEWIDE ZONE	109		
30			70			110		
31			71			111		
32		FILLER	72			112		
33			73		EXTERNAL STATEWIDE ZONE	113		
34			74			114		
35			75			115		
36			76			116		
37			77		24 HR. FACTOR	117		
38			78			118		
39			79			119		
40			80			120		
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						122		
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Form 2350G

TAPE RECORD - TITLE STW TRIP VECTOR PROGRAM NO. Q01099 PAGE 1 of 1

CHAR		FIELD DESCRIPTION
1		
2		CITY NUMBER
3		FORM NUMBER
4		VEHICLE TYPE
5		TRIP PURPOSE
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7		STATION NUMBER
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