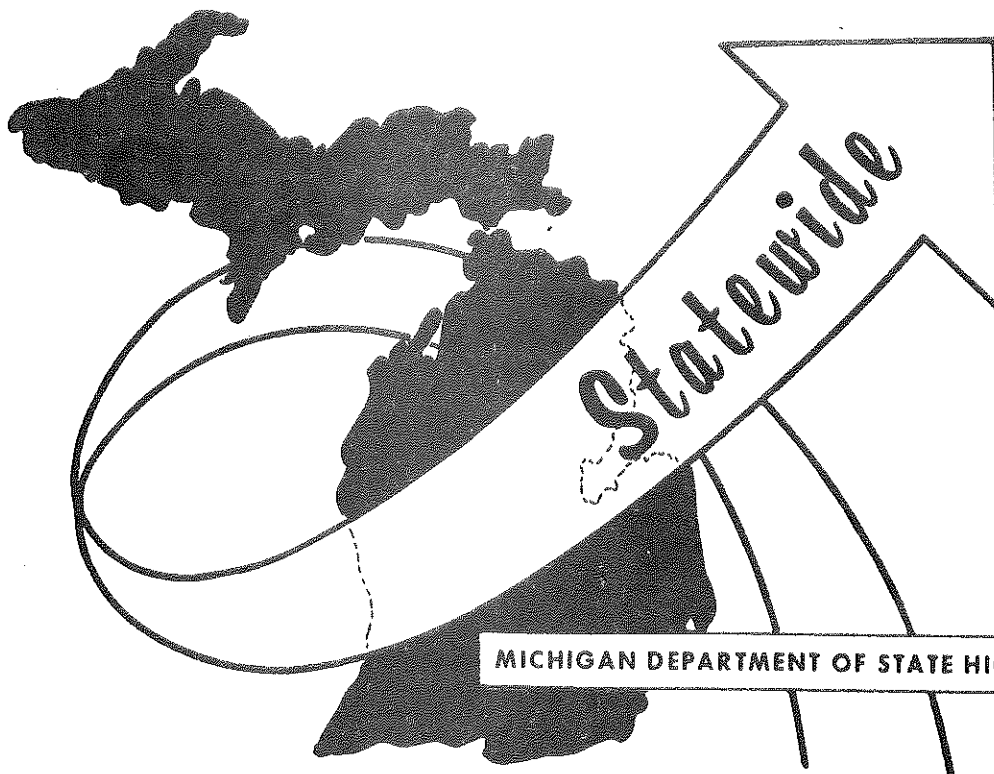# Statewide Transportation Analysis & Research

★

MICHIGAN'S STATEWIDE
TRANSPORTATION MODELING SYSTEM

## SINGLE STATION ORIGIN-DESTINATION ANALYSIS PROCESS PROCEDURES

STATEWIDE TRANSPORTATION
PLANNING PROCEDURES
VOLUME V-A

*Statewide*

MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

# MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

## BUREAU OF TRANSPORTATION PLANNING

MICHIGAN'S STATEWIDE
TRANSPORTATION MODELING SYSTEM

SINGLE STATION ORIGIN-DESTINATION
ANALYSIS PROCESS PROCEDURES

STATEWIDE TRANSPORTATION
PLANNING PROCEDURES
VOLUME V-A

## STATE HIGHWAY COMMISSION

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DIRECTOR

John P. Woodford

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

In Cooperation With

The U. S. Department of Transportation
Federal Highway Administration

SINGLE STATION ORIGIN-DESTINATION

ANALYSIS PROCESS PROCEDURES

July, 1972

TRANSPORTATION PLANNING DIVISION
STATEWIDE STUDIES UNIT

Supervisor _Richard E. Esch_

Analyst _Richard A. Nelson_

# INTRODUCTION

The new Single Station Rural Origin and Destination
process is characterized by two distinct improvements over
the old process.   The first is the use of auto coding tech-
niques.   This permits interviewers to continue to code up
place names directly at the time of interview but eliminates
the lengthly and necessarily error-generating task of coding
and decoding origins and destinations.

The second change is that computer programs from the TP
package are used to process data into report form.   This
together with plotting capabilities eliminates many of the
manual procedures required to get data summaries and diagrams
for reports.

The additional refinements also permit further use of
data by rendering it acceptable to other TP package programs.
Savings in time and manpower with these new procedures will
permit more complete analysis and more varied uses of data
acquired through the Single Station Rural Origin and Destina-
tion Data Collection Process.

All of the travel data analysis is based on the
statewide model's 547 zone system.   Figure 1 is a diagram
of the 547 instate zones and Figure 2 is a diagram of the
547 outstate zones.   Presently this zone system is the
finest level of travel detail available for any traffic
survey conducted using the new "auto coding" process.

1
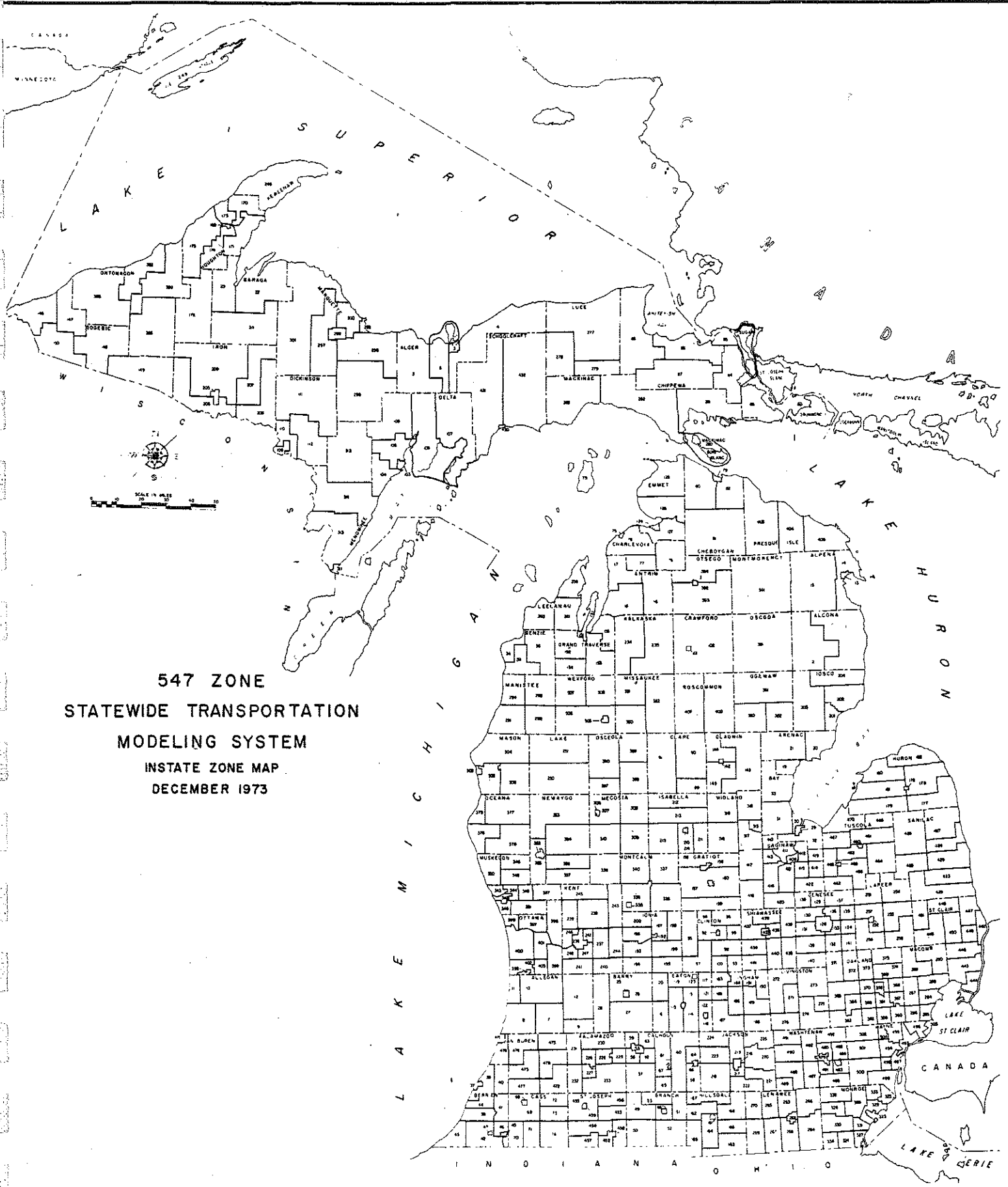
**547 ZONE**

**STATEWIDE TRANSPORTATION**

**MODELING SYSTEM**

INSTATE ZONE MAP

DECEMBER 1973

FIGURE 1

2

Figure 2



ONTARIO

MINNESOTA

WISCONSIN

MICHIGAN

NEW YORK

IOWA

ILLINOIS

PENNSYLVANIA

INDIANA

OHIO

MISSOURI

WEST VIRGINIA

KENTUCKY

547 *ZONE TRAFFIC FORECASTING SYSTEM*

*OUTSTATE ANALYSIS ZONES*

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
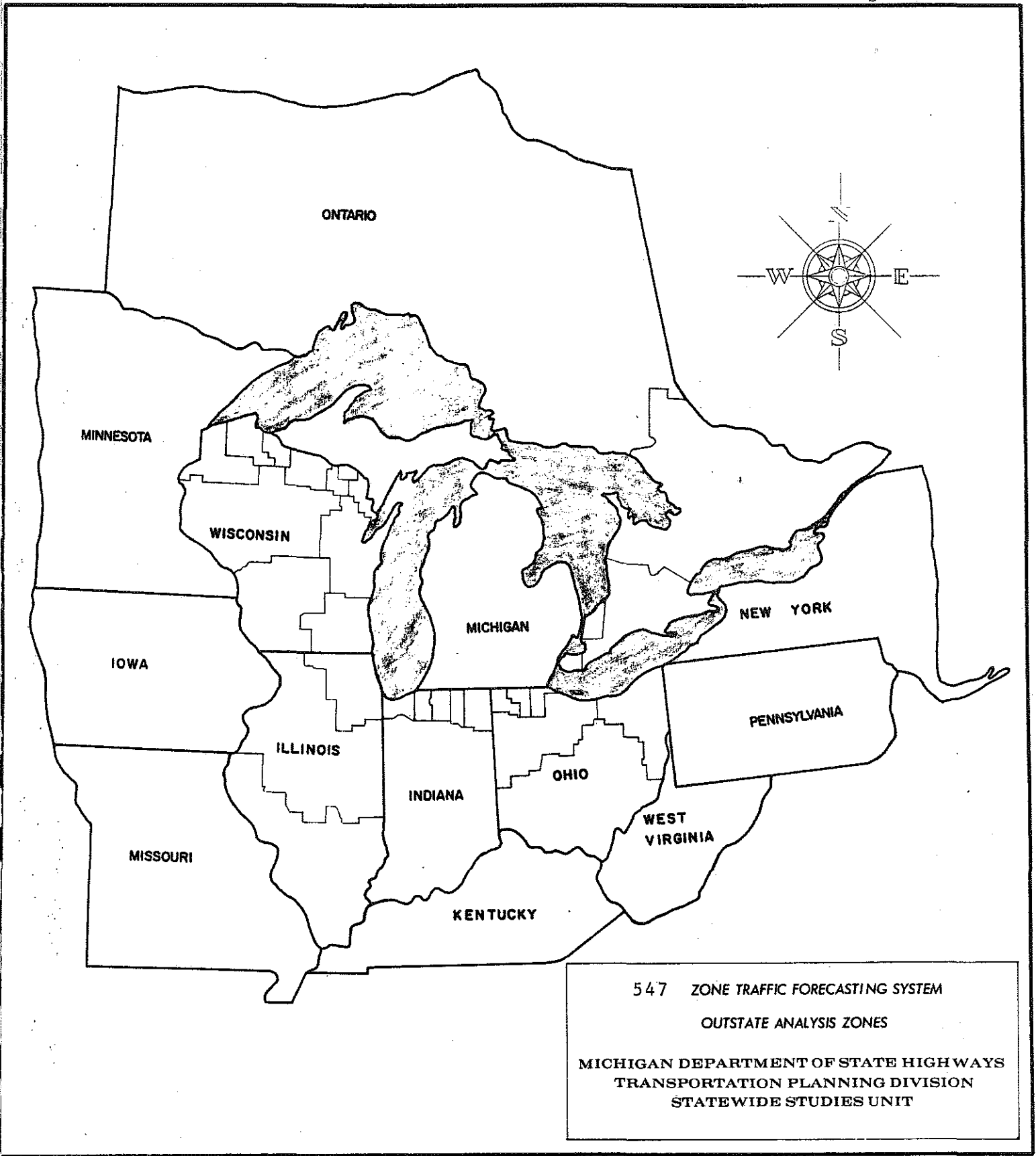TRANSPORTATION PLANNING DIVISION
STATEWIDE STUDIES UNIT

FIGURE 2

## SINGLE STATION ORIGIN-DESTINATION
## ANALYSIS PROCESS PROCEDURES

The Single Station Origin and Destination Survey
and Analysis Process has been sub-divided into five basic
areas.  A generalized flow chart appears in Figure 3
along with the identification of each phase.  A detailed
flow chart appears in Figure 24.  The detail flow chart
will be used as the basic reference throughout the
following discussion.  This whole process is initiated
by a request for travel information on some portion of
the state's road system.

Requests for S. S. O & D Surveys may originate from
within Transportation Planning or other divisions.  The
Requester should use form 1730, Figure 4.  This form is the
same used to request other traffic information, except that
a space for indicating the need for a single station origin
destination survey is provided.

All S. S. O & D requests originating outside the
Transportation Survey and Analysis Section will be forwarded
to the proper Analysis Unit (see Figure 5) through the
Section Engineer.  These <u>outside requests should be received
by March 1st of each year</u>.  Each analysis unit supervisor
should attempt to fulfill the request with existing survey
data if possible.  The remaining requests should be combined
with the Unit's requests and forwarded, along with maps
showing locations, to the Statewide Studies Unit by Mid-March
of each year.

# GENERAL FLOW CHART

PHASE I

STATION SELECTION

PHASE II

DATA COLLECTION

PHASE III

DATA EDITING

PHASE IV

DATA ANALYSIS

PHASE V

REPORTS

FIGURE 3

# REQUEST FOR TRAFFIC INFORMATION

Date _____

To: K. E. Bushnell, Engineer
    Transportation Survey and Analysis Section
    Transportation Planning Division

Control Section I. D. _____

Job No. _____

Please furnish the following traffic data at the following location,

Route _____, County _____, Description _____

_____

| | PRESENT YEAR | FUTURE YEAR DIRECTIONAL | FUTURE YEAR TOTAL | |
|---|---|---|---|---|
| A.D.T. | _____ | _____ | _____ | ☐ Vehicle Turning Movement |
| 30th H.V. | _____ | _____ | _____ | ☐ Classified Turning Movement |
| Per Cent Comm. of A.D.T. | _____ | _____ | _____ | ☐ Other _____ SPECIFY |
| of D.H.V. | _____ | _____ | _____ | |
| Single Sta. O & D(M.V.M.S.S.) | _____ | _____ | _____ | |

This data is intended for use in:

☐ Preliminary Location Study

☐ Program Estimating

☐ Future Lane Requirements

    Design  ☐ Road Capacity
               ☐ Bridge Capacity
               ☐ Ramp Capacity

☐ Road Closures

☐ Proposed Trunkline Abandonment

☐ Bituminous Project

☐ Other _____ SPECIFY

AVAILABLE DATA

☐ Land Use Map      ☐ Population Trend      ☐ Origin & Destination Study

☐ Other (Specify) _____

_____

Remarks: _____

_____

Requested by _____

_____

DATE NEEDED _____

FIGURE 4   DIVISION

ATTACHED ARE 2 PRINTS SHOWING PROJECT LOCATION

# STATE PLANNING AND DEVELOPMENT REGIONS

## State of Michigan



KEWEENAW

HOUGHTON

ONTONAGON

BARAGA

GOGEBIC (13)

IRON

MARQUETTE

DICKINSON

ALGER (12)

SCHOOLCRAFT

DELTA

LUCE

CHIPPEWA (11)

MACKINAC

MENOMINEE

EMMET  CHEBOYGAN

CHARLEVOIX

PRESQUE ISLE

ANTRIM

OTSEGO  MONT-MORENCY (9)  ALPENA

LEELANAU

KALKASKA  CRAWFORD  OSCODA  ALCONA

BENZIE  GRAND TRAVERSE (10)

MANISTEE  WEXFORD  MISSAUKEE  ROSCOMMON  OGEMAW  IOSCO

MASON  LAKE  OSCEOLA  CLARE  GLADWIN  ARENAC

HURON

OCEANA  NEWAYGO  MECOSTA  ISABELLA  MIDLAND  BAY

TUSCOLA  SANILAC

MUSKEGON (14)

MONTCALM  GRATIOT  SAGINAW

OTTAWA  KENT (8)  IONIA  CLINTON  SHIAWASSEE  GENESEE (5)  LAPEER  ST CLAIR

OAKLAND  MACOMB

(6)

ALLEGAN  BARRY  EATON  INGHAM  LIVINGSTON (1)

VAN BUREN  KALAMAZOO  CALHOUN  JACKSON  WASHTENAW  WAYNE

(4)  (3)  (2)

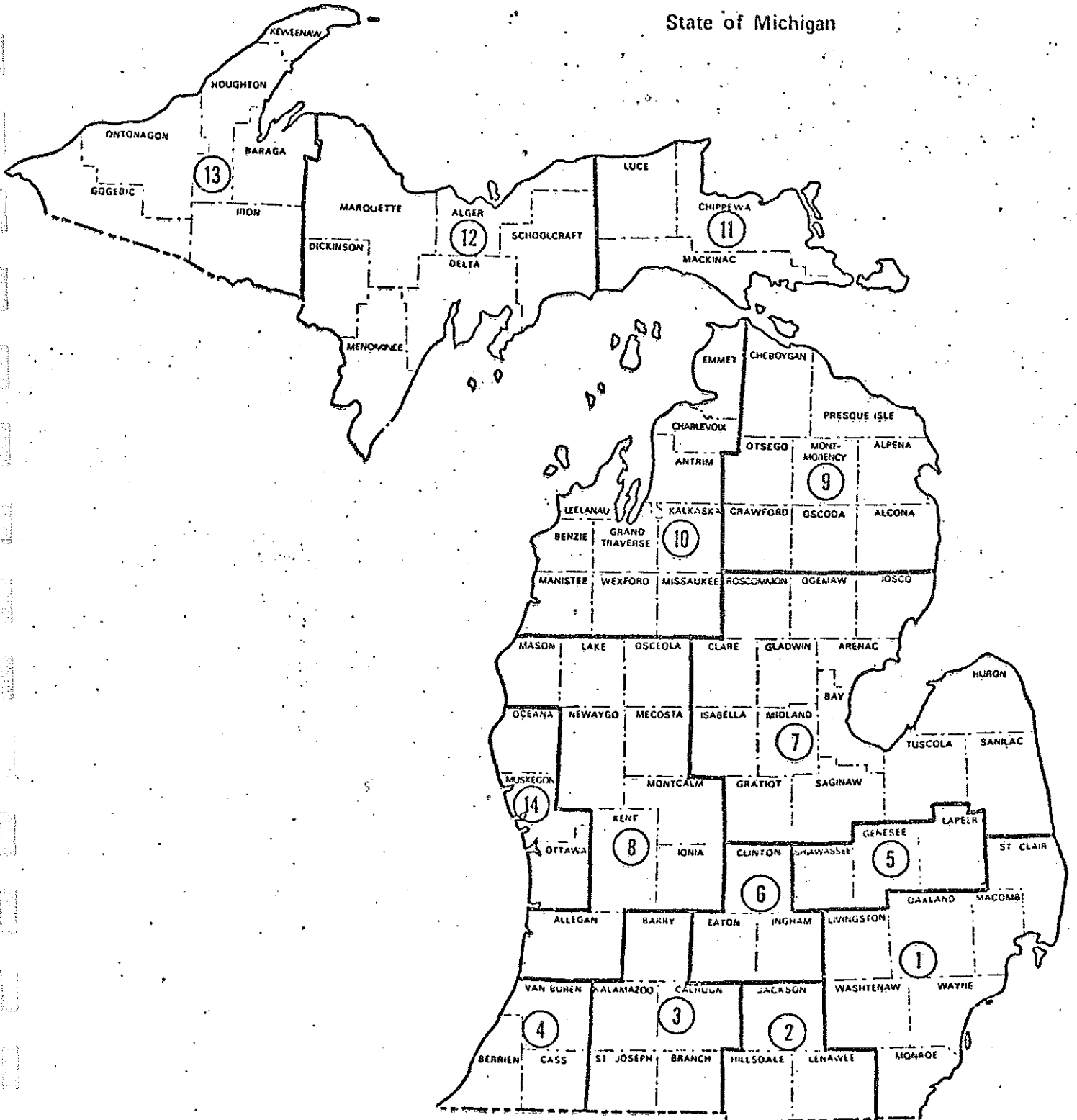BERRIEN  CASS  ST JOSEPH  BRANCH  HILLSDALE  LENAWEE  MONROE

## FIGURE 5

7

The Statewide Studies Unit will coordinate with the analysis units to determine how to best satisfy the requests and also where to locate stations to best suit the Statewide Model.

The finalized station requests will be forwarded, along with maps showing the specific locations, from the Statewide Studies Unit to the O & D Unit.

The O & D Unit will schedule the stations requested. In the event that all stations cannot be completed, because of the O & D Unit's workload, the Statewide Unit, in cooperation with the original requester, and the appropriate analysis unit, will determine which S. S. O & D Surveys will be delayed until the following year or eliminated. The O & D Unit will send copies of the final schedule of stations to be taken that year to each of the Analysis Units and to the Statewide Unit. The O & D Unit will then obtain statewide station numbers for these stations from the Traffic Statistics Unit. At this time the Statewide Studies Unit will assign master file numbers to each station as a means of filing final analysis reports.

Any S. S. O & D Survey which will require special programming changes will be scheduled, however, the original requester will be notified that special programming is required and that final analysis of the survey records will be delayed until special programming has been completed.

One or two weeks prior to the conducting of the actual survey, the appropriate analysis unit will supply the O & D

8

Unit with a list of place names (from the Auto-Coding
Place File listing in each Analysis Unit) for which
there are duplicate place names in other counties or
states, see Figure 6 A & B.  This dualing list should
include duplicate place names within the county where
the station (s) is/are to be taken and in the first
ring of counties surrounding that county as in Figure 7.
Two copies of the Auto Coding Place File listing are
available.  One in which the place names are sorted
alphabetically and the second where the listing is
sorted numerically by the 6 digit place code.  The
analyst should use the numerically sorted listing as
place names are in order by county in this listing.
To select duplicate place names refer to Cols. 16-20
of the Place File listing for the county abbreviation.
If a county abbreviation appears in these columns for
a place name (instate), then other place names exist
in the place file which are the same but which are
located in other counties or states.  Therefore, by
sorting out all place names with county abbreviations
(for the counties required), a dualing list will result.

Also, a list of place names which may be difficult
for field interviewers to spell should also be supplied
for the same counties.  A sample difficult spelling list
appears in Figure 8 A & B.  Furnishing the O & D Unit
with Dualing and Spelling lists gives the interviewers a
chance to look at problem place names prior to the survey

| | |
|---|---|
| CLEAR LK | BARR |
| HOPE TWP | BARR |
| LONG LK | BARR |
| MAPLE GRV TWP | BARR |
| PINE LK | BARR |
| CROOKED LK | BARR |
| WOODLAND | BARR |
| | |
| ALBION | CALH |
| LAKEVIEW | CALH |
| SPRINGFIELD | CALH |
| BEDFORD TWP | CALH |
| OAK PK | CALH |
| BURLINGTON TWP | CALH |
| DUCK LK | CALH |
| EMMETT TWP | CALH |
| HOMER TWP | CALH |
| LEE TWP | CALH |
| LEROY TWP | CALH |
| MILL LK | CALH |
| NEWTON TWP | CALH |
| CLEAR LK | CALH |
| SHERIDAN TWP | CALH |
| | |
| BENTON TWP | EATO |
| BROOKFLD TWP | EATO |
| CHESTER TWP | EATO |
| HAMLIN TWP | EATO |
| PINE LK | EATO |
| | |
| CASCO TWP | ALLE |
| DUCK LK | ALLE |
| EAGLE LK | ALLE |
| CLYDE TWP | ALLE |
| CROOKED LK | ALLE |
| LEE TWP | ALLE |
| GREEN LK | ALLE |
| SALEM TWP | ALLE |
| BASE LINE LK | ALLE |
| WATSON | ALLE |
| PICKEREL LK | ALLE |
| | |
| BERLIN TWP | IONI |
| MORRISON LK | IONI |
| ORANGE TWP | IONI |
| LONG LK | IONI |

| | |
|---|---|
| BRADY TWP | KALA |
| INDIAN LK | KALA |
| LONG LK | KALA |
| PICKEREL LK | KALA |
| RICHLAND TWP | KALA |
| SCHOOLCRAFT TP | KALA |
| EAGLE LK | KALA |
| FULTON | KALA |
| | |
| CALEDONIA TWP | KENT |
| ALASKA | KENT |
| PICKEREL LK | KENT |
| SILVER LK | KENT |
| GAINES TWP | KENT |
| SAND LK | KENT |
| PLAINFLD TWP | KENT |
| SOLON TWP | KENT |
| BASS LK | KENT |
| TYRONE TWP | KENT |
| ALTON | KENT |
| WYOMING | KENT |

FIGURE 6B

# DUALING LIST COUNTIES
## ( EXAMPLE )
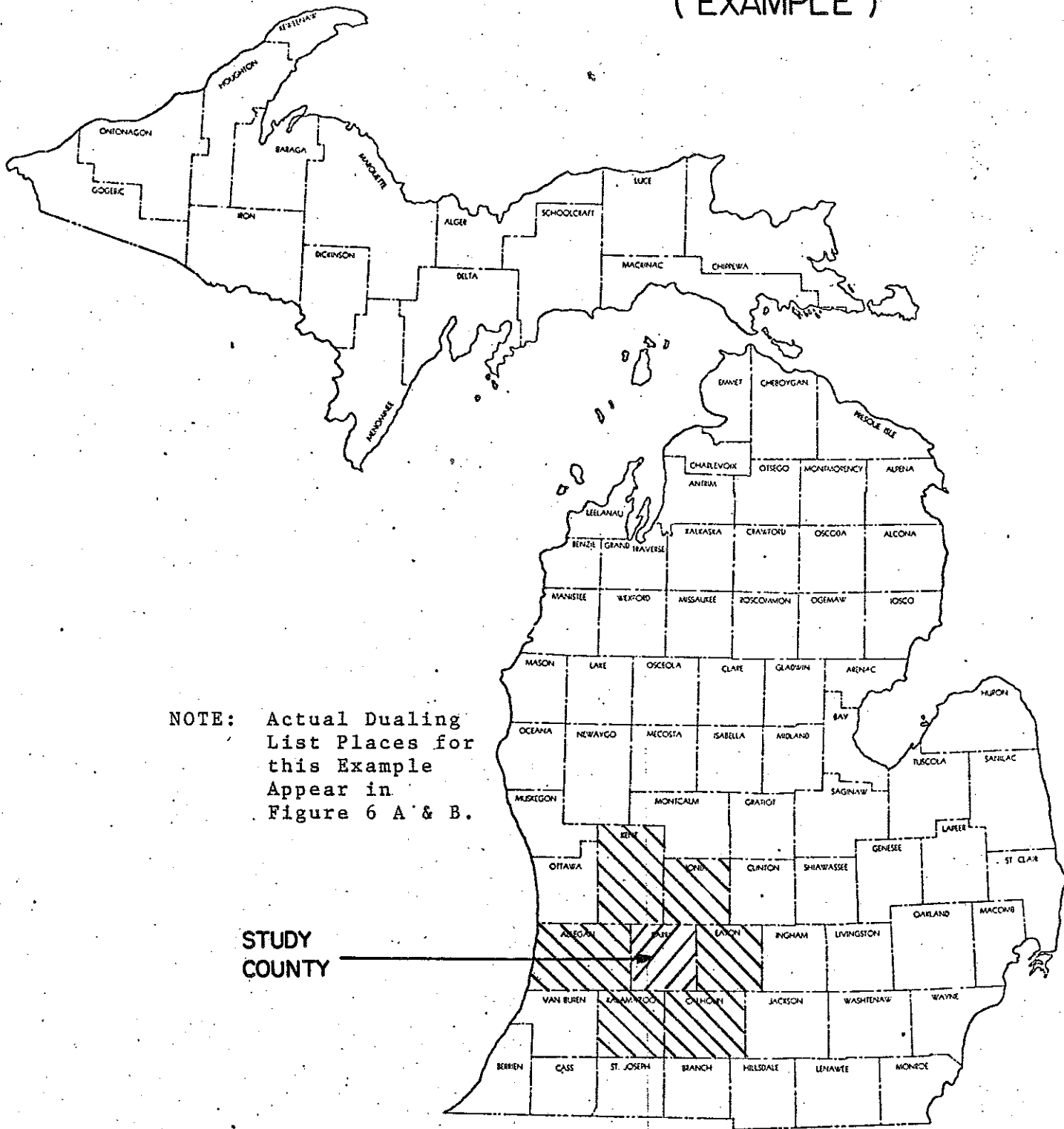


NOTE:    Actual Dualing
         List Places for
         this Example
         Appear in
         Figure 6 A & B.

STUDY
COUNTY

FIGURE 7

```
                              DIFFICULT
              HASTINGS  -  SPELLING LIST

              ALLEGAN CO

              LEISURE
              MIOMI PK BCH
              CHICORA
              FILLMORE
              BELKNAP
              GUNPLAIN
              ARGENTA
              NEELEY
              DUNNINGVILLE
              HILLIARDS
              HOPKINSBURG
              GRAAFSCHAP
              GOSHORN
              OSTERHOUT LK
              LEIGHTON
              MANLIUS
              FENNVILLE
              OVERISEL
              BENTHEIM
              SCHNABLE

              BARRY CO

              ASSYRIA
              CRESSY
              SCHULTZ
              ALGONQUIN

              CALHOUN CO

              GOGUAC LK
              WABASCON LK
              BURLINGTON
              CONVIS
              ECKFORD
              PARTELLO
              JOPPA
              SONOMA
              MARENGO
              CERESCO

              EATON CO

              BELLVUE
              PETRIEVILLE
              ONEIDA TWP
              SAUBEE
              ROXAND TWP
              KALAMO TWP

              IONIA CO
```

FIGURE 8-A

13

SARANAC
KEENE
OTISCO TWP
SMYRNA
SEBEWA
PEWAMO
ODESSA
SHILOH

KALAMAZOO CO

GALESBURG
OSHTEMO
MC KAIN CORS
WAKESHMA TWP
PRAIRIE RONDE

KENT CO

ALGOMA TWP
BOWNE CTR
CAMPAU LK
CHAUNCEY
SEGWUN
WABASIS
VERGENNES TWP
FALLASBURG

FIGURE 8-B

and provides them with easy-reference lists for use at the survey site. This substantially reduces the interview error rate and, therefore, greatly reduces the number of records the analyst will have to correct in the editing process.

Some standard abbreviations are used regularly by the O & D Unit to facilitate more rapid coding of interview sheets in the field. A list of these abbreviations (which agree with place name abbreviations in the Auto-Coding Place File) appears in Figures 9-11. Whenever all or part of a place name with a corresponding abbreviation on the list is coded, that abbreviated place name is used.

The O & D Unit, in turn, distributes to each of the interviewers, copies of the dualing list, spelling list, list of standard abbreviations and procedures to follow in taking interviews. The portion of these procedures concerning the actual coding of interviews in the field is included in Appendix A, Item A-1. The analyst may find these helpful as a reference during the editing phase.

After each survey is taken, the original interview forms, Figure 12, and the 24 HR classification counts Figure 13, will be sent to the appropriate analysis unit. (NOTE the classification counts for the interviewed periods will be in the 1st hour interview envelope, the classification counts for the balance of the 24 hour period, will be attached to the folder containing the packets) the analyst should spot check interviews for completeness of coding and record the

## ABBREVIATIONS FOR O-D
## PLACE NAME DIRECTORY

| | | | |
|---|---|---|---|
| Airport | AP | Recreation | REC |
| Air Force Base | AFB | Reservoir | RESVR |
| Beach | BCH | River | R |
| | | S S Marie | SOO |
| Center | CTR | Saint | ST |
| Central | CTRL | South | S |
| College | COL | Spring | SPG |
| Corner | COR | Springs | SPGS |
| Corners | CORS | Station | STA |
| County | CO | Township | TWP |
| Creek | CR | | |
| Detroit | DET | Upper | UP |
| East | E | | |
| | | Valley | VAL |
| Field | FLD | Village | VIL |
| *(See note below) | | | |
| | | West | W |
| Grand | GD | | |
| Grove | GRV | | |
| | | | |
| Harbor | HBR | | |
| Harbors | HBRS | | |
| Heights | HTS | Do not abbreviate – | |
| | | City | |
| Island | IS | Rapids | |
| | | Ridge | |
| Junction | JCT | | |
| | | Forest | |
| Lake | LK | State | |
| Lakes | LKS | | |
| Location | LOC | | |
| Lower | LOW | | |
| Little | LT | Field is abbreviated "FLD" | |
| | | only on the townships ending | |
| Michigan | MICH | in field. | |
| Metropolitan | MET | | |
| Mile | MI | | |
| Mount | MT | | |
| Municipal | MUN | | |
| Mountain | MTN | | |
| | | | |
| North | N | | |
| | | | |
| Park | PK | | |
| Point | PT | | |
| Pointe | PTE | | |
| Post Office | PO | | |

FIGURE 9

16

These are always justified <u>left</u>, that is, if there are more coding squares than needed, begin filling in at the left, leaving the blank squares to the right.

<u>The United States:</u>

| | | | | | |
|---|---|---|---|---|---|
| Alabama | ALA | Kentucky | KEN | North Dakota | ND |
| Alaska | ALK | Louisiana | LOU | Ohio | OHI |
| Arizona | ARI | Maine | MAI | Oklahoma | OKL |
| Arkansas | ARK | Maryland | MAR | Oregon | ORE |
| California | CAL | Massachusetts | MAS | Pennsylvania | PEN |
| Colorado | COL | Michigan (blank) | | Rhode Island | RHO |
| Connecticut | CON | Minnesota | MIN | South Carolina | SC |
| Delaware | DEL | Mississippi | MIS | South Dakota | SD |
| Dist. of Columbia | DC | Missouri | MO | Tennessee | TEN |
| Florida | FLO | Montana | MON | Texas | TEX |
| Georgia | GEO | Nebraska | NEB | Utah | UTA |
| Hawaii | HAW | Nevada | NEV | Vermont | VER |
| Idaho | IDA | New Hampshire | NH | Virginia | VIR |
| Illinois | ILL | New Jersey | NJ | Washington | WAS |
| Indiana | IND | New Mexico | NM | West Virginia | WV |
| Iowa | IOW | New York | NY | Wisconsin | WIS |
| Kansas | KAN | North Carolina | NC | Wyoming | WYO |

Note that the general rule is to take the first three letters of single word names and the initials of two word names. The exceptions are Alaska = ALK, Missouri = MO and Rhode Island = RHO.

<u>The remainder of North America:</u>

| | |
|---|---|
| Alberta | ALB |
| British Columbia | BC |
| Manitoba | MAN |
| New Brunswick | NB |
| Newfoundland | NEWF |
| Northwest Territories | NWT |
| Nova Scotia | NS |
| *Ontario | ONT |
| Prince Edward I. | PEI |
| Quebec | QUE |
| Saskatchewan | SAS |
| The Yukon | YUK |
| Mexico | MEX |

*ONT should be entered in the "Co. or State" squares with a specific location in front of it. However, for a trip to an unknown or unspecified location in Ontario, ONT may be entered at the <u>beginning</u> of the place coding squares to indicate Ontario - unknown. This is <u>not</u> true of Indiana, Illinois, Ohio, or Wisconsin.

The above covers all possible trips on this continent; there is therefore, no "OTHER." If a trip is actually encountered going to another continent, the port of exit should be entered as destination.

FIGURE 10
17

| | | | | | | |
|---|---|---|---|---|---|---|
| Alcona | ALCO | 1 | Manistee | MANI | 51 |
| Alger | ALGE | 2 | Marquette | MARQ | 52 |
| Allegan | ALLE | 3 | Mason | MASO | 53 |
| Alpena | ALPE | 4 | Mecosta | MECO | 54 |
| Antrim | ANTR | 5 | Menominee | MENO | 55 |
| Arenac | AREN | 6 | Midland | MIDL | 56 |
| Baraga | BARA | 7 | Missaukee | MISS | 57 |
| Barry | BARR | 8 | Monroe | MONR | 58 |
| Bay | BAY | 9 | Montcalm | MCAL | *59 |
| Benzie | BENZ | 10 | Montmorency | MMOR | *60 |
| Berrien | BERR | 11 | Muskegon | MUSK | 61 |
| Branch | BRAN | 12 | Newaygo | NEWA | 62 |
| Calhoun | CALH | 13 | Oakland | OAKL | 63 |
| Cass | CASS | 14 | Oceana | OCEA | 64 |
| Charlevoix | CHAR | 15 | Ogemaw | OGEM | 65 |
| Cheboygan | CHEB | 16 | Ontonagon | ONTO | 66 |
| Chippewa | CHIP | 17 | Osceola | OSCE | 67 |
| Clare | CLAR | 18 | Oscoda | OSCO | 68 |
| Clinton | CLIN | 19 | Otsego | OTSE | 69 |
| Crawford | CRAW | 20 | Ottawa | OTTA | 70 |
| Delta | DELT | 21 | Presque Isle | PRES | 71 |
| Dickinson | DICK | 22 | Roscommon | ROSC | 72 |
| Eaton | EATO | 23 | Saginaw | SAGI | 73 |
| Emmet | EMME | 24 | Sanilac | SANI | 74 |
| Genessee | Gene | 25 | Schoolcraft | SCHO | 75 |
| Gladwin | GLAD | 26 | Shiawassee | SHIA | 76 |
| Gogebic | GOGE | 27 | St. Clair | STCL | 77 |
| Grand Traverse | GRTR | *28 | St. Joseph | STJO | 78 |
| Gratiot | GRAT | 29 | Tuscola | TUSC | 79 |
| Hillsdale | HILL | 30 | Van Buren | VANB | 80 |
| Houghton | HOUG | 31 | Washtenaw | WASH | 81 |
| Huron | HURO | 32 | Wayne | WAYN | 82 |
| Ingham | INGH | 33 | Wexford | WEXF | 83 |
| Ionia | IONI | 34 | | | |
| Iosco | IOSC | 35 | | | |
| Iron | IRON | 36 | | | |
| Isabella | ISAB | 37 | | | |
| Jackson | JACK | 38 | | | |
| Kalamazoo | KALA | 39 | | | |
| Kalkaska | KALK | 40 | | | |
| Kent | KENT | 41 | | | |
| Keweenaw | KEWE | 42 | | | |
| Lake | LAKE | 43 | | | |
| Lapeer | LAPE | 44 | | | |
| Leelanau | LEEL | 45 | | | |
| Lenawee | LENA | 46 | | | |
| Livingston | LIVI | 47 | | | |
| Luce | LUCE | 48 | | | |
| Mackinac | MACK | 49 | | | |
| Macomb | MACO | 50 | | | |

All abreviations are the first four letters of the county except the three indicated *

FIGURE 11

18

OD-1757

# SINGLE STATION RURAL O-D STUDY

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
TRANSPORTATION AND PLANNING

STA. LOCATION AND NUMBER

| FORM NUMBER | **6** | COUNTY NUMBER | **29** | STATEWIDE NUMBER | **0012** | HOUR PERIOD ENDING | **20** | * DIRECTION | **3** | DAY ** OF TRAVEL | **5** | MO. | **04** | DATE | **29** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 2  3 | | 4 5 6 7 | | 8  9 | | 10 | | 11 | | 12 13 | | 14 15 |

| INTERVIEW NUMBER | VEH. TYPE | NO. IN VEH. | ORIGIN Where did this trip begin? | | DESTINATION Where will this trip end? | | WHERE IS VEHICLE GARAGED | TRIP PURPOSE | ROUTE OF EXIT OR ENT. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Co. or State | | Co. or State | | | |
| 0 5 4 | 1 | 2 | BRECKENRIDGE | | WHEELER | | 0 0 0 1 | 1 | |
| | | | | | | | 0 0 0 | | |
| | | | | | | | 0 0 0 | | |
| | | | | | | | 0 0 0 | | |
| | | | | | | | 0 0 0 | | |
| | | | | | | | 0 0 0 | | |
| | | | | | | | 0 0 0 | | |

16 17 18  19  20  21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39  42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60  61 62 63 64  65  66 67

19

**VEHICLE TYPE**
1 PASSENGER CAR WITHOUT A TRAILER
2 PASSENGER CAR WITH A TRAILER
3 PANEL OR PICK-UP WITHOUT A TRAILER
4 PANEL OR PICK-UP WITH A TRAILER
5 OTHER SINGLE UNIT TRUCKS
6 COMBINATIONS & TRUCKS WITH TRAILERS
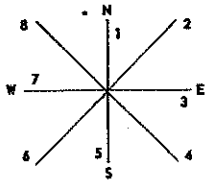
**DAY OF TRAVEL **
SUNDAY 1    THURSDAY 5
MONDAY 2    FRIDAY 6
TUESDAY 3    SATURDAY 7
WEDNESDAY 4

**GARAGED**
1 ORIGIN
2 DESTINATION
3 OTHER

**TRIP PURPOSE**
1 WORK
2 PERS. BUSINESS
3 SHOPPING
4 VACATION
5 OTHER SOC. OR REC.
6 ALL OTHER

FIGURE 12

STATE OF MICHIGAN
**DEPARTMENT OF STATE HIGHWAYS**

**ORIGIN–DESTINATION MANUAL CLASSIFICATION**

Form 1599
O-D 9
(Rev. 5/70)

ROUTE __M-46__  LOCATION DESCRIPTION __W. of GRATIOT Co. E.C.L. (W. of MERIDIAN Rd)__ TY __SINGLE-station RURAL O-D__
(old M-30)

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

RECORDER __F. Beard__

**DO NOT ACCUMULATE**

20

| IN/OUT (22) | DIRECT OF TRAVEL (23 24) | TIME ENDING HOUR (25 26) | MIN (27 28) | PASSENGER CAR WITHOUT TRAILER (1) (29-32) | WITH TRAILER (2) (33-35) | PANEL & PICK-UP WITHOUT (3) (36-38) | WITH (4) (39-41) | ALL OTHER SINGLE UNIT TRUCKS WITHOUT TRAILER (5) (42-44) | ALL TRUCK COMB. AND SINGLE UNIT TRUCK WITH TRAILER (6) (45-47) | ALL BUSES (7) (48 49) | MOTOR CYCLE (8) (50) | MICHIGAN BOAT (51 52) | OUTSTATE BOAT (53 54) | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 07 | 07 | 00 | 0019 | 000 | 007 | 002 | 007 | 005 | 00 | 0 | | | 40 | |
| 1 | 07 | 08 | 00 | 0069 | 001 | 015 | 001 | 004 | 009 | 21 | 0 | | | 100 | 140 |
| 1 | 07 | 09 | 00 | 0089 | 001 | 018 | 001 | 005 | 008 | 06 | 0 | | | 128 | 268 |
| 1 | 07 | 10 | 00 | 0115 | 000 | 021 | 002 | 018 | 014 | 01 | 0 | | | 171 | 439 |
| 1 | 07 | 11 | 00 | 0083 | 002 | 012 | 001 | 013 | 009 | 00 | 0 | | | 120 | 559 |
| 1 | 07 | 12 | 00 | 0086 | 001 | 010 | 002 | 009 | 016 | 01 | 0 | | | 125 | 684 |
| 1 | 07 | 13 | 00 | 0093 | 001 | 015 | 0 | | 004 | | | | | 121 | 805 |
| 1 | | | | | | | | | | | | | | | |
| 2 | 03 | 07 | 00 | 0097 | 000 | 023 | 000 | 005 | 008 | 00 | 0 | | | 123 | 173 |
| 2 | 03 | 08 | 00 | 0111 | 000 | 030 | 000 | 003 | 006 | 00 | 0 | | | 150 | 323 |
| 2 | 03 | 09 | 00 | 0069 | 000 | 024 | 002 | 011 | 011 | 00 | 0 | | | 117 | 440 |
| 2 | 03 | 10 | 00 | 0079 | 000 | 010 | 000 | 006 | 010 | 00 | 0 | | | 105 | 545 |
| 2 | 03 | 11 | 00 | 0071 | 000 | 009 | 001 | 005 | 007 | 01 | 0 | | | 97 | 642 |
| 2 | 03 | 12 | 00 | 0086 | 001 | 018 | 001 | 008 | 008 | 00 | 0 | | | 122 | 764 |
| 2 | | | | | | 013 | 000 | 008 | 014 | 00 | 0 | | | 144 | 908 |
| 2 | | | | | | | | | | | | | | | |

FIGURE 13

control totals at each station prior to sending interviews to keypunching. Control totals should be forwarded to the Statewide Studies Unit. These control totals should include date(s) of operation, hours operated and number of interviews taken by station. The interview packets should then be delivered to Keypunch (as a package for each station) under a transmittal memo, Figure 14, requesting that the interviews be keypunched and verified. Also at this time, the 24 hour classification counts should be keypunched and verified. The keypunched interview cards are stored in the computer room until needed by the analyst. The keypunched 24 hour classification counts should be picked up by the analyst along with the interview cards and saved for input to the expansion program.

After interview cards have been keypunched and verified, they should be spot checked to see that there are interview cards for each hour interviewed. If interview cards are complete for the hours the station was to have been operated, then the analyst is ready for the edit process which is the third major phase in the S. S. O & D process (Figure 3).

Frequently a station will be operated for two interview periods, but on different days. It is necessary in these cases to separate interview cards into batches by the day (Col. 11) or date (Cols. 14-15) each group of interviews was taken and run them through the edit process at Batch 1, Batch 2, etc. When only good records remain on Batch 1, Batch 2, etc. tapes they will be stack-merged onto (1) tape. See Flow Diagram

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MICHIGAN DEPARTMENT OF STATE HIGHWAYS          Date_____

Transmittal Memorandum for Single Station Origin & Destination
                              Study

TO:   Data Processing Section, M.D.S.H.

FROM: Statewide Studies Unit

SUBJECT:   Transmittal of SSO&D Station Interviews


The following interviews are transmitted for keypunching:

| Station Number | Hour Periods | Trip Interviews |
|----------------|--------------|-----------------|

FIGURE 14
22

Figure 24. In the future the edit program may be modified
to accept interviews taken on different days, thereby
eliminating the present necessity of dividing the data
into separate batches.

The analyst should note whether or not adidtional
abbreviations other than the standard abbreviation of place
names have been used at a particular station during the
actual interview. These abbreviations are for long place
names which occurred frequently at that station; they will
be indicated on the station folder. This flexibility was
initiated in order to allow the interviewers more of a chance
to improve on the data collection process. A maximum of 19 of
these will be accepted by the edit and reformat program. In
order to run the edit program an equivalence card must be inclu-
ded for each abbreviation used. The format for the equivalence
cards appears in the edit program abstract, Appendix A, Item A-3.

If there are fewer than 500 interview cards, the analyst
may option at this point to sort interview cards on the card
sorter, run the edit program and then correct cards manually
which are indicated on the error listings. Usually it will be
more desirable to run the interview cards throught the pre-edit
sort program (See Appendix A, Item A-2) to sort records on
tape, run the edit program and then correct errors using the
computer terminal. Both methods require that interviews taken
on different days be processed individually (i.e., Batch 1,
Batch 2, etc.) through the edit phase.

The steps for editing interview records using the computer

23

terminal are outlined in the flow diagram, Figure 24.
The three programs used in this method, Q01041 O & D
Pre-Edit Sort, Q01043, O & D Machine Edit & Reformat and
Q17208, General Copy Program may be run as a series i.e.,
1 of 3, 2 of 3, 3 of 3, back to back, the output of the
first being input to the second etc.  See sample request
cards Figure 15.

Notice that the interview cards are input to the
Pre-Edit Sort Program Q01041 and output is a tape of
sorted interview records.  This tape is, in turn, input
to the Edit & Reformat Program Q01043.  Output is a tape
with good records (QT01002) and tape with error records
(QT01019).  A listing of the error records and their
appropriate error messages is also output.  See zerox copy
of a sample error listing, Figure 16.

Upon receipt of the error listing, the analyst will
review the errors against the Auto-Coding Place File
(copies of the cover and page 1 appear in Item A-4) and
the Edit Program Parameters (refer to interviewers'
original coding instructions Item A-1).

The General Copy Program Q17208 (Figure 15 sample
request card 3 of 3) is run DURING TIME SHARING to copy
the error tape to disk so that corrections can be made
using the computer terminal.  Instructions for using the
terminal are contained in the Terminal Users Guide (a
copy of the cover appears in Item A-5).

After the analyst has reviewed the error listing and

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

COMPUTER SERVICE REQUEST

1 of 3  Form 2350 F (Rev. 11/67)

Please run for production program(s)

*QO1041*

Date Submitted
*9-1-71*

Distribution  ☒ Normal  ☐ Other

*Rick Nelson 32663*

Special Instructions (Use when deviating from abstract)

*1 of 3*  *ØUT = QTO1001 = #( ) [SAVE for IN # 2 of 3]*

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

Oper. Inits.                                    Run Date

---

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

COMPUTER SERVICE REQUEST

2 of 3  Form 2350 F (Rev. 11/67)

Please run for production program(s)

*QO1043*

Date Submitted
*9-1-71*

Distribution  ☒ Normal  ☐ Other

*Rick Nelson 32663*

Special Instructions (Use when deviating from abstract)

*LØAD TAPE QDO1302 #3733 TO DISK*

*2 of 3*  *IN = QTO1001 = #( ) [OUT from 1 of 3]*
*ØUT = QTO1002 = #( )*
*ØUT = QTO1019 = #( ) [SAVE for IN to 3 of 3]*

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

Oper. Inits.                                    Run Date

---

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

COMPUTER SERVICE REQUEST

3 of 3  Form 2350 F (Rev. 11/67)

Please run for production program(s)

*Q17208*

Date Submitted
*9-1-71*

Distribution  ☒ Normal  ☐ Other

*Rick Nelson 32663*

Special Instructions (Use when deviating from abstract)

*RUN DURING TSS*

*3 of 3*  *IN = QTO1019 = #( ) [ØUT from 2 of 3]*
*ØUT = DISK    QSERR1/QTRANSP*

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

Oper. Inits.                                    Run Date

FIGURE 15

25

PARAMETER CARD INFORMATION

| PROG-ID | CNTY | STATION | MO | DA | YR | BEGIN-HR | END-HR | DIR-1 | DIR-2 | TRAV-DAY | MAX-INTV | RUND | CARD-ID |
|---------|------|---------|----|----|----|----------|--------|-------|-------|----------|----------|------|---------|
| 01043 | 29 | 0012 | 04 | 29 | 71 | 14 | 20 | 3 | 7 | 5 | 130 | FIRST | SS |


6290012143504290091IST LOUIS              HEMLOCK              00025          00000001
      CAN NOT FIND THE-PLACE IN PLACE FILE                     HEMLOCK

6290012143504290131IALMA                    GREESE              00015          00000002
      CAN NOT FIND THE-PLACE IN PLACE FILE                     GREESE

6290012143504290243IBRECKRIDGE              MERRILL             00031          00000003
      CAN NOT FIND THE-PLACE IN PLACE FILE                     BRECKRIDGE

6290012143504290346IDETROIT                 SAGINAW             00031          00000004
      CAN NOT FIND THE-PLACE IN PLACE FILE                     DETROIT

6290012143504290541ZBRECKENRIDGE            WHEELER          GRAT00011          00000005
      CAN NOT FIND THE-PLACE IN PLACE FILE                     WHEELER

6290012143504290561ZBRECKENRDG              SAGINAW             00032          00000006
      CAN NOT FIND THE-PLACE IN PLACE FILE                     BRECKENRDG

6290012143504290571ZBRECKNRDG               SAGINAW             00011          00000007
      CAN NOT FIND THE-PLACE IN PLACE FILE                     BRECKNRDG

6290012143504290583ZVESTABURG               HEMLOCK             00031          00000008
      CAN NOT FIND THE-PLACE IN PLACE FILE                     HEMLOCK

6290012143504290621ABRECKENRDG              MERRILL             00022          00000009
      CAN NOT FIND THE-PLACE IN PLACE FILE                     BRECKENRDG

FIGURE 16

26

6290012153504290776lKOUTS              INDI  ZILWAUKEE          00011      00000032
     CAN NOT FIND THE-PLACE IN PLACE FILE              KOUTS

6290012153504290905lHUDSON IND          GAGETOWN          00011      00000033
     CAN NOT FIND THE-PLACE IN PLACE FILE              HUDSON IND

6290012153504290963 4REMUS              HEMLOCK          00012      00000034
     CAN NOT FIND THE-PLACE IN PLACE FILE              HEMLOCK

629001215350429101llITHICA              SAGINAW          00011      00000035
     CAN NOT FIND THE-PLACE IN PLACE FILE              ITHICA

6290012153504291041 3ALMA              HEMLOCK          00035      00000036
     CAN NOT FIND THE-PLACE IN PLACE FILE              HEMLOCK

29001215350429106l2BIG RAPIDS          SAGINAW          00015      00000037
     INVALID FORM NUMBER

629001215350429113llBRECKENRIDGE          BRANDT          00023      00000038
     CAN NOT FIND THE-PLACE IN PLACE FILE              BRANDT

629001215350429114llMT PLEASANT          HEMLOCK          00021      00000039
     CAN NOT FIND THE-PLACE IN PLACE FILE              HEMLOCK

6290012153504291193lBRECKENRIDGE          HEMLOCK          00021      00000040
     CAN NOT FIND THE-PLACE IN PLACE FILE              HEMLOCK

629001216350429001llALMA              HEMLOCK          00015      00000041
     CAN NOT FIND THE-PLACE IN PLACE FILE              HEMLOCK

29001216350429013l4E LANSING          HEMLOCK          00025      00000042
     INVALID FORM NUMBER

FIGURE 17

6290012183504290642111ITHICA      MIDLAND      00012     00000087
    CAN NOT FIND THE-PLACE IN PLACE FILE      ITHICA

6290012183504290453 3WHEELER      HEMLOCK      00015     00000088
    CAN NOT FIND THE-PLACE IN PLACE FILE      HEMLOCK

629001218350429049111KALAMAZOO      HEMLOCK      00022     00000089
    CAN NOT FIND THE-PLACE IN PLACE FILE      HEMLOCK

629001218350429052114T PLEASANT      HEMLOCK      00015     00000090
    CAN NOT FIND THE-PLACE IN PLACE FILE      HEMLOCK

6290012183504290531 2JENSION      MIDLAND      00012     00000091
    CAN NOT FIND THE-PLACE IN PLACE FILE      JENSION

6290012183504290581 1GREEN LK S     WIS    TORONTO    CAN 00021    00000092
    CAN NOT FIND THE-PLACE IN PLACE FILE      GREEN LK

629001218350429059 1GO RAPIDS GF     DETROIT      00021     00000093
    CAN NOT FIND THE-PLACE IN PLACE FILE      DETROIT

6290012183504290626 1CHICAGO     ILL   BAY CITY      00021     00000094
    CAN NOT FIND THE-PLACE IN PLACE FILE      CHICAGO

6290012183504290641 3LOUISVILLE     KENT MIDLAND      00024     00000095
    CAN NOT FIND THE-PLACE IN PLACE FILE      LOUISVILLE

6290012183504290681 5MT PLEASANT      HEMLOCK      00023     00000096
    CAN NOT FIND THE-PLACE IN PLACE FILE      HEMLOCK

6290012183504290803 1WHEELER      MT HALEY TWP   MIDL 00021    00000097
    CAN NOT FIND THE-PLACE IN PLACE FILE      MT HALEY T

FIGURE 18

```
6290012183504290931 3WHEELER                    HEMLOCK              00022        00000098
        CAN NOT FIND THE-PLACE IN PLACE FILE                        HEMLOCK

6290012183504291091 4ST LOUIS                   HEMLOCK              00022        00000099
        CAN NOT FIND THE-PLACE IN PLACE FILE                        HEMLOCK

6290012183504291101 1LAKEVIEW                   ST CHARLES           00021        00000100
        CAN NOT FIND THE-PLACE IN PLACE FILE                        LAKEVIEW

6290012183504291141 1ST LOUIS AN                SAGINAW AP           00021        00000101
        CAN NOT FIND THE-PLACE IN PLACE FILE                        SAGINAW AP

6290012183504291151 4BRECKENRIDGE               JONESFIELD TWP       00023        00000102
        CAN NOT FIND THE-PLACE IN PLACE FILE                        JONESFIELD

6290012183504291161 1WHEELER            RED OAK RSTRNT  00012        00000103
        CAN NOT FIND THE-PLACE IN PLACE FILE                        RED OAK R

6290012193504290051 2BRECKENRIDGE               HEMLOCK              00022        00000104
        CAN NOT FIND THE-PLACE IN PLACE FILE                        HEMLOCK

6290012193504290101 5ALMA               HEMLOCK Y    00022        00000105
        CAN NOT FIND THE-PLACE IN PLACE FILE                        HEMLOCK

6290012193504290141 4BRECKENRIDGE     KENT HEMLOCK         00022        00000106
        CAN NOT FIND THE-PLACE IN PLACE FILE                        HEMLOCK

6290012193504290151 7BRECKENRIDGE               HEMLOCK              00015        00000107
        CAN NOT FIND THE-PLACE IN PLACE FILE                        HEMLOCK

6290012193504290191 2ITHICA                     RED OAK RSTRNT   00032        00000108
        CAN NOT FIND THE-PLACE IN PLACE FILE                        ITHICA
```

FIGURE 19

the error records are on disk he is prepared to go to
the computer terminal and "FIX" the error records.  Sample
pages from the error listing for station #290012 (M-46),
Batch 1, appears in Figures 17-19.  Sample printed output
from the terminal showing the corresponding corrections
for the error records sequence #35 through #41 appear in
Figure 20, and the corrections for #93 through #103 appear
in Figure 21.

The majority of the error messages will usually be
"CANNOT FIND THE PLACE IN PLACE FILE", meaning the name
indicated on the error listing is not an exact match with
any place name in the AUTO-CODING PLACE FILE.  The analyst
will correct errors in origin or destinations by changing
the names so that they appear exactly as in the place file.
Note that place names are not free form, i.e. each part of
the place name must be in the columns as specified in the
original coding instructions.  Note also that when an error
is found in the ORIGIN there is no edit of the DESTINATION.
The analyst will find, however, that often the same place
name errors are reoccurring in the error listing and the
analyst will usually spot any additional errors in the
DESTINATIONS; these can then be corrected at the same time.
If errors remain never-the-less, they will be on the error
listing created when the "corrected" records tape is loaded
onto the "good" original records tape, i.e. in the second
pass through the edit program.

Occasionally a record which is in error cannot be
corrected; for instance, there may be no logical match for

30

```
B5500 TIME SHARING - 01/14, LINE 13
ENTER USER CODE, PLEASE-QTRANSP←

09/21/71  1:26 PM.
GOOD AFTERNOON, TRANSP              YOU HAVE LINE 13

#
LOAD QSERR1←
FILE:QSERR1 - TYPE:UNKNOWN    -- LOADING

 END LOAD 1.4 SEC.


#
FIX36:    00035:SAGI00035←
P36←
36 62900121535042910413ALMA              HEMLOCK            SAGI00035


#
FIX37: 29:629←
P←
1 62900121435004290091ST LOUIS        H/


#
P37←
37 62900121535042910612BIG RAPIDS        SAGINAW           00015


#
FIX38:NDT:NT←
P38←
38 62900121535042911311BRECKENRIDGE      BRANT             00023


#
FIX39:    00021:SAGI00021←
P39←
39 62900121535042911411MT PLEASANT       HEMLOCK           SAGI00021


#
FIX40:    00021:SAGI00021←
FIX41:    000015:SAGI00015
```

FIGURE 20

```
#
FIX93:ROIT:      ←
FIX94:ILLI:ILL ←
FIX95:LOUISVILLE:
FIX95:KENT:      ←
FIX95:13    :13KEN←
P95
95 6290012183504290641 3KEN                    MIDLAND         00024


#
FIX96:      00023:SAGI00023←
FIX97:MIDL:    ←
FIX98:      00022:SAGI00022←
FIX99    00022:SAGI00022←
FIXI 100:    : 00021:MCAL00021←
P100←
FIX IGNORED--SEQ # 00000099
100 6290012183504291101 1LAKEVIEW       MCAL    ST CHARLES    00021


#
FIX103:RED   OAK RSTRNT:WHEELER TWP      ←
P103←
103 6290012183504291161 1WHEELER            WHEELER TWP      00012


#
SAVE←
FILE:QSERR1 - TYPE:UNKNOWN   -- SAVED.


BYE←
 ON FOR  2 HRS, 22 MIN, 18.5 SEC.
 C&E USE 19.5 SEC.
 EXECUTE 1 MIN, 47.4 SEC.
 IO TIME 3 MIN, 11.9 SEC.
 OFF AT   3:48 PM.
 GOODBYE QTRANSP
09/21/71
```

FIGURE 21

the place name in the place file. See sample of error listing Figure 16, "GREESE". This type of error record should be deleted. Other types of errors which may elude correction would be omissions or invalid codes. It will be the analyst's responsibility to determine whether to delete these records or to save them coding in the most probable alphanumeric values.

The analyst must supply the Machine Operations Section with a "dump card" if all errors are not corrected the same day the error tape is copied to disk. This will permit the retention of the disk file of the "corrected" error records and the remaining errors by storing them on tape each night until all errors have been corrected.

When all errors have been corrected the General Copy Program Q17208 will again be run, this time to copy the corrected records from disk to tape. Note that this program must be run during time sharing (Write on the request card under "Special Instructions to Operator" RUN DURING TSS. See Figure 22). The edit program (see request card 2 of 2) is run next to load the "corrected records" to the original "good" tape and to edit the so-called "corrected records" for any errors not corrected in the first run through the edit process. When all errors have been corrected the analyst may specify "NO-EDIT" on the edit program parameter card, Cols. 43-49, to eliminate the creation of an error tape and error listing. In this type of run of the edit program the "corrected records" (assumed to all be good) are merely added to the original good records.

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER | COMPUTER SERVICE REQUEST

Please run for production program(s)
*Q 17208*

Date Submitted
*9-1-71*

*Rick Nelson 32663*

Distribution  [X] Normal   [ ] Other

Special Instructions (Use when deviating from abstract)

*RUN DURING TSS*

*IN = DISK  QSERR1/QTRANSP*
*OUT= QTO1019 = #(          )[SAVE for IN to 2 of 2]*

Output Needed:  [X] 24 Hrs.   [ ] 3 Days   [ ] 1 Week   [ ] Other
(Check one)

Oper. Inits.                                    Run Date

---

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER | COMPUTER SERVICE REQUEST

Please run for production program(s)
*QO1043*

Date Submitted
*9-1-71*

*Rick Nelson 32663*

Distribution  [X] Normal   [ ] Other

Special Instructions (Use when deviating from abstract)

*IN/OUT = QTO1002 = #(          )*
*IN      = QTO1019 = #(          )[OUT from 1 of 2]*

Output Needed:  [X] 24 Hrs.   [ ] 3 Days   [ ] 1 Week   [ ] Other
(Check one)

Oper. Inits.                                    Run Date

---

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES – DATA CENTER | COMPUTER SERVICE REQUEST

Form 2350 F (Rev. 11/67)

Please run for production program(s)
*Q 17208*

Date Submitted
*9-2-71*

*Rick Nelson 32663*

Distribution  [X] Normal   [ ] Other

Special Instructions (Use when deviating from abstract)

*STACK-MERGE TAPES*

*IN = QTO1002 = #(          ) Batch 1*
*IN = QTO1002 = #(          ) Batch 2*
*OUT = QTO1002 = #(          )*

Output Needed:  [X] 24 Hrs.   [ ] 3 Days   [ ] 1 Week   [ ] Other
(Check one)

Oper. Inits.                                    Run Date

FIGURE 22
34

When only good records remain, the third phase of the
S. S. O & D, edit phase is completed.  If the edit was run in
separate batches, B1, B2, etc., these should now be combined
by using the General Copy Program Q17208, to stack-merge all
the edited records for the station onto one tape.  The third
card, Figure 22, Card 3, is a sample request card for running
Q17208 to stack-merge tapes.

The tape, with all good records for a particular
station, is now input, along with the 24 hour classification
count cards, into the expansion programs Q01046 and Q01047.
See abstracts, Items A-6 and A-7.  Output from the expansion
programs is the "trip details tape" for a Single Station
O & D Survey.  These "trip details" should now be sorted by
origin zones using utility program Q017025 (COBOL SORT
GENERATOR) and the program generated by it, Q01199.  Input
to Q01199/HY is this card deck and the "trip details" tape.
Once Q017025 has been run the generated program deck created
is good for sorting "trip details" for any station in the
S. S. O & D format.  This now completes the third major
phase of the S. S. O & D data collection and analysis
process.  (Figure 3).

From this point on in the S. S. O & D process steps
will consist of running programs already available to
produce the particular printer listing(s) or plot(s) of
data for the desired report(s).  Through the use of the
single station sorted trip-details tape, the utility programs,
the TP programs and the plotting programs a number of reports
are now directly possible.  The analyst should note in the

flow diagram, Figure 24, that some of the reports are standard and some are optional. Also, some steps prepare data for use in arriving at more than one report. Still another option is now available whereby the analyst may compress the travel zone analysis base to the county level. This may be accomplished using the multi-level network generator program Q01036. This program compresses the zones and the network for any or all counties. Data analysis in all reports will be expressed in the 547 Zone Statewide Model base unless the user creates a compressed zone base.

The first report on the left near the bottom in Figure 24, the trip purpose - vehicle type summary report is produced directly by running TPGPSP on the sorted Trip Details tape from the sort programs. (Refer to the TPSYSTEM notebooks in each analysis unit for the computer program abstracts to run this program and all other "TP" programs used in the S. S. O & D process).

The second report consists of a single-station trip table report based on the 547 zone statewide system. A statewide zone map should accompany this report. The trip table is built by running TPTRIP with the Sorted Trip Details tape as input. The statewide zone maps are available from the Statewide Studies Unit. By referring to the Statewide zone map and the trip table listing out of TPPRIN, the trip interchange between each and every zone having trips passing through the station can be studied.

The third report is probably more functional than the second as it produces a selected tree plot with trip end values by origin or destination. Starting with the Sorted Trip Details tape run the O/D Tape Maintenance program to set all trip ORIGINS equal to the statewide zone nearest the station site. The abstract for tape maintenance appears in the Appendix A, Item A-9. After tape maintaining the Sorted Trip Details file run TPTRIP. The final two steps are building a selected tree from the statewide zone chosen to represent the station and then plotting the selected tree using program Q01154 (Transportation Planning "Plotting of Selected Minimum Path Trees"). The abstract for the tree plot program appears in Appendix A Item A-10. The report produced is a plotted tree with DESTINATION trip end values at the 547 zone level. Essentially this eliminates the need to manually create a desireline diagram as was done previously; see the sample desireline diagram, Figure 23. The plot created will have another decided advantage over the old desireline diagram in that it will also show the most probable path trips take to the DESTINATION zones. Note that if the ORIGIN ends of trips are desired on a tree plot the analyst would set the DESTINATIONS to equal the zone nearest the station site in running tape maintenance and then proceed as in the above. The plot produced in this case will show the ORIGINS of trips passing through the station and their most probable paths to the station as well as the number of trips from each zone originating trips. (Notice also on the

# DISTRIBUTION OF TRUNKLINE TRAFFIC PASSING THROUGH M.V.M.S.L. STATION 4584-05
## MACKINAC BRIDGE, MACKINAC COUNTY
### 1967 SUMMER WEEKEND, AUG. 11-13
### DAY 1-SATURDAY

| | |
|---|---|
| ALASKA | 7 |
| ALBERTA | 83 |
| BRITISH COLUMBIA | 46 |
| LABRADOR | 1 |
| MANITOBA | 108 |
| SASKATCHEWAN | 51 |
| N. W. TERRITORY | 1 |
| YUKON | 3 |
| MONTREAL | 96 |
| PENNSYLVANIA | 6 |
| OHIO | 18 |
| NEW JERSEY | 1 |
| MARYLAND | 4 |
| MASSACHUSETTS | 3 |
| NEW YORK | 14 |
| NEW BRUNSWICK | 4 |
| NOVA SCOTIA | 12 |
| ONTARIO | 1524 |
| PRINCE EDWARD ISLAND | 1 |
| QUEBEC | 38 |
| | 2021 |

| | |
|---|---|
| ARIZONA | 2 |
| CALIFORNIA | 14 |
| COLORADO | 11 |
| IDAHO | 3 |
| ILLINOIS | 35 |
| IOWA | 10 |
| KANSAS | 3 |
| MINNESOTA | 317 |
| MISSISSIPPI | 2 |
| MISSOURI | 5 |
| MONTANA | 10 |
| NEBRASKA | 7 |
| NORTH DAKOTA | 21 |
| OREGON | 11 |
| SOUTH DAKOTA | 21 |
| WASHINGTON | 34 |
| WISCONSIN | 452 |
| WYOMING | 7 |
| BERRIEN CO. | 4 |
| KENT CO. | 1 |
| | 961 |
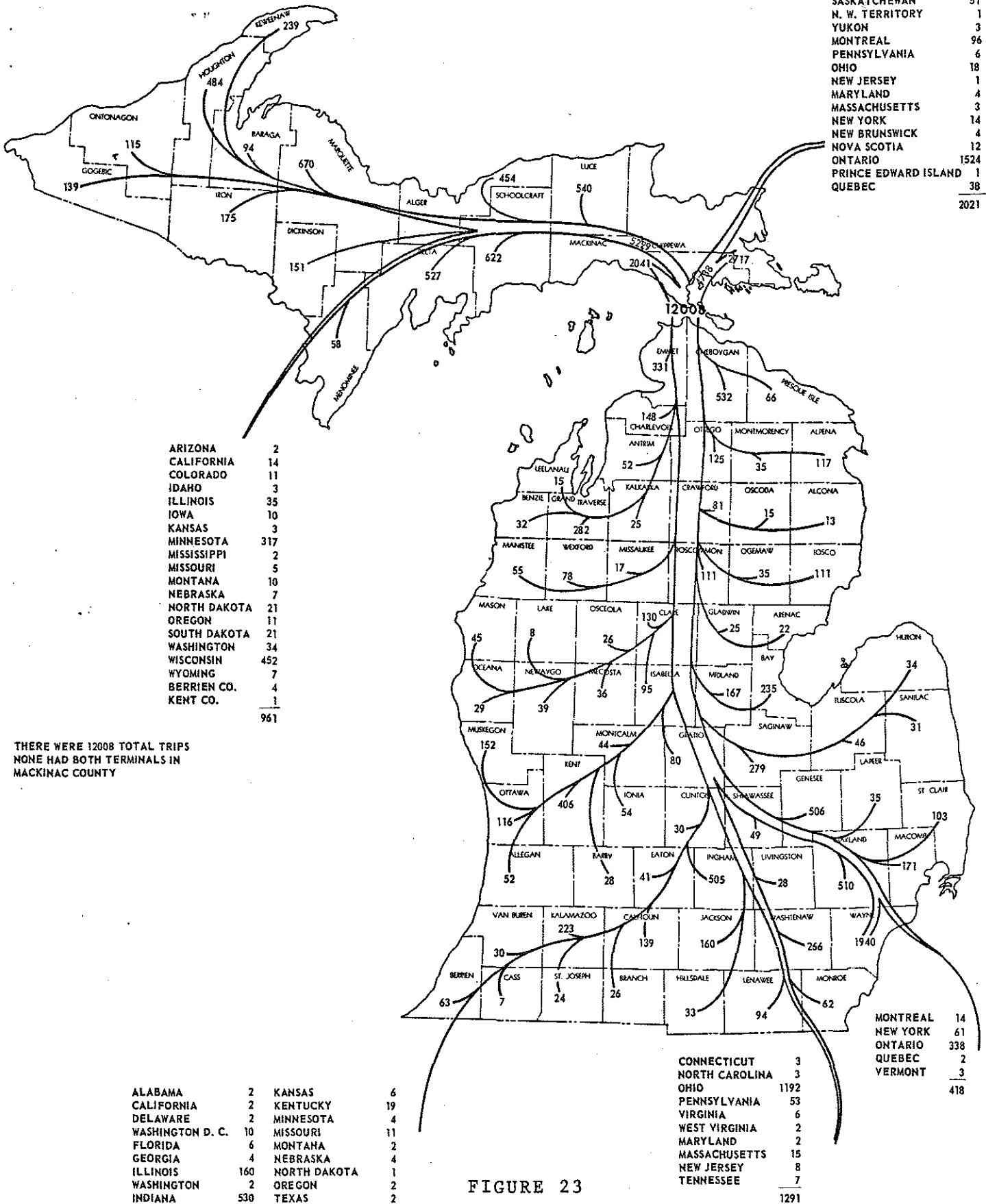
THERE WERE 12008 TOTAL TRIPS
NONE HAD BOTH TERMINALS IN
MACKINAC COUNTY

| | |
|---|---|
| MONTREAL | 14 |
| NEW YORK | 61 |
| ONTARIO | 338 |
| QUEBEC | 2 |
| VERMONT | 3 |
| | 418 |

| | |
|---|---|
| CONNECTICUT | 3 |
| NORTH CAROLINA | 3 |
| OHIO | 1192 |
| PENNSYLVANIA | 53 |
| VIRGINIA | 6 |
| WEST VIRGINIA | 2 |
| MARYLAND | 2 |
| MASSACHUSETTS | 15 |
| NEW JERSEY | 8 |
| TENNESSEE | 7 |
| | 1291 |

| | | | |
|---|---|---|---|
| ALABAMA | 2 | KANSAS | 6 |
| CALIFORNIA | 2 | KENTUCKY | 19 |
| DELAWARE | 2 | MINNESOTA | 4 |
| WASHINGTON D.C. | 10 | MISSOURI | 11 |
| FLORIDA | 6 | MONTANA | 2 |
| GEORGIA | 4 | NEBRASKA | 4 |
| ILLINOIS | 160 | NORTH DAKOTA | 1 |
| WASHINGTON | 2 | OREGON | 2 |
| INDIANA | 530 | TEXAS | 2 |
| IOWA | 5 | WISCONSIN | 24 |
| | | | 798 |

FIGURE 23

38

flow diagram the option of plotting a tree for a compressed
analysis zone base.)

The fourth report is a summary report and printer
plot of the distribution of trip lengths.  The TPTLD
program takes as input a trip table tape and a skim
tree tape which may be either the 547 zone base or a
compressed zone base as user specified.  Output is useful
for travel characteristics analysis.

The fifth report is in the form of a computer network
plot.  This is a plot of actual trip volumes from the
single-station trip table after assignment to the highway
network.  Because of the fact that the user may now complete
traffic assignment using single station origin-destination
data minor trunkline relocation analysis can efficiently be
evaluated.  The analysis network used may be defined as the
547 zone system or a compressed zone system as user specified.
The input to TPLOAD is a network tape, a tree tape and a trip
table.  To plot the loaded network two more steps remain --
that of creating a preplot tape from the loaded network tape
using program Q01151 and then running the plot program Q01153
using as input the preplot tape.  The abstracts for the
"NETWORK PREPLOT" program and for the "NETWORK PLOTTING"
program appear in the Appendix A, Items A-12 and A-13
respectively.

# SINGLE STATION RURAL ORIGIN AND DESTINATION PROCESS FLOW CHART

ORIGIN & DESTINATION UNIT

STATEWIDE STUDIES UNIT

ANALYSIS UNITS

**A**

```
ORIGINAL REQUEST FOR
SINGLE STATION ORIGIN
& DESTINATION SURVEY
```

```
FULFILL REQUEST WITH
EXISTING DATA IS POSSIBLE
```

```
MERGE REMAINING
REQUESTS WITH THOSE
FROM THE ANALYSIS UNITS
```

```
COORDINATE WITH UNITS
REGARDING CONSOLIDATION
OR ALTERATION OF STATIONS
TO BETTER SUIT THE NEEDS
OF THOSE USING THE RESULTS
```

```
SEND SUBSEQUENT
REQUESTS TO
STATEWIDE STUDIES UNIT
```

```
SCHEDULE SINGLE
STATION O&D'S
REQUESTED
```

```
SEND FINAL O&D REQUESTS
TO O&D UNIT FOR SCHEDULING
```

```
SEND COPY OF
SCHEDULE TO
STATEWIDE UNIT &
ANALYSIS UNITS
```

```
ASSIGN A FILE NUMBER
TO EACH STATION SCHEDULED
```

```
(optional)
DETERMINE SPECIAL
PROGRAM NEEDS &
PREPARE REQUESTS FOR
SPECIAL PROGRAMMING
```

```
(optional)
COMPLETE SPECIAL
PROGRAMMING
```

```
OBTAIN STATION NUMBER
FROM STATISTICS UNIT
```

```
(optional)
DEFINE SPECIAL
ANALYSIS PROCEDURES
```

```
(optional)
RUN SPECIAL PROGRAMS
IN ADDITION TO
STANDARD PROGRAMS
```

```
SUPPLY O&D UNIT
WITH DUALING LIST
AND SPELLING LIST
```

```
CONDUCT SURVEY
```

```
(optional)
EDIT SPECIAL
PROGRAM LISTINGS
& PREPARE SPECIAL
ANALYSIS
```

```
NOTE ON THE
STATION FOLDER
ANY ADDITIONAL
ABBREVIATIONS
USED AT THE STATION
```

```
REPORT
```

```
SEND INTERVIEWS
& 24 HR CLASSIFICATION
COUNTS TO THE APPROPRIATE
ANALYSIS UNIT
```

```
SEND CONTROL TOTALS
TO STATEWIDE UNIT
```

```
SEND INTERVIEWS TO
KEYPUNCH WITH
TRANSMITTAL MEMO
```

```
KEY PUNCH AND
VERIFY INTERVIEW
CARDS
```

```
DISTRIBUTE
FINAL REPORT
```

**B**

```
RETURN PUNCHED
CARDS TO ANALYSIS
UNIT
```

```
(1) COPY TO
STATEWIDE STUDIES UNIT
S.S. O & D FILE
```

```
(1) COPY TO
ORIGINAL
REQUESTER
```

D

547 ZONE
STATEWIDE
NETWORK

RUN Q01401 (TP TRIP)
FOR ZONE REPRESENTING
THE STATION

547 ZONE BASE

GENERATED
EQUIVALENCE CARDS

RUN Q01436 (MULTI-
LEVEL HIGHWAY NETWORK
GENERATOR)

C

COMPRESSED
ZONE BASE

547
ZONE BASE

RUN Q01403 (TP TREE)
BUILD SELECTED TREE

RUN Q01403 (TP TREE)
BUILD ALL TREES

(optional)

RUN Q01404 (TP SKIM)

GET CURRENT
TREES TAPE
FROM STATEWIDE
STUDIES UNIT

RUN Q01414 (TP SQEZ)

RUN Q01195 (TAPE MAINTENANCE)
TO CHANGE ALL ORIGIN ZONES
TO EQUAL ZONE REPRESENTED
BY THE STATION

COMPRESSED
TRIP TABLE
AS USER SPECIFIED
IN Q 01436
(MULTI-LEVEL HIGHWAY
NETWORK GENERATOR)

(optional)

(optional)
RUN Q01405 (TP LOAD)

RUN Q01410 (TP PRIN)
FOR LISTING OF
SINGLE STATION
TRIP TABLE

RUN Q01401 (TP TRIP)
BUILD SINGLE STATION
TRIP TABLE (OPT. BY
TRIP PURPOSE OR VEH. TYPE)

COMPRESSED
ZONE BASE

RUN Q01151
(NETWORK PREPLOT)

RUN Q01429 (TP DFSP)
FOR TRIP PURPOSE
SUMMARY LISTING

REFER TO
MAP OF STATEWIDE
ZONES AND NETWORK

(optional)

RUN Q01154/BY
TO PLOT SELECTED TREE
WITH TRIP OPT

RUN Q01408 (TP TLD)
FOR TRAVEL CHARACTERISTICS
ANALYSIS AT STATION

RUN Q01155
(NETWORK PLOT)

REPORT

REPORT

REPORT

REPORT

REPORT

DISTRIBUTE
FINAL REPORT

DISTRIBUTE
FINAL REPORT

DISTRIBUTE
FINAL REPORT

DISTRIBUTE
FINAL REPORT

DISTRIBUTE
FINAL REPORT

(1) COPY TO
STATEWIDE STUDIES UNIT
S.S. O&D FILE

(1) COPY TO
ORIGINAL
REQUESTER

(1) COPY TO
STATEWIDE STUDIES UNIT
S.S. O&D FILE

(1) COPY TO
ORIGINAL
REQUESTER

(1) COPY TO
STATEWIDE STUDIES UNIT
S.S. O&D FILE

(1) COPY TO
ORIGINAL
REQUESTER

(1) COPY TO
STATEWIDE STUDIES UNIT
S.S. O&D FILE

(1) COPY TO
ORIGINAL
REQUESTER

(1) COPY TO
STATEWIDE STUDIES UNIT
S.S. O&D FILE

(1) COPY TO
ORIGINAL
REQUESTER

LOAD SINGLE STATION
TAPE ONTO MASTER FILE

SEND THE TAPE #
OF FINAL RECORDS
FOR THE STATION TO
STATEWIDE STUDIES UNIT
AFTER ALL REQUIRED
REPORTS HAVE BEEN COMPLETED

NOTE: For sample of each final report
see Appendix B.

FIGURE 24

APPENDIX A

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PROCEDURE FOR SINGLE-STATION RURAL O-Ds

MINOR CITY O-Ds

Interviews will be taken at these stations on MDSH form 1757 OD6.

This form has columns numbered 1 through 67 which will be filled in as follows:

Column 1: Form Number. This has preprinted the number 6.

Columns 2 & 3: County. In this column the numeric designation of the county where the station is located is entered, according to the standard alphabetical list of Michigan counties.

Columns 4 through 7: The station number is entered here according to the Statewide station numbering system.

Columns 8 & 9: The military time (24 hour clock) designation of the ending hour when the interviews are taken is entered here.

For example: interviews taken between 7 and 8 AM will be on a sheet where 08 is entered; interviews taken between 3 and 4 PM will be on a sheet where 16 is entered in these columns. Note that at the end of each hour all interview sheets including those not completely full are turned in to the party chief by each interviewer and new sheets are started.

Column 10: Direction of Travel (bound, not from). Number is entered to indicate direction as follows:

        1. North
        2. Northeast
        3. East
        4. Southeast
        5. South
        6. Southwest

7.   West
                    8.   Northwest

This will be the direction at the particular location of the
station, even though it may not reflect the general direction
of the entire length of the road.
Note also that the interview form is printed in two colors,
white and blue.  Directions one thru four will use white
sheets; directions five through eight will use blue sheets.

Column 11:  Day of travel.  Days of the week are numbered
and the number for the day on which the interviews are
taken is entered as follows:

                    1.   Sunday
                    2.   Monday
                    3.   Tuesday
                    4.   Wednesday
                    5.   Thursday
                    6.   Friday
                    7.   Saturday

Columns 12 & 13:  Month.  The months January through December
are numbered 01 through 12 and these two digits are entered
here.

Columns 14 & 15:  The Date.  The date of the month is entered
here, always using two digits (i.e., the first day of the
month is 01).

Columns 16, 17, 18:  Interview number.  At the end of each
hour when the interview sheets are turned in to the party
chief, he will separate them by direction (i.e., by color).

In each direction he will then separate the sheets which do not have a full six interviews, putting them on the bottom of the pile. He then numbers the interviews beginning at the top, 001, 002, etc., (the top interview on the second sheet should be 007). After the full sheets are numbered, the numbering is continued on to the partial sheets, numbering interviews only (not blanks). Interviews which are not complete and are obviously not useable (for instance refusals) should not be numbered. Numbering recommences at 001 with each direction each hour.

Column 19: Vehicle type. The interviewer enters the code number for the vehicle as he sees it approaching him. Codes are as follows:

1. Passenger cars without trailer
2. Passenger cars with trailer
3. Panel or pickup trucks without trailer
4. Panel or pickup with trailer
5. Other (larger) single unit trucks
6. Truck combinations (with complete trailers or semi-trailers)
7. All buses (except converted to house-cars)
8. Motorcycles

Column 20: Number of people in vehicle (including driver). This is entered by the interviewer by observation.

---

ORIGIN & DESTINATION information will be obtained by the interviewer by asking each motorist these questions. In almost all cases the interviewer should be able to write the information directly into the coding squares.

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<u>Columns 21 through 39:   ORIGIN - Where did this trip begin?</u>

If it is a city, village, township or other place in Michigan, the interviewers will enter the name, letter by letter in the coding squares 21 through 35.  This will begin at column 21 and go as far to the right as necessary up to column 35, using no punctuation but putting in spaces in normal manner. L'Anse would be written LANSE; Saint Louis would be written ST LOUIS.  Standard abbreviations will be used, but individual interviewers will not make up any other abbreviations of their own.  If a need is noted, party chiefs may designate additional abbreviations, to a maximum of 20, at any station to suit local conditions, but these must be plainly noted on the station folder (form D6) and brought to the attention of the analyst when the work is turned in to the office.  This provision is principly to shorten very long names to about five letters.  Abbreviations of two or three letters are not recommended.  For instance, Breckenridge could be shortened to BRECK.  These should be kept to a minimum.  They then are permanently established for any time the station is operated.  If the name entered in these coding squares is on the "dualing list," (a list of more than one place having the same name), the standard abbreviation for the county (see attached county abbreviations) is entered in columns 36 to 39.  For example, there are more than one Lincoln Township in Michigan; therefore, an entry LINCOLN TWP would have to be followed in columns 36 to 39 by ISAB (Isabella County) or whichever county is appropriate.

After an entry WHEELER, columns 36-39 must be left blank since there is only one Wheeler in Michigan. An extract will be made of the master dualing list pertinent to the immediately surrounding counties and will be provided for the interviewers. If the trip origin is in the state of Ohio, Indiana, Illinois, Wisconsin, or the Province of Ontario, enter beginning with column 21 the name of the city; then enter the standard abbreviation for the state or province in columns 36-39.

If the origin is in any state or province other than those listed above enter the standard abbreviation for the state or for any Canadian province other than Ontario, beginning at column 21 (note: not 36).

Columns 61 through 64: Where is vehicle garaged? (Columns 6. 62, & 63 are preprinted zeros.) 1, 2, or 3 is entered in column 64 as follows:

1. Vehicle garaged at origin
2. Vehicle garaged at destination
3. Vehicle garaged at neither Origin or Destination

Column 65: Purpose of trip. Interviewer will get enough information from the motorist to assign the trip to one of six trip purpose categories. The categories are:

1. Work                    4. Vacation
2. Personal Business       5. Other social or recreation
3. Shopping                6. All Other

Columns 66 and 67: Route of exit or entrance. This has no meaning at a single station and will be left blank.

PROGRAM NO.  Q01041

**PROGRAM ABSTRACT**

DATE  Sept. 2, 1970

| TITLE | O&D PRE-EDIT SORT |
|---|---|

**DESCRIPTION**

This program sorts the O&D data for the edit:

IAS = Sample number within Block within Tract.
INT = Sample number within Block within Tract.
EXT = Interview number within Hour Period within Direction within Station.
TRX = Trip number within Interview number.
 SS = Interview number within Hour period.

| DELIVERY: DIVISION | Transportation Planning | | SORT SEQUENCE See description | | | | COMPILER COBOL |
|---|---|---|---|---|---|---|---|
| SECTION | Survey & Analysis | | SORT DISK 1/2 Mod | PROD. CYCLE Request* | PAGES 1 | COPIES 0 | CPU TIME 5-10 Min. |
| UNIT | O & D | | SORT-TAPES 3 | SETUP User | OVERLAY ID | CPU % 20 | I/O % 80 |

| I/O | EQUIPMENT | ID | KEYWORD | FILE NAME | BLOCK FACTOR | RECORD LENGTH | FILE DESCRIPTION | RETEN-TION |
|---|---|---|---|---|---|---|---|---|
| IN | READER | QH01041 | | PARAMETER-FILE | 1 | 80 | Parameter Card | |
| IN | READER | QC01001 | | OD-FILE | 1 | 80 | Details (City,Year) or Single Station Details (Station,Year) | |
| OUT | TAPE | QT01001 | OD | OD-SORTED-FILE | 80 | 80 | Details (City,Year) or Single Station Details (Station,Year) sorted for edit | 030 |
| | OR | | | | | | | |
| IN | TAPE | QT01002 | OD | OD-TAPE-FILE | 20 | 200 | Details (City,Year) or Single Station Details (Station,Year) Edited and Reformated | |
| OUT | TAPE | QT01002 | OD | OD-SORTED-TAPE-FILE | 20 | 200 | Details (City,Year) or Single Station Details (Station,Year) Reformated & sorted for Edit | 030 |
| OUT | PRINTER | QP01041 | | | | | Record Counts | |

*Run 15 times a year in Fall-Winter                    ITEM A-2

CARD INPUT RECORD - TITLE __PARAMETER CARD__ PROGRAM NO. __01041__ PAGE 1 of 1

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | 0 | | 41 | | | 81 | | |
| 2 | 1 | PROGRAM | 42 | | | 82 | | |
| 3 | 0 | | 43 | | | 83 | | |
| 4 | 4 | IDENTIFICATION | 44 | | | 84 | | |
| 5 | 1 | | 45 | | | 85 | | |
| 6 | | | 46 | | | 86 | | |
| 7 | | "CARD" = card | 47 | | | 87 | | |
| 8 | | "TAPE" = tape | 48 | | | 88 | | |
| 9 | | | 49 | | | 89 | | |
| 10 | | INPUT | 50 | | | 90 | | |
| 11 | | | 51 | | | 91 | | |
| 12 | | "MV"=MISS.VALLEY | 52 | | | 92 | | |
| 13 | | "OD"=OD INPUT | 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: __Nov. 1969__

RECORD NO: __QH01041__          TAPE DENSITY: _____

RECORD LENGTH: __80__          BLOCKING: _____

PAPER FORMS: _____          NO. OF COPIES: _____

COLOR OF CARDS: _____          LINED or UNLINED: _____

VOLUME OF DATA: __1__

SPECIAL INSTRUCTIONS:

PROGRAM NO. __Q01043__

# PROGRAM ABSTRACT

EFFECTIVE DATE ___June 25, 1971___

TITLE

O & D MACHINE EDIT AND REFORMAT

DESCRIPTION

Program edits the O&D data (forms 2, 3, 4, 8 or 6) checking for coding and keypunch errors, correcting some of the errors. If the record is an External thru-trip stopping inside of the study area with a purpose of 1, 2, 3, 7 or 8, it is split into two trips. All records in error are printed with their errors listed below. All good records are written onto QT01002 and are reformatted into the 200-char. combined format, while the error records are written onto QT01002 and are reformatted into the 200-char. combined format, while the error records are written onto QT01019.

| DELIVERY: DIVISION | SORT SEQUENCE | | | | COMPILER | |
|---|---|---|---|---|---|---|
| Transportation Planning | None | | | | COBOL | |
| SECTION | SORT DISK | PROD. CYCLE 2 wkl | PAGES | COPIES | CPU TIME | |
| Survey & Analysis | - | fall-winter | 1-500 | 0 | 2-10 Min. | |
| UNIT | SORT-TAPES | SETUP | OVERLAY ID | | CPU % | I/O |
| OD or Statewide | | User | | | 20 | 80 |

| I/O | EQUIPMENT | ID | KEYWORD | FILE NAME | BLOCK FACTOR | RECORD LENGTH | FILE DESCRIPTION | RET TIC |
|---|---|---|---|---|---|---|---|---|
| IN | READER | QH01043 | | PARAM | | | Parameter Card & Trac-Bloc or Equivalent Name Cards | |
| IN | TAPE OR CARD OR | QT01001 | OD | OD-DETAILS | 80 | 80 | Sorted for EDit (City-Year) | |
| IN | TAPE | QT01019* | OD | * | 80 | 80 | Errors | |
| IN | DISK** | QD01302/ QOD | OD | PLACE-FILE | 1 | 240 | Nationwide Place File | |
| OUT | TAPE | QT01002 | OD | OD-FILE | 20 | 200 | Edited and Reformatted | 99 |
| OUT | TAPE | QT01019 | OD | ERROR-FILE | | 80 | Errors | 00 |
| OUT | PRINTER | QP01043 | | PRINT-FILE | | | Error List & Record Counts | |

APPROVED BY: _____  6-25-71

(Manager, Machine Operations Section)  (Date)

REMARKS:
*Label Equate ?FILE "OD-DETAILS" = QT01019
**Must be loaded from tape QT01302

ITEM A-3
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These cards are not used when the edit phase is bypassed.

QT01002

Tract-Blocks Parameter

QT01001 —or— QT01001 —or— QT0101

QT01002 is outputted on the FIRST run only, on the other runs it is read to EOF, closed, and reopened as output so that the newly edited & reformatted records may be added onto the end on the file.

B-5500

QD01302 PLACE FILE

QT01002

QP01043

QT01019 This file is not created when the edit phase is bypas

? END

INTERVIEW DATA

? DATA QT01001

PARAMETER

? DATA QH01043

? EXECUTE

USED ONLY IF INTERVIEW DATA IS NOT ON TAPE

or TRACT-BLOC CARDS IF ØD RUN
EQUIV. NAMES IF SS RUN
(NOT REQUIRED ØN SS RUN)

## Description

Program will accept OD data with form numbers of 2, 3, 4
and 8 in one batch or with a form number of 6 in one batch.

For forms 2, 3, 4 and 8, a set of trac-bloc cards is required;
for form 6 a list of equivalent names for use with the place
file is optional.

Card file QH01043 is loaded to memory and written to printer.
Data is edited.  Each error is printed as it is encountered.
For single station data, the alphabetic names of origin and
destination are used to enter the Place File and obtain the
OD place code and the statewide zone.  If no errors are
encountered in a record, it is reformatted to 200 characters
and written to a final tape.

All error records are written to a tape.  At completion of
program, record totals are printed.

## Limitations

There is no restart procedure.

For single station data, only one station may be processed at
each program execution.  *Must be run seporately if hour
periods are not on same day*

6-16-71
A. R. Friend

Edits of Single Station O&D Interview Input Record:

| Data | Edit |
|---|---|
| 1. Form Number | 1. Must equal 6. |
| 2. Station Number and Date | 2. Must equal Station Number and Date in Edit Card. |
| 3. Hour Period Ending | 3. Must fall within Hour Period range on edit card (Beginning-Ending). |
| 4. Direction | 4. Must equal Direction-1 or Direction-2 on Edit Card. |
| 5. Day of Travel | 5. Must equal Day of Travel on Edit Card. |
| 6. Interview Number | 6. Must run serially, ascending from 001 for each hour within each direction. Also, must be less than or equal to maximum interview number on Edit Card. |
| 7. Vehicle Type | 7. Must equal 1-9. |
| 8. No. in Vehicle | 8. Must equal 1-9 or X. |
| 9. Origin/Destination | 9. Must be alphabetic. |
| 10. Vehicle Garaged | 10. Must be 1, 2 or 3. |
| 11. Trip Purpose | 11. Must equal 1-6. |

INPUT CARD RECORD - TITLE _SINGLE STATION PARAMETER_ PROGRAM NO. _QH01043_ PAGE _1 of 2_

| CHAR | | FIELD DESCRIPTION | | CHAR | | FIELD DESCRIPTION | | CHAR | | FIELD DESCRIPTION |
|------|---|---|---|------|---|---|---|------|---|---|
| 1 | 0 | PROGRAM | | 41 | | INTERVIEW | | 81 | | |
| 2 | 1 | | | 42 | | NUMBER | | 82 | | |
| 3 | 0 | ID | | 43 | | | | 83 | | |
| 4 | 4 | | | 44 | | RUN | | 84 | | |
| 5 | 3 | | | 45 | | | | 85 | | "bFIRSTb" |
| 6 | | | | 46 | | NUMBER | | 86 | | "NO-EDIT" |
| 7 | | | CNTY | 47 | | | | 87 | | |
| 8 | | STATION | | 48 | | | | 88 | | |
| 9 | | | | 49 | | | | 89 | | "what |
| 10 | | | STAT OF CNTY | 50 | S | CARD-ID | | 90 | | ever |
| 11 | | | | 51 | S | | | 91 | | you |
| 12 | | | | 52 | | | | 92 | | want, |
| 13 | | | | 53 | | | | 93 | | (this |
| 14 | | | | 54 | | | | 94 | | does) |
| 15 | | | | 55 | | | | 95 | | edit |
| 16 | | | | 56 | | | | 96 | | |
| 17 | | | | 57 | | | | 97 | | |
| 18 | | | | 58 | | | | 98 | | |
| 19 | | | | 59 | | | | 99 | | |
| 20 | | | | 60 | | | | 100 | | |
| 21 | | | | 61 | | TITLE | | 101 | | |
| 22 | | | | 62 | | | | 102 | | |
| 23 | | | | 63 | | | | 103 | | |
| 24 | | | | 64 | | | | 104 | | |
| 25 | | | | 65 | | INFO | | 105 | | |
| 26 | | | | 66 | | | | 106 | | |
| 27 | | | MO | 67 | | | | 107 | | |
| 28 | | DATE | | 68 | | | | 108 | | |
| 29 | | | DA | 69 | | | | 109 | | |
| 30 | | | | 70 | | | | 110 | | |
| 31 | | | YR | 71 | | | | 111 | | |
| 32 | | | | 72 | | | | 112 | | |
| 33 | | HOUR PERIOD RANGE | BEGIN | 73 | | | | 113 | | |
| 34 | | | | 74 | | | | 114 | | |
| 35 | | | END | 75 | | | | 115 | | |
| 36 | | | | 76 | | | | 116 | | |
| 37 | | DIRECTION 1 | | 77 | | | | 117 | | |
| 38 | | DIRECTION 2 | | 78 | | | | 118 | | |
| 39 | | DAY OF TRAVEL | | 79 | | | | 119 | | |
| 40 | | MAXIMUM | | 80 | | | | 120 | | |
| | | | | | | | | 121 | | |
| | | | | | | | | 122 | | |
| | | | | | | | | 123 | | |
| | | | | | | | | 124 | | |
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| | | | | | | | | 131 | | |
| | | | | | | | | 132 | | |

DATE: _MAY 1971_

RECORD NO: _QH01043_      TAPE DENSITY: _____

RECORD LENGTH: _80_       BLOCKING: _____

PAPER FORMS: _____      NO. OF COPIES: _____

COLOR OF CARDS: _____   LINED or UNLINED: _____

VOLUME OF DATA: _1_ *

SPECIAL INSTRUCTIONS:

* OPTIONAL: UP TO 19 EQUIVALENT NAME CARDS MAY FOLLOW PARAMETER CARD

53

CARD INPUT RECORD - TITLE _SINGLE STATION EQUIVALENT NAME FILE_ PROGRAM NO. _Q01043_ PAGE _2 of 2_

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | S | CONTROL CODE | 41 | | | 81 | | |
| 2 | S | | 42 | | | 82 | | |
| 3 | | | 43 | | | 83 | | |
| 4 | | | 44 | | | 84 | | |
| 5 | | | 45 | | | 85 | | |
| 6 | | | 46 | | | 86 | | |
| 7 | | | 47 | | | 87 | | |
| 8 | | INTERVIEW | 48 | | | 88 | | |
| 9 | | | 49 | | | 89 | | |
| 10 | | PLACE | 50 | | | 90 | | |
| 11 | | | 51 | | | 91 | | |
| 12 | | NAME | 52 | | | 92 | | |
| 13 | | | 53 | | | 93 | | |
| 14 | | | 54 | | | 94 | | |
| 15 | | | 55 | | | 95 | | |
| 16 | | | 56 | | | 96 | | |
| 17 | | | 57 | | | 97 | | |
| 18 | | | 58 | | | 98 | | |
| 19 | | | 59 | | FILLER | 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 | | PLACE-FILE | 68 | | | 108 | | |
| 29 | | | 69 | | | 109 | | |
| 30 | | PLACE | 70 | | | 110 | | |
| 31 | | | 71 | | | 111 | | |
| 32 | | NAME | 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 | | |
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| | | | | | | 132 | | |

DATE: _SEPT '70_

RECORD NO: _QN01043_ *

RECORD LENGTH: _80_

PAPER FORMS: _____

COLOR OF CARDS: _O-19_ *

VOLUME OF DATA: _____

SPECIAL INSTRUCTIONS:

TAPE DENSITY: _____

BLOCKING: _1_

NO. OF COPIES: _____

LINED or UNLINED: _____

* IF EQUIVALENT NAME CARDS ARE SUBMITTED
THEY _MUST_ _FOLLOW_ THE PARAMETER CARD.
IF MORE THAN _19_ CARDS ARE SUBMITTED,
PROGRAM WILL USE ONLY THE FIRST _19_.

INPUT CARD
OR TAPE
RECORD – TITLE _SINGLE STATION INTERVIEWS_ PROGRAM NO. _Q0043_ PAGE _1/1_

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | | FORM NO. | 41 | | FILLER | 81 | | |
| 2 | | STATION — CNTY | 42 | | | 82 | | |
| 3 | | | 43 | | | 83 | | |
| 4 | | STHT NO | 44 | | | 84 | | |
| 5 | | OF | 45 | | DESTINATION | 85 | | |
| 6 | | CNTY | 46 | | | 86 | | |
| 7 | | | 47 | | | 87 | | |
| 8 | | HOUR ENDING | 48 | | | 88 | | |
| 9 | | | 49 | | NAME | 89 | | |
| 10 | | DIRECTION | 50 | | | 90 | | |
| 11 | | DAY OF TRAVEL | 51 | | | 91 | | |
| 12 | | DATE — MO. | 52 | | | 92 | | |
| 13 | | | 53 | | | 93 | | |
| 14 | | DA. | 54 | | | 94 | | |
| 15 | | | 55 | | | 95 | | |
| 16 | | INTERVIEW NO. | 56 | | | 96 | | |
| 17 | | | 57 | | | 97 | | |
| 18 | | | 58 | | | 98 | | |
| 19 | | VEHICLE TYPE | 59 | | | 99 | | |
| 20 | | NO. IN VEHICLE | 60 | | | 100 | | |
| 21 | | | 61 | | | 101 | | |
| 22 | | | 62 | | FILLER | 102 | | |
| 23 | | | 63 | | | 103 | | |
| 24 | | | 64 | | VEH. GAR. | 104 | | |
| 25 | | ORIGIN | 65 | | TRIP PURPOSE | 105 | | |
| 26 | | | 66 | | | 106 | | |
| 27 | | | 67 | | | 107 | | |
| 28 | | | 68 | | | 108 | | |
| 29 | | NAME | 69 | | | 109 | | |
| 30 | | | 70 | | | 110 | | |
| 31 | | | 71 | | | 111 | | |
| 32 | | | 72 | | FILLER | 112 | | |
| 33 | | | 73 | | | 113 | | |
| 34 | | | 74 | | | 114 | | |
| 35 | | | 75 | | | 115 | | |
| 36 | | | 76 | | | 116 | | |
| 37 | | | 77 | | | 117 | | |
| 38 | | | 78 | | | 118 | | |
| 39 | | | 79 | | | 119 | | |
| 40 | | FILLER | 80 | | | 120 | | |
| | | | | | | 121 | | |
| | | | | | | 122 | | |
| | | | | | | 123 | | |
| | | | | | | 124 | | |
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| | | | | | | 131 | | |
| | | | | | | 132 | | |

DATE: MAY 1971

RECORD NO: QT01001      TAPE DENSITY: 800 BPI

RECORD LENGTH: 80      BLOCKING: 80

PAPER FORMS: _____      NO. OF COPIES: _____

COLOR OF CARDS: _____      LINED or UNLINED: _____

VOLUME OF DATA: _____

SPECIAL INSTRUCTIONS:

55

MICHIGAN DEPARTMENT OF STATE HIGHWAYS
MANAGEMENT SERVICES DIVISION
DATA PROCESSING SECTION

Form 23500

Input/Output RECORD – TITLE  O/D Combined   PROGRAM NO. O/D Series   PAGE  1

| CHAR | | FIELD DESCRIPTION | | CHAR | | FIELD DESCRIPTION | | CHAR | | FIELD DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * | "OD⌀⌀" or "SS⌀⌀" | | 41 | | | Indstry | 81 | | Person No (Cont) | |
| 2 | * | | | 42 | | Person 1 | Occup. | 82ᵃ | * | Sample | IAS-INT |
| 3 | * | Key word | | 43 | | | | 83 | * | No. | |
| 4 | * | | | 44 | | | Age | 84 ⌄ | * | | External |
| 5 | * | OD City or | | 45 | | | Sex-race | 85 | | | Truck/Taxi |
| 6 | * | SS County | | 46 | | | Indstry | 86 | | | Internal |
| 7 | * | Form number | | 47 | | Person 2 | Occup. | 87 | | Trip | |
| 8 | | IAS Cont'd Form | | 48 | | | | 88 | | No. | |
| 9 | | | | 49 | | | Age | 89 | * | Mode of Travel | |
| 10 | | Resi- | Tract | 50 | | | Sex-race | 90 | * | Number | Internal |
| 11 | | dence | | 51 | | | Indstry | 91 | * | in Vehicle | |
| 12 | | | Block | 52 | | Person 3 | Occup. | 92 | | Travel | From |
| 13 | | | | 53 | | | | 93 | * | Purpose | To |
| 14 | | | | 54 | | | Age | 94 | * | Station Number | |
| 15 | * | Month | | 55 | | | Sex-race | 95 | * | | |
| 16 | * | | | 56 | | | Indstry | 96 | * | Direction | |
| 17 | * | Day of Week | | 57 | | Person 4 | | 97 | | | Hour |
| 18 | | Structure Type | | 58 | | | Occup. | 98 | | Start | |
| 19 | | Cars at | Own | 59 | | | Age | 99 | | Time | Minute |
| 20 | | Address | Co-own | 60 | | | Sex-race | 100 | | | |
| 21 | | | Total | 61 | | | Indstry | 101 | | | |
| 22 | | | Trx or Car4 | 62 | | Person 5 | Occup. | 102 | | | |
| 23 | | Car | Car3 | 63 | | | | 103 | | | |
| 24 | | Mileage | Car2 | 64 | | | Age | 104 | | | |
| 25 | | | Car1 | 65 | | | Sex-race | 105 | | | |
| 26 | | Persons at | | 66 | | | Indstry | 106 | | | |
| 27 | | Address | | 67 | | Person 6 | Occup. | 107 | | | |
| 28 | | Persons over age | | 68 | | | | 108 | | | |
| 29 | | of 5 years | | 69 | | | Age | 109 | | | |
| 30 | | Years at | | 70 | | | Sex-race | 110 | | | |
| 31 | | residence | | 71 | | | Indstry | 111 | | | |
| 32 | | Rent or own | | 72 | | Person 7 | Occup. | 112 | | | |
| 33 | | | | 73 | | | | 113 | | | |
| 34 | | Residential Value | | 74 | | | Age | 114 | | | |
| 35 | | | | 75 | | | Sex-race | 115 | | | |
| 36 | | Education of Head | | 76 | | | Indstry | 116 | | | |
| 37 | | of Household | | 77 | | Person 8 | Occup. | 117 | | | |
| 38 | | Persons employed | | 78 | | | | 118 | | | |
| 39 | | Income | | 79 | | | Age | 119 | | | |
| 40 | | | Sex-race | 80 | | Person Number | | 120 | | | |
| | | | | | | | | 121 | | | |
| | | | | | | | | 122 | | | |
| | | | | | | | | 123 | | | |
| | | | | | | | | 124 | | | |
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| | | | | | | | | 132 | | | |

All Records Receive "01" Here

DATE:  AUG.  1970

RECORD NO:  QT01002        TAPE DENSITY: _____

RECORD LENGTH:  200 Char.   BLOCKING:  20

PAPER FORMS: _____        NO. OF COPIES: _____

COLOR OF CARDS: _____     LINED or UNLINED: _____

VOLUME OF DATA: _____

SPECIAL INSTRUCTIONS:

56

Input/Output RECORD - TITLE __O/D Combined__ PROGRAM NO. _O/D Series_ PAGE __2__

| CHAR | | FIELD DESCRIPTION | | CHAR | | FIELD DESCRIPTION | | CHAR | | FIELD DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * | Ending Time | Hour | 41 | | Garaged | | 81 | | Destination | Distri |
| 2 | * | | | 42 | | Parking | | 82 | | | |
| 3 | | | Minute | 43 | | Screen | | 83 | | | Zone |
| 4 | | | | 44 | | Car pool | | 84 | | | |
| 5 | * | Origin | Tract | 45 | ** | Statewide Station No. within County | | 85 | | | |
| 6 | * | | | 46 | ** | | | 86 | | | Sector |
| 7 | * | | | 47 | ** | | | 87 | | Intermediate Stop Location | |
| 8 | * | | | 48 | ** | | | 88 | | | Distri |
| 9 | * | | Block | 49 | ** | Vehicle Garaged | | 89 | | | |
| 10 | * | | | 50 | ** | | | 90 | | | |
| 11 | | Land Use @ Origin | | 51 | ** | | | 91 | | | Zone |
| 12 | | | | 52 | ** | | | 92 | | | |
| 13 | * | Destination | Tract | 53 | ** | Day | | 93 | * | 1 hour Expansion factor | |
| 14 | * | | | 54 | ** | | | 94 | * | | |
| 15 | * | | | 55 | ** | Year | | 95 | * | | |
| 16 | * | | | 56 | ** | | | 96 | * | | |
| 17 | * | | Block | 57 | ** | Statewide Zone No. of Origin | | 97 | * | Expansion Factor | |
| 18 | * | | | 58 | ** | | | 98 | * | | |
| 19 | | Land Use @ Dest. | | 59 | ** | | | 99 | * | | |
| 20 | | | | 60 | ** | | | 100 | * | | |
| 21 | | OD Exit (or) | | 61 | ** | Statewide Zone No. of Destination | | 101 | | | |
| 22 | | OD Entr. | | 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 | | | Dist. | 107 | | | |
| 28 | | | | 68 | | | | 108 | | | |
| 29 | | | Block | 69 | | | Zone | 109 | | | |
| 30 | | | | 70 | | | | 110 | | | |
| 31 | | Registration | | 71 | | | | 111 | | | |
| 32 | | Industry and Business | | 72 | | Origin | Sector | 112 | | | |
| 33 | | | | 73 | | | | 113 | | | |
| 34 | | | | 74 | | | Dist. | 114 | | | |
| 35 | | Total Trips | | 75 | | | | 115 | | | |
| 36 | | | | 76 | | | | 116 | | | |
| 37 | | | | 77 | | | Zone | 117 | | | |
| 38 | | Capacity | | 78 | | | | 118 | | | |
| 39 | | | | 79 | | | Sector | 119 | | | |
| 40 | | | | 80 | | | | 120 | | | |
| | | | | | | | | 121 | | | |
| | | | | | | | | 122 | | | |
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| | | | | | | | | 131 | | | |
| | | | | | | | | 132 | | | |

DATE: ____AUG. 1970____

RECORD NO: ____QT01002____   TAPE DENSITY: _____

RECORD LENGTH: __200 Char.__   BLOCKING: __20__

PAPER FORMS: _____   NO. OF COPIES: _____

COLOR OF CARDS: _____   LINED or UNLINED: _____

VOLUME OF DATA: _____   *Used for regular OD data OR Single Station.

SPECIAL INSTRUCTIONS:   **Used for Single Station data only.

DISK
RANDOM

RECORD – TITLE _PLACE FILE_  PROGRAM NO. _QO1043_  PAGE _1 of 1_

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | X | | 41 | | MICH. HWY MODEL COORD. X | 81 | | |
| 2 | X | PLACE NAME | 42 | | | 82 | | |
| 3 | X | | 43 | | | 83 | | |
| 4 | X | | 44 | | | 84 | | |
| 5 | X | | 45 | | | 85 | | |
| 6 | X | | 46 | | MICH HWY MODEL COORD. Y | 86 | | |
| 7 | X | | 47 | | | 87 | | |
| 8 | X | | 48 | | | 88 | | |
| 9 | X | | 49 | | | 89 | | |
| 10 | X | | 50 | | | 90 | | |
| 11 | X | | 51 | | | 91 | | |
| 12 | X | | 52 | | MICH COORD X. | 92 | | |
| 13 | X | | 53 | | | 93 | | |
| 14 | X | | 54 | | | 94 | | |
| 15 | X | | 55 | | | 95 | | |
| 16 | X | | 56 | | | 96 | | |
| 17 | X | | 57 | | | 97 | | |
| 18 | X | | 58 | | | 98 | | FILLER TO 240 |
| 19 | X | | 59 | | MICH COORD Y | 99 | | |
| 20 | | EXTERNAL PLACE CODE | 60 | | | 100 | | |
| 21 | | | 61 | | | 101 | | |
| 22 | | | 62 | | | 102 | | |
| 23 | | | 63 | | | 103 | | |
| 24 | | | 64 | | | 104 | | |
| 25 | | | 65 | | | 105 | | |
| 26 | | MISS. VALLEY LONGITUDE | 66 | | DATA CODE | 106 | | |
| 27 | | | 67 | | IBM CITY CODE | 107 | | |
| 28 | | | 68 | | | 108 | | |
| 29 | | MISS. VALLEY LATITUDE | 69 | | | 109 | | |
| 30 | | | 70 | | | 110 | | |
| 31 | | | 71 | | STATEWIDE ZONE | 111 | | |
| 32 | | MISS. VALLEY STATE | 72 | | | 112 | | |
| 33 | | | 73 | | | 113 | | |
| 34 | | MISS. VALLEY COUNTY | 74 | | FILLER | 114 | | |
| 35 | | | 75 | | | 115 | | |
| 36 | | | 76 | | | 116 | | |
| 37 | | MISS. VALLEY PLACE | 77 | | | 117 | | |
| 38 | | | 78 | | | 118 | | |
| 39 | | | 79 | | | 119 | | |
| 40 | | | 80 | | | 120 | | |
| | | | | | | 121 | | |
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| | | | | | | 132 | | |

KEY (chars 1–19)

DATE: _MAY 1971_   QOD

RECORD NO: _QD01302/_   TAPE DENSITY: _____

RECORD LENGTH: _240_   BLOCKING: ___/___

PAPER FORMS: _____   NO. OF COPIES: _____

COLOR OF CARDS: _____   LINED or UNLINED: _____

VOLUME OF DATA: _____

SPECIAL INSTRUCTIONS:
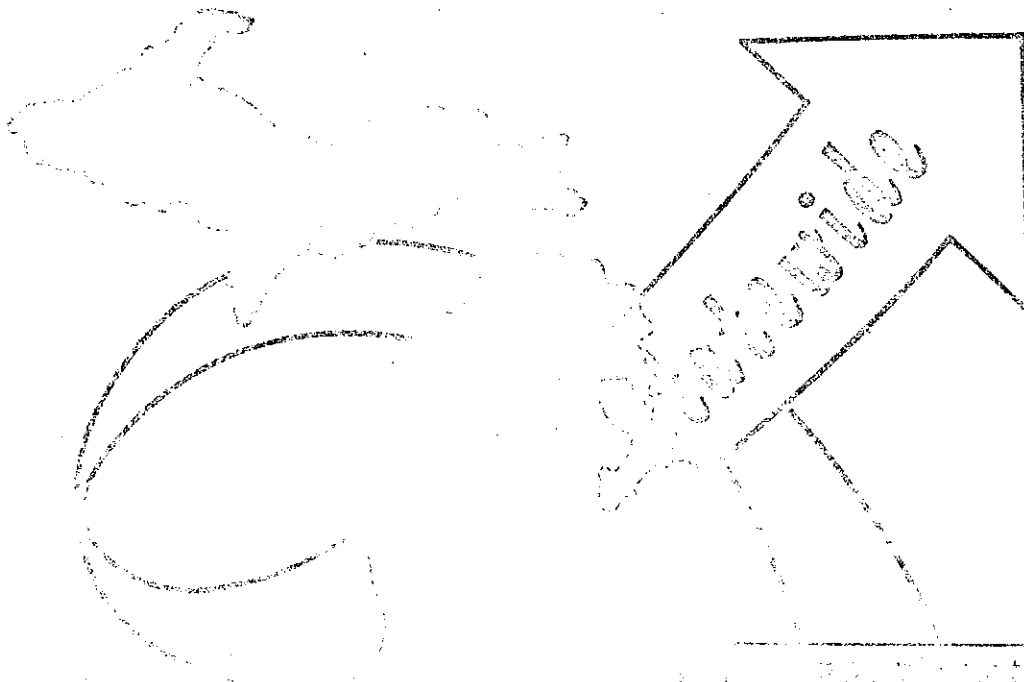
# Statewide Transportation Analysis & Research

SINGLE STATION ORIGIN
& DESTINATION

AUTO - CODING

PLACE FILE

SORTED BY
PLACE NAME (ALPHABETICAL)

JANUARY 1972

COUNT    COUNT         BEGINNING RECORD       1 NUMBER OF RECORDS WANTED  5521 RECORD LENGTH 0080 BLOCKING FACTOR    80

| | | | | | |
|---|---|---|---|---|---|
| 1 | 1 ABBOTTSFORD | | 77407182643021147 | 142000034850 | 0447 | 00000000000000000000000000000000000000000 |
| 2 | 1 ABINGDON | ILL | 91348190440812095004013000 13710 | | 00100526 | |
| 3 | 1 ACKERSON LK | | 73809184342221075 | 110430014080 | 0221 | |
| 4 | 1 ACME | | 72801185544821055 | 090530079450 | 0155 | |
| 5 | 1 ACME TWP | | 72801085544821055 | 091200079600 | 0155 | |
| 6 | 1 ACTON | ONT | 97008980043668 | | 0512 | |
| 7 | 1 ADA | | 74101185543021081 | 089570033650 | 0237 | |
| 8 | 1 ADA | OHI | 94133183845834065001025320 13150 | | 00100538 | |
| 9 | 1 ADA TWP | | 74101085543021081 | 089600034500 | 0237 | |
| 10 | 1 ADAIR | | 77404182642821147 | 141960029320 | 0443 | |
| 11 | 1 ADAMS CO | ILL | 913010 | 12001 | 0527 | |
| 12 | 1 ADAMS CO | IND | 915010 | 13001 | 0533 | |
| 13 | 1 ADAMS CO | OHI | 941010 | 34001 | 0540 | |
| 14 | 1 ADAMS CO | WIS | 958010 | 48001 | 0524 | |
| 15 | 1 ADAMS TWP | AREN | 70601084144021011 | 115800060000 | 0021 | |
| 16 | 1 ADAMS TWP | HILL | 73001084542021059 | 106900008300 | 0168 | |
| 17 | 1 ADAMS TWP | HOUG | 73101088747121061 | 035800137700 | 0175 | |
| 18 | 1 ADAMSVILLE | | 71409186041821027 | 079450004650 | 0071 | |
| 19 | 1 ADDISON | | 74618184342021091 | 110370009100 | 0270 | |
| 20 | 1 ADDISON TWP | | 76301083242821125 | 132400030400 | 0375 | |
| 21 | 1 ADRIAN | | 74601184041921091005116110006780 | | 00100262 | |
| 22 | 1 ADRIAN TWP | | 74601084141921091 | 115800007600 | 0263 | |
| 23 | 1 ADVANCE | | 71506185145221029 | 098410090620 | 0078 | |
| 24 | 1 ADVERT LK | | 70303185942521005 | 081500021780 | 0007 | |
| 25 | 1 AETNA | | 76209185943621123 | 082110049340 | 0353 | |
| 26 | 1 AETNA TWP | MECO | 75401085543521107 | 089900047600 | 0310 | |
| 27 | 1 AETNA TWP | MISS | 75701085044321113 | 098500066800 | 0322 | |
| 28 | 1 AFTON | | 71605184545421031 | 108900094400 | 0081 | |

# Burroughs

# B5500

## TIME SHARING SYSTEM

### TERMINAL USER'S GUIDE

TITLE

GENERAL COPY PROGRAM

DESCRIPTION

This program will copy card, disk, tape, non-standard unlabeled tape or non-standard labeled tape to card, disk, printer, tape or non-standard unlabeled tape depending on the options selected on the parameter card. It will also stack input tapes giving one output tape as another option, plus select every Nth record starting at a specified record and ending after a specified number have been selected. This information is specified on a parameter card for each input file. A file equate card must be used for input and output file on the 1st option, and a ~~file~~ equate card must be used for output on the 2nd option.

| DELIVERY: DIVISION | SORT SEQUENCE | COMPILER |
|---|---|---|
| Requesting Unit | None | ALGOL |

| SECTION | SORT DISK | PROD. CYCLE * | PAGES | COPIES | CPU TIME ** |
|---|---|---|---|---|---|
| | None | Upon Request | 5 | 0 | |

| UNIT | SORT-TAPES | SETUP | OVERLAY ID | CPU % | I/O |
|---|---|---|---|---|---|
| | None | User | | 5 | 9 |

| I/O | EQUIPMENT | ID | KEYWORD | FILE NAME | BLOCK FACTOR | RECORD LENGTH | FILE DESCRIPTION | RE TI |
|---|---|---|---|---|---|---|---|---|
| IN | CARD | QH17208 | | CNTR | 1 | 80 | Parameter Cards | |
| IN | CARD | YOUR ID | | CARDIN | 1 | 80 | "CARDIN" | |
| IN | DISK | " | | DISKIN | | | "DISKIN" | |
| IN | TAPE | " | | TAPEIN | 1 | | "TAPEIN" | |
| IN | TAPE | Non-Standard | | ATAPEIN | | | "ATAPEIN" (labeled or unlabeled) | |
| OUT | CARD | QC17208 | | CARDOUT | 1 | 80 | "CARDOUT" | |
| OUT | DISK | YOUR ID | | DISKOUT | | | "DISKOUT" | |
| OUT | PRINTER | QY17208 | | PRTER | 1 | 132 | Optional Output File | |
| OUT | TAPE | YOUR ID | | TAPEOUT | | | "TAPEOUT" | |
| OUT | TAPE | Non-Standard | | ATAPOUT | | | "ATAPOUT" (Unlabeled) | |
| OUT | PRINTER | QP17208 | | PRINTER | 1 | 132 | Program Error Messages and Parity Error Blocks | |

APPROVED BY: _____  9-27-71
(Manager, Machine Operations Section)    (Date)

REMARKS:

*As need arises for copying files.
**Runs at peripheral speed.

ITEM A-6
62

PROGRAM NO. 17

Header Card RECORD – TITLE _General Copy_ PROGRAM NO. Q17208/HY  PAGE 1 of 2

Type 1

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | F | | 41 | | PRNT | 81 | | |
| 2 | I | | 42 | | * | 82 | | |
| 3 | L | | 43 | | | 83 | | |
| 4 | E | | 44 | R | | 84 | | |
| 5 | I | | 45 | E | | 85 | | |
| 6 | N | | 46 | C | | 86 | | |
| 7 | | | 47 | | | 87 | | |
| 8 | | Type of File In | 48 | | Number of | 88 | | |
| 9 | | CARD, DISK, TAPE | 49 | | Characters | 89 | | |
| 10 | | MANY | 50 | | per Record | 90 | | |
| 11 | | | 51 | | | 91 | | |
| 12 | | * | 52 | B | | 92 | | |
| 13 | | | 53 | L | | 93 | | |
| 14 | R | | 54 | K | | 94 | | |
| 15 | E | | 55 | | | 95 | | |
| 16 | C | | 56 | | Number of | 96 | | |
| 17 | | Number of | 57 | | Records per | 97 | | |
| 18 | | Characters | 58 | | Block | 98 | | |
| 19 | | per Record | 59 | | | 99 | | |
| 20 | | | 60 | S | | 100 | | |
| 21 | | | 61 | A | | 101 | | |
| 22 | B | | 62 | V | | 102 | | |
| 23 | L | | 63 | E | | 103 | | |
| 24 | K | | 64 | | | 104 | | |
| 25 | | Number of | 65 | | Save Factor | 105 | | |
| 26 | | Records per | 66 | | | 106 | | |
| 27 | | Block | 67 | | | 107 | | |
| 28 | | | 68 | D | | 108 | | |
| 29 | | | 69 | I | | 109 | | |
| 30 | F | | 70 | S | | 110 | | |
| 31 | I | | 71 | K | | 111 | | |
| 32 | L | | 72 | | | 112 | | |
| 33 | E | | 73 | | Number of | 113 | | |
| 34 | O | | 74 | | Areas (Paging) | 114 | | |
| 35 | U | | 75 | , | | 115 | | |
| 36 | T | | 76 | | Number of | 116 | | |
| 37 | | | 77 | | Records In | 117 | | |
| 38 | | Type of File Out | 78 | | Each Area of | 118 | | |
| 39 | | CARD, DISK, TAPE | 79 | | the Disk File | 119 | | |
| 40 | | | 80 | | | 120 | | |
| | | | | | | 121 | | |
| | | | | | | 122 | | |
| | | | | | | 123 | | |
| | | | | | | 124 | | |
| | | | | | | 125 | | |
| | | | | | | 126 | | |
| | | | | | | 127 | | |
| | | | | | | 128 | | |
| | | | | | | 129 | | |
| | | | | | | 130 | | |
| | | | | | | 131 | | |
| | | | | | | 132 | | |

DATE: _10-12-71_

RECORD NO: _QH17208_     TAPE DENSITY: _____

RECORD LENGTH: _80_     BLOCKING: _____

PAPER FORMS: _____     NO. OF COPIES: _____

COLOR OF CARDS: _White_     LINED or UNLINED: _____

VOLUME OF DATA: _1_

SPECIAL INSTRUCTIONS:

*N if non-standard tape, unlabeled
 L if non-standard tape, labeled
 U if standard tape, unlabeled
 ฿ if standard tape, labeled

Header Card RECORD - TITLE _General Copy_ PROGRAM NO. _Q17208/HY_ PAGE _2_ of _2_
Type 2

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | | | 41 | | of Input File | 81 | | |
| 2 | | | 42 | | | 82 | | |
| 3 | | Input | 43 | | | 83 | | |
| 4 | | Multifile | 44 | | | 84 | | |
| 5 | | Identification | 45 | | Total Number | 85 | | |
| 6 | | | 46 | | of Input Files | 86 | | |
| 7 | | | 47 | | | 87 | | |
| 8 | | | 48 | | | 88 | | |
| 9 | | | 49 | | Sequence Number | 89 | | |
| 10 | | | 50 | | of First Record | 90 | | |
| 11 | | | 51 | | to be copied | 91 | | |
| 12 | | Input | 52 | | | 92 | | |
| 13 | | File | 53 | | | 93 | | |
| 14 | | Identification | 54 | | | 94 | | |
| 15 | | | 55 | | Increment in | 95 | | |
| 16 | | | 56 | | Records to be | 96 | | |
| 17 | | | 57 | | Copied | 97 | | |
| 18 | | | 58 | | | 98 | | |
| 19 | | Type of | 59 | | | 99 | | |
| 20 | | File In | 60 | | | 100 | | |
| 21 | | CARD, TAPE, DISK | 61 | | Maximum Number | 101 | | |
| 22 | | | 62 | | of records | 102 | | |
| 23 | | | 63 | | to be copied. | 103 | | |
| 24 | | | 64 | | | 104 | | |
| 25 | | * | 65 | | | 105 | | |
| 26 | | | 66 | | | 106 | | |
| 27 | | | 67 | | | 107 | | |
| 28 | | | 68 | | | 108 | | |
| 29 | | Number of | 69 | | | 109 | | |
| 30 | | Characters | 70 | | | 110 | | |
| 31 | | per Record | 71 | | | 111 | | |
| 32 | | | 72 | | | 112 | | |
| 33 | | | 73 | | | 113 | | |
| 34 | | | 74 | | | 114 | | |
| 35 | | Number of | 75 | | | 115 | | |
| 36 | | Records per | 76 | | | 116 | | |
| 37 | | Block | 77 | | | 117 | | |
| 38 | | | 78 | | | 118 | | |
| 39 | | | 79 | | | 119 | | |
| 40 | | Sequence Number | 80 | | | 120 | | |
| | | | | | | 121 | | |
| | | | | | | 122 | | |
| | | | | | | 123 | | |
| | | | | | | 124 | | |
| | | | | | | 125 | | |
| | | | | | | 126 | | |
| | | | | | | 127 | | |
| | | | | | | 128 | | |
| | | | | | | 129 | | |
| | | | | | | 130 | | |
| | | | | | | 131 | | |
| | | | | | | 132 | | |

DATE: ___10-12-71___

RECORD NO: ___QH17208___     TAPE DENSITY: _____

RECORD LENGTH: __80____     BLOCKING: _____

PAPER FORMS: _____     NO. OF COPIES: _____

COLOR OF CARDS: _White___     LINED or UNLINED: _____

VOLUME OF DATA: _0-999___

SPECIAL INSTRUCTIONS:

*N if non-standard tape, unlabeled
 L if non-standard tape, labeled
 U if standard tape, unlabeled
 Ƀ if standard tape, labeled

Q17208

## GENERAL COPY

### A.  FUNCTION OF PROGRAM

The basic function of this program is to provide a convenient
means of copying a file.  The input file may be on cards, disk
or magnetic tape.  The output file may be any of these media
or the line printer.  The magnetic tape used may be standard
or non-standard, labeled or unlabeled.

In addition, it is possible to copy several input files or
selected portions of them onto a single output file.

In addition to the primary output file, a line printer file is
provided to monitor the progress of the copy process and to
print error messages, if necessary.

Consider the following uses of the program:

### Case I.  Basic Copy, Single Input File

The program was originally written for this purpose (September,
1969).  The present program does not change this capability
except for printing additional information on the monitoring
line printer file.  This version requires the use of just one
header card (Type 1) describing the input file and the output
file.  Label equation cards should be provided for these files,
unless they are unlabeled.

### Case II.  Basic Copy, Multiple Input Files

This usage requires a header card (Type 1) to indicate that
there will be multiple input files and to describe the output
file.  In addition, it requires one header card (Type 2) for
each input file.

In this case, the first header card (Type 1) will have parameters
describing the lone output file.  In addition, the type of input
file will be given as "MANY".  This indicates that parameters
describing the input files will be found on subsequent header
cards (Type 2).

Each header card (Type 2) contains parameters for one input
file, as follows:

> Multifile ID and File ID.  The program provides for
> internal label equating, so that the usual label equation
> control cards are not needed for the input files.  (A
> label equation card should be provided for the output
> file, however.)

Type of File.  Input can be from card, tape or disk,
and if tape, can be labeled or unlabeled.

Number of Characters per Record.

Number of Records per Block.

Sequence Number of Input File.  The user determines the
order in which he wishes to copy the input files.  The
header cards must be sequenced according to that order.
This makes it possible for the program to determine
whether the header cards are in proper order or not.
If they are not, the run is aborted.

Total Number of Input Files.  This number, together with
the sequence number of the input file, helps the program
to check the header cards for consistency.

Number of First Record to be Copied.  This parameter and
the two which follow provide the capability of copying
selected portions of the input file.  However, since the
present case calls for copying each input file in its
entirety, this number should be "1".

Increment of Records to be Copied.  In order to copy the
entire file, this number should be "1".

Maximum Number of Records to be Copied.  Since the entire
input file is to be copied, this number should be any
number larger than (or equal to) the number of records in
the file.

Each input file is processed in its entirety, then closed and
locked before the next input file is opened.  This makes it
possible for different files on the same multifile reel of tape
to be processed in any desired order.

Case III.  Partial Copy, Multiple Input Files

This usage is the same as Case II, above, with the exception
of three parameters on each header card of Type 2:

Number of First Record to be Copied.  The user may
choose to copy only a portion of a given input file.
If so, he specifies the first record to be copied
according to its position sequence in the file.

Increment of Records to be Copied.  Starting with the
first record to be copied as indicated above, the user
may copy every third, eleventh (or whatever) record, by
specifying this increment.

Maximum Number of Records to be Copied. The total number of records to be copied from this file can be limited by this parameter.

## Case IV.  Partial Copy, Single Input File

This usage is the same as Case III above, except that only one input file is used. In other words, only two header cards are used, one of each type. The second card is necessary in order to specify the manner of selecting records from the input file, as well as describing the input file.

B.   FILE USAGE

This program uses two or more input files and produces two
output files.   One of the input files contains parameters
describing the remaining input file(s) and the principal out-
put file.   The other output file provides a monitor of the
process of copying input and writing output.

A description of the individual files follows:

I.   File Name is CNTR.

This file is normally a card file labeled QH17208.   It contains
parameters describing other files to be used.   The first card
in this file (parameter card Type 1) is prepared as follows:

> If a single input file is to be copied completely, then
> columns 1-28 are used as follows:

> Cols. 8-11    CARD, DISK or TAPE specifies the type of
> input file to be copied.

> Col. 12       If the input file is CARD or DISK, then this
> column is left blank.

> If the input file is TAPE, this column must
> contain:   N - if non-standard, unlabeled tape
> L - if non-standard labeled tape
> U - if standard, unlabeled tape
> ⌿ - if standard, labeled tape

> Cols. 17-20   Number of characters per record in the
> input file to be copied.

> Cols. 25-28   Number of records per block in the input file.
> If the file is unblocked, this may be left
> blank.

> For all other cases, only one field is used within
> columns 1-28:

> Cols. 8-11    MANY signifies that additional parameter
> card(s) must be read in order to obtain
> specifications for the input file(s).

> The remaining columns (29-80) on this parameter card are
> always used to describe the main output file:

> Cols. 38-41   CARD, DISK, TAPE or PRNT specifies the type
> of the output file to be used.

Col. 42       If the main output file is CARD, DISK or PRNT, then this column is left blank.

If the main output file is TAPE, this column must contain:

    N - if non-standard, unlabeled tape
    L - if non-standard, labeled tape
    U - if standard, unlabeled tape
    ᵬ - if standard, labeled tape

Cols. 47-50   Number of characters per record in the main output file.

Cols. 55-58   Number of records per block in the main output file. If the file is unblocked, this may be left blank.

Cols. 64-66   Save Factor. If the output file is TAPE or DISK, then the number of days to retain the file should be entered here.

Cols. 73-74   If the output file is DISK, then the number of disk areas to be made available is entered here. This number may be from 1 to 20.

Cols. 76-80   If the output file is DISK, then the number of records to be put in each disk area is entered here.

If more than one parameter card is required, then each input file will require one parameter card, Type 2. This card is prepared as follows:

Cols. 1-7    Multifile ID.

If the input file is DISK, then a file prefix is entered here, left justified.

If the input file is TAPE, then a multifile ID is entered here, left justified, if it exists; otherwise the field is left blank.

If the input file is CARD, the field is left blank.

Cols. 10-16   File ID of the input file must be entered here, left justified, unless the input is unlabeled tape. This field and the preceding field are employed to label equate the input file programmatically. The operator can "UL" an unlabeled tape but the program will abort if the file ID of a labeled file is not given here.

Cols. 19-22   CARD, TAPE or DISK specifies the type of input file to be copied.

Col. 25      If the input file is CARD or DISK, then this column is left blank.

If the input file is TAPE, this column must contain:

        N - if non-standard, unlabeled tape
        L - if non-standard, labeled tape
        U - if standard, unlabeled tape
        ƀ - if standard, labeled tape

Cols. 28-31   Number of characters per record in the current input file.

Cols. 34-37   Number of records per block in the current input file. If the file is unblocked this may be left blank.

Cols. 40-42   Sequence number of the current input file.

Cols. 45-47   Total number of input files to be copied.

Cols. 48-53   Sequence number of the first record to be copied from the current input file. If all records are to be copied, of course this number must be "1".

Cols. 54-59   Increment in number of records to be copied. If every record is to be copied, then the increment must be "1".

Cols. 60-66   Maximum number of records to be copied.

## II.   File Name is CARDIN

This is a card input file (optional). If used, its characteristics must be specified on a parameter card in the file CNTR.

## III.   File Name is DISKIN

This is a disk input file (optional). If used, its characteristics must be specified on a parameter card in the file CNTR.

## IV.   File Name is TAPEIN

This is a standard tape input file (optional).  The tape may be labeled or unlabeled.  If this file is used, its characteristics must be specified on a parameter card in the file CNTR.

## V.   File Name is ATAPEIN

This is a non-standard tape input file (optional).  The tape may be labeled or unlabeled.  If this file is used, its characteristics must be specified on a parameter card in the file CNTR.

## VI.   File Name is PRINTER

This is a line printer output file.  It prints back a verification of the parameters in the header file CNTR.  It also monitors the progress of copying from the main input file to the main output file.  If necessary, error messages are printed here.

## VII.   File Name is CARDOUT

This is a card output file (optional).  If this file is used, its characteristics must be specified on the first parameter card in the file CNTR.  If not otherwise label-equated, this file will be labeled "QC17208".

## VIII.   File Name is DISKOUT

This is a disk output file (optional).  If this file is used, its characteristics must be specified on the first parameter card in the file CNTR.  If not otherwise label-equated, this file will be labeled "DISKOUT".

## IX.   File Name is TAPEOUT

This is a standard tape output file (optional).  If this file is used, its characteristics must be specified on the first parameter card in the file CNTR.  This file may be labeled or unlabeled.  If it is specified as a labeled tape and is not otherwise label-equated, it will be labeled "TAPEOUT".

## X.   File Name is ATAPOUT

This is a non-standard tape output file (optional).  If this file is used, its characteristics must be specified on the first

parameter card in the file CNTR.  This file may be labeled
or unlabeled.  If it is specified as a labeled tape and is
not otherwise label-equated, it will be labeled "ATAPOUT".

## XI.  File Name is PRTER

This is a line printer output file (optional).  If this file
is used, its characteristics must be specified on the first
parameter card in the file CNTR.  If this file is not other-
wise label-equated, it will be labeled "QY17208".

C. OPERATIONAL PITFALLS AND SPECIAL CONDITIONS

I. If the main output file is a disk file, a label equation card must be used to give the file proper identifiers on the disk. (Label-equate to DISKOUT)

If the main output file is a labeled tape, a label equation card should ordinarily be used, also. If standard tape, label equate to TAPEOUT. If non-standard tape, label equate to ATAPOUT.

Card and line printer output files normally are labeled QC17208 and QY17208, respectively. It may be desirable to supply label equation cards for these files also, in order to prevent confusion with similar files produced by other users of this program. Label equate to CARDOUT or PRTER, as needed.

II. If using a single parameter card (i.e., a single input file is being copied in its entirety), the input file should ordinarily be label equated. However, it is possible for the operator to "IL" a card file or a labeled tape file. He may (indeed, must) "UL" an unlabeled tape. However, a disk file requires the use of a label equation card.

III. If two or more header cards are required, then file labels must be given on all parameter cards of Type 2, unless the input file is unlabeled tape. If a required file label is not given, the program automatically aborts. In the case of unlabeled tape, the operator must "UL" the tape.

IV. If two or more header cards are used, any given input file may be copied in its entirety or selected records may be taken from the file. This choice can be varied from file to file. In fact, a second or third pass through any given file (except card files) can be made by supplying additional header cards for the same file, and using different parameters for selecting records.

Programmatically, these passes are treated as entirely separate files and the header cards should reflect this fact in their sequence number and total number of files.

V. An arbitrary maximum of 999 input files has been imposed on the program. Within this limit any combination of disk, tape and card files can be used.

VI. If the maximum number of records required has been copied before the end of the file is reached, no more records are read from that file and the file is locked. The program then checks to see if another file is to be processed.

VII.    The program always locks an input file after it has been
        processed.  Thus, if several files are to be processed
        from a single multifile reel of tape, the operator must
        "ready" (RY) the tape unit each time a new file from that
        reel is called for.

VIII.   The number of characters per record in the main output
        file is usually the same as the corresponding value for
        the input file.  However, equality is not required.  If
        the output value is larger, zeros are appended to the
         input record.  If the output value is smaller, the input
        record is truncated.

| TITLE | O&D PRELIMINARY EXTERNAL EXPANSION |
|---|---|

**DESCRIPTION**

This program summarizes the number of vehicle classification count cards and External records or Single Station records on Vehicle-Type w/Hour-Period w/Direction w/Station as to Counts and Interviews, and computes both an hourly factor and a Directional factor, which are written out on separate disk files and combined onto one tape file with the directional factor first, followed by the corresponding hourly factors.  The formula is FACTOR = COUNTS / INTERVIEWS.

The program may be restarted after the Externals have been sorted (Phase 2A or 2B) or after the Factors have been computed and printed (Phase 3).

| DELIVERY: DIVISION | | SORT SEQUENCE | | | COMPILER | |
|---|---|---|---|---|---|---|
| Transportation Planning | | Station, Direction, Hour, Vehicle Type | | | COBOL | |

| SECTION | | SORT DISK | PROD. CYCLE | PAGES | COPIES | CPU TIME |
|---|---|---|---|---|---|---|
| Survey & Analysis | | 1/2 Mod | 20 in Fall-Winter | 1-100 | 0 | 20-30 Min. |

| UNIT | | SORT-TAPES | SETUP | OVERLAY ID | CPU % | I/O % |
|---|---|---|---|---|---|---|
| O & D or Statewide | | 3 | User | | 30 | 70 |

| I/O | EQUIPMENT | ID | KEYWORD | FILE NAME | BLOCK FACTOR | RECORD LENGTH | FILE DESCRIPTION | RETENTION |
|---|---|---|---|---|---|---|---|---|
| IN | READER | QH01046 | | Parameter-File | | | Parameter Cards | |
| IN | READER | QC01021 | O&D | Card-File | | | Vehicle Classification Counts | |
| IN | TAPE | QT01005 | O&D | OD-File | 20 | 200 | IAS, INT, TRX Expanded | |
| O/I | TAPE | QT01006 | O&D | OD-Externals | 20 | 200 | Sorted for External Expansion | 030 |
| WORK | DISK | QW01046 | | Factor-1-File | 30 | 80 | 1-Hr Factors | * |
| WORK | DISK | QX01046 | | Factor-24-File | 30 | 80 | 24-Hr Factors | * |
| OUT | TAPE | QT01007 | O&D | Factor-24Hr-and-1Hr-File | 20 | 200 | 24-Hour & 1-Hour Factors | 030 |
| OUT | PRINTER | QP01046** | | Print-File | | | Counts, Interviews, Factors, Record counts. | |

*Saved until successful  EOJ, then purged.
**Printout will be to printer backup disk.

PROGRAM NO.     01047

# PROGRAM ABSTRACT

DATE    Sept. 22, 1970

| TITLE | O&D FINAL EXTERNAL EXPANSION |
|---|---|

**DESCRIPTION**

This program computes and applies the Expansion factor for each External or Single Station record. The Expansion factor is computed by multiplying (either the 24-hour tape factor or the 24-hour card factor) by (either the 1-hour tape factor or 1-hour card factor). If the trip both starts and stops outside of the Cordon Area, it may be halved if option is set on the parameter card. Both the Expansion factor and 1-Hour factor are written on the record. The factors are computed and applied by Vehicle Type w/Hour-Period w/Direction w/Station.

| DELIVERY: DIVISION | Transportation Planning | | | SORT SEQUENCE None | | | | | COMPILER Cobol |
|---|---|---|---|---|---|---|---|---|---|
| SECTION | Survey & Analysis | | | SORT DISK | PROD. CYCLE 20/Fall-Winter | | PAGES 20-100 | COPIES 0 | CPU TIME 5-10 Min. |
| UNIT | OD or Statewide | | | SORT-TAPES | SETUP User | | OVERLAY ID | CPU % 10 | I/O % 90 |

| I/O | EQUIPMENT | ID | KEYWORD | FILE NAME | BLOCK FACTOR | RECORD LENGTH | FILE DESCRIPTION | RETEN-TION |
|---|---|---|---|---|---|---|---|---|
| IN | READER | QH01047 | | Control-File | 1 | 80 | Parameter Card | |
| IN | READER* | QC01022 | OD | Factor24-File | 1 | 80 | 24-Hour Factor Corrections | |
| IN | READER** | QC01014 | O+D | Update-File | 1 | 80 | 1-Hour Factor Corrections | |
| IN | TAPE | QT01006 | OD | OD-File | 20 | 200 | Sorted for External Expansion | |
| IN | TAPE | QT01007 | OD | Factor-24Hr-and-1Hr-File | 50 | 80 | 24 & 1 Hour Factors | |
| OUT | TAPE | QT01009 | OD | OD-File-Expanded | 20 | 200 | Expanded | 999 |
| OUT | PRINTER | QP01047 | | Print-File | | | Factors and Record Counts | |

*Optional File.  Sort not necessary.
**Optional File sort on:  Major Col. 1-2;  Inter Col. 5;  Minor Col. 9-10.

| PROGRAM NEW [X] | PROGRAM REVISION [ ] | ABSTRACT CORRECTION [ ] | DATE 2-20-69 |
|---|---|---|---|

**TITLE**

O/D TAPE MAINTENANCE

**DESCRIPTION**

This program will add, change, or delete records from any of the O/D tape files.

| DELIVERY: | DIVISION | SECTION | UNIT |
|---|---|---|---|
| | Transportation Planning | Survey & Analysis | O/D |

| PRODUCTION CYCLE AND TIME | PAGES | COPIES | OVERLAY ID | LANGUAGE | SEGMENT SIZE | RUN TIME | |
|---|---|---|---|---|---|---|---|
| Request | 1-100 | 1 | | Algol | 7400 | Hr. | Min.5-10 |

| IN/OUT | EQUIPMENT | FILE IDENTIFICATION AND NAME | SAVE FACTOR |
|---|---|---|---|
| IN | READER | "HC17024" O/D Maintenance Data (including program control data) | |
| IN | TAPE | "QT01xxx" O/D File to be maintained | |
| OUT | TAPE | "QT01xxx" O/D Maintained file | |
| OUT | PRINTER | "HP17024" Maintained O/D records, errors & record counts | |

EQUIPMENT USAGE PERCENT: CPU 70          I/O 100          DISK 300

INSTRUCTIONS: (Include disposition of all input and output.)

ITEM A-9

PROGRAM NO. 01154

## PROGRAM ABSTRACT

DATE January 4, 1971

| TITLE |
|---|
| TRANSPORTATION PLANNING "PLOTTING OF SELECTED MINIMUM PATH TREES" |

**DESCRIPTION**

Program Q01154 generates a plotting work tape, which is run on the CAL-COMP Model 570 drum plotter. The end result is the plot showing the path from each zone to the zone for which the tree was built for only those links which have both ends within the user's defined rectangle.

| DELIVERY: DIVISION | TRANSPORTATION PLANNING | | | SORT SEQUENCE None | | | | | COMPILER Extended Algol |
|---|---|---|---|---|---|---|---|---|---|
| SECTION | SURVEY | | | SORT DISK | PROD. CYCLE Request | | PAGES 3 | COPIES 0 | CPU TIME Approx 10 Min. |
| UNIT | O & D | | | SORT-TAPES | SETUP User | | OVERLAY ID | CPU % 50 | I/O % 50 |

| I/O | EQUIPMENT | ID | KEYWORD | FILE NAME | BLOCK FACTOR | RECORD LENGTH | FILE DESCRIPTION | RETEN-TION |
|---|---|---|---|---|---|---|---|---|
| IN | CARD | QC01154 | | FILE5 | 1 | 80 | User specifications | |
| IN | TAPE | ** | O&D | FILE28 | 1 | 2408 | Selected minimum path trees | |
| IN | TAPE | ** | O&D | FILE1 | 1 | 2408 | Network: Multifile Header, XYS, Links | |
| IN | TAPE* | ** | O&D | FILE21 | 1 | 2408 | Standard merged packed matrix | User |
| OUT | TAPE | *** | O&D | PLOTTER | | | | |
| OUT | PRINTER | QP01154 | O&D | FILE6 | 1 | 132 | User specifications and run time messages. | |

*Optional input file.
**User will label equate these files.
***Unlabeled 200 BPI work tape for plotting.

ITEM A-10

PROGRAM NO. 01154

BLOCK DIAGRAHM: Q01154
PLOTTING OF SELECTED MINIMUM PATH TREES
DEC EMBER 20, 1970.
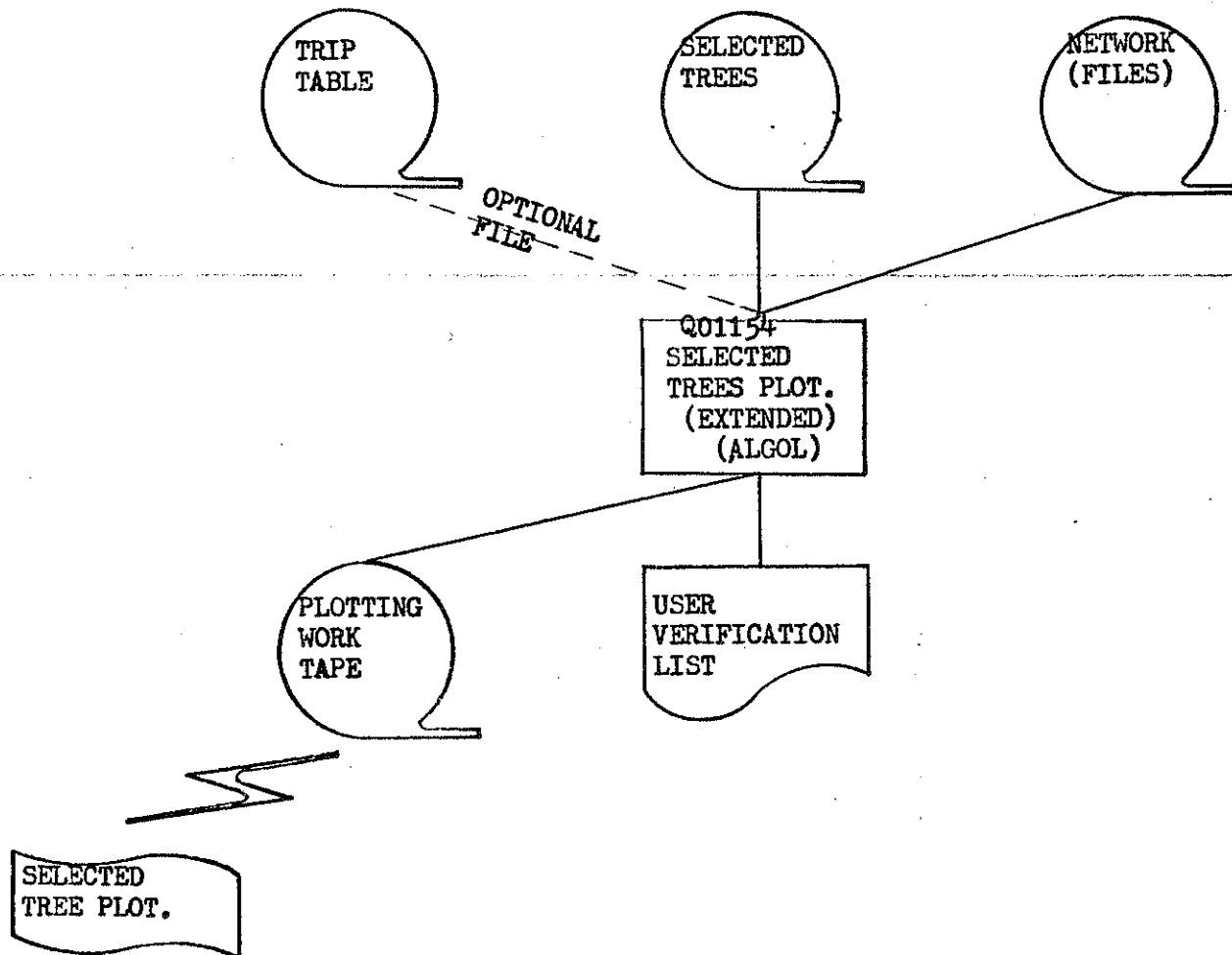
# USER RUN DECK SET UP

? EXECUTE <u>QO1154</u> /HY.

? FILE FILE28 = _____/_____.    SELECT TREE _____, REEL #___.

\* ? FILE FILE21 = _____/_____.    TRIP VOLUMES FOR ORIGIN ___.

? FILE FILE 1 = _____/_____.    HEADER OF NET REEL = _____.

? FILE FILE 2 = _____/2.    COORDINATES.

\* ? FILE FILE 3 = _____/3.    LINKS FILE (if any dash)

? DATA QC01154.

   (HEADER CARD)

b$PARAM  (See Key Word Table)    $END.

b$OPTION (See Key Word Table)    $END.

? END.    PLEASE DESK CHECK YOUR SET UP.



\*Please Note:   File 21 and File 3 are optional files.

80

| KEY WORD | TYPE | LENGTH | DEFAULT VALUE | MAX VALUE | MIN VALUE | FUNCTION |
|---|---|---|---|---|---|---|
| TREE | I | 1 | None | Zones | 1 | Designates tree to be plotted. |
| ZON | I | 1 | 0 | Zones | 0 | 0 = Null annotation. 1 thru Zon = range of annotation. ▢ |
| STA | I | 1 | 0 | Zones | 0 | 0 = Null annotation ZON + 1 thru STA = ◇ range of annotation. |
| SCA | R | 1 | 1.0 | None | None | Scale network coordinates as required. |
| MINXP | I | 1 | None | None | None | Define outer bounds of plot parameter. |
| MAXXP | I | 1 | " | " | " | |
| MINYP | I | 1 | " | " | " | |
| MAXYP | I | 1 | " | " | " | |
| MAXXC | I | 1 | None | None | None | Defines central area boundaries for a void central area. |
| MINXC | I | 1 | " | " | " | |
| MAXYC | I | 1 | " | " | " | |
| MINYC | I | 1 | " | " | " | |
| SKIP | I | 1 | 3 | 10 | 0 | Annotate only each skip$_{th}$ link with CUM time and node numbers. (If CUM = False, skip is not utilized) |

$ P A R A M

| KEY WORD | TYPE | LENGTH | DEFAULT VALUE | MAX VALUE | MIN VALUE | FUNCTION |
|---|---|---|---|---|---|---|
| CUM | L | 1 | False | True | False | To annotate CUM time on each $skip_{th}$ link plotted. |
| NOD | L | 1 | False | True | False | NOD = True will annotate the full range of nodes with node numbers. (1 to Nodes, where nodes is taken from NET Header) |
| TRP | L | 1 | False | True | False | TRP = True will cause a trip table or skim tree to be read by this program Trip ends will be annotated. |
| TRACE | L | 1 | False | True | False | Programmer's debugging aid. |
| OMIT | L | 1 | False | True | False | Omit lexicon. |
| DASH | L | 16 | False | True | False | True values will generate dash lines for links of corresponding link type. |

**PROGRAM ABSTRACT**

PROGRAM NO. Q17025

PROGRAM NEW ☐          PROGRAM REVISION ☒          ABSTRACT CORRECTION ☐          DATE 2-26-69

**TITLE**
COBOL SORT PROGRAM GENERATOR

**DESCRIPTION**

This program will generate a COBOL source deck to sort either
a card, tape, or disk file on from 1 to 5 sort-keys on either
ascending or descending sequence, and giving either a card,
tape, or disk file out. The input and output files may be
either labeled or unlabeled, standard or non-standard. The
source deck may be either punched out and saved or created on
disk and used as a 1-shot program. Also the generated program
may or may not be listed when compiled.

If, during the editing of the 2 parameter cards, an error is
detected the COBOL Sort Program will not be generated.

| DELIVERY: | DIVISION | SECTION | UNIT |
|---|---|---|---|
| | Requesting Party | | |

| PRODUCTION CYCLE AND TIME | PAGES | COPIES | OVERLAY ID | LANGUAGE | SEGMENT SIZE | RUN TIME Hr. | Min. |
|---|---|---|---|---|---|---|---|
| Request | 1 - 2 | 1 | | COBOL | 8750 | | 1 |

| IN/OUT | EQUIPMENT | FILE IDENTIFICATION AND NAME | SAVE FACTOR |
|---|---|---|---|
| IN | READER | "QH17025"   Parameter Cards* | |
| OUT or OUT | PUNCH DISK | "QC17025" "QW17025" } Source file for Sort Program | |
| OUT | PRINTER | "QP17025"   Input Verification &/or Error Listing | |

EQUIPMENT USAGE PERCENT: CPU 15%          I/O 100%          DISK

**INSTRUCTIONS:** (Include disposition of all input and output.)

*See attached for setup instructions.

## COBOL Sort Program Generator

### -17025-

This program, through the use of two parameter cards, will generate a COBOL source program to sort either a card, tape, or disk file on from 1 to 5 sort-keys in either ascending or descending sequence and giving either a card, tape, or disk file out.  The input and output files may be either Standard or Non-Standard and either Labeled or Unlabeled.

The program lists and edits the two parameter cards.  If any errors are detected, the COBOL source program will not be generated.  Instead, a listing of the errors will be printed.

The generated COBOL source program may be either punched out or written out onto disk.  The user may include the needed MCP cards with the request and the file may be sorted right after the program is generated.  During compilation of the program, the user may or may not request a listing of the program.
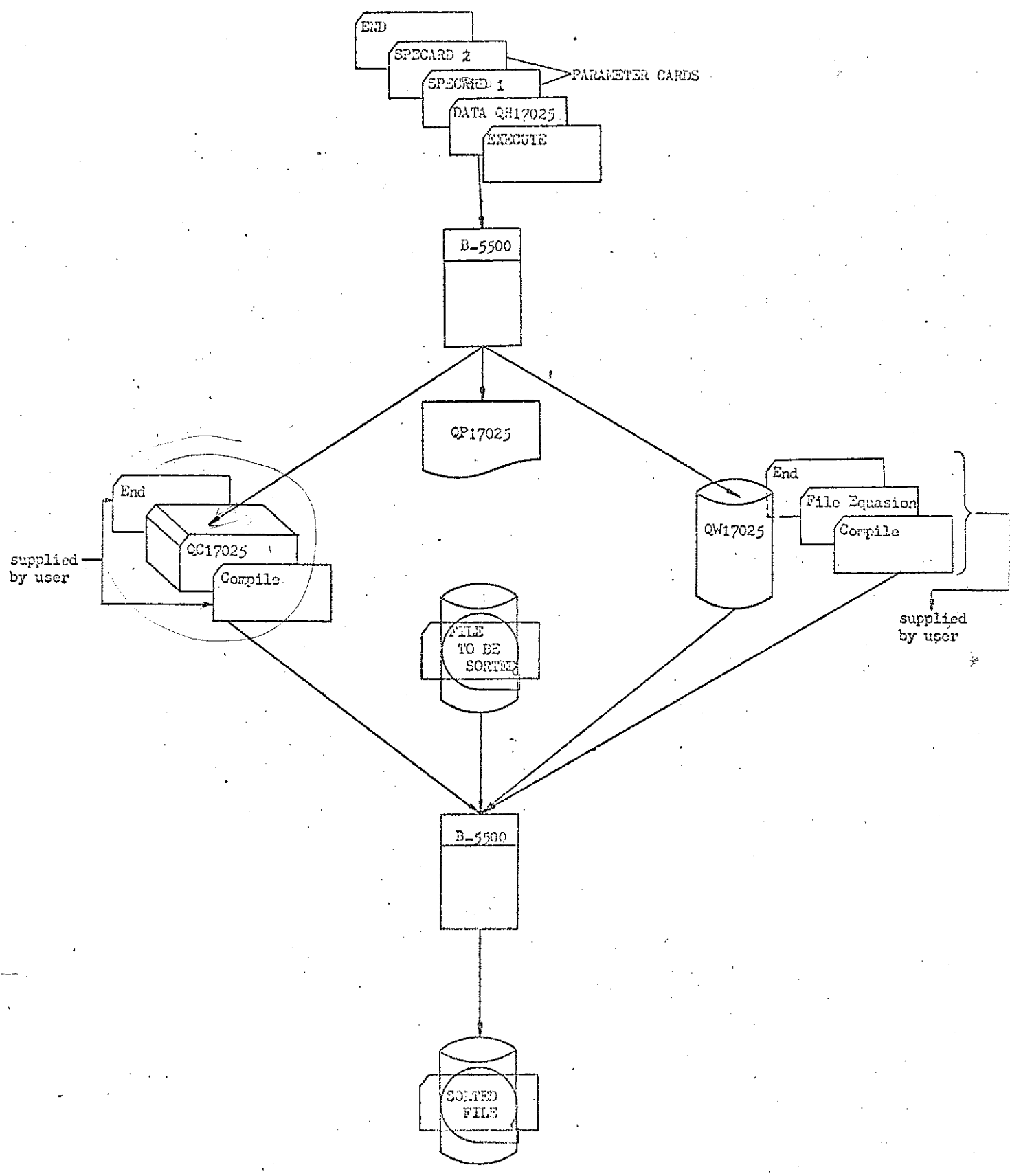
Two specification cards are required to produce a COBOL sort program. The following paragraphs discuss the coding of each of these two cards.

<u>SPECIFICATION CARD 1</u>

| <u>Columns</u> | <u>Field</u> | <u>Contents</u> |
|---|---|---|
| 1 - 8 | Required | Identification & card sequence = "17025β1β" (β = blank) |
| 9 - 16 | Program ID | Used to identify the generated sort program. |
| 17 - 20 | Memory Size | Number of words assigned to memory for sort (5000 words recommended). |
| 21 | Sort Mode | T = Tape only; D = Disk only; B = Tape and Disk |
| 22 | Number of Sort Tapes | Number of tapes assigned for sorting (3 tapes recommended). |

<u>Input File Description</u>

| | | |
|---|---|---|
| 23 | Hardware Type | Type of input to be sorted. (C - Card; T = Tape; D = Disk) |
| 24 | Recording Mode | S = Standard; N = Non-standard |
| 25 - 26 | Page size | The number of pages of disk file at creation. (Code zero if not paged.) |
| 27 - 32 | File Limits | The number of records on the file or the number of records per page. (Zero if not disk file.) |
| 33 - 35 | Blocking Factor | The number of records per block. (Code 1 if unblocked.) |
| 36 - 39 | Record Length | The number of characters per record. |
| 40 | Label Usage | S = Standard; ∅ = Omitted. |
| 41 - 47 | File ID | The 7-position name assigned to the file; leave blank if labels are omitted. |

## SPECIFICATION CARD 1 (Continued)

| Columns | Field | Contents |
|---------|-------|----------|
| 48 | Hardware Type | Type of file to be outputted. (C = Card; T = Tape; D = Disk) |
| 49 | Recording Mode | S = Standard; N = Non-standard |
| 50 - 51 | Page Size | The number of pages of disk file being created. (Code zero if not paged.) |
| 52 - 57 | File Limits | The number of records on the file or the number of records per page. (Zero if not disk file.) |
| 58 - 60 | Blocking Factor | The number of records per block. (Code 1 if unblocked) |
| 61 - 64 | Record Length | The number of characters per record. |
| 65 | Label Usage | S = Standard; $\emptyset$ = Omitted. |
| 66 - 72 | File ID | The 7-position name assigned to the file; leave blank if labels are omitted. |
| 73 - 75 | Author's Initials | Initials of using party. |

The following three pages show the two Parameter Cards and the generated COBOL Sort Program to sort a standard, labeled disk file on three sort-keys, giving a standard, labeled tape file.

The disk file contains 15 pages of 3000 records, which are blocked 6 and 200 characters in length with an ID of "QD01010." The file is to be sorted positions 100-101 w/positions 197-200 w/position 7.

Position 7 is alphanumeric and is to be in ascending sequence.
Positions 100-101 are alphanumeric and are to be in ascending sequence.
Positions 197-200 are numeric and are to be in ascending sequence.

The sorted tape file is to be blocked 20, 200 characters in length, with an ID of "QS01010."

The file is to be sorted on disk and 3 sort-tapes, using 5000 words of memory.

The generated deck is to be given the ID of Q01021HY, written on disk and listed during compilation.

```
        --   S P E C I F I C A T I O N    C A R D    1   --

            1           2          3          4          5          6          7
....!....*....!....*....!....*....!....*....!....*....!....*....!....*....!...

17025 1 Q01021HY5000B3DS150030000060200SQD01010TS          0200200SQS01010DRM
```

```
        --   S P E C I F I C A T I O N    C A R D    2   --

            1           2          3          4          5          6          7
....!....*....!....*....!....*....!....*....!....*....!....*....!....*....!...

17025 2 XA00070007XA010001019A01970200                    132   3EXAMPLE OF RUN
```

```
          --   S P E C I F I C A T I O N   C A R D   1   --

          1           2           3           4           5           6
....!....*....!....!....*....!....*....!....*....!....*....!....*....!....
17025 1 Q17025-A3000 60S2100300000300B0SQD01052TS          3000800SQT01
                      **    **           ****                 ******
ERROR LISTING:
                                          Column designator──┘
INVALID SORT MODE
INVALID NUMBER OF SORT-TAPES            ──Specification card verification
INPUT FILE SPECIFICATION
      PAGE SIZE > 20                    ──Error position designator
OUTPUT FILE SPECIFICATION  ◄─────────────Error listing, beginning with
      BLOCK SIZE* RECORD LENGTH < 8 OR > 8184    first field and
INPUT RECORD LENGTH ≠ OUTPUT RECORD LENGTH       working to the
                                                 right.


          --   S P E C I F I C A T I O N   C A R D   2   --

          1           2           3           4           5           6
....!....*....!....!....*....!....*....!....*....!....*....!....*....!....
17025 2 XA00050005FA00060007.D00070010AU00110080          241355ERROR
                  *       ***** ****       *********         **
ERROR LISTING:

SORT KEY 2
      INVALID FIELD DESCRIPTOR
SORT KEY 3
      INVALID FIELD DESCRIPTOR
      LOW ORDER LOCATION ≤ PREVIOUS HIGH ORDER
SORT KEY 4
      INVALID SEQUENCE DESCRIPTOR
      SORT-KEY LENGTH < 1 OR > 63
UNDEFINED SORT-KEY, INTERMEDIATE 4 FIELD
INVALID SOURCE DECK OPTION


-- CORRECT ERRORS AND RESUBMIT --
```

90

# COBOL SORT GENERATOR CODING FORM

**SPECIFICATION 1,7,0,2,5**

| Field | Value |
|---|---|
| GENERATED PROGRAM NUMBER | |
| MEMORY SIZE | |
| SORT MODE | |
| SORT-TAPES | |
| INPUT MEDIA | |
| RECORDING MODE | |
| PAGE SIZE | |

**UNSORTED FILE DESCRIPTION 1,7,0,2,5,2,3**

| Field | Value |
|---|---|
| FILE SIZE | |
| BLOCK SIZE | |
| RECORD LENGTH | |
| LABEL USAGE | |

**SORTED FILE DESCRIPTION 1,7,0,2,5,4,8**

| Field | Value |
|---|---|
| FILE ID | |
| OUTPUT MEDIA | |
| RECORDING MODE | |
| PAGE SIZE | |
| FILE SIZE | |
| BLOCK SIZE | |
| RECORD LENGTH | |
| LABEL USAGE | |
| FILE ID | |
| AUTHOR'S INITIALS | |

**SPECIFICATION 1,7,0,2,5,2**

SORT KEY 1
- DESCRIPTOR
- SEQUENCE
- HIGH ORDER POSITION
- LOW ORDER POSITION

SORT KEY 2
- DESCRIPTOR
- SEQUENCE
- HIGH ORDER POSITION
- LOW ORDER POSITION

SORT KEY 3
- DESCRIPTOR
- SEQUENCE
- HIGH ORDER POSITION
- LOW ORDER POSITION

**CARD 3,9**

SORT KEY 4
- DESCRIPTOR
- SEQUENCE
- HIGH ORDER POSITION
- LOW ORDER POSITION

SORT KEY 5
- DESCRIPTOR
- SEQUENCE
- HIGH ORDER POSITION
- LOW ORDER POSITION

ORDER
- MAJOR
- INTERMEDIATE 1
- INTERMEDIATE 2
- INTERMEDIATE 3
- INTERMEDIATE 4
- DECK OPTION

REMARKS

17025

SPECIFICATION CARD 2

| Column | Field | Contents |
|---|---|---|
| 1 - 8 | Required | Identification & card sequence = "17025β2β" (β = blank) |

Sort Key 1

| | | |
|---|---|---|
| 9 | Sort Type | A = alphabetic data; X = alphanumeric data; 9 = numeric data. |
| 10 | Sort Sequence | A = ascending sequence; D = descending sequence. |
| 11 - 14 | High Order Location | Position number of the high order character of the sort key. |
| 15 - 18 | Low order Location | Position number of the low order character of the sort key. |

Sort Key 2

| | | |
|---|---|---|
| 19 | Sort Type | A = alphabetic data; X = alphanumeric data; 9 = numeric data. |
| 20 | Sort Sequence | A = ascending sequence; D = descending sequence. |
| 21 - 24 | High Order Location | Position number of the high order character of the sort key. |
| 25 - 28 | Low Order Location | Position number of the low order character of the sort key. |

Sort Key 3

| | | |
|---|---|---|
| 29 | Sort Type | A = Alphabetic data; X = alphanumeric data; 9 = numeric data. |
| 30 | Sort Sequence | A = ascending sequence; D = descending sequence. |
| 31 - 34 | High Order Location | Position number of the high order character of the sort key. |
| 35 - 38 | Low Order Location | Position number of the low order character of the sort key. |

SPECIFICATION CARD 2 (Continued)

| Column | Field | Contents |
|--------|-------|----------|

Sort Key 4

| | | |
|--------|-------|----------|
| 39 | Sort Type | A = Alphabetic data; X = Alpha-numeric data; 9 = Numeric data. |
| 40 | Sort Sequence | A = ascending sequence<br>D = descending sequence. |
| 41 - 44 | High Order Location | Position number of the high order character of the sort key. |
| 45 - 48 | Low Order Location | Position number of the low order character of the sort key. |

Sort Key 5

| | | |
|--------|-------|----------|
| 49 | Sort Type | A = Alphabetic data; X = alpha-numeric data; 9 = Numeric data. |
| 50 | Sort Sequence | A = ascending sequence<br>D = descending sequence. |
| 51 - 54 | High Order Location | Position number of the high order character of the sort key. |
| 55 - 58 | Low Order Location | Position number of the low order character of the sort key. |
| 59 | Major | Key number of major field. |
| 60 | Intermediate 1 | Key number of intermediate 1 field. |
| 61 | Intermediate 2 | Key number of intermediate 2 field. |
| 62 | Intermediate 3 | Key number of intermediate 3 field. |
| 63 | Intermediate 4 | Key number of intermediate 4 field. |
| 64 | Deck Option | 1 = Punched deck with program listing<br>2 = Punched deck without program listing<br>3 = SOLT file with program listing<br>4 = SOLT file without program listing |
| 65 - 78 | Remarks | Any comments about the program. |

## SPECIFICATION CARD 1

The "memory size" may be no less than 3000 or no greater than 9999.

The "number of sort tapes" may be no less than 3 or no more than 5.

The "page size" may be no more than 20.

The "file limits" may be no less than 1.

The "record length" may be no less than 8 characters or no greater than 4096 characters.

The "block size times the record length" may be no less than 8 characters or no greater than 8184 characters.

The "input record length" must be the same length as the "output record length".

## SPECIFICATION CARD 2

The sort-keys must be described in the order in which they appear on the record.

If the "sort-key" is only 1 position in length, the "high order location" and the "low order location" must be the same number.

No one "sort-key" may be longer than 63 positions.

Input **RECORD - TITLE** Parameter card 1 **PROGRAM NO.** Q17025 **PAGE** 009

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | | 41 | R | | 81 | | |
| 2 | 7 | | 42 | I | | 82 | | |
| 3 | 0 | Program Id. | 43 | P | | 83 | | |
| 4 | 2 | | 44 | T | File Id. | 84 | | |
| 5 | 5 | | 45 | I | | 85 | | |
| 6 | | | 46 | O | | 86 | | |
| 7 | 1 | Card code | 47 | N | | 87 | | |
| 8 | | | 48 | | Output media | 88 | | |
| 9 | | | 49 | S | Recording mode | 89 | | |
| 10 | | | 50 | O | | 90 | | |
| 11 | | | 51 | R | Page size | 91 | | |
| 12 | | Program number of | 52 | T | | 92 | | |
| 13 | | generated program | 53 | E | | 93 | | |
| 14 | | | 54 | D | | 94 | | |
| 15 | | | 55 | | File size | 95 | | |
| 16 | | | 56 | F | | 96 | | |
| 17 | | | 57 | I | | 97 | | |
| 18 | | | 58 | L | | 98 | | |
| 19 | | Memory size | 59 | E | Block size | 99 | | |
| 20 | | | 60 | | | 100 | | |
| 21 | | Sort mode | 61 | D | | 101 | | |
| 22 | | Sort-tapes | 62 | E | Record length | 102 | | |
| 23 | | U Input media | 63 | S | | 103 | | |
| 24 | | N Recording mode | 64 | C | | 104 | | |
| 25 | | S Page size | 65 | R | Label usage | 105 | | |
| 26 | | O | 66 | I | | 106 | | |
| 27 | | R | 67 | P | | 107 | | |
| 28 | | T | 68 | T | | 108 | | |
| 29 | | E File size | 69 | I | File Id. | 109 | | |
| 30 | | D | 70 | O | | 110 | | |
| 31 | | | 71 | N | | 111 | | |
| 32 | | F | 72 | | | 112 | | |
| 33 | | I | 73 | | | 113 | | |
| 34 | | L Block size | 74 | | User's initials | 114 | | |
| 35 | | E | 75 | | | 115 | | |
| 36 | | | 76 | | | 116 | | |
| 37 | | D | 77 | | | 117 | | |
| 38 | | E Record length | 78 | | | 118 | | |
| 39 | | S | 79 | | | 119 | | |
| 40 | | C Label usage | 80 | | | 120 | | |
| | | | | | | 121 | | |
| | | | | | | 122 | | |
| | | | | | | 123 | | |
| | | | | | | 124 | | |
| | | | | | | 125 | | |
| | | | | | | 126 | | |
| | | | | | | 127 | | |
| | | | | | | 128 | | |
| | | | | | | 129 | | |
| | | | | | | 130 | | |
| | | | | | | 131 | | |
| | | | | | | 132 | | |

DATE: 24 February 1969

RECORD NO: QH17025

RECORD LENGTH: 80 char

PAPER FORMS: _____

COLOR OF CARDS: Orange

VOLUME OF DATA: 1

SPECIAL INSTRUCTIONS:

TAPE DENSITY: _____

BLOCKING: _____

NO. OF COPIES: _____

LINED or UNLINED: _____

Input _____ RECORD – TITLE __ Parameter card 2 PROGRAM NO. ___ Q17025 _____ PAGE __ 010 ___

| CHAR | | FIELD DESCRIPTION | | CHAR | | FIELD DESCRIPTION | | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | | | 41 | | R | | 81 | | |
| 2 | 7 | | | 42 | | T | High order | 82 | | |
| 3 | 0 | Program Id. | | 43 | | | position | 83 | | |
| 4 | 2 | | | 44 | | K | | 84 | | |
| 5 | 5 | | | 45 | | E | | 85 | | |
| 6 | | | | 46 | | Y | Low order | 86 | | |
| 7 | 2 | Card code | | 47 | | | position | 87 | | |
| 8 | | | | 48 | | 4 | | 88 | | |
| 9 | S | Descriptor | | 49 | | S | Descriptor | 89 | | |
| 10 | O | Sequence | | 50 | | O | Sequence | 90 | | |
| 11 | R | | | 51 | | R | | 91 | | |
| 12 | T | High order | | 52 | | T | High order | 92 | | |
| 13 | | position | | 53 | | | position | 93 | | |
| 14 | K | | | 54 | | K | | 94 | | |
| 15 | E | | | 55 | | E | | 95 | | |
| 16 | Y | Low order | | 56 | | Y | Low order | 96 | | |
| 17 | | position | | 57 | | | position | 97 | | |
| 18 | 1 | | | 58 | | 5 | | 98 | | |
| 19 | S | Descriptor | | 59 | | O | Major | 99 | | |
| 20 | O | Sequence | | 60 | | R | Intermediate 1 | 100 | | |
| 21 | R | | | 61 | | D | Intermediate 2 | 101 | | |
| 22 | T | High order | | 62 | | E | Intermediate 3 | 102 | | |
| 23 | | position | | 63 | | R | Intermediate 4 | 103 | | |
| 24 | K | | | 64 | | Deck option | | 104 | | |
| 25 | E | | | 65 | | | | 105 | | |
| 26 | Y | Low order | | 66 | | Remarks | | 106 | | |
| 27 | | position | | 67 | | | | 107 | | |
| 28 | 2 | | | 68 | | | | 108 | | |
| 29 | S | Descriptor | | 69 | | | | 109 | | |
| 30 | O | Sequence | | 70 | | | | 110 | | |
| 31 | R | | | 71 | | | | 111 | | |
| 32 | T | High order | | 72 | | | | 112 | | |
| 33 | | position | | 73 | | | | 113 | | |
| 34 | K | | | 74 | | | | 114 | | |
| 35 | E | | | 75 | | | | 115 | | |
| 36 | Y | Low order | | 76 | | | | 116 | | |
| 37 | | position | | 77 | | | | 117 | | |
| 38 | 3 | | | 78 | | | | 118 | | |
| 39 | S | Descriptor | | 79 | | | | 119 | | |
| 40 | O | Sequence | | 80 | | | | 120 | | |
| | | | | | | | | 121 | | |
| | | | | | | | | 122 | | |
| | | | | | | | | 123 | | |
| | | | | | | | | 124 | | |
| | | | | | | | | 125 | | |
| | | | | | | | | 126 | | |
| | | | | | | | | 127 | | |
| | | | | | | | | 128 | | |
| | | | | | | | | 129 | | |
| | | | | | | | | 130 | | |
| | | | | | | | | 131 | | |
| | | | | | | | | 132 | | |

DATE: _24 February 1969_

RECORD NO: _QH17025_        TAPE DENSITY: _____

RECORD LENGTH: _80 char_    BLOCKING: _____

PAPER FORMS: _____   NO. OF COPIES: _____

COLOR OF CARDS: _Orange_    LINED or UNLINED: _____

VOLUME OF DATA: ___1___

SPECIAL INSTRUCTIONS:

MCP

Input _____ **RECORD – TITLE** __Compile card__ **PROGRAM NO.** __917025__ **PAGE** __011__

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | ? | Invalid character | 41 | | | 81 | | |
| 2 | | | 42 | | | 82 | | |
| 3 | C | | 43 | | | 83 | | |
| 4 | O | | 44 | | | 84 | | |
| 5 | M | | 45 | | | 85 | | |
| 6 | P | | 46 | | | 86 | | |
| 7 | I | | 47 | | | 87 | | |
| 8 | L | | 48 | | | 88 | | |
| 9 | E | | 49 | | | 89 | | |
| 10 | | | 50 | | | 90 | | |
| 11 | | | 51 | | | 91 | | |
| 12 | | | 52 | | | 92 | | |
| 13 | | Agency code | 53 | | | 93 | | |
| 14 | | Resource code | 54 | | | 94 | | |
| 15 | | | 55 | | | 95 | | |
| 16 | | Program code | 56 | | | 96 | | |
| 17 | | | 57 | | | 97 | | |
| 18 | | | 58 | | | 98 | | |
| 19 | / | Slash | 59 | | | 99 | | |
| 20 | H | Data center | 60 | | | 100 | | |
| 21 | Y | | 61 | | | 101 | | |
| 22 | | | 62 | | | 102 | | |
| 23 | | | 63 | | | 103 | | |
| 24 | | | 64 | | | 104 | | |
| 25 | | | 65 | | | 105 | | |
| 26 | C | | 66 | | | 106 | | |
| 27 | O | | 67 | | Agency's | 107 | | |
| 28 | B | Source language | 68 | | billing code | 108 | | |
| 29 | O | | 69 | | | 109 | | |
| 30 | L | | 70 | | | 110 | | |
| 31 | . | Period | 71 | | User's initials | 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 | | |

(Characters 13–21: PROGRAM NUMBER)

DATE: __11 March 1969__

RECORD NO: _____

RECORD LENGTH: __80 char.__

PAPER FORMS: _____

COLOR OF CARDS: __Pink__

VOLUME OF DATA: __1__

TAPE DENSITY: _____

BLOCKING: _____

NO. OF COPIES: _____

LINED or UNLINED: _____

SPECIAL INSTRUCTIONS:

MCP CARD

Input ___ **RECORD - TITLE** ___ File equasion ___ **PROGRAM NO.** ___ Q17025 ___ **PAGE** ___ 012 ___

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|------|---|-------------------|------|---|-------------------|------|---|-------------------|
| 1 | ? | Invalid character | 41 | | | 81 | | |
| 2 | | | 42 | | | 82 | | |
| 3 | C | | 43 | | | 83 | | |
| 4 | O | | 44 | | | 84 | | |
| 5 | B | | 45 | | | 85 | | |
| 6 | O | | 46 | | | 86 | | |
| 7 | L | | 47 | | | 87 | | |
| 8 | | | 48 | | | 88 | | |
| 9 | F | | 49 | | | 89 | | |
| 10 | I | | 50 | | | 90 | | |
| 11 | L | | 51 | | | 91 | | |
| 12 | E | | 52 | | | 92 | | |
| 13 | | | 53 | | | 93 | | |
| 14 | C | | 54 | | | 94 | | |
| 15 | A | | 55 | | | 95 | | |
| 16 | R | | 56 | | | 96 | | |
| 17 | D | | 57 | | | 97 | | |
| 18 | | | 58 | | | 98 | | |
| 19 | = | Equal sign | 59 | | | 99 | | |
| 20 | | | 60 | | | 100 | | |
| 21 | Q | | 61 | | | 101 | | |
| 22 | W | | 62 | | | 102 | | |
| 23 | 1 | | 63 | | | 103 | | |
| 24 | 7 | | 64 | | | 104 | | |
| 25 | 0 | | 65 | | | 105 | | |
| 26 | 2 | | 66 | | | 106 | | |
| 27 | 5 | | 67 | | | 107 | | |
| 28 | | | 68 | | | 108 | | |
| 29 | D | | 69 | | | 109 | | |
| 30 | I | | 70 | | | 110 | | |
| 31 | S | | 71 | | | 111 | | |
| 32 | K | | 72 | | | 112 | | |
| 33 | | | 73 | | | 113 | | |
| 34 | S | | 74 | | | 114 | | |
| 35 | E | | 75 | | | 115 | | |
| 36 | R | | 76 | | | 116 | | |
| 37 | I | | 77 | | | 117 | | |
| 38 | A | | 78 | | | 118 | | |
| 39 | L | | 79 | | | 119 | | |
| 40 | . | Period | 80 | | | 120 | | |
| | | | | | | 121 | | |
| | | | | | | 122 | | |
| | | | | | | 123 | | |
| | | | | | | 124 | | |
| | | | | | | 125 | | |
| | | | | | | 126 | | |
| | | | | | | 127 | | |
| | | | | | | 128 | | |
| | | | | | | 129 | | |
| | | | | | | 130 | | |
| | | | | | | 131 | | |
| | | | | | | 132 | | |

DATE: 24 February 1969

RECORD NO: _____     TAPE DENSITY: _____

RECORD LENGTH: 80 char     BLOCKING: _____

PAPER FORMS: _____     NO. OF COPIES: _____

COLOR OF CARDS: Pink     LINED or UNLINED: _____

VOLUME OF DATA: 1

SPECIAL INSTRUCTIONS: This card is included only if the COBOL source program
is written on disk.

98

MCP CARD

Input _____ **RECORD – TITLE** ___ End card _____ **PROGRAM NO.** ___ Q17025 _____ **PAGE** ___ 013 ___

| CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION | CHAR | | FIELD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| 1 | ? | Invalid character | 41 | | | 81 | | |
| 2 | | | 42 | | | 82 | | |
| 3 | E | | 43 | | | 83 | | |
| 4 | N | | 44 | | | 84 | | |
| 5 | D | | 45 | | | 85 | | |
| 6 | . | Period | 46 | | | 86 | | |
| 7 | | | 47 | | | 87 | | |
| 8 | | | 48 | | | 88 | | |
| 9 | | | 49 | | | 89 | | |
| 10 | | | 50 | | | 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: _24 February 1969_

RECORD NO: _____     TAPE DENSITY: _____

RECORD LENGTH: _80 char_     BLOCKING: _____

PAPER FORMS: _____     NO. OF COPIES: _____

COLOR OF CARDS: _Pink_     LINED or UNLINED: _____

VOLUME OF DATA: ___1___

SPECIAL INSTRUCTIONS:

PROGRAM NO.   Q01151

DATE     January 26, 1971.

# PROGRAM ABSTRACT

| TITLE | |
|---|---|
| | NETWORK PRE-PLOT |

**DESCRIPTION**

The program reads a Highway NETWORK tape which contains four files:  (1) Header, (2) Coordinates, (3) Links, and (4) Turn Penalties.

The first two files are copied onto a PREPLOT tape.  The third file is reorganized into a sequence which facilitates efficient plotting and annotation of the Network or some portion of the Network.

The reorganized Link file is also written onto the PREPLOT tape.

| DELIVERY: DIVISION | | SORT SEQUENCE | | COMPILER | |
|---|---|---|---|---|---|
| Requesting Party | | None | | ALGOL | |

| SECTION | SORT DISK | PROD. CYCLE | PAGES | COPIES | CPU TIME |
|---|---|---|---|---|---|
| | None | On Request | 1-5 | None | 11 Sec/100 Links |

| UNIT | SORT-TAPES | SETUP | OVERLAY ID | CPU % | I/O % |
|---|---|---|---|---|---|
| | None | Operations | None | 16 | 84 |

| I/O | EQUIPMENT | ID | KEYWORD | FILE NAME | BLOCK FACTOR | RECORD LENGTH | FILE DESCRIPTION | RETEN-TION |
|---|---|---|---|---|---|---|---|---|
| IN | READER | QH01151 | O/D | CARDS | 1 | 80 | Labels for input & output tapes | |
| IN | TAPE | * | O/D | TPHED | ** | ** | Network parameters | 999 |
| IN | TAPE | * | O/D | TPCRD | ** | ** | Network node coordinates | 999 |
| IN | TAPE | * | O/D | TPLNK | ** | ** | Network Links (Node sequence) | 999 |
| WORK | DISK | QW01151 | O/D | PLINK | ** | ** | Network Links (Node sequence) | |
| WORK | DISK | QW01151 | O/D | PLONK | ** | ** | Network Links (Node Sequence) | |
| OUT | TAPE | * | O/D | PTHED | ** | ** | Network parameters | 999 |
| OUT | TAPE | * | O/D | PTCRD | ** | ** | Network Node Coordinates | 999 |
| OUT | TAPE | * | O/D | PTLNK | ** | ** | Network Links (Plotting Seq.) | 999 |
| OUT | PRINTER | QP01151 | O/D | PRT | 1 | 132 | Parameters & error messages | |

*ID is "QT01" plus 3 characters supplied by user.  All tape input is from multi-file reel.  Same for Output
**Logical record varies from 24 to 224 char.  Block is 2408 char. on tape or 2400 char. on disk.  Blocking is handled programmatically.     ITEM A-12     100                              PROGRAM NO 001151

THIS PROGRAM (QO1151/HY) IS USED FOR THE PREPARATION OF A PREPLOT
TAPE FROM A NETWORK TAPE.


AS INPUT PARAMETERS THE PROGRAM NEEDS THE MULTIFILE ID OF THE
NETWORK TAPE AND THE FILE ID OF THE HEADER FILE ON THE NETWORK
TAPE.


AS OUTPUT PARAMETERS THE PROGRAM NEEDS THE MULTIFILE ID OF THE
PREPLOT TAPE AND THE FILE ID OF ITS HEADER FILE.


THESE PARAMETERS ARE SUPPLIED BY THE USER IN "NAMELIST" FASHION.
THE FOLLOWING EXAMPLE REPRESENTS THE MANNER IN WHICH THE USER
SUPPLIES THESE NAMES:


```
$ FILES    MULTFIN = XXXXXXX,
            FILEIN = XXXXXXX,
          MULTFOUT = XXXXXXX,
           FILEOUT = XXXXXXX    $END
```


IN THE ABOVE EXAMPLE, ITEMS REPRESENTED BY XXXXXXX ARE ITEMS (UP
TO SEVEN CHARACTERS IN LENGTH) TO BE SUPPLIED BY THE USER.


CONTROL CARDS NEEDED TO RUN QO1151/HY ARE:


```
? EXECUTE QO1151/HY        (IN STANDARD FORMAT)
? DATA QH01151
```

(PARAMETER CARDS, AS DESCRIBED ABOVE)

? END


NOTE THAT IN THIS PROGRAM, USING FILE IDENTIFIERS AS PARAMETERS
OBVIATES THE NECESSITY OF USING LABEL EQUATION CARDS FOR THE
NETWORK TAPE AND THE PREPLOT TAPE. MOREOVER, THE ACTUAL FILE
IDENTIFIERS CAN BE WRITTEN ON THE LINE PRINTER LISTING.


THE PROGRAM COPIES THE HEADER FILE AND THE COORDINATES FILE FROM
THE INPUT TAPE AND WRITES THEM ONTO THE OUTPUT TAPE. THE LINKS
FILE IS REARRANGED INTO A SEQUENCE SUITABLE FOR EFFICIENT
PLOTTING AND IS THEN WRITTEN ONTO THE OUTPUT TAPE. THIS
COMPLETES PREPARATION OF THE PREPLOT TAPE.

PROGRAM NO.    Q01153

# PROGRAM ABSTRACT

DATE  January 26, 1971

*original*

| TITLE | NETWORK PLOTTING |
|---|---|

**DESCRIPTION**

This program prepares a PLOTTER tape to be used in plotting a highway network.  The type of plot obtained depends on the files, options and parameters specified by the input card file and PREPLOT network tape.

| DELIVERY: DIVISION  Requesting Party | | | SORT SEQUENCE  None | | COMPILER  XALGOL |
|---|---|---|---|---|---|
| SECTION | | | SORT DISK  None | PROD. CYCLE  Request-Daily | PAGES  3-10 | COPIES  0 | CPU TIME  30 Links/Sec |
| UNIT | | | SORT-TAPES  None | SETUP  Operations | OVERLAY ID  None | CPU %  50 | I/O %  50 |

| I/O | EQUIPMENT | ID | KEYWORD | FILE NAME | BLOCK FACTOR | RECORD LENGTH | FILE DESCRIPTION | RETEN-TION |
|---|---|---|---|---|---|---|---|---|
| IN | READER | QC01153 | PLANNING | CARDS | 1 | 80 | Files, options & parameters | |
| IN | TAPE | * | PLANNING | PPHED | 1 | 2408 | Network parameters | 365 |
| IN | TAPE | * | PLANNING | PPCRD | 1 | 2408 | Network Node Coordinates | 365 |
| IN | TAPE | * | PLANNING | PPLNK | 1 | 2408 | Network Links in Plotting Sequence | 365 |
| OUT | TAPE | PLOTTER | PLANNING | PLOTTER | 1 | 24488 | Network Plotting | 1 |
| OUT | PRINTER | QP01153 | PLANNING | PRT | 1 | 132 | Parameters and error messages | |

*Three input tape files are on one tape.  ID is supplied by the user.

ITEM A-13          102

SAMPLE REPORTS
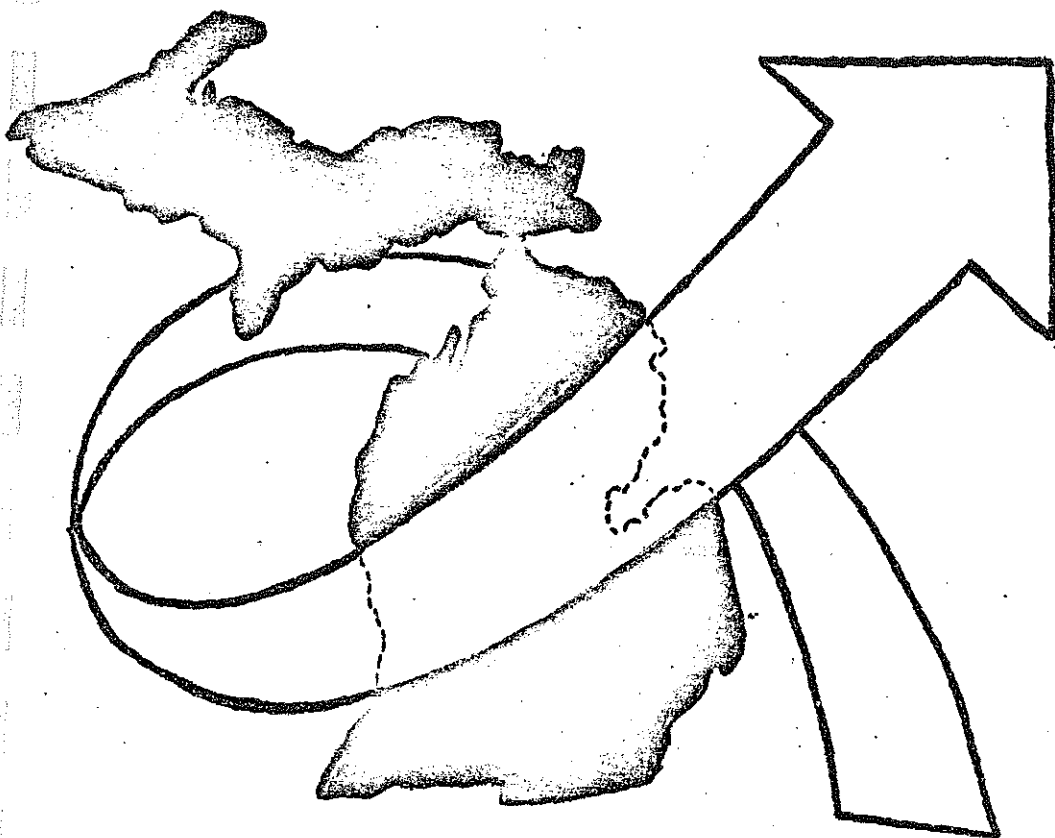
APPENDIX B

FORM NUMBER              = 6

EXIT-ENT STAT            =        TO

V E H I C L E   T Y P E

| RANGES | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | TOTAL |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | TOT % |
|---|---|---|---|---|---|---|---|---|---|
| 1    1 | 2725.29 | 19.76 | 1245.57 | 25.62 | 633.87 | 226.25 | 0.00 | 0.00 | 4876.36 |
| ROW % | 55.89 | 0.41 | 25.54 | 0.53 | 13.00 | 4.64 | 0.00 | 0.00 | 27.62 |
| COL % | 20.01 | 9.14 | 44.70 | 32.88 | 88.18 | 96.68 | 0.00 | 0.00 | |
| T    TOT % | 15.44 | 0.11 | 7.06 | 0.15 | 3.59 | 1.28 | 0.00 | 0.00 | |
| R 2    2 | 984.15 | 14.62 | 222.59 | 7.40 | 9.27 | 0.00 | 0.00 | 0.00 | 1238.03 |
| ROW % | 79.49 | 1.18 | 17.98 | 0.60 | 0.75 | 0.00 | 0.00 | 0.00 | 7.01 |
| I    COL % | 7.23 | 6.76 | 7.99 | 9.50 | 1.29 | 0.00 | 0.00 | 0.00 | |
| TOT % | 5.58 | 0.08 | 1.26 | 0.04 | 0.05 | 0.00 | 0.00 | 0.00 | |
| P | | | | | | | | | |
| 3    3 | 3863.60 | 19.47 | 597.55 | 1.64 | 10.18 | 1.59 | 0.00 | 0.00 | 4494.03 |
| ROW % | 85.97 | 0.43 | 13.30 | 0.04 | 0.23 | 0.04 | 0.00 | 0.00 | 25.46 |
| COL % | 28.37 | 9.01 | 21.44 | 2.10 | 1.42 | 0.68 | 0.00 | 0.00 | |
| P    TOT % | 21.89 | 0.11 | 3.39 | 0.01 | 0.06 | 0.01 | 0.00 | 0.00 | |
| U 4    4 | 1008.44 | 99.45 | 74.70 | 19.19 | 42.02 | 2.15 | 0.00 | 0.00 | 1245.95 |
| ROW % | 80.94 | 7.98 | 6.00 | 1.54 | 3.37 | 0.17 | 0.00 | 0.00 | 7.06 |
| R    COL % | 7.40 | 46.00 | 2.68 | 24.62 | 5.85 | 0.92 | 0.00 | 0.00 | |
| TOT % | 5.71 | 0.56 | 0.42 | 0.11 | 0.24 | 0.01 | 0.00 | 0.00 | |
| P | | | | | | | | | |
| 5    5 | 3478.68 | 52.02 | 423.27 | 16.93 | 11.80 | 0.00 | 0.00 | 0.00 | 3982.70 |
| O    ROW % | 87.34 | 1.31 | 10.63 | 0.43 | 0.30 | 0.00 | 0.00 | 0.00 | 22.56 |
| COL % | 25.54 | 24.06 | 15.19 | 21.72 | 1.64 | 0.00 | 0.00 | 0.00 | |
| S    TOT % | 19.71 | 0.29 | 2.40 | 0.10 | 0.07 | 0.00 | 0.00 | 0.00 | |
| E 6    6 | 1558.47 | 10.87 | 223.13 | 7.15 | 11.71 | 4.03 | 0.00 | 0.00 | 1815.36 |
| ROW % | 85.85 | 0.60 | 12.29 | 0.39 | 0.65 | 0.22 | 0.00 | 0.00 | 10.28 |
| COL % | 11.44 | 5.03 | 8.01 | 9.17 | 1.63 | 1.72 | 0.00 | 0.00 | |
| TOT % | 8.83 | 0.06 | 1.26 | 0.04 | 0.07 | 0.02 | 0.00 | 0.00 | |

-------------------------------------------------------------------------------------------------------------------------

| TOTAL | 13618.63 | 216.19 | 2786.81 | 77.93 | 718.85 | 234.02 | 0.00 | 0.00 | 17652.43 |
| TOT % | 77.15 | 1.22 | 15.79 | 0.44 | 4.07 | 1.33 | 0.00 | 0.00 | |

INTERCHANGE VALUES FROM ZONE   146 TO ALL OTHER ZONES     TABLES NUMBER 101

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2 | 0 | 0 | 4 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8 | 10 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 1 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 16 |
| 11 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 |
| 14 | 0 | 0 | 2 | 0 | 0 | 0 | 1498 | 95 | 136 | 36 |
| 15 | 284 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| 17 | 7 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 3 | 0 | 1 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 25 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 28 | 8 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 4 |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 34 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |
| 36 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 38 | 1 | 0 | 0 | 45 | 3 | 37 | 133 | 0 | 0 | 0 |
| 39 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 43 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 49 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 51 | 0 | 4 | 3 | 3 | 5082 | 220 | 188 | 2 | 0 | 2 |
| 52 | 30 | 49 | 29 | 56 | 6 | 13 | 1 | 0 | 0 | 0 |
| 53 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 54 | 0 | 1 | 0 | 2 | 5 | 193 | 0 | 4 | | |

TOTAL =    8395            MEAN =     15,347
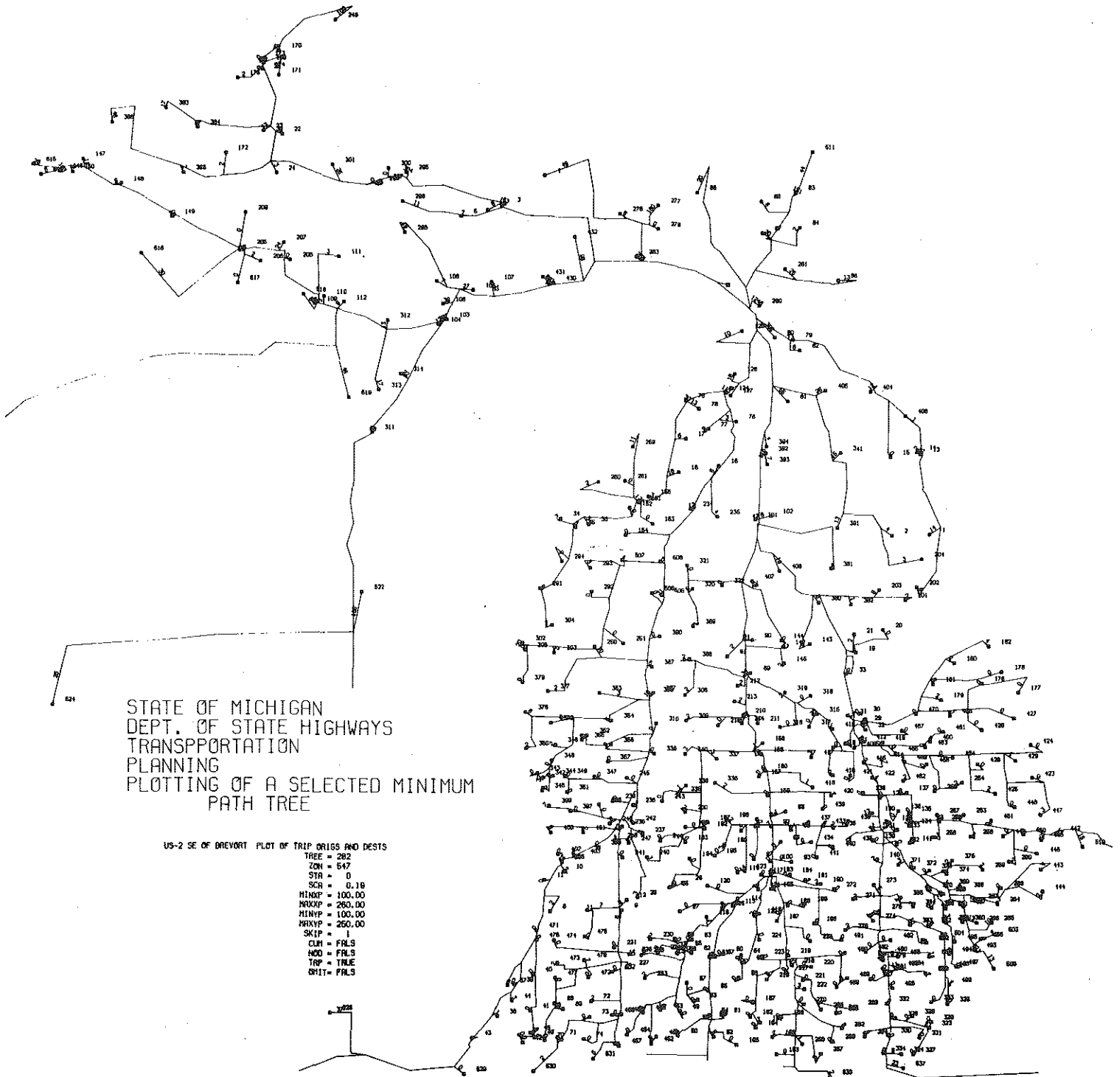
STATE OF MICHIGAN
DEPT. OF STATE HIGHWAYS
TRANSPPORTATION
PLANNING
PLOTTING OF A SELECTED MINIMUM
          PATH TREE

US-2 SE OF BREVORT  PLOT OF TRIP ORIGS AND DESTS
                    TREE  = 282
                    ZON   = 547
                    STA   =   0
                    SCA   =   0.19
                    MINXP = 100.00
                    MAXXP = 260.00
                    MINYP = 100.00
                    MAXYP = 260.00
                    SKIP  =   1
                    CUM   = FALS
                    NOD   = FALS
                    TRP   = TRUE
                    OMIT  = FALS

```
 0    2    4    6    8   10   12   14   16   18   20   22   24   26   28   30   32   34   36   38   40
 +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
```

| # | P.C. | CUM. | ACTUAL |
|---|------|------|--------|
| 1. | 0.000 | 0.000 | 0 |
| 2. | 20.345 | 20.345 | 3044308 |
| 3. | 25.292 | 45.636 | 3784562 |
| 4. | 19.579 | 65.215 | 2929692 |
| 5. | 4.409 | 69.625 | 659809 |
| 6. | 2.274 | 71.898 | 340242 |
| 7. | 3.538 | 75.436 | 529356 |
| 8. | 2.777 | 78.213 | 415601 |
| 9. | 2.158 | 80.372 | 322988 |
| 10. | 3.312 | 83.684 | 495567 |
| 11. | 0.842 | 84.526 | 126020 |
| 12. | 1.399 | 85.925 | 209324 |
| 13. | 1.004 | 86.928 | 150182 |
| 14. | 1.150 | 88.078 | 172049 |
| 15. | 1.100 | 89.178 | 164542 |
| 16. | 0.606 | 89.783 | 90623 |
| 17. | 1.301 | 91.084 | 194651 |
| 18. | 0.443 | 91.527 | 66233 |
| 19. | 1.520 | 93.046 | 227379 |
| 20. | 0.766 | 93.813 | 114694 |
| 21. | 0.395 | 94.208 | 59084 |
| 22. | 0.660 | 94.868 | 98770 |
| 23. | 0.432 | 95.300 | 64700 |
| 24. | 0.951 | 96.251 | 142268 |
| 25. | 0.653 | 96.904 | 97773 |
| 26. | 0.287 | 97.191 | 42915 |
| 27. | 0.424 | 97.615 | 63412 |
| 28. | 0.054 | 97.669 | 8109 |
| 29. | 0.264 | 97.933 | 39477 |
| 30. | 0.103 | 98.036 | 15384 |
| 31. | 0.103 | 98.139 | 15472 |
| 32. | 0.140 | 98.279 | 20905 |
| 33. | 0.145 | 98.424 | 21747 |
| 34. | 0.172 | 98.596 | 25667 |
| 35. | 0.047 | 98.643 | 7098 |
| 36. | 0.340 | 98.983 | 50856 |
| 37. | 0.123 | 99.106 | 18434 |
| 38. | 0.074 | 99.180 | 11060 |
| 39. | 0.118 | 99.299 | 17727 |
| 40. | 0.077 | 99.375 | 11461 |
| 41. | 0.040 | 99.415 | 6027 |
| 42. | 0.122 | 99.538 | 18285 |
| 43. | 0.040 | 99.578 | 6045 |
| 44. | 0.029 | 99.607 | 4313 |
| 45. | 0.024 | 99.631 | 3663 |
| 46. | 0.054 | 99.686 | 8136 |
| 47. | 0.016 | 99.702 | 2424 |
| 48. | 0.017 | 99.719 | 2594 |
| 49. | 0.046 | 99.765 | 6909 |
| 50. | 0.023 | 99.788 | 3441 |
| 51. | 0.034 | 99.822 | 5066 |
| 52. | 0.011 | 99.833 | 1579 |
| 53. | 0.021 | 99.854 | 3185 |
| 54. | 0.065 | 99.919 | 9738 |
| 55. | 0.031 | 99.950 | 4617 |
| 56. | 0.009 | 99.959 | 1333 |
| 57. | 0.015 | 99.974 | 2260 |
| 58. | 0.002 | 99.976 | 276 |
| 59. | 0.000 | 99.976 | 0 |
| 60. | 0.004 | 99.980 | 595 |
| 61. | 0.015 | 99.995 | 2307 |
| 62. | 0.002 | 99.997 | 242 |
| 63. | 0.001 | 99.998 | 197 |
| 64. | 0.002 | 100.000 | 280 |

REMAINING VALUES ARE ALL ZERO
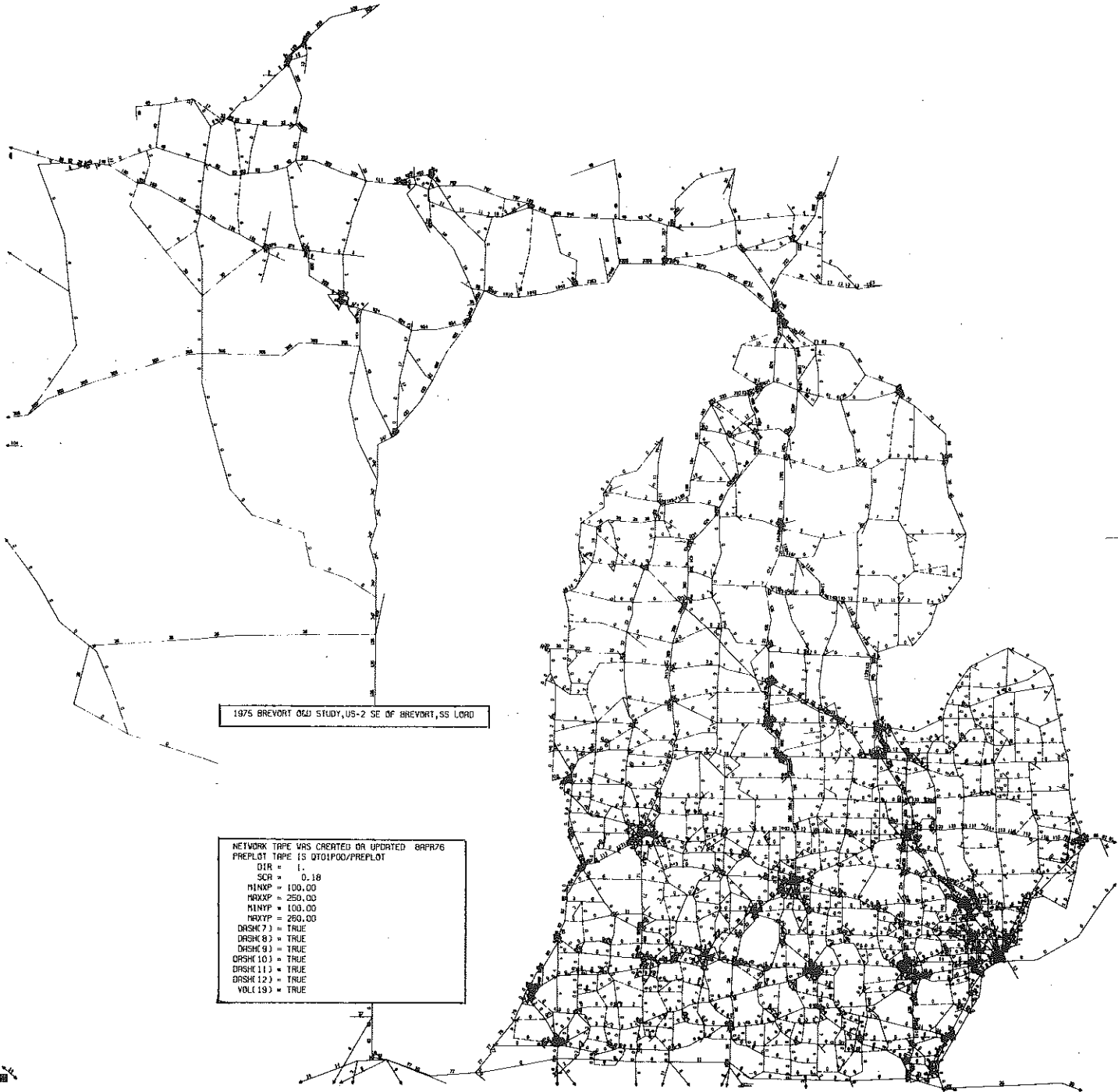NUMBER OF OBSERVATIONS=14963627        SUM= 99661621.        MEAN=   6.660        VAR=      53.803            SD=    7.335

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

1975 BREVORT O&U STUDY,US-2 SE OF BREVORT,SS LOAD

```
NETWORK TAPE WAS CREATED OR UPDATED  8APR76
PREPLOT TAPE IS QTO1P0D/PREPLOT
        DIR =   1.
        SCA =    0.18
      MINXP =  100.00
      MAXXP =  250.00
      MINYP =  100.00
      MAXYP =  260.00
   DASH( 7) = TRUE
   DASH( 8) = TRUE
   DASH( 9) = TRUE
   DASH(10) = TRUE
   DASH(11) = TRUE
   DASH(12) = TRUE
   VOL(19) = TRUE
```