# Highway Performance Monitoring System
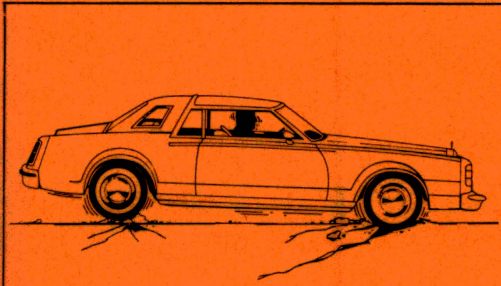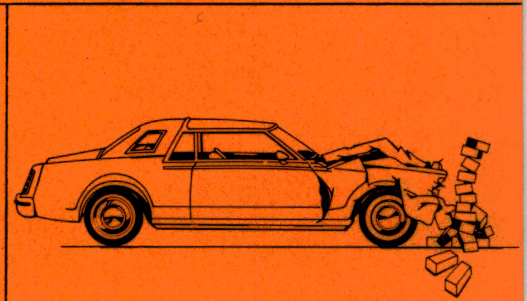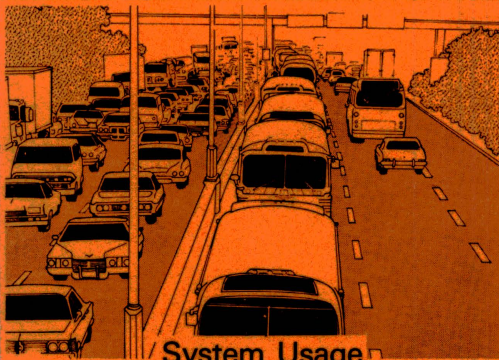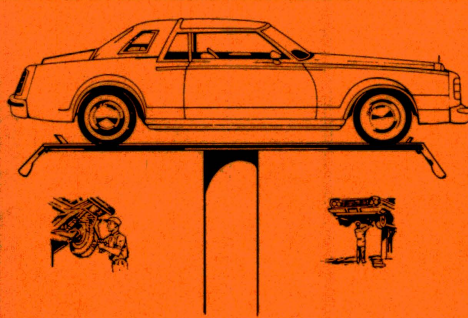
## Procedural Manual For Data Submittal
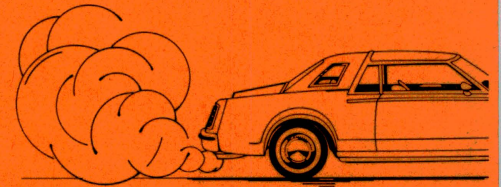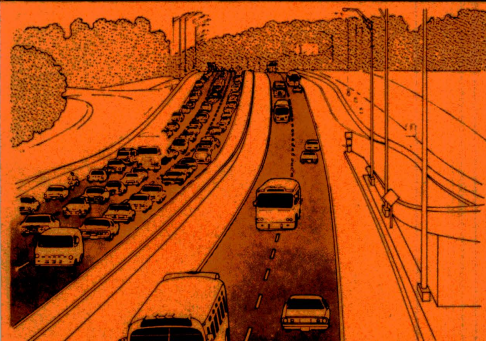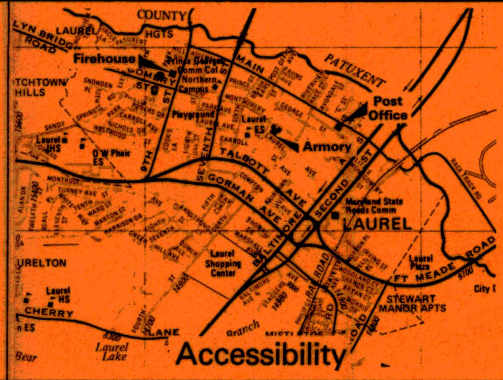


System Condition

Safety

System Usage

Vehicle Operating Cost

Air Pollution

Comfort and Convenience

Accessibility

**U.S. DEPARTMENT OF TRANSPORTATION**

**Federal Highway Administration**

**Program Management Division**

UNITED STATES GOVERNMENT

*Memorandum*

DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

DATE: **2 4 AUG** 1979

In reply
refer to: HHP-12

SUBJECT: <u>ACTION</u>: Distribution of Computer Software for the Highway Performance Monitoring System (HPMS) Data Submittal

FROM : Director of Highway Planning
Washington, D.C.  20590
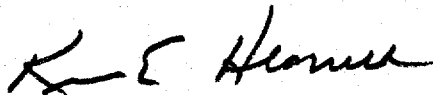
TO : All State Highway Agencies
THRU: Federal Highway Division Administrators

We appreciate the cooperative efforts of each State highway agency in implementing the Highway Performance Monitoring System.  We fully recognize the magnitude of each State's efforts necessary to achieve this highly desirable goal.  As a result, we have prepared software and guidelines for each State's use as an aid to develop the HPMS data submittal tape.

This memorandum transmits the "Procedural Manual for Data Submittal" and the associated battery of computer software that has been written to develop, edit and correct each State's section data that will be furnished to the FHWA on magnetic tape.  The magnetic tape being distributed along with this memorandum and Procedural Manual contains the battery of programs as well as test data.  All programs are written in COBOL.

Each State highway agency is encouraged to become familiar with the operation of this battery of programs through the use of the test data that have been furnished.  Should problems occur when using the test data and/or in subsequent production runs, please contact:

Beverly Harrison
Special Studies Branch, HHP-12
Telephone:  202-426-0193

Kevin E. Heanue

# Highway Performance Monitoring System

## Procedural Manual For Data Submittal

## Table of Contents

Highway Performance Monitoring System (HPMS)
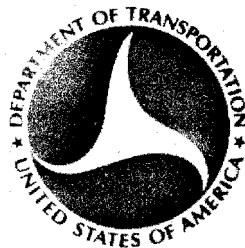
Procedural Manual for Developing
the Data Submittal Tape

## Introduction

The module of programs supplied for a State to use in preparing their
HPMS data submittal tape will develop the database from cards or card
images, edit the section data, correct errors in the data, and develop
mileage, DVMT, and volume group summaries by functional class.  The
module consists of a main (calling) program, STHPMS, and four subprograms:
DEVTAPE, EDITCK, UPDATE and SUMTBLES.  (It should be noted that this module
of programs has the capability of processing a mixed dataset consisting of
both urban and rural section data.)  The main program and four subprograms
are written in COBOL and were designed and developed on an IBM 360/65 with
full operating system (OS).

The module execution is controlled by user parameter cards through the
main program, STHPMS.  STHPMS calls the subprograms required by the
options the user selected.  The functions of the subprograms are as
follows:

> DEVTAPE reads the rural and urban section data on cards or card
> images in the FHWA worksheet format and creates the HPMS section
> record format on tape in sort by ID within county.  The subprogram
> verifies that cards 1 and 2 and the optional cards specified by
> the user are present for each section.  Only sections having valid
> card sets are added to the master dataset.  A summary is produced
> for each volume group by functional class giving the number of
> sections added and rejected along with the sampled and expanded
> mileage.  Lists of input cards, cards in error and a summary of
> sections for rural and urban areas are also produced.

> EDITCK reads the HPMS dataset produced by DEVTAPE or UPDATE (or
> a State developed tape in the required format) and checks each
> data item for valid codes.  Cross editing is also performed
> among data items.  Each section ID is checked for uniqueness
> within a county.  A listing is produced with errors and messages.[1]

> UPDATE is used to correct section errors detected by the subprogram,
> EDITCK.  Using transaction cards with the proper code, the user is
> able to delete or modify sections, and add or delete bridge and/or
> railroad crossing ID's.  (Note:  DEVTAPE is used to add a new section

---

[1] See Appendix A for a complete listing of edit specifications.

to the existing dataset.) A summary is produced by section ID indicating the changes made to a section record. Also produced is a listing of input transaction cards and a listing of cards which have format errors.

SUMTBLES develops and produces two sets of summary tables. One table gives a summary of 1978 sampled and expanded mileage, 1978 DVMT, 2000 DVMT, average section length and the number of sections with lengths less than 0.3 for rural and 0.1 for urban for each functional class by area. The second table is a summary for each volume group within a functional class by area which contains the number of sections sampled and sampled and expanded mileage.

The module has been designed to enable a State to develop, edit and update their data for rural sections only or urban sections only if the State finds this easier for their particular work environment. However, the _final_ edit and summaries _must_ be run with only one dataset consisting of both the rural and urban section data in sort by ID within county.

Data Submittal Tape Specifications

1. The tape should have the following characteristics:

   9 track                          1600 BPI or 800 BPI
   EBCDIC
   Standard Labels

2. The rural and urban section data should be submitted on the same tape and in the same dataset in sort by section ID within county. The dataset name (DSNAME) should be URBRURXX, where XX is the two-digit State code (FIPS) listed in the "HPMS Field Implementation Manual."

3. The tape submitted should have a volume serial number of HPMSXX, where XX is the two-digit State code as listed in the "HPMS Field Implementation Manual."

4. The data control block (DCB) characteristics are to be as follows:

   RECFM=VB
   LRECL=1823
   BLKSIZE=9119

Each State is to submit the final edit run and the final two sets of summary tables with their data tape. Remaining errors in the data are to be explained on the edit listing. The tape and listings are to be provided to the FHWA division office for forwarding to the Special Studies Branch, HHP-12, by December 31, 1979.

STHPMS

## A. Identification

```
Program Name:  STHPMS
Language    :  COBOL
Written By  :  Beverly Harrison
               Special Studies Branch (HHP-12)
               Program Management Division, FHWA
               Washington, D.C.  20590
               Phone:  202-426-0193
Date        :  May-June 1979
```

## B. Purpose

STHPMS processes the cards (or card images) punched from the HPMS
rural and urban worksheets to develop a State's HPMS section database
on tape, edits the database checking to see if each data item meets
the specifications, updates  the data items for each section found to
be in error and developes and produces summary tables for 1978 mileage,
1978 DVMT, 2000 DVMT and volume groups by functional class for each
area.

## C. Components

STHPMS is the calling program in the module composed of four
subprograms--DEVTAPE, EDITCK, UPDATE, and SUMTBLES.

## D. Parameter Cards

There are several types of parameter cards the user may elect to use
to execute STHPMS.  The number and types of parameter cards required
depends on the program option(s) selected.  The parameter cards may
be placed in the execution deck in any order.

1. State Name Card (ISTATE)

   This card is required for all executions of the program.  The
   keyword ISTATE is coded in columns 1-6 followed by an equal
   sign (=) in column 7.  Starting in column 8, 1-25 characters
   and blanks may be used to code the State name.  The State name
   is followed with the two-digit State code found in the "HPMS
   Field Implementation Manual."  Both digits must be coded and
   must be coded as /xx/, where xx is the State code.

        e.g., ISTATE=_ _TEST_HPMS_/99/

             ISTATE=TEST_HPMS/99/

2. Program Option Card (SELDEV, SELMOD, SELEDT, SELTAB)

The user must include <u>at least one</u> program option card and may include more than one <u>of these cards in an execution.</u>

a. SELDEV

This card enables the user to select the subprogram which processes the rural and/or urban cards (card images) punched from the HPMS worksheets and formats the cards into a record on tape for each sampled section. This card is also required when new sections are to be added to the existing database. SELDEV is punched in columns 1-6 followed by an equal sign (=) in column 7. The keywords for the options selected for the subprogram are then coded separated by a comma. The keywords may be coded in any order and are as follows:

<u>Required Keywords</u>

-<u>One</u> keyword from this set <u>must</u> be selected.

R    Cards for rural sections only are being input.

U    Cards for urban sections only are being input.

RU    Cards for both rural and urban sections are being input.

-<u>One</u> keyword from this set <u>must</u> be selected.

REQONLY    Only the required data are being submitted. (Cards 1 and 2 are being input.)

REQOPT    Required data plus some or all of the optional data are being submitted.(Cards 1-6 are being input.)

<u>Optional Keywords</u>

-If the keyword REQOPT is coded <u>at least one</u> of these keywords <u>must</u> be selected indicating which optional data is included.

CURVES    Indicates curves are included for all sections for some or all functional classes, Card 3.

GRADES    Indicates grades are included for all sections for some or all functional classes, Card 4.

BRIDID    Indicates bridge ID's are included for some or all sections where applicable, Card 5.

CROSSID     Indicates railroad crossing ID's are included
            for some or all sections where applicable,
            Card 6.


-ADDSECT is coded if <u>new</u> sections are to be <u>added</u> to the
 existing database.

-PUNERR is coded if the user wants the card sets in error
 punched as well as listed.

e.g., SELDEV=REQOPT,RU,GRADES,CROSSID   Rural and urban sections
                                        _   optional grades
                                        and railroad crossing
                                        ID's coded.

      SELDEV=PUNERR,R,REQONLY            Rural sections-required
                                         data only with card sets
                                         in error to be punched.

      SELDEV=RU,ADDSECT,REQOPT,CURVES   New rural and urban
                                        sections are being added
                                        to database with curves
                                        provided.

b.  SELMOD

    This card enables the user to select the subprogram which
    modifies (updates) or deletes a section in the database.
    This card is required if the user is correcting coding
    errors detected by the edit program.  SELMOD is punched
    in columns 1-6 followed by an equal sign (=) in column 7.
    Each keyword selected for a subprogram option is then
    coded, followed by a comma.  The keywords can be in
    any order.  The keywords for SELMOD are as follows:


    -<u>One</u> keyword from the following set <u>must</u> be coded.

    R    Rural sections only are to be modified or deleted.

    U    Urban sections only are to be modified or deleted.

    RU   Rural and urban sections are to be modified or
         deleted.

—One keyword from the following set must be coded.

ADDMOD    Indicates sections are to be added to the existing
tape and the database is then to be modified. When
this keyword is used, the program option card SELDEV
with keyword ADDSECT must also be included.

MODONLY  Coded when sections are to be modified or deleted
and no new sections are being added.

e.g., SELMOD=RU,MODONLY    Rural and urban sections are
to be modified or deleted.
No new sections are to be
added.

c.  SELEDT

This card enables the user to select the subprogram which checks
each data item to see if it has been coded to specifications.
In columns 1-6, punch SELEDT followed by an equal sign (=).
Starting in column 8, code the keyword(s) for the subprogram
option selected, each separated by a comma. The order of the
placement of the keywords is not significant. Select options
using the following keywords:

Required Keyword

—One of these keywords must be coded:

R    Rural sections are to be edited.

U    Urban sections are to be edited.

RU   Rural and urban sections are to be edited.

Optional Keywords

—FINAL      Indicates the final edit is to be made on the
rural and urban sections in the HPMS database.
The listing from this edit is to be submitted
to FHWA with the data tape.

—ERRMESS    Indicates the user wants a suppressed listing
with section ID, item number in error and
messages only. When this keyword is omitted,
the listing includes the value coded for each
data item for a section in error along with
item number in error and message.

-FHWADESIGN   Indicates the State has used the volume groups and ADT ranges contained in the "HPMS Field Implementation Manual" and that the volume group number coded is to be checked against the 1978 ADT.  If this keyword is <u>not</u> coded, the volume group number is <u>not</u> verified with the 1978 ADT value.

-MFRS   Indicates the State is not coding the items that could be reported via MFRS (* items in Manual).

e.g., SELEDT=R,FHWADESIGN   Rural sections to be edited with volume group number and 1978 ADT verified.

SELEDT=FINAL,RU   Final edit is to be made on all (rural and urban) HPMS sections.

d. SELTAB

This card enables the user to select the subprogram which developes and produces the summary tables for 1978 mileage, 1978 DVMT and 2000 ADT by functional class by area and the summary table for the volume groups by functional class, by area.  SELTAB is coded in columns 1-6 followed by an equal sign (=).  Starting in column 8, code the keyword(s) for the subprogram options selected with a comma separating each one. There is no required sequence for the keywords selected.  The SELTAB keywords are:

-<u>One</u> keyword from the following set <u>must</u> be selected.

R   Rural summary tables will be produced.

U   Urban summary tables will be produced.

RU   Rural and urban summary tables will be produced.

-<u>One</u> or <u>both</u> of the following keywords <u>must</u> be selected.

VOLGRP   Indicates the summary tables for the volume groups are to be developed and printed.

DVMTMILE   Indicates the summary table (s) for the mileage and DVMT are to be developed and printed.

-Optional Keyword

FINAL   Indicates the final set of summary tables are
        to be produced for the HPMS database and are
        to be submitted to FHWA along with the final
        edit and submittal tape.

e.g., SELTAB=FINAL,DVMTMILE,VOLGRP,RU    Final set of both
                                         tables to be
                                         produced.

SELTAB=VOLGRP,RU                         The tables for the
                                         volume group summaries
                                         are to be produced
                                         for use by the State.

3. Maximum Number Edit Errors (MAXERR)

This card is optional and is coded if the user wants the subprogram
which edits the data to stop execution when a maximum number of
sections with coding errors is reached. If MAXERR is included in
the execution deck, the program option card, SELEDT, must be
included. MAXERR is punched in columns 1-6 followed by an equal
sign (=). Starting in column 8, code the numeric value for the
maximum number of sections allowed to be in error. From 1 to 5
digits may be coded. The default value (card omitted) is for all
sections in the database to be edited.

e.g., MAXERR=550   Execution for the edit subprogram will
                   terminate when 550 sections with at least
                   one data item in error had been detected.

4. Functional Class Optional Curves/Grades Card (FUNCUR, FUNGRD)

These cards are required if the optional data is being provided
for curves and/or grades to indicate which functional class(es)
will have the data coded. They are necessary since the optional
grades and/or curves data must be provided for an entire functional
class. Both cards may be included in the same execution.

a. FUNCUR

This card is required if the user has included the SELDEV card
with the keywords, REQOPT and CURVES coded. In columns 1-6,
punch FUNCUR followed by an equal sign (=). Starting in
column 8, punch the functional class code for all classes
(rural and/or urban) which will have curve data coded. Leading
zeroes are optional for the rural functional class codes.

e.g., FUNCUR=2,11,14   Curves provided for rural functional
                       class 2 and urban functional classes
                       11 and 14.

FUNCUR=12,01,11   Curves provided for urban functional classes 11 and 12 and rural functional class 01.

   b.   FUNGRD

   This card is required if the user has included the SELDEV card with the keywords, REQOPT and GRADES coded. FUNGRD is punched in columns 1-6 followed by an equal sign (=). Punch the functional class code for all classes (rural and/or urban) which will have grade data coded starting in column 8. The leading zero for the rural functional class codes is optional.

      e.g., FUNGRD=17,11,01   Grades data will be provided for urban classes 17 and 11; rural, 01.

         FUNGRD=2,12,06,16   Grades data will be provided for rural classes, 02 and 06; urban, 12 and 16.

5.   MFRS Option Card (OPMFRS)

   This card is optional and is used only by a State submitting part of their HPMS data items via MFRS (* items on the worksheet in the HPMS Implementation Manual). If all data items are being coded in the HPMS database, this card will not be included in the execution deck. In columns 1-6, punch OPMFRS followed by an equal sign (=). One of the following keywords must then be coded starting in column 8.

      YFC   Indicates all * items except functional class are coded via MFRS. The functional class code is being coded for all sections with the remaining * items coded zero.

      NFC   Indicates all * items including functional class are being submitted via MFRS and are coded zero.

      e.g., OPMFRS=YFC   Functional class is being coded and all remaining * items are coded zero.

         OPMFRS=NFC   All * items including functional class are being coded zero.

E.   Control Cards (Transactions)

   If the program option SELMOD has been selected by the user, control cards are required to indicate which transactions are to be performed by subprogram UPDATE. There are four kinds of transaction control cards used by UPDATE:

-Delete a section

-Modify or update a section

-Add or delete bridge ID's

-Add or delete at-grade railroad crossing ID's

Each transaction card must contain the county and section ID coded for the section which is to be altered. The delete card cannot be used with any of the other three transaction cards for the same section; however, the other three cards may be included for the same section. If a combination of transaction cards is used, all of one kind must be placed together in sequence. There may be only one delete card per section and from 1 to 10 each of the other three transaction cards per section.

The card format for each transaction control card will be discussed separately.

1. Delete a section transaction card.

   This card enables the user to remove a section from the database. The card format is as follows:

   | | |
   |---|---|
   | Transaction card code---"D" | column 1 |
   | Sequence number---always "01" | columns 2-3 |
   | County code | columns 4-6 |
   | Section identification code | columns 7-18 |
   | Occurrence of section to be deleted | column 19 |
   | Blank | columns 20-80 |

   The county code must be a three-digit numeric value. The section identification must be coded exactly as the one to be deleted (embedded blanks must be the same if the ID was placed in database with blanks as part of it). The occurrence of the section to be deleted must be numeric and tells which matching section is to be deleted if there is more than one in the database.

   e.g., D01124_ _RT11_ _10212     Delete the second section with matching ID.

2. Update or modify a section transaction card.

   This card enables the user to correct the coding errors in the data items. The update transaction card may be used in combination

with the bridge ID card and/or the at-grade railroad crossing ID card. The card must have the following format:

| | |
|---|---|
| Transaction card code--"U" | column 1 |
| Sequence number--"01-10" | columns 2-3 |
| County code | columns 4-6 |
| Section ID | columns 7-18 |
| Data item number to be updated and data value in the following format: | columns 19-80 |

$$/N_1,D_1/N_2,D_2/N_3,D_3/.\ .\ ./N_i,D_i/$$

where $N_i$ = data item number to be updated*

$D_i$ = new data value

*The data item numbers are listed in Appendix B.

Several updates may be coded on one card providing that the last column coded contains a "/" thereby requiring both "N" and "D" values for a given update to be on the same card. The value coded for the data item must contain the same number of characters as the length of the data item, i.e., to update Item 43, 2000 ADT, one must code 6-digits. Leading zeroes must be coded for all numeric data items.

The data items which have a part a, b, or c (e.g., Item 18 or Item 27) must have the letter coded as part of the item number as indicated in Appendix B--that is, to correct the right shoulder width to "10" one would code /18-A,10/. The data items with more than one set of values (e.g., railroad crossing or bridge ID's) must have the position of the one to be corrected as part of the item number as indicated in Appendix B--that is, to correct the third railroad crossing ID, one would code /56-03,007631A/. The position for the item number must be coded as two digits with leading zero.

The sequence number always start with 01, must be two digits and indicates the location of the update card when there is more than one per section. The county code must have a three-digit numeric value and the section ID must be coded exactly as the ID for the section in the database. If all the data item corrections required for a section cannot be coded on 10 update cards, another execution will have to be made to correct any remaining data items. There cannot be more than 10 update cards with the same county and section ID code.

e.g., U01017_ _ _000011289/11,0110/27-B,03/ Item 11, section length
is to be corrected to a
value "0110"; Item 27-B,
number at-grade inter-
sections with stop signs
is to be corrected to a
value of "03".

U06020_ _ _ _ _ _ _ _286/53-E,02023/56-12,701936A/33,2/
Item 53-E, curves is
changed to "02023"; Item 56,
the 12th crossing ID is to
be corrected to "701936A";
Item 33, terrain is changed
to "2".

3.  Add or delete Bridge ID's transaction card.

    This card enables the user to add the optional bridge ID's to
    an existing section, add more bridge ID's to a section which
    already has ID's coded (<99) or delete one or more ID's from
    the existing set of ID's for a section. This card may be used
    in combination with the update card and/or at-grade crossing
    ID card. The bridge ID transaction card format is as follows:

    | | |
    |---|---|
    | Transaction card code--"B" | column 1 |
    | Sequence number--"01-10" | columns 2-3 |
    | County code | columns 4-6 |
    | Section ID | columns 7-18 |
    | Function performed on bridge ID<br>--"A" add ID's coded<br>--"D" delete ID's coded | column 19 |
    | Bridge ID's to be added or deleted<br>coded 15 characters each, 1 to 4<br>per card | columns 20-79 |
    | Blank | column 80 |

    The sequence number must begin with 01, be numeric and must have
    two digits coded. A three-digit numeric value must be coded for
    the county code and the section ID must be coded exactly as the
    existing section in the database. Only one function, "D" or "A",
    may be coded per card and all ID's coded on that card will be
    added or deleted; however, existing bridge ID's may be deleted
    for a section and new ID's added by coding one or more cards
    with a "D" and one or more with an "A". Each bridge ID must be
    15 characters (blanks included) in length.

e.g., B01171_ _ _ _RT07628D2243CTYRT10RT25

B02171_ _ _ _RT07628A_FED76982761072FED769871469352

Two bridge transaction cards for one section. First a
bridge ID is to be deleted and then two new ID's are
to be added for the section.

If more than 40 bridge ID's are to be deleted and/or added
for a section, the subprogram UPDATE will need to be executed
more than once since the maximum number of ID's that can be
coded in one execution is 40 (4 per card, 10 cards maximum).

4. Add or delete at-grade railroad crossing ID's card.

The use of this card enables the user to add the optional
crossing ID's to an existing section, add more crossing ID's
to a section which already has ID's coded (<15) or delete one
or more ID's from the existing set of ID's for a section. The
crossing transaction card may be used in combination with the
update and/or bridge ID transaction cards. The card format is
as follows:

| | |
|---|---|
| Transaction card code--"C" | column 1 |
| Sequence number--"01-10" | columns 2-3 |
| County code | columns 4-6 |
| Section ID | columns 7-18 |
| Function performed on Crossing ID<br>--"A" add ID's coded<br>--"D" delete ID's coded | column 19 |
| Crossing ID's to be added or deleted<br>  coded as 7 characters each, 1 to 8<br>  per card | columns 20-75 |
| Blank | columns 76-80 |

The sequence number __must__ be a two-digit numeric value and __must__
start with 01. The county code must be a three-digit numeric
value. The section ID coded must match the one in the database
exactly. Crossing ID's may be deleted and added for the same
section by using 2 or more crossing ID transaction cards, some
with a function of "D" and some with "A". Each crossing ID
coded __must__ be 7 characters in length--six numeric digits and
one alphabetic.

e.g., CO1273_ _ _ _ _ _ _12854D724329B816629F

CO2273_ _ _ _ _ _ _12854A872131J923517D396424A157739H

Two crossing transaction cards for the same section.
The first function says delete 2 crossing ID's; then
add 4 crossing ID's to the section.

F.  Input/Output Datasets

Several datasets are used during execution depending on the program
option(s) selected.  For a reference to see the datasets required
for each program option, see Table 1.

1.  SYSUDUMP/SYSABEND    Standard "system output" dataset used if
                         the program abnormally terminates during
                         execution.  Destined to the printer.
                         Required for all executions.

2.  SYSOUT               Standard "systems output" dataset for
                         printing system messages.  Required for
                         all executions.

3.  SYSIN                Input dataset containing the program
                         parameter cards.  Consists of 80 -
                         character records.  Required for all
                         executions.

4.  PRINTOUT             Output dataset destined to the printer
                         for listing of parameter cards, error
                         messages and summary tables.  Required
                         for all executions.

5.  DATAIN               Input dataset containing the cards punched
                         from the rural and/or urban worksheets or
                         card images.  Contains 80 - character
                         records.  Required for program option SELDEV.
                         The card set must be in sort by functional
                         class within area.

6.  SECTDATA             Input/output dataset which contains the HPMS
                         section data.  The DCB parameters are defined
                         by the subprogram when used as input or output.
                         Required output dataset for program option
                         SELDEV.  If SELDEV is coded with keyword
                         ADDSECT, then the DISP parameter must be coded
                         - DISP=(MOD,...) - so the added sections may
                         be placed at the end of the current HPMS
                         section database.  Required input dataset for
                         the program option SELEDT and/or SELTAB if
                         these program options are selected with SELDEV
                         without the keyword ADDSECT.

7. CURDATA

Input/output dataset which contains the HPMS section dataset. The DCB parameters are defined by the subprogram(s). Required output dataset for the program option SELDEV with keyword ADDSECT. Required input dataset for SELMOD. Required input dataset for SELEDT or SELTAB or SELEDT and SELTAB. Required input dataset for program option SELEDT and/or SELTAB and SELDEV with keyword ADDSECT.

8. NEWDATA

Input/output dataset which contains the HPMS section data. The DCB parameters are defined by the subprogram. Required output dataset for the program option SELMOD. Required input dataset for SELEDT and/or SELTAB if these program options are selected with (1) SELDEV with keyword ADDSECT and SELMOD with keyword ADDMOD or (2) SELMOD with keyword MODONLY.

9. ERRCARDS

Output dataset destined to the card punch. Contains 80 - character records. Required output for the program option SELDEV with keyword PUNERR.

10. ERRLIST

Output dataset destined to the printer. Required output dataset for the program option SELDEV and/or SELEDT and/or SELMOD. Contains user supplied cards found to be in error and/or error messages.

11. MODCARD

Input dataset destined to the card reader. Consists of the 80 - character transaction cards to modify and/or delete sections. Required dataset for program option SELMOD.

12. ALTFILE

Temporary input/output dataset required for the program option SELMOD. Contains the sorted valid transaction card sets to modify and/or delete HPMS sections. The DCB parameters are defined by the program.

13. SORTLIB

Dataset containing the sort routine. Required for program option SELDEV and/or SELTAB and/or SELMOD.

14. SORTWK01
    SORTWK02
    SORTWK03

Intermediate storage datasets for sorting applications. The sort program requires at least three work datasets. Additional work datasets may be defined with DD names beginning with SORTWK04 when larger amounts of data are to be sorted. Required datasets for program option SELDEV and/or SELTAB and/or SELMOD.

Table 1

Datasets Required for Each Program Option

| Datasets | SELDEV | SELMOD | SELEDT | SELTAB |
|---|---|---|---|---|
| SYSUDUMP | O | O | O | O |
| SYSOUT | O | O | O | O |
| SYSIN | I | I | I | I |
| PRINTOUT | O | O | O | O |
| | | | | |
| DATAIN | I | | | |
| SECTDATA | O | | | |
| CURDATA | O($\begin{smallmatrix}\text{Keyword}\\\text{ADDSECT}\end{smallmatrix}$) | I | I | I |
| NEWDATA | | O | | |
| | | | | |
| ERRCARDS | O($\begin{smallmatrix}\text{Keyword}\\\text{PUNERR}\end{smallmatrix}$) | | | |
| ERRLIST | O | O | O | |
| MODCARD | | I | | |
| ALTFILE | | O/I | | |
| | | | | |
| SORTLIB | I | I | | I |
| SORTWK01 | I | I | | I |
| SORTWK02 | I | I | | I |
| SORTWK03 | I | I | | I |

G.  Program Operation

The parameter cards are read and processed to determine which program option cards have been included and which keywords were selected for these program options.  Each card read is edited for general format-- valid parameter card name with valid keywords and numeric value where required.  Once a general error is detected, the remainder of the parameter cards are read and listed without being processed for selections along with the appropriate general error message.  If the end of the parameter cards are reached without any general error being detected, a more detailed edit is performed on the set of cards with specific error message(s) listed for any error(s) detected. Some of the detailed edits are:

1.  ISTATE card must be included in card set.

2.  If SELMOD with keyword ADDMOD, then SELDEV card must be included in card set.

3.  If MAXERR card is included, then SELEDT card must be present in card set.

4.  If SELDEV with keywords REQOPT and CURVES, then FUNCUR must be included in card set.

If at least one error is detected--general or from the more detailed editing--the execution of STHPMS terminates with the parameter cards listed along with the appropriate error message(s).

Once the end of the parameter cards are reached with no errors, STHPMS proceeds to call the subprogram(s) required to perform the program option(s) selected by the user.  Each subprogram operation will be discussed briefly in the order in which they are called.

DEVTAPE (SELDEV)

Each set of cards is checked to verify that required card 1 and card 2 with matching ID's are present; and, if curves (card 3) and/or grades (card 4) are to be provided,the program verifies each is present for the functional classes coded on the FUNCUR or FUNGRD parameter cards. If cards 5 or 6 are provided,the ID's are verified with those on card 1.  Any section with errors in the card set is not added to the dataset created by the program.  Each valid section is added to the dataset in the HPMS record format (see Appendix C), added to the appropriate matrix for the volume group summary by functional class and added to the rural or urban section count.  Upon reaching the end of the section punched cards, the output dataset is sorted by section ID within county; the volume group summary report is printed by functional class by area; cards in error are listed with error messages and a summary report for the data in the dataset is printed.  Execution then returns to the main program,STHPMS,and the next subprogram selected is called.

UPDATE (SELMOD)

The transaction card sets are read and checked for general format
errors with each valid set being placed in a temporary dataset,
ALTFILE, with one record consisting of all cards (1-10) in a
transaction set. When the end of the transaction cards is reached,
ALTFILE is sorted by ID within county to match the ordering on the
dataset from DEVTAPE used as input for this program. Next, the
process of matching the section ID on the ALTFILE with the section
to be modified or deleted begins. Once a match is found, the section
record is not written on the new master dataset for a delete trans-
action or the section is written on the new master dataset with the
corrected (update) data value, bridge ID's added and/or deleted or
railroad crossing ID's added and/or deleted. This matching process
continues until the end of the ALTFILE or the section dataset is
reached. During this process, sections not being updated (unmatched)
are copied to the new master dataset. A summary is written indicating
the transactions by section ID for rural and urban. A listing is also
given showing all transaction cards input, cards in error and error
messages. Upon completion of all reports,execution control returns
to STHPMS and the next subprogram selected is called.

EDITCK (SELEDT)

Each section record is read and the rural/urban code is checked to
match the area with the user selection on the parameter card--R, U,
or RU. All data items in the section record are then verified for
valid codes with the data items which are coded for all sections
being edited. Next, the urban only or rural only data items are
verified. The program then checks to see if the MFRS option was
selected and uses the appropriate edits with MFRS coding or non-MFRS.
If the keyword FHWADESIGN was selected, each volume group number is
checked with the 1978 ADT coded to verify the ADT falls within the
range of ADT's for the volume group coded. Next, the program checks
to see if the section has any optional data coded; if so, then, it
checks to see which optional data and executes only the edits for
the optional data coded. If no errors are detected, the next section
record is read and the editing for that section is performed. If at
least one data item was found to be in error, a check is made to see
which print option was selected--section ID's with error messages
or section ID's, all coded values for data items and error messages.
The appropriate listing is then printed along with calculations being
made for the summary report. After the section with errors is printed,
a check is made to see if the number of sections in error exceeds the
maximum number of errors allowed, if not, a new section record is read
and the editing is performed for that section. When the maximum
number of errors allowed is exceeded or the end of the dataset is
reached, the edit summary report is printed and execution returns to
STHPMS and the next subprogram selected is called.

SUMTBLES (SELTAB)

The program reads each section record checking to see if the rural/
urban code matches the selection on the SELTAB parameter card--R, U,
or RU. A work record is created containing the data items required
for the calculations in the two summary tables--mileage and DVMT
summaries or volume group summaries. Upon reaching the end of the
HPMS section dataset, the work file is sorted by urbanized code
(Note the urbanized code for rural sections is coded "000"; small
urban, "999"). Each sorted record is then returned with the
appropriate checks for placement of the data in the proper matrices
and calculations being performed for each table selected--mileage
and DVMT and/or volume group. When the end of an urbanized area or
area is reached, the end calculations required for the mileage and
DVMT table are performed if the user selected this summary. After
all calculations are made, each table selected is printed with the
mileage/DVMT table first; then, the volume group summary table for
each functional class within the area. The above procedure continues
until the end of the sorted file is reached. Execution then returns
to STHPMS and execution stops.

H. Output

1. Dataset on Tape or Disk

   The program option SELDEV creates a dataset with one record for
   each HPMS sampled section in the HPMS record format. The program
   option UPDATE creates a dataset with corrected values for the
   HPMS data items. Appendix C contains the HPMS record format.

2. Printed

   a. List of parameter cards provided by the user.

   b. Error messages if invalid parameter cards are used.

   c. Volume group summaries for data added to dataset.

   d. List of invalid cards when data is being added to
      dataset in card format with error message.

   e. Error messages and/or section data item values from
      editing of data.

   f. Update sumamries.

   g. Summary tables for mileage, DVMT and volume groups.

   Appendix D contains samples of printed output.

I. Error Messages

The messages are listed below for STHPMS and each program option. (The edit messages for the data items in error will not be listed as the edit specifications are included in Appendix A.)

STHPMS

1.  "INVALID KEYWORD ON PARAMETER CARD" – Indicates the user has misspelled a keyword. Execution terminates.

2.  "INVALID FORMAT ON PARAMETER CARD" – Indicates the equal sign, required slashes, or comma has been omitted. Execution terminates.

3.  "REQUIRED STATE NAME CARD MISSING" – Indicates the ISTATE card is missing. Execution terminates.

4.  "PROGRAM OPTION SELDEV SELECTED WITH REQOPT INDICATED. OPTIONAL DATA TO BE CODED WAS NOT INDICATED" – Indicates the user needs to verify the type of data being provided in card format. Execution terminates.

5.  "VALUE CODED FOR MAX NUMBER ERRORS ALLOWED (NUMERR) OR STATE CODE OR FUNCTIONAL CLASS IS NOT NUMERIC" – Indicates a nonnumeric has been coded for a numeric. Execution terminates.

6.  "FUNCTIONAL CLASS NOT INCLUDED FOR OPTIONAL CURVES AND/OR GRADES DATA" – Indicates user has coded keyword CURVES and/or GRADES WITHOUT INCLUDING THE FUNCUR and/or FUNGRD card. Execution terminates.

7.  "INVALID CARD NAME ON PARAMETER CARD" – Indicates the user has miscoded the card name. Execution terminates.

8.  "PROGRAM OPTION SELDEV SELECTED WITH REQONLY INDICATED. OPTIONAL DATA CODED ON SELDEV CARD. VERIFY " – Indicates the user needs to verify which type of data is being provided in card format. Execution terminates.

9.  "SELDEV CARD DOES NOT HAVE TYPE DATA KEYWORD CODED REQONLY OR REQOPT" – Indicates the user has not coded what data are being provided in card format. Execution terminates.

10. "PARAMETER CARDS DO NOT CONTAIN AT LEAST ONE PROGRAM OPTION CARD--SELDEV, SELEDT, SELMOD, SELTAB" – Indicates the user did not select a program option. Execution terminates.

11. "MAXIMUM NUMBER ERRORS CODED WITHOUT PROGRAM OPTION SELEDT CARD" – Indicates the MAXERR card was included when the edit program was not selected. Execution terminates.

12. "SELDEV CODED REQONLY. CURVES AND/OR GRADES FUNCTIONAL CLASSES
HAVE BEEN CODED. VERIFY CARDS" - Indicates the user needs to
check what data is being provided in card format. Execution
terminates.

13. "ADDMOD CODED ON SELMOD CARD. REQUIRED SELDEV CARD MISSING
FOR THIS SELECTION" - Indicates new sections are to be added
to the dataset, but the program which adds sections was not
selected. Execution terminates.

14. "MODONLY CODED ON SELMOD CARD. SELDEV CARD CODED FOR THIS
SELECTION IS IN ERROR. VERIFY SELECTIONS" - Indicates the
program to add sections to dataset was selected but the keyword
on SELMOD indicated sections in existing dataset were to be
modified only. Execution terminates.

15. "PARAMETER CARDS CONTAIN AT LEAST ONE ERROR. CHECK ALL CARDS.
EXECUTION TERMINATED" - Self-explanatory.

DEVTAPE (SELDEV)

1. "INVALID CARD NUM FOR REQONLY" - Required only data
indicated but cards 3-6 are included or some other number
is punched in column 80. Section is not added to dataset.
Verify card number.

2. "ID's DON'T MATCH CARDS 1 & 2" - The section ID has been miscoded
on one of the cards. Section is not added to dataset.

3. "CARD 1 MISSING FOR SECTION" - Each sampled section must have a
card 1 & 2. Section is not added to dataset.

4. "CARD 2 MISSING FOR SECTION" - See No. 3 above.

5. "REQUIRED CARD 1 & 2 MISSING" - See No. 3 above.

6. "CARD 3 OR 4 MISSING FC LISTED" - Indicates the functional class
coded on card 1 is to have curve (card 3) or grade (card 4) data
coded. Section is not added to dataset.

7. "TOO MANY CROSSING ID CODED" - The section record format has been
set up to allow for 1-15 railroad crossing ID's per section.
Section is not added to dataset.

8. "ID's DON'T MATCH OPT CARD(S)" - The section ID coded on cards 3-6
does not match the ID on cards 1 & 2. Section is not added to
dataset.

9. "FC LISTED CARDS 3 & 4 NOT CODED" - Functional class has been coded to have <u>both</u> curves and grade data. <u>Both</u> cards are not coded. Section is not added to dataset.

10. "INVALID CARD NUMBER NOT 1-6" - Column 80 contains some other number or nonnumeric character. Section is not added to dataset.

11. "CHECK FC LIST FOR CUR/GRD" - Curve (card 3) or grade (card 4) data has been coded for a functional class not listed on FUNCUR or FUNGRD card. Section is not added to dataset.

12. "TOO MANY BRID ID CODED" - The section record format has been set up to allow for 1-99 bridge ID's per section. Section is not added to dataset.

13. "BRIDID (C5) NOT LISTED AS OPT" or "XINGID (C6) NOT LISTED AS OPT" or "CURVES (C3) NOT LISTED AS OPT" or "GRADES (C4) NOT LISTED AS OPT"- Optional data has been coded but was not indicated to be included. Section is not added to dataset.

14. "INVALID CODE CARD 1 COLUMN 79" - Card 1 contains an invalid rural/ urban code. Must be coded 1 for an urban section; coded 2 for a rural section. Section is not added to dataset.

15. "RU CODE NOT = TYPERUN SELECT" - Indicates the user coded R or U on the SELDEV card, but rural cards have been included when "U" was coded or urban cards have been included when "R" was coded. Section is not added to dataset.

UPDATE (SELMOD)

1. "UPDATE CARD IMPROPER FORM" - Indicates the user has not coded the update transaction card correctly. This card is not used.

2. "SEQ NUM MUST BE NUMERIC > 0" - Indicates the sequence number on the transaction card has been miscoded. The transaction is not used for the card set with matching ID.

3. "CK: SEQ NUM, ID or TRAN CODE" - The ordering of the transaction set should be verified, section ID and county code checked. In some situations, the transaction code may be invalid. The set with matching ID's is not used.

4. "DELETE CARDS > 1 WITH SAME ID"-More than one delete card has been included for the same section. The deletion is not performed for either card. Verify ID's on cards.

5. "INVALID TRANSACTION CODE" - The first column on the card does not contain a U, D, B, C. The transaction set with matching ID is not used.

6. "CARDS IN TRANSACTION SET > 10" - The ID's on all cards should be verified to see if two different section modifications have been coded as one or the transaction code should be verified to see if two different codes should have been used. The set is not used.

7. "TRAN CODE NOT =; SEQ # > 1, ID =" - Different transaction codes coded for same ID with a sequence number not equal 01. Verify ID, transaction code, and sequence number. The set is not used.

8. "TOO MANY BRID/XING ID FOR SECT" - Indicates the addition of bridge or crossing ID's exceeded the maximum number - bridge, 99; crossing, 15. Only the ID's beyond the maximum number were not added. Card with these ID's is listed.

9. "INVALID ITEM NUMBER" - Indicates that particular update could not be performed. All valid updates on card are performed.

10. "ID TRANS NOT = ID FOR SECTION" - Indicates the county code and section ID on the transaction card does not match any in the dataset. No transaction performed.

11. "OCCURRENCE OF DELETION INVALID" - Indicates ID for deletion matched but there was only one section with that ID. Deletion is not performed.

12. "INVALID FORMAT FOR UPDATE CARD" - Verify the coding of card. This particular card is not used but all valid cards in set are used and updates are performed.

13. "INVALID FORMAT FOR UPDATE" - Indicates that particular update has a coding error--not of form /xx,xxxx/ or /xx-x, xx/. All valid coded updates on card are used.

14. "INVALID FORMAT FOR BRIDID CARD' - Indicates that particular bridge transaction card is miscoded and is not used. Any valid cards in set are used with actions performed on section.

15. "INVALID FORMAT FOR XINGID CARD" - Indicates that particular crossing transaction card is miscoded and is not used. Any valid cards in set are used with actions performed on section.

16. "INVALID FORMAT FOR DELETE CARD" - Indicates the card is miscoded. The deletion is not performed.

17. "INVALID SUB-ITEM LETTER OR NUM" - Indicates the letter coded
for item number 18, 27, 37, 42, 53, or 54 is miscoded or the
bridge ID referenced is > 99 or the crossing ID referenced is
> 15. The update is not performed. Any other valid updates
on card are performed.

18. "CODE NOT 'A' or 'D' FOR ID'S" - Indicates the action to be
performed on bridge or crossing ID is miscoded. This card
is not used. Any other valid card in set is used.

19. "DEL BRID/XING ID DOESN'T MATCH" - Indicates the ID coded to
be deleted from section bridge ID's or crossing ID's is not
on data record. Verify. Any other valid ID to delete on card
is deleted for section.

20. "INVALID ITEM NUM WITH SUB-ITEM" - Indicates a letter or number
has been coded for an item number which has no subitems. See
Appendix B to verify which data items have subitems. This
particular update is not performed, but any valid update on
card is performed.

21. "DEL CARD & OTHER TRAN CARD = ID" - Indicates a delete for a
section has been coded with an update, crossing ID action or
bridge ID action for the same section. Verify transaction
codes. Cards are not used.

22. "ITEM NUM MUST HAVE SUB-ITEM" - Indicates the coded item number
must have a letter or number subitem. This particular update
is not made. Any other valid updates on card are performed.

J. Core and Timing

The amount of core and CPU time required depends on the program
option selected or combination of program options selected. The
amount of core for execution varies from approximately 100K bytes
to 166K bytes. The approximate amount of core by program option
is as follows:

```
    DEVTAPE(SELDEV) 142K bytes
    EDITCK(SELEDT)   100K bytes
   *UPDATE(SELMOD)   134K bytes or 166K bytes
    SUMTBLES(SELTAB) 140K bytes
```

   *SELMOD requires the larger amount of core for execution to
   sort the new master dataset if a county code or section ID
   is modified.

The amount of CPU time per 125 sections varies from 2.00 seconds to
8.70 seconds depending on the program option or combinations of
program options being executed.

K.   Sample Run Setups

<div align="center">
EDIT SETUP WITH MAXIMUM NUMBER ERRORS SET<br>
PRINTED OUTPUT ERROR MESSAGES ONLY
</div>

```
//HPMS   EXEC   PGM=STHPMS,REGION=100K
//STEPLIB   DD   DSN=STATE.HPMS.LOADLIB,VOL=SER=SHP002,UNIT=SYSDA,
//    DISP=OLD
//SYSOUT   DD   SYSOUT=A
//SYSUDUMP   DD   SYSOUT=A
//SYSIN   DD   DATA
ISTATE=   TEST HPMS /99/
SELEDT=RU,FHWADESIGN,ERRMESS
MAXERR=100
/*
//PRINTOUT   DD   SYSOUT=A,DCB=(RECFM=FB,BLKSIZE=133)
//CURDATA   DD   UNIT=SYSDA,DISP=(OLD,KEEP),
//    VOL=SER=SHP002,DSNAME=HPMSTEST
//ERRLIST   DD   SYSOUT=A,DCB=(RECFM=FB,BLKSIZE=133)
/*
//
```

<div align="center">
SUMMARY TABLES SETUP<br>
RURAL ONLY
</div>

```
//HPMS   EXEC   PGM=STHPMS,REGION=140K
//STEPLIB   DD   DSN=STATE.HPMS.LOADLIB,VOL=SER=SHP002,UNIT=SYSDA,
//    DISP=OLD
//SYSOUT   DD   SYSOUT=A
//SYSUDUMP   DD   SYSOUT=A
//SYSIN   DD   DATA
ISTATE=   TEST HPMS /99/
SELTAB=VOLGRP,DVMTMILE,R
/*
//PRINTOUT   DD   SYSOUT=A,DCB=(RECFM=FB,BLKSIZE=133)
//CURDATA   DD   UNIT=SYSDA,DISP=(OLD,KEEP),
//    VOL=SER=SHP002,DSNAME=HPMSTEST
//SORTLIB   DD   DSNAME=SYS1.SORTLIB,DISP=SHR
//SORTWK01   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK02   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK03   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK04   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK05   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
/*
//
```

NOTE:  Printed output requires 65 lines of print.

SAMPLE SETUP
DEVELOP DATASET, EDIT SECTION DATA, DVMT & MILEAGE SUMMARY TABLES
RURAL/URBAN

```
//HPMS    EXEC   PGM=STHPMS,REGION=150K
//STEPLIB   DD   DSN=STATE.HPMS.LOADLIB,VOL=SER=SHP002,UNIT=SYSDA,
//     DISP=OLD
//SYSOUT   DD   SYSOUT=A
//SYSUDUMP   DD   SYSOUT=A
//SYSIN   DD   DATA
ISTATE=   TEST HPMS /99/
SELDEV=RU,REQOPT,CURVES,GRADES,BRIDID,CROSSID
FUNCUR=06,02,12,16
FUNGRD=06,16,02
SELEDT=RU,FHWADESIGN
SELTAB=RU,DVMTMILE
/*
//PRINTOUT   DD   SYSOUT=A,DCB=(RECFM=FB,BLKSIZE=133)
//SECTDATA   DD   UNIT=SYSDA,DISP=(NEW,KEEP),SPACE=(TRK,(4,2)),
//     VOL=SER=SHP002,DSNAME=STATE.HPMS.TEST
//ERRLIST   DD   SYSOUT=A,DCB=(RECFM=FB,BLKSIZE=133)
//DATAIN   DD   DATA
           .
           .
           .

           SECTION DATA ON CARDS GO HERE
           .
           .
           .
/*
//SORTLIB   DD   DSNAME=SYS1.SORTLIB,DISP=SHR
//SORTWK01   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK02   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK03   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK04   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK05   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
/*
//
```

NOTE:  Printed output requires 65 lines of print.

SAMPLE SETUP
MODIFY SECTION DATASET & EDIT THE NEW MASTER DATASET
ONLY ERROR MESSAGES PRINTED FROM EDIT

```
//HPMS    EXEC   PGM=STHPMS,REGION=140K
//STEPLIB  DD   DSN=STATE.HPMS.LOADLIB,VOL=SER=SHP002,UNIT=SYSDA,
//    DISP=OLD
//SYSOUT   DD   SYSOUT=A
//SYSUDUMP  DD   SYSOUT=A
//SYSIN   DD   DATA
ISTATE=   TEST HPMS /99/
SELMOD=RU,MODONLY
SELEDT=RU,FHWADESIGN,ERRMESS
/*
//PRINTOUT  DD   SYSOUT=A,DCB=(RECFM=FB,BLKSIZE=133)
//CURDATA  DD   UNIT=SYSDA,DISP=(OLD,KEEP),
//    VOL=SER=SHP002,DSNAME=STATE.HPMS.TEST
//MODCARD   DD   DATA
              .
              .
              .
          CARDS TO MODIFY THE DATASET GO HERE
          .
          .
          .
/*
//ALTFILE   DD   UNIT=SYSDA,SPACE=(TRK,(2,1)),DISP=(NEW,DELETE),
//    DSNAME=&&WORKUP
//NEWDATA   DD   UNIT=SYSDA,SPACE=(TRK,(4,2),RLSE),DISP=(NEW,KEEP),
//    VOL=SER=SHP002,DSNAME=TEST.UPDATE.HPMS
//ERRLIST   DD   SYSOUT=A,DCB=(RECFM=FB,BLKSIZE=133)
//SORTLIB   DD   DSNAME=SYS1.SORTLIB,DISP=SHR
//SORTWK01   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK02   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK03   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK04   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//SORTWK05   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
/*
//
```

NOTE:  Printed output requires 65 lines of print.
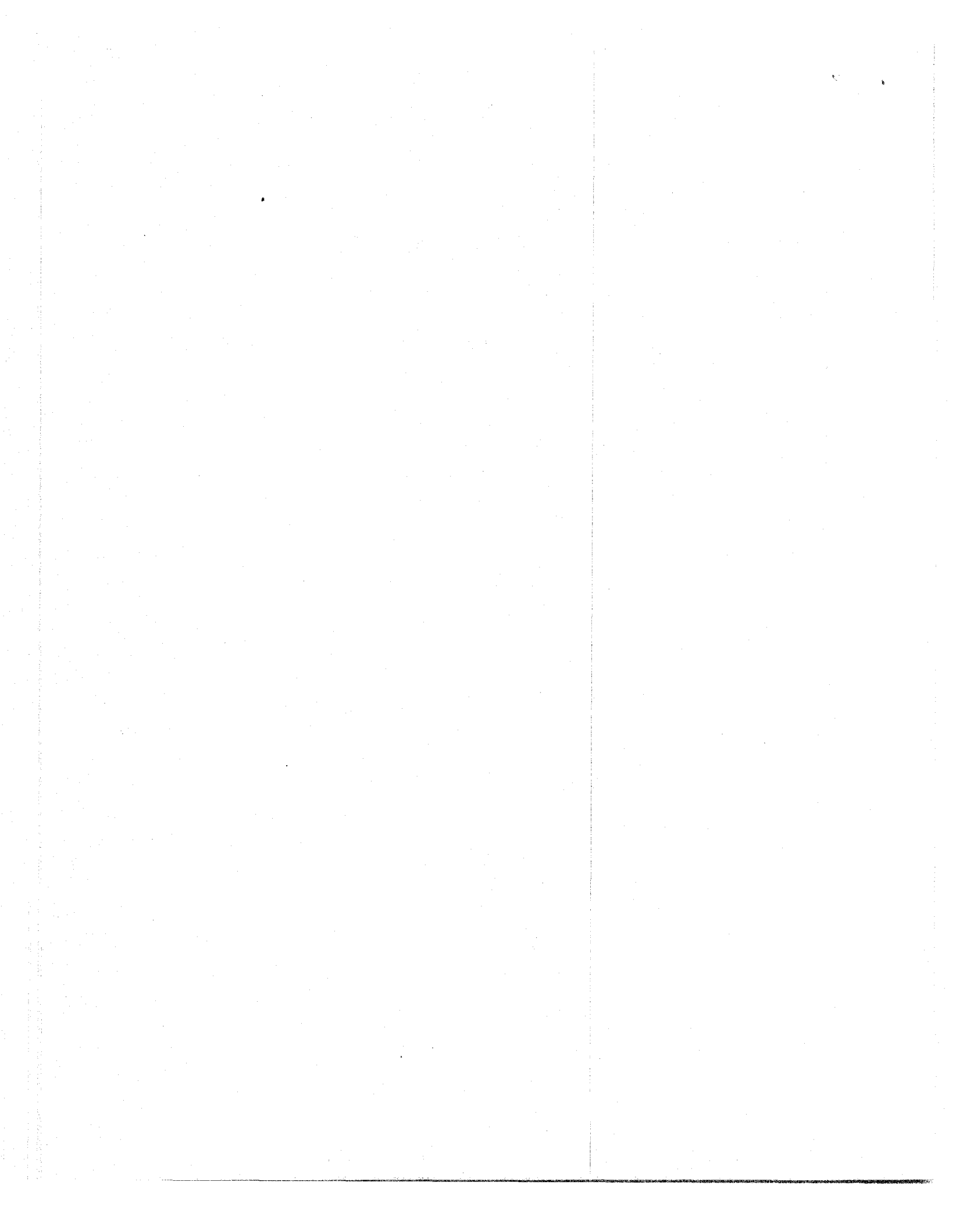
APPENDIX A

EDIT SPECIFICATIONS FOR HPMS SAMPLED DATA

The following specifications are to be met when editing the HPMS inventory data:

1. One asterisk (*) indicates items which may be optionally reported through the MFRS, as described in the HPMS/MFRS Coordination Section in Chapter I. The indicated items must contain zeroes, except for Functional Class (Item 8) and 1978 ADT (Item 36). We have requested that Items 8 and 36 be completed even if this option is selected, so that the edit and summary programs developed can be utilized to the maximum extent possible.

2. Two asterisks (**) indicate that when the MFRS option is selected, the following should be noted:

   a. The edits for Items 22, 24, 25, 49, 50, 51, and 52 (Rural) will be limited due to Item 21, Surface Type, not being reported.

   b. Items 15 and 52 (Urban) will be limited since Functional Class may not be reported.

| DATA ITEM | EDIT TO BE PERFORMED |
|---|---|
| 1 - Year | Must equal 78 for this submittal. |
| 2 - State Code | Must match State code on edit program parameter control card. |
| 3 - Type of Section ID | Must contain a value from 1 to 3. |
| 4 - Section ID | Must be a nonzero alphanumeric and must be unique to this section on a countywide basis. |
| 5 - Segment | Must be zero for this submittal. |
| * 6 - County Code | Must contain a nonzero numeric value. |
| 7 - Urbanized Area Code (Urban Only) | Must contain a value from 001 to 291, 400-500, or "999". |

| | |
|---|---|
| * 8 - Functional Class | Rural: Must equal one of the following: "01", "02", "06", "07", "08". <br> Urban: Must contain a value from 11 to 17. |
| * 9 - Federal-Aid System | Must equal one of the following: <br> Rural: "1", "2", "4", "8". <br> Urban: "1", "2", "3", "8". |
| *10 - Jurisdictional Responsibility | Must contain a value from 1 to 4. |
| 11 - Section Length | Must contain a nonzero numeric entry. |
| *12 - Access Control | Must contain a value from 1 to 3. |
| 13 - Number of Through Lanes | Rural: Should contain a value from 01 to 10. <br> Urban: Should contain a value from 01 to 14. |
| 14 - Lane Width | Should contain a value from 07 to 15. |
| **15 - Approach Width | If Item 8 > 13, this item should contain a value from 007 to 100. Otherwise, it must contain "000". |
| 16 - Median Width | Must contain a numeric value. If Item 13 $\leq$ 2, this item should contain "00". |
| 17 - Median Type | If Item 16 > 00, this item must contain a value from 1 to 3. Otherwise, it must contain "4". |
| 18 - Shoulder Width <br>     a. Right <br>     b. Left | The right shoulder should contain a value from 00 to 12. If Item 16 = 00, left shoulder must be 00, otherwise left shoulder should contain a value from 00 to 12. |

| | |
|---|---|
| 19 - Shoulder Type | If Item 18a > 0, this item must contain a value from 1 to 3. Otherwise, it must contain "4" or "5". |
| 20 - Drainage Adequacy | Must contain a value from 1 to 3. |
| *21 - Surface Type | Must contain one of the following: "30", "40", a value from 51 to 53, "60", "70", "80". If Item 8 is "11" or "01", this item should contain a value from 60 to 79. (MFRS detailed codes will be accepted by the edit.) |
| **22 - Pavement Section | If Item 21 > 49, this item must contain a value from 1 to 5. Otherwise, it must contain "0". |
| 23 - Structural Number or Slab Thickness | a. If Item 22 contains "1", this item should contain a value from 10 to 60. <br> b. If Item 22 contains "2", this item should contain a value from 06 to 12. <br> c. If Item 22 does not contain "1" or "2", this item must contain "00". |
| **24 - Pavement Condition | If Item 21 > 49, this item must contain a value from 01 to 50. Otherwise, it must contain "00". |
| **25 - Skid Resistance | Urban: Must be in the range 20-80 or "00". <br> Rural: If Item 21 > 49, this item must be in the range 20-80 or "00". Otherwise, it must be "00". |
| 26 - Number of Grade-Separated Interchanges | Must contain a numeric value. |
| 27 - Number of At-Grade Intersections with Public Facilities with: <br> a. Signals <br> b. Stop Signs <br> c. Other or No Controls | <br><br><br> Must contain a numeric value. <br> Must contain a numeric value. <br> Must contain a numeric value. |

| | |
|---|---|
| 28 – Prevailing Type of Signalization (Urban) | If Item 27a > 00, this item must contain a value from 1 to 3. Otherwise, it must contain "4". |
| 29 – Typical Percent Green Time (Urban) | Must contain a numeric value and should be < 86. If Item 27a > 00, this item must not = 00. |
| 30 – Number of Major Commercial/Industrial/ Recreational Access Points | Must contain a numeric value or be coded with the range codes R1 – R6. |
| 31 – Type of Development (Rural Only) | Must be coded 1 or 2. |
| 32 – Urban Location (Urban Only) | Must contain a value from 1 to 5. |
| 33 – Terrain (Rural Only) | Must contain a value from 1 to 3. |
| *34 – Existing Right-of-Way Width | Should contain a value $\geq$ 15. |
| 35 – Is Widening Feasible? | Must contain a value from 1 to 5. |
| *36 – 1978 ADT | Must contain a nonzero numeric value. |
| 37 – Percent Trucks a. Peak Period | Must be numeric and should contain a value < 45. |
| b. Off Peak | Must be numeric and should contain a value < 45. |
| 38 – K Factor | Must be numeric and should contain a value from 01 to 24. |

| | |
|---|---|
| 39 - Directional Factor | Urban: a. If Item 40 contains "1", "3", "5", or "7", this item must contain "100".<br>b. If Item 40 contains "2", "4", "6", "8", "9", or "10", this item should contain a value from 050 to 075.<br>Rural: Should contain a value from 050 to 075 or 100. |
| 40 - Type of Operation (Urban Only) | Must contain a value from 1 to 10 ("0" code is changed to 10). |
| 41 - Parking (Urban Only)<br>    a. Peak Period<br>    b. Off Peak | <br><br>Must contain a value from 1 to 3.<br>Must contain a value from 1 to 3. |

42 - Capacity
    a. Peak Period

                Rural - Must contain "000000" or must contain a nonzero numeric entry meeting the following conditions:
        (1) When item 13 = 3, it should contain a value < 4,000.
        (2) Otherwise, it should contain a value $\leq$ Item 13 x 1,000.

                Urban - Must contain a nonzero numeric entry $\leq$ Item 13 x 1,000.

    b. Off Peak          Must contain a nonzero numeric entry $\leq$ Item 13 x 1,000.

| | |
|---|---|
| 43 - 2000 ADT | Must contain a nonzero numeric entry. |
| 44 - Number of Structures | Must contain a numeric value. |
| 45 - Number of At-Grade Railroad Crossings | Must contain a numeric value. |
| 46 - ADT Volume Group Identifier | Must contain a nonzero numeric value. For States using the FHWA developed approach, the number must be < 10. The 1978 ADT for this section must correspond to this volume group number for the ADT ranges outlined in the FHWA Manual. |

| | |
|---|---|
| 47 – Expansion Factor | Must contain a value $\geq$ 0100. |
| 48 – Speed Limit | Must contain a value from 15 to 56. |
| **49 – Percent of Length with Sight Distance $\geq$ 1500 feet (Rural Only) | If Item 21 > 49 and Item 13 = 2, this item should be in the range 010 to 100. Otherwise, it should contain "000". |
| **50 – Horizontal Alignment Adequacy (Rural Only) | If Item 21 > 49 and Item 53 is omitted, this item must contain a value from 1 to 4. Otherwise, it must contain a numeric value $\leq$ 4. |
| **51 – Vertical Alignment Adequacy (Rural Only) | If Item 21 > 49 and Item 54 is omitted, this item must contain a value from 1 to 4. Otherwise, it must contain a numeric value $\leq$ 4. |
| **52 – Average Highway Speed | Rural: a. If Item 8 > 6 and Item 21 > 49 and Item 31 = 1 and Item 53 is omitted, this item should contain a value from 35 to 70. |
| | b. If Item 8 > 6 and Item 21 > 49 and Item 31 = 2 and Item 53 is omitted, this item should contain a value from 35 to 70 or "00". |
| | c. If Item 8 < 7 and Item 21 > 49 and Item 53 is omitted, this item should contain a value from 35 to 70, otherwise, |
| | d. When Item 21 > 49, this item should be "00" or 35 to 70. |
| | Urban: If Item 8 = 11, 12, or 13, and Item 53 is omitted, this item must contain a numeric value which should be from 35 to 70. Otherwise, this item should contain "00". |

The following edits apply to optional data Items 53, 54, 55, and 56, which may or may not be provided.

| | |
|---|---|
| 53 - Curves by Class | The number of curves field and curve length field must contain a numeric value for each curvature class. If the number of curves is > 0, the corresponding curve length field must contain a nonzero numeric value. If the number of curves equal "00", the corresponding curve length field must contain "000". The sum of the curve length fields must be ≤ section length. |
| 54 - Grades by Class | The number of grades field and length field must contain a numeric value for each gradient class. If the number of grades is > 0, the corresponding length of grade field must contain a nonzero numeric value. If the number of grades equals 0, the corresponding length of grade field must contain "000". The sum of the grade lengths must approximately equal the section length. |
| 55 - Bridge Identification Numbers | The number of ID's must equal the number of structures coded in Item 44. |
| 56 - At-Grade Railroad Crossing Identification Numbers | The first six positions of each crossing ID must be a numeric value. The seventh character must be alphabetic. The number of ID's must = number of crossings coded in Item 45. |

# CROSS EDITS

## Items 57, 8

If Rural/Urban Code = 1, then functional class is between 11 and < 17.

If Rural/Urban Code = 2, then functional class = "01", "02", "06", "07", or "08".

## Items 8, 9

If Federal-Aid = 1, then functional class = "01" or "11".

# APPENDIX B

## DATA ITEM NUMBERS

| NO. | REQUIRED FIELD LENGTH | NAME |
|-----|------------------------|------|
| 1 | 2 | Year |
| 2 | 2 | State Code |
| 3 | 1 | Type of Section ID |
| 4 | 12 | Section ID |
| 5 | 1 | Segment |
| 6 | 3 | County Code |
| 7 | 3 | Urbanized Area Code |
| 8 | 2 | Functional Class Code |
| 9 | 1 | Federal-Aid System |
| 10 | 1 | Jurisdictional Responsibility |
| 11 | 4 | Section Length |
| 12 | 1 | Access Control |
| 13 | 2 | Number of Through Lanes |
| 14 | 2 | Lane Width |
| 15 | 3 | Approach Width |
| 16 | 2 | Median Width |
| 17 | 1 | Median Type |
| 18-A | 2 | Right Shoulder Width |
| 18-B | 2 | Left Shoulder Width |
| 19 | 1 | Shoulder Type |
| 20 | 1 | Drainage Adequacy |
| 21 | 2 | Surface Type |
| 22 | 1 | Pavement Section |
| 23 | 2 | Structural Number or Slab Thickness |
| 24 | 2 | Pavement Condition |
| 25 | 2 | Skid Resistance |
| 26 | 2 | Number of Grade-Separated Interchanges |
| 27-A | 2 | Number of At-Grade Intersections with Signals |
| 27-B | 2 | Number of At-Grade Intersections with Stop Signs |
| 27-C | 2 | Number of At-Grade Intersections with Other or No Controls |
| 28 | 1 | Prevailing Type of Signalization (Urban Only) |
| 29 | 2 | Typical Percent Green Time (Urban Only) |
| 30 | 2 | Number of Major Commercial/Industrial/ Recreational Access Points |

| NO. | REQUIRED FIELD LENGTH | NAME |
|-----|------|------|
| 31 | 1 | Type of Development (Rural Only) |
| 32 | 1 | Urban Location (Urban Only) |
| 33 | 1 | Terrain (Rural Only) |
| 34 | 3 | Existing Right-of-Way Width |
| 35 | 1 | Is Widening Feasible? |
| 36 | 6 | 1978 ADT |
| 37-A | 2 | Peak Period Percent Trucks |
| 37-B | 2 | Off Peak Percent Trucks |
| 38 | 2 | K Factor |
| 39 | 3 | Directional Factor |
| 40 | 2 1/ | Type of Operation (Urban Only) |
| 41-A | 1 | Peak Period Parking (Urban Only) |
| 41-B | 1 | Off Peak Parking (Urban Only) |
| 42-A | 5 | Peak Period Capacity |
| 42-B | 5 | Off Peak Capacity (Urban Only) |
| 43 | 6 | 2000 ADT |
| 44 | 2 | Number of Structures |
| 45 | 2 | Number of At-Grade Railroad Crossings |
| 46 | 2 | ADT Volume Group Identifier |
| 47 | 4 | Expansion Factor |
| 48 | 2 | Speed Limit |
| 49 | 3 | Percent of Length with Sight Distance $\geq$ 1500 feet (Rural Only) |
| 50 | 1 | Horizontal Alignment Adequacy (Rural Only) |
| 51 | 1 | Vertical Alignment Adequacy (Rural Only) |
| 52 | 2 | Average Highway Speed |

1/
   The data code of "0" is recoded to "10" on the data tape and therefore all other codes must be two digits.

| NO. | NAME |
|-----|------|

**CURVES BY CLASS** (5 characters required)

| 53-A | Number <u>and</u> Length of Curves from | 0.5° to 1.4° |
|------|------|------|
| 53-B | " | 1.5° to 2.4° |
| 53-C | " | 2.5° to 3.4° |
| 53-D | " | 3.5° to 4.4° |
| 53-E | " | 4.5° to 5.4° |
| 53-F | " | 5.5° to 6.9° |
| 53-G | " | 7.0° to 8.4° |
| 53-H | " | 8.5° to 10.9° |
| 53-I | " | 11.0° to 13.9° |
| 53-J | " | 14.0° to 19.4° |
| 53-K | " | 19.5° to 27.9° |
| 53-L | " | 28° + |

**GRADES BY CLASS** (5 characters required)

| 54-A | Number <u>and</u> Length of Grades from | 0.0 to 0.4% |
|------|------|------|
| 54-B | " | 0.5 to 2.4% |
| 54-C | " | 2.5 to 4.4% |
| 54-D | " | 4.5 to 6.4% |
| 54-E | " | 6.5 to 8.4% |
| 54-F | " | 8.5 + % |

NO.                                          NAME

BRIDGE ID NUMBERS (15 characters required)

55-01     The exact ID code for the first Bridge ID on the file
55-02     "   "   "   "   "   "  second   "   "  "   "   "

55-23     "   "   "   "   "   "   23rd    "   "  "   "    "

55-99     "   "   "   "   "   "   99th    "   "  "   "    "


At-GRADE RAILROAD CROSSING ID NOS. (7 characters required)

56-01     The exact ID Code for the first RR x'ing ID on the file
56-02     "   "   "   "   "   "  second  "   "   "   "   "    "

56-11     "   "   "   "   "   "   11th  "   "   "   "   "    "

56-15     "   "   "   "   "   "   15th  "   "   "   "   "    "

APPENDIX C

HPMS Record Format

Part I:  All Sections

| Position | Item | Length | | | Rural Only | Urban Only |
|---|---|---|---|---|---|---|
| 1 | 57 | 1 | | *Rural/Urban Code | | |
| 2-3 | 1 | 2 | | Year | | |
| 4-5 | 2 | 2 | | State Code | | |
| 6 | 3 | 1 | | Type of Section ID | | |
| 7-9 | 6 | 3 | | County Code | | |
| 10-21 | 4 | 12 | | Section ID | | |
| 22 | 5 | 1 | | Segment (Precoded: 0) | | |
| 23-25 | 7 | 3 | | Urban Area Code | | ✓ |
| 26-27 | 8 | 2 | | Functional Class | | |
| 28-29 | 46 | 2 | | Volume Group Identifier | | |
| 30 | 9 | 1 | | Federal-Aid System | | |
| 31 | 10 | 1 | | Jurisdictional Responsibility | | |
| 32-35 | 11 | 4 | (xx.xx) | Section Length | | |
| 36-39 | 47 | 4 | (xx.xx) | Expansion Factor | | |
| 40 | 12 | 1 | | Access Control | | |
| 41-42 | 13 | 2 | | Number of Through Lanes | | |
| 43-44 | 14 | 2 | | Lane Width | | |
| 45-47 | 15 | 3 | | Approach Width | | ✓ |
| 48-49 | 16 | 2 | | Median Width | | |
| 50 | 17 | 1 | | Median Type | | |
| 51-54 | 18A&B | 4 | | Shoulder Width (Right A, Left B) | | |
| 55 | 19 | 1 | | Shoulder Type | | |
| 56 | 20 | 1 | | Drainage Adequacy | | |
| 57-58 | 21 | 2 | | Surface Type | | |
| 59 | 22 | 1 | | Pavement Section | | |
| 60-61 | 23 | 2 | | Structural Number | | |
| 62-63 | 24 | 2 | (x.x) | Pavement Condition | | |
| 64-65 | 25 | 2 | | Skid Resistance | | |
| 66-67 | 26 | 2 | | Number Grade-Separated Interchanges | | |
| 68-69 | 27A | 2 | | At-Grade Intersections: Signals | | |
| 70-71 | 27B | 2 | | Stop Signs | | |
| 72-73 | 27C | 2 | | Other or None | | |
| 74 | 28 | 1 | | Prevailing Type of Signalization | | ✓ |
| 75-76 | 29 | 2 | | % Green Time | | ✓ |
| 77-78 | 30 | 2 | | Number Entrances/Exits | | |
| 79 | 31 | 1 | | Type of Development | | |
| 80 | 32 | 1 | | Urban Location | | ✓ |
| 81 | 33 | 1 | | Terrain | ✓ | |
| 82-84 | 34 | 3 | | Existing Right-of-Way | | |
| 85 | 35 | 1 | | Is Widening Feasible? | | |
| 86-91 | 36 | 6 | | 1978 ADT | | |
| 92-93 | 37A | 2 | | % Trucks: Peak | | |
| 94-95 | 37B | 2 | | Off-Peak | | |
| 96-97 | 38 | 2 | | K-Factor | | |
| 98-100 | 39 | 3 | | Directional Factor | | |

*Column 79 Card 1 on worksheets  1-Urban; 2-Rural

| Position | Item | Length | | Rural Only | Urban Only |
|----------|------|--------|--|------------|------------|
| 101-102 | 40 | 2 | *Type of Operation | | ✔ |
| 103 | 41A | 1 | Parking: Peak | | ✔ |
| 104 | 41B | 1 | Off-Peak | | ✔ |
| 105-109 | 42A | 5 | Capacity: Peak | | |
| 110-114 | 42B | 5 | Off-Peak | | ✔ |
| 115-120 | 43 | 6 | 2000 ADT | | |
| 121-122 | 44 | 2 | Number Structures | | |
| 123-124 | 45 | 2 | Number of At-Grade R.R. Crossings | | |
| 125-126 | 48 | 2 | Speed Limit | | |
| 127-129 | 49 | 3 | PSD ≥ 1500 | ✔ | |
| 130 | 50 | 1 | Horizontal Alignment | ✔ | |
| 131 | 51 | 1 | Vertical Alignment | ✔ | |
| 132-133 | 52 | 2 | Average Highway Speed | | |
| 134-139 | – | 6 | Continuation Code for Optional Data (6-positions coded zero; No optional data) | | |

*Type of Operation coded "0" is coded "10" on the tape record.

A State not submitting any of the optional data (cards 3-6) would submit data in the above 139 character record format with position 134-139 always coded "000000".

Part II - Sections with Optional Data Items Being Provided

A State submitting any of the optional data (cards 3-6) will have a variable record format determined on an individual section basis. The record would consist of the 133 characters formatted as in Part I plus the codes to indicate which optional data is being provided and any combination of the optional data. If none of the optional data being submitted exists for a section, the record would contain the 139 fixed characters only. The length of the variable record would have a minimum of 139 characters and a maximum of 1819 characters.

In the variable length record format, positions 134-139 are fixed with the remaining positions in the record depending on which optional data is being submitted and exists for a section. These fixed positions are coded as:

Position

| | |
|---|---|
| 134 | Indicates curve data provided for section (0-No; 1-Yes) |
| 135 | Indicates grade data provided for section (0-No; 1-Yes) |
| 136-137 | Indicates bridge ID data provided for section (00-None; > 00 = # of ID's) |
| 138-139 | Indicates crossing ID data provided for section (00-None; > 00 = # of ID's) |

The remaining part of the record will vary in the number of characters from 7-1680 depending on the combinations of the optional data and the number of bridge ID's and/or the number of at-grade crossing ID's. If all optional data are provided, the data will be in the following order:

| | |
|---|---|
| Item 53, Curves by Class | 60 characters |
| Item 54, Grades by Class | 30 characters |
| *Item 55, Bridge ID's | 15-1485 characters |
| *Item 56, At-Grade Crossing ID's | 7-105 characters |

*The record is designed to allow for 0-99 bridge ID's per section and/or 0-15 at-grade crossing ID's.

Any combination of the optional data would use the ordering given above for the placement of the data in the section record, e.g., Item 53, Item 56; Item 54, Item 55, Item 56; or Item 55, Item 56.

The following examples illustrate some of the different possibilities for a State submitting optional data:

A State is submitting curve data for Interstate only, rural and urban, and bridge ID's for all applicable sections.

a. The variable part of the record for an Interstate section with three bridges would be:

Position

| | |
|---|---|
| 134 | Coded "1" |
| 135 | Coded "0" |
| 136-137 | Coded "03" |
| 138-139 | Coded "00" |
| 140-199 | Curve data |
| 200-244 | Three bridge ID's |

The record length for the section is 244 characters.

b. The record for a minor collector section with no bridges would consist of the 139 fixed characters with zero coded in the 134-139th positions. The section record would not contain any of the optional information since the State is providing curve data for Interstate sections only and the section has no bridges.

c. The variable part of the record for an Interstate section with no bridges would be:

Position

| | |
|---|---|
| 134 | Coded "1" |
| 135 | Coded "0" |
| 136-137 | Coded "00" |
| 138-139 | Coded "00" |
| 140-199 | Curve data |

The record length for the section is 199 characters.

d. The variable part of the record for a minor arterial section with 10 bridges would be:

Position

| | |
|---|---|
| 135 | Coded "0" |
| 136 | Coded "0" |
| 137 | Coded "10" |
| 138-139 | Coded "00" |
| 140-289 | Ten bridge ID's |

The record length for the section is 289. The section has no curve data since it is not an Interstate section.

APPENDIX D

SAMPLE PRINTED OUTPUT

H P M S   V C L U M E   G R O U P   S U M M A R Y

AREA:     RURAL          FUNCTICNAL CLASS 02

| VOLUMF GFCUP | NUM SECTICNS | SAMPLED MILEAGE | EXPANDED MILEAGE |
|---|---|---|---|
| 1 | 0 | 0.00 | 0.00 |
| 2 | 45 | 90.10 | 1951.02 |
| 3 | 1 | 4.00 | 2.00 |
| 4 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0.00 | 0.00 |
| 6 | 4 | 8.00 | 176.80 |
| 7 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0.00 | 0.00 |
| *  >10 | 1 | 2.00 | 44.20 |
| *** | 0 | 0.00 | 0.00 |
| TOTALS | 51 | 104.10 | 2174.02 |

*     ALL VCLUME GROUP AUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***     SECTICNS WHICH HAVE A NCNNUMERIC VOLUME GROUP NUMBER OR = 00.

NUMBER SECTICNS WITH SECTICN LENGTH OR EXPANSION FACTOR NOT NUMERIC OR = ZERO:    2


FINAL SUMMARY SEND TO HHP-12 FHWA WITH  HPMS DATA TAPE AND FINAL EDIT.


Sample Printout Volume Group Summary Table

USER SUPPLIED PARAMETER CARDS

ISTATE=  TEST HPMS /99/
SELDEV=RU,REQOPT,CURVES,GRADES,BRIDIO,CROSSID
FUNCUR=06,02,12,16
FUNGRD=06,16,02
SELEDT=RU,FHWADESIGN
SELTAB=RU,DVMTMILE

ALL USER SUPPLIED CARDS PROCESSED. NO ERRORS WERE DETECTED.

# H P M S   V O L U M E   G R O U P   S U M M A R Y

DEVELOP TAPE

AREA:      RURAL           FUNCTIONAL CLASS 01

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
|---|---|---|---|---|---|
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 0 | 1 | 1 | 4.10 | 86.10 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 0 | 1 | 1 | 4.10 | 86.10 |

*   ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***   SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:   A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

DATE:08/30/79     STATE:  TEST HPMS

## H P M S  V O L U M E  G R O U P  S U M M A R Y

### DEVELOP TAPE

AREA:     RURAL          FUNCTIONAL CLASS 02

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
| --- | --- | --- | --- | --- | --- |
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 0 | 0 | 0 | 0.00 | 0.00 |
| 3 | C | 1 | 1 | 4.00 | 2.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | C | 0 | 0 | 0.00 | 0.00 |
| 6 | C | 1 | 1 | 2.00 | 44.20 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | C | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | C | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 1 | 0 | 1 | 0.00 | 0.00 |
| TOTAL | 1 | 2 | 3 | 6.00 | 46.20 |

*   ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***   SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:  A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

D-4

H P M S   V O L U M E   G R O U P   S U M M A R Y

DEVELUP TAPE

AREA:      RURAL              FUNCTIONAL CLASS 03

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
|---|---|---|---|---|---|
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 0 | 1 | 1 | 2.00 | 44.20 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 0 | 1 | 1 | 2.00 | 44.20 |

* ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

*** SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:  A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

# H P M S   V O L U M E   G R O U P   S U M M A R Y

## DEVELOP TAPE

AREA:     RURAL          FUNCTIONAL CLASS 06

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
|---|---|---|---|---|---|
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 0 | 0 | 0 | 0.00 | 0.00 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 1 | 1 | 2 | 2.00 | 44.20 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 1 | 1 | 2 | 2.00 | 44.20 |

*   ALL VOLUME GROUP NUMBERS > 10.  VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***   SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:   A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

# H P M S   V O L U M E   G R O U P   S U M M A R Y

## DEVELOP TAPE

AREA:      RURAL                FUNCTIONAL CLASS 07

| VOLUME GROUP | N U M B E R   O F   S E C T I O N S | | | MILEAGE SECTIONS ADDED | |
|---|---|---|---|---|---|
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
| 1 | 0 | 0 | 0 | 3.33 | 0.00 |
| 2 | 0 | 0 | 0 | 3.00 | 0.00 |
| 3 | 0 | 1 | 1 | 2.35 | 18.94 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 3.00 | 0.00 |
| 6 | 0 | 0 | 0 | 3.30 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 3.30 | 0.00 |
| 10 | 0 | 0 | 0 | 3.30 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 3.00 | 0.00 |
| TOTAL | 0 | 1 | 1 | 2.35 | 18.94 |

\* ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

\*\*\* SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:  A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

# H P M S   V O L U M E   G R O U P   S U M M A R Y

## DEVELOP TAPE

AREA: URBANIZED   070        FUNCTIONAL CLASS 11

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 0 | 0 | 0 | 0.00 | 0.00 |
| 3 | 0 | 1 | 1 | 0.95 | 21.89 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| ● >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 0 | 1 | 1 | 0.95 | 21.89 |

● ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

*** SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:  A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

H P M S   V O L U M E   G R O U P   S U M M A R Y

DEVELOP TAPE

AREA: URBANIZED  074      FUNCTIONAL CLASS 11

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 0 | 0 | 0 | 0.00 | 0.00 |
| 3 | C | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | C | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 1 | 1 | 0.00 | 0.00 |
| TOTAL | 0 | 1 | 1 | 0.00 | 0.00 |

*   ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***   SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:   A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

H P M S   V O L U M E   G R O U P   S U M M A R Y

DEVELOP TAPE

AREA: URBANIZED   070      FUNCTIONAL CLASS 12

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 1 | 0 | 1 | 0.00 | 0.00 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 1 | 0 | 1 | 0.00 | 0.00 |

*   ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***   SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:   A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

## H P M S   V O L U M E   G R O U P   S U M M A R Y

### DEVELOP TAPE

AREA: URBANIZED  070        FUNCTIONAL CLASS 14

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
|---|---|---|---|---|---|
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 0 | 0 | 0 | 0.00 | 0.00 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 1 | 1 | 0.95 | 21.89 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 0 | 1 | 1 | 0.95 | 21.89 |

* ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

*** SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:  A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

H P M S   V O L U M E   G R O U P   S U M M A R Y

DEVELOP TAPE

AREA: URBANIZED  070      FUNCTIONAL CLASS 13

| VOLUME GROUP | N U M B E R   O F   S E C T I O N S | | | MILEAGE SECTIONS ADDED | |
|---|---|---|---|---|---|
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
| 1 | 0 | 0 | 0 | 0.00 | 0.00 |
| 2 | 1 | 0 | 1 | 0.00 | 0.00 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 1 | 0 | 1 | 0.00 | 0.00 |

*  ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***  SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:  A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:  A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

## H P M S   V O L U M E   G R O U P   S U M M A R Y

### DEVELOP TAPE

AREA: URBANIZED  070      FUNCTIONAL CLASS 17

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
|:---:|:---:|:---:|:---:|:---:|:---:|
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
| 1 | 0 | 1 | 1 | 0.30 | 2.40 |
| 2 | 0 | 0 | 0 | 0.00 | 0.00 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 0 | 1 | 1 | 0.30 | 2.40 |

*  ALL VOLUME GROUP NUMBERS > 10. VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***  SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:   A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

H P M S   V O L U M E   G R O U P   S U M M A R Y

DEVELOP TAPE

AREA:SMALL URBAN          FUNCTIONAL CLASS 12

| VOLUME GROUP | NUMBER OF SECTIONS | | | MILEAGE SECTIONS ADDED | |
| | REJECTED | ADDED | TOTAL | SAMPLED | EXPANDED |
|---|---|---|---|---|---|
| 1 | 0 | 1 | 1 | 0.85 | 22.95 |
| 2 | 0 | 0 | 0 | 0.00 | 0.00 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |
| 4 | 0 | 0 | 0 | 0.00 | 0.00 |
| 5 | 0 | 0 | 0 | 0.00 | 0.00 |
| 6 | 0 | 0 | 0 | 0.00 | 0.00 |
| 7 | 0 | 0 | 0 | 0.00 | 0.00 |
| 8 | 0 | 0 | 0 | 0.00 | 0.00 |
| 9 | 0 | 0 | 0 | 0.00 | 0.00 |
| 10 | 0 | 0 | 0 | 0.00 | 0.00 |
| * >10 | 0 | 0 | 0 | 0.00 | 0.00 |
| *** | 0 | 0 | 0 | 0.00 | 0.00 |
| TOTAL | 0 | 1 | 1 | 0.85 | 22.95 |

*   ALL VOLUME GROUP NUMBERS > 10.  VERIFY FUNCTIONAL CLASS HAS >10 VOLUME GROUPS.

***   SECTION HAS INVALID VOLUME GROUP NUM OR SECTION LENGTH OR EXP FACT OR CARD 2 MISSING.

NOTE:   A SECTION REJECTED FOR AN INVALID CODE IN COLUMN 79, CARD 1, IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH DID NOT HAVE A REQUIRED CARD 1 IS NOT COUNTED IN ANY VOL GRP SUMMARY TABLE.

NOTE:   A SECTION WHICH HAS AN INVALID CARD NUM FOR THE SPECIFIED TAPE FORMAT IS NOT COUNTED IN ANY VOL GRP SUMMARY TAB.

HPMS  DATA  TAPE  SUMMARY

DEVELOP TAPE

RURAL/URBAN

RECORD FORMAT:    REQOPT

OPTIONAL DATA INCLUDED(CARDS 3-6):    CURVES    GRADES    BRIDGES    XINGS

NUMBER SECTIONS ADDED:          URBAN          5          RURAL          6

NUMBER SECTIONS REJECTED:          URBAN          2          RURAL          2      WRONG RUCODE      0

NUMBER CARDS WITH INVALID CARD NUMBER:        0

NUMBER SECTIONS WITH CARD1 MISSING:        1

# H P M S   M I L E A G E   A N D   D V M T   S U M M A R Y   T A B L E

## BY FUNCTIONAL CLASS

AREA:         RURAL

| FC | NUM SECTIONS | SAMPLED MILEAGE | EXPANDED MILEAGE | 1978 DVMT (100'S) | 2000 DVMT (100'S) | AVG SECT LGTH | # SECT LGTH < .3 |
|----|----|----|----|----|----|----|----|
| 01 | 1 | 4.10 | 86.10 | 23247.0 | 26260.5 | 4.10 | 0 |
| 02 | 2 | 6.00 | 46.20 | 14000.0 | 15366.0 | 3.00 | 0 |
| 06 | 1 | 2.00 | 44.20 | 13260.0 | 14586.0 | 2.00 | 0 |
| 07 | 1 | 2.35 | 18.94 | 1041.7 | 1079.5 | 2.35 | 0 |
| 08 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| *** | 1 | 2.00 | 44.20 | 13260.0 | 14586.0 | 2.00 | 0 |
| TOTALS | 6 | 16.45 | 239.64 | 64808.7 | 71878.0 | 2.74 | 0 |

***     SECTIONS WHICH HAVE AN INVALID FUNCTIONAL CLASS CODE.

NUMBER SECTIONS WITH NON-NUMERIC OR ZERO SECTION LENGTH, EXPANSION FACTOR, 1978 ADT OR 2000 ADT:     0

WORK SUMMARY FOR STATE

H P M S   M I L E A G E   A N D   D V M T   S U M M A R Y   T A B L E

BY FUNCTIONAL CLASS

AREA:    URBANIZED  070

| FC | NUM SECTIONS | SAMPLED MILEAGE | EXPANDED MILEAGE | 1978 DVMT (100'S) | 2000 DVMT (100'S) | AVG SECT LGTH | # SECT LGTH < .1 |
|---|---|---|---|---|---|---|---|
| 11 | 1 | 0.95 | 21.89 | 5691.4 | 6567.0 | 0.95 | 0 |
| 12 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 13 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 14 | 1 | 0.95 | 21.89 | 5691.4 | 6567.0 | 0.95 | 0 |
| 15 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 16 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 17 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| *** | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| OTALS | 2 | 1.90 | 43.78 | 11382.8 | 13134.0 | 0.95 | 0 |

***     SECTIONS WHICH HAVE AN INVALID FUNCTIONAL CLASS CODE.

NUMBER SECTIONS WITH NON-NUMERIC OR ZERO SECTION LENGTH, EXPANSION FACTOR, 1978 ADT OR 2000 ADT:     1

WORK SUMMARY FOR STATE

## H P M S   M I L E A G E   A N D   D V M T   S U M M A R Y   T A B L E

### BY FUNCTIONAL CLASS

AREA:    URBANIZED   074

| FC | NUM SECTIONS | SAMPLED MILEAGE | EXPANDED MILEAGE | 1978 DVMT (100'S) | 2000 DVMT (100'S) | AVG SECT LGTH | # SECT LGTH < .1 |
|----|----|----|----|----|----|----|----|
| 11 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 12 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 13 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 14 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 15 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 16 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 17 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| *** | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| TOTALS | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |

***     SECTIONS WHICH HAVE AN INVALID FUNCTIONAL CLASS CODE.

NUMBER SECTIONS WITH NON-NUMERIC OR ZERO SECTION LENGTH, EXPANSION FACTOR, 1978 ADT OR 2000 ADT:     1

WORK SUMMARY FOR STATE

# H P M S   M I L E A G E   A N D   D V M T   S U M M A R Y   T A B L E

## BY FUNCTIONAL CLASS

AREA:  SMALL URBAN

| FC | NUM SECTIONS | SAMPLED MILEAGE | EXPANDED MILEAGE | 1978 DVMT (100'S) | 2000 DVMT (100'S) | AVG SECT LGTH | # SECT LGTH < .1 |
|----|--------------|-----------------|------------------|-------------------|-------------------|---------------|------------------|
| 11 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 12 | 1 | 0.85 | 22.95 | 4131.0 | 5049.0 | 0.85 | 0 |
| 13 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 14 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 15 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 16 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| 17 | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| *** | 0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0 |
| TOTALS | 1 | 0.85 | 22.95 | 4131.0 | 5049.0 | 0.85 | 0 |

***    SECTIONS WHICH HAVE AN INVALID FUNCTIONAL CLASS CODE.

NUMBER SECTIONS WITH NON-NUMERIC OR ZERO SECTION LENGTH, EXPANSION FACTOR, 1978 ADT OR 2000 ADT:      0

WORK SUMMARY FOR STATE

LISTING OF REJECTED SECTIONS OR CARD
RURAL/URBAN

| CARD NUM | | CODED DATA | LOCATION | ERROR |
|---|---|---|---|---|
| 1 | 78991 | 720 204050070022300C02142210106C061160300306500008B0002111803000000334121 | 35 | CARD 2 MISSING FOR SECTION |
| 1 | 78991 | 800170621020020412361080811604G0314001G00001001116040300030010421 | 48 | CARD3 OR 4 MISSING FC LISTED |
| 2 | 78991 | 80120500396003300000150622105000000050000000000000000000000000002 | 49 | |
| 4 | 78991 | 80010150100500000000000000000C000000000000000000000000000000000004 | 50 | |
| 1 | 78991 | 21099907U012210095104120C0403060611703003230010000000400003220400011 | 59 | CHECK FC LIST FOR CUR/GRD |
| 2 | 78991 | 21002600C060413055233037600384C030000001000223055565000000030000092 | 60 | |
| 3 | 78991 | 21003009000000000000000000000000C0CC00000000000000000000000000003 | 61 | |
| 4 | 78991 | 210000000000000400600000001003 0C000C0000000000000000000000003000004 | 62 | |
| 5 | 78991 | 210BRIDGE          1                                                5 | 63 | |
| 2 | 78991SHORT SEC | 502002600006041305523303760038400300C000000032305556500000000000002 | 64 | CARD 1 MISSING FOR SECTION |
| 1 | 78991 | 3109990701321009510412000403060611703003200010000000400003220400011 | 68 | CHECK FC LIST FOR CUR/GRD |
| 2 | 78991 | 3100260000060413055233037600384003000000000223055565000000000000002 | 69 | |
| 3 | 78991 | 31003010C0000000000000000000000000C0000000C00000000000000000000000003 | 70 | |
| 4 | 78991 | 310000000000000400600000001003000000000000000000000000000000000000004 | 71 | |

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6):   001   SECTION ID(ITEM 4):   __555_777_2   SEGMENT(ITEM5):   0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 1 | 19 | SHOULDER TYPE | 1 | 36 | 1978 ADT | 018000 |
| 1 | YEAR | 78 | 20 | DRAINAGE ADEQUACY | 2 | 37-A | % TRUCKS: PEAK | 02 |
| 2 | STATE CODE | 35 | 21 | SURFACE TYPE | 60 | 37-B | OFF PEAK | 04 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 4 | 38 | K-FACTOR | 25 |
| 7 | URBAN AREA CODE | 070 | 23 | STRUCTURAL NUMBER | 02 | 39 | DIRECTIONAL FACTOR | 055 |
| 8 | FUNCTIONAL CLASS | 17 | 24 | PAVEMENT CONDITION | 51 | 40 | TYPE OPERATION | 02 |
| 46 | VOLUME GROUP IDENTIFIER | 01 | 25 | SKID RESISTANCE | 00 | 41-A | PARKING: PEAK | 3 |
| 9 | FEDERAL-AID SYSTEM | 3 | 26 | NUM GRADE-SEPARATED INTERCH | 00 | 41-B | OFF PEAK | 0 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 02 | 42-A | CAPACITY: PEAK | 00800 |
| 11 | SECTION LENGTH | 0030 | 27-B | STOP SIGNS | 00 | 42-B | OFF PEAK | 00750 |
| 47 | EXPANSION FACTOR | 0800 | 27-C | OTHER/NONE | 01 | 43 | 2000 ADT | 000000 |
| 12 | ACCESS CONTROL | 0 | 28 | PREVAILING TYPE SIGNALIZATION | 1 | 44 | NUMBER STRUCTURES | 00 |
| 13 | NUMBER OF THROUGH LANES | 02 | 29 | % GREEN TIME | 50 | 45 | NUMBER AT-GRADE RR CROSSINGS | 01 |
| 14 | LANE WIDTH | 09 | 30 | NUMBER ENTRANCES/EXITS | 00 | 48 | SPEED LIMIT | 40 |
| 15 | APPROACH WIDTH | 015 | 31 | TYPE OF DEVELOPMENT | 0 | 49 | PSD > OR = 1500 | 000 |
| 16 | MEDIAN WIDTH | 00 | 32 | URBAN LOCATION | 0 | 50 | HORIZONTAL ALIGNMENT | 0 |
| 17 | MEDIAN TYPE | 4 | 33 | TERRAIN | 0 | 51 | VERTICAL ALIGNMENT | 0 |
| 18-A | SHOULDER WIDTH: RIGHT | 00 | 34 | EXISTING RIGHT-OF-WAY | 060 | 52 | AVERAGE HIGHWAY SPEED | 40 |
| 18-B | LEFT | 00 | 35 | IS WIDENING FEASIBLE? | 1 | -- | CONTINUATION CODE | 000001 |

OPTIONAL DATA:
56-XING ID:1234567

ERRORS AND MESSAGES:

| | |
|---|---|
| ITEM 2 | STATE CODE DOES NOT MATCH STATE CODE ON PARAMETER CARD |
| ITEM 12 | ACCESS CONTROL MUST CONTAIN A 1, 2, OR 3 |
| ITEM 19, 18 | SHOULDER TYPE CODE MUST BE 4 OR 5 WHEN ITEM 18-RIGHT SHOULDER- = 0 |
| ITEM 23, 22 | STRUCTURAL NUMBER MUST BE ZERO WHEN ITEM 22 NOT = 1 OR 2 |
| ITEM 24, 21 | PAVEMENT CONDITION MUST BE IN RANGE 01 TO 50 WHEN ITEM 21 > 49 |
| ITEM 32   URBAN | URBAN LOCATION CODE MUST BE IN RANGE 1-5 |
| ITEM 38 | K FACTOR MUST BE NUMERIC AND SHOULD CONTAIN A VALUE IN THE RANGE 01-24. VERIFY |
| ITEM 41   URBAN | PARKING PEAK AND OFF-PEAK MUST BE 1, 2, OR 3 |
| ITEM 43 | 2000 ADT MUST BE NON-ZERO NUMERIC |
| ITEM 46, 36 | ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY |
| ITEM 52,8     URB | AHS SHOULD BE 00 WHEN ITEM 8 > 13. VERIFY |
| ITEM 56 | AT-GRADE RR CROSSING ID MUST BE 6-DIGITS AND 1 ALPHABETIC |

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6):  005    SECTION ID(ITEM 4):  1___3 22450    SEGMENT(ITEM5):  0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 1 | 19 | SHOULDER TYPE | 1 | 36 | 1978 ADT | 018000 |
| 1 | YEAR | 78 | 20 | DRAINAGE ADEQUACY | 2 | 37-A | % TRUCKS: PEAK | 04 |
| 2 | STATE CODE | 99 | 21 | SURFACE TYPE | 60 | 37-B | OFF PEAK | 05 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 1 | 38 | K-FACTOR | 14 |
| 7 | URBAN AREA CODE | 999 | 23 | STRUCTURAL NUMBER | 47 | 39 | DIRECTIONAL FACTOR | 050 |
| 8 | FUNCTIONAL CLASS | 12 | 24 | PAVEMENT CONDITION | 34 | 40 | TYPE OPERATION | 02 |
| 46 | VOLUME GROUP IDENTIFIER | 01 | 25 | SKID RESISTANCE | 00 | 41-A | PARKING: PEAK | 3 |
| 9 | FEDERAL-AID SYSTEM | 2 | 26 | NUM GRADE-SEPARATED INTERCH | 00 | 41-B | OFF PEAK | 3 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 01 | 42-A | CAPACITY: PEAK | 02880 |
| 11 | SECTION LENGTH | 0085 | 27-B | STOP SIGNS | 00 | 42-B | OFF PEAK | 02850 |
| 47 | EXPANSION FACTOR | 2700 | 27-C | OTHER/NONE | 00 | 43 | 2000 ADT | 022000 |
| 12 | ACCESS CONTROL | 2 | 28 | PREVAILING TYPE SIGNALIZATION | 1 | 44 | NUMBER STRUCTURES | 00 |
| 13 | NUMBER OF THROUGH LANES | 04 | 29 | % GREEN TIME | 77 | 45 | NUMBER AT-GRADE RR CROSSINGS | 00 |
| 14 | LANE WIDTH | 12 | 30 | NUMBER ENTRANCES/EXITS | 00 | 48 | SPEED LIMIT | 55 |
| 15 | APPROACH WIDTH | 000 | 31 | TYPE OF DEVELOPMENT | 0 | 49 | PSD > OR = 1500 | 000 |
| 16 | MEDIAN WIDTH | 24 | 32 | URBAN LOCATION | 4 | 50 | HORIZONTAL ALIGNMENT | 0 |
| 17 | MEDIAN TYPE | 3 | 33 | TERRAIN | 0 | 51 | VERTICAL ALIGNMENT | 0 |
| 18-A | SHOULDER WIDTH: RIGHT | 08 | 34 | EXISTING RIGHT-OF-WAY | 180 | 52 | AVERAGE HIGHWAY SPEED | 60 |
| 18-B | LEFT | 06 | 35 | IS WIDENING FEASIBLE? | 4 | -- | CONTINUATION CODE | 100000 |

OPTIONAL DATA:
53-CURVES:  00000 01001 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000

ERRORS AND MESSAGES:

   ITEM 46, 36           ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6):  017    SECTION ID(ITEM 4):  _____41    SEGMENT(ITEM5):  0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 2 | 19 | SHOULDER TYPE | 1 | 36 | 1978 ADT | 030000 |
| 1 | YEAR | 78 | 20 | DRAINAGE ADEQUACY | 1 | 37-A | % TRUCKS: PEAK | 01 |
| 2 | STATE CODE | 99 | 21 | SURFACE TYPE | 60 | 37-B | OFF PEAK | 04 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 4 | 38 | K-FACTOR | 12 |
| 7 | URBAN AREA CODE | 000 | 23 | STRUCTURAL NUMBER | 00 | 39 | DIRECTIONAL FACTOR | 050 |
| 8 | FUNCTIONAL CLASS | 03 | 24 | PAVEMENT CONDITION | 31 | 40 | TYPE OPERATION | 00 |
| 46 | VOLUME GROUP IDENTIFIER | 02 | 25 | SKID RESISTANCE | 40 | 41-A | PARKING: PEAK | 0 |
| 9 | FEDERAL-AID SYSTEM | 2 | 26 | NUM GRADE-SEPARATED INTERCH | 01 | 41-B | OFF PEAK | 0 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 00 | 42-A | CAPACITY: PEAK | 03690 |
| 11 | SECTION LENGTH | 0200 | 27-B | STOP SIGNS | 00 | 42-B | OFF PEAK | 00000 |
| 47 | EXPANSION FACTOR | 2210 | 27-C | OTHER/NONE | 01 | 43 | 2000 ADT | 033000 |
| 12 | ACCESS CONTROL | 2 | 28 | PREVAILING TYPE SIGNALIZATION | 0 | 44 | NUMBER STRUCTURES | 02 |
| 13 | NUMBER OF THROUGH LANES | 04 | 29 | % GREEN TIME | 00 | 45 | NUMBER AT-GRADE RR CROSSINGS | 00 |
| 14 | LANE WIDTH | 12 | 30 | NUMBER ENTRANCES/EXITS | 00 | 48 | SPEED LIMIT | 50 |
| 15 | APPROACH WIDTH | 000 | 31 | TYPE OF DEVELOPMENT | 1 | 49 | PSD > OR = 1500 | 000 |
| 16 | MEDIAN WIDTH | 36 | 32 | URBAN LOCATION | 0 | 50 | HORIZONTAL ALIGNMENT | 0 |
| 17 | MEDIAN TYPE | 1 | 33 | TERRAIN | 1 | 51 | VERTICAL ALIGNMENT | 0 |
| 18-A | SHOULDER WIDTH: RIGHT | 08 | 34 | EXISTING RIGHT-OF-WAY | 160 | 52 | AVERAGE HIGHWAY SPEED | 50 |
| 18-B | LEFT | 08 | 35 | IS WIDENING FEASIBLE? | 4 | -- | CONTINUATION CODE | 000000 |

ERRORS AND MESSAGES:

| | |
|---|---|
| ITEM 8 | FUNCTIONAL CLASS CODE IS INVALID |
| ITEM 50,21,53  RURAL | HORIZONTAL ALIGNMENT MUST BE IN RANGE 1-4 WHEN ITEM 21 > 49 AND ITEM 53 IS NOT PROVIDED |
| ITEM 51,21,54  RURAL | VERTICAL ALIGNMENT MUST BE IN RANGE 1 TO 4 WHEN ITEM 21 > 49 AND ITEM 54 IS NOT PROVIDED |
| ITEM 52,8,21,31 RUR | VERIFY VALUE CODED ITEM 52; ITEM 8, 21 OR 31 IS IN ERROR |
| ITEM 57,8 | RUR-URB CODE = 2; FUNCTIONAL CLASS CODE MUST BE 01,02,06,07 OR 08 |

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6):   104    SECTION ID(ITEM 4):   CROSS EDIT01    SEGMENT(ITEM5):  0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 2 | 19 | SHOULDER TYPE | 4 | 36 | 1978 ADT | 005500 |
| 1 | YEAR | 78 | 20 | DRAINAGE ADEQUACY | 2 | 37-A | % TRUCKS: PEAK | 30 |
| 2 | STATE CODE | 99 | 21 | SURFACE TYPE | 54 | 37-B | OFF PEAK | 35 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 0 | 38 | K-FACTOR | 15 |
| 7 | URBAN AREA CODE | 000 | 23 | STRUCTURAL NUMBER | 10 | 39 | DIRECTIONAL FACTOR | 100 |
| 8 | FUNCTIONAL CLASS | 07 | 24 | PAVEMENT CONDITION | 00 | 40 | TYPE OPERATION | 00 |
| 46 | VOLUME GROUP IDENTIFIER | 03 | 25 | SKID RESISTANCE | 10 | 41-A | PARKING: PEAK | 0 |
| 9 | FEDERAL-AID SYSTEM | 4 | 26 | NUM GRADE-SEPARATED INTERCH | 00 | 41-B | OFF PEAK | 0 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 02 | 42-A | CAPACITY: PEAK | 03000 |
| 11 | SECTION LENGTH | 0235 | 27-B | STOP SIGNS | 01 | 42-B | OFF PEAK | 00000 |
| 47 | EXPANSION FACTOR | 0806 | 27-C | OTHER/NONE | 00 | 43 | 2000 ADT | 005700 |
| 12 | ACCESS CONTROL | 3 | 28 | PREVAILING TYPE SIGNALIZATION | 0 | 44 | NUMBER STRUCTURES | 03 |
| 13 | NUMBER OF THROUGH LANES | 02 | 29 | % GREEN TIME | 00 | 45 | NUMBER AT-GRADE RR CROSSINGS | 02 |
| 14 | LANE WIDTH | 11 | 30 | NUMBER ENTRANCES/EXITS | 10 | 48 | SPEED LIMIT | 50 |
| 15 | APPROACH WIDTH | 000 | 31 | TYPE OF DEVELOPMENT | 2 | 49 | PSD > OR = 1500 | 000 |
| 16 | MEDIAN WIDTH | 00 | 32 | URBAN LOCATION | 0 | 50 | HORIZONTAL ALIGNMENT | 2 |
| 17 | MEDIAN TYPE | 2 | 33 | TERRAIN | 1 | 51 | VERTICAL ALIGNMENT | 2 |
| 18-A | SHOULDER WIDTH: RIGHT | 10 | 34 | EXISTING RIGHT-OF-WAY | 042 | 52 | AVERAGE HIGHWAY SPEED | 30 |
| 18-B | LEFT | 04 | 35 | IS WIDENING FEASIBLE? | 3 | -- | CONTINUATION CODE | 000401 |

OPTIONAL DATA:
55-STRUC ID: BRIDGE      31 BRIDGE      32 BRIDGE      33 BRIDGE      34
56-XING ID:495644R

ERRORS AND MESSAGES:

| | |
|---|---|
| ITEM 17, 16 | MED TYPE CODE MUST BE 4 WHEN ITEM 16 = 0 |
| ITEM 18, 16 | LEFT SHOULDER WIDTH MUST BE ZERO WHEN ITEM 16 = 00 |
| ITEM 19, 18 | SHOULDER TYPE CODE MUST BE IN RANGE 1-3 WHEN ITEM 18-RIGHT SHOULDER- > 0 |
| ITEM 21 | SURFACE TYPE CODE IS INVALID |
| ITEM 22, 21 | VERIFY VALUE CODED FOR ITEM 22; ITEM 21 IS IN ERROR |
| ITEM 23, 22 | STRUCTURAL NUMBER MUST BE ZERO WHEN ITEM 22 NOT = 1 OR 2 |
| ITEM 24, 21 | VERIFY VALUE CODED FOR ITEM 24; ITEM 21 IS IN ERROR |
| ITEM 25, 21   RURAL | VERIFY VALUE CODED FOR ITEM 25; ITEM 21 IS IN ERROR |
| ITEM 42, 13   RURAL | CAPACITY SHOULD BE < OR = NUMBER LANES TIMES 1000 OR ZERO |
| ITEM 49, 21, 13 | VERIFY VALUE CODED FOR ITEM 49; ITEM 21 OR 13 IN ERROR |
| ITEM 50, 21   RURAL | VERIFY VALUE CODED FOR ITEM 50; ITEM 21 IS IN ERROR |
| ITEM 51, 21   RURAL | VERIFY VALUE CODED FOR ITEM 51; ITEM 21 IS IN ERROR |
| ITEM 52,8,21,31 RUR | VERIFY VALUE CODED ITEM 52; ITEM 8, 21 OR 31 IS IN ERROR |
| ITEM 55,44 | BRIDGE ID    NUMBER OF ID'S MUST = NUMBER OF STRUCTURES, ITEM 44 |
| ITEM 56,45 | AT-GRADE RR CROSSING ID    NUMBER OF ID'S MUST = NUMBER OF RR CROSSINGS, ITEM 45 |

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6): 193    SECTION ID(ITEM 4):    95 87675    SEGMENT(ITEM5): 0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 2 | 19 | SHOULDER TYPE | 1 | 36 | 1978 ADT | 027000 |
| 1 | YEAR | 78 | 20 | DRAINAGE ADEQUACY | 2 | 37-A | % TRUCKS: PEAK | 02 |
| 2 | STATE CODE | 99 | 21 | SURFACE TYPE | 60 | 37-B | OFF PEAK | 04 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 3 | 38 | K-FACTOR | 12 |
| 7 | URBAN AREA CODE | 000 | 23 | STRUCTURAL NUMBER | 00 | 39 | DIRECTIONAL FACTOR | 050 |
| 8 | FUNCTIONAL CLASS | 01 | 24 | PAVEMENT CONDITION | 29 | 40 | TYPE OPERATION | 00 |
| 46 | VOLUME GROUP IDENTIFIER | 02 | 25 | SKID RESISTANCE | 00 | 41-A | PARKING: PEAK | 0 |
| 9 | FEDERAL-AID SYSTEM | 1 | 26 | NUM GRADE-SEPARATED INTERCH | 02 | 41-B | OFF PEAK | 0 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 00 | 42-A | CAPACITY: PEAK | 03920 |
| 11 | SECTION LENGTH | 0410 | 27-B | STOP SIGNS | 00 | 42-B | OFF PEAK | 00000 |
| 47 | EXPANSION FACTOR | 2100 | 27-C | OTHER/NONE | 00 | 43 | 2000 ADT | 030500 |
| 12 | ACCESS CONTROL | 1 | 28 | PREVAILING TYPE SIGNALIZATION | 0 | 44 | NUMBER STRUCTURES | 02 |
| 13 | NUMBER OF THROUGH LANES | 04 | 29 | % GREEN TIME | 00 | 45 | NUMBER AT-GRADE RR CROSSINGS | 00 |
| 14 | LANE WIDTH | 12 | 30 | NUMBER ENTRANCES/EXITS | 00 | 48 | SPEED LIMIT | 55 |
| 15 | APPROACH WIDTH | 000 | 31 | TYPE OF DEVELOPMENT | 1 | 49 | PSD > OR = 1500 | 000 |
| 16 | MEDIAN WIDTH | 30 | 32 | URBAN LOCATION | 0 | 50 | HORIZONTAL ALIGNMENT | 1 |
| 17 | MEDIAN TYPE | 3 | 33 | TERRAIN | 1 | 51 | VERTICAL ALIGNMENT | 1 |
| 18-A | SHOULDER WIDTH: RIGHT | 08 | 34 | EXISTING RIGHT-OF-WAY | 200 | 52 | AVERAGE HIGHWAY SPEED | 60 |
| 18-B | LEFT | 08 | 35 | IS WIDENING FEASIBLE? | 4 | -- | CONTINUATION CODE | 000200 |

OPTIONAL DATA:
55-STRUC ID: 217369728452083 432198765432109

ERRORS AND MESSAGES:

ITEM 46, 36          ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6):   700    SECTION ID(ITEM 4):    __354 2172C    SEGMENT(ITEM5):   0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 2 | 19 | SHOULDER TYPE | 1 | 36 | 1978 ADT | 037000 |
| 1 | YEAR | 78 | 20 | DRAINAGE ADEQUACY | 1 | 37-A | % TRUCKS: PEAK | 01 |
| 2 | STATE CODE | 99 | 21 | SURFACE TYPE | 70 | 37-B | OFF PEAK | 04 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 2 | 38 | K-FACTOR | 25 |
| 7 | URBAN AREA CODE | 000 | 23 | STRUCTURAL NUMBER | 00 | 39 | DIRECTIONAL FACTOR | 050 |
| 8 | FUNCTIONAL CLASS | 02 | 24 | PAVEMENT CONDITION | 40 | 40 | TYPE OPERATION | 00 |
| 46 | VOLUME GROUP IDENTIFIER | 03 | 25 | SKID RESISTANCE | 60 | 41-A | PARKING: PEAK | 0 |
| 9 | FEDERAL-AID SYSTEM | 2 | 26 | NUM GRADE-SEPARATED INTERCH | 01 | 41-B | OFF PEAK | 0 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 00 | 42-A | CAPACITY: PEAK | 00000 |
| 11 | SECTION LENGTH | 0400 | 27-B | STOP SIGNS | 00 | 42-B | OFF PEAK | 00000 |
| 47 | EXPANSION FACTOR | 0050 | 27-C | OTHER/NONE | 00 | 43 | 2000 ADT | 039000 |
| 12 | ACCESS CONTROL | 1 | 28 | PREVAILING TYPE SIGNALIZATION | 0 | 44 | NUMBER STRUCTURES | 01 |
| 13 | NUMBER OF THROUGH LANES | 04 | 29 | % GREEN TIME | 00 | 45 | NUMBER AT-GRADE RR CROSSINGS | 00 |
| 14 | LANE WIDTH | 12 | 30 | NUMBER ENTRANCES/EXITS | 01 | 48 | SPEED LIMIT | 10 |
| 15 | APPROACH WIDTH | 000 | 31 | TYPE OF DEVELOPMENT | 1 | 49 | PSD > OR = 1500 | 090 |
| 16 | MEDIAN WIDTH | 16 | 32 | URBAN LOCATION | 0 | 50 | HORIZONTAL ALIGNMENT | 0 |
| 17 | MEDIAN TYPE | 2 | 33 | TERRAIN | 0 | 51 | VERTICAL ALIGNMENT | 0 |
| 18-A | SHOULDER WIDTH: RIGHT | 08 | 34 | EXISTING RIGHT-OF-WAY | 200 | 52 | AVERAGE HIGHWAY SPEED | 60 |
| 18-B | LEFT | 08 | 35 | IS WIDENING FEASIBLE? | 3 | -- | CONTINUATION CODE | 110000 |

OPTIONAL DATA:
53-CURVES:  01002 01000 01004 00000 00000 00000 00000 00000 00000 00000 00000 00000
54-GRADES:  02030 01007 01005 00000 00000 00000

ERRORS AND MESSAGES:

| ITEM 23, 22 | STRUCTURAL NUMBER SHOULD BE IN RANGE 06-12 WHEN ITEM 22 = 2 |
|---|---|
| ITEM 33   RURAL | TERRAIN CODE MUST BE IN RANGE 1-3 |
| ITEM 38 | K FACTOR MUST BE NUMERIC AND SHOULD CONTAIN A VALUE IN THE RANGE 01-24. VERIFY |
| ITEM 46, 36 | ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY |
| ITEM 47 | EXPANSION FACTOR MUST BE IN THE RANGE 0100 TO 9999 |
| ITEM 48 | SPEED LIMIT MUST BE IN THE RANGE 15 TO 56 |
| ITEM 49, 13   RURAL | PSD > OR = 1500 SHOULD BE 000 WHEN ITEM 13 > 2 OR ITEM 21 < 49 |
| ITEM 53 | CURVES BY CLASS     NUM OF CURVES > 00   MUST HAVE LENGTH > 000 |
| ITEM 54,11 | GRADES BY CLASS     SUM OF GRADES LENGTHS MUST = ITEM 11 |

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6):  999    SECTION ID(ITEM 4):  _____ 41     SEGMENT(ITEM5):   0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 1 | 19 | SHOULDER TYPE | 1 | 36 | 1978 ADT | 026000 |
| 1 | YEAR | 78 | 20 | DRAINAGE ADEQUACY | 1 | 37-A | % TRUCKS: PEAK | 06 |
| 2 | STATE CODE | 99 | 21 | SURFACE TYPE | 70 | 37-B | OFF PEAK | 04 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 3 | 38 | K-FACTOR | 13 |
| 7 | URBAN AREA CODE | 070 | 23 | STRUCTURAL NUMBER | 00 | 39 | DIRECTIONAL FACTOR | 055 |
| 8 | FUNCTIONAL CLASS | 14 | 24 | PAVEMENT CONDITION | 32 | 40 | TYPE OPERATION | 02 |
| 46 | VOLUME GROUP IDENTIFIER | 07 | 25 | SKID RESISTANCE | 00 | 41-A | PARKING: PEAK | 3 |
| 9 | FEDERAL-AID SYSTEM | 2 | 26 | NUM GRADE-SEPARATED INTERCH | 01 | 41-B | OFF PEAK | 3 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 00 | 42-A | CAPACITY: PEAK | 03760 |
| 11 | SECTION LENGTH | 0095 | 27-B | STOP SIGNS | 00 | 42-B | OFF PEAK | 03840 |
| 47 | EXPANSION FACTOR | 2305 | 27-C | OTHER/NONE | 00 | 43 | 2000 ADT | 030000 |
| 12 | ACCESS CONTROL | 1 | 28 | PREVAILING TYPE SIGNALIZATION | 4 | 44 | NUMBER STRUCTURES | 01 |
| 13 | NUMBER OF THROUGH LANES | 04 | 29 | % GREEN TIME | 00 | 45 | NUMBER AT-GRADE RR CROSSINGS | 00 |
| 14 | LANE WIDTH | 12 | 30 | NUMBER ENTRANCES/EXITS | 00 | 48 | SPEED LIMIT | 55 |
| 15 | APPROACH WIDTH | 000 | 31 | TYPE OF DEVELOPMENT | 0 | 49 | PSD > OR = 1500 | 000 |
| 16 | MEDIAN WIDTH | 40 | 32 | URBAN LOCATION | 3 | 50 | HORIZONTAL ALIGNMENT | 0 |
| 17 | MEDIAN TYPE | 3 | 33 | TERRAIN | 0 | 51 | VERTICAL ALIGNMENT | 0 |
| 18-A | SHOULDER WIDTH: RIGHT | 06 | 34 | EXISTING RIGHT-OF-WAY | 220 | 52 | AVERAGE HIGHWAY SPEED | 65 |
| 18-B | LEFT | 06 | 35 | IS WIDENING FEASIBLE? | 4 | -- | CONTINUATION CODE | 000100 |

OPTIONAL DATA:
55-STRUC ID: BRIDGE          1

ERRORS AND MESSAGES:

   ITEM 15, 8   URBAN       APPROACH WIDTH SHOULD BE IN RANGE 007-100 WHEN ITEM 8 > 13. VERIFY
   ITEM 52,8          URB   AHS SHOULD BE 00 WHEN ITEM 8 > 13. VERIFY

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6):  999    SECTION ID(ITEM 4):  _____501    SEGMENT(ITEM5):  0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 1 | 19 | SHOULDER TYPE | 1 | 36 | 1978 ADT | 026000 |
| 1 | YEAR | 78 | 20 | DRAINAGE ADEQUACY | 1 | 37-A | % TRUCKS: PEAK | 06 |
| 2 | STATE CODE | 99 | 21 | SURFACE TYPE | 70 | 37-B | OFF PEAK | 04 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 3 | 38 | K-FACTOR | 13 |
| 7 | URBAN AREA CODE | 070 | 23 | STRUCTURAL NUMBER | 00 | 39 | DIRECTIONAL FACTOR | 055 |
| 8 | FUNCTIONAL CLASS | 11 | 24 | PAVEMENT CONDITION | 32 | 40 | TYPE OPERATION | 02 |
| 46 | VOLUME GROUP IDENTIFIER | 03 | 25 | SKID RESISTANCE | 00 | 41-A | PARKING: PEAK | 3 |
| 9 | FEDERAL-AID SYSTEM | 1 | 26 | NUM GRADE-SEPARATED INTERCH | 01 | 41-B | OFF PEAK | 3 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 00 | 42-A | CAPACITY: PEAK | 03760 |
| 11 | SECTION LENGTH | 0095 | 27-B | STOP SIGNS | 00 | 42-B | OFF PEAK | 03840 |
| 47 | EXPANSION FACTOR | 2305 | 27-C | OTHER/NONE | 00 | 43 | 2000 ADT | 030000 |
| 12 | ACCESS CONTROL | 1 | 28 | PREVAILING TYPE SIGNALIZATION | 4 | 44 | NUMBER STRUCTURES | 00 |
| 13 | NUMBER OF THROUGH LANES | 04 | 29 | % GREEN TIME | 00 | 45 | NUMBER AT-GRADE RR CROSSINGS | 00 |
| 14 | LANE WIDTH | 12 | 30 | NUMBER ENTRANCES/EXITS | 00 | 48 | SPEED LIMIT | 55 |
| 15 | APPROACH WIDTH | 000 | 31 | TYPE OF DEVELOPMENT | 0 | 49 | PSD > OR = 1500 | 000 |
| 16 | MEDIAN WIDTH | 40 | 32 | URBAN LOCATION | 3 | 50 | HORIZONTAL ALIGNMENT | 0 |
| 17 | MEDIAN TYPE | 3 | 33 | TERRAIN | 0 | 51 | VERTICAL ALIGNMENT | 0 |
| 18-A | SHOULDER WIDTH: RIGHT | 06 | 34 | EXISTING RIGHT-OF-WAY | 220 | 52 | AVERAGE HIGHWAY SPEED | 65 |
| 18-B | LEFT | 06 | 35 | IS WIDENING FEASIBLE? | 4 | -- | CONTINUATION CODE | 000000 |

ERRORS AND MESSAGES:

   ITEM 46, 36              ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY

CODED VALUES FOR SECTION IN ERROR & ERROR MESSAGES
RURAL/URBAN

COUNTY(ITEM 6): 999    SECTION ID(ITEM 4): _____506    SEGMENT(ITEM5):  0

| ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE | ITEM NUM | ITEM NAME | CODED VALUE |
|---|---|---|---|---|---|---|---|---|
| 57 | RURAL/URBAN CODE | 1 | 19 | SHOULDER TYPE | 1 | 36 | 1978 ADT | 026000 |
| 1 | YEAR | 8 | 20 | DRAINAGE ADEQUACY | 1 | 37-A | % TRUCKS: PEAK | 06 |
| 2 | STATE CODE | 99 | 21 | SURFACE TYPE | 70 | 37-B | OFF PEAK | 04 |
| 3 | TYPE SECTION ID | 1 | 22 | PAVEMENT SECTION | 3 | 38 | K-FACTOR | 13 |
| 7 | URBAN AREA CODE | 074 | 23 | STRUCTURAL NUMBER | 00 | 39 | DIRECTIONAL FACTOR | 055 |
| 8 | FUNCTIONAL CLASS | 11 | 24 | PAVEMENT CONDITION | 32 | 40 | TYPE OPERATION | 02 |
| 46 | VOLUME GROUP IDENTIFIER | 03 | 25 | SKID RESISTANCE | 00 | 41-A | PARKING: PEAK | 3 |
| 9 | FEDERAL-AID SYSTEM | 1 | 26 | NUM GRADE-SEPARATED INTERCH | 01 | 41-B | OFF PEAK | 3 |
| 10 | JURISDICTIONAL RESPONSIBILITY | 1 | 27-A | AT-GRADE INTERSECT: SIGNALS | 00 | 42-A | CAPACITY: PEAK | 03760 |
| 11 | SECTION LENGTH | AAAA | 27-B | STOP SIGNS | 00 | 42-B | OFF PEAK | 03840 |
| 47 | EXPANSION FACTOR | 2305 | 27-C | OTHER/NONE | 00 | 43 | 2000 ADT | 030000 |
| 12 | ACCESS CONTROL | 1 | 28 | PREVAILING TYPE SIGNALIZATION | 4 | 44 | NUMBER STRUCTURES | 00 |
| 13 | NUMBER OF THROUGH LANES | 04 | 29 | % GREEN TIME | 00 | 45 | NUMBER AT-GRADE RR CROSSINGS | 00 |
| 14 | LANE WIDTH | 12 | 30 | NUMBER ENTRANCES/EXITS | 00 | 48 | SPEED LIMIT | 55 |
| 15 | APPROACH WIDTH | 000 | 31 | TYPE OF DEVELOPMENT | 0 | 49 | PSD > OR = 1500 | 000 |
| 16 | MEDIAN WIDTH | 40 | 32 | URBAN LOCATION | 3 | 50 | HORIZONTAL ALIGNMENT | 0 |
| 17 | MEDIAN TYPE | 3 | 33 | TERRAIN | 0 | 51 | VERTICAL ALIGNMENT | 0 |
| 18-A | SHOULDER WIDTH: RIGHT | 06 | 34 | EXISTING RIGHT-OF-WAY | 220 | 52 | AVERAGE HIGHWAY SPEED | 65 |
| 18-B | LEFT | 06 | 35 | IS WIDENING FEASIBLE? | 4 | -- | CONTINUATION CODE | 000000 |

ERRORS AND MESSAGES:

ITEM  1            YEAR MUST BE 78
ITEM 11            SECTION LENGTH MUST BE A NON-ZERO NUMERIC
ITEM 46, 36        ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY

E D I T   S U M M A R Y
RURAL/URBAN

NUMBER SECTIONS EDITED:        RURAL:       6     URBAN:        5

NUMBER SECTIONS IN ERROR:      RURAL:       4    URBAN:        5

END OF DATASET WAS REACHED BEFORE MAXIMUM NUMBER ERRORS FOR EDIT RUN

WORK EDIT FOR STATE.

USER SUPPLIED PARAMETER CARDS

ISTATE= TEST HPMS /99/
SELMOD=RU,MODONLY
SELEDT=RU,FHWADESIGN,CRI-MESS

ALL USER SUPPLIED CARDS PROCESSED. NO ERRORS WERE DETECTED.

# T R A N S A C T I O N   C A R D S   S U P P L I E D
## RURAL/URBAN

| CARD LOC | COUNTY | SECTION ID | CARD |
|---|---|---|---|
| 1  | 001 | ___555___777_2 | U020F1    555    777 2/2,99/12,2/56-1,999721B/ |
| 2  | 001 | ___555___777_2 | U01CC1    555    777 2/44,02/45,3/ |
| 3  | 001 | ___555___777_2 | C010 1    555    777 2A777777X666666Y |
| 4  | 001 | ___555___777_2 | B01CC1    555    777 2ATEST ADD BRID01TEST ADD BRID02 |
| 5  | 193 | ____95_87675   | D01193      95 876751 |
| 6  | 170 | 0__354_21720   | B011730   354 21720UNO MATCH DEL ID |
| 7  | 170 | 0__354_21720   | B02.730   354 21720ATEST ADD BRID01TEST ADD BRID02TEST ADD BRID03 |
| 8  | 170 | 0__354_21720   | U011700   354 21720/44,03/48,45/ |
| 9  | 999 | _____501  | U01999          501/33,1/27,01/ |
| 10 | 999 | _____501  | U02999          50145,06/18-C,10/37-A,25/ |
| 11 | 999 | _____501  | C01999          501AADD TEST BRID01 |
| 12 | 999 | _____501  | B01999          501111111A222222B333333C |
| 13 | 999 | _____501  | B02999          501A444444D555555E666666F |
| 14 | 193 | _____72183   | D01193        721832 |
| 15 | 193 | _____72183   | D02193        721831 |
| 16 | 017 | _____40   | B01017           40AADD TEST BRID01 |
| 17 | 017 | _____40   | C01017           40999999Z |
| 18 | 017 | _____40   | U01017           40/6,018/ |
| 19 | 999 | _____921_768   | U01999        921 768/10,1/38,22/ |
| 20 | 999 | _____501  | U01999          501/37-A,10-1,78-47,2215/ |
| 21 | 999 | _____501  | U02999          501/7,307/14,10/51,1/ |
| 22 | 999 | _____501  | B01999          501ABRID01 TEST ADDBRID02 TEST ADD |
| 23 | 700 | ___354_21721   | D01700   354 217211 |
| 24 | 017 | _____41   | U01017           41/8,32/ |
| 25 | 018 | _____44   | C01018           44A887766X |
| 26 | 018 | _____44   | U02018           44/6,019/ |
| 27 | 005 | 1____3_22450   | U010051      3 22450/46,02/52,45/45,01/ |
| 28 | 005 | 1____3_22450   | U02005Z      3 22450/53-C,01002/44,02/ |
| 29 | 005 | 1____3_22450   | B01C051      3 22450AADD BRID01 TEST |
| 30 | 005 | 1____3_22450   | C01P052      3 22450A623457Z |
| 31 | 104 | CROSS_EDIT01   | U011C4CROSS EDIT01/17,4/18-B,00/19,2/ |
| 32 | 104 | CROSS_EDIT01   | U021C4CROSS EDIT01/45,01/44,04/23,00/ |

VALID TRANSACTION SETS WERE PROCESSED. UPDATE PROCESS STARTED. NEW MASTER DATASET TO BE DEVELOPED.

FILES OPENED. MERGE PROCESS STARTED TO UPDATE SECTDATA  AND CREATE DATASET NEWDATA--THE NEW MASTER FILE.

# T R A N S A C T I O N S   B Y   S E C T I O N   I D
(SUMMARY IS BY COUNTY CODE AND SECTION ID ON NEW MASTER DATABASE)

| COUNTY | SECTION ID | NUMBER ITEMS UPDATED | BRIDGE ID | CROSSING ID | SECTION DELETED |
|---|---|---|---|---|---|
| 001 | 555 777 2 | 4 | A- 2 D- 0 | A- 2 D- 0 | |
| 005 | 1    3 22450 | 5 | A- 1 D- 0 | A- 1 D- 0 | |
| 017 | 41 | 1 | A- 0 D- 0 | A- 0 D- 0 | |
| 104 | CROSS EDITOR | 0 | A- 0 D- 0 | A- 0 D- 0 | |
| 193 | 95 87675 | 0 | A- 0 D- 0 | A- 0 D- 0 | X |
| 999 | 501 | 4 | A- 4 D- 0 | A- 3 D- 0 | |

H P M S   U P D A T E   S U M M A R Y   R E P O R T
RURAL/URBAN

*SECTIONS MODIFIED:    RURAL:      2      URBAN:      3

SECTIONS DELETED:      RURAL:      1      URBAN:      0

SECTIONS INPUT:        RURAL:      6      URBAN:      5


*  INCLUDES SECTION WITH UPDATED DATA ITEM AND/OR BRIDGE ID'S ADDED OR DELETED AND/OR CROSSING ID'S ADDED OR DELETED.


END OF SECTION DATABASE REACHED BEFORE ALL TRANSACTIONS WERE PROCESSED.
TRANSACTION BEING PROCESSED OR LAST ONE PROCESSED:   999      921 768      U


SECTIONS WERE MODIFIED OR DELETED ONLY IN THIS EXECUTION. NO NEW SECTIONS WERE ADDED TO THE DATABASE.

## T R A N S A C T I O N   C A R D S   I N   E R R O R
### (LISTED TRANSACTION SETS WERE NOT ADDED TO ALTER FILE AND NONE WERE USED IN DEVELOPING UPDATED DATABASE)

| CARD LOC | | CODED CARD | ERROR  MESSAGE |
|---|---|---|---|
| 14 | D01193 | 721832 | DELETE CARDS > 1 WITH SAME ID |
| 15 | D02193 | 721831 | |
| | | | |
| 25 | C01018 | 44A887766X | TRAN CODE NOT =; SEQ# >1, ID = |
| 26 | U02018 | 44/6,019/ | |

ERRORS DETECTED DURING MERGE PROCESS

| INPUT CARD POSITION | SEQ NUM | COUNTY | SECTION ID | TRANS CODE | CODED ERROR OR VERIFY | ERROR MESSAGE |
|---|---|---|---|---|---|---|
| 1 | 1 | 001 | __555__777__ | U | 56-1 | INVALID SUB-ITEM LETTER OR NUM |
| 18 | 16 | 017 | _____41 | U | CK CNTY & SECT ID CODED | ID TRANS NOT = ID FOR SECTION |
| 17 | 16 | 017 | _____4L | C | CK CNTY & SECT ID CODED | ID TRANS NOT = ID FOR SECTION |
| 16 | 16 | 017 | _____4C | B | CK CNTY & SECT ID CODED | ID TRANS NOT = ID FOR SECTION |
| 8 | 2 | 170 | C__354_2172U | U | CK CNTY & SECT ID CODED | ID TRANS NOT = ID FOR SECTION |
| 6 | 2 | 170 | C__354_2172C | B | CK CNTY & SECT ID CODED | ID TRANS NOT = ID FOR SECTION |
| 23 | 2 | 700 | __354_2L721 | D | CK CNTY & SECT ID CODED | ID TRANS NOT = ID FOR SECTION |
| 20 | 1 | 999 | _____5J1 | U | CHECK /'S AND ,'S | INVALID FORMAT FOR UPDATE CARD |
| 9 | 1 | 999 | _____50L | U | 27 | ITEM NUM MUST HAVE SUB-ITEM |
| 9 | 2 | 999 | _____50L | U | CHECK /'S AND ,'S | INVALID FORMAT FOR UPDATE CARD |
| 12 | 1 | 999 | _____5uL | D | 1 | CODE NOT 'A' OR 'D' FOR ID'S |

ITEM NUMBERS AND ERROR MESSAGES BY SECTION ID
RURAL/URBAN

COUNTY(ITEM 6): 001    SECTION ID(ITEM 4): ___555___777_2    SEGMENT(ITEM5):  0
ERRORS AND MESSAGES:
  ITEM 19, 18           SHOULDER TYPE CODE MUST BE 4 OR 5 WHEN ITEM 18-RIGHT SHOULDER- = 0
  ITEM 23, 22           STRUCTURAL NUMBER MUST BE ZERO WHEN ITEM 22 NOT = 1 OR 2
  ITEM 24, 21           PAVEMENT CONDITION MUST BE IN RANGE 01 TO 50 WHEN ITEM 21 > 49
  ITEM 32  URBAN        URBAN LOCATION CODE MUST BE IN RANGE 1-5
  ITEM 38               K FACTOR MUST BE NUMERIC AND SHOULD CONTAIN A VALUE IN THE RANGE 01-24. VERIFY
  ITEM 41  URBAN        PARKING PEAK AND OFF-PEAK MUST BE 1, 2, OR 3
  ITEM 43               2000 ADT MUST BE NON-ZERO NUMERIC
  ITEM 45               NUMBER OF AT-GRADE CROSSINGS MUST BE NUMERIC
  ITEM 46, 36           ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY
  ITEM 52,8         URB  AHS SHOULD BE 00 WHEN ITEM 8 > 13. VERIFY
  ITEM 56               AT-GRADE RR CROSSING ID MUST BE 6-DIGITS AND 1 ALPHABETIC
  ITEM 56,45            AT-GRADE RR CROSSING ID   NUMBER OF ID'S MUST = NUMBER OF RR CROSSINGS, ITEM 45

COUNTY(ITEM 6): 005    SECTION ID(ITEM 4): 1___3_22+22    SEGMENT(ITEM5):  0
ERRORS AND MESSAGES:
  ITEM 55,44            BRIDGE ID     NUMBER OF ID'S MUST = NUMBER OF STRUCTURES, ITEM 44

COUNTY(ITEM 6): 017    SECTION ID(ITEM 4): _____41    SEGMENT(ITEM5):  0
ERRORS AND MESSAGES:
  ITEM 46, 36           ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY
  ITEM 50,21,53  RURAL  HORIZONTAL ALIGNMENT MUST BE IN RANGE 1-4 WHEN ITEM 21 > 49 AND ITEM 53 IS NOT PROVIDED
  ITEM 51,21,54  RURAL  VERTICAL ALIGNMENT MUST BE IN RANGE 1 TO 4 WHEN ITEM 21 > 49 AND ITEM 54 IS NOT PROVIDED

COUNTY(ITEM 6): 104    SECTION ID(ITEM 4): CROSS_EDIT_1    SEGMENT(ITEM5):  0
ERRORS AND MESSAGES:
  ITEM 21               SURFACE TYPE CODE IS INVALID
  ITEM 22, 21           VERIFY VALUE CODED FOR ITEM 22; ITEM 21 IS IN ERROR
  ITEM 24, 21           VERIFY VALUE CODED FOR ITEM 24; ITEM 21 IS IN ERROR
  ITEM 25, 21  RURAL    VERIFY VALUE CODED FOR ITEM 25; ITEM 21 IS IN ERROR
  ITEM 42, 13  RURAL    CAPACITY SHOULD BE < OR = NUMBER LANES TIMES 1000 OR ZERO
  ITEM 49, 21, 13       VERIFY VALUE CODED FOR ITEM 49; ITEM 21 OR 13 IN ERROR
  ITEM 50, 21  RURAL    VERIFY VALUE CODED FOR ITEM 50; ITEM 21 IS IN ERROR
  ITEM 51, 21  RURAL    VERIFY VALUE CODED FOR ITEM 51; ITEM 21 IS IN ERROR
  ITEM 52,8,21,31 RUR   VERIFY VALUE CODED ITEM 52; ITEM 8, 21 OR 31 IS IN ERROR

COUNTY(ITEM 6): 700    SECTION ID(ITEM 4): ___354_2172E    SEGMENT(ITEM5):  0
ERRORS AND MESSAGES:
  ITEM 23, 22           STRUCTURAL NUMBER SHOULD BE IN RANGE 06-12 WHEN ITEM 22 = 2
  ITEM 33  RURAL        TERRAIN CODE MUST BE IN RANGE 1-3
  ITEM 38               K FACTOR MUST BE NUMERIC AND SHOULD CONTAIN A VALUE IN THE RANGE 01-24. VERIFY
  ITEM 46, 36           ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY
  ITEM 47               EXPANSION FACTOR MUST BE IN THE RANGE 0100 TO 9999
  ITEM 48               SPEED LIMIT MUST BE IN THE RANGE 15 TO 56
  ITEM 49, 13  RURAL    PSD > OR = 1500 SHOULD BE 001 WHEN ITEM 13 > 2 OR ITEM 21 < 49
  ITEM 53               CURVES BY CLASS    NUM OF CURVES > 00   MUST HAVE LENGTH > 000
  ITEM 54,11            GRADES BY CLASS    SUM OF GRADES LENGTHS MUST = ITEM 11

COUNTY(ITEM 6): 999    SECTION ID(ITEM 4): _____41    SEGMENT(ITEM5):  0
ERRORS AND MESSAGES:
  ITEM 15, 8  URBAN     APPROACH WIDTH SHOULD BE IN RANGE 007-100 WHEN ITEM 8 > 13. VERIFY
  ITEM 52,8         URB  AHS SHOULD BE 00 WHEN ITEM 8 > 13. VERIFY

COUNTY(ITEM 6): 999    SECTION ID(ITEM 4): _____5_1    SEGMENT(ITEM5):  0
ERRORS AND MESSAGES:
  ITEM 46, 36           ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY
  ITEM 55,44            BRIDGE ID    NUMBER OF ID'S MUST = NUMBER OF STRUCTURES, ITEM 44
  ITEM 55               AT-GRADE RR CROSSING ID MUST BE 6-DIGITS AND 1 ALPHABETIC
  ITEM 56,45            AT-GRADE RR CROSSING ID   NUMBER OF ID'S MUST = NUMBER OF RR CROSSINGS, ITEM 45

ITEM    URBAN       AN URBAN SECTION HAS A VALUE CODED FOR A RURAL ONLY DATA ITEM. CHECK ALL RURAL ITEMS

COUNTY(ITEM 6):  990    SECTION ID(ITEM 4):  _____5.6    SEGMENT(ITEM5):  0
ERRORS AND MESSAGES:
  ITEM  1              YEAR MUST BE 78
  ITEM  11             SECTION LENGTH MUST BE A NON-ZERO NUMERIC
  ITEM 46, 36          ADT VOLUME GROUP(FOR FHWA APPROACH) IDENTIFIER IS INVALID FOR 1978 ADT VALUE CODED. VERIFY

E D I T   S U M M A R Y
RURAL/URBAN

NUMBER SECTIONS EDITED:        RURAL:      5      URBAN:        5

NUMBER SECTIONS IN ERROR:      RURAL:      3      URBAN:        5

END OF DATASET WAS REACHED BEFORE MAXIMUM NUMBER ERRORS FOR EDIT RUN

WORK EDIT FOR STATE.