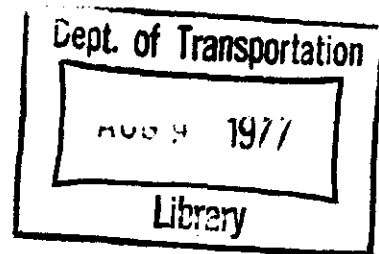


TE
184
.A5
1976



U.S. Department of Transportation
Federal Highway Administration

GUIDE FOR MILEAGE
FACILITIES REPORTING

September 1976

Highway Statistics Division
Mileage Facilities Branch

Dept. of Transportation

AUG 9 1977

INTRODUCTION

This guide describes procedures for reporting data related to roadway mileage, facilities, and characteristics. Detailed procedures provide for submittal of annual mileage data to the Highway Statistics Division for use in compiling national statistics. These procedures are intended to provide a workable means for submittal of data in computer readable form, produced from a variety of computerized and noncomputerized sources. This guide includes detailed coding procedures and a number of examples showing methods of reporting and coding when different levels of detail are available in the basic roadway data in the State.

Roadway statistics are fundamental to the planning, financing, and administration of a wide variety of governmental and commercial activities associated with highway transportation. Therefore, these procedures are intended to be comprehensive in the sense that all road and street facilities available for use by the general public are accounted for. At the same time, a level of detail must be achieved so that useful comparisons can be made related to the characteristics of the roadway, governmental and administrative jurisdiction, geographic location, program expenditures, and traffic service. As new programs are proposed and implemented to deal with complex problems, needs for new kinds of information providing additional relationships become apparent at all levels of government. Where detailed computer records are available, needed relationships can often be determined readily by special analysis of available data. In other cases, additional data must be obtained. The use of procedures designed to facilitate analysis and adaptability to new data requirements should efficiently provide a maximum of needed information. These procedures are intended to (1) be compatible with a wide range of State and local procedures and information systems, (2) encourage the development of information systems, and (3) provide detailed extensive data useful for planning, developing programs, and managing highway activities by all levels of government.

Since photolog techniques are becoming increasingly important and are currently being utilized more frequently by State highway and transportation departments, new procedures, such as those incorporated in this guide, should be designed to be adaptable to photologging as an input medium. Much of the information required in this mileage reporting process can be coded from the States photos of its various highway sections, thus considerably lessening the task of obtaining the highway inventory.

Objectives of Compiling Mileage Data

The mileage data, like other data published in Highway Statistics since 1945, are intended to provide comprehensive national statistics concerning public activities related to highway transportation in the detail needed to effectively plan and administer highway programs at all levels of government and to assist in other private, government, academic, and industry planning activities related to highway transportation. With increasing economic development, urban growth, and technological advances, the highway program activities at all levels of government have become correspondingly complex. To deal with problems involving financing, safety, mobility for all citizens, environmental quality, allocation of energy and other limited resources, increased recreational needs and economic opportunities, government programs have been provided and many others proposed. To plan and effectively administer the necessary activities, an ever widening variety of relationships must be analyzed. The extent of roads and streets within each significant category provides the base by which needs and expenditures can be related to performance. Therefore, a continuing need for new and different mileage data is expected, and reporting procedures must be developed to provide maximum analytical flexibility within the limited resources available for acquiring and reporting data.

Obtaining Mileage Data

Detailed data providing characteristics such as mileage by pavement type and width, traffic volumes, and right-of-way width require field observations and measurements. Road Inventory procedures are described in the Road Inventory Manual which is Volume 20, Appendix 12, of the Highway Planning Program Manual. Records of highway construction and maintenance activities are a principal basis for updating mileage data. Since a substantial proportion of new mileage is constructed in connection with residential and commercial land development, building permit and subdivision approval records are useful in determining the extent of new mileage constructed each year, available from local officials. County mileage data should be checked and adjusted whenever counties are reinventoried.

Submittal of Data

Data records in the specified formats may be submitted on magnetic computer tape or punchcards which can be processed by FHWA equipment. The data are due by June 1 of the year following the year of the data. Data should reflect the status as of December 31.

Magnetic tape submittals are preferred. Tapes will be returned as soon as they have been copied. If the submittal must be made in the form of 80-column punchcards, the cards should be tightly packed to prevent curling or other damage.

If the submittal is made on magnetic tape, the tape should contain 80-character logical records, 20 records to a block. If possible, the tape should have "standard labels" with label information provided in the transmittal correspondence. The term "standard labels" is intended to denote tape labels which are compatible with IBM Operating System software. That is, the labels must include a volume label (VOL1) as well as data set (header) labels (HDR1 and HDR2) before each data set. Following the data set, a data set trailer label group must appear consisting of standard data set label 1 (EOV1 or EOF1) and standard data set label 2 (EOV2 or EOF2). Each data set and each data set label group on magnetic tape must be followed by a tapemark. Formats of the various labels are shown in tables 1 through 3. The tape should be written in 1600 or 800 bpi density, nine-channel, EBCDIC code. The reel should have a physical label attached containing the name of the State, the words "Roadway Inventory File, Office of Highway Planning," the above tape specifications, and the address to which the tape is to be returned.

If it is impossible to provide a tape in accordance with the above specifications, the transmittal correspondence and the external physical label should contain the following information:

- Name and model of computer on which the tape was produced
- Number of channels
- Whether or not the tape has standard labels
- Density
- Character representation code
- Blocking factor
- How last block filled

The data submittal, either cards or magnetic tape, should have the shipping carton marked with the name of the State and the words, "Roadway Inventory File." It should be sent to:

Chief, Highway Statistics Division
 HHP-42
 Federal Highway Administration
 Washington, D.C. 20590



TABLE 1. STANDARD VOLUME LABEL

<u>Columns</u>	<u>No. of Columns</u>	<u>Description of Item</u>
1-4	4	VOL1
5-10	6	Volume Serial Number
11-80	70	Reserved

TABLE 2. STANDARD DATA SET LABEL 1

<u>Columns</u>	<u>No. of Columns</u>	<u>Description of Item</u>
1-4	4	HDR1 or EOVI or EOF1
5-21	17	Data Set Identifier
22-31	10	Reserved
32-35	4	Data Set Sequence Number
36-47	12	Reserved
48-53	6	Expiration Date
54	1	Data Set Security
55-60	6	Block Count
61-80	20	Reserved

TABLE 3. STANDARD DATA SET LABEL 2

<u>Columns</u>	<u>No. of Columns</u>	<u>Description of Item</u>
1-4	4	HDR2 or EOVI or EOF2
5	1	Record Format
6-10	5	Block length
11-15	5	Record length
16	1	Tape Density
17	1	Data Set Position
18-34	17	Reserved
35-36	2	Tape Recording Technique
37	1	Printer Control Characters
38	1	Reserved
39	1	Block Attribute
40-80	41	Reserved

Timing, Changeover, and Reporting

It is expected that a number of States will be unable to provide all data details requested in the first year. For this reason, a phased program is outlined so that data will be available from some States the first year to provide a base for testing the new procedures. By the second year, it is hoped that all States will be geared up to utilize the new procedure. The proposed timing and changeover is outlined as follows:

For December 31, 1975, Data

These data are due in FHWA Washington Headquarters by June 1976. The standard mileage tables (PR-502, 505, 506, 528, 528M, and 529) will be submitted by each State and will be utilized in summarizing mileage figures for the year. In addition, at least one State per Region should also submit data under the new procedure to aid in the development and checking procedures that will be used.

For December 31, 1976, Data

These data are due in FHWA Washington Headquarters by June 1977. All States should submit data under the new procedures. PR-500 series tables should also be submitted.

For December 31, 1977, Data

These data are due in FHWA Washington Headquarters by June of 1978. Only the new procedure will be used. A form PR-528 will be filled out and submitted with the data to provide a broad verification of the data.

It is realized that some States may be unable to immediately supply the data for all of the fields in the record. Revision of existing State procedures will, in many instances, be necessary to obtain such data as right-of-way width, shoulder types, or population group. It is expected that each State will develop procedures to supply all of the requested data at as early a date as possible. As a minimum, procedures to initially submit the data corresponding to at least that which is currently submitted on the PR-500 series of tables should be developed. This will require a greater level of detail for the State Primary, Federal-Aid Primary, and Federal-Aid Urban Systems.

Those areas that should be completed as a minimum requirement for all mileage reported are: Year; State; County; Section length; Federal, State, and local domain; Governmental Level of Control; Administrative classification; Federal-aid system traveled-way;

Federal-aid system designated-way; Toll; Federal-aid urban area; Municipality; Access control, public roads (only public roads portion need be coded); Pavement type - primary direction; and Record type Identifier. For that mileage on the State Primary, Federal-Aid Primary, and Federal-Aid Urban systems the following additional items are required: Population group (showing as a minimum the 5,000 population split); Access control, public roads (both portions need to be coded); ADT; Pavement width; Number of lanes; and Median type (showing as a minimum undivided, one-way, and divided).

The level of detail within some data items can be varied by using either a general or specific code. Surface types have such a coding scheme. By using the codes at intervals of ten (10, 20, 30,...) general information on the roadway surface is shown, but by using, when available, the more specific code (51, 52, 53,...) even greater detail is supplied.

Multiple Record Submission

Several record types have been designed for each highway segment or category to allow more than 80 columns of data to be submitted. For each record, columns 1 through 32 are considered the identification portion of the record, and the data in the fields within these columns are used to tie the data in the various records for a particular highway segment together for processing purposes. Column 80 of each record serves as a record type identifier as follows:

<u>CODE</u>	<u>DESCRIPTION</u>
0, 1, 2, or 3	"Primary" data record containing administrative, functional, area, and roadway data shown in the format on page 9. The various codes, 0 through 3, are utilized to denote the manner in which directional road-data has been coded within the primary data record.
4	"Supplemental" data record containing data regarding special lanes, adjacent bikeways, etc., as shown in the record format on page 46.
5	"Transaction" data record containing data outlining construction or system changes between the current year's data submission and that for the previous year. The record is discussed in the section titled "Reporting of New Construction and System and Administrative Reclassifications."

It is possible that a single data record (0, 1, 2, or 3 in column 80) for a highway segment will serve to contain all of the required data regarding that segment. However, the number 4 and number 5 records provide the flexibility necessary to submit additional data regarding a segment, as applicable.

In addition, should the need arise in the future to expand the format of the data currently being requested or should a particular State have need to submit a portion of its data in a special format, this could be accomplished by submitting the data in an additional record, again utilizing columns 1 - 32 as the segment identifier area and using a unique record identifier in column 80.

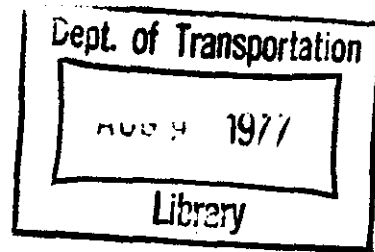
Future Metrication

It is likely that all measurements will be converted to metric units in a future year. Until this is officially implemented, all roadway length data should be reported in miles.

There are several considerations which may aid the transition.

1. It has been customary to refer to data describing the amount of roadway as "mileage data," and location on a route as "mile posts" or "mile points." "Mileage Facilities Branch" is the name of the Highway Statistics Division unit responsible for roadway data. Throughout these instructions, terms such as "roadway," and "amount of highway" have been used where "mileage" could otherwise have been used.
2. Should it become necessary to summarize and report data in kilometers, the roadway mileage data can be factored accordingly. This will eliminate the need for conversion of entire inventory files.
3. Since 621.37 miles equals 1000 kilometers, any computer record data fields designated to accommodate entries of up to 999 miles will overflow where the existing entry is greater than 621 miles. The conversion to the metric system should be considered in coding the segments and category records to be used.
4. A difference will result when a large number of mileage records are factored to kilometers and summed and the resulting total compared to the original mileage total factored to kilometers. This difference will be reduced if the mileage entries in the individual records are coded with maximum precision applicable for the field.

TE
184
.A5
1976



U.S. Department of Transportation
Federal Highway Administration

GUIDE FOR MILEAGE
FACILITIES REPORTING

September 1976

Highway Statistics Division
Mileage Facilities Branch

Dept. of Transportation

AUG 9 1977

INTRODUCTION

This guide describes procedures for reporting data related to roadway mileage, facilities, and characteristics. Detailed procedures provide for submittal of annual mileage data to the Highway Statistics Division for use in compiling national statistics. These procedures are intended to provide a workable means for submittal of data in computer readable form, produced from a variety of computerized and noncomputerized sources. This guide includes detailed coding procedures and a number of examples showing methods of reporting and coding when different levels of detail are available in the basic roadway data in the State.

Roadway statistics are fundamental to the planning, financing, and administration of a wide variety of governmental and commercial activities associated with highway transportation. Therefore, these procedures are intended to be comprehensive in the sense that all road and street facilities available for use by the general public are accounted for. At the same time, a level of detail must be achieved so that useful comparisons can be made related to the characteristics of the roadway, governmental and administrative jurisdiction, geographic location, program expenditures, and traffic service. As new programs are proposed and implemented to deal with complex problems, needs for new kinds of information providing additional relationships become apparent at all levels of government. Where detailed computer records are available, needed relationships can often be determined readily by special analysis of available data. In other cases, additional data must be obtained. The use of procedures designed to facilitate analysis and adaptability to new data requirements should efficiently provide a maximum of needed information. These procedures are intended to (1) be compatible with a wide range of State and local procedures and information systems, (2) encourage the development of information systems, and (3) provide detailed extensive data useful for planning, developing programs, and managing highway activities by all levels of government.

Since photolog techniques are becoming increasingly important and are currently being utilized more frequently by State highway and transportation departments, new procedures, such as those incorporated in this guide, should be designed to be adaptable to photologging as an input medium. Much of the information required in this mileage reporting process can be coded from the States photos of its various highway sections, thus considerably lessening the task of obtaining the highway inventory.

Objectives of Compiling Mileage Data

The mileage data, like other data published in Highway Statistics since 1945, are intended to provide comprehensive national statistics concerning public activities related to highway transportation in the detail needed to effectively plan and administer highway programs at all levels of government and to assist in other private, government, academic, and industry planning activities related to highway transportation. With increasing economic development, urban growth, and technological advances, the highway program activities at all levels of government have become correspondingly complex. To deal with problems involving financing, safety, mobility for all citizens, environmental quality, allocation of energy and other limited resources, increased recreational needs and economic opportunities, government programs have been provided and many others proposed. To plan and effectively administer the necessary activities, an ever widening variety of relationships must be analyzed. The extent of roads and streets within each significant category provides the base by which needs and expenditures can be related to performance. Therefore, a continuing need for new and different mileage data is expected, and reporting procedures must be developed to provide maximum analytical flexibility within the limited resources available for acquiring and reporting data.

Obtaining Mileage Data

Detailed data providing characteristics such as mileage by pavement type and width, traffic volumes, and right-of-way width require field observations and measurements. Road inventory procedures are described in the Road Inventory Manual which is Volume 20, Appendix 10, of the Highway Planning Program Manual. Records of highway construction and maintenance activities are a principal basis for updating mileage data. Since a substantial proportion of new mileage is constructed in connection with residential and commercial land development, building permit and subdivision approval records are useful in determining the extent of new mileage constructed each year, available from local officials. County mileage data should be checked and adjusted whenever counties are reinventoried.

Submittal of Data

Data records in the specified formats may be submitted on magnetic computer tape or punchcards which can be processed by FHWA equipment. The data are due by June 1 of the year following the year of the data. Data should reflect the status as of December 31.

Magnetic tape submittals are preferred. Tapes will be returned as soon as they have been copied. If the submittal must be made in the form of 80-column punchcards, the cards should be tightly packed to prevent curling or other damage.

If the submittal is made on magnetic tape, the tape should contain 80-character logical records, 20 records to a block. If possible, the tape should have "standard labels" with label information provided in the transmittal correspondence. The term "standard labels" is intended to denote tape labels which are compatible with IBM Operating System software. That is, the labels must include a volume label (VOL1) as well as data set (header) labels (HDR1 and HDR2) before each data set. Following the data set, a data set trailer label group must appear consisting of standard data set label 1 (EOV1 or EOF1) and standard data set label 2 (EOV2 or EOF2). Each data set and each data set label group on magnetic tape must be followed by a tapemark. Formats of the various labels are shown in tables 1 through 3. The tape should be written in 1600 or 800 bpi density, nine-channel, EBCDIC code. The reel should have a physical label attached containing the name of the State, the words "Roadway Inventory File, Office of Highway Planning," the above tape specifications, and the address to which the tape is to be returned.

If it is impossible to provide a tape in accordance with the above specifications, the transmittal correspondence and the external physical label should contain the following information:

- Name and model of computer on which the tape was produced
- Number of channels
- Whether or not the tape has standard labels
- Density
- Character representation code
- Blocking factor
- How last block filled

The data submittal, either cards or magnetic tape, should have the shipping carton marked with the name of the State and the words, "Roadway Inventory File." It should be sent to:

Chief, Highway Statistics Division
 HHP-42
 Federal Highway Administration
 Washington, D.C. 20590

TABLE 1. STANDARD VOLUME LABEL

<u>Columns</u>	<u>No. of Columns</u>	<u>Description of Item</u>
1-4	4	VOL1
5-10	6	Volume Serial Number
11-80	70	Reserved

TABLE 2. STANDARD DATA SET LABEL 1

<u>Columns</u>	<u>No. of Columns</u>	<u>Description of Item</u>
1-4	4	HDR1 or EOVI or EOF1
5-21	17	Data Set Identifier
22-31	10	Reserved
32-35	4	Data Set Sequence Number
36-47	12	Reserved
48-53	6	Expiration Date
54	1	Data Set Security
55-60	6	Block Count
61-80	20	Reserved

TABLE 3. STANDARD DATA SET LABEL 2

<u>Columns</u>	<u>No. of Columns</u>	<u>Description of Item</u>
1-4	4	HDR2 or EOVI or EOF2
5	1	Record Format
6-10	5	Block length
11-15	5	Record length
16	1	Tape Density
17	1	Data Set Position
18-34	17	Reserved
35-36	2	Tape Recording Technique
37	1	Printer Control Characters
38	1	Reserved
39	1	Block Attribute
40-80	41	Reserved

Timing, Changeover, and Reporting

It is expected that a number of States will be unable to provide all data details requested in the first year. For this reason, a phased program is outlined so that data will be available from some States the first year to provide a base for testing the new procedures. By the second year, it is hoped that all States will be geared up to utilize the new procedure. The proposed timing and changeover is outlined as follows:

For December 31, 1975, Data

These data are due in FHWA Washington Headquarters by June 1976. The standard mileage tables (PR-502, 505, 506, 528, 528M, and 529) will be submitted by each State and will be utilized in summarizing mileage figures for the year. In addition, at least one State per Region should also submit data under the new procedure to aid in the development and checking procedures that will be used.

For December 31, 1976, Data

These data are due in FHWA Washington Headquarters by June 1977. All States should submit data under the new procedures. PR-500 series tables should also be submitted.

For December 31, 1977, Data

These data are due in FHWA Washington Headquarters by June of 1978. Only the new procedure will be used. A form PR-528 will be filled out and submitted with the data to provide a broad verification of the data.

It is realized that some States may be unable to immediately supply the data for all of the fields in the record. Revision of existing State procedures will, in many instances, be necessary to obtain such data as right-of-way width, shoulder types, or population group. It is expected that each State will develop procedures to supply all of the requested data at as early a date as possible. As a minimum, procedures to initially submit the data corresponding to at least that which is currently submitted on the PR-500 series of tables should be developed. This will require a greater level of detail for the State Primary, Federal-Aid Primary, and Federal-Aid Urban Systems.

Those areas that should be completed as a minimum requirement for all mileage reported are: Year; State; County; Section length; Federal, State, and local domain; Governmental Level of Control; Administrative classification; Federal-aid system traveled-way;

Federal-aid system designated-way; Toll; Federal-aid urban area; Municipality; Access control, public roads (only public roads portion need be coded); Pavement type - primary direction; and Record type Identifier. For that mileage on the State Primary, Federal-Aid Primary, and Federal-Aid Urban systems the following additional items are required: Population group (showing as a minimum the 5,000 population split); Access control, public roads (both portions need to be coded); ADT; Pavement width; Number of lanes; and Median type (showing as a minimum undivided, one-way, and divided).

The level of detail within some data items can be varied by using either a general or specific code. Surface types have such a coding scheme. By using the codes at intervals of ten (10, 20, 30, ...) general information on the roadway surface is shown, but by using, when available, the more specific code (51, 52, 53, ...) even greater detail is supplied.

Multiple Record Submission

Several record types have been designed for each highway segment or category to allow more than 80 columns of data to be submitted. For each record, columns 1 through 32 are considered the identification portion of the record, and the data in the fields within these columns are used to tie the data in the various records for a particular highway segment together for processing purposes. Column 80 of each record serves as a record type identifier as follows:

<u>CODE</u>	<u>DESCRIPTION</u>
0, 1, 2, or 3	"Primary" data record containing administrative, functional, area, and roadway data shown in the format on page 9. The various codes, 0 through 3, are utilized to denote the manner in which directional road-data has been coded within the primary data record.
4	"Supplemental" data record containing data regarding special lanes, adjacent bikeways, etc., as shown in the record format on page 46.
5	"Transaction" data record containing data outlining construction or system changes between the current year's data submission and that for the previous year. The record is discussed in the section titled "Reporting of New Construction and System and Administrative Reclassifications."

It is possible that a single data record (0, 1, 2, or 3 in column 80) for a highway segment will serve to contain all of the required data regarding that segment. However, the number 4 and number 5 records provide the flexibility necessary to submit additional data regarding a segment, as applicable.

In addition, should the need arise in the future to expand the format of the data currently being requested or should a particular State have need to submit a portion of its data in a special format, this could be accomplished by submitting the data in an additional record, again utilizing columns 1 - 32 as the segment Identifier area and using a unique record identifier in column 80.

Future Metrication

It is likely that all measurements will be converted to metric units in a future year. Until this is officially implemented, all roadway length data should be reported in miles.

There are several considerations which may aid the transition.

1. It has been customary to refer to data describing the amount of roadway as "mileage data," and location on a route as "mile posts" or "mile points." "Mileage Facilities Branch" is the name of the Highway Statistics Division unit responsible for roadway data. Throughout these instructions, terms such as "roadway," and "amount of highway" have been used where "mileage" could otherwise have been used.
2. Should it become necessary to summarize and report data in kilometers, the roadway mileage data can be factored accordingly. This will eliminate the need for conversion of entire inventory files.
3. Since 621.37 miles equals 1000 kilometers, any computer record data fields designated to accommodate entries of up to 999 miles will overflow where the existing entry is greater than 621 miles. The conversion to the metric system should be considered in coding the segments and category records to be used.
4. A difference will result when a large number of mileage records are factored to kilometers and summed and the resulting total compared to the original mileage total factored to kilometers. This difference will be reduced if the mileage entries in the individual records are coded with maximum precision applicable for the field.

Submittal of all Data in Standard Computer Format

An analysis of present procedures for tabular reporting by each State indicate that a total of 45 tables with over 8,000 data cells are required from a State having both SMSA and non-SMSA mileage in each category of form PR-528. At the same time, the resulting extension data do not provide many types of much needed information. The amount of non-Interstate freeway mileage in urbanized areas cannot be determined from these data. While data are reported by traffic volume group and surface type in form PR-505 and by traffic volume group, number of lanes, and control of access on form PR-506, it is not possible to determine the amounts of multilane mileage which has bituminous or portland cement concrete surface. Title 23, U.S.C., Section 219, requires that non-Federal-aid, nontoll, public road mileage, which were not previously reported on the PR-500 series of tables, be identified for apportionment of off-system highway funds to the various State. Each additional geographic or administrative category, or other attribute for which data are required, results in the need for a revised form and often creates a complete additional set of backup forms. Reporting data in computer records will facilitate the summary of data by any combination of attributes presently recorded. The actual number of records required, while substantial, would appear to be not a great deal more demanding than preparation of the many PR forms now required. Many new data requirements will be accommodated by providing new codes in existing categories. In addition, all States indicate that they are presently developing computerized mileage files and many States already have operational systems.

The feasibility of accepting State data in the form of a duplicate file of State computer records was considered, but this does not appear practical because States use different formats and coding schemes. While it would seem theoretically feasible for reformat and recode programs to be developed by FHWA in Washington for each State, it would be inefficient for a number of reasons, even if sufficient programming resources were available. Past experience with recoding truck weight and other computerized data has revealed many difficulties. A programmer working on data from several States has difficulty keeping the distinctions in procedures straight in his mind. Differences in terms, in characteristics of the States, and in procedures for detailed documentation when a State's coding or other procedures are modified would require extensive correspondence and effort by experienced personnel. In addition, the overall quality of computerized data is

generally better when there is frequent convenient communication between those involved in data collection, coding, keypunching, and editing. Thus, the standard format is intended to be created by reformatting and recoding from the State files, and is not intended to be the basis of the State roadway information system.

Common Format for both Sectional and Grouped Data

This procedure provides for reporting mileage data on a section-by-section basis. It is envisioned that this would be accomplished at least for the Federal-aid systems and State primary system. For the other highway systems (State secondary, local roads, and local city streets), records grouped by various categories, by county, should be provided. The same record format will be used for the section-by-section reporting on the primary system and grouped reporting on the lower highway systems. Grouped records are not identified by location in the detail required in a section-by-section record which is tied to a particular route and location on that route, while the grouped record is identified only by county, or possibly by city or town.

For the section-by-section coding which is to be done for all higher type highway systems, a new record would, of course, be produced whenever any of the data items along the highway change. It is intended to facilitate making each section-by-section record location specific so that records can be conveniently plotted and updated.

Grouped records will be used for all mileage not reported by section-by-section records. All data items should be coded with the appropriate codes. If it is an area that is not known or does not apply, use the appropriate code for each field, which is usually zero, rather than leave any area blank. The location data will be zero filled for the grouped records, but otherwise the same codes will be used.

MILEAGE RECORD FORMAT

<u>ITEM NUMBER</u>	<u>COLUMNS</u>	<u>NO. OF COLUMNS</u>	<u>PAGE</u>	<u>DATA ITEM</u>
1	1-2	2	11	Year
2	3-4	2	11	State code
3	5-7	3	12	County code
4	8-12	5	12	City or place code
5	13	1	12	Class designator
6	14-19	6	13	Section length
7	20	1	14	Node of milepoint indicator
8	21-26	6	15	Inventory route number
9	27-32	6	15	Milepoint
	-or-			
10	21-25	5	15	"A" Node
11	26-30	5	15	"B" Node
12	31-32	2	15	Segment number
13	33	1	16	Travel route category
14	34-38	5	16	Travel route number Identification
15	39-40	2	17	Federal, State, and Local Domain
16	41-42	2	18	Governmental level of Control
17	43	1	19	Administrative Classification
18	44	1	20	Federal-aid system traveled-way
19	45	1	20	Federal-aid system designated-way
20	46	1	21	Toll
21	47	1	22	Federal-aid urban area
22	48-49	2	22	Functional classification
23	50-51	2	23	Special system
24	52	1	24	Municipality
25	53	1	25	Census category
26	54	1	31	Population group
27	55	1	32	Parkway, trucks
28	56	1	32	Access control, public roads
29	57-62	6	33	Average annual daily traffic (ADT), Vehicles per day
30	63-66	4	34	Right-of-way width
31	67	1	38	Shoulder-primary direction
32	68-69	2	39	Pavement type-primary direction
33	70-71	2	42	Pavement width-primary direction
34	72	1	42	Number of lanes-primary direction
35	73	1	43	Median type
36	74	1	38	Should-other direction
37	75-76	2	39	Pavement type-other direction
38	77-78	2	42	Pavement width-other direction
39	79	1	42	Number of lanes-other direction
40	80	1	43	Record type Identifier

Item 1, Columns 1-2, Year

The last two digits of the year to which the data apply are entered in this field. For example, the year 1975 would be coded "75."

This field is used in identifying submitted data and in analyzing data over time.

Data should be reported as of December 31 of the coded year.

Item 2, Columns 3-4, State

<u>State</u>	<u>Code</u>	<u>State</u>	<u>Code</u>
Alabama	01	Nevada	32
Alaska	02	New Hampshire	33
Arizona	04	New Jersey	34
Arkansas	05	New Mexico	35
California	06	New York	36
Colorado	08	North Carolina	37
Connecticut	09	North Dakota	38
Delaware	10	Ohio	39
District of Columbia	11	Oklahoma	40
Florida	12	Oregon	41
Georgia	13	Pennsylvania	42
Hawaii	15	Rhode Island	44
Idaho	16	South Carolina	45
Illinois	17	South Dakota	46
Indiana	18	Tennessee	47
Iowa	19	Texas	48
Kansas	20	Utah	49
Kentucky	21	Vermont	50
Louisiana	22	Virginia	51
Maine	23	Washington	53
Maryland	24	West Virginia	54
Massachusetts	25	Wisconsin	55
Michigan	26	Wyoming	56
Minnesota	27	American Samoa	60
Mississippi	28	Canal Zone	61
Missouri	29	Guam	66
Montana	30	Puerto Rico	72
Nebraska	31	Virgin Islands	78

The Federal Information Processing Systems (FIPS) standard code is being used because strong efforts are underway to standardize all data on this code. These codes are issued by the National Bureau of Standards, U.S. Department of Commerce. It provides for including in alphabetical order all States followed by other areas which are treated as States in some highway programs.

Item 3, Columns 5-7, County Code

The three-digit FIPS county code (see Federal Information Processing Standards Publication 6, "Counties and County Equivalents of States of the United States") will be entered in this field. This is essentially the same as the IBM code which places counties within a State in alphabetical order using odd-numbered codes.

For the New England States (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) and Alaska the code in this area will not be the county code. In New England a town code will be used. Since there is no Federal Standard code for towns, a scheme will be developed with the cooperation of the States involved. In Alaska, Census Divisions will be used.

Item 4, Columns 8-12, City or Place Code

Since there is at present no FIPS code for cities and other concentrations of population, a five-column field is being reserved to allow incorporation of the American National Standard Structure for the Identification of Named Population Places and Related Entries of the States of the United States when it becomes available. It is expected that this code or some revision thereof will eventually be adopted as a FIPS standard.

Under this code, each named place within a State is assigned a standard five-digit code. Within the United States, the code becomes unique only when used together with the two-digit State code (columns 3 and 4).

It is expected that the standard location codes for this field will be available in the future. For the present, the four-digit place name code in the Bureau of the Census Geographic Identification Code Scheme should be entered in columns 9 through 12 with a zero in column 8. Publications containing this code are available for each Census region from the U.S. Government Printing Office, Washington, D.C. This city code is also used for "Structure Inventory of the Nation's Bridges" (Recording and Coding Guide for the structural inventory and appraisal of the Nation's Bridges, July 1972).

When this code is not applicable, use a code of 00000.

Item 5, Column 13, Class Designator

This field should be coded zero at present. It is reserved for a single-letter designator which will serve to categorize individual entities into one of a number of classes. This code will also be a part of the American National Standard Structure for the Identification of Named

Populated Places and Related Entities of the States of the United States. The five-digit code (see columns 8-12) assigned to a given place is a unique Identifier independent of the class designator. However, the one-column designator, to be coded in this field, is useful in differentiating between various types of places such as: incorporated places, unincorporated populated places, seasonally populated places, rural communities, etc.

The standard class designator codes for this field, to be available in the future, should be utilized.

Item 6, Columns 14-19, Section Length

The section length is coded XXX.XXX with an assumed decimal point between columns 16 and 17. For lower type highways where records by category of mileage are coded, the total mileage in the category is coded in this field. Should it be necessary to code a number larger than 999.999 in this field, two or more records should be included so as to produce the required sum in this field.

In coding the field, the level of precision should be the same as used by the State for their own purposes. While provision has been made for coding to a maximum precision of 0.001 mile, the various submitted records should reflect the precision normally utilized by the State. For example, if Interstate System records in a State are coded to 0.001 miles, State primary routes to 0.01, and county roads to the nearest whole mile, the submitted records for each of the three types of records should each be coded to the corresponding precision, i.e.; 0.001, 0.01, and 1.0 miles, respectively. This not only provides maximum precision, but alleviates rounding, programing, and checking problems. A minimum precision to the nearest mile should be provided.

The field should be coded with trailing and leading zeros in columns 14-19, depending on the precision obtained.

For grouped records that exceed the amount (621,370 miles) which will be accommodated by a single record, one or more additional records will be provided. Care should be taken to avoid splitting the mileage equally between records so that the possibility of mistaking these for duplicate records can be avoided.

Columns 20-32, Location Data

These columns provide the means for making the section-by-section data records (which are submitted for higher type highway systems) location specific. The data in

this area should be coded in one of two ways--route-milepoint or node-segment:

1. Route-milepoint - Fields for Inventory route number and for milepoint are provided.
2. A-Node, B-Node, Segment - These fields provide the means of coding the two node numbers (usually intersections) which the segment fall between. The segment field allows the ordering of segments between the two nodes.

To avoid duplication, the same mileage should be reported with only one of the two location data methods. An indicator field (column 20) is provided to flag the type of coding which has been used. Procedures now under development will convert back and forth between the route-milepoint system and the nodal system. It is envisioned that the submitted data will eventually be stored in the A-Node, B-Node, Segment format. This will facilitate automatic plotting of the submitted data using existing computer procedures.

All conversion and plotting procedures will be made available to each State as soon as they become workable.

When a record contains data from different locations within a county, this area will be zero filled and column 20 will be coded to indicate that the data are grouped. These grouped records will use identical coding procedures to the location specific data.

Item 7, Column 20, Node or Milepoint Indicator

The code in this column indicates the type of location data that has been coded between columns 21 and 32.

For group data records that contain data for more than one location within a county, code a "0" in column 20. Columns 21 through 32 are zero filled.

A "1" in column 20 indicates that route-milepoint data is coded and that columns 21 through 26 contain the inventory route number, and columns 27 through 32 the milepoint.

A code of "2" in column 20 denotes A-Node, B-Node segment coding, with columns 21 through 26 containing the A-Node, columns 27 through 30 the B-Node, and columns 31 and 32 the segment number.

OPTION 1

For Route-Milepoint Location Data (Column 20 coded "1"):

Item 8, Columns 21-26, Inventory Route Number

This field should contain the route number as utilized by the State's Route-Milepoint Inventory. Columns 27-32 (milepoint) should be coded in all instances where this field is coded. The number in this field is not necessarily the same as that posted along the roadway itself, but it is a number used to uniquely identify a route within the State.

Item 9, Columns 27-32, Milepoint

The mileage point along the particular route coded in columns 21-26 is coded in this field as XXX.XXX. A decimal point is assumed between columns 29 and 30. The coded mileage point represents the distance in miles from a set reference point to the beginning of this highway segment. The reference point could be a State or county line or the point where the particular route originates. The milepoint is the position along a route where one of the values in the segment record changes. The milepoint numbering format should be such that the combination of county inventory route number and milepoint will define a unique location. Provision is made for coding to thousandths of miles. Where State files do not provide this precision, column 32 should be left blank, providing coding in hundredths of miles.

OPTION 2

For A-Node, B-Node, Segment Data (Column 20 coded "2"):

Item 10, Columns 21-25, A-NodeItem 11, Columns 26-30, B-Node

These two fields contain the A-Node and B-Node numbers between which the highway segment falls.

Item 12, Columns 31-32, Segment Number

The number coded in this field provides the position of the highway segment in the link between the same A-Node and B-Node. The number in this field should be lowest for the segment which begins at the A-Node. It should increase for each segment thereafter with the highest segment number being assigned to the segment which ends at the B-Node. While sequential numbers can be utilized, it is advantageous to leave gaps in the numbering to provide for expansion of the number of coded segments between nodes. Segment number 01 should begin at the A-Node, while 99 should be the number of the segment at the B-Node, and for links with a single segment.

One or more coded highway segments may lie between each A and B Node. The segment number field (column 31 and 32) denotes the location relationship of the various highway segments between a given pair of nodes. Details for the coding of nodes should be discussed with the Highway Statistics Division prior to each State's submittal.

Item 13, Column 33, Travel Route Category

This code identifies the highest category of signed route such as Interstate, U.S., State, or county. When a route is signed with two or more identifiers (for example, Interstate Route 83 and U.S. Route 32), the code for the highest class of route would be used (Interstate in the above example).

<u>Code</u>	<u>Description</u>
0	Not known
1	Interstate
2	Interstate business loop or spur route
3	U.S.
4	State
5	County
6	Township
7	Municipal route
8	Nonnumbered, named or unnamed route, road or street
9	Not a traveled route, not open to traffic, designated only

The above codes represent the manner in which the highway segment is or will be signed and does not necessarily bear any relationship to the Federal-Aid System category.

Item 14, Columns 35-38, Travel Route Identification

This five-character field will contain the alphanumeric route number assigned to the travel route category coded in column 33. Should there be more than one route number from this category assigned to the highway segment, the lowest number should be coded. The number within the field should be rightly justified using leading zeros; that is, Route U.S. 1 should be coded as "00001," Route U.S. 25A as "0025A", etc.

<u>Examples</u>	<u>Column 33</u>	<u>Columns 34-38</u>
1. Highway section signed as Interstate 81, Interstate 281, and US10	"1"	"00001"

- | | | |
|--|-----|---------|
| 2. Highway section signed as US66 and US128 | "3" | "00066" |
| 3. Highway section signed as State route 30A, State route 50, and county route 3 | "4" | "0030A" |
| 4. Highway section signed as county route 486 | "5" | "00486" |
| 5. Third Street | "7" | "00003" |

If the travel route category (column 33) is coded "0," "8," or "9," code this area "00000" as a filler.

Columns 39-56

The next group of items, columns 39 to 56, cover the administrative grouping of the facility along with the environment through which the facility passes. Items such as Federal-aid system and Functional Classification indicate the importance of the roadway in the total system; Governmental level of Control indicates who has responsibility for the facility; and Federal, State, and Local Domain shows what agency has jurisdiction over the land through which the roadway passes. These items are described in detail below.

Item 15, Columns 39-40, Federal, State and Local Domain

The code in these columns identifies the Federal, State, or local agency, if any, having control over the land through which the highway segment passes. The codes 60-99 are reserved for Federal agencies having domain over the land, while the codes from 10 to 29 are to denote various local agencies and 30-59 for State agencies. Only ten Federal codes have been defined. Local and State agency codes for a particular State will be developed as necessary.

Where the highway falls between two domains, or is along the boundary of one, a judgement must be made as to the most appropriate domain to be coded. An example is if a State highway is the boundary for a National Forest, then it would not be considered to be within the National Forest, but if it were a Forest highway forming the boundary, then it would be considered to be within the National Forest.

<u>Code</u>	<u>Description</u>
00	Not on Federal, State, or local land
10	Local agency
11-29	Local agency (specific)
30	State agency
31-59	State agency (specific)
60	Federal agency
62	Bureau of Indian Affairs
64	U.S. Forest Service
66	National Park Service
68	Bureau of Land Management
70	Military Reservation
72	Corps of Engineers
74	Energy Research and Development Administration (formerly Atomic Energy Commission)
76	Tennessee Valley Authority
78	National Aeronautics and Space Administration
80	Fish and Wildlife Service
81-99	Reserved for other Federal agencies to be specified by FHWA

Item 16, Columns 41-42, Governmental Level of Control

This indicates the level of government that has responsibility for the facility. In the case of toll authorities this code is not dependent upon a toll being charged (see column 46).

<u>Code</u>	<u>Description</u>
01	State Highway Department
02	County Highway Department
03	Town or Township Highway Department
04	Municipal Highway Department
11	State Park, Forest, or Reservation Agency
12	County Park, Forest, or Reservation Agency
13	Town or Township Park, Forest, or Reservation Agency
14	Municipal Park, Forest, or Reservation Agency
21	Other State Non-Toll Agency
22	Other County Non-Toll Agency
23	Other Town or Township Non-Toll Agency
24	Other Municipal Non-Toll Agency
25	Other Local Non-Toll Agency
26	Private Non-Toll
31	State Toll Authority
32	County Toll Authority
33	Town or Township Toll Authority
34	Municipal Toll Authority
35	Other Local Toll Authority
36	Private Toll

50	Federal agency
62	Bureau of Indian Affairs
64	U.S. Forest Service
66	National Park Service
68	Bureau of Land Management
70	Military Reservation
72	Corps of Engineers
74	Energy Research and Development Administration (formerly Atomic Energy Commission)
76	Tennessee Valley Authority
78	National Aeronautics and Space Administration
80	Fish and Wildlife Service
81-99	Reserved for other Federal agencies to be specified by FHWA

Item 17, Column 43, Administrative Classification

The code in this field indicates the administrative highway classification based on State or local regulations or procedures to which the highway facility is assigned. The codes are as follows:

<u>Code</u>	<u>Description</u>
1	Primary
2	Secondary
3	Local
4	Other

The code in columns 41-42, Governmental Control, indicate the level of control over the highway segment. This field, column 43, supplements that one by detailing particular administrative classifications. If a system of highway is subdivided into roads of primary and secondary importance then they should be shown as such by appropriately coding this column.

When there is no breakdown, the system as a whole should be considered as primary. In those States where all or part of county roads are under State control, then these are coded as "local" in column 43 and "State" in columns 41-42. If a county controlled system is broken into a primary and secondary classification, then the level of control code, columns 41-42, would be "02" with the appropriate administrative classification coded.

This field should always be coded, either with the appropriate classification code for the State administered systems (primary, secondary, local), or, if known, the appropriate classification for a non-State administered system. If the classification is not known, use the primary code of "1".

Item 18, Column 44, Federal-Aid System (Traveled-Way)Item 19, Column 45, Federal-Aid System (Designated-Way)

In dealing with Federal-aid highway systems, the terms "traveled-way" and "designated-way" are highly significant. It is important that the terms be properly defined so that the coding of the above two columns can be accomplished with accuracy in such a manner that the computerized data will remain consistent with mileage data reported and published on this basis in previous years. As the construction on a particular Federal-aid route progresses, gaps sometimes appear between useable sections of the route so that through traffic which desires to use the route must be diverted onto a parallel existing highway until such time as the section in question is in a condition to serve traffic. The location of the complete Federal-aid route in its final position on the ground is termed the "designated-way." When construction is complete and the segment is open to traffic, the traveled-way and the designated-way will ultimately be the same. These definitions could also apply to planned State and local routes where corridor location has been approved but specific construction has not begun. The coding of the designated segment-by-segment records should be undertaken so as to provide a record for the mileage of designated Federal-aid highway system segments which are not open to traffic. The records for these segments are readily identifiable because a "9" code will be included in the Federal-aid system traveled-way field, column 44.

A record should also be provided for the traveled-way portion of the route.

Where a section of road serves as traveled-way for several highway systems, the traveled-way code should be for the highest system served. The designated-way code should be for the administrative system in which the road is included for funding capital improvements. The codes are as follows:

<u>Code</u>	<u>Description</u>
1	Interstate
2	Federal-Aid Primary
3	Federal-Aid Urban
4	Federal-Aid Secondary
8	Non-Federal-aid
9	Non-Traveled (for traveled-way field of a designated route segment)

The coding for two examples will be discussed:

1. Designated-way, Primary Highway - not yet open to traffic.
2. Primary highway traffic being carried on secondary highway.

In the first example, Column 33, Travel Route Category, is coded "0" as there is no traffic on this highway. Column 44, Federal-aid System (traveled-way), is coded "9" for non-traveled. Column 45, Federal-aid System (designated-way), is coded "2" for Federal-aid primary.

The second example is coded with a "4" (Federal-aid secondary) in column 45, Designated-Way, and with a "2" (Federal-Aid Primary) in column 44, Traveled-Way. Column 33 would be coded with the appropriate nonzero traveled route category code.

Item 20, Column 46, Toll Free or Toll

This field is used to indicate whether or not a toll is charged for the use of the facility.

<u>Code</u>	<u>Description</u>
1	Not a toll facility
2	Toll free segment of a toll facility
3	Toll segment of a toll facility

When a segment of roadway can be traversed without the payment of a toll, then the segment is considered toll free, even if the segment is under the control of a toll authority. This means that a vehicle can enter and exit from the main through route without payment of a toll. To continue along the through route, a toll may be charged, but that segment which can be traversed without any toll payment is a toll free segment of the toll facility. If a toll is charged in only one direction, the "free" direction is not considered a toll free segment.

Item 21, Column 47, Federal-Aid Urban Area

Whether or not the highway segment lies in a Federal-aid urban area is denoted by the following codes:

<u>Code</u>	<u>Description</u>
1	Segment outside Federal-aid Urban/Urbanized Area
2	Segment in Federal-Aid Urban Area
3	Segment in Federal-aid Urbanized Area

Federal-Aid Urban Area as defined by Title 23, U.S.C., means an area at least equal to an urbanized area or, in the case of an urbanized area encompassing more than one State, that part of the urbanized area in each State, or an urban place as designated by the Bureau of the Census having a population of 5,000 or more and not within any urbanized area, within boundaries to be fixed by responsible State and local officials in cooperation with each other, subject to approval by the Secretary of Transportation. Such boundaries shall, as a minimum, encompass the entire urban place designated by the Bureau of the Census.

Federal-Aid Urbanized Area, as defined by 23 U.S.C. 101, means an area so designated by the Bureau of the Census, within boundaries to be fixed by responsible State and local officials in cooperation with each other, subject to approval by the Secretary of Transportation. Such boundaries shall, as a minimum, encompass the entire urbanized area within a State as designated by the Bureau of the Census.

Definitions of Census terms are outlined under the discussion of the Census Category, Item 25.

Item 22, Columns 48-49, Functional Classification

These columns will contain a code denoting the functional classification for the highway segment projected for five to ten years in the future. This should be the same classification which is used in determining the realigned Federal-aid highway systems. Available classification (for past or future years) should be utilized, where practical, and modified to represent the five- to ten-year

classification. This functional classification is as defined in Federal-Aid Highway Program Manual, Volume 4, Chapter 6, Section 7, Federal-Aid Highway Systems.

<u>Code</u>	<u>Description</u>
00	Not Known
	<u>Rural</u>
01	Principal Arterial - Interstate
02	Principal Arterial - Other
06	Minor Arterial
07	Major Collector
08	Minor Collector
09	Local Systems

Urban

11	Principal Arterial - Interstate
12	Principal Arterial - Other freeways or expressways - connecting link
13	Principal Arterial - Other freeways or expressways - non-connecting link
14	Principal Arterial - Other connecting link
15	Principal Arterial - Other non-connecting link
16	Minor Arterial
17	Collector
19	Local System

Item 23, Columns 50-51, Special Systems

This field is used to code the special funding categories in which some highway segments fall. These special systems are separate and distinct from those outlined in previously defined fields. While a limited number of codes are defined below, two columns are provided so that codes can be added as their need becomes apparent.

<u>Code</u>	<u>Description</u>
00	Not known
01	Not on a Special System
02	National Forest Highway System 1/
03	National Forest Development Roads and Trails
04	National Park Service Parkway 1/
05	National Park Roads and Trails
06	Indian Reservation Roads and Bridges 1/
07	Economic Growth Center Development Highway (23 U.S.C. 145)
08	Federal Public Lands Development Roads and Trails, other
10	Appalachian Development Highway 2/
11	Appalachian Development Highway on National Forest Highway System
12	Appalachian Development Highway on National Forest Development Road
13	Appalachian Development Highway on National Park Service Parkway
14	Appalachian Development Highway on National Park Roads and Trails
15	Appalachian Highway Access Road on National Forest Highway System
16	Appalachian Highway Access Road on National Forest Development Road
17	Appalachian Highway Access Road on National Park Service Parkway

1/ These definitions are intended to be consistent with 23 U.S.C. 101(a), Definitions and Declaration of Policy.

2/ These definitions are intended to be consistent with 23 U.S.C. 143(f) (2) and 23 U.S.C. 101(a).

- 18 Appalachian Highway Access Road on National Park Roads and Trails
- 20 Priority Primary Route (23 U.S.C. 147)
- 25 Great River Road (23 U.S.C. 148)
- 30 Defense Access Roads (23 U.S.C. 210)
- 40 Territorial Highway (23 U.S.C. 215, American Samoa, Guam, Virgin Islands)

These special systems may overlap previously defined systems. For example, the National Forest Highway System may include mileage under jurisdiction of a State or local government. However, if the mileage is part of the National Forest Highway System, it should be coded as such in this field.

In instances where two or more special systems overlap and there is no code for the combination, a code will be assigned by FHWA.

Item 24, Column 52, Municipality

The code for a municipality is intended to provide comparability with local finance data.

<u>Code</u>	<u>Description</u>
1	Segment is not in a municipality (or in certain States the rural portions of towns or townships)
2	Segment is in municipality (or in certain States the urban portions of towns, townships, villages, cities or certain classes, etc.)

A municipality is as defined in the Highway Finance Manual a political subdivision within which a municipal corporation has been established to provide general local government for a specific population concentration in a defined area. Political units so identified are those incorporated as cities, boroughs, towns, and villages. All such incorporated places, regardless of population, should be classed as municipalities except as noted below.

(a) Several counties have had boundaries coextensive with cities. These counties are: San Francisco, California; Denver, Colorado; Orleans, (New Orleans), Louisiana; Suffolk (Boston), Massachusetts; Bronx, Kings, New York, Queens, and Richmond (New York City), New York; and Philadelphia, Pennsylvania. This list was augmented as a result of recent county-city mergers beginning in 1963. The purpose of the merger was to consolidate governmental functions, but the counties, in general, have retained their identities for certain administrative purposes. These counties are:

Borough of Juneau (Juneau and Douglas), Alaska; Duval (Jacksonville), Florida; Marion (Indianapolis), Indiana; Ormsby (Carson City), Nevada; Davidson (Nashville), Tennessee; Norfolk (South Norfolk), Princess Anne (Virginia Beach), Virginia; and Muscogee (Columbus), Georgia. Arlington County, Virginia, because it is entirely urban in character, is also classed as a municipality.

(b) In certain other counties, the entire area, or nearly all, is occupied by municipal corporations, but merger of governments has occurred. These include: New Jersey, Bergen, Essex, Hudson, and Union Counties; New York, Nassau County; Ohio, Cuyahoga County; Wisconsin, Milwaukee County. In these cases, they should be considered municipal.

(c) Statistics relating to the following townships should be classified and summarized with municipalities: Pennsylvania-first class townships; New Jersey, New York and New England States-townships (or towns) having a population density of 600 or more per square mile of total land area of the township, or having a total population of 1,000 or more in the built-up or urban compact area of the township, according to the latest available census.

Item 25, Column 53, Census Category

The census area within which the highway lies is coded in this area.

There are three major categories, rural, urban, and urbanized. Generally, rural is any place with less than 2,500 inhabitants and outside an urban area. Urban places are places that have 2,500 or more inhabitants and urbanized areas are places of 50,000 or more population encompassing an urban area.

<u>Code</u>	<u>Description</u>
0	Not known
1	Census rural area or unincorporated place - outside urbanized area
2	Census rural incorporated place - outside urbanized area
3	Census urban unincorporated place - outside urbanized area
4	Census urban incorporated place - outside urbanized area
5	Census rural area or unincorporated place or incorporated place - within urbanized area urban fringe
6	Census urban unincorporated place - within urbanized area fringe
7	Census urban incorporated place - within urbanized area fringe
8	Census urban unincorporated place - urbanized area central city
9	Census urban incorporated place - urbanized area central city

An effort should be made to provide this detail as expeditiously as possible giving high priority to the largest urbanized areas, so that all coding is completed before the 1980 Census. It is expected that in many urban study areas this have been or can be done expeditiously by computer for the coded network using a U.S. Bureau of the Census Geographic Base (DIME) file, as discussed below.

Census definitions as applicable to mileage reporting as quoted below will be found in the Introduction to all State population reports series PC(1)-A, "Number of Inhabitants, 1970 Census of Population."

"According to the definition adopted for use in the 1970 census the urban population comprises all persons living in urbanized areas and in places of 2,500 inhabitants or more outside urbanized areas. More specifically, the urban population consists of all persons living in (a) places of 2,500 inhabitants or more, incorporated cities, villages, boroughs (except Alaska), and towns (except in the New England States, New York, and Wisconsin), but excluding those persons living in the rural portions of extended cities; (b) unincorporated places of 2,500 inhabitants or more; and (c) other territory, incorporated or unincorporated, included in urbanized areas.

"In census prior to 1950, the urban population comprised all persons living in incorporated places of 2,500 or more and areas (usually minor civil divisions) classified as urban under special rules relating to population size and density. The most important component of the urban territory in any definition is the group of incorporated places having 2,500 inhabitants or more. A definition of urban territory restriction to such places, however, would exclude a number of large and densely settled places merely because they are not incorporated. Prior to 1950, an effort was made to avoid some of the more obvious omissions by inclusion of selected places which were classified as urban under special rules. Even with these rules, however, many large and closely built-up places were excluded from the urban territory.

"To improve its measure of the urban population, the Bureau of the Census adopted, in 1950, the concept of the urbanized area and declined, in advance of enumeration, boundaries for unincorporated places. With the adoption of the urbanized area and unincorporated place concepts for the 1950 census, the urban population was defined as all persons residing in urbanized areas and, outside these areas, in all places incorporated and unincorporated, which had 2,500 inhabitants or more. With the following two exceptions, the 1950 definition of urban was continued substantially unchanged to 1960 and 1970. In 1960 (but not in 1970), certain towns in the New England States, townships in New Jersey and

Pennsylvania, and counties elsewhere were designated as urban. However, most of the population of these 'special rule' areas would have been classified as urban in any event because they were residents of an urbanized area or an unincorporated place of 2,500 or more. Second, the introduction of the concept of 'extended cities' in 1970 has very little impact on the urban and rural figures generally.

"In all urban and rural definitions, the population not classified as urban constitutes the rural population.

.

Places

"Two types of places are recognized in the census reports - incorporated places and unincorporated places, as defined below.

INCORPORATED PLACES

"These are political units incorporated as cities, boroughs, towns, and villages with the following exceptions (a) boroughs in Alaska and (b) towns in the New England States, New York, and Wisconsin. Boroughs in Alaska are treated as county subdivisions and may include one or more incorporated places. The towns in New England States, New York and Wisconsin are minor civil divisions similar to the townships found in other States and not necessarily thickly settled centers of population such as the cities, boroughs, towns, and villages in other States.... Similarly, in New Jersey and Pennsylvania, where some townships possess powers and functions similar to those of incorporated places, the townships are not classified as 'incorporated places.' Without this restriction all of the towns in the New England States, New York, and Wisconsin and the townships in New Jersey and Pennsylvania would have to be counted as incorporated places without any consideration of the nature of population settlement. The densely settled portions of some are recognized as unincorporated places or as part of an urbanized area.

"In Hawaii, there are no incorporated places in the sense of a functioning local governmental unit. The State, however, has recognized places and established boundaries for them. Consequently, the Census Bureau has agreed to treat all such places as incorporated.

.

UNINCORPORATED PLACES

"As in the 1950 and 1960 censuses, the Census Bureau has delineated boundaries for closely settled population centers without corporate limits. Each place so delineated

possesses a definite nucleus of residences and has its boundaries drawn to include, if feasible, all the surrounding closely settled area. Outside urbanized areas, those unincorporated places with a population of 1,000 or more are presented in the census reports in the same manner as incorporated places of equal size. Within urbanized areas, unincorporated places are shown only if they have 5,000 inhabitants or more and there was an expression of local interest in their recognition.

The following modifications in the delineation of unincorporated places were introduced in the 1970 census:

1. Selected towns in the New England States and townships in Pennsylvania and New Jersey are not regarded as urban as in 1960. Therefore, unincorporated places are defined for the built-up area of these towns and townships outside urbanized areas in the same manner as they are in the rest of the country.
2. In urbanized areas outside of the New England States, unincorporated places with 5,000 inhabitants or more are recognized. In the New England States, no unincorporated places are recognized within urbanized areas.
3. Built-up parts of military installations outside incorporated places are recognized as unincorporated places.
4. All places in Hawaii are treated as incorporated places, with boundaries defined by the State; in 1960, all places other than Honolulu and Hilo were considered as unincorporated places with boundaries defined by the Census Bureau.
5. Arlington County, Virginia, is treated as an unincorporated place; it is the only such place which consists of an entire county.

URBANIZED AREAS

The major objective of the Census Bureau in delineating urbanized areas is to provide a more exact and realistic classification of urban and rural population than could be obtained were urban populations described solely on the basis of populations within places of 2,500 or more.

An urbanized area must include a central city or cities that qualify under one of the criteria listed below. All population criteria refer to 1970 census population counts (except as specified in item 1a.).

- 1a. A city of 50,000 inhabitants or more according to the 1970 census, a special census taken between 1960 and 1970 or the 1960 census provided that the city is located in an SMSA and is not included in an existing urbanized area.
- 1b. A city having a population of at least 25,000 which, with the addition of the population of contiguous places, (Incorporated or unincorporated) each of which has a population density of at least 1,000 persons per square mile, and which together constitute for general economic and social purposes, a single community with a combined population of at least 50,000, provided that the city is located within an SMSA and is not included in an existing urbanized area.
2. In addition to a central city or cities, an urbanized area includes contiguous territory meeting the following criteria:
 - a. Incorporated places of 2,500 inhabitants or more but excluding the rural portions of extended cities.
 - b. Incorporated places with fewer than 2,500 inhabitants, provided that each has a closely settled area of 100 housing units or more; and all unincorporated places recognized in the 1970 census.
 - c. Contiguous small parcels of unincorporated land (delineated as either enumeration districts or block parcels prior to the 1970 census) determined to have a 1970 census population density of 1,000 inhabitants or more per square mile. (In this instance the areas of large nonresidential tracts devoted to such urban land uses as railroad yards, airports, factories, parks, golf courses, and cemeteries are excluded in computing the population density.)

"The 1970 criteria are essentially the same as those used in 1960 with two exceptions. The extended city concept is new for 1970. Secondly, in 1960, towns in New England States, townships in New Jersey and Pennsylvania, the counties elsewhere, which were classified as urban in accordance with specific criteria, were included in the contiguous urbanized areas. In 1970, only those portions of towns and townships in these States that met the rules followed in defining urbanized areas elsewhere in the United States are included.

"All persons residing in an urbanized area are classified as urban. The urbanized area population is sometimes divided into those in the 'central city (or cities)' and those in the remainder of the area or the 'urban fringe.' The 'central city' category consists of the population of the

cities named in the title of the urbanized area. ^{3/} The title is limited to three names and normally lists the largest city first and the other qualifying cities in size order; this order is, in many cases based on 1960 population because most names were fixed before the 1970 counts were available. For the other cities to be listed in the title, they must have (a) 250,000 inhabitants or more or (b) at least one third the population of the largest city and a population of 25,000 or more (except in the case of the small twin cities).

"There is generally one urbanized area in each standard metropolitan statistical area. Sometimes, however, there are two because there exists another qualifying city with 50,000 inhabitants or more whose surrounding urban fringe is separated from the urban fringe of the larger central city or cities. (The Chicago metropolitan area has three urbanized areas.) In other cases, a single urbanized area covers portions of two or more standard metropolitan statistical areas. One metropolitan area (New London-Groton-Norwich, Conn.) has no urbanized area."

^{3/} The four exceptions are:

New York, N.Y.-Northeastern New Jersey (New York, Newark, Jersey City, Paterson, Clifton, and Passaic)
 Chicago, Ill.-Northeastern Indiana (Chicago, Gary Hammond, and East Chicago)
 Los Angeles-Long Beach (Los Angeles, Long Beach, Anaheim, Santa Ana, and Garden Grove)
 San Francisco-Oakland (San Francisco-Oakland and Vallejo)

It is recommended that geographic base files (GBF) be considered as a mechanism for compiling data in urbanized areas. Initially, the files were developed by the Bureau of the Census as a tool for conducting the mail portion of the 1970 census. Shortly after their conception, it was recognized that the files represented a potentially significant resource, capable of organizing various records within a geographic framework. The FHWA State and urban planning study staffs have been assisting in the development and updating of the GBF, formerly known as the Address Coding Guide (ACG), with HPR and PL funding. (The GBF represents a complete link-node network. In addition to the street network, the GBF contains segment data for other features such as boundaries, rivers, shorelines, railroad tracks, etc.). In urbanized areas, the planning study staff will often be able to provide the census boundary data in coded link files by use of the GBF, where this has not already been done.

Item 26, Column 54, Population Size Group

The code in this column represents the population range of the census category coded in column 53 (rural, unincorporated place, etc.) for the highway segment.

<u>Code</u>	<u>Description</u>
0	Unknown or rural area
1	Under 2,500
2	2,500 to 4,999
3	5,000 to 24,999
4	25,000 to 49,999
5	50,000 to 99,999
6	100,000 to 199,999
7	200,000 to 499,999
8	500,000 to 1,999,999
9	2,000,000 and over

The referenced population should be for the census category as coded in column 53. The population will be that of the census defined urban or rural place, unincorporated or incorporated, when outside of census urbanized areas. When inside a census urbanized area, the population of the entire urbanized area will be coded. Where the urbanized area falls within more than one State, the population of the entire urbanized area will be coded.

If column 53 is coded "0" then column 54 should be coded "0". For a code of "1" in column 53, column 54 should be coded "0" outside of census places and "1" within census rural places. If column 53 is coded "2" then column 54 should be "1". If column 53 is coded "3" or "4" then a "1" thru "4" should be coded in column 54. All other codes in column 53 should have the urbanized area population, codes "5" thru "9," in column 54.

If only a population break at 5,000 is known, then code all over 5,000 as "3" and all under as "2."

Population data should be based on the U.S. Bureau of the Census publication PC(1) 1970 Census of Population for each State or comparable population based on later data published by the U.S. Bureau of the Census. If the census population is not presently available, use whatever comparable data that is available.

Item 27, Column 55, Parkway, Trucks

This field provides information for identification of parkways and of truck restrictions on a highway segment. The codes are as follows:

<u>Code</u>	<u>Description</u>
0	Not known
1	Not a parkway, trucks allowed
2	Parkway, trucks prohibited
3	Not a parkway, trucks prohibited
4	Parkway, trucks allowed

A Parkway, for purposes of coding this field will be considered as a highway with full or partial control of access and usually located within a park or a ribbon of parklike developments.

Item 28, Column 56, Access Control, Public Road

This field is used to define the degree of access control together with an indication as to whether or not the coded highway segment is defined as a public road.

<u>Code</u>	<u>Description</u>
1	Full control of access-on public road
2	Partial control of access-on public road
3	No control of access-on public road
4	Full control of access-not on public road
5	Partial control of access-not on public road
6	No control of access-not on public road
7	Access control not known-on public road
8	Access control not known-not on public road

Applicable definitions follow:

- a. "Full control of access means that the authority to control access is exercised to give performance to through traffic by providing access connections with selected public roads only by prohibiting crossings at grade or direct private driveway connections." (AASHTO Highway Definitions, June 1968)
- b. "Partial control of access means that the authority to control access is exercised to give performance to through traffic to a degree that, in addition to access connections with selected public roads, there may be some crossings at grade and some private driveway connections" (AASHTO Highway Definitions, June 1968).

- c. "A public road means any road under the jurisdiction of and maintained by a public authority and open to public travel." (23 U.S.C. 402(c))
- d. A public authority is defined as a Federal, State, county, town or township, municipal or other local government or instrumentality thereof, with authority to finance, build, operate, or maintain highway facilities, either toll or tollfree. (FHPM,4,5,3)
- e. "The term 'maintenance' means the preservation of the entire highway, including surface, shoulders, roadsides, structures, and such traffic-control devices as are necessary for its safe and efficient utilization." (23 U.S.C. 101)
- f. To be open to public travel a road must be available, except during scheduled periods, extreme weather or other emergency conditions, and open to the general public for use by 4-wheel standard passenger cars without restrictive gates, prohibitive signs, or regulation other than restrictions based on size, weight, or class of registration. Toll plazas of public toll roads are not considered as restrictive gates. (FHPM,4,5,3)
- g. Primitive roads (surface type A) do not meet the criteria for "public roads" since they are defined as routes "on which there is no public maintenance." Some additional road sections reported as unimproved (surface type B) or better may also be eliminated because they do not meet one or more of the criteria concerning public jurisdiction, maintenance, or open to public travel. (FHPM,6,3,1,2)

The code in this column provides the control of access data, reported in PR-506 and the identification of any mileage generally available for use but not meeting the criteria for public roads as required by 23 U.S.C. 402(c).

Item 29, Columns 57-62, Average Annual Daily Traffic (ADT)

Average annual daily traffic is coded in these columns to the units position. For example, ADT of 25,300 vehicles per day is coded "025300."

The ADT is a generally recognized overall indicator of performance or service and is the basis for the ADT groupings for the State primary and Federal-aid primary systems reported in forms PR-505 and PR-506. ADT figures from this field when multiplied by section length and summed and multiplied by 365 days per year must reflect total vehicles-miles of travel reported for each system in table TA-1 (Highway Planning Program Manual or reference instructions) when accumulated.

For example, it may be that in table TA-1 a total of 45,900 miles are reported for local rural roads, with 1,795 million vehicle-miles. For this example, it is assumed that section-by-section data are available for several counties with a total of 1,100 miles. When the ADT's for these sections are multiplied by the corresponding section lengths and then by 365 days it is found that 1,100 miles and 45 million vehicle-miles are accounted for. Subtracting these values from the table TA-1 totals for local rural roads leaves 44,800 miles and 1,750 million vehicle-miles for the year. The value for average daily vehicle-miles of travel on this remaining mileage is 4,794,520.5 ($1,750,000,000 \div 365$). The average ADT that would produce the 4,795 thousand daily vehicle-miles on the 44,800 miles of road is 107 ($4,794,520.5 \div 44,800$). Thus for all remaining records for local roads for which section-by-section ADT's were not available, a value of "00107" would be coded in columns 57-62.

When ADT is unknown use a code of "999999."

Item 30, Columns 63-66, Right-of-Way Width

Code right-of-way width in feet, in this field. An estimate of average right-of-way width should be coded for category-type records, using procedures discussed below or other procedures suitable for State conditions.

This is a new item not previously reported. Substantial estimating may be required for local rural roads and city streets as well as for other categories in some States. A reasonable reliable value is a particularly important data item since it is the key to determining the amount of land devoted to highways. This is needed so that comparisons can be made to estimate annual changes in the amount of land used for highway purposes. Recent charges concerning land taken for highways have been based on a wide variety of estimates. With 3.8 million miles of roads and streets of which nearly 3 million are local rural roads, it is evident that a difference in estimated local road right-of-way width from 40 to 66 feet can produce substantial variance and uncertainty.

A width of 150 feet is coded "0150." Where width data are available on a section-by-section basis, these should be coded. Where right-of-way width varies throughout the mileage in a category and where width data are available, a

weighted average width should be used. For example, a 28.62 mile category might consist of the following:

<u>Length</u> <u>(miles)</u>		<u>Width</u> <u>(feet)</u>		
3.76	X	30	=	112.80
9.21	X	40	=	368.40
13.09	X	48	=	628.32
<u>2.56</u>	X	<u>60</u>	=	<u>153.60</u>
28.62			=	1,263.12
		1,263.12	-	28.62
			=	44.13

Sample measurements as a basis for estimating widths for categories of roadway on particular systems or in different areas of a State are encouraged. For any particular category where locations for sample width measurements are selected on a probability basis, no more than 15 to 30 measurement locations per category should be needed until the sample data have been analyzed to determine variability. One method of selecting a probability sample of road sections can be described using example values. First, all sections in the category are listed and the total mileage determined. For 83 sections totaling 341.00 miles, from which 20 sample locations are to be selected, the average 6 miles per sample would be 341 divided by 20 or 17.05 miles. The starting point should be selected by a system that provides equal probability of selecting any point from 0.00 to 17.05. Using a random number table, select any number between 0 and 1705. Assume that 383 is selected. The first sample is then 3.83 miles from the beginning point. If the first section listed was 1.8 miles and the second 3.9 miles, then the first measurement point would be 2.03 miles from the beginning of the second section. The second point would be identified by adding 17.05 miles to the first or 17.05 plus 3.83 equals 20.88 miles. The location in the particular section containing point 20.88 would be identified as before and field measurements would be averaged and the average (mean) width to the nearest foot would then be coded in the right-of-way width field of all records for mileage in the sampled category.

When these data are not available, code "0000."

Columns 67-72, Roadway Characteristics

The roadway characteristics to be reported are shoulder characteristics, pavement type, pavement width, number of lanes, and median type. Several procedures for reporting roadway characteristics are provided to accommodate a variety of State inventory and computerized data system procedures. The applicable procedure for a record is indicated by one of the four codes defined for column 80, Record Type Identifier.

The codes are briefly described below and are described in detail under the description from column 80, Record Type Identifier.

<u>Code</u>	<u>Description</u>
0	Data for both directions are contained in the "primary direction" field (columns 67-72). The coded number of lanes and pavement may be divided by 2 to obtain directional data. Columns 74-79 are not coded.
1	Data in the record are for the direction of inventory. Both directions are included, and both fields (columns 68-72 and columns 74-79) are coded.
2	The record contains data only for the primary direction of inventory and columns 74-79 for "other direction" are coded zero in this record and a number 3 record for the opposite direction is coded as discussed below.
3	A number 3 record is used in conjunction with a number 2 record to define each direction of a highway segment on a separate record. The number 2 record contains directional data in columns 67-72 for the primary direction of inventory, while the number 3 record contains directional data for the "other direction" in those same columns. The contents of columns 1-32 of both records or the record sequence within the data set, in cases where independent node numbering or milepoint identification schemes are used in each direction, determine the correlation between the appropriate number 2 and number 3 records.

Two procedures are provided for reporting data for a single roadway carrying traffic in both directions. Pavement, lane and shoulder data may be reported in aggregate or separately for each direction of travel. For separate roadways, each serving traffic in only one direction, data on pavement and number of lanes can be reported for each direction in a single record or separate records can be provided for each direction. The code in column 80 indicates which of 4 possible reporting conditions apply to the particular record. As shown in the record format, there are paired directional fields for shoulder, pavement type, pavement width and number of lanes. In the discussion which follows

both fields for a data item are identified and discussed together. A careful review of these different procedures will be necessary to determine which is best suited to the procedures and data of a particular State.

Columns 67-72, "Primary Direction" Coding
Columns 74-79, "Other Direction" Coding

These areas of the record provide the means of coding certain roadway characteristics by direction of travel. "Primary direction is defined as travel in the direction from A-node to B-node or in the direction of increasing mileposts or milepoints on the State's route-milepoint system. "Other direction," then, is from the B-node to the A-node or the direction of decreasing mileposts or milepoints on the State's route-milepoint system.

The following methods of coding are available to insure flexibility depending upon data available to the State and its individual coding preferences. Column 80 contains the directional data indicator used to indicate the method of coding used as discussed on page 41.

1. Should the State record contain only nondirectional information, one of the following procedures can be utilized:
 - a. Column 80 will be coded "0", indicating that non-directional data are entered in the record. The data (combined for both directions) will be coded into the "primary direction" area (columns 67-72). The "other direction" area will be zero filled.
 - b. Column 80 will be coded "1" and the State will split its data directionally into the "primary direction" and "other direction" record area. The appropriate pavement type code will be utilized in each of the two directions, and the total number of lanes and the pavement width will be split between the two directions. Undivided highways will be handled in the same manner as divided highways. (A two-lane undivided highway would be coded with data for the one lane and shoulder in the primary direction coded in columns 67-72 and data for the one lane and shoulder for the other direction in columns 74-79.) Two one-way streets which form a couplet would be coded in the same manner. The data for one street would be used in the "other direction" record area. Thus data for both directions of one-way couplets may be coded in a single record, if this procedure best suits the State data.
2. If the State record contains the roadway data by direction, column 80 will be coded "1", and the appropriate data will be transferred by the State to columns 67-72 and 74-79, respectively, of the record.

3. Should the State elect to code its records, or at least the records pertaining to divided highways, by means of a separate record for each direction, column 80 will be coded "2" and the directional data for the one direction will be entered in the "primary direction" record area (columns 67-72). The "other direction" area will be left blank. Another record would then be required for the opposite direction. Column 80 in that record would be coded "3" and the directional data would also be coded in columns 67-72. The "3" record should immediately follow the "2" record in the submitted data set. This type of coding should be utilized when a State desires a separate nodal numbering system for each freeway roadway.

The following "primary direction" and "other direction" fields are available to accommodate the above described coding methods.

Item 31, Column 67, Shoulder-Primary Direction

Item 36, Column 74, Shoulder-Other Direction

The code in each of these columns will denote the physical design and condition of the area adjacent to the traveled way for each direction of travel.

<u>Code</u>	<u>Description</u>
0	Unknown
1	Shoulder present but characteristics unknown
2	No shoulder
3	Unusable shoulder, unable to support vehicles or remove them totally from the traveled way
4	Usable shoulder, able to support vehicles and remove them totally from the traveled way
5	Curb and gutter (no frontage road or unknown)
6	Same description as for code 2 except with frontage road
7	Same description as for code 3 except with frontage road
8	Same description as for code 4 except with frontage road
9	Same description as for code 5 except with frontage road

Frontage roads should be reported separately to reflect their own system criteria (for example, local roads serving local traffic along or between interchanges of freeways). Collector-distributors are not considered to be frontage roads and they should be included as part of the mainline.

Item 32, Columns 68-69, Pavement Type-Primary Direction
Item 37, Columns 75-76, Pavement Type-Other Direction

The code in these fields represents the type of pavement on the roadway section.

<u>GENERAL CODE</u>	<u>CODE</u>	<u>SYMBOL</u>	<u>DESCRIPTION</u>
10	10	A	<u>Primitive Road.</u> --An unimproved route (on which there is no public maintenance) usable by 4-wheel vehicles and publically traveled by small numbers of vehicles.
20	20	B	<u>Unimproved Road.</u> --A road using the natural surface and maintained to permit bare passability for motor vehicles, but not conforming to the requirements for a graded and drained earth road. The road may have been bladed and minor improvements may have been made locally.
30	30	C	<u>Graded and Drained Earth Road.</u> --A road of natural earth aligned and graded to permit reasonably convenient use by motor vehicles and drained by longitudinal and transverse drainage systems (natural and artificial) sufficiently to prevent serious impairment of the road by normal surface water, with or without dust palliative treatment or a continuous course of special borrow material to protect the new road-bed temporarily and to facilitate immediate traffic service.
40	41	D	<u>Soil-Surfaced Road.</u> --A road of natural soil, the surface of which has been improved to provide more adequate traffic service by the addition of (1) a course of mixed soil having A-1 or A-2 characteristics, such as sand-clay, soft slate, or topsoil, or (2) an admixture such as bituminous material, Portland cement, calcium chloride, or fine granular material (sand or similar material).
40	42	E	<u>Gravel or Stone Road.</u> --A road, the surface of which consists of gravel, broken stone, slag, chert, caliche, iron ore, shale, chert, disintegrated rock or granite, or other similar fragmental material (coarser than sand) with or without sand-clay, bituminous chemical stabilizing admixture or light penetrations of oil or chemical to serve as a dust palliative.

- 50 51 F Bituminous Surface-Treated Road.--An earth road, a soil-surfaced road, or a gravel or stone road to which has been added by any process a bituminous surface course with or without a seal coat, the total compacted thickness of which is less than 1 inch. Seal coats include those known as chip seals, drag seals, plantmix seals, and rock asphalt seals.
- 50 52 G-1 Mixed Bituminous Road.--(see definition below)-low type (less than 7 inches combined thickness surface and base.)
- 50 53 H-1 Bituminous Penetration Road.--(see definition below)-low type (less than 7 inches combined thickness surface and base.)
- 60 61 G-2 Mixed Bituminous Road.--(see definition below)-high type (7 inches or more combined thickness surface and base, or equivalent.)
- 60 62 G-3 Mixed Bituminous Surface.--Resurfacing with 1 inch or more mixed bituminous surface on Portland cement concrete base.
- 60 63 G-4 Mixed Bituminous Surface.--New construction with 1 inch or more mixed bituminous surface on Portland cement concrete base.
- 60 64 H-2 Bituminous Penetration Road.--(see definition below)-high type (7 inches or more combined thickness surface and base, or equivalent.)
- 60 65 H-3 Bituminous Penetration Surface.--Resurfacing with 1 inch or more bituminous penetration surface on Portland cement concrete base.
- 60 66 H-4 Bituminous Penetration Surface.--New construction with 1 inch or more bituminous penetration surfaced on Portland cement concrete base.
- 60 67 I Bituminous Concrete, Sheet Asphalt, or Rock Asphalt Road.--A road on which has been constructed a surface course 1 inch or more in compacted thickness consisting of bituminous concrete or sheet asphalt, prepared in accordance with precise specifications controlling gradation proportions and consist

of composition, or rock asphalt. The surface course may consist of combination of two or more layers such as a bottom or a top course or a binder and a wearing course.

60	68	I-3	<u>Bituminous Concrete, Sheet Asphalt, or Rock Asphalt Resurfacing.</u> --Resurfacing with 1 inch or more of bituminous concrete, sheet asphalt, or rock asphalt on Portland cement concrete base.
60	69	I-4	<u>Bituminous Concrete, Sheet Asphalt, or Rock Asphalt Surface.</u> --New construction with 1 inch or more of bituminous concrete, sheet asphalt, or rock asphalt on new Portland cement concrete base.
70	71	J	<u>Portland Cement Concrete Road.</u> --A road consisting of Portland cement concrete without a bituminous wearing surface.
70	72	J-3	<u>Portland Cement Concrete Resurfacing.</u> --Resurfacing with 1 inch or more of Portland cement concrete on Portland cement concrete base.
70	73	J-4	<u>Portland Cement Concrete Road.</u> --New construction of a road consisting of Portland cement concrete with a bituminous wearing surface less than 1 inch in compacted thickness.
80	81	K	<u>Brick Road.</u> --A road consisting of paving brick with or without a bituminous wearing surface less than 1 inch in compacted thickness.
80	82	L	<u>Block Road.</u> --A road consisting of stone block, wood block, asphalt block, or other forms of block, except paving brick, with or without a bituminous wearing surface less than 1 inch in compacted thickness.
80	83		<u>Other Type Road.</u> --Steel, wood, etc.
90	90		<u>Ferryboat.</u> --A boat used to transport motor vehicles across a small body of water to connect the vehicles with roads on either side.

Definitions:

Mixed Bituminous Payment.--A road, the surface course of which is 1 inch or more in compacted thickness composed of gravel, stone, sand, or similar material bound with bituminous material introduced by downward or upward penetration.

Bituminous Penetration Road.--A road, the surface course of which is 1 inch or more in compacted thickness composed of gravel, stone, sand, or similar material bound with bituminous material introduced by downward or upward penetration.

Item 33, Columns 70-71, Pavement Width-Primary Direction
Item 38, Columns 77-78, Pavement Width-Other Direction

In these fields is coded the pavement width, in feet. For undivided highways reported by direction, the width is from centerline to edge of pavement. Shoulder width, if any, should not be included. When nondirectional reporting is utilized the width is from edge of pavement to edge of pavement. Pavement width, in instances where parking lanes are present along the highway segment, should include complete pavement width, curb-to-curb. For divided highways the width, if reported nondirectionally, will be from edge of pavement to edge of pavement less the median width.

Columns 70-71 will be coded "00" if width is unknown.

Columns 77-78 will be coded "00" if coding is nondirectional or width is unknown.

Item 34, Column 72, Number of Lanes-Primary Direction
Item 39, Column 79, Number of Lanes-Other Direction

In each of these columns is coded the number of through traffic lanes by direction of travel. The coded number does not include turning lanes, passing lanes, or climbing lanes unless their length and importance is sufficient to justify the formation of a separate highway segment record to define the commencement and termination of the extra lane.

Column 72 is coded "0" if number of lanes is unknown.

Column 79 is coded "0" if coding is nondirectional or number of lanes is unknown.

Only include parking lanes in the total number of lanes for these fields if parking is prohibited during rush hours and the lanes are available to carry through traffic. Should the parking lanes available for travel vary between the two rush hours, an attempt should be made to code the number of lanes in a manner which will represent maximum capacity.

The number of lanes in a direction of travel may vary during the day because of such things as reversible lanes where the direction of flow is the opposite in the A.M. rush hour of that in the P.M. rush hour. An attempt should be made in these instances to code an average condition existing during the two rush hours. Care should be taken not to code in more lanes than actually exist on the roadway.

Item 35, Column 73, Median Type

The code in this field identifies whether or not a physical median exists to separate the two directions of travel. Thus, it defines divided and undivided roadways as well as one-way streets.

<u>Code</u>	<u>Description</u>
0	Unknown
1	Undivided highway, no median
2	One-way street
3	One-way couplet
4	Divided highway, median width less than 30 feet, no barrier.
5	Divided highway, median width greater than 30 feet, no barrier
6	Divided highway, width not known, no barrier
7	Divided highway, guardrail Jersey-type barrier
8	Divided highway, other barrier type or barrier type not known
9	Divided highway, median characteristics unknown

Undivided highway is defined as having 4 feet or less between inside edges of the inside travel lanes which carry traffic in opposite directions without a barrier.

A one-way street is a roadway having traffic moving in one direction only. A roadway that is one-way only during rush hours, and other times being two-way should not be considered one-way.

When a pair of one-way streets serve the same traffic corridor, similar to a divided highway with the median devoted to residential or commercial use, they are considered a couplet and coded "3". Roadway characteristics for such segments should be coded in the same manner as for a divided highway.

Item 40, Column 80, Record Type Identifier

Column 80 of each card is used to identify the type of card. For the "primary data card" described above codes of 0, 1, 2, or 3 can be used. Use of these codes not only identifies the type of card, but indicates the method of directional or nondirectional coding used in the record. The flexibility described under columns 67-72, "Primary Direction Coding,"

and columns 74-79, "Other Direction Coding," is made possible through the following code definitions:

<u>Code</u>	<u>Description</u>
0	<u>Nondirectional data.</u> --The card type is coded "0" if roadway data for both directions are contained in the "primary direction" coding (columns 67-72). It will be assumed that directional data can be attained by dividing the coded number of lanes and pavement width by 2. Shoulder information and pavement type will be assumed similar in both directions. Grouped data records should also be coded "0" in this field.
1	<u>Directional Data.</u> --A code of "1" indicates that data for both directions have been included in this record. The data for the Node-A to Node-B direction or for the direction of increasing milepoints are coded in the "primary direction" fields, while that for the opposite direction are entered in the "other direction" fields (columns 74-79).
2	The use of the code "2" denotes the fact that the record contains data only for a single direction. These are coded into "primary direction" fields of the record.
3	A "3" coded in this field indicates that the directional data coded in the "primary direction" fields of the record are the "other direction" data for the record with a "2" in this field which has the same "section identifier" (columns 1-32) or which immediately precedes this record sequentially in the data set.

NOTE:

It is necessary to tie the number 2 and 3 records together sequentially within the data set if the node numbering or the milepoint identifiers are unique for each direction of the roadway, thus precluding a match on the column 1-32 "section identifier." As an alternative the "A" node number from the "Primary Direction" record may be entered in columns 74-79 of the "Other Direction" record.

Reporting of New Construction and System and Administrative Reclassification

The previously discussed data (number 0, 1, 2, or 3 records) which each State will submit in June of each year will reflect the status of all highway segments as of December 31 of the previous year. Included in that data will be highway segments which have been added or modified since the previous submittal.

For these segments, as well as for those which have been deleted, a separate data set of "transition" data records (number 5 records) will be submitted, which will allow the Highway Statistics Division to follow each change in detail, thus providing a transition between the previous year's data records and the latest data records. Included in the record for each segment will be a transaction code which indicates the type of change which has occurred on the segment since the previous submittal.

The format of the "transaction" data set is as follows:

<u>Columns</u>	<u>No. of Columns</u>	<u>Description of Item</u>
1-2	2	Year
3-4	2	State Code
5-7	3	County Code
8-12	5	City or Place code
13	1	Class Designator

LATEST YEAR DATA

14-19	6	Section Length
20	1	Node or Milepoint Indicator
21-26	6	Inventory Route Number
27-32	6	Milepoint

OR

21-25	5	"A" Node
26-30	5	"B" Node
31-32	2	Segment Number
33	1	Traveled Way System
34	1	Designated System
35-36	2	Governmental Control
37	1	Administrative System
38-39	2	Functional Classification
40-41	2	Pavement Type

PREVIOUS YEAR DATA

42-47	6	Section Length
48	1	Node or Milepoint Indicator
49-54	6	Inventory Route Number
55-60	5	Milepoint

OR

49-53	5	"A" Node
54-58	5	"B" Node

59-60	2	Segment Number
61	1	Traveled-Way System
62	1	Designated System
63-64	2	Governmental Control
65	1	Administrative System
66-67	2	Functional Classification
68-71	4	Right-of-Way Width
72	1	Shoulder*
73-74	2	Pavement Type*
75-76	2	Pavement Width*
77	1	Number of Lanes*
78	1	Median Type*

TRANSACTION DATA

79	1	Transaction Code
----	---	------------------

IDENTIFIER

80	1	"5"
----	---	-----

*Predominant nondirectional data will be coded.

The description for the codes in each of the above fields (will be found in the writeup for the corresponding field in the detailed highway segment record (number 0, 1, 2, or 3 records) format.

The codes for the Transaction field follow:

<u>Code</u>	<u>Description</u>
0	Not known
1	New construction on new location with Federal-aid.
2	New construction on new location without Federal-aid.
3	New construction, reconstruction, or betterment on existing location with Federal-aid.
4	New construction, reconstruction, or betterment on existing location without Federal-aid.
5	Mileage correction or transfer from one system to another without betterment.
6	Transfer from one system to another with betterment using Federal-aid funds.
7	Transfer from one system to another with betterment using no Federal-aid funds.
8	Transfer between private and public ownership.
9	Abandoned.

Transaction codes identify system and administrative classifications as well as new construction and abandonment. The code provides for identification of Federal-aid and non-Federal-aid betterments. The information is similar to that presently reported on form PR-502, but provision is now made for linking betterment to fund category.

Transition records should be submitted for all location-specific data records on which changes have occurred during the past year. Transition records will also be submitted for category-type records leaving the location fields blank and relying upon the State code, county code, city or place and class designator fields for location and identification.

SUPPLEMENTAL DATA RECORD

These records contain a "4" in column 80. The record is utilized for submitting additional data, such as bikeway and special lane characteristics, for the roadway sections coded on the primary data records, previously described. The identification portion of the record, columns 1-32, is coded precisely the same as columns 1-32 of the primary data record. The format of the record follows:

<u>Columns</u>	<u>No. of Columns</u>	<u>Data Item</u>
<u>1-32</u>	<u>32</u>	<u>IDENTIFICATION SECTION</u>
1-2	2	Year
3-4	2	State Code
5-7	3	County Code
8-12	5	City or Place Code
13	1	Class Designator
14-19	6	Section Length
20	1	Node or Milepoint Indicator
21-25	5	Inventory Route Number
26-32	7	Milepoint
	<u>OR</u>	
21-25	5	"A" Node
26-30	5	"B" Node
31-32	2	Segment Number
		<u>DATA SECTION</u>
33	1	Special Lane(s) - Type(s)
34	1	Number of Special Lanes
35-39	5	Vehicles per Hour - Special Lane(s)
40	1	Bikeway Location
41-46	6	Bikeway Length
47	1	Bikeway Usage
48	1	Bikeway Surface

Descriptions of other than identification fields follow. It is anticipated that other fields will be designed as the need for the data becomes apparent.

Column 33, Special Lane(s) - Type(s)

The code in this column denotes the type of special lane(s), if any, which exists on the roadway segment. This field is not coded for category-type records.

<u>Code</u>	<u>Description</u>
Blank or 0	No special lane or category-type record
1	Bus lane(s) - only during specified hours
2	Bus lane(s) - no time restrictions
3	Carpool Lane(s) - only during specified hours
4	Carpool Lane(s) - no time restrictions
5	Bus and Carpool Lane(s) - only during specified hours
6	Bus and Carpool Lane(s) - no time restrictions

Bus Lane(s) is defined as that portion of the highway open only to use by bus-type vehicles during a portion of or throughout the day.

The definition of carpool lane(s) is that portion of the highway open only for use by passenger vehicles containing a minimum specified number of passengers. The lanes may be open for a portion of or throughout the day.

Column 34, Number of Special Lanes

Code the number of special lanes which are present on the particular highway segment. Code the lanes even if the lanes are designated special only during a portion of the day. The field should be left blank or coded 0 if there are no special lanes or for category-type records.

Columns 35-39, Vehicle per Hour - Special Lane(s)

Vehicles per hour on the special lane(s) during the peak period of usage is coded in these columns to the units position. This field will provide a measure of the usage being made of the special lane(s).

Column 40, Bikeway Location

Information of the presence of a bikeway within or adjacent to the right-of-way of the highway segment is coded in this field. The codes are as follows:

<u>Code</u>	<u>Description</u>
Blank or 0	No bikeway adjacent to highway segment or category-type record
1	Bikeway present within right-of-way of the highway segment
2	Bikeway located adjacent to right-of-way of the highway segment

Columns 41-46, Bikeway Length

The length of the bikeway coded in column 40, if any, is coded in this field as xxx.xxx, with the decimal point assumed to be between columns 43 and 44. The level of precision for coding purposes should be that normally utilized by the State. The field should be coded with leading and trailing zeros in columns 41 through 46, depending upon the precision to be coded. The field is left blank for segments with no bikeway or for category-type records.

Column 47, Bikeway Usage

Information on allowable usage of the bikeway is coded into this field. Usage of the bikeway by pedestrians and/or motorized vehicle is considered in determining the coding to be used.

<u>Code</u>	<u>Description</u>
Blank or 0	No bikeway or category-type record
1	Only bicycle usage permitted
2	Pedestrian usage permitted
3	Usage by motorized vehicles permitted
4	Both pedestrian and motorized vehicle usage permitted

Column 48, Bikeway Surface

The type of surfacing on the bikeway is coded in this field as follows:

<u>Code</u>	<u>Description</u>
Blank or 0	No bikeway or category-type record
1	Hard pavement surface
2	Soil, gravel, or stone surface
3	Unimproved path