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16. Abstract
This report is concerned with the design, development, testing and installation of a flexible pavement, district-level, microcomputer database. The development system supports five major data files: visual condition data collected every 0.5 miles; deflection analysis (FWD) data collected every 0.5 miles; ride data collected every 0.2 miles; skid data collected every 0.2 miles; and master 0.1 mile highway segment file. The system permits on-line query to all files for the purpose of producing highway segment data pertaining to user-specified conditions. Upon completion, the system will provide data concerning critical highway segments, data to support maintenance decisions, highway condition plots, and data to support the allocations of maintenance funds.

The developed model is designed around the specific needs of District 21, Pharr, Texas. However, the system is designed to function within any highway district in Texas with minimal modification. The database design was modeled using the DATAEASE microcomputer-based relational database language and runs on the IBM or IBM-compatible AT class of microcomputer. Minimal hardware requirements include DOS 3.1 or higher, 640 KB of RAM, one 1.2 Mb floppy disk, and a 33 Mb fixed disk. Additional equipment needs are a wide carriage dot matrix printer and a high speed tape backup system.

The system is designed to be resident in the district headquarters with technical support provided by D-18PM in Austin and the Texas Transportation Institute at Texas A&M University, College Station, Texas.

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DISTRICT LEVEL MICROCOMPUTER FLEXIBLE PAVEMENT HIGHWAY DATABASE SYSTEM

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The Texas Transportation Institute
The Texas A&M University System
College Station, Texas 77843-3135

METRIC (SI*) CONVERSION FACTORS

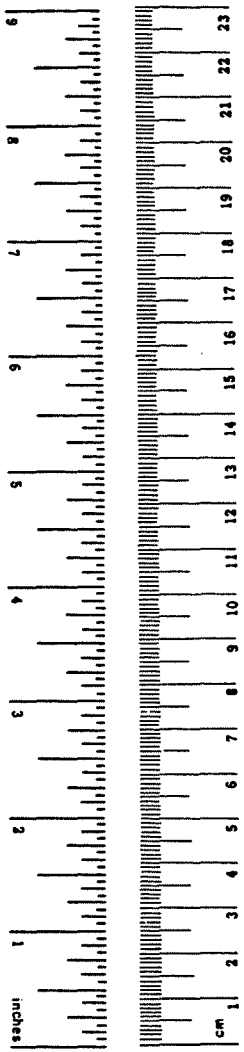
APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
in	inches	2.54	centimetres	cm
ft	feet	0.3048	metres	m
yd	yards	0.914	metres	m
mi	miles	1.61	kilometres	km
AREA				
in^2	square inches	645.2	centimetres squared	cm^2
ft^2	square feet	0.0929	metres squared	m^2
yd^2	square yards	0.836	metres squared	m^2
mi^2	square miles	2.59	kilometres squared	km^2
ac	acres	0.395	hectares	ha
MASS (weight)				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
VOLUME				
fl oz	fluid ounces	29.57	millilitres	mL
gal	gallons	3.785	litres	L
ft^3	cubic feet	0.0328	metres cubed	m^3
yd^3	cubic yards	0.0765	metres cubed	m^3

NOTE: Volumes greater than 1000 L shall be shown in m^3.

TEMPERATURE (exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

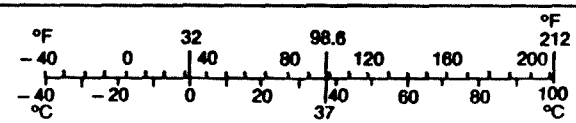


APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
mm	millimetres	0.039	inches	in
m	metres	3.28	feet	ft
m	metres	1.09	yards	yd
km	kilometres	0.621	miles	mi
AREA				
mm^2	millimetres squared	0.0016	square inches	in^2
m^2	metres squared	10.764	square feet	ft^2
km^2	kilometres squared	0.39	square miles	mi^2
ha	hectores (10 000 m^2)	2.53	acres	ac
MASS (weight)				
g	grams	0.0353	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams (1 000 kg)	1.103	short tons	T
VOLUME				
mL	millilitres	0.034	fluid ounces	fl oz
L	litres	0.264	gallons	gal
m^3	metres cubed	35.315	cubic feet	ft^3
m^3	metres cubed	1.308	cubic yards	yd^3

TEMPERATURE (exact)

°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



These factors conform to the requirement of FHWA Order 5190.1A.

* SI is the symbol for the International System of Measurements

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SECTION	TOPIC	PAGE NUMBER

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ABSTRACT

This report is concerned with the design, development, testing and installation of a flexible pavement, district-level, microcomputer database system. The developed system supports five major data files: Visual condition data collected every 0.5-miles along all state maintained roadways; deflection analysis (FWD) data every 0.5 miles; ride (siometer) data collected every 0.2-miles; skid data collected every 0.2 miles; and a master (0.1-mile) file. The developed system permits on-line query to all files for the purpose of producing highway segment data pertaining to user-specified needs/conditions. Upon completion, the system will provide data concerning critical highway segments, data to support maintenance decisions, highway condition plots, and ultimately, data to assist in the allocation of maintenance funds within a highway district.

The developed model is designed around the specific needs of District 21, Pharr, Texas. However, the system is easily transportable to any Texas highway district. The database design was modeled using an IBM-compatible AT class of microcomputer. Later versions of the data base will be expanded to 386 and future technology DOS-based systems. Minimal hardware requirements include DOS 3.3 or higher, 640 Kb of ram, one 1.2 Mb floppy drive, a 103 Mb hard disk, and an associated laserjet printer. Backup of system files is accomplished via a 60 Mb (or higher) high speed tape streaming backup system.

The system described herein is resident in the district headquarters with backup systems located within D-18PM in Austin, Texas and within the Industrial Engineering department of Texas A&M University, College Station, Texas.

KEY WORDS

Flexible Pavement Management
Highway Condition Data
Flexible Pavement Performance
Flexible Pavement Management
Microcomputer Database Applications
Rehabilitation and Maintenance Programs
District Level Pavement Management Database

Note:

In December of 1990, the system as described herein has been converted to function with TxDOT's new Reference Marker System location keys. During the first three years of this project's application life, the location system was the then-current Milepost and Mile-point system. All uses of the word "milepost" should be interpreted (by the reader) as "reference marker" to coincide with the current state-wide location system.

ACKNOWLEDGEMENTS

The original motivation behind this research is credited to Samuel G. Cox, Maintenance Engineer (retired), District 21, Pharr, Texas. Mr. Cox was instrumental in conceiving the original ideas that motivated this research effort. It was through his vision and dynamic leadership that this effort was undertaken. Mr. Cox has gained state-wide and national attention for his leadership and knowledge relating to the maintenance and rehabilitation of pavement systems. Through his efforts, and the cooperative spirit of his associates, District 21 has gained the reputation of successfully managing and maintaining one of the best highway systems in the state of Texas.

Grateful appreciation is extended to Mr. Bob Guinn, D-18PM, Austin for his support, and leadership. Through Mr. Guinn's interaction with Highway Department officials, this effort greatly benefited.

Finally, Dr. R.G. Lytton, Professor of Civil Engineering and Director of the Pavement Research Division of TTI deserves special credit for his vision, leadership, and support.

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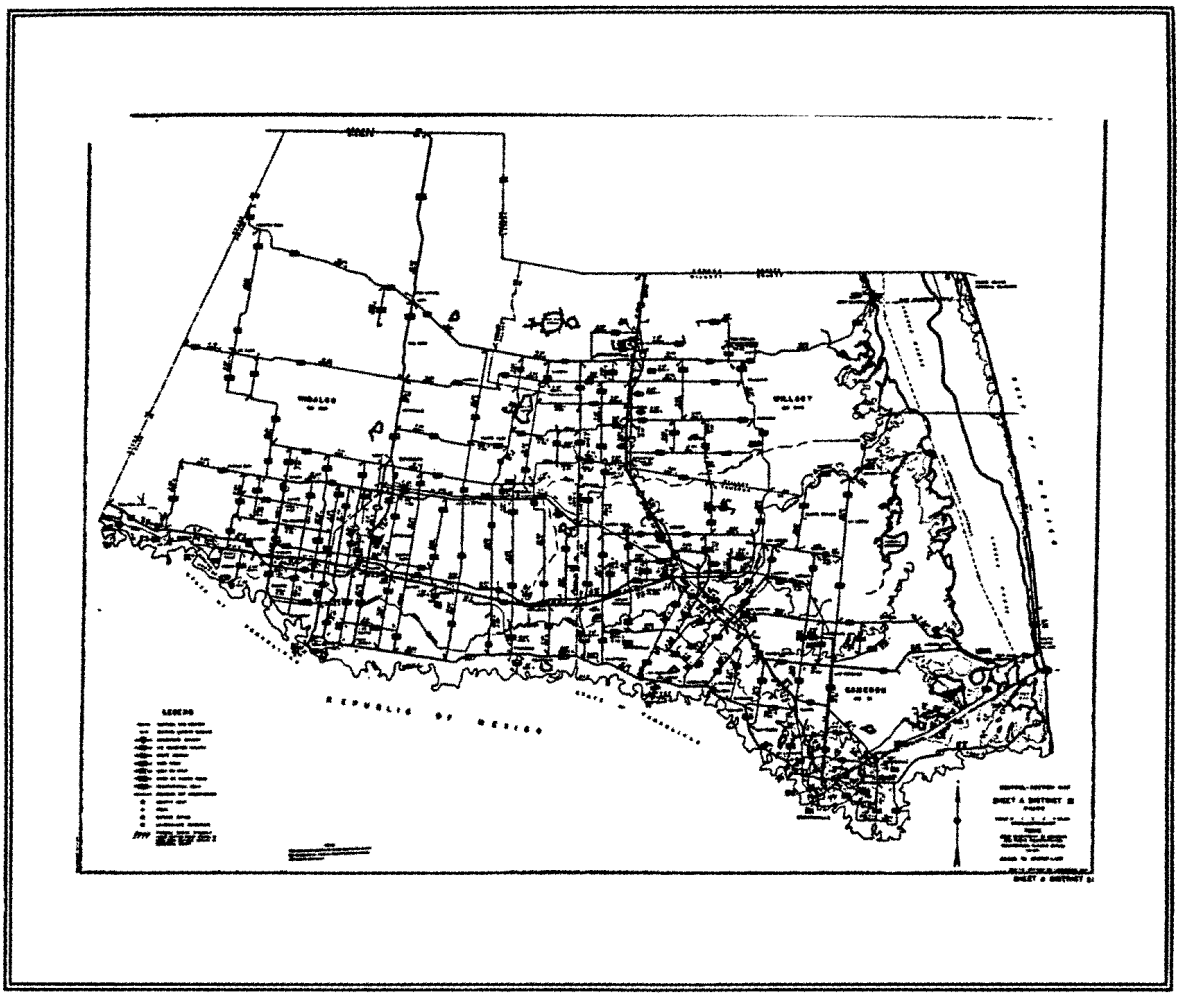
DISCLAIMER



DISTRICT 21 MAP

Consisting of the following counties:

Brooks	Kenedy
Cameron	Starr
Duval	Webb
Hidalgo	Willacy
Jim Hogg	Zapata

1.0 INTRODUCTION

The State of Texas currently maintains over 180,000 lane miles of federal, state, and park roads with a public investment involving billions of dollars. Twenty four state highway districts supervise and manage approximately six to seven thousand lane miles per district. Due to the vast geographical expanse of Texas, with its severe climatic conditions, highway maintenance and rehabilitation activities represent a challenging set of problems to highway engineers.

Central to the success of any rehabilitation and maintenance (R&M) program is the need for accurate and timely data relating to the highway network under study. This research project, originally undertaken in September or 1984, sought to establish a District level, microcomputer database system accessible at the local level to supply the information needs of highway engineers.

The original concept of a de-centralized, microcomputer based system is attributed to Mr. Samuel G. Cox, Maintenance Engineer (retired) District 21, Pharr, Texas. Mr. Cox was instrumental in conceiving the notion of a District level database powerful enough to handle the complex needs of the District combined with simplicity to allow a variety of District level personnel to utilize the system on a day-to-day basis.

1.1 BACKGROUND OF THE PROBLEM

District 21 has been involved with pavement evaluation since the early 1970's. Under Cooperative Research Study No. 151, Mr. Sam Cox worked with TTI researcher Dr. Jon Epps to develop a prototype Maintenance Management System (MMS). The results of these efforts are documented in several research reports, specifically:

1. TTI Report 151-4: "**The Development of Maintenance Management Tools**".
2. TTI Report 151-2: "**Roadway Maintenance Evaluation User's Manual**".
3. SDHPT SS18.0: "**An Approach to Maintenance Management**".

The major achievements of this research were:

a. The development of a flexible and rigid pavement rating procedure with sufficient detail to be used for maintenance purposes.
b. The development of a pavement scoring procedure which matched maintenance engineers' perceive condition ratings.
c. The implementation of pavement condition plots similar to the one shown in Figure 1.

This system was fully operational by the late 1970s. The condition plots were introduced at the maintenance foreman level and several foremen began to use the plots and condition reports to select candidate maintenance and rehabilitation

projects for the upcoming year. For several reasons, the condition rating system was discontinued in 1978 and not reinstated until Project 409 was started in 1985.

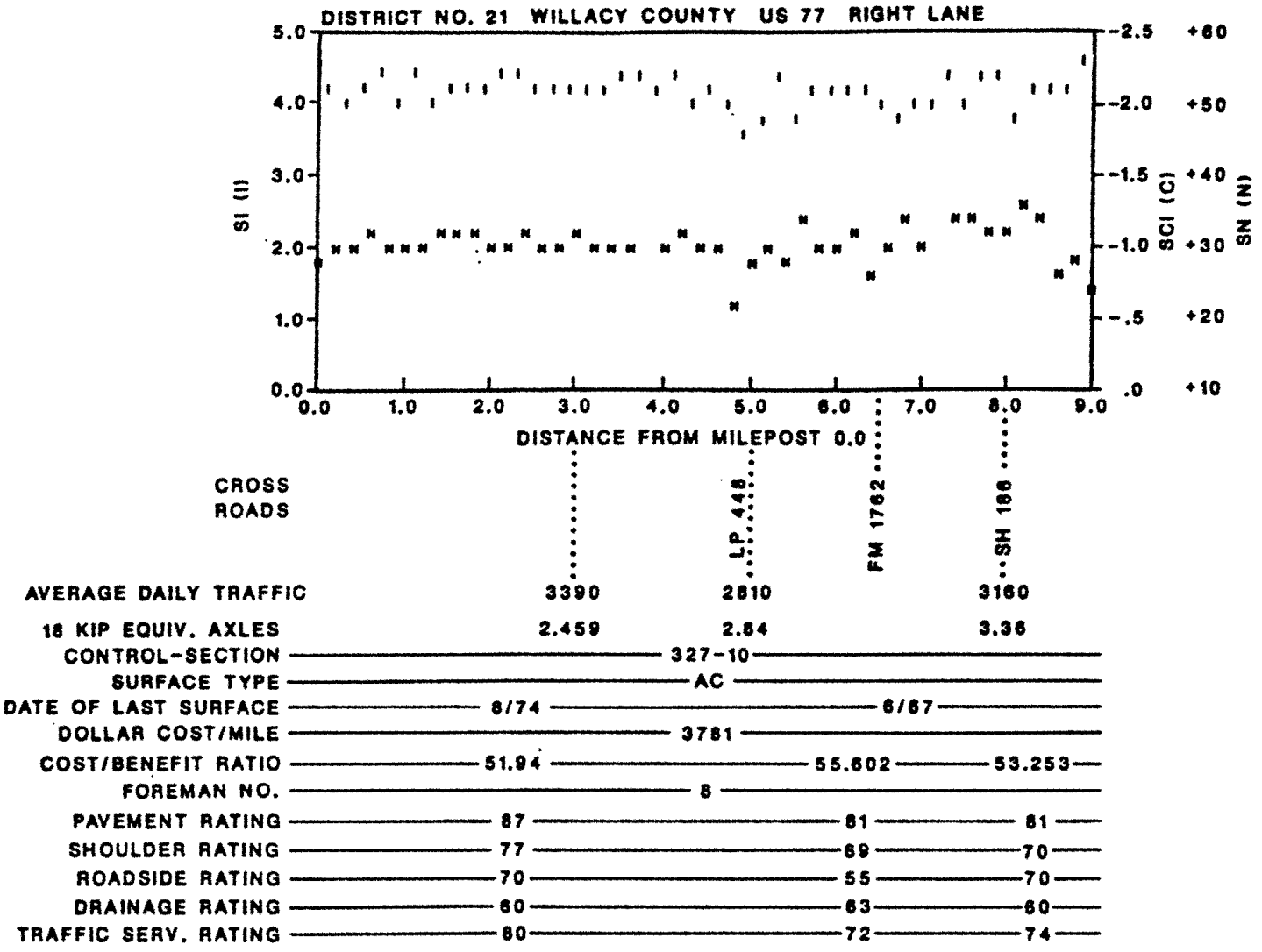


FIGURE 1
Specimen Condition Rating Plot
Part of the Initial Project 409 Effort

In the initial phase of Project 409, an analysis was made of additional user requirements from the new system. The results of that analysis are summarized below:

A. Pavement Performance Inputs

Visual Condition Surveys:

To be conducted at 0.5-mile intervals using an inspection procedure from TTI Report 151-2.

Ride Data:

To be collected using the May's Ride Meter (MRM) equipment or a SIOMETER (e.g. Walker Roughness Device) based on 0.2-mile intervals.

Deflection Analysis:

To be collected using a Falling Weight Deflectometer (FWD) based on 0.5-mile intervals.

Testing Frequency:

Visual and Ride data to be collected annually (normally beginning in September of a given year.) Skid data collected annually on high volume roads and at 3-year intervals on low volume highways. The Falling Weight Deflectometer data is collected on 3-year intervals.

B. Inventory Requirements

The following data items need to be collected and procedures developed to facilitate updating:

* Pavement width.
* Surface type and Date of Last Surface (DLS).
* Average Daily Traffic (ADT).
* Projected 18 KIP single-axle equivalent loadings (18KIP).
* Location of cross-roads.

C. Historical Data

Provisions must be made to store Visual, Ride, Skid, and FWD data in a file structure suitable for fast access, data analysis, and report summarizations.

D. Output Requirements

In addition to highway segment condition plots (see Figure 1), the following outputs were required:

Degradation Curves

The system would provide condition trends as a function of time for defined highway segments.

On-line Query

The system would provide the ability to permit real-time access to the data and to respond to ad hoc requests such as "list all highways with ADT greater than 1000 which have not been worked on in the last five years" or, "list highways with skid values less than 35."

Maintenance Estimates

To permit users to supply decision criteria which will be used to generate maintenance estimates. For example, "apply crack seal treatments to all highways which have moderate or severe longitudinal or transverse cracking" or, "apply level-ups to all highways carrying between 1000 and 3000 vehicles per day with PSI less than 2.5."

Funds Allocation

To produce statistics on overall network condition to aid in the funds allocation process and to provide an user-friendly interface between the highway segment database and the RAMS-DO-1 series of FORTRAN-based optimization routines.

Details of each of these activities will be given in later sections of this report.

The purpose of this report is to produce a detailed design document describing the development of the District 21 microcomputer database system that stores highway segment data based upon 0.1, 0.2, and 0.5-mile highway segment data for all state-maintained highways within District 21. While the system described herein is specific to the needs of District 21, the system is capable of being installed within any state-wide district. Further, due to the flexible nature of the database, it is possible to modify the D21 system to suit the specific needs of other Districts.

1.2 Objectives of the Research

The primary objectives of this research effort are as follows:

1. Design and develop a 16/32-bit microcomputer database system capable of storing, retrieving, and summarizing, highway segment data at the 0.1, 0.2, and 0.5-mile interval level.

2. Design the system such that District-level personnel could effectively manage and operate the system at the District level.

3. Have the system in place and fully operational by the end of 1987.

4. Design the system to be comprehensive with the flexibility to be customized for other Districts desiring to implement it either as is or in some modified form.

Work was begun in January of 1987 to design a microcomputerized database system consistent with the data collection philosophy adhered to by District 21. Mr. Cox directed that 100% of the District 21 highway network be inspected with data collected under the following categories:

1. Visual Inspection every 0.5 miles.
2. Ride data collected every 0.2 miles.
3. Skid data collected every 0.2 miles.
4. Falling Weight Deflectometer measuments taken every 0.5 miles.

Additionally, physical attribute data was collected from the RI-1 files to build the District level highway inventory file, crossroads file, and the 0.1 mile master file.

The primary file for the system described herein is the 0.1 mile master file. This data file contains over 90 separate data elements that store the physical and condition data of each 0.1 mile segment of state maintained highway within District 21. This file is built from a county-level highway inventory file. To augment the 0.1 file, several 0.2 and 0.5 files are maintained to hold visual data, falling weight, skid, and ride data. The database described herein permits data from one file to be incorporated into other files as required.

The mechanism by which collected highway segment data is entered, stored, sorted, evaluated, and accessed, is a popular microcomputer relational database software program by SoftEase Corporation termed **DATAEASE**. Early in the project development phase of this research, consideration was given to all of the then-current microcomputer database systems. DBASE III and RBASE 5 were evaluated. DATAEASE was selected based upon its simplicity, ease of learning,

programming features, and end-user friendliness. While DBASE III was (and remains) the industry de facto standard, the time to learn the system was far greater than that of DATAEASE. Since the research team was under time constraints to have a system in place and operational, and the research staff had little or no experience with DBASE III, the decision to implement DATAEASE was affirmed.

Development of this version of the flexible pavement district-level database system was instituted in January of 1987. The original plan called for on-site installation in May of 1987. However, due to developmental problems coupled with data collection delays, the phase I version (reported herein) was not installed until the fall of 1987.

The remainder of this report will describe the database and illustrate the elements currently designed into the system. It is perceived that this version will undergo modifications and enhancements as time progresses. In actuality, no computer-based system is, nor should be, considered "in final form." As conditions and time evolve, this version will be modified to reflect the needs of the end user, i.e., the district level engineers. This system is designed to be a decision support tool to aid and assist highway engineers in the day-to-day tasks associated with maintaining public roadways in the highest possible condition at a reasonable and affordable cost.

The next section presents an overview of computerized database logic. This section is intended to brief the reader on the basic principles of relational database design and is included merely to promote a greater understanding of the detail associated with the flexible pavement database.

2.0 DATABASE DESIGN - AN OVERVIEW

During the 1960s, the concept of **database processing** was one of the developing computer-based technologies. The concept of database processing (limited primarily to mainframe computer users) was strongly promoted to corporate industry as a better way to provide information to decision makers. With the implementation of centralized data processing centers, database applications were actively promoted by DPC managers as a tool to improve overall managerial efficiency.

During the 1970s, numerous database systems were designed and promoted extensively within business and government. Some systems were successful; others failed to various degrees. Where failures were experienced, managers grew wary of database technology. Others, who experienced success with their systems, swore by them. With the introduction of the 8 bit IBM-PC microcomputer in the early 80s, the concept of desktop database power grew in rapid proportions.

Further enhancements to the IBM-PC, (PC/XT, AT and the 386 machine) combined with more sophisticated "operating" systems, merely accelerated the scope of the PC-based database software.

Today, with the power of the 32 bit 386 system architecture, database systems are more powerful than the IBM 360/370 mainframe equivalent database systems of the 60s and 70s are in place. With the increasing need for timely information, decision makers have grown to readily accept these decision support tools and rely heavily on them.

Properly designed, database processing allows an organization's data to be processed as an integrated whole. This approach allows data to be maintained in separate files, but the design of the database system permits the user to access data as if there was one, integrated file. The integrated database concept presents data to the decision maker in a more natural manner.

Microcomputer database systems permit the following functions:

1. Data entry with data checking ability.
2. Data storage (usually on a hard disk).
3. Data retrieval for viewing/editing.
4. File creation from other separate files (merging).
5. Data sorting/manipulation.
6. Report generation from a single file or from other related files.
7. The ability to "export" data out to other programs and "import" data into the database from other programs.
8. Communication to and from mainframe and mini computer systems.
9. System administration (security, password protection, file management, etc.

The database structure permits a common and consistent file structure that permits fast accessing of a selected item or, the merging of two or more files to create a merged file. Specifically, to qualify as a **database**, such a system must possess the following attributes:

1. The ability to integrate more than one logical record.
2. Represent more than one key (common element) per record.
3. Represent a variety of relationships among the records.
4. Permit program/data independence.

If a promoted system does not perform or provide these features, it is not technically a database. Rather, such a design would be referred to as a "data base" or a "file management system." Simply stated, a database is a computerized record-keeping system or, an electronic filing cabinet capable of performing a

variety of operations on the stored data. The primary objective of a computerized database is to provide access to information and data manipulations within a small time frame.

Using today's technology, database systems range from large, multi-user mainframe systems to small (but powerful) microcomputer-based systems. Depending upon the computer's operating system, the micro-based database (DB) systems may be single-user or multi-user. Generally, a microcomputer database system involves four major components:

1. Hardware,
2. Software,
3. Data,
4. Users.

The system described herein is a microcomputer-based **single-user** system designed for installation and operation at the district level. The system minimally requires an IBM-XT/AT microcomputer (or compatible) 640Kb of main memory, with at least one 33Mb hard disk, one or more floppy drives, and an appropriate wide carriage dot matrix printer.

The prototype version was developed using the **DATAEASE** software system running under control of PC-DOS 3.2. The system will run on any IBM-PC compatible XT,AT, or 386-based machine under MS-DOS 3.1 or higher. More specific information regarding hardware requirements will be presented in Section 7.

Operationally, a microcomputer database system possesses five software-related elements (see Figure 2.) They are:

1. An interactive user/applications program,
2. A Data Communications Processor,
3. Batch User Applications Program,
4. The Database Processing System,
5. The computer's Disk Operating System - DOS.

The interactive/user applications program permits the designer and the user to create input files and associated data entry screens. A data record may be physically built using this routine. The designer-user does not have to be proficient in computer programming to accomplish this task. By using the "point and shoot"

technique, the designer can layout the screen in any manner desirable, assign variable or field names to the data elements, edit the screen (add data elements, remove elements, move elements), and even perform numerical calculations on data as it is entered. When finished, the designer "saves" the screen image to disk and it becomes available to the database communications processor and the base processing system.

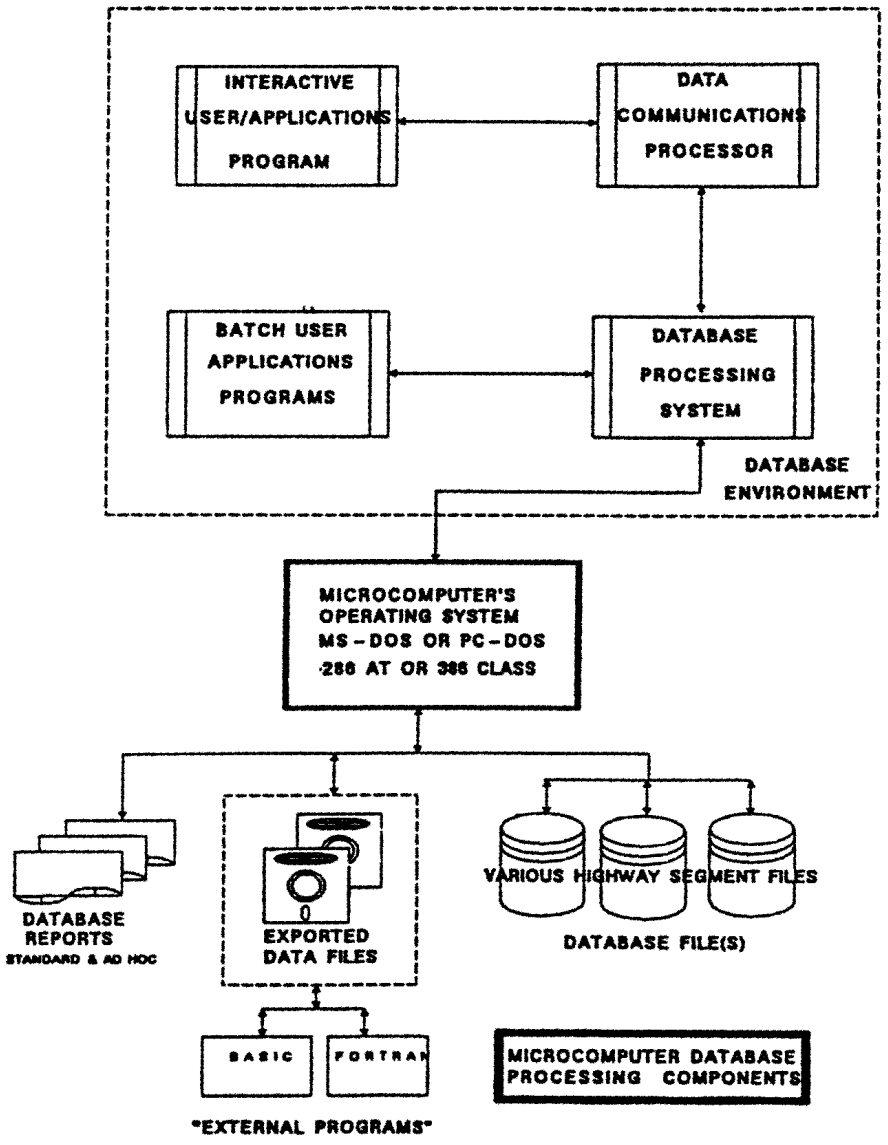


FIGURE 2: Microcomputer Database System Structure

The Communications Processor is a set of software programs that link the user applications (files, screens, etc.) to the Database Processing System. The processing system controls the actual sorting, retrieval, and calculation functions that will ultimately be requested. The Batch User Application Program permits the user to write programs in a special language called the **query language**. The term "query language" has grown to be a common term; however, it is a misnomer since the term "query" implies "retrieval only." In database applications, the query language permits other activities such as updating, inserting, merging, sorting, etc. By using the query language, the user can write any number of applications routines that will sort the database, extract specified information, produce detailed reports, import/export data to other files, and perform complex mathematical calculations on the data within a given record.

The final element, the disk operating system of the micro, is required to manage all of the file input/output activities that transpire. DOS is, in effect, the "shell" that surrounds the database and permits use of the microcomputer's resources to function properly.

The end-result of the integration of these five elements is the resultant database files, reports, special files, (files suitable for transfer to other programs outside of the database), and the ability to receive imported files from outside programs. As will be shown, the developed system relies on file import and export activities to occur. For example, some of the activities require the use of PC-SAS to manipulate data and import that data back into the database. Additional applications require the database to prepare sorted data from specified files, export the sorted data to disk for use in FORTRAN and/or BASIC programs. The file import/export feature greatly expands the utility of the database to other existing software packages that permit plotting, optimizations, cost estimations, etc.

2.1 DATABASE TERMINOLOGY

To assist in understanding the architecture of the developed system, the following terminology is defined:

BIT - The smallest discrete element of storage in a digital computer. A computer **bit** = 0 or 1.

BYTE - A **byte** (normally = to 8 **bits**) represents one character. Thus, a pattern of 8 **bits** equals one **byte** or one character.

FIELD - A collection of bytes or characters that can represent a number, words, phrases, etc.

RECORD - A collection of **fields** that represent a **unique**, **complete** dataset.

FILE - A collection of **records**.

KEY - A special identifying field within a **record**. When the file is accessed, the **key** assists in specifying the identity of the record to be processed. Most keys are one or more fields within a record. These are referred to as **imbedded keys**.

Additional important termonology:

DATABASE RECORD

A grouping of fields or, a logical record format.

DATABASE FILE

A collection of database records.

DATABASE

A collection of database files.

PRIMARY KEY

A field or collection of fields that is/are **unique** i.e. no other record possesses the same field value. The key is used to access matching records in a small amount of time.

SECONDARY KEY(S)

Additional field(s) which may or may not be unique. Secondary keys assist in sorting and/or retrieving specified records that match the keyed value(s).

For the purpose of this report, a database record will generally represent a unique highway-lane segment. In the 0.1 master file, each record represents a unique tenth-mile lane segment for a particular highway number in a given county. The fields within that record contain the fields (data) that represent the condition of that particular stretch of highway-lane. Thus, if a particular county has 300 miles of two lane highway, then the 0.1 file will contain 6000 records (3000 records for the "R" lane and 3000 records for the "L" lane.) For multi-lane roads, i.e. interstate

roads, more lane designations are required thus increasing the number of records required. The 0.1, 0.2, and 0.5 files discussed herein are all organized in this manner.

2.2 RELATIONAL DATABASE FILE STRUCTURE - AN OVERVIEW.

Most of recently-developed computerized databases are **relational** in nature. These newer systems are based upon the concept of relational ideas. While the theoretical concepts underlying relational mathematics is beyond the scope of this report, the reader may require an overview of the concept. Simply stated, a relational database system is one that:

1. The user perceives the data as being represented by tables and nothing but tables.

2. The operations at the user's disposal for data retrieval are operators that generate new tables from older, existing tables.

Figure 3 illustrates the table concept. As shown, the table is comprised of rows and columns. Each row in the table is referred to as **record**; each column within a row is a **field**. The collection of rows with their associated fields comprises a database **file**.

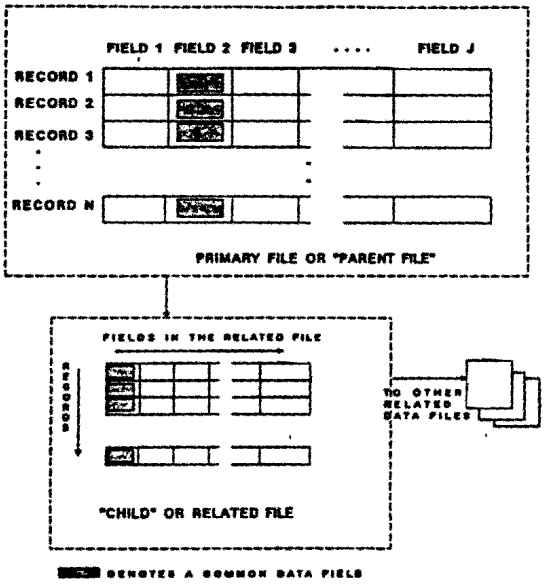


FIGURE 3: Relational Database Table Concept

FIGURE 3: Relational Database Table Concept

Further examination of Figure 3 reveals that all records contain the same number of fields. Each field contains a specific data element common to that particular record. Some fields may contain data that is unique to that field, i.e., no other record in the table contains the same, identical data. These fields may be utilized as **key** fields and are useful for retrieving that particular record.

The relational concept is illustrated in Figure 4. Returning to the row-column concept, we observe that at every row and column position in every relational database table, there is always exactly one data value - never a set of values. Under this design concept, the data values are referred to as **atomic**. A second observation is that the entire information content of the database is represented as **explicit data values**. There are no links or pointers connecting one table in the database to any other table in the same database. The only way to relate one table to another is by the common existence of one or more cells in one table to another table containing the existence of the same cell (it does not have to be in the same row-column location.) By this "existence" it is possible to "relate" one table to another and hence the term "relational database".

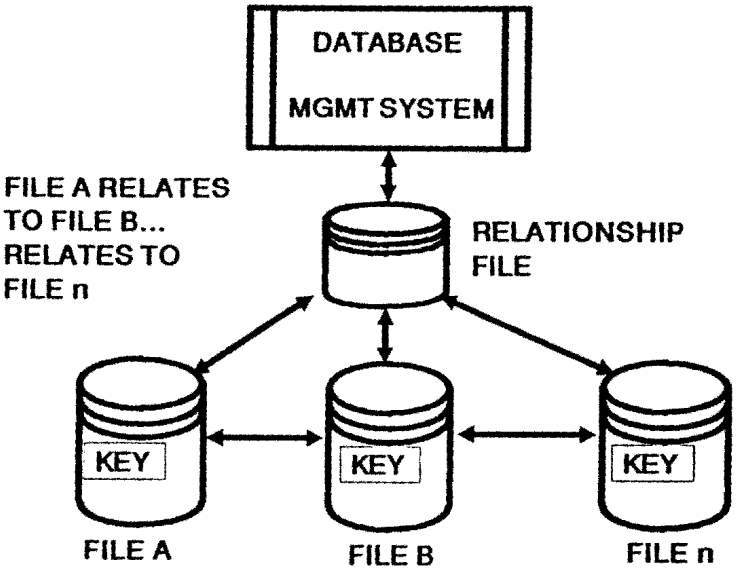


FIGURE 4: Key Field Concept for a Relational Database

Non-relational database design incorporates pointers or "links" that direct the system to other datasets. Many of the older DB systems utilized linked lists and imbedded pointers to direct control from one data set to another. Modern DB design has appeared to abandon these concepts in favor of the relational concept.

In summary, the relational design is a useful means to represent highway data. It is important to emphasize that the database may not actually store the data in a matrix or tabular format. It is not important that we understand exactly how the data is stored. What is important is that we **perceive** that it is stored in a tabular manner. By understanding this perception, we can better comprehend the design of the system.

2.3 DISTRICT-LEVEL DATABASE MANAGEMENT

Historically, computerized database systems have been an integral part of centralized data processing systems. This is true because historically, database systems were originally designed for large, mainframe systems. With the advent of remote terminal access, users located away from the centralized facility could access data through a terminal system. With the proliferation of single user microcomputers, database systems were designed exclusively for these systems. Today, the single-user micro-based database system is common.

The system reported herein is designed to be a single user, district-based system. With some modification, the system could be expanded to run under a network configuration (assuming the requisite hardware and networking software is purchased.)

The advantages of single-user microcomputer database systems for district-level use are as follows:

1. Flexibility in design.
2. Integrity of data.
3. Increased response time.
4. Ease of use.

Use of microcomputer-based database software permits custom design of the system to suit the individual needs of each district. Due to the flexible nature of these systems, it is possible to design a "base system" and incorporate custom applications to fit the district's special needs. The base or "generic" system can easily be modified to generate a variety of different file structures from a base file. Additionally, an unlimited number of reports can be generated without employing

programmers or seeking assistance from a centralized mainframe environment. Data can be transported to various sites for additional processing. In essence, the data and the applications programs reside in the district and can be manipulated in a variety of ways.

The very essence of a database design creates an environment whereby data values are secure and stored in a format that permits flexible manipulation. Password protection can be implemented to restrict access to some or all of the data. Data may, if required, be accessed on a "need to know" basis via the password security systems. Only "authorized" users can view all or part of the data and/or run specified reports.

With the database residing at the district level, engineers can access highway data within a short time and have reports, plots, etc. in their hands often within minutes. Increased time response often pays valuable dividends over centralized database operations, especially when customized or "one-time" reports are required.

The selected system, DATAEASE, has proven to be relatively easy to learn. Within one or two weeks, engineers will possess the ability to generate custom reports with little difficulty. With the menu-based features of the system, a variety of staff members can use the system within a short time. With proper training, the district staff could completely manage, program, alter, and create extensions to the system as future needs arise. It is estimated that staff members, depending upon their level of education, could master the system with less than 40 hours of training combined with 2-3 months of day-to-day use.

The next section will begin the detailed description of the highway database system by focusing upon the required files that "drive" the system. In this section, the logic and the sequence of events will be described, illustrated by system-level flow charts for each file.

3.0 DISTRICT-LEVEL, FLEXIBLE PAVEMENT DATABASE - OVERVIEW

The district-level, flexible pavement database is designed for the analysis of highway segment pavement data at the district level. The entire system is devised to reside on an IBM compatible XT, AT, or a 386-based microcomputer. The system defined herein maintains highway segment data by county. If, for example, a district is comprised of 12 counties, then 12 separate database directories are required. Each DOS directory contains the entire datasets for a given county. In the design stage of this project, a variety of segmentation schemes were evaluated. The most logical breakdown appeared to be by county. It is possible to combine counties in an attempt to create a multi-county base. However, under the DOS 3.XX restrictions, a 33 Mb. limit on the hard disk is imposed. With future releases of DOS, notably IBM's newly announced OS/2 operating system (scheduled for release in early 1988), this limit may disappear, and the maintenance of a entire district level file could be possible.

The selected DB system, **DATAEASE**, allows for a variety of operations to be performed with minimal computer expertise of the user. However, users will be required to undergo a series of training session before becoming operational on the system. A separate user's manual will be prepared at a later date, and maintained as changes evolve, to assist in the training process.

This report discusses Version 1.0 of the flexible pavement database. The first installation is scheduled to take place in the fall of 1987 in District 21, Pharr, Texas. A backup of the system will be maintained in D-18PM, Austin, and within the Texas Transportation Institute at Texas A&M University, College Station, Texas. All data collected by the host district will be stored in the three locations plus the appropriate number of tape backups. This level of redundancy will serve to minimize problems associated with loss of data. Additionally, any problems encountered at the district level could be emulated at the backup sites in order to provide user assistance when required.

The succeeding sections describe the details of the database and the various operational features designed into the system. Each file will be described along with the information required to collect the requisite data and the associated data entry.

3.1 DATABASE SYSTEM DESIGN

The overview of the flexible pavement, district-level database system is shown in Figure 5. The primary data source from which all succeding files are built are gathered from the RI-1 district file. Information such as county highway inventory data, cross-road data, traffic, road widths, date of last surfacing, etc. are required to initiate the system. Parts of the data requirements exist on various computerized datasets in Austin while other elements are not computerized and must be generated manually by researching this information source. Twelve items of information for **each** highway within a given county must be extracted from the RI-1 file. Figure 6 illustrates a county-level data form that is helpful in tabulating this information for input into the database. The information consists of the highway number, roadway, beginning and ending reference points by job control section, milepost information, and control section number and location. The details concerning each data item will be discussed in the next section.

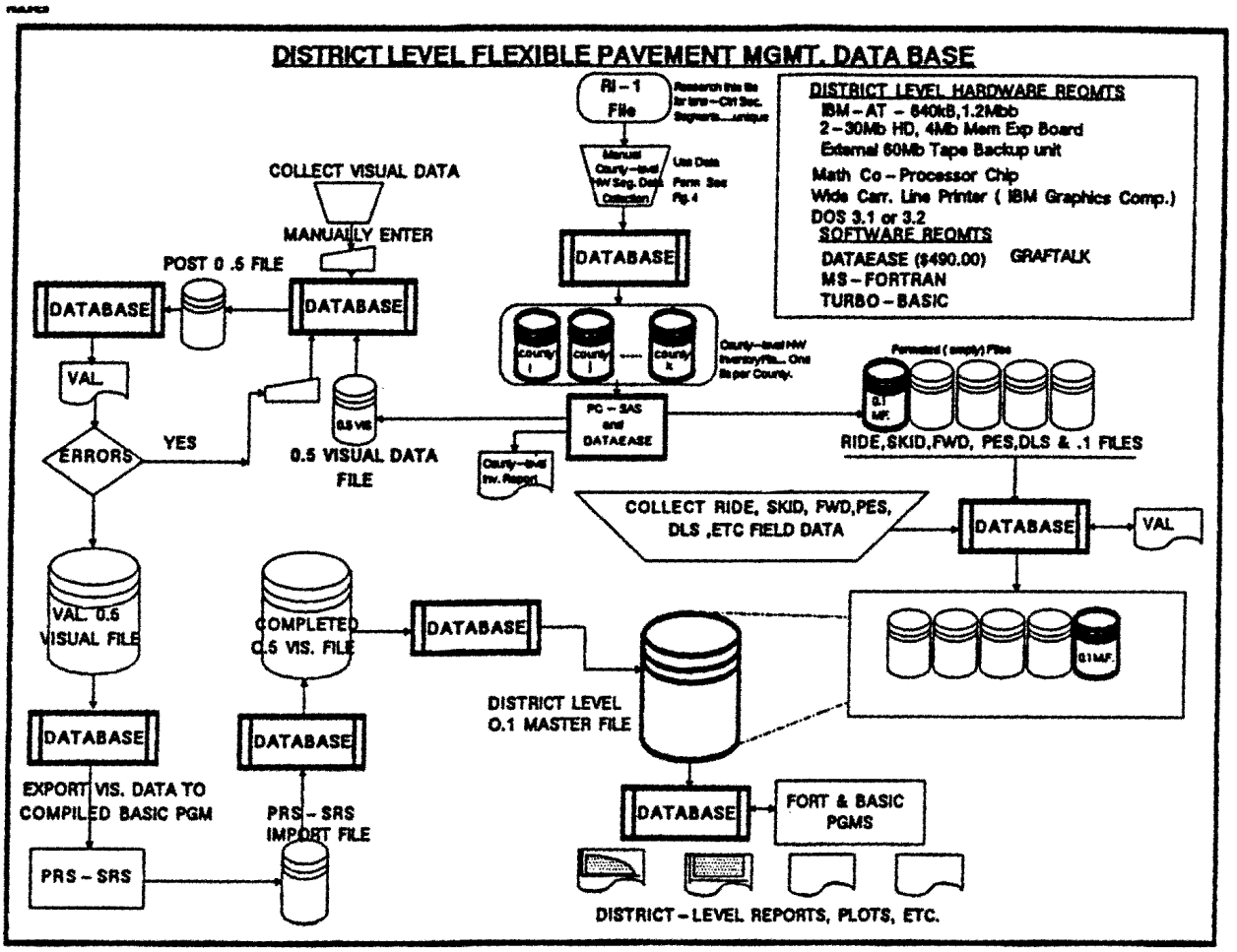


FIGURE 5: Flexible Pavement District-level Database Overview

After all highway information has been recorded using the form shown in Figure 6, then the data is **manually** input into the database using a pre-designed data entry screen. A "destination" file was built in DATAEASE according to the columns (fields) of the County Highway Inventory Form (CHIF). The DATAEASE file name is **COUNTY HW INV**. Each row in the CHIF constitutes one record in this file.

STATE OF TEXAS HIGHWAY PAVEMENT MANAGEMENT SYSTEM PAGE ___ OF ___

COUNTY LEVEL HIGHWAY INVENTORY DATA FORM

_____ COUNTY

GENERATED BY: _____ DATE: ____

COUNTY NUMBER: _____

HIGHWAY			RDWAY	BEG REF. POINT	END. REF. POINT	MILE POST	+ −	DISP	CONTROL NUMBER	SECTION	BEG. MILE POINT	END MILE POINT	LAP
PRE	NUM.	SUF.											

CHECKED By: _____

DATE: _____

FIGURE 6: Database Generated County-level Highway Inventory Form

After all highway information has been entered into DATAEASE, the DATAEASE file **COUNTY HW INV** contains (hopefully) all of the highway inventory information. Several reports can then be run to produce a listing of this file, sorted in any manner desired. It must be remembered that the row order of this file is unimportant. A relational database has the ability to sort this file and write another file based upon a large number of sorting options. This file is ordered (record by record) with respect to the order of the manual data entry. The user should not be concerned with row order since it can be altered as required.

The hardcopy reports written for this file should be audited by the engineering staff to insure accuracy. Two critical points must be kept in mind concerning the creation of the **COUNTY HW INV** file. First, the creation of this file is normally a one-time effort. Once the file is built, it remains fairly constant from year-to-year. The audit report needs to be reviewed annualy to see if any **new** pavements have been constructed or, old pavments have been taken out. Since both of these options are rare events, this file will remain fairly stable. This file will be used in the future to generate new 0.1 sections only if new pavement has been added or existing pavement has been taken out. Second, the data in this file must be totally accurate. Before building this file for a new district, great care should be taken to insure its accuracy. In effect, this file is the "driver file" for the database.

Further examination of Figure 5 reveals that given the County Highway Inventory File, as it resides in the database, all other data files are built from it. By use of the DATAEASE Query Language (QL), routines have been written to read the **COUNTY HW INV** file and generate the Ride, Skid, FWD, and the 0.1 Mile Segment files. Once generated, these files contain no data per se. However, each record in each file is established with the appropriate milage increments. For example, if a given highway segment contains 10.00 miles of highway, then the file creation process will generate 20 0.5-mile records for visual and FWD data; 50 0.2-mile records for ride and skid data; and 200 0.1-mile records for the master highway segment file. However, at this stage, the files do not contain the actual data. The processing time to prepare these files is minimal, i.e., one or two working days. Once prepared, these files become a "perminent" file structure that can be re-used in succeding years. If pavements are added or taken out of service, it is a simple task to update the **COUNTY HW INV** file and generate the new records and add them to the existing set.

Roadway segments entered into this file (where one record equals one unique roadway segment) are defined as follows:

> **One record in the County-level Highway Inventory File equates to one Roadway-Control Section number. In other words, each roadway segment (record) possesses a unique roadway code and a unique control section number.**

Thus, when one first builds the **COUNTY HW INV** file, the District Traffic Engineer must identify all roadway segments within the county by their unique roadway-control section values. It is this criteria that determines "uniqueness" of roadway segments.

The next phase is the in-field data collection activities. Field data collection will take months to complete. As data comes in, it can be entered manually into the appropriate file or if automated data collection is used, merged into the appropriate file. The 0.1, 0.2, and 0.5 files must be totally complete before any meaningful analysis can be run accross the files. Once completed, the database is available for virtually any type of analysis required.

The analysis aspect of the database is primarially driven from the **0.1 MASTER** file. This file contains over 90 fields of information for each 0.1-mile segment of highway within a given county. The database possesses the ability through the query language to generate a wide variety of reports, sorts, exporting of selected data in a variety of formats, and graphics generation for segment plots.

The last overview feature concerns the end-of-year functions required to prepare the files for new data. First, the entire database will be backed up to tape. By using the query language, selected data in each file will be moved into "history fields" reserved for storing cumulative historical data.. After the history fields have been updated, the actual data will be erased and the file(s) will be ready to receive current data. This process will be repeated toward the end of each year (normally in November.)

The next sections review in more detail, the specific files needed by the database. These are:

1. The County Highway Inventory File,
2. The 0.5 Visual File,
3. The 0.5 FWD File,
4. The 0.2 Ride File,
5. The 0.2 Skid File,
6. The 0.1 Master File,
7. The Miscellaneous Files.

3.2 COUNTY-LEVEL HIGHWAY INVENTORY FILE

Analysis of Figure 5 reveals that the prime source of information for beginning the database is the RI-1 file and other information maintained within the district. The system is driven from knowledge of the total highway system within a given county. District engineers must first inventory each county for 13 data elements for each highway. These are:

1. Highway Prefix

   IH,US,SH,FM,PR.

2. Highway Number

   The (up to) 4 digit designation.

3. Highway Suffix

   For PR roads: { 'blank', A,B,...,Z }.
   For FM,US,IH, and SH: { 'blank', A,S,E,W, and N }

4. Roadway code

   The lane direction code: { R,L,A, and X }.
   { R and A } designate increasing milepost directional values.The { L and X } set designates decreasing milepost directional values.

5. Beginning Reference Point

   The mile point defining the beginning of the defined highway segment where the segment first enters a given county or, where the segment is initiated within the given county for the first control section. If the roadway is comprised of multiple control sections, in general, the beginning reference point (BRP) equals the ending reference point of the previous control section segment.

6. Ending Reference Point

   The length of the control section (in tenths of miles) added to the BRP of that control section. In effect, this is the length of the control section rounded to the nearest tenth of a mile.

7. Mile Post *(Replaced by the new Reference Marker System in 1990)*

A physical marker set in the field to act as a reference point to assist in location. Mile posts are generally set every two miles (unless physical constraints prevent) and measure the distance from the point of origin of the highway within the county.

8. Mile Post Sign

A "+" or "-" displacement direction. "+" indicates an increasing mile post direction: "-" indicates a decreasing mile post direction.

9. Mile Post Displacement

Tenths of miles associated with the mile post sign "+" or "-" from the mile post sign and begins from the mile post sign.

10. Control Number

A four digit identification number associated with the given segment. This number is assigned at the time the highway segment was originally constructed.

11. Section Number

A two-digit code i.e., 01,02,..., attached to the end of the control number.

12. Beginning Mile Point

The beginning mile point associated with the origination of the control section associated with the given segment. This may not be connsistent with the beginning/ending reference point mile system. This numbering scheme is measured in thousandths of a mile and permits location within +- 5.28 feet. Note: no physical marker is placed in the field for this scheme.

13. Ending Mile Point

The length of a given control section measured to the nearest thousandth of a mile and measures the length of the control section.

14. Lap Code

A "Y" or a "N". A "Y" designates the fact that the current segment has a control section break at the beginning of the segment. An "N" signifies the current segment is a continuation of existing control section number.

This information is required to generate the 0.1 Master File and the associated 0.2 and 0.5 mile files.

An important feature of the database files is the location scheme applied by the State of Texas in locating highway segments. Under the Texas scheme, mileposts are set on 2-mile intervals (except on interstate roads which are set on 1-mile intervals). In some locations, i.e. urban areas, it may be physically impossible to set a milepost exactly at the proper point. In some instances, mileposts may be offset, or even missing. All highway segments in the 0.1, 0.2, and 0.5 mile files are referenced to these mileposts or some offset (+ or -) from the milepost.

The next section discusses the identification/location rules as defined by the Texas State Highway Department. This information is important in that the rules for identifying and locating a given highway segment are presented. This is critical because each database record in the 0.1 Master file, 0.2, and 0.5 files all contain segment location information. Thus, it is important to understand the terminology and rules used by the Texas Department of Transportation (TxDOT).

3.2.1 DIRECTION OF INCREASING MILEPOST NUMBERS

For east-west highways, the mileposts values increase from west to east for all highway types (IH,US,SH,FM and PR). For north-south highways, milepost values generally increase from north to south except for interstate highways. For interstate roadways, the mileposts increase from south to north. To view increasing milepost numbers the following rules apply:

INCREASING MILEPOST VALUES APPLY FOR....

1.	INTERSTATE HIGHWAYS	TRAVELING EAST OR NORTH
2.	US HIGHWAYS	TRAVELING EAST OR SOUTH
3.	STATE HIGHWAYS	TRAVELING EAST OR SOUTH
4.	FARM-TO-MARKET HIGHWAYS	TRAVELING EAST OR SOUTH

These rules may vary on certain highways, especially if the highway "angles" across the state. A specific example is US 59 from Laredo to Texarkana. This highway

These rules may vary on certain highways, especially if the highway "angles" across the state. A specific example is US 59 from Laredo to Texarkana. This highway travels more east-west than north-south. For milepost direction purposes, US 59 is considered to be a north-south road system. Thus, traveling east on this system is considered as traveling north! Thus, the milepost values decrease in value from Laredo to Texarkana.

Milepost locations and values are maintained on D-10 files. However, it is the responsibility of the District Pavement Manager to ensure that all mileposts within the district are accurately placed.

3.2.2 LOCATION OF MILEPOST ZERO

Milepost '0' indicates the beginning of a highway. The location of this milepost follows these rules:

1. For interstate highways, Milepost 0 (MP 0) is located at the southern-most or western-most State line. If an Interstate begins in Texas i.e. IH 20, MP 0 is located at the road's southern or western end (see Figure 7.)

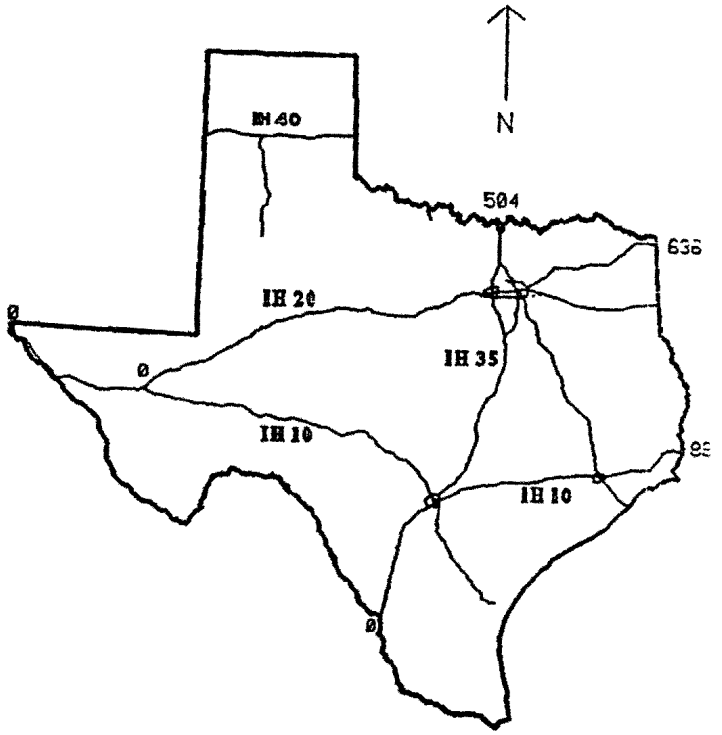


FIGURE 7: Milepost Numbering for Interstate Highways
Reprinted from: 1987 Pavement Evaluation System Rater's Manual
Texas State Department of Highways and Public Transportation-1987

2. If a non-interstate road begins within a county, MP 0 is located at the northern or western end of the road. (see Figure 8).

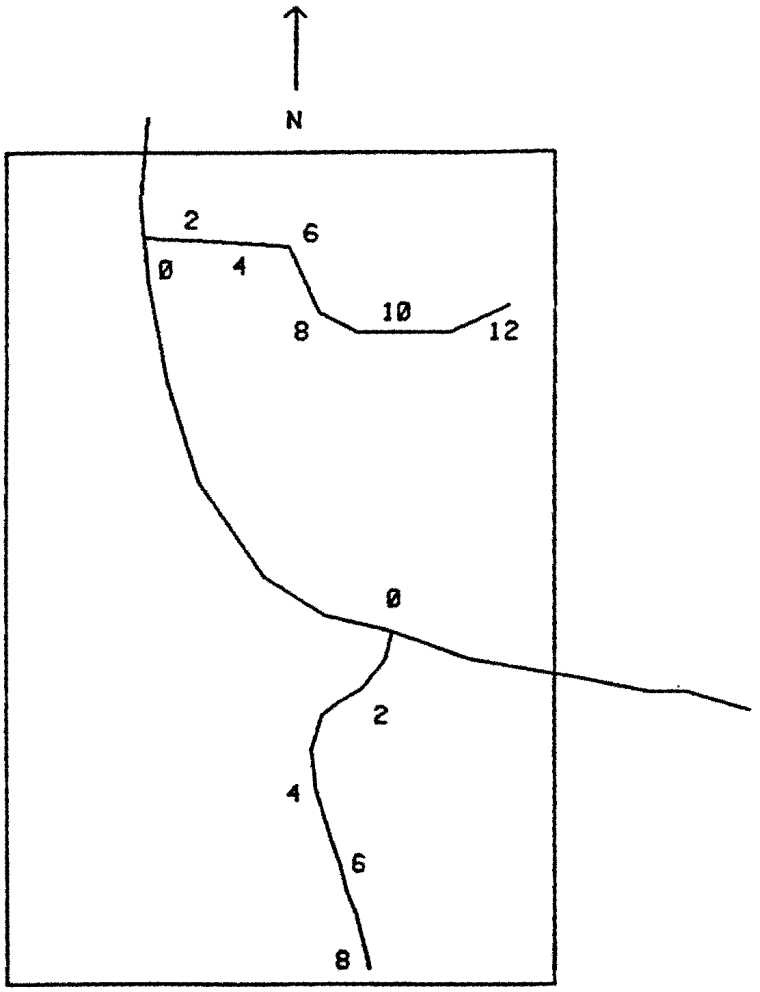


FIGURE 8: Milepost Numbering for Non-Interstate Roads within a County
Reprinted from: 1987 Pavement Evaluation System Rater's Manual
Texas State Department of Highways and Public Transportation-1987

3. If a non-interstate road crosses a county line, the milepost numbers are reset to zero. Thus, MP 0 is located at the point where the road crosses the southern or easterly county line (see Figure 9).

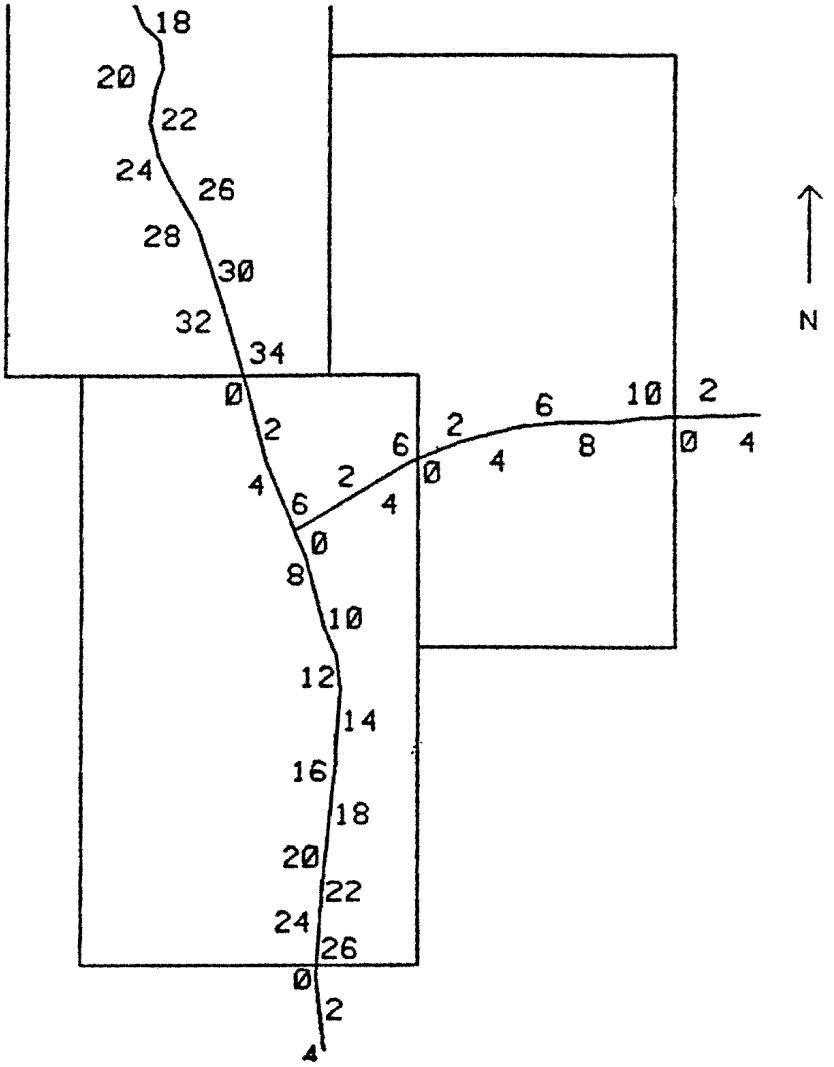


FIGURE 9: Milepost Numbering for Non-Interstate Roads Which Cross County Lines

Reprinted from: 1987 Pavement Evaluation System Rater's Manual
Texas State Department of Highways and Public Transportation-1987

3.2.3 LOCATING HIGHWAY SEGMENTS IN THE FIELD

By using the Texas State Highway Department PES Standard Report R01 (M.I.S. PES Program No. 413560), a listing of all PES 2-mile sections may be obtained for any given county. The Flexible Pavement County-level Database adheres to the use of mileposts to assist in locating any given segment. Most PES 2.0 mile segments

begin and end exactly at a milepost. However, some sections may not follow this convention. Thus, an "offset scheme" has been devised to locate segments between mileposts. This scheme employs a milepost number "+" or "-" some displacement or offset. For example, assume a segment of highway begins at milepost "34+00" and runs to milepost "34+16". This means that the segment begins exactly at milepost 34 and ends at mile post 34 + 1.6 miles. The ending milepost "34+16" indicates that the defined segment ends 1.6 miles past milepost 34.

Milepost designations are comprised of two values. The first value is the milepost (34 in this example) and a **displacement** value (+16) which stands for "1.6 miles past the previous milepost. Displacements may also be "-". If the segment end point was "34-16", this would state that the segment ended 1.6 mile before milepost 34. It is to be emphasized that these designations assume one is traveling in the direction of increasing mileposts.

3.2.4 MILEPOSTS ON CONCURRENT HIGHWAYS

In many instances, two or more highways may be "concurrent" (i.e., they travel along the same route). As such, the milepost designations should follow the major highway according to the following rules:

1. If the roads have different prefixes (IH,US, SH, or FM), the major highway is identified by the highest level prefix. Prefix ordering follows:

Ranking No.	Prefix
1	IH
2	US
3	SH
4	FM

2. If the concurrent roadways have the same prefix, identify the major highway as that highway having the lowest highway number. Example: If a streach of highway involved both US 82 and US 62, the milepost designations would adhere to the lowest number highway, i.e., US 62.

As stated in the PES manual:

"There is no consistent method used for setting mileposts on concurrent routes. Mileposts on the major highway should continue uninterrupted. However, mileposts on the minor highway(s) may be interrupted at the end of the concurrent route."

Additionally, while every road must begin with MP 0, there is no guarantee that MP 0 will be located exactly where it should be. If the road begins at an intersection, it may be physically impossible to locate the milepost marker at its exact spot (in this case, the centerline of the intersection.) Thus, the milepost may be slightly removed from its exact location. In this case, MP 0 may be referenced as MP 0+01 to signify that this milepost is 0.1 miles ahead of its exact location.

The detailed milepost rules are documented in the current version of the Pavement Evaluation System Rater's Manual available from the Texas Department of Transportation (D-18PM) in Austin, Texas. This manual (updated annually) contains detailed information concerning the location schemes and rating rules. Use of the database assumes the user is familiar with the existing State of Texas Pavement Evaluation System (PES) methodology. However, it must be emphasized that the file structure of the district-level, flexible pavement database contains different information than the State's PES file structure, nor does this database follow the data structure of the PES file system. This system is separate and distinct from the PES system.

3.2.5 DETAILS OF THE COUNTY HIGHWAY INVENTORY FILE

The County Highway Inventory File (CHIF) contains highway segment data as entered under the format shown in Figure 6. Tables 1, 2, and 3 illustrate the entire CHIF sorted three different ways. These reports were generated by DATAEASE for Cameron County (County Number 31). These "reports" was defined within the DATAEASE structure as a report function selected from the DATAEASE Main Menu - Option 3 (see Figure 10). Details regarding using the database will be presented in Section 5.

DATAEASE - MAIN MENU

1. Form Definition and Changes
2. Record Entry and Quick Reports
3. Full Reports
4. Data Base Maintenance
5. Data Base Utilities
6. Menus and Relationships
7. System Administration

FIGURE 10: DATAEASE Main Menu Screen

TABLE 1
Listing of Cameron County Highway Inventory File
Sorted by Record Number

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

SORTED BY RECORD NUMBER ONLY — PAGE NO. 1

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST DISP.	MILEPOST SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000001	31	US	0077		A	1.7	4.3	0	+	1.7	0327	08	2.650	5.325	no
000002	31	FM	0106		R	0.0	6.3	2	-	2.0	1425	03	0.000	6.345	no
000003	31	FM	0106		R	6.3	9.2	6	+	0.3	0630	02	6.350	9.241	yes
000004	31	FM	0106		R	9.2	11.4	8	+	1.2	0630	03	19.241	21.460	yes
000005	31	FM	0106		R	11.4	13.1	10	+	1.4	1138	01	0.000	1.732	yes
000006	31	FM	0106		R	13.1	15.8	12	+	1.1	2243	01	0.000	2.667	yes
000007	31	FM	0313		R	0.0	1.7	0	+	0.0	1806	01	0.000	1.736	no
000008	31	FM	0506		R	0.0	2.8	0	+	0.0	0872	02	0.000	2.831	no
000009	31	FM	0506		R	2.8	5.9	2	+	0.8	0872	02	10.000	13.110	yes
000010	31	FM	0506		R	6.5	18.5	4	+	2.5	0872	04	0.000	11.972	no
000011	31	FM	0507		R	0.0	4.9	2	-	2.0	0873	02	0.000	4.938	no
000012	31	FM	0507		R	5.4	9.1	4	+	1.4	0873	01	0.000	3.745	no
000013	31	FM	0508		R	0.0	9.1	0	+	0.0	0342	04	0.409	9.517	no
000014	31	FM	0509		R	0.0	5.5	2	-	2.0	1065	01	0.000	5.512	no
000015	31	FM	0510		R	0.0	17.1	0	+	0.0	1057	03	0.000	17.077	no
000016	31	FM	0510		R	17.1	22.5	16	+	1.1	0775	01	0.000	5.366	yes
000017	31	FM	0511		R	0.0	12.2	2	-	2.0	0684	01	0.272	12.425	no
000018	31	FM	0511		R	12.2	16.2	12	+	0.2	0684	02	12.488	16.462	yes
000019	31	FM	0675		R	0.0	4.2	2	-	2.0	1057	01	0.000	4.158	no
000020	31	FM	0732		R	0.0	6.0	2	-	2.0	1057	02	0.000	5.980	no
000021	31	FM	0733		R	0.0	3.2	2	-	2.0	0872	03	0.000	3.222	no
000022	31	FM	0800		R	0.0	5.4	2	-	2.0	1136	01	0.000	5.352	no
000023	31	FM	0800		R	5.4	16.9	4	+	1.4	1136	02	5.352	16.891	yes
000024	31	FM	0801		R	0.0	3.6	2	-	1.0	1137	01	1.026	4.578	no
000025	31	FM	0802		R	0.0	2.2	0	+	0.0	1140	01	5.000	7.221	no
000026	31	FM	0802		R	2.2	7.2	2	+	0.2	1140	02	7.121	12.111	yes
000027	31	FM	0802		R	7.2	8.6	6	+	1.2	1140	03	1.000	2.424	yes
000028	31	FM	0803		R	0.0	10.3	2	-	1.9	1138	01	1.732	12.045	no
000029	31	FM	0803		R	10.3	13.6	10	+	0.3	1138	02	0.000	3.255	yes
000030	31	FM	1419		R	0.0	12.3	2	-	1.7	1426	01	0.345	12.639	no
000031	31	FM	1420		R	0.0	4.5	2	-	2.0	1425	02	0.000	4.497	no
000032	31	FM	1421		R	0.0	6.6	4	-	4.0	0331	03	0.022	6.635	no
000033	31	FM	1479		L	0.0	1.1	2	-	2.0	1425	04	0.000	1.117	no
000034	31	FM	1479		R	0.0	9.2	2	-	2.0	1425	04	0.000	9.195	no
000035	31	FM	1575		R	0.0	4.0	2	-	2.0	1505	01	1.000	4.999	no
000036	31	FM	1561		R	0.0	4.3	0	+	0.0	3045	01	0.000	4.270	no
000037	31	FM	1577		R	0.0	5.3	2	-	2.0	1506	01	0.000	5.266	no
000038	31	FM	1595		R	0.0	1.8	0	+	0.0	2369	01	0.000	1.770	no
000039	31	FM	1595		R	1.8	4.0	0	+	1.8	0630	02	1.770	3.988	yes
000040	31	FM	1599		R	0.0	2.2	2	-	2.0	1518	01	0.000	2.220	no
000041	31	FM	1732		R	0.0	5.1	2	-	2.0	0684	03	0.000	5.057	no
000042	31	FM	1846		R	0.0	7.5	2	-	2.0	1065	02	0.000	7.468	no
000043	31	FM	1847		R	0.0	7.4	2	-	2.0	1801	02	0.000	7.381	no
000044	31	FM	1847		R	7.4	13.5	6	+	1.4	1801	02	20.000	26.055	yes
000045	31	FM	1847		R	13.5	27.8	12	+	1.5	1801	01	0.000	14.328	yes

TABLE 1 - Continued
Listing of Cameron County Highway Inventory File
Sorted by Record Number

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

SORTED BY RECORD NUMBER ONLY — PAGE NO. 2

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST	MILEPOST DISP. SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000046	31	FM	2480		R	0.0	6.8	2	-	2.0	2366	01	0.000	6.801	no
000047	31	FM	2519		R	0.0	1.8	0	+	0.0	0487	01	0.000	1.799	no
000048	31	FM	2520		R	0.0	7.0	2	-	2.0	2356	01	0.000	7.007	no
000049	31	FM	2556		R	0.0	2.3	2	-	2.0	2529	01	0.000	2.266	no
000050	31	FM	2556		R	2.3	11.8	2	+	0.3	2529	01	10.002	19.501	yes
000051	31	FM	2556		R	12.4	17.6	10	+	2.4	2529	02	10.000	15.175	no
000052	31	FM	2629		R	0.0	0.4	0	+	0.0	2621	02	0.000	0.366	no
000053	31	FM	2893		R	0.0	2.9	2	-	2.0	2965	01	0.000	2.945	no
000054	31	FM	2925		R	0.0	3.1	10	+	0.0	0630	04	0.222	3.328	no
000055	31	FM	2925		R	3.1	14.8	12	+	1.1	0630	03	3.328	14.998	yes
000056	31	FM	2994		R	0.0	4.1	0	+	0.0	3044	01	0.000	4.079	no
000057	31	FM	3067		R	0.0	2.5	0	+	0.0	3094	03	0.000	2.453	no
000058	31	FM	3068		R	0.0	1.5	0	+	0.0	0684	04	0.000	1.502	no
000059	31	FM	3069		R	0.0	3.0	0	+	0.0	3093	01	0.000	3.020	no
000060	31	FM	3195		R	0.0	1.7	0	+	0.0	3304	01	5.000	6.705	no
000061	31	FM	3248		R	0.0	5.3	4	-	4.0	2717	01	1.000	6.344	no
000062	31	PR	0100		A	11.5	13.9	22	+	1.1	0331	04	26.548	28.918	no
000063	31	PR	0100		L	10.9	13.9	22	+	0.5	0331	04	25.876	28.918	no
000064	31	PR	0100		R	0.0	7.0	12	-	0.4	0331	05	15.000	22.000	no
000065	31	PR	0100		R	7.0	13.9	18	+	0.6	0331	04	22.000	28.918	yes
000066	31	PR	0100		X	10.9	11.3	22	+	0.5	0331	04	25.876	26.231	no
000067	31	PR	0100		X	11.5	13.9	22	+	1.1	0331	04	26.548	28.918	no
000068	31	SH	0004		L	0.0	0.1	2	-	1.1	1504	01	0.973	1.087	no
000069	31	SH	0004		L	1.5	1.6	2	+	0.4	0039	10	11.476	11.618	no
000070	31	SH	0004		R	0.0	1.4	2	-	1.1	1504	01	0.973	2.365	no
000071	31	SH	0004		R	1.4	23.5	2	+	0.3	0039	10	11.365	33.458	yes
000072	31	SH	0048		L	6.3	6.8	6	+	0.3	0220	05	6.319	6.830	no
000073	31	SH	0048		R	0.0	6.8	2	-	2.0	0220	05	0.000	6.830	no
000074	31	SH	0048		R	6.8	22.3	6	+	0.8	0220	07	1.000	16.498	yes
000075	31	SH	0100		L	22.8	23.5	22	+	0.8	0331	02	22.746	23.469	no
000076	31	SH	0100		L	24.2	24.6	26	+	0.2	0331	02	24.142	24.610	no
000077	31	SH	0100		R	0.0	12.7	2	-	2.0	0331	01	0.000	12.690	no
000078	31	SH	0100		R	12.7	24.6	12	+	0.7	0331	02	12.690	24.610	yes
000079	31	SH	0107		R	0.0	8.5	0	+	0.0	0342	03	0.000	8.544	no
000080	31	SH	0107		R	8.5	8.9	8	+	0.5	0342	04	0.000	0.409	yes
000081	31	SH	0206	S	L	0.0	2.4	0	-	0.1	1425	03	10.000	12.398	no
000082	31	SH	0206	S	R	0.0	2.4	0	-	0.1	1425	03	10.000	12.398	no
000083	31	SH	0345		L	7.3	8.1	6	+	1.3	0630	01	7.289	8.043	no
000084	31	SH	0345		R	0.0	8.8	2	-	2.0	0630	01	0.035	8.805	no
000085	31	SH	0374	S	L	8.5	9.3	8	+	0.5	0039	06	8.512	9.326	no
000086	31	SH	0374	S	R	0.0	9.3	0	+	0.0	0039	06	0.000	9.326	no
000087	31	SH	0415	S	L	3.0	3.9	2	+	1.0	0039	10	3.518	4.435	no
000088	31	SH	0415	S	R	0.0	3.9	0	+	0.0	0039	10	0.546	4.435	no
000089	31	SH	0448	S	L	11.9	12.5	8	+	0.3	0327	08	8.981	9.533	no
000090	31	SH	0448	S	L	13.2	17.1	8	+	1.6	0327	08	10.281	14.150	no

TABLE 1 - Continued
Listing of Cameron County Highway Inventory File
Sorted by Record Number

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

SORTED BY RECORD NUMBER ONLY — PAGE NO. 3

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST	MILEPOST DISP. SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000091	31	SH	0448	S	L	17.1	17.6	10	+	3.5	0039	12	14.150	14.669	yes
000092	31	SH	0448	S	L	20.2	22.1	16	+	0.6	0039	12	17.241	19.122	no
000093	31	SH	0448	S	L	23.3	23.8	18	+	1.7	0039	12	20.393	20.923	no
000094	31	SH	0448	S	R	0.0	1.2	0	+	0.0	0327	11	1.000	2.226	no
000095	31	SH	0448	S	R	8.9	17.1	6	-	0.7	0327	08	6.000	14.150	no
000096	31	SH	0448	S	R	17.1	23.9	10	+	3.5	0039	12	14.150	20.923	yes
000097	31	SH	0486	S	R	0.0	1.0	0	+	0.0	1065	02	7.468	8.471	no
000098	31	SH	0499	S	R	0.0	6.8	0	+	0.0	1137	02	1.064	7.886	no
000099	31	SH	0499	S	R	6.8	7.8	6	+	0.8	1137	01	0.000	1.026	yes
000100	31	SH	0054	S	R	0.0	1.1	0	+	0.0	0039	20	0.000	1.134	no
000101	31	US	0077		A	0.0	1.1	0	+	0.0	0327	08	1.000	2.140	no
000102	31	US	0077		A	4.3	20.2	4	+	0.3	0039	07	5.325	21.183	yes
000103	31	US	0077		A	20.6	23.3	20	+	0.6	0039	08	21.677	24.393	no
000104	31	US	0077		A	27.3	30.6	26	+	1.3	0039	08	28.322	31.629	no
000105	31	US	0077		A	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000106	31	US	0077		A	32.9	36.8	32	+	0.9	0039	16	33.879	37.770	yes
000107	31	US	0077		L	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no
000108	31	US	0077		L	4.3	20.5	4	+	0.3	0039	07	5.325	21.543	yes
000109	31	US	0077		L	20.5	30.6	20	+	0.5	0039	08	21.543	31.629	yes
000110	31	US	0077		L	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000111	31	US	0077		L	32.9	36.9	32	+	0.9	0039	16	33.879	37.876	yes
000112	31	US	0077		L	36.8	36.9	36	+	0.8	1504	01	5.021	5.113	yes
000113	31	US	0077		R	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no
000114	31	US	0077		R	4.3	20.5	4	+	0.3	0039	07	5.325	21.543	yes
000115	31	US	0077		R	20.5	30.6	20	+	0.5	0039	08	21.543	31.629	yes
000116	31	US	0077		R	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000117	31	US	0077		R	32.9	36.9	32	+	0.9	0039	16	33.879	37.876	yes
000118	31	US	0077		R	36.8	37.7	36	+	0.8	1504	01	5.021	5.925	yes
000119	31	US	0077		R	37.7	37.8	36	+	1.7	0039	11	0.000	0.060	yes
000120	31	US	0077		X	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no
000121	31	US	0077		X	4.3	20.2	4	+	0.3	0039	07	5.325	21.183	yes
000122	31	US	0077		X	20.5	23.4	20	+	0.5	0039	08	21.543	24.407	no
000123	31	US	0077		X	24.5	24.7	24	+	0.5	0039	08	25.495	25.741	no
000124	31	US	0077		X	27.3	27.7	26	+	1.3	0039	08	28.322	28.720	no
000125	31	US	0077		X	28.1	30.6	26	+	2.1	0039	08	29.184	31.629	no
000126	31	US	0077		X	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000127	31	US	0077		X	32.9	36.8	32	+	0.9	0039	16	33.879	37.770	yes
000128	31	US	0083		A	0.0	8.6	2	-	2.0	0039	19	0.000	8.616	no
000129	31	US	0083		L	0.0	9.8	2	-	2.0	0039	19	0.000	9.838	no
000130	31	US	0083		R	0.0	9.8	2	-	2.0	0039	19	0.000	9.838	no
000131	31	US	0083		X	0.0	8.5	2	-	2.0	0039	19	0.000	8.507	no
000132	31	US	0281		R	0.0	12.4	2	-	2.0	0220	03	0.000	12.361	no
000133	31	US	0281		R	12.4	18.7	12	+	0.4	0220	04	12.361	18.652	yes
000134	31	US	0281		R	18.7	26.1	18	+	0.7	0220	04	28.606	35.956	yes
000135	31	US	0281		R	26.1	26.6	26	+	0.1	0220	05	8.000	8.542	yes

TABLE 2
Listing of Cameron County Highway Inventory File
Multiple Sort Criteria
Sorted by: County Number, Highway Prefix, Highway Number, Roadway, and Beginning Reference Point

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

MULTIPLE SORT CRITERIA

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST	MILEPOST DISP. SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000064	31	PR	0100		R	0.0	7.0	12	-	0.4	0331	05	15.000	22.000	no
000065	31	PR	0100		R	7.0	13.9	18	+	0.6	0331	04	22.000	28.918	yes
000066	31	PR	0100		X	10.9	11.3	22	+	0.5	0331	04	25.876	26.231	no
000063	31	PR	0100		L	10.9	13.9	22	+	0.5	0331	04	25.876	28.918	no
000062	31	PR	0100		A	11.5	13.9	22	+	1.1	0331	04	26.548	28.918	no
000067	31	PR	0100		X	11.5	13.9	22	+	1.1	0331	04	26.548	28.918	no
000002	31	FM	0106		R	0.0	6.3	2	-	2.0	1425	03	0.000	6.345	no
000003	31	FM	0106		R	6.3	9.2	6	+	0.3	0630	02	6.350	9.241	yes
000004	31	FM	0106		R	9.2	11.4	8	+	1.2	0630	03	19.241	21.460	yes
000005	31	FM	0106		R	11.4	13.1	10	+	1.4	1138	01	0.000	1.732	yes
000006	31	FM	0106		R	13.1	15.8	12	+	1.1	2243	01	0.000	2.667	yes
000007	31	FM	0313		R	0.0	1.7	0	+	0.0	1806	01	0.000	1.736	no
000008	31	FM	0506		R	0.0	2.8	0	+	0.0	0872	02	0.000	2.831	no
000009	31	FM	0506		R	2.8	5.9	2	+	0.8	0872	02	10.000	13.110	yes
000010	31	FM	0506		R	6.5	18.5	4	+	2.5	0872	04	0.000	11.972	no
000011	31	FM	0507		R	0.0	4.9	2	-	2.0	0873	02	0.000	4.938	no
000012	31	FM	0507		R	5.4	9.1	4	+	1.4	0873	01	0.000	3.745	no
000013	31	FM	0508		R	0.0	9.1	0	+	0.0	0342	04	0.409	9.517	no
000014	31	FM	0509		R	0.0	5.5	2	-	2.0	1065	01	0.000	5.512	no
000015	31	FM	0510		R	0.0	17.1	0	+	0.0	1057	03	0.000	17.077	no
000016	31	FM	0510		R	17.1	22.5	16	+	1.1	0775	01	0.000	5.366	yes
000017	31	FM	0511		R	0.0	12.2	2	-	2.0	0684	01	0.272	12.425	no
000018	31	FM	0511		R	12.2	16.2	12	+	0.2	0684	02	12.488	16.462	yes
000019	31	FM	0675		R	0.0	4.2	2	-	2.0	1057	01	0.000	4.158	no
000020	31	FM	0732		R	0.0	6.0	2	-	2.0	1057	02	0.000	5.980	no
000021	31	FM	0733		R	0.0	3.2	2	-	2.0	0872	03	0.000	3.222	no
000022	31	FM	0800		R	0.0	5.4	2	-	2.0	1136	01	0.000	5.352	no
000023	31	FM	0800		R	5.4	16.9	4	+	1.4	1136	02	5.352	16.891	yes
000024	31	FM	0801		R	0.0	3.6	2	-	1.0	1137	01	1.026	4.578	no
000025	31	FM	0802		R	0.0	2.2	0	+	0.0	1140	01	5.000	7.221	no
000026	31	FM	0802		R	2.2	7.2	2	+	0.2	1140	02	7.121	12.111	yes
000027	31	FM	0802		R	7.2	8.6	6	+	1.2	1140	03	1.000	2.424	yes
000028	31	FM	0803		R	0.0	10.3	2	-	1.9	1138	01	1.732	12.045	no
000029	31	FM	0803		R	10.3	13.6	10	+	0.3	1138	02	0.000	3.255	yes
000030	31	FM	1419		R	0.0	12.3	2	-	1.7	1426	01	0.345	12.639	no
000031	31	FM	1420		R	0.0	4.5	2	-	2.0	1425	02	0.000	4.497	no
000032	31	FM	1421		R	0.0	6.6	4	-	4.0	0331	03	0.022	6.635	no
000034	31	FM	1479		R	0.0	9.2	2	-	2.0	1425	04	0.000	9.195	no
000033	31	FM	1479		L	0.0	1.1	2	-	2.0	1425	04	0.000	1.117	no
000036	31	FM	1561		R	0.0	4.3	0	+	0.0	3045	01	0.000	4.270	no
000035	31	FM	1575		R	0.0	4.0	2	-	2.0	1505	01	1.000	4.999	no
000037	31	FM	1577		R	0.0	5.3	2	-	2.0	1506	01	0.000	5.266	no
000038	31	FM	1595		R	0.0	1.8	0	+	0.0	2369	01	0.000	1.770	no
000039	31	FM	1595		R	1.8	4.0	0	+	1.8	0630	02	1.770	3.988	yes
000040	31	FM	1599		R	0.0	2.2	2	-	2.0	1518	01	0.000	2.220	no

TABLE 2 - Continued
Listing of Cameron County Highway Inventory File
Multiple Sort Criteria

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

MULTIPLE SORT CRITERIA — PAGE NO. 2

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST	MILEPOST DISP. SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000041	31	FM	1732		R	0.0	5.1	2	-	2.0	0684	03	0.000	5.057	no
000042	31	FM	1846		R	0.0	7.5	2	-	2.0	1065	02	0.000	7.468	no
000043	31	FM	1847		R	0.0	7.4	2	-	2.0	1801	02	0.000	7.381	no
000044	31	FM	1847		R	7.4	13.5	6	+	1.4	1801	02	20.000	26.055	yes
000045	31	FM	1847		R	13.5	27.8	12	+	1.5	1801	01	0.000	14.328	yes
000046	31	FM	2480		R	0.0	6.8	2	-	2.0	2366	01	0.000	6.801	no
000047	31	FM	2519		R	0.0	1.8	0	+	0.0	0487	01	0.000	1.799	no
000048	31	FM	2520		R	0.0	7.0	2	-	2.0	2356	01	0.000	7.007	no
000049	31	FM	2556		R	0.0	2.3	2	-	2.0	2529	01	0.000	2.266	no
000050	31	FM	2556		R	2.3	11.8	2	+	0.3	2529	01	10.002	19.501	yes
000051	31	FM	2556		R	12.4	17.6	10	+	2.4	2529	02	10.000	15.175	no
000052	31	FM	2629		R	0.0	0.4	0	+	0.0	2621	02	0.000	0.366	no
000053	31	FM	2893		R	0.0	2.9	2	-	2.0	2965	01	0.000	2.945	no
000054	31	FM	2925		R	0.0	3.1	10	+	0.0	0630	04	0.222	3.328	no
000055	31	FM	2925		R	3.1	14.8	12	+	1.1	0630	03	3.328	14.998	yes
000056	31	FM	2994		R	0.0	4.1	0	+	0.0	3044	01	0.000	4.079	no
000057	31	FM	3067		R	0.0	2.5	0	+	0.0	3094	03	0.000	2.453	no
000058	31	FM	3068		R	0.0	1.5	0	+	0.0	0684	04	0.000	1.502	no
000059	31	FM	3069		R	0.0	3.0	0	+	0.0	3093	01	0.000	3.020	no
000060	31	FM	3195		R	0.0	1.7	0	+	0.0	3304	01	5.000	6.705	no
000061	31	FM	3248		R	0.0	5.3	4	-	4.0	2717	01	1.000	6.344	no
000068	31	SH	0004		L	0.0	0.1	2	-	1.1	1504	01	0.973	1.087	no
000070	31	SH	0004		R	0.0	1.4	2	-	1.1	1504	01	0.973	2.365	no
000071	31	SH	0004		R	1.4	23.5	2	+	0.3	0039	10	11.365	33.458	yes
000069	31	SH	0004		L	1.5	1.6	2	+	0.4	0039	10	11.476	11.618	no
000073	31	SH	0048		R	0.0	6.8	2	-	2.0	0220	05	0.000	6.830	no
000072	31	SH	0048		L	6.3	6.8	6	+	0.3	0220	05	6.319	6.830	no
000074	31	SH	0048		R	6.8	22.3	6	+	0.8	0220	07	1.000	16.498	yes
000100	31	SH	0054	S	R	0.0	1.1	0	+	0.0	0039	20	0.000	1.134	no
000077	31	SH	0100		R	0.0	12.7	2	-	2.0	0331	01	0.000	12.690	no
000078	31	SH	0100		R	12.7	24.6	12	+	0.7	0331	02	12.690	24.610	yes
000075	31	SH	0100		L	22.8	23.5	22	+	0.8	0331	02	22.746	23.469	no
000076	31	SH	0100		L	24.2	24.6	26	+	0.2	0331	02	24.142	24.610	no
000079	31	SH	0107		R	0.0	8.5	0	+	0.0	0342	03	0.000	8.544	no
000080	31	SH	0107		R	8.5	8.9	8	+	0.5	0342	04	0.000	0.409	yes
000081	31	SH	0206	S	L	0.0	2.4	0	-	0.1	1425	03	10.000	12.398	no
000082	31	SH	0206	S	R	0.0	2.4	0	-	0.1	1425	03	10.000	12.398	no
000084	31	SH	0345		R	0.0	8.8	2	-	2.0	0630	01	0.035	8.805	no
000083	31	SH	0345		L	7.3	8.1	6	+	1.3	0630	01	7.289	8.043	no
000086	31	SH	0374	S	R	0.0	9.3	0	+	0.0	0039	06	0.000	9.326	no
000085	31	SH	0374	S	L	8.5	9.3	8	+	0.5	0039	06	8.512	9.326	no
000088	31	SH	0415	S	R	0.0	3.9	0	+	0.0	0039	10	0.546	4.435	no
000087	31	SH	0415	S	L	3.0	3.9	2	+	1.0	0039	10	3.518	4.435	no
000094	31	SH	0448	S	R	0.0	1.2	0	+	0.0	0327	11	1.000	2.226	no
000095	31	SH	0448	S	R	8.9	17.1	6	-	0.7	0327	08	6.000	14.150	no

TABLE 2 - Continued
Listing of Cameron County Highway Inventory File
Multiple Sort Criteria

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

MULTIPLE SORT CRITERIA — PAGE NO. 3

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST	MILEPOST DISP. SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000089	31	SH	0448	S	L	11.9	12.5	8	+	0.3	0327	08	8.981	9.533	no
000090	31	SH	0448	S	L	13.2	17.1	8	+	1.6	0327	08	10.281	14.150	no
000096	31	SH	0448	S	R	17.1	23.9	10	+	3.5	0039	12	14.150	20.923	yes
000091	31	SH	0448	S	L	17.1	17.6	10	+	3.5	0039	12	14.150	14.669	yes
000092	31	SH	0448	S	L	20.2	22.1	16	+	0.6	0039	12	17.241	19.122	no
000093	31	SH	0448	S	L	23.3	23.8	18	+	1.7	0039	12	20.393	20.923	no
000097	31	SH	0486	S	R	0.0	1.0	0	+	0.0	1065	02	7.468	8.471	no
000098	31	SH	0499	S	R	0.0	6.8	0	+	0.0	1137	02	1.064	7.886	no
000099	31	SH	0499	S	R	6.8	7.8	6	+	0.8	1137	01	0.000	1.026	yes
000107	31	US	0077		L	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no
000113	31	US	0077		R	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no
000101	31	US	0077		A	0.0	1.1	0	+	0.0	0327	08	1.000	2.140	no
000120	31	US	0077		X	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no
000001	31	US	0077		A	1.7	4.3	0	+	1.7	0327	08	2.650	5.325	no
000102	31	US	0077		A	4.3	20.2	4	+	0.3	0039	07	5.325	21.183	yes
000121	31	US	0077		X	4.3	20.2	4	+	0.3	0039	07	5.325	21.183	yes
000108	31	US	0077		L	4.3	20.5	4	+	0.3	0039	07	5.325	21.543	yes
000114	31	US	0077		R	4.3	20.5	4	+	0.3	0039	07	5.325	21.543	yes
000109	31	US	0077		L	20.5	30.6	20	+	0.5	0039	08	21.543	31.629	yes
000115	31	US	0077		R	20.5	30.6	20	+	0.5	0039	08	21.543	31.629	yes
000122	31	US	0077		X	20.5	23.4	20	+	0.5	0039	08	21.543	24.407	no
000103	31	US	0077		A	20.6	23.3	20	+	0.6	0039	08	21.677	24.393	no
000123	31	US	0077		X	24.5	24.7	24	+	0.5	0039	08	25.495	25.741	no
000104	31	US	0077		A	27.3	30.6	26	+	1.3	0039	08	28.322	31.629	no
000124	31	US	0077		X	27.3	27.7	26	+	1.3	0039	08	28.322	28.720	no
000125	31	US	0077		X	28.1	30.6	26	+	2.1	0039	08	29.184	31.629	no
000110	31	US	0077		L	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000116	31	US	0077		R	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000126	31	US	0077		X	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000105	31	US	0077		A	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000117	31	US	0077		R	32.9	36.9	32	+	0.9	0039	16	33.879	37.876	yes
000111	31	US	0077		L	32.9	36.9	32	+	0.9	0039	16	33.879	37.876	yes
000106	31	US	0077		A	32.9	36.8	32	+	0.9	0039	16	33.879	37.770	yes
000127	31	US	0077		X	32.9	36.8	32	+	0.9	0039	16	33.879	37.770	yes
000118	31	US	0077		R	36.8	37.7	36	+	0.8	1504	01	5.021	5.925	yes
000112	31	US	0077		L	36.8	36.9	36	+	0.8	1504	01	5.021	5.113	yes
000119	31	US	0077		R	37.7	37.8	36	+	1.7	0039	11	0.000	0.060	yes
000131	31	US	0083		X	0.0	8.5	2	-	2.0	0039	19	0.000	8.507	no
000129	31	US	0083		L	0.0	9.8	2	-	2.0	0039	19	0.000	9.838	no
000130	31	US	0083		R	0.0	9.8	2	-	2.0	0039	19	0.000	9.838	no
000128	31	US	0083		A	0.0	8.6	2	-	2.0	0039	19	0.000	8.616	no
000132	31	US	0281		R	0.0	12.4	2	-	2.0	0220	03	0.000	12.361	no
000133	31	US	0281		R	12.4	18.7	12	+	0.4	0220	04	12.361	18.652	yes
000134	31	US	0281		R	18.7	26.1	18	+	0.7	0220	04	28.606	35.956	yes
000135	31	US	0281		R	26.1	26.6	26	+	0.1	0220	05	8.000	8.542	yes

TABLE 3
Listing of Cameron County Highway Inventory File Sorted by Control Section Number

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

SORTED BY CONTROL SECTION NUMBER — PAGE NO. 1

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST	MILEPOST DISP. SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000085	31	SH	0374	S	L	8.5	9.3	8	+	0.5	0039	06	8.512	9.326	no
000086	31	SH	0374	S	R	0.0	9.3	0	+	0.0	0039	06	0.000	9.326	no
000114	31	US	0077		R	4.3	20.5	4	+	0.3	0039	07	5.325	21.543	yes
000108	31	US	0077		L	4.3	20.5	4	+	0.3	0039	07	5.325	21.543	yes
000121	31	US	0077		X	4.3	20.2	4	+	0.3	0039	07	5.325	21.183	yes
000102	31	US	0077		A	4.3	20.2	4	+	0.3	0039	07	5.325	21.183	yes
000103	31	US	0077		A	20.6	23.3	20	+	0.6	0039	08	21.677	24.393	no
000109	31	US	0077		L	20.5	30.6	20	+	0.5	0039	08	21.543	31.629	yes
000125	31	US	0077		X	28.1	30.6	26	+	2.1	0039	08	29.184	31.629	no
000124	31	US	0077		X	27.3	27.7	26	+	1.3	0039	08	28.322	28.720	no
000104	31	US	0077		A	27.3	30.6	26	+	1.3	0039	08	28.322	31.629	no
000122	31	US	0077		X	20.5	23.4	20	+	0.5	0039	08	21.543	24.407	no
000115	31	US	0077		R	20.5	30.6	20	+	0.5	0039	08	21.543	31.629	yes
000123	31	US	0077		X	24.5	24.7	24	+	0.5	0039	08	25.495	25.741	no
000116	31	US	0077		R	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000126	31	US	0077		X	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000105	31	US	0077		A	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000110	31	US	0077		L	30.6	32.9	30	+	0.6	0039	09	31.629	33.879	yes
000071	31	SH	0004		R	1.4	23.5	2	+	0.3	0039	10	11.365	33.458	yes
000088	31	SH	0415	S	R	0.0	3.9	0	+	0.0	0039	10	0.546	4.435	no
000087	31	SH	0415	S	L	3.0	3.9	2	+	1.0	0039	10	3.518	4.435	no
000069	31	SH	0004		L	1.5	1.6	2	+	0.4	0039	10	11.476	11.618	no
000119	31	US	0077		R	37.7	37.8	36	+	1.7	0039	11	0.000	0.060	yes
000096	31	SH	0448	S	R	17.1	23.9	10	+	3.5	0039	12	14.150	20.923	yes
000092	31	SH	0448	S	L	20.2	22.1	16	+	0.6	0039	12	17.241	19.122	no
000093	31	SH	0448	S	L	23.3	23.8	18	+	1.7	0039	12	20.393	20.923	no
000091	31	SH	0448	S	L	17.1	17.6	10	+	3.5	0039	12	14.150	14.669	yes
000117	31	US	0077		R	32.9	36.9	32	+	0.9	0039	16	33.879	37.876	yes
000127	31	US	0077		X	32.9	36.8	32	+	0.9	0039	16	33.879	37.770	yes
000111	31	US	0077		L	32.9	36.9	32	+	0.9	0039	16	33.879	37.876	yes
000106	31	US	0077		A	32.9	36.8	32	+	0.9	0039	16	33.879	37.770	yes
000129	31	US	0083		L	0.0	9.8	2	-	2.0	0039	19	0.000	9.838	no
000130	31	US	0083		R	0.0	9.8	2	-	2.0	0039	19	0.000	9.838	no
000128	31	US	0083		A	0.0	8.6	2	-	2.0	0039	19	0.000	8.616	no
000131	31	US	0083		X	0.0	8.5	2	-	2.0	0039	19	0.000	8.507	no
000100	31	SH	0054	S	R	0.0	1.1	0	+	0.0	0039	20	0.000	1.134	no
000132	31	US	0281		R	0.0	12.4	2	-	2.0	0220	03	0.000	12.361	no
000134	31	US	0281		R	18.7	26.1	18	+	0.7	0220	04	28.606	35.956	yes
000133	31	US	0281		R	12.4	18.7	12	+	0.4	0220	04	12.361	18.652	yes
000072	31	SH	0048		L	6.3	6.8	6	+	0.3	0220	05	6.319	6.830	no
000135	31	US	0281		R	26.1	26.6	26	+	0.1	0220	05	8.000	8.542	yes
000073	31	SH	0048		R	0.0	6.8	2	-	2.0	0220	05	0.000	6.830	no
000074	31	SH	0048		R	6.8	22.3	6	+	0.8	0220	07	1.000	16.498	yes
000001	31	US	0077		A	1.7	4.3	0	+	1.7	0327	08	2.650	5.325	no
000120	31	US	0077		X	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no

TABLE 3 - Continued
Listing of Cameron County Highway Inventory File
Sorted by Control Section Number

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

SORTED BY CONTROL SECTION NUMBER — PAGE NO. 2

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST	MILEPOST DISP. SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000090	31	SH	0448	S	L	13.2	17.1	8	+	1.6	0327	08	10.281	14.150	no
000107	31	US	0077		L	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no
000089	31	SH	0448	S	L	11.9	12.5	8	+	0.3	0327	08	8.981	9.533	no
000095	31	SH	0448	S	R	8.9	17.1	6	-	0.7	0327	08	6.000	14.150	no
000101	31	US	0077		A	0.0	1.1	0	+	0.0	0327	08	1.000	2.140	no
000113	31	US	0077		R	0.0	4.3	0	+	0.0	0327	08	1.000	5.325	no
000094	31	SH	0448	S	R	0.0	1.2	0	+	0.0	0327	11	1.000	2.226	no
000077	31	SH	0100		R	0.0	12.7	2	-	2.0	0331	01	0.000	12.690	no
000075	31	SH	0100		L	22.8	23.5	22	+	0.8	0331	02	22.746	23.469	no
000078	31	SH	0100		R	12.7	24.6	12	+	0.7	0331	02	12.690	24.610	yes
000076	31	SH	0100		L	24.2	24.6	24	+	0.2	0331	02	24.142	24.610	no
000032	31	FM	1421		R	0.0	6.6	4	-	4.0	0331	03	0.022	6.635	no
000063	31	PR	0100		L	10.9	13.9	22	+	0.5	0331	04	25.876	28.918	no
000065	31	PR	0100		R	7.0	13.9	18	+	0.6	0331	04	22.000	28.918	yes
000062	31	PR	0100		A	11.5	13.9	22	+	1.1	0331	04	26.548	28.918	no
000067	31	PR	0100		X	11.5	13.9	22	+	1.1	0331	04	26.548	28.918	no
000066	31	PR	0100		X	10.9	11.3	22	+	0.5	0331	04	25.876	26.231	no
000064	31	PR	0100		R	0.0	7.0	12	-	0.4	0331	05	15.000	22.000	no
000079	31	SH	0107		R	0.0	8.5	0	+	0.0	0342	03	0.000	8.544	no
000013	31	FM	0508		R	0.0	9.1	0	+	0.0	0342	04	0.409	9.517	no
000080	31	SH	0107		R	8.5	8.9	8	+	0.5	0342	04	0.000	0.409	yes
000047	31	FM	2519		R	0.0	1.8	0	+	0.0	0487	01	0.000	1.799	no
000083	31	SH	0345		L	7.3	8.1	6	+	1.3	0630	01	7.289	8.043	no
000084	31	SH	0345		R	0.0	8.8	2	-	2.0	0630	01	0.035	8.805	no
000039	31	FM	1595		R	1.8	4.0	0	+	1.8	0630	02	1.770	3.988	yes
000003	31	FM	0106		R	6.3	9.2	6	+	0.3	0630	02	6.350	9.241	yes
000055	31	FM	2925		R	3.1	14.8	12	+	1.1	0630	03	3.328	14.998	yes
000004	31	FM	0106		R	9.2	11.4	8	+	1.2	0630	03	19.241	21.460	yes
000054	31	FM	2925		R	0.0	3.1	10	+	0.0	0630	04	0.222	3.328	no
000017	31	FM	0511		R	0.0	12.2	2	-	2.0	0684	01	0.272	12.425	no
000018	31	FM	0511		R	12.2	16.2	12	+	0.2	0684	02	12.488	16.462	yes
000041	31	FM	1732		R	0.0	5.1	2	-	2.0	0684	03	0.000	5.057	no
000058	31	FM	3068		R	0.0	1.5	0	+	0.0	0684	04	0.000	1.502	no
000016	31	FM	0510		R	17.1	22.5	16	+	1.1	0775	01	0.000	5.366	yes
000009	31	FM	0506		R	2.8	5.9	2	+	0.8	0872	02	10.000	13.110	yes
000008	31	FM	0506		R	0.0	2.8	0	+	0.0	0872	02	0.000	2.831	no
000021	31	FM	0733		R	0.0	3.2	2	-	2.0	0872	03	0.000	3.222	no
000010	31	FM	0506		R	6.5	18.5	4	+	2.5	0872	04	0.000	11.972	no
000012	31	FM	0507		R	5.4	9.1	4	+	1.4	0873	01	0.000	3.745	no
000011	31	FM	0507		R	0.0	4.9	2	-	2.0	0873	02	0.000	4.938	no
000019	31	FM	0675		R	0.0	4.2	2	-	2.0	1057	01	0.000	4.158	no
000020	31	FM	0732		R	0.0	6.0	2	-	2.0	1057	02	0.000	5.980	no
000015	31	FM	0510		R	0.0	17.1	0	+	0.0	1057	03	0.000	17.077	no
000014	31	FM	0509		R	0.0	5.5	2	-	2.0	1065	01	0.000	5.512	no
000097	31	SH	0486	S	R	0.0	1.0	0	+	0.0	1065	02	7.468	8.471	no

TABLE 3 - Continued
Listing of Cameron County Highway Inventory File
Sorted by Control Section Number

COUNTY LEVEL HIGHWAY INVENTORY REPORT
DISTRICT 21, PHARR, TEXAS
CAMERON COUNTY

SORTED BY CONTROL SECTION NUMBER — PAGE NO. 3

Record Number	COUNTY NUMBER	HIGHWAY PREFIX	HIGHWAY NUMBER	HIGHWAY SUFFIX	ROADWAY	BEG. REF. POINT	END. REF. POINT	MILEPOST	MILEPOST DISP. SIGN	MILEPOST VALUE	CONTROL SECTION		BEG. MILEPOINT	END. MILEPOINT	LAP
000042	31	FM	1846		R	0.0	7.5	2	-	2.0	1065	02	0.000	7.468	no
000022	31	FM	0800		R	0.0	5.4	2	-	2.0	1136	01	0.000	5.352	no
000023	31	FM	0800		R	5.4	16.9	4	+	1.4	1136	02	5.352	16.891	yes
000099	31	SH	0499	S	R	6.8	7.8	6	+	0.8	1137	01	0.000	1.026	yes
000024	31	FM	0801		R	0.0	3.6	2	-	1.0	1137	01	1.026	4.578	no
000098	31	SH	0499	S	R	0.0	6.8	0	+	0.0	1137	02	1.064	7.886	no
000028	31	FM	0803		R	0.0	10.3	2	-	1.9	1138	01	1.732	12.045	no
000005	31	FM	0106		R	11.4	13.1	10	+	1.4	1138	01	0.000	1.732	yes
000029	31	FM	0803		R	10.3	13.6	10	+	0.3	1138	02	0.000	3.255	yes
000025	31	FM	0802		R	0.0	2.2	0	+	0.0	1140	01	5.000	7.221	no
000026	31	FM	0802		R	2.2	7.2	2	+	0.2	1140	02	7.121	12.111	yes
000027	31	FM	0802		R	7.2	8.6	6	+	1.2	1140	03	1.000	2.424	yes
000031	31	FM	1420		R	0.0	4.5	2	-	2.0	1425	02	0.000	4.497	no
000082	31	SH	0206	S	R	0.0	2.4	0	-	0.1	1425	03	10.000	12.398	no
000002	31	FM	0106		R	0.0	6.3	2	-	2.0	1425	03	0.000	6.345	no
000081	31	SH	0206	S	L	0.0	2.4	0	-	0.1	1425	03	10.000	12.398	no
000034	31	FM	1479		R	0.0	9.2	2	-	2.0	1425	04	0.000	9.195	no
000033	31	FM	1479		L	0.0	1.1	2	-	2.0	1425	04	0.000	1.117	no
000030	31	FM	1419		R	0.0	12.3	2	-	1.7	1426	01	0.345	12.639	no
000070	31	SH	0004		R	0.0	1.4	2	-	1.1	1504	01	0.973	2.365	no
000068	31	SH	0004		L	0.0	0.1	2	-	1.1	1504	01	0.973	1.087	no
000118	31	US	0077		R	36.8	37.7	36	+	0.8	1504	01	5.021	5.925	yes
000112	31	US	0077		L	36.8	36.9	36	+	0.8	1504	01	5.021	5.113	yes
000035	31	FM	1575		R	0.0	4.0	2	-	2.0	1505	01	1.000	4.999	no
000037	31	FM	1577		R	0.0	5.3	2	-	2.0	1506	01	0.000	5.266	no
000040	31	FM	1599		R	0.0	2.2	2	-	2.0	1518	01	0.000	2.220	no
000045	31	FM	1847		R	13.5	27.8	12	+	1.5	1801	01	0.000	14.328	yes
000044	31	FM	1847		R	7.4	13.5	6	+	1.4	1801	02	20.000	26.055	yes
000043	31	FM	1847		R	0.0	7.4	2	-	2.0	1801	02	0.000	7.381	no
000007	31	FM	0313		R	0.0	1.7	0	+	0.0	1806	01	0.000	1.736	no
000006	31	FM	0106		R	13.1	15.8	12	+	1.1	2243	01	0.000	2.667	yes
000048	31	FM	2520		R	0.0	7.0	2	-	2.0	2356	01	0.000	7.007	no
000046	31	FM	2480		R	0.0	6.8	2	-	2.0	2366	01	0.000	6.801	no
000038	31	FM	1595		R	0.0	1.8	0	+	0.0	2369	01	0.000	1.770	no
000049	31	FM	2556		R	0.0	2.3	2	-	2.0	2529	01	0.000	2.266	no
000050	31	FM	2556		R	2.3	11.8	2	+	0.3	2529	01	10.002	19.501	yes
000051	31	FM	2556		R	12.4	17.6	10	+	2.4	2529	02	10.000	15.175	no
000052	31	FM	2629		R	0.0	0.4	0	+	0.0	2621	02	0.000	0.366	no
000061	31	FM	3248		R	0.0	5.3	4	-	4.0	2717	01	1.000	6.344	no
000053	31	FM	2893		R	0.0	2.9	2	-	2.0	2965	01	0.000	2.945	no
000056	31	FM	2994		R	0.0	4.1	0	+	0.0	3044	01	0.000	4.079	no
000036	31	FM	1561		R	0.0	4.3	0	+	0.0	3045	01	0.000	4.270	no
000059	31	FM	3069		R	0.0	3.0	0	+	0.0	3093	01	0.000	3.020	no
000057	31	FM	3067		R	0.0	2.5	0	+	0.0	3094	03	0.000	2.453	no
000060	31	FM	3195		R	0.0	1.7	0	+	0.0	3304	01	5.000	6.705	no

3.2.5.1 INTERPRETATION OF THE COUNTY-LEVEL HIGHWAY FILE RECORDS

As shown in Tables 1, 2, and 3, the CHIF records may be sorted in any manner desired from within the query language. It has also been stated that each record within this file constitutes one unique control section-roadway highway segment. In this section, a series of control section roadways will be selected from the CHIF for illustration purposes.

To illustrate, examine the first six records shown in Table 2. These records deal with Park Road 100 [PR100], Cameron County. PR100 is the main highway located on South Padre Island. This section is illustrated in Figure 11.

Analysis of the PR100 records shown in Table 2 coordinated with Figure 11 reveal that record limits in the CHIF are defined by lane, for each control section. When a lane is added, a new record will be created and added to the CHIF. Basically, a completed record in the CHIF ends when (a) the lane ends (see record 000066), (b) a control section ends, or (c) the road ends (see record no. 000063).

Figure 11 also reveals the difficulties that may be expected during construction of the CHIF records from RI-1 data. Although the Cameron County CHIF (Tables 1,2,or 3) list six records for PR100, Figure 11 shows only four records (000063, 000064, 000065, and 000066). Two frontage road records (000062 and 000067) from MP 26.548 to MP 28.918 were inadvertently included in the Cameron CHIF because the RI-1 drawings of this area looked more like parallel frontage roads rather than a long bridge (which it really is). However, this is not a critical error since no field data would be collected on the two "extra" sections. The absence of field data should alert District users to problem sections. In this example, the erroneous records should be deleted from the CHIF to avoid future problems.

To insure that all field data has been collected, a "Missing Data" batch run is made across the 0.2 and 0.5 files to determine those segments with no data. Missing segment reports are then generated and field crews are directed back into the District to collect the data from the missing segments.

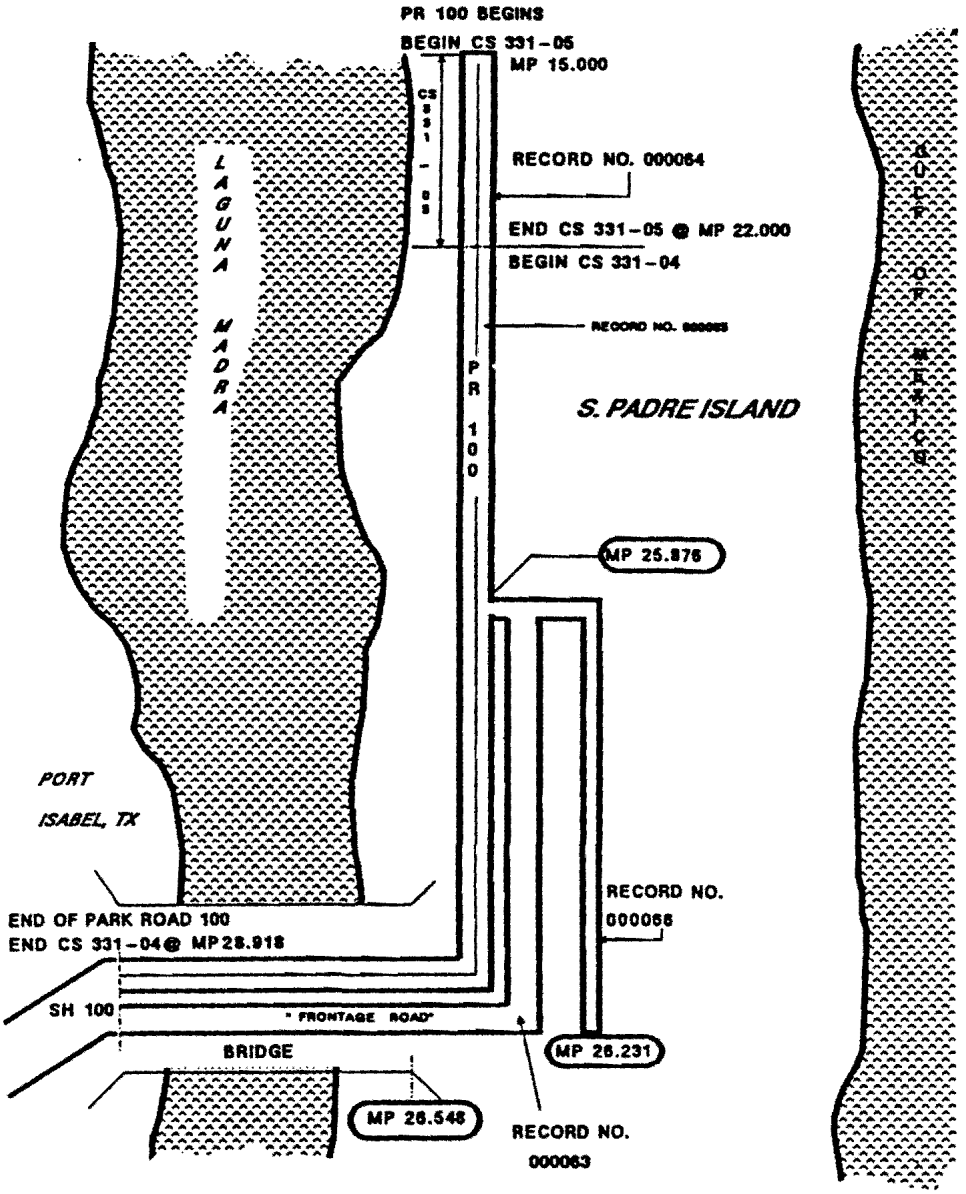


FIGURE 11: PR100 EXAMPLE - CAMERON COUNTY
Illustrating County-level CHIF Record Construction

3.2.6 GENERATING THE COUNTY-LEVEL REPORTS

The database provides a straight-forward mechanism by which users can output information from the various database files. Data requirements for any DATAEASE report are defined using the DATAEASE QUERY LANGUAGE (DQL). This language is a flexible and relatively comprehensive language. Within a short time, users can generate a variety of reports and/or build output files to be read by "external" programs. While it is beyond the scope of this report to go into extensive detail regarding the DQL, it is useful to illustrate its capabilities at this point. The details of the DQL are contained in the DATAEASE Version 2.5 Reference Manual, Section 8, pp 8-1 - 8-109.

The DQL is similar to PASCAL in that it provides a logic base by which the user writes a program to generate reports. The DQL utilizes structured programming concepts and supports a variety of macro statements to perform mathematical and sorting operations. Further, the DQL supports an output formating feature that allows the user to design, on the screen, exactly how a given report will look. Within a matter of several days, the "persistent" user can master many of the features of the DQL. However, based upon the experience of the research team, the above mentioned reference manual lacked clarity on certain points, and trial-and-error was resorted to in order to accomplish some tasks. The authors of DATAEASE (Software Solutions, Inc., Trumbull, CT.) are in the process of updating this manual and have scheduled a December, 1987 release.

The DQL for the report shown in Table 1 is reproduced in Table 4. Examination of Table 4 gives the reader an idea of the structured logic and specific statements required to reproduce this report.

TABLE 4
DATAEASE Query Language Statements to Generate the County-level Highway Inventory Sorted by Record Number

```
for COUNTY HW INV
        ;
        LIST RECORDS
        RECORD NUMBER   IN ORDER  ;
        COUNTY NUMBER ;
        HIGHWAY PREFIX ;
        HIGHWAY NUMBER ;
        HIGHWAY SUFFIX;
        ROADWAY ;
        BEG. REF. POINT ;
        END.REF.POINT
        MILEPOST;
        MILEPOST DISP.SIGN;
        MILEPOST VALUE;
        CONTROL;
        SECTION;
        BEG.MILEPOINT;
        END.MILEPOINT;
        LAP.
```

The query language statements shown in Table 4 were used to generate the report shown in Table 1. Note, the various records are shown in "record number order". This means that the individual control section-roadway segments are printed out in the identical order of original data entry. From Table 1, the first record entered was US 77, roadway A, from milepost 1.7 to 4.3 - control Section 0327-08. The next record entered was FM 106 from milepost 0.0 to 6.3 (R lane) for control section 1425-03, etc.

The database does not care about the order of entry for each control section-roadway segment. The order of data entry is immaterial. With the query language, the user can always generate new files or formatted output ("reports") based upon any sorting criteria required.

The '**for**' command requests the name of the datafile to be used to generate the report. The target file **COUNTY HW INV** is the designated file. The LIST RECORDS command initiates output of the file according to the variable names of the selected fields and the sorting criteria that follow. Note, the first value listed is RECORD NUMBER. RECORD NUMBER is one of the field variables previously defined when

the file was first constructed. The next field variable, COUNTY NUMBER is requested to be listed IN ORDER. The IN ORDER syntax designates that all records in the file **COUNTY HW INV** are to be sorted in ascending order. The remaining field variables are shown in the listing. When the IN ORDER command follows a variable, the appropriate sorting scheme is applied. When the IN ORDER command does not follow a field variable, no sorting is applied to that field. Further note that the DQL requires the ';' and '.' symbols to end each line. The '.' symbol following LAP signifies the end of the query language for this report.

Table 2 illustrates the same file sorted multiply according to the following:

County Number
Highway Prefix
Highway Number
Roadway
Beginning Reference Point.

The "staggered" notation indicates that the first sort is by county number. Then, given the county number, the next sort is by Highway Prefix. Given county number and Highway Prefix, the next sort is by Roadway, etc. This illustrates the power of the database in that virtually any combination of sorting can be accomplished by the database.

Further examination of Table 2 reveals that the first column of the report - Record Number - is not in sequential order. When this file is first constructed by entering the data from the County-level Highway Inventory Form (Figure 6), the order of entry is unimportant. The Record Number represents the order of original data entry (as demonstrated in Table 1). When the sorting criteria are applied to the finished file, the record numbers will most likely be in non-sequential order. The Record Number field is maintained in order for the user to call up the j-th record with one key stroke. This facilitates data editing of any given segment within a matter of seconds. Thus, the Record Number field is merely for convenience.

The query language statements that produce the multiple-sorted report for the county-level inventory file are shown in Table 4.

TABLE 4
DATAEASE Query Language Syntax to Generate the Multiple-Sorted County-level Highway Inventory Report

```
for COUNTY HW INV
;
        LIST RECORDS
        RECORD NUMBER ;
        COUNTY NUMBER    IN ORDER  ;
        HIGHWAY PREFIX   IN ORDER  ;
        HIGHWAY NUMBER   IN ORDER  ;
        HIGHWAY SUFFIX;
        ROADWAY          IN ORDER  ;
        BEG. REF. POINT  IN ORDER  ;
        END.REF.POINT
        MILEPOST;
        MILEPOST DISP.SIGN;
        MILEPOST VALUE;
        CONTROL;
        SECTION;
        BEG.MILEPOINT;
        END.MILEPOINT;
        LAP.
```

Note the placement of the "**IN ORDER** " commands throughout this syntax. The "**IN ORDER**" commands establish the order of sorting reading from top to bottom of the statements.

Table 3 illustrates the same file sorted by control section number only. Obviously, one obtains a different order in the listing because the "**IN ORDER**" command is requested only one time as shown in Table 5.

TABLE 5
DATAEASE Query Language Syntax to Generate the Control Section-Sorted County-level Highway Inventory Report

```
for COUNTY HW INV
;
    LIST RECORDS
    RECORD NUMBER ;
    COUNTY NUMBER ;
    HIGHWAY PREFIX ;
    HIGHWAY NUMBER ;
    HIGHWAY SUFFIX;
    ROADWAY ;
    BEG. REF. POINT ;
    END.REF.POINT
    MILEPOST;
    MILEPOST DISP.SIGN;
    MILEPOST VALUE;
    CONTROL        IN ORDER ;
    SECTION        IN ORDER ;
    BEG.MILEPOINT;
    END.MILEPOINT;
    LAP.
```

The **IN ORDER** commands are placed after the field variable names "CONTROL" and "SECTION" to define the primary sort is to take place on the CONTROL field first, followed by the secondary sort on SECTION given that CONTROL has been sorted.

The **COUNTY HW INV** file represents the "driver" file of the flexible pavement database. The accuracy of the succeeding files are derived from this file. Special care must be taken by District Engineers to ensure the accuracy of this file else the remaining files will not be accurate. The detailed database file specifications for the CHIF are presented in Appendix A.

The next section describes the generation of the 0.5 and 0.2 files needed to establish the remainder of the database.

3.3 GENERATION OF 0.5, 0.2, AND 0.1 DATA FILES

The previous section was devoted to the County-level Highway Inventory File description. As mentioned, this file constitutes the "base" file from which the remaining data files are built. This section is devoted to the description of the **0.5 VISUAL FILE** (O.5VF). Subsequent sections will discuss the companion Skid, Ride, FWD, and the 0.1 master file.

Globally, the database system extensively utilizes the 0.1 Master File to perform most of the information needed at the district level. However, four other files are to complete the 0.1 file. These files are:

1. 0.5-Mile Visual Data File (0.5 VDF),
2. 0.5-Mile Falling Weight Deflectometer File (0.5 FWD),
3. 0.2-Mile Ride File (0.2RF),
4. 0.2-Mile Skid File (0.2SF).

The 0.5-mile files store visual and FWD data collected over half-mile highway segment intervals according to State Highway Department standards. Likewise, the 0.2-mile files contain ride and skid data collected over two-tenths mile highway intervals. When the field data has been collected within each county for each of the above files, then the 0.1 file can be "filled-in" with this data. Thus, the 0.1 file contains the combination of 0.5 and 0.2-mile information imported into the appropriate records of the 0.1-mile file. Each record in the 0.1-mile file contains data for a unique 0.1-mile highway segment. Likewise, each record in the 0.5-mile files and the 0.2-mile files contain relevant data for each 0.5 or 0.2-mile highway segment.

Before field data is collected, all 0.5, 0.2, and the 0.1 files must first be "logically" constructed to hold the field information. This process, termed "**file configuration**" is accomplished by the database query language. The file creation process builds or creates each one of these files according to a pre-determined format. All field variables are defined consistent with the type of data collected in the field. Figure 12 illustrates the process of file configuration.

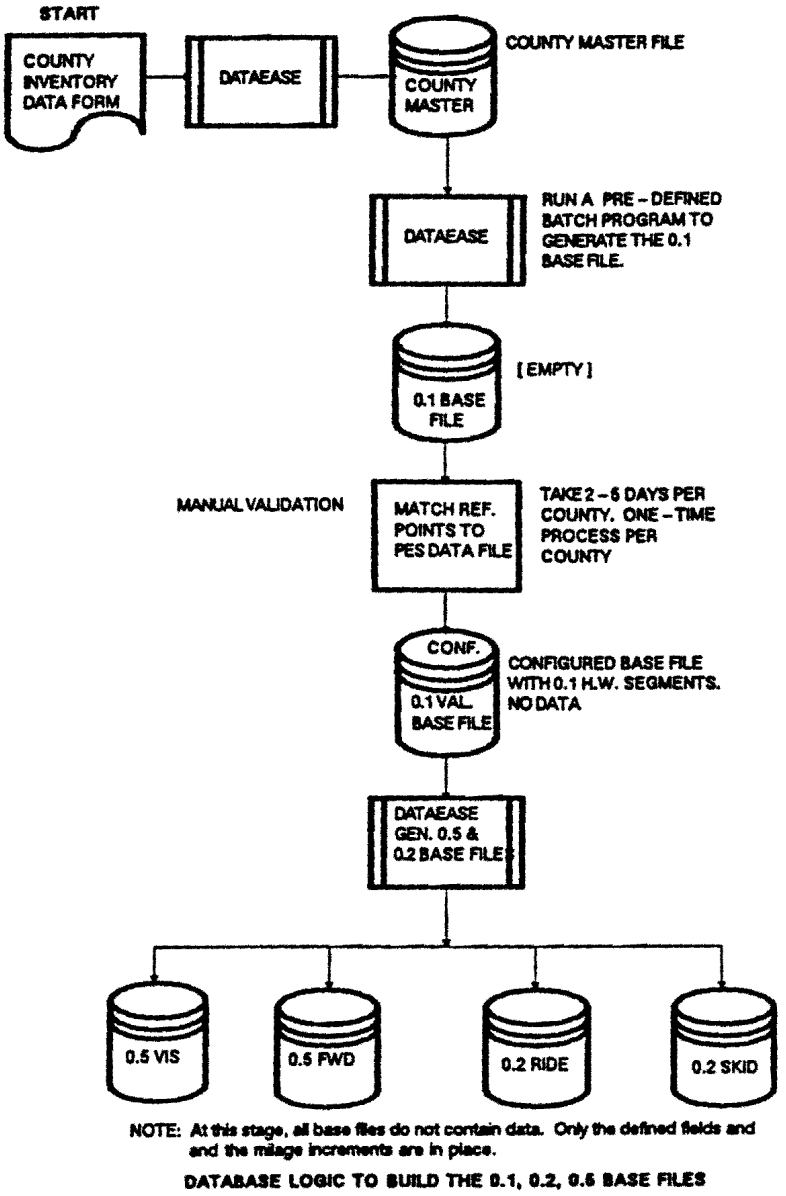


FIGURE 12: DATABASE LOGIC TO BUILD THE 0.5, 0.2, AND 0.1 DATA FILES

From Figure 12, the CHIF is used to generate a 0.1-mile "base" file. A series of DATAEASE batch programs have been written to accomplish this task. Given the "base" file, a manual validation process must be instituted to match reference points to the PES file. This process can take from two to five days per county. However, this is a one-time task per county. Once completed, the 0.1 "base" file

remains intact for future use. The only time modifications are made to this file are when:

1. New pavements are added within a county
2. Existing pavements are removed from a county.

Since these constitute rare events, this file can be reviewed annually, and the appropriate updates made with the assistance of D-18PM in Austin. Normally, the 0.1 "base" file will remain unchanged over time.

Given the 0.1 Base file, batch runs are made with the DATAEASE Query Language to generate the remaining 0.2 and 0.5 files. It is to be emphasized that at this point, all files (0.1, 0.2, and 0.5 files) are essentially empty except for highway segment location and identification fields. The location/identification fields common to all highway segment files are summarized in Table 7.

TABLE 7
Location/Identification Field Variables Common to all Highway Segment Files

1. County Number
2. District Number
3. Highway Prefix
4. Highway Number
5. Highway Suffix
6. Roadway
7. Milepost
8. Milepost Displacement Sign
9. Milepost Value
10. From
11. Reference Point (To)
12. Lane

The parameters shown in Table 7 serve to accurately identify and locate a given highway segment. Most of the county-level reports concerning the summarization of the segment data (see Section 5 of this report) contain most, if not all of these ID/Location values in each highway segment database record. While these fields occupy approximately 45 bytes per record, this information is valuable in sorting based upon location of the desired segments. In a sense, one may think of these fields as "valuable overhead" that do not contribute directly to the condition data, but are required for location and identification purposes.

The next section presents information concerning the exact file structure of the 0.5 Visual Data File.

3.3.1 DEFINITION AND STRUCTURE OF THE 0.5 VISUAL DATA FILE

The 0.5 Visual Data File contains visual data collected over half-mile flexible (ACP) highway segments by qualified raters. Raters record the occurrence of specified surface distress types and shoulder characteristics. According to State guidelines, raters travel along the side of the road (with the traffic flow) in a vehicle traveling no more than 15 mph. Raters are instructed to rate the most severely distressed lane, stopping at least once every 0.5 miles. The first stop is made at the beginning milepost. At each stop, raters are instructed to walk approximately 100 feet in each direction from the vehicle. They are to critically observe all visible distress types in this interval. Ratings are conducted on the following surface distress types:

1. Rutting
2. Raveling
3. Flushing
4. Corrugations
5. Alligator Cracking
6. Longitudinal Cracking
7. Transverse Cracking
8. Cracks and Patching
9. Failures
10. Shoulder Conditions.

The results are recorded on a customized form designed for this purpose (see Figure 16). Obviously, visual rating is a complex combination of objective and subjective evaluation of the pavement's surface distress features. Raters are trained in the proper rating procedures and through experience, become reasonably accurate and consistent. The documented visual rating procedures are outlined in the current version of the Pavement Rating System Rater's Manual, TxDOT, D-18PM, in Austin, Texas.

The rating process continues over each 0.5-mile section (or fraction thereof) until the entire highway is completed. This process is repeated over all state maintained roadways within a given district. In most state-wide districts, visual rating begins in September. Depending upon the availability of qualified raters and the work demands within the District, visual rating may take from 2 to 4 months to complete. In most instances, visual rating should be completed by the end of the current calendar year.

The record structure of the 0.5 Visual File is graphically shown in Figure 13. Appendix B contains the detailed record structure for this file. From Figure 13, the first 13 fields contain "identification/location" fields (see Table 7). The remaining fields contain the visual rating values obtained from the field for **each** 0.5 mile

segment in the given county. Each record represents one 0.5-mile segment (or fraction thereof). Thus, if a county has 600 miles of highway, then that county's 0.5 VDF would contain 1,200 half-mile records.

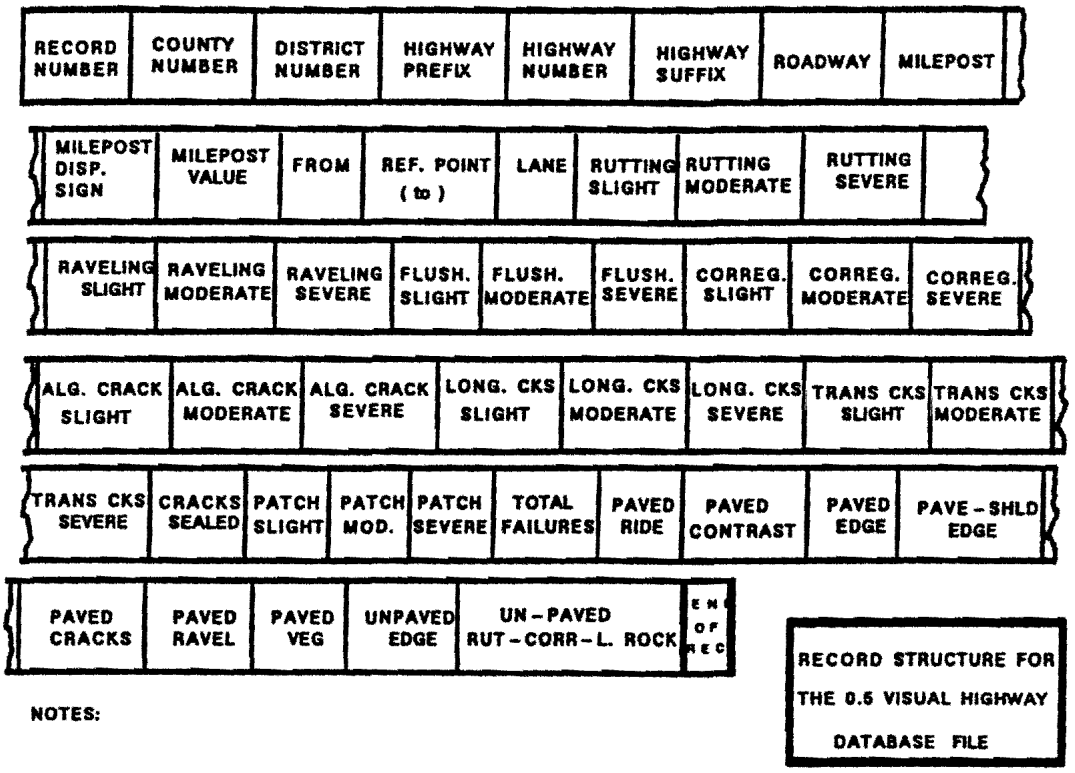


FIGURE 13: Record Structure for the 0.5 Visual Data File

Figure 13 illustrates the record structure by which the 0.5 VDF. Building this file involves the creation of data collection forms that can be used in the field to record surface distress values. One of the valuable features of the database is the ability to read the 0.5 Configured Visual file and produce properly-sequenced data collection forms on a laser printer. Since the forms are sequenced for a given county, raters can take the forms to the starting milepost and begin the rating from that point. Each line of the produced form constitutes one 0.5-mile segment. By producing the forms from the configured 0.5-mile file, the possibility of missing segments is reduced. Figure 14 illustrates the logic involved in forms creation and data entry.

Figures 14 and 15 illustrate the procedures for building a 0.5 VDF at the county level. Once the in-field visual rating is completed, the rating forms are brought into the district for manual data entry. Staff personnel can begin the visual data entry as soon as the filled-in forms are available. The 0.5 VIS file is called up in the Data Entry mode, and the data is entered from the forms. The order of data entry is immaterial. The database can sort the entered records into any order required. The file can be first constructed in the order of completion of the segments. At any time, the staff can run a "Missing Data Report" that lists the 0.5-mile segments containing no data. This report can be used to direct raters to missing segments to obtain data.

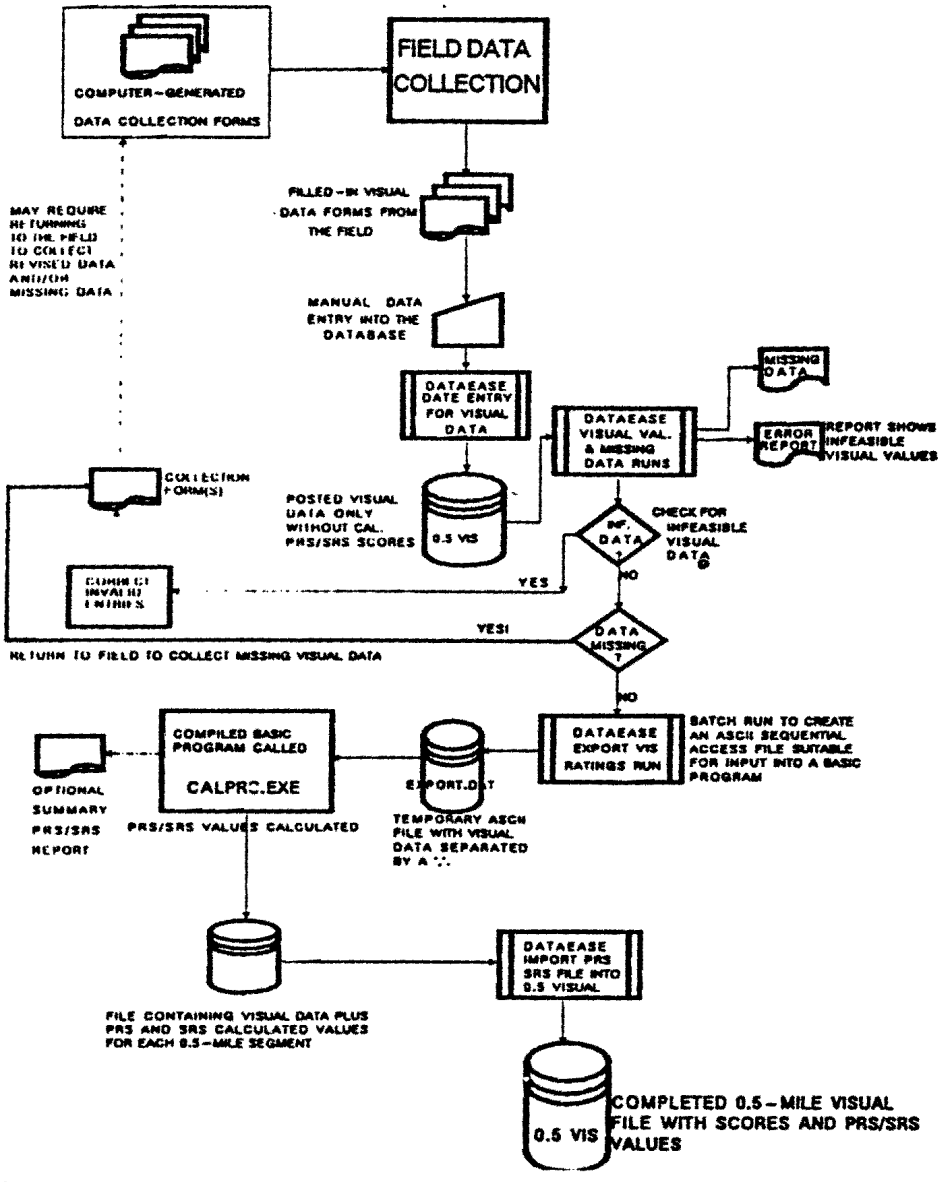


FIGURE 14: Overview Logic for Building the 0.5-Mile Visual File

Figure 14 shows the overall logic required to construct the 0.5 Visual File. This

process begins with the **configured** 0.5 visual file. The term **configured** means that the file format has been built by the database and is ready to receive data. The first step in building this file is to generate the requisite data collection forms that can be taken to the field. A DATAEASE report procedure has been written to automatically generate these forms. This illustrates one of the powerful features of the database in that the system has the ability to read the configured 0.5 file and produce logically organized visual data collection forms. Figure 15 shows the detailed logic associated with producing the visual data collection forms.

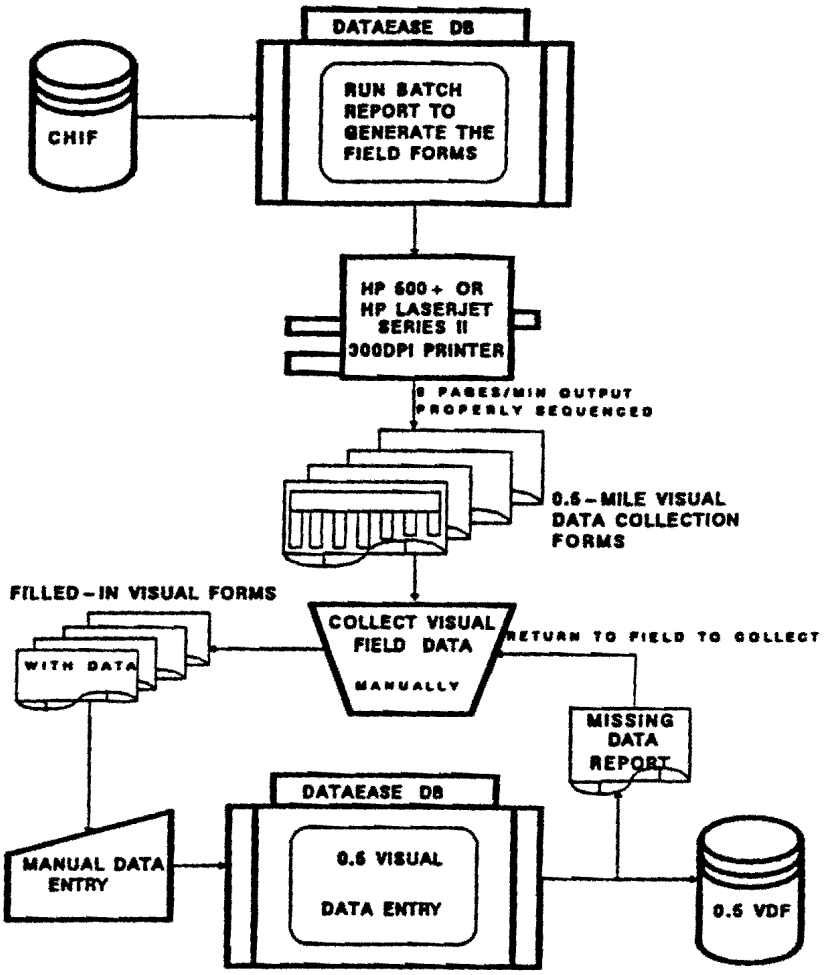


FIGURE 15: Logic to Produce the 0.5-mile Visual Data Collection Forms

The 0.5-mile visual data collection forms are produced by a pre-designed report program that reads the 0.5-mile configured file (which contains 0.5-mile records built from the County Highway Inventory File) and produces the forms on an HP 500+ or HP LaserJet Series II 300 dpi laser printer. Due to the output capability of laser printers (8 pages/minute on the average), this process of producing data collection forms is best handled on these types of printers. If one

were to attempt to produce these forms on a dot matrix printer, the production time would be extremely slow. Thus, it is highly recommended that a laser printer be used for this specific function.

Once the forms have been produced, they are released to the visual inspectors to conduct the actual visual distress ratings in the field. When the visual data has been collected, the inspectors return them to the District Headquarters where a trained staff member **manually** enters the data into the database. This process may cover from 4 to 6 weeks depending upon the availability of qualified visual inspectors. However, visual data can be entered as soon as the inspectors are finished rating. Care must be taken to insure that data is entered in the proper order. However, the database provides a mechanism whereby it is virtually impossible to enter visual data incorrectly. Figure 16 illustrates a specimen visual data collection data form for County 31, PR 100 in the R roadway beginning at Milepost 12+0.4.

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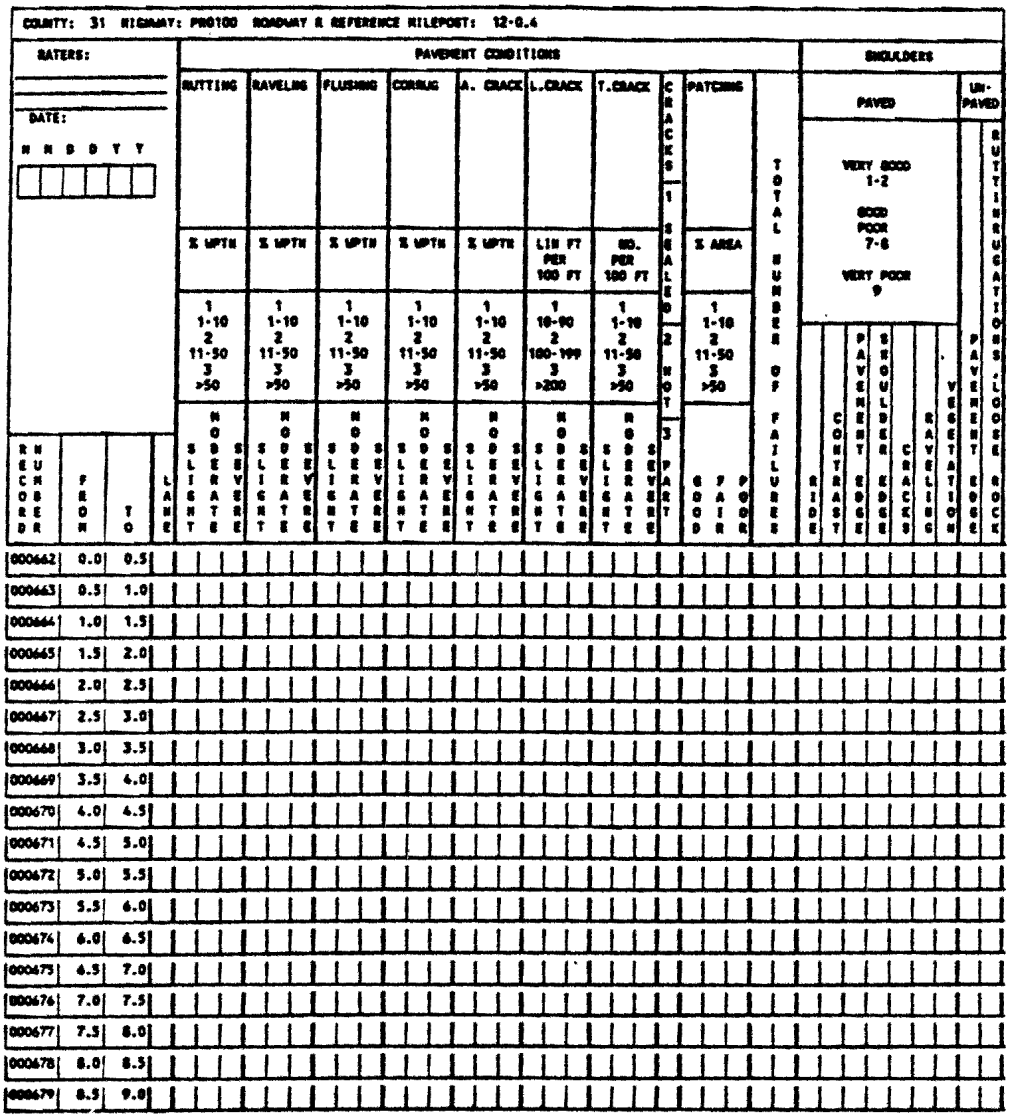

FIGURE 16: Specimen Data Collection Form for 0.5 Visual Data Collection

As can be seen from Figure 16, the database automatically reads the configured 0.5-mile file and creates the appropriate "From-To" sequence on the form. One line on the data collection form corresponds to one 0.5-mile segment of roadway. The rater then knows exactly where to begin the visual inspection. Visual inspection is conducted on each half-mile section as noted on the collection form(s). When a highway number is completed, the forms for that highway are turned into the District Headquarters for manual data entry. Due to the batch processing nature of the forms generation program, **all** of the required data collection forms are generated at one time for a given county.

After the visual data has been collected, the forms returned and the data entered, two batch programs are then run across the 0.5 file. The first procedure examines the 0.5-mile visual file (with entered data) to determine if any 0.5-mile segments contain missing data. If any half-mile records are found to contain missing data, the From-To IDs are printed in a Missing Visual Data Report. By running this procedure, one can determine any missing segments. When missing segments are found, the Maintenance Engineer will direct the inspectors (with the appropriate forms) back into the field to collect the information. The Missing Data Report is run across the visual file to determine if any more missing segments exist. This procedure is repeated until no missing segments exist.

Once it is confirmed that no missing data exists, the second validation report procedure can be run. This batch run is referred to as **VALIDAT PAVE RECORDS** and resides in the DATAEASE Report Menu. This report scans each 0.5-mile record for "infeasible" entries. "Infeasible entries" are defined to be any sequence of pavement distress ratings for the distress categories (Rutting, Raveling, Flushing, Corrugations, Alligator Cracking, Longitudinal Cracking, and Transverse Cracking) whose data entry sequence totals greater than six. For example, assume that three scores exist for the Rutting category, i.e.,

SLIGHT	MODERATE	SEVERE
3	3	2

This sequence is infeasible since a "3" represents "greater than 50% area" for the associated distress. The above sequence would represent greater than 50% rutting for slight, greater than 50% for moderate and 11 to 50% for severe. This signifies a greater than 100% evaluation which is infeasible. Thus, the validation run simply checks for pavement condition ratings whose entries in each category **sums to** 6 or greater. Presently, this is the only check that is made on each sequence. To further support the accuracy of the visual file, users are permitted to enter only a valid range of values at the time of data entry. In other words, these fields are restricted to accept only "valid data", i.e., 0, 1, 2, or 3. No other values are permitted.

The visual data validation run produces a printed report similar to the one shown in Table 9. In this example, a data input error was intentionally made in a record to illustrate the procedure. For the flushing and corrugation entries, three 3s were entered for each category. The validation run detected these errors and flagged the appropriate columns. The remaining fields validated with no apparent error. When errors are detected, the staff should refer back to the original data

entry forms and check to see if those fields were correctly entered. If not, the erroneous records can be brought up and changed. If the data entry form containing the flagged record shows the same sequence for the flagged field, then the visual inspector made an error. Somehow, the result must be resolved before proceeding.

The validation report (see Table 7) must be run across the 0.5 file as soon as it is determined that all 0.5-mile segments within the county have been entered. Once the validation run signifies no infeasible records, calculation of the PRS and SRS scores can begin.

TABLE 7
Specimen Output of the Visual Validation Report Run

STATE OF TEXAS HIGHWAY DEPARTMENT
VALIDATE PAVEMENT ENTRY RECORDS REPORT

RUN DATE: 10/24/87 DISTRICT NO. 21 RUN TIME: 12:53:29 PAGE NO. 1

CURRNT RECORD NUMBER	CTY NO.	HW PX	HW NO.	HW SX	RD WAY	FROM	TO	LANE	RUTTING ERROR CODE	RAVEL ERROR CODE	FLUSH ERROR CODE	CORRUG ERROR CODE	ALLIG ERROR CODE	L.CRK ERROR CODE	TRN CRK ERROR CODE	PATCH ERROR CODE	PAVED-UNPVD ERROR CODE	TOTAL ERROR COUNT	RECORD NUMBER
000001	31	FM	0106		R	0.0	0.5	R	-- 0 --	-- 0 --	FLU ERR	CORR ERR	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	2	000001
000002	31	FM	0106		R	0.5	1.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000002
000003	31	FM	0106		R	1.0	1.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000003
000004	31	FM	0106		R	1.5	2.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000004
000005	31	FM	0106		R	2.0	2.5	R	-- 0 --	RAV ERR	-- 0 --	CORR ERR	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	2	000005
000006	31	FM	0106		R	2.5	3.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000006
000007	31	FM	0106		R	3.0	3.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000007
000008	31	FM	0106		R	3.5	4.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000008
000009	31	FM	0106		R	4.0	4.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000009
000010	31	FM	0106		R	4.5	5.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	ALG ERR	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	1	000010
000011	31	FM	0106		R	5.0	5.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000011
000012	31	FM	0106		R	5.5	6.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000012
000013	31	FM	0106		R	6.0	6.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000013
000014	31	FM	0106		R	6.5	7.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000014
000015	31	FM	0106		R	7.0	7.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000015
000016	31	FM	0106		R	7.5	8.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000016
000017	31	FM	0106		R	8.0	8.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000017
000018	31	FM	0106		R	8.5	9.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000018
000019	31	FM	0106		R	9.0	9.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000019
000020	31	FM	0106		R	9.5	10.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000020
000021	31	FM	0106		R	10.0	10.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000021
000022	31	FM	0106		R	10.5	11.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000022
000023	31	FM	0106		R	11.0	11.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000023
000024	31	FM	0106		R	11.5	12.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000024
000025	31	FM	0106		R	12.0	12.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000025
000026	31	FM	0106		R	12.5	13.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000026
000027	31	FM	0106		R	13.0	13.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000027
000028	31	FM	0106		R	13.5	14.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000028
000029	31	FM	0106		R	14.0	14.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000029
000030	31	FM	0106		R	14.5	15.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000030
000031	31	FM	0106		R	15.0	15.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000031
000032	31	FM	0106		R	15.5	15.8	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000032
000033	31	FM	0313		R	0.0	0.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000033
000034	31	FM	0313		R	0.5	1.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000034
000035	31	FM	0313		R	1.0	1.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000035
000036	31	FM	0313		R	1.5	1.7	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000036
000037	31	FM	0506		R	0.0	0.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000037
000038	31	FM	0506		R	0.5	1.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000038
000039	31	FM	0506		R	1.0	1.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000039
000040	31	FM	0506		R	1.5	2.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000040
000041	31	FM	0506		R	2.0	2.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000041
000042	31	FM	0506		R	2.5	3.0	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000042
000043	31	FM	0506		R	3.0	3.5	R	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	-- 0 --	------ 0 ------	0	000043

Examination of Table 8 illustrates detected errors in records 1, 5, and 10. The sum of the three visual evaluations are greater than 6 (hence, infeasible) in these specific records. The user should bring up these records in the Visual file and examine the data values and coordinate the entries with the data collection form. If a data entry error has been made, it is a simple task to edit the appropriate visual ratings or modify each record. If it turns out that the values were entered correctly, then a visual inspection error has occurred. The Maintenance Engineer will need to correct the errors and/or return to the field to re-evaluate the specific sections. In either case, the detected error(s) must be rectified. It must be noted that the validation run detects only "gross infeasible" errors. There is no way to detect errors in judgement or recording errors. In other words, some of the visual evaluation values may still be incorrect but not "infeasible".

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3.3.2 CALCULATION OF THE VISUAL PAVEMENT AND SHOULDER SCORES

Upon confirming that the 0.5-mile file is complete and contains feasible data, the next step in building this file is to calculate the Pavement Rating Scores (PRS) and the Shoulder Rating Scores (SRS). This procedure is not conducted from within the database. Rather, the procedure is to export the entire visual file out as an ASCII file with commas separating the visual data items. This process is shown in Figure 17.

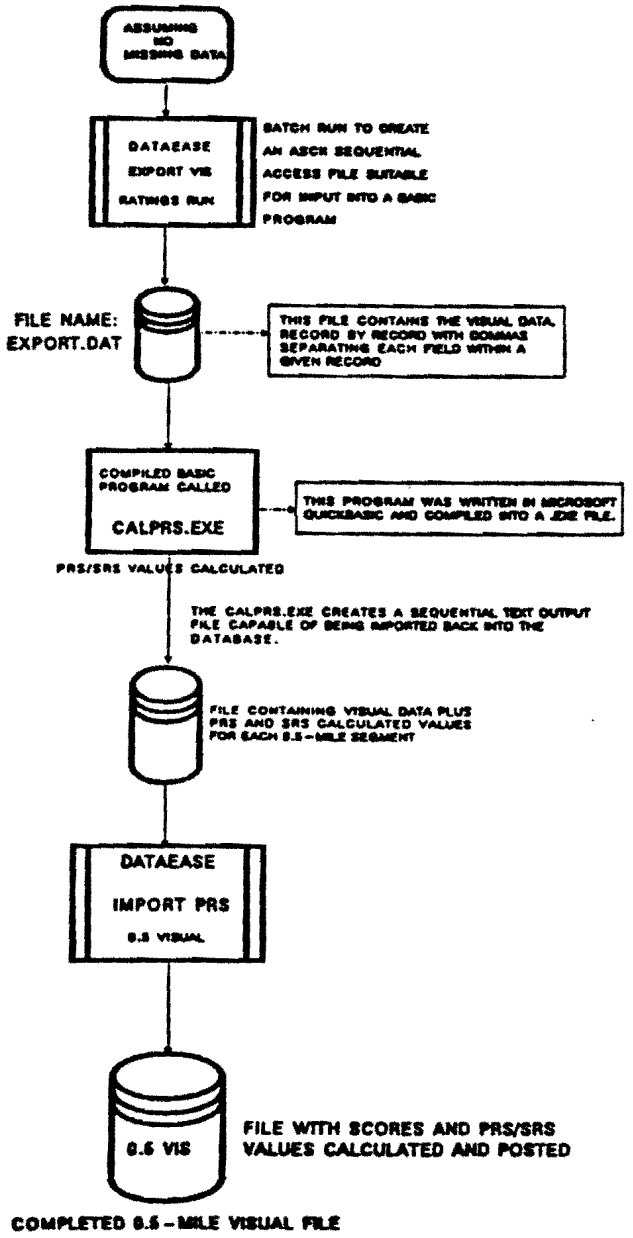

FIGURE 17: Logic Detailing Calculation of PRS/SRS Scores for 0.5 Visual File

Given the 0.5-mile file with visual data, a batch program called **EXPORT PAVE DATA** is run from the Reports Menu. This procedure reads each 0.5-mile record and places a "," between each data item in the record and writes the record to a file called **EXPORT.DAT**. This file is written to a floppy diskette in the A: drive.

After the EXPORT.DAT temporary file has been created, the user exits the DATAEASE program. From the DOS prompt, run the CALPRS.EXE program and respond to the prompts. Within seconds, all PRS and SRS scores have been calculated and written to an output file that is user-specified within CALPRS.EXE. Returning to DATAEASE, the user selects the IMPORT option and imports the file into the 0.5 Visual data file.

At this point, the 0.5 Visual file is complete! This file remains intact throughout the year and requires no additional manipulations until the end-of-year postings are made. It is possible to run a variety of queries on this file as required by the District. Specific queries relating to this file will be discussed in Section 5 of this report.

3.4 ORGANIZATION AND STRUCTURE OF THE 0.5 FALLING WEIGHT DEFLECTOMETER FILE

Similar to the 0.5 Visual File, the FWD file represents a half-mile highway segment file. The process begins with a configured 0.5 FWD file that contains the appropriate 0.5-mile records as built from the county inventory file. However, this file initially does not contain FWD data. While the Visual File requires manual data entry, building the FWD is an automated process requiring no manual data entry. The logic detailing the construction of this file is shown in Figure 18.

Given a configured 0.5-mile FWD file, the database generates a "missing data" report similar to the one shown in Table 10. At first, all of the configured records have missing data. Thus, all records will show up missing - by design. The missing data report can be used as an aid for the collection of field data since it reports the missing 0.5-mile segments.

With the missing data report as an aid, trained FWD technicians drive the FWD van/trailer over the various highways within the county which automatically records FWD readings. These readings are collected inside the van by a portable microcomputer. The readings are recorded on a 5.25 inch floppy disk. When the task of collecting the FWD readings is complete, the disks are returned to the District Office.

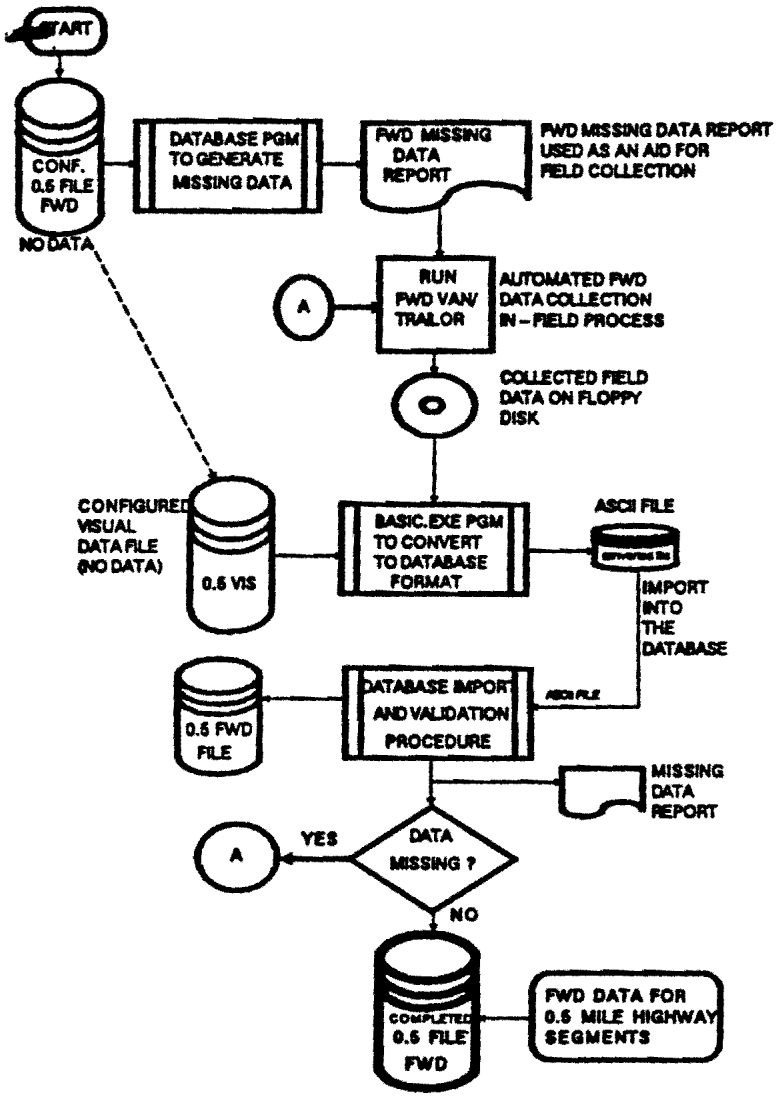

FIGURE 18: Falling Weight Deflectometer File Logic

When all highways within a county have been recorded, the collected disks are read by a compiled BASIC program to produce an ASCII file suitable to be imported into the 0.5-mile FWD database file. By running a pre-written database query report, the ASCII file is imported into the 0.5-mile FWD file. This missing data procedure is ran across the FWD database file to determine if any missing records exits. If so, the missing data report is used to direct the data collection team back into the field to collect the data. If no missing records are found, the 0.5-mile FWD file is complete!

Appendix B contains the detailed database file design for the 0.5-mile FWD file and the source code listing of the BASIC program used to convert the collected

field data into an ASCII file. Essentially, five values are recorded into the 0.5-mile FWD file. The five data values are:

W1 & W2:

These two data values represent readings from geophones 1 and 2. These readings measure the strength in the upper part of the pavement.

W6 & W7:

The next two data values represent the readings from geophones 6 and 7. These readings measure the strength in the pavement's sub grade.

DATE:

The date the readings were recorded.

The basic procedure for recording FWD readings is to drive each half-mile section of pavement. At the selected point, the deflectometer is positioned on or just above the pavement and various readings are recorded. Currently, the FWD unit contains seven geophones. However, recordings are currently made from phones 1, 2, 6, and 7.

The Surface Curvature Index (SCI) is calculated by the following relationship:

$$SCI_D = 0.0409 + 0.028(W_1 - W_2).$$

The size for the 0.5-mile file requires 55 bytes of storage per half-mile highway segment. After all half-mile records have been constructed, selected field variables are merged into the 0.1-mile master file. At the end of the year, the field variables W1, W2, W6, W7, and Date are "blanked" from the file to make room for the new data. However, the segment location data (fields 1 - 11 as defined in Appendix B) remain intact. The FWD field data is recorded on magnetic media for subsequent processing in Austin. The post-data collection processing produces a FWD file on 3.5 inch microdisks. The microdisks can be read by a compiled BASIC data reduction program for direct import into the 0.5 FWD input file.

3.5 0.2 MILE SKID DATA FILE

The third data file necessary to support the database is the 0.2-mile skid data file. Skid data is collected over 0.2 mile highway segments using a "skid truck". The logic detailing the procedure is illustrated in Figure 19.

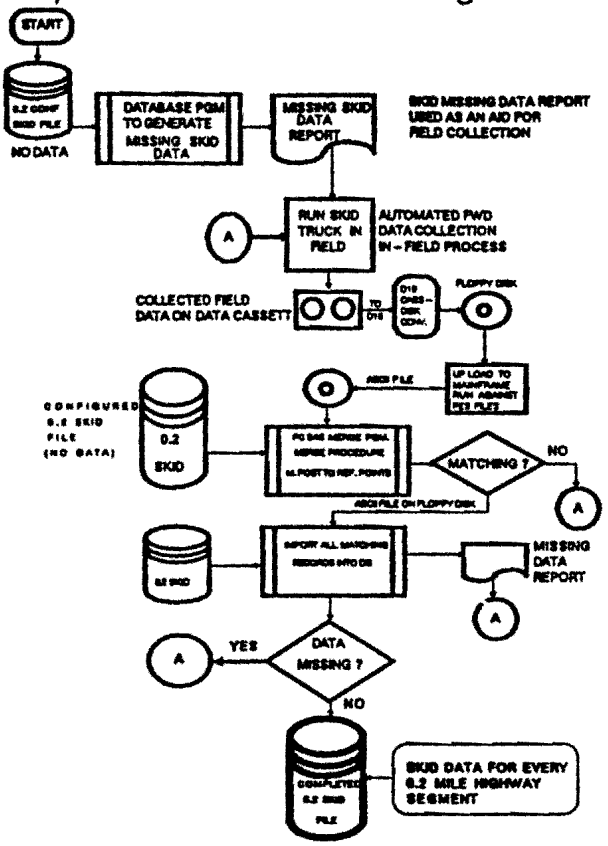

Figure 19: Logic to Create the 0.2-mile Skid File

The steps required to generate this file are:

1. Given the 0.2-mile configured file (configured with location data and space for the skid values), generate a "missing data report". Obviously, this missing data report will, at this stage, show all records having missing skid data. However, as with the FWD file, this report is used as an aid in the field to assist in location.

2. Given the missing data report, technicians run the skid truck in the field to collect the skid data over 0.2-mile segments.

3. The skid data is initially collected on cassette tape within the skid truck. Upon returning from the field, the cassettes are collected and delivered to D-18PM in Austin. D-18PM runs a conversion program across the cassette to convert the data to 5.25/3.50 disks.

to convert the data to 5.25/3.50 disks.

4. Given the 5.25 disk format, D18-P "up-loads" the 5.25 format to the mainframe computer to run against the current PES file. This procedure produces an ASCII file suitable for merging into the database's 0.2-mile skid file.

5. By using PC SAS, the ASCII file produced in Step 4 is read and tested against the 0.2-mile database file. If any non-matching segments are discovered, the missing half-mile segments must be collected. The PC SAS routine generates another ASCII file that is in the proper format for the final merging process into the database.

6. All matching records are imported into the database by running a pre-defined import procedure stored within the database. Since the PC SAS procedure executed in Step 5 assures matching segments, the imported records will match the configured 0.2 skid file. However, missing data may still exist!

7. Run the missing data query report across the 0.2 Skid file. This query is resident within the database. If the report indicates missing 0.2-mile segments, then return to Step 2 - 7. If no missing records are discovered, the 0.2-mile skid file is complete!

3.6 0.2-MILE RIDE DATA FILE

The 0.2-mile Ride Data file stores 0.2-mile segment location data and the SI value calculated from the observed MRM rating of the segments. The file structure for this file is shown in detail in Appendix E. Currently, ride data may be collected in the field using one of two procedures. The first procedure involves using a Mayes Ride Meter towed behind a vehicle. As the vehicle covers each 0.2-mile segment, MRM values are displayed inside the vehicle. At the end of each 0.2-mile interval, the observer manually records the MRM value on a data form. The second procedure utilizes a Siometer and involves automated data collection. Either procedure can be used to collect ride data. Figure 20 illustrates the logic for the MRM manual procedure. Figure 21 shows the Siometric automated procedure.

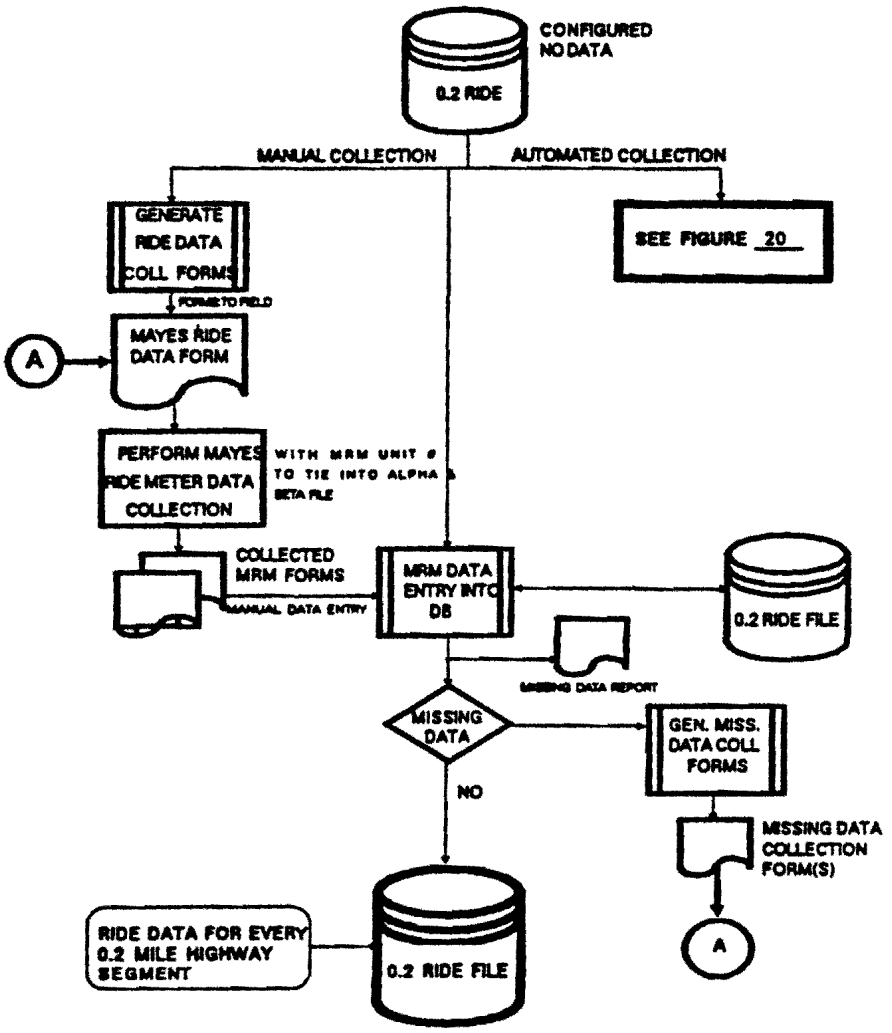

Figure 20: Logic to Build the 0.5-mile Ride Data File
The "Manual" Method

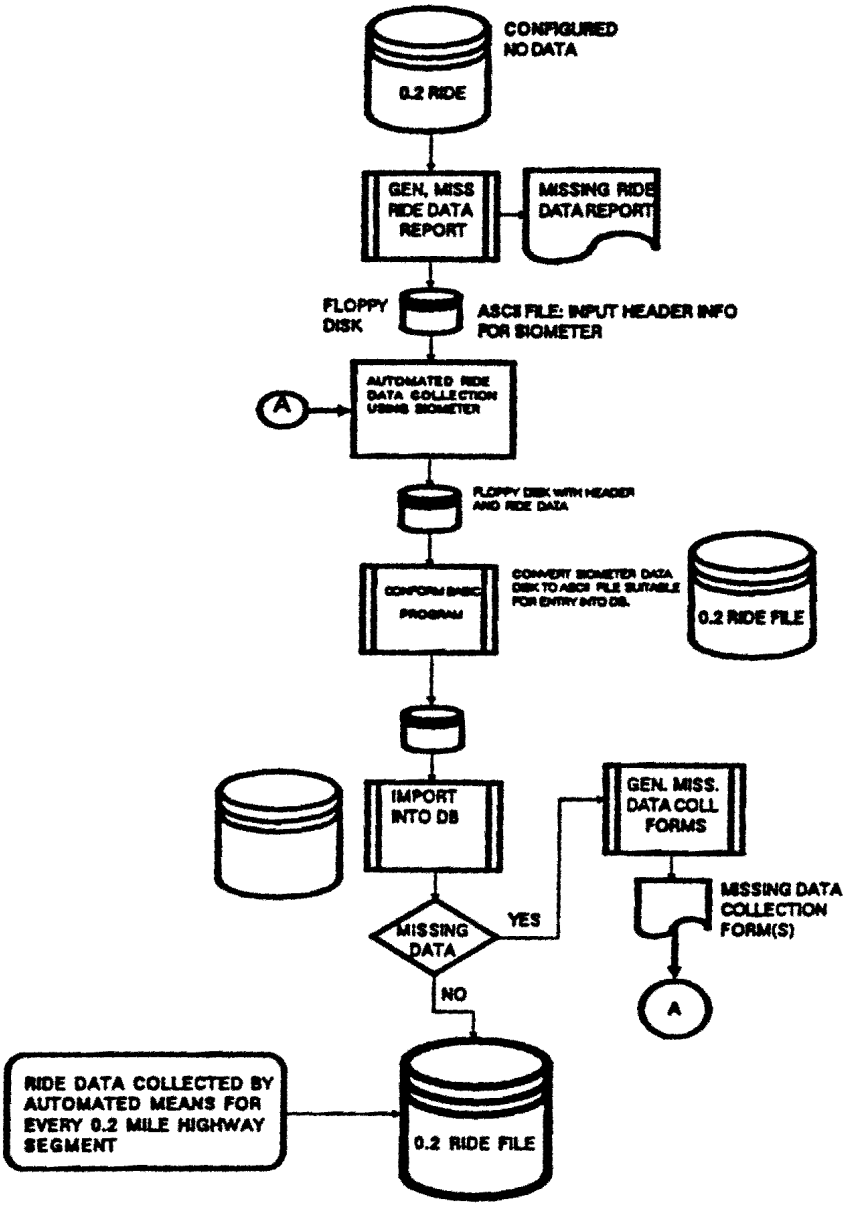

FIGURE 21: The Logic Detailing the 0.2-mile Ride File: The Automated Approach

For the manual method, the following steps are required to collect the data:

1. Assuming a configured 0.2-mile ride file (configured with the location data but void of the MRM values), generate the missing data report. At this stage, all records contain missing data (by design). This form is used in the field as an aid for collecting and recording the data.

2. Using the missing data forms, collect the ride data using the Mayes Meter and manually recording the MRM readings. Also, record the MRM unit number on the forms. The MRM unit number is used to cross

2. Using the missing data forms, collect the ride data using the Mayes Meter and manually recording the MRM readings. Also, record the MRM unit number on the forms. The MRM unit number is used to cross reference the calibration constant for the particular MRM unit. This calibration value is required in the Surface Index calculation.

3. Return the collected MRM forms to the District Headquarters to begin the manual data entry process. The MRM values are input to the configured 0.2 Ride file by using the data entry mode of the data base.

4. After all forms have been entered, run the Missing Data Report to determine if any missing records exist. If any missing 0.2-mile segments are discovered, go to Step 2, above. If no missing records are discovered, the 0.2-mile Ride file is complete.

The associated SI value for each 0.2-mile record is calculated as soon as the MRM value is entered in the file. This is shown explicitly in Field 16 of the Ride Input detailed field definition shown in Appendix E. Thus, no additional batch runs or external (external to the database) programs are needed to compute the SI value. The equation defined in Field 16 requires the "Alpha" and "Beta" value of the particular Mayes Ride Meter unit. A small related database file called **MACHINE # VAR** stores the associated "Alpha" and "Beta" values (associated machine calibration constants) for each MRM unit used. The Alpha and Beta values are constants associated with the annual calibration of each Mayes Ride Meter. The calibration process is conducted in Austin, and the calibration constants are specific to each MRM unit. Thus, it is possible to call in a number of MRM units to assist in collecting ride data. The associated Alpha and Beta values are stored in the related file which are accessible to the database by the LOOKUP function.

After all 0.2-mile Ride records have been recorded, the file is ready for any predefined or ad hoc query reports that the District may desire. (Query reports are discussed in Section 5 of this report.) Additionally, the SI values for each 0.2-mile record will subsequently be merged into the 0.1-mile Master File that will be presented in the next section.

3.7 THE 0.1-MILE MASTER FILE

The 0.1-mile Master File represents the primary file utilized by this database. This file contains the following data:

1. Location data fields for each 0.1-mile segment
2. Date of Last Surface and Average Daily Traffic
3. RI-1 data including:
   * No. of lanes
   * Shoulder Data
   * Lane widths
4. PES Data
   * Section number and break points
   * Design type
   * Highway class
5. Merged Visual Data and PRS/SRS values (every fifth record)
6. FWD summary data (every fifth record)
7. SI values (every second record)
8. Skid value and date (every second record)
9. Field space (allocated) for cost data (to be entered later)
10. Fields to hold historical data for:
    * PES for the last five years
    * SI data for the last five years
    * Skid values for the last two years
    * SCI values for the last two years.

The detailed file format for the 0.1-mile Master File is provided in Appendix B. This file contains 95 fields and requires 216 bytes per 0.1-mile record. Each county will require, on the average, from 6,000 to 7,000 records. The detailed logic required to build this file is illustrated in Figure 22.

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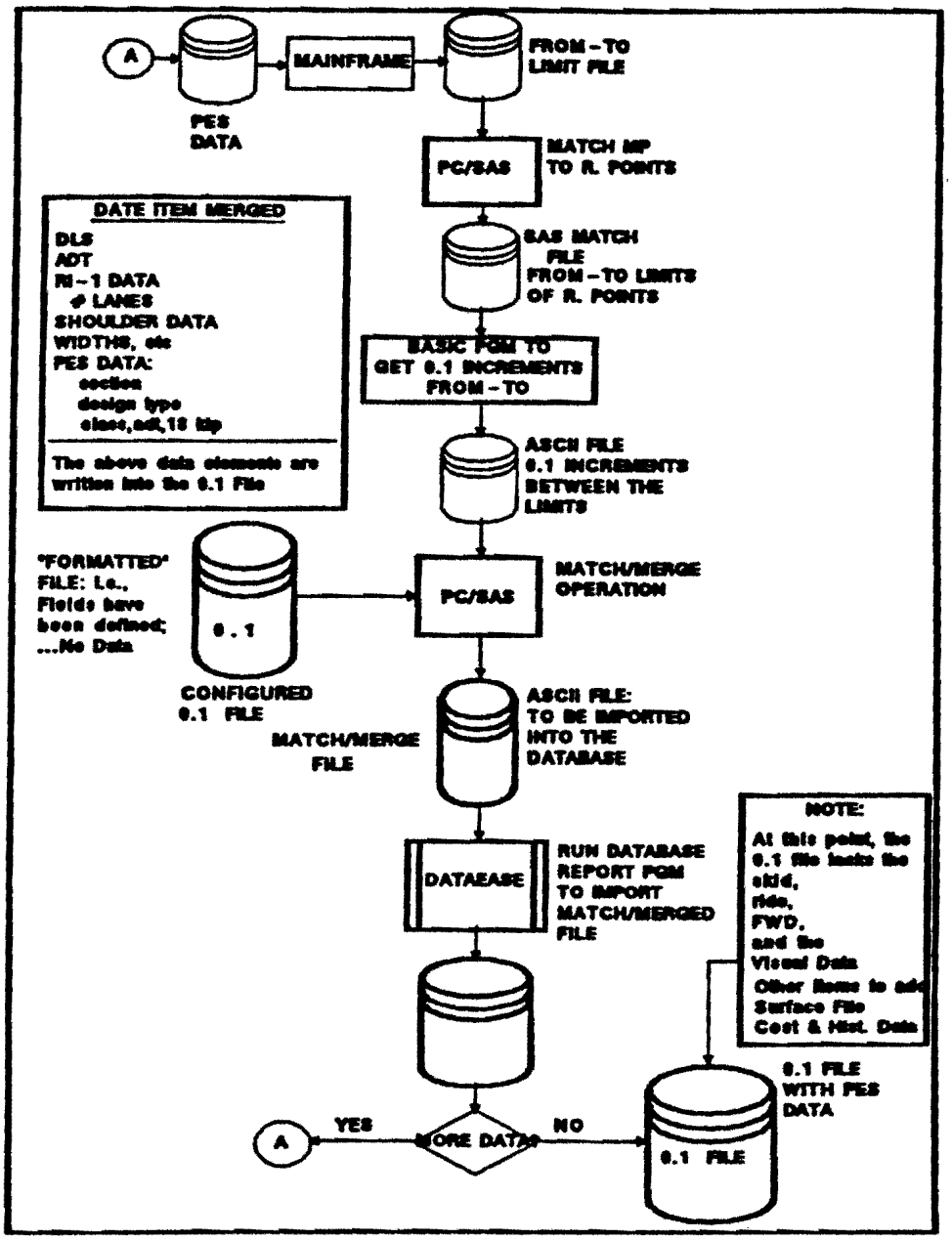

Figure 22: Logic to Build the 0.1-mile Master File

NOTE: As of the date this report was written, the designers were working on improvements to this file based upon the results of field testing in D21. When the field evaluation is completed, revised documentation relating to this file will be added to this report. Therefore, details concerning this file remain intentionally brief. It is anticipated that the current

milepost/reference marking system will be replaced with a new "reference marker" system sometime in 1991. This version of the database does not include the anticipated changes/additions.

3.8 MISCELLANEOUS FILES

Three miscellaneous files, while small, are nevertheless required to support the system. The three files are:

1. The County file (file name **COUNTIES**),
2. The Cross roads file (file name **CROSS ROADS**),
3. The Alpha and Beta file (file name **MACHINE #VAR**).

* The **COUNTIES** file contains three fields, i.e.,

County Number
County Name
District Number

This file is used to support the initial building of the configured 0.2 and 0.5 files. Appendix G contains the details of this file.

The **CROSS ROADS** file (Appendix H) contains 12 fields and provides the location data needed to reference all cross roads (intersections) within a given county. The fields in this file are used to support generation of the condition rating plots (Figure 1) that will be generated from the database.

The last supporting file is the **MACHINE #VAR** file previously referenced in Section 3.7. This file contains the MRM unit number and the alpha and beta calibration values required by the Ride file. The detailed file structure is documented in Appendix B.

Appendix B and D of this report contain details relative to all files required by this system.

4.0 REPORT GENERATION CAPABILITIES

The previous sections of this report have dealt primarily with the overall database design and the file structure of the various support file. This section concentrates on the report generation capabilities of the database. Report generation, and the ability to produce queries to the various files, constitutes an important feature of this design. The ability to produce reports within the scope of a user-specified format represents one of the powerful features of DATAEASE. During the pre-design phase of this project, one of the criteria for the specific database to be used was the ability to allow the user to design customized queries with a minimum of effort. Of the three then-popular databases, (DATAEASE, RBASE-5000, and DBASE III), DATAEASE ranked superior at the time of selection.

The term "report generation" in database nomenclature, means the following:

1. A mechanism by which the user produces screen, disk, or printed output based upon a logical inquiry to one or more of the database files.

or,

2. The construction of a sequence of commands to access one or more existing files in order to:

    a. Create one or more new file(s).
    b. Modify and/or delete one or more file(s).
    c. Sort and/or merge file(s) from one or more existing file(s).
    d. Perform mathematical, statistical, and financial calculations on fields residing in existing files.

A "report" constitutes a batch program executed under control of the database system monitor. A batch program is made up of a sequence of commands that are executed sequentially until some predefined condition is fulfilled. Once begun, a batch program runs with little or no user intervention. Most of the reports designed for this system are batch programs.

A DATAEASE report is constructed by the user using the DATAEASE Query Language (DQL). The DQL is a PASCAL-like language that follows a somewhat rigid structure. In order to be proficient with the DQL, the user must undertake a daily involvement in writing and executing various reports. While the DQL appears straight-forward, potential users must spend a moderate amount of time practicing with the language. With this in mind, the designers of the database have pre-written many of the critical reports (batch programs) that build and maintain the critical files. Additionally, a small subset of these reports are devoted to simple

queries to the files to produce printed reports that summarize the highway segment data.

The system supports two types of output reports: **standard** and **ad hoc**. A **standard** report is one that remains fixed over an operating year and represents information that District engineers expect to see as a matter of routine. **Ad hoc** reports represent those type of reports that may be one-time queries or, special purpose. Due to the relative simplicity of DATAEASE, it is not difficult for District personnel (once trained) to create their own reports within an hour or so.

The remainder of this section will present a sample of the **standard**-type reports available with the database. Since it is not possible to anticipate the various queries that District personnel will expect, the number of initial standard reports will be small. After the database is installed, and district-level personnel become accustomed to its features, additional reports will be added based upon demand. As part of the installation procedures, selected district personnel will be trained in the details of report generation. Thus, as time progresses, selected district personnel will be able to create their own library of reports to cover specific needs. In the interim, D-18PM and TTI staff members will assist in creating reports as requested.

4.1 STANDARD REPORTS

To illustrate the standard report capability of the database, five pre-defined reports are included in the database. The five reports are:

1. A listing of all highway segments with a Pavement Rating Score equal to or less than **50** and ADT greater than **5000**.

2. A listing of all highway segments with a Serviceability Index (SI) less than **2.8** and ADT greater than **5000**.

3. A listing of all highway segments with a Surface Curvature Index (SCI) greater than **1**.

4. A listing of all highway segments with a Skid Value less than **30** and ADT greater than **5000.**

5. A listing of all highway segments with a Date of Last Surface year equal to or less than **82,** i.e., highway segments with a date of last surface 5 years or older and ADT greater than or equal to **5000** .

In the above listings, the numerical values (shown in bold type) for each category represent perceived critical values. These values may be user-specified prior to running the specific report. Thus, the user is not locked into fixed critical values. Prior to running each report, a data entry screen is provided to allow acceptance of the default setting(s) or, to allow the user to specify another critical value. The next section will address each of these reports in more detail and provide sample output for Brooks County with 1986 data.

Note: All of the sample reports referred to in the next section are taken from the 0.1-mile master file. However, reports may be generated from the component files, i.e., the 0.5 Visual and FWD files and the 0.2-mile Ride and Skid files.

4.1.1 CRITICAL PRS/ADTREPORT

The **CRITICAL PRS/ADTREPORT** scans the 0.1-mile master file to locate all highway segments within the given county with average daily traffic equal to or greater than 5000 vehicles per day **and** PRS scores equal to or less than 50. Table 8 illustrates the output from this batch run for District 21, Brooks County. Appendix J contains the DATAEASE Report Definition for this report. Table 4 (beginning on the next page) shows the output for Brooks County using 1990 data.

TABLE 4
CRITICAL PRS AND ADT SUMMARY REPORT

Critical PRS and ADT Summary Report
BROOKS COUNTY (024)

Critical PRS Score: 50 Critical ADT Value Specified: 5,000

Page No. 1

ITEM NO.	COUNTY	HIGHW PFX	HIGHW NO.	HIGHW SFX	ROAD WAY	MILE POST	MILE DISP	MILEP VALUE	REFER POINT	LANE	PRS SCORE	ADT VALUES	MAINT. SECTION	Date Last Surface
1	24	US	0281		R	4	+	0.0	2.5	R	30	12,200	3	01/86
2	24	US	0281		R	4	+	0.5	3.0	R	8	12,200	3	01/86
3	24	US	0281		R	4	+	1.0	3.5	R	41	12,200	3	04/86
mean											26.33	12,200.00		

4.1.2 CRITICAL RIDE/ADT REPORT

The report **CRITICAL RIDE/ADT** provides the user with all highway segments with a ride score less than 2.8 (or, any ride value the user may choose) and ADT greater than 1500 vehicles per day. Table 5 shows the highway segments meeting the stated requirement.

TABLE 5
CRITICAL RIDE AND ADT SUMMARY

Critical Ride and ADT Summary Report
BROOKS COUNTY (024)

Critical RIDE Score: 2.8 Critical ADT Value Specified: 1,500

Page No. 1

ITEM NO.	COUNTY	HIGHW PFX	HIGHW NO.	HIGHW SFX	ROAD WAY	MILE POST	MILE DISP	MILEP VALUE	REFER POINT	LANE	RIDE SCORE	ADT VALUES	MAINTENANCE SECTION	Date of Last Surface
1	24	FM	2191		R	0	+	0.1	0.2		2.0	1,850	3	08/87
2	24	FM	2191		R	0	+	0.7	0.8		1.3	1,850	3	08/87
3	24	FM	2191		R	0	+	0.9	1.0	R	2.7	1,850	3	01/85
4	24	SH	0285		R	24	+	0.2	24.2		1.2	4,800	3	04/88
mean											1.8	2,587.50		

Note, four segments within Brooks county meet the specified conditions of ride scores less than 2.8 combined with an ADT rating in excess of 1500 vehicles per day.

4.1.3 CRITICAL SURFACE CURVATURE INDEX (SCI) REPORT

The **CRITICAL SCI** report generates all highway segments possessing SCI values greater than the critical SCI value requested when the report is run. Appendix L contains the detailed DATAEASE Report Definition form detailing this query. Table 6 illustrates the output for Brooks County.

TABLE 6
CRITICAL SCI AND ADT REPORT

Critical SCI and ADT Summary Report
BROOKS COUNTY (024)

Critical SCI Score: 1.00 Critical ADT Value Specified: 1,500

Page No. 1

ITEM NO.	COUNTY	HIGHW PFX	HIGHW NO.	HIGHW SFX	ROAD WAY	MILE POST	MILE DISP	MILEP VALUE	REFER POINT	LANE	SCI SCORE	ADT VALUES	MAINTEN SECTION	D.L.S.
1	24	FM	2191		R	0	+	0.4	0.5	R	1.27	1,850	3	08/87
2	24	SH	0285		R	28	+	0.0	28.0	R	1.06	2,100	3	01/78
3	24	US	0281		R	4	+	0.5	3.0	R	1.11	12,200	3	01/86
mean											1.15	5,383.33		

For Brooks County, three segments were located possessing SCI scores of 1.00 or greater combined with an ADT of 1500 vehicles per day or more.

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4.1.4 CRITICAL SKID/ADT REPORT

The **CRITICAL SKID** report locates all highway segments with critical skid values/ADT ratings. Table 11 describes the output of this run for Brooks County with user-specified skid of 30 or less and ADT ratings of 5000 vehicles per day or more.

TABLE 11
CRITICAL SKID AND ADT REPORT

DISTRICT 21 CRITICAL SKID & ADT SUMMARY
BROOKS COUNTY (024)
FOR A CRITICAL SKID VALUE OF 30 WITH ADT VALUE GREATER THAN OR = TO 8,000 VPD

Page No. 1

Item No.	COUNTY No.	HIGHWAY PREFIX	HIGHWAY NO.	H.WAY SFX	ROAD WAY	MILE POST	M.P. DISP	M.POST VALUE	REF. POINT	LANE	SKID VALUE	ADT	MAINT. SEC.
1	24	US	0281		R	0	+	0.4	0.4		30	11,100	3
2	24	US	0281		R	0	+	0.5	0.5	R	18	11,100	3
3	24	US	0281		R	0	+	1.0	1.0	R	30	11,100	3
4	24	US	0281		R	0	+	1.2	1.2		30	11,100	3
5	24	US	0281		R	0	+	1.6	1.6		28	11,100	3
6	24	US	0281		R	0	+	1.7	1.7		30	11,100	3
7	24	US	0281		R	0	+	1.8	1.8		28	11,100	3
8	24	US	0281		R	2	+	0.0	2.0	R	26	11,100	3
9	24	US	0281		R	2	+	0.2	2.2		29	12,200	3
10	24	US	0281		R	2	+	0.4	2.4		27	12,200	3
11	24	US	0281		R	4	+	0.7	3.2		28	12,200	3
12	24	US	0281		R	4	+	0.9	3.4		25	12,200	3
13	24	US	0281		R	4	+	1.1	3.6		29	12,200	3
14	24	US	0281		R	4	+	1.6	5.6		16	11,100	3
15	24	US	0281		R	4	+	1.8	5.8		14	11,100	3
16	24	US	0281		R	6	+	0.0	6.0	R	15	11,100	3
17	24	US	0281		R	30	+	3.7	33.7		29	11,100	3
mean											25.41	11,423.53	

Seventeen sections were located possessing skid values of 30 or less with an ADT of 5000 vehicles per day or more.

4.1.5 CRITICAL DATE OF LAST SURFACE/ADTREPORT

This report scans the 0.1-mile master file to locate all highway segments high traffic that have not been surfaced since the specified year requested on the data entry screen. The DATAEASE report name is **CRITICAL DLS/ADT**. The Report Specification Form is given in Appendix C. Table 12 presents the highway segments located in Brooks County with critical dates of last surface up to 1982 and possessing ADT ratings of 5000 vehicles per day or higher.

TABLE 12
CRITICAL DATE OF LAST SURFACE/ADTREPORT

Critical DATE OF LAST SURFACE and ADT Summary Report
BROOKS COUNTY (024)

Critical DATE OF LAST SURFACE: 84 Critical ADT Value Specified: 5,000

Page No. 1

ITEM NO.	COUNTY	HIGHW PFX	HIGHW NO.	HIGHW SFX	ROAD WAY	MILE POST	MILE DISP	MILEP VALUE	REFER POINT	LANE	HW DSGN TYPE	SURFACE TYPE	DATE LAST SURFACE	ADT VALUES	MAINTEN SECTION
1	24	SH	0285		R	26	+	0.1	24.5	R	1	10	01/83	5,300	3
2	24	SH	0285		R	26	+	0.2	24.6		1	10	01/83	5,300	3
3	24	SH	0285		R	26	+	0.8	25.2		1	10	01/78	5,300	3
4	24	SH	0285		R	26	+	0.9	25.3		1	10	01/78	5,300	3
5	24	SH	0285		R	26	+	1.0	25.4		1	10	01/78	5,300	3
6	24	SH	0285		R	26	+	1.1	25.5	R	1	10	01/78	5,300	3
7	24	SH	0285		R	26	+	1.2	25.6		1	10	01/78	5,300	3
8	24	SH	0285		R	26	+	1.3	25.7		1	10	01/78	5,300	3
9	24	SH	0285		R	26	+	1.4	25.8		1	10	01/78	5,300	3
10	24	SH	0285		R	26	+	1.5	25.9		1	10	01/78	5,300	3
11	24	SH	0285		R	26	+	0.0	26.0	R	1	10	01/78	5,300	3
12	24	US	0281		R	4	+	0.2	4.2		1	4	01/78	11,100	3
13	24	US	0281		R	4	+	0.3	4.3		1	4	01/78	11,100	3
14	24	US	0281		R	4	+	0.4	4.4		1	4	01/78	11,100	3
15	24	US	0281		R	4	+	0.5	4.5	R	1	4	01/78	11,100	3
16	24	US	0281		R	4	+	0.6	4.6		1	4	01/78	11,100	3
17	24	US	0281		R	4	+	0.7	4.7		1	4	01/78	11,100	3
18	24	US	0281		R	4	+	0.8	4.8		1	4	01/78	11,100	3
19	24	US	0281		R	4	+	0.9	4.9		1	4	01/78	11,100	3
20	24	US	0281		R	4	+	1.0	5.0	R	1	4	01/78	11,100	3
21	24	US	0281		R	4	+	1.1	5.1		1	4	01/78	11,100	3
22	24	US	0281		R	4	+	1.2	5.2		1	4	01/78	11,100	3
23	24	US	0281		R	4	+	1.3	5.3		1	4	01/78	11,100	3
mean														8,326.09	

4.1.6 CRITICAL REPORTS FROM THE VISUAL AND RIDE DATA FILES

In addition to the five standard reports, four additional reports will be presented. These are:

1. Critical Ride/FWD/ADT,
2. Critical Raveling/Rutting/Patching (from the visual data file),
3. Critical Raveling/Rutting/Patching/Ride,
4. Critical Crack Location.

Critical Ride/FWD/ADT Report

This report locates those road segments possessing inferior ride and FWD scores in conjunction with a designated ADT value. These segments indicate worse case segments that are in need of major maintenance work. Table 13 illustrates critical segments taken from Brooks County.

TABLE 13
CRITICAL RIDE/FWD/ADT REPORT

Critical RIDE/FWD/ADT Summary Report
Specified for BROOKS COUNTY (024)
Critical RIDE Score: 2.8 and Critical FWD Score >= 1.00 and a Critical ADT Value >= 500 vpd
Page No. 1

ITEM NO.	COUNTY	HIGHW PFX	HIGHW NO.	HIGHW SFX	ROAD WAY	MILE POST	MILE DISP	MILEP VALUE	REFER POINT	LANE	RIDE SCORE	FWD SCORE	ADT VALUES	MAINTENANCE SECTION	D.L.S.
1	24	FM	0430		R	0	+	1.0	1.0	R	2.4	1.31	910	3	06/88
2	24	FM	2191		R	12	+	0.0	12.0	R	2.8	1.41	540	3	03/87
3	24	SH	0285		R	12	+	0.2	12.0	R	2.5	1.29	640	3	06/85
mean											2.6	1.34	696.67		

Critical Raveling/Rutting/Patching Report

Table 14 presents those highway segments located in Brooks County possessing low visual ratings regarding raveling, rutting, or patching. These segments indicate segments in need of sealing/overlay work.

TABLE 14
CRITICAL RAVELING/RUTTING/PATCHING REPORT

DISTRICT 21 CRITICAL RAVELING-RUTTING-PATCHING VS. RIDE LOCATION REPORT
BROOKS COUNTY (024)

Page No.1

item no.	Cty No.	H.W. PFX	H.W. NO.	H.W. Sfx	Road Way	M.P.	M.P. Dsp.	M.P. Val.	Lane	Ref. Point	Rav Mo	Rav Sv	Rut Mo	Rut Sv	Pat Mo	Pat Sv	Ride Val.	Maint. Sec
1	24	US	0281		R	0	+	0.5	R	0.5	0	0	2	0	0	0		3
2	24	US	0281		R	2	+	0.0	R	2.0	0	0	1	0	0	1	4.7	3
3	24	US	0281		R	4	+	0.0	R	2.5	0	0	1	0	0	1		3
4	24	US	0281		R	4	+	0.5	R	3.0	0	0	2	0	0	1	3.0	3
5	24	US	0281		R	4	+	1.0	R	3.5	0	0	2	0	0	1		3
6	24	US	0281		R	4	+	0.0	R	4.0	0	0	2	0	0	0	4.8	3
7	24	US	0281		R	4	+	0.5	R	4.5	0	0	1	0	0	1		3
8	24	US	0281		R	4	+	1.0	R	5.0	0	0	0	0	0	1	3.8	3
9	24	US	0281		R	18	+	1.0	R	19.0	0	0	1	0	0	0	3.3	3
10	24	US	0281		R	20	+	0.0	R	20.0	0	0	1	0	0	0	3.0	3
11	24	SH	0285		R	0	+	0.5	R	0.5	0	0	2	0	0	0		3
12	24	SH	0285		R	0	+	1.5	R	1.5	0	0	1	0	0	0		3
13	24	SH	0285		R	4	+	0.7	R	4.5	0	0	1	0	0	0		3
14	24	SH	0285		R	4	+	1.2	R	5.0	0	0	1	0	0	0	4.4	3
15	24	SH	0285		R	6	+	0.7	R	6.5	0	0	1	0	0	0		3
16	24	SH	0285		R	6	+	1.7	R	7.5	0	0	2	0	0	0		3
17	24	SH	0285		R	8	+	0.2	R	8.0	0	0	2	0	0	0	4.1	3
18	24	SH	0285		R	8	+	0.7	R	8.5	0	0	1	0	0	0		3
19	24	SH	0285		R	8	+	1.7	R	9.5	0	0	1	0	0	3		3
20	24	SH	0285		R	10	+	0.2	R	10.0	0	0	0	0	0	1	3.4	3
21	24	SH	0285		R	10	+	0.7	R	10.5	0	0	1	0	0	2		3
22	24	SH	0285		R	10	+	1.2	R	11.0	0	0	0	0	1	0	4.1	3
23	24	SH	0285		R	12	+	0.7	R	12.5	0	0	1	0	1	0		3
24	24	SH	0285		R	12	+	1.2	R	13.0	0	0	1	0	0	2	3.6	3
25	24	SH	0285		R	12	+	1.7	R	13.5	0	0	0	0	2	0		3
26	24	SH	0285		R	14	+	1.7	R	15.5	0	0	0	0	1	0		3
27	24	SH	0285		R	16	+	0.0	R	16.0	0	0	0	0	1	0	3.3	3
28	24	SH	0285		R	18	+	0.0	R	18.0	0	0	0	0	0	1	3.4	3
29	24	SH	0285		R	18	+	0.5	R	18.5	0	0	0	0	0	1		3
30	24	SH	0285		R	18	+	1.0	R	19.0	0	0	0	0	0	1	3.6	3
31	24	SH	0285		R	18	+	1.5	R	19.5	0	0	0	0	0	1		3
32	24	SH	0285		R	20	+	0.5	R	20.5	0	0	1	0	0	0		3
33	24	FM	0430		R	0	+	0.5	R	0.5	0	0	0	0	2	0		3
34	24	FM	0430		R	0	+	1.0	R	1.0	0	0	0	0	1	0	2.4	3
35	24	FM	0430		R	2	+	0.0	R	2.0	0	0	0	0	1	0	3.6	3
36	24	FM	0430		R	2	+	1.0	R	3.0	0	0	0	0	1	0	3.3	3

Critical Raveling/Rutting/Patching/Ride Report

Table 15 presents located highway segments possessing critical visual-type distresses (rutting, raveling, patching, etc) along with the associated ride score. In this manner, the maintenance engineer can judge if the ride value of the segment has been adversely affected by the visual distresses.

TABLE 15
CRITICAL RAVELING/RUTTING/PATCHING/RIDE REPORT

DISTRICT 21 CRITICAL RAVELING-RUTTING-PATCHING VS. RIDE LOCATION REPORT
BROOKS COUNTY (024)

Page No.2

item no.	Cty No.	H.W. PFX	H.W. NO.	H.W. Sfx	Road Way	M.P.	M.P. Dsp.	M.P. Val.	Lane	Ref. Point	Rav Mo	Rav Sv	Rut Mo	Rut Sv	Pat Mo	Pat Sv	Ride Val.	Maint. Sec
52	24	FM	0755		R	14	+	1.0	R	15.0	0	0	0	0	0	1	3.6	3
53	24	FM	0755		R	16	+	0.0	R	16.0	0	0	0	0	1	0	3.7	3
54	24	FM	0755		R	16	+	0.5	R	16.5	0	0	0	0	1	0		3
55	24	FM	0755		R	16	+	1.0	R	17.0	0	0	0	0	1	0	4.0	3
56	24	FM	0755		R	16	+	1.5	R	17.5	0	0	0	0	0	1		3
57	24	FM	0755		R	18	+	0.5	R	18.5	0	0	1	0	0	1		3
58	24	FM	0755		R	20	+	0.0	R	20.0	0	0	1	0	0	1	4.5	3
59	24	FM	0755		R	22	+	0.4	R	22.4	0	0	0	0	1	0		3
60	24	FM	1418		R	0	+	0.5	R	0.5	0	0	0	0	1	1		3
61	24	FM	1418		R	0	+	1.0	R	1.0	0	0	0	0	0	2	1.9	3
62	24	FM	1418		R	0	+	1.5	R	1.5	0	0	0	0	2	0		3
63	24	FM	1418		R	2	+	0.0	R	2.0	0	0	1	0	2	0	4.1	3
64	24	FM	2191		R	0	+	0.4	R	0.5	0	0	1	0	0	1		3
65	24	FM	2191		R	0	+	0.9	R	1.0	0	0	1	0	0	1	2.7	3
66	24	FM	2191		R	0	+	1.4	R	1.5	0	0	0	0	0	2		3
67	24	FM	2191		R	2	+	0.0	R	2.0	0	0	1	0	0	1	3.1	3
68	24	FM	2191		R	2	+	0.5	R	2.5	0	0	0	0	0	1		3
69	24	FM	2191		R	2	+	1.0	R	3.0	0	0	1	0	0	1	3.5	3
70	24	FM	2191		R	2	+	1.5	R	3.5	0	0	0	0	0	1		3
71	24	FM	2191		R	4	+	0.0	R	4.0	0	0	1	0	0	0	3.3	3
72	24	FM	2191		R	4	+	0.5	R	4.5	0	0	0	0	1	1		3
73	24	FM	2191		R	4	+	1.0	R	5.0	0	0	0	0	0	1	3.6	3
74	24	FM	2191		R	4	+	1.5	R	5.5	0	0	0	0	0	1		3
75	24	FM	2191		R	6	+	0.0	R	6.0	0	0	0	0	1	0	2.8	3
76	24	FM	2191		R	6	+	0.5	R	6.5	0	0	1	1	0	2		3
77	24	FM	2191		R	6	+	1.0	R	7.0	0	0	0	0	1	0	4.5	3
78	24	FM	2191		R	10	+	1.0	R	11.0	0	0	0	0	0	1	3.3	3
79	24	FM	2191		R	10	+	1.5	R	11.5	0	0	1	0	1	1		3
80	24	FM	2191		R	12	+	0.0	R	12.0	0	0	0	0	0	1	2.8	3
81	24	FM	2191		R	12	+	0.3	R	12.3	0	0	1	0	0	1		3

Critical Crack Location Report

Table 16 locates those highway segments possessing moderate to severe crack distresses. This report serves to inform the maintenance engineer of the location and severity of the various moderate to severe cracking distresses.

TABLE 16
CRITICAL CRACK LOCATION REPORT

DISTRICT 21 MODERATE-SEVERE CRACK LOCATION REPORT
CRACK CONDITION CODES: 1=ARE 2=NOT 3=PARTLY... SEALED
BROOKS COUNTY (024) Page No: 1

ITEM NO.	COUNTY NO.	HIGH PREFX	HIGH NO.	HIGH SFX	ROAD WAY	MILE POST	MILE DISP	MILE VALUE	LANE	REFERENCE POINT	ALG-MO	ALG-SV	LONG-MO	LONG-SV	TRANS-MO	TRANS-SV	CR COND
1	24	US	0281		R	0	+	0.5	R	1.0	0	0	1	0	0	0	3
2	24	US	0281		R	2	+	0.0	R	2.5	0	0	2	0	2	0	3
3	24	US	0281		R	4	+	0.0	R	4.5	0	0	3	0	3	0	3
4	24	US	0281		R	4	+	0.5	R	5.0	0	0	3	0	3	0	1
5	24	US	0281		R	4	+	1.0	R	5.5	0	0	3	0	3	0	3
6	24	US	0281		R	4	+	1.5	R	6.0	0	0	3	0	3	0	3
7	24	US	0281		R	6	+	0.0	R	6.5	0	0	3	0	3	0	3
8	24	US	0281		R	6	+	0.5	R	7.0	0	0	3	0	3	0	3
9	24	US	0281		R	6	+	1.0	R	7.5	0	0	3	0	3	0	3
10	24	US	0281		R	6	+	1.5	R	8.0	0	0	3	0	3	0	3
11	24	US	0281		R	8	+	0.0	R	8.5	0	0	3	0	3	0	3
12	24	US	0281		R	8	+	0.5	R	9.0	0	0	3	0	3	0	3
13	24	US	0281		R	8	+	1.0	R	9.5	0	0	3	0	3	0	1
14	24	US	0281		R	8	+	1.5	R	10.0	0	0	2	0	3	0	1
15	24	US	0281		R	10	+	0.0	R	10.5	0	0	2	0	3	0	1
16	24	US	0281		R	10	+	0.5	R	11.0	0	0	2	0	3	0	1
17	24	US	0281		R	10	+	1.0	R	11.5	0	0	3	0	3	0	1
18	24	US	0281		R	10	+	1.5	R	12.0	0	0	3	0	3	0	1
19	24	US	0281		R	12	+	0.0	R	12.5	0	0	3	0	3	0	3
20	24	US	0281		R	12	+	0.5	R	13.0	0	0	3	0	3	0	1
21	24	US	0281		R	12	+	1.0	R	13.5	0	0	3	0	3	0	1
22	24	US	0281		R	12	+	1.5	R	14.0	0	0	3	0	3	0	1
23	24	US	0281		R	14	+	0.0	R	14.5	0	0	3	0	3	0	1
24	24	US	0281		R	14	+	0.5	R	15.0	0	0	3	0	3	0	1
25	24	US	0281		R	14	+	1.0	R	15.5	0	0	2	0	3	0	3
26	24	US	0281		R	14	+	1.5	R	16.0	0	0	0	0	2	0	3
27	24	US	0281		R	16	+	0.5	R	17.0	0	0	3	0	3	0	1
28	24	FM	2191		R	2	-	2.0	R	0.5	2	0	0	0	0	0	2
29	24	FM	2191		R	4	+	1.5	R	6.0	1	0	0	0	0	0	2
30	24	FM	2191		R	6	+	0.0	R	6.5	2	0	1	0	1	0	2
31	24	FM	2191		R	10	+	1.0	R	11.5	2	0	0	0	0	0	0

4.2 SUMMARY FOR REPORT GENERATION

This section presented information concerning the generation of standardized sample reports that the research team felt would be important to District Engineers. As more experience is gained with the system, it is highly likely that numerous other reports will be added. Thus, as with any system of this nature, it will continue to expand and develop as future needs arise.

When the final installation of this system is completed in D21, the authors will revise this report to reflect the changes brought about by day-to-day use. Our intent for now is to present the development of the prototype system and the reporting capabilities designed herein.

As district personnel become familiar with the system, they will develop the skill necessary to write their own standard reports and any **ad hoc** reports that may be required. The ad hoc report represents a special propose or one-time report that satisfies a special inquiry into the database. An **ad hoc** report can be executed one time or saved to a report file for continued use.

The report generation language once learned, is straight-forward. With the appropriate training, resident engineers can produce their own reports specific to their needs. The developed system permits building libraries of reports and incorporating them into a menu scheme.

The purpose of this section is to illustrate the basic reports available on the developed system. No attempt has been made to cover the details of the report generation language. Training District personnel in the report generation capabilities of the database will be part of specialized training sessions to be conducted at the request of the district. Documentation of these activities will be part of the maintenance/extension of this system and will be published under separate documentation as performed.

The next sections deal with details relating to collection and importing of ride, skid, FWD, and visual data into the respective holding files.

5.0 RIDE DATA COLLECTION -- SIOMETER METHOD

(This section was written by D-18PM personnel under the direction of Mr. Craig Cox.)

When Slometer ride data is collected for a given county, its final form is in a format readable only by the Pavement Evaluation System (PES). In order to use this ride data in this Pavement Management System (PMS), the collected data must be converted into a readable format. After the data is converted, it is then imported into the proper data form through an iterative process. When the collection of the ride data is complete, the results will be used in reporting and decision making operations.

The following example details the steps involved in processing the Slometer Ride Data.

5.1 SIOMETER RIDE DATA CONVERSION

To begin the Slometer ride data conversion, select the county in which the Siometer ride data was collected. This can be accomplished by using the "Pavement Management System" main menu (Figure 23). In this example, we will use Willacy county. To do this, use the arrow keys on the keyboard to point to the item "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key.

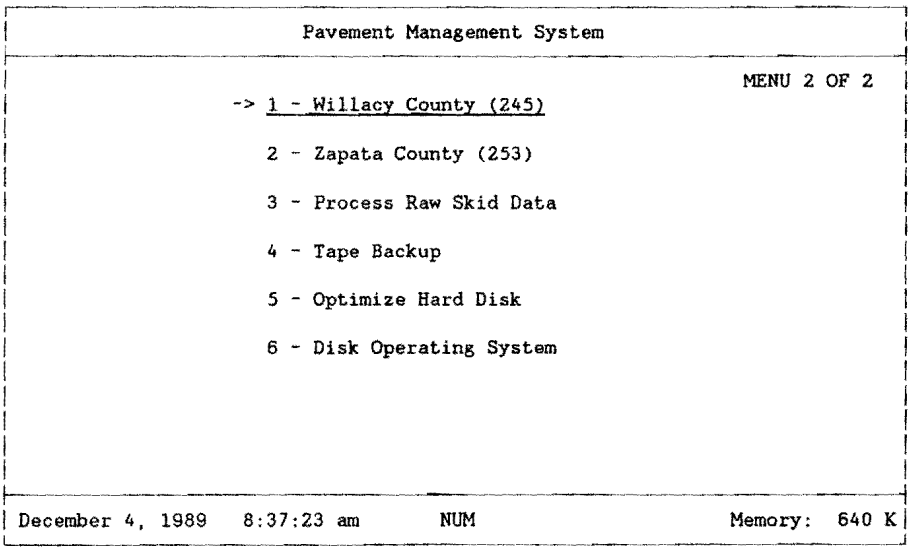


FIGURE 23: PMS MAIN MENU

As soon as you select a county, the menu program automatically accesses the database for that county and prompts you for your name and your security password (Figure 24). Your sign-on name and password are assigned to you by your PMS administrator.

In the following example, the sign on name is "DATA" and the security password is "ENTRY". The database first prompts you for your name. In this example, type "DATA" and press the "Enter" key. The database then prompts you for your security password. Type "ENTRY" and press the "Enter" key. Notice that the password that you typed does not appear on the screen.

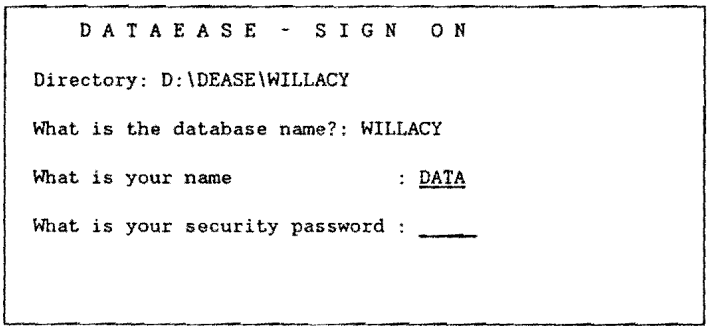


FIGURE 24: PMS SIGN-ON MENU

If everything was typed in correctly, the "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen with seven different categories to choose from (Figure 25). Select "2. Data Entry -- District Field Data" by pressing the "2" key or use the arrow keys to highlight the selection and press the "Enter" key.

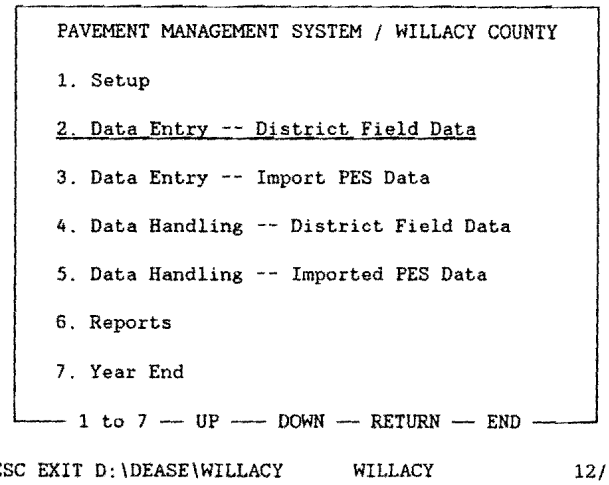


FIGURE 25: PMS DATA ENTRY MENU

The next menu that appears on your screen is the "DATA ENTRY -- DISTRICT FIELD DATA / WILLACY COUNTY" menu. Since we want to process ride data,

select "2. Ride Data" by pressing the "2" key, or use the arrow keys to highlight the selection and press the "Enter" key (Figure 26).

```
DATA ENTRY -- DISTRICT FIELD DATA / WILLACY COUNTY

  1. Input or Modify Visual Data

  2. Ride Data

  3. FWD Data

  4. Skid Data

  5. Create or Modify Date of Last Surface

  6. Create or Modify Crossroads

  7. Create or Modify District Counties Data

  8. Create or Modify Roadway Characteristics

  1 to 8 -- UP -- DOWN -- RETURN -- END

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY      WILLACY          12/04/89   8:40 am
```

FIGURE 26: FIELD DATA MENU

The next menu, "RIDE DATA / WILLACY COUNTY", will initiate ride data processing (Figure 27).

The first operation to perform is to convert the raw SIometer data. This is done by selecting "2. Convert Raw SIometer Data". Press the "2" key or use the arrow keys to highlight the selection and press the "Enter" key.

```
          RIDE DATA / WILLACY COUNTY

  1. Input or Modify Mays Ride Data

  2. Convert Raw SIometer Data

  3. Import SIometer Data

  4. Validate SIometer Errors in Imported Data

  5. Correct Errors in SIometer Data File

  1 to 5 -- UP -- DOWN -- RETURN -- END

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY      WILLACY          12/04/89   8:40 am
```

FIGURE 27: CONVERT RAW SIOMETER DATA

You are then prompted with the following message.

PLACE RIDE FIELD DATA IN DRIVE A:
Strike a key when ready . . .

Place the floppy diskette containing the Slometer ride data for Willacy County in Drive A and press any key on the keyboard. Make certain that only ride data collected for Willacy county resides on the floppy diskette.

The menu then selects and executes a BASIC program called "RIDEC.EXE". "RIDEC.EXE" reformats the Slometer ride data collected for Willacy County to a format that can be imported into the Slometer ride form in the PMS database. Upon completion of the conversion, you will be prompted with the following screen (Figure 28).

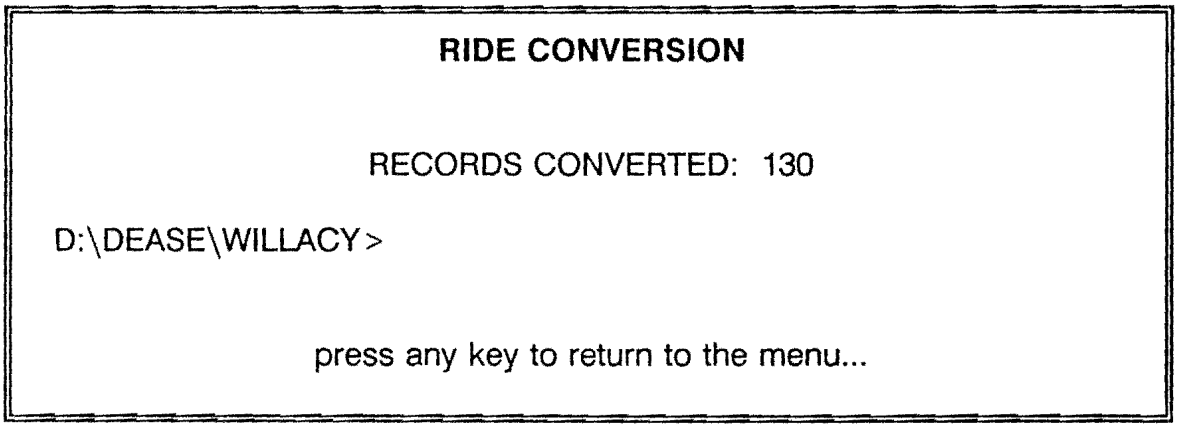


FIGURE 28: RIDE CONVERSION TERMINAL SCREEN

Press any key and you will be returned to the "RIDE DATA / WILLACY COUNTY" menu screen.

The remainder of this page intentionally left blank.

5.2 SIOMETER DATA IMPORT

Now that the SIometer ride data for the selected county has been converted, we will attempt to import it into the PMS database. To do this, select "3. Import SIometer data" by pressing "3" or use the arrow keys to point to the selection and press "Enter"(Figure 29).

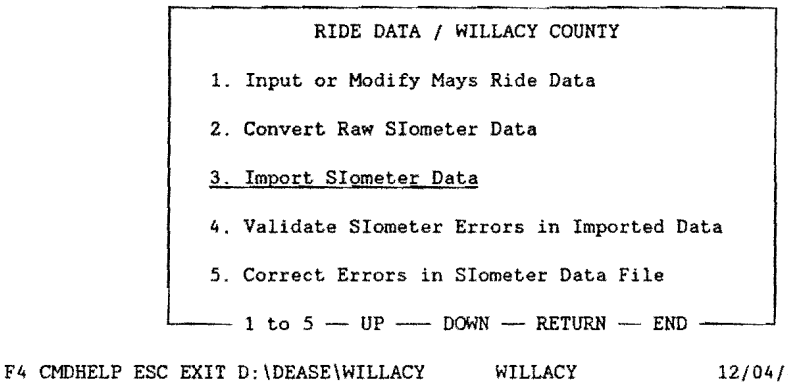


FIGURE 29: IMPORT SIOMETER DATA MENU

The "3. Import SIometer Data" selection does a number of operations. The first operation that the selection does is try to import the SIometer ride data from the file created in the "2. Convert Raw SIometer Data" selection. Two examples of the import facility are shown below, which demonstrate matching and nonmatching records. The first example demonstrates a nonmatching record.

D:\DEASE\WILLACY\SIOMETER.DBI 1: discarded..
Transferring data...
DATAEASE - DATA IMPORT FACILITY

F4 CMDHELP ESC EXIT

The second example demonstrates a matching record.

D:\DEASE\WILLACY\SIOMETER.DBI11: updates 535..Transferring data...

DATAEASE - DATA IMPORT FACILITY

F4 CMDHELP ESC EXIT

Invariably you will have records that will not match the records in the database for some reason or another. These records are listed in a separate file as errors from the import function. On the other hand, if no errors occur, the import process of the Slometer ride data is complete, and you can disregard the next set of operations.

The error file, that the import function creates, contains only the line number from the import data set where the errors occurred. The next process that the import selection does is to match the line number errors in the error file to the actual line containing the data, and to list the data with errors. This process is done by a program named "RIDERR.EXE". "RIDERR.EXE" then creates a new import file with the Slometer ride data that contained errors.

An example listing, to the printer, of the errors incurred by the import process and generated by "RIDERR.EXE" follows (Table 17).

RIDE ERRORS

CNTY HIGHWAY MILEPOST RWY SI CMT YEAR

---

discarded.. 245;FM;0490; ;000;+;0.0;R;1.6; ;88
discarded.. 245;FM;0490; ;000;+;0.2;R;2.7; ;88
discarded.. 245;FM;0490; ;000;+;0.4;R;3.6; ;88
discarded.. 245;FM;0490; ;000;+;0.6;R;2.6; ;88
discarded.. 245;FM;0490; ;000;+;0.8;R;2.8; ;88
discarded.. 245;FM;0088; ;000;+;0.0;R;3.6; ;88
discarded.. 245;FM;0088; ;000;+;0.2;R;3.1; ;88
discarded.. 245;FM;0088; ;000;+;0.4;R;2.7; ;88
discarded.. 245;FM;0088; ;000;+;0.6;R;3.4; ;88
discarded.. 245;FM;0088; ;000;+;0.8;R;3.0; ;88
discarded.. 245;FM;0606; ;000;+;0.0;L;3.3; ;88
discarded.. 245;FM;0606; ;000;+;0.2;L;2.7; ;88
discarded.. 245;FM;0606; ;000;+;0.4;L;3.0; ;88
discarded.. 245;FM;0606; ;000;+;0.6;L;3.0; ;88
discarded.. 245;FM;0606; ;000;+;0.8;L;2.1; ;88

TABLE 17
DISGARDED RIDE RECORDS

These errors must be corrected and reimported again until no more errors exist.

The first operation in correcting the errors is to separate the break points in the error listing by manually underlining them on the output. This will make the error validation process much easier. Table 18 demonstrates the break points in the error listing of the Slometer ride data.

RIDE ERRORS

	CNTY HIGHWAY	MILEPOST	RWY	SI	CMT	YEAR
discarded..	245;FM;0490;	;000;+;0.0;R;1.6;			;88	
discarded..	245;FM;0490;	;000;+;0.2;R;2.7;			;88	
discarded..	245;FM;0490;	;000;+;0.4;R;3.6;			;88	
discarded..	245;FM;0490;	;000;+;0.6;R;2.6;			;88	
discarded..	245;FM;0490;	;000;+;0.8;R;2.8;			;88	
discarded..	245;FM;0088;	;000;+;0.0;R;3.6;			;88	
discarded..	245;FM;0088;	;000;+;0.2;R;3.1;			;88	
discarded..	245;FM;0088;	;000;+;0.4;R;2.7;			;88	
discarded..	245;FM;0088;	;000;+;0.6;R;3.4;			;88	
discarded..	245;FM;0088;	;000;+;0.8;R;3.0;			;88	
discarded..	245;FM;0606;	;000;+;0.0;L;3.3;			;88	
discarded..	245;FM;0606;	;000;+;0.2;L;2.7;			;88	
discarded..	245;FM;0606;	;000;+;0.4;L;3.0;			;88	
discarded..	245;FM;0606;	;000;+;0.6;L;3.0;			;88	
discarded..	245;FM;0606;	;000;+;0.8;L;2.1;			;88	

TABLE 18
BREAKPOINTS FOR EDITING RIDE DATA

After the errors are listed to the printer, you are returned to the "RIDE DATA / WILLACY COUNTY" menu screen. The next step is to validate each group of errors that were separated and to note any correction on the output. This is done by selecting the "4. Validate SIometer Errors in Imported Data" option (Figure 30). Press the "4" key or use the arrow keys to highlight the selection and press the "Enter" key.

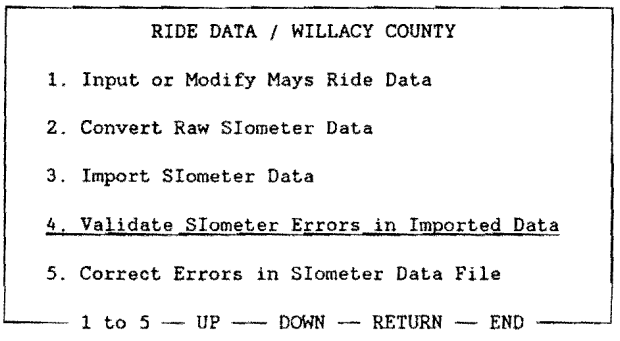


FIGURE 30: VALIDATE SIOMETER MENU

5.3 SIOMETER ERROR CORRECTION PROCEDURE

The next screen that appears is the "RIDE ERROR CORRECTIONS" report, which the user must complete for validation of the SIometer ride data with errors. The information that must be completed will be found in the groups of invalid SIometer ride data that were selected on the "RIDE ERRORS" report (See Figure 31).

RIDE ERRORS

	CNTY HIGHWAY MILEPOST RWY SI CMT YEAR	
discarded..	245;FM;0490; ;000;+;0.0;R;1.6; ;88	┐
discarded..	245;FM;0490; ;000;+;0.2;R;2.7; ;88	│
discarded..	245;FM;0490; ;000;+;0.4;R;3.6; ;88	├ FIRST GROUP
discarded..	245;FM;0490; ;000;+;0.6;R;2.6; ;88	│
discarded..	245;FM;0490; ;000;+;0.8;R;2.8; ;88	┘
discarded..	245;FM;0088; ;000;+;0.0;R;3.6; ;88	
discarded..	245;FM;0088; ;000;+;0.2;R;3.1; ;88	
discarded..	245;FM;0088; ;000;+;0.4;R;2.7; ;88	
discarded..	245;FM;0088; ;000;+;0.6;R;3.4; ;88	
discarded..	245;FM;0088; ;000;+;0.8;R;3.0; ;88	
discarded..	245;FM;0606; ;000;+;0.0;L;3.3; ;88	
discarded..	245;FM;0606; ;000;+;0.2;L;2.7; ;88	
discarded..	245;FM;0606; ;000;+;0.4;L;3.0; ;88	
discarded..	245;FM;0606; ;000;+;0.6;L;3.0; ;88	
discarded..	245;FM;0606; ;000;+;0.8;L;2.1; ;88	

FIGURE 31: DISGARDED RIDE ERRORS

To validate the errors in the first group of Slometer ride errors (Figure 31), the "RIDE ERROR CORRECTIONS" report screen must be completed as shown in Figure 32.

RIDE ERROR CORRECTIONS

Complete the entries below, then press "F2"

HIGHWAY PREFIX: FM

HIGHWAY NUMBER: 0490

HIGHWAY SUFFIX: _

ROADWAY: R

F4CMDHELP ESCEXIT F2SAVE F5FORM CLEAR F6FIELD CLR

FIGURE 32: RIDE ERROR CORRECTIONS

After the information is completed (FM; 0490; SPACE; R), press the "F2" key to start the validation report process. Scroll through the output by pressing the space bar until the output matches, as near as possible, that of the first group on the Slometer ride data error listing (Table 19).

the Slometer ride data error listing (Table 19).

RIDE VIEW Running report RIDE VIEW
SPACEorPgDn: Continue report EXIT: Abort report PgUp: Scroll

SIOMETER ERROR CORRECTIONS

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST
000016	245	FM0490	R	0.2	2-1.8
000017	245	FM0490	R	0.4	2-1.6
000018	245	FM0490	R	0.6	2-1.4
000019	245	FM0490	R	0.8	2-1.2
000020	245	FM0490	R	1.0	2-1.0
000021	245	FM0490	R	1.2	2-0.8
000022	245	FM0490	R	1.4	2-0.6
000023	245	FM0490	R	1.6	2-0.4
000024	245	FM0490	R	1.8	2-0.2
000025	245	FM0490	R	2.0	2+0.0
000026	245	FM0490	R	2.2	2+0.2
000027	245	FM0490	R	2.4	2+0.4
000028	245	FM0490	R	2.6	2+0.6
000029	245	FM0490	R	2.8	2+0.8
000030	245	FM0490	R	3.0	2+1.0
000031	245	FM0490	R	3.2	2+1.2

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY WILLACY 12/12/89 10:40 am

TABLE 19
SIOMETER ERROR SUMMARY

Note on the Slometer ride data error output the corrections that need to be made to match the records to the ones above. In our example, the only difference between the Slometer ride error output and the screen above is the "MILEPOST" structure inequality. To correct the structure inequality, modify the milepost variable to appear as the "MILEPOST" above.

Also, the first record in the "RIDE ERRORS" report does not appear in the "SIOMETER ERROR CORRECTIONS" report, so it must be deleted as demonstrated below.

RIDE ERRORS

```
                CNTY  HIGHWAY MILEPOST RWY  SI CMT YEAR
-------------------------------------------------------------------
  discarded..   245;FM;0490; ;000;+;0.0;R;1.6; ;88 — DELETE RECORD
  discarded..   245;FM;0490; ;000;+;0.2;R;2.7; ;88 — ;002;-;1.8;
  discarded..   245;FM;0490; ;000;+;0.4;R;3.6; ;88 — ;002;-;1.6;
  discarded..   245;FM;0490; ;000;+;0.6;R;2.6; ;88 — ;002;-;1.4;
  discarded..   245;FM;0490; ;000;+;0.8;R;2.8; ;88 — ;002;-;1.2
  discarded..   245;FM;0088; ;000;+;0.0;R;3.6; ;88
  discarded..   245;FM;0088; ;000;+;0.2;R;3.1; ;88
  discarded..   245;FM;0088; ;000;+;0.4;R;2.7; ;88
  discarded..   245;FM;0088; ;000;+;0.6;R;3.4; ;88
  discarded..   245;FM;0088; ;000;+;0.8;R;3.0; ;88
  discarded..   245;FM;0606; ;000;+;0.0;L;3.3; ;88
  discarded..   245;FM;0606; ;000;+;0.2;L;2.7; ;88
  discarded..   245;FM;0606; ;000;+;0.4;L;3.0; ;88
  discarded..   245;FM;0606; ;000;+;0.6;L;3.0; ;88
  discarded..   245;FM;0606; ;000;+;0.8;L;2.1; ;88
```

MILEPOST INEQUALITY CHANGE

Press the "Esc" key to return to the "RIDE ERROR CORRECTIONS" report input screen. Now, we need to validate the second group of errors in the Slometer ride data (Table 20).

RIDE ERRORS

```
                CNTY  HIGHWAY MILEPOST RWY  SI CMT YEAR
-------------------------------------------------------------------
  discarded..   245;FM;0490; ;000;+;0.0;R;1.6; ;88 — DELETE RECORD
  discarded..   245;FM;0490; ;000;+;0.2;R;2.7; ;88 — ;002;-;1.8;
  discarded..   245;FM;0490; ;000;+;0.4;R;3.6; ;88 — ;002;-;1.6;
  discarded..   245;FM;0490; ;000;+;0.6;R;2.6; ;88 — ;002;-;1.4;
  discarded..   245;FM;0490; ;000;+;0.8;R;2.8; ;88 — ;002;-;1.2
  discarded..   245;FM;0088; ;000;+;0.0;R;3.6; ;88
  discarded..   245;FM;0088; ;000;+;0.2;R;3.1; ;88
  discarded..   245;FM;0088; ;000;+;0.4;R;2.7; ;88
  discarded..   245;FM;0088; ;000;+;0.6;R;3.4; ;88
  discarded..   245;FM;0088; ;000;+;0.8;R;3.0; ;88
  discarded..   245;FM;0606; ;000;+;0.0;L;3.3; ;88
  discarded..   245;FM;0606; ;000;+;0.2;L;2.7; ;88
  discarded..   245;FM;0606; ;000;+;0.4;L;3.0; ;88
  discarded..   245;FM;0606; ;000;+;0.6;L;3.0; ;88
  discarded..   245;FM;0606; ;000;+;0.8;L;2.1; ;88
```

MILEPOST INEQUALITY CHANGE

SECOND GROUP

TABLE 20
RIDE ERROR CORRECTIONS

Type in the pertinent information (FM; 0088; SPACE; R) of the second group of data for the error validation report, and press the "F2" key.

RIDE ERROR CORRECTIONS
Complete the entries below, then press "F2"

```
                    HIGHWAY PREFIX: FM

                    HIGHWAY NUMBER: 0088

                    HIGHWAY SUFFIX: _

                         ROADWAY: R

F4CMDHELP ESCEXIT F2SAVE F5FORM CLEAR F6FIELD CLR
```

Scroll through the report by pressing the space bar, until the output matches, as near as possible, that of the second group on the "RIDE ERRORS" report listing (Table 21).

```
RIDE VIEW                                Running report RIDE VIEW
SPACEorPgDn: Continue report EXIT: Abort report PgUp: Scroll

                    SIOMETER ERROR CORRECTIONS
```

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST
000001	245	FM0088	R	0.2	2-1.7
000002	245	FM0088	R	0.4	2-1.5
000003	245	FM0088	R	0.6	2-1.3
000004	245	FM0088	R	0.8	2-1.1
000005	245	FM0088	R	1.0	2-0.9
000006	245	FM0088	R	1.2	2-0.7
000007	245	FM0088	R	1.4	2-0.5
000008	245	FM0088	R	1.6	2-0.3
000009	245	FM0088	R	1.8	2-0.1
000010	245	FM0088	R	2.0	2+0.1
000011	245	FM0088	R	2.2	2+0.3
000012	245	FM0088	R	2.4	2+0.5
000013	245	FM0088	R	2.6	2+0.7
000014	245	FM0088	R	2.8	2+0.9
000015	245	FM0088	R	3.0	2+1.1

```
F4 CMDHELP ESC EXIT D:\DEASE\WILLACY      WILLACY          12/12/89  10:40 am
```

TABLE 21
BLOCKED SIOMETER ERROR CORRECTIONS

The modifications to the second group are almost exactly the same as that of the first group, except that the tenths of miles is odd instead of even.

The first record in this set does not exist, so delete it. The rest of the records in this set need the "MILEPOST" variable modified in two ways. Modify the structure inequality of the "MILEPOST" variable, then increase or decrease the tenth of mile one tenth.

The rounding of the tenths of mile will now allow the data to match the records in the database. The modification notes for the second data set appear in Table 22.

RIDE ERRORS

	CNTY HIGHWAY MILEPOST RWY SI CMT YEAR		
discarded..	245;FM;0490; ;000;+;0.0;R;1.6; ;88	— DELETE RECORD	┐
discarded..	245;FM;0490; ;000;+;0.2;R;2.7; ;88	— ;002;-;1.8;	│
discarded..	245;FM;0490; ;000;+;0.4;R;3.6; ;88	— ;002;-;1.6;	├ MILEPOST INEQUALITY
discarded..	245;FM;0490; ;000;+;0.6;R;2.6; ;88	— ;002;-;1.4;	│ CHANGE
discarded..	245;FM;0490; ;000;+;0.8;R;2.8; ;88	— ;002;-;1.2	┘
discarded..	245;FM;0088; ;000;+;0.0;R;3.6; ;88	— DELETE RECORD	┐
discarded..	245;FM;0088; ;000;+;0.2;R;3.1; ;88	— ;002;-;1.7	│
discarded..	245;FM;0088; ;000;+;0.4;R;2.7; ;88	— ;002;-;1.5	├ MILEPOST INEQUALITY
discarded..	245;FM;0088; ;000;+;0.6;R;3.4; ;88	— ;002;-;1.3	│ AND ROUNDING CHANGE
discarded..	245;FM;0088; ;000;+;0.8;R;3.0; ;88	— ;002;-;1.1	┘
discarded..	245;FM;0606; ;000;+;0.0;L;3.3; ;88		
discarded..	245;FM;0606; ;000;+;0.2;L;2.7; ;88		
discarded..	245;FM;0606; ;000;+;0.4;L;3.0; ;88		
discarded..	245;FM;0606; ;000;+;0.6;L;3.0; ;88		
discarded..	245;FM;0606; ;000;+;0.8;L;2.1; ;88		

TABLE 22
DELETED SIOMETER RECORDS

Press the "Esc" key to return to the "RIDE ERROR CORRECTIONS" report input screen. This leaves the third and final group to validate (Table 23).

RIDE ERRORS

	CNTY HIGHWAY MILEPOST RWY SI CMT YEAR		
discarded..	245;FM;0490; ;000;+;0.0;R;1.6; ;88	— DELETE RECORD	┐
discarded..	245;FM;0490; ;000;+;0.2;R;2.7; ;88	— ;002;-;1.8;	│
discarded..	245;FM;0490; ;000;+;0.4;R;3.6; ;88	— ;002;-;1.6;	├ MILEPOST INEQUALITY
discarded..	245;FM;0490; ;000;+;0.6;R;2.6; ;88	— ;002;-;1.4;	│ CHANGE
discarded..	245;FM;0490; ;000;+;0.8;R;2.8; ;88	— ;002;-;1.2	┘
discarded..	245;FM;0088; ;000;+;0.0;R;3.6; ;88	— DELETE RECORD	┐
discarded..	245;FM;0088; ;000;+;0.2;R;3.1; ;88	— ;002;-;1.7	│
discarded..	245;FM;0088; ;000;+;0.4;R;2.7; ;88	— ;002;-;1.5	├ MILEPOST INEQUALITY
discarded..	245;FM;0088; ;000;+;0.6;R;3.4; ;88	— ;002;-;1.3	│ AND ROUNDING CHANGE
discarded..	245;FM;0088; ;000;+;0.8;R;3.0; ;88	— ;002;-;1.1	┘
discarded..	245;FM;0606; ;000;+;0.0;L;3.3; ;88		┐
discarded..	245;FM;0606; ;000;+;0.2;L;2.7; ;88		│
discarded..	245;FM;0606; ;000;+;0.4;L;3.0; ;88		├ THIRD GROUP
discarded..	245;FM;0606; ;000;+;0.6;L;3.0; ;88		│
discarded..	245;FM;0606; ;000;+;0.8;L;2.1; ;88		┘

TABLE 23
MODIFIED RIDE CORRECTIONS

Type in the pertinent information (FM; 0606; SPACE; L) of the third group of data for the error validation report, and press the "F2" key.

```
                    RIDE ERROR CORRECTIONS

            Complete the entries below, then press "F2"

                      HIGHWAY PREFIX: FM

                      HIGHWAY NUMBER: 0606

                      HIGHWAY SUFFIX: _

                            ROADWAY: L

          F4CMDHELP ESCEXIT F2SAVE F5FORM CLEAR F6FIELD CLR
```

Upon examination, this road does not exist according to the database.

```
RIDE VIEW                                  Running report RIDE VIEW
SPACEorPgDn: Continue report EXIT: Abort report PgUp: Scroll

                        SIOMETER ERROR CORRECTIONS

  ================================================================
    RECORD    COUNTY    HIGHWAY     ROADWAY    REFERENCE  MILEPOST
    NUMBER    NUMBER                           POINT
  ----------------------------------------------------------------
  ================================================================

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY      WILLACY            12/12/89  10:40 am
```

There must be something wrong with our input to the data selection of the report. If we change our "ROADWAY" input from "L" to "R", we can find the records for the selected highway in the database.

```
                    RIDE ERROR CORRECTIONS

            Complete the entries below, then press "F2"

                      HIGHWAY PREFIX: FM

                      HIGHWAY NUMBER: 0606

                      HIGHWAY SUFFIX: _

                            ROADWAY: R

          F4CMDHELP ESCEXIT F2SAVE F5FORM CLEAR F6FIELD CLR
```

Scroll through the report, by pressing the space bar, until the output matches, as near as possible, that of the third group on the Slometer ride data error listing (Table 24).

RIDE VIEW Running report RIDE VIEW
SPACEorPgDn: Continue report EXIT: Abort report PgUp: Scroll

SIOMETER ERROR CORRECTIONS

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST
000057	245	FM0088	R	0.2	2-1.7
000058	245	FM0088	R	0.4	2-1.5
000059	245	FM0088	R	0.6	2-1.3
000050	245	FM0088	R	0.8	2-1.1
000005	245	FM0088	R	1.0	2-0.9
000006	245	FM0088	R	1.2	2-0.7
000007	245	FM0088	R	1.4	2-0.5
000008	245	FM0088	R	1.6	2-0.3
000009	245	FM0088	R	1.8	2-0.1
000010	245	FM0088	R	2.0	2+0.1
000011	245	FM0088	R	2.2	2+0.3
000012	245	FM0088	R	2.4	2+0.5
000013	245	FM0088	R	2.6	2+0.7
000014	245	FM0088	R	2.8	2+0.9
000015	245	FM0088	R	3.0	2+1.1

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY WILLACY 12/12/89 10:40 am

TABLE 24
MODIFIED SIOMETER ERROR CORRECTIONS

There are only two changes that need to be made. The first record of the third group does not exist according to the database, so it needs to be deleted. The other change is that of the "ROADWAY" variable. Change it from "L" to "R" (see Table 25).

RIDE ERRORS

	CNTY HIGHWAY MILEPOST RWY SI CMT YEAR	
	discarded.. 245;FM;0490; ;000;+;0.0;R;1.6; ;88 — DELETE RECORD	
	discarded.. 245;FM;0490; ;000;+;0.2;R;2.7; ;88 — ;002;-;1.8;	
	discarded.. 245;FM;0490; ;000;+;0.4;R;3.6; ;88 — ;002;-;1.6;	
MILEPOST INEQUALITY		
	discarded.. 245;FM;0490; ;000;+;0.6;R;2.6; ;88 — ;002;-;1.4;	
CHANGE		
	discarded.. 245;FM;0490; ;000;+;0.8;R;2.8; ;88 — ;002;-;1.2	
	discarded.. 245;FM;0088; ;000;+;0.0;R;3.6; ;88 — DELETE RECORD	
	discarded.. 245;FM;0088; ;000;+;0.2;R;3.1; ;88 — ;002;-;1.7	
	discarded.. 245;FM;0088; ;000;+;0.4;R;2.7; ;88 — ;002;-;1.5	
MILEPOST INEQUALITY		
	discarded.. 245;FM;0088; ;000;+;0.6;R;3.4; ;88 — ;002;-;1.3	
AND ROUNDING CHANGE		
	discarded.. 245;FM;0088; ;000;+;0.8;R;3.0; ;88 — ;002;-;1.1	
	discarded.. 245;FM;0606; ;000;+;0.0;L;3.3; ;88 — DELETE RECORD	
	discarded.. 245;FM;0606; ;000;+;0.2;L;2.7; ;88 — ;R;	
	discarded.. 245;FM;0606; ;000;+;0.4;L;3.0; ;88 — ;R;	
THIRD GROUP		
	discarded.. 245;FM;0606; ;000;+;0.6;L;3.0; ;88 — ;R;	
	discarded.. 245;FM;0606; ;000;+;0.8;L;2.1; ;88 — ;R;	

TABLE 25
REVISED SIOMETER DATA

Now that the noting of the changes to the SIometer ride data is complete, we want to attempt to modify the SIometer ride file to the changes that we noted. The first thing we need to do is to exit from the "RIDE ERROR CORRECTIONS" report menu and return to the "RIDE DATA / WILLACY COUNTY" menu.

```
RIDE ERROR CORRECTIONS

Complete the entries below, then press "F2"

                    HIGHWAY PREFIX: __
                    HIGHWAY NUMBER: ____
                    HIGHWAY SUFFIX: _
                         ROADWAY: _

F4CMDHELP ESCEXIT F2SAVE F5FORM CLEAR F6FIELD CLR
```

To accomplish this, press the "Esc" key, and the "RIDE DATA / WILLACY COUNTY" screen should appear (Figure 33). Select "5. Correct Errors in SIometer Data File" by pressing the "5" key or using the arrow keys to highlight the selection and press the "Enter" key.

```
          RIDE DATA / WILLACY COUNTY

  1. Input or Modify Mays Ride Data

  2. Convert Raw SIometer Data

  3. Import SIometer Data

  4. Validate SIometer Errors in Imported Data

  5. Correct Errors in SIometer Data File

  1 to 5 — UP — DOWN — RETURN — END

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY      WILLACY          12/04/89   8:40 am
```

FIGURE 33: CORRECT SIOMETER DATA MENU

The menu option labeled "5. Correct Errors in SIometer Data File" selection loads a text editor, "E88.EXE", with the SIometer ride data file that contained the errors. Now, we can use the notes made earlier to modify the SIometer ride data (Table 26).

```
                    D:RIDE.DAT      Line:00    Col:02   Free:1681     Mode: EDIT       Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;MILEPOST;MILEPOST DISP. SIGN;MILEPOST
    VALUE;ROADWAY;SI VALUE;COMMENT;YEAR
                    > 245;FM;0490; ;000;+;0.0;R;1.6; ;88
                    > 245;FM;0490; ;000;+;0.2;R;2.7; ;88
                    > 245;FM;0490; ;000;+;0.4;R;3.6; ;88
                    > 245;FM;0490; ;000;+;0.6;R;2.6; ;88
                    > 245;FM;0490; ;000;+;0.8;R;2.8; ;88
                    > 245;FM;0088; ;000;+;0.0;R;3.6; ;88
                    > 245;FM;0088; ;000;+;0.2;R;3.1; ;88
                    > 245;FM;0088; ;000;+;0.4;R;2.7; ;88
                    > 245;FM;0088; ;000;+;0.6;R;3.4; ;88
                    > 245;FM;0088; ;000;+;0.8;R;3.0; ;88
                    > 245;FM;0606; ;000;+;0.0;L;3.3; ;88
                    > 245;FM;0606; ;000;+;0.2;L;2.7; ;88
                    > 245;FM;0606; ;000;+;0.4;L;3.0; ;88
                    > 245;FM;0606; ;000;+;0.6;L;3.0; ;88
                    > 245;FM;0606; ;000;+;0.8;L;2.1; ;88
                    F
                    F
                    F
                    F
                    F
                    F
```

TABLE 26
SAMPLE RIDE DATA

The first task is to separate the break points of each group by inserting a line between them (to facilitate editing each group). Before the file is saved, the "inserted lines" must be deleted.

In the example shown below, the inserted blank lines assist in delineating the various highway segments.

```
D:RIDE.DAT      Line:00    Col:02   Free:1681     Mode: EDIT       Com key:[F1]
 > COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;MILEPOST;MILEPOST DI
   SP. SIGN;MILEPOST VALUE;ROADWAY;SI VALUE;COMMENT;YEAR
 > 245;FM;0490; ;000;+;0.0;R;1.6; ;88
 > 245;FM;0490; ;000;+;0.2;R;2.7; ;88
 > 245;FM;0490; ;000;+;0.4;R;3.6; ;88
 > 245;FM;0490; ;000;+;0.6;R;2.6; ;88
 > 245;FM;0490; ;000;+;0.8;R;2.8; ;88
 >
 > 245;FM;0088; ;000;+;0.0;R;3.6; ;88
 > 245;FM;0088; ;000;+;0.2;R;3.1; ;88
 > 245;FM;0088; ;000;+;0.4;R;2.7; ;88
 > 245;FM;0088; ;000;+;0.6;R;3.4; ;88
 > 245;FM;0088; ;000;+;0.8;R;3.0; ;88
 >
 > 245;FM;0606; ;000;+;0.0;L;3.3; ;88
 > 245;FM;0606; ;000;+;0.2;L;2.7; ;88
 > 245;FM;0606; ;000;+;0.4;L;3.0; ;88
 > 245;FM;0606; ;000;+;0.6;L;3.0; ;88
 > 245;FM;0606; ;000;+;0.8;L;2.1; ;88
 F
 F
 F
 F
 F
 F
```

Using the notes taken during the validation process, modify the first group of

Slometer ride data by first deleting the first data line then modifying the mileposts (Table 27).

```
 D:RIDE.DAT       Line:00    Col:02   Free:1681     Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;MILEPOST;MILEPOST DISP. SIGN;MILEPOST
VALUE;ROADWAY;SI VALUE;COMMENT;YEAR
                    > 245;FM;0490; ;002;-;1.8;R;2.7; ;88 ─┐
                    > 245;FM;0490; ;002;-;1.6;R;3.6; ;88  ├─ MODIFY MILEPOSTS
                    > 245;FM;0490; ;002;-;1.4;R;2.6; ;88  │  INEQUALITY
                    > 245;FM;0490; ;002;-;1.2;R;2.8; ;88 ─┘
                    >
                    > 245;FM;0088; ;000;+;0.0;R;3.6; ;88
                    > 245;FM;0088; ;000;+;0.2;R;3.1; ;88
                    > 245;FM;0088; ;000;+;0.4;R;2.7; ;88
                    > 245;FM;0088; ;000;+;0.6;R;3.4; ;88
                    > 245;FM;0088; ;000;+;0.8;R;3.0; ;88
                    >
                    > 245;FM;0606; ;000;+;0.0;L;3.3; ;88
                    > 245;FM;0606; ;000;+;0.2;L;2.7; ;88
                    > 245;FM;0606; ;000;+;0.4;L;3.0; ;88
                    > 245;FM;0606; ;000;+;0.6;L;3.0; ;88
                    > 245;FM;0606; ;000;+;0.8;L;2.1; ;88
                    F
                    F
                    F
                    F
                    F
                    F
```

TABLE 27
SAMPLE RIDE DATA WITH BREAK POINTS

Modify the second group of Slometer ride data in the same manner as the first, including a rounding change. Delete the first record of the second group, then modify the mileposts by changing the inequality and rounding them as illustrated in Table 28.

```
 D:RIDE.DAT       Line:00    Col:02   Free:1681     Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;MILEPOST;MILEPOST DISP. SIGN;MILEPOST
    VALUE;ROADWAY;SI VALUE;COMMENT;YEAR
                    > 245;FM;0490; ;002;-;1.8;R;2.7; ;88
                    > 245;FM;0490; ;002;-;1.6;R;3.6; ;88
                    > 245;FM;0490; ;002;-;1.4;R;2.6; ;88
                    > 245;FM;0490; ;002;-;1.2;R;2.8; ;88
                    >
                    > 245;FM;0088; ;002;-;1.7;R;3.1; ;88 ─┐
                    > 245;FM;0088; ;002;-;1.5;R;2.7; ;88  ├─ MODIFY MILEPOSTS
                    > 245;FM;0088; ;002;-;1.3;R;3.4; ;88  │  INEQUALITY & ROUND
                    > 245;FM;0088; ;002;-;1.1;R;3.0; ;88 ─┘
                    >
                    > 245;FM;0606; ;000;+;0.0;L;3.3; ;88
                    > 245;FM;0606; ;000;+;0.2;L;2.7; ;88
                    > 245;FM;0606; ;000;+;0.4;L;3.0; ;88
                    > 245;FM;0606; ;000;+;0.6;L;3.0; ;88
                    > 245;FM;0606; ;000;+;0.8;L;2.1; ;88
                    F
                    F
                    F
                    F
```

TABLE 28
EDITING/ROUNDING SIOMETER DATA

Modify the third group by deleting the first record of the group and changing the "ROADWAY" variable from "L" to "R" (Table 29).

```
D:RIDE.DAT       Line:00    Col:02   Free:1681     Mode: EDIT        Com key:[F1]
>COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;MILEPOST;MILEPOST DISP. SIGN;MILEPOST
     VALUE;ROADWAY;SI VALUE;COMMENT;YEAR
                    > 245;FM;0490; ;002;-;1.8;R;2.7; ;88
                    > 245;FM;0490; ;002;-;1.6;R;3.6; ;88
                    > 245;FM;0490; ;002;-;1.4;R;2.6; ;88
                    > 245;FM;0490; ;002;-;1.2;R;2.8; ;88
                    >
                    > 245;FM;0088; ;002;-;1.7;R;3.1; ;88
                    > 245;FM;0088; ;002;-;1.5;R;2.7; ;88
                    > 245;FM;0088; ;002;-;1.3;R;3.4; ;88
                    > 245;FM;0088; ;002;-;1.1;R;3.0; ;88
                    >
                    > 245;FM;0606; ;000;+;0.2;R;2.7; ;88 ─┐
                    > 245;FM;0606; ;000;+;0.4;R;3.0; ;88  ├─ CHANGE ROADWAY FROM
                    > 245;FM;0606; ;000;+;0.6;R;3.0; ;88  │  L TO R
                    > 245;FM;0606; ;000;+;0.8;R;2.1; ;88 ─┘
                    F
                    F
                    F
                    F
                    F
                    F
```

TABLE 29
ADDITIONAL EDITS TO RIDE DATA

Now, delete all of the blank lines and save the data set by pressing the "F1" key and selecting the "(A.) END "the edit option and save this file" option by pressing the "A" key (Figure 34).

```
D:RIDE.DAT       Line:00    Col:02   Free:1681     Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;MILEPOST;MILEPOST DISP. SIGN;MILEPOST
     VALUE;ROADWAY;SI VALUE;COMMENT;YEAR
                    > 245;FM;0490; ;002;-;1.8;R;2.7; ;88
                    > 245;FM;0490; ;002;-;1.6;R;3.6; ;88
                    > 245;FM;0490; ;002;-;1.4;R;2.6; ;88
                    > 245;FM;0490; ;002;-;1.2;R;2.8; ;88
                    > 245;FM;0088; ;002;-;1.7;R;3.1; ;88
                    > 245;FM;0088; ;002;-;1.5;R;2.7; ;88
                    > 245;FM;0088; ;002;-;1.3;R;3.4; ;88
                    > 245;FM;0088; ;002;-;1.1;R;3.0; ;88
                    > 245;FM;0606; ;000;+;0.2;R;2.7; ;88
                    > 245;FM;0606; ;000;+;0.4;R;3.0; ;88
                    > 245;FM;0606; ;000;+;0.6;R;3.0; ;88
                    > 245;FM;0606; ;000;+;0.8;R;2.1; ;88
                    F
                    F
                    F
                    F
                    F
                    F
```

```
        MASTER COMMAND MENU

 Select option or press Esc to return

(A.)  END the edit and save this file
(B.)  BACKUP (create filename.bak)
(C.)  CHANGE filename (for saving)
(D.)  HELP
(E.)  EDIT another file (with options)
(F.)  SEARCH and [replace] string
(G.)  SETUP (set default parameters)
(H.)  QUIT * RETURN TO DOS * NO SAVE
```

FIGURE 34: FINAL EDITS TO SIOMETER DATA

After saving the changes to the SIometer ride data file, you are then returned back to the "RIDE DATA / WILLACY COUNTY" menu.

Select the "3. Import SIometer Data" option to import the SIometer ride data that has been altered by pressing the "3" key or using the arrow keys to highlight the option and press the "Enter" key (Figure 35).

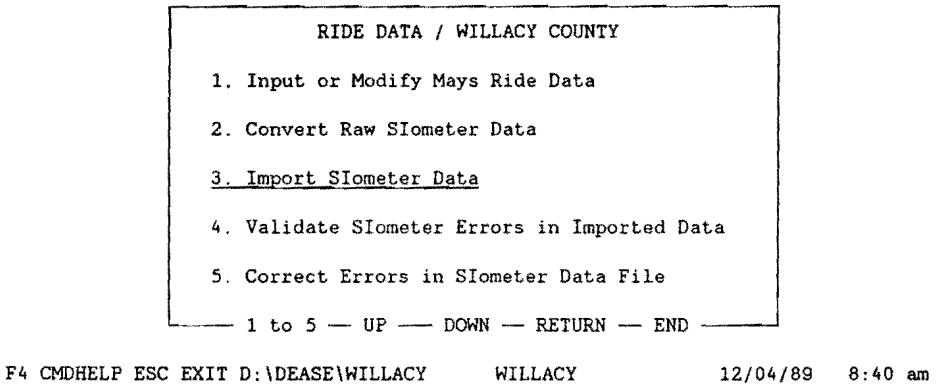


FIGURE 35: IMPORT SIOMETER DATA MENU

After the import has completed and there are no errors sent to the printer, you will be returned to the "RIDE DATA / WILLACY COUNTY" menu with the "0 added, 14 updated, 0 discarded" message at the top of the screen.

0 added, 12 updated, 0 discarded

The system will return to the main siometer menu as shown below (Figure 36).

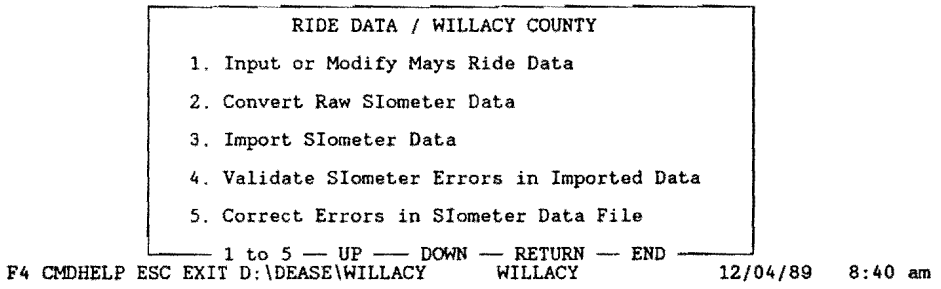


FIGURE 36: SIOMETER MAIN MENU

If errors were detected, you must go through the previous processes of validation and correction until there are no errors detected.

Now that the SIometer ride data entry process is complete for this data set, press the "Esc" key to retrace our steps out of the database until the "Pavement Management System" menu appears (Figure 37). If additional SIometer ride data is collected for the same county at a later date, follow the same procedures of the SIometer ride data entry process discussed above.

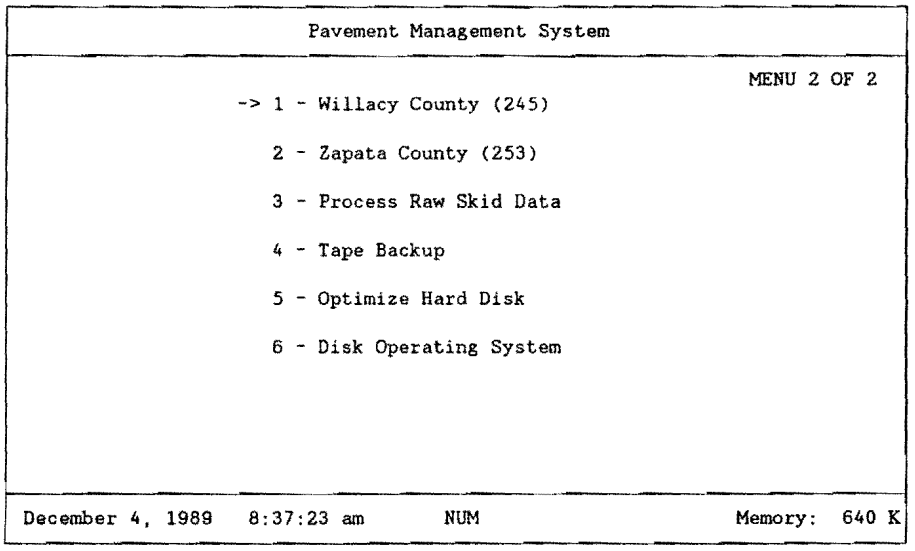


FIGURE 37: PMS MAIN MENU

5.4 COMPLETENESS OF SIOMETER DATA

After it is assumed that all of the Slometer ride data for a particular county has been collected, converted, and imported, it is a good practice to ensure that you are satisfied with the completeness of the data. This is done by running a missing ride data report for the particular county of interest.

Select the particular county that is assumed to be complete. In this example, we will again use Willacy county. To do this, use the arrow keys on the keyboard to point to the item "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key (Figure 38).

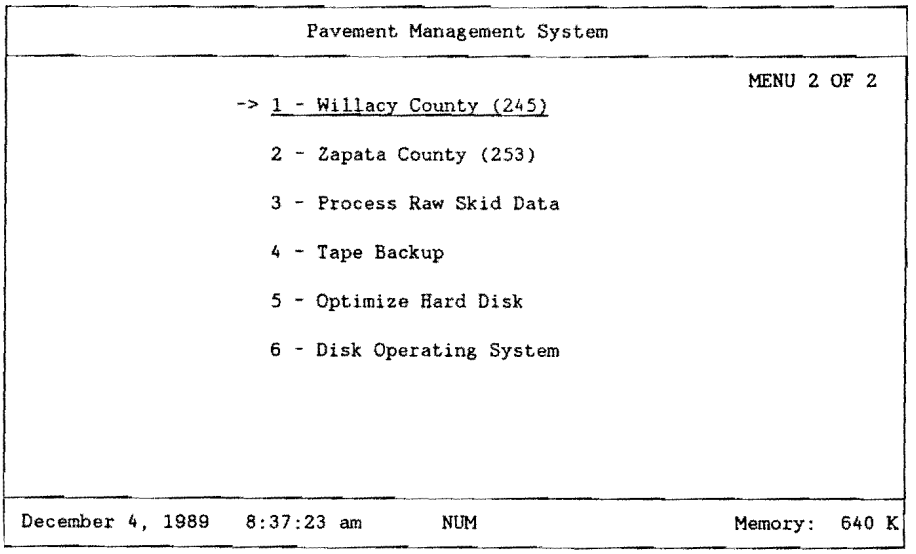


FIGURE 38: PMS MAIN MENU

Again you are prompted for your name and security password. In the following example, the sign on name is "DATA" and the security password is "ENTRY".

The main sign-on menu is shown below (Figure 39).

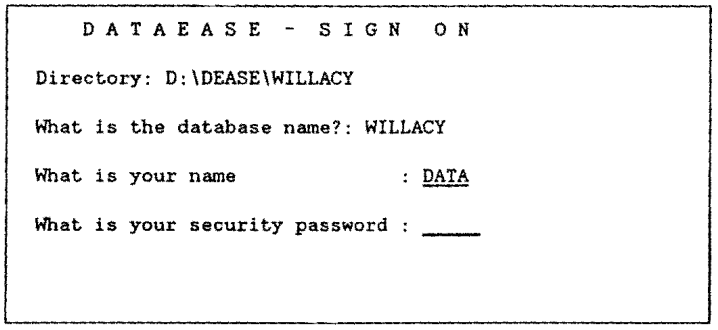


FIGURE 39: PMS MAIN SIGN-ON MENU

5.5 GENERATION OF SIOMETER RELATED REPORTS

The "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen (Figure 40). Select "6. Reports" by pressing the "6" key, or use the arrow keys to highlight the selection and press the "Enter" key.

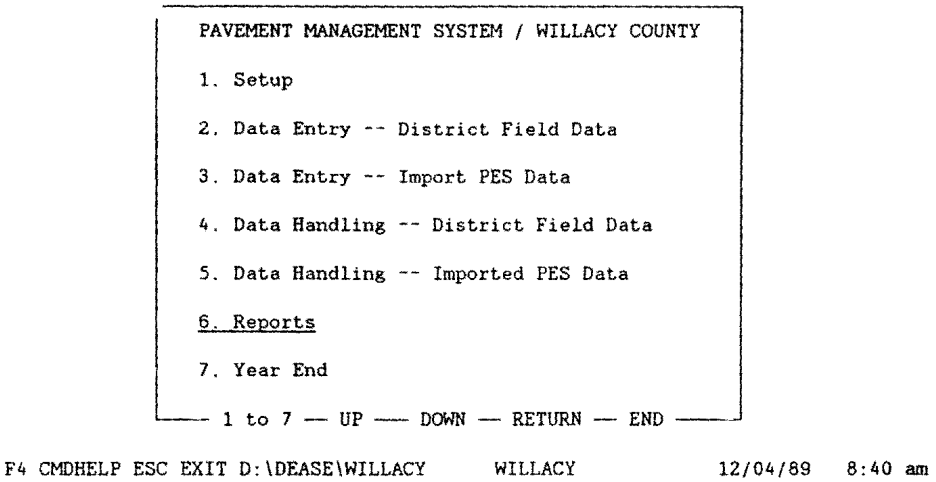


FIGURE 40: PMS MAIN MENU - REPORTS

The next menu (fIGURE 41) that appears on your screen is "REPORTS / WILLACY COUNTY" menu. We want a report on missing ride data so select the "1. Missing Data Reports" by pressing the "1" key, or use the arrow keys to highlight the selection and press the "Enter" key.

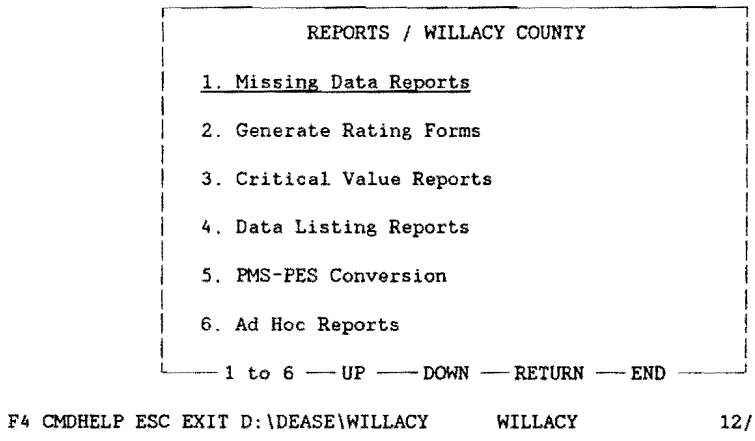


FIGURE 41: MISSING DATA REPORT MENU

Make certain the printer is powered up, loaded with paper, and on line, then select the "**2. Missing Ride Data**" option by pressing the "**2**" key, or use the arrow keys to highlight the selection and press the "Enter" key (Figure 42).

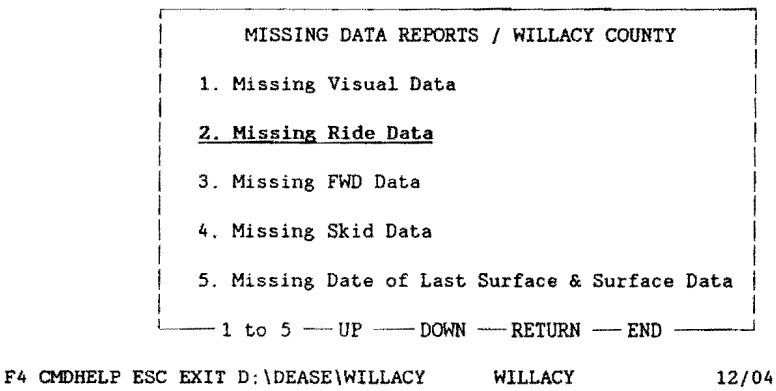


FIGURE 42: PMS MISSING DATA MENU CHOICE

A listing of missing ride data should start printing on the printer. If there was no missing ride data, a blank page will be printed.An example of a missing ride data report for Willacy county is shown in Table 30.

MISSING RIDE DATA
WILLACY COUNTY Page No. 1

COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST	RECORD NUMBER
245	FM0490	R	22.2	22+0.2	001204
245	FM0490	R	23.9	22+1.9	000135
245	FM0606	R	0.8	0+0.8	000260
245	FM1015	R	2.0	2+0.0	000270
245	FM1018	R	10.0	10+0.0	000327
245	FM1420	R	13.4	12+1.4	000408
245	FM1425	R	9.1	8+1.2	000454
245	FM1761	R	6.6	6+0.6	001206
245	FM1761	R	6.9	6+0.9	000489
245	FM1762	R	3.4	2+1.4	000506
245	FM1762	R	3.6	2+1.6	000507
245	FM1762	R	3.8	2+1.8	000508
245	FM1834	R	2.0	2+0.0	000533
245	FM2099	R	2.4	2+0.4	001207
245	FM2099	R	9.4	8+1.4	000599
245	FM2209	R	6.5	6+0.5	000632
245	FM2629	R	12.5	12+0.5	000684
245	FM3168	R	0.9	0+0.9	000742
245	SH0056S	R	0.3	0+0.3	000744
245	SH0112S	R	0.4	0+0.4	000746

TABLE 30
LISTING OF MISSING RIDE DATA

You will be returned to the "MISSING DATA REPORTS / WILLACY COUNTY" menu as soon as the report has completed (Figure 43).

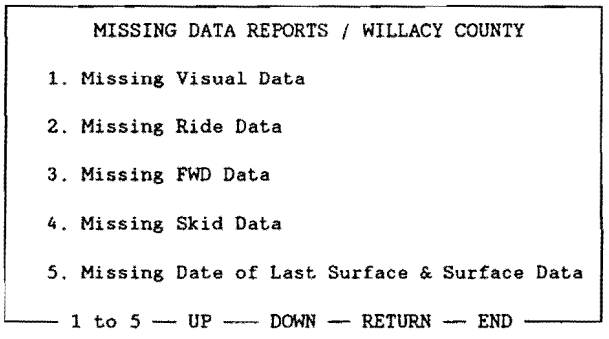


FIGURE 43: MISSING DATA MENU OPTIONS

Now that the report has completed, press the "Esc" key several times to exit from the database and return to the "Pavement Management System" menu (Figure 44).

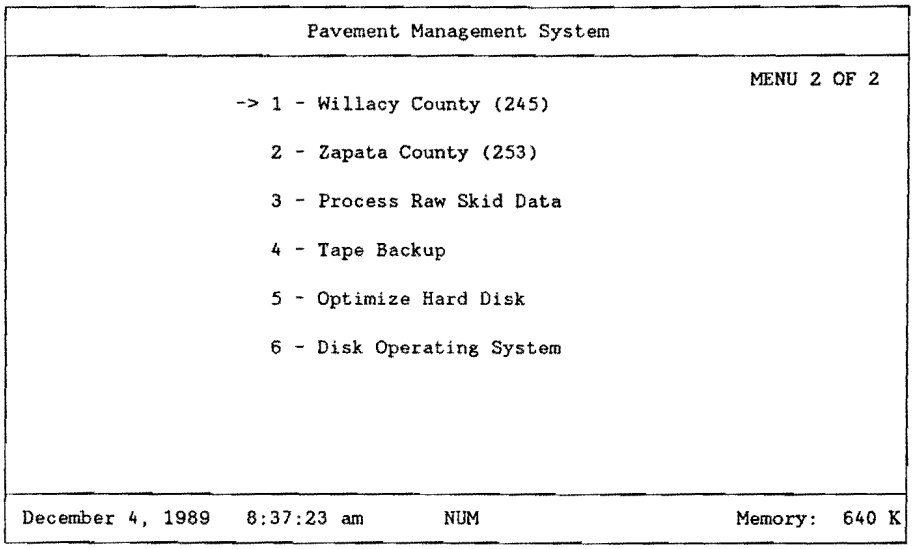


FIGURE 44: PMS MAIN MENU OPTIONS

If you are not satisfied with the results of the missing ride data report, use the report as a guide in collecting the missing sections. Then, you must go through the conversion and import processes discussed earlier to finalize the completeness of the ride data. If you are completely satisfied with the completeness of the ride data, proceed with the next section.

5.6 SIOMETER DATA: FINAL TRANSFER TO THE 0.1 MASTER FILE

When it is verified that all of the ride data has been completely collected for the given year in a particular county, the data must be transferred from the Ride data form to the Master data form for reporting purposes. This process is accomplished by first selecting the particular county. In this example we will use Willacy county. To do this, use the arrow keys on the keyboard to point to the item "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key. This option for "Willacy County (245)" is selected as shown in Figure 45.

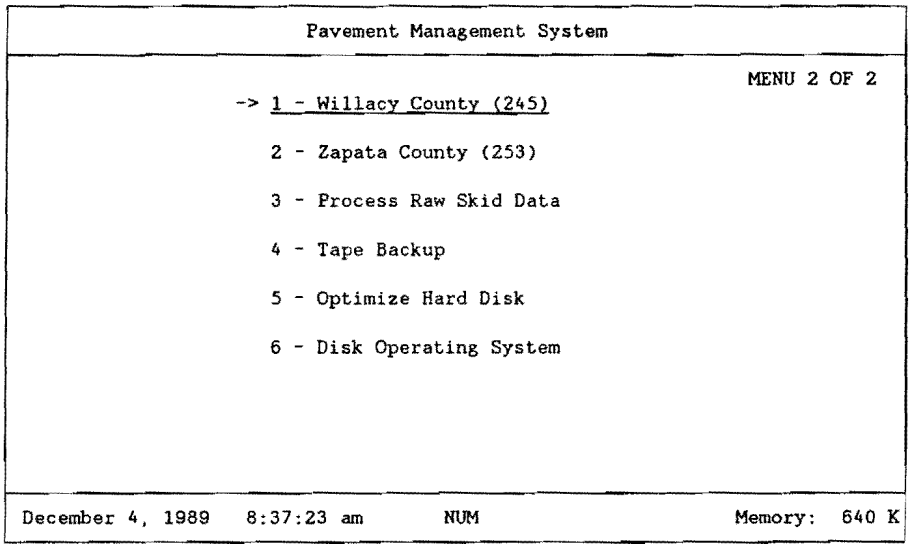


FIGURE 45: PMS SELECT COUNTY MENU

You are then prompted for your name and security password. In the following example, (Figure 46), the sign-on name is "DATA", and the security password is "ENTRY".

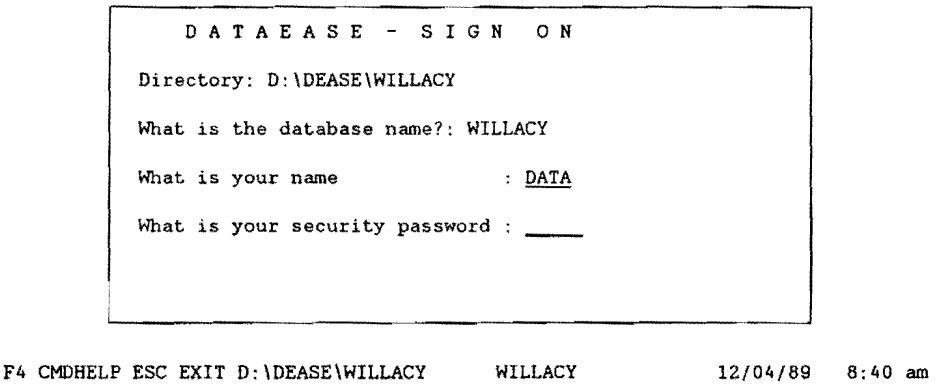


FIGURE 46: PMS SIGN-ON MENU

The "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen. Select "4. Data Handling -- District Field Data" by pressing the "4" key, or use the arrow keys to highlight the selection and press the "Enter" key (Figure 47).

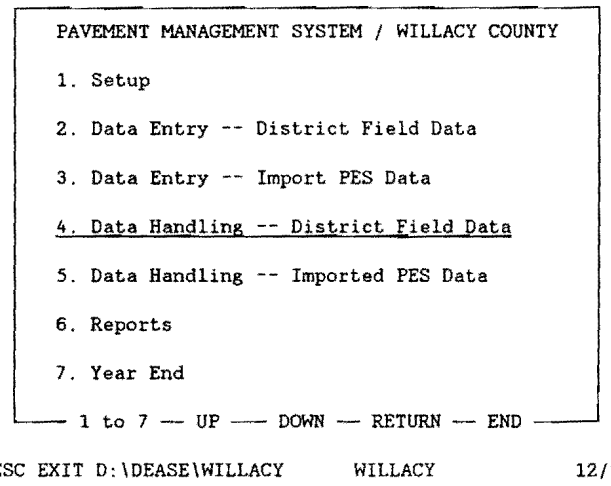


FIGURE 47: DATA HANDLING MENU

The next menu (Figure 48) is the "DATA HANDLING -- DISTRICT FIELD DATA / WILLACY COUNTY" menu. Select option "2. Ride Data" by pressing the "2" key, or use the arrow keys to highlight the selection and press the "Enter" key.

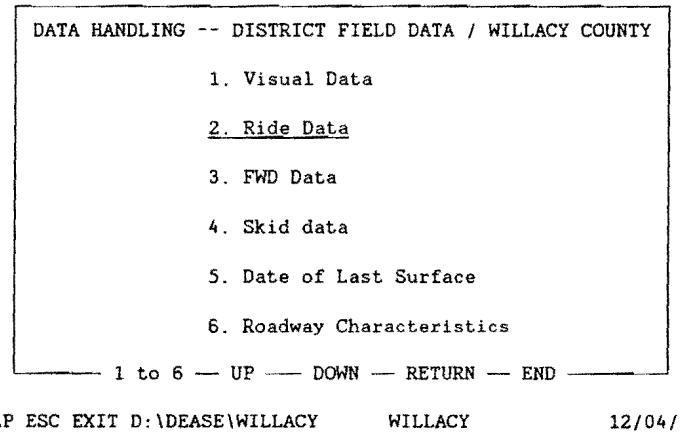


FIGURE 48: DATA HANDLING - RIDE DATA MENU OPTION

The next screen (Figure 49) that appears is "RIDE DATA HANDLING / WILLACY COUNTY" with two selections. Make certain that the printer is on and select "1. Verify Validity of Ride Data" by pressing the "1" key, or use the arrow keys to highlight the selection and press the "Enter" key. This process checks for valid dates and ride values. When errors are encountered, they are listed to the printer.

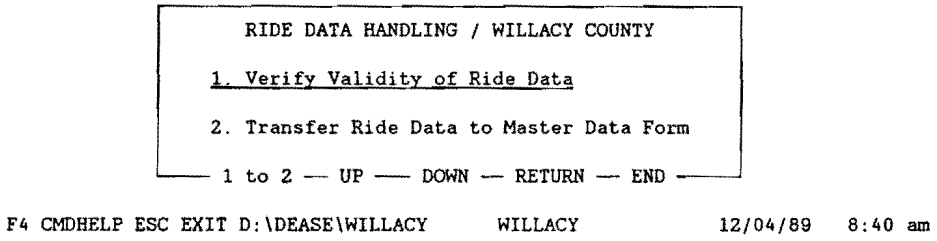


FIGURE 49: RIDE DATA HANDLING - VERIFY RIDE DATA

If any errors were encountered, they must be corrected before proceeding to the next step. The type of errors that can occur are that of missing date of collection or ride values less than 0.1.

If no errors were encountered, select the "2. Transfer Ride Data to Master Data Form" option (Figure 50) by pressing the "2" key, or use the arrow keys to highlight the selection and press the "Enter key.

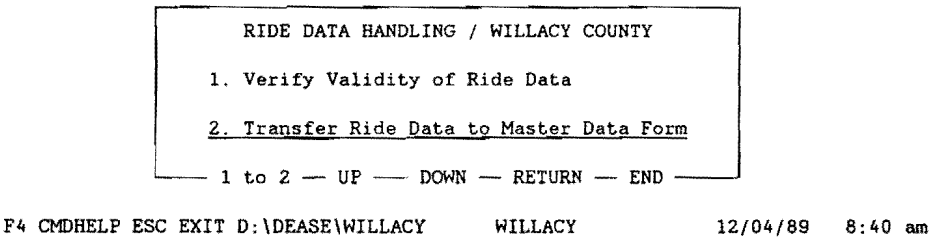


FIGURE 50: TRANSFER RIDE DATA TO MASTER FILE MENU OPTION

This process transfers all of the ride data from the Ride data form (0.2 mile records) to the equivalent Master data form (0.1 mile records). This procedure "matches" the existing 0.2 mile siometer records in the SIOMETER DATA FILE to an equivalent record in the MASTER file.

As soon as the update procedure has completed, you will be returned to the "RIDE DATA HANDLING / WILLACY COUNTY" menu (Figure 51).

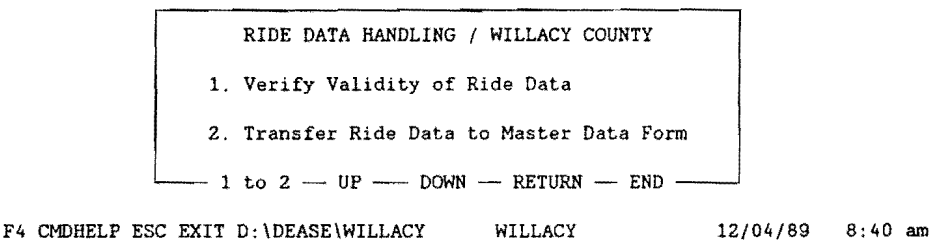


FIGURE 51: RIDE DATA HANDLING MENU

Press the "Esc" key several times to return to the "Pavement Management System" menu as illistrated in Figure 52.

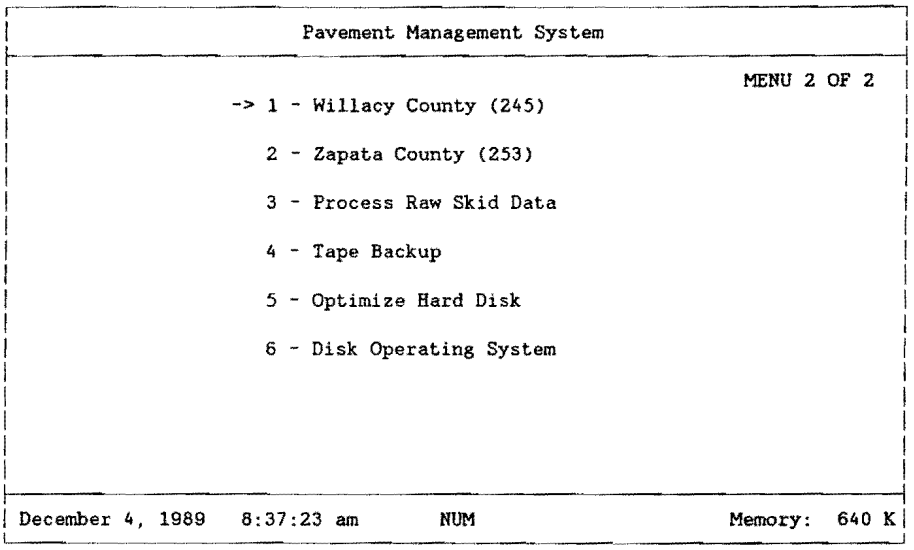


FIGURE 52: PMS MAIN MENU

This concludes the Slometer data input process.

6.0 SKID DATA COLLECTION -- HANSEN METHOD

(This section was written under the direction of Mr. Craig Cox, D-18PM, Austin.)

Data collection using the Hansen method will use integer or whole reference points as a basis for location, which will be cross-referenced with mileposts or reference markers that are located along the highways. The existing skid test equipment along with the automated method of data collection, which was established under the SKIDR system, will be used.

6.1 SKID DATA COLLECTION EQUIPMENT

The skid resistance data collection equipment is basically a two-wheeled skid test trailer conforming to ASTM E274. The instrumentation includes a skid number calculator, coupler scanner, distance measuring instrument, velocity measuring instrument and a data recorder which is a teletype or TI-733 data terminal.

6.2 SKID DATA INSERTION WHILE TESTING

The data to be collected by the skid test unit have been subdivided into five categories as follows:

Category 1 - Termed "A" Data Item.

Category 2 - Termed "B1" Data Item.

Category 3 - Termed "C Whole Reference Point" Data Item.

Category 4 - Termed "B2" Data Item.

Category 5 - Termed "C Skid" Data Item.

6.3 SKID "A" DATA ITEM

Figure 53 shows the format and an example of an "A" data item. The "A" data item will be manually typed in on the teletype or TI-733 keyboard. In a given district, the "A" data should not change except on different days--or more particularly as the temperature changes. All numbers should be right justified and contain zeros where blank spaces normally occur.

										1	1	1	1	1
Card column	1	2	3	4	5	6	7	8	9	0	1	2	3	4
DATA	**A**	**2**	**1**	**4**	**0**	**1**	**0**	**1**	**1**	**8**	**8**	**0**	**9**	**5**

Card Identifier	-	col. 1
District Number	-	col. 2-3
Truck Number	-	col. 4-5
Month	-	col. 6-7
Day	-	col. 8-9
Year	-	col. 10-11
Temperature	-	col. 12-14

FIGURE 53: SKID "A" DATA ITEM RECORD FORMAT

6.4 SKID "B1" DATA ITEM (Highway Location)

The "B1" data item format shown in Figure 54 includes the highway system and number, the county number and a frontage road designator. Table 31 shows the numbers used to denote the highway system used to denote the counties. When testing on frontage roads of highways, code a "1" in the frontage road designator, and when testing on the main lanes of highways, code a "0" in the frontage road designator.

The "B1" data item is input by the observer using the thumb wheel on the observer console. When the desired digits are dialed on the thumb wheels, the data is inserted (or recorded) by depressing the "B" data buttons on the observer console. Note the activation of the "B" data buttons clears and resets the distance counters. Therefore, activation of the "B" data item should be accomplished only at a desired roadway location.

The "B1" data item indicates begin testing but not necessarily at a whole reference point. A "C, comm. 7" and "B2" data types must follow (in order) at some point in the data stream to identify a whole reference point.

										1	1	1	1	1
Card Columns:	1	2	3	4	5	6	7	8	9	0	1	2	3	4
Data:	**B**	**1**	**1**	**4**	**0**	**1**	**0**	**1**	**1**	**8**	**8**	**7**	**5**	

Card Identifier	- col. 1	(B)
Format Identifier	- col. 2	(1)
Highway System	- col. 3-4	(14)
Highway Number	- col. 5-8	(01)
County Number	- col. 9-11	(188)
Frontage Road Designator	- col. 12	(7)
Not Used	- col. 14	(blank)

FIGURE 54: SKID "B" DATA ITEM FORMAT

01 U.S. Highway10 U.S. Highway Spur
02 State Highway11 Recreational Road
03 State Loop or Spur12 Recreational Road Spur
04 Park Road
05 Farm or Ranch to Market
06 U.S. Alternate
07 State Alternate or Temporary Route
08 Interstate Highway
09 Farm or Ranch to Market Spur

TABLE 31
SKID HIGHWAY SYSTEM DESIGNATION CODES

The business routes are designated as State loops or spurs, even though they may be signed as U.S. business routes. Therefore, all business routes are coded with a 03. There are also some unusual special codes for a few "unusual" highway names, but none of these are in District 21 (see Table 32).

SH0OSR - will be coded 020999
SHNASA - will be coded 029999
IH0035E - will be coded 080353
IH0035W - will be coded 080354

TABLE 32
SPECIAL SKID HIGHWAY CODES

6.5 SKID "C WHOLE REFERENCE POINT" DATA ITEM (Skid Data)

"C Whole Reference Point" data item has a format that is shown in Figure 55. The "C Whole Reference Point" data item always has a "7" in the comment column. The "C Whole Reference Point" data item is always inserted (recorded) by depressing the "C" data button on the observer console. The reason for inserting a "C Whole Reference Point" data item, with a "7" in the comments, is to set a flag or check in order for the software program to expect a "B2" data item, which will immediately follow the "C Whole Reference Point" data item. Normally "C Whole Reference Point" data items will contain a zero skid number and a zero velocity. However, the distance and lane items may contain varying data, depending on conditions. All possible lane designations and codes are identified below.

Record Columns:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Data Value:	C	0	0		0	0		0	0	3		0	7	

Card Identifier	-	col. 1	(C)
Skid Number	-	col. 2-3	(00)
Blank	-	col. 4	(blank)
Velocity	-	col. 5-6	(00-usually near 40)
Blank	-	col. 7	(blank)
Distance (in tenths)	-	col. 8-10	(00.3)
Blank	-	col. 11	(blank)
Lane	-	col. 12	(0=L or X)
Comment	-	col. 13	(7=32 card next)

FIGURE 55: SKID "C" DATA ITEM FORMAT

The associated skid lane designation codes are shown in Table 33.

	Frontage Road	Main Lanes	Main Lanes	Frontage Road
Designation	X-Y-Z	L-M-N-O-P	V-U-T-S-R	C-B-A
CODE	0-1-2	0-1-2-3-4	5-6-7-8-9	7-8-9

Direction of Increasing Mileposts:

TABLE 33
SKID LANE DESIGNATIONS AND CODES

6.6 SKID "B2" DATA ITEM (Milepost Location)

"B2" data item immediately follows the insertion of "C Whole Reference Point" data item. The format for the "B2" data item is identified below. The "B2" data item is inserted through the use of the same thumb wheels used to record the "B1" data item. In fact, the Highway System and Highway Number used on the "B1" data item should be left in place for use on the "B2" data item. A "2" is dialed on the thumb wheel to the far left and, the whole reference point number replaces the county number previously used in the "B1" data item. If desired, the frontage road designator number used in the "B1" data may be left in place. The "B2" data item is recorded by depressing the "B" data item button on the observer console (Figure 56).

									1 0	1 1	1 2	1 3	1 4
1	2	3	4	5	6	7	8	9	0	1	2	3	4
B	2	0	1	0	0	7	7	0	0	2	0	X	X

```
Card Identifier          - col. 1      (B)
Format Identifier        - col. 2      (2)
Highway System           - col. 3-4    (01=US)
Highway Number           - col. 5-8    (0077)
Whole Reference Point    - col. 9-11   (002)
Frontage Road Designator - col. 12     (0 = No)
Not Used                 - col. 13-14  (blank)
```

FIGURE 56: B2 DATA ITEM RECORDING FORMAT

6.7 SKID "C Skid" DATA ITEM

The format of the "C Skid" data item is shown below and is the same as that used in the SKIDR system. The observer has little control over the recording of the "C Skid" data, since this data is automatically recorded after each skid. The observer does have control over the lane designation number and comments. The lane numbers and designation are listed above. The lane numbers also give direction of travel. The lane numbers 0 thru 4 are opposite the direction of increasing mileposts, and the numbers 5 thru 9 are with the direction of increasing mileposts.

The comment codes are shown in Figure 57. Note comment "7" is termed "Reference Point Designator". The remaining comments are similar to that used in the SKIDR system. Note that a comment "9" will cause the last "C Skid" data item to be deleted, and two successive comment "9"s will cause an entire series of data to be deleted, back to and including the previous "B1" data item.

Top Row = Record Column: Bottom Row = Data Value(s)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
C	**3**	**7**		**3**	**2**		**0**	**0**	**0**		**0**	**0**	

Card Identifier	-	col. 1	(C)
Skid Number	-	col. 2-3	(37)
Blank	-	col. 4	(blank)
Velocity	-	col. 5-6	(32 mph)
Blank	-	col. 7	(blank)
Distance (in tenths)	-	col. 8-10	(00.0)
Blank	-	col. 11	(blank)
Lane	-	col. 12	(0=L)*
Comment	-	col. 13	(0)
Not Used	-	col. 14	(blank)

Note: * *"0" is Lane 'L" here since previous B2 card indicates that testing is on main lanes (Frontage Road Designator, Col. 12, is "0" = No)*

Skid Comment Codes

0 - No Comment
1 - Flushed Surface
2 - Patched Surface
3 - Intersection
4 - Structure
5 - Railroad Crossing
6 - Curve
7 - Reference Point Designator
8 - District Selected (User defined)
9 - Disregard Last Skid

FIGURE 57: SKID DATA "C" FORMAT AND CODES

6.8 SKID CASSETTE TAPE HANDLING

1. The beginning of each day's data should contain an identification number, which is input on the keyboard. This identification number will consist of the following items and format(Figure 58):

Record Column					
1	2	3	4	5	6
2	**1**	**1**	**0**	**8**	**8**

District	-	col. 1-2	(21)
Month	-	col. 3-4	(10)
Year	-	col. 5-6	(88)

FIGURE 58: SKID TAPE RECORD FORMAT

The identification number is right justified with leading zeros.

2. The characters EOT and the End of Tape Symbol should be put on the cassette at the end of each day's data or at the end of the data recording on each side of a cassette.

3. The cassettes should be duplicated before mailing the original to the Division of Maintenance and Operations , Pavement Management Section (D-18PM) for processing. The duplicated cassette will be held in the District until the District is assured of having correct data. The duplicate ensures a backup.

4. Cassettes should have external labels on each side in the following manner:

   (a) Labeled side A or side B.

   (b) All identification numbers recorded on side A should be listed on the external label on side A. A similar procedure should be used for side B.

   (c) Number of EOTs on each side.

(An example follows)

Example:	Side A	Side B
	210988	210988
		211088
	1 EOT	2 EOTs

5. Do not put data from more than one District on a cassette.

Figure 59 illustrates a typical beginning-of-day tape format.

Example Skid Data

211088	--	identification Number
A2140101188075	--	"A" Data Item
B10100770660	--	"B1" Data Item
C52 39 000 00	--	"C" Skid Data Item
C51 38 002 00		
C00 00 003 07	--	"C Whole Reference Point Data Item
B20100770020	--	"B2" Data Item
C44 41 000 00		
C39 41 002 00		
C28 41 004 00		
C32 39 006 08	--	"C" Skid Data Item with User Defined Comment

FIGURE 59: EXAMPLE SKID DATA TAPE FORMAT

6.9 SKID DATA CONVERSION

The skid data processing, done by D-18PM, transfers the skid data, in its original format, to a floppy diskette. After the skid data has been transferred, D-18PM sends the District the skid data on the floppy diskette. The collected skid data must now be validated and converted into a format that the Pavement Management System (PMS) database can input.

The validation and conversion of the skid data is done through an iterative process selected from the "Pavement Management System" main menu (Figure 60), labeled

"Process Raw Skid Data". This program validates the skid data in its original format, then converts the valid data into an import format. The program iterates on the invalid skid data until it is completely valid. Below is a detailed example of the process.

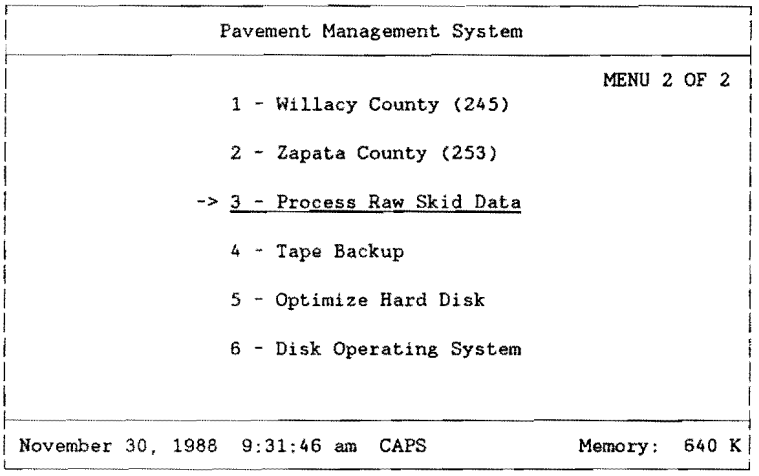


FIGURE 60: PMS MAIN SYSTEM MENU - SKID DATA HANDLING

Select "Process Raw Skid Data" by using the arrow keys on the keyboard to point to item "3" (only in this example) on your monitor and press "Enter", or press the "3" on the keyboard. You are then prompted with the following message.

```
*********************************************
**  Make Certain Raw Skid Data is in Drive A
*********************************************
          Strike a key when ready . . .
```

Place the floppy diskette containing the raw skid data, transferred by D-18PM, in Drive A and press any key on the keyboard.

The menu then selects and executes a BASIC program called "SE.EXE". This program reads and displays (Figure 61) a directory of Drive A with the first file enclosed with a highlighted box.

Use the arrow keys to move the highlighted box over the skid file that you wish to process and press the "Enter" key, or press the "Esc" key to return to the "Pavement Management System" menu.

```
INPUT SKID FILE A:SKID21A.DAT
PRESS Esc TO EXIT

SDIR  Sorted DIRectory Listing, Version 2.6  Volume              11/30/88 09:33
 |OPTIONS  /Cls /WrITe /Pause /All |COLUMN: /2 /6 |SORT: /No /Size /Date /eXt
                              Directory of A:\
Filespec.ext  Bytes |Filespec.ext  Bytes |Filespec.ext  Bytes |Filespec.ext  Bytes
ALL      .DAT 104706 |SKID21AG.DAT  22623 |SKID21C .DAT  25280 |SKID21DG.DAT  10262
ALL      .SKD 104706 |SKID21B .DAT  23969 |SKID21CG.DAT  25262 |SKID21E .DAT  22597
GOODSKID.DAT 133226 |SKID21BG.DAT  23947 |SKID21D .DAT  10279 |SKID21EG.DAT  22591
SKID21A .DAT  22661
  552109 Bytes in       13 File(s);   657408 bytes free...
```

FIGURE 61: SKID DIRECTORY LISTING

The program "SE.EXE" then begins its process of validating the raw skid data in the file that you selected and prints any errors encountered. The validation process in "SE.EXE" does the following:

1. Checks for a "A", "B", or "C" in column 1.

2. Checks a valid length of each data type.

3. Checks "B" data type for "B1" or "B2".

4. Checks "B" data type for valid Highway System

Below is an example of errors listed to the printer while validating the format of the raw skid data.

```
ERROR IN LINE     0     INVALID FIRST CHARACTER
ERROR IN LINE     1     LINE LENGTH
ERROR IN LINE   161     LINE LENGTH
ERROR IN LINE   603     LINE LENGTH
ERROR IN LINE  1006     LINE LENGTH
ERROR IN LINE  1428     LINE LENGTH

    7  ERRORS WERE DETECTED
```

When errors are encountered, SE.EXE automatically loads the file into a text editor, called "E88.EXE". **Start with the last error first,** i.e. the error in line 1428, by using the "Page Down" key to locate the line number. By starting with the last error first, the error line numbers in the previous errors will not change with line changes, e.i. additions or deletions.

The listing shown in Table 34 illustrates the error located in line 1428.

```
A:SKID21A.DAT   Line:1428  Col:02  Free:4774    Mode: EDIT        Com key:[F1]
          > A21J21P4304278889
          > B10100770660
          > C01 42 000 07
          > C46 37 001 00
          > C46 00 001 09
          > C46 00 001 09
          > B10100770660
          > C40 41 000 00
          > C41 42 002 00
          > C41 42 003 07
          > B20100770400
          > C49 41 000 00
          > C38 41 002 00
```

TABLE 34
SKID ERROR RECORD LISTING

The error listing for line 1428 displays an invalid line length. Notice line 1428 which contains "A21J21P4304278889". According to the format of the "A" data item defined earlier, the line is too long. If you modify the line by deleting "J21P", the line almost conforms to the format of an "A" data item. Notice now that the line is too short. The temperature reading for an "A" data item is three digits, but the existing temperature is only two, "89". If you precede the temperature reading with a "0", the final form of the "A" data item becomes "A2143042788089", which conforms exactly to the format of the "A" data item. Table 35 shows the final alterations to line 1428.

```
A:SKID21A.DAT   Line:1428  Col:02  Free:4774    Mode: EDIT        Com key:[F1]
          > A2143042788089
          > B10100770660
          > C01 42 000 07
          > C46 37 001 00
          > C46 00 001 09
          > C46 00 001 09
          > B10100770660
          > C40 41 000 00
          > C41 42 002 00
          > C41 42 003 07
          > B20100770400
          > C49 41 000 00
          > C38 41 002 00
```

TABLE 35
SKID ERROR EXAMPLE

The next error (Table 36) occurs on line 1006, with another line length error, which is exactly as the error encountered above.

```
A:SKID21A.DAT   Line:1006  Col:02  Free:4774    Mode: EDIT        Com key:[F1]
    > A21J21P4304208886
    > B10100770660
    > C36 41 001 00
    > C38 41 002 00
    > C35 40 004 00
    > C35 41 005 07
    > B20100770220
    > C38 40 000 00
    > C35 40 002 00
    > C38 41 004 00
    > C35 40 006 00
    > C49 41 008 00
    > C38 41 010 00
```

TABLE 36
SKID ERROR LISTING

With the same type of modifications as above, the resulting data set is shown in Table 37.

```
A:SKID21A.DAT   Line:1006  Col:02  Free:4774    Mode: EDIT        Com key:[F1]
    > A2143042088086
    > B10100770660
    > C36 41 001 00
    > C38 41 002 00
    > C35 40 004 00
    > C35 41 005 07
    > B20100770220
    > C38 40 000 00
    > C35 40 002 00
    > C38 41 004 00
    > C35 40 006 00
    > C49 41 008 00
    > C38 41 010 00
```

TABLE 37
SKID DATA ERROR CHANGES

The next error occurs in line 603, "C36 41 059 90100770300", with another line length error. Table 38 shows a listing of the data with line 603, where the error occurs.

```
A:SKID21A.DAT   Line:603   Col:02  Free:4774    Mode: EDIT        Com key:[F1]
              > C36 41 059 90100770300
              > C36 41 000 97
              > B20100770300
              > C38 40 000 90
              > C32 40 004 96
              > C27 40 006 96
              > C28 41 008 96
              > C30 40 010 90
              > C32 40 012 90
              > C35 40 014 90
              > C33 40 016 90
              > C30 41 018 90
              > C28 40 020 90
```

TABLE 38
SKID DATA ERROR CORRECTION

Line 603 appears to be two lines in one, with "C36 41 059 90" being one line and "0100770300" being the other. However, there is no data type identification for the concatenation of the additional line. With further investigation, the additional part of line 603, "0100770300", appears to have a format of a "B" data item. Now, another problem arises. Is the "B" data item a "B1" or a "B2"? If you look further down the data set, you will see that there is a "B2" data item, "B20100770300", preceded by a "C" data item, "C36 41 000 97", with a comment "7", and line 603's "C" data item, "C36 41 059 90", does not have a comment "7". Therefore the additional part of line 603, "0100770300", must be a "B1" data item.

After you break line 603 into two lines and make the alterations, the modified data set should look like the one below (Table 39).

```
A:SKID21A.DAT   Line:603   Col:02  Free:4773    Mode: EDIT        Com key:[F1]
              > C36 41 059 90
              > B10100770300
              > C36 41 000 97
              > B20100770300
              > C38 40 000 90
              > C32 40 004 96
              > C27 40 006 96
              > C28 41 008 96
              > C30 40 010 90
              > C32 40 012 90
              > C35 40 014 90
              > C33 40 016 90
              > C30 41 018 90
```

TABLE 39
MODIFIED SKID ERRORS

Another error occurs in line 161, "C44 40 096 0C50 40 098 00", which is similar to the last error. Again, the error is another line length problem. The error is shown in Table 42. **Note: Tables 40 and 41 have been omitted from this report for technical reasons. Also, the succeding page (page 123) does not apply to this report.**

```
A:SKID21A.DAT   Line:161   Col:02   Free:4773   Mode: EDIT          Com key:[F1]
                                    > C44 40 096 0C50 40 098 00
                                    > C50 41 098 07
                                    > B20200480100
                                    > C56 40 000 00
                                    > C52 40 002 06
                                    > C50 40 004 00
                                    > C54 40 006 00
                                    > C56 40 008 00
                                    > C50 40 010 00
                                    > C52 40 012 00
                                    > C52 40 014 00
                                    > C51 40 016 00
                                    > C50 40 018 00
```

TABLE 40
SKID ERROR CORRECTION

Line 161, "C44 40 096 0C50 40 098 00", appears to be two "C" data types in one, with the first "C" data type being "C44 40 096 0" and the second "C50 40 098 00". The only item missing is the comment code in the first "C" data type, "C44 40 096 0". If we assume that there was no comment, "0", we can correct this error by adding a "0" after the first part of line 161.

If you encounter an error that appears to be two lines of data concatenated together and one or both of the lines are missing identifying traits or data, delete the line or lines in question. When you divide line 161 and make the modifications, the data set should appear as shown in Table 41.

```
A:SKID21A.DAT   Line:161   Col:02   Free:4772   Mode: EDIT          Com key:[F1]
                                    > C44 40 096 00
                                    > C50 40 098 00
                                    > C50 41 098 07
                                    > B20200480100
                                    > C56 40 000 00
                                    > C52 40 002 06
                                    > C50 40 004 00
                                    > C54 40 006 00
                                    > C56 40 008 00
                                    > C50 40 010 00
                                    > C52 40 012 00
                                    > C52 40 014 00
                                    > C51 40 016 00
```

TABLE 41
MODIFIED SKID DATA

The last two errors appear in lines 0, "210288", and 1, "A21J21P4304188882". The data set, with these errors, is shown in Table 42.

```
A:SKID21A.DAT   Line:0     Col:02  Free:4772    Mode: EDIT        Com key:[F1]
                > 210288
                > A21J21P4304188882
                > B10200040310
                > C36 26 000 00
                > C36 28 002 03
                > C30 27 004 00
                > C30 28 006 00
                > C26 30 008 00
                > C38 17 010 00
                > C32 30 012 00
                > C36 29 014 00
                > C42 24 016 00
                > C34 33 018 00
```

TABLE 42
SKID DATA ERROR CORRECTIONS

The tape identifier appears in line 0, "210288". Since we do not need the tape identifier to process the skid data, delete line 0. Line 1 , "A21J21P4304188882", is identical to the error encountered in line 1428 and should be handled in the same manner. The corrected data set appears below.

```
A:SKID21A.DAT   Line:0     Col:02  Free:4773    Mode: EDIT        Com key:[F1]
                > A2143041888082
                > B10200040310
                > C36 26 000 00
                > C36 28 002 03
                > C30 27 004 00
                > C30 28 006 00
                > C26 30 008 00
                > C38 17 010 00
                > C32 30 012 00
                > C46 29 014 00
                > C42 24 016 00
                > C34 33 018 00
                > C34 33 020 00
```

TABLE 43
EDITED SKID DATA

After all errors are resolved, press the "F1" key and select the "(A.) END the edit and save this file" option by pressing the "A" key. The example (Table 44) displays the options after the "F1" key is pressed.

```
A:SKID21A.DAT   Line:0     Col:02  Free:4773    Mode: EDIT        Com key:[F1]
> A2143041888082
> B10200040310
> C36 26 000 00
> C36 28 002 03
> C30 27 004 00
> C30 28 006 00
> C26 30 008 00
> C38 17 010 00
> C32 30 012 00
> C46 29 014 00
> C42 24 016 00
> C34 33 018 00
> C34 33 020 00
```

```
        MASTER COMMAND MENU

 Select option or press Esc to return

(A.)  END the edit and save this file
(B.)  BACKUP (create filename.bak)
(C.)  CHANGE filename (for saving)
(D.)  HELP
(E.)  EDIT another file (with options)
(F.)  SEARCH and [replace] string
(G.)  SETUP (set default parameters)
(H.)  QUIT * RETURN TO DOS * NO SAVE
```

TABLE 44
SAVING THE EDITED SKID FILE

After you save the data set with the changes, the program "SE.EXE" rechecks your modifications. If you have any more errors, the program will list them to the printer and reload the skid data into the text editor for remodification. If there were no errors encountered, the program will list the following statement to the printer.

```
0  ERRORS WERE DETECTED
```

With no errors detected, "SE.EXE" transfers control to another program, "SKIDCOMP.EXE", where a more detailed data check and a reformat conversion of the data is done. This begins phase two, a system phase, which the user will be unaware of and requires no user action.

"SKIDCOMP.EXE" extracts a whole "B1" data block at a time, i.e. from one "B1" to the next "B1", and performs several tests on that data block. If errors are found within the data block, the data block is appended to an error file with appropriate error messages beside the lines that were invalid. If no errors were found, the data block is processed and converted into a format that the PMS database can understand. The converted data will then be appended to a file for importing into the PMS database.

The validation process in "SKIDCOMP.EXE" accomplishes the following:

1. Checks for a "B1" data type in the data block.

2. Checks for a "B2" data type in the data block.

3. Checks "B1" and "B2" data type for highway match.

4. Checks for two consecutive comment "9"s and deletes the whole data set if the test is positive.

5. Checks for valid lane switches within a section.

6. Checks for a "B2" data type immediately following a "C" data type with a comment "7".

7. Checks for a comment "7" in a "C" data item immediately preceding a "B2" data type.

8. Validates "B1" data type for proper county number.

9. Validates increasing offsets in "C" data types.

Upon completion of the second phase, a system phase, of the skid processing, "SKIDCOMP.EXE" passes control to "SKIDERR2.EXE". "SKIDERR2.EXE" searches for an error file that was generated by "SKIDCOMP.EXE".

If "SKIDERR2.EXE" detects an error file, the program lists the line numbers where the errors occurred and the total number of errors. On the contrary, if no error file was detected, the skid processing is complete and control is passed back to "SE.EXE".

Below is an example of errors that may be listed to the printer in the third phase of skid data validation.

```
ERROR IN LINE    104    ERROR
ERROR IN LINE    119    ERROR

   2  ERRORS WERE DETECTED
```

If there are errors, "SKIDERR2.EXE" automatically loads the text editor, "E88.EXE", with the blocks of data that contained the errors. Again, begin error corrections with the last error first. Now we want to look at line 119. Table 45 illustrates the output of the error output. In this example line 119 has the error message, "NO B2 CARD", beside it.

```
D:ALL.SKD       Line:117   Col:02  Free:6189    Mode: EDIT        Com key:[F1]
                > C56 40 096 00
                > C55 40 098 07
                > C55 41 098 07  ******  NO B2 CARD
                > B20200480200
                > C56 40 000 00
                > C57 40 002 00
                > C54 40 004 00
                > C54 38 006 00
                > C54 40 008 06
                > C55 40 010 00
                > C57 40 012 06
                > C53 39 014 00
                > C55 41 016 00
```

TABLE 45
EXAMPLE ERRORS FOR SKID DATA

When a comment "7" is encountered in a "C" data type, "SKIDCOMP.EXE" expects a "B2" data type to immediately following it. In this case, it appears that a duplicate "C" data type exists, and one of the data lines must be eliminated.

When correcting errors, make sure the error message is also deleted after the error is corrected. Thus, in this example, delete the line "C55 41 098 07", just above the "B2" line.

The corrected data set appears in Table 46.

```
D:ALL.SKD       Line:117   Col:02  Free:6190    Mode: EDIT        Com key:[F1]
                   > C56 40 094 00
                   > C56 40 096 00
                   > C55 41 098 07
                   > B20200480200
                   > C56 40 000 00
                   > C57 40 002 00
                   > C54 40 004 00
                   > C54 38 006 00
                   > C54 40 008 06
                   > C55 40 010 00
                   > C57 40 012 06
                   > C53 39 014 00
                   > C55 41 016 002
```

TABLE 46
CORRECTED SKID DATA EXAMPLE

The next error occurs in line 104 with an error massage of "INVALID COUNTY NUMBER" in a "B1" data type. "SKIDCOMP.EXE" reads a county file that contains a complete listing of county numbers for the particular District in question, and if there is no county number match, this particular error message is issued. An example of an "Invalid County Number" error is shown in Table 47.

```
D:ALL.SKD       Line:102   Col:02  Free:6190    Mode: EDIT        Com key:[F1]
                > A214304198808
                > B10100770300  *********  INVALID COUNTY NUMBER
                > C36 41 000 97
                > B20100770300
                > C38 40 000 90
                > C32 40 002 90
                > C27 41 004 90
                > C27 41 006 90
                > C26 40 008 96
                > C38 40 010 90
                > C30 40 012 90
                > C29 40 014 90
                > C29 40 016 90
```

TABLE 47
INVALID COUNTY NUMBER EXAMPLE

The particular county number in question is "030" (it should be 031). Knowing which District that is being processed, the county number can be corrected. Remember to delete the error message after the correction, or future errors will occur. The data set with corrections is illustrated in Table 48.

```
D:ALL.SKD       Line:102   Col:02  Free:6190    Mode: EDIT        Com key:[F1]
                > A214304198808
                > B10100770310
                > C36 41 000 97
                > B20100770300
                > C38 40 000 90
                > C32 40 002 90
                > C27 41 004 90
                > C27 41 006 90
                > C26 40 008 96
                > C38 40 010 90
                > C30 40 012 90
                > C29 40 014 90
                > C29 40 016 90
```

TABLE 48
CORRECTED SKID DATA

After all of the errors are corrected and the error messages deleted, press the "F1" key and a screen, Figure 62, will appear.

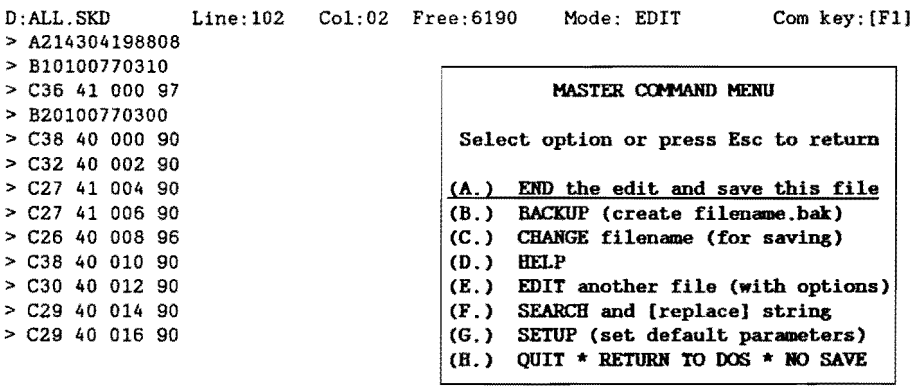


FIGURE 62: END-EDIT SKID MENU

Select option "(A.) END the edit and save this file" by pressing the "A" key, and this will save all of your changes.

"SKIDERR2.EXE" then passes control back to "SKIDCOMP.EXE", where it does its same error checks on the data that was previously corrected. When "SKIDCOMP.EXE" does not detect any errors and "SKIDERR2.EXE" does not detect an error file created by "SKIDCOMP.EXE", the following messages are generated and listed to the printer.

```
0 ERRORS WERE DETECTED
SKID PROCESS COMPLETE
```

Program control is then returned to "SE.EXE", where another skid file can be processed, or you can return to the "Pavement Management System" menu.

Notice that the file "SKID21A.DAT", which we selected and processed, has now been renamed with an "XXX" extension (see Table 49). Renaming the file with the "XXX" extension helps the user to remember which files have been processed and which files have not been processed.

```
INPUT SKID FILE A:SKID21A.DAT
PRESS Esc TO EXIT

SDIR  Sorted DIRectory Listing, Version 2.6  Volume            11/30/88 09:33
|OPTIONS  /Cls /WrITe /Pause /All |COLUMN: /2 /6 |SORT: /No /Size /Date /eXt
                                Directory of A:\

Filespec.ext  Bytes|Filespec.ext  Bytes|Filespec.ext  Bytes|Filespec.ext  Bytes
ALL      .DAT 104706|SKID21AG.DAT  22623|SKID21C .DAT  25280|SKID21DG.DAT  10262
ALL      .SKD 104706|SKID21B .DAT  23969|SKID21CG.DAT  25262|SKID21E .DAT  22597
GOODSKID.DAT 133226|SKID21BG.DAT  23947|SKID21D .DAT  10279|SKID21EG.DAT  22591
SKID21A .XXX  22637
     552085 Bytes in       13 File(s);   657432 bytes free...
```

TABLE 49
SKID DIRECTORY AFTER EDITS

To exit from "SE.EXE", press the "Esc" key, and you will be returned to the "Pavement Management System" main menu, (Figure 63) or you may move the highlighted box from "SKID21A.XXX" to another skid file, and press the "Enter" key to check for other errors.

```
                    Pavement Management System

                                                          MENU 2 OF 2
                    -> 1 - Willacy County (245)

                       2 - Zapata County (253)

                       3 - Process Raw Skid Data

                       4 - Tape Backup

                       5 - Optimize Hard Disk

                       6 - Disk Operating System


 November 30, 1988  9:31:46 am  CAPS              Memory:  640 K
```

FIGURE 63: PMS MAIN MENU

The next section discusses matching the processed skid data records to the highway segments for each county.

6.10 SKID DATA IMPORT

When raw skid data is collected and processed for a given county, it must be matched to the existing records in the PMS database. This process must be done for every county within the District.

The following example takes you through all of the steps involved in matching the processed skid data to the records in the PMS database. Note, the skid data must be processed for the particular county or the select and match operation described here will not find the data for that county.

Select a particular county for which you have collected and processed the raw skid data. In this example, we will use Willacy county (Figure 64). To do this, use the arrow keys on the keyboard to point to item "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key.

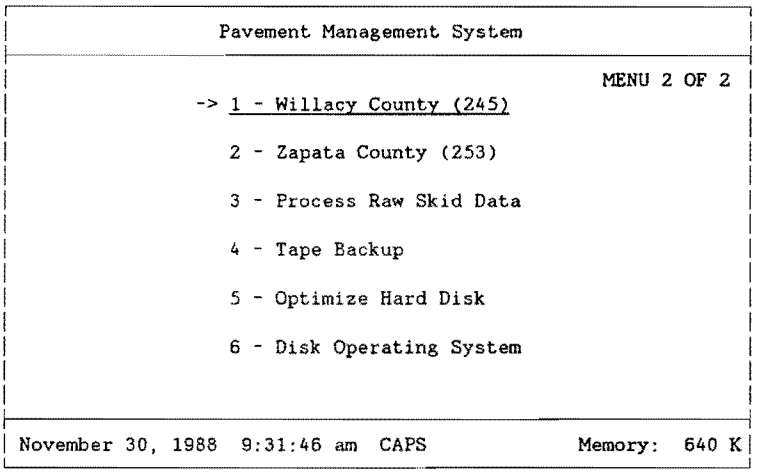


FIGURE 64: PMS MAIN MENU: COUNTY SELECTION

As soon as you select a county, the menu program automatically accesses the database for that county and prompts you for your name and your security password. Your sign on name and password are assigned to you by your PMS administrator.

In the following example the sign on name is "DATA" and the security password is "ENTRY". The database first prompts you for your name. In this example, type "DATA" and press the "Enter" key. The database then prompts you for your security password.

Type "**ENTRY**" and press the "Enter" key. Notice the password you typed in does not appear on the screen (Figure 65).

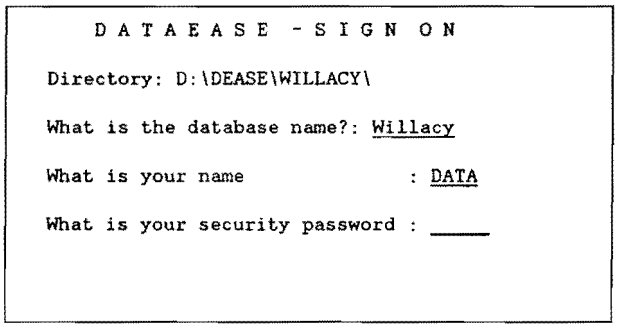


FIGURE 65: PMS SIGN-ON MENU

If everything was typed in correctly, the "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen with seven different categories to choose (Figure 66). Select "2. Data Entry -- District Field Data" by pressing the "2" key, or use the arrow keys to highlight the selection, and press the "Enter" key.

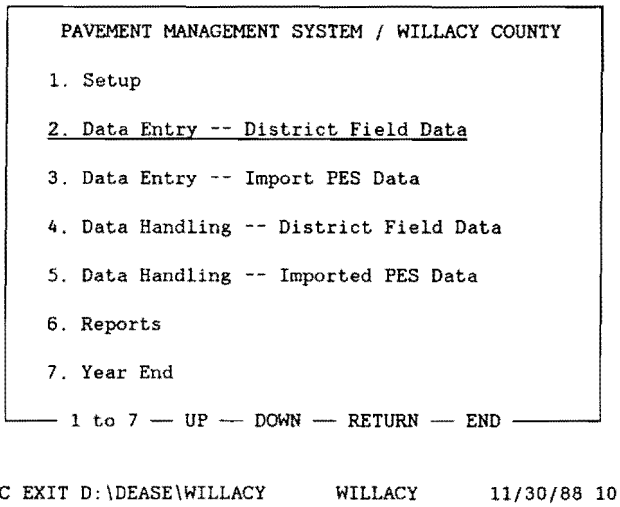


FIGURE 66: PMS DATA ENTRY - DISTRICT FIELD DATA MENU

The next menu (Figure 67) that appears on your screen is the "DATA ENTRY -- DISTRICT FIELD DATA / WILLACY COUNTY". Since we want to enter skid data, select "4. Skid Data" by pressing the "4" key, or use the arrow keys to highlight the selection, and press the "Enter" key.

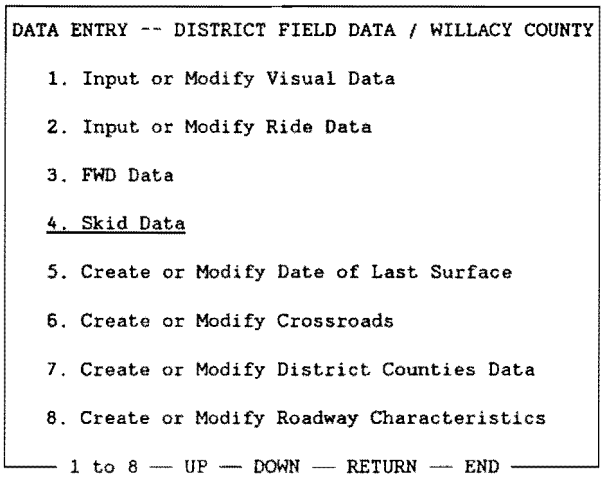


FIGURE 67: SKID DATA MENU SELECTION

The next menu (Figure 68), "SKID DATA ENTRY / WILLACY COUNTY", will be where we process all of the skid data.

The first operation to perform is to separate and transfer the skid data for the county that we selected from all of the processed skid data. This is done by selecting "1. Transfer Skid Field Data". Press the "1" key or use the arrow keys to highlight the selection and press the "Enter" key.

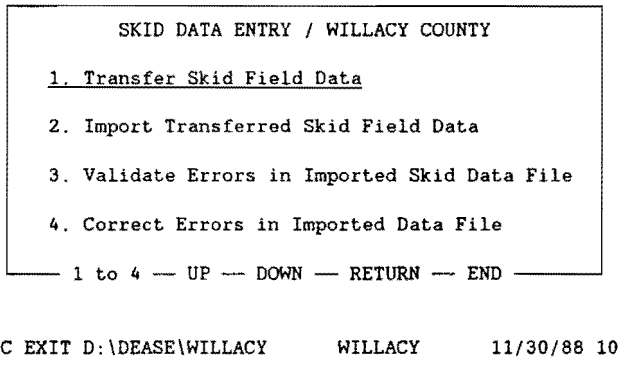


FIGURE 68: TRANSFER SKID FIELD DATA

The "1. Transfer Skid Field Data" selection calls a program named "SKIDSEG.EXE". "SKIDSEG.EXE" separates the skid data, for the county selected, from the entire District skid data file. A skid data file is created for the separated

data, and the remainder skid data is returned to the District file. After completion of the process, you are returned to the "SKID DATA ENTRY" menu selection.

Now that the skid data for the selected county has been separated from the District skid data, we will attempt to import it into the PMS database. To do this, select "2. Import Transferred Skid Field Data" by pressing "2" or use the arrow keys to point to the selection and press "Enter" (Figure 69).

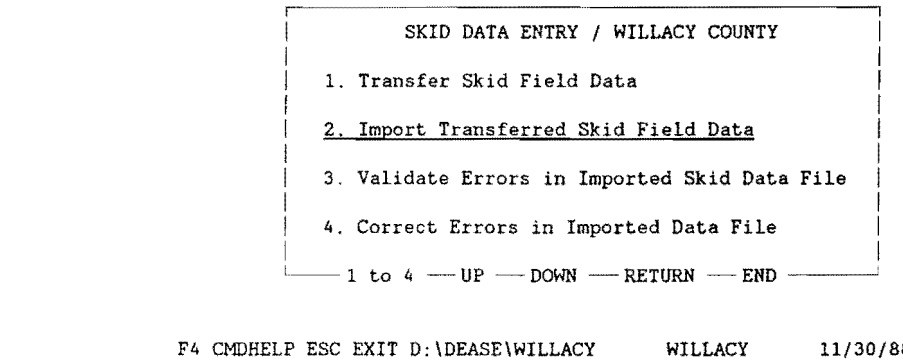
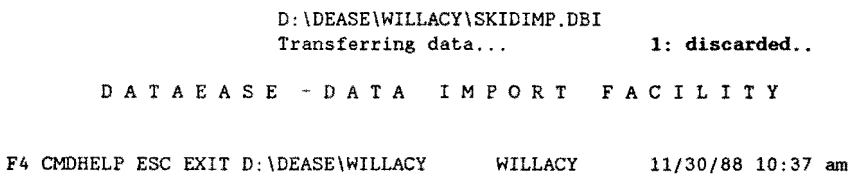


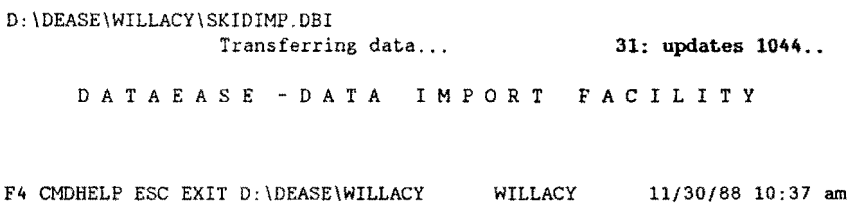
FIGURE 69: IMPORT SKID DATA MENU

The "2. Import Transferred Skid Field Data" selection does a number of operations. The first operation that the selection does is try to import the skid data from the file created in the "1. Transfer Skid Field Data" selection. Two examples of the import facility are shown below, which demonstrates matching and nonmatching records.

The first example demonstrates a nonmatching record.



The second example demonstrates a matching record.



Invariably you will have records that will not match the records in the database for some reason or another. These records are listed in a separate file as errors from the import function. On the other hand, if no errors occur, the import process of the skid data is complete, and you can disregard the next set of operations.

The error file, that the import function creates, contains only the line numbers from the import data set, where the errors occurred. The next process that the import selection does is to match the line number errors in the error file to the actual line containing the data, and to list the data with errors. This process is done by a program named "SKIDERR.EXE". "SKIDERR.EXT" then creates a new import file with the skid data that contained errors.

An example listing, to the printer, of the errors incurred by the import process and generated by "SKIDERR.EXE" follows(Table 50).

SKID ERRORS

	CNTY HIGHWAY RWY REF. SKD DATE
discarded..	245;US;0077; ;L;006.0;40;88
discarded..	245;US;0077; ;L;005.8;42;88
discarded..	245;US;0077; ;L;005.6;41;88
discarded..	245;SH;0186; ;L;019.7;54;88
discarded..	245;SH;0186; ;L;019.5;60;88
discarded..	245;SH;0186; ;L;019.3;57;88
discarded..	245;SH;0186; ;L;030.0;31;88
discarded..	245;SH;0186; ;L;029.7;30;88
discarded..	245;SH;0186; ;L;029.6;32;88

TABLE 50
LISTING OF SKID ERRORS

These errors must be corrected and reimported again until no more errors exist, similar to a manual iterative process on the raw skid data with errors. The first operation in correcting the errors is to separate the break points in the error listing, by manually underlining them on the output. This will make the error validation process much easier. Table 51 illustrates the break points in the error listing of the skid data shown in Table 50.

SKID ERRORS

CNTY	HIGHWAY RWY REF. SKD DATE
discarded..	245;US;0077; ;L;006.0;40;88
discarded..	245;US;0077; ;L;005.8;42;88
discarded..	245;US;0077; ;L;005.6;41;88
discarded..	245;SH;0186; ;L;019.7;54;88
discarded..	245;SH;0186; ;L;019.5;60;88
discarded..	245;SH;0186; ;L;019.3;57;88
discarded..	245;SH;0186; ;L;030.0;31;88
discarded..	245;SH;0186; ;L;029.7;30;88
discarded..	245;SH;0186; ;L;029.6;32;88

TABLE 51
SKID ERRORS WITH ASSOCIATED BREAK POINTS

After the errors are listed to the printer, you are returned to the "SKID DATA ENTRY / WILLACY COUNTY" (FIGURE 70) process of the PMS database. The next step is to validate each group of errors that was separated and to note any correction on the output. This is done by pressing "3" or using the arrow keys to highlight "3. Validate Errors in Imported Skid Data File" and pressing the "Enter" key.

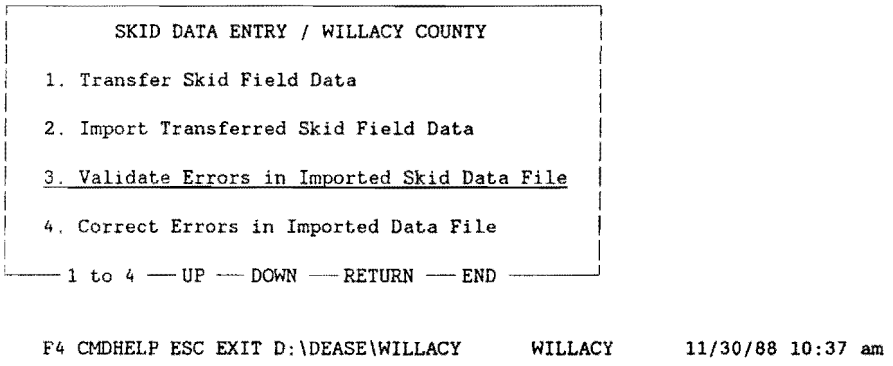


FIGURE 70: SKID DATA ENTRY MENU

The next screen that appears is the "SKID ERROR CORRECTIONS" report, in which the user must complete for validation of the skid data with errors. The information that must be completed will be found in the groups of invalid skid data that were selected on the "SKID ERRORS" report (see Table 52).

SKID ERRORS

CNTY	HIGHWAY RWY REF. SKD DATE	
discarded..	245;US;0077; ;L;006.0;40;88	┐
discarded..	245;US;0077; ;L;005.8;42;88	├ FIRST GROUP
discarded..	245;US;0077; ;L;005.6;41;88	┘
discarded..	245;SH;0186; ;L;019.7;54;88	
discarded..	245;SH;0186; ;L;019.5;60;88	
discarded..	245;SH;0186; ;L;019.3;57;88	
discarded..	245;SH;0186; ;L;030.0;31;88	
discarded..	245;SH;0186; ;L;029.7;30;88	
discarded..	245;SH;0186; ;L;029.6;32;88	

TABLE 52
GROUPED SKID DATA ERRORS

To validate the errors in the first group of skid data errors, the "SKID ERROR CORRECTIONS" report screen must be completed as shown in Figure 71.

SKID VIEW

SKID ERROR CORRECTIONS

Complete the entries below, then press "F2"

HIGHWAY PREFIX: US
HIGHWAY NUMBER: 0077
HIGHWAY SUFFIX:
ROADWAY: L

F4 CMDHELP ESCEXIT F2SAVE F5FORM CLEAR F6FIELD CLR

FIGURE 71: SKID ERROR CORRECTION SCREEN

After the information is completed (US; 0077; SPACE; L), press the "F2" key to start the validation report process.

Scroll through the output by pressing the space bar until the output matches, as near as possible, that of the first group on the skid data error listing (see Figure 72).

SKID VIEW Running report SKID VIEW
SPACE: Continue Report EXIT: Abort Report

SKID ERROR CORRECTIONS

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST
001060	245	US0077	L	3.1	2+1.1
001061	245	US0077	L	3.3	2+1.3
001062	245	US0077	L	3.5	2+1.5
001063	245	US0077	L	3.7	2+1.7
001064	245	US0077	L	3.9	2+1.9
001065	245	US0077	L	4.1	4+0.1
001066	245	US0077	L	4.3	4+0.3
001067	245	US0077	L	4.5	4+0.5
001068	245	US0077	L	4.7	4+0.7
001069	245	US0077	L	4.9	4+0.9
001070	245	US0077	L	5.1	4+1.1
001071	245	US0077	L	5.3	4+1.3
001072	245	US0077	L	5.5	4+1.5
001073	245	US0077	L	5.7	4+1.7
001074	245	US0077	L	5.9	4+1.9
001075	245	US0077	L	6.1	6+0.1

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY WILLACY 11/30/88 10:37 am

FIGURE 72: BLOCKED SKID ERRORS

Note on the skid data error output, the corrections that need to be made to match the records to the ones above. In our example, the only difference between the skid error output and the screen above is the "REFERENCE POINT" mismatch. To correct the mismatch error, round the "REFERENCE POINT" up or down by one tenth. This correction will then allow the data to match the records in the database (Figure 73).

SKID ERRORS

	CNTY	HIGHWAY	RWY	REF.	SKD	DATE
discarded..	245	US	0077		L	006.0;40;88
discarded..	245	US	0077		L	005.8;42;88
discarded..	245	US	0077		L	005.6;41;88
discarded..	245	SH	0186		L	019.7;54;88
discarded..	245	SH	0186		L	019.5;60;88
discarded..	245	SH	0186		L	019.3;57;88
discarded..	245	SH	0186		L	030.0;31;88
discarded..	245	SH	0186		L	029.7;30;88
discarded..	245	SH	0186		L	029.6;32;88

ROUND REFERENCE POINT UP ONE TENTH

FIGURE 73: CORRECTED SKID VALUES

Press the "Esc" key to return to the "SKID ERROR CORRECTION" report input screen. Now, we need to validate the second group of errors in the skid data.

SKID ERRORS

```
          CNTY  HIGHWAY RWY REF. SKD DATE
-----------------------------------------------------------
discarded..   245;US;0077; ;L;006.0;40;88 ┐
discarded..   245;US;0077; ;L;005.8;42;88 ├─ ROUND REFERENCE POINT UP
discarded..   245;US;0077; ;L;005.6;41;88 ┘  ONE TENTH
discarded..   245;SH;0186; ;L;019.7;54;88 ┐
discarded..   245;SH;0186; ;L;019.5;60;88 ├─ SECOND GROUP
discarded..   245;SH;0186; ;L;019.3;57;88 ┘
discarded..   245;SH;0186; ;L;030.0;31;88
discarded..   245;SH;0186; ;L;029.7;30;88
discarded..   245;SH;0186; ;L;029.6;32;88
```

FIGURE 74: ROUNDING SKID RECORDS TO CORRECT IMPORT ERRORS

Type in the pertinent information (SH; 0186; SPACE; L) of the second group of data for the error validation report, and press the "F2" key (Figure 75).

```
                    SKID VIEW

                SKID ERROR CORRECTIONS

        Complete the entries below, then press "F2"

                  HIGHWAY PREFIX: SH

                  HIGHWAY NUMBER: 0186

                  HIGHWAY SUFFIX: _

                        ROADWAY: L

    F4 CMDHELP ESCEXIT F2SAVE F5FORM CLEAR F6FIELD CLR
```

FIGURE 75: SKID ERROR CORRECTIONS

The response of the system for this example is shown in Table 53.

```
SKID VIEW                                  Running report SKID VIEW
END OF REPORT.  SPACE: Return to Menu

                SKID ERROR CORRECTIONS

==========================================================================
  RECORD    COUNTY    HIGHWAY     ROADWAY    REFERENCE  MILEPOST
  NUMBER    NUMBER                           POINT
--------------------------------------------------------------------------
==========================================================================
```

TABLE 53
SKID ERROR SCREEN REPORT

Upon careful examination, this road does not exist according to the database (Table 53). There must be something wrong with our input to the data selection of the report. If we change our "ROADWAY" input from "L" to "R", we can find the records for the selected highway in the database (Figure 76).

```
                    SKID VIEW

                 SKID ERROR CORRECTIONS

          Complete the entries below, then press "F2"

                    HIGHWAY PREFIX: SH

                    HIGHWAY NUMBER: 0186

                    HIGHWAY SUFFIX: _

                          ROADWAY: R

  F4 CMDHELP ESCEXIT F2SAVE F5FORM CLEAR F6FIELD CLR
```

FIGURE 76: SELECTING SKID ERROR CORRECTIONS

Scroll through the report, by pressing the space bar, until the output matches, as near as possible, that of the second group on the skid data error listing (Table 54).

```
SKID VIEW                                   Running report SKID VIEW
SPACE: Continue Report  EXIT: Abort Report

                        SKID ERROR CORRECTIONS
```

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST
000868	245	SH0186	R	19.2	18+1.2
000869	245	SH0186	R	19.4	18+1.4
000870	245	SH0186	R	19.6	18+1.6
000871	245	SH0186	R	19.8	18+1.8
000872	245	SH0186	R	20.0	20+0.0
000873	245	SH0186	R	20.2	20+0.2
000874	245	SH0186	R	20.4	20+0.4
000875	245	SH0186	R	20.6	20+0.6
000876	245	SH0186	R	20.8	20+0.8
000877	245	SH0186	R	21.0	20+1.0
000878	245	SH0186	R	21.2	20+1.2
000879	245	SH0186	R	21.4	20+1.4
000880	245	SH0186	R	21.6	20+1.6
000881	245	SH0186	R	21.8	20+1.8
000882	245	SH0186	R	22.0	22+0.0
000883	245	SH0186	R	22.2	22+0.2

```
F4 CMDHELP ESC EXIT D:\DEASE\WILLACY      WILLACY      11/30/88 10:37 am
```

TABLE 54
CORRECTED SKID ERRORS

We already know one change that must be noted. The change involving the "ROADWAY" from "L" to "R". This modification should be noted for the second group, as well as the third group, of skid data errors.

The second modification that should be noted for the second group, is similar to that of the first group. If the "ROADWAY" is changed from "L" to "R" in the second group of skid data, the records will continually remain in error. The "REFERENCE POINT" has to be modified for the records to match, again it should be rounded up or down by one tenth.

The modification notes for the second data set appear in Table 55.

SKID ERRORS

	CNTY HIGHWAY RWY REF. SKD DATE	
	discarded.. 245;US;0077; ;L;006.0;40;88	ROUND REFERENCE POINT UP
	discarded.. 245;US;0077; ;L;005.8;42;88	ROUND REFERENCE POINT UP
	discarded.. 245;US;0077; ;L;005.6;41;88	ROUND REFERENCE POINT UP ONE TENTH
CHANGE THE ROADWAY FROM L TO R	discarded.. 245;SH;0186; ;L;019.7;54;88	
	discarded.. 245;SH;0186; ;L;019.5;60;88	ROUND REFERENCE POINT UP
	discarded.. 245;SH;0186; ;L;019.3;57;88	ROUND REFERENCE POINT UP ONE TENTH
	discarded.. 245;SH;0186; ;L;030.0;31;88	
	discarded.. 245;SH;0186; ;L;029.7;30;88	
	discarded.. 245;SH;0186; ;L;029.6;32;88	

TABLE 55
SKID DATA MODIFICATIONS

Notice that the third group of skid errors is contained in the same highway section (Table 56).

SKID ERRORS

	CNTY HIGHWAY RWY REF. SKD DATE	
	discarded.. 245;US;0077; ;L;006.0;40;88	ROUND REFERENCE POINT UP
	discarded.. 245;US;0077; ;L;005.8;42;88	ROUND REFERENCE POINT UP
	discarded.. 245;US;0077; ;L;005.6;41;88	ROUND REFERENCE POINT UP ONE TENTH
	discarded.. 245;SH;0186; ;L;019.7;54;88	
CHANGE THE ROADWAY FROM L to R	discarded.. 245;SH;0186; ;L;019.5;60;88	ROUND REFERENCE POINT UP
	discarded.. 245;SH;0186; ;L;019.3;57;88	ROUND REFERENCE POINT UP ONE TENTH
	discarded.. 245;SH;0186; ;L;030.0;31;88	
	discarded.. 245;SH;0186; ;L;029.7;30;88	THIRD GROUP
	discarded.. 245;SH;0186; ;L;029.6;32;88	THIRD GROUP

TABLE 56
ADJUSTED SKID DATA EXAMPLE DATA

Scroll through the same output of the "SKID ERROR CORRECTIONS" by pressing the space bar until the output matches, as near as possible, that of the third group of skid data errors (Table 57).

SKID VIEW Running report SKID VIEW
SPACE: Continue Report EXIT: Abort Report
SKID ERROR CORRECTIONS

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST
000916	245	SH0186	R	28.8	28+0.8
000917	245	SH0186	R	29.0	28+1.0
000918	245	SH0186	R	29.2	28+1.2
000919	245	SH0186	R	29.4	28+1.4
000920	245	SH0186	R	29.6	28+1.6
000921	245	SH0186	R	29.8	28+1.8
000922	245	SH0186	R	30.0	30+0.0
000923	245	SH0186	R	30.2	30+0.2
000924	245	SH0186	R	30.4	30+0.4
000925	245	SH0186	R	30.6	30+0.6
000926	245	SH0186	R	30.8	30+0.8
000927	245	SH0186	R	31.0	30+1.0
000928	245	SH0186	R	31.2	30+1.2
000929	245	SH0186	R	31.4	30+1.4
000930	245	SH0186	R	31.6	30+1.6
000931	245	SH0186	R	31.8	30+1.8

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY WILLACY 11/30/88 10:37 am

TABLE 57
CORRECTED SKID ERRORS

Notice that after the notes of the "ROADWAY" changes from "L" to "R", that the first and third records in the third group of the skid data do not require any additional notes. However, the second record in the third group of skid data does require, again, a "REFERENCE POINT" modification note (Table 58).

SKID ERRORS

	CNTY HIGHWAY RWY REF. SKD DATE	
	discarded.. 245;US;0077; ;L;006.0;40;88	ROUND REFERENCE POINT UP ONE TENTH
	discarded.. 245;US;0077; ;L;005.8;42;88	
	discarded.. 245;US;0077; ;L;005.6;41;88	
CHANGE THE ROADWAY FROM L to R	discarded.. 245;SH;0186; ;L;019.7;54;88	ROUND REFERENCE POINT UP ONE TENTH
	discarded.. 245;SH;0186; ;L;019.5;60;88	
	discarded.. 245;SH;0186; ;L;019.3;57;88	
	discarded.. 245;SH;0186; ;L;030.0;31;88	
	discarded.. 245;SH;0186; ;L;029.7;30;88	ROUND REFERENCE POINT UP ONE TENTH
	discarded.. 245;SH;0186; ;L;029.6;32;88	

TABLE 58
MODIFIED SKID DATA

Now that the noting of the changes to the skid data is complete, we want to attempt to modify the skid file with the changes that we noted. The first thing we

need to do is to exit from the "SKID ERROR CORRECTIONS" report menu and return to the "SKID DATA ENTRY" menu (Figure 77).

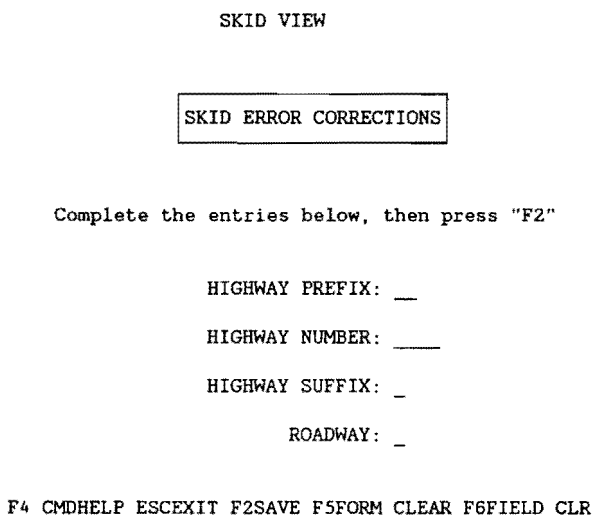


FIGURE 77: SKID ERROR CORRECTION MENU

To do this, press the "Esc" key, and the "SKID DATA ENTRY / WILLACY COUNTY" screen should appear (Figure 78). Select "4. Correct Errors in Imported Data File" by pressing the "4" key, or using the arrow keys to highlight the selection, press the "Enter" key.

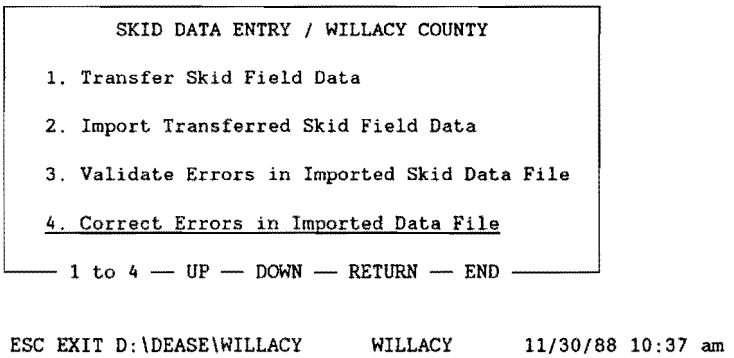


FIGURE 78: CORRECT ERRORS IN IMPORTED SKID DATA

The "4. Correct Errors in Imported Data File" selection loads a text editor, "E88.EXE", with the skid data file that contained the errors. Now, we can use the notes made earlier to modify the skid data (Table 59).

```
    D:SKID.DAT       Line:00    Col:02   Free:5604    Mode: EDIT        Com key:[F1]

> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE
  POINT;SKID VALUE;SKID DATE
                > 245;US;0077; ;L;006.0;40;88
                > 245;US;0077; ;L;005.8;42;88
                > 245;US;0077; ;L;005.6;41;88
                > 245;US;0077; ;L;019.7;54;88
                > 245;US;0077; ;L;019.5;60;88
                > 245;US;0077; ;L;019.3;57;88
                > 245;US;0077; ;L;030.0;31;88
                > 245;US;0077; ;L;029.7;30;88
                > 245;US;0077; ;L;029.6;32;88
                F
                F
                F
                F
                F
                F
```

TABLE 59
UNCORRECTED SKID DATA ERRORS

The first task is to separate the break points of each group by inserting a line between them (Table 60). This makes editing each group much easier, but before the file is saved, these inserted lines must be deleted.

```
   D:SKID.DAT       Line:00    Col:02   Free:5604    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE
  POINT;SKID VALUE;SKID DATE
                > 245;US;0077; ;L;006.0;40;88
                > 245;US;0077; ;L;005.8;42;88
                > 245;US;0077; ;L;005.6;41;88
                >
                > 245;US;0077; ;L;019.7;54;88
                > 245;US;0077; ;L;019.5;60;88
                > 245;US;0077; ;L;019.3;57;88
                >
                > 245;US;0077; ;L;030.0;31;88
                > 245;US;0077; ;L;029.7;30;88
                > 245;US;0077; ;L;029.6;32;88
                F
                F
                F
                F
```

TABLE 60
SEGMENTED SKID DATA FILE

Using the notes taken during the validation process, modify the first group of skid data by rounding the "REFERENCE POINT" up by one tenth (Table 61).

```
D:SKID.DAT       Line:00    Col:02   Free:5604    Mode: EDIT        Com key:[F1]
  > COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE
    POINT;SKID VALUE;SKID DATE
                > 245;US;0077; ;L;006.1;40;88 ┐
                > 245;US;0077; ;L;005.9;42;88 ├─ Rounded up one tenth
                > 245;US;0077; ;L;005.7;41;88 ┘
                >
                > 245;US;0077; ;L;019.7;54;88
                > 245;US;0077; ;L;019.5;60;88
                > 245;US;0077; ;L;019.3;57;88
                >
                > 245;US;0077; ;L;030.0;31;88
                > 245;US;0077; ;L;029.7;30;88
                > 245;US;0077; ;L;029.6;32;88
                F
                F
                F
                F
```

TABLE 61
CORRECTED SKID DATA FILE

The required modifications are shown below.Modify the second group of skid data by making two alterations. First, change the "ROADWAY" from "L" to "R", and second, round the "REFERENCE POINT" up one tenth (Table 62).

```
D:SKID.DAT       Line:00    Col:02   Free:5604    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE
  POINT;SKID VALUE;SKID DATE
                > 245;US;0077; ;L;006.1;40;88
                > 245;US;0077; ;L;005.9;42;88
                > 245;US;0077; ;L;005.7;41;88
                >
                > 245;US;0077; ;R;019.8;54;88 ┐
                > 245;US;0077; ;R;019.6;60;88 ├─ Changed roadway to "R" and
                > 245;US;0077; ;R;019.4;57;88 ┘  rounded up one tenth
                >
                > 245;US;0077; ;L;030.0;31;88
                > 245;US;0077; ;L;029.7;30;88
                > 245;US;0077; ;L;029.6;32;88
                F
                F
                F
                F
```

TABLE 62
MODIFIED SKID DATA SET

The final alteration that has to be made to the data set; again, it is a two step procedure (Table 63). Change the "ROADWAY" from "L" to "R" and modify the "REFERENCE POINT" of the second member of the third group by rounding up one tenth.

```
D:SKID.DAT       Line:00    Col:02   Free:5604    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE
  POINT;SKID VALUE;SKID DATE
                > 245;US;0077; ;L;006.1;40;88
                > 245;US;0077; ;L;005.9;42;88
                > 245;US;0077; ;L;005.7;41;88
                >
                > 245;US;0077; ;R;019.8;54;88
                > 245;US;0077; ;R;019.6;60;88
                > 245;US;0077; ;R;019.4;57;88
                >
                > 245;US;0077; ;R;030.0;31;88 ┐
                > 245;US;0077; ;R;029.8;30;88 ├- Changed roadway to "R" and
                > 245;US;0077; ;R;029.6;32;88 ┘    rounded up one tenth
                F
                F
                F
                F
```

TABLE 63
MODIFIED SKID DATA

Now, delete all of the blank lines and save the data set by pressing the "F1" key and selecting the "(A.) END the edit and save this file" option by pressing the "A" key (Figure 79).

```
D:SKID.DAT       Line:00    Col:02   Free:5604    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE P
  OINT;SKID VALUE;SKID DATE
> 245;US;0077; ;L;006.1;40;88
> 245;US;0077; ;L;005.9;42;88
> 245;US;0077; ;L;005.7;41;88
> 245;US;0077; ;R;019.8;54;88
> 245;US;0077; ;R;019.6;60;88
> 245;US;0077; ;R;019.4;57;88
> 245;US;0077; ;R;030.0;31;88
> 245;US;0077; ;R;029.8;30;88
> 245;US;0077; ;R;029.6;32;88
F
F
F
F
F
F
```

```
        MASTER COMMAND MENU

Select option or press Esc to return

(A.)  END the edit and save this file
(B.)  BACKUP (create filename.bak)
(C.)  CHANGE filename (for saving)
(D.)  HELP
(E.)  EDIT another file (with options)
(F.)  SEARCH and [replace] string
(G.)  SETUP (set default parameters)
(H.)  QUIT * RETURN TO DOS * NO SAVE
```

FIGURE 79: FINAL EDITS - SKID DATA

After saving the changes to the skid file, you are then returned back to the "SKID DATA ENTRY / WILLACY COUNTY" menu.

Select the "2. Import Transferred Skid Field Data" option to import the skid data that has been altered by pressing the "2" key or using the arrow keys to highlight the option and press the "Enter" key (Figure 80).

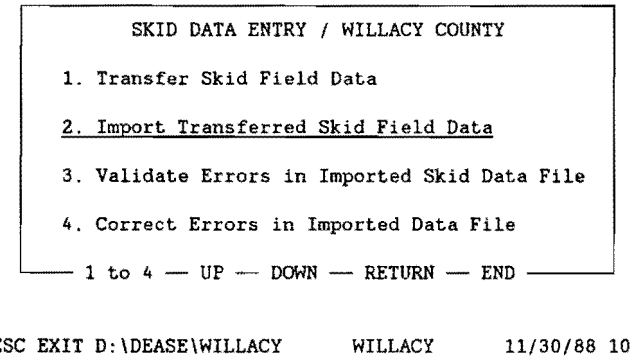


FIGURE 80: IMPORT TRANSFERRED SKID FIELD DATA

After the import has completed and there are no errors sent to the the printer, you will be returned to the "SKID DATA ENTRY / WILLACY COUNTY" menu with the "0 added, 9 updated, 0 discarded" message at the top of the screen. The sub-menu is shown in Figure 80.

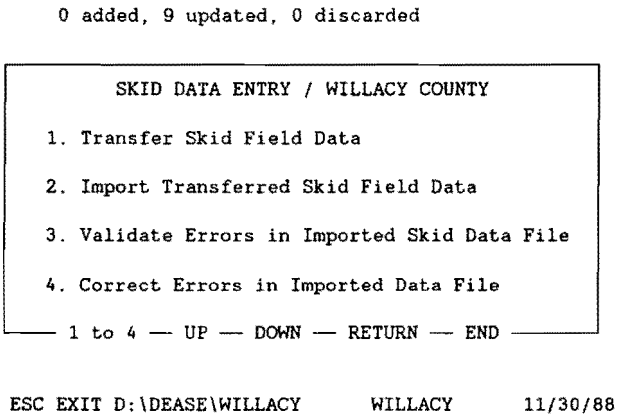


FIGURE 80: SKID DATA MAIN MENU

If errors were detected, you must go through the previous processes of validation and correction until there are no errors detected.

Now that the skid data entry process is complete for this data set, press the "Esc" key to retrace your steps out of the database until the "Pavement Management System" menu appears (Figure 81). If additional skid data is collected for the same county at a later date, follow the same procedures of the skid data entry process discussed above.

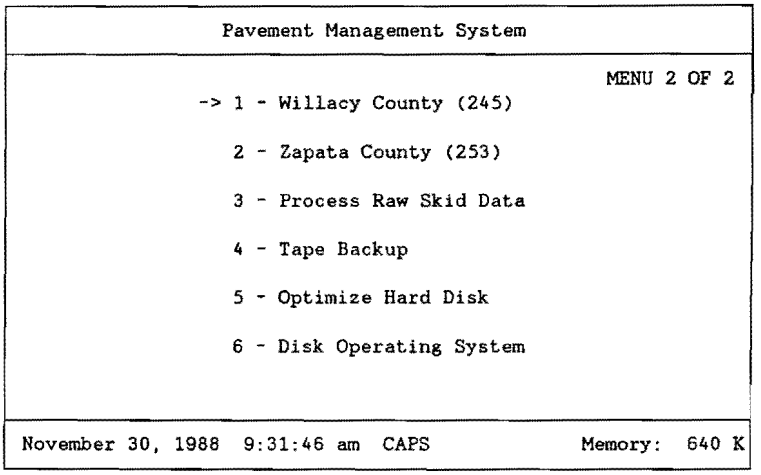


FIGURE 81: PMS MAIN SYSTEM MENU

6.11 SKID DATA COMPLETENESS

After it is assumed that all of the skid data for a particular county has been collected, converted, and imported, it is a good practice to ensure that you are satisfied with the completeness of the data. This is done by running a missing skid data report for the particular county of interest.

Select the particular county that is assumed to be complete. In this example, we will again use Willacy county. To do this, use the arrow keys on the keyboard to point to the item "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key (Figure 82).

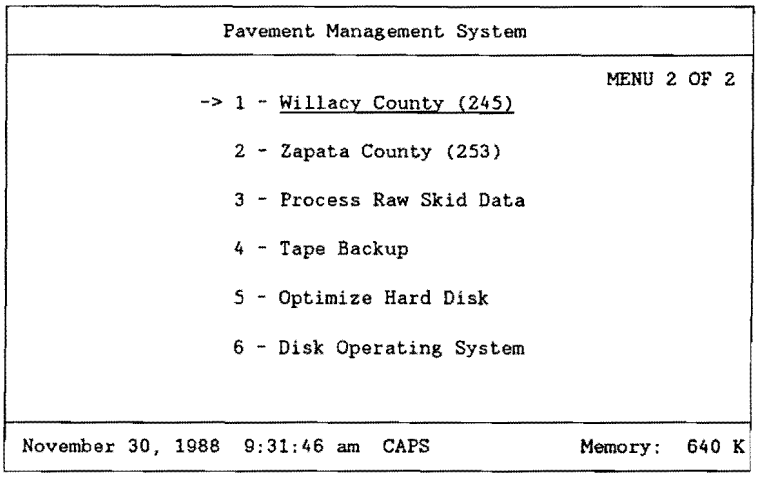


FIGURE 82: PMS MAIN MENU

You are prompted for your name and security password. In the following example, the sign on name is "DATA" and the security password is "ENTRY". This choice is shown in Figure 83.

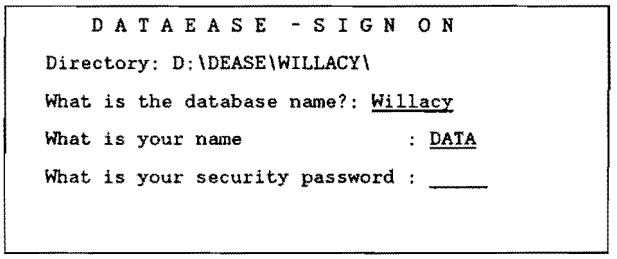


FIGURE 83: PMS SIGN-ON MENU

The "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen (Figure 84). Select "6. Reports" by pressing the "6" key, or use the arrow keys to highlight the selection and press the "Enter" key.

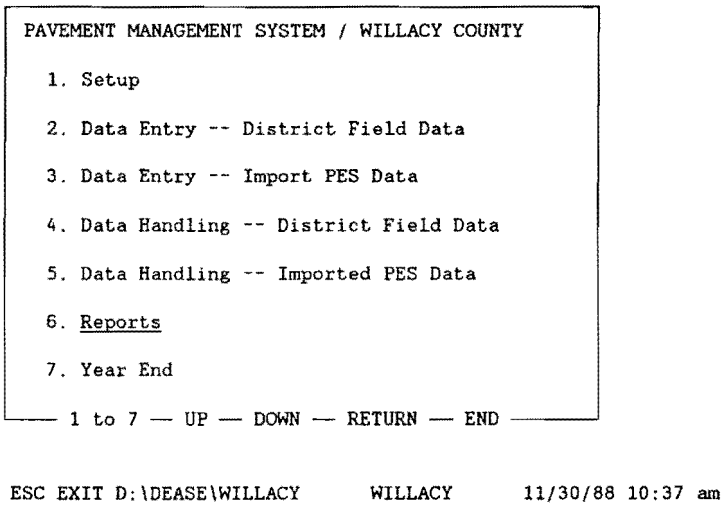


FIGURE 84: SELECT REPORTS MENU

The next menu that appears on your screen is "REPORTS / WILLACY COUNTY" menu (Figure 85). We want a report on missing skid data, so select the "1. Missing Data Reports" by pressing the "1" key, or use the arrow keys to highlight the selection and press the "Enter" key.

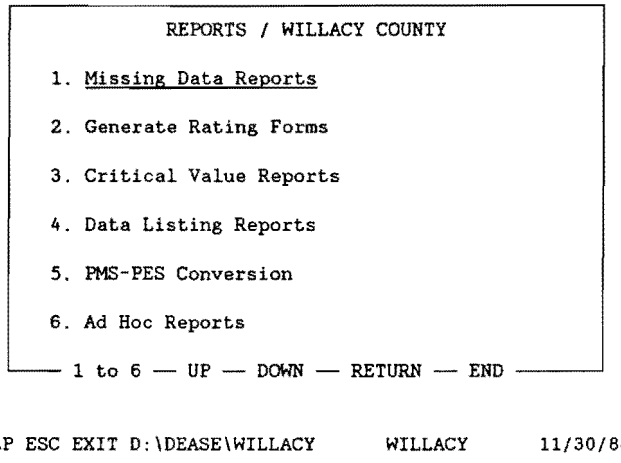


FIGURE 85: PMS MISSING DATA REPORT MENU

Make certain that your printer is powered up and on line, then select the "4. Missing Skid Data" by pressing the "4" key, or use the arrow keys to highlight the selection and press the "Enter" key (see Figure 86).

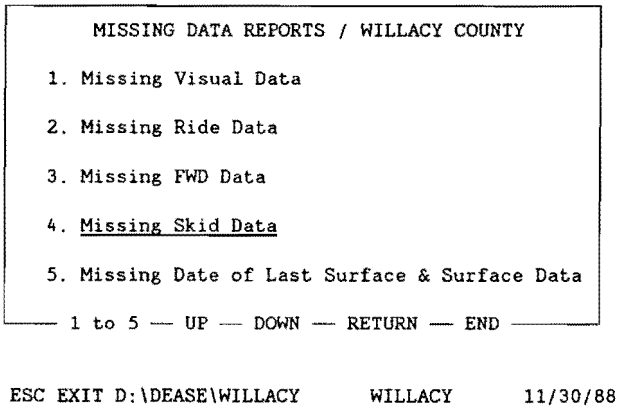


FIGURE 86: MISSING SKID DATA MENU

A listing of missing skid data should start printing on the printer. If there was no missing skid data, a blank page will be printed. Table 64 illustrates a missing skid data report for Willacy County.

MISSING SKID DATA
Willacy County Page No. 1

COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST	ADT	18-KIP	RECORD NUMBER
245	FM0088	R	0.0	2-1.9	1,250	480	000001
245	FM0088	R	0.2	2-1.7	1,250	480	000002
245	FM0088	R	0.4	2-1.5	1,250	480	000003
245	FM0088	R	0.6	2-1.3	1,250	480	000004
245	FM0088	R	0.8	2-1.1	1,250	480	000005
245	FM0088	R	0.0	2-0.9	1,250	480	000006
245	FM0088	R	0.2	2-0.7	1,250	480	000007
245	FM0088	R	0.4	2-0.5	1,250	480	000008
245	FM0088	R	0.6	2-0.3	1,250	480	000009
245	FM0088	R	0.8	2-0.1	1,250	480	000010
245	FM0088	R	0.0	2+0.1	1,250	480	000011
245	FM0088	R	0.2	2+0.3	1,250	480	000012
245	FM0088	R	0.4	2+0.5	1,250	480	000013
245	FM0088	R	0.6	2+0.7	1,250	480	000014
245	FM0088	R	0.8	2+0.9	1,250	480	000015
245	FM0088	R	0.0	2+1.1	1,250	480	000016
245	FM0490	R	0.0	2-2.0	280	133	000017

TABLE 64
MISSING SKID DATA REPORT - EXAMPLE

You will be returned to the "MISSING DATA RECORDS / WILLACY COUNTY" menu as soon as the report has completed (Figure 86).

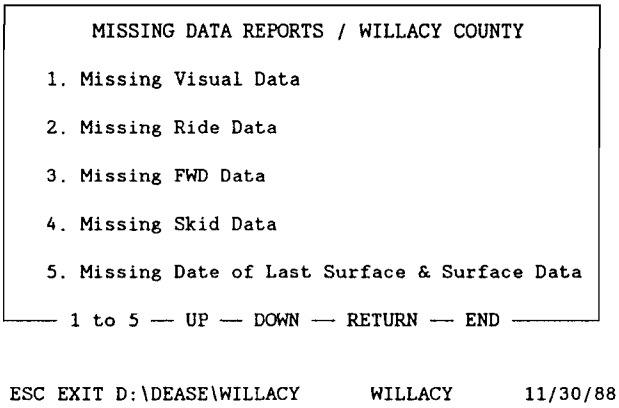


FIGURE 86: MISSING DATA REPORT MAIN MENU

Now that the report has completed, press the "Esc" key several times to exit from the database and return to the "Pavement Management System" menu (Figure 87).

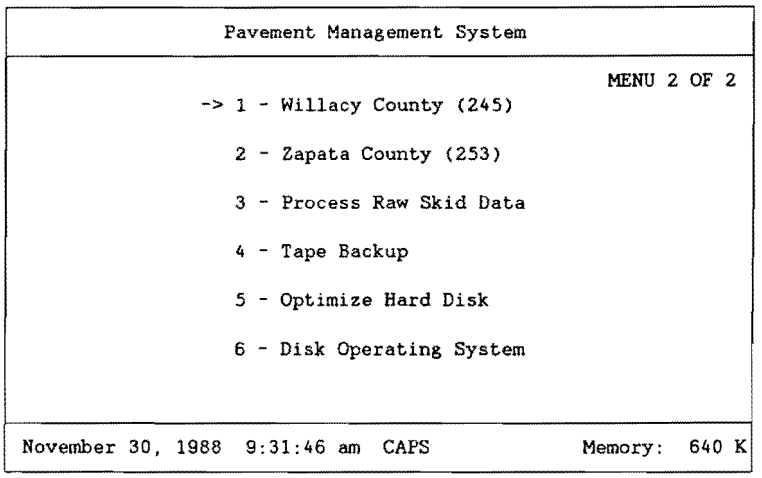


FIGURE 87
PMS MAIN MENU

If you are not satisfied with the results of the missing skid data report, use the report as a guide in collecting the missing sections. Then, you must go through the conversion and import processes discussed earlier to finalize the completeness of the skid data.

On the other hand, if you are completely satisfied with the completeness of the skid data, proceed with the next section.

6.12 SKID DATA FINAL TRANSFER

Caution, this process should be done once and only once within a given calendar year.

When it is verified that **all** of the skid data has been completely collected for the given year in a particular county, the data must be transferred from the Skid data form to the Master data form for reporting purposes.

This process is done by first selecting the particular county. In this example we will use Willacy county. To do this, use the arrow keys on the keyboard to point to the item "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key (see Figure 88).

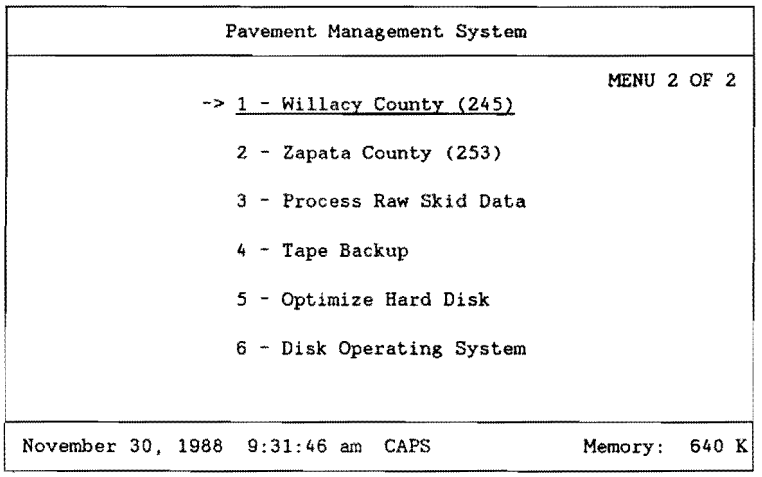


FIGURE 88: PMS MAIN MENU

You are then prompted for your name and security password. In the following example, (Figure 89) the sign on name is "DATA" and the security password is "ENTRY".

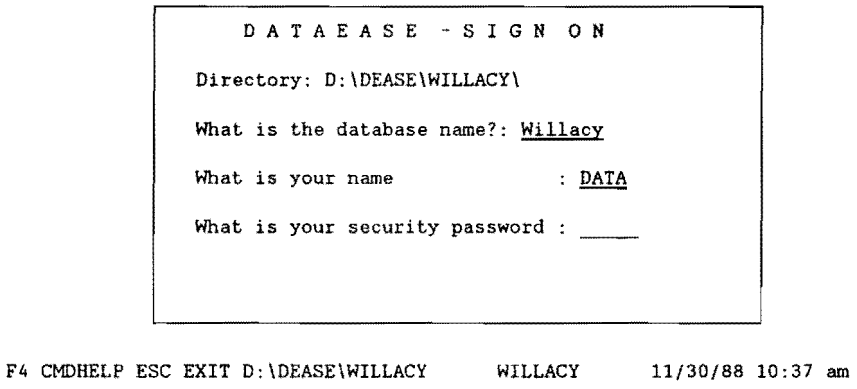


FIGURE 89: PMS SIGN-ON MENU

The "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen (Figure 90). Select "4. Data Handling -- District Field Data" by pressing the "4" key, or use the arrow keys to highlight the selection and press the "Enter" key.

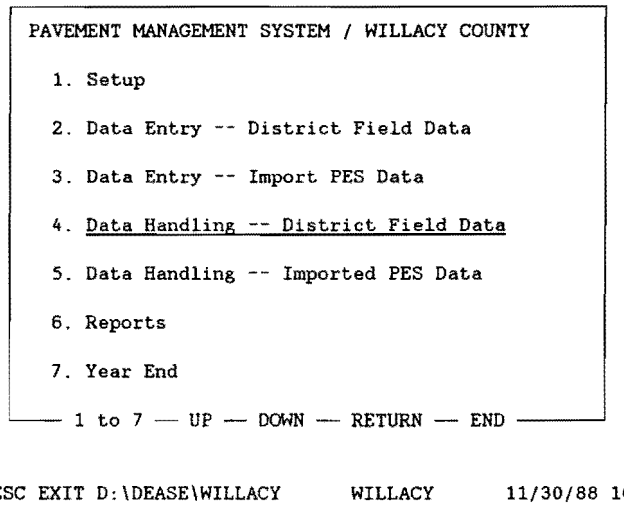
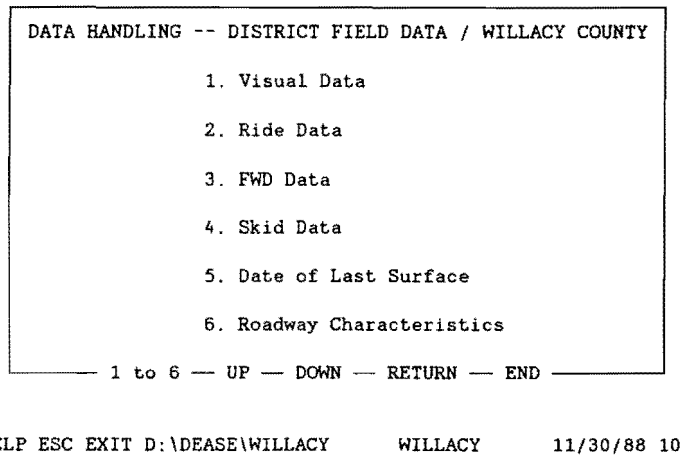


FIGURE 90: PMS DATA HANDLING MENU

The next menu that should appear on your screen is entitled "DATA HANDLING -- DISTRICT FIELD DATA / WILLACY COUNTY" (Figure 91). Select "4. Skid data" by pressing the "4" key, or use the arrow keys to highlight the selection and press the "Enter" key.



FIGUREE 91: MOVE SKID DATA TO HISTORY FILE MENU

The next screen (Figure 92) that appears is "SKID DATA HANDLING / WILLACY COUNTY", with only one selection. Select "1. Transfer Skid Data to Master Data Form" by pressing the "1" key, or use the arrow keys to highlight the selection and press the "Enter" key. This process transfers all of the skid data from the Skid data form (0.2 mile records) to the Master data form (0.1 mile records).

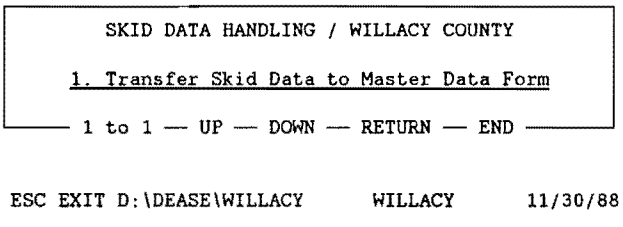


FIGURE 92: SKID DATA TO HISTORY FILE PROMPT

The following screen should appear.

As soon as the update procedure has completed, you will be returned to the "SKID DATA HANDLING / WILLACY COUNTY" menu (Figure 93).

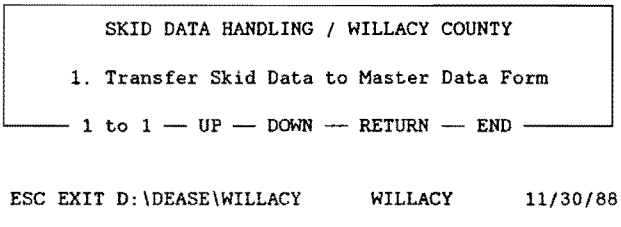


FIGURE 93: TRANSFER SKID DATA TO HISTORY FILE PROMPT

Press the "Esc" key several times to return to the "Pavement Management System" menu (Figure 94).

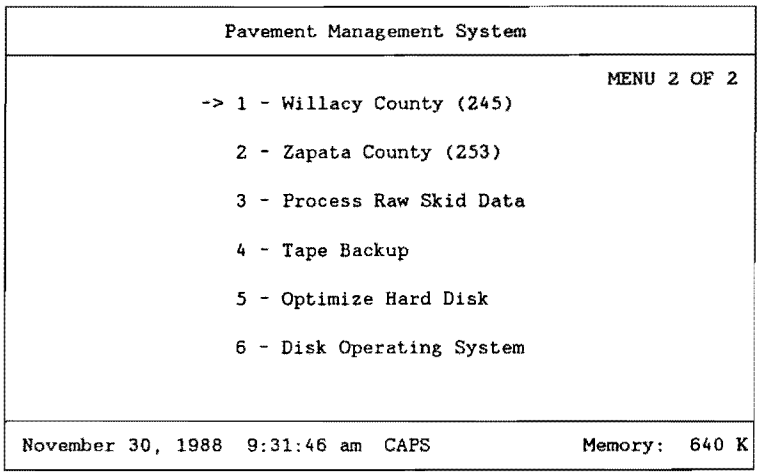


FIGURE 94: PMS MAIN SYSTEM MENU

This concludes the skid data processing.

7.0 DEFLECTION DATA COLLECTION -- FALLING WEIGHT DEFLECTOMETER METHOD

This section was written under the direction of Mr. Craig Cox, D-18PM, Austin, Texas.

Data collected by the Falling Weight Deflectometer (FWD) must be converted to a format readable by the Pavement Management System (PMS) database. After the data is converted, it is then imported into the proper data form through an iterative process for a particular county. After all of the FWD data has been collected and imported to the proper form, it will be used in reporting and decision making operations.

Within District 21, FWD data is collected over 0.5-mile intervals. Additionally, the District attempts to collect FWD data over approximately one third of the state maintained highways within D21 in a given year. Thus, over a three year period, all highways have FWD readings collected over 0.5-mile intervals.

The following procedures and examples isntructs the user in processing and storing the collected FWD data in the PMS database.

7.1 FWD DATA CONVERSION

To begin the FWD data conversion, select the county in which the FWD data was collected. This can be accomplished by using the "Pavement Management System" main menu (Figure 95). In this example, we will use Willacy county. To do this, use the arrow keys on the keyboard to point to "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key.

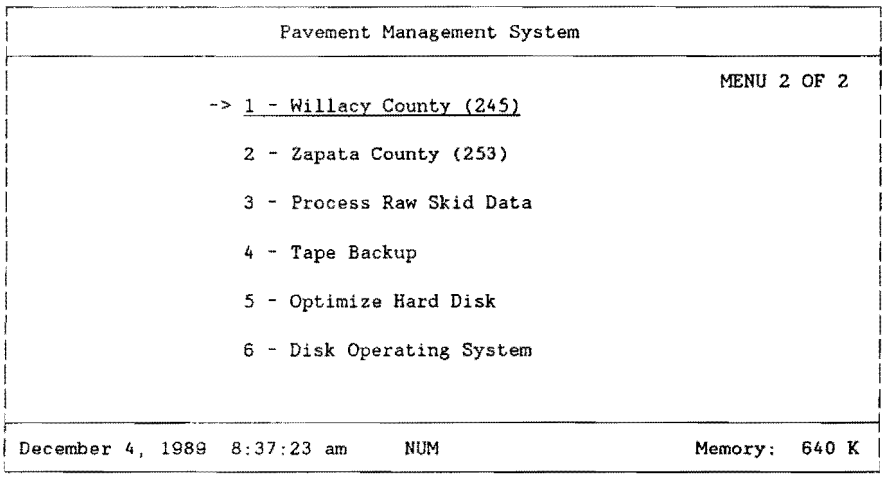


FIGURE 95: PMS MAIN SYSTEM MENU

As soon as you select a county, the menu program automatically accesses the database for that county and prompts you for your name and your security password. Your sign on name and password are assigned to you by your PMS administrator.

In the following example, the sign on name is "DATA" and the security password is "ENTRY". The database first prompts you for your name (Figure 96). In this example, type "DATA" and press the "Enter" key. The database then prompts you for your security password. Type "ENTRY" and press the "Enter" key. Notice that the password that you typed does not appear on the screen.

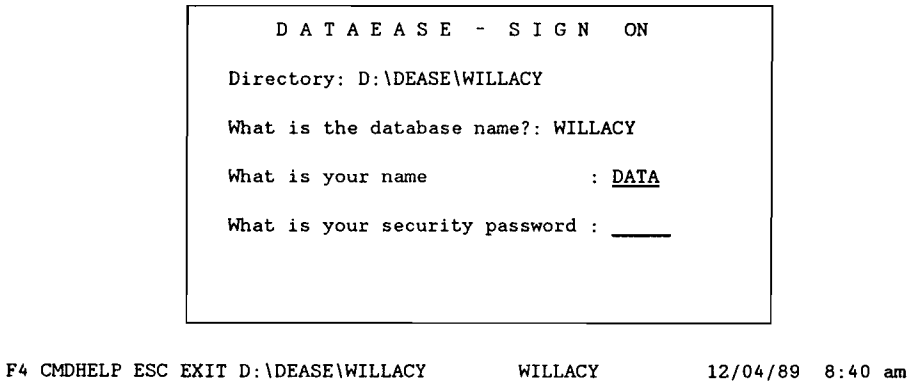


FIGURE 96: SIGN-0N MENU

If everything was typed in correctly, the "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen with seven different categories to choose from. Select "2. Data Entry -- District Field Data" by pressing the "2" key, or use the arrow keys to highlight the selection and press the "Enter" key (Figure 97).

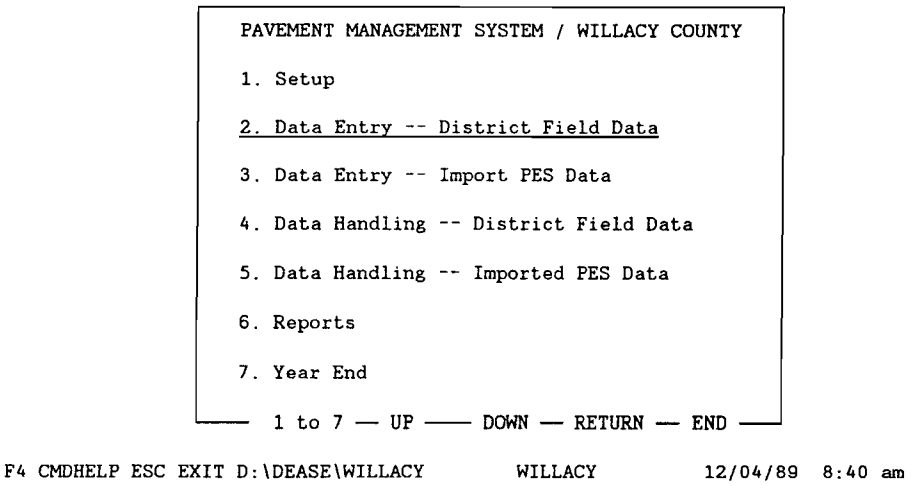


FIGURE 97: PMS DATA ENTRY MENU

The next menu that appears on your screen is the "DATA ENTRY -- DISTRICT FIELD DATA / WILLACY COUNTY" menu (Figure 98). Since we want to process FWD data, select "3. FWD Data" by pressing the "3" key, or use the arrow keys to highlight the selection and press the "Enter" key.

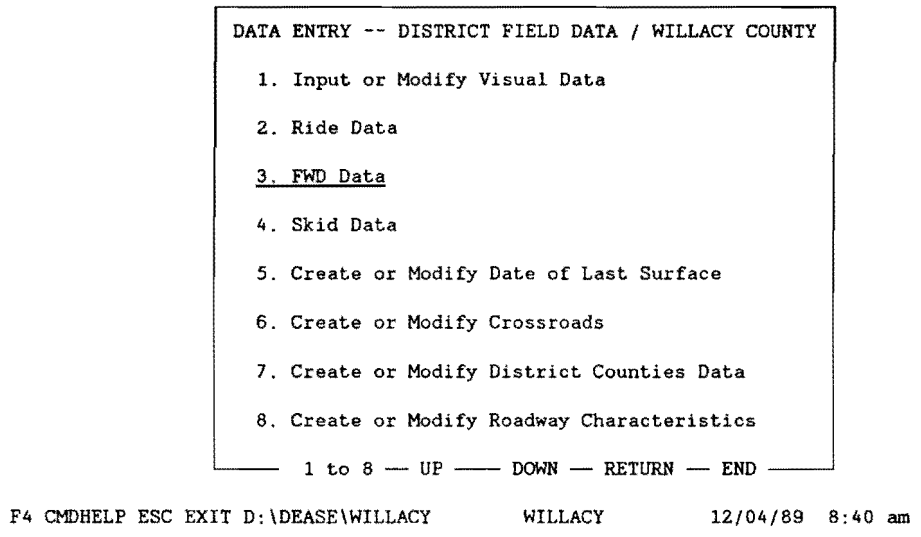


FIGURE 98: SELECT FWD DATA OPTION

The next menu (Figure 99), "FWD DATA / WILLACY COUNTY", will present all options relative to FWD data handling.

7.1.1 CONVERTING RAW FWD DATA

The first operation we must perform is to convert the raw FWD data. This is done by selecting "1. Convert FWD Field Data". Press the "1" key, or use the arrow keys to highlight the selection and press the "Enter" key.

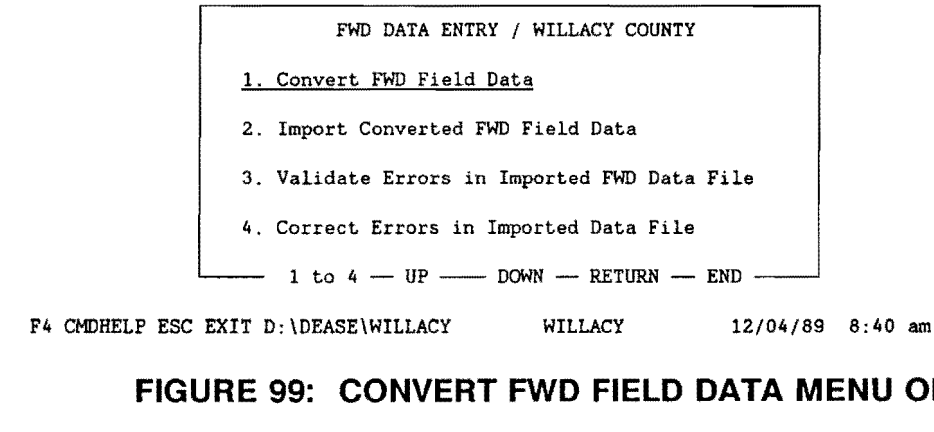


FIGURE 99: CONVERT FWD FIELD DATA MENU OPTION

The user is prompted with the following message.

```
PLACE FWD FIELD DATA IN DRIVE A:
Strike a key when ready . . .
```

Place the floppy diskette containing the FWD field data for Willacy county in Drive A and press any key on the keyboard. Make certain that only FWD data collected for Willacy county resides on the floppy diskette.

The menu then selects and executes a BASIC program called "CONVRT.EXE", which reformats the FWD field data collected for Willacy county into a format suitable for direct import into the FWD file in the PMS database. The following logo appears on the screen when "CONVRT.EXE" is executed.

```
FALLING WEIGHT DEFLECTOMETER DATA CONVERSION PROGRAM

This program converts raw FWD data files into a form which can be used by Dataease, a
spreadsheet, or database management programs.

                    DISTRICT 21 VERSION
```

Upon completion of the conversion, the following screen will appear.

```
FILE CONVERSION IS COMPLETE
```

You will then be returned to the "FWD DATA ENTRY / WILLACY COUNTY" menu screen.

7.1.2 IMPORTING CONVERTED FWD DATA INTO THE PMS DATABASE

Now that the FWD field data for the selected county has been converted, we will attempt to import it into the PMS database. To do this, select "2. Import Converted FWD Field Data" by pressing "2", or use the arrow keys to point to the selection and press the "Enter" key (Figure 100).

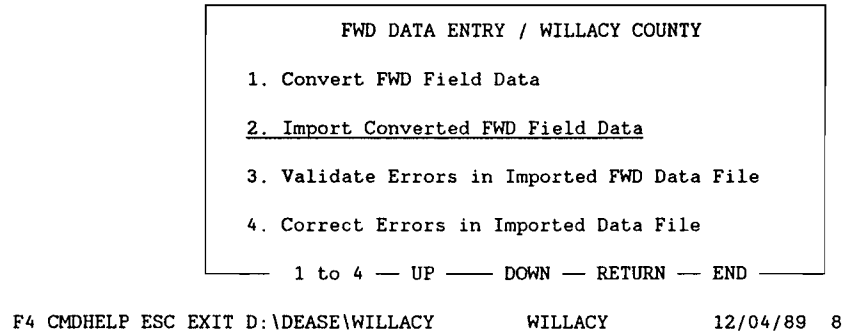


FIGURE 100: IMPORT FWD DATA

The "2. Import Converted FWD Field Data" selection does a number of operations. Initially, the selection tries to import the FWD field data from the file created in the "1. Convert FWD Field Data" selection. Two examples of the import facility are shown below, which demonstrate matching and nonmatching records.

The first example (Figure 101) demonstrates a nonmatching record as evidenced by the "discarded.." message. "Discarded" means that the current record being read did not totally match the input record in the FWD file. Thus, the imported record is skipped in an attempt to match the next import record.

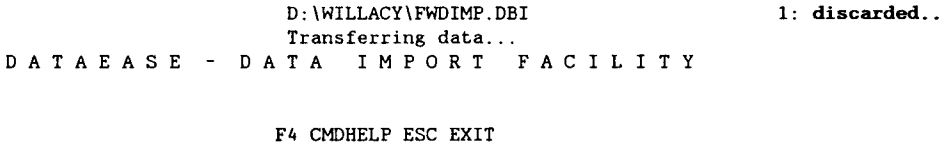


FIGURE 101: NON-MATCHING FWD RECORD

A **non-matching** record is one whose location parameters did not match the 0.5-mile FWD file. The FWD import is conducted under a **update matching** import protocol. In order for a given FWD record to be accepted into the 0.5-mile FWD file, all of the predesignated matching fields in the input record must match a resident record in the 0.5-mile FWD file. If no match exists, the record is rejected, i.e., it becomes a non-matching record.

Figure 102 demonstrates a matching record. Note, the term **updates...** appears in the upper right-hand portion of the screen. "Update" means the current record matched an existing FWD record and the data from the imported record **updates** the database file.

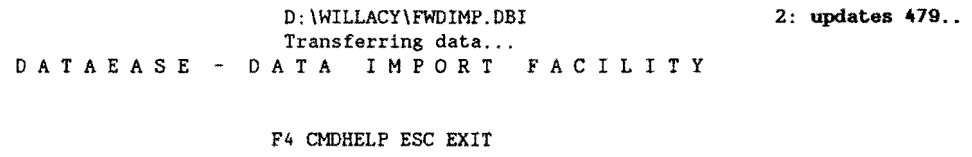


FIGURE 102: MATCHING FWD RECORD SCREEN MESSAGE

The next section discusses the problems associcated with "non-matching" records.

7.1.3 HANDLING NON-MATCHING FWD RECORDS

Invariably you will have records that will not match the records in the database for some reason or another. These records are listed in a separate file as errors from the import function. On the other hand, if no errors occur, the import process of the FWD field data is complete and you can disregard the next set of operations.

The error file, that the import function creates, contains only the line number from the import data set, where the errors occurred. The next process that the import selection does is to match the line number errors in the error file to the actual line containing the data and to list the data with errors. This process is done by a program named "FWDERR.EXE". "FWDERR.EXE" then creates a new import file with the FWD field data that contained errors. An example listing, to the printer, of the errors incurred by the import process and generated by "FWDERR.EXE" is shown in Table 65.

FWD ERRORS

	CNTY HIGHWAY	RWY	REF.	W1	W2	W6	W7	DATE
discarded..	245;US;0077;	;A;	7.6;	9.45;	8.20;	2.10;	1.75;	01/89
discarded..	245;US;0077;	;A;	8.1;	18.21;	13.51;	1.68;	1.42;	01/89
discarded..	245;US;0077;	;A;	18.0;	10.84;	9.66;	2.19;	1.76;	01/89
discarded..	245;US;0077;	;X;	18.3;	18.68;	12.81;	2.04;	1.82;	01/89
discarded..	245;US;0077;	;X;	18.0;	23.29;	16.28;	2.35;	1.71;	01/89
discarded..	245;US;0077;	;X;	8.2;	10.39;	8.74;	2.49;	2.15;	01/89
discarded..	245;FM;0490;	;R;	13.4;	56.09;	41.57;	4.56;	3.76;	01/89
discarded..	245;FM;0490;	;R;	13.9;	25.69;	20.82;	3.70;	2.66;	01/89
discarded..	245;FM;0490;	;R;	14.4;	78.14;	52.84;	3.88;	2.95;	01/89

TABLE 65
NON-MATCHING FWD RECORDS

These errors must be corrected and reimported again until no more errors exist.

The first operation in correcting the errors is to separate the break points in the error listing, by manually underlining them on the output. This will make the error validation process much easier. Table 66 illustrates the break points in the error listing of a specimen sample of FWD field data that did not match on the first import run.

FWD ERRORS

	CNTY HIGHWAY	RWY	REF.	W1	W2	W6	W7	DATE
discarded..	245;US;0077;	;A;	7.6;	9.45;	8.20;	2.10;	1.75;	01/89
discarded..	245;US;0077;	;A;	8.1;	18.21;	13.51;	1.68;	1.42;	01/89
discarded..	245;US;0077;	;A;	18.0;	10.84;	9.66;	2.19;	1.76;	01/89
discarded..	245;US;0077;	;X;	18.3;	18.68;	12.81;	2.04;	1.82;	01/89
discarded..	245;US;0077;	;X;	18.0;	23.29;	16.28;	2.35;	1.71;	01/89
discarded..	245;US;0077;	;X;	8.2;	10.39;	8.74;	2.49;	2.15;	01/89
discarded..	245;FM;0490;	;R;	13.4;	56.09;	41.57;	4.56;	3.76;	01/89
discarded..	245;FM;0490;	;R;	13.9;	25.69;	20.82;	3.70;	2.66;	01/89
discarded..	245;FM;0490;	;R;	14.4;	78.14;	52.84;	3.88;	2.95;	01/89

TABLE 66
BLOCKED FWD RECORDS -NON-MATCHING

After the errors are listed to the printer, you are returned to the "FWD DATA ENTRY / WILLACY COUNTY" menu screen. The next step is to validate each group of errors that were separated, and to note any correction on the output. This is done by selecting the "3. Validate Errors in Imported FWD Data File" option. Press the "3" key, or use the arrow keys to highlight the selection and press the "Enter" key (See Figure 103).

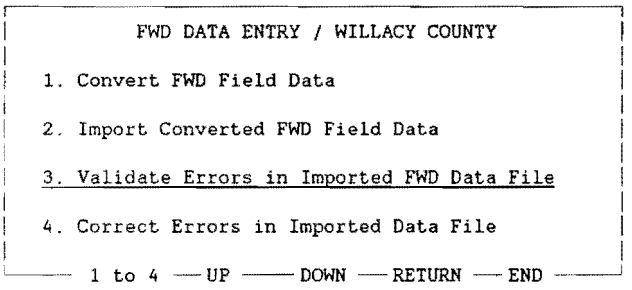


FIGURE 103: VALIDATE FWD ERROR OPTION

At this point, the user initiates a DOS text editor to make appropriate changes in the non-matching records in order to re-import.

7.1.4 EDITING NON-MATCHING FWD RECORDS

The next screen that appears is the "FWD ERROR CORRECTIONS" report, which the user must complete for validation of the FWD field data with errors. The information that must be completed will be found in the groups of invalid FWD field data that were selected on the "FWD ERRORS" report. Table 67 illustrates specimen data requiring editorial changes.

FWD ERRORS

	CNTY HIGHWAY	RWY	REF.	W1	W2	W6	W7	DATE	
discarded..	245;US;0077;	;A;	7.6;	9.45;	8.20;	2.10;	1.75;	01/89	┐
discarded..	245;US;0077;	;A;	8.1;	18.21;	13.51;	1.68;	1.42;	01/89	├ FIRST GROUP
discarded..	245;US;0077;	;A;	18.0;	10.84;	9.66;	2.19;	1.76;	01/89	┘
discarded..	245;US;0077;	;X;	18.3;	18.68;	12.81;	2.04;	1.82;	01/89	
discarded..	245;US;0077;	;X;	18.0;	23.29;	16.28;	2.35;	1.71;	01/89	
discarded..	245;US;0077;	;X;	8.2;	10.39;	8.74;	2.49;	2.15;	01/89	
discarded..	245;FM;0490;	;R;	13.4;	56.09;	41.57;	4.56;	3.76;	01/89	
discarded..	245;FM;0490;	;R;	13.9;	25.69;	20.82;	3.70;	2.66;	01/89	
discarded..	245;FM;0490;	;R;	14.4;	78.14;	52.84;	3.88;	2.95;	01/89	

TABLE 67
FWD RECORDS REQUIRING EDITS

To validate the errors in the first group of FWD field data errors, the "FWD ERROR CORRECTIONS" report screen must be completed as shown in Figure 104.

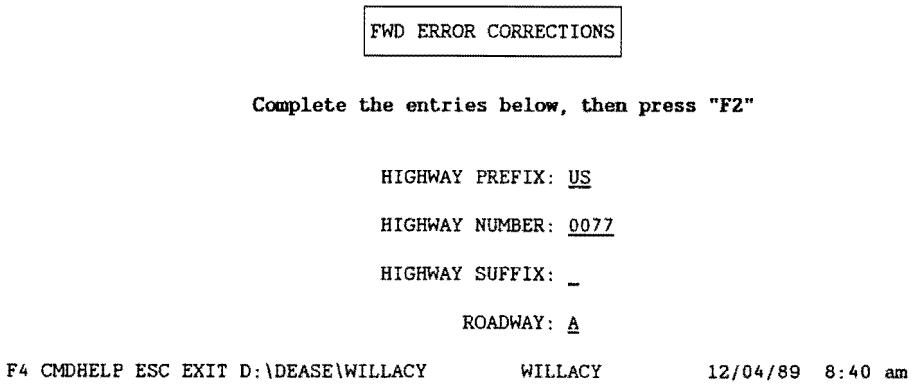


FIGURE 104: CORRECT FWD ERRORS

After the information is completed (US; 0077; SPACE; R), press the "F2" key to start the validation report process. Scroll through the output by pressing the space bar, until the output matches, as near as possible, that of the first group on the FWD field data error listing (Table 68).

```
FWD VIEW                                  Running report FWD VIEW
END OF REPORT. SPACE: Return to Menu   PgUp: Scroll
                          FWD ERROR CORRECTIONS
```

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT
000437	245	US0077	A	8.0
000438	245	US0077	A	8.5
000439	245	US0077	A	8.6
000440	245	US0077	A	18.3

```
F4 CMDHELP ESC EXIT D:\DEASE\WILLACY        WILLACY        12/04/89  8:40 am
```

TABLE 68
EDITING FWD DATA

Note on the FWD field data error output (Table 68), the corrections that need to be made to match the records to the ones above. In our example, the only difference between the FWD error output and the screen above is the "REFERENCE POINT" location inequality. To correct the inequality, modify the location variable to appear as the "REFERENCE POINT" above.

Also, the first record of the first group in the "FWD ERRORS" report does not appear in the "FWD ERROR CORRECTIONS" report, so it must be deleted (Table 69).

FWD ERRORS

```
            CNTY  HIGHWAY RWY REF.   W1     W2     W6    W7    DATE
-------------------------------------------------------------------------
discarded..  245;US;0077; ;A;  7.6;  9.45;  8.20;  2.10;  1.75;01/89 ——DELETE RECORD    ——┐ REFERENCE POINT
discarded..  245;US;0077; ;A;  8.1; 18.21; 13.51;  1.68;  1.42;01/89 ——;  8.0;         —— INEQUALITY
discarded..  245;US;0077; ;A; 18.0; 10.84;  9.66;  2.19;  1.76;01/89 ——; 18.3;         ——┘ CHANGE
discarded..  245;US;0077; ;X; 18.3; 18.68; 12.81;  2.04;  1.82;01/89
discarded..  245;US;0077; ;X; 18.0; 23.29; 16.28;  2.35;  1.71;01/89
discarded..  245;US;0077; ;X;  8.2; 10.39;  8.74;  2.49;  2.15;01/89
discarded..  245;FM;0490; ;R; 13.4; 56.09; 41.57;  4.56;  3.76;01/89
discarded..  245;FM;0490; ;R; 13.9; 25.69; 20.82;  3.70;  2.66;01/89
discarded..  245;FM;0490; ;R; 14.4; 78.14; 52.84;  3.88;  2.95;01/89
```

TABLE 69
CORRECTING FWD ERRORS

Press the "Esc" key to return to the "FWD ERROR CORRECTIONS" report input screen. Now, we need to validate the second group of errors in the FWD field data error report (Table 70).

FWD ERRORS

	CNTY HIGHWAY	RWY	REF.	W1	W2	W6	W7	DATE	
discarded..	245;US;0077;	;A;	7.6;	9.45;	8.20;	2.10;	1.75;	01/89	DELETE RECORD — REF. POINT
discarded..	245;US;0077;	;A;	8.1;	18.21;	13.51;	1.68;	1.42;	01/89	; 8.0; — INEQUALITY
discarded..	245;US;0077;	;A;	18.0;	10.84;	9.66;	2.19;	1.76;	01/89	; 18.3; — CHANGE
discarded..	245;US;0077;	;X;	18.3;	18.68;	12.81;	2.04;	1.82;	01/89	
discarded..	245;US;0077;	;X;	18.0;	23.29;	16.28;	2.35;	1.71;	01/89	SECOND GROUP
discarded..	245;US;0077;	;X;	8.2;	10.39;	8.74;	2.49;	2.15;	01/89	
discarded..	245;FM;0490;	;R;	13.4;	56.09;	41.57;	4.56;	3.76;	01/89	
discarded..	245;FM;0490;	;R;	13.9;	25.69;	20.82;	3.70;	2.66;	01/89	
discarded..	245;FM;0490;	;R;	14.4;	78.14;	52.84;	3.88;	2.95;	01/89	

TABLE 70
FWD ERROR CORRECTION

Type in the pertinent information (US; 0077; SPACE; X) from the second group of data for the error validation report, and press the "F2" key (Figure 105).

FWD ERROR CORRECTIONS

Complete the entries below, then press "F2"

HIGHWAY PREFIX: US

HIGHWAY NUMBER: 0077

HIGHWAY SUFFIX: _

ROADWAY: X

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY WILLACY 12/04/89 8:40 am

FIGURE 105: FWD ERROR CORRECTION SCREEN

Scroll through the report, by pressing the space bar, until the output matches, as near as possible, that of the second group on the "FWD ERRORS" report listing (Table 71).

```
FWD VIEW                                       Running report FWD VIEW
END OF REPORT. SPACE: Return to Menu           PgUp: Scroll
                  FWD ERROR CORRECTIONS
```

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT
000517	245	US0077	X	2.0
000518	245	US0077	X	2.1
000519	245	US0077	X	8.0
000520	245	US0077	X	8.4

```
F4 CMDHELP ESC EXIT D:\DEASE\WILLACY        WILLACY        12/04/89  8:40 am
```

TABLE 71
CORRECTIONS TO FWD DATA

The modifications to the second group is almost exactly the same as that of the first group.

The first two records in this set do not exist, so delete them. The third record requires a "REFERENCE POINT" modification to match the records above. Although the location of this record falls exactly between the two records above, the location point can be rounded up or down two tenths. Use your own discretion when rounding the location points, choosing the least distance in rounding. The modification notes for the second data set appear in Table 72.

```
FWD ERRORS

          CNTY  HIGHWAY RWY REF.   W1     W2     W6     W7    DATE
--------------------------------------------------------------------
discarded..  245;US;0077; ;A;  7.6;  9.45;  8.20;  2.10;  1.75;01/89 — DELETE RECORD ┐ REFERENCE POINT
discarded..  245;US;0077; ;A;  8.1; 18.21; 13.51;  1.68;  1.42;01/89 — ;  8.0;      ├ INEQUALITY
discarded..  245;US;0077; ;A; 18.0; 10.84;  9.66;  2.19;  1.76;01/89 — ; 18.3;      ┘ CHANGE
discarded..  245;US;0077; ;X; 18.3; 18.68; 12.81;  2.04;  1.82;01/89 — DELETE RECORD ┐ REFERENCE POINT
discarded..  245;US;0077; ;X; 18.0; 23.29; 16.28;  2.35;  1.71;01/89 — DELETE RECORD ├ INEQUALITY
discarded..  245;US;0077; ;X;  8.2; 10.39;  8.74;  2.49;  2.15;01/89 — ;  8.0;      ┘ CHANGE
discarded..  245;FM;0490; ;R; 13.4; 56.09; 41.57;  4.56;  3.76;01/89
discarded..  245;FM;0490; ;R; 13.9; 25.69; 20.82;  3.70;  2.66;01/89
discarded..  245;FM;0490; ;R; 14.4; 78.14; 52.84;  3.88;  2.95;01/89
```

TABLE 72
EDITED FWD DATA

Press the "Esc" key to return to the "FWD ERROR CORRECTIONS" report input screen. Now, validate the third group and final group of errors in the FWD field data (Figure 73).

FWD ERRORS

	CNTY	HIGHWAY	RWY	REF.	W1	W2	W6	W7	DATE	
discarded..	245	US;0077	;	A;	7.6;	9.45;	8.20;	2.10;	1.75;01/89	DEL RECORD
discarded..	245	US;0077	;	A;	8.1;	18.21;	13.51;	1.68;	1.42;01/89	; 8.0;
discarded..	245	US;0077	;	A;	18.0;	10.84;	9.66;	2.19;	1.76;01/89	; 18.3;
discarded..	245	US;0077	;	X;	18.3;	18.68;	12.81;	2.04;	1.82;01/89	DEL RECORD
discarded..	245	US;0077	;	X;	18.0;	23.29;	16.28;	2.35;	1.71;01/89	DELETE RECORD
discarded..	245	US;0077	;	X;	8.2;	10.39;	8.74;	2.49;	2.15;01/89	; 8.0;
discarded..	245	FM;0490	;	R;	13.4;	56.09;	41.57;	4.56;	3.76;01/89	
discarded..	245	FM;0490	;	R;	13.9;	25.69;	20.82;	3.70;	2.66;01/89	THIRD GROUP
discarded..	245	FM;0490	;	R;	14.4;	78.14;	52.84;	3.88;	2.95;01/89	

REF POINT, INEQUALITY, CHANGE

REF POINT, INEQUALITY, CHANGE

TABLE 73
EDITED FWD DATA

Type in the pertinent information (FM; 0490; SPACE; R) from the third group of data for the error validation report, and press the "F2" key (Figure 106).

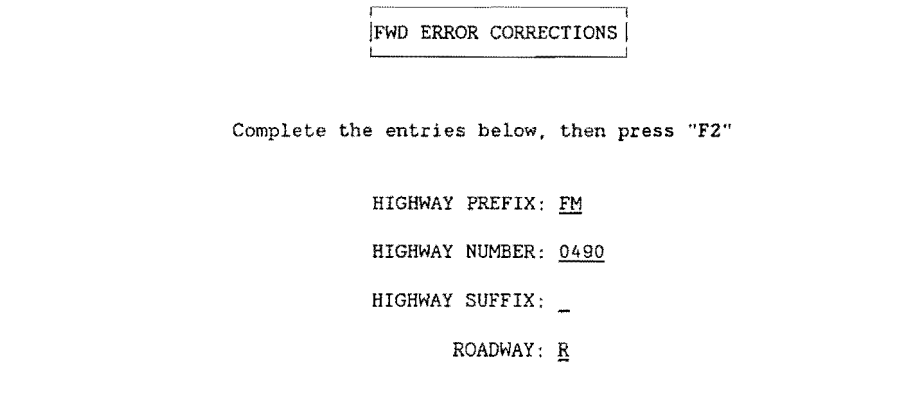


FIGURE 106: FWD ERROR CORRECTION SCREEN PROMPTS

Scroll through the report, by pressing the space bar, until the output matches, as near as possible, that of the third group on the "FWD ERRORS" report listing. Specimen results are shown in Table 74.

FWD VIEW Running report FWD VIEW
END OF REPORT. SPACE: Return to Menu PgUp: Scroll

FWD ERROR CORRECTIONS

RECORD NUMBER	COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT
000024	245	FM0490	R	8.0
000025	245	FM0490	R	8.5
000026	245	FM0490	R	9.0
000027	245	FM0490	R	9.5
000028	245	FM0490	R	10.0
000029	245	FM0490	R	10.5
000030	245	FM0490	R	11.0
000031	245	FM0490	R	11.5
000032	245	FM0490	R	12.0
000033	245	FM0490	R	12.5
000034	245	FM0490	R	13.0
000035	245	FM0490	R	13.5
000036	245	FM0490	R	14.0
000037	245	FM0490	R	14.5
000038	245	FM0490	R	15.0
000039	245	FM0490	R	15.5

F4 CMDHELP ESC EXIT D:\DEASE\WILLACY WILLACY 12/04/89 8:40 am

TABLE 74
PARTITIONED FWD DATA

The modifications to the third group are similar to those of the first two groups. Again the "REFERENCE POINT" variable needs to be modified by rounding the location of the data up one tenth. The modification notes for the third data set appear in Table 75.

FWD ERRORS

	CNTY HIGHWAY RWY REF.	W1	W2	W6	W7	DATE		
discarded..	245;US;0077; ;A;	7.6;	9.45;	8.20;	2.10;	1.75;01/89	DEL RECORD	REF POINT
discarded..	245;US;0077; ;A;	8.1;	18.21;	13.51;	1.68;	1.42;01/89	; 8.0;	INEQUALITY
discarded..	245;US;0077; ;A;	18.0;	10.84;	9.66;	2.19;	1.76;01/89	; 18.3;	CHANGE
discarded..	245;US;0077; ;X;	18.3;	18.68;	12.81;	2.04;	1.82;01/89	DEL RECORD	REF POINT
discarded..	245;US;0077; ;X;	18.0;	23.29;	16.28;	2.35;	1.71;01/89	DELETE RECORD	INEQUALITY
discarded..	245;US;0077; ;X;	8.2;	10.39;	8.74;	2.49;	2.15;01/89	; 8.0;	CHANGE
discarded..	245;FM;0490; ;R;	13.4;	56.09;	41.57;	4.56;	3.76;01/89	; 13.5;	REFERENCE POINT
discarded..	245;FM;0490; ;R;	13.9;	25.69;	20.82;	3.70;	2.66;01/89	; 14.0;	INEQUALITY
discarded..	245;FM;0490; ;R;	14.4;	78.14;	52.84;	3.88;	2.95;01/89	; 14.5;	CHANGE

TABLE 75
CORRECTED FWD DATA

Now that the noting of the changes to the FWD field data is complete, we want to attempt to modify the FWD field data to the changes that we noted. The first thing we need to do is to exit from the "FWD ERROR CORRECTIONS" report menu and return to the "FWD DATA ENTRY / WILLACY COUNTY" menu (Figure 107).

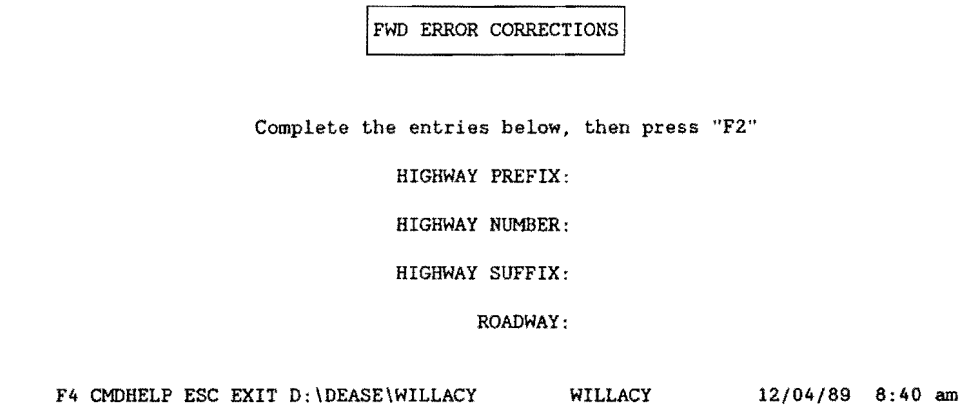


FIGURE 107: FWD CORRECTION SCREEN

To do this, press the "Esc" key, and the "FWD DATA ENTRY / WILLACY COUNTY" screen should appear (Figure 108). Select "4". Correct Errors in Imported Data File" by pressing the "4" key, or using the arrow keys to highlight the selection and press the "Enter" key.

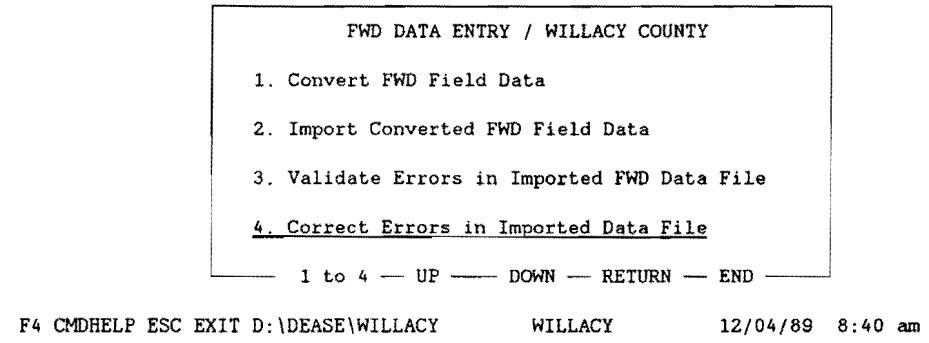


FIGURE 108: PMS CORRECT FWD ERROR MAIN MENU

The next section discusses editing the FWD input data file to correct errors.

7.1.5 CORRECTING FWD ERRORS IN THE IMPORT FILE

The "4. Correct Errors in Imported Data File" selection loads a text editor, "E88.EXE", with the FWD field data file that contained the errors. Now, we can use the notes made earlier to modify the FWD field data. Table 76 illustrates sample data requiring various edits in order to facilitate importating.

```
        D:FWD.CON        Line:08    Col:02   Free:1391    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE
  POINT;W1;W2;W6;W7;DATE
         > 245;US;0077; ;A;  7.6;  9.45;  8.20;  2.10;  1.75;01/89
         > 245;US;0077; ;A;  8.1; 18.21; 13.51;  1.68;  1.42;01/89
         > 245;US;0077; ;A; 18.0; 10.84;  9.66;  2.19;  1.76;01/89
         > 245;US;0077; ;X; 18.3; 18.68; 12.81;  2.04;  1.82;01/89
         > 245;US;0077; ;X; 18.0; 23.29; 16.28;  2.35;  1.71;01/89
         > 245;US;0077; ;X;  8.2; 10.39;  8.74;  2.49;  2.15;01/89
         > 245;FM;0490; ;R; 13.4; 56.09; 41.57;  4.56;  3.76;01/89
         > 245;FM;0490; ;R; 13.9; 25.69; 20.82;  3.70;  2.66;01/89
         > 245;FM;0490; ;R; 14.4; 78.14; 52.84;  3.88;  2.95;01/89
           F
           F
```

TABLE 76
SPECIMEN FWD DATA TO EDIT

The first task is to separate the break points of each group by inserting a line between them. This makes editing each group much easier, but before the file is saved, these inserted lines must be deleted (see Table 77).

```
 D:FWD.CON        Line:08    Col:02   Free:1391    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE
  POINT;W1;W2;W6;W7;DATE
> 245;US;0077; ;A;  7.6;  9.45;  8.20;  2.10;  1.75;01/89
> 245;US;0077; ;A;  8.1; 18.21; 13.51;  1.68;  1.42;01/89
> 245;US;0077; ;A; 18.0; 10.84;  9.66;  2.19;  1.76;01/89

> 245;US;0077; ;X; 18.3; 18.68; 12.81;  2.04;  1.82;01/89
> 245;US;0077; ;X; 18.0; 23.29; 16.28;  2.35;  1.71;01/89
> 245;US;0077; ;X;  8.2; 10.39;  8.74;  2.49;  2.15;01/89

> 245;FM;0490; ;R; 13.4; 56.09; 41.57;  4.56;  3.76;01/89
> 245;FM;0490; ;R; 13.9; 25.69; 20.82;  3.70;  2.66;01/89
> 245;FM;0490; ;R; 14.4; 78.14; 52.84;  3.88;  2.95;01/89
  F
  F
  F
```

TABLE 77
FWD DATA SEGMENTED FOR EDITING

Using the notes taken during the validation process, modify the first group of FWD field data by first deleting the first data line then modifying the "REFERENCE POINTS" (Table 78).

```
        D:FWD.CON        Line:08    Col:02   Free:1391    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POINT;W1;W2;W6;W7;DATE
> 245;US;0077; ;A;  8.0; 18.21; 13.51;  1.68;  1.42;01/89 ─┬─ MODIFY REFERENCE POINT
> 245;US;0077; ;A; 18.3; 10.84;  9.66;  2.19;  1.76;01/89 ─┘  INEQUALITIES

> 245;US;0077; ;X; 18.3; 18.68; 12.81;  2.04;  1.82;01/89
> 245;US;0077; ;X; 18.0; 23.29; 16.28;  2.35;  1.71;01/89
> 245;US;0077; ;X;  8.2; 10.39;  8.74;  2.49;  2.15;01/89

> 245;FM;0490; ;R; 13.4; 56.09; 41.57;  4.56;  3.76;01/89
> 245;FM;0490; ;R; 13.9; 25.69; 20.82;  3.70;  2.66;01/89
> 245;FM;0490; ;R; 14.4; 78.14; 52.84;  3.88;  2.95;01/89
  F
  F
  F
  F
  F
  F
  F
  F
```

TABLE 78
MODIFIED FWD DATA

Modify the second group of FWD field data in the same manner as the first. Delete the first two records, then modify the "REFERENCE POINT" inequality by rounding (Table 79).

```
        D:FWD.CON        Line:08    Col:02   Free:1391    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POINT;W1;W2;W6;W7;DATE
        > 245;US;0077; ;A;  8.0; 18.21; 13.51;  1.68;  1.42;01/89
        > 245;US;0077; ;A; 18.3; 10.84;  9.66;  2.19;  1.76;01/89

        > 245;US;0077; ;X;  8.0; 10.39;  8.74;  2.49;  2.15;01/89 ── MODIFY REFERENCE POINT INEQUALITY

        > 245;FM;0490; ;R; 13.4; 56.09; 41.57;  4.56;  3.76;01/89
        > 245;FM;0490; ;R; 13.9; 25.69; 20.82;  3.70;  2.66;01/89
        > 245;FM;0490; ;R; 14.4; 78.14; 52.84;  3.88;  2.95;01/89
        F
        F
        F
        F
        F
        F
        F
        F
```

TABLE 79
MODIFIED FWD DATA REFERENCE POINTS - PASS 2

Modify the third group by rounding the "REFERENCE POINTS" (Table 80).

```
         D:FWD.CON        Line:08    Col:02   Free:1391    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POINT;W1;W2;W6;W7;DATE
         > 245;US;0077; ;A;  8.0; 18.21; 13.51;  1.68;  1.42;01/89
         > 245;US;0077; ;A; 18.3; 10.84;  9.66;  2.19;  1.76;01/89

         > 245;US;0077; ;X;  8.0; 10.39;  8.74;  2.49;  2.15;01/89

         > 245;FM;0490; ;R; 13.5; 56.09; 41.57;  4.56;  3.76;01/89 ┐
         > 245;FM;0490; ;R; 14.0; 25.69; 20.82;  3.70;  2.66;01/89 ├ MODIFY REFERENCE POINT
         > 245;FM;0490; ;R; 14.5; 78.14; 52.84;  3.88;  2.95;01/89 ┘ INEQUALITIES
         F
         F
         F
         F
         F
         F
         F
         F
```

TABLE 80
ROUNDING REFERENCE POINTS IN FWD DATA

Now, delete all of the blank lines and save the data set by pressing the "F1" key and selecting the "(A.) END the edit and save this file" option by pressing the "A" key (Figure 109).

```
      D:FWD.CON        Line:08    Col:02   Free:1391    Mode: EDIT        Com key:[F1]
> COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POINT;W1;W2;W6;W7;DATE
      > 245;US;0077; ;A;  8.0; 18.21; 13.51;  1.68;  1.42;01/89
      > 245;US;0077; ;A; 18.3; 10.84;  9.66;  2.19;  1.76;01/89
      > 245;US;0077; ;X;  8.0; 10.39;  8.74;  2.49;  2.15;01/89
      > 245;FM;0490; ;R; 13.5; 56.09; 41.57;  4.56;  3.76;01/89
      > 245;FM;0490; ;R; 14.0; 25.69; 20.82;  3.70;  2.66;01/89
      > 245;FM;0490; ;R; 14.5; 78.14; 52.84;  3.88;  2.95;01/89
      F
      F
      F
      F
      F
      F
      F
      F
```

```
        MASTER COMMAND MENU

 Select option or press Esc to return

(A.)  END the edit and save this file
(B.)  BACKUP (create filename.bak)
(C.)  CHANGE filename (for saving)
(D.)  HELP
(E.)  EDIT another file (with options)
(F.)  SEARCH and [replace] string
(G.)  SETUP (set default parameters)
(H.)  QUIT * RETURN TO DOS * NO SAVE
```

FIGURE 109: SAVING EDITED FWD DATA MENU

After saving the changes to the FWD field data file, you are then returned back to the "FWD DATA ENTRY / WILLACY COUNTY" menu.

Select the "2. Import Converted FWD Field Data" option to import the FWD filed data that has been altered, by pressing the "2" key, or using the arrow keys to highlight the option and press the "Enter" key (Figure 110).

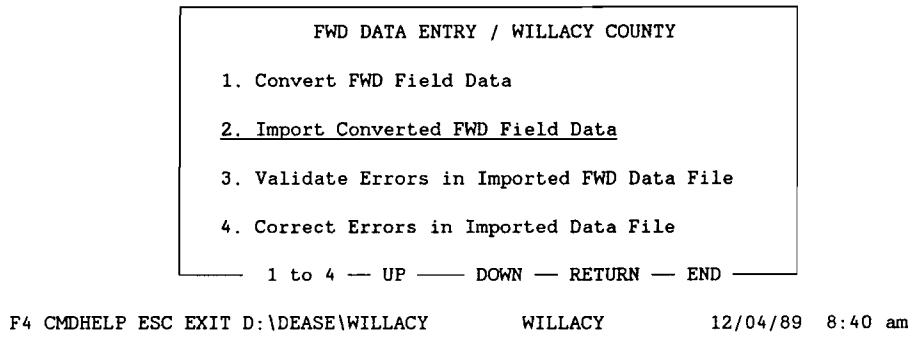


FIGURE 110: IMPORT FWD DATA MENU

After the import has completed and there were no errors sent to the printer, you will be returned to the "FWD DATA ENTRY / WILLACY COUNTY" menu with the "0 added, 6 updated, 0 discarded" message at the top of the screen (Figure 111).

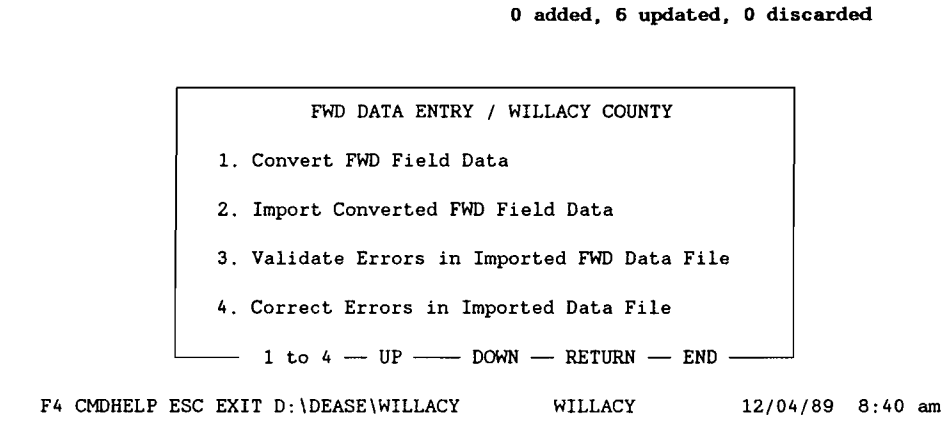


FIGURE 111: FWD DATA ENTRY SYSTEM MENU

If errors were detected, you must go through the previous processes of validation and correction until there are no errors detected.

Now that the FWD field data entry process is complete for this data set, press the "Esc" key to retrace our steps out of the database until the "Pavement Management System" menu appears (Figure 112). If additional FWD field data is collected for the same county at a later date, follow the same procedures of the FWD field data entry process discussed above.

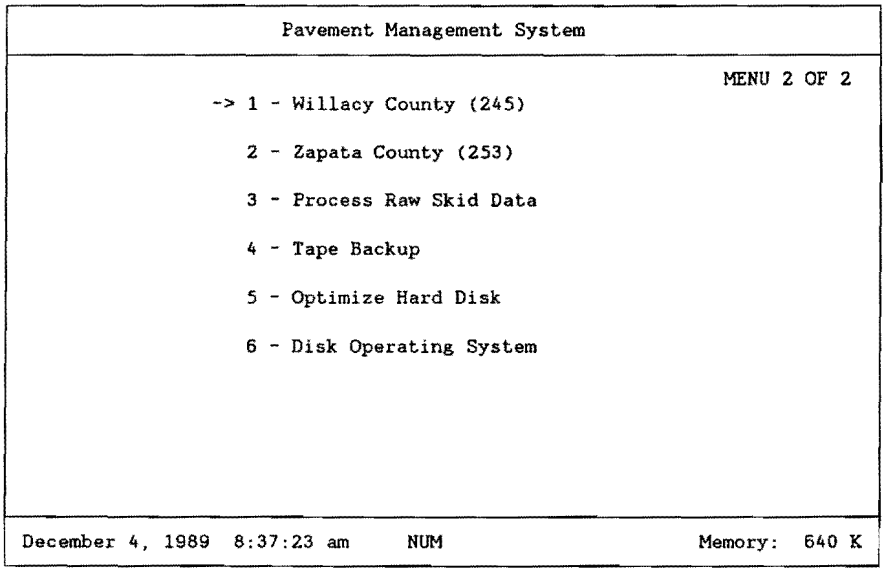


FIGURE 112: PMS MAIN SYSTEM MENU

The next section discusses auditing the FWD file to insure that no missing data exists.

7.2 COMPLETENESS OF FWD DATA

After it is assumed that all of the FWD data for a particular county has been collected, converted, and imported, it is a good practice to ensure that you are satisfied with the completeness of the data. This is done by running a missing FWD data report for the particular county of interest.

Select the particular county that is assumed to be complete. In this example, we will again use Willacy county. To do this, use the arrow keys on the keyboard to point to the item "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key (Figure 113).

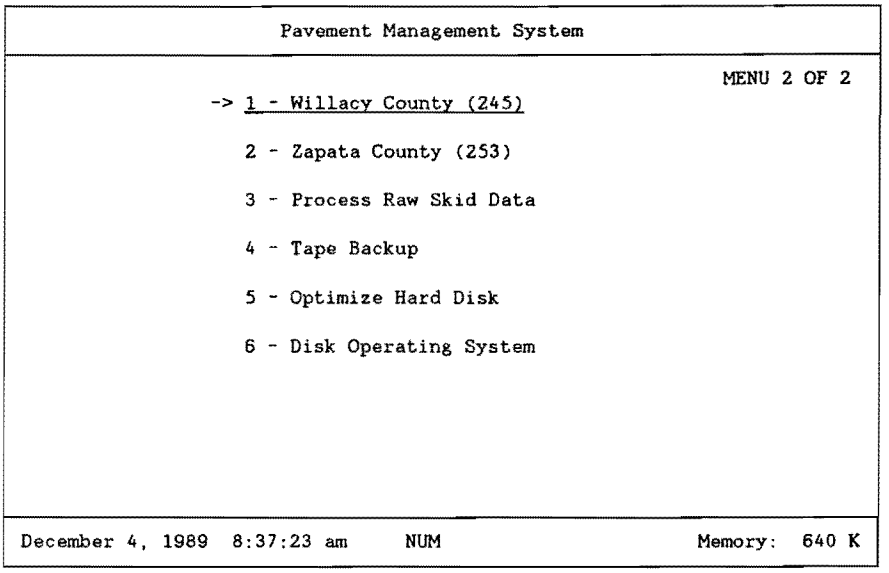


FIGURE 113: PMS MAIN SYSTEM MENU

Again you are prompted for your name and security password. In the following example, the sign on name is "DATA" and the security password is "ENTRY" (Figure 114).

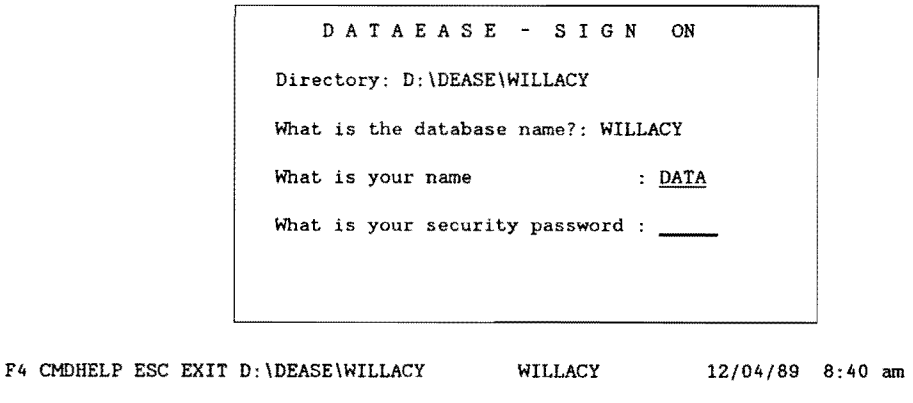


FIGURE 114: PMS SIGN-ON MENU SCREEN

The "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen (Figure 115). Select "6. Reports" by pressing the "6" key, or use the arrow keys to highlight the selection and press the "Enter" key.

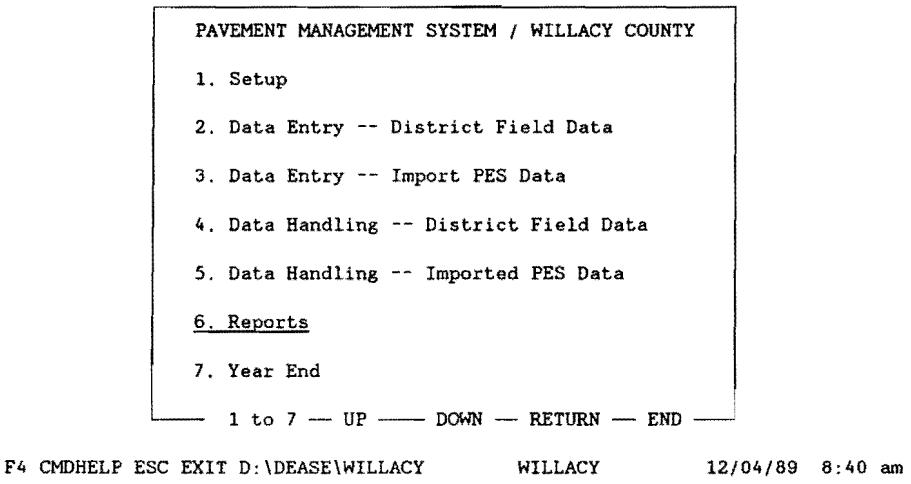


FIGURE 115: PMS REPORTS MENU

The next menu that appears on your screen is "REPORTS / WILLACY COUNTY" menu (Figure 116). We want a report on missing FWD data, so select the "1. Missing Data Reports" by pressing the "1" key, or use the arrow keys to highlight the selection and press the "Enter" key.

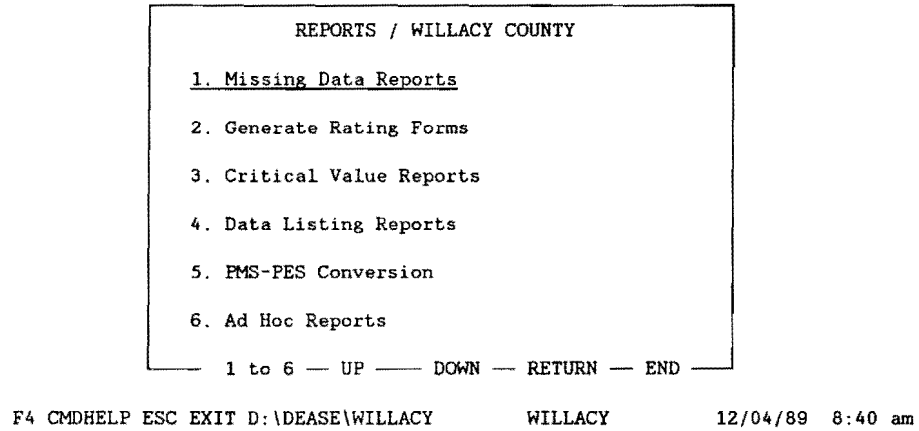


FIGURE 116: PMS MISSING DATA REPORT MENU

Make certain that your printer is powered up and on line, then select the "3. Missing FWD Data" option by pressing the "3" key or use the arrow keys to highlight the selection and press the "Enter" key (Figure 117). At this point, make certain the laser printer is loaded with paper and on-line.

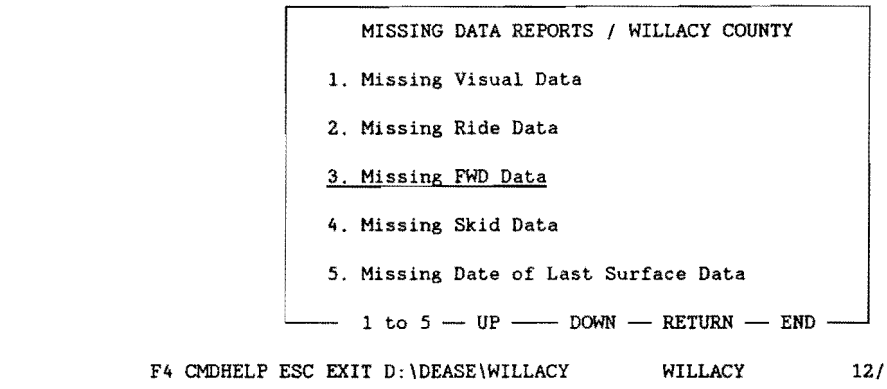


FIGURE 117: MISSING DATA REPORT MENU

A listing of missing FWD data should start printing on the printer. If there was no missing FWD data, a blank page will be printed. Tabe 81 provides an example of a missing FWD data report for Willacy County.

MISSING FWD DATA
Willacy County Page No. 1

COUNTY NUMBER	HIGHWAY	ROADWAY	REFERENCE POINT	MILEPOST	ADT	KIP	RECORD NUMBER
245	FM0498	R	11.8	10+1.8	170	265	000092
245	FM1761	R	4.0	4+0.0	240	302	000205
245	FM2099	R	0.0	2-2.0	160	120	000242
245	FM2099	R	1.0	2-1.0	160	120	000244
245	FM2099	R	1.5	2-0.5	160	120	000245
245	FM2099	R	2.0	2+0.0	160	120	000246
245	FM2099	R	2.5	2+0.5	160	120	000247
245	FM2099	R	3.0	2+1.0	160	120	000248
245	FM2099	R	3.5	2+1.5	160	120	000249
245	FM2099	R	4.0	4+0.0	160	120	000250
245	FM2099	R	4.5	4+0.5	130	107	000251
245	FM2099	R	5.0	4+1.0	130	107	000252
245	FM2099	R	5.5	4+1.5	130	107	000253
245	FM2099	R	5.6	4+1.6	130	107	000254
245	FM2099	R	6.5	8-1.5	130	107	000255
245	FM2099	R	7.0	8-1.0	130	107	000256
245	FM2099	R	7.5	8-0.5	130	107	000257
245	FM2099	R	8.0	8+0.0	130	107	000258
245	FM2099	R	8.5	8+0.5	130	107	000259
245	FM2099	R	9.0	8+1.0	130	107	000260
245	FM2099	R	9.4	8+1.4	130	372	000261
245	FM2209	R	5.5	4+1.5	710	372	000273
245	FM2209	R	6.0	6+0.0	7,800	7,621	000274
245	US0077	A	8.6	8+0.6			000439
245	US0077	X	2.0	2+0.0			000517
245	US0077	X	2.1	2+0.1			000518

TABLE 81
SPECIMEN OUTPUT FOR MISSING FWD DATA

You will be returned to the "MISSING DATA REPORTS / WILLACY COUNTY" menu (Figure 118) as soon as the report has completed.

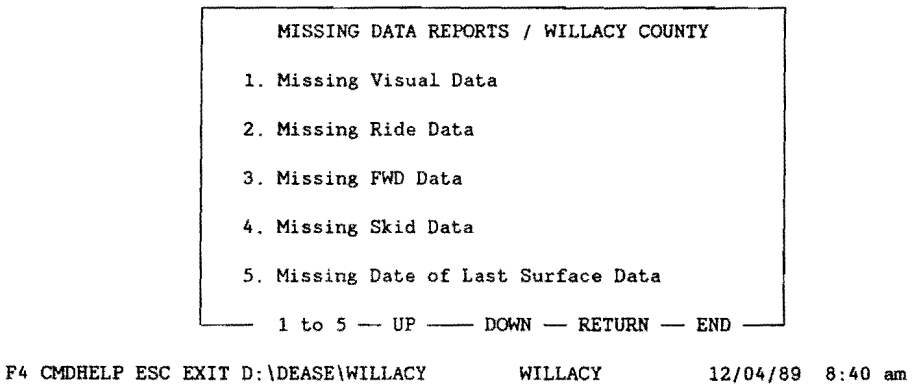


FIGURE 118: MISSING DATA MENU

Now that the report has completed, press the "Esc" key several times to exit from the database and return to the "Pavement Management System" menu (Figure 119).

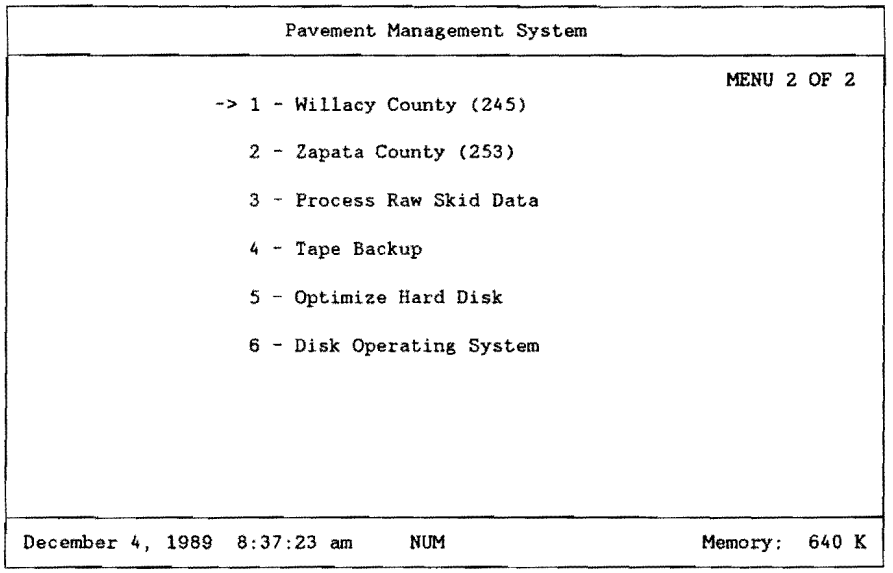


FIGURE 119: PMS MAIN SYSTEM MENU

If not satisfied with the results of the missing FWD data report, use the report as a guide in collecting the missing sections. Then, one must go through the

conversion and import processes discussed earlier to finalize the completeness of the FWD data. On the other hand, if one is satisfied with the completeness of the FWD data, proceed with undertaking movement of the FWD data to the 0.1-mile history file (with caution as noted in the next section).

7.3 FWD DATA FINAL TRANSFER

Caution, this process should be undertaken only one time within a given data collection year. This procedure moves the 0.5-mile FWD data to the 0.1-mile Master file. Normally, final data transfer takes place as soon as all district field data (Visual, Skid, Siometer, and FWD) have been collected and either entered or imported.

When it is verified that **all** of the FWD data has been completely collected for the given year in a particular county, the data must be transferred from the FWD data form to the 0.1 - mile Master data form. Once trasferred, the various critical and ad hoc reports can be generated from the 0.1 - mile Master.

This process is done by first selecting the particular county. In this example we will use Willacy county. To do this, use the arrow keys on the keyboard to point to the item "1 - Willacy County (245)" (only in this example) and press the "Enter" key, or press the "1" key (Figure 120).

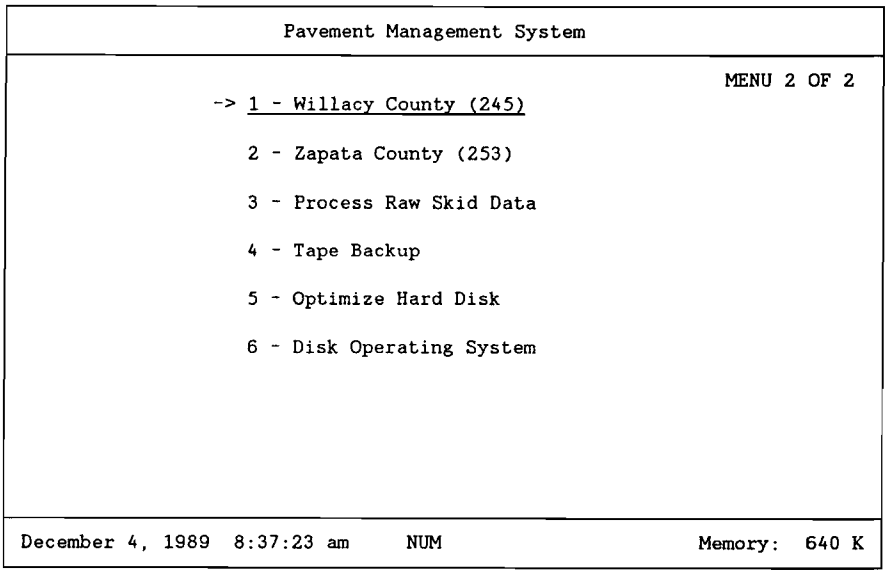


FIGURE 120: PMS MAIN SYSTEM MENU

You are then prompted for your name and security password. In the following example, the sign on name is "DATA" and the security password is "ENTRY" as shown in Figure 121.

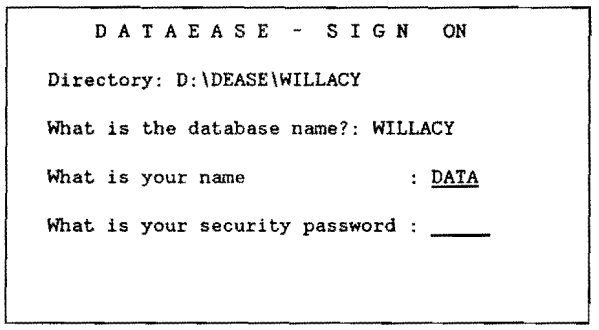


FIGURE 121: PMS SIGN-ON MENU

The "PAVEMENT MANAGEMENT SYSTEM / WILLACY COUNTY" menu should appear on your screen (Figure 122). Select "4. Data handling -- District Field Data" by pressing the "4" key, or use the arrow keys to highlight the selection and press the "Enter" key.

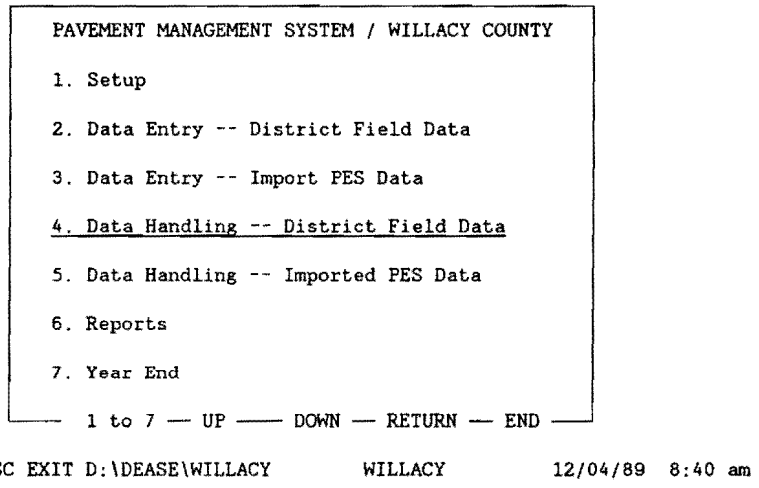


FIGURE 122: PMS DATA HANDLING MENU

The next menu that should appear on your screen is entitled "DATA HANDLING -- DISTRICT FIELD DATA / WILLACY COUNTY" (Figure 122). Select "3. FWD Data" by pressing the "3" key, or use the arrow keys to highlight the selection and press the "Enter" key.

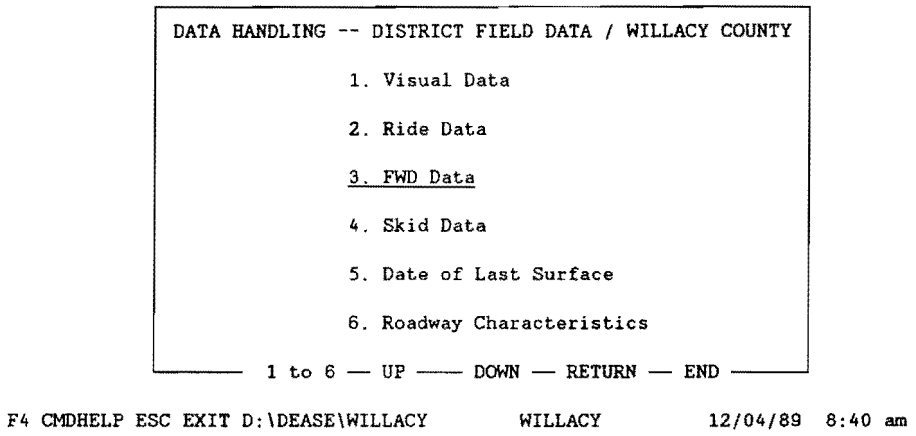


FIGURE 123: PMS FWD DATA SELECTION MENU

The next screen that appears is "FWD DATA HANDLING / WILLACY COUNTY", with only one selection (Figure 124). Select "1. Transfer FWD Data to Master Data Form" by pressing the "1" key, or use the arrow keys to highlight the selection and press the "Enter" key. This process transfers all of the FWD data from the FWD data form (0.5 mile records) to the Master data form (0.1 mile records).

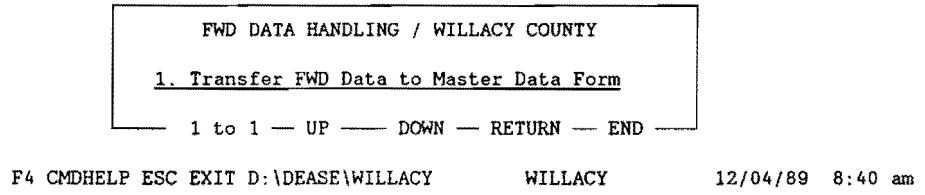


FIGURE 124: FWD TRANSFER TO HISTORY FILE

The following screen (Figure 125) will appear.

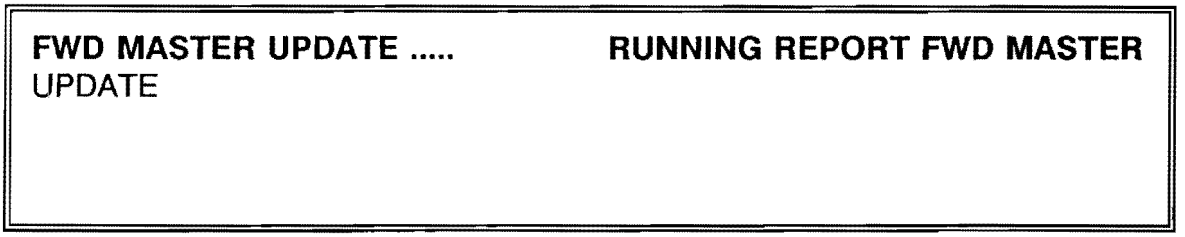


FIGURE 125: FWD MASTER FILE UPDATE

This procedure transfers the 0.5-mile FWD data for each 0.5-mile highway

segment to the appropriate 0.1-mile Master File. As soon as the update procedure has completed, you will be returned to the "FWD DATA HANDLING / WILLACY COUNTY" menu as shown in Figure 126.

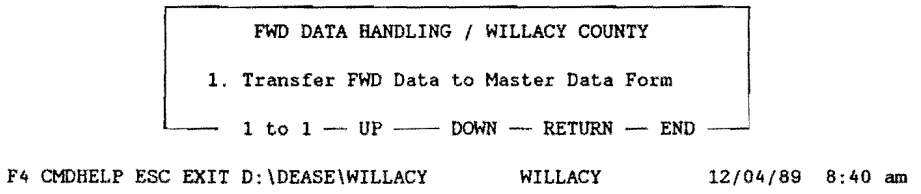


FIGURE 126: TRANSFER FWD DATA TO 0.1-MILE FILE

When the transfer process is complete, press the "Esc" key several times to return to the "Pavement Management System" menu as shown in Figure 127.

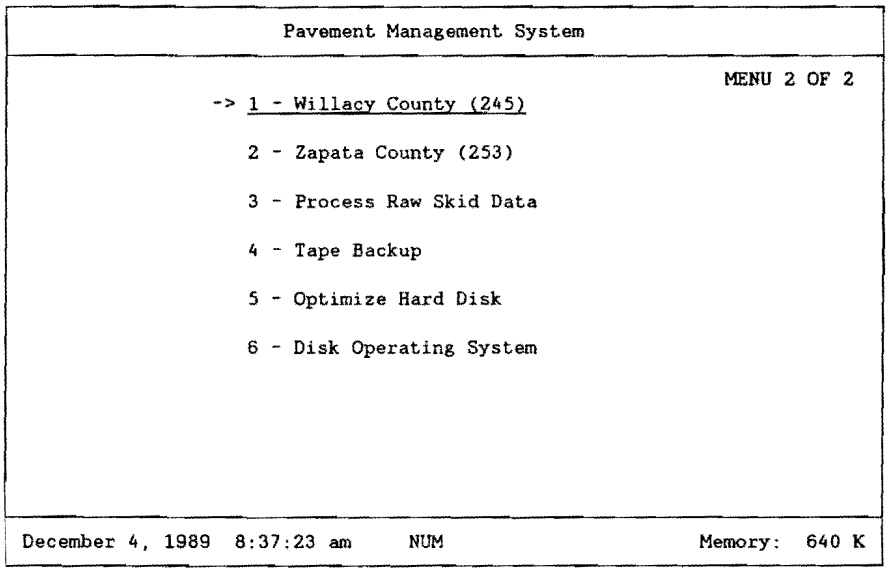


FIGURE 127: PMS MAIN SYSTEM MENU

This concludes the FWD data processing.

8.0 VISUAL DATA ENTRY

This section describes the data entry steps necessary to enter current **Visual** data into the database. Visual data is one of several data types required by the database. It is important to point out that this is the only data collection process that requires manual data entry. Since the gathering of visual data (on 0.5-mile intervals) is largely a human-intensive effort, and no means as yet been discovered to fully automate visual data, this task remains labor intensive. First, the actual collection of visual data is highly subjective. Trained raters must drive the entire district and record their evaluations of the pavement sections on computer-generated rating sheets. Second, the rating sheets are returned to the district headquarters where trained staff personnel manually enter the scored segments directly into the 0.5 VIS file, record by record. This report segment describes, in detail, the steps required to enter visual data into the PMS database.

Visual data is stored within a data file containing half-mile highway segment records. Trained rating personnel begin the manual process of rating pavement segments in September of any given year. Rating forms are produced from the 0.5-mile visual file and given to the raters to assist in the rating process. The rating forms contain sorted 0.5-mile segments associated with each highway within a given conty. Using the forms as a guide, raters drive the various highway segments and subjectively rate each visual category associated with pavement distresses.

This protion of the report deals with the manual data entry of the subjectively gathered distress values and the subsequent transfer of the data to the 0.1-mile master file. Based upon the visual distress scores observed, the system generates pavement rating scores (PRS values) and shoulder rating scores (SRS values). The respective PRS and SRS values are calculated and stored within the 0.5-mile and 0.1-mile files for later analysis.

Details relating to visual data collection and the associated training requirements may be found in the 1989 District PRS Rater's Manual, published by the Texas Department of Transportation, August, 1989.

8.1 D21-PMS Data Set Categories

The D21 system currently supports four (4) types of data sets, specifically:

1. Visual Data,
2. Ride Data,
3. Falling Weight Data,
4. Skid Data.

Under the 1988-89 version, Visual Data must be manually input by a trained data entry operator. The remaining data sets (Ride, Skid, and FWD data are automated data transfer procedures that require more intimate knowledge of the internal operation of the database. This section will emphasize the data entry procedures pertaining only to the manual entry of Visual Data. Later sections will focus on the procedures for Ride, FWD, and Skid data entry.

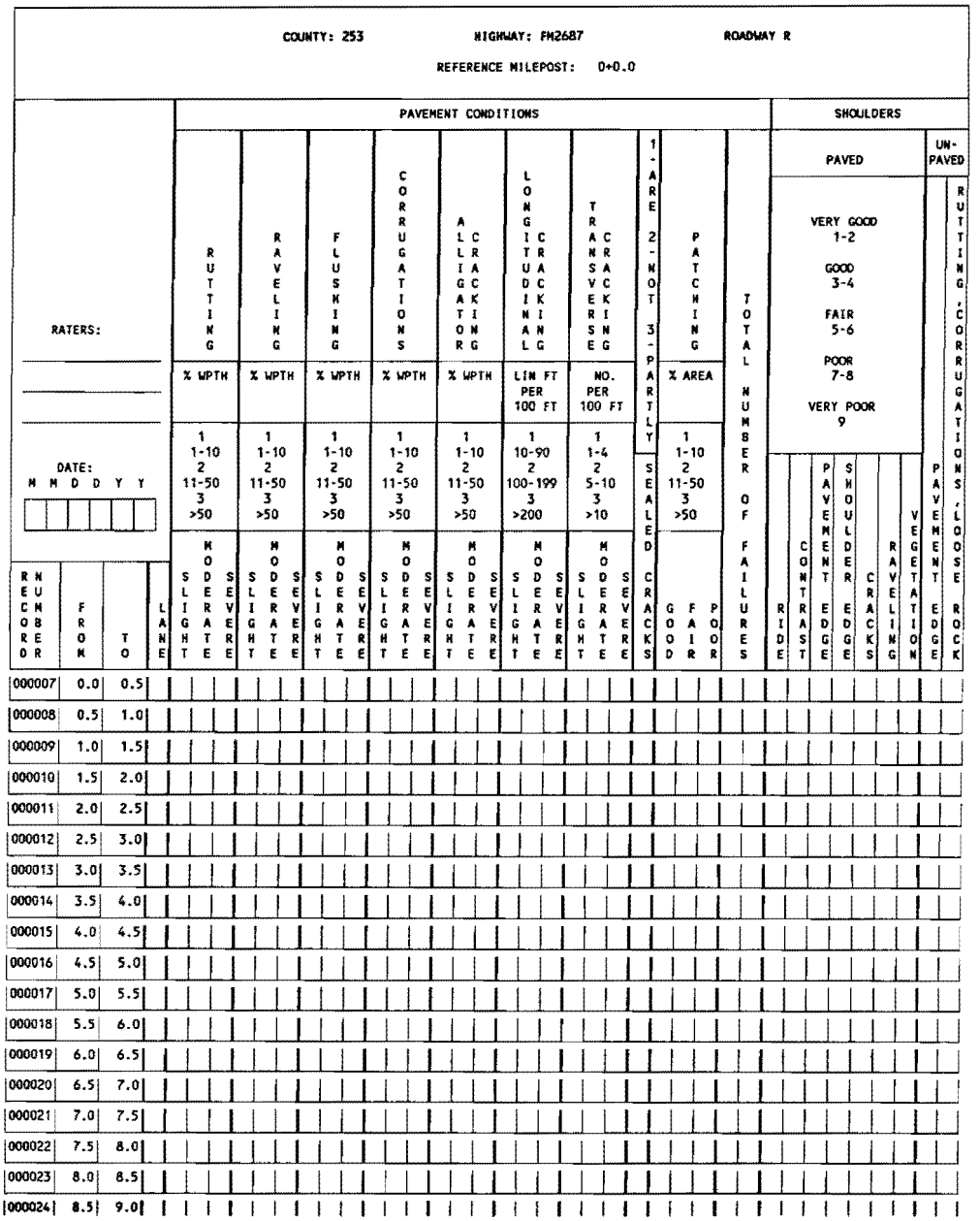
8.2 DESCRIPTION OF VISUAL DATA COLLECTION

Data collection activities for District 21 normally begin in September of a given year. Trained field crews drive the entire grid of state maintained roads within the district and collect visual pavement condition data. This activity involves from three (3) to five (5) 2-person crews who are assigned to work a given county. For large counties, two 2-person crews divide the visual data collection. The goal is to 100% visually rate 0.5-mile segments within each county. Normally, the visual data collection activities are finished by the end of November of a given year. Visual data collection involves a skilled rater who subjectively evaluates the following attributes:

1. Rutting,
2. Raveling,
3. Flushing,
4. Corrugations,
5. Alligator Cracking,
6. Longitudinal Cracking,
7. Transverse Cracking,
8. Sealed cracks,
9. Patching,
10. Shoulder evaluation (paved or unpaved).

In order to record the visual scores, the D21 Database maintains an up-to-date highway inventory file listing the County Number, Highway Prefix, suffix, number, roadway, and reference milepost. From the highway inventory within a given county, the database system has the ability to generate visual data collection forms sorted in a specific order. The visual data collection forms are generated on a laser printer and are provided to the raters. The forms are taken to the field where the rating crews drive the required segments and manually record their subjective scores (37 individual entries per half-mile segment) for each of the 10 categories. The computer generated rating forms contain all information necessary to

locate/identify the required 0.5-mile segment. A specimen form taken from Zapata County for the first part of FM 2687 is shown in Figure 128.



COUNTY: 253 HIGHWAY: FM2687 ROADWAY R

REFERENCE MILEPOST: 0+0.0

RATERS:

DATE: M M D D Y Y

PAVEMENT CONDITIONS

SHOULDERS

RECORD NUMBER	FROM	TO	LANE	RUTTING % WPTH 1 1-10 2 11-50 3 >50	MODERATE	SEVERE	RAVELING % WPTH 1 1-10 2 11-50 3 >50	MODERATE	SEVERE	FLUSHING % WPTH 1 1-10 2 11-50 3 >50	MODERATE	SEVERE	CORRUGATIONS % WPTH 1 1-10 2 11-50 3 >50	MODERATE	SEVERE	ALLIGATOR CRACKING % WPTH 1 1-10 2 11-50 3 >50	MODERATE	SEVERE	LONGITUDINAL CRACKING LIN FT PER 100 FT 1 10-90 2 100-199 3 >200	MODERATE	SEVERE	TRANSVERSE CRACKING NO. PER 100 FT 1 1-4 2 5-10 3 >10	MODERATE	SEVERE	1-ARE 2-NOT 3-PARTLY SEALED CRACKS	PATCHING % AREA 1 1-10 2 11-50 3 >50	GOOD	FAIR	POOR	TOTAL NUMBER OF FAILURES	PAVED: RIDE	CONTRAST	PAVEMENT EDGE	SHOULDER EDGE	CRACKS	RAVELING	VEGETATION	UNPAVED: PAVEMENT EDGE	RUTTING, CORRUGATIONS, LOOSE ROCK
000007	0.0	0.5																																						
000008	0.5	1.0																																						
000009	1.0	1.5																																						
000010	1.5	2.0																																						
000011	2.0	2.5																																						
000012	2.5	3.0																																						
000013	3.0	3.5																																						
000014	3.5	4.0																																						
000015	4.0	4.5																																						
000016	4.5	5.0																																						
000017	5.0	5.5																																						
000018	5.5	6.0																																						
000019	6.0	6.5																																						
000020	6.5	7.0																																						
000021	7.0	7.5																																						
000022	7.5	8.0																																						
000023	8.0	8.5																																						
000024	8.5	9.0																																						

FIGURE 128: SPECIMEN VISUAL DATA COLLECTION FORM (ZAPATA COUNTY)

As shown in Figure 128, a typical highway segment (in this example, FM 2687 (Zapata County) beginning at reference milepost 0+0.0, R lane is shown. Down the left hand side of the form is the database record number (needed only for

internal auditing) along with the From-To limits. Raters will drive FM 2687 beginning at reference milepost 0+0.0 (which denotes R.P. 0.0). The first row of the form corresponds to the first 0.5-mile segment (RP 0.0 - 0.5). Upon driving this segment, the raters will manually record their impressions of the scores for each category (categories are shown across the top of the form). An integer score that varies for each column (normally 0,1,2,3) is entered on the row and within the required column. Each row in this form represents a particular 0.5-mile segment or fraction thereof.

The next section describes the steps required to enter the database in order to begin **visual data entry**.

8.3 Entering the Database to Begin Visual Data Entry

The current version of the D21 Database is maintained at the District 21 Headquarters in Pharr, Texas. The system resides on a Hewlett Packard Vectra R/S20 20 Mhz 386-based microcomputer. This system is configured as follows:

1. 640 Kb of "standard" or base RAM,
2. 2 Mb of total memory,
3. One 5.25" 1.2Mb floppy (A:Drive),
4. One 3.5" drive (B: Drive),
5. One 103 Mb Hard Drive partitioned as a C: Drive (32 Mb) and a D: Drive (70 Mb),
6. One HP LaserJet Series II or III parallel printer (LPT1),
7. One ComputerLand 60Mb high speed tape backup unit.

The D21 database was designed using an existing software package called DATAEASE Version 4.0. User menus have been developed to facilitate data entry and report generation by various users of the system. DATAEASE requires that all users have a password in order to gain access to the system. The software supports various levels of users and each user's level is defined in advance. A "high" level user is one who can access all levels of the system from data entry to creating data calculations and report generation. Lower level users are restricted to such activities as data entry only and cannot gain access to the intimate details of the system. Visual data entry is established at a rather low level and all one can do is simply enter data.

The next section describes the process of entering the recorded visual distress scores.

8.3.1 Booting the System

To begin visual data entry perform the following steps:

1. **Power on the system and turn the color monitor on.**

   The power-on switch is on the upper left-hand side of the Vectra. Depress the switch then push in the power switch on the lower right hand side of the monitor.

   After completing the above steps, it takes approximately 20 seconds or so for the system to perform internal checking procedures. Upon passing the internal checks, the software built into the system comes up with the **Pavement Management System** main menu as shown in Figure 9.2.

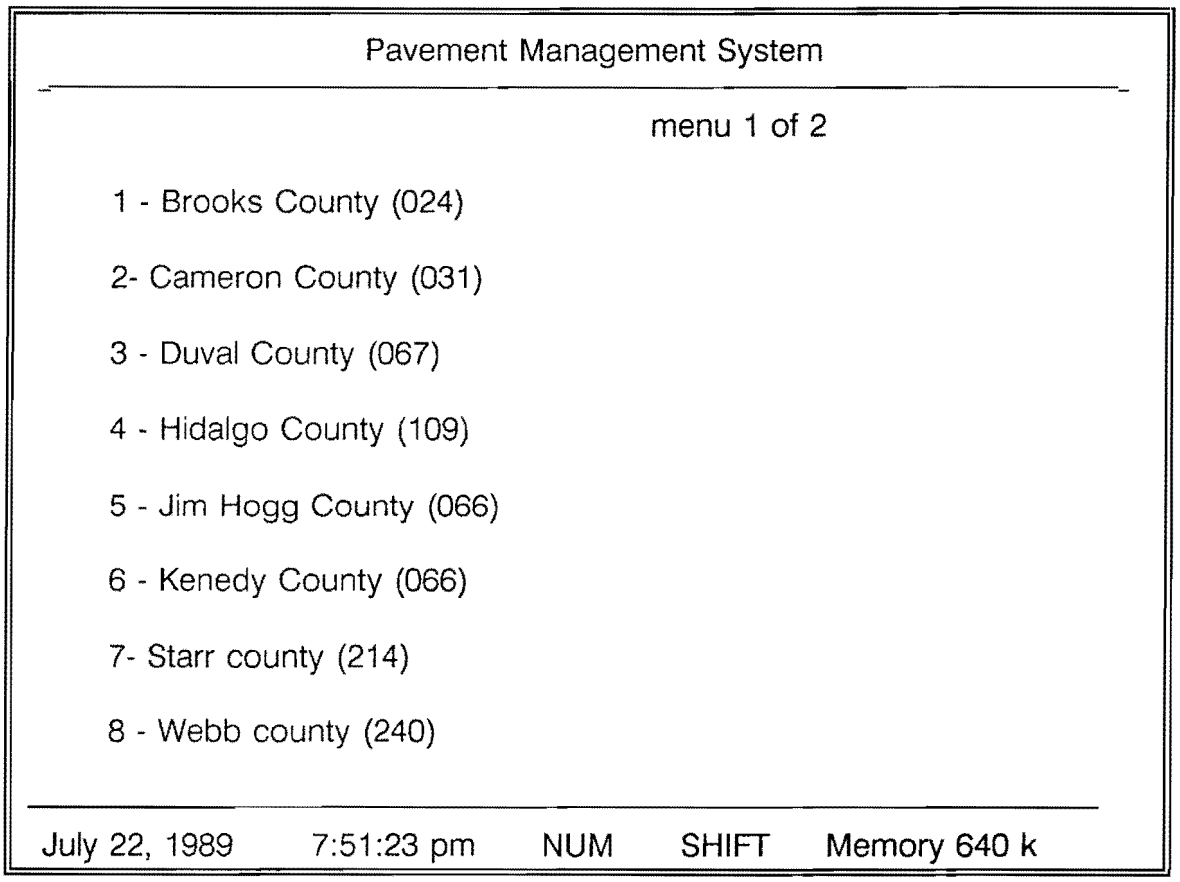


FIGURE 129: Pavement Management System Main Menu2

Figure 129 shows the first menu that the user sees. A small arrow (pointer)

points to the first county (in this case, Brooks County - County No. 024). The entire D21 database is comprised of 10 counties. Each county occupies its own DOS directory. This menu permits the user to select the county one wishes to work with at the time. A particular county (A DOS directory) is selected by using the un-down arrow keys on the keyboard. In the above display, the first 8 counties are shown.

A second menu is also available. By depressing the **down arrow** key until it passes option 8 or pressing the **page down** key, one can visualize the second part of the menu. Menu 2 is shown in Figure 130 and contains the "overflow" that the designers were unable to design into Menu 1. Users can flip from one part of the menu to the other by **Page Down** or **Page Up** as required.

If the user desired to work with Starr County for example, depressing the down-arrow key until the pointer is next to item 7 - Starr County is all that is needed to identify the county. Once the pointer is opposite the county, the user simply depresses the **ENTER** key on the keyboard and we move into the actual database system.

Technical Note:

The menus shown in Figures 129 and 130 are not a part of the actual database. Rather, they are a DOS-type of "front-end" menu that selects the particular DOS directory associated with the user's choice. Access is gained by the command **AUTO** contained in the **autoexec.bat** file on the root directory of the C: drive.

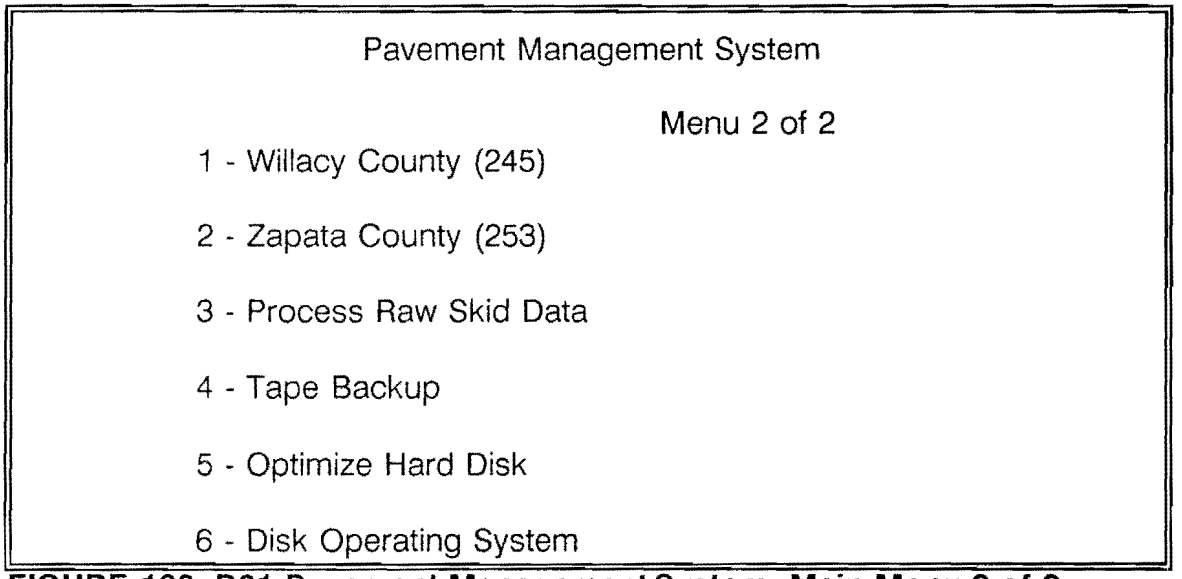


FIGURE 130: D21 Pavement Management System: Main Menu 2 of 2

Figure 130 illustrates the second "page" of the main menu. Notice that choices

1 and 2 on this menu represent the last two counties in the database. The first 8 counties are menu choices on the first page of the main menu.

Choices 3-6 on the second menu (Figure 130) are **not to be selected** when one is entering visual data. These choices are for the more experienced user and are simply not required for visual data entry. Option 6 merely transports the user out of the Main Menu and into DOS. One can return to this menu from DOS by typing **AUTO** followed by depressing the **ENTER** key.

8.3.2 THE DATABASE SIGN-ON MENU

Given the user has selected the appropriate county, the DATAEASE sign-on menu is displayed as shown in Figure 131.

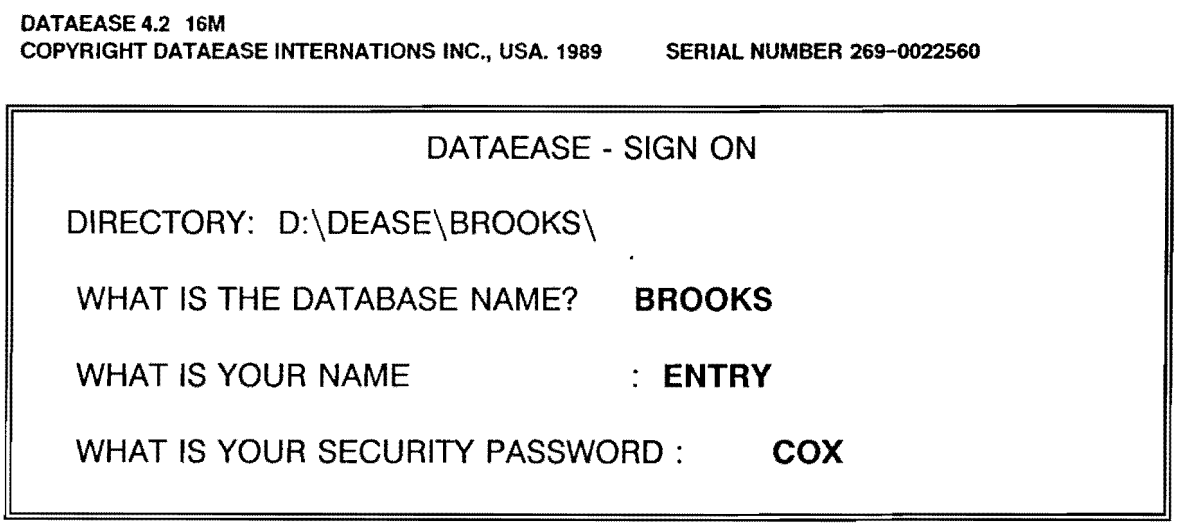


FIGURE 131: THE DATABASE SIGN-ON SCREEN

Figure 131 illustrates the database's sign-on screen. This screen is a functional part of the database and is required by the user in order to gain access to the data entry files for a particular county. For this example, we will assume the user has selected BROOKS county from the Main Menu (See Figure 129). When this screen appears, the **name** of the county has been pre-set by the designers (in this example it is displaying **BROOKS**. The first prompt is asking:

What is your name :_____

Do not respond with your actual name! Rather, a pre-set name has been selected as **DATA.**

Type as the name the following: **DATA**
Then press the **ENTER** key.

The next prompt is as follows:

What is your security password: _____

DATAEASE requires the user to enter a password. The password is a pre-established procedure and can only be set by a user with a high level of clearance. To gain access to the current password for entering visual data see Mr. Rogelio Sandoval, Engineering technician 4, D21 Headquarters, Pharr, Texas. He will provide the required current password. Simply type the supplied password then depress the **Enter** key. If the entered password is correct, the screen will clear and be replaced with the DATAEASE PMS Main Menu (Figure 132). This menu is not to be confused with the DOS Main Menu (figures 129 and 130). To clarify, the DOS Main Menu(s) help the user select the proper county to work on. The DATAEASE Main Menu is internal to the database and is, in reality, the main menu.

PAVEMENT MANAGEMENT SYSTEM / BROOKS COUNTY

1. SETUP
2. **DATA ENTRY -- DISTRICT FIELD DATA**
3. DATA ENTRY -- IMPORT PES DATA
4. DATA HANDLING -- DISTRICT FIELD DATA
5. DATA HANDLING -- IMPORTED PES DATA
6. REPORTS
7. YEAR END

1 to 7 UP DOWN RETURN END

FIGURE 132: DATAEASE PMS Main Menu

For entering visual data we are only concerned with **Option 2 -- District Field Data**. The remaining options (1,3,4,5,6, and 7) do not concern us at this time! Therefore:

Select option 2

by using the up-down arrow keys to highlight the choice or... typing the number associated with the choice. For visual data entry either use the up-down arrow keys or type

2

after which you....

Press the **ENTER** key

for the next lower level menu (shown in Figure 133

DATA ENTRY --DISTRICT FIELD DATA /BROOKS COUNTY

1. **INPUT OR MODIFY VISUAL DATA**
2. RIDE (SIOMETER) DATA
3. FWD DATA
4. SKID DATA
5. CREATE/MODIFY DATE OF LAST SURFACE
6. CREATE OR MODIFY CROSSROADS
7. CREATE OR MODIFY DISTRICK COUNTIES DATA
8. CREATE OR MODIFY ROADWAY CHARACTERISTICS

1 TO 8 UP DOWN RETURN END

FIGURE 133: P.M.S. FIELD DATA MENU

Figure 133lustrates the second-level menu relating to all field-level data entry options. For our purposes, we are only concerned with **option 1 - Input or modify Visual Data**. The other options relate to ride, FWD, skid, and

create/modify other files in the database. Select only option 1 from this menu.

To select this option:

type **1**

or,

use the up-down arrow keys to select option 1 followed by....

pressing the **ENTER** key.

The screen will clear and the Visual Pavement Condition Data Entry screen will appear as shown in Figure 134.

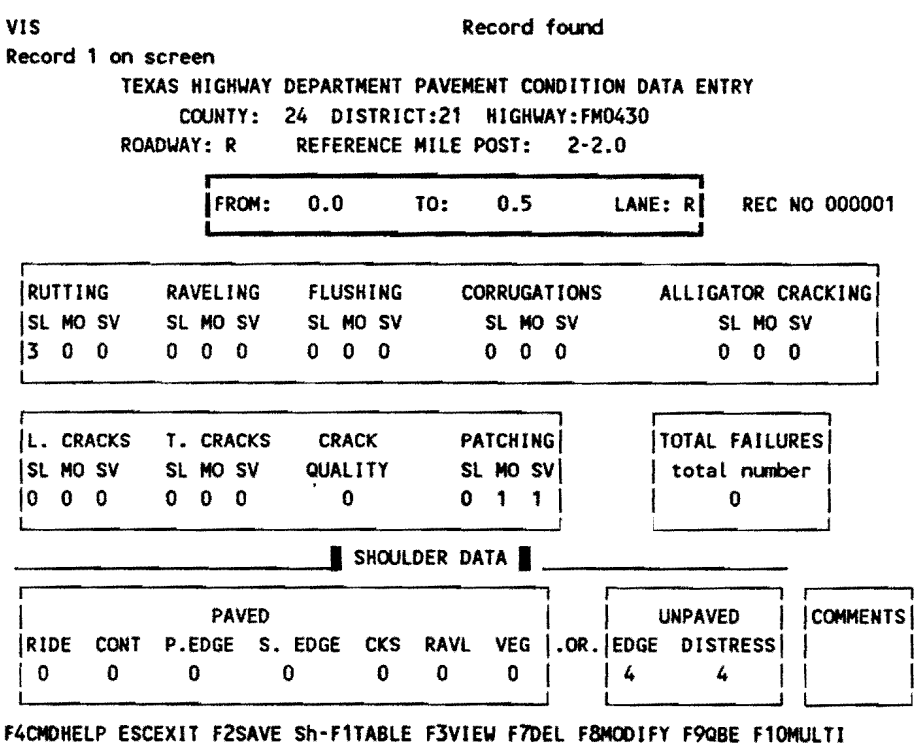


FIGURE 134: PMS VISUAL DATA ENTRY SCREEN

The screen (Figure 134) is what database designers refer to as a data entry template. It is a pre-designed screen to assist the user is entering data in an orderly manner. At the top of the screen note the box with "From: To: Lane: " tags. Also note that just to the right of this box is the tag "REC NO ". At this time there are no data values to the right of these tags. This is so because

we have not yet "pulled up" an active record of information. This screen is just a template with no data yet displayed.

To display data on this template, we must use the **F3** key. Before depressing the **F3** key, examine the bottom of the screen. The database displays nine function keys that when depressed, initiate some sort of action. These keys are:

F4: Provides on-the-spot help to the user

Esc: Pressing the Esc key "escapes" or quits and returns the user to the next higher level of action.

F2: The SAVE option. **Never press this key!.** An explanation will soon follow.

Sh-F1: Ignore this key for the present and do not use it during visual data entry.

F3: View the next record action. Pressing the F3 key permits the user to bring up the next record to view and/or modify. We will make extensive use of this key.

F7: The Delete action. Pressing the F7 key will delete/erase a record from the visual file. **Never use this key!** If this key is depressed and the subsequent confirm-delete command answered with a "YES", then we have lost a 0.5-mile segment of visual data. Therefore, do not use the **F7** key!

F8: The Modify key. This key is most important to visual data entry and its use will be explained shortly.

The remaining two function keys (F9 and F10) are not needed at all for visual data entry. Ignore them! The next section address the manual data entry of collected visual data.

8.4 ENTERING VISUAL DATA

At this point we have the Visual Data Entry template on the screen (Figure 134). However, in its present form it is not showing use any data. To bring up the first data file (remember, these files have been pre-built according to the From-To mile point locations) we press the **F3** key. The **F3** key allows one to view the next available record and display its contents on the template. One could continually press the **F3** key and scroll through the records in the file. Pressing the **F3** key does no harm in any way to the data....it simply permits one to view the next

record.

An alternative use of the **F3** key is to find a given record in the visual file. The designers of the Visual file have stored a "record number" in each 0.5-mile record. The record number appears to the left of the visual data entry recording sheets that the raters have filled out in the field. If you wanted to find record 203 for example we type"

Ctrl-F3

followed by the record number we wish to view. In this example we would enter **203** followed by pressing the **Enter** key. If that record exists, the database system will immediately find and display it on the screen. If the record does not exist, the system will communicate it to you. So remember, use of **Ctrl-F3** finds a specified record: **F3** used by itself, finds the next record.

Assuming we are in Brooks County, depress the **F3** key and we will see the first record (shown below in Figure 135).

```
VIS                                       Record found
Record 1 on screen
          TEXAS HIGHWAY DEPARTMENT PAVEMENT CONDITION DATA ENTRY
               COUNTY:  24  DISTRICT:21  HIGHWAY:FM0430
          ROADWAY: R     REFERENCE MILE POST:    2-2.0

                 |FROM:    0.0      TO:     0.5      LANE: R|   REC NO 000001

 |RUTTING     RAVELING     FLUSHING     CORRUGATIONS     ALLIGATOR CRACKING|
 |SL MO SV    SL MO SV     SL MO SV        SL MO SV            SL MO SV    |
 |3  0  0     0  0  0      0  0  0         0  0  0             0  0  0     |

 |L. CRACKS   T. CRACKS    CRACK        PATCHING|     |TOTAL FAILURES|
 |SL MO SV    SL MO SV     QUALITY      SL MO SV|     | total number |
 |0  0  0     0  0  0        0          0  1  1 |     |      0       |

                          SHOULDER DATA

 |                PAVED                         |     |   UNPAVED     | |COMMENTS|
 |RIDE  CONT  P.EDGE  S. EDGE  CKS  RAVL  VEG   |.OR.|EDGE  DISTRESS| |        |
 | 0     0     0        0       0    0     0    |     | 4       4     | |        |

F4CMDHELP ESCEXIT F2SAVE Sh-F1TABLE F3VIEW F7DEL F8MODIFY F9QBE F10MULTI
```

FIGURE 135: SPECIMEN VISUAL RECORD TAKEN FROM BROOKS COUNTY

By pressing the **F3** key we have successfully brought up the first record. Note that in the "From - To " block we see the fist mile post increments displayed, in this case we see:

From: 0.0 TO: 0.5.

Also, we see the current record number displayed to the right as:

REC NO 000001.

Thus, we have the first record for **FM0430** (displayed at the top of the screen) from mile point 0.0 to mile point 0.5. Always check the From-To values on the data collection forms against the From-to values shown on the screen. They must match! Also, cross check the highway number (at the top of the field data form against the highway number at the top of the data entry screen. Likewise, these must match. If not, your collection forms are out of order. If you find that elements do not match, contact Mr. Sandoval in D21 for the appropriate action to recover. If you detect mis-matches, cease entering data until an audit has been performed.

If no apparent mis-matches exist, we are now ready to enter the data from the visual data field forms.

The first value required is the **Lane** designation and the cursor is positioned on the Lane cell. For most visual evaluations, this will be the **R** lane. So we would enter a "R" in the lane designation cell. Note, other lane designations are possible such as (A,B,C,V,U,T,S,R,L,M,N,O,P,X,Y,Z). Regardless of the lane designation, the appropriate letter should always be shown on the field data collection form. Simply enter that lane code in this cell.

As soon as you have entered the lane designation letter, the cursor will move to the next field (Rutting in this example). For the remaining entries, most of them will be "0's". To post a "0" in the field, keep pressing the **Enter** key and the cursor will keep moving across the template posting a "0" in the appropriate cell. If a non-zero value is required, simple type the appropriate number as call for from the field data form. Remember,

You must keep pressing the "Enter" key or the appropriate number until the entire template is filled out.

If you make a mistake it is a simple matter to correct it. Use the arrow keys to locate the cell with the mistake then:

Hit the **F6** key (this deletes the value)

Then enter the corrected value. Remember, the **F6** key deletes the current field. You are then free to enter the corrected value. (Do not use the F7 key - which would attempt to delete the entire record!)

When you are finished with the current record it is time to post your entries to the database. While you were entering values on the template, you were not saving the values in the database. In order to post your entered values you must use the **F8** key (**Modify**) key. The **F8** key modifies the current record to the values you have just entered. Remember we stated that all of the visual records have been pre-built for you. These records already exist. You are simply modifying their current values.

Recall, we said **not to use the F2 key**. If you enter all of the data for a given 0.5-mile stretch and then use the F2 key you would be creating a new record and we don't want that! Since these records already exist, we only want to modify the existing records. So, **do not use the F2 key to "save" the current record.** If you examine the F2 key code at the bottom of the screen it specifies...

F2SAVE

and SAVE means to "save" the record. What is really means is to "create" a new (additional) record and this can be misleading to the user. If we remember not to use the F2 key but rather the F8 key, we stay out of trouble!

After pressing the **F8** key, we have modified the record. Now, hit the **F3** key and the next record is displayed. Check you record number and From-To limits on the field form against the screen values. They should match! If not, cease data entry and report the problem to Mr. Sandoval. If these fields match, continue posting the appropriate values until the entire line on the field data form is posted to the template on the screen. Then visually check the line on the form against the screen template. If all fields match hit the **F8** key followed by the **F3** key and this will post the changes to the file and bring up the next record.

If you detect an error, use the arrow keys to move to the cell with the error, hit the **F6** key to delete the error, re-enter the corrected value, re-check, then hit the **F8** followed by the **F3** key.

8.4.1 Quitting a Session

When finished (or you wish to quit) finish the current record, record where you are in the field data (Highway No, record number) then hit the **Esc** key to escape out of the data entry. You may continue hitting the **Esc** key and responding to any prompts until you are out of the database.

8.4.2 To Re-enter the Database

Follow the procedures outlined in Section 8.3.2 of this section and come up into the PMS Visual Data Entry Screen (Figure 134). If you have recorded the record number of the last record you entered, you can enter...

Ctrl-F3

and respond with that record number. The data base will display that record number for you to check. Then hit **F3** to display the next record and you can begin entering data from the spot that you last left.

Remember to always check the highway number, record number and the From-To values on the field data form against the screen values to ensure that you are coordinated. The values on the field data forms must match with the location values on the screen for a given record. **It might help to remember that one line on the field data form corresponds to one screen on the data entry form.**

In summary, the process is:

1. Use the **F3** key to bring up the next record.

2. Use the **Enter** or the arrow keys to move around on the screen template.

3. Check the location parameters on the field data forms against the same fields on the displayed screen.

4. Enter the correct values on the screen template as per the values on the field data forms.

5. When finished with one line on the field data forms, visually confirm, then hit the **F8** key to modify the current record.

6. Press the **F3** key to move to the next record (or the **Ctrl-F3** key combination to move to the specified record).

7. To quit a session, finish the current line on the field data forms and record the associated record number. Then hit the **Esc** key as many times as required to back out of the data base.

8.5 Producing Visual Data Collection Forms

Visual data collection activities within District 21 commence in September of any given year. Prior to collecting visual data, district personnel attend visual rating classes in Austin and at district headquarters. Trained raters are then routed to the various counties to commence the visual data collection activities.

In order to organize their work, the PMS Database has the ability to generate sorted visual data collection forms for each county within the district. The automated procedure for accomplishing this follows.

NOTE: Before beginning this procedure, perform the following tasks.

1. Load the LaserJet printer tray with a full supply of paper.

2. Take the printer off-line and set the **font number** to font no. **9 or 10.** To obtain a listing of the possible number of fonts supported by the HP LaserJet, take the printer off-line, and press ALT-Print Fonts keys on the printer. This action will produce a listing of all possible fonts supported by the printer.
3. Bring the printer back to On-line status.

4. Log into the database in the normal fashion. The following PMS main menu appears (Figure 136):

Remainder of this page intentionally left blank.

PAVEMENT MANAGEMENT SYSTEM / BROOKS COUNTY

1. SETUP
2. DATA ENTRY -- DISTRICT FIELD DATA
3. DATA ENTRY -- IMPORT PES DATA
4. DATA HANDLING -- DISTRICT FIELD DATA
5. DATA HANDLING -- IMPORTED PES DATA
6. **REPORTS**
7. YEAR END

1 to 7 UP DOWN RETURN END

Figure 136: P.M.S. REPORTS MENU

Select option 6, **REPORTS**.

The next menu appearing (Figure 137):

REPORTS / BROOKS COUNTY

1. MISSING DATA REPORTS
2. **GENERATE RATING FORMS**
3. CRITICAL VALUE REPORTS
4. DATA LISTING REPORTS
5. PMS-PES CONVERSION
6. AD HOC REPORTS

1 TO 6 UP DOWN RETURN END

FIGURE 137: P.M.S. GENERATING RATING FORMS MENU OPTION

Select option **2. GENERATE RATING FORMS**. This option produces the next menu, (Figure 138).

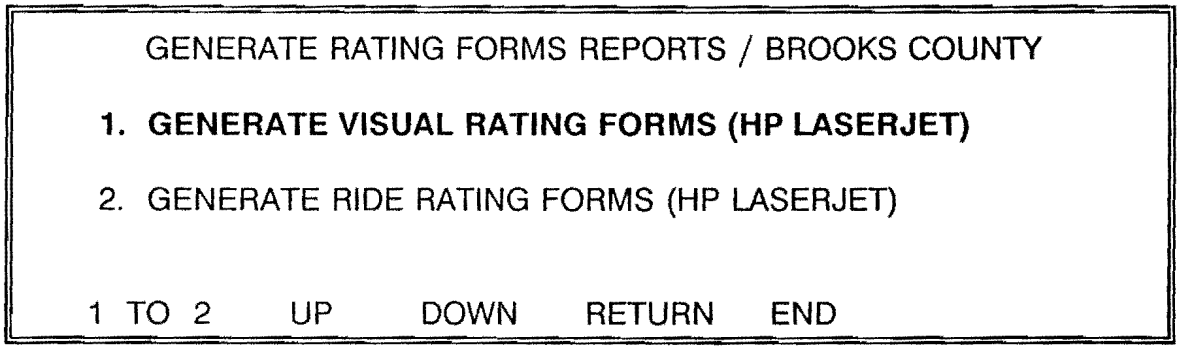


FIGURE 138: P.M.S. GENERATE VISUAL RATING FORMS MENU

Select option 1 **GENERATE VISUAL RATING FORMS (HP LASERJET).** The remaing process is under control of a Database procedure termed **visual rating forms**. This routine scans the 0.5-mile visual form, sorts the records into an appropriate order, and prints the forms for the entire county.

Upon completion of the batch process, press the **ESC** key three times to exit the PMS database. This concludes generation of the visual rating forms.

APPENDIX A

D21 P.M.S. MICROCOMPUTER HARDWARE REQUIREMENTS

To install and maintain the Micro-PMS system, the following minimum hardware requirements apply:

1. 386-based (or higher) microcomputer operating under DOS 4.01 or higher.

   Specific hardware requirements are:

   a. Minimum of 4 Mb of RAM.
   b. Math co-processor.
   c. Minimum 120 Mb hard disk.
   d. Color EGA or VGA adaptor and monitor.
   e. 1.44 Mb A: Drive
   f. 1.44 Mb 3.5" B: Drive for microdisks.

2. Sysdyne high speed tape backup unit (internal or external) capable of backing up at least 60Mb of data per tape.

3. HP LaserJet Series III or II-P with 2.5 Mb of data storage and 300 d.p.i. resolution.

4. Software:

   a. DataEase Version 4.2 from Software Solutions, Inc.
   b. The EDIX DOS Text editor from Emergine Technology, Boulder, Colorado.

APPENDIX B
P.M.S. DATABASE DETAILED FILE STRUCTURE

This appendix summarizes the individual files required to support the PMS database. Details involving the screen displays, fields, and field definitions are provided for each file. Brooks County (024) has been selected to illustrate the file definitions. The remaining 9 counties within D21 have exactly the same file structure.

Form Name: COUNTIES

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

                        COUNTY DISTRICT RELATIONSHIPS

    COUNTY NUMBER:_1_    COUNTY NAME:_2__________________ DISTRICT NUMBER:__
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	COUNTY NUMBER Number Type : Integer Lower Limit: 001 Upper Limit: 254	Number	3	2	3			*		*	
2	COUNTY NAME	Text	20	20	5						
3	DISTRICT NUMBER Number Type : Integer Lower Limit: 01 Upper Limit: 25	Number	2	1	25					*	

Record Size: 26 Memory: Text = 116 Fields = 193 Total = 309

Form Name: MACHINE # VAR.

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

MRM MACHINE ALPHA AND BETA VALUES

```
      +-------------------------------------------------------------------+
      |                                                                   |
      |                          MACHINE #: _1_____                       |
      |                                                                   |
      |                                                                   |
      |        ALPHA VALUE : _2_______        BETA VALUE : _3_______      |
      |                                                                   |
      +-------------------------------------------------------------------+
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	MACHINE #	Text	7	7	3	*		*			
	Display Attribute: Highlight 1										
2	ALPHA VALUE	Number	9	4	10	*					
	Number Type : Integer										
	Display Attribute: Highlight 1										
3	BETA VALUE	Number	9	4	14	*					
	Number Type : Integer										
	Display Attribute: Highlight 1										

Record Size: 18 Memory: Text = 647 Fields = 98 Total = 745

Form Name: TEMP

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                      MAINTENANCE MANAGEMENT MASTER FILE

                              RI-1 FILE DATA ENTRY
--------------------------------------------------------------------------------
                              COUNTY NUMBER.......:_1_
                              HIGHWAY PREFIX......:__
                              HIGHWAY NUMBER......:_3__
                              HIGHWAY SUFFIX......:_
                              REFERENCE POINT.....:_5___
                              MILEPOST............:_6_
                              MILEPOST DISP. SIGN.:_
                              MILEPOST DISP.......:_8_
                              ROADWAY.............:_

MASTER ID CODE _10_____________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	COUNTY NUMBER Number Type : Integer Help:	Number	3	2	4			*			
2	HIGHWAY PREFIX	Text	2	2	6			*			
3	HIGHWAY NUMBER	Num. String	4	4	8			*			
4	HIGHWAY SUFFIX	Text	1	1	12			*			
5	REFERENCE POINT Number Type : Fixed Point	Number	5	4	13			*			
6	MILEPOST Number Type : Integer	Number	3	2	17						
7	MILEPOST DISP. SIGN	Text	1	1	19						
8	MILEPOST VALUE Number Type : Fixed Point	Number	3	4	20						
9	ROADWAY	Text	1	1	24						
10	MASTERID	Text	16	16	25	*		*			*

Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))

Record Size: 41 Memory: Text = 794 Fields = 552 Total = 1346

Form Name: DATE OF LAST SURFACE

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                           DATE OF LAST SURFACE
                           --------------------

              COUNTY NUMBER: _1_                    RECORD NUMBER: _2____
                    HIGHWAY: ___4___
                    ROADWAY: _

              FROM MILEPOST: _7___9_      FROM REFERENCE POINT: _10__

                TO MILEPOST: _______        TO REFERENCE POINT: _14__

         DATE OF LAST SURFACE: _15__
             PES SURFACE TYPE: __

DLSFMPID _17_____________

DLSTMPID _18_____________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	COUNTY NUMBER	Number	3	2	5			*	*		*
	Number Type : Integer										
	Formula: 024										
2	RECORD NUMBER	Num. String	6	6	7				*		*
	Formula: SEQUENCE FROM 000001										
3	HIGHWAY PREFIX	Choice	2	1	13	*		*			
	Choice 1: PR										
	Choice 2: FM										
	Choice 3: SH										
	Choice 4: US										
	Choice 5: IH										
4	HIGHWAY NUMBER	Num. String	4	4	14	*		*			
5	HIGHWAY SUFFIX	Choice	1	1	18			*			
	Choice 1: A										
	Choice 2: S										
	Choice 3: E										
	Choice 4: W										
6	ROADWAY	Choice	1	1	19	*		*			
	Choice 1: R										
	Choice 2: L										
	Choice 3: A										
	Choice 4: X										
7	FROM MILEPOST	Number	3	2	20	*		*			
	Number Type : Integer										

Form Name: **DATE OF LAST SURFACE Continued...**
FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
8	FROM MILEPOST SIGN Choice 1: + Choice 2: -	Choice	1	1	22	*		*			
9	FRM MILEPOST DISP Number Type : Fixed Point	Number	3	4	23	*		*			
10	FROM Number Type : Fixed Point	Number	5	4	27						
11	TO MILEPOST Number Type : Integer	Number	3	2	31	*					
12	TO MILEPOST SIGN Choice 1: + Choice 2: -	Choice	1	1	33	*					
13	TO MILEPOST DISP Number Type : Fixed Point	Number	3	4	34	*					
14	TO Number Type : Fixed Point	Number	5	4	38						
15	DATE Formated as : Other Format	Num. String	5	4	42	* 00/00					
16	SURFACE TYPE Number Type : Integer Lower Limit: 1 Upper Limit: 10	Number	2	1	46	*				*	
17	DLSFMPID Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(FROM	Text	17	17	47	*		*		*	

Form Name: **DATE OF LAST SURFACE Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
		MILEPOST,JOINTEXT(FROM MILEPOST SIGN,FRM MILEPOST DISP*10)))))))									
18	DLSTMPID	Text	17	17	64		*		*		*
	Formula:	JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(TO MILEPOST,JOINTEXT(TO MILEPOST SIGN,TO MILEPOST DISP*10)))))))									

Record Size: 81 Memory: Text = 539 Fields = 1354 Total = 1893

Form Name: **ROADWAY CHARACTERS**

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                          ROADWAY CHARACTERISTICS
                          -----------------------
                                                  RECORD NUMBER: _1____
                          COUNTY NUMBER: _2_
                                HIGHWAY: ___4___
                                ROADWAY: _
                        FROM REFERENCE: _7___
                          TO REFERENCE: _8___
                             NUMBER OF LANES: _
                               SURFACE WIDTH: _10__
                          LEFT SHOULDER WIDTH: _11_
                           LEFT SHOULDER TYPE: _
                         RIGHT SHOULDER WIDTH: _13_
                          RIGHT SHOULDER TYPE: _
                           RIGHT OF WAY WIDTH: _15_____
                                ROADBED WIDTH: _16__
                                    BASE TYPE: _
FROMCHARID _18____________
TOCHARID _19____________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	RECORD NUMBER	Num. String	6	6	5				*		*
	Formula: SEQUENCE FROM 000001										
2	COUNTY NUMBER	Number	3	2	11			*	*		*
	Number Type : Integer										
	Formula: 024										
3	HIGHWAY PREFIX	Choice	2	1	13	*		*			
	Choice 1: PR										
	Choice 2: FM										
	Choice 3: SH										
	Choice 4: US										
	Choice 5: IH										
4	HIGHWAY NUMBER	Num. String	4	4	14	*		*			
	Formated as : Other Format					0000					
5	HIGHWAY SUFFIX	Choice	1	1	18			*			
	Choice 1: A										
	Choice 2: S										
	Choice 3: E										
	Choice 4: W										

Form Name: **ROADWAY CHARACTERS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
6	ROADWAY	Choice	1	1	19	*		*			
	Choice 1: R Choice 2: L Choice 3: A Choice 4: X										
7	FROM REFERENCE	Number	5	4	20	*		*			
	Number Type : Fixed Point										
8	TO REFERENCE	Number	5	4	24	*					
	Number Type : Fixed Point										
9	NUMBER OF LANES	Number	2	1	28	*					
	Number Type : Integer										
10	SURFACE WIDTH	Number	5	4	29	*					
	Number Type : Fixed Point										
11	LEFT SHOULDER WIDTH	Number	4	4	33	*					
	Number Type : Fixed Point										
12	LEFT SHOULDER TYPE	Number	2	1	37	*					
	Number Type : Integer										
13	RIGHT SHOULDER WIDTH	Number	4	4	38	*					
	Number Type : Fixed Point										
14	RIGHT SHOULDER TYPE	Number	2	1	42	*					
	Number Type : Integer										
15	RIGHT OF WAY WIDTH	Number	8	8	43	*					
	Number Type : Fixed Point										
16	ROADBED WIDTH	Number	5	4	51	*					
	Number Type : Fixed Point										
17	BASE TYPE	Number	1	1	55	*					
	Number Type : Integer										
18	FROMCHARID	Text	16	16	56		*		*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,FROM REFERENCE)))))										
19	TOCHARID	Text	16	16	72		*		*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,TO REFERENCE)))))										

Record Size: 88 Memory: Text = 930 Fields = 1155 Total = 2085

Form Name: **MAINTENANCE SECTIONS**

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                          MAINTENANCE SECTIONS
                          --------------------
                                                    RECORD NUMBER: _1____
                          COUNTY NUMBER: _2_
                                HIGHWAY: ___4___
                                ROADWAY: _

                          FROM MILEPOST: _7___9_     FROM REFERENCE: _10__

                            TO MILEPOST: _______       TO REFERENCE: _14__

                       MAINTENANCE SECTION: __

OMSFMP _16_____________

MSTMP _17_____________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	RECORD NUMBER Formula: SEQUENCE FROM 000001	Num. String	6	6	5				*		*
2	COUNTY NUMBER Number Type : Integer Formula: 024	Number	3	2	11			*	*		*
3	HIGHWAY PREFIX Choice 1: PR Choice 2: FM Choice 3: SH Choice 4: US Choice 5: IH	Choice	2	1	13			*			*
4	HIGHWAY NUMBER Formated as : Other Format	Num. String	4	4	14 0000			*			*
5	HIGHWAY SUFFIX Choice 1: A Choice 2: S Choice 3: E Choice 4: W	Choice	1	1	18			*			*
6	ROADWAY Choice 1: R Choice 2: L Choice 3: A Choice 4: X	Choice	1	1	19			*			*

Form Name: **MAINTENANCE SECTIONS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
7	FROM MILEPOST	Number	3	2	20			*			
	Number Type : Integer										
8	FROM MILEPOST SIGN	Choice	1	1	22			*			
	Choice 1: +										
	Choice 2: -										
9	FRM MILEPOST DISP	Number	3	4	23			*			
	Number Type : Fixed Point										
10	FROM REFERENCE	Number	5	4	27						*
	Number Type : Fixed Point										
11	TO MILEPOST	Number	3	2	31						
	Number Type : Integer										
12	TO MILEPOST SIGN	Choice	1	1	33						
	Choice 1: +										
	Choice 2: -										
13	TO MILEPOST DISP	Number	3	4	34						
	Number Type : Fixed Point										
14	TO REFERENCE	Number	5	4	38						*
	Number Type : Fixed Point										
15	MAINT SEC	Number	2	1	42						*
	Number Type : Integer										
16	MSFMP	Text	17	17	43	*		*			*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(FROM MILEPOST,JOINTEXT(FROM MILEPOST SIGN,FRM MILEPOST DISP*10)))))))										
17	MSTMP	Text	17	17	60	*		*			*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(TO MILEPOST,JOINTEXT(TO MILEPOST SIGN,TO MILEPOST DISP*10)))))))										

Record Size: 77 Memory: Text = 611 Fields = 1302 Total = 1913

Form Name: **ADT VALUES**

SCREEN DESCRIPTION

```
-----------------
1       10        20        30        40        50        60        70       80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                                                    ADT
                                                    ---
                                                                   RECORD NUMBER: _1____
                                          COUNTY NUMBER: _2_
                                                HIGHWAY: ___4___
                                                ROADWAY: _

                                          FROM MILEPOST: _7___9_      FROM REFERENCE: _10__

                                            TO MILEPOST: _______        TO REFERENCE: _14__

                                              ADT VALUE: _15____


ADFMP _16______________

ADTMP _17______________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1       10        20        30        40        50        60        70       80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	RECORD NUMBER Formula: SEQUENCE FROM 000001	Num. String	6	6	5				*		*
2	COUNTY NUMBER Number Type : Integer Formula: 024	Number	3	2	11			*	*		*
3	HIGHWAY PREFIX Choice 1: PR Choice 2: FM Choice 3: SH Choice 4: US Choice 5: IH	Choice	2	1	13			*			*
4	HIGHWAY NUMBER Formated as : Other Format 0000	Num. String	4	4	14			*			*
5	HIGHWAY SUFFIX Choice 1: A Choice 2: S Choice 3: E Choice 4: W	Choice	1	1	18			*			*
6	ROADWAY Choice 1: R Choice 2: L Choice 3: A Choice 4: X	Choice	1	1	19			*			*

Form Name: **ADT VALUES Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
7	FROM MILEPOST	Number	3	2	20			*			
	Number Type : Integer										
8	FROM MILEPOST SIGN	Choice	1	1	22			*			
	Choice 1: +										
	Choice 2: -										
9	FRM MILEPOST DISP	Number	3	4	23			*			
	Number Type : Fixed Point										
10	FROM REFERENCE	Number	5	4	27						*
	Number Type : Fixed Point										
11	TO MILEPOST	Number	3	2	31						
	Number Type : Integer										
12	TO MILEPOST SIGN	Choice	1	1	33						
	Choice 1: +										
	Choice 2: -										
13	TO MILEPOST DISP	Number	3	4	34						
	Number Type : Fixed Point										
14	TO REFERENCE	Number	5	4	38						*
	Number Type : Fixed Point										
15	ADT VALUE	Number	7	4	42						*
	Number Type : Integer										
16	ADFMP	Text	17	17	46	*		*			*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(FROM MILEPOST,JOINTEXT(FROM MILEPOST SIGN,FRM MILEPOST DISP*10)))))))										
17	ADTMP	Text	17	17	63	*		*			*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(TO MILEPOST,JOINTEXT(TO MILEPOST SIGN,TO MILEPOST DISP*10)))))))										

Record Size: 80 Memory: Text = 640 Fields = 1302 Total = 1942

Form Name: FUNCT CLASS

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

                          FUNCTIONAL CLASSIFICATION
                          -------------------------
                                                    RECORD NUMBER: _1____
                            COUNTY NUMBER: _2_
                                  HIGHWAY: ___4___
                                  ROADWAY: _

                           FROM MILEPOST: _7___9_     FROM REFERENCE: _10__

                             TO MILEPOST: _______     TO REFERENCE: _14__

                      FUNCTIONAL CLASSIFICATION: _

FCFMP _16_____________

FCTMP _17_____________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	RECORD NUMBER Formula: SEQUENCE FROM 000001	Num. String	6	6	5				*		*
2	COUNTY NUMBER Number Type : Integer Formula: 024	Number	3	2	11			*	*		*
3	HIGHWAY PREFIX Choice 1: PR Choice 2: FM Choice 3: SH Choice 4: US Choice 5: IH	Choice	2	1	13			*			*
4	HIGHWAY NUMBER Formated as : Other Format	Num. String	4	4	14 0000			*			*
5	HIGHWAY SUFFIX Choice 1: A Choice 2: S Choice 3: E Choice 4: W	Choice	1	1	18			*			*
6	ROADWAY Choice 1: R Choice 2: L Choice 3: A Choice 4: X	Choice	1	1	19			*			*

Form Name: **FUNCT CLASS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
7	FROM MILEPOST Number Type : Integer	Number	3	2	20			*			
8	FROM MILEPOST SIGN Choice 1: + Choice 2: -	Choice	1	1	22			*			
9	FRM MILEPOST DISP Number Type : Fixed Point	Number	3	4	23			*			
10	FROM REFERENCE Number Type : Fixed Point	Number	5	4	27						*
11	TO MILEPOST Number Type : Integer	Number	3	2	31						
12	TO MILEPOST SIGN Choice 1: + Choice 2: -	Choice	1	1	33						
13	TO MILEPOST DISP Number Type : Fixed Point	Number	3	4	34						
14	TO REFERENCE Number Type : Fixed Point	Number	5	4	38						*
15	FC VALUE Number Type : Integer	Number	1	1	42						*
16	FCFMP Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(FROM MILEPOST,JOINTEXT(FROM MILEPOST SIGN,FRM MILEPOST DISP*10)))))))	Text	17	17	43	*		*			*
17	FCTMP Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(TO MILEPOST,JOINTEXT(TO MILEPOST SIGN,TO MILEPOST DISP*10)))))))	Text	17	17	60	*		*			*

Record Size: 77 Memory: Text = 658 Fields = 1301 Total = 1959

Form Name: 18-KIP VALUES

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

                                    18-KIP
                                    ------
                                                     RECORD NUMBER: _1____
                           COUNTY NUMBER: _2_
                                 HIGHWAY: ___4___
                                 ROADWAY: _

                          FROM MILEPOST: _7___9_    FROM REFERENCE: _10__

                            TO MILEPOST: _______      TO REFERENCE: _14__

                           18-KIP VALUE: _15___


KPFMP _16______________

DPTMP _17______________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Requir	Index	Unique	Derived	Rng Chk	Prevent
1	RECORD NUMBER	Num. String	6	6	5				*		*
	Formula: SEQUENCE FROM 000001										
2	COUNTY NUMBER	Number	3	2	11			*	*		*
	Number Type : Integer										
	Formula: 024										
3	HIGHWAY PREFIX	Choice	2	1	13			*			*
	Choice 1: PR										
	Choice 2: FM										
	Choice 3: SH										
	Choice 4: US										
	Choice 5: IH										
4	HIGHWAY NUMBER	Num. String	4	4	14			*			*
	Formated as : Other Format					0000					
5	HIGHWAY SUFFIX	Choice	1	1	18			*			*
	Choice 1: A										
	Choice 2: S										
	Choice 3: E										
	Choice 4: W										
6	ROADWAY	Choice	1	1	19			*			*
	Choice 1: R										
	Choice 2: L										
	Choice 3: A										
	Choice 4: X										

Form Name: **18-KIP VALUES Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
7	FROM MILEPOST Number Type : Integer	Number	3	2	20			*			
8	FROM MILEPOST SIGN Choice 1: + Choice 2: -	Choice	1	1	22			*			
9	FRM MILEPOST DISP Number Type : Fixed Point	Number	3	4	23			*			
10	FROM REFERENCE Number Type : Fixed Point	Number	5	4	27						*
11	TO MILEPOST Number Type : Integer	Number	3	2	31						
12	TO MILEPOST SIGN Choice 1: + Choice 2: -	Choice	1	1	33						
13	TO MILEPOST DISP Number Type : Fixed Point	Number	3	4	34						
14	TO REFERENCE Number Type : Fixed Point	Number	5	4	38						*
15	KIP VALUE Number Type : Integer	Number	6	4	42						*
16	KPFMP Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(FROM MILEPOST,JOINTEXT(FROM MILEPOST SIGN,FRM MILEPOST DISP*10)))))))	Text	17	17	46	*		*			*
17	KPTMP Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(TO MILEPOST,JOINTEXT(TO MILEPOST SIGN,TO MILEPOST DISP*10)))))))	Text	17	17	63	*		*			*

Record Size: 80 Memory: Text = 640 Fields = 1302 Total = 1942

Form Name: HIGHWAY DESIGN

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                              HIGHWAY DESIGN
                              --------------

                                                    RECORD NUMBER: _1____

                          COUNTY NUMBER: _2_
                                HIGHWAY: ___4___
                                ROADWAY: _

                         FROM MILEPOST: _7___9_   FROM REFERENCE: _10__

                           TO MILEPOST: _______     TO REFERENCE: _14__

                        HIGHWAY DESIGN: _

HDFMP _16_____________

HDTMP _17_____________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	RECORD NUMBER Formula: SEQUENCE FROM 000001	Num. String	6	6	5				*		*
2	COUNTY NUMBER Number Type : Integer Formula: 024	Number	3	2	11			*	*		*
3	HIGHWAY PREFIX Choice 1: PR Choice 2: FM Choice 3: SH Choice 4: US Choice 5: IH	Choice	2	1	13			*			*
4	HIGHWAY NUMBER Formated as : Other Format	Num. String	4	4	14 0000			*			*
5	HIGHWAY SUFFIX Choice 1: A Choice 2: S Choice 3: E Choice 4: W	Choice	1	1	18			*			*
6	ROADWAY Choice 1: R Choice 2: L Choice 3: A Choice 4: X	Choice	1	1	19			*			*

Form Name: **HIGHWAY DESIGN Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
7	FROM MILEPOST Number Type : Integer	Number	3	2	20			*			
8	FROM MILEPOST SIGN Choice 1: + Choice 2: -	Choice	1	1	22			*			
9	FRM MILEPOST DISP Number Type : Fixed Point	Number	3	4	23			*			
10	FROM REFERENCE Number Type : Fixed Point	Number	5	4	27						*
11	TO MILEPOST Number Type : Integer	Number	3	2	31						
12	TO MILEPOST SIGN Choice 1: + Choice 2: -	Choice	1	1	33						
13	TO MILEPOST DISP Number Type : Fixed Point	Number	3	4	34						
14	TO REFERENCE Number Type : Fixed Point	Number	5	4	38						*
15	HIGHWAY DESIGN Number Type : Integer	Number	1	1	42						*
16	HDFMP Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(FROM MILEPOST,JOINTEXT(FROM MILEPOST SIGN,FRM MILEPOST DISP*10)))))))	Text	17	17	43	*		*			*
17	HDTMP Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,JOINTEXT(TO MILEPOST,JOINTEXT(TO MILEPOST SIGN,TO MILEPOST DISP*10)))))))	Text	17	17	60	*		*			*

Record Size: 77 Memory: Text = 606 Fields = 1307 Total = 1913

Form Name: GRAPH FILE HW ID

F O R M P R O P E R T I E S

Minimum Security Levels:
to VIEW Records: Low3
to MODIFY Records: Medium3
to ENTER Records: Medium3
to DELETE Records: Medium3
Encrypt Data Records: yes

When Entering Records:
Default View of This Form: Form View
Clear Form After Entering Record: yes
Suppress Automatic TAB When a Field Fills: yes
Preserve Old CURRENT DATE, etc. on Modify: yes

Form Name: GRAPH FILE HW ID

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

TEMPORARY FILE TO HOLD THE TARGETED HW PREFIX AND NO

HIGHWAY PREFIX __ HIGHWAY NUMBER _2__

```
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	HIGHWAY PREFIX	Text	2	2	3						*
2	HIGHWAY NUMBER	Num. String	4	4	5						*

Record Size: 9 Memory: Text = 135 Fields = 83 Total = 218

Form Name: CROSS ROADS

F O R M   P R O P E R T I E S

Minimum Security Levels:

to VIEW Records:	Low3
to MODIFY Records:	Medium3
to ENTER Records:	Medium3
to DELETE Records:	Medium3

Encrypt Data Records: yes

When Entering Records:

Default View of This Form:	Form View
Clear Form After Entering Record:	yes
Suppress Automatic TAB When a Field Fills:	yes
Preserve Old CURRENT DATE, etc. on Modify:	yes

Form Name: CROSS ROADS

SCREEN DESCRIPTION

```
-----------------

1        10        20        30        40        50        60        70       80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
MASTER ID CODE _1_______________                 CRMPID _2_______________

                                CROSS ROADS
             ----------------------------------------------------
                         RM: _3_ _ _ _6__

                         COUNTY.........: _7_
                         HIGHWAY........: ___9___
 REF.POINT: _11__        RM VALUE.......: _12__
                         MILEPOST.......: _______
                         ROADWAY........: _
                         XROAD..........: ___18__


-----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70       80
```

FIELD DESCRIPTIONS

```
------------------
No. Name                Type       Long  Record   Req In- Uni- Der- Rng Pre-
                                       Size offset uir dex que  ived Chk vent
--- ------------------ ---------- ---- ---- ------ --- --- ---- ---- --- -----
  1 MASTERID            Text        16   16     5       *    *    *        *
    Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY
             NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE
             POINT)))))

  2 CRMPID              Text        17   17    21       *         *        *
    Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY
             NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY
             ,JOINTEXT(MILEPOST,JOINTEXT(MILEPOST DISP. SIGN,MILEPOST DISP.
             *10)))))))

  3 RM                  Number       3    2    38
    Number Type : Integer

  4 RM SUFFIX           Text         1    1    40

  5 RM DISP. SIGN       Text         1    1    41
```

Form Name: **CROSS ROADS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
6	RM DISP.	Number	4	4	42						
	Number Type : Fixed Point										
7	COUNTY NUMBER	Number	3	2	46	*				*	
	Number Type : Integer										
	Lower Limit: 001										
	Upper Limit: 245										
8	HIGHWAY PREFIX	Choice	2	1	48	*					
	Choice 1: PR										
	Choice 2: FM										
	Choice 3: SH										
	Choice 4: US										
	Choice 5: IH										
9	HIGHWAY NUMBER	Num. String	4	4	49	*		*		*	
	Lower Limit: 0001										
	Upper Limit: 9999										
10	HIGHWAY SUFFIX	Choice	1	1	53			*			
	Choice 1: R										
	Choice 2: L										
	Choice 3: A										
	Choice 4: X										
11	REFERENCE POINT	Number	5	4	54						
	Number Type : Fixed Point										
12	RM VALUE	Number	5	4	58						*
	Number Type : Fixed Point										
13	MILEPOST	Number	3	2	62	*					
	Number Type : Integer										
14	MILEPOST DISP. SIGN	Choice	1	1	64	*		*			
	Choice 1: +										
	Choice 2: -										
15	MILEPOST DISP.	Number	3	4	65	*		*			
	Number Type : Fixed Point										
16	ROADWAY	Choice	1	1	69	*					
	Choice 1: R										
	Choice 2: L										
	Choice 3: A										

Form Name: **CROSS ROADS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
	Choice 4: X										
17	XROAD PREFIX	Choice	2	1	70						
	Choice 1: PR										
	Choice 2: FM										
	Choice 3: SH										
	Choice 4: US										
	Choice 5: IH										
18	XROAD NUMBER	Num. String	4	4	71					*	
	Lower Limit: 0001										
	Upper Limit: 9999										
19	XROAD SUFFIX	Choice	1	1	75						
	Choice 1: A										
	Choice 2: S										
	Choice 3: E										
	Choice 4: W										

Record Size: 76 Memory: Text = 575 Fields = 1306 Total = 1881

Form Name: DISTRICT INVENTORY

F O R M P R O P E R T I E S

Minimum Security Levels:
to VIEW Records: Low3
to MODIFY Records: Medium3
to ENTER Records: Medium3
to DELETE Records: Medium3

Encrypt Data Records: yes

When Entering Records:
Default View of This Form: Form View
Clear Form After Entering Record: yes
Suppress Automatic TAB When a Field Fills: yes
Preserve Old CURRENT DATE, etc. on Modify: yes

Form Name: DISTRICT INVENTORY
SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
BEG MASTER ID CODE _1_____________ END MAST ID CODE  _2_____________
```

DISTRICT MASTER FILE

BEG REF. MARKER: _3_ _ _ _6_ _ END REF. MARKER _7_ _ _ _10_
Record Number: _11___

1. County Number:..... ___
2. Highway Prefix:..... _
3. Highway Number:..... _14_
4. Highway Suffix:..... _
5. Roadway:..... _
6. Beg. Reference Point:..... _17__ BEG RM VALUE: _18__
7. End. Reference Point:..... _19__ END RM VALUE:_20__
8. Milepost:..... ___
9. Milepost Displacement Sign:..... _
10. Milepost Displacement Value:..... ___
11. Control Number:..... _24_
12. Section Number:..... _
13. Beg. Milepoint:..... _26___ BEG CTL RM VALUE _27____
14. End. Milepoint:..... _28___ END CTL RM VALUE _29____
15. Lap Code:..... ___

```
-----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS ...**District Inventory...continued**

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	BEG MASTERID	Text	16	16	6	*	*	*		*	

Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,BEG. REF. POINT)))))

2	END MASTERID	Text	16	16	22	*	*	*		*	

Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,END. REF. POINT)))))

3	BEG RM	Number	3	2	38						

Number Type : Integer

4	BEG RM SUFFIX	Text	1	1	40						
5	BEG RM DISP. SIGN	Text	1	1	41						
6	BEG RM DISP.	Number	4	4	42						

Number Type : Fixed Point

7	END RM	Number	3	2	46						

Number Type : Integer

8	END RM SUFFIX	Text	1	1	48						
9	END RM DISP. SIGN	Text	1	1	49						
10	END RM DISP.	Number	4	4	50						

Number Type : Fixed Point

11	Record Number	Num. String	6	6	54				*		

Formula: SEQUENCE FROM 000001

12	COUNTY NUMBER	Number	3	2	60	*					*

Number Type : Integer
Lower Limit: 1
Upper Limit: 254
View Security Required: High Write Security Required: High
Display Attribute: Highlight 1

13	HIGHWAY PREFIX	Choice	2	1	62	*					

Choice 1: PR
Choice 2: FM
Choice 3: SH
Choice 4: US
Choice 5: IH

View Security Required: High Write Security Required: High

Display Attribute: Highlight 1

Form Name: **DISTRICT INVENTORY Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
14	HIGHWAY NUMBER	Num. String	4	4	63	*				*	

Lower Limit: 0000
Upper Limit: 9999
View Security Required: High Write Security Required: High
Display Attribute: Highlight 1

15	HIGHWAY SUFFIX	Choice	1	1	67						

Choice 1: A
Choice 2: S
Choice 3: E
Choice 4: W

View Security Required: High Write Security Required: High
Display Attribute: Highlight 1

16	ROADWAY	Choice	1	1	68	*					

Choice 1: R
Choice 2: L
Choice 3: A
Choice 4: X

View Security Required: High Write Security Required: High
Display Attribute: Highlight 1

17	BEG. REF. POINT	Number	5	4	69	*				*	

Number Type : Fixed Point
Lower Limit: 000.00
Upper Limit: 999.99
View Security Required: High Write Security Required: High
Display Attribute: Highlight 1

18	BEG RM VALUE	Number	5	4	73						

Number Type : Fixed Point

19	END. REF. POINT	Number	5	4	77	*				*	

Number Type : Fixed Point
Lower Limit: 000.00
Upper Limit: 999.99
View Security Required: High Write Security Required: High
Display Attribute: Highlight 1

20	END RM VALUE	Number	5	4	81						

Number Type : Fixed Point

21	MILEPOST	Number	3	2	85	*				*	

Number Type : Integer
Lower Limit: 0
Upper Limit: 999
View Security Required: High Write Security Required: High
Display Attribute: Highlight 1

Form Name: **DISTRICT INVENTORY Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
22	MILEPOST DISP. SIGN	Choice	1	1	87	*					
	Choice 1: +										
	Choice 2: -										
	View Security Required: High	Write Security Required: High									
	Display Attribute: Highlight 1										
23	MILEPOST VALUE	Number	3	4	88	*					*
	Number Type : Fixed Point										
	Lower Limit: 0.0										
	Upper Limit: 9.9										
	View Security Required: High	Write Security Required: High									
	Display Attribute: Highlight 1										
24	CONTROL	Num. String	4	4	92	*					
	View Security Required: High	Write Security Required: High									
	Display Attribute: Highlight 1										
25	SECTION	Num. String	2	2	96	*					
	View Security Required: High	Write Security Required: High									
	Display Attribute: Highlight 1										
26	BEG. MILEPOINT	Number	6	4	98	*					
	Number Type : Fixed Point										
	View Security Required: High	Write Security Required: High									
	Display Attribute: Highlight 1										
27	BEG CTL RM VALUE	Number	7	8	102						
	Number Type : Fixed Point										
28	END. MILEPOINT	Number	6	4	110	*					
	Number Type : Fixed Point										
	View Security Required: High	Write Security Required: High									
	Display Attribute: Highlight 1										
29	END CTL RM VALUE	Number	7	8	114						
	Number Type : Fixed Point										
30	LAP	Choice	3	1	122	*					
	Choice 1: no										
	Choice 2: yes										

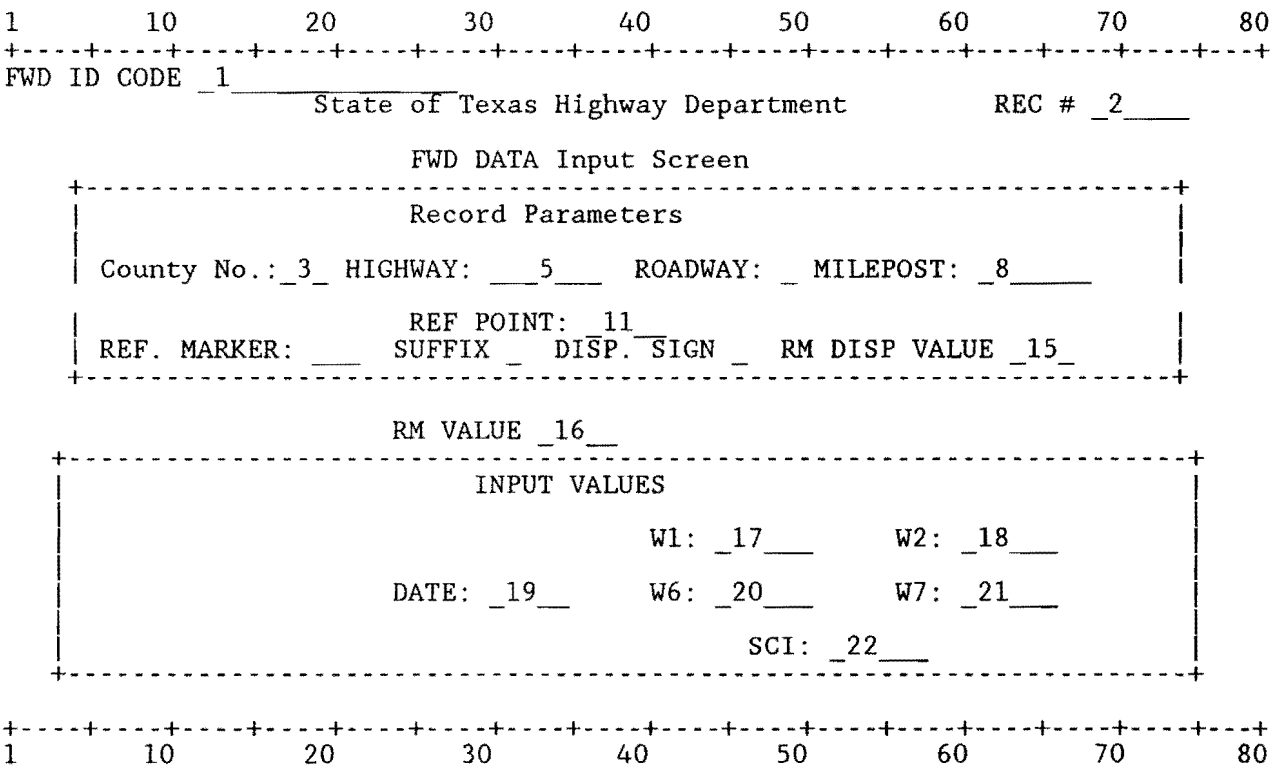
Record Size: 123 Memory: Text = 1717 Fields = 1702 Total = 3419

Form Name: FWD INPUT

F O R M P R O P E R T I E S

```
Minimum Security Levels:
      to VIEW Records:          Lowl
      to MODIFY Records:        High
      to ENTER Records:         High
      to DELETE Records:        High

Encrypt Data Records:    yes

When Entering Records:

  Default View of This Form:                    Form View
  Clear Form After Entering Record:             yes
  Suppress Automatic TAB When a Field Fills:    yes
  Preserve Old CURRENT DATE, etc. on Modify:    yes
  Form Name: FWD INPUT
```

SCREEN DESCRIPTION



FIELD DESCRIPTIONS...FWD Input...continued

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	FWDID	Text	16	16	5	*	*	*			*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))										
2	RECORD NUMBER	Num. String	6	6	21				*		*
	Formula: SEQUENCE FROM 00001										
3	COUNTY NUMBER	Number	3	2	27						*
	Number Type : Integer										
	View Security Required: High	Write Security Required: Low1									
4	HIGHWAY PREFIX	Text	2	2	29						*
	View Security Required: High	Write Security Required: Low1									
5	HIGHWAY NUMBER	Num. String	4	4	31						*
	View Security Required: High	Write Security Required: Low1									
6	HIGHWAY SUFFIX	Text	1	1	35						*
	View Security Required: High	Write Security Required: Low1									
7	ROADWAY	Text	1	1	36						*
	View Security Required: High	Write Security Required: Low1									
8	MILEPOST	Number	3	2	37						*
	Number Type : Integer										
9	MILEPOST DISP. SIGN	Choice	1	1	39						*
	Choice 1: +										
	Choice 2: -										
10	MILEPOST VALUE	Number	3	4	40						*
	Number Type : Fixed Point										
11	REFERENCE POINT	Number	5	4	44						*
	Number Type : Fixed Point										
12	RM	Number	3	2	48						
	Number Type : Integer										
13	RM SUFFIX	Text	1	1	50						
14	RM DISP. SIGN	Text	1	1	51						
15	RM DISP.	Number	4	4	52						
	Number Type : Fixed Point										
16	RM VALUE	Number	5	4	56						*
	Number Type : Fixed Point										
17	W1	Number	6	4	60						
	Number Type : Fixed Point										

Form Name: **FWD INPUT Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
18	W2	Number	6	4	64						
	Number Type : Fixed Point										
19	DATE	Num. String	5	4	68						
	Formated as : Other Format					00/00					
20	W6	Number	6	4	72						
	Number Type : Fixed Point										
21	W7	Number	6	4	76						
	Number Type : Fixed Point										
22	SCI	Number	6	4	80				*		*
	Number Type : Fixed Point										
	Formula: (((W1-W2)*0.02678)+0.1871)										

Record Size: 84 Memory: Text = 1431 Fields = 945 Total = 2376

Form Name: RIDE INPUT

F O R M P R O P E R T I E S

```
Minimum Security Levels:
      to VIEW Records:          Lowl
      to MODIFY Records:        High
      to ENTER Records:         High
      to DELETE Records:        High
Encrypt Data Records:     yes
When Entering Records:
  Default View of This Form:                    Form View
  Clear Form After Entering Record:             yes
  Suppress Automatic TAB When a Field Fills:    yes
  Preserve Old CURRENT DATE, etc. on Modify:    yes
```

Form Name: RIDE INPUT

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
FROM RIDEID _1_____________   TO RIDEID _2_____________
                State of Texas Highway Department        REC # _3____

                        RIDE DATA Input Screen
 +-------------------------------------------------------------------------+
 |                        Record Parameters                                |
 |County No.: _4_  HIGHWAY: ___6___  ROADWAY: _ MPOST: _9_____             |
 |                    FROM: _12__    TO: _13__                             |
 |                                                                         |
 |    FROM REF. MARKER:___ _ _ _17_ TO: REF. MARKER: ___ _ _ _21_          |
 +-------------------------------------------------------------------------+
              FROM RM VALUE:_22__  TO RM VALUE _23__
   +-----------------------------------------------------------------+
   |                          INPUT VALUES                           |
   |                                                                 |
   |                  YEAR: __        MACHINE #: _25____             |
   |                                                                 |
   |            MRM VALUE: ___   COMMENTS: __                        |
   |                                                                 |
   |                    CALCULATED SI VALUE: ___                     |
   +-----------------------------------------------------------------+

RIDE ID CODE _29_____________

+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
1	FROM RIDEID	Text	16	16	6	*	*	*		*	

Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,FROM)))))

FIELD DESCRIPTIONS...RIDE INPUT...continued

No.	Name	Type	Long	Record Size	offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
2	TO RIDEID	Text	16	16	22	*	*	*		*	
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))										
3	RECORD NUMBER	Num. String	6	6	38				*		*
	Formula: SEQUENCE FROM 00001										
4	COUNTY NUMBER	Number	3	2	44			*			*
	Number Type : Integer View Security Required: High Write Security Required: Low1										
5	HIGHWAY PREFIX	Text	2	2	46			*			*
	View Security Required: High Write Security Required: Low1										
6	HIGHWAY NUMBER	Num. String	4	4	48			*			*
	View Security Required: High Write Security Required: Low1										
7	HIGHWAY SUFFIX	Text	1	1	52			*			*
	View Security Required: High Write Security Required: Low1										
8	ROADWAY	Text	1	1	53			*			*
	View Security Required: High Write Security Required: Low1										
9	MILEPOST	Number	3	2	54						*
	Number Type : Integer										
10	MILEPOST DISP. SIGN	Choice	1	1	56						*
	Choice 1: + Choice 2: -										
11	MILEPOST VALUE	Number	3	4	57						*
	Number Type : Fixed Point										
12	FROM	Number	5	4	61						*
	Number Type : Fixed Point										
13	REFERENCE POINT	Number	5	4	65			*			*
	Number Type : Fixed Point										
14	FROM RM	Number	3	2	69						
	Number Type : Integer										
15	FROM RM SUFFIX	Text	1	1	71						
16	FROM RM DISP. SIGN	Text	1	1	72						
17	FROM RM DISP.	Number	4	4	73						
	Number Type : Fixed Point										
18	TO RM	Number	3	2	77						
	Number Type : Integer										

Form Name: RIDE INPUT Continued...

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
19	TO RM SUFFIX	Text	1	1	79						
20	TO RM DISP. SIGN	Text	1	1	80						
21	TO RM DISP.	Number	4	4	81						
	Number Type : Fixed Point										
22	FROM RM VALUE	Number	5	4	85				*		*
	Number Type : Fixed Point										
	Formula: IF(FROM RM DISP. SIGN = "+",FROM RM + FROM RM DISP., FROM RM - FROM RM DISP.)										
23	TO RM VALUE	Number	5	4	89				*		*
	Number Type : Fixed Point										
	Formula: IF(TO RM DISP. SIGN ="+", TO RM + TO RM DISP., TO RM - TO RM DISP.)										
24	YEAR	Number	2	1	93					*	*
	Number Type : Integer										
	Lower Limit: 86										
	Upper Limit: 99										
	Display Attribute: Highlight 1										
25	MACHINE #	Choice	7	1	94						
	Choice 1: 079873A										
	Choice 2: 219917C										
	Choice 3: 299867A										
	Display Attribute: Highlight 1										
26	MRM VALUE	Number	3	2	95						
	Number Type : Integer										
	Display Attribute: Highlight 1										
27	COMMENTS	Number	2	1	97						
	Number Type : Integer										
	Display Attribute: Highlight 1										
28	SI VALUE	Number	3	4	98				*		*
	Number Type : Fixed Point										
	Formula: FLOOR(((5/EXP(POWER((LOG(32*MRM VALUE))/(LOOKUP "MACHINE # VAR." "BETA VALUE"/100000),LOOKUP "MACHINE # VAR." "ALPHA VALUE" /100000)))*10)+0.5)/10										
29	RIDEID	Text	16	16	102				*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))										

Record Size: 118 Memory: Text = 1488 Fields = 2261 Total = 3749

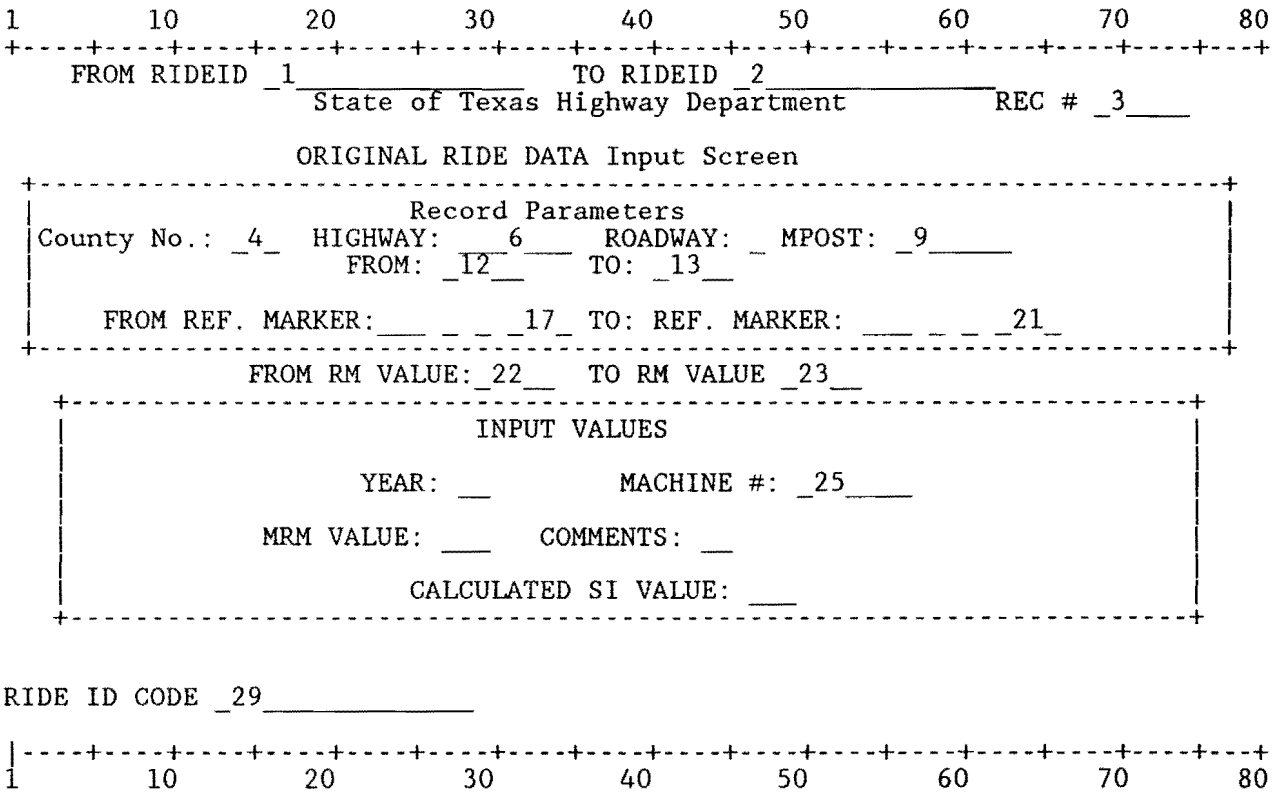
Form Name: ORIGINAL RIDE INPUT

F O R M P R O P E R T I E S

```
Minimum Security Levels:
      to VIEW Records:          Lowl
      to MODIFY Records:        High
      to ENTER Records:         High
      to DELETE Records:        High
Encrypt Data Records:    yes

When Entering Records:
  Default View of This Form:                    Form View
  Clear Form After Entering Record:             yes
  Suppress Automatic TAB When a Field Fills:    yes
  Preserve Old CURRENT DATE, etc. on Modify:    yes
```

Form Name: ORIGINAL RIDE INPUT

SCREEN DESCRIPTION



RIDE ID CODE _29_____

1 10 20 30 40 50 60 70 80

FIELD DESCRIPTIONS ORIGINAL RIDE INPUT...continued

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	FROM RIDEID	Text	16	16	6		*	*	*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,FROM)))))										
2	TO RIDEID	Text	16	16	22		*	*	*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))										
3	RECORD NUMBER	Num. String	6	6	38				*		*
	Formula: SEQUENCE FROM 00001										
4	COUNTY NUMBER	Number	3	2	44			*			*
	Number Type : Integer View Security Required: High Write Security Required: Low1										
5	HIGHWAY PREFIX	Text	2	2	46			*			*
	View Security Required: High Write Security Required: Low1										
6	HIGHWAY NUMBER	Num. String	4	4	48			*			*
	View Security Required: High Write Security Required: Low1										
7	HIGHWAY SUFFIX	Text	1	1	52			*			*
	View Security Required: High Write Security Required: Low1										
8	ROADWAY	Text	1	1	53			*			*
	View Security Required: High Write Security Required: Low1										
9	MILEPOST	Number	3	2	54						*
	Number Type : Integer										
10	MILEPOST DISP. SIGN	Choice	1	1	56						*
	Choice 1: + Choice 2: -										
11	MILEPOST VALUE	Number	3	4	57						*
	Number Type : Fixed Point										
12	FROM	Number	5	4	61						*
	Number Type : Fixed Point										
13	REFERENCE POINT	Number	5	4	65			*			*
	Number Type : Fixed Point										
14	FROM RM	Number	3	2	69						
	Number Type : Integer										
15	FROM RM SUFFIX	Text	1	1	71						
16	FROM RM DISP. SIGN	Text	1	1	72						
17	FROM RM DISP.	Number	4	4	73						
	Number Type : Fixed Point										
18	TO RM	Number	3	2	77						
	Number Type : Integer										

Form Name: **ORIGINAL RIDE INPUT Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
19	TO RM SUFFIX	Text	1	1	79						
20	TO RM DISP. SIGN	Text	1	1	80						
21	TO RM DISP.	Number	4	4	81						
	Number Type : Fixed Point										
22	FROM RM VALUE	Number	5	4	85				*		*
	Number Type : Fixed Point										
	Formula: IF(FROM RM DISP. SIGN = "+",FROM RM + FROM RM DISP., FROM RM - FROM RM DISP.)										
23	TO RM VALUE	Number	5	4	89				*		*
	Number Type : Fixed Point										
	Formula: IF(TO RM DISP. SIGN ="+", TO RM + TO RM DISP., TO RM - TO RM DISP.)										
24	YEAR	Number	2	1	93					*	*
	Number Type : Integer										
	Lower Limit: 86										
	Upper Limit: 99										
	Display Attribute: Highlight 1										
25	MACHINE #	Choice	7	1	94						
	Choice 1: 079873A										
	Choice 2: 219917C										
	Choice 3: 299867A										
	Display Attribute: Highlight 1										
26	MRM VALUE	Number	3	2	95						
	Number Type : Integer										
	Display Attribute: Highlight 1										
27	COMMENTS	Number	2	1	97						
	Number Type : Integer										
	Display Attribute: Highlight 1										
28	SI VALUE	Number	3	4	98				*		*
	Number Type : Fixed Point										
	Formula: FLOOR(((5/EXP(POWER((LOG(32*MRM VALUE))/(LOOKUP "MACHINE # VAR." "BETA VALUE"/100000),LOOKUP "MACHINE # VAR." "ALPHA VALUE" /100000)))*10)+0.5)/10										
29	RIDEID	Text	16	16	102				*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))										

Record Size: 118 Memory: Text = 1494 Fields = 2261 Total = 3755

Form Name: 0.1 SIOMETER FILE

F O R M P R O P E R T I E S

Minimum Security Levels:
to VIEW Records: Low3
to MODIFY Records: Medium3
to ENTER Records: Medium3
to DELETE Records: Medium3
Encrypt Data Records: yes

When Entering Records:
Default View of This Form: Form View
Clear Form After Entering Record: yes
Suppress Automatic TAB When a Field Fills: yes
Preserve Old CURRENT DATE, etc. on Modify: yes

Form Name: 0.1 SIOMETER FILE

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
     RIDEID: _1_____________  BROOKS COUNTY (024)       REC # _2____
     0.1 - MILE SIOMETER INPUT FILE (RIDE)   MODIFIED: APRIL, 1991
-------------------------------------------------------------------------------
                          COUNTY NUMBER.....:_3_
                          HIGHWAY PREFIX.....:__
                          HIGHWAY NUMBER.....:_5__
                          HIGHWAY SUFFIX.....:_
                          REFERENCE POINT.....:_7___
                          MILEPOST.....:_8_
                          MILEPOST DISP. SIGN.:_
                          MILEPOST DISP.....:___
                          ROADWAY.....:_

      FROM REF. MARKER: ___  SUFFIX _  DISP. SIGN _  RM DISP VALUE _15_

             FROM RM VALUE:_16__       TO RM VALUE  _17__
             +-------------------------------------------+
             |                INPUT VALUES               |
             |                                           |
             |  YEAR: __  SIOMETER VALUE:___  COMMENTS: __ |
             +-------------------------------------------+

+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
1	IMPORT SIOM KEY	Text	16	16	5	*	*	*	*		*

Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,
JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,
JOINTEXT(ROADWAY,TO RM VALUE)))))

2	RECORD NUMBER	Num. String	6	6	21				*		*

Formula: SEQUENCE FROM 00001

Form Name: 0.1 SIOMETER FILE Continued...

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
3	COUNTY NUMBER Number Type : Integer Lower Limit: 1 Upper Limit: 254	Number	3	2	27					*	*
4	HIGHWAY PREFIX Choice 1: PR Choice 2: FM Choice 3: SH Choice 4: US Choice 5: IH	Choice	2	1	29	*					*
5	HIGHWAY NUMBER Lower Limit: 0001 Upper Limit: 9999	Num. String	4	4	30	*				*	*
6	HIGHWAY SUFFIX Choice 1: A Choice 2: S Choice 3: E Choice 4: W	Choice	1	1	34						*
7	REFERENCE POINT Number Type : Fixed Point	Number	5	4	35						*
8	MILEPOST Number Type : Integer Lower Limit: 0 Upper Limit: 999	Number	3	2	39	*				*	*
9	MILEPOST DISP. SIGN Choice 1: + Choice 2: -	Choice	1	1	41	*					*
10	MILEPOST VALUE Number Type : Fixed Point Lower Limit: 0.0 Upper Limit: 9.9	Number	3	4	42	*				*	*
11	ROADWAY Choice 1: R Choice 2: L Choice 3: A Choice 4: X	Choice	1	1	46	*					*
12	RM Number Type : Integer	Number	3	2	47						*
13	RM SUFFIX	Text	1	1	49						*
14	RM DISP. SIGN	Text	1	1	50						*
15	RM DISP. Number Type : Fixed Point	Number	4	4	51						*

Form Name: **0.1 SIOMETER FILE Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
16	FROM RM VALUE	Number	5	4	55				*		*
	Number Type : Fixed Point Formula: IF (RM DISP. SIGN = "+" , RM + RM DISP. , RM - RM DISP.)										
17	TO RM VALUE	Number	5	4	59						*
	Number Type : Fixed Point										
18	YEAR	Number	2	1	63						*
	Number Type : Integer Display Attribute: Highlight 1										
19	SI VALUE	Number	3	4	64						*
	Number Type : Fixed Point										
20	COMMENTS	Number	2	1	68						*
	Number Type : Integer										

Record Size: 69 Memory: Text = 1292 Fields = 1189 Total = 2481

Form Name: SKID INPUT

F O R M P R O P E R T I E S

```
Minimum Security Levels:
      to VIEW Records:          Lowl
      to MODIFY Records:        High
      to ENTER Records:         High
      to DELETE Records:        High
Encrypt Data Records:    yes
When Entering Records:
  Default View of This Form:                    Form View
  Clear Form After Entering Record:             yes
  Suppress Automatic TAB When a Field Fills:    yes
  Preserve Old CURRENT DATE, etc. on Modify:    yes
```

Form Name: SKID INPUT

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                  State of Texas Highway Department          REC # _1____
                          BROOKS COUNTY (024)
                        SKID DATA Input Screen
   +-------------------------------------------------------------------------+
   |                        Record Parameters                                |
   |                                                                         |
   |   County No.: _2_  HIGHWAY: ___4___  ROADWAY: _ MILEPOST: _7___9_       |
   |                                                                         |
   |                          REFERENCE POINT: _10__                         |
   |                                                                         |
   |    REF. MARKER: ___  SUFFIX _  DISP. SIGN _  RM DISP VALUE _14_         |
   +-------------------------------------------------------------------------+
                          RM VALUE _15__
   +-------------------------------------------------------------------------+
   |                            INPUT VALUES                                 |
   |                                                                         |
   |             SKID VALUE: __    SKID DATE: __                             |
   |                                                                         |
   +-------------------------------------------------------------------------+


OLD SKID ID CODE _18_____________
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	RECORD NUMBER	Num. String	6	6	5				*		*
	Formula: SEQUENCE FROM 00001										
2	COUNTY NUMBER	Number	3	2	11						*
	Number Type : Integer										
	View Security Required: High Write Security Required: Lowl										

Form Name: SKID INPUT Continued...

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent	
3	HIGHWAY PREFIX	Text	2	2	13							*
	View Security Required: High		Write Security Required: Low1									
4	HIGHWAY NUMBER	Num. String	4	4	15							*
	View Security Required: High		Write Security Required: Low1									
5	HIGHWAY SUFFIX	Text	1	1	19							*
	View Security Required: High		Write Security Required: Low1									
6	ROADWAY	Text	1	1	20							*
	View Security Required: High		Write Security Required: Low1									
7	MILEPOST	Number	3	2	21							*
	Number Type : Integer											
8	MILEPOST DISP. SIGN	Choice	1	1	23							*
	Choice 1: +											
	Choice 2: -											
9	MILEPOST VALUE	Number	3	4	24							*
	Number Type : Fixed Point											
10	REFERENCE POINT	Number	5	4	28							*
	Number Type : Fixed Point											
11	RM	Number	3	2	32							
	Number Type : Integer											
12	RM SUFFIX	Text	1	1	34							
13	RM DISP. SIGN	Text	1	1	35							
14	RM DISP.	Number	4	4	36							
	Number Type : Fixed Point											
15	RM VALUE	Number	5	4	40							*
	Number Type : Fixed Point											
16	SKID VALUE	Number	2	1	44							*
	Number Type : Integer											
17	SKID DATE	Number	2	1	45							*
	Number Type : Integer											
18	OLD SKIDID	Text	16	16	46		*		*			*

Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))

Record Size: 62 Memory: Text = 1234 Fields = 793 Total = 2027

Form Name: PES: ADT & 18KIP IN

F O R M P R O P E R T I E S

Minimum Security Levels:

to VIEW Records:	Low3
to MODIFY Records:	Medium3
to ENTER Records:	Medium3
to DELETE Records:	Medium3

Encrypt Data Records: yes

When Entering Records:

Default View of This Form:	Form View
Clear Form After Entering Record:	yes
Suppress Automatic TAB When a Field Fills:	yes
Preserve Old CURRENT DATE, etc. on Modify:	yes

Form Name: PES: ADT & 18KIP IN

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
PESKEY _1_____________ DISTRICT 21 PES DATA FILE: ADT & 18KIP REC. NO:_2____
GRAPHKEY_3____

              COUNTY NUMBER: _4_ HIGHWAY: ___6___ ROADWAY: _

              FROM REF. MARKER: _9___     TO REF. MARKER _10__

              ADT VALUE: _11____  18-KIP VALUE: _12___  DATE:__

              HIGHWAY DESIGN TYPE _ FUNCTIONAL CLASS _
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
1	PESKEY	Text	15	15	4	*	*	*			
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX, JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,TO REF. MARKER))))										
2	RECORD NUMBER	Num. String	6	6	19				*		*
	Formula: SEQUENCE FROM 000001										
3	GRAPHKEY	Text	6	6	25	*			*		
	Formula: JOINTEXT(HIGHWAY PREFIX,HIGHWAY NUMBER)										

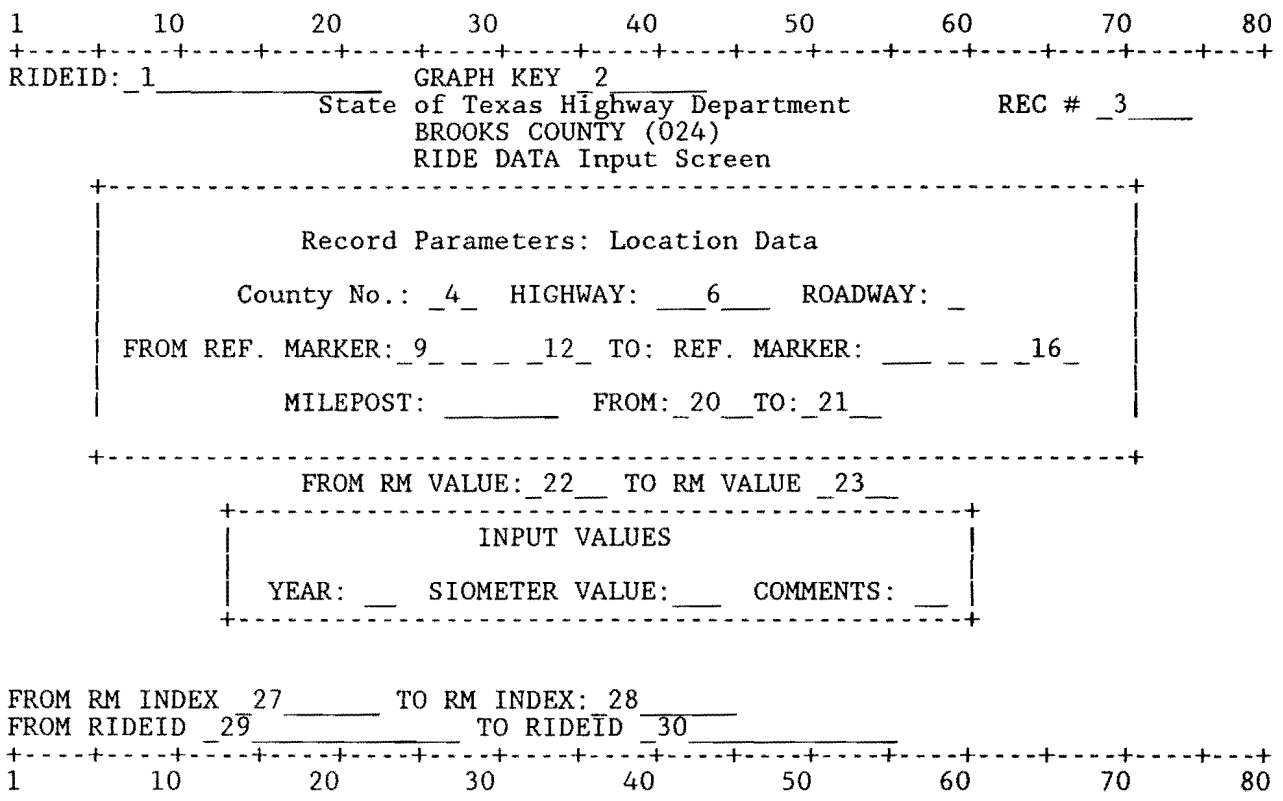
FIELD DESCRIPTIONS PES: ADT & 18KIP IN

No.	Name	Type	Long	Record Size	offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
4	COUNTY NUMBER	Number	3	2	31						*
	Number Type : Integer										
5	HIGHWAY PREFIX	Choice	2	1	33						*
	Choice 1: PR										
	Choice 2: FM										
	Choice 3: SH										
	Choice 4: US										
	Choice 5: IH										
6	HIGHWAY NUMBER	Num. String	4	4	34						*
	Formated as : Other Format				0000						
7	HIGHWAY SUFFIX	Choice	1	1	38						*
	Choice 1: A										
	Choice 2: S										
	Choice 3: E										
	Choice 4: W										
8	ROADWAY	Choice	1	1	39						*
	Choice 1: R										
	Choice 2: L										
	Choice 3: A										
	Choice 4: X										
9	FROM REF. MARKER	Number	5	4	40						*
	Number Type : Fixed Point										
10	TO REF. MARKER	Number	5	4	44						*
	Number Type : Fixed Point										
11	ADT VALUE	Number	7	4	48						*
	Number Type : Integer										
12	KIP VALUE	Number	6	4	52						*
	Number Type : Integer										
13	YEAR	Number	2	1	56						*
	Number Type : Integer										
14	HIGHWAY DESIGN TYPE	Number	1	1	57						*
	Number Type : Integer										
15	FUNCTIONAL CLASS	Number	1	1	58						*
	Number Type : Integer										

Record Size: 59 Memory: Text = 439 Fields = 802 Total = 1241

Form Name: SIOMETER RIDE VALUES

SCREEN DESCRIPTION



FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
1	IMPORT SIOM KEY	Text	16	16	6	*	*	*	*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX, JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX, JOINTEXT(ROADWAY,TO RM VALUE)))))										
2	GRAPH KEY	Text	8	8	22		*		*		*
	Formula: JOINTEXT (HIGHWAY PREFIX, JOINTEXT(HIGHWAY NUMBER, JOINTEXT(HIGHWAY SUFFIX, ROADWAY)))										
3	RECORD NUMBER	Num. String	6	6	30				*		*
	Formula: SEQUENCE FROM 00001										
4	COUNTY NUMBER	Number	3	2	36						*
	Number Type : Integer View Security Required: High Write Security Required: Low1										
5	HIGHWAY PREFIX	Text	2	2	38						*
	View Security Required: High Write Security Required: Low1										
6	HIGHWAY NUMBER	Num. String	4	4	40						*
	View Security Required: High Write Security Required: Low1										

Form Name: SIOMETER RIDE VALUES Continued...

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
7	HIGHWAY SUFFIX	Text	1	1	44						*
	View Security Required: High		Write Security Required: Low1								
8	ROADWAY	Text	1	1	45						*
	View Security Required: High		Write Security Required: Low1								
9	FROM RM	Number	3	2	46						*
	Number Type : Integer										
10	FROM RM SUFFIX	Text	1	1	48						*
11	FROM RM DISP. SIGN	Text	1	1	49						*
12	FROM RM DISP.	Number	4	4	50						*
	Number Type : Fixed Point										
13	TO RM	Number	3	2	54						*
	Number Type : Integer										
14	TO RM SUFFIX	Text	1	1	56						*
15	TO RM DISP. SIGN	Text	1	1	57						*
16	TO RM DISP.	Number	4	4	58						*
	Number Type : Fixed Point										
17	MILEPOST	Number	3	2	62						*
	Number Type : Integer										
18	MILEPOST DISP. SIGN	Choice	1	1	64						*
	Choice 1: +										
	Choice 2: -										
19	MILEPOST VALUE	Number	3	4	65						*
	Number Type : Fixed Point										
20	FROM	Number	5	4	69						*
	Number Type : Fixed Point										
21	REFERENCE POINT	Number	5	4	73						*
	Number Type : Fixed Point										
22	FROM RM VALUE	Number	5	4	77				*		*
	Number Type : Fixed Point										
	Formula: IF(FROM RM DISP. SIGN = "+",FROM RM + FROM RM DISP., FROM RM - FROM RM DISP.)										
23	TO RM VALUE	Number	5	4	81				*		*
	Number Type : Fixed Point										
	Formula: IF(TO RM DISP. SIGN ="+",TO RM + TO RM DISP., TO RM - TO RM DISP.)										

Name: **SIOMETER RIDE VALUES Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
24	YEAR	Number	2	1	85					*	*
	Number Type : Integer Upper Limit: 99 Display Attribute: Highlight 1										
25	SI VALUE	Number	3	4	86						*
	Number Type : Fixed Point										
26	COMMENTS	Number	2	1	90						*
	Number Type : Integer										
27	FROM RM INDEX	Text	9	9	91	*			*		*
	Formula: JOINTEXT(FROM RM, JOINTEXT(FROM RM SUFFIX, JOINTEXT(FROM RM DISP. SIGN , FROM RM DISP.)))										
28	TO RM INDEX	Text	9	9	100	*			*		*
	Formula: JOINTEXT(TO RM,JOINTEXT(TO RM SUFFIX,JOINTEXT(TO RM DISP. SIGN, TO RM DISP.)))										
29	FROM RIDEID	Text	16	16	109				*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,FROM)))))										
30	TO RIDEID	Text	16	16	125				*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))										

Record Size: 141 Memory: Text = 1404 Fields = 2274 Total = 3678

Form Name: PRS-SRS INPUT FILE

F O R M P R O P E R T I E S

Minimum Security Levels:

to VIEW Records:	Low3
to MODIFY Records:	Medium3
to ENTER Records:	Medium3
to DELETE Records:	Medium3

Encrypt Data Records: yes

When Entering Records:

Default View of This Form:	Form View
Clear Form After Entering Record:	yes
Suppress Automatic TAB When a Field Fills:	yes
Preserve Old CURRENT DATE, etc. on Modify:	yes

Form Name: PRS-SRS INPUT FILE

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

PAVEMENT RATING & SHOULDER RATING HOLDING FILE
[Not to be used for Data Entry]

RECORD NUMBER PAVEMENT RATING SCORE SHOULDER RATING SCORE

```
      _1____                  _2____                  _3____
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	RECORD NUMBER Display Attribute: Highlight 1	Num. String	6	6	3	*	*				*
2	PAVEMENT RATING Number Type : Fixed Point Display Attribute: Highlight 1	Number	6	4	9						*
3	SHOULDER RATING Number Type : Fixed Point Display Attribute: Highlight 1	Number	6	4	13						*

Record Size: 17 Memory: Text = 258 Fields = 115 Total = 373

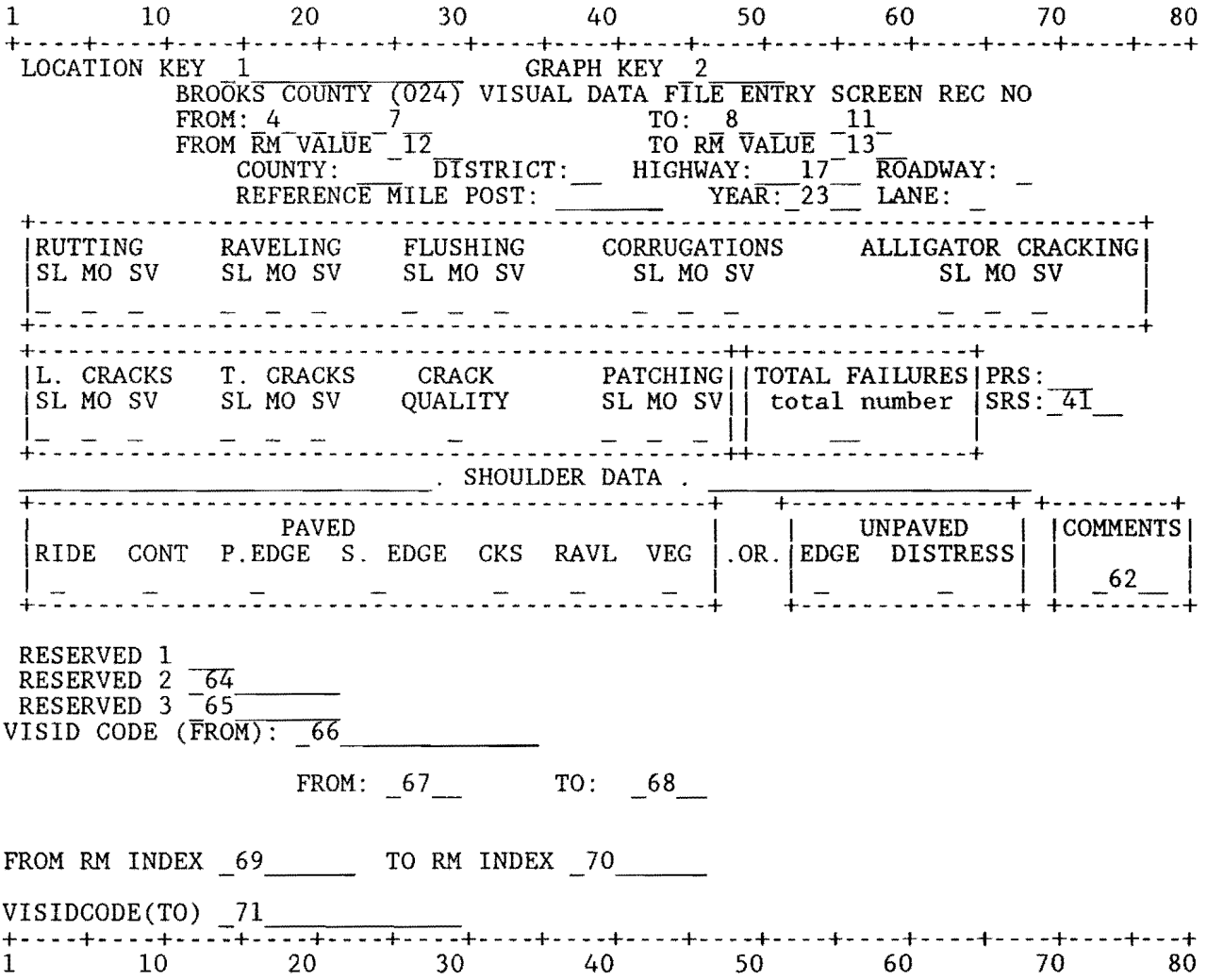
Form Name: VIS

F O R M P R O P E R T I E S

Minimum Security Levels:
to VIEW Records: Low3
to MODIFY Records: Medium3
to ENTER Records: Medium3
to DELETE Records: Medium3
Encrypt Data Records: yes
When Entering Records:
Default View of This Form: Form View
Clear Form After Entering Record: yes
Suppress Automatic TAB When a Field Fills: yes
Preserve Old CURRENT DATE, etc. on Modify: yes

Form Name: VIS

SCREEN DESCRIPTION



RESERVED 1 ___
RESERVED 2 _64_____
RESERVED 3 _65_____
VISID CODE (FROM): _66_____

FROM: _67__ TO: _68__

FROM RM INDEX _69_____ TO RM INDEX _70_____

VISIDCODE(TO) _71_____

1 10 20 30 40 50 60 70 80

continued on the succeding page

FIELD DESCRIPTIONS VIS (VISUAL DATA FILE ....REQUIRES MANUAL INPUT AT THE DISTRICT)

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	LOCATION KEY	Text	16	16	11		*	*			*
2	GRAPH KEY	Text	7	7	27		*		*		*
	Formula: JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER, JOINTEXT(HIGHWAY SUFFIX,ROADWAY)))										
3	RECORD NUMBER	Num. String	6	6	34	*	*	*	*		*
	Formula: SEQUENCE FROM 000001 Display Attribute: Highlight 2										
4	FROM RM	Number	3	2	40						*
	Number Type : Integer										
5	FROM RM SUFFIX	Text	1	1	42						*
6	FROM RM DISP. SIGN	Text	1	1	43						*
7	FROM RM DISP.	Number	4	4	44						*
	Number Type : Fixed Point										
8	TO RM	Number	3	2	48						*
	Number Type : Integer										
9	TO RM SUFFIX	Text	1	1	50						*
10	TO RM DISP. SIGN	Text	1	1	51						*
11	TO RM DISP.	Number	4	4	52						*
	Number Type : Fixed Point										
12	FROM RM VALUE	Number	5	4	56						*
	Number Type : Fixed Point										
13	TO RM VALUE	Number	5	4	60						*
	Number Type : Fixed Point										
14	COUNTY NUMBER	Num. String	3	3	64				*	*	*
	Lower Limit: 000 Upper Limit: 254 Formula: 000 Display Attribute: Highlight 1										
15	DISTRICT	Num. String	2	2	67				*		*
	Formula: LOOKUP COUNTIES "DISTRICT NUMBER"										

Form Name: VIS Continued...
FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
	Display Attribute: Highlight 1										
16	HIGHWAY PREFIX	Choice	2	1	69						*
	Choice 1: PR Choice 2: FM Choice 3: SH Choice 4: US Choice 5: IH Display Attribute: Highlight 1										
17	HIGHWAY NUMBER	Num. String	4	4	70						*
	Formated as : Other Format 0000 Display Attribute: Highlight 1										
18	HIGHWAY SUFFIX	Choice	1	1	74						*
	Choice 1: A Choice 2: S Choice 3: E Choice 4: W Display Attribute: Highlight 1										
19	ROADWAY	Choice	1	1	75						*
	Choice 1: R Choice 2: L Choice 3: A Choice 4: X Display Attribute: Highlight 1										
20	MILEPOST	Number	3	2	76						*
	Number Type : Integer										
21	MILEPOST DISP. SIGN	Choice	1	1	78						*
	Choice 1: + Choice 2: -										
22	MILEPOST VALUE	Number	3	4	79						*
	Number Type : Fixed Point										
23	YEAR	Text	5	5	83						*
24	LANE	Text	1	1	88						
	Display Attribute: Highlight 1										
25	RUT-SL	Number	1	1	89				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
26	RUT-MO	Number	1	1	90				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										

Form Name: **VIS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
27	RUT-SV	Number	1	1	91				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
28	RAV-SL	Number	1	1	92				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
29	RAV-MO	Number	1	1	93				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
30	RAV-SV	Number	1	1	94				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
31	FL-SL	Number	1	1	95				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
32	FL-MO	Number	1	1	96				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
33	FL-SV	Number	1	1	97				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
34	COR-SL	Number	1	1	98				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0										

Form Name: **VIS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
35	COR-MO	Number	1	1	99				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
36	COR-SV	Number	1	1	100				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
37	ALG-SL	Number	1	1	101				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
38	ALG-MO	Number	1	1	102				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
39	ALG-SV	Number	1	1	103				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
40	PRS SCORE	Number	3	2	104						*
	Number Type : Integer										
41	SR SCORE	Number	5	4	106						*
	Number Type : Fixed Point										
42	LCKS-SL	Number	1	1	110				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
43	LCKS-MO	Number	1	1	111				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										

Form Name: **VIS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
44	LCKS-SV	Number	1	1	112				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
45	TCKS-SL	Number	1	1	113				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
46	TCKS-MO	Number	1	1	114				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
47	TCKS-SV	Number	1	1	115				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
48	CRACKS-SEALED ETC	Number	1	1	116				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
49	PAT-SL	Number	1	1	117				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
50	PAT-MO	Number	1	1	118				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0 Display Attribute: Highlight 1										
51	PAT-SV	Number	1	1	119				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 3 Formula: 0										

Form Name: VIS Continued...

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
	Display Attribute: Highlight 1										
52	TOTAL FAILURES	Number	2	1	120				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 20 Formula: 0 Display Attribute: Highlight 1										
53	PAVED-RIDE	Number	1	1	121				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										
54	PAVED-CONTRAST	Number	1	1	122				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										
55	PAVED-EDGE	Number	1	1	123				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										
56	PAVED-SHOULDER EDGE	Number	1	1	124				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										
57	PAVED-CRACKS	Number	1	1	125				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										
58	PAVED-RAVEL	Number	1	1	126				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										

Form Name: VIS Continued...

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
59	PAVED-VEG	Number	1	1	127				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										
60	UNPAVED-EDGE	Number	1	1	128				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										
61	UNPAVED-RUT-CR-ROCK	Number	1	1	129				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 9 Formula: 0 Display Attribute: Highlight 1										
62	COMMENTS	Text	5	5	130						
	Display Attribute: Highlight 1										
63	RESERVED 1	Number	3	2	135						*
	Number Type : Integer View Security Required: Low3 Write Security Required: Low3										
64	RESERVED 2	Number	10	8	137						*
	Number Type : Fixed Point View Security Required: Low3 Write Security Required: Low3										
65	RESERVED 3	Number	10	8	145						*
	Number Type : Fixed Point										
66	VISUALID FROM	Text	16	16	153				*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,FROM)))))										
67	FROM	Number	5	4	169					*	*
	Number Type : Fixed Point Lower Limit: 0.00 Display Attribute: Highlight 1										
68	REFERENCE POINT	Number	5	4	173					*	*
	Number Type : Fixed Point Lower Limit: 0.00 Display Attribute: Highlight 1										

Form Name: **VIS Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
69	FROM RM INDEX	Text	9	9	177	*			*		*
	Formula: JOINTEXT(FROM RM, JOINTEXT(FROM RM SUFFIX, JOINTEXT(FROM RM DISP. SIGN, FROM RM DISP.)))										
70	TO RM INDEX	Text	9	9	186	*			*		*
	Formula: JOINTEXT(FROM RM, JOINTEXT(FROM RM SUFFIX, JOINTEXT(FROM RM DISP. SIGN, TO RM DISP.)))										
71	VISUALID2	Text	16	16	195				*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))										

Record Size: 211 Memory: Text = 1841 Fields = 5039 Total = 6880

Form Name: **MASTER** (0.1 Master File)

F O R M P R O P E R T I E S

Minimum Security Levels:

to VIEW Records:	Low3
to MODIFY Records:	Medium3
to ENTER Records:	Medium3
to DELETE Records:	Medium3
Encrypt Data Records:	yes
When Entering Records:	

Default View of This Form:	Form View
Clear Form After Entering Record:	yes
Suppress Automatic TAB When a Field Fills:	yes
Preserve Old CURRENT DATE, etc. on Modify:	yes

Form Name: MASTER

SCREEN DESCRIPTION -- Multiple Screen File

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                  SORTED MAINTENANCE MANAGEMENT MASTER FILE
   LOCATION KEY:_1_____________     GRAPHKEY_2_____  RM VALUE:_3___

                              RI-1 FILE DATA ENTRY
--------------------------------------------------------------------------------

    COUNTY NUMBER.......:_4_
    HIGHWAY PREFIX......:__
    HIGHWAY NUMBER......:_6__
    HIGHWAY SUFFIX......:_          MASTER ID CODE _8_____________
    REFERENCE POINT.....:_9___
    MILEPOST............:___
    MILEPOST DISP. SIGN.:_
    MILEPOST DISP.......:___
    ROADWAY.............:_

            REFERENCE MARKER DATA FIELDS POSTED 12-18-90
   +-------------------------------------------------------------+
   |                                                             |
   |     REF. MARKER: ___  SUFFIX _  DISP. SIGN _  RM DISP VALUE _17_  |
   |                                                             |
   +-------------------------------------------------------------+


  ================== screen no. 1 ==================================
```

Master 0.1 File -- continued

```
                    MAINTENANCE MANAGEMENT MASTER FILE

                      RI-1 FILE ADDITIONAL DATA ENTRY
 ------------------------------------------------------------------------------

                         NUMBER OF LANES.....:__
                         SURFACE WIDTH.......:_19__
                         LEFT SHOULDER WIDTH.:_20_
                         LEFT SHOULDER TYPE..:_
                         RIGHT SHOULDER WIDTH:_22_
                         RIGHT SHOULDER TYPE.:_
                         RIGHT OF WAY WIDTH..:_24____
                         ROADBED WIDTH.......:_25__
                         BASE TYPE...........:_


                                 screen no. 2
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70       80


1        10        20        30        40        50        60        70       80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
                    MAINTENANCE MANAGEMENT MASTER FILE

                              PES MERGE DATA
-------------------------------------------------------------------------------

                         MAINTENANCE SECTION:__
                         HIGHWAY DESIGN TYPE:_
                         FUNCTIONAL CLASS...:_
                         CONTROL-SECTION 1..:_30____
                         CONTROL-SECTION 2..:_31____      PES DATE__
                         ADT................:_33____
                         18-KIP.............:_34___
  ==========================  screen no. 3 ===================================
                    MAINTENANCE MANAGEMENT MASTER FILE

                          ADDITIONAL FILE MERGE DATA
-------------------------------------------------------------------------------
       PAVEMENT
  MAINTENANCE COST FILE                      VISUAL FILE
MAINTENANCE COST:_35_______  |------------------------------------------|
                              LANE:_                            SHOULDER
    SURFACE FILE              PAVEMENT CONDITIONS                 PAVED
SURFACE TYPE.........:__      RUTTING........:___          PS RIDE......:_
DATE OF LAST SURFACE.:_42__   RAVELING.......:___          PS CONTRAST..:_
                              FLUSHING.......:___          PS PAV. EDGE.:_
        SKID FILE             CORRUGATIONS...:___          PS SHLD. EDGE:_
 SKID VALUE:__ SKID DATE:__   ALLIG. CRACKING:___          PS CRACKS....:_
                              LONG. CRACKING.:___          PS RAVELING..:_
        RIDE FILE             TRANS. CRACKING:___          PS VEGETATION:_
RIDE VALUE:___ RIDE DATE:__   CRACKS SEALED..:_
                              PATCHING.......:___             UNPAVED
        FWD FILE              FAILURES.......:___          US PVMT. EDGE:_
W1:_77__ W2:_78__ W6:_79__                                 US CONDITION.:_
W7:_81__ SCI:_82___ FWDATE:_83__    COMMENTS:_84__      PRS:___
                     screen no. 4
```

0.1 Master File...continued

MAINTENANCE MANAGEMENT MASTER FILE

HISTORICAL DATA

PRS

PRS-1:___ PRS-2:___ PRS-3:___ PRS-4:___ PRS-5:___

RIDE

SI-1:___ SI-2:___ SI-3:___ SI-4:___ SI-5:___

screen no. 5

```
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

SKID

SKIDYR1:__ SKID1:__
SKIDYR2:__ SKID2:__

FWD

SCIYR1:__ SCI1:_99__
SCIYR2:__ SCI2:_103_

MASTER MP ID CODE _104_____

screen no. 6 (hidden screen)

```
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

End of Screens: Field Descriptions follow

0.1 Master File - continued

FIELD DESCRIPTIONS - 0.1 Master File

No.	Name	Type	Long	Record Size	offset	Req	In-dex	Uni-que	Der-ived	Rng Chk	Pre-vent
1	LOCATION KEY	Text	16	16	15		*	*			*
2	GRAPHKEY	Text	8	8	31		*		*		*
	Formula: JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER, JOINTEXT(HIGHWAY SUFFIX,ROADWAY)))										
3	RM VALUE	Number	5	4	39						*
	Number Type : Fixed Point										
4	COUNTY NUMBER	Num. String	3	3	43			*		*	
	Lower Limit: 1										
	Upper Limit: 254										
5	HIGHWAY PREFIX	Choice	2	1	46	*		*			
	Choice 1: PR										
	Choice 2: FM										
	Choice 3: SH										
	Choice 4: US										
	Choice 5: IH										
6	HIGHWAY NUMBER	Num. String	4	4	47	*		*		*	
	Lower Limit: 0001										
	Upper Limit: 9999										
7	HIGHWAY SUFFIX	Choice	1	1	51			*			
	Choice 1: A										
	Choice 2: S										
	Choice 3: E										
	Choice 4: W										
8	MASTERID	Text	16	16	52				*		*
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))										
9	REFERENCE POINT	Number	5	4	68			*			
	Number Type : Fixed Point										
10	MILEPOST	Number	3	2	72	*				*	
	Number Type : Integer										
	Lower Limit: 0										
	Upper Limit: 999										
11	MILEPOST DISP. SIGN	Choice	1	1	74	*					
	Choice 1: +										
	Choice 2: -										
12	MILEPOST VALUE	Number	3	4	75	*				*	
	Number Type : Fixed Point										
	Lower Limit: 0.0										
	Upper Limit: 9.9										

Form Name: **MASTER Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
13	ROADWAY	Choice	1	1	79	*		*			
	Choice 1: R										
	Choice 2: L										
	Choice 3: A										
	Choice 4: X										
14	RM	Number	3	2	80						
	Number Type : Integer										
15	RM SUFFIX	Text	1	1	82						
16	RM DISP. SIGN	Text	1	1	83						
17	RM DISP.	Number	4	4	84						
	Number Type : Fixed Point										
18	NUMBER OF LANES	Number	2	1	88						
	Number Type : Integer										
19	SURFACE WIDTH	Number	5	4	89						
	Number Type : Fixed Point										
20	LEFT SHOULDER WIDTH	Number	4	4	93						
	Number Type : Fixed Point										
21	LEFT SHOULDER TYPE	Number	2	1	97						
	Number Type : Integer										
22	RIGHT SHOULDER WIDTH	Number	4	4	98						
	Number Type : Fixed Point										
23	RIGHT SHOULDER TYPE	Number	2	1	102						
	Number Type : Integer										
24	RIGHT OF WAY WIDTH	Number	7	4	103						
	Number Type : Fixed Point										
25	ROADBED WIDTH	Number	5	4	107						
	Number Type : Fixed Point										
26	BASE TYPE	Number	1	1	111						
	Number Type : Integer										
27	MAINTENANCE SECTION	Number	2	1	112						
	Number Type : Integer										
28	HIGHWAY DESIGN TYPE	Number	1	1	113						
	Number Type : Integer										
29	FUNCTIONAL CLASS.	Number	1	1	114						
	Number Type : Integer										
30	CS1	Num. String	7	6	115						
	Formated as : Other Format										0000-00

Form Name: **MASTER Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
31	CS2	Num. String	7	6	121						
	Formated as : Other Format				0000-00						
32	PES DATE	Number	2	1	127						*
	Number Type : Integer										
33	ADT	Number	7	4	128						
	Number Type : Integer										
34	KIP	Number	6	4	132						
	Number Type : Integer										
35	MAINTENANCE COST	Number	10	8	136						
	Number Type : Fixed Point										
36	LANE	Text	1	1	144						
37	SURFACE TYPE	Number	2	1	145						
	Number Type : Integer										
38	RUT-SL	Number	1	1	146						
	Number Type : Integer										
39	RUT-MO	Number	1	1	147						
	Number Type : Integer										
40	RUT-SV	Number	1	1	148						
	Number Type : Integer										
41	PAVED-RIDE	Number	1	1	149						
	Number Type : Integer										
42	DATE OF LAST SURFACE	Num. String	5	4	150						
	Formated as : Other Format				00/00						
43	RAV-SL	Number	1	1	154						
	Number Type : Integer										
44	RAV-MO	Number	1	1	155						
	Number Type : Integer										
45	RAV-SV	Number	1	1	156						
	Number Type : Integer										
46	PAVED-CONTRAST	Number	1	1	157						
	Number Type : Integer										
47	FL-SL	Number	1	1	158						
	Number Type : Integer										
48	FL-MO	Number	1	1	159						
	Number Type : Integer										
49	FL-SV	Number	1	1	160						
	Number Type : Integer										

Form Name: **MASTER Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
50	PAVED-EDGE Number Type : Integer	Number	1	1	161						
51	COR-SL Number Type : Integer	Number	1	1	162						
52	COR-MO Number Type : Integer Upper Limit: 3	Number	1	1	163					*	
53	COR-SV Number Type : Integer	Number	1	1	164						
54	PAVED-SHOULDER EDGE Number Type : Integer	Number	1	1	165						
55	SKID VALUE Number Type : Integer	Number	2	1	166						
56	SKID DATE Number Type : Integer	Number	2	1	167						
57	ALG-SL Number Type : Integer	Number	1	1	168						
58	ALG-MO Number Type : Integer	Number	1	1	169						
59	ALG-SV Number Type : Integer	Number	1	1	170						
60	PAVED-CRACKS Number Type : Integer	Number	1	1	171						
61	LCKS-SL Number Type : Integer	Number	1	1	172						
62	LCKS-MO Number Type : Integer	Number	1	1	173						
63	LCKS-SV Number Type : Integer	Number	1	1	174						
64	PAVED-RAVEL Number Type : Integer	Number	1	1	175						
65	TCKS-SL Number Type : Integer	Number	1	1	176						
66	TCKS-MO Number Type : Integer	Number	1	1	177						
67	TCKS-SV Number Type : Integer	Number	1	1	178						

Form Name: **MASTER Continued...**

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
68	PAVED-VEG	Number	1	1	179						
	Number Type : Integer										
69	RIDE VALUE	Number	3	4	180						
	Number Type : Fixed Point										
70	RIDE DATE	Number	2	1	184						
	Number Type : Integer										
71	CRACKS-SEALED ETC	Number	1	1	185						
	Number Type : Integer										
72	PAT-SL	Number	1	1	186						
	Number Type : Integer										
73	PAT-MO	Number	1	1	187						
	Number Type : Integer										
74	PAT-SV	Number	1	1	188						
	Number Type : Integer										
75	TOTAL FAILURES	Number	2	1	189						
	Number Type : Integer										
76	UNPAVED-EDGE	Number	1	1	190						
	Number Type : Integer										
77	W1	Number	5	4	191						
	Number Type : Fixed Point										
78	W2	Number	5	4	195						
	Number Type : Fixed Point										
79	W6	Number	5	4	199						
	Number Type : Fixed Point										
80	UNPAVED-RUT-CR-ROCK	Number	1	1	203						
	Number Type : Integer										
81	W7	Number	5	4	204						
	Number Type : Fixed Point										
82	SCI	Number	6	4	208						
	Number Type : Fixed Point										
83	DATE	Num. String	5	4	212						
	Formated as : Other Format					00/00					
	View Security Required: Low3	Write Security Required: Low3									
84	COMMENTS	Text	5	5	216						
85	PRS	Number	3	2	221						
	Number Type : Integer										
86	PRS-1	Number	3	2	223						
	Number Type : Integer										

FIELD DESCRIPTIONS **Master - continued**

No.	Name	Type	Long	Record Size	offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
87	PRS-2	Number	3	2	225						
	Number Type : Integer										
88	PRS-3	Number	3	2	227						
	Number Type : Integer										
89	PRS-4	Number	3	2	229						
	Number Type : Integer										
90	PRS-5	Number	3	2	231						
	Number Type : Integer										
91	SI-1	Number	3	4	233						
	Number Type : Fixed Point										
92	SI-2	Number	3	4	237						
	Number Type : Fixed Point										
93	SI-3	Number	3	4	241						
	Number Type : Fixed Point										
94	SI-4	Number	3	4	245						
	Number Type : Fixed Point										
95	SI-5	Number	3	4	249						
	Number Type : Fixed Point										
96	SKIDYR1	Number	2	1	253						
	Number Type : Integer										
97	SKID1	Number	2	1	254						
	Number Type : Integer										
98	SCIYR1	Number	2	1	255						
	Number Type : Integer										
99	SCI1	Number	5	4	256						
	Number Type : Fixed Point										
100	SKIDYR2	Number	2	1	260						
	Number Type : Integer										
101	SKID2	Number	2	1	261						
	Number Type : Integer										
102	SCIYR2	Number	2	1	262						
	Number Type : Integer										
103	SCI2	Number	5	4	263						
	Number Type : Fixed Point										
104	MASTERMPID	Text	17	17	267		*	*		*	
	Formula: JOINTEXT(COUNTY NUMBER,JOINTEXT(HIGHWAY PREFIX,JOINTEXT(HIGHWAY NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY ,JOINTEXT(MILEPOST,JOINTEXT(MILEPOST DISP. SIGN,MILEPOST VALUE *10)))))))										

Record Size: 284 Memory: Text = 4271 Fields = 3641 Total = 7912

Appendix C
PMS Query Procedures

The PMS Query Procedures represent a collection of programs that interrogate one or more of the PMS files for the purpose of producing a report, calculation of summary values, or producing variable length export files for use by external programs. All of the commercially available database languages utilize some form of a "query language". The language (command structure) used herein is the DataEase Query Language (DQL). DQL, while not exactly similar to IBM's SQL, is a rich and powerful language with SQL-like capabilities.

This appendix presents the DQL procedures utilized by the PMS Database as of January 1, 1989.

Report Name: MISSING VISUAL DATA

REPORT QUERY

```
for VIS
with LANE = BLANK ;
list records
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  FROM in order ;
  REFERENCE POINT ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  RECORD NUMBER ;
  current page number .
```

FIELD DESCRIPTIONS

No.	Name	Type	Length

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header

                              MISSING VISUAL DATA
                                Brooks County          Page No. _1_
             ================================================================ COUNTY
              HIGHWAY  ROADWAY FROM    TO    MILEPOST RECORD
              NUMBER                                    NUMBER
              ---------------------------------------------------------------- .items
               _2_     ___4___     _    _7___  _8___  _9_____  _12___ .end
.footer       ================================================================
```

FIELD DESCRIPTIONS

No.	Name	Type	Length	Remove Spaces ---
1	current page number	Number	3	
	Number Type : Integer			
2	COUNTY NUMBER	Number	3	
	Number Type : Integer			
3	HIGHWAY PREFIX	Choice	2	
	Choice 1: no			
	Choice 2: yes			
4	HIGHWAY NUMBER	Num. String	4	
5	HIGHWAY SUFFIX	Choice	1	
	Choice 1: no			
	Choice 2: yes			
6	ROADWAY	Choice	1	
	Choice 1: no			
	Choice 2: yes			
7	FROM	Number	5	
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
8	REFERENCE POINT	Number	5	
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
9	MILEPOST	Number	3	
	Number Type : Integer			
10	MILEPOST DISP. SIGN	Choice	1	
	Choice 1: no			
	Choice 2: yes			
11	MILEPOST VALUE	Number	3	
	Number Type : Fixed Point			
	Digits to left of Decimal = 1			

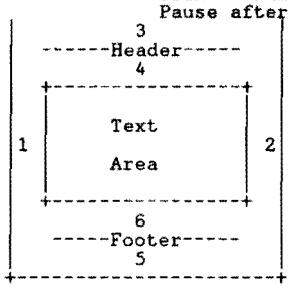
Report Name: MISSING VISUAL DATA Continued...

No.	Name	Type	Length	Remove Spaces ---
12	RECORD NUMBER	Num. String	6	

Memory Required:

PRINT STYLE SPECIFICATION Report Destination: Printer
Allow Style modification at run-time No If disk Output, Filename:

Now press DEFAULT VIEW to get default values for the remaining fields.
Printer Name : HP Ser.2 Portrt
Pause after each page ? : No



IF PRINTER NAME IS SPECIFIED ABOVE :

PAGE SIZE AND POSITION ON CARRIAGE (in inches)
Length 10 Width 9 Starting position 0

MARGINS (in inches): SEE FIGURE ON LEFT

1.Left	0	2.Right	0
3.Top to Header	0	4.Header to Text	0
5.Footer to Bottom	1	6.Text to Footer	0

TYPE STYLE
Characters Per Inch 10 Lines Per Inch 6
Highlights 1 2 3

```
Report Name: TRANSFER PRS TO PED

REPORT DEFINITION

DATA-ENTRY FORM
Data-Entry Form Name: TRANSFER PRS TO PED
SCREEN DESCRIPTION

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                PROCEDURE: To copy the PRS and SRS data imported from
                the compiled BASIC program into the PAVEMENT DATA
                                ENTRY FILE.

                           Press the F2 Key to begin
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80


FIELD DESCRIPTIONS

No. Name                  Type       Long   Record    Req In- Uni- Der- Rng Pre-
                                            Size offset uir dex que  ived Chk vent
--- -------------------- ---------- ---- ---- -------- ------- ---- --- -----
Record Size: 32000  Memory:  Text = 250  Fields = 17  Total = 267
      REPORT QUERY
--------------------

for PRS-SRS INPUT FILE
;
  modify records in VIS with ( RECORD NUMBER = PRS-SRS INPUT FILE RECORD NUMBER
)
  RESERVED 1 := PRS-SRS INPUT FILE PAVEMENT RATING ; RESERVED 2 := PRS-SRS INPUT
FILE SHOULDER RATING . end .

ÜFIELD DESCRIPTIONS¢

No. Name                  Type            Length
-------------------- ---------------- ------ ------
      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page

                    PRS-SRS RECORDS HAVE BEEN TRANSFERRED


PRINT STYLE SPECIFICATION Report Destination:  Screen
Allow Style modification at run-time  No If disk Output, Filename:
Now press DEFAULT VIEW to get default values for the remaining fields.
              Printer Name          :
              Pause after each page ?    : Yes +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----     |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+    |     Length 0     Width 0     Starting position 0
|   |                |    |
|   |      Text      |    |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                | 2  |   1.Left              0       2.Right           0
|   |      Area      |    |   3.Top to Header     0       4.Header to Text  0
|   |                |    |   5.Footer to Bottom  0       6.Text to Footer  0
|   +----------------+    |
|          6              |  TYPE STYLE
|    -----Footer-----     |     Characters Per Inch 0      Lines Per Inch  0
|          5              |     Highlights 1  Special 7  2 Special 8 3
+-------------------------+
```

Report Name: PRINT PRS-SRS INFILE

REPORT DEFINITION

DATA-ENTRY FORM
Data-Entry Form Name: PRINT PRS-SRS INFILE

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                          +----------------------+
                          | MICRO-RAMS DATA BASE |
                          +----------------------+

                    +-------------------------------------+
                    |    TEXAS STATE HIGHWAY DEPARTMENT   |
                    |                &                    |
                    | THE TEXAS TRANSPORTATION INSTITUTE  |
                    |                                     |
                    |         TEXAS A&M UNIVERSITY        |
                    +-------------------------------------+

                    LIST PAVEMENT DATA RECORDS REPORT


               RUN DATE: _1_____ (Press RETURN to automatically generate)

                       ******* PRESS THE F2 KEY TO BEGIN *******
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record	Req	In-	Uni-	Der-	Rng	Pre-
Size	offset	uir	dex	que	ived	Chk	vent			
1	RUN DATE	Date	8	6		3		*		

Formula: ??/??/??

Record Size: 9 Memory: Text = 768 Fields = 70 Total = 838

REPORT QUERY

```
for VIS with LANE not = blank ;
list records
  current page number ;
  data-entry RUN DATE ;
  DISTRICT ;
  RECORD NUMBER in order ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX ;
  HIGHWAY NUMBER ;
  HIGHWAY SUFFIX ;
  ROADWAY ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  FROM ;
  REFERENCE POINT ;
  LANE ;
  RUT-SL ;
  RUT-MO ;
  RUT-SV ;
  rav-sl ;
  RAV-MO ;
  RAV-SV ;
  FL-SL ;
  FL-MO ;
  FL-SV ;
  COR-SL ;
  COR-MO ;
  COR-SV ;
  ALG-SL ;
```

Report Name: PRINT PRS-SRS INFILE Continued...

```
      REPORT QUERY
--------------------
  ALG-MO ;
  ALG-SV ;
  LCKS-SL ;
  LCKS-MO ;
  LCKS-SV ;
  TCKS-SL ;
  TCKS-MO ;
  TCKS-SV ;
  CRACKS-SEALED ETC ;
  PAT-SL ;
  PAT-MO ;
  PAT-SV ;
  TOTAL FAILURES ;
  PAVED-RIDE ;
  PAVED-CONTRAST ;
  PAVED-EDGE ;
  PAVED-SHOULDER EDGE ;
  PAVED-CRACKS ;
  PAVED-RAVEL ;
  PAVED-VEG ;
  UNPAVED-EDGE ;
  UNPAVED-RUT-CR-ROCK ;
  RESERVED 1 : item mean max min ;
  RESERVED 2 :  item  mean max min ;
COMMENTS .
```

```
Report Name: PLOT DATA

REPORT DEFINITION

      REPORT QUERY
--------------------

DEFINE "NSI" NUMBER.
DEFINE "NSN" NUMBER.
for MASTER
with SKID VALUE not = BLANK or
  RIDE VALUE not = BLANK or
  SCI not = BLANK or
  PRS not = BLANK ;
if SKID VALUE NOT = BLANK then
   assign temp NSN := SKID VALUE.
eND
IF RIDE VALUE NOT = BLANK THEN
   ASSIGN TEMP NSI := RIDE VALUE * 10 .
end
list records
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY IN ORDER ;
  REFERENCE POINT in order ;
  SKID VALUE ;
  RIDE VALUE ;
  SCI ;
  nsN ;
  NSI ;
  PRS .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

.page
.items
_1_ __ _3__ _ _ _6___ __ __ _9___ ___
.end

ÜFIELD DESCRIPTIONS¢

No. Name                Type            Length
-------------------- ---------------- ------  ------
  1 COUNTY NUMBER       Number            3
      Number Type : Integer
  2 HIGHWAY PREFIX      Choice            2
  3 HIGHWAY NUMBER      Num. String       4
  4 HIGHWAY SUFFIX      Choice            1
  5 ROADWAY             Choice            1
  6 REFERENCE POINT     Number            5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  7 nsN                 Number            2
        Number Type : Integer
  8 NSI                 Number            2
        Number Type : Integer
  9 SCI                 Number            5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
 10 PRS                 Number            3
       Number Type : Integer

        PRINT STYLE SPECIFICATION Report Destination:    Disk
        Allow Style modification at run-time Yes If disk Output, Filename:
           A:PLOT.DAT
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name              :
             Pause after each page ?   : Yes +---------------------+
|         3           |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header----- |
|         4           |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+ |     Length 0    Width 0    Starting position 0
|  |                | |
|  |     Text       | |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |2|   1.Left            0      2.Right            0
|  |     Area       | |   3.Top to Header   0      4.Header to Text   0
|  |                | |   5.Footer to Bottom 0     6.Text to Footer   0
|  +----------------+ |
|         6           |  TYPE STYLE
|   -----Footer-----  |     Characters Per Inch 0     Lines Per Inch  0
|         5           |     Highlights 1    2  3
+---------------------+
```

```
Report Name: MISSING RIDE DATA
REPORT DEFINITION

      REPORT QUERY
--------------------

for RIDE INPUT ;
for SIOMETER RIDE VALUES with ( RIDEID = RIDE INPUT RIDEID and SI VALUE < 0.1
  and
  RIDE INPUT MRM VALUE < 1 )
list records
current page number ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  REFERENCE POINT in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  RECORD NUMBER .

END
END

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
                                  MISSING RIDE DATA
                                   Brooks County               Page No.  1
             ==================================================== COUNTY
              HIGHWAY  ROADWAY REFERENCE MILEPOST RECORD
              NUMBER                     POINT              NUMBER
             ---------------------------------------------------- .items
              _2_     ___4___    _       _7___   _8_____   _11___
.footer
             ==================================================== .end
.page

FIELD DESCRIPTIONS

No. Name                 Type             Length  Remove Spaces ---
-------------------- ---------------- ------  ------
  1 current page number  Number             3
      Number Type : Integer
  2 COUNTY NUMBER        Number             3
      Number Type : Integer
  3 HIGHWAY PREFIX       Text               2
  4 HIGHWAY NUMBER       Num. String        4
  5 HIGHWAY SUFFIX       Text               1
  6 ROADWAY              Text               1
  7 REFERENCE POINT      Number             5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  8 MILEPOST             Number             3
        Number Type : Integer
  9 MILEPOST DISP. SIGN  Choice             1
        Choice   1: no
        Choice   2: yes
 10 MILEPOST VALUE       Number             3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 11 RECORD NUMBER        Num. String        6
```

Missing Ride Data....continued

```
        PRINT STYLE SPECIFICATION Report Destination: Printer
   Allow Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                : HP Ser.2 Portrt
             Pause after each page ?     :  No +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----       |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+      |     Length 10    Width 9     Starting position 0
|   |                |      |
|   |      Text      |      |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                |  2   |   1.Left              0      2.Right           0
|   |      Area      |      |   3.Top to Header     0      4.Header to Text  0
|   |                |      |   5.Footer to Bottom  1      6.Text to Footer  0
|   +----------------+      |
|          6                |  TYPE STYLE
|    -----Footer-----       |     Characters Per Inch 10     Lines Per Inch  6
|          5                |     Highlights 1             2           3
+---------------------------+
```

Report Name: MISSING SKID DATA

REPORT DEFINITION

REPORT QUERY

```
for SKID INPUT
with SKID VALUE < 1 ;
for MASTER with ( MASTERID = SKID INPUT SKIDID and SKID DATE <= year ( current
date ) - 3 )

list records
current page number ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  REFERENCE POINT in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  ADT ;
  KIP ;
  SKID INPUT RECORD NUMBER .

END
END .
```

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header

          MISSING SKID DATA: RECORDED FROM THE 0.1-MILE MASTER FILE
                                Brooks County                  Page No. _1_
     ==========================================================================
      COUNTY  HIGHWAY  ROADWAY REFERENCE MILEPOST   ADT   18-KIP  RECORD
      NUMBER                    POINT                              NUMBER
     -------------------------------------------------------------------------- .items
        _2_     ___4___     _       _7___   _8_____  _11____ _12___ _13___
.footer
     ========================================================================== .end
```

FIELD DESCRIPTIONS

No.	Name	Type	Length
1	current page number	Number	3
	Number Type : Integer		
2	COUNTY NUMBER	Number	3
	Number Type : Integer		
3	HIGHWAY PREFIX	Choice	2
4	HIGHWAY NUMBER	Num. String	4
5	HIGHWAY SUFFIX	Choice	1
6	ROADWAY	Choice	1
7	REFERENCE POINT	Number	5
	Number Type : Fixed Point		
	Digits to left of Decimal = 3		
8	MILEPOST	Number	3
	Number Type : Integer		
9	MILEPOST DISP. SIGN	Choice	1
10	MILEPOST VALUE	Number	3
	Number Type : Fixed Point		
	Digits to left of Decimal = 1		
11	ADT	Number	7
	Number Type : Integer		
12	KIP	Number	6
	Number Type : Integer		
13	SKID INPUT RECORD NU	Num. String	6

Missing Skid Data...continued

```
      PRINT STYLE SPECIFICATION Report Destination: Printer
   Allow Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                : HP Ser.2 Portrt
             Pause after each page ?     :  No +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----      |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+     |     Length 10    Width 9     Starting position 0
|  |                |     |
|  |      Text      |     |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |  2  |   1.Left              0      2.Right           0
|  |      Area      |     |   3.Top to Header     0      4.Header to Text  0
|  |                |     |   5.Footer to Bottom  1      6.Text to Footer  0
|  +----------------+     |
|          6              |  TYPE STYLE
|   -----Footer-----      |     Characters Per Inch 10     Lines Per Inch  6
|          5              |     Highlights 1             2           3
+-------------------------+
```

```
Report Name: MISSING FWD DATA

REPORT DEFINITION
      REPORT QUERY
--------------------

for FWD INPUT
with W1 < 1 ;
for MASTER with ( MASTERID = FWD INPUT FWDID and lastc ( DATE , 2 ) <= year (
current date ) - 3 )

list records
current page number ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  REFERENCE POINT in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  ADT ;
  KIP ;
  FWD INPUT RECORD NUMBER .

END
END .

      REPORT FORMAT

1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header

                              MISSING FWD DATA
                              Brooks County            Page No. _1_
     ==========================================================================
      COUNTY  HIGHWAY  ROADWAY REFERENCE MILEPOST   ADT    KIP   RECORD
      NUMBER                    POINT                           NUMBER
     -------------------------------------------------------------------------- .items
       _2_     ___4___     _       _7___   _8_____  _11____ _12___ _13___
.footer
     ========================================================================== .end

FIELD DESCRIPTIONS

No. Name                 Type           Length
------------------- ---------------- ------ ------
  1 current page number  Number            3
     Number Type : Integer
  2 COUNTY NUMBER        Number            3
     Number Type : Integer
  3 HIGHWAY PREFIX       Choice            2
  4 HIGHWAY NUMBER       Num. String       4
  5 HIGHWAY SUFFIX       Choice            1
  6 ROADWAY              Choice            1
  7 REFERENCE POINT      Number            5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  8 MILEPOST             Number            3
      Number Type : Integer
  9 MILEPOST DISP. SIGN  Choice            1
 10 MILEPOST VALUE       Number            3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 11 ADT                  Number            7
      Number Type : Integer
 12 KIP                  Number            6
      Number Type : Integer
 13 FWD INPUT RECORD NUM Num. String       6
```

Missing FWD Data...continued

```
   PRINT STYLE SPECIFICATION Report Destination: Printer
   Allow Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                : HP Ser.2 Portrt
             Pause after each page ?     :  No +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----     |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+    |     Length 10    Width 9     Starting position 0
|   |                |    |
|   |      Text      |    |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                |  2 |   1.Left              0      2.Right           0
|   |      Area      |    |   3.Top to Header     0      4.Header to Text  0
|   |                |    |   5.Footer to Bottom  1      6.Text to Footer  0
|   +----------------+    |
|          6              |  TYPE STYLE
|    -----Footer-----     |     Characters Per Inch 10     Lines Per Inch  6
|          5              |     Highlights 1               2           3
+-------------------------+
```

Report Name: ALL DATA

Data-Entry Form Name: ALL DATA

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

                          +--------------------+
                          |  MASTER DATA BASE  |
                          +--------------------+

                  +-----------------------------------+
                  |                                   |
                  |  TEXAS STATE DEPARTMENT OF HIGHWAYS |
                  |     AND PUBLIC TRANSPORTATION     |
                  |                                   |
                  +-----------------------------------+

                     LIST DATA RECORDS REPORT


          RUN DATE: _1_____ (Press RETURN to automatically generate)

                      ******* PRESS THE F2 KEY TO BEGIN *******
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Length
1	RUN DATE Formula: ??/??/??	Date	8

Record Size: 9 Memory: Text = 730 Fields = 70 Total = 800

REPORT QUERY

```
for MASTER with MAINTENANCE SECTION not = BLANK or HIGHWAY DESIGN TYPE not =
  BLANK or
  FUNCTIONAL CLASS. not = BLANK or
  CS1 not = BLANK or
  ADT not = BLANK or
  KIP not = BLANK or
  LANE not = BLANK or
  SKID VALUE not = BLANK or
  RIDE VALUE not = BLANK or
  W1 not = BLANK ;

      list records

  COUNTY NUMBER IN ORDER ;
  HIGHWAY PREFIX IN ORDER ;
  HIGHWAY NUMBER IN ORDER ;
  HIGHWAY SUFFIX IN ORDER ;
  ROADWAY IN ORDER ;
  current page number ;
  data-entry RUN DATE ;
  MAINTENANCE SECTION ;


  REFERENCE POINT IN ORDER ;
  CS1 ;
  SURFACE TYPE ;
  LANE ;

  RUT-SL ;
  RUT-MO ;
  RUT-SV ;

  rav-sl ;
  RAV-MO ;
  RAV-SV ;
```

Report Name: ALL DATA Continued...

REPORT QUERY

```
FL-SL ;
FL-MO ;
FL-SV ;

COR-SL ;
COR-MO ;
COR-SV ;

ALG-SL ;
ALG-MO ;
ALG-SV ;

LCKS-SL ;
LCKS-MO ;
LCKS-SV ;

TCKS-SL ;
TCKS-MO ;
TCKS-SV ;

CRACKS-SEALED ETC ;

PAT-SL ;
PAT-MO ;
PAT-SV ;

TOTAL FAILURES ;

PAVED-RIDE ;
PAVED-CONTRAST ;
PAVED-EDGE ;
PAVED-SHOULDER EDGE ;
PAVED-CRACKS ;
PAVED-RAVEL ;
PAVED-VEG ;

UNPAVED-EDGE ;
UNPAVED-RUT-CR-ROCK ;

RIDE VALUE ;
SKID VALUE ;
SCI ;
ADT ;
KIP ;
HIGHWAY DESIGN TYPE ;
FUNCTIONAL CLASS. ;
PRS .
```

Report Name: ALL DATA Continued...
FIELD DESCRIPTIONS

No.	Name	Type	Length
1	data-entry RUN DATE	Date	8
2	current page number	Number	3
	Number Type : Integer		
3	MAINTENANCE SECTION	Number	2
	Number Type : Integer		
4	COUNTY NUMBER	Number	3
	Number Type : Integer		
5	HIGHWAY PREFIX	Choice	2
6	HIGHWAY NUMBER	Num. String	4
7	HIGHWAY SUFFIX	Choice	1
8	ROADWAY	Choice	1
9	REFERENCE POINT	Number	5
	Number Type : Fixed Point		
	Digits to left of Decimal = 3		
10	CS1	Num. String	7
11	LANE	Text	1
12	RUT-SL	Number	1
	Number Type : Integer		
13	RUT-MO	Number	1
	Number Type : Integer		
14	RUT-SV	Number	1
	Number Type : Integer		
15	rav-sl	Number	1
	Number Type : Integer		
16	RAV-MO	Number	1
	Number Type : Integer		
17	RAV-SV	Number	1
	Number Type : Integer		
18	FL-SL	Number	1
	Number Type : Integer		
19	FL-MO	Number	1
	Number Type : Integer		
20	FL-SV	Number	1
	Number Type : Integer		
21	COR-SL	Number	1
	Number Type : Integer		
22	COR-MO	Number	1
	Number Type : Integer		
23	COR-SV	Number	1
	Number Type : Integer		
24	ALG-SL	Number	1
	Number Type : Integer		
25	ALG-MO	Number	1
	Number Type : Integer		
26	ALG-SV	Number	1
	Number Type : Integer		
27	LCKS-SL	Number	1
	Number Type : Integer		
28	LCKS-MO	Number	1
	Number Type : Integer		
29	LCKS-SV	Number	1
	Number Type : Integer		
30	TCKS-SL	Number	1
	Number Type : Integer		
31	TCKS-MO	Number	1
	Number Type : Integer		
32	TCKS-SV	Number	1
	Number Type : Integer		
33	CRACKS-SEALED ETC	Number	1
	Number Type : Integer		
34	PAT-SL	Number	1
	Number Type : Integer		
35	PAT-MO	Number	1
	Number Type : Integer		
36	PAT-SV	Number	1
	Number Type : Integer		
37	TOTAL FAILURES	Number	2
	Number Type : Integer		
38	PAVED-RIDE	Number	1
	Number Type : Integer		
39	PAVED-CONTRAST	Number	1
	Number Type : Integer		
40	PAVED-EDGE	Number	1
	Number Type : Integer		
41	PAVED-SHOULDER EDGE	Number	1
	Number Type : Integer		
42	PAVED-CRACKS	Number	1
	Number Type : Integer		
43	PAVED-RAVEL	Number	1
	Number Type : Integer		
44	PAVED-VEG	Number	1
	Number Type : Integer		

Report: All Data....continued

```
 45 UNPAVED-EDGE          Number              1
      Number Type : Integer
 46 UNPAVED-RUT-CR-ROCK   Number              1
      Number Type : Integer
Report Name: ALL DATA Continued...

No. Name                 Type             Length

-------------------- ---------------- ------  ------  47 RIDE VALUE           Number              3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 48 SKID VALUE            Number              2
      Number Type : Integer
 49 SCI                   Number              5
     Number Type : Fixed Point
     Digits to left of Decimal = 2
 50 ADT                   Number              6
      Number Type : Integer
 51 KIP                   Number              5
      Number Type : Integer
 52 HIGHWAY DESIGN TYPE   Number              1
      Number Type : Integer
 53 FUNCTIONAL CLASS.     Number              1
      Number Type : Integer
 54 PRS                   Number              3
      Number Type : Integer

      PRINT STYLE SPECIFICATION Report Destination: Printer
  Allow Style modification at run-time Yes If disk Output, Filename:

  Now press DEFAULT VIEW to get default values for the remaining fields.
            Printer Name              :
            Pause after each page ?   : Yes +----------------------+
|         3               |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----      |
|         4               |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+     |     Length 0     Width 0     Starting position 0
|  |                |     |
|  |      Text      |     |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |  2  |   1.Left              0      2.Right           0
|  |      Area      |     |   3.Top to Header     0      4.Header to Text  0
|  |                |     |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+     |
|         6               |  TYPE STYLE
|   -----Footer-----      |     Characters Per Inch 0      Lines Per Inch  0
|         5               |     Highlights 1             2           3
+-------------------------+
```

Report Name: VISUAL RATING FORM

REPORT QUERY

```
  for VIS ;
list records
  COUNTY NUMBER in GROUPS ;
  HIGHWAY PREFIX in GROUPS ;
  HIGHWAY NUMBER in GROUPS ;
  HIGHWAY SUFFIX in GROUPS ;
  ROADWAY in groups ;
  FROM in order ;
  REFERENCE POINT ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  RECORD NUMBER .
```

No.	Name	Type	Length	
1	COUNTY NUMBER	Number	3	
	Number Type : Integer			
2	HIGHWAY PREFIX	Choice	2	
	Choice 1: no			
	Choice 2: yes			
3	HIGHWAY NUMBER	Num. String	4	
4	HIGHWAY SUFFIX	Choice	1	
	Choice 1: no			
	Choice 2: yes			
5	ROADWAY	Choice	1	
	Choice 1: no			
	Choice 2: yes			
6	MILEPOST	Number	3	
	Number Type : Integer			
7	MILEPOST DISP. SIGN	Choice	1	
	Choice 1: no			
	Choice 2: yes			
8	MILEPOST VALUE	Number	3	
	Number Type : Fixed Point			
	Digits to left of Decimal = 1			
9	RECORD NUMBER	Num. String	6	
10	FROM	Number	5	
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
11	REFERENCE POINT	Number	5	
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			

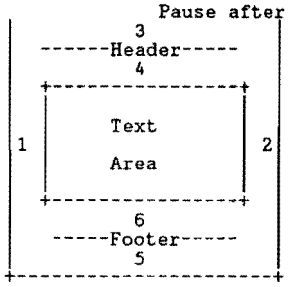
```
PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
Style modification at run-time  No If disk Output, Filename: FORM.PRN
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name              : HP SER.2 PORTRT
             Pause after each page ?   :  No +---------------------+
|           3             |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----     |
|           4             |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +-----------------+   |     Length 10    Width 14    Starting position 0
|   |                 |   |
|   |      Text       |   |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                 | 2 |   1.Left              0      2.Right           0
|   |      Area       |   |   3.Top to Header     0      4.Header to Text  0
|   |                 |   |   5.Footer to Bottom  0      6.Text to Footer  0
|   +-----------------+ |
|           6             |  TYPE STYLE
|    -----Footer-----     |     Characters Per Inch 17     Lines Per Inch  8
|           5             |     Highlights 1             2             3
+-------------------------+
```

```
Report Name: RIDE INPUT FORM

      REPORT QUERY
--------------------

FOR RIDE INPUT
;
list records
  COUNTY NUMBER ;
  HIGHWAY PREFIX in groups ;
  HIGHWAY NUMBER in groups ;
  HIGHWAY SUFFIX in groups ;
  ROADWAY in groups ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  FROM in ORDER ;
  REFERENCE POINT ;
  RECORD NUMBER .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.Group Header
.page
.header

 +-----------------------------------------------------------------------------+
 |                                                                             | |
 COUNTY: _1_  HIGHWAY: ___3___  ROADWAY: _   REFERENCE MILEPOST: _6___8_  |
 |                                                                             |
 +-----------------------------------------------------------------------------+
 |                                                                             |
 |          M  M  D  D  Y  Y                       MRM EQUIPMENT NUMBER        |
 |        +--+--+--+--+--+--+                    +--+--+--+--+--+--+--+--+     |
 |  DATE: |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |  |     |
 |        +--+--+--+--+--+--+                    +--+--+--+--+--+--+--+--+     |
 |                                                                             |
 |       +--+--+--+--+--+--+--+--+             +--+--+--+--+--+--+--+--+     |
 | ALPHA: |  |  |  |  |  |  |  |  |     BETA:  |  |  |  |  |  |  |  |  |     |
 |       +--+--+--+--+--+--+--+--+             +--+--+--+--+--+--+--+--+     |
 |                                                                             |
 +-----------------------+----------------+-----------------+-----------+--------+
 |     RECORD NUMBER     |      FROM      |       TO        | MRM VALUE |COMMENT|
 +-----------------------+----------------+-----------------+-----------+--------+
.items
 |       _9____          |     _10__      |      _11__      |   |   |   |   |   |
 +-----------------------+----------------+-----------------+---+---+---+---+---+
.footer

.Group Trailer
.end
.call PRNT.BAT

FIELD DESCRIPTIONS

No. Name                 Type             Length
-------------------- --------------- ------  ------
  1 COUNTY NUMBER        Number              3
      Number Type : Integer
  2 HIGHWAY PREFIX       Text                2
  3 HIGHWAY NUMBER       Num. String         4
  4 HIGHWAY SUFFIX       Text                1
  5 ROADWAY              Text                1
  6 MILEPOST             Number              3
        Number Type : Integer
  7 MILEPOST DISP. SIGN  Choice              1
        Choice   1: no
        Choice   2: yes
  8 MILEPOST VALUE       Number              3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
```

Report Name: RIDE INPUT FORM Continued...

No.	Name	Type	Length	
9	RECORD NUMBER	Num. String	6	
10	FROM	Number	5	
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
11	REFERENCE POINT	Number	5	
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			

PRINT STYLE SPECIFICATION Report Destination: Disk Allow
Style modification at run-time No If disk Output, Filename:
FORM.PRN
Now press DEFAULT VIEW to get default values for the remaining fields.
Printer Name :
Pause after each page ? : Yes



IF PRINTER NAME IS SPECIFIED ABOVE :

PAGE SIZE AND POSITION ON CARRIAGE (in inches)
Length 805 Width 0 Starting position 0

MARGINS (in inches): SEE FIGURE ON LEFT

1.Left	197	2.Right	0
3.Top to Header	0	4.Header to Text	0
5.Footer to Bottom	0	6.Text to Footer	0

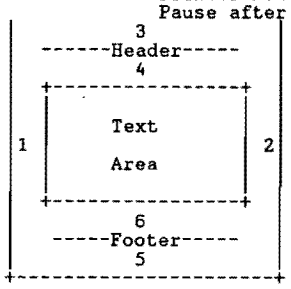
TYPE STYLE
Characters Per Inch 0 Lines Per Inch 805
Highlights 1 2 3

```
Report Name: DLS REFERENCE POINTS

      REPORT QUERY
--------------------

for MASTER
;
MODIFY RECORDS in DATE OF LAST SURFACE with ( FIRSTC(FROM,5) = "   . " and DLSFMPID =
  MASTER MASTERMPID )
  FROM := MASTER REFERENCE POINT .
end
for MASTER
;
modify records in DATE OF LAST SURFACE with ( FIRSTC(TO,5) = "   . " and DLSTMPID =
  MASTER MASTERMPID )
  TO := MASTER REFERENCE POINT .
end
list records in DATE OF LAST SURFACE with ( FIRSTC(FROM,5) = "   . " or FIRSTC(TO,5)
  = "   . " )
  RECORD NUMBER ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX IN ORDER ;
  HIGHWAY NUMBER IN ORDER ;
  HIGHWAY SUFFIX IN ORDER ;
  ROADWAY IN ORDER ;
  FROM MILEPOST IN ORDER ;
  FROM MILEPOST SIGN IN ORDER ;
  FRM MILEPOST DISP IN ORDER ;
  TO MILEPOST ;
  TO MILEPOST SIGN ;
  TO MILEPOST DISP ;
  FROM ;
  TO .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

.page
.header
                             DATE OF LAST SURFACE

                                  INVALID MILEPOSTS

    ========================================================================
     RECORD COUNTY HIGHWAY  ROADWAY   FROM      TO      FROM      TO
     NUMBER NUMBER                  MILEPOST MILEPOST REFERENCE REFERENCE
    ------------------------------------------------------------------------ .items
     _1____  _2_  ___4___    _      _7__9_  _______   _13__     _14__  .end
    ======================================================================== ÜFIELD
DESCRIPTIONS

No. Name                 Type             Length
-------------------- ---------------- ------ ------
  1 RECORD NUMBER        Num. String        6
  2 COUNTY NUMBER        Number             3
      Number Type : Integer
  3 HIGHWAY PREFIX       Choice             2
     Related Form Not Found
  4 HIGHWAY NUMBER       Num. String        4
  5 HIGHWAY SUFFIX       Choice             1
     Related Form Not Found
  6 ROADWAY              Choice             1
     Related Form Not Found
  7 FROM MILEPOST        Number             3
      Number Type : Integer
  8 FROM MILEPOST SIGN   Choice             1
     Related Form Not Found
  9 FRM MILEPOST DISP    Number             3
    Number Type : Fixed Point
    Digits to left of Decimal = 1
 10 TO MILEPOST          Number             3
     Number Type : Integer
 11 TO MILEPOST SIGN     Choice             1
    Related Form Not Found
 12 TO MILEPOST DISP     Number             3
    Number Type : Fixed Point
    Digits to left of Decimal = 1
 13 FROM                 Number             5
    Number Type : Fixed Point
    Digits to left of Decimal = 3
 14 TO                   Number             5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
```

Report Name: DLS REFERENCE POINTS Continued...

PRINT STYLE SPECIFICATION Report Destination: Printer Allow
Style modification at run-time Yes If disk Output, Filename:

Now press DEFAULT VIEW to get default values for the remaining fields.
Printer Name :
Pause after each page ? : Yes



IF PRINTER NAME IS SPECIFIED ABOVE :

PAGE SIZE AND POSITION ON CARRIAGE (in inches)
Length 0 Width 0 Starting position 0

MARGINS (in inches): SEE FIGURE ON LEFT

1.Left	0	2.Right	0
3.Top to Header	0	4.Header to Text	0
5.Footer to Bottom	0	6.Text to Footer	0

TYPE STYLE
Characters Per Inch 0 Lines Per Inch 0
Highlights 1 2 3

```
Report Name: DLS VALIDATION

      REPORT QUERY
--------------------

for DATE OF LAST SURFACE
with HIGHWAY PREFIX not = BLANK ;
list records
  RECORD NUMBER ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  FROM in order ;
  TO .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.items
_1_____2____4_____7____8___
.end

ÜFIELD DESCRIPTIONS¢

No. Name                 Type             Length
-------------------- ---------------  ------  ------
  1 RECORD NUMBER        Num. String       6
  2 COUNTY NUMBER        Number            3
        Number Type : Integer
  3 HIGHWAY PREFIX       Choice            2
        Choice   1: no
        Choice   2: yes
  4 HIGHWAY NUMBER       Num. String       4
  5 HIGHWAY SUFFIX       Choice            1
        Choice   1: no
        Choice   2: yes
  6 ROADWAY              Choice            1
        Choice   1: no
        Choice   2: yes
  7 FROM                 Number            5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  8 TO                   Number            5
     Number Type : Fixed Point
     Digits to left of Decimal = 3

 PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
 Style modification at run-time  No If disk Output, Filename: DLS.DAT
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name               :
             Pause after each page ?    : Yes +----------------------+
|          3           |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----   |
|          4           |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+  |     Length 0     Width 0     Starting position 0
|  |                |  |
|  |     Text       |  |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                | 2|   1.Left            0      2.Right            193
|  |     Area       |  |   3.Top to Header     0      4.Header to Text  0
|  |                |  |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+  |
|          6           |  TYPE STYLE
|   -----Footer-----   |     Characters Per Inch 0      Lines Per Inch  0
|          5           |     Highlights 1    2  3
+----------------------+
```

```
Report Name: DLS MERGE TO MASTER

      REPORT QUERY
--------------------

MODIFY RECORDS in MASTER with ( SURFACE TYPE > 0 ) SURFACE TYPE := BLANK ;
  DATE OF LAST SURFACE := BLANK .


for DATE OF LAST SURFACE
;
modify records in MASTER with ( COUNTY NUMBER = DATE OF LAST SURFACE COUNTY NUMBER
and
  HIGHWAY PREFIX = DATE OF LAST SURFACE HIGHWAY PREFIX and HIGHWAY NUMBER = DATE OF
  LAST SURFACE HIGHWAY NUMBER and HIGHWAY SUFFIX = DATE OF LAST SURFACE HIGHWAY
  SUFFIX and ROADWAY = DATE OF LAST SURFACE ROADWAY and REFERENCE POINT >= DATE OF
  LAST SURFACE FROM and REFERENCE POINT <= DATE OF LAST SURFACE TO ) SURFACE TYPE :=
  DATE OF LAST SURFACE SURFACE TYPE ; DATE OF LAST SURFACE := DATE OF LAST SURFACE
  DATE .

      REPORT FORMAT

1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

.page

        MASTER FILE HAS BEEN UPDATED WITH DATE OF LAST SURFACE DATA
```

```
   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----       |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +-----------------+     |     Length 0     Width 0     Starting position 0
|   |                 |     |
|   |      Text       |     |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                 |  2  |   1.Left              0       2.Right           0
|   |      Area       |     |   3.Top to Header     0       4.Header to Text  0
|   |                 |     |   5.Footer to Bottom  0       6.Text to Footer  0
|   +-----------------+     |
|          6                |  TYPE STYLE
|    -----Footer-----       |     Characters Per Inch 0       Lines Per Inch  0
|          5                |     Highlights 1              2  3
+---------------------------+
```

```
Report Name: MAINT SEC REF POINTS

      REPORT QUERY
--------------------

for MASTER
;
modify records in MAINTENANCE SECTIONS with ( FIRSTC(FROM REFERENCE,5) = "   . " and
  MSFMP = MASTER MASTERMPID )
  FROM REFERENCE := MASTER REFERENCE POINT .
end
for MASTER
;
modify records in MAINTENANCE SECTIONS with ( FIRSTC(TO REFERENCE,5) = "   . " a nd
  MSTMP = MASTER MASTERMPID )
  TO REFERENCE := MASTER REFERENCE POINT .
end
list records in MAINTENANCE SECTIONS with ( FIRSTC(FROM REFERENCE,5) = "   . " o r
  FIRSTC(TO REFERENCE,5) = "   . " )
  RECORD NUMBER ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX IN ORDER ;
  HIGHWAY NUMBER IN ORDER ;
  HIGHWAY SUFFIX IN ORDER ;
  ROADWAY IN ORDER ;
  FROM MILEPOST IN ORDER ;
  FROM MILEPOST SIGN IN ORDER ;
  FRM MILEPOST DISP IN ORDER ;
  TO MILEPOST ;
  TO MILEPOST SIGN ;
  TO MILEPOST DISP ;
  FROM REFERENCE ;
  TO REFERENCE .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
                                MAINTENANCE SECTION

                                 INVALID MILEPOSTS

    ======================================================================
     RECORD COUNTY HIGHWAY  ROADWAY   FROM     TO      FROM      TO
     NUMBER NUMBER                  MILEPOST MILEPOST REFERENCE REFERENCE
    ---------------------------------------------------------------------- .items
     _1____ _2_  ___4___    _      _7__9_  _______  _13__     _14__  .end
    ====================================================================== UFIELD
DESCRIPTIONS¢

No. Name                 Type             Length
-------------------- ---------------- ------ ------
  1 RECORD NUMBER        Num. String        6
  2 COUNTY NUMBER        Number             3
        Number Type : Integer
  3 HIGHWAY PREFIX       Choice             2
       Related Form Not Found
  4 HIGHWAY NUMBER       Num. String        4
  5 HIGHWAY SUFFIX       Choice             1
       Related Form Not Found
  6 ROADWAY              Choice             1
       Related Form Not Found
  7 FROM MILEPOST        Number             3
        Number Type : Integer
  8 FROM MILEPOST SIGN   Choice             1
       Related Form Not Found
  9 FRM MILEPOST DISP    Number             3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 10 TO MILEPOST          Number             3
       Number Type : Integer
 11 TO MILEPOST SIGN     Choice             1
      Related Form Not Found
 12 TO MILEPOST DISP     Number             3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 13 FROM REFERENCE       Number             5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
 14 TO REFERENCE         Number             5
      Number Type : Fixed Point
```

Continued on the next page ...

```
Report Name: MAINT SEC REF POINTS Continued...

 PRINT STYLE SPECIFICATION Report Destination: Printer    Allow
   Style modification at run-time Yes If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----       |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+      |     Length 0      Width 0      Starting position 0
|   |                |      |
|   |      Text      |      |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                |  2   |   1.Left              0       2.Right             0
|   |      Area      |      |   3.Top to Header     0       4.Header to Text    0
|   |                |      |   5.Footer to Bottom  0       6.Text to Footer    0
|   +----------------+      |
|          6                |  TYPE STYLE
|    -----Footer-----       |     Characters Per Inch 0       Lines Per Inch  816
|          5                |     Highlights 1    2  3
+---------------------------+
```

Report Name: HWY DESN REFER POINT

REPORT QUERY

```
--------------------
for MASTER
;
modify records in HIGHWAY DESIGN with ( FIRSTC(FROM REFERENCE,5) = "   . " and HDFMP
  = MASTER MASTERMPID )
  FROM REFERENCE := MASTER REFERENCE POINT .
end
for MASTER
;
modify records in HIGHWAY DESIGN with ( FIRSTC(TO REFERENCE,5) = "   . " and HDTMP =
  MASTER MASTERMPID )
  TO REFERENCE := MASTER REFERENCE POINT .
end
list records in HIGHWAY DESIGN with ( FIRSTC(FROM REFERENCE,5) = "   . " or FIRSTC(TO
  REFERENCE,5) = "   . " )
  RECORD NUMBER ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX IN ORDER ;
  HIGHWAY NUMBER IN ORDER ;
  HIGHWAY SUFFIX IN ORDER ;
  ROADWAY IN ORDER ;
  FROM MILEPOST IN ORDER ;
  FROM MILEPOST SIGN IN ORDER ;
  FRM MILEPOST DISP IN ORDER ;
  TO MILEPOST ;
  TO MILEPOST SIGN ;
  TO MILEPOST DISP ;
  FROM REFERENCE ;
  TO REFERENCE .
```

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
                              HIGHWAY DESIGN

                             INVALID MILEPOSTS

    ======================================================================
    RECORD COUNTY HIGHWAY  ROADWAY   FROM     TO      FROM      TO
    NUMBER NUMBER                  MILEPOST MILEPOST REFERENCE REFERENCE
    ---------------------------------------------------------------------- .items
    _1____ _2_  ___4___    _       _7__9_  _______   _13__     _14__  .end
    ====================================================================== ÜFIELD
```

FIELD DESCRIPTIONS

```
No. Name                 Type             Length
-------------------- ---------------- ------ ------
  1 RECORD NUMBER        Num. String        6
  2 COUNTY NUMBER        Number             3
        Number Type : Integer
  3 HIGHWAY PREFIX       Choice             2
       Related Form Not Found
  4 HIGHWAY NUMBER       Num. String        4
  5 HIGHWAY SUFFIX       Choice             1
       Related Form Not Found
  6 ROADWAY              Choice             1
       Related Form Not Found
  7 FROM MILEPOST        Number             3
        Number Type : Integer
  8 FROM MILEPOST SIGN   Choice             1
       Related Form Not Found
  9 FRM MILEPOST DISP    Number             3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 10 TO MILEPOST          Number             3
       Number Type : Integer
 11 TO MILEPOST SIGN     Choice             1
      Related Form Not Found
 12 TO MILEPOST DISP     Number             3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 13 FROM REFERENCE       Number             5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
 14 TO REFERENCE         Number             5
      Number Type : Fixed Point
```

```
Report Name: HWY DESN REFER POINT Continued...

 PRINT STYLE SPECIFICATION Report Destination: Printer    Allow
   Style modification at run-time Yes If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----     |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+    |     Length 0     Width 0     Starting position 0
|   |                |    |
|   |      Text      |    |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                |  2 |   1.Left              0      2.Right           0
|   |      Area      |    |   3.Top to Header     0      4.Header to Text  0
|   |                |    |   5.Footer to Bottom  0      6.Text to Footer  0
|   +----------------+    |
|          6              |  TYPE STYLE
|    -----Footer-----     |     Characters Per Inch 0      Lines Per Inch  0
|          5              |     Highlights 1             2  3 Underline
+-------------------------+
```

```
Report Name: HWY DSN MRG TO MASTR

      REPORT QUERY
--------------------

modify records in MASTER with ( HIGHWAY DESIGN TYPE > 0 ) HIGHWAY DESIGN TYPE :=
  BLANK .


for HIGHWAY DESIGN ;


modify records in MASTER with
  ( COUNTY NUMBER = HIGHWAY DESIGN COUNTY NUMBER and HIGHWAY PREFIX = HIGHWAY DESIGN
  HIGHWAY PREFIX and HIGHWAY NUMBER = HIGHWAY DESIGN HIGHWAY NUMBER and HIGHWAY
  SUFFIX = HIGHWAY DESIGN HIGHWAY SUFFIX and ROADWAY = HIGHWAY DESIGN ROADWAY and
  REFERENCE POINT >= HIGHWAY DESIGN FROM REFERENCE and REFERENCE POINT <= HIGHWAY
  DESIGN TO REFERENCE ) HIGHWAY DESIGN TYPE := HIGHWAY DESIGN HIGHWAY DESIGN .
END .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page

        MASTER FILE HAS BEEN UPDATED WITH HIGHWAY DESIGN DATA
```

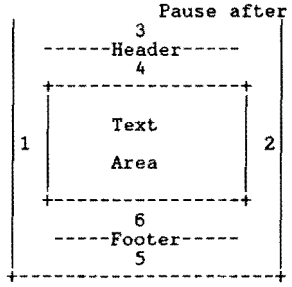
```
   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name              :
             Pause after each page ?    : Yes +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----     |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +-----------------+   |     Length 0     Width 0     Starting position 0
|   |                 |   |
|   |      Text       |   |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                 | 2 |   1.Left              0      2.Right           0
|   |      Area       |   |   3.Top to Header     0      4.Header to Text  0
|   |                 |   |   5.Footer to Bottom  0      6.Text to Footer  0
|   +-----------------+   |
|          6              |  TYPE STYLE
|    -----Footer-----     |     Characters Per Inch 0      Lines Per Inch  0
|          5              |     Highlights 1  Special 4  2           3
+-------------------------+
```

```
Report Name: 18-KIP REFER POINT

      REPORT QUERY
--------------------

for MASTER
;
modify records in 18-KIP VALUES with ( FIRSTC(FROM REFERENCE,5) = "    . " and KPFMP =
  MASTER MASTERMPID )
  FROM REFERENCE := MASTER REFERENCE POINT .
end
for MASTER
;
modify records in 18-KIP VALUES with ( FIRSTC(TO REFERENCE,5) = "    . " and KPTMP =
  MASTER MASTERMPID )
  TO REFERENCE := MASTER REFERENCE POINT .
end
list records in 18-KIP VALUES with ( FIRSTC(FROM REFERENCE,5) = "    . " or FIRSTC(TO
  REFERENCE,5) = "    . " )
  RECORD NUMBER ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX IN ORDER ;
  HIGHWAY NUMBER IN ORDER ;
  HIGHWAY SUFFIX IN ORDER ;
  ROADWAY IN ORDER ;
  FROM MILEPOST IN ORDER ;
  FROM MILEPOST SIGN IN ORDER ;
  FRM MILEPOST DISP IN ORDER ;
  TO MILEPOST ;
  TO MILEPOST SIGN ;
  TO MILEPOST DISP ;
  FROM REFERENCE ;
  TO REFERENCE .


      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
                                    18-KIP

                                INVALID MILEPOSTS

    ================================================================================
     RECORD COUNTY HIGHWAY  ROADWAY   FROM      TO       FROM       TO
     NUMBER NUMBER                   MILEPOST MILEPOST REFERENCE REFERENCE
    -------------------------------------------------------------------------------- .items
     _1____ _2_ ___4___ _ _7__9_ _____ _13__ _14__ .end
    ================================================================================ ÜFIELD
DESCRIPTIONS¢

No. Name                 Type            Length  Remove Spaces ---
--- -------------------- --------------- ------  ------
  1 RECORD NUMBER        Num. String          6
  2 COUNTY NUMBER        Number               3
       Number Type : Integer
  3 HIGHWAY PREFIX       Choice               2
      Related Form Not Found
  4 HIGHWAY NUMBER       Num. String          4
  5 HIGHWAY SUFFIX       Choice               1
      Related Form Not Found
  6 ROADWAY              Choice               1
      Related Form Not Found
  7 FROM MILEPOST        Number               3
       Number Type : Integer
  8 FROM MILEPOST SIGN   Choice               1
      Related Form Not Found
  9 FRM MILEPOST DISP    Number               3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 10 TO MILEPOST          Number               3
      Number Type : Integer
 11 TO MILEPOST SIGN     Choice               1
     Related Form Not Found
 12 TO MILEPOST DISP     Number               3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 13 FROM REFERENCE       Number               5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
 14 TO REFERENCE         Number               5
      Number Type : Fixed Point
```

Report Name: 18-KIP REFER POINT Continued...

PRINT STYLE SPECIFICATION Report Destination: Printer Allow
Style modification at run-time Yes If disk Output, Filename:

Now press DEFAULT VIEW to get default values for the remaining fields.
Printer Name :
Pause after each page ? : Yes



IF PRINTER NAME IS SPECIFIED ABOVE :

PAGE SIZE AND POSITION ON CARRIAGE (in inches)
Length 0 Width 0 Starting position 0

MARGINS (in inches): SEE FIGURE ON LEFT

1.Left	0	2.Right	0
3.Top to Header	0	4.Header to Text	0
5.Footer to Bottom	0	6.Text to Footer	0

TYPE STYLE
Characters Per Inch 0 Lines Per Inch 0
Highlights 1 2 Underline 3 Italicise

```
Report Name: 18-KIP MRG TO MASTR

      REPORT QUERY
--------------------

modify records in MASTER with ( KIP > 0 ) KIP := BLANK .

for 18-KIP VALUES ;

modify records in MASTER with
  ( COUNTY NUMBER = 18-KIP VALUES COUNTY NUMBER and HIGHWAY PREFIX = 18-KIP VALUES
  HIGHWAY PREFIX and HIGHWAY NUMBER = 18-KIP VALUES HIGHWAY NUMBER and HIGHWAY SUFFIX
  = 18-KIP VALUES HIGHWAY SUFFIX and ROADWAY = 18-KIP VALUES ROADWAY and
  REFERENCE POINT >= 18-KIP VALUES FROM REFERENCE and REFERENCE POINT <= 18-KIP
  VALUES TO REFERENCE ) KIP := 18-KIP VALUES KIP VALUE .

END .

      REPORT FORMAT

1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page


            MASTER FILE HAS BEEN UPDATED WITH 18-KIP DATA
                        .
```

```
   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
  Style modification at run-time  No If disk Output, Filename:

  Now press DEFAULT VIEW to get default values for the remaining fields.
            Printer Name              :
            Pause after each page ?    : Yes +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----      |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+     |     Length 0     Width 0     Starting position 0
|  |                |     |
|  |      Text      |     |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |  2  |   1.Left              0      2.Right           0
|  |      Area      |     |   3.Top to Header     0      4.Header to Text  0
|  |                |     |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+     |
|          6              |  TYPE STYLE
|   -----Footer-----      |     Characters Per Inch 0      Lines Per Inch  0
|          5              |     Highlights 1  Special 4  2           3
+-------------------------+
```

```
Report Name: ADT REFER POINT


      REPORT QUERY
--------------------

for MASTER
;
modify records in ADT VALUES with ( FIRSTC(FROM REFERENCE,5) = "    . " and ADFMP =
  MASTER MASTERMPID )
  FROM REFERENCE := MASTER REFERENCE POINT .
end
for MASTER
;
modify records in ADT VALUES with ( FIRSTC(TO REFERENCE,5) = "    . " and ADTMP =
  MASTER MASTERMPID )
  TO REFERENCE := MASTER REFERENCE POINT .
end
list records in ADT VALUES with ( FIRSTC(FROM REFERENCE,5) = "    . " or FIRSTC(TO
  REFERENCE,5) = "    . " )
  RECORD NUMBER ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX IN ORDER ;
  HIGHWAY NUMBER IN ORDER ;
  HIGHWAY SUFFIX IN ORDER ;
  ROADWAY IN ORDER ;
  FROM MILEPOST IN ORDER ;
  FROM MILEPOST SIGN IN ORDER ;
  FRM MILEPOST DISP IN ORDER ;
  TO MILEPOST ;
  TO MILEPOST SIGN ;
  TO MILEPOST DISP ;
  FROM REFERENCE ;
  TO REFERENCE .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
                                    ADT

                              INVALID MILEPOSTS

    ================================================================================
     RECORD COUNTY HIGHWAY  ROADWAY   FROM      TO       FROM       TO
     NUMBER NUMBER                   MILEPOST MILEPOST REFERENCE REFERENCE
    -------------------------------------------------------------------------------- .items
     _1____ _2_ ___4___ _   _7__9_ ________ _13__ _14__ .end
    ================================================================================ UFIELD
DESCRIPTIONS¢

No. Name                 Type           Length
--- -------------------- -------------- ------ ------
  1 RECORD NUMBER        Num. String         6
  2 COUNTY NUMBER        Number              3
       Number Type : Integer
  3 HIGHWAY PREFIX       Choice              2
      Related Form Not Found
  4 HIGHWAY NUMBER       Num. String         4
  5 HIGHWAY SUFFIX       Choice              1
      Related Form Not Found
  6 ROADWAY              Choice              1
      Related Form Not Found
  7 FROM MILEPOST        Number              3
       Number Type : Integer
  8 FROM MILEPOST SIGN   Choice              1
      Related Form Not Found
  9 FRM MILEPOST DISP    Number              3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 10 TO MILEPOST          Number              3
      Number Type : Integer
 11 TO MILEPOST SIGN     Choice              1
     Related Form Not Found
 12 TO MILEPOST DISP     Number              3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 13 FROM REFERENCE       Number              5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
 14 TO REFERENCE         Number              5
      Number Type : Fixed Point
```

ADR REFER POINT ...continued

```
   PRINT STYLE SPECIFICATION Report Destination: Printer    Allow
   Style modification at run-time Yes If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----        |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+       |     Length 0      Width 0      Starting position 0
|  |                |       |
|  |      Text      |       |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |  2    |   1.Left              0       2.Right            0
|  |      Area      |       |   3.Top to Header     0       4.Header to Text   0
|  |                |       |   5.Footer to Bottom  0       6.Text to Footer   0
|  +----------------+       |
|          6                |  TYPE STYLE
|   -----Footer-----        |     Characters Per Inch 0       Lines Per Inch  0
|          5                |     Highlights 1  Italicise  2 Underline 3 Special 2
+---------------------------+
```

Report Name: ADT MRG TO MASTR

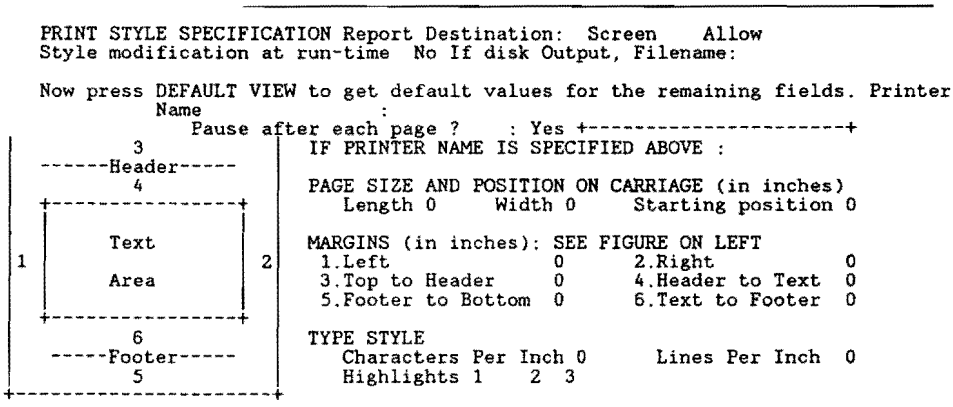
REPORT QUERY

```
modify records in MASTER with ( ADT > 0 ) ADT := BLANK .
for ADT VALUES
;
modify records in MASTER with ( COUNTY NUMBER = ADT VALUES COUNTY NUMBER and
  HIGHWAY PREFIX = ADT VALUES HIGHWAY PREFIX and HIGHWAY NUMBER = ADT VALUES HIGHWAY
  NUMBER and HIGHWAY SUFFIX = ADT VALUES HIGHWAY SUFFIX and ROADWAY = ADT VALUES
  ROADWAY and
  REFERENCE POINT >= ADT VALUES FROM REFERENCE and REFERENCE POINT <= ADT VALUES TO
  REFERENCE ) ADT := ADT VALUES ADT VALUE .
```

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

```
.page

                MASTER FILE HAS BEEN UPDATED WITH ADT DATA
```



Report Name: VIS UPDATE MASTER

ÜREPORT DEFINITION¢

REPORT QUERY

```
for VIS
with LANE not = BLANK ;
modify records in MASTER with ( MASTERID = VIS VISUALID ) LANE := VIS LANE ;
  RUT-SL := VIS RUT-SL ;
  RUT-MO := VIS RUT-MO ;
  RUT-SV := VIS RUT-SV ;

  RAV-SL := VIS RAV-SL ;
  RAV-MO := VIS RAV-MO ;
  RAV-SV := VIS RAV-SV ;

  FL-SL := VIS FL-SL ;
  FL-MO := VIS FL-MO ;
  FL-SV := VIS FL-SV ;

  COR-SL := VIS COR-SL ;
  COR-MO := VIS COR-MO ;
  COR-SV := VIS COR-SV ;
  ALG-SL := VIS ALG-SL ;
  ALG-MO := VIS ALG-MO ;
  ALG-SV := VIS ALG-SV ;

 LCKS-SL := VIS LCKS-SL ;
  LCKS-MO := VIS LCKS-MO ;
  LCKS-SV := VIS LCKS-SV ;

 TCKS-SL := VIS TCKS-SL ;
  TCKS-MO := VIS TCKS-MO ;
  TCKS-SV := VIS TCKS-SV ;

 CRACKS-SEALED ETC := VIS CRACKS-SEALED ETC ;

 PAT-SL := VIS PAT-SL ;
 PAT-MO := VIS PAT-MO ;
   PAT-SV := VIS PAT-SV ;

 TOTAL FAILURES := VIS TOTAL FAILURES ;
  PAVED-RIDE := VIS PAVED-RIDE ;
  PAVED-CONTRAST := VIS PAVED-CONTRAST ;
  PAVED-EDGE := VIS PAVED-EDGE ;
  PAVED-SHOULDER EDGE := VIS PAVED-SHOULDER EDGE ; PAVED-CRACKS := VIS PAVED-CRACKS ;
  PAVED-RAVEL := VIS PAVED-RAVEL ;
  PAVED-VEG := VIS PAVED-VEG ;
```

```
Report Name: VIS UPDATE MASTER Continued...

      REPORT QUERY
--------------------

  UNPAVED-EDGE := VIS UNPAVED-EDGE ;
  UNPAVED-RUT-CR-ROCK := VIS UNPAVED-RUT-CR-ROCK ; COMMENTS := VIS COMMENTS ;
  PRS := VIS RESERVED 1 .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page

      MASTER FILE HAS BEEN UPDATED WITH VISUAL DATA ÜFIELD DESCRIPTIONS¢
```

```
   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----        |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+       |     Length 0     Width 0     Starting position 0
|  |                |       |
|  |      Text      |       |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |  2    |   1.Left              0      2.Right           0
|  |      Area      |       |   3.Top to Header     0      4.Header to Text  0
|  |                |       |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+       |
|          6                |  TYPE STYLE
|   -----Footer-----        |     Characters Per Inch 0      Lines Per Inch  0
|          5                |     Highlights 1  Special 4  2           3
+---------------------------+
```

```
Report Name: RIDE MASTER UPDATE

      REPORT QUERY
--------------------

for RIDE INPUT
with MRM VALUE > 0 ;
modify records in MASTER with ( MASTERID = RIDE INPUT RIDEID ) RIDE VALUE := RIDE
  INPUT SI VALUE ;
  RIDE DATE := RIDE INPUT YEAR .
end
for SIOMETER RIDE VALUES
with SI VALUE > 0 ;
modify records in MASTER with ( MASTERID = SIOMETER RIDE VALUES RIDEID ) RIDE VALUE
  := SIOMETER RIDE VALUES SI VALUE ; RIDE DATE := SIOMETER RIDE VALUES YEAR . end

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page


   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|           3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----      |
|           4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +-----------------+    |     Length 0     Width 0     Starting position 0
|   |                 |    |
|   |      Text       |    |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                 | 2  |   1.Left              0      2.Right           0
|   |      Area       |    |   3.Top to Header     0      4.Header to Text  0
|   |                 |    |   5.Footer to Bottom  0      6.Text to Footer  0
|   +-----------------+    |
|           6              |  TYPE STYLE
|    -----Footer-----      |     Characters Per Inch 0      Lines Per Inch  0
|           5              |     Highlights 1  Special 4  2           3
+--------------------------+
```

Report Name: FWD MASTER UPDATE

REPORT QUERY

```
for FWD INPUT
with W1 > 0 ;
modify records in MASTER with ( MASTERID = FWD INPUT FWDID ) SCI2 := SCI1 ;
  SCI1 := SCI ;
  W1 := FWD INPUT W1 ;
  W2 := FWD INPUT W2 ;
  W6 := FWD INPUT W6 ;
  W7 := FWD INPUT W7 ;
  SCI := FWD INPUT SCI ;
  SCIYR2 := SCIYR1 ;
  SCIYR1 := LASTC(DATE,2) ;
  DATE := FWD INPUT DATE .
```

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

.page

Report Name: SKID MASTER UPDATE

REPORT QUERY

```
for SKID INPUT
with SKID VALUE > 0 ;
modify records in MASTER with ( MASTERID = SKID INPUT SKIDID ) SKID2 := SKID1 ;
  SKID1 := SKID VALUE ;
  SKID VALUE := SKID INPUT SKID VALUE ;
  SKIDYR2 := SKIDYR1 ;
  SKIDYR1 := SKID DATE ;
  SKID DATE := SKID INPUT SKID DATE .
```

```
Report Name: FC REFER POINT

      REPORT QUERY
--------------------

for MASTER
;
modify records in FUNCT CLASS with ( FIRSTC(FROM REFERENCE,5) = "    . " and FCFMP =
  MASTER MASTERMPID )
  FROM REFERENCE := MASTER REFERENCE POINT .
end
for MASTER
;
modify records in FUNCT CLASS with ( FIRSTC(TO REFERENCE,5) = "    . " and FCTMP =
  MASTER MASTERMPID )
  TO REFERENCE := MASTER REFERENCE POINT .
end
list records in FUNCT CLASS with ( FIRSTC(FROM REFERENCE,5) = "    . " or FIRSTC(TO
  REFERENCE,5) = "    . " )
  RECORD NUMBER ;
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX IN ORDER ;
  HIGHWAY NUMBER IN ORDER ;
  HIGHWAY SUFFIX IN ORDER ;
  ROADWAY IN ORDER ;
  FROM MILEPOST IN ORDER ;
  FROM MILEPOST SIGN IN ORDER ;
  FRM MILEPOST DISP IN ORDER ;
  TO MILEPOST ;
  TO MILEPOST SIGN ;
  TO MILEPOST DISP ;
  FROM REFERENCE ;
  TO REFERENCE .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
                              FUNCTIONAL CLASS

                              INVALID MILEPOSTS

    ==========================================================================
     RECORD COUNTY HIGHWAY  ROADWAY   FROM      TO       FROM       TO
     NUMBER NUMBER                  MILEPOST MILEPOST REFERENCE REFERENCE
    -------------------------------------------------------------------------- .items
     _1____ _2_ ___4___ _ _7___9_ _______ _13__ _14__ .end
    ========================================================================== UFIELD
DESCRIPTIONS

No. Name                 Type            Length
--- -------------------- --------------- ------ ------
  1 RECORD NUMBER        Num. String        6
  2 COUNTY NUMBER        Number             3
       Number Type : Integer
  3 HIGHWAY PREFIX       Choice             2
      Related Form Not Found
  4 HIGHWAY NUMBER       Num. String        4
  5 HIGHWAY SUFFIX       Choice             1
      Related Form Not Found
  6 ROADWAY              Choice             1
      Related Form Not Found
  7 FROM MILEPOST        Number             3
       Number Type : Integer
  8 FROM MILEPOST SIGN   Choice             1
      Related Form Not Found
  9 FRM MILEPOST DISP    Number             3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 10 TO MILEPOST          Number             3
      Number Type : Integer
 11 TO MILEPOST SIGN     Choice             1
     Related Form Not Found
 12 TO MILEPOST DISP     Number             3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 13 FROM REFERENCE       Number             5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
 14 TO REFERENCE         Number             5
      Number Type : Fixed Point
```

FC REFER POINT ...continued

```
   PRINT STYLE SPECIFICATION Report Destination: Printer    Allow
   Style modification at run-time Yes If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----       |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+      |     Length 0      Width 0      Starting position 0
|   |                |      |
|   |      Text      |      |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                |  2   |   1.Left                0       2.Right           0
|   |      Area      |      |   3.Top to Header       0       4.Header to Text  0
|   |                |      |   5.Footer to Bottom    0       6.Text to Footer  0
|   +----------------+      |
|          6                |  TYPE STYLE
|    -----Footer-----       |     Characters Per Inch 0       Lines Per Inch  0
|          5                |     Highlights 1              2 Italicise 3 Italicise
+---------------------------+
```

```
Report Name: FC MRG TO MASTR

ÜREPORT DEFINITION¢


      REPORT QUERY
--------------------

modify records in MASTER with ( FUNCTIONAL CLASS. > 0 ) FUNCTIONAL CLASS. := BLANK .
for FUNCT CLASS
;
modify records in MASTER with ( COUNTY NUMBER = FUNCT CLASS COUNTY NUMBER and
  HIGHWAY PREFIX = FUNCT CLASS HIGHWAY PREFIX and HIGHWAY NUMBER = FUNCT CLASS
  HIGHWAY NUMBER and HIGHWAY SUFFIX = FUNCT CLASS HIGHWAY SUFFIX and ROADWAY = FUNCT
  CLASS ROADWAY and
  REFERENCE POINT >= FUNCT CLASS FROM REFERENCE and REFERENCE POINT <= FUNCT CLASS TO
  REFERENCE ) FUNCTIONAL CLASS. := FUNCT CLASS FC VALUE .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page


      MASTER FILE HAS BEEN UPDATED WITH FUNCTIONAL CLASSIFICATION DATA
```

```
   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----        |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+       |     Length 0     Width 0     Starting position 0
|  |                |       |
|  |      Text      |       |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |  2    |   1.Left              0      2.Right           0
|  |      Area      |       |   3.Top to Header     0      4.Header to Text  0
|  |                |       |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+       |
|          6                |  TYPE STYLE
|   -----Footer-----        |     Characters Per Inch 0      Lines Per Inch  0
|          5                |     Highlights 1  Special 4  2           3
+---------------------------+
```

Report Name: VALIDAT PAVE RECORDS

Data-Entry Form Name: VALIDAT PAVE RECORDS

SCREEN DESCRIPTION¢

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                    STATE OF TEXAS PAVEMENT DATA ENTRY

                  +-----------------------------------+
                  |          EDIT CHECK REPORT        |
                  |    FOR PAVEMENT-DATA ENTRY RECORDS |
                  +-----------------------------------+

                  RUN THIS REPORT ONLY AFTER ALL PAVEMENT
                     DATA RECORDS HAVE BEEN ENTERED

          +-------------------------------------------------------------+
          |                                                             |
          |  This report examines each record and checks for illegal data |
          |  values that are not checked for during data entry.  This run |
          |  produces a report showing the invalid data fields along with |
          |  the record number of that record.                          |
          +-------------------------------------------------------------+

          RUN DATE: _1_____    { Press the RETURN key to generate }

                     [ PRESS THE F2 KEY TO BEGIN THE RUN ]
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Req offset	Req	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent
1	RUN DATE	Date	8	6	3			*		*	

Formula: ??/??/??

Display Attribute: Highlight 1

Record Size: 9 Memory: Text = 1034 Fields = 70 Total = 1104

REPORT QUERY

```
define "check sum 1" number .
define "check sum 2" number .
define "check sum 3" number .
define "check sum 4" number .
define "check sum 5" number .
define "check sum 6" number .
define "check sum 7" number .
define "check sum 8" number .
define "total sum" number .
DEFINE "PAVED SUM" NUMBER .
DEFINE "UNPAVED SUM" NUMBER .
define "rutting" Text 8 .
define "raveling" text 8 .
define "flushing" text 8 .
define "corrugations" text 8 .
define "allig crack" text 8 .
define "long crack" text 8 .
define "trans crack" text 8 .
define "patching" text 8 .
define "paved-unpaved" text 14 .
define "error count" number .
define "sum count" number .

for VIS with LANE not = BLANK ;
   rutting :=  "-- 0 -- " .
   raveling := "-- 0 -- " .
   flushing := "-- 0 -- " .
   corrugations := "-- 0 -- " .
   allig crack :=  "-- 0 -- " .
   long crack :=   "-- 0 -- " .
```

```
Report Name: VALIDAT PAVE RECORDS Continued...

      REPORT QUERY
--------------------

   trans crack :=  "-- 0 -- " .
   patching :=     "-- 0 -- " .
   paved-unpaved := "----- 0 ----- " .

  SUM COUNT := 0 .
  ERROR COUNT := 0 .

   check sum 1 := rut-sl + rut-mo + rut-sv + rav-sl + rav-mo + rav-sv . check sum 2
   := fl-sl + fl-mo + fl-sv +cor-sl + cor-mo + cor-sv . check sum 3 := alg-sv +
   alg-mo + alg-sl + lcks-sl + lcks-mo + lcks-sv . check sum 4 := tcks-sl + tcks-mo +
   tcks-sv + cracks-sealed etc . check sum 5 := pat-sl + pat-mo + pat-sv + total
   failures + paved-ride . check sum 6 := paved-contrast + paved-edge +
   paved-shoulder edge . check sum 7 := paved-cracks + paved-ravel + paved-veg +
   unpaved-edge . check sum 8 := unpaved-rut-cr-rock .
   total sum := check sum 1 + check sum 2 + check sum 3 + check sum 4 + check su m 5
+ check sum 6 + check sum 7 + check sum 8 .

 IF TOTAL SUM > 0 THEN

    sum count := rut-sl + rut-mo + rut-sv . if sum count > 7 then
         rutting := "RUT ERR " .
         error count := error count + 1 .
       else
       end
       sum count := 0 .
       sum count := RAV-SL + RAV-MO + RAV-SV .
        if sum count > 7 then
         raveling := "RAV ERR " .
                 error count := error count + 1 . else
        end

       sum count := 0 .
       sum count := fl-sl + fl-mo + fl-sv .
        if sum count > 7 then
          flushing := "FLU ERR " .
                  error count := error count + 1 . else
        end
      sum count := 0 .
      sum count := cor-sl + cor-mo + cor-sv .
        if sum count > 7 then
          error count := error count + 1 .
                  corrugations := "CORR ERR" .
         else
         end
       sum count := 0 .
       sum count := alg-sl + alg-mo + alg-mo .
       If sum count > 7 then
          error count := error count + 1 .
                  allig crack := "ALG ERR " .
         else
         end
     sum count := 0 .
     sum count := lcks-sl + lcks-mo + lcks-sv .
        if sum count > 9 then
         long crack := "LGT ERR " .
                 error count := error count + 1 . else
        end
     sum count := 0 .
     sum count := tcks-sl + tcks-mo + tcks-sv .
         if sum count > 9 then
          trans crack := "TRCK ERR" .
          error count := error count + 1 .
              else
     end
     sum count := 0 .
     sum count := PAT-SL + PAT-MO + PAT-SV .
         if sum count > 7 then
          patching := "PAT ERR " .
                  error count := error count + 1 . else

  PAVED SUM := PAVED-RIDE + PAVED-CONTRAST + PAVED-EDGE + PAVED-SHOULDER EDGE +
PAVED-CRACKS + PAVED-RAVEL + PAVED-VEG .
  UNPAVED SUM := UNPAVED-EDGE + UNPAVED-RUT-CR-ROCK . IF PAVED SUM > 0 AND
       UNPAVED SUM > 0 THEN
       ERROR COUNT := ERROR COUNT + 1 .
         PAVED-UNPAVED := "MUT. EXC ERROR" . ELSE
  END
ELSE
END

if temp error count > 0 then
```

```
Report Name: VALIDAT PAVE RECORDS Continued...  COUNTY NUMBER ;

LIST RECORDS
  current date ;
  current time ;
  current page number ;
  DISTRICT ;
  RECORD NUMBER ;
  HIGHWAY PREFIX ;
  HIGHWAY NUMBER ;
  HIGHWAY SUFFIX ;
  ROADWAY ;
  FROM ;
  REFERENCE POINT ;
  LANE ;
  temp rutting ;
  temp raveling ;
  temp flushing ;
  temp corrugations ;
  temp allig crack ;
  temp long crack ;
  temp trans crack ;
  temp patching ;
  temp paved-unpaved ;
  temp error count ;
  temp total sum ;
  RECORD NUMBER .
end
end.
END .
```

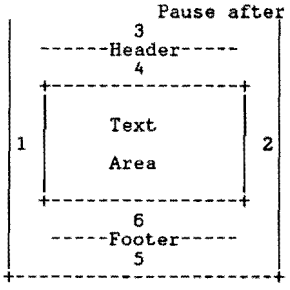
FIELD DESCRIPTIONS

No.	Name	Type	Length
1	current date	Date	8
2	DISTRICT	Number	3
	Number Type : Integer		
3	current time	Time	8
4	current page number	Number	3
	Number Type : Integer		
5	RECORD NUMBER	Num. String	6
6	COUNTY NUMBER	Number	3
7	HIGHWAY PREFIX	Choice	2
	Choice 1: no		
	Choice 2: yes		
8	HIGHWAY NUMBER	Num. String	4
9	HIGHWAY SUFFIX	Choice	1
	Choice 1: no		
	Choice 2: yes		
10	ROADWAY	Choice	1
	Choice 1: no		
	Choice 2: yes		
11	FROM	Number	5
	Number Type : Fixed Point		
	Digits to left of Decimal = 3		
12	REFERENCE POINT	Number	5
	Number Type : Fixed Point		
	Digits to left of Decimal = 3		
13	LANE	Text	1
14	temp rutting	Text	8
15	temp raveling	Text	8
16	temp flushing	Text	8
17	temp corrugations	Text	8
18	temp allig crack	Text	8
19	temp long crack	Text	8
20	temp trans crack	Text	8
21	temp patching	Text	8
22	temp paved-unpaved	Text	14
23	temp error count	Number	5
	Number Type : Integer		
24	RECORD NUMBER	Num. String	6

Validate Pavement Records...continued

PRINT STYLE SPECIFICATION Report Destination: Printer Allow
Style modification at run-time Yes If disk Output, Filename:

Now press DEFAULT VIEW to get default values for the remaining fields.
Printer Name : HP Ser.2 Landsp
Pause after each page ? : No



IF PRINTER NAME IS SPECIFIED ABOVE :

PAGE SIZE AND POSITION ON CARRIAGE (in inches)
Length 8 Width 11 Starting position 0

MARGINS (in inches): SEE FIGURE ON LEFT

1.Left	0	2.Right	0
3.Top to Header	0	4.Header to Text	0
5.Footer to Bottom	1	6.Text to Footer	0

TYPE STYLE
Characters Per Inch 17 Lines Per Inch 6
Highlights 1 2 3

Report Name: FWD VIEW

Data-Entry Form Name: FWD VIEW

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                          +--------------------+ |FWD ERROR CORRECTIONS|
                          +--------------------+

               Complete the entries below, then press "F2"

                          HIGHWAY PREFIX: __

                          HIGHWAY NUMBER: _2__

                          HIGHWAY SUFFIX: _

                                 ROADWAY: _
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS¢

No.	Name	Type	Long	Record	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent	Size	offset
1	HP	Text	2	2	3	*						
2	HN	Num. String	4	4	5	*						
	Formated as : Other Format				0000							
3	HS	Text	1	1	9							
4	RD	Text	1	1	10	*						

Record Size: 11 Memory: Text = 412 Fields = 98 Total = 510

REPORT QUERY

```
for FWD INPUT
with HIGHWAY PREFIX = data-entry HP and
  HIGHWAY NUMBER = data-entry HN and
  HIGHWAY SUFFIX = data-entry HS and
  ROADWAY = data-entry RD ;

list records
  RECORD NUMBER in order ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX ;
  HIGHWAY NUMBER ;
  HIGHWAY SUFFIX ;
  ROADWAY ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  REFERENCE POINT .
```

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
                              FWD ERROR CORRECTIONS

        ================================================================== RECORD
          COUNTY    HIGHWAY     ROADWAY    REFERENCE  MILEPOST
          NUMBER    NUMBER                            POINT
        ------------------------------------------------------------------ .items
                    _1____      _2_      ___4___        _          _7___   _8_____
.end
        ==================================================================
```

```
FWD VIEW....continued:  FIELD DESCRIPTIONS

No. Name                 Type            Length
  ------------------- ---------------- ------  ------
  1 RECORD NUMBER        Num.
       String        6
  2 COUNTY NUMBER        Number             3
       Number Type : Integer
  3 HIGHWAY PREFIX       Text               2
  4 HIGHWAY NUMBER       Num. String        4
  5 HIGHWAY SUFFIX       Text               1
  6 ROADWAY              Text               1
  7 REFERENCE POINT      Number             5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  8 MILEPOST             Number             3
       Number Type : Integer
  9 MILEPOST DISP. SIGN  Choice             1
     Related Form Not Found
 10 MILEPOST VALUE       Number             3
     Number Type : Fixed Point
     Digits to left of Decimal = 1


   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name              :
             Pause after each page ?   : Yes +----------------------+
|          3          |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----  |
|          4          |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+ |     Length 0     Width 0     Starting position 0
|  |                | |
|  |      Text      | |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |2|   1.Left              0      2.Right           0
|  |      Area      | |   3.Top to Header     0      4.Header to Text  0
|  |                | |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+ |
|          6          |  TYPE STYLE
|   -----Footer-----  |     Characters Per Inch 0      Lines Per Inch  0
|          5          |     Highlights 1             2           3
+---------------------+
```

Report Name: EXPORT PAVE RECORDS

Data-Entry Form Name: EXPORT PAVE RECORDS

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                          +----------------------+
                          |  MICRO-RAMS DATA BASE |
                          +----------------------+

                    +-----------------------------------+
                    |    TEXAS STATE HIGHWAY DEPARTMENT |
                    |                 &                 |
                    |  THE TEXAS TRANSPORTATION INSTITUTE |
                    |       TEXAS A&M UNIVERSITY        |
                    +-----------------------------------+

                    EXPORT PAVEMENT RECORD DATA TO DISK FILE

          RUN DATE: _1_____ (Press RETURN to automatically generate)

                    ******* PRESS THE F2 KEY TO BEGIN *******
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent	Size
1	RUN DATE Formula: ??/??/??	Date	8	6	3			*			

Record Size: 9 Memory: Text = 772 Fields = 70 Total = 842

REPORT QUERY

```
delete records in PRS-SRS INPUT FILE .
for VIS with lane not = BLANK ;
list records
  RECORD NUMBER in order ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX ;
  HIGHWAY NUMBER ;
  FROM ;
  REFERENCE POINT ;
  LANE ;
  RUT-SL ;
  RUT-MO ;
  RUT-SV ;
  rav-sl ;
  RAV-MO ;
  RAV-SV ;
  FL-SL ;
  FL-MO ;
  FL-SV ;
  COR-SL ;
  COR-MO ;
  COR-SV ;
  ALG-SL ;
  ALG-MO ;
  ALG-SV ;
  LCKS-SL ;
  LCKS-MO ;
  LCKS-SV ;
  TCKS-SL ;
  TCKS-MO ;
  TCKS-SV ;
  CRACKS-SEALED ETC ;
  PAT-SL ;
  PAT-MO ;
  PAT-SV ;
  TOTAL FAILURES ;
  PAVED-RIDE ;
  PAVED-CONTRAST ;
  PAVED-EDGE ;
  PAVED-SHOULDER EDGE ;
  PAVED-CRACKS ;
  PAVED-RAVEL ;
  PAVED-VEG ;
  UNPAVED-EDGE ;
  UNPAVED-RUT-CR-ROCK .
```

Report Name: EXPORT PAVE RECORDS Continued...

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

.page
.items
_1____,_2_,__,_4__,_5___,_6___,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,_,
_,__,_,_,_,_,_,_,_,_
.end
```

FIELD DESCRIPTIONS

```
No. Name                 Type            Length  Remove Spaces ---
-------------------- --------------- ------ ------
  1 RECORD NUMBER        Num. String       6
  2 COUNTY NUMBER        Number            3
        Number Type : Integer
  3 HIGHWAY PREFIX       Choice            2
      Related Form Not Found
  4 HIGHWAY NUMBER       Num. String       4
  5 FROM                 Number            5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  6 REFERENCE POINT      Number            5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  7 LANE                 Text              1
  8 RUT-SL               Number            1
        Number Type : Integer
  9 RUT-MO               Number            1
        Number Type : Integer
 10 RUT-SV               Number            1
      Number Type : Integer
 11 rav-sl               Number            1
      Number Type : Integer
 12 RAV-MO               Number            1
      Number Type : Integer
 13 RAV-SV               Number            1
      Number Type : Integer
 14 FL-SL                Number            1
      Number Type : Integer
 15 FL-MO                Number            1
      Number Type : Integer
 16 FL-SV                Number            1
      Number Type : Integer
 17 COR-SL               Number            1
      Number Type : Integer
 18 COR-MO               Number            1
      Number Type : Integer
 19 COR-SV               Number            1
      Number Type : Integer
 20 ALG-SL               Number            1
    Number Type : Integer
 21 ALG-MO               Number            1
    Number Type : Integer
 22 ALG-SV               Number            1
    Number Type : Integer
 23 LCKS-SL              Number            1
    Number Type : Integer
 24 LCKS-MO              Number            1
    Number Type : Integer
 25 LCKS-SV              Number            1
    Number Type : Integer
 26 TCKS-SL              Number            1
    Number Type : Integer
 27 TCKS-MO              Number            1
    Number Type : Integer
 28 TCKS-SV              Number            1
    Number Type : Integer
 29 CRACKS-SEALED ETC    Number            1
    Number Type : Integer
 30 PAT-SL               Number            1
    Number Type : Integer
 31 PAT-MO               Number            1
    Number Type : Integer
 32 PAT-SV               Number            1
    Number Type : Integer
 33 TOTAL FAILURES       Number            2
    Number Type : Integer
 34 PAVED-RIDE           Number            1
    Number Type : Integer
 35 PAVED-CONTRAST       Number            1
    Number Type : Integer
 36 PAVED-EDGE           Number            1
    Number Type : Integer
```

```
Report Name: EXPORT PAVE RECORDS Continued...
No. Name                  Type             Length         Spaces
--- --------------------- ---------------- ------         ------

 37 PAVED-SHOULDER EDGE   Number             1
      Number Type : Integer
 38 PAVED-CRACKS          Number             1
      Number Type : Integer

 39 PAVED-RAVEL           Number             1
      Number Type : Integer
 40 PAVED-VEG             Number             1
      Number Type : Integer
 41 UNPAVED-EDGE          Number             1
      Number Type : Integer
 42 UNPAVED-RUT-CR-ROCK   Number             1
      Number Type : Integer
```

```
        PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
        Style modification at run-time  No If disk Output, Filename:
          EXPORT.VIS
   Now press DEFAULT VIEW to get default values for the remaining fields.
            Printer Name                :
            Pause after each page ?     : Yes +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----       |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+      |     Length 0     Width 0     Starting position 0
|   |                |      |
|   |      Text      |      |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                |  2   |   1.Left              0      2.Right           0
|   |      Area      |      |   3.Top to Header     0      4.Header to Text  0
|   |                |      |   5.Footer to Bottom  0      6.Text to Footer  0
|   +----------------+      |
|          6                |  TYPE STYLE
|    -----Footer-----       |     Characters Per Inch 0      Lines Per Inch  0
|          5                |     Highlights 1             2            3
+---------------------------+
```

Report Name: CRITICAL PRS/ADT

Data-Entry Form Name: CRITICAL PRS/ADT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

DISTRICT 21 HIGHWAY SEGMENT DATABASE

```
+-------------------------+        +---------------+
|                         |        | MAKE SURE THE |
| BATCH RUN TO PRODUCE    |        | PRINTER IS ON |
| 0.1-MILE RECORDS FROM   |        | LINE AND SET  |
| THE MASTER FILE SORTED  |        | TO TOP-OF-FORM|
| BY CRITICAL PRS & ADT   |        +---------------+
+-------------------------+
```

Version 1-88

Enter the required critical PRS and ADT sorting values below. Note: by pressing <RETURN> for each field, will assign the default value.

Critical PRS Score: [<=] _1_ [Default = 50]

Critical ADT Value: [>=] _2_____ [Default = 5000 vpd]

Press the F2 Key to begin the Batch Run

```
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record offset		Required	Index	Unique	Derived	Rng Chk	Prevent	Size
1	CRITICAL PRS SCORE Number Type : Integer Lower Limit: 0 Upper Limit: 100 Formula: 50	Number	3	2	3	*			*	*		
2	CRITICAL ADT Number Type : Integer Lower Limit: 0 Upper Limit: 32000 Formula: 5000	Number	7	4	5	*			*	*		

Record Size: 9 Memory: Text = 1043 Fields = 205 Total = 1248

REPORT QUERY

```
for MASTER
with PRS <= data-entry CRITICAL PRS SCORE and PRS not = BLANK and
  ADT >= data-entry CRITICAL ADT ;
list records
  current page number ;
  current item number ;
  data-entry CRITICAL PRS SCORE ;
  data-entry CRITICAL ADT ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  REFERENCE POINT in order ;
  LANE ;
  PRS :  item mean ;
  ADT :  item mean ;
  MAINTENANCE SECTION ;
DATE OF LAST SURFACE .
```

Report Name: CRITICAL RIDE/ADT

Data-Entry Form Name: CRITICAL RIDE/ADT

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                      DISTRICT 21 HIGHWAY SEGMENT DATABASE

                 +-------------------------+          +---------------+
                 |                         |          | MAKE SURE THE |
                 | BATCH RUN TO PRODUCE    |          | PRINTER IS ON |
                 | 0.1-MILE RECORDS FROM   |          | LINE AND SET  |
                 | THE MASTER FILE SORTED  |          | TO TOP-OF-FORM|
                 | BY CRITICAL RIDE & ADT  |          +---------------+
                 +-------------------------+
                        Version 1-88

    Enter the required critical RIDE and ADT sorting values below.  Note: by pressing
    <RETURN> for each field, will assign the default value.

        Critical RIDE Score: [ <= ]    _1__         [ Default = 2.8 ]

        Critical ADT Value:  [ >= ]    _2_____      [ Default = 5000 vpd ]

                      Press the F2 Key to begin the Batch Run
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS¢

No.	Name	Type	Long	Record offset		Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent	Size
1	CRITICAL RIDE SCORE	Number	4	4	3	*				*	*	
	Number Type : Fixed Point Lower Limit: 0 Upper Limit: 5 Formula: 2.8 Display Attribute: Highlight 1											
2	CRITICAL ADT	Number	7	4	7	*				*	*	
	Number Type : Integer Lower Limit: 0 Upper Limit: 32000 Formula: 5000											

Record Size: 11 Memory: Text = 1046 Fields = 205 Total = 1251

REPORT QUERY

```
for MASTER
with RIDE VALUE <= data-entry CRITICAL RIDE SCORE and RIDE VALUE not = BLANK and
  ADT >= data-entry CRITICAL ADT ;
list records
  current page number ;
  current item number ;
  data-entry CRITICAL RIDE SCORE ;
  data-entry CRITICAL ADT ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  REFERENCE POINT in order ;
  LANE ;
  RIDE VALUE :  item mean ;
  ADT :  item mean ;
  MAINTENANCE SECTION ;
  DATE OF LAST SURFACE .
```

Report Name: CRITICAL RIDE/ADT Continued...

REPORT QUERY

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

```
.page
.header
                    Critical Ride and ADT Summary Report
                              BROOKS COUNTY (024)

        Critical RIDE Score: _1__     Critical ADT Value Specified: _2_____

                              Page No. _3_
```

Report Name: CRITICAL SCI/ADT

Data-Entry Form Name: CRITICAL SCI/ADT

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                    DISTRICT 21 HIGHWAY SEGMENT DATABASE

                 +-------------------------+          +---------------+
                 |                         |          | MAKE SURE THE |
                 | BATCH RUN TO PRODUCE    |          | PRINTER IS ON |
                 | 0.1-MILE RECORDS FROM   |          | LINE AND SET  |
                 | THE MASTER FILE SORTED  |          | TO TOP-OF-FORM|
                 | BY CRITICAL SCI & ADT   |          +---------------+
                 +-------------------------+
                      Version 1-88

    Enter the required critical SCI and ADT sorting values below.  Note: by pressing
    <RETURN> for each field, will assign the default value.

      Critical SCI Score: [ >= ]       _1____       [ Default = 1.00 ]

      Critical ADT Value: [ >= ]       _2_____      [ Default = 5000 vpd ]

                    Press the F2 Key to begin the Batch Run
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent	Size
1	CRITICAL SCI	Number	6	4	3	*			*	*	
	Number Type : Fixed Point										
	Lower Limit: 0										
	Upper Limit: 999.99										
	Formula: 1.00										
	Display Attribute: Highlight 1										
2	CRITICAL ADT	Number	7	4	7	*			*	*	
	Number Type : Integer										
	Lower Limit: 0										
	Upper Limit: 32000										
	Formula: 5000										

Record Size: 11 Memory: Text = 1044 Fields = 204 Total = 1248

REPORT QUERY

```
for MASTER
with SCI >= data-entry CRITICAL SCI and
  SCI not = BLANK and
  ADT >= data-entry CRITICAL ADT ;
list records
  current page number ;
  current item number ;
  data-entry CRITICAL SCI ;
  data-entry CRITICAL ADT ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  REFERENCE POINT in order ;
  LANE ;
  SCI :  item mean ;
  ADT :  item mean ;
  MAINTENANCE SECTION ;
DATE OF LAST SURFACE .
```

Report Name: CRITICAL SCI/ADT Continued...

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
    @c4
    @["&18D]
.header
                        Critical SCI and ADT Summary Re port
                              BROOKS COUNTY (024)

            Critical SCI Score: _1____   Critical ADT Value Specified: _2_____

   PRINT STYLE SPECIFICATION Report Destination: Printer    Allow
   Style modification at run-time Yes If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name              : HP Ser.2 Portrt
             Pause after each page ?   :  No +----------------------+
|          3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----        |
|          4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+       |     Length 10    Width 9     Starting position 0
|  |                |       |
|  |      Text      |       |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |  2    |   1.Left              0      2.Right           0
|  |      Area      |       |   3.Top to Header     0      4.Header to Text  0
|  |                |       |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+       |
|          6                |  TYPE STYLE
|   -----Footer-----        |     Characters Per Inch 17     Lines Per Inch  6
|          5                |     Highlights 1             2             3
+---------------------------+
```

Report Name: CRITICAL SKID/ADT

Data-Entry Form Name: CRITICAL SKID/ADT

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                    DISTRICT 21 HIGHWAY SEGMENT DATABASE
                                                          +---------------+
                         +------------------------+       | MAKE SURE THE |
                         |                        |       | PRINTER IS ON |
                         | BATCH RUN TO PRODUCE   |       | LINE AND SET  |
                         | 0.1-MILE RECORDS FROM  |       | TO TOP-OF-FORM|
                         | THE MASTER FILE SORTED |       +---------------+
                         | BY CRITICAL SKID & ADT |
                         +------------------------+
                              Version 1-88

    Enter the required critical SKID and ADT sorting values below.  Note: by pressing
    <RETURN> for each field, will assign the default value.

        Critical SKID Score: [ <= ]   __          [ Default = 30.00 ]

        Critical ADT Value:  [ >= ]  _2_____     [ Default = 5000 vpd ]

                    Press the F2 Key to begin the Batch Run
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent	Size
1	CRITICAL SKID VALUE Number Type : Integer Lower Limit: 0 Upper Limit: 99 Formula: 30 Display Attribute: Highlight 1	Number	2	1	3	*			*	*	
2	CRITICAL ADT Number Type : Integer Lower Limit: 0 Upper Limit: 32000 Formula: 5000	Number	7	4	4	*			*	*	

Record Size: 8 Memory: Text = 1049 Fields = 205 Total = 1254

REPORT QUERY

```
for MASTER
with SKID VALUE <= data-entry CRITICAL SKID VALUE and SKID VALUE not = BLANK and
  ADT >= data-entry CRITICAL ADT ;
list records
  current page number ;
  current item number ;
  data-entry CRITICAL SKID VALUE ;
  data-entry CRITICAL ADT ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  REFERENCE POINT  in order ;
  LANE ;
  SKID VALUE :  item mean ;
  ADT :  item mean ;
  MAINTENANCE SECTION .
```

Report Name: CRITICAL DLS/ADT
Data-Entry Form Name: CRITICAL DLS/ADT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

DISTRICT 21 HIGHWAY SEGMENT DATABASE

```
+------------------------+          +---------------+
|                        |          | MAKE SURE THE |
| BATCH RUN TO PRODUCE   |          | PRINTER IS ON |
| 0.1-MILE RECORDS FROM  |          | LINE AND SET  |
| THE MASTER FILE SORTED |          | TO TOP-OF-FORM|
| BY CRITICAL  DLS & ADT |          +---------------+
+------------------------+
```

DATE OF LAST SURFACE
Version 1-88

Enter the required critical DLS and ADT sorting values below. Note: by pressing <RETURN> for each field, will assign the default value.

Critical Date of Last Surface (last 2 Digits of the Year) __

Critical ADT Value: [>=] _2_____ [Default = 5000 vpd]

Press the F2 Key to begin the Batch Run

```
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent	Size
1	CRITICAL YEAR	Number	2	1	3	*			*		
	Number Type : Integer										
	Lower Limit: 00										
	Upper Limit: 99										
	Display Attribute: Highlight 1										
2	CRITICAL ADT	Number	7	4	4	*			*	*	
	Number Type : Integer										
	Lower Limit: 0										
	Upper Limit: 32000										
	Formula: 5000										

Record Size: 8 Memory: Text = 1064 Fields = 182 Total = 1246

REPORT QUERY

```
for MASTER
with LASTC(DATE OF LAST SURFACE,2) <= data-entry CRITICAL YEAR and DATE OF LAST
  SURFACE NOT = BLANK and
  ADT >= data-entry CRITICAL ADT ;
list records
  current page number ;
  current item number ;
  data-entry CRITICAL YEAR ;
  data-entry CRITICAL ADT ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  REFERENCE POINT in order ;
  LANE ;
  HIGHWAY DESIGN TYPE ;
  SURFACE TYPE ;
  DATE OF LAST SURFACE ;
  ADT :  item mean ;
  MAINTENANCE SECTION in order .
```

Report Name: PRINT DIST. INVENTRY

Data-Entry Form Name: PRINT DIST. INVENTRY

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
```

PRINT THE COUNTY-LEVEL HIGHWAY INVENTORY

PRESS THE F2 KEY TO BEGIN THE RUN

```
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record Size	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent

Record Size: 32000 Memory: Text = 125 Fields = 17 Total = 142

REPORT QUERY

```
for DISTRICT INVENTORY
;
list records
  Record Number ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX ;
  ROADWAY ;
  BEG. REF. POINT in order ;
  END. REF. POINT ;
  MILEPOST in order ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  CONTROL in order ;
  SECTION ;
  BEG. MILEPOINT ;
  END. MILEPOINT ;
LAP .
```

```
Report Name: SETUP YEAR-END BLANK

DATA-ENTRY FORM


Data-Entry Form Name: SETUP YEAR-END BLANK

ÜSCREEN DESCRIPTION¢

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+


                              DISTRICT 21 HIGHWAY DATABASE

  WARNING!!!!:

  USE OF THIS BATCH PROGRAM WILL RESULT IN BLANKING ALL RELEVENT DATA FIELDS IN THE
  MASTER 0.1 FILE, THE VISUAL 0.5 FILE, THE FWD, RIDE AND SKID FILES.

  THIS REPORT SHOULD ONLY BE RUN WHEN THE USER IS READY TO BLANK THE CURRENT YEAR'S
  DATABASE AND SETUP FOR NEW DATA ENTRY.

  MAKE SURE YOU HAVE PROVIDED FOR ADEQUATE BACKUP OF THE FILES BEFORE RUNNING.

    ARE YOUR PREPARED TO RUN THIS ROUTINE? IF SO, PRESS THE F2 KEY TO
    BEGIN..... IF NOT, PRESS THE F4 KEY TO EXIT AND ABORT THIS RUN

+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80

REPORT QUERY
--------------------
for MASTER
;
modify records
  lane := blank ;
  PRS-5 := PRS-4 ;
  PRS-4 := PRS-3 ;
  PRS-3 := PRS-2 ;
  PRS-2 := PRS-1 ;
  PRS-1 := PRS ;
  PRS := BLANK ;
  RUT-SL := BLANK ;
  RUT-MO := BLANK ;
  RUT-SV := BLANK ;
  PAVED-RIDE := BLANK ;
  RAV-SL := BLANK ;
  RAV-MO := BLANK ;
  RAV-SV := BLANK ;
  PAVED-CONTRAST := BLANK ;
  FL-SL := BLANK ;
  FL-MO := BLANK ;
  FL-SV := BLANK ;
  PAVED-EDGE := BLANK ;
  COR-SL := BLANK ;
  COR-MO := BLANK ;
  COR-SV := BLANK ;
  PAVED-SHOULDER EDGE := BLANK ;
  ALG-SL := BLANK ;
  ALG-MO := BLANK ;
  ALG-SV := BLANK ;
  PAVED-CRACKS := BLANK ;
  LCKS-SL := BLANK ;
  LCKS-MO := BLANK ;
  LCKS-SV := BLANK ;
  PAVED-RAVEL := BLANK ;
  TCKS-SL := BLANK ;
  TCKS-MO := BLANK ;
  TCKS-SV := BLANK ;
  PAVED-VEG := BLANK ;
  SI-5 := SI-4 ;
  SI-4 := SI-3 ;
  SI-3 := SI-2 ;
  SI-2 := SI-1 ;
  SI-1 := RIDE VALUE ;
  RIDE VALUE := BLANK ;
  RIDE DATE := BLANK ;
  CRACKS-SEALED ETC := BLANK ;
  PAT-SL := BLANK ;
  PAT-MO := BLANK ;
  PAT-SV := BLANK ;
  TOTAL FAILURES := BLANK ;
  UNPAVED-EDGE := BLANK ;
  UNPAVED-RUT-CR-ROCK := BLANK ;
  COMMENTS := BLANK .
  end .
```

Report Name: SETUP YEAR-END BLANK Continued...

REPORT QUERY

```
modify records in VIS
  LANE := blank ;
  RUT-SL := blank ;
  RUT-MO := blank ;
  RUT-SV := blank ;
  RAV-SL := blank ;
  RAV-MO := blank ;
  RAV-SV := blank ;
  FL-SL := blank ;
  FL-MO := blank ;
  FL-SV := blank ;
  COR-SL := blank ;
  COR-MO := blank ;
  COR-SV := blank ;
  ALG-SL := blank ;
  ALG-MO := blank ;
  ALG-SV := blank ;
  LCKS-SL := blank ;
  LCKS-MO := blank ;
  LCKS-SV := blank ;
  TCKS-SL := blank ;
  TCKS-MO := blank ;
  TCKS-SV := blank ;
  CRACKS-SEALED ETC := blank ;
  PAT-SL := blank ;
  PAT-MO := blank ;
  PAT-SV := blank ;
  TOTAL FAILURES := blank ;
  PAVED-RIDE := blank ;
  PAVED-CONTRAST := blank ;
  PAVED-EDGE := blank ;
  PAVED-SHOULDER EDGE := blank ;
  PAVED-CRACKS := blank ;
  PAVED-RAVEL := blank ;
  PAVED-VEG := blank ;
  UNPAVED-EDGE := blank ;
  UNPAVED-RUT-CR-ROCK := blank ;
  COMMENTS := blank ;
  RESERVED 1 := blank ;
  RESERVED 2 := blank .

modify records in RIDE INPUT
  YEAR := lastc ( current date , 2 ) ;
  MACHINE # := blank ;
  MRM VALUE := blank ;
  COMMENTS := blank ;
  SI VALUE := blank .

modify records in FWD INPUT
  W1 := blank ;
  W2 := blank ;
  DATE := blank ;
  W6 := blank ;
  W7 := blank ;
  SCI := blank .

modify records in SKID INPUT
  SKID VALUE := blank ;
  SKID DATE := blank .

delete records in HIGHWAY DESIGN .
delete records in MAINTENANCE SECTIONS .
delete records in 18-KIP VALUES .
delete records in ADT VALUES .
DELETE RECORDS in FUNCT CLASS .
```

Setup Year-end Blank....continued

```
      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
```

master file has been reset for new data

```
   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time Yes If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----      |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+     |     Length 0     Width 0     Starting position 0
|  |                |     |
|  |      Text      |     |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |  2  |   1.Left              0       2.Right           0
|  |      Area      |     |   3.Top to Header     0       4.Header to Text  0
|  |                |     |   5.Footer to Bottom  0       6.Text to Footer  0
|  +----------------+     |
|          6              |  TYPE STYLE
|   -----Footer-----      |     Characters Per Inch 0      Lines Per Inch  0
|          5              |     Highlights 1    2 Special 8 3
+-------------------------+
```

Report Name: CRIT RIDE/FWD/ADT

Data-Entry Form Name: CRIT RIDE/FWD/ADT

ÜSCREEN DESCRIPTION¢

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                     DISTRICT 21 HIGHWAY SEGMENT DATABASE
                                                          +----------------+
                          +-------------------------+     | MAKE SURE THE  |
                          |                         |     | PRINTER IS ON  |
                          | BATCH RUN TO PRODUCE    |     | LINE AND SET   |
                          | 0.1-MILE RECORDS FROM   |     | TO TOP-OF-FORM |
                          | THE MASTER FILE SORTED  |     +----------------+
                          | BY CRIT. RIDE/FWD/ADT   |
                          +-------------------------+
                          Version 6-88

    Enter the required critical RIDE and ADT sorting values below.  Note: by pressing
    <RETURN> for each field, will assign the default value.

        Critical RIDE Score: [ <= ]   _1__      [ Default = 2.8 ]
        Critical FWD Score : [ >= ]   _2____    [ Default = 1.00 ]
        Critical ADT Value:  [ >= ]   _3_____   [ Default = 5000 vpd ]

                     Press the F2 Key to begin the Batch Run
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

```
No. Name                 Type       Long  Record    Req In- Uni- Der- Rng Pre- Size
                                              offset uir dex que  ived Chk vent
--- -------------------- ---------- ---- ---- --------- --- ---- ---- --- -----
  1 CRITICAL RIDE SCORE  Number        4    4      3  *              *   *
      Number Type : Fixed Point
      Lower Limit: 0
      Upper Limit: 5
      Formula: 2.8
        Display Attribute: Highlight 1

  2 CRITICAL SCI SCORE   Number        6    4      7  *              *   *
      Number Type : Fixed Point
      Lower Limit: 0.2
      Upper Limit: 3.0
        Formula: 1.00

  3 CRITICAL ADT         Number        7    4     11  *              *   *
      Number Type : Integer
      Lower Limit: 0
      Upper Limit: 32000
        Formula: 5000
--- -------------------- ---------- ---- ---- ------ --- --- ---- ---- --- -----

Record Size: 15  Memory:  Text = 1111  Fields = 304  Total = 1415
```

Report Name: CRIT RIDE/FWD/ADT Continued...

REPORT QUERY

```
for MASTER
with RIDE VALUE <= data-entry CRITICAL RIDE SCORE and RIDE VALUE not = BLANK and
  SCI >= data-entry CRITICAL SCI SCORE and ADT >= data-entry CRITICAL ADT ;
list records
  current page number ;
  current item number ;
  data-entry CRITICAL RIDE SCORE ;
  data-entry CRITICAL SCI SCORE ;
  data-entry CRITICAL ADT ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  REFERENCE POINT in order ;
  LANE ;
  RIDE VALUE :  item mean ;
  SCI : item mean ;
  ADT :  item mean ;
  MAINTENANCE SECTION ;
DATE OF LAST SURFACE .
```

Report Name: CRIT SKID/DLS/ADT

Data-Entry Form Name: CRIT SKID/DLS/ADT

ÜSCREEN DESCRIPTION¢

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

DISTRICT 21 HIGHWAY SEGMENT DATABASE

```
+-------------------------+        +---------------+
|                         |        | MAKE SURE THE |
| BATCH RUN TO PRODUCE    |        | PRINTER IS ON |
| 0.1-MILE RECORDS FROM   |        | LINE AND SET  |
| THE MASTER FILE SORTED  |        | TO TOP-OF-FORM|
| BY CRIT. SKID/DLS/ADT   |        +---------------+
+-------------------------+
```

Version 6-88

Enter the required critical SKID, DLS, and ADT values below. Note: by pressing <RETURN> for each field, will assign the default value.

```
Critical SKID Score: [ <= ]  __          [ Default = 30 ]
Critical DLS YEAR  : [ <= ]  __          Last 2 digits i.e. 82
Critical ADT Value:  [ >= ]  _3____      [ Default = 5000 vpd ]
```

Press the F2 Key to begin the Batch Run

```
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record offset		Req	Index	Unique	Derived	Rng Chk	Prevent	Size
1	CRITICAL SKID Number Type : Integer Formula: 30	Number	2	1	3	*			*			
2	CRITICAL DLS DATE Number Type : Integer	Number	2	1	4	*						
3	CRITICAL ADT Number Type : Integer Lower Limit: 0 Upper Limit: 32000 Formula: 5000	Number	7	4	5	*			*	*		

Record Size: 9 Memory: Text = 1117 Fields = 198 Total = 1315

REPORT QUERY

```
for MASTER
with  SKID VALUE <= data-entry CRITICAL SKID and SKID VALUE not = BLANK and
  lastc(DATE OF LAST SURFACE,2) <= data-entry CRITICAL DLS DATE and ADT >= data-entry
  CRITICAL ADT ;
list records
  current page number ;
  current item number ;
  data-entry CRITICAL SKID ;
  data-entry CRITICAL DLS DATE  ;
  data-entry CRITICAL ADT ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  REFERENCE POINT in order ;
  LANE ;
  SKID VALUE :  item mean ;
  DATE OF LAST SURFACE ;
  ADT : item mean ;
  MAINTENANCE SECTION .
```

Report Name: CRIT CRACK LOCATION

Data-Entry Form Name: CRIT CRACK LOCATION

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
```

DISTRICT 21 CRITICAL CRACKING LOCATION REPORT

This batch run scans the VISusal data file in order to locate all 0.5-mile highway segments possessing alligator, long. and transverse moderate to severe cracking, i.e., those segments with scores > 0 in each of the categories defined as moderate or severe.

Press the F2 Key to begin the Run

```
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1         10        20        30        40        50        60        70        80
```

REPORT QUERY

```
for VIS
with ALG-MO > 0
or
  ALG-SV > 0
or
  LCKS-MO > 0
or
  LCKS-SV > 0
or
  TCKS-MO > 0
or
  TCKS-SV > 0
;
list records
  current item number ;
  current page number ;
  COUNTY NUMBER ;
HIGHWAY NUMBER in order ;
  HIGHWAY PREFIX  in order ;
  HIGHWAY SUFFIX ;
  ROADWAY ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  LANE ;
  REFERENCE POINT in order ;
  ALG-MO ;
  ALG-SV ;
  LCKS-MO ;
  LCKS-SV ;
  TCKS-MO ;
  TCKS-SV ;
CRACKS-SEALED ETC .
```

Report Name: CRIT RAV/RUT/PATRIDE

Data-Entry Form Name: CRIT RAV/RUT/PATRIDE

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
```

DISTRICT 21 CRITICAL RAVELING-RUTTING-PATCHING VS RIDE LOCATION REPORT

This batch run scans the 0.1 Master file in order to locate the h.w. segments possessing non-zero entries in moderate-severe Raveling, Rutting and Patching along with the associated Ride score.

Press the F2 Key to begin the run

```
                              Version 6-88
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

REPORT QUERY

```
for MASTER
with RAV-MO > 0
or
  RAV-SV > 0
or
  RUT-MO > 0
or
  RUT-SV > 0
or
  PAT-MO > 0
or
  PAT-SV > 0
;
list records
  current page number ;
 current item number ;
  COUNTY NUMBER ;
  HIGHWAY PREFIX ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX ;
  ROADWAY ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  LANE ;
  REFERENCE POINT in order ;
  RAV-MO ;
  RAV-SV ;
  RUT-MO ;
  RUT-SV ;
  PAT-MO ;
  PAT-SV ;
  RIDE VALUE ;
  MAINTENANCE SECTION .
```

Report Name: VALIDATE MILEPOSTS

Data-Entry Form Name: VALIDATE MILEPOSTS

SCREEN DESCRIPTION

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

                          +----------------------+
                          | MILEPOST VALIDATIONS |
                          +----------------------+

               Complete the entries below, then press "F2"

                              HIGHWAY PREFIX: __
                              HIGHWAY NUMBER: _2__
                              HIGHWAY SUFFIX: _
                                     ROADWAY: _
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+
1        10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record offset	Required	Index	Unique	Derived	Range Check	Prevent	Size
1	HP	Text	2	2	3	*					
2	HN	Num. String	4	4	5	*					
	Formated as : Other Format										0000
3	HS	Text	1	1	9						
4	RD	Text	1	1	10	*					

Record Size: 11 Memory: Text = 412 Fields = 98 Total = 510

REPORT QUERY

```
for MASTER
with HIGHWAY PREFIX = data-entry HP and
  HIGHWAY NUMBER = data-entry HN and
  HIGHWAY SUFFIX = data-entry HS and
  ROADWAY = data-entry RD ;

list records
  COUNTY NUMBER ;
  HIGHWAY PREFIX ;
  HIGHWAY NUMBER ;
  HIGHWAY SUFFIX ;
  ROADWAY ;
  REFERENCE POINT in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE .
```

VALIDATE MILEPOSTS ... continued

REPORT DESIGN

```
.page
.header
                           MILEPOST VALIDATION

          ======================================================= COUNTY
           HIGHWAY     ROADWAY   MILEPOST  REFERENCE
           NUMBER                                 POINT
           -------------------------------------------------------- .items
            _1_       ___3___       _          _6__8_     _9___  .end
           ========================================================
```

FIELD DESCRIPTIONS

```
No. Name                 Type              Length
-------------------- --------------- ------  ------
  1 COUNTY NUMBER        Number              3
      Number Type : Integer
  2 HIGHWAY PREFIX       Choice              2
  3 HIGHWAY NUMBER       Num. String         4
  4 HIGHWAY SUFFIX       Choice              1
  5 ROADWAY              Choice              1
  6 MILEPOST             Number              3
        Number Type : Integer
  7 MILEPOST DISP. SIGN  Choice              1
  8 MILEPOST VALUE       Number              3
     Number Type : Fixed Point
     Digits to left of Decimal = 1
  9 REFERENCE POINT      Number              5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
```

```
   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|           3           |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----   |
|           4           |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+   |     Length 0     Width 0     Starting position 0
|  |                |   |
|  |     Text       |   |  MARGINS (in inches): SEE FIGURE ON LEFT
1  |                |  2|   1.Left             0      2.Right            0
|  |     Area       |   |   3.Top to Header    0      4.Header to Text   0
|  |                |   |   5.Footer to Bottom 0      6.Text to Footer   0
|  +----------------+   |
|           6           |  TYPE STYLE
|   -----Footer-----    |     Characters Per Inch 0     Lines Per Inch  0
|           5           |     Highlights 1             2          3
+-----------------------+
```

```
Report Name: MNT SEC MRG TO MASTR

      REPORT QUERY
--------------------

MODIFY records in MASTER with ( MAINTENANCE SECTION > 0 ) MAINTENANCE SECTION := BLANK
  .

for MAINTENANCE SECTIONS ;
MODIFY RECORDS IN MASTER with
      ( COUNTY NUMBER = MAINTENANCE SECTIONS COUNTY NUMBER and HIGHWAY PREFIX =
  MAINTENANCE SECTIONS HIGHWAY PREFIX and HIGHWAY NUMBER = MAINTENANCE SECTIONS
  HIGHWAY NUMBER and HIGHWAY SUFFIX = MAINTENANCE SECTIONS HIGHWAY SUFFIX and ROADWAY
  = MAINTENANCE SECTIONS ROADWAY and REFERENCE POINT >= MAINTENANCE SECTIONS FROM
  REFERENCE and REFERENCE POINT <= MAINTENANCE SECTIONS TO REFERENCE )

  MAINTENANCE SECTION := MAINTENANCE SECTIONS MAINT SEC .

END .
      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
```

MASTER FILE HAS BEEN UPDATED WITH MAINTENANCE SECTION DATA

```
   PRINT STYLE SPECIFICATION Report Destination:  Screen    Allow
   Style modification at run-time  No If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----     |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+    |     Length 0     Width 0     Starting position 0
|   |                |    |
|   |      Text      |    |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                | 2  |   1.Left              0      2.Right           0
|   |      Area      |    |   3.Top to Header     0      4.Header to Text  0
|   |                |    |   5.Footer to Bottom  0      6.Text to Footer  0
|   +----------------+    |
|          6              |  TYPE STYLE
|    -----Footer-----     |     Characters Per Inch 0      Lines Per Inch  0
|          5              |     Highlights 1  Special 4  2           3
+-------------------------+
```

```
Report Name: INVENTORY MILE CHECK

      REPORT QUERY
--------------------

for DISTRICT INVENTORY ;

  list records
    HIGHWAY PREFIX in order ;
    HIGHWAY NUMBER in order ;
    HIGHWAY SUFFIX in order ;
    ROADWAY in groups with group-totals ; END. REF. POINT - BEG. REF. POINT :  sum  ;
    END. MILEPOINT - BEG. MILEPOINT : sum ; ( END. REF. POINT - BEG. REF. POINT ) - (
    END. MILEPOINT - BEG. MILEPOINT ) : sum .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
  HIGHWAY  ROADWAY     REFERENCE  MILEPOINT   DIFFERENCE LENGTH      LENGTH
----------------------------------------------------------- .group header
                       ___2___    _
.items
.group trailer
          sum                       _5___      _6_____      _7_____
          ---------------------------------------------------------- .end
.footer
          ==========================================================

ÜFIELD DESCRIPTIONS¢

No. Name                    Type             Length
--------------------- ---------------- ------  ------
  1 HIGHWAY PREFIX        Choice              2
        Choice    1: no
        Choice    2: yes
  2 HIGHWAY NUMBER        Num. String         4
  3 HIGHWAY SUFFIX        Choice              1
        Choice    1: no
        Choice    2: yes
  4 ROADWAY               Choice              1
        Choice    1: no
        Choice    2: yes
  5 END. REF. POINT - BE Number              5
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  6 END. MILEPOINT - BEG Number              7
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  7 ( END. REF. POINT -  Number              7
     Number Type : Fixed Point
     Digits to left of Decimal = 3
```

```
     PRINT STYLE SPECIFICATION Report Destination: Printer    Allow
   Style modification at run-time Yes If disk Output, Filename:

   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name              :
             Pause after each page ?   : Yes +----------------------+
|          3            |  IF PRINTER NAME IS SPECIFIED ABOVE :
| ------Header----- |   |
|          4            |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +-----------------+  |     Length 0     Width 201    Starting position 0
|  |                 |  |
|  |      Text       |  |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                 |2 |   1.Left             0       2.Right            0
|  |      Area       |  |   3.Top to Header    0       4.Header to Text   0
|  |                 |  |   5.Footer to Bottom 0       6.Text to Footer   0
| +-----------------+ | |
|          6            |  TYPE STYLE
|   -----Footer-----    |     Characters Per Inch 0       Lines Per Inch   0
|          5            |     Highlights 1    2  3
+-----------------------+
```

```
Report Name: SORT INVENTORY FILE

      REPORT QUERY
--------------------

for DISTRICT INVENTORY
;
list records
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  BEG. REF. POINT in order ;
  END. REF. POINT ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE ;
  CONTROL ;
  SECTION ;
  BEG. MILEPOINT ;
  END. MILEPOINT ;
  LAP .
end
delete records in DISTRICT INVENTORY .

REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;BEG. REF. POI
NT;END. REF. POINT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE;CONTROL;SECTION;B EG.
MILEPOINT;END. MILEPOINT;LAP
.items
_1_;__;_3__;_;_;_6___;_7___;_8_;_;___;_11_;__;_13___;_14___;___ .end

FIELD DESCRIPTIONS

No. Name                 Type            Length
------------------- ---------------- ------  ------
  1 COUNTY NUMBER        Number             3       *
      Number Type : Integer
  2 HIGHWAY PREFIX       Choice             2       *
        Choice   1: no
        Choice   2: yes
  3 HIGHWAY NUMBER       Num. String        4       *
  4 HIGHWAY SUFFIX       Choice             1       *
        Choice   1: no
        Choice   2: yes
  5 ROADWAY              Choice             1       *
        Choice   1: no
        Choice   2: yes
  6 BEG. REF. POINT      Number             5       *
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  7 END. REF. POINT      Number             5       *
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  8 MILEPOST             Number             3       *
        Number Type : Integer
  9 MILEPOST DISP. SIGN  Choice             1       *
        Choice   1: no
        Choice   2: yes
 10 MILEPOST VALUE       Number             3       *
     Number Type : Fixed Point
     Digits to left of Decimal = 1
 11 CONTROL              Num. String        4       *
 12 SECTION              Num. String        2       *
 13 BEG. MILEPOINT       Number             6       *
     Number Type : Fixed Point
     Digits to left of Decimal = 2
 14 END. MILEPOINT       Number             6       *
     Number Type : Fixed Point
     Digits to left of Decimal = 2
 15 LAP                  Choice             3       *
          Choice   1: no
```

Sort Inventory File...continued

```
   PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
        Style modification at run-time  No If disk Output, Filename: INV.DAT
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|            3                |  IF PRINTER NAME IS SPECIFIED ABOVE :
|     ------Header-----         |
|            4                |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|     +----------------+        |     Length 0     Width 201   Starting position 0
|     |                |        |
|     |      Text      |        |  MARGINS (in inches): SEE FIGURE ON LEFT
|1    |                |    2   |   1.Left              0      2.Right           0
|     |      Area      |        |   3.Top to Header     0      4.Header to Text  0
|     |                |        |   5.Footer to Bottom  0      6.Text to Footer  0
|     +----------------+        |
|            6                |  TYPE STYLE
|      -----Footer-----         |     Characters Per Inch 0      Lines Per Inch  0
|            5                |     Highlights 1    2  3
+-----------------------------+
```

Report Name: CREATE MASTER FILE

Data-Entry Form Name: CREATE MASTER FILE

SCREEN DESCRIPTION

```
1         10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

          +-------------------------------------------------+
          |ADD, MODIFY, OR CREATE MASTER (0.1 mi.) FILE RECORDS|
          +-------------------------------------------------+

                          ENTER HIGHWAY: ___2___

                    NOTE:  FOR ALL ROADS ENTER "XX0000X"

                       +----------------------+
                       |PRESS "F2" TO CONTINUE|
                       +----------------------+
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
1         10        20        30        40        50        60        70        80
```

FIELD DESCRIPTIONS

No.	Name	Type	Long	Record offset	Req uir	In- dex	Uni- que	Der- ived	Rng Chk	Pre- vent	Size
1	PREFIX	Text	2	2	3						
2	NUMBER	Num. String	4	4	5						
3	SUFFIX	Text	1	1	9						

Record Size: 10 Memory: Text = 455 Fields = 86 Total = 541

REPORT QUERY

```
define "tc" Number .
define "CS1" Text 7 .
define "CS2" Text 7 .
define "MP" Number .
define "MPS" Text 1 .
define "MPD" Number .
define "CC" Number .
define "test" Number .
define "LP1" Text 2 .
define "LP2" Text 2 .
define "LN1" Numeric String 4 .
define "LN2" Numeric String 4 .
define "LS1" Text 1 .
define "LS2" Text 1 .
if data-entry PREFIX = "XX" then
  assign temp LP1 := "PR" .
  assign temp LP2 := "IH" .
  assign temp LN1 := 0000 .
  assign temp LN2 := 9999 .
  assign temp LS1 := "*" .
  assign temp LS2 := "*" .
else
  assign temp LP1 := data-entry PREFIX .
  assign temp LP2 := data-entry PREFIX .
  assign temp LN1 := data-entry NUMBER .
  assign temp LN2 := data-entry NUMBER .
  assign temp LS1 := data-entry SUFFIX .
  assign temp LS2 := data-entry SUFFIX .
end
for DISTRICT INVENTORY with
  HIGHWAY PREFIX between temp LP1 to temp LP2 and HIGHWAY NUMBER between temp LN1 to
  temp LN2 and
HIGHWAY SUFFIX between temp LS1 to temp LS2 ; assign temp MP := MILEPOST .
  assign temp MPS := MILEPOST DISP. SIGN . assign temp MPD := MILEPOST VALUE * 10 .
  assign temp tc := BEG. REF. POINT * 10 . assign temp CC := 0 .
  if LAP = yes then
    assign temp CC := 1 .
  end
  while ceil ( END. REF. POINT * 10 ) >= ceil ( temp tc ) do if LAP = yes and temp CC
  not = 1 then assign temp CS1 := JOINTEXT ( CONTROL , JOINTEXT ( "-", SECTION ) ) .
    end
    if LAP = yes and temp CC = 1 then
           assign temp CS2 := JOINTEXT ( CONTROL , JOINTEXT ( "-", SECTION ) ) .
    end
    if LAP = yes and temp CC not = 1 then assign temp CS2 := BLANK .
    end
```

Create Master File...continued

```
    if LAP = no then
            assign temp CS2 := BLANK .
    end
```

Report Name: CREATE MASTER FILE Continued...

```
      REPORT QUERY
--------------------

      if LAP = no then
            assign temp CS1 := JOINTEXT (CONTROL , JOINTEXT ( "-",SECTION ) ) .
    end
    list records
      COUNTY NUMBER ;
      HIGHWAY PREFIX ;
      HIGHWAY NUMBER ;
      HIGHWAY SUFFIX ;
      ROADWAY ;
      temp tc / 10 ;
      temp MP ;
      temp MPS ;
      temp MPD / 10 ;
      temp CS1 ;
      temp CS2 .
    assign temp tc := temp tc + 1 .
    if temp MPS = "+" then
            assign temp MPD := temp MPD + 1 .
    end
    if temp MPS = "-" then
            assign temp MPD := temp MPD - 1 .
    end
    if temp MPS = "-" and floor ( temp MPD ) = 0 then assign temp MPS := "+" .
            assign temp MPD := 0 .
    end
    if temp MPS = "+" and mod ( temp MPD , 20 ) < 1 then if mod ( temp MP , 2 ) not <
    1 then
        temp MPD := temp MPD - 10 .
        temp MP := temp MP + 1 .
          end
    end
    if temp MPS = "+" and mod ( temp MPD , 20 ) < 1 then if temp MPD not = 0 then
        temp MPD := 0 .
        temp MP := temp MP + 2 .
        end
  end
  assign temp cc := 2 .
end
```

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POI
NT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE;CS1;CS2 .items
_1_;__;_3__;_;_;_6___;_7_;_;_9_;_10____;_11____ .end
```

FIELD DESCRIPTIONS

No.	Name	Type	Length	
1	COUNTY NUMBER	Number	3	*
	Number Type : Integer			
2	HIGHWAY PREFIX	Choice	2	
	Choice 1: no			
	Choice 2: yes			
3	HIGHWAY NUMBER	Num. String	4	
4	HIGHWAY SUFFIX	Text	1	
5	ROADWAY	Choice	1	
	Choice 1: no			
	Choice 2: yes			
6	temp tc / 10	Number	5	*
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
7	temp MP	Number	3	*
	Number Type : Integer			
8	temp MPS	Text	1	
9	temp MPD / 10	Number	3	*
	Number Type : Fixed Point			
	Digits to left of Decimal = 1			
10	temp CS1	Text	7	
11	temp CS2	Text	7	

CREATE MASTER FILE ---continued

```
  PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
       Style modification at run-time  No If disk Output, Filename: MASTR.EXP
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|           3               |  IF PRINTER NAME IS SPECIFIED ABOVE :
|    ------Header-----      |
|           4               |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|    +----------------+     |     Length 0     Width 0     Starting position 0
|    |                |     |
|    |      Text      |     |  MARGINS (in inches): SEE FIGURE ON LEFT
|1   |                |  2  |   1.Left              0      2.Right           0
|    |      Area      |     |   3.Top to Header     0      4.Header to Text  0
|    |                |     |   5.Footer to Bottom  0      6.Text to Footer  0
|    +----------------+ |   |
|           6               |  TYPE STYLE
|     -----Footer-----      |     Characters Per Inch 0      Lines Per Inch  0
|           5               |     Highlights 1               2           3
+---------------------------+
```

```
Report Name: ORDERED MASTER FILE

      REPORT QUERY
--------------------
delete records in TEMP .
for MASTER
;
list records
  COUNTY NUMBER ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  REFERENCE POINT in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POI
NT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
_1_;__;_3__;_;_;_6___;_7_;_;_9_
.end
999;99;9999;9;9;999.9;999;9;9.9
ÜFIELD DESCRIPTIONS¢

No. Name                 Type             Length  Remove Spaces ---
-------------------- ---------------- ------  ------
  1 COUNTY NUMBER        Number             3       *
     Number Type : Integer
  2 HIGHWAY PREFIX       Choice             2       *
    Related Form Not Found
  3 HIGHWAY NUMBER       Num. String        4       *
  4 HIGHWAY SUFFIX       Choice             1       *
     Related Form Not Found
  5 ROADWAY              Choice             1       *
     Related Form Not Found
  6 REFERENCE POINT      Number             5       *
    Number Type : Fixed Point
    Digits to left of Decimal = 3
  7 MILEPOST             Number             3       *
     Number Type : Integer
  8 MILEPOST DISP. SIGN  Choice             1       *
     Related Form Not Found
  9 MILEPOST VALUE       Number             3       *
    Number Type : Fixed Point
    Digits to left of Decimal = 1
```

```
      PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
       Style modification at run-time  No If disk Output, Filename: SORT.DAT
  Now press DEFAULT VIEW to get default values for the remaining fields.
            Printer Name              :
            Pause after each page ?   : Yes +----------------------+
|          3          |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----  |
|          4          |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+ |     Length 0     Width 0     Starting position 0
|  |                | |
|  |      Text      | |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                |2|   1.Left              0      2.Right           0
|  |      Area      | |   3.Top to Header     0      4.Header to Text  0
|  |                | |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+ |
|          6          |  TYPE STYLE
|   -----Footer-----  |     Characters Per Inch 0      Lines Per Inch  0
|          5          |     Highlights 1    2  3
+---------------------+
```

```
Report Name: GENERATE FWD FILE

      REPORT QUERY
--------------------
delete records in FWD INPUT .
define "HWY1" Text 15 .
define "HWY2" Text 15 .
define "HWY" Text 15 .
define "MP1" Text 9 .
define "MP2" Text 9 .
define "MP" Text 9 .
define "CNT" Number .
define "FRST" Number .
define "SC" Number .
define "R1" Text 31 .
temp FRST := 0 .
temp SC := 0 .
for TEMP ;
  if temp FRST = 0 then
    temp HWY1 := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGHWAY PREFIX
      , jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , jointext (
      HIGHWAY SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) .
    temp HWY2 := temp HWY1 .
    temp MP1 := jointext ( MILEPOST , jointext ( ";" , jointext ( MILEPOST DISP. SIGN
    , jointext ( ";" , MILEPOST VALUE ) ) ) ) . temp MP2 := temp MP1 .
      temp SC := REFERENCE POINT * 10 .
  end
  temp HWY1 := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGHWAY PREFIX ,
    jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , jointext ( HIGHWAY
    SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) ) .
  temp CNT := REFERENCE POINT * 10 .
  temp MP2 := temp MP1 .
  temp MP1 := jointext ( MILEPOST , jointext ( ";" , jointext ( MILEPOST DISP. SIGN ,
    jointext ( ";" , MILEPOST VALUE ) ) ) ) .
  if temp FRST > 0 then
    temp SC := temp SC + 1 .
  end
   if temp HWY1 not = HWY2 or firstc ( temp SC , length ( temp SC )) not = firstc (
 temp CNT , length ( CNT )) then
    temp HWY := temp HWY2 .
    temp MP := temp MP2 .
    temp SC := ( temp SC - 1 ) / 10 .
    temp R1 := jointext ( temp HWY , jointext ( ";" , jointext ( temp SC , jointext (
      ";" , temp MP ) ) ) ) .
    temp SC := temp SC * 10 .
    if mod ( temp SC , 5 ) >= 1 and mod ( temp SC , 5 ) <= 4 then
      list records
        temp R1 .
    end
    temp HWY2 := temp HWY1 .
    temp SC := temp CNT .
  end
end
.
define "HWY" Text 15 .
define "MP" Text 9 .
define "SC" Number .
define "CNT" Number .
define "FRST" Number .
define "R" Text 31 .
temp FRST := 0 .
for TEMP ;
  if temp FRST = 0 then
    temp SC := REFERENCE POINT * 10 .
  end
  temp HWY := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGHWAY PREFIX ,
    jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , jointext ( HIGHWAY
    SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) .
  temp MP := jointext ( MILEPOST , jointext ( ";" , jointext ( MILEPOST DISP. SIGN ,
    jointext ( ";" , MILEPOST VALUE ) ) ) ) .
  temp CNT := REFERENCE POINT * 10 .
  if temp FRST not = 0 then
      temp SC := temp SC + 1 .
  end
  temp FRST := 1 .
  if mod ( temp CNT , 5 ) < 0.9 or mod ( temp CNT , 5 ) > 4 or firstc ( temp SC ,
length ( temp SC )) not = firstc ( temp CNT , length ( CNT )) then
    temp CNT := temp CNT / 10 .
    temp R := jointext ( temp HWY , jointext ( ";" , jointext ( temp CNT , jointext (
    ";" , temp MP ) ) ) ) .
    if COUNTY NUMBER not = 999 then
    list records
      temp R .
    end
    temp CNT := REFERENCE POINT * 10 .
    temp SC := temp CNT .
  end
end.
```

Report Name: GENERATE FWD FILE Continued...

REPORT QUERY

```
  temp FRST := 1 .
```

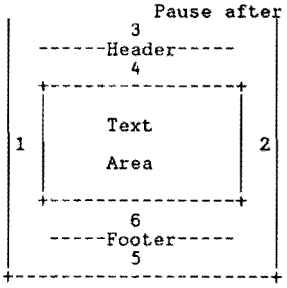
REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POI
NT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
_1_____________________________2_____________________________ .end
```

ÜFIELD DESCRIPTIONS¢

No.	Name	Type	Length	Remove Spaces
1	temp R1	Text	31	*
2	temp R	Text	31	*

PRINT STYLE SPECIFICATION Report Destination: Disk Allow
Style modification at run-time No If disk Output, Filename: FWD.EXP
Now press DEFAULT VIEW to get default values for the remaining fields.
Printer Name :
Pause after each page ? : Yes



IF PRINTER NAME IS SPECIFIED ABOVE :

PAGE SIZE AND POSITION ON CARRIAGE (in inches)
Length 0 Width 0 Starting position 0

MARGINS (in inches): SEE FIGURE ON LEFT

1.Left	0	2.Right	0
3.Top to Header	0	4.Header to Text	0
5.Footer to Bottom	0	6.Text to Footer	0

TYPE STYLE
Characters Per Inch 0 Lines Per Inch 0
Highlights 1 Special 4 2 3

```
Report Name: FWD SORTED

      REPORT QUERY
--------------------

for FWD INPUT ;

list records
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  REFERENCE POINT in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE .
end .
delete records in FWD INPUT .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POI
NT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
_1_;__;_3__;_;_;_6___;_7_;_;_9_
.end
FIELD DESCRIPTIONS

No. Name                 Type              Length
-------------------- ---------------- ------ ------
  1 COUNTY NUMBER        Number              3       *
      Number Type : Integer
  2 HIGHWAY PREFIX       Text                2       *
  3 HIGHWAY NUMBER       Num. String         4       *
  4 HIGHWAY SUFFIX       Text                1       *
  5 ROADWAY              Text                1       *
  6 REFERENCE POINT      Number              5       *
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  7 MILEPOST             Number              3       *
        Number Type : Integer
  8 MILEPOST DISP. SIGN  Choice              1       *
       Related Form Not Found
  9 MILEPOST VALUE       Number              3       *
     Number Type : Fixed Point
     Digits to left of Decimal = 1
```

```
       PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
        Style modification at run-time  No If disk Output, Filename:FWD.EXP
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|         3             |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----    |
|         4             |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +-----------------+  |     Length 861   Width 0     Starting position 0
|  |                 |  |
|  |      Text       |  |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1|                 |2 |   1.Left           0      2.Right            0
|  |      Area       |  |   3.Top to Header  0      4.Header to Text   0
|  |                 |  |   5.Footer to Bottom  0   6.Text to Footer   0
|  +-----------------+  |
|         6             |  TYPE STYLE
|   -----Footer-----    |     Characters Per Inch 0      Lines Per Inch  0
|         5             |     Highlights 1    2  3
+-----------------------+
```

```
Report Name: ORDERED R MASTER

      REPORT QUERY
--------------------

delete records in TEMP .

for MASTER with ROADWAY = R or ROADWAY = A ;
  list records
    COUNTY NUMBER in order ;
    HIGHWAY PREFIX in order ;
    HIGHWAY NUMBER in order ;
    HIGHWAY SUFFIX in order ;
    ROADWAY in order ;
    REFERENCE POINT in order ;
    MILEPOST ;
    MILEPOST DISP. SIGN ;
    MILEPOST VALUE .
end
.
      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POI
NT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
_1_;__;_3__;_;_;_6___;_7_;_;_9_
.end

FIELD DESCRIPTIONS

No. Name                 Type            Length
--- -------------------- --------------- ------  ------
  1 COUNTY NUMBER        Number               3       *
     Number Type : Integer
  2 HIGHWAY PREFIX       Choice               2       *
    Related Form Not Found
  3 HIGHWAY NUMBER       Num. String          4       *
  4 HIGHWAY SUFFIX       Choice               1       *
     Related Form Not Found
  5 ROADWAY              Choice               1       *
     Related Form Not Found
  6 REFERENCE POINT      Number               5       *
    Number Type : Fixed Point
    Digits to left of Decimal = 3
  7 MILEPOST             Number               3       *
     Number Type : Integer
  8 MILEPOST DISP. SIGN  Choice               1       *
     Related Form Not Found
  9 MILEPOST VALUE       Number               3       *
    Number Type : Fixed Point
    Digits to left of Decimal = 1
```

```
    PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
       Style modification at run-time  No If disk Output, Filename: bull1.SRT
  Now press DEFAULT VIEW to get default values for the remaining fields.
            Printer Name                :
            Pause after each page ?     : Yes +----------------------+
|          3           |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header------  |
|          4           |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+  |     Length 0     Width 0     Starting position 0
|  |                |  |
|  |      Text      |  |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                | 2|   1.Left              0      2.Right           0
|  |      Area      |  |   3.Top to Header     0      4.Header to Text  0
|  |                |  |   5.Footer to Bottom  0      6.Text to Footer  0
|  +----------------+  |
|          6           |  TYPE STYLE
|  -----Footer-----    |     Characters Per Inch 0      Lines Per Inch  0
|          5           |     Highlights 1    2           3
+----------------------+
```

```
Report Name: ORDERED L MASTER

REPORT DEFINITION

      REPORT QUERY
--------------------

for MASTER with ROADWAY = L or ROADWAY = X ;
  list records
    COUNTY NUMBER ;
    HIGHWAY PREFIX in order ;
    HIGHWAY NUMBER in order ;
    HIGHWAY SUFFIX in order ;
    ROADWAY in order ;
    REFERENCE POINT in reverse ;
    MILEPOST ;
    MILEPOST DISP. SIGN ;
    MILEPOST VALUE .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.items
_1_;__;_3__;_;_;_6___;_7_;_;_9_
.end
999;99;9999;9;9;999.9;999;9;9.9
.call COPY BULL1.SRT+BULL2.SRT SORT.DAT

FIELD DESCRIPTIONS

No. Name                 Type            Length
------------------- ---------------- ------  ------
  1 COUNTY NUMBER        Number            3       *
    Number Type : Integer
  2 HIGHWAY PREFIX       Choice            2       *
  3 HIGHWAY NUMBER       Num. String       4       *
  4 HIGHWAY SUFFIX       Choice            1       *
  5 ROADWAY              Choice            1       *
  6 REFERENCE POINT      Number            5       *
    Number Type : Fixed Point
    Digits to left of Decimal = 3
  7 MILEPOST             Number            3       *
      Number Type : Integer
  8 MILEPOST DISP. SIGN  Choice            1       *
  9 MILEPOST VALUE       Number            3       *
    Number Type : Fixed Point
    Digits to left of Decimal = 1
```

```
      PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
       Style modification at run-time  No If disk Output, Filename: C:BULL2.SRT
  Now press DEFAULT VIEW to get default values for the remaining fields.
            Printer Name                :
            Pause after each page ?     : Yes +----------------------+
          3                               |  IF PRINTER NAME IS SPECIFIED ABOVE :
   ------Header------                     |
          4                               |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
   +-----------------+                    |     Length 0     Width 0     Starting position 0
   |                 |                    |
   |      Text       |                    |  MARGINS (in inches): SEE FIGURE ON LEFT
1  |                 |  2                 |   1.Left              0      2.Right           0
   |      Area       |                    |   3.Top to Header     0      4.Header to Text  0
   |                 |                    |   5.Footer to Bottom  0      6.Text to Footer  0
   +-----------------+                    |
          6                               |  TYPE STYLE
    -----Footer-----                      |     Characters Per Inch 0      Lines Per Inch  0
          5                               |     Highlights 1    2  3
+-----------------------+                 |
```

```
Report Name: GENERATE RIDE FILE

      REPORT QUERY
--------------------

delete records in RIDE INPUT .

define "SC" Number .
define "FRM" Number .
define "HWY1" Text 15 .
define "HWY2" Text 15 .
define "FRST" Number .
define "CNT" Number .
define "TO" Number .
define "LMP" Text 9 .
define "RD" Text 1 .

assign temp FRST := 0 .

for TEMP ;

if temp FRST = 0 then
 assign temp SC := REFERENCE POINT * 10 . assign temp FRM := REFERENCE POINT * 10 .
 assign temp RD := ROADWAY .
 if ROADWAY = "L" or ROADWAY = "X" then
   assign temp TO := temp FRM - 2 .
 end
 if ROADWAY = "R" or ROADWAY = "A" then
    assign temp TO := temp FRM + 2 .
 end
 assign temp LMP := jointext ( MILEPOST , jointext ( ";", jointext ( MILEPOST DI SP.
SIGN , jointext ( ";", MILEPOST VALUE ) ) ) ) .
 assign temp HWY1 := jointext ( COUNTY NUMBER , jointext ( ";" , JOINTEXT ( HIGH WAY
PREFIX , JOINTEXT ( ";" , jointext ( HIGHWAY NUMBER , JOINTEXT ( ";" , joint ext (
HIGHWAY SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) .
 assign temp HWY2 := jointext ( COUNTY NUMBER , jointext ( ";" , JOINTEXT ( HIGH WAY
PREFIX , JOINTEXT ( ";" , jointext ( HIGHWAY NUMBER , JOINTEXT ( ";" , joint ext (
HIGHWAY SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) . end
assign temp HWY2 := jointext ( COUNTY NUMBER , jointext ( ";" , JOINTEXT ( HIGHW AY
PREFIX , JOINTEXT ( ";" , jointext ( HIGHWAY NUMBER , JOINTEXT ( ";" , jointe xt (
HIGHWAY SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) .

assign temp CNT := REFERENCE POINT * 10 . if temp FRST not = 0 then
  if ROADWAY = "L" or ROADWAY = "X" then
     assign temp SC := temp SC - 1 .
  end
  if ROADWAY = "R" or ROADWAY = "A" then
       assign temp SC := temp SC + 1 .
  end
end
assign temp FRST := 1 .
if temp HWY1 not = temp HWY2 or firstc ( temp CNT , length ( temp CNT )) not = f irstc
( temp SC , length ( temp SC )) or
     firstc ( temp SC , length ( temp SC )) = firstc ( temp TO , length ( temp T O ))
then
   if temp HWY1 not = temp HWY2 or firstc ( temp CNT , length ( temp CNT )) not =
firstc ( temp SC , length ( temp SC )) then if ( temp RD = "R" or temp RD = "A" ) and
COUNTY NUMBER not = 999 then temp SC := temp SC - 1 .
    end
    if ( temp RD = "L" or temp RD = "X" ) and COUNTY NUMBER not = 999 then temp SC :=
    temp SC + 1 .
       end
  end
  if ( temp FRM + 1 <= temp SC and ( temp RD = "R" or temp RD = "A" )) or ( temp FRM -
     1 >= temp SC and ( temp RD = "L" or temp RD = "X" )) then
    list records
      temp HWY1 ;
      temp FRM / 10 ;
      temp SC / 10 ;
      temp LMP .
  end
    assign temp FRM :=  REFERENCE POINT * 10 . assign temp SC := REFERENCE POINT * 10
    . assign temp HWY1 := temp HWY2 .
     assign temp LMP := jointext ( MILEPOST , jointext ( ";", jointext ( MILEPOST DISP.
 SIGN , jointext ( ";", MILEPOST VALUE ) ) ) ) .
    assign temp RD := ROADWAY .
    if ROADWAY = "L" or ROADWAY = "X" then assign temp TO := temp FRM - 2 .
    end
    if ROADWAY = "R" or ROADWAY = "A" then assign temp TO := temp FRM + 2 .
    end
end
```

Report Name: GENERATE RIDE FILE Continued...

REPORT QUERY

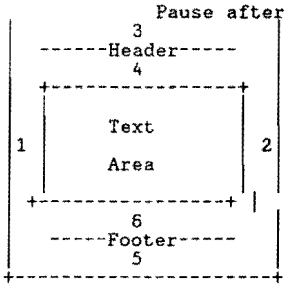
REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;FROM;REFERENC E
POINT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
_1_____________;_2___;_3___;_4_______
.end
```

FIELD DESCRIPTIONS

No.	Name	Type	Length	
1	temp HWY1	Text	15	*
2	temp FRM / 10	Number	5	*
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
3	temp SC / 10	Number	5	*
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
4	temp LMP	Text	9	*

PRINT STYLE SPECIFICATION Report Destination: Disk Allow
Style modification at run-time No If disk Output, Filename: RIDE.EXP
Now press DEFAULT VIEW to get default values for the remaining fields.
Printer Name :
Pause after each page ? : Yes



IF PRINTER NAME IS SPECIFIED ABOVE :

PAGE SIZE AND POSITION ON CARRIAGE (in inches)
Length 0 Width 0 Starting position 0

MARGINS (in inches): SEE FIGURE ON LEFT

1.Left	0	2.Right	0
3.Top to Header	0	4.Header to Text	0
5.Footer to Bottom	0	6.Text to Footer	0

TYPE STYLE
Characters Per Inch 0 Lines Per Inch 0
Highlights 1 Special 4 2 3

```
Report Name: RIDE SORTED

      REPORT QUERY
--------------------

for RIDE INPUT ;

list records
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  REFERENCE POINT in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE .
end .
delete records in RIDE INPUT .

      REPORT FORMAT

1        10        20        30        40        50        60        70       80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POI
NT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
_1_;__;_3__;_;_;_6___;_7_;_;_9_
.end

FIELD DESCRIPTIONS

No. Name                 Type             Length
-------------------- ---------------- ------ ------
  1 COUNTY NUMBER        Number             3       *
      Number Type : Integer
  2 HIGHWAY PREFIX       Text               2       *
  3 HIGHWAY NUMBER       Num. String        4       *
  4 HIGHWAY SUFFIX       Text               1       *
  5 ROADWAY              Text               1       *
  6 REFERENCE POINT      Number             5       *
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  7 MILEPOST             Number             3       *
        Number Type : Integer
  8 MILEPOST DISP. SIGN  Choice             1       *
        Choice   1: no
        Choice   2: yes
  9 MILEPOST VALUE       Number             3       *
     Number Type : Fixed Point
     Digits to left of Decimal = 1
```

```
       PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
        Style modification at run-time  No If disk Output, Filename: RIDE.EXP
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                   :
             Pause after each page ?        : Yes +----------------------+
|          3            |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----    |
|          4            |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+   |     Length 805   Width 0     Starting position 0
|  |                |   |
|  |     Text       |   |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                | 2 |   1.Left            0       2.Right            0
|  |     Area       |   |   3.Top to Header   0       4.Header to Text   0
|  |                |   |   5.Footer to Bottom 0      6.Text to Footer   0
|  +----------------+ | |
|          6            |  TYPE STYLE
|   -----Footer-----    |     Characters Per Inch 0      Lines Per Inch  805
|          5            |     Highlights 1   2  3
+-----------------------+
```

```
Report Name: GENERATE SKID FILE

      REPORT QUERY
--------------------
delete records in SKID INPUT .
define "HWY1" text 16 .
define "HWY2" text 16 .
define "MP" text 9 .
define "RD" text 1 .
define "FRST" Number .
define "CNT" Number .
define "SC" Number .
define "STRT" Number .
define "ALL" text 31 .
define "ALL2" text 31 .
define "TST" Number .
temp FRST := 0 .
temp STRT := 0 .
for TEMP ;
if temp FRST = 0 then
  temp HWY1 := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGHWAY PREFIX ,
               jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , jointext
               ( HIGHWAY SUFFIX , jointext ( ";" , jointext ( ROADWAY , ";" ) ) ) ) )
               ) ) ) ) . temp HWY2 := temp HWY1 .

  temp RD := ROADWAY .
  temp CNT := REFERENCE POINT * 10 .
  temp SC := temp CNT .
  if temp RD = "R" or temp RD = "A" then
    temp SC := temp SC + 2 .
  else
    temp SC := temp SC - 2 .
  end
end
  temp FRST := 1 .
temp CNT := REFERENCE POINT * 10 .
  temp HWY1 := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGHWAY PREFIX ,
               jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , jointext
               ( HIGHWAY SUFFIX , jointext ( ";" , jointext ( ROADWAY , ";" ) ) ) ) )
               ) ) ) ) . temp MP := jointext ( MILEPOST , jointext ( ";" ,
             jointext ( MILEPOST DISP. SIGN , jointext ( ";" , MILEPOST VALUE ) ) ) )
             .
if temp HWY1 not = temp HWY2 or
   firstc(temp CNT,length(temp CNT)) = firstc(temp SC,length(temp SC)) or temp CNT >
   temp SC or temp STRT = 0 then
  temp CNT := temp CNT / 10 .
   temp ALL := jointext ( HWY1 , jointext ( temp CNT , jointext ( ";" , temp MP ) ) ) .
if COUNTY NUMBER not = 999 then
  list records
      temp ALL .
end
  temp STRT := 1 .
  temp CNT := temp CNT * 10 .
  temp HWY2 := temp HWY1 .
  if temp RD = "R" or temp RD = "A" then
      temp SC := temp CNT + 2 .
  else
      temp SC := temp CNT - 2 .
  end
  temp MP := jointext ( MILEPOST , jointext ( ";" , jointext ( MILEPOST DISP. SIGN ,
             jointext ( ";" , MILEPOST VALUE ) ) ) ) .
end
end .
temp FRST := 0 .
for TEMP ;
if temp FRST = 0 then
  temp HWY1 := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGHWAY PREFIX ,
               jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , jointext
               ( HIGHWAY SUFFIX , jointext ( ";" , jointext ( ROADWAY , ";" ) ) ) ) )
               ) ) ) ) .
  temp HWY2 := temp HWY1 .
  temp MP := jointext ( MILEPOST , jointext ( ";" , jointext ( MILEPOST DISP. SIGN ,
             jointext ( ";" , MILEPOST VALUE ) ) ) ) .
  temp SC := REFERENCE POINT * 10 .
  temp RD := ROADWAY .
end
  temp FRST := 1 .
  temp HWY1 := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGHWAY PREFIX ,
               jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , jointext
               ( HIGHWAY SUFFIX , jointext ( ";" , jointext ( ROADWAY , ";" ) ) ) ) )
               ) ) ) ) .
  temp CNT := REFERENCE POINT * 10 .
  if temp RD = "R" or temp RD = "A" then
      temp TST := temp SC + 1.5 .
  else
    temp TST := temp SC - 0.5 .
  end
```

GENERATE SKID FILE...CONTINUED

```
 if ( temp TST > temp CNT and ( temp RD = "R" or temp RD = "A" ) and temp HWY1 = temp
 HWY2 ) or
     ( temp TST < temp CNT and ( temp RD = "L" or temp RD = "X" ) and temp HWY1 = temp
 HWY2 ) then
```

Report Name: GENERATE SKID FILE Continued...

```
      REPORT QUERY
--------------------

      temp HWY2 := temp HWY1 .
      temp MP := jointext ( MILEPOST , jointext ( ";" , jointext ( MILEPOST DISP. SIGN
              , jointext ( ";" , MILEPOST VALUE ) ) ) ) .
      temp SC := REFERENCE POINT * 10 .
      temp RD := ROADWAY .
 end

 if ( temp TST < temp CNT and ( temp RD = "R" or temp RD = "A" ) and temp HWY1 = temp
 HWY2 ) or
     ( temp TST > temp CNT and ( temp RD = "L" or temp RD = "X" ) and temp HWY1 = temp
 HWY2 ) or
     temp HWY1 not = temp HWY2 then

  temp SC := temp SC / 10 .
   temp ALL2 := jointext ( HWY2 , jointext ( temp SC , jointext ( ";" , temp MP ) ) ) .
  temp SC := temp SC * 10 .

  list records
    temp ALL2 .

      temp HWY2 := temp HWY1 .
      temp MP := jointext ( MILEPOST , jointext ( ";" , jointext ( MILEPOST DISP. SIGN
              , jointext ( ";" , MILEPOST VALUE ) ) ) ) .
      temp SC := REFERENCE POINT * 10 .
      temp RD := ROADWAY .
 end
end .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POI
NT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
 1________________________________2______________________________ .end
UFIELD DESCRIPTIONS¢

No. Name                 Type             Length  Remove Spaces ---
-------------------- ---------------- ------- ------
  1 temp ALL             Text               31       *
  2 temp ALL2            Text               31       *

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

      PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
        Style modification at run-time  No If disk Output, Filename: SKID.EXP
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                 :
             Pause after each page ?      : Yes +----------------------+
|          3             |   IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----    |
|          4             |   PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+   |      Length 0     Width 0     Starting position 0
|   |                |   |
|   |     Text       |   |   MARGINS (in inches): SEE FIGURE ON LEFT
|1  |                |  2|    1.Left             0       2.Right            0
|   |     Area       |   |    3.Top to Header    0       4.Header to Text   0
|   |                |   |    5.Footer to Bottom 0       6.Text to Footer   0
|  +----------------+ |  |
|          6             |   TYPE STYLE
|    -----Footer-----    |      Characters Per Inch 0      Lines Per Inch  0
|          5             |      Highlights 1  Special 4  2          3
+------------------------+
```

```
Report Name: SKID SORTED

      REPORT QUERY
--------------------

for SKID INPUT ;

list records
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  REFERENCE POINT in order ;
  MILEPOST ;
  MILEPOST DISP. SIGN ;
  MILEPOST VALUE .
end .


delete records in SKID INPUT .

      REPORT FORMAT

1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE POI
NT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
_1_;__;_3__;_;_;_6___;_7_;_;_9_
.end

FIELD DESCRIPTIONS

No. Name                 Type             Length
-------------------- ---------------- ------ ------
  1 COUNTY NUMBER        Number             3      *
      Number Type : Integer
  2 HIGHWAY PREFIX       Text               2      *
  3 HIGHWAY NUMBER       Num. String        4      *
  4 HIGHWAY SUFFIX       Text               1      *
  5 ROADWAY              Text               1      *
  6 REFERENCE POINT      Number             5      *
     Number Type : Fixed Point
     Digits to left of Decimal = 3
  7 MILEPOST             Number             3      *
       Number Type : Integer
  8 MILEPOST DISP. SIGN  Choice             1      *
       Choice    1: no
       Choice    2: yes
  9 MILEPOST VALUE       Number             3      *
     Number Type : Fixed Point
     Digits to left of Decimal = 1
```

```
       PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
        Style modification at run-time  No If disk Output, Filename: SKID.EXP
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name              :
             Pause after each page ?   : Yes +----------------------+
|        3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|  ------Header-----    |
|        4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|  +----------------+   |     Length 0     Width 0     Starting position 0
|  |                |   |
|  |     Text       |   |  MARGINS (in inches): SEE FIGURE ON LEFT
|1 |                | 2 |   1.Left            0       2.Right            0
|  |     Area       |   |   3.Top to Header   0       4.Header to Text   0
|  |                |   |   5.Footer to Bottom 0      6.Text to Footer   0
|  +----------------+   |
|        6              |  TYPE STYLE
|   -----Footer-----    |     Characters Per Inch 0      Lines Per Inch  0
|        5              |     Highlights 1    2  3
+-----------------------+
```

Report Name: GENERATE VIS FILE

REPORT QUERY

```
delete records in VIS .


define "SC" Number .
define "FRM" Number .
define "HWY1" Text 15 .
define "HWY2" Text 15 .
define "FRST" Number .
define "CNT" Number .
define "LMP" Text 9 .
assign temp FRST := 0 .
for TEMP ;
if temp FRST = 0 then
 assign temp SC := REFERENCE POINT * 10 . assign temp FRM := REFERENCE POINT * 10 .
 assign temp LMP := jointext ( MILEPOST , jointext ( ";", jointext ( MILEPOST DI SP.
SIGN , jointext ( ";", MILEPOST VALUE ) ) ) .
 assign temp HWY1 := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGH WAY
PREFIX , jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , joint ext (
HIGHWAY SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) .
 assign temp HWY2 := jointext ( COUNTY NUMBER , jointext ( ";" , jointext ( HIGH WAY
PREFIX , jointext ( ";" , jointext ( HIGHWAY NUMBER , jointext ( ";" , joint ext (
HIGHWAY SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) . end
assign temp HWY2 := jointext ( COUNTY NUMBER , jointext ( ";" , JOINTEXT ( HIGHW AY
PREFIX , JOINTEXT ( ";" , jointext ( HIGHWAY NUMBER , JOINTEXT ( ";" , jointe xt (
HIGHWAY SUFFIX , jointext ( ";" , ROADWAY ) ) ) ) ) ) ) .
assign temp CNT := REFERENCE POINT * 10 . if temp FRST not = 0 then
  assign temp SC := temp SC + 1 .
end
assign temp FRST := 1 .
if temp HWY1 not = temp HWY2 or firstc ( temp CNT , length ( temp CNT )) not = f irstc
( temp SC , length ( temp SC )) or mod ( temp SC , 5 ) < 1 or mod ( temp S C , 5 ) > 4
then
  if temp HWY1 not = temp HWY2 or firstc ( temp SC , length ( temp SC )) not = f irstc
( temp CNT , length ( temp CNT )) then temp SC := temp SC - 1 .
  end
if ( temp FRM + 1 ) <= temp SC then
    list records
      temp HWY1 ;
      temp FRM / 10 ;
      temp SC / 10 ;
      temp LMP .
  end
    assign temp FRM :=  REFERENCE POINT * 10 . assign temp SC := REFERENCE POINT * 10
    . assign temp HWY1 := temp HWY2 .
     assign temp LMP := jointext ( MILEPOST , jointext ( ";", jointext ( MILEPOST DISP.
 SIGN , jointext ( ";", MILEPOST VALUE ) ) ) ) . end
```

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;FROM;REFERENC E
POINT;MILEPOST;MILEPOST DISP. SIGN;MILEPOST VALUE .items
_1_____;_2___;_3___;_4_____
.end
```

FIELD DESCRIPTIONS

No.	Name	Type	Length	
1	temp HWY1	Text	16	*
2	temp FRM / 10	Number	5	*
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
3	temp SC / 10	Number	5	*
	Number Type : Fixed Point			
	Digits to left of Decimal = 3			
4	temp LMP	Text	9	*

GENERATE VIS FILE ...continued

```
       PRINT STYLE SPECIFICATION Report Destination:    Disk    Allow
        Style modification at run-time  No If disk Output, Filename: VISUAL.EXP
   Now press DEFAULT VIEW to get default values for the remaining fields.
             Printer Name                :
             Pause after each page ?     : Yes +----------------------+
|          3              |  IF PRINTER NAME IS SPECIFIED ABOVE :
|   ------Header-----     |
|          4              |  PAGE SIZE AND POSITION ON CARRIAGE (in inches)
|   +----------------+    |     Length 0     Width 0     Starting position 0
|   |                |    |
|   |      Text      |    |  MARGINS (in inches): SEE FIGURE ON LEFT
| 1 |                |  2 |   1.Left              0      2.Right           0
|   |      Area      |    |   3.Top to Header     0      4.Header to Text  0
|   |                |    |   5.Footer to Bottom  0      6.Text to Footer  0
|   +----------------+ |  |
|          6              |  TYPE STYLE
|    -----Footer-----     |     Characters Per Inch 0      Lines Per Inch  0
|          5              |     Highlights 1  Special 4  2           3
+-------------------------+
```

Report Name: MISSING SURFACE DATA

REPORT QUERY

```
for MASTER with SURFACE TYPE < 1 ;

list records
  COUNTY NUMBER in order ;
  HIGHWAY PREFIX in order ;
  HIGHWAY NUMBER in order ;
  HIGHWAY SUFFIX in order ;
  ROADWAY in order ;
  REFERENCE POINT in order .
```

REPORT FORMAT

```
1        10        20        30        40        50        60        70        80
+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+---+

.page
.header
                              MISSING DATE OF LAST SURFACE

                                    AND SURFACE DATA

                    ============================================
                    COUNTY    HIGHWAY  ROADWAY    REFERENCE NUMBER
                                                    POINT
                      ------------------------------------------
                        _1_     ___3___      _         _6___

                    ============================================
```

FIELD DESCRIPTIONS

```
No. Name                 Type            Length
------------------- --------------- ------ ------
  1 COUNTY NUMBER        Number            3
     Number Type : Integer
  2 HIGHWAY PREFIX       Choice            2
    Choice Field Type Name: 1
       Choice 1:
       Choice 2:
       Choice 3:
       Choice 4: no
       Choice 5: yes
       Choice 6:
       Choice 7:
       Choice 8: PR
       Choice 9: FM
       Choice 10: SH
       Choice 11: US
       Choice 12: IH
       Choice 13:
       Choice 14: A
       Choice 15: S
       Choice 16: E
       Choice 17: W
       Choice 18:
       Choice 19: +
       Choice 20: -
       Choice 21:
       Choice 22: R
       Choice 23: L
       Choice 24: A
       Choice  25: X
       Choice  26: 0000-00
       Choice  27: 0000-00
       Choice  28: 00/00
       Choice  29: 00/00
       Choice          30:     JOINTEXT(COUNTY     NUMBER,JOINTEXT(HIGHWAY     PREFIX,JOINTEXT(HIGHWAY
                          NUMBER,JOINTEXT(HIGHWAY SUFFIX,JOINTEXT(ROADWAY,REFERENCE POINT)))))
       Choice  31: J
       Choice  32:
       Choice  33:
```

APPENDIX D
LISTING OF P.M.S. DATABASE FILES

The following file list describes all files required to support the PMS Database system. For the micro-PMS system, each county within D21 resides within its own DOD directory. Each county-level directory maintains the same file structure as shown below. The micro-PMS D21 system consists of 29 user-defined files and 6 system files for a total of 35 files per county. The forms list contained in this appendix have been extracted from the BROOKS COUNTY (024) sud-directory of the PMS. The remaining 9 counties have exactly the same file structure. The Brooks County structures was selected for illustrative purposes.

P.M.S. Data Forms List (1989)

Number of Forms: User Defined: 29 System Defined: 6 Total: 35

No.	Form Name	No. of Records Existing	Deleted	Disk File Name	File Size Bytes
1	users	6	0	USERBAAA.DBM	378
2	configuration	1	0	CONFBAAA.DBM	186
3	printers	231	0	PRINTERS.DAT	237,930
4	screen styles	3	0	SCREBAAA.DBM	201
5	relationships	8	3	RELABAAA.DBM	1,792
6	menus	58	0	MENUBAAA.DBM	38,976
7	COUNTIES	10	0	COUNBAAA.DBM	260
	Form Definition file			COUNBAAA.DBA	346
8	MACHINE # VAR.	3	0	MACHBAAA.DBM	54
	Form Definition file			MACHBAAA.DBA	782
9	TEMP	0	0	TEMPBAAA.DBM	0
	Index File			TEMPBAAA.I0A	512
	Form Definition file			TEMPBAAA.DBA	1,383
10	DATE OF LAST SURFACE	26	0	DATEBAAA.DBM	2,106
	Index File			DATEBAAA.I11	2,048
	Index File			DATEBAAA.I12	2,560
	Form Definition file			DATEBAAA.DBA	1,930
11	ROADWAY CHARACTERS	33	0	ROADBAAA.DBM	2,904
	Index File			ROADBAAA.I12	2,560
	Index File			ROADBAAA.I13	2,560
	Form Definition file			ROADBAAA.DBA	2,122
12	MAINTENANCE SECTIONS	0	0	MAINBAAA.DBM	0
	Index File			MAINBAAA.I10	512
	Index File			MAINBAAA.I11	512
	Form Definition file			MAINBAAA.DBA	1,950
13	ADT VALUES	0	0	ADTVBAAA.DBM	0
	Index File			ADTVBAAA.I10	512
	Index File			ADTVBAAA.I11	512
	Form Definition file			ADTVBAAA.DBA	1,979
14	FUNCT CLASS	0	0	FUNCBAAA.DBM	0
	Index File			FUNCBAAA.I10	512
	Index File			FUNCBAAA.I11	512
	Form Definition file			FUNCBAAA.DBA	1,996
15	18-KIP VALUES	0	0	KIPVBAAA.DBM	0
	Index File			KIPVBAAA.I10	512
	Index File			KIPVBAAA.I11	512
	Form Definition file			KIPVBAAA.DBA	1,979

LISTING OF P.M.S. DATABASE FILES - continued

Form List Continued...

No.	Form Name	No. of Records Existing	Deleted	Disk File Name	File Size Bytes
16	HIGHWAY DESIGN	0	0	HIGHBAAA.DBM	0
	Index File			HIGHBAAA.I10	512
	Index File			HIGHBAAA.I11	512
	Form Definition file			HIGHBAAA.DBA	1,950
17	UNSORTED 0.5 FWD FIL	0	0	UNSOBAAA.DBM	0
	Index File			UNSOBAAA.I10	512
	Form Definition file			UNSOBAAA.DBA	2,183
18	SORTED 0.5 FWD FIL	0	0	SORTBAAA.DBM	0
	Index File			SORTBAAA.I10	512
	Form Definition file			SORTBAAA.DBA	2,181
19	GRAPH FILE HW ID	0	0	GRAPBAAB.DBM	0
	Form Definition file			GRAPBAAB.DBA	305
20	DUMMY RM FILE	1175	0	DUMMBAAB.DBM	173,900
	Index File			DUMMBAAB.I01	59,392
	Index File			DUMMBAAB.I02	8,192
	Index File			DUMMBAAB.I16	59,392
	Form Definition file			DUMMBAAB.DBA	3,961
21	CROSS ROADS	21	0	CROSBAAB.DBM	1,596
	Index File			CROSBAAB.I01	2,048
	Index File			CROSBAAB.I02	2,048
	Form Definition file			CROSBAAB.DBA	1,968
22	DISTRICT INVENTORY	15	0	DISTBAAB.DBM	1,845
	Index File			DISTBAAB.I01	1,024
	Index File			DISTBAAB.I02	1,024
	Form Definition file			DISTBAAB.DBA	3,506
23	FWD INPUT	246	0	FWDIBAAB.DBM	20,664
	Index File			FWDIBAAB.I01	11,776
	Form Definition file			FWDIBAAB.DBA	2,463
24	RIDE INPUT	587	0	RIDEBAAA.DBM	69,266
	Index File			RIDEBAAA.I01	29,184
	Index File			RIDEBAAA.I02	29,184
	Form Definition file			RIDEBAAA.DBA	3,836
25	ORIGINAL RIDE INPUT	587	0	ORIGBAAA.DBM	69,266
	Index File			ORIGBAAA.I01	29,184
	Index File			ORIGBAAA.I02	29,184
	Form Definition file			ORIGBAAA.DBA	3,842
26	0.1 SIOMETER FILE	1175	0	SIOMBAAD.DBM	81,075
	Index File			SIOMBAAD.I01	59,904
	Form Definition file			SIOMBAAD.DBA	2,568

LISTING OF P.M.S. DATABASE FILES - continued

Form List Continued...

No.	Form Name	No. of Records Existing	Deleted	Disk File Name	File Size Bytes
27	SKID INPUT	596	0	SKIDBAAB.DBM	36,952
	Form Definition file			SKIDBAAB.DBA	2,114
28	PES: ADT & 18KIP IN	1175	0	PESABAAA.DBM	69,325
	Index File			PESABAAA.I01	59,904
	Index File			PESABAAA.I03	8,192
	Form Definition file			PESABAAA.DBA	1,328
29	DUMMY VIS INPUT	0	0	DUMMBAAA.DBM	0
	Index File			DUMMBAAA.I01	512
	Form Definition file			DUMMBAAA.DBA	4,377
30	UNMATCH SIOM HOLD FL	74	0	UNMABAAB.DBM	2,590
	Index File			UNMABAAB.I01	4,608
	Form Definition file			UNMABAAB.DBA	627
31	SIOMETER RIDE VALUES	587	0	SIOMBAAA.DBM	82,767
	Index File			SIOMBAAA.I01	30,208
	Index File			SIOMBAAA.I02	8,192
	Form Definition file			SIOMBAAA.DBA	3,765
32	PRS-SRS INPUT FILE	236	0	PRSSBAAB.DBM	4,012
	Index File			PRSSBAAB.I01	7,680
	Form Definition file			PRSSBAAB.DBA	460
33	VIS	237	0	VISABAAB.DBM	50,007
	Index File			VISABAAB.I01	12,288
	Index File			VISABAAB.I02	3,072
	Index File			VISABAAB.I03	7,680
	Form Definition file			VISABAAB.DBA	6,967
34	1990 PES ADT KIP FC	41	0	PESABAAB.DBM	2,296
	Form Definition file			PESABAAB.DBA	1,218
35	MASTER	1175	0	MASTBAAA.DBM	333,700
	Index File			MASTBAAA.I01	66,560
	Index File			MASTBAAA.I02	8,192
	Form Definition file			MASTBAAA.DBA	7,999

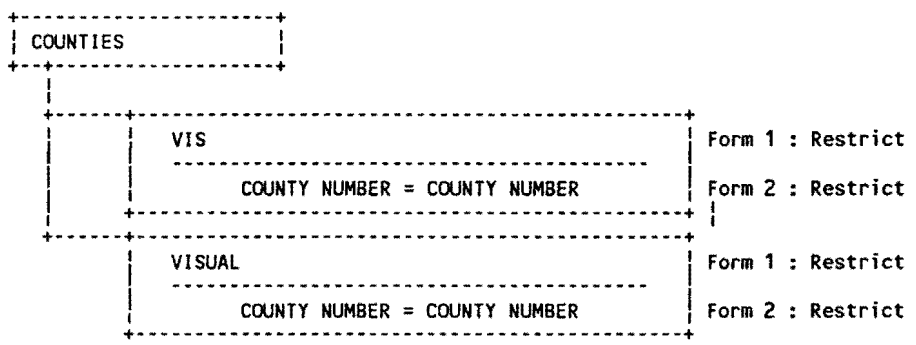
APPENDIX E
PMS DATABASE FORM RELATIONSHIPS

This appendix defines the PMS data file relationship structure. Various forms within the PMS structure share common data fields. This sharing of common fields supports forms lookups and cross referencing activites.

The forms that have explicit relationships are defined on the succeding page.

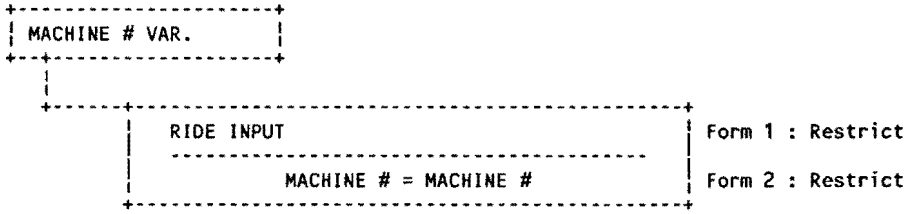
List of Form Relationships for the PMS Database

COUNTIES - VISUAL



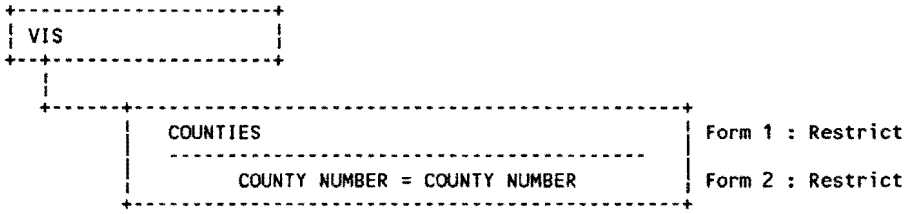
List of Form Relationships

MACHINE # VAR. (MAYES RIDE) - RIDE INPUT



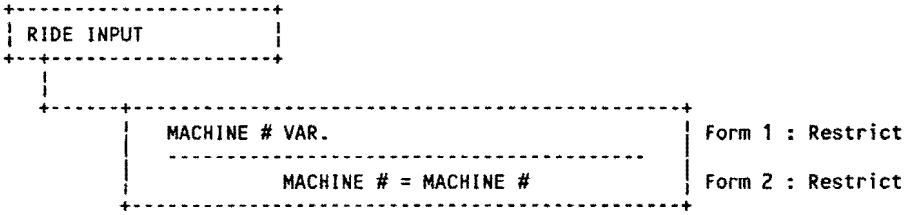
List of Form Relationships

VISUAL - COUNTIES (COUNTY NO.)



List of Form Relationships

RIDE INPUT (MAYES) - MACHINE # VAR



Appendix F
PMS Database Import File Names

The import programs shown below constitute the requisite import procedures required to import all variable length data files into their respective data files.

Import List

No.	Import Name	Disk File Name	File Size Bytes
1.	ADTIMP	ADTIMP.DBI	92
2.	FCIMP	FCIMP.DBI	92
3.	FWD	FWD.DBI	92
4.	FWDIMP	FWDIMP.DBI	92
5.	HDIMP	HDIMP.DBI	92
6.	IMPPRS	IMPPRS.DBI	92
7.	INVENTRY	INVENTRY.DBI	92
8.	KIPIMP	KIPIMP.DBI	92
9.	MASTER	MASTER.DBI	92
10.	MSIMP	MSIMP.DBI	92
11.	REFIMP	REFIMP.DBI	190
12.	RIDE	RIDE.DBI	92
13.	SIOMETER	SIOMETER.DBI	190
14.	SKID	SKID.DBI	92
15.	SKIDIMP	SKIDIMP.DBI	190
16.	SORTA	SORTA.DBI	92
17.	VISUAL	VISUAL.DBI	92

Appendix G
PMS Menu Definition Specifications: 1988-89 Version

The following define the user-menu designs for the PMS database as of December, 1989. These menus permit district personnel unfamiliar with the programming details of the PMS to interact with the pre-defined routines designed into the system. Each menu shown below constitutes a menu data record. The menu records are stored within a database system file. The menus appear when the user logs into the PMS with the appropriate password.

All menus as of December, 1989 are shown on the following pages of this appendix.

Menu Name: 18-KIP DATA HANDLING
Security Level: High

18-KIP Data Handling / BROOKS COUNTY

	TYPE	NAME
1.Match Mileposts with Reference Points	Run Proc.	18-KIP REFER POINT
2.Validate 18-KIP Mileposts	Run Proc.	VALIDATE MILEPOSTS
3.Modify 18-KIP Data	Rec Entry	18-KIP VALUES
4.Transfer 18-KIP Data to Master Form	Run Proc.	18-KIP MRG TO MASTR
5.		
6.		
7.		
8.		
9.		

Menu Name: ADT DATA HANDLING
Security Level: High

ADT Data Handling / BROOKS COUNTY

	TYPE	NAME
1.Match Mileposts with Reference Points	Run Proc.	ADT REFER POINT
2.Validate ADT Mileposts	Run Proc.	VALIDATE MILEPOSTS
3.Modify ADT Data	Rec Entry	ADT VALUES
4.Transfer ADT Data to Master Form	Run Proc.	ADT MRG TO MASTR
5.		
6.		
7.		
8.		
9.		

Menu Name: ADT IMPORT
Security Level: High

CHAIN

	TYPE	NAME
1.Transfer ADT Data to PC	Prog Call	PES.BAT
2.Import ADT Data	Import	ADTIMP
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: CREATE MASTER
Security Level: High

CHAIN

	TYPE	NAME
1.Generate Master Data Records	Run Proc.	CREATE MASTER FILE
2.Import Records into Master Data Form	Import	MASTER
3.Delete Master Data Record File	Prog Call	DEL MASTR.EXP
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: CRITICAL REPORTS
Security Level: Low3

CHAIN

	TYPE	NAME
1.Critical PRS/ADT	Run Proc.	CRITICAL PRS/ADT
2.Critical Ride/ADT	Run Proc.	CRITICAL RIDE/ADT
3.Critical SCI/ADT	Run Proc.	CRITICAL SCI/ADT
4.Critical Skid/ADT	Run Proc.	CRITICAL SKID/ADT
5.Critical DLS/ADT	Run Proc.	CRITICAL DLS/ADT
6.Critical Ride/FWD/ADT	Run Proc.	CRIT RIDE/FWD/ADT
7.Critical Skid/DLS/ADT	Run Proc.	CRIT SKID/DLS/DAT
8.Critical Crack Location	Run Proc.	CRIT CRACK LOCATION
9.Critical RAV/RUT/PAT/Ride	Run Proc.	CRIT RAV/RUT/PATRIDE

Menu Name: DATA ENTRY I
Security Level: Lowl

DATA ENTRY -- DISTRICT FIELD DATA / BROOKS COUNTY

	TYPE	NAME
1.Input or Modify Visual Data	Rec Entry	VIS
2.Ride Data	User Menu	RIDE INPUT
3.FWD Data	User Menu	FWD DATA INPUT
4.Skid Data	User Menu	SKID DATA INPUT
5.Create or Modify Date of Last Surface	Rec Entry	DATE OF LAST SURFACE
6.Create or Modify Crossroads	Rec Entry	CROSS ROADS
7.Create or Modify District Counties Data	Rec Entry	COUNTIES
8.Create of Modify Roadway Characteristics	Rec Entry	ROADWAY CHARACTERS
9.		

Menu Name: DATA ENTRY II
Security Level: High

DATA ENTRY -- IMPORTED PES DATA / BROOKS COUNTY

	TYPE	NAME
1.Import Maintenance Section Data	User Menu	MAINTENANCE SECT IMP
2.Import ADT Data	User Menu	ADT IMPORT
3.Import Functional Classification Data	User Menu	FUNCT CLASS IMP
4.Import 18-KIP Data	User Menu	KIP IMPORT
5.Import Highway Design Data	User Menu	HIGHWAY DESN IMP
6.		
7.		
8.		
9.		

Menu Name: DATA LISTING
Security Level: Low3

DATA LISTING REPORTS / BROOKS COUNTY

	TYPE	NAME
1.List District Inventory Data	Run Proc.	PRINT DIST. INVENTRY
2.List Visual Ratings	Run Proc.	PRINT PRS-SRS INFILE
3.List Date of Last Surface & Surface Data	Run Proc.	DLS DATA
4.List Cross Roads	Run Proc.	CROSSROADS
5.List Counties Information Data	Run Proc.	COUNTY DATA
6.List All Data	Run Proc.	ALL DATA
7.Create File for Plotting Data	Run Proc.	PLOT DATA
8.PRINT PRS-SRS DATA SUMMARY	Run Proc.	PRINT PRS-SRS SUMRY
9.		

Menu Name: DLS DATA HANDLING
Security Level: Medium1

DATE OF LAST SURFACE DATA HANDLING / BROOKS COUNTY

	TYPE	NAME
1.Match Mileposts with Reference Points	Run Proc.	DLS REFERENCE POINTS
2.Validate Date of Last Surface Mileposts	Run Proc.	VALIDATE MILEPOSTS
3.Check Date of Last Surface for Overlaps	User Menu	DLS VALIDATE
4.Modify Date of Last Surface Data	Rec Entry	DATE OF LAST SURFACE
5.Transfer Date of Last Surface Data to Master	Run Proc.	DLS MERGE TO MASTER
6.		
7.		

```
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: DLS VALIDATE
Security Level: Mediuml

CHAIN

```
+--------------------------------------------------+  TYPE      NAME
|1.Export Date of Last Surface Data                |Run Proc.  DLS VALIDATION
|2.Validate Date of Last Surface Data              |Prog Call  DLSVAL.EXE
|3.Delete Data File                                |Prog Call  DEL DLS.DAT
|4.                                                |
|5.                                                |
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: FC DATA HANDLING
Security Level: High

Functional Classification Data Handling / BROOKS COUNTY

```
+--------------------------------------------------+  TYPE      NAME
|1.Match Mileposts with Reference Points           |Run Proc.  FC REFER POINT
|2.Validate Functional Classification Mileposts    |Run Proc.  VALIDATE MILEPOSTS
|3.Modify Functional Classification Data           |Rec Entry  FUNCT CLASS
|4.Transfer Funct. Class. Data to Master Form      |Run Proc.  FC MRG TO MASTR
|5.                                                |
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: FUNCT CLASS IMP
Security Level: High

CHAIN

```
+--------------------------------------------------+  TYPE      NAME
|1.Transfer Functional Class. Data to PC           |Prog Call  PES.BAT
|2.Import Functional Classification Data           |Import     FCIMP
|3.                                                |
|4.                                                |
|5.                                                |
```

```
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: FWD CONVERT
Security Level: Medium1

CHAIN

```
+--------------------------------------------------+ TYPE      NAME
|1.Make certain data is in drive A:                |Prog Call  FWD.BAT
|2.Copy FWD Field Data into One File               |Prog Call  COPY A:*.FWD ALL.FWD
|3.EDIT EOF'S FROM ALL.FWD                         |Prog Call  EDIX ALL.FWD
|4.RUN THE CONVERT PROGRAM                         |Prog Call  FWDCONV.EXE
|5.DELETE THE COMBINED FILE                        |Prog Call  DEL ALL.FWD
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: FWD CREATE
Security Level: High

CHAIN

```
+--------------------------------------------------+ TYPE      NAME
|1.Sort Master Data in Ascending Order             |Run Proc.  ORDERED MASTER FILE
|2.Import Sorted Master Data into Temp Form        |Import     SORTA
|3.Delete Sorted Data File                         |Prog Call  DEL SORT.DAT
|4.Generate FWD Records                            |Run Proc.  GENERATE FWD FILE
|5.Reorganize FWD Data File                        |Form Reorg FWD INPUT
|6.Import FWD Records into FWD Form                |Import     FWD
|7.Delete FWD Data File                            |Prog Call  DEL FWD.EXP
|8.Sort FWD Records                                |Run Proc.  FWD SORTED
|9.Go to Part Two of this Menu                     |User Menu  FWD CREATE II
+--------------------------------------------------+
```

Menu Name: FWD CREATE II
Security Level: High

CHAIN

```
+--------------------------------------------------+ TYPE      NAME
|1.Reorganize FWD Data File                        |Form Reorg FWD INPUT
|2.Import FWD Records into FWD Form                |Import     FWD
|3.Delete FWD Data File                            |Prog Call  DEL FWD.EXP
|4.                                                |
|5.                                                |
|6.                                                |
|7.                                                |
|8.                                                |
```

9.

Menu Name: FWD DATA
Security Level: High

FWD DATA SETUP / BROOKS COUNTY

	TYPE	NAME
1.Create FWD Data Records	User Menu	FWD CREATE
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: FWD DATA HANDLING
Security Level: Medium1

FWD DATA HANDLING / BROOKS COUNTY

	TYPE	NAME
1.Verify Validity of FWD Data		
2.Transfer FWD Data to Master Data Form	Run Proc.	FWD MASTER UPDATE
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: FWD DATA INPUT
Security Level: Medium1

FWD DATA ENTRY / BROOKS COUNTY

	TYPE	NAME
1.Convert FWD Field Data	User Menu	FWD CONVERT
2.Import Converted FWD Field Data	User Menu	FWD IMPORT
3.Validate Errors in Imported FWD Data File	Run Proc.	FWD VIEW
4.Correct Errors in Imported Data File	Prog Call	EDIX FWD.CON
5.		
6.		
7.		
8.		
9.		

Menu Name: FWD ERRORS
Security Level: Medium1

CHAIN

	TYPE	NAME
1.List the Roadway Section Where Errors Occur	Run Proc.	FWD VIEW
2.Edit the Errors	Prog Call	E88 FWD.CON
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: FWD IMPORT
Security Level: Medium1

CHAIN

	TYPE	NAME
1.Import Converted FWD Field Data	Import	FWDIMP
2.Copy Errors into File	Prog Call	COPY FWD*.E00 ER.ERR
3.List Errors to Printer	Prog Call	FWDERR.EXE
4.Delete Error Files	Prog Call	DEL *.ERR
5.DELETE FWD*.E?? FILE	Prog Call	DEL FWD*.E0?
6.		
7.		
8.		
9.		

Menu Name: GRAPH-1
Security Level: Medium2

D21 PMS HIGHWAY SEGMENT PLOTTING MENU

	TYPE	NAME
1.PRINT BROOKS COUNTY HIGHWAY INVENTORY	Run Proc.	PRINT DIST. INVENTRY
2.PRODUCE RIDE/SKID/FWD/PRS PLOTS	Run Proc.	BUILD GRAPH PROC
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: HANDLING I
Security Level: Mediuml

DATA HANDLING -- DISTRICT FIELD DATA / BROOKS COUNTY

	TYPE	NAME
1.Visual Data	User Menu	VISUAL DATA HANDLING
2.Ride Data	User Menu	RIDE DATA HANDLING
3.FWD Data	User Menu	FWD DATA HANDLING
4.Skid Data	User Menu	SKID DATA HANDLING
5.Date of Last Surface	User Menu	DLS DATA HANDLING
6.Roadway Characteristics	User Menu	RDWAY CHAR HANDLING
7.		
8.		
9.		

Menu Name: HANDLING II
Security Level: High

Data Handling -- Imported PES Data / BROOKS COUNTY

	TYPE	NAME
1.Maintenance Section Data Handling	User Menu	MAINT SECT DATA HAND
2.ADT Data Handling	User Menu	ADT DATA HANDLING
3.Functional Classification Data Handling	User Menu	FC DATA HANDLING
4.18-KIP Data Handling	User Menu	18-KIP DATA HANDLING
5.Highway Design Data Handling	User Menu	HWY DSN DATA HAND
6.		
7.		
8.		
9.		

Menu Name: HIGHWAY DESN IMP
Security Level: High

CHAIN

	TYPE	NAME
1.Transfer Highway Design Data to PC	Prog Call	PES.BAT
2.Import Highway Design Data	Import	HDIMP
3.		
4.		
5.		

```
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: HWY DSN DATA HAND
Security Level: High

Highway Design Data / BROOKS COUNTY

```
+--------------------------------------------------+ TYPE      NAME
|1.Match Mileposts with Reference Points           |Run Proc.  HWY DESN REFER POINT
|2.Validate Highway Design Mileposts               |Run Proc.  VALIDATE MILEPOSTS
|3.Modify Highway Design Data                      |Rec Entry  HIGHWAY DESIGN
|4.Transfer Highway Design Data to Master Form     |Run Proc.  HWY DSN MRG TO MASTR
|5.                                                |
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: INVENTORY
Security Level: High

COUNTY INVENTORY SETUP / BROOKS COUNTY

```
+--------------------------------------------------+ TYPE      NAME
|1.Create or Modify County Inventory Data          |Rec Entry  DISTRICT INVENTORY
|2.Roadway Length Check                            |Run Proc.  INVENTORY MILE CHECK
|3.Reorganize County Inventory Data                |User Menu  REORGANIZE INVENTORY
|4.                                                |
|5.                                                |
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: KIP IMPORT
Security Level: High

CHAIN

```
+--------------------------------------------------+ TYPE      NAME
|1.Transfer 18-KIP Data to PC                      |Prog Call  PES.BAT
|2.Import 18-KIP Data                              |Import     KIPIMP
|3.                                                |
```

```
|4.                                                |
|5.                                                |
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: MAIN
Security Level: Low3

PAVEMENT MANAGEMENT SYSTEM / BROOKS COUNTY

	TYPE	NAME
1.Setup	User Menu	SETUP
2.Data Entry -- District Field Data	User Menu	DATA ENTRY I
3.Data Entry -- Import PES Data	User Menu	DATA ENTRY II
4.Data Handling -- District Field Data	User Menu	HANDLING I
5.Data Handling -- Imported PES Data	User Menu	HANDLING II
6.Reports & Graphs	User Menu	REPORTS
7.Year End	User Menu	YEAR END
8.		
9.		

Menu Name: MAINT SECT DATA HAND
Security Level: High

MAINTENANCE SECTION DATA HANDLING / BROOKS COUNTY

	TYPE	NAME
1.Match Mileposts with Reference Points	Run Proc.	MAINT SEC REF POINTS
2.Validate Maintenance Section Mileposts	Run Proc.	VALIDATE MILEPOSTS
3.Modify Maintenance Section Data	Rec Entry	MAINTENANCE SECTIONS
4.Transfer Maintenance Section to Master Form	Run Proc.	MNT SEC MRG TO MASTR
5.		
6.		
7.		
8.		
9.		

Menu Name: MAINTENANCE SECT IMP
Security Level: High

CHAIN

	TYPE	NAME

1.Transfer Maintenance Section Data to PC	Prog Call	PES.BAT
2.Import Maintenance Section Data	Import	MSIMP
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: MASTER DATA
Security Level: High

MASTER DATA SETUP / BROOKS COUNTY

	TYPE	NAME
1.Create Master Data Records	User Menu	CREATE MASTER
2.Modify Master Data Records	Rec Entry	MASTER
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: MISSING DATA
Security Level: Low3

MISSING DATA REPORTS / BROOKS COUNTY

	TYPE	NAME
1.Missing Visual Data	Run Proc.	MISSING VISUAL DATA
2.Missing Ride Data	Run Proc.	MISSING RIDE DATA
3.Missing FWD Data	Run Proc.	MISSING FWD DATA
4.Missing Skid Data	Run Proc.	MISSING SKID DATA
5.Missing Date of Last Surface & Surface Data	Run Proc.	MISSING SURFACE DATA
6.		
7.		
8.		
9.		

Menu Name: MRM EQUIPMENT
Security Level: High

MRM Equipment Coefficients SETUP / BROOKS COUNTY

	TYPE	NAME
1.Add, Delete,or Update Current Coefficients	Rec Entry	MACHINE # VAR.
2.Modify Ride Form with New MRM Equip. Numbers	Main Menu	
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: PMS-PES
Security Level: Low3

CHAIN

	TYPE	NAME
1.List Visual Data	Run Proc.	PMS-PES VISUAL
2.List Maintenance Sections & Surface Type	Run Proc.	PMS-PES MS & ST
3.List Ride Data	Run Proc.	PMS-PES RIDE
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: RATING FORMS
Security Level: Low3

GENERATE RATING FORMS REPORTS / BROOKS COUNTY

	TYPE	NAME
1.Generate Visual Rating Forms (HP Laser Jet)	Run Proc.	VISUAL RATING FORM
2.Generate Ride Rating Forms (HP Laser Jet)	Run Proc.	RIDE INPUT FORM
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: RDWAY CHAR HANDLING
Security Level: Medium1

ROADWAY CHARACTERISTICS DATA HANDLING / BROOKS COUNTY

	TYPE	NAME
1.Verify Validity of Roadway Char. Data	User Menu	RDWY CHAR VALIDATE
2.Transfer Roadway Data to Master Data Form	Run Proc.	RDWY MASTER UPDATE
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: RDWY CHAR VALIDATE
Security Level: Medium1

CHAIN

	TYPE	NAME
1.Export Rdwy Char Data	Run Proc.	RDWY CHAR VALIDATION
2.Validate Rdwy Char Data	Prog Call	DLSVAL.EXE
3.Delete Data File	Prog Call	DEL DLS.DAT
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: REORGANIZE INVENTORY
Security Level: High

CHAIN

	TYPE	NAME
1.Sort and Save County Inventory Data	Run Proc.	SORT INVENTORY FILE
2.Reorganize Records in County Inventory Form	Form Reorg	DISTRICT INVENTORY
3.Import Sorted County Inventory Data	Import	INVENTRY
4.Delete Sorted County Inventory Data File	Prog Call	DEL INV.DAT
5.		
6.		
7.		
8.		
9.		

Menu Name: REPORTS
Security Level: Low3

REPORTS / BROOKS COUNTY

	TYPE	NAME
1.Missing Data Reports	User Menu	MISSING DATA
2.Generate Rating Forms	User Menu	RATING FORMS
3.Critical Value Reports	User Menu	CRITICAL REPORTS
4.Data Listing Reports	User Menu	DATA LISTING
5.PMS-PES Conversion	User Menu	PMS-PES
6.Ad Hoc Reports	Run Proc.	
7.Highway Segment Graphs (Ride/Skid/PRS/FWD)	User Menu	GRAPH-1
8.		
9.		

Menu Name: RIDE CREATE
Security Level: High

CHAIN

	TYPE	NAME
1.Sort Master Data in R Roadway Order	Run Proc.	ORDERED R MASTER
2.Sort Master Data in L Roadway Order	Run Proc.	ORDERED L MASTER
3.Delete Temporary Sorted Files	Prog Call	DEL *.SRT
4.Import Sorted Data Files	Import	SORTA
5.Delete Sort File	Prog Call	DEL SORT.DAT
6.Generate Ride File	Run Proc.	GENERATE RIDE FILE
7.Reorganize Ride Data File	Form Reorg	RIDE INPUT
8.Import Ride Data into Ride Form	Import	RIDE
9.Continue	User Menu	RIDE CREATE II

Menu Name: RIDE CREATE II
Security Level: High

CHAIN

	TYPE	NAME
1.Delete Ride Data File	Prog Call	DEL RIDE.EXP
2.Sort Ride Form	Run Proc.	RIDE SORTED
3.Reorganize Ride Form	Form Reorg	RIDE INPUT
4.Import Sorted Ride File	Import	RIDE
5.Delete Sorted Ride File	Prog Call	DEL RIDE.EXP
6.		
7.		
8.		
9.		

Menu Name: RIDE DATA

Security Level: High

RIDE DATA SETUP / BROOKS COUNTY

	TYPE	NAME
1.Create Ride Data Records	User Menu	RIDE CREATE
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: RIDE DATA HANDLING
Security Level: Mediuml

RIDE DATA HANDLING / BROOKS COUNTY

	TYPE	NAME
1.Verify Validity of Ride Data	Run Proc.	VALIDATE RIDE DATA
2.Transfer Ride Data to Master Data Form	Run Proc.	RIDE MASTER UPDATE
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: RIDE INPUT
Security Level: Lowl

RIDE DATA / BROOKS COUNTY

	TYPE	NAME
1.Input or modify Mays Ride Data	Rec Entry	RIDE INPUT
2.Convert Raw SIometer Data	Prog Call	RIDEC.EXE
3.Import SIometer Data	User Menu	SIOMETER
4.Validate SIometer Errors in Imported Data	Run Proc.	RIDE VIEW
5.Correct Errors in SIometer Data File	Prog Call	E88 RIDE.DAT
6.		
7.		
8.		
9.		

Menu Name: SETUP
Security Level: High

SETUP DATABASE FILES / BROOKS COUNTY

	TYPE	NAME
1.County Inventory	User Menu	INVENTORY
2.Master Data (0.1 mi.)	User Menu	MASTER DATA
3.Visual Data (0.5 mi. interval)	User Menu	VISUAL DATA
4.FWD Data (0.5 mi.)	User Menu	FWD DATA
5.Ride Data (0.2 mi. interval)	User Menu	RIDE DATA
6.Skid Data (0.2 mi.)	User Menu	SKID DATA
7.MRM Equipment Coefficients	User Menu	MRM EQUIPMENT
8.		
9.		

Menu Name: SIOMETER
Security Level: Lowl

CHAIN

	TYPE	NAME
1.Import SIometer Data	Import	SIOMETER
2.Copy Errors into File	Prog Call	COPY SIO*.E?? ER.ERR
3.List Errors to Printer	Prog Call	RIDERR.EXE
4.Delete Errors	Prog Call	DEL SIO*.E??
5.		
6.		
7.		
8.		
9.		

Menu Name: SKID CREATE
Security Level: High

CHAIN

	TYPE	NAME
1.Sort Master Data in R Roadway Order	Run Proc.	ORDERED R MASTER
2.Sort Master Data in L Roadway Order	Run Proc.	ORDERED L MASTER
3.Delete Temporary Sorted Files	Prog Call	DEL *.SRT
4.Import Sorted Data Files	Import	SORTA
5.Delete Sort File	Prog Call	DEL SORT.DAT
6.Generate Skid File	Run Proc.	GENERATE SKID FILE
7.Reorganize Skid Data File	Form Reorg	SKID INPUT
8.Import Skid Data into Skid Form	Import	SKID
9.Continue	User Menu	SKID CREATE II

```
+---------------------------------------------+
```

Menu Name: SKID CREATE II
Security Level: High

CHAIN

```
+---------------------------------------------+ TYPE      NAME
|1.Delete Skid Data File                      |Prog Call  DEL SKID.EXP
|2.Sort Skid Form                             |Run Proc.  SKID SORTED
|3.Reorganize Skid Form                       |Form Reorg SKID INPUT
|4.Import Sorted Skid File                    |Import     SKID
|5.Delete Sorted Skid File                    |Prog Call  DEL SKID.EXP
|6.                                           |
|7.                                           |
|8.                                           |
|9.                                           |
+---------------------------------------------+
```

Menu Name: SKID DATA
Security Level: High

SKID DATA SETUP / BROOKS COUTNY

```
+---------------------------------------------+ TYPE      NAME
|1.Create Skid Data Records                   |User Menu  SKID CREATE
|2.                                           |
|3.                                           |
|4.                                           |
|5.                                           |
|6.                                           |
|7.                                           |
|8.                                           |
|9.                                           |
+---------------------------------------------+
```

Menu Name: SKID DATA HANDLING
Security Level: Mediuml

SKID DATA HANDLING / BROOKS COUNTY

```
+---------------------------------------------+ TYPE      NAME
|1.Verify Validity of Skid Data               |
```

2.Transfer Skid Data to Master Data Form	Run Proc.	SKID MASTER UPDATE
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: SKID DATA INPUT
Security Level: Medium1

SKID DATA ENTRY / BROOKS COUNTY

	TYPE	NAME
1.Transfer Skid Field Data	Prog Call	SKIDSEG
2.Import Transferred Skid Field Data	User Menu	SKID IMPORT
3.Validate Errors in Imported Skid Data File	Run Proc.	SKID VIEW
4.Correct Errors in Imported Data File	Prog Call	EDIX SKID.DAT
5.Perform a Quick Edit on Skid.dat	Prog Call	skidedit.exe
6.		
7.		
8.		
9.		

Menu Name: SKID ERRORS
Security Level: Medium1

CHAIN

	TYPE	NAME
1.List the Roadway Section Where Errors Occur	Run Proc.	SKID VIEW
2.Edit the Errors	Prog Call	EDIX SKID.DAT
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: SKID IMPORT
Security Level: Medium1

CHAIN

	TYPE	NAME
1.Import Transferred SKID Field Data	Import	SKIDIMP
2.Copy Errors into File	Prog Call	COPY SKI*.E?? ER.ERR
3.List Errors to Printer	Prog Call	SKIDERR.EXE
4.Delete Error Files	Prog Call	DEL *.E??
5.		

```
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: VISUAL CREATE
Security Level: High

CHAIN

```
+--------------------------------------------------+  TYPE      NAME
|1.Sort Master Data in Ascending Order             |Run Proc.  ORDERED MASTER FILE
|2.Import Sorted Master Data into Temp Form        |Import     SORTA
|3.Delete Sorted Data File                         |Prog Call  DEL SORT.DAT
|4.Generate Visual Records                         |Run Proc.  GENERATE VIS FILE
|5.Reorganize Visual Data File                     |Form Reorg VIS
|6.Import Visual Records into Visual Form          |Import     VISUAL
|7.Delete Visual Data File                         |Prog Call  DEL VISUAL.EXP
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: VISUAL DATA
Security Level: High

VISUAL DATA SETUP / BROOKS COUNTY

```
+--------------------------------------------------+  TYPE      NAME
|1.Create Visual Data Records                      |User Menu  VISUAL CREATE
|2.                                                |
|3.                                                |
|4.                                                |
|5.                                                |
|6.                                                |
|7.                                                |
|8.                                                |
|9.                                                |
+--------------------------------------------------+
```

Menu Name: VISUAL DATA HANDLING
Security Level: Mediuml

VISUAL DATA HANDLING / BROOKS COUNTY

	TYPE	NAME
1.Verify Validity of Visual Data	Run Proc.	VALIDAT PAVE RECORDS
2.Generate Pavement Rating Scores & Update	User Menu	VISUAL PRS UPDATE
3.Transfer Visual Data to Master Data Form	Run Proc.	VIS UPDATE MASTER
4.		
5.		
6.		
7.		
8.		
9.		

Menu Name: VISUAL PRS UPDATE
Security Level: Medium1

CHAIN

	TYPE	NAME
1.Export Visual Data	Run Proc.	EXPORT PAVE RECORDS
2.Reorganize PRS & SRS Input File	Form Reorg	PRS-SRS INPUT FILE
3.Generate PRS & SRS from Visual Data	Prog Call	PRSVER2.EXE
4.Import PRS & SRS Data	Import	IMPPRS
5.Delete Exported & Imported Visual Files	Prog Call	DEL *.VIS
6.Transfer PRS & SRS to Visual Data Form	Run Proc.	TRANSFER PRS TO PED
7.		
8.		
9.		

Menu Name: YEAR END
Security Level: High

Note: Perform these functions only one time per data collection year after all data has been collected, entered, and/or imported into the database.

CHAIN

	TYPE	NAME
1.Clear All Files for Next Year	Run Proc.	SETUP YEAR-END BLANK
2.Reorganize Maintenance Section Form	Form Reorg	MAINTENANCE SECTIONS
3.Reorganize ADT Form	Form Reorg	ADT VALUES
4.Reorganize Functional Classification Form	Form Reorg	FUNCT CLASS
5.Reorganize 18-KIP Form	Form Reorg	18-KIP VALUES
6.Reorganize Highway Design Form	Form Reorg	HIGHWAY DESIGN
7.		
8.		
9.		

Appendix H
Detailed Specification for all Import Procedures

The following import procedures are required to import data into various files within the database. Details regarding the type of import, matching rules, source data drive, and target data drive are provided.

These specifications coordinate with the import files shown in Appendix F of this report. The details that follow define the import procedure, the source file, the targed file, and the import protocol.

Import Definitions

Import	Destination Form	Format	Add or Update	Organized
ADTIMP	ADT VALUES	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:ADT.DAT				
Auto Decimal: No Special 7		Record Sep: ;		
FCIMP	FUNCT CLASS	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:FC.DAT				
Auto Decimal: No Special 7 Record Sep: ;				
FWD	FWD INPUT	VAR.LENGTH	Update Match	Auto Dec
Destination Form: d:FWD.EXP				
Auto Decimal: No Special 7 Record Sep: ;				
FWDIMP	FWD INPUT	VAR.LENGTH	Update Match	Destinat
Destination Form: d:FWD.CON				
Auto Decimal: No Special 7 Record Sep: ;				
HDIMP	HIGHWAY DESIGN	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:HD.DAT				
Auto Decimal: No Special 7 Record Sep: ;				
IMPPRS	PRS-SRS INPUT FILE	VAR.LENGTH	Add Non-Match	Auto Dec
Destination Form: d:IMPORT.VIS				
Auto Decimal: No Special 7 Record Sep: ,				
INVENTRY	DISTRICT INVENTORY	VAR.LENGTH	Update Match	Auto Dec
Destination Form: d:INV.DAT				
Auto Decimal: No Special 7 Record Sep: ;				
KIPIMP	18-KIP VALUES	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:KIP.DAT				
Auto Decimal: No Special 7 Record Sep: ;				
MASTER	MASTER	VAR.LENGTH	Update Match	Source F
Destination Form: d:MASTR.EXP				
Auto Decimal: No Special 7 Record Sep: ;				
MSIMP	MAINTENANCE SECTIONS	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:MS.DAT				
Auto Decimal: No Special 7 Record Sep: ;				
REFIMP	MASTER	VAR.LENGTH	Update Match	Destinat
Destination Form: D:\DEASE\BROOKS\IMP.024 Auto Decimal:				
Yes Special 7 Record Sep: ;				
RIDE	RIDE INPUT	VAR.LENGTH	Update Match	Auto Dec

```
     Destination Form: d:RIDE.EXP
     Auto Decimal: No  Special 7  Record Sep: ;
```

Import Definitions - continued

Import	Destination Form	Format	Add or Update	Organized
SIOMETER	SIOMETER RIDE VALUES	VAR.LENGTH	Update Match	Destinat
	Destination Form: G:RIDE.DAT			
	Auto Decimal: No Special 7 Record Sep: ;			
SKID	SKID INPUT	VAR.LENGTH	Update Match	Auto Dec
	Destination Form: d:SKID.EXP			
	Auto Decimal: No Special 7 Record Sep: ;			
SKIDIMP	SKID INPUT	VAR.LENGTH	Update Match	Destinat
	Destination Form: D:\DEASE\BROOKS\SKID.DAT Auto Decimal:			
	No Special 7 Record Sep: ;			
SORTA	TEMP	VAR.LENGTH	Update Match	Auto Dec
Destination Form: d:SORT.DAT				
Auto Decimal: No Special 7 Record Sep: ;				
VISUAL	VIS VAR.LENGTH	Update Match	Auto Dec	
Destination Form: d:VISUAL.EXP				
Auto Decimal: No Special 7 Record Sep: ;				

APPENDIX I
PMS DATABASE LASERPRINTER DEFINITION SPECIFICATIONS

The following represent the standard printer definition file for the HP LaserJet II and IIP. This printer has been specified as the "standard printer" for the D21 PMS database system.

```
          P R I N T E R   D E F I N I T I O N
-------------------------------------------------------------------------------
Printer Name:    [HP Ser.2 Portrt     ]
-------------------------------------------------------------------------------

Default Paper Width:             [  8.5]  - Normally 8.5
Line Advance String:     [0D0A          ]  - Normally 0D0A
Form Advance String:     [0C            ]  - Normally 0C
Initialization String:   [              ]  - Start of Report
Termination String:      [              ]  - End of Report


      CHARACTERS PER INCH           LINES PER INCH            SET PAPER LENGTH
   CPI     Turn-on String      LPI     Turn-on String    Inches  Turn-on String
---------- -------------- ---------- -------------- -------- --------------
1: [10]    ["&k0S         ]  1: [6 ]   ["&l6D        ]  1: [10]  [             ]
2: [12]    ["&k4S         ]  2: [8 ]   ["&l8D        ]  2: [0 ]  [             ]
3: [17]    ["&k2S         ]  3: [12]   ["&l12D       ]  3: [0 ]  [             ]
4: [0 ]    [              ]  4: [4 ]   ["&l4D        ]  4: [0 ]  [             ]

SPECIAL EFFECTS    Turn-on String             Turn Off String
------------------ ------------------------- -------------------------
Boldface           ["(s3B                  ] ["(s0B                  ]
Underline          ["&dD                   ] ["&d@                   ]
Italicize          ["(s1S                  ] ["(s0S                  ]

Special  Description Turn-On String              Turn-Off String
------------------- --------------------------- ---------------------------
   1: [No Perf Skip] ["&l0L                    ] ["&l1L                    ]
   2: [            ] [                         ] [                         ]
   3: [            ] [                         ] [                         ]
   4: [            ] [                         ] [                         ]
   5: [            ] [                         ] [                         ]
   6: [            ] [                         ] [                         ]
   7: [            ] [                         ] [                         ]
   8: [            ] [                         ] [                         ]
   9: [            ] [                         ] [                         ]

Extended Character Translation: [Does Not Print Extended, TRANSLATE TO NORMAL ]
```

APPENDIX J
COMPILED MICROSOFT QUICKBASIC PROGRAMS TO SUPPORT PMS DATA IMPORT-EXPORT ACTIVITIES

The following programs, written in Microsoft Quick-Basic (Version 4.0 and 4.5) support selected ASCII data import-export activites. These routines were authored by Mr. Craig Cox, D18-PM and Dr. Don Smith, TAMU-TTI-INEN. A brief description of each program preceeds the source code listing.

Each of the programs listed within this appendix have been compiled into .EXE code and copied into the root directory of the PMS Database. Thus, each of the 10 county sub-directories under the PMS main directory can access each .EXE program as required.

RIDEC.BAS

Converts raw Siometer Data as supplied by D21 field data collection activities into a format suitable for importing into the Siometer Holding File.

```
DECLARE SUB TOFILE (A$, PRIORA$)
DECLARE SUB PAUSE ()
'1991 SIOMETER FORMAT RIDE.DAT IMPORT PREPARATION PROGRAM
' MODIFIED BY D. R. SMITH: 3-28-91 - TAMU-INEN-TTI-D21: TTI PROJECT 900-1
'BASED UPON THE FOLLOWING MMSS1 HEADER FORMAT
'       COLUMNS              INFORMATION
'        1-5                MMSS1 HEADER ID (HEADER TAG)
'        6-7                DISTRICT NUMBER (21)
'         8                 LANE CODE (A-Z)
'        9-14               DATE DATA COLLECTED (EX: 110890)
'        15-21              SIOMETER UNIT NUMBER
'        22-24              3 DIGIT COUNTY NUMBER e.g 024 (= Brooks County)
'        25-26              HW PREFIX e.g. FM, US, IH, SH, ..
'        27-30              HW NUMBER
'        31                 HW SUFFIX (MOST = BLANK, SOME = S )
'        32-35              REF MARKER VALUE (4 DIGITS  e.g. 0656 =656
'         36                REF MARKER SUFFIX
'         37                REF MARKER DISP SIGN ( + OR - )
'        38-39              REF MARKER DISP. VALUE (VALUE X 10)
'
'************** FORMAT FOR THE MMSS2 SIOMETER RECORD ************************
'     COLS                 DATA DEFINITION
'    1 - 5                HEADER ID = ( MMSS2 ) = A SIOMETER VALUE RECORD
'    6 - 8                SEQUENCE NUMBER i.e., 001, 002,...,010
'                         exist in blocks of 10 or less ( 2 mile segments)
'    9-10                 FIRST SIOMETER VALUE - 2 DIGITS  I.E., 29
'  14 - 15                SECOND SIOMETER VALUE ...
'  19 - 20                THIRD VALUE
'  24 - 25                FOURTH VALUE...      { MAX OF 5 VALUES/RECORD }
'  29 - 30                FIFTH VALUE ...
'
'** MMSS2 PERMISSIBLE RECORDS LENGTHS FOR THE MMSS2 RECORD:
' 5 VALUES: L = 30: 4 VALUES: L=25: 3 VALUES: L=20: 2 VALUES: L=15:
' 1 VALUE L = 10
' COLUMNS 1-8 = MMSS2XXX WHERE XXX = SEQUENCE NUMBER BEG AT 001 - 010
' *****************   END OF FORMAT DEFINITIONS ******************************
'
' DATABASE IMPORT KEY DEFINITION
' DATABASE KEY FIELD NAME IN THE FILE SIOMETER RIDE VALUES
'
'  RIDEID
' TEXT, MAXIMUM OF 16 ALPHA-NUM CHARACTERS BASED UPON:
' COUNTY NUMBER + HIGHWAY PREFIX + HIGHWAY NUMBER + HIGHWAY SUFFIX + ROADWAY
' + TO RM VALUE
        WIDTH LPRINT 131
        LPRINT CHR$(27); "&k2S"'print code for the HPLJ SERIES II COMPRESSED
        CLEAR
        LNO% = 0     ' SET LINEPRINT RECORD COUNTER TO 0
        CLS
        LOCATE 2, 15: PRINT "D21 Siometer (Ride) Data Conversion Program"
        LOCATE 3, 23: PRINT "Version 2.0: March, 1991"
        BEEP: LOCATE 4, 5: INPUT "County Name for this run "; cname$
tag0:   LOCATE 5, 5: INPUT "Designate the Data Drive (A,B)"; DRV$
        LOCATE 7, 5: PRINT "                                                  "
        IF DRV$ = "a" THEN DRV$ = "A:": GOTO tag1
        IF DRV$ = "A" THEN DRV$ = "A:": GOTO tag1
        IF DRV$ = "b" THEN DRV$ = "B:": GOTO tag1
        IF DRV$ = "B" THEN DRV$ = "B:": GOTO tag1
        BEEP: LOCATE 7, 5: PRINT "Invalid Drive: Must be A or B: Re-enter"
        GOTO tag0

tag1:
        LOCATE 7, 5: PRINT "Designated Drive is the "; DRV$; " drive"
        LOCATE 8, 5: PRINT "Make certain the correct data disk is in the "; DRV$; " drive"
```

RIDEC.BAS...continued

```
        FIN$ = DRV$ + "VAL_RIDE.DAT"
        FOUT$ = DRV$ + "RIDE.DAT"
        PRINT "INPUT FILE IS ... "; FIN$
        PRINT "OUTPUT FILE IS ... "; FOUT$
        INPUT "Do you want a hard copy of the output file?(Y/N) "; YN$
        YN$ = UCASE$(YN$)
        OPEN FOUT$ FOR OUTPUT AS #2  'OUTPUT FILE TO IMPORT INTO DE
        OPEN FIN$ FOR INPUT AS #1 'VALIDATED FILE TO CONVERT
        CALL PAUSE
        CLS
'PRINT THE FIELD NAMES AT THE TOP OF THE OUTPUT FILE PER DATAEASE IMPORT
'REQUIREMENTS.  THESE FIELD NAMES MATCH THE SIOMETER RIDE VALUES DATABASE
'FIELD NAMES
        IF YN$ = "Y" THEN LPRINT "County Name: "; cname$
        PRINT "PRINTING THE DATABASE HEADERS AT TOP OF OUTPUT FILE"
        PRINT #2, "IMPORT SIOM KEY"; ";"; "SI VALUE"; ";"; "COMMENTS"; ";"; "YEAR"
        IF YN$ = "Y" THEN
   LPRINT "REC NO"; "RIDEID"; ";"; "SI VALUE"; ";"; "COMMENTS"; ";"; "YEAR"
  END IF
'OPEN THE VAL_RIDE.DAT INPUT FILE AND READ EACH RECORD UNTIL EOF CONDITION
'IS ENCOUNTERED

MMSS1% = 0
WHILE NOT EOF(1)
                LINE INPUT #1, A$
                MMSS1% = MMSS1% + 1  'INCREMENT THE MMSS1 COUNTER
                HOLD$ = A$
' CHECK FOR A MMSS1 HEADER RECORD IN THE INPUT FILE
' AND BUILD THE DATABASE IMPORT SORTING KEY STRING
                T$ = MID$(A$, 1, 5)
                PRINT T$

         IF MID$(A$, 1, 5) = "MMSS1" THEN

         IF MMSS1% = 1 THEN
          PRINT #2, MID$(A$, 1, 50)
          GOTO AAA
         END IF
         IF YN$ = "Y" THEN
            LPRINT
            SHORT$ = MID$(A$, 1, 45)'SHORTEN A$ TO FIT ON ONE LINE
            LPRINT SHORT$;               'LPRINT CURRENT MMSS2 RECORD
            IF PRIORA$ = A$ THEN    'CHECK LAST MMSS1 TO CURRENT MMSSS1
             LPRINT " CONFLICT WITH LAST MMSS1 REC."
             ELSE
             LPRINT " *** OK ***"
            END IF

            IF YN$ = "Y" THEN LPRINT
         END IF
        CALL TOFILE(A$, PRIORA$)
AAA:
     TEMPA$ = A$
     CNTY$ = MID$(A$, 22, 3)  'OBTAIN THE COUNTY NO
     CVALUE = VAL(CNTY$)
     IF CVALUE <= 99 THEN CNTY$ = RIGHT$(CNTY$, 2)
        PRE$ = MID$(A$, 25, 2)
        NUM$ = MID$(A$, 27, 4)
        SFX$ = MID$(A$, 31, 1)
        LAN$ = MID$(A$, 8, 1)
        IF LAN$ > "Q" AND LAN$ < "W" THEN RDWY$ = "R"
        IF LAN$ > "K" AND LAN$ < "Q" THEN RDWY$ = "L"
        IF LAN$ < "D" THEN RDWY$ = "A"
        IF LAN$ > "W" THEN RDWY$ = "X"
        YEAR$ = MID$(A$, 13, 2)
' BUILD THE STARTING REF MARKER VALUE FROM THE MMSS1 RECORD
```

RIDEC.BAS...continued

```
      RMVALUE$ = MID$(A$, 32, 4)
      RMV = VAL(RMVALUE$) ' CONVERT TO A REAL NUMBER
' check to see of the RMV is an even 10 mile record i.e. 520.0
' this particular ref marker must be written as 520 not 520.0 in order to
' match the import key in the dataease 0.10-mile siometer file

              RMSIGN$ = MID$(A$, 37, 1)
              RMDISPV$ = MID$(A$, 38, 2)
              RMD = VAL(RMDISPV$)
              RMD = RMD / 10!
              IF RMSIGN$ = "+" THEN
                  START = RMV + RMD
              ELSE
                  START = RMV - RMD
              END IF

' DEFINE THE FIRST PART OF THE RIDE KEY:

   PRIORA$ = A$ 'STORE THE CURRENT MMSS1 REC TO COMPARE WITH NXT END IF

' CASE: MMSS2 RECORD
               IF MID$(A$, 1, 5) = "MMSS2" THEN
                CM$ = " "
                L = LEN(A$) 'DETERMINE THE LENGTH OF CURR MMSS2 REC.

   IF L > 9 THEN SI$ = MID$(A$, 9, 1) + "." + MID$(A$, 10, 1)
   IF L > 11 THEN CM$ = MID$(A$, 12, 1)
   IF SI$ <> " . " THEN GOSUB 100
   IF L > 14 THEN SI$ = MID$(A$, 14, 1) + "." + MID$(A$, 15, 1)
   IF L > 16 THEN CM$ = MID$(A$, 17, 1)
   IF SI$ <> " . " THEN GOSUB 100
   IF L > 19 THEN SI$ = MID$(A$, 19, 1) + "." + MID$(A$, 20, 1)
   IF L > 21 THEN CM$ = MID$(A$, 22, 1)
   IF SI$ <> " . " THEN GOSUB 100
   IF L > 24 THEN SI$ = MID$(A$, 24, 1) + "." + MID$(A$, 25, 1)
   IF L > 26 THEN CM$ = MID$(A$, 27, 1)
   IF SI$ <> " . " THEN GOSUB 100
   IF L > 29 THEN SI$ = MID$(A$, 29, 1) + "." + MID$(A$, 30, 1)
   IF L > 31 THEN CM$ = MID$(A$, 32, 1)
   IF SI$ <> " . " THEN GOSUB 100
   END IF
WEND

        CLOSE #1, #2
        CLS : BEEP:
        LOCATE 10, 10: PRINT "RIDE CONVERSION FINISHED...."
        CALL PAUSE
' SEND A FORMS FEED TO THE PRINTER TO FLUSH THE LAST PAGE
        IF YS$ = "Y" THEN LPRINT CHR$(12)
        END

'GOSUB TO PRINT EACH RECORD TO THE OUTPUT (IMPORT) FILE ON UNIT #2

100 :

' START = THE RM VALUE AT THE BEGINNING OF THE HW SEGMENT
' RMSIGN$ = + OR - DEPENDING UPON THE LANE
  IF RDWY$ = "R" OR RDWY$ = "A" THEN
      START = START + .2
    ELSEIF RDWY$ = "L" OR RDWY$ = "X" THEN
      START = START - .2
    END IF

' CONVERT TO TO 10-TH MILE VALUE
' START = A NUMERIC VALUE FOR THE REF MARKER ... MUST CONVERT TO A STRING
' DUE TO THE MANNER IN WHICH QBASIC COMPUTES, NUM REPRESENTATION MAY BE TO
' MORE THAN ONE PLACE.  IF SO, THE VALUE MUST BE CONVERTED TO THE NEAREST
```

RIDEC.BAS ...continued

```
'10-TH OF A MILE I.E. 524.2 NOT 525.20001......THE NEXT CODE SEGMENT
' CONVERTS TO A STRING VALUE WITH ONE PLACE TO THE RIGHT OF THE DECIMAL
   TEMP$ = STR$(START)    'CONVERT START TO A STRING
    LL% = LEN(TEMP$)
    IF LEFT$(TEMP$, 1) = " " THEN TEMP$ = RIGHT$(TEMP$, LL% - 1)
    LL% = LEN(TEMP$)       ' CAL THE TOTAL LENGTH OF THE STRING EQUIVALENT
    IF LL% = 3 THEN TEMP$ = TEMP$ + ".0"  'IF L=3 WE NEED A FORCED DEC pt.
    E% = 1                 ' SET A COUNTER = TO 1

XXX:     COMPARE$ = MID$(TEMP$, E%, 1)   ' PHARSE THROUGH TO FIND THE .
         IF COMPARE$ <> "." THEN         ' DECIMAL FOUND?
            E% = E% + 1                  '  NOT FOUND ADD ONE TO COUNTER
            GOTO XXX                     ' GO BACK AND SEARCH CHECK NEXT PLACE
         ELSE
            DECPLACE% = E%
            PLEFT% = E% - 1
          END IF

     B$ = LEFT$(TEMP$, PLEFT%)          ' CONVERT TO A STRING PLACES TO LEFT
     C$ = MID$(TEMP$, E% + 1, 1)        ' NEAREST 10-MILE DISP VALUE HELD
     TEMP$ = B$ + "." + C$              ' PUT THE RM VALUE BACK TOGETHER

' BUILD THE IMPORT KEY FOR THE DATABASE
     AV% = ASC(SFX$)
'    PRINT "***ASCII VALUE OF SFX$="; AV%; " *********"
'    CALL pause
    IF ASC(SFX$) = 0 OR ASC(SFX$) = 32 THEN
      part1$ = CNTY$ + PRE$ + NUM$ + RDWY$
    ELSE
      part1$ = CNTY$ + PRE$ + NUM$ + SFX$ + RDWY$
    END IF
'******************** END OF BLOCK TO CHECK ON SFX$ ***********************
' CHECK TO SEE IF RM VALUE = AN EVEN 10-TH MILE VALUE I.E., 520.0
' THIS PARTICULAR RM VALUE MUST BE WRITTEN AS 520  NOT 520.0 IN ORDER TO
' MATCH THE DATAEASE 0.1-MILE SORT KEY IN THE SIOMETER FILE

    TAIL$ = RIGHT$(TEMP$, 1)
    IF TAIL$ = "0" THEN TEMP$ = LEFT$(TEMP$, 3)

    KEY$ = part1$ + TEMP$
    RMV$ = TEMP$
    PRINT #2, KEY$; ";"; SI$; ";"; CM$; ";"; YEAR$
    'PRINT LNO%; " "; KEY$; ";"; SI$; ";"; CM$; ";"; YEAR$
    IF YS$ = "Y" THEN
     LNO% = LNO% + 1
     LPRINT LNO%; " ";
     LPRINT TAB(8); KEY$; ";"; SI$; ";"; CM$; ";"; YEAR$; ";"; RMV$
    END IF
    SI$ = " . "
    CM$ = " "
    RETURN

SUB PAUSE STATIC
LOCATE 25, 50
PRINT "Press any key to Continue"
DO WHILE INKEY$ = ""
LOOP
END SUB
SUB TOFILE (A$, PRIORA$) STATIC
 SHORT$ = MID$(A$, 1, 45)'SHORTEN A$ TO FIT ON ONE LINE
 PRINT #2, SHORT$;               'LPRINT CURRENT MMSS2 RECORD
   IF PRIORA$ = A$ THEN     'CHECK LAST MMSS1 TO CURRENT MMSSS1
        PRINT #2, " CONFLICT WITH LAST MMSS1 REC."
   ELSE
        PRINT #2, " *** OK ***"
  END IF
  END SUB
```

RIDEFORM.BAS

RIDEFORM.BAS opens a datafile on the A: drive (raw siometer data) and reformats the data into an ouput file suitable of importation in the ride data holding file.

```
        DIM C1$(40,3),C2$(10,3)
        C=0
        OPEN "A:RIDE.EXP" FOR INPUT AS #1
        WHILE NOT EOF(1)
                LINE INPUT #1, A$
                IF C>0 THEN 5
                        TST$=MID$(A$,7,11)
                        RDWY$=MID$(A$,17,1)
                        IF RDWY$="R" OR RDWY$="A" THEN 2
                                TP$=MID$(A$,23,5)
                                GOTO 3
2                       TP$=MID$(A$,18,5)
3                       TP=VAL(TP$)-0.2
                        TP=INT(TP*10)
                        CNTY$=MID$(A$,7,3)
                        HWY$=MID$(A$,10,7)
5               HDR$=MID$(A$,7,11)
                IF TST$=HDR$ THEN 7
                GOTO 30
7               IF RDWY$="R" OR RDWY$="A" THEN TP=TP+2 ELSE TP=TP-2
                TP=INT(TP)
                IF RDWY$="R" OR RDWY$="A" THEN 8
                        SEQ$=MID$(A$,23,5)
                        GOTO 9
8               SEQ$=MID$(A$,18,5)
9               SEQ=VAL(SEQ$)
                SEQ=INT(SEQ*10)
                IF SEQ=TP THEN 10
                GOTO 30
10              C=C+1
                IF C<51 THEN 12
                        C=C-1
                        GOTO 30
12              IF C<41 THEN 15
                        C2$(C-40,1)=MID$(A$,1,6)
                        C2$(C-40,2)=MID$(A$,18,5)
                        C2$(C-40,3)=MID$(A$,23,5)
                        GOTO 50
15              C1$(C,1)=MID$(A$,1,6)
                C1$(C,2)=MID$(A$,18,5)
                C1$(C,3)=MID$(A$,23,5)
                GOTO 50
30              FOR I=1 TO 6
                        LPRINT
                NEXT I
                LPRINT SPACE$(20);"COUNTY:  ";CNTY$;
                LPRINT SPACE$(13);"HIGHWAY:  ";HWY$
                LPRINT
                LPRINT
                LPRINT SPACE$(33);"ROADWAY:  ";RDWY$
                FOR I=1 TO 10
                        LPRINT
                NEXT I
                IF C>40 THEN 35
                        FOR I=1 TO C
                                LPRINT SPACE$(9);C1$(I,1);SPACE$(4);
                                LPRINT C1$(I,2);SPACE$(5);C1$(I,3)
                        NEXT I
                GOTO 40
35              C2=C-40
```

RIDEFORM.BAS...continued

```
                FOR I=1 TO C2
                        LPRINT SPACE$(9);C1$(I,1);SPACE$(4);
                        LPRINT C1$(I,2);SPACE$(5);C1$(I,3);



                        LPRINT SPACE$(13);C2$(I,1);SPACE$(4);
                        LPRINT C2$(I,2);SPACE$(5);C2$(I,3)
                NEXT I
                FOR I=C2+1 TO C-C2
                        LPRINT SPACE$(9);C1$(I,1);SPACE$(4);
                        LPRINT C1$(I,2);SPACE$(5);C1$(I,3)
                NEXT I
40              C=1
                C1$(1,1)=MID$(A$,1,6)
                C1$(1,2)=MID$(A$,18,5)
                C1$(1,3)=MID$(A$,23,5)
                TST$=MID$(A$,7,11)
                RDWY$=MID$(A$,17,1)
                IF RDWY$="R" OR RDWY$="A" THEN 41
                        TP$=MID$(A$,23,5)
                        GOTO 42
41              TP$=MID$(A$,18,5)
42              TP=VAL(TP$)
                TP=INT(TP*10)
                CNTY$=MID$(A$,7,3)
                HWY$=MID$(A$,10,7)
                LPRINT CHR$(12);
                GOTO 50
50      WEND
                FOR I=1 TO 6
                        LPRINT
                NEXT I
                LPRINT SPACE$(20);"COUNTY:  ";CNTY$;
                LPRINT SPACE$(13);"HIGHWAY:  ";HWY$
                LPRINT
                LPRINT
                LPRINT SPACE$(33);"ROADWAY:  ";RDWY$
                FOR I=1 TO 10
                        LPRINT
                NEXT I
                IF C>40 THEN 135
                        FOR I=1 TO C
                                LPRINT SPACE$(9);C1$(I,1);SPACE$(4);
                                LPRINT C1$(I,2);SPACE$(5);C1$(I,3)
                        NEXT I
                GOTO 240
135             C2=C-40
                FOR I=1 TO C2
                        LPRINT SPACE$(9);C1$(I,1);SPACE$(4);
                        LPRINT C1$(I,2);SPACE$(5);C1$(I,3);
                        LPRINT SPACE$(13);C2$(I,1);SPACE$(4);
                        LPRINT C2$(I,2);SPACE$(5);C2$(I,3)
                NEXT I
                FOR I=C2+1 TO C-C2
                        LPRINT SPACE$(9);C1$(I,1);SPACE$(4);
                        LPRINT C1$(I,2);SPACE$(5);C1$(I,3)
                NEXT I
240     CLOSE #1
        END
```

RIDERR.BAS

The RIDERR.bas program reads the DataEase exception file following an import pass and selects those records from the original import file that did not match the import run. The program retains the format of the import file which allows the user to enter a text editor and edit the records in preparation for another import pass.

```
' BASIC PROGRAM TO READ THE ER.ERR FILE FROM THE DATABASE AND PRINT THE
'MIS-MATCHED RECORDS TO THE LINE PRINTER VERSION APRIL, 1991

        PRINT "PROGRAM TO LIST UN-MATCHED RIDE RECORDS TO THE PRINTER"
        BEEP
        INPUT "MAKE READY THE PRINTER...LOAD WITH PAPER AND ON-LINE"; DUM$
        INPUT "MAKE CERTAIN THE SIOMETER DISK IS IN THE B: DRIVE"; DUM$
        ON ERROR GOTO 999
        OPEN "B:\ER.ERR" FOR INPUT AS #1
        OPEN "B:\RIDE.DAT" FOR INPUT AS #2
        OPEN "B:\RIDE.TMP" FOR OUTPUT AS #3
        LINE INPUT #2, A$
        PRINT #3, A$
        FC = 0
        LPRINT
        LPRINT
        LPRINT "                          RIDE ERRORS"
        LPRINT
        LPRINT ""
        LPRINT "             CNTY  REF. MARKER KEY RWY  SI CMT YEAR"
        LPRINT "-------------------------------------------------------------------------"
10      LINE INPUT #1, A$
        L = LEN(A$)
        LN = 0
        FOR I = 1 TO L
                T$ = MID$(A$, I, 1)
                IF T$ = ":" THEN LN = I - 1
        NEXT I
        IF LN = 0 THEN 999
        LN$ = MID$(A$, 1, LN)
        LN = VAL(LN$)
        IF FC > LN THEN
                CLOSE #2
                OPEN "B:\RIDE.DAT" FOR INPUT AS #2
                LINE INPUT #2, DUMMY$
                FC = 0
        END IF
        WHILE NOT EOF(2) AND FC <> LN
                LINE INPUT #2, B$
                FC = FC + 1
        WEND
        PRINT #3, B$
        LPRINT "discarded..   "; B$
        GOTO 10
999     CLOSE #3, #2, #1
        SHELL "DEL B:\RIDE.DAT"
        SHELL "RENAME B:\RIDE.TMP RIDE.DAT"
        END
```

SKIDCOMP.BAS

SKIDCOMP.BAS prepares raw skid data as supplied from the District in order to import the data into the Skid holding file.

```
      PROGRAM NAme:  SKIDCOMP.BAS          ***************
      DIM N$(50, 4)
        DIM D$(500)
        DIM G$(500)
        DIM conty(50)

'*************************************************************************
'***************                                                ************
'***************        OPEN DATA FILE AND SETUP COUNTERS       ************
'***************                                                ************
'*************************************************************************

        CLS : COLOR 2, 0
        PRINT " Processing in Skidcomp.bas"
20      NAME$ = "ALL.SKD"
        CLS
        PRINT "Opening COUNTY.DAT file to obtain valid county numbers"
        OPEN "COUNTY.DAT" FOR INPUT AS #1
        cnties = 0
        WHILE NOT EOF(1)
             cnties = cnties + 1
             INPUT #1, conty(cnties)
        WEND
        CLOSE #1
        FOR jjjj = 1 TO cnties
         PRINT jjjj; "  "; conty(jjjj)
        NEXT jjjj
        INPUT "press return to continue"; dum$

        OPEN NAME$ FOR INPUT AS #1
        CNT = 0                                    ' CARD COUNTER
        NC = 0                                     ' COMMENT "9" COUNTER
        LC$ = ""                                   ' LAST DATA CARD ENCOUNTERED

'*************************************************************************
'***************                                      *****************
'***************         READ IN  DATA AND TEST       *****************
'***************                                      *****************
'*************************************************************************

        WHILE NOT EOF(1)
          LINE INPUT #1, A$

          '************************************
          '***   IF "A" DATA TYPE VALIDATE   ****
          '************************************

30        IF MID$(A$, 1, 1) = "A" THEN

            '************************************************
            '***   CHECK IF LAST CARD IS A COMMENT "9"   ***
            '************************************************

            IF NC = 1 AND CNT <> 0 THEN
              D$(CNT - 1) = D$(CNT)
              CNT = CNT - 1
              NC = 0
            END IF
```

SKIDCOMP.BAS..continued

```
'*************************************
'***   PROCESS LAST "B1" DATA SET   ***
'*************************************
IF CNT <> 0 THEN GOSUB 100
'*****************************************
'***   SET VARIABLES FROM "A" CARD   ***
'*****************************************

YEAR$ = MID$(A$, 10, 2)
AC$ = A$
CNT = 0
LC$ = "A"
GOTO 999

END IF

'*********************************
'***   IF "B1" TYPE VALIDATE   ***
'*********************************

IF MID$(A$, 1, 2) = "B1" THEN

  '************************************************
  '***   CHECK IF LAST CARD IS A COMMENT "9"   ***
  '************************************************

  IF NC = 1 THEN
    D$(CNT - 1) = D$(CNT)
    CNT = CNT - 1
    NC = 0
  END IF

  '*************************************
  '***   SET VARIABLES TO "B1" CARD   ***
  '*************************************

  CNT = CNT + 1
  D$(CNT) = A$
  LC$ = "B1"
  GOTO 999

END IF

'*************************************
'***   IF "B2" TYPE THEN VALIDATE   ***
'*************************************

IF MID$(A$, 1, 2) = "B2" THEN

  '************************************************
  '***   CHECK IF LAST CARD IS A COMMENT "9"   ***
  '************************************************

  IF NC = 1 THEN
    D$(CNT - 1) = D$(CNT)
    CNT = CNT - 1
    NC = 0
  END IF
  '*************************************
  '***   SET VARIABLES TO "B2" CARD   ***
  '*************************************

  CNT = CNT + 1
  D$(CNT) = A$
  LC$ = "B2"
  GOTO 999
END IF
```

SKIDCOMP.BAS...continued

```
        '************************************
        '***   IF "C" TYPE THEN VALIDATE   ***
        '************************************

        IF MID$(A$, 1, 1) = "C" THEN

          '************************************************
          '***   CHECK FOR COMMENT "9" AND SET COUNTER   ***
          '************************************************

          IF MID$(A$, 13, 1) = "9" THEN
            NC = NC + 1

            '******************************************************
            '***   IF 2 CONSECUTIVE COMMENT "9"S THEN DELETE   ***
            '***   ENTIRE DATA SET                             ***
            '******************************************************

            IF NC = 2 THEN
              CNT = 0
              NC = 0
            END IF

            '************************************
            '***   SET VARIABLES TO "C" CARD   ***
            '************************************

            LC$ = "C"
            GOTO 999

          END IF

          '******************************************
          '***   CHECK IF LAST CARD COMMENT "9"   ***
          '******************************************

          IF NC = 1 THEN
            D$(CNT - 1) = D$(CNT)
            CNT = CNT - 1
            NC = 0
          END IF

          '************************************************
          '***   IF LAST CARD "B1" THEN PROCESS DATA   ***
          '************************************************

          IF LC$ = "B1" THEN
            GOSUB 100
            D$(1) = D$(CNT)
            CNT = 1
          END IF

          '************************************
          '***   SET VARIABLES TO "C" CARD   ***
          '************************************

          CNT = CNT + 1
          D$(CNT) = A$
          LC$ = "C"

        END IF

999     WEND
```

SKIDCOMP.BAS..continued

```
        '*********************************************
        '***   END OF DATA, PROCESS LAST BLOCK   ***
        '*********************************************
        GOSUB 100
        CLOSE #1
        '*****************************************************
        '***   DELETE LAST WORK FILE AND CREATE NEW ONE   ***
        '***   FROM ERRORS GENERATED ON LAST SET IF ANY   ***
        '*****************************************************
        SHELL "DEL ALL.SKD"
        SHELL "COPY SKID.BAD ALL.SKD"
        SHELL "DEL SKID.BAD"

        '*********************************************
        '***   CALL PROGRAM TO LIST ERRORS, IF ANY   ***
        '*********************************************

        CHAIN "SKIDERR2.EXE"
        END

'*************************************************************************
'   SUBROUTINE TO CHECK FOR ERRORS IN A COMPLETE DATA BLOCK    ***
'   AND WRITE THE ERRORS TO AN ERROR FILE OR CONVERT DATA      ***
'   TO DATAEASE FORMAT AND WRITE CONVERTED DATA TO DATA FILE   ***
'*************************************************************************

'*************************************************************
'***   SET UP COUNTERS AND DETERMINE NUMBER OF ELEMENTS IN   ***
'***   DATA ARRAY                                            ***
'*************************************************************

100     IF LC$ = "B1" THEN N = CNT - 1 ELSE N = CNT
        BC = 0                          'LOCATION OF "B2" CARD
        GC = 0                          'GOOD "C" CARD FLAG
        FCC = 0                         'FIRST "C" CARD FLAG

        '************************************
        '***   PROCESS ENTIRE DATA BLOCK   ***
        '************************************

        FOR I = 1 TO N

          '************************************
          '***   CHECK FOR FIRST "C" CARD   ***
          '************************************

          IF FCC = 0 THEN

            '*************************************************
            '***   IF FIRST "C" CARD THEN GET LANE VALUE   ***
            '***   AND RESET FIRST "C" CARD FLAG           ***
            '*************************************************

            IF MID$(D$(I), 1, 1) = "C" THEN
              LN = VAL(MID$(D$(I), 12, 1))
              FCC = 1
            END IF

          END IF

          '*****************************************
          '***   CHECK AND PROCESS "C" DATA CARD   ***
          '*****************************************

          IF MID$(D$(I), 1, 1) = "C" THEN
```

SKIDCOMP.BAS...continued

```
          '*********************************
           '***   CHECK LANE CONTINUITY   ***
           '*********************************

           TLN = VAL(MID$(D$(I), 12, 1))
           IF (TLN < 5 AND LN > 4) OR (TLN > 4 AND LN < 5) THEN
             GC = -1
             D$(I) = D$(I) + "  *INV. LANE SWITCH: Curr C rec does not match 1st C rec"
           END IF
           '************************************************************
           '***   CHECK FOR COMMENT "7" AND "B2" CARD IMMEDIATELY   ***
           '***   FOLLOWING THE "C" CARD                            ***
           '************************************************************



           IF MID$(D$(I), 13, 1) = "7" AND MID$(D$(I + 1), 1, 2) <> "B2" THEN
              GC = 1
              D$(I + 1) = D$(I + 1) + "  * NO B2 Rec here: B2 must follow a C7 rec"
           END IF
         END IF

         IF BC <> 0 THEN 110

          '*****************************************************
          '***   LOCATE FIRST "B2" CARD AND KEEP LOCATION    ***
          '*****************************************************

         IF MID$(D$(I), 1, 2) = "B2" THEN BC = I

110    NEXT I

       '*************************************
       '***   CHECK IF "B2" CARD EXISTS   ***
       '*************************************

       IF BC = 0 THEN RETURN

       '*******************************************
       '***   IF ERRORS WRITE THEM AND RETURN   ***
       '*******************************************

       IF GC < 0 THEN GOSUB 200: RETURN
       IF GC > 0 THEN GOSUB 200: RETURN
       GC = 0

       '***********************************************************
       '***   CHECK FIRST CARD IN DATA BLOCK FOR "B1" CARD   ***
       '***********************************************************

       IF MID$(D$(1), 1, 2) <> "B1" THEN
         D$(1) = D$(1) + "  ******* MISSING B1 CARD -- LAST COUNTY = "
         D$(1) = D$(1) + COUNTY$
         GOSUB 200
         RETURN
       END IF

       '*************************************************
       '***   CONVERT HIGHWAY CODE FROM "B1" CARD   ***
       '*************************************************

       HWY$ = "       "
       HSC = VAL(MID$(D$(1), 3, 2))
       IF HSC = 1 OR HSC = 6 OR HSC = 10 THEN MID$(HWY$, 1, 2) = "US"
       IF HSC = 2 OR HSC = 3 OR HSC = 7 THEN MID$(HWY$, 1, 2) = "SH"
       IF HSC = 4 OR HSC = 11 OR HSC = 12 THEN MID$(HWY$, 1, 2) = "PR"
       IF HSC = 5 OR HSC = 9 THEN MID$(HWY$, 1, 2) = "FM"
```

SKIDCOMP.BAS...continued

```
IF HSC = 8 THEN MID$(HWY$, 1, 2) = "IH"
HN = VAL(MID$(D$(1), 5, 4))
IF HN = 999 AND HSC = 2 THEN MID$(HWY$, 3, 4) = "OOSR"
IF HN = 9999 AND HSC = 2 THEN MID$(HWY$, 3, 4) = "NASA"
IF MID$(HWY$, 3, 4) = "    " THEN MID$(HWY$, 3, 4) = MID$(D$(1), 5, 4)
IF HN = 353 AND HSC = 8 THEN MID$(HWY$, 7, 1) = "E"
IF HN = 354 AND HSC = 8 THEN MID$(HWY$, 7, 1) = "W"
IF HSC = 3 OR HSC = 9 OR HSC = 10 OR HSC = 12 THEN MID$(HWY$, 7, 1) = "S"
IF HSC = 6 OR HSC = 7 THEN MID$(HWY$, 7, 1) = "A"

'************************************************
'***   CHECK FOR VALID COUNTIES IN DISTRICT   ***
'************************************************

COUNTY$ = MID$(D$(1), 9, 3)
CNTY = VAL(COUNTY$)
LPRINT "COUNTY CODES = "; COUNTY$; "NUM VAL = "; CNTY
I = 1


CNTF = 0
WHILE I <= cnties AND CNTF = 0
     IF conty(I) = CNTY THEN CNTF = 1
     I = I + 1
WEND
IF CNTF = 0 THEN
  D$(1) = D$(1) + "  *INV. CTY NO. Does not exist in this District"
  GOSUB 200
  RETURN
END IF

'************************************************************
'***   IF "B2" CARD, CHECK LAST "C" CARD FOR COMMENT "7"   ***
'************************************************************

IF MID$(D$(BC - 1), 13, 1) <> "7" THEN
  D$(BC - 1) = D$(BC - 1) + "  *NO C 7 rec. C7 must come before B2 rec"
  GOSUB 200
  RETURN
END IF

'******************************************************
'***   CHECK "B1" AND "B2" FOR HIGHWAY SYSTEM MATCH   ***
'******************************************************

IF MID$(D$(1), 3, 6) <> MID$(D$(BC), 3, 6) THEN
  D$(BC) = D$(BC) + "  *B2 & last B1 do not match on HW fields cols 3-6"
  GOSUB 200
  RETURN
END IF


PST = INT(VAL(MID$(D$(BC), 9, 3)) * 10)   'STARTING REFERENCE POINT
RD = VAL(MID$(D$(1), 12, 1))              'ROADWAY

IF BC > 2 THEN

  FF = INT(VAL(MID$(D$(BC - 1), 8, 3)))   'LAST OFFSET BEFORE "B2"
  TBC = BC
  IF TBC - 2 < 2! THEN TBC = 4

  IF LN < 5 THEN 120                      'L OR X DIRECTION
  FOR I = 2 TO TBC - 2
    L = INT(VAL(MID$(D$(I), 8, 3)))
```

SKIDCOMP.BAS ...continued

```
            '****************************
            '***   VALIDATE OFFSET   ***
            '****************************

   IF L > FF THEN
     D$(BC - 1) = D$(BC - 1) + "  *INV OFFSET OR MISSING B2 CARD ABOVE"
      GOSUB 200
      RETURN
    END IF

    RP = INT(PST - (FF - L))             'COMPUTE REFERENCE POINT
    IF RD = 1 THEN RDWY$ = "A" ELSE RDWY$ = "R"   'SET ROADWAY
    SKD$ = MID$(D$(I), 2, 2)                    'GET SKID NUMBER
    GOSUB 180                            'BUILD DATAEASE RECORD
  NEXT I

  GOTO 130

          '*********************************************************
          '***   COMPUTE REFERENCE POINT FOR L OR X DIRECTION   ***
          '*********************************************************

120       FOR I = 2 TO TBC - 2
            L = INT(VAL(MID$(D$(I), 8, 3)))

            '****************************
            '***   VALIDATE OFFSET   ***
            '****************************

    IF L > FF THEN
    D$(BC - 1) = D$(BC - 1) + "  *****  INVALID OFFSET OR MISSING B2 CARD        ABOVE"
      GOSUB 200
      RETURN
    END IF

    RP = INT(PST + (FF - L))        'COMPUTE REFERENCE POINT
    IF RD = 1 THEN RDWY$ = "X" ELSE RDWY$ = "L"     'SET ROADWAY
    SKD$ = MID$(D$(I), 2, 2)                        'GET SKID NUMBER
    GOSUB 180                                  'BUILD DATAEASE RECORD

          NEXT I

130     END IF

        '*****************************************************
        '***   PROCESS EVERYTHING AFTER FIRST "B2" CARD   ***
        '*****************************************************

        PTR = BC + 1

  WHILE PTR <= N
         CT$ = MID$(D$(PTR), 1, 1)

          '****************************************
          '***   CHECK AND PROCESS IF "B" CARD   ***
          '****************************************

          IF CT$ = "B" THEN

            '*********************************************************
            '***   CHECK "B1" AND "B2" FOR HIGHWAY SYSTEM MATCH   ***
            '*********************************************************
```

SKIDCOMP.BAS ....continued

```
            IF MID$(D$(PTR), 3, 6) <> MID$(D$(1), 3, 6) THEN
            D$(PTR) = D$(PTR) + "  * NON MATCH. HW. SYS. BETWEEN B2 AND LAST B1 REC"
            GOSUB 200
            RETURN
            END IF

            PST = INT(VAL(MID$(D$(PTR), 9, 3)) * 10)         'GET NEW REFERENCE POINT
            PTR = PTR + 1
          END IF

          '****************************************
          '***   CHECK AND PROCESS IF "C" CARD   ***
          '****************************************

          IF CT$ = "C" THEN

            IF MID$(D$(PTR), 13, 1) = "7" THEN 140

            L = INT(VAL(MID$(D$(PTR), 8, 3)))  'GET OFFSET

            '****************************************
            '***   CHECK FOR INCREASING OFFSETS   ***
            '****************************************

            IF MID$(D$(PTR - 1), 1, 1) = "C" AND INT(VAL(MID$(D$(PTR - 1), 8, 3))) > L THEN
              D$(PTR) = D$(PTR) + "  *****  INVALID OFFSET OR B2 CARD  MISSING ABOVE"
              GOSUB 200
              RETURN
            END IF
            '************************************************************
            '***   COMPUTE REFERENCE POINT FROM ROADWAY DIRECTION   ***
            '************************************************************

            IF LN < 5 THEN RP = INT(PST - L) ELSE RP = INT(PST + L)
            SKD$ = MID$(D$(PTR), 2, 2)     'GET SKID NUMBER
            GOSUB 180                      'BUILD DATAEASE RECORD
140         PTR = PTR + 1

          END IF

        WEND

        '************************************************
        '***   WRITE GOOD SKID DATA IN DATAEASE FORMAT   ***
        '************************************************

        OPEN "GOODSKID.DAT" FOR APPEND AS #2
          FOR I = 1 TO GC
            PRINT G$(I)
            PRINT #2, G$(I)
          NEXT I
        CLOSE #2
        RETURN

  '****************************************************************
  '***   SUBROUTINE TO BUILD SKID RECORD INTO DATAEASE FORMAT   ***
  '****************************************************************
```

SKIDCOMP.BAS...continued

```
180         GC = INT(GC + 1)
            G$(GC) = COUNTY$ + ";" + MID$(HWY$, 1, 2) + ";" + MID$(HWY$, 3, 4)
            G$(GC) = G$(GC) + ";" + MID$(HWY$, 7, 1) + ";" + RDWY$ + ";"
            RP$ = STR$(RP / 10)
            L = LEN(RP$) - 1
            RP$ = RIGHT$(RP$, L)
            DSML = 0
            FOR J = 1 TO L
              T$ = MID$(RP$, J, 1)
              IF T$ = "." THEN DSML = J
            NEXT J
            IF DSML = 0 AND L = 1 THEN RP$ = "00" + RP$ + ".0"
            IF DSML = 0 AND L = 2 THEN RP$ = "0" + RP$ + ".0"
            IF DSML = 0 AND L = 3 THEN RP$ = RP$ + ".0"
            IF DSML = 1 THEN RP$ = "000" + RP$
            IF DSML = 2 THEN RP$ = "00" + RP$
            IF DSML = 3 THEN RP$ = "0" + RP$
            G$(GC) = G$(GC) + RP$ + ";" + SKD$ + ";" + YEAR$
            RETURN

        '*********************************************************
        '***   SUBROUTINE TO WRITE INVALID DATA TO A FILE   ***
        '*********************************************************

200     OPEN "SKID.BAD" FOR APPEND AS #2
          PRINT #2, AC$
          FOR I = 1 TO N
            PRINT #2, D$(I)
          NEXT I
        CLOSE #2
        RETURN
```

SKIDEDIT.BAS

The SKIDEDIT.BAS program permits the user to add/subtract 0.1 mile to the previously rejected records from an import attempt. The rejected records are usually 0.1 mile off from the existing database records. In order to facilitate correcting data import errors, this routine allows the addition/subtraction of a thenth of a mile to a defined sequence of skid records within a few seconds. This relieves the user from having to manually adjust the sequence of records - which often can take several hours.

```
'program to edit and add/sub 0.1 mile to the skid.dat file

REM $DYNAMIC
DIM x$(1, 2)
WIDTH LPRINT 131
LPRINT CHR$(27); "E"
xflag = 0
NAME$ = "skid.dat"
REC% = 0
OPEN NAME$ FOR INPUT AS #1
WHILE NOT EOF(1)
   LINE INPUT #1, A$
   REC% = REC% + 1
WEND
CLOSE #1
PRINT "NO. OF RECORDS READ = "; REC%
maxrec% = REC% - 1
ERASE x$
DIM x$(maxrec%, 2)
OPEN NAME$ FOR INPUT AS #1
RECORD% = 0
WHILE NOT EOF(1)
 LINE INPUT #1, A$
 IF MID$(A$, 1, 6) = "COUNTY" THEN GOTO 100
 RECORD% = RECORD% + 1
 x$(RECORD%, 1) = STR$(RECORD%)
 x$(RECORD%, 2) = A$
 PRINT RECORD%
 GOTO 110
100 temp$ = A$
110 WEND
PRINT "SKID.DAT FILE TRANSFERRED INTO THE ARRAY X$"
' PRINT TO THE PRINTER
74 :
CLS : BEEP
LOCATE 5, 5
INPUT "Print to the line printer? (Y/N)...."; dum$
IF dum$ = "y" OR dum$ = "Y" OR dum$ = "N" OR dum$ = "n" THEN GOTO 77
GOTO 74
77 :
IF dum$ = "Y" OR dum$ = "y" THEN GOTO 78
GOTO 500
78 :
LPRINT "REC NO"
CK$ = MID$(x$(1, 2), 5, 12)
FOR i% = 1 TO maxrec%
b$ = MID$(x$(i%, 2), 1, 16)
C$ = MID$(x$(i%, 2), 17, 5)
d$ = RIGHT$(x$(i%, 2), 6)
CUR$ = MID$(x$(i%, 2), 5, 12)
IF CUR$ = CK$ THEN GOTO 115
```

SKIDEDIT.BAS

```
LPRINT
CK$ = CUR$
115  LPRINT x$(i%, 1);
LPRINT TAB(8);
LPRINT b$;
LPRINT TAB(26);
LPRINT C$;
LPRINT TAB(34);
LPRINT d$
NEXT i%
LPRINT CHR$(12)
LPRINT CHR$(27); "E"
500 :
CLS
LOCATE 2, 5
PRINT "CHANGE INDIVIDUAL REFERENCE POINTS + OR - BY 0.1 MILE"
LOCATE 4, 5
INPUT "BEGINNING RECORD NO = "; br%
LOCATE 5, 5
INPUT "ENDING RECORD NO = "; er%
240 :
LOCATE 7, 5
INPUT "(A)DD 0.1 or (S)ubtract 0.1...enter A or S....."; ans$
IF ans$ = "S" OR ans$ = "s" OR ans$ = "A" OR ans$ = "a" THEN GOTO 200
BEEP
GOTO 240
200 :
IF ans$ = "A" OR ans$ = "a" THEN GOTO 700
INPUT "Confirm a subtract of 0.1 miles (Y/N)"; conf$
IF conf$ = "Y" OR conf$ = "y" THEN GOTO 710
GOTO 240
700 :
INPUT "Confirm an addition of 0.1 miles (Y/N)"; conf$
IF conf$ = "Y" OR conf$ = "y" THEN GOTO 710
GOTO 240
710 :
IF ans$ = "a" OR ans$ = "A" THEN delta = .1 ELSE delta = -.1
FOR i% = br% TO er%
 ref = VAL(MID$(x$(i%, 2), 17, 5))
 new = ref + delta
J$ = STR$(new)
n% = LEN(J$)
IF LEFT$(J$, 1) = " " THEN J$ = MID$(J$, 2, n% - 1)
 n% = LEN(J$)
IF n% > 5 THEN
   new = new + .000001
   J$ = STR$(new)
   IF LEFT$(J$, 1) = " " THEN J$ = MID$(J$, 2, n% - 1)
END IF

SELECT CASE new

   CASE IS < 0!
   t$ = "000.0"

   CASE 0! TO .9
   t$ = "000" + J$

   CASE 1! TO 9.9
   t$ = "00" + J$

   CASE 10! TO 99.9
   t$ = "0" + J$

   CASE 100 TO 999.9
   t$ = J$
CASE ELSE
```

SKIDEDIT.BAS

```
PRINT "*****case else no match found...abort run"
PRINT "REC NO = "; RECORD%
PRINT "VALUE OF J$ = "; J$
xflag = 1
END SELECT
IF xflag = 1 THEN GOTO 1000
' check for whole numbers and convert
x = VAL(J$)
t% = INT(x)
tt = t%
dif = x - tt
IF dif = 0 THEN t$ = t$ + ".0"
IF x = 0 THEN t$ = "000.0"
n% = LEN(t$)
IF n% > 5 THEN
   t$ = LEFT$(t$, 5)
END IF
b$ = MID$(x$(i%, 2), 1, 16)
d$ = RIGHT$(x$(i%, 2), 6)
PRINT i%, ref, new, t$, n%
'.........write changes to the array...........
new$ = b$ + t$ + d$
x$(i%, 2) = new$
NEXT i%
GOTO 2000
1000 :
BEEP:
PRINT "**********  No match found in the reference point adjustment"
2000 :
PRINT
INPUT "Perform another interation...(Y/N) "; dum$
IF dum$ = "y" OR dum$ = "Y" OR dum$ = "n" OR dum$ = "N" THEN GOTO 2010
GOTO 2000
2010 :
IF dum$ = "y" OR dum$ = "Y" THEN GOTO 500
IF xflag = 1 THEN
  CLS
  PRINT " aborting run xflag = 1 no match error found"
  GOTO 6000
ELSE
6000 :
  CLS
  PRINT "re-writing the file and closing out....."
  OPEN "tskid.dat" FOR OUTPUT AS #2
  PRINT #2, temp$
  FOR i% = 1 TO maxrec%
  PRINT #2, x$(i%, 2)
  PRINT i%
  NEXT i%
END IF
PRINT : PRINT

2600 :

LOCATE , 5
INPUT " type TSKID.DAT file to the line printer???  (Y/N)"; dum$
If dum$ = "y" OR dum$ = "Y" OR dum$ = "n" OR dum$ = "N" THEN GOTO 3000
GOTO 2600

3000 :

IF dum$ = "y" OR dum$ = "Y" THEN
   SHELL "type tskid.dat > lpt1"
END IF
SHELL "erase oldskid.dat"
SHELL "rename skid.dat oldskid.dat"
SHELL "rename tskid.dat skid.dat"
```

```
SHELL "erase tskid.dat"
END
```

SKIDERR.BAS

SKIDERR.BAS examines the DataEase exception file following an import attempt of a sequence of skid data records. The exception file lists the record number(s) of all rejected skid records, i.e., those records that did not match the database records. SKIDERR.BAS produces the rejected records from the original SKID.DAT file in a form the can be edited and submitted for re-import.

```
        'skiderr.bas .....COX and SMITH 7-88
        ON ERROR GOTO 999
        OPEN "ER.ERR" FOR INPUT AS #1      '****  FILE CONTAINING ERRORS
        OPEN "SKID.DAT" FOR INPUT AS #2    '****  FILE CONTAINING SKID DATA
        OPEN "SKID.TMP" FOR OUTPUT AS #3   '**** FILE CONTAINING SKID ERR DATA

        '***********************************************
        '****    INPUT VARIABLE IDENTIFIER LINE    ****
        '***********************************************

        LINE INPUT #2, A$

        '************************************************************
        '****    WRITE VARIABLE IDENTIFIER LINE TO ERROR FILE    ****
        '************************************************************

        PRINT #3, A$

        FC = 0   '***  LINE POINTER IN SKID DATA FILE

        '************************************************
        '****    PRINT HEADER TO PRINTER FOR ERRORS    ****
        '************************************************

        LPRINT
        LPRINT
        LPRINT "                      SKID ERRORS"
        LPRINT
        LPRINT
        LPRINT "              CNTY  HIGHWAY RWY REF. SKD DATE"
        LPRINT "-------------------------------------------------------"

        '*********************************************************
        '****    INPUT NEXT LINE ERROR OR END OF ERROR FILE    ****
        '*********************************************************

10      LINE INPUT #1, A$

        L = LEN(A$)  '***  LENGTH OF ERROR MESSAGE
        LN = 0       '***  POINTER FOR END OF LINE NUMBER WHERE ERROR IS

        '*********************************************************
        '****    CHECK FOR LINE NUMBER WHERE ERROR OCCURS    ****
        '*********************************************************

        FOR I = 1 TO L
                T$ = MID$(A$, I, 1)
                IF T$ = ":" THEN LN = I - 1  '***  LINE NUMBER FOUND
        NEXT I
```

SKIDERR.BAS...continued

```
      IF LN = 0 THEN 999   '*** NO MORE ERRORS

       LN$ = MID$(A$, 1, LN) '*** EXTRACT LINE NUMBER WHERE ERROR OCCURRED
       LN = VAL(LN$)         '*** CONVERT TO NUMERIC VALUE
        '*****************************************************
       '*****    CHECK TO SEE IF LINE NUMBER IS BEFORE    *****
       '*****    POINTER IN SKID DATA FILE                *****
       '*****************************************************


       IF FC > LN THEN
              CLOSE #2
              OPEN "SKID.DAT" FOR INPUT AS #2
              LINE INPUT #2, DUMMY$
              FC = 0
       END IF

       '****************************************
       '*****    FIND DATA LINE WITH ERROR    *****
       '****************************************

       WHILE NOT EOF(2) AND FC < LN
              LINE INPUT #2, B$
              FC = FC + 1
       WEND

       '*************************************************
       '*****    SAVE DATA LINE AND PRINT TO PRINTER    *****
       '*************************************************

       PRINT #3, B$
       LPRINT "discarded..   "; B$

       '*********************************
       '*****    GO TO NEXT ERROR    *****
       '*********************************

       GOTO 10

       '***********************************************************
       '*****    END OPERATION, DELETE OLD SKID DATA FILE      *****
       '*****    AND COPY DATA WITH ERRORS TO NEW SKID FILE    *****
       '***********************************************************

999    CLOSE #3, #2, #1
       SHELL "DEL SKID.DAT"
       SHELL "RENAME SKID.TMP SKID.DAT"
       END
```

FWDCONV.BAS

This program reads the raw FWD data file as produced from District FWD data collection and re-formats the data (record by record) into a form suitable for importing into the FWD data file.

```
        '*************************************************************************
        '*************************************************************************
        '*****************                                             ************
        '*****************          PROGRAM NAME:  CONVRT.BAS          ************
        '*****************Ver.2 July 23,1990: Modified by Craig Cox    ************
        '***************** for the revised FWD format                 ************
        '*************************************************************************
        CLS
        LOCATE 4, 15: PRINT "================================================="
        LOCATE 5, 15: PRINT "FALLING-WEIGHT DEFLECTOMETER DATA CONVERSION PROGRAM"
        LOCATE 6, 15: PRINT "================================================="
        LOCATE 15, 17: PRINT "This program converts raw FWD data files into a"
        LOCATE 16, 17: PRINT "form which can be used by Dataease, a"
        LOCATE 17, 17: PRINT "spreadsheet, or database management programs."
        LOCATE 19, 27: PRINT "DISTRICT 21 VERSION": PRINT : PRINT
        ON ERROR GOTO 40
100     SHELL "PAUSE"

        '*******************************************************
        '***************                          ****************
        '***************     GET RAW FWD FILE     ****************
        '***************                          ****************
        '*******************************************************

30      CLS
        B$ = "ALL.FWD"
        OPEN B$ FOR INPUT AS #1
        GOTO 50
40      NUM = ERR
        IF NUM = 53 THEN
                CLOSE #1
                CLS
                LOCATE 15, 20: PRINT "FILE NOT FOUND -- TRY AGAIN"
                LOCATE 17, 20: PRINT "HIT ANY KEY TO CONTINUE"
60              F$ = INKEY$: IF F$ = "" THEN 60
                RESUME 30
        END IF

        '*************************************************************
        '*****************                                 **************
        '*****************    SETUP FWD CONVERTED FILE     **************
        '*****************                                 **************
        '*************************************************************

50      C$ = "FWD.CON"
        OPEN C$ FOR OUTPUT AS #2
        ON ERROR GOTO 0
        PRINT #2, "COUNTY NUMBER;HIGHWAY PREFIX;HIGHWAY NUMBER;HIGHWAY SUFFIX;ROADWAY;REFERENCE
POINT;W1;W2;W6;W7;DATE"

        '*************************************************************
        '*****************                          ******************
        '*****************    CONVERT RAW FWD FILE  ******************
        '*****************                          ******************
        '*************************************************************
```

FWDCONVT.BAS...continued

```
        WHILE NOT EOF(1)
                LINE INPUT #1, A$
150             T1$ = MID$(A$, 1, 3)
                IF T1$ = "R32" THEN 110
                IF T1$ <> "R80" THEN 10



                '************************************************
                '**************                      ***************
                '**************     80 COL. DATA     ***************
                '**************                      ***************
                '************************************************

                DAT$ = MID$(A$, 14, 6)
                CTY$ = MID$(A$, 20, 3)
                FOR I = 1 TO 4
                        LINE INPUT #1, A$
                NEXT I
                GOSUB HWYDPS
10              T1$ = MID$(A$, 1, 3)
                IF T1$ = "EOF" THEN 20
                T2$ = MID$(A$, 1, 1)
                IF T2$ <> "S" THEN LINE INPUT #1, A$: GOTO 10
15              REF$ = MID$(A$, 2, 8)
                GOSUB LANE
                AT$ = MID$(A$, 40, 3): AIRTEMP = VAL(AT$)
                LINE INPUT #1, A$
                FOR J = 1 TO NDROPS
                        LOD$ = MID$(A$, 34, 5)
                        W1$ = MID$(A$, 39, 6)
                        W2$ = MID$(A$, 45, 6)
                        W6$ = MID$(A$, 69, 6)
                        W7$ = MID$(A$, 75, 6)
                        LOD = VAL(LOD$): IF LOD <= 0 THEN 16
                        W1 = VAL(W1$): W1 = (W1 * 10000) / LOD
                        W2 = VAL(W2$): W2 = (W2 * 10000) / LOD
                        W6 = VAL(W6$): W6 = (W6 * 10000) / LOD
                        W7 = VAL(W7$): W7 = (W7 * 10000) / LOD
                        GOSUB OUTPT
16                      LINE INPUT #1, A$
                NEXT J
                GOTO 10
20              PRINT CTY$; " "; PREFIX$; NUMBER$; SUFFIX$; " "; LANE$
        WEND
        CLOSE #1
        CLOSE #2
        CLS
        LOCATE 15, 20: PRINT "FILE CONVERSION IS COMPLETE"
        PRINT
        PRINT
        SHELL "PAUSE"
        END

        '************************************************************
        '***************                                 **************
        '***************          32 COL. DATA           **************
        '***************                                 **************
        '************************************************************

110     DAT$ = MID$(A$, 14, 6)
```

FWDCONV.BAS...continued

```
        FOR I = 1 TO 4
                LINE INPUT #1, A$
        NEXT I
        CTY$ = MID$(A$, 3, 3)
        GOSUB HWYDPS
130     T1$ = MID$(A$, 1, 3)
        IF T1$ = "EOF" THEN 20
        T2$ = MID$(A$, 1, 1)
        IF T2$ <> "S" THEN LINE INPUT #1, A$: GOTO 130
120     REF$ = MID$(A$, 2, 8)
        GOSUB LANE
        AT$ = MID$(A$, 24, 2): AIRTEMP = VAL(AT$)
        LINE INPUT #1, A$
        FOR J = 1 TO NDROPS
                LOD$ = MID$(A$, 1, 4)
                W1$ = MID$(A$, 5, 4)
                W2$ = MID$(A$, 9, 4)



                W6$ = MID$(A$, 25, 4)
                W7$ = MID$(A$, 29, 4)
                LOD = VAL(LOD$): LOD = 1000 * LOD * .10197 * .00142234# * 3.1415 * (5.91 ^ 2)
                IF LOD <= 0 THEN 121
                W1 = VAL(W1$): W1 = (W1 / 25.4 * 10000) / LOD
                W2 = VAL(W2$): W2 = (W2 / 25.4 * 10000) / LOD
                W6 = VAL(W6$): W6 = (W6 / 25.4 * 10000) / LOD
                W7 = VAL(W7$): W7 = (W7 / 25.4 * 10000) / LOD
                GOSUB OUTPT
121             LINE INPUT #1, A$
        NEXT J
        GOTO 130


HWYDPS: PREFIX1$ = MID$(A$, 7, 1)
        TEMP$ = PREFIX1$
        GOSUB CAPS
        PREFIX1$ = TEMP$
        PREFIX2$ = MID$(A$, 8, 1)
        TEMP$ = PREFIX2$
        GOSUB CAPS
        PREFIX2$ = TEMP$
        PREFIX$ = PREFIX1$ + PREFIX2$
        SUFFIX$ = MID$(A$, 13, 1)
        TEMP$ = SUFFIX$
        GOSUB CAPS
        SUFFIX$ = TEMP$
        NUMBER$ = MID$(A$, 9, 4)
        FOR I = 1 TO 25
                LINE INPUT #1, A$
        NEXT I
        NDROPS = 0
        FOR I = 1 TO 3
                LINE INPUT #1, B$
        NEXT I
        FOR K = 1 TO 80
                IF MID$(A$, K, 1) <> "." AND MID$(B$, K, 1) <> "." THEN NDROPS = NDROPS + 1
        NEXT K
        FOR I = 1 TO 4
                LINE INPUT #1, A$
        NEXT I
        RETURN

LANE:   REF = ABS(VAL(REF$))
        LANE$ = MID$(A$, 10, 1)
        TEMP$ = LANE$
```

FWDCONV.BAS...continued

```
        GOSUB CAPS
        LANE$ = TEMP$
        RETURN

OUTPT:  IF (J = 2 OR NDROPS = 1) AND W1 > W2 AND W2 > W6 AND W6 > W7 THEN
                YR$ = LEFT$(DAT$, 2)
                MO$ = MID$(DAT$, 3, 2)
                PRINT #2, CTY$; ";"; PREFIX$; ";"; NUMBER$; ";";
                PRINT #2, SUFFIX$; ";"; LANE$; ";";
                PRINT #2, USING "###.#"; REF;
                PRINT #2, ";";
                PRINT #2, USING "###.##"; W1;
                PRINT #2, ";";
                PRINT #2, USING "###.##"; W2;
                PRINT #2, ";";
                PRINT #2, USING "###.##"; W6;
                PRINT #2, ";";
                PRINT #2, USING "###.##"; W7;
                PRINT #2, ";"; MO$; "/"; YR$
        END IF
        RETURN

CAPS:   TN = ASC(TEMP$)
        IF TN > 96 AND TN < 123 THEN


               TN = TN - 32
                TEMP$ = CHR$(TN)
        END IF
        RETURN
```

FWDERR.BAS

FWDERR.BAS examines the DataEase exception file following an import attempt of a sequence of skid data records. The exception file lists the record number(s) of all rejected 0.5-MILE FWD records, i.e., those records that did not match the database records. FWDERR.BAS produces the rejected records from the original SKID.DAT file in a form the can be edited and submitted for re-import.

```
     ON ERROR GOTO 999
     OPEN "ER.ERR" FOR INPUT AS #1
     OPEN "FWD.CON" FOR INPUT AS #2
     OPEN "FWD.TMP" FOR OUTPUT AS #3
     LINE INPUT #2,A$
     PRINT #3,A$
     FC=0
     LPRINT
     LPRINT
     LPRINT "                          FWD ERRORS"
     LPRINT
     LPRINT "
     LPRINT "              CNTY  HIGHWAY RWY REF.   W1    W2
  W6    W7   DATE"
     L          P          R          I          N          T
"-------------------------------------------------------------
---------"
10      LINE INPUT #1,A$
     L=LEN(A$)
     LN=0
     FOR I=1 TO L
          T$=MID$(A$,I,1)
          IF T$=":" THEN LN=I-1
     NEXT I
     IF LN=0 THEN 999
     LN$=MID$(A$,1,LN)
     LN=VAL(LN$)
     IF FC > LN THEN
          CLOSE #2
          OPEN "FWD.CON" FOR INPUT AS #2
          LINE INPUT #2,DUMMY$
          FC=0
     END IF
     WHILE NOT EOF(2) AND FC <> LN
          LINE INPUT #2,B$
          FC=FC+1
     WEND
```

FWDERR.BAS

```
     PRINT #3,B$
     LPRINT "discarded..    ";B$
     GOTO 10
999     CLOSE #3,#2,#1
     SHELL "DEL FWD.CON"
     SHELL "RENAME FWD.TMP FWD.CON"
     END
```

Appendix K
Detailed Specification for all Import Procedures

The following import procedures are required to import data into various files within the database. Details regarding the type of import, matching rules, source data drive, and target data drive are provided.

Import Definitions

Import	Destination Form	Format	Add or Update	Organized
ADTIMP	ADT VALUES	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:ADT.DAT Auto Decimal: No Special 7 Record Sep: ;				
FCIMP	FUNCT CLASS	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:FC.DAT Auto Decimal: No Special 7 Record Sep: ;				
FWD	FWD INPUT	VAR.LENGTH	Update Match	Auto Dec
Destination Form: d:FWD.EXP Auto Decimal: No Special 7 Record Sep: ;				
FWDIMP	FWD INPUT	VAR.LENGTH	Update Match	Destinat
Destination Form: d:FWD.CON Auto Decimal: No Special 7 Record Sep: ;				
HDIMP	HIGHWAY DESIGN	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:HD.DAT Auto Decimal: No Special 7 Record Sep: ;				
IMPPRS	PRS-SRS INPUT FILE	VAR.LENGTH	Add Non-Match	Auto Dec
Destination Form: d:IMPORT.VIS Auto Decimal: No Special 7 Record Sep: ,				
INVENTRY	DISTRICT INVENTORY	VAR.LENGTH	Update Match	Auto Dec
Destination Form: d:INV.DAT Auto Decimal: No Special 7 Record Sep: ;				
KIPIMP	18-KIP VALUES	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:KIP.DAT Auto Decimal: No Special 7 Record Sep: ;				
MASTER	MASTER	VAR.LENGTH	Update Match	Source F
Destination Form: d:MASTR.EXP Auto Decimal: No Special 7 Record Sep: ;				
MSIMP	MAINTENANCE SECTIONS	VAR.LENGTH	Update Match	Auto Dec
Destination Form: A:MS.DAT Auto Decimal: No Special 7 Record Sep: ;				
REFIMP	MASTER	VAR.LENGTH	Update Match	Destinat
Destination Form: D:\DEASE\BROOKS\IMP.024 Auto Decimal: Yes Special 7 Record Sep: ;				
RIDE	RIDE INPUT	VAR.LENGTH	Update Match	Auto Dec
Destination Form: d:RIDE.EXP Auto Decimal: No Special 7 Record Sep: ;				
SIOMETER	SIOMETER RIDE VALUES	VAR.LENGTH	Update Match	Destinat
Destination Form: G:RIDE.DAT Auto Decimal: No Special 7 Record Sep: ;				

Import Definitions - continued

Import	Destination Form	Format	Add or Update	Organized
SKID	SKID INPUT	VAR.LENGTH	Update Match	Auto Dec
Destination Form: d:SKID.EXP Auto Decimal: No Special 7 Record Sep: ;				
SKIDIMP	SKID INPUT	VAR.LENGTH	Update Match	Destinat
Destination Form: D:\DEASE\BROOKS\SKID.DAT Auto Decimal: No Special 7 Record Sep: ;				
SORTA	TEMP	VAR.LENGTH	Update Match	Auto Dec
Destination Form: d:SORT.DAT Auto Decimal: No Special 7 Record Sep: ;				
VISUAL	VIS VAR.LENGTH	Update Match	Auto Dec	
Destination Form: d:VISUAL.EXP Auto Decimal: No Special 7 Record Sep: ;				