

**SIOUX CITY SIGN INVENTORY SYSTEM**

**SCSIS USER'S MANUAL**

prepared for

Sioux City, Iowa

in cooperation with

Iowa Department of Transportation

and

Federal Highway Administration

U.S. Department of Transportation

by

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## **PREFACE**

The Sioux City Sign Inventory System (SCSIS) is a computer program which has been developed to manage the in-field traffic sign inventory held by the City of Sioux City, Iowa. This report is the User's Manual which contains a general description of the program and explicit instructions regarding program usage including collection of field data, proper coding of commands, out put options, and an operations guide. Also included are examples of program application.

SCSIS and this User's Manual were developed for the City of Sioux City under the sponsorship of the Iowa Department of Transportation and the Federal Highway Administration.

SCSIS provides the City staff with a tool that can assist them in developing, monitoring, and evaluating their own traffic sign program from many perspectives. It has been written to have general applicability, although some functions have been tailored to the particular needs of the Sioux City traffic signing operation. Because the system developed in this project addresses the needs of a municipal function which is common to all local governments, it may be of general interest to those officials or agencies which have responsibilities in the area of traffic control.

The User's Manual has been divided into four chapters: Chapter 1 - Overview of SCSIS, is an introduction to all the major elements and processes involved in the use of SCSIS; Chapter 2 - Field Data Requirements, is a procedural manual for collecting and maintaining current sign inventory information; Chapter 3 - Coding Requirements, gives detailed instructions on coding field data and SCSIS commands; and Chapter 4 - Example Applications and Reports, illustrates the available output options.

This User's Manual should provide all the information that is necessary for someone to become familiar with the possibilities that SCSIS has to offer. The traffic manager should be able to more readily identify and define the sources which create budgetary demand, and then develop methods which will increase the overall efficiency of the sign operation. Of course, the most fundamental aspect of SCSIS is that part which is a recordkeeping and retrieval system, but only by applying the interrogative features of SCSIS does the real usefulness of the system begin to show.



This is the original development of the software behind SCSIS. Although other computerized sign inventory systems exist, we found none which maintain a description of the exact sign location, provide the extent of control over output listings, and have the analysis capabilities that exist in SCSIS. Even so, there is certainly much room for improvements and enhancements. Items which would improve on the current capability and which would be natural extensions to the existing software include the following.

1. Expanded error detection and messages.

Additional checks performed on the original sign inventory information would be very helpful in assuring the development of an error free data base. In conjunction with other improvements or modifications, work in this area would make SCSIS much more self-documenting and forgiving.

2. Preprocessor module or interactive processing support or a combination thereof.

A preprocessor module would read the entire input stream scanning for errors and would not proceed with the job unless the entire input stream was acceptable. This would eliminate some of the inherent disadvantages of batch processing by pinpointing errors and by saving wasted computer resources. Another option would be to use the program interactively. This could definitely have application after the original sign inventory data base is developed.

3. Internal assignment of sign numbers.

This would eliminate the need for the User to be concerned with assigning proper sign numbers to each sign.

4. Sign shop inventory control.

Using standard inventory control techniques, this feature could lend considerable assistance in maintaining cost-effective inventory levels of sign stock. This would extend the applicability of the software so that it assists in maintaining both the "in-field" and "shop" sign inventories. This concept would be applicable to the larger jurisdictions.

At this stage of its development, SCSIS is not particularly "user friendly". The first two items discussed above address this situation. SCSIS was developed with the thought of maximizing its potential in terms of being able to assist in the development of traffic sign management techniques and sign improvement programs, while being equally able to assist the management in rapidly evaluating responses to unforeseen contingencies. If this approach is sound and SCSIS performs well in practice, then future efforts in making the suggested or other enhancements can be justified.

**INTRODUCTION**

SCSIS is part of a comprehensive traffic sign management program designed to assist traffic engineers and technicians in initiating and maintaining efficient control over the City's traffic sign inventory. In order to take advantage of the benefits offered by a sign inventory system, the following major tasks must be assumed as a minimum effort.

First, an initial in-field inventory of all traffic sign installations must be conducted. Second, a method must be devised to keep the inventory current. And last, some means of retrieving the desired information must be provided. SCSIS represents a solution to the information retrieval problem.

After the initial inventory is complete, the sign inventory information and a representation of the corresponding street network is coded on prepared forms. SCSIS uses this information to construct several permanent files on direct access storage media. SCSIS can then be used to retrieve, analyze, and update the original information. Work order forms record all sign maintenance activity which takes place after the original inventory which are then processed in regular intervals to keep the sign inventory file current.

**PROGRAM CAPABILITIES**

Utilizing a computer which has been programmed to assist in maintaining the sign inventory makes information retrieval simple and rapid, permits a wide variety of analysis, and also reduces the chance for errors to occur through manual tabulations, loss of information, overlooking records, etc. In general terms, SCSIS has been designed in a manner that it can address the following functions within the realm of the typical municipal traffic sign operation.

1. Maintain an up-to-date inventory of all the City's signs conveniently available.
2. Provide a permanent record of all completed traffic sign work orders.



3. Develop and maintain a data base which can be used to identify trends in the type and quantity of the sign improvement and maintenance work being accomplished.
4. Provide a means to quickly evaluate existing signing for condition and check sign characteristics for conformance to the Manual on Uniform Traffic Control Devices.
5. Assist in the development of the spending priorities and budget requirements, and the purchasing of materials.
6. Permit more efficient scheduling of work orders.

The manner in which SCSIS accomplishes the above will be discussed in detail throughout the remainder of this report.

## DATA ORGANIZATION

The data compiled from the original sign inventory along with a description of the street network is the information used by SCSIS to construct the initial sign inventory data base.

A city may optionally be subdivided into any number of geographical subdivisions, which are termed sectors. This may be desirable in some instances for work scheduling purposes, statistical stratification, or when there is insufficient work space to successfully process a larger amount of data at one time. If a city is not subdivided, then it can simply be thought of as being one sector.

A set of four permanent direct access files are associated with each sector inventoried. The following is a brief description of the four file types.

1. Current Sign Inventory File: Represents only the current version of the sign inventory which reflects any and all updates made to the initial inventory. One record contains all the descriptive data recorded during the sign inventory for one sign. The records in this file are arranged by sign number (a unique number assigned to each sign on a sector basis) in ascending order.

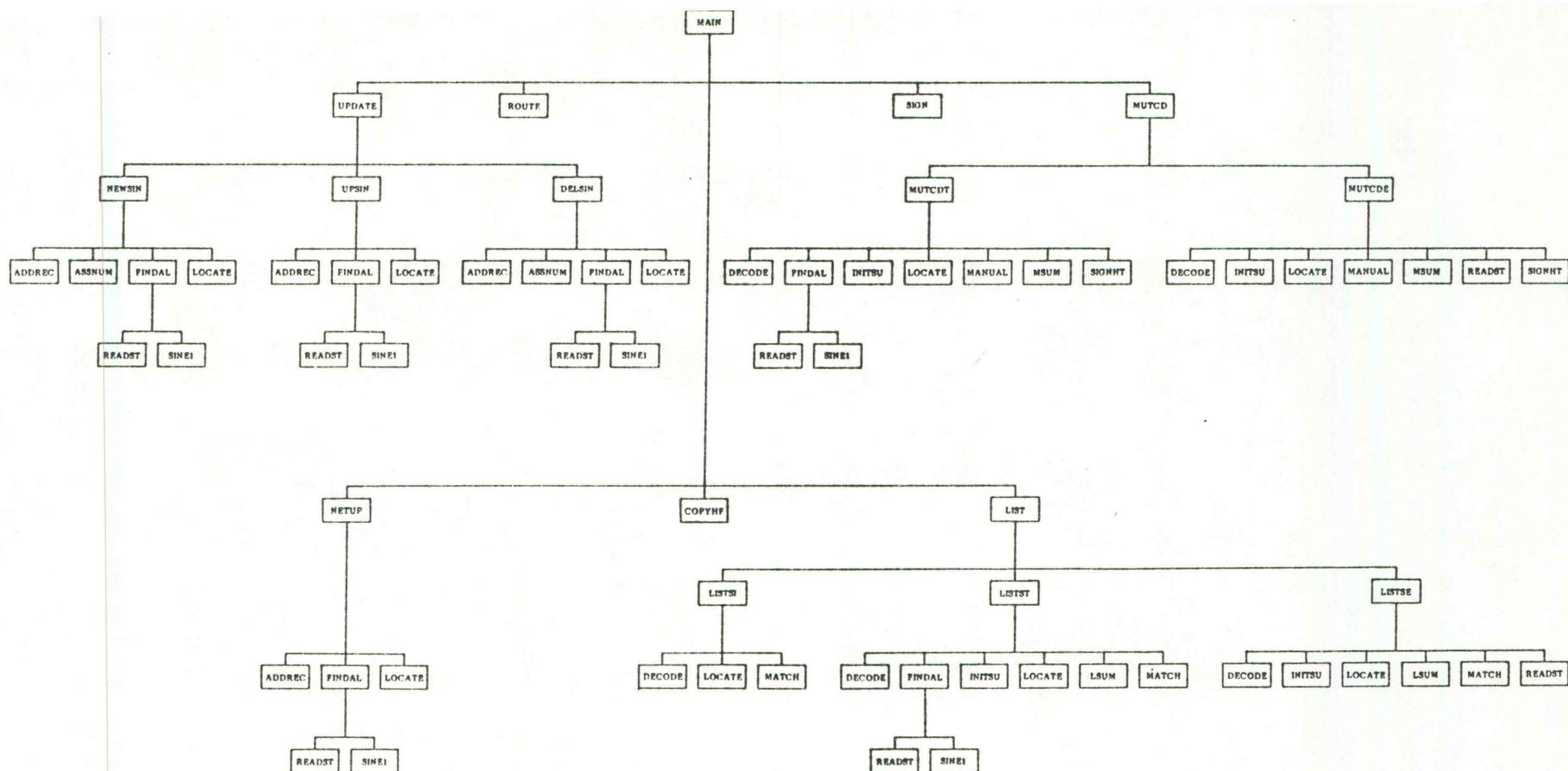


2. Historical Sign Inventory File: Similar data as the current sign inventory file. This file contains a copy of all the work orders which have been processed since the original inventory was taken. For each sign which has had a work order completed, a complete historical log is available including the current condition of the sign. These records also arranged by sign number, which are not necessarily unique in this file, in ascending order.
3. Inventory Route File: Contains a list of all the streets that were originally inventoried or added later to the sector. It also contains information about the location of the corresponding group of cross-street names within the reference cross-street file. One record contains one six character inventory route name and one set of pointers which locate the beginning and end of the reference cross streets for the specific route. The records are arranged according to the alphabetical order of the inventory route names.
4. Reference Cross Street File: Contains a list of cross street names and associated data for each inventory route. For each reference cross street there is also a corresponding block length, and first sign numbers for the current and historical sign inventory files. (The first sign number is the sign number assigned to the southernmost or westernmost sign for each cross street). The arrangement of cross-streets and assignments of first sign numbers is according to the order of the inventory routes and the cross streets that would be encountered assuming an inventory direction of north for north-south routes and east for east-west routes. Each cross street name and associated data is one record.

There are also four other very small permanent files which are maintained. These files keep track of the number of records written in each of the groups of four files described above. In other words, one file would keep track of the number of records in each of the current inventory files, one would keep track of the number of records in the historical sign inventory file, and so on. Thus, each of these files has a record which simply consists of a number which is equal to the length of the associated file. The number of records in these four files is equal to the number of sectors defined in the particular application.

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For a more detailed and technical description of the permanent files, see the internal documentation which is located in the main program.



SCSIS FUNCTIONAL PROGRAM STRUCTURE



## PROGRAM DESCRIPTION

SCSIS is coded in FORTRAN IV and currently consists of 30 subprogram units and several COMMON areas. Since the permanent files used by the program are direct access, modifications to the source program at installation time are frequently necessary. These modifications are generally limited to the statements which define the characteristics of the direct access files.

The program was developed on an IBM OS/360 utilizing the FORTRAN H-Extended compiler and a DEC VAX/VMS utilizing the VAX-11 FORTRAN V2 compiler.

Figure 1-1 shows the functional structure of SCSIS and Table 1-1 also briefly describes the major function of each of the subprogram units. For detailed information regarding the logic and flow of data, the user is referred to the internal documentation. Each subprogram has all of the logic well documented and is introduced by an explanatory paragraph(s) which contains more information than what appears in this manual.

TABLE 1-1  
LIST OF SUBPROGRAMS

Name	Description
MAIN	Program entry point. Reads command words.
ROUTE	Reads the original network description and constructs the inventory route and reference cross-street files.
SIGN	Reads the original sign inventory and constructs the initial current and historical sign inventories.
LIST	Reads the locational parameters, file description, output options, and optional key words which control the report of the current or historical sign inventory file generated by a LIST command.
LISTSI	Controls the writing of the report requested by a LIST command when a specific sign number is specified.
LISTST	Controls the writing of the report requested by a LIST command when a particular route or route segment is requested.

TABLE 1-1  
LIST OF SUBPROGRAMS  
Continued

Name	Description
LISTSE	Controls the writing of the report requested by a LIST command when an entire sector(s) is requested.
UPDATE	Reads the work order form reflecting an update or deletion of an existing sign, or an addition of a new sign.
UPSIN	Controls the process of updating the permanent current and historical sign inventory files when some characteristic of an existing sign has been modified.
ADD SIN	Controls the process of updating the current and historical sign inventory files when a new sign has been installed.
DELSIN	Controls the process of updating the current and historical sign inventory files when an existing sign has been removed.
MUTCD	Reads the locational parameters, output options, and keywords which control which signs are to be analyzed for condition and conformance to the <u>Manual on Uniform Traffic Control Devices (M.U.T.C.D.)</u> .
MUTCDT	Controls the writing of the report requested by a MUTCD command when a particular inventory route or route segment is specified.
MUTCDE	Controls the writing of the report requested by a MUTCD command when an entire sector(s) is requested.
NETUP	Reads the updated inventory route cross street file information. Controls the process of updating the same files. Can also be used to simply list the contents of these files.
COPYHF	Reads the permanent historical sign inventory file and writes a copy to a magnetic tape for storage. The original permanent historical sign inventory file is effectively destroyed.
LOCATE	Finds the record in the current or historical sign inventory file that matches the requested sign number.
FINDAL	Finds the record in the inventory route file that matches the requested inventory route.
READST	Reads the reference cross street file associated with a specified inventory route.
ADDREC	Shifts records such that new records can be properly inserted. Applicable to all four permanent files associated with each sector.



TABLE 1-1  
LIST OF SUBPROGRAMS  
Continued

Name	Description
ASSNUM	Corrects the value of the assembly numbers of signs which are affected by work performed on other signs mounted on the same pole.
SINE1	Keeps the sign number of the first sign in each block updated as necessary in both the current and historical sign inventories.
DECODE	Converts numeric representations of sign characteristics contained in the current and historical sign inventories to more recognizable abbreviations. Used when printing reports.
MATCH	Determines if current values of specified sign characteristic(s) match values specified as an input qualifier.
MANUAL	Determines if current sign characteristic value(s) of a specified current sign inventory record match the sign characteristics specified for that sign type in the <u>Manual on Uniform Traffic Control Devices (M.U.T.C.D.)</u> .
BLOCK DATA	Defines various constants held in COMMON.
LSUM	Prints a table which lists the total quantity of each sign type corresponding to the output generated by a LIST command.
MSUM	Prints a table which lists the quantity of each sign type, reflective sheeting, post requirements, and estimated material cost corresponding to the deficiencies generated by a MUTCD command.
SIGNHT	Computes the total vertical sign height on one pole. Assists MSUM in determining post requirements.
INITSU	Initializes various counters used in LSUM and MSUM.

In the most general terms, there are seven distinct functions or operations provided by SCSIS. These functions can be correlated to the subprograms identified in Figure 1-1 and Table 1-1 and also can be correlated to the SCSIS commands which are introduced below.

## SCSIS COMMANDS

The user can select which of the seven functions provided in SCSIS to use in a particular run or at a particular point within a job. This is accomplished by inserting a record containing one of the seven SCSIS commands in an appropriate place in the input data file. The function of each of the commands which are available to the SCSIS user are briefly described below.

1. Command: ROUTE

This command prompts SCSIS to read the original street network description and create the inventory route and reference cross street files.

2. Command: SIGN

This command prompts SCSIS to read the original sign inventory data and create the initial current sign inventory files. The historical sign inventory files are also established.

3. Command: NETWORK

This command prompts SCSIS to list and/or update the street network files. Its major function is to facilitate network modifications made necessary by street extensions and new route construction. It can be used to check and change the contents of the street network files at anytime.

4. Command: UPDATE

This command prompts SCSIS to read a coded work order request form and update the contents of a particular sign number in the current sign inventory file. The historical file is also updated to reflect the completed activity. Confirmation of the update actions taken are provided to the user.

5. Command: LIST

This command will prompt SCSIS to list the contents of the current or historical sign inventory file for the specified sector, route, route segment, or sign number. In addition, it is possible to develop listings of signs which have specific sign characteristics. A summary by sign type is also optional.



## 6. Command: MUTCD

This command will prompt SCSIS to examine current sign inventory records and determine if deficiencies or nonconformities exist for most regulatory, warning, and school signs that have MUTCD designations which appear in the manual. Selected guide signs which can be fixed according to size, shape, etc., have also been included. This analysis is limited to checking sign conditions, shape, color, size, visibility, height, reflectivity, and pole condition. If the MUTCD designation of the sign being analyzed is not recognized, then a further limited analysis is performed. The analysis is performed for a specified location and can optionally be limited to specified sign types and deficiencies. A material and cost summary is also optional.

## 7. Command: COPY

This command will prompt SCSIS to create a copy of selected historical sign inventory files on magnetic tape for permanent storage.

The ROUTE and SIGN commands are used to create the initial files and are generally not used again. The NETWORK and UPDATE commands are used to keep the files current and are used frequently as work orders are processed and street network changes occur. Question and answer sessions regarding the sign inventory are possible with use of the LIST and MUTCD commands. These two commands provide the information which can assist the traffic manager in making more informed decisions regarding the traffic sign operation. The COPY command is rarely used and is strictly a utility which has been provided to control historical sign inventory file sizes.

## SUMMARY

This chapter has provided the user with a general understanding of how SCSIS is organized and an introduction to the capabilities SCSIS has to offer. Chapter 3 will discuss how to code the field data so that it can be properly processed by the individual SCSIS commands.

**INTRODUCTION**

This chapter outlines the procedures for gathering the required input data. To establish the initial data base of traffic signs, a comprehensive inventory of the existing traffic control signing must be conducted. The initial data base consists of two major categories of information: (1) Detailed information about the location and characteristics of each traffic sign, and (2) A description of the street network. Both pieces of information are obtained through an initial comprehensive sign inventory.

Once the original sign inventory is taken, provisions must be made to keep the inventory current. A methodology which involves issuing and completing work orders has been developed for this purpose.

The following sections discuss the procedures for conducting the in-field sign inventory and establishing an on-going update process.

**TRAFFIC SIGN INVENTORY PROCEDURES**

An inventory of all in-field traffic signs is a must in establishing a comprehensive traffic sign management system. A sign inventory form has been developed so that the information needed for each sign can be recorded in a clear and uniform manner. This form is shown in Figure 2-1.

The following instructions are provided to aid field personnel in completing the sign inventory forms. If sectors have been established within the City, then it is recommended that the sign inventory data be collected on a sector by sector basis. A separate inventory sheet or series of sheets should be completed for each inventory route in each sector.

**FORM HEADING** -- The heading of the inventory form should be completed using the following instructions:

**ROUTE** -- Record the name or number of the route being inventoried. The route names or numbers for each facility should be determined prior to starting the inventory.



**Sioux City, Iowa**

Inventory Direction: \_\_\_\_\_

End at: \_\_\_\_\_

Inventory Direction: \_\_\_\_\_

2-2

Work Needed

1. None needed
2. Remove sign
3. Remove sign & post
4. Replace sign
5. Replace post
6. Replace sign & post
7. Straighten sign
8. Correct sign height
9. Improve visibility
0. Other

BEGIN AT -- Enter the starting point (intersecting route or other definitive point) of the route segment being inventoried.

END AT -- Enter the ending point (intersecting route or other definitive point) defining the other limit of the route segment being inventoried.

SHEET \_\_\_\_ OF \_\_\_\_ -- Record the number of each sheet and the total number of sheets for the inventory forms completed for each route segment inventoried.

DATE - Enter the date the route was inventoried.

SECTOR -- Record the sector number applicable to the route that is being inventoried, if applicable. Each field crew should carry a sector map with them in order to be sure of the sector limits.

INVENTORY DIRECTION -- The direction of travel of the inventory team along the inventory route should be shown (north, east, south, or west).

The balance of the sign inventory form is to be used for recording the inventory data for individual signs and sign assemblies. Where more than one sign is included in the sign assembly (one or more signs mounted on a post) several lines may be required to record the sign inventory data.

SIGN LOCATION -- Record the location of the sign being inventoried by distance (in feet) from the most recent cross street. If this is not feasible, a cumulative record may be kept with the centerline distance of each intersecting street being noted on a separate line on the inventory form. The inventory team should also record in addition to cross streets, the locations of railroad crossings, bridges, and other topographic features as they are encountered.

DIRECTION FACING -- Record the cardinal direction the sign faces using the codes shown on the form and as follows:

Code

- N - Sign faces north
- S - Sign faces south
- E - Sign faces east
- W - Sign faces west



LATERAL POSITION -- The lateral position of the sign will be measured in feet from a reference point as shown in the codes listed on the form and as shown herein. Generally, the distance would be measured from the nearest edge of pavement or face of curb to the nearest edge of the sign. Indications of left or right in the coding information refer to left or right as the inventory survey team views it and not necessarily as the motorist viewing the sign would see it.

Code

- R - Right side of route
- L - Left side of route
- O - Overhead (This coding will not require a measurement)
- M - Median

NUMBER IN ASSEMBLY -- The number in assembly assigns each sign that is mounted on a common post or mounting assembly a unique number. All signs on a common post or mounting assembly should be inventoried in sequence such that the number in assembly is recorded 1, 2, 3, . . . , 9 (from highest mounted to lowest mounted sign) in the box provided. If the post has signs facing in multiple directions, these signs are numbered in similar fashion starting with the lowest number not already assigned. For example, the numbers 4, 5, 6 could be assigned to the highest, middle, and lowest mounted sign facing east after numbers 1, 2, 3 had been used for signs facing west. Each sign in an assembly will have its inventory data recorded on a separate line of the form.

SIGN LEGEND -- Record the legend of the sign in its entirety in the blank provided. If more space is required use the Remarks column or additional lines of the form. The MUTCD Number box should not be completed in the field. This information will be recorded in the office.

SIGN SHAPE -- Record the shape of the sign using the codes shown on the form and as follows:

Code

- 1 - Diamond
- 2 - Rectangular
- 3 - Square
- 4 - Octagonal
- 5 - Triangular
- 6 - Round
- 7 - Crossbucks
- 8 - Pentagonal
- 9 - Trapezoidal
- 0 - Other

SIGN COLOR -- Record the color of the sign legend and the color of the sign background using the codes shown on the form and as follows:

Code

- 1 - Black on white
- 2 - Black and red on white
- 3 - White on black
- 4 - White on red
- 5 - Red on white
- 6 - Green on white
- 7 - White on green
- 8 - Black on yellow
- 9 - White on blue
- 0 - Other

SIGN SIZE -- Enter the sign size to the nearest inch in the spaces provided for the horizontal and vertical dimensions of the sign. The following criteria should be used for the measurements:

- a) Square and rectangular signs - measure along horizontal and vertical edges.



- b) Diamond shaped signs - measure along sign edge from bottom corner to side corner. Use this dimension for both horizontal and vertical measurements.
- c) Triangular signs - measure along the top of the sign and along the side. Pennant signs should also be measured along the top (long dimension) for horizontal and along the side (short dimension) for vertical dimension.
- d) Shields, pentagonal and octagonal shaped signs - measure in a horizontal and vertical direction; enter the largest dimension in each direction.
- e) Round signs - measure diameter, record horizontal distance only.

All dimensions recorded for signs should be the size of the sign as if the corners were not rounded.

**SIGN CONDITION** - The condition of the sign should be recorded in the box provided using the codes shown on the form and as follows:

Code

- 1 - Good
- 2 - Bent
- 3 - Defaced
- 4 - Faded
- 5 - Not Legible
- 6 - Map Cracked or Peeling
- 7 - Damaged
- 8 - Other

**SIGN REFLECTIVITY** -- Record whether sign is reflective or non-reflective using the codes shown on the form and as follows:

Code

- 1 - Reflective
- 2 - Non-reflective

SIGN VISIBILITY -- The sign visibility should be recorded in the box using the codes shown on the form and as follows:

Code

- 1 - Easily seen
- 2 - Hidden by official sign
- 3 - Hidden by advertising sign
- 4 - Hidden by brush
- 5 - Hidden by tree limbs
- 6 - Hidden by parked vehicles
- 7 - Hidden because of curve
- 8 - Hidden because of hill
- 9 - Other

SIGN HEIGHT -- Record the height (measured in feet, to the nearest one-half foot) from the bottom of the sign to the level of the pavement, roadway edge, or sidewalk.

BACKING MATERIAL -- This information is to be recorded for street name signs only and will be coded on the form as shown below and as indicated on the forms:

Code

- 1 - Aluminum
- 2 - Steel
- 3 - Other

POST DATA -- Data pertaining to sign post or mounting details should be recorded in the boxes provided for the post type and post condition. Use the codes shown on the form and as follows to record this data.

POST TYPE:

Code

- 1 - Steel sign post
- 2 - Wood sign post
- 3 - Street name sign post
- 4 - Utility pole
- 5 - 2" pipe
- 6 - U post
- 7 - Other

## POST CONDITION:

### Code

- 1 - Satisfactory
- 2 - Damaged
- 3 - Needs plumbing
- 4 - Other

WORK NEEDED -- This information can be completed in the office and should not be completed in the field. This information will not be used in subsequent processing using SCSIS. Any information to be recorded should use the codes shown on the form as follows:

### Code

- 1 - None needed
- 2 - Remove sign
- 3 - Remove sign & post
- 4 - Replace sign
- 5 - Replace post
- 6 - Replace sign & post
- 7 - Straighten sign
- 8 - Correct sign height
- 9 - Improve visibility
- 0 - Other

REMARKS/RECOMMENDATIONS -- This column should be used to write brief remarks concerning anything unique about a sign, its mounting, or location which are not adequately covered by the coded data. The Remarks column can also be used for overflow of the sign legend.

As previously mentioned, the sign inventory should be completed on a sector by sector basis. This will establish a uniform method for completing the inventory and will also eliminate potential errors that could occur if routes were inventoried from their beginning to end with no regard for sector limits.

The following guide should be used for inventorying those streets that make up the sector limits: the east-west sector limit streets will be inventoried in the sector to their immediate north and the north-south sector limit streets will be inventoried in the sector to their immediate east.

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It should be noted that when a street name sign is inventoried the following items need not be coded: Shape, Color, Size, Reflectivity, Visibility and Height.



## WORK ORDER REQUEST INSTRUCTIONS

A work order request form will be completed for each sign installation on which work is completed. The work can be identified as being one of three types: (1) Maintenance of an existing sign, (2) Removal of an existing sign, or (3) Installation of a new sign. The information recorded will be of the same nature that was recorded on the sign inventory forms and coded on the sign inventory coding forms.

A work order request form is shown in Figure 2-2. When a work assignment is initiated by the engineering office, their personnel will complete the top portion of the form (non-shaded areas) and the field crew will complete the bottom portion of the form (shaded areas). The field crew will complete both portions of the form (if the information is known) on those occasions when maintenance inspections reveal a problem that the field crew can remedy immediately without having to wait for a work order from the engineering office.

The numbers in parentheses that follow each item on the work order form refer to the eighty blocks at the bottom of the page which will be completed by office personnel in accordance with the coding instructions explained in Chapter 3. The work order request form should be completed utilizing the following instructions.

**CITIZEN REQUEST #** - Record the citizen request number that has been assigned to this work order (if applicable).

**DATE** - The date that the work order was initiated should be recorded in this space.

**ORDERED BY** - Record the name of the person ordering the work to be completed.

**ASSIGNED TO** - The crew leader who has been assigned this job should have his name recorded in this space.

**APPROVED BY** - Record the name of the person who approves this work order.

**INVENTORY DIRECTION** - Record the direction of travel (north or east) whichever is applicable.

**PUBLIC WORKS DEPARTMENT**  
**Parking and Traffic Services Division**  
**Work Order Request**  
 Citizen Request # \_\_\_\_\_

**DATE:** \_\_\_\_\_ **ORDERED BY:** \_\_\_\_\_

**ASSIGNED TO:** \_\_\_\_\_ **APPROVED BY:** \_\_\_\_\_

Inventory Direction: (4) \_\_\_\_\_ . Sign #: (5-9) \_\_\_\_\_ .

Location: On (10-15) \_\_\_\_\_ , (16-19) \_\_\_\_\_ feet  
 \_\_\_\_\_ (north, east, south, or west) of (20-25) \_\_\_\_\_ .

Sign is facing (26) \_\_\_\_\_ , (27-28) \_\_\_\_\_ ft. from edge of roadway/face of curb.

Sign is on the (29) \_\_\_\_\_ side of roadway. Sign is # (30) \_\_\_\_\_ in the assembly.

Sign Legend: \_\_\_\_\_ .

Work Needed & Remarks: \_\_\_\_\_

Shape: (44) \_\_\_\_\_ . Colors (45) \_\_\_\_\_ on \_\_\_\_\_ .

Size: (46-47) \_\_\_\_\_ " x (48-49) \_\_\_\_\_ " . Condition: (50) \_\_\_\_\_ .

Reflectivity: (51) \_\_\_\_\_ . Visibility: (52) \_\_\_\_\_ .

Height: (53-54) \_\_\_\_\_ feet. Backing Material: (55) \_\_\_\_\_ .

Post Type: (56) \_\_\_\_\_ . Post Condition: (57) \_\_\_\_\_ .

Work Completed: (73) \_\_\_\_\_ .

Reason For Work: (74) \_\_\_\_\_ .

Date of Work: (75-76) \_\_\_\_\_ (77-78) \_\_\_\_\_ (79-80) \_\_\_\_\_ .

Time: \_\_\_\_\_ Month \_\_\_\_\_ Day \_\_\_\_\_ Year \_\_\_\_\_ .

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----



**SIGN #** - The sign number that has been designated for the sign in question should be recorded here. As the City's sign upgrading program progresses, these sign numbers will be stenciled to each sign. This number is not related to the MUTCD number.

**LOCATION** - In the next four spaces provided record the following information: the name of the street on which the sign is located; the distance (in feet) that the sign is located from the cross street; the direction (north or east) that the sign is located from the cross street; and the name of the cross street.

**SIGN IS FACING** - In these two spaces indicate the direction that the sign is facing and the distance between the edge of the sign and edge of the pavement or face of the curb.

**SIDE OF ROADWAY** - Record left or right in this space indicating the side of the road that the sign is located as the inventory team or field crew (whichever is applicable) views it while traveling in the "INVENTORY DIRECTION" recorded previously.

**NUMBER IN ASSEMBLY** - The number in assembly assigns each sign that is mounted on a common post or mounting assembly a unique number. The information should be recorded in the same manner as instructed for the sign inventory form.

**SIGN LEGEND** - In this space record the legend of the sign in its entirety.

**WORK NEEDED & REMARKS** - Use these spaces to indicate what work needs to be accomplished to complete the work order. Write brief remarks concerning anything unique about the sign, its location, or its mounting which are not adequately covered by the other data on the work order.

The following information refers to the replacement sign and/or post and will therefore always be supplied by the field crew.

**SHAPE** - Record the shape of the sign in this space - diamond, square, pentagonal, etc. If unsure of the wording, sketch the sign's shape.



COLORS - In these spaces indicate the color of the sign's legend and the color of the sign's background. Example: a stop sign is white on red.

SIZE - In these two spaces record the horizontal sign dimension (to the nearest inch) and the vertical sign dimension (to the nearest inch). The following criteria should be used for these measurements:

- a) Square and rectangular signs - measure along horizontal and vertical edges.
- b) Diamond shaped signs - measure along sign edge from bottom corner to side corner. Use this dimension for both horizontal and vertical measurements.
- c) Triangular signs - measure along the top of the sign and along the side. Pennant signs should also be measured along the top (long dimension) for horizontal and along the side (short dimension) for vertical dimension.
- d) Shields, pentagonal and octagonal shaped signs - measure in a horizontal and vertical direction; enter the largest dimension in each direction.
- e) Round signs - measure diameter, record horizontal distance only.

All dimensions recorded for signs should be the size of the sign as if the corners were not rounded.

CONDITION - Record the condition of the sign in this space. Examples: good, bent, peeling, etc.

REFLECTIVITY - In this space indicate whether or not the sign is reflective by recording yes or no.

VISIBILITY - Indicate the sign's visibility in the space provided. Examples: easily seen, hidden by advertising sign, hidden by tree limbs, hidden by parked car, etc.

HEIGHT - Record the height (in feet to the nearest one-half foot) from the bottom of the sign to the level of the pavement or roadway edge or sidewalk - whichever condition applies. If the sign is overhead, record its height to the nearest foot.

BACKING MATERIAL - Record this information for street name signs only. Examples: aluminum, steel, etc.

POST TYPE - In this space indicate the type of post used. Examples: U-post, 2" pipe, utility pole, signal pole, etc.

POST CONDITION - Record the condition of the post. Examples: satisfactory, damaged, etc.

WORK COMPLETED - In this space, the field crew should record the work it completed. Examples: replaced sign, replaced post, installed new sign and post, etc.

REASON FOR WORK - Record the reason for which the work was completed. Examples: vandalism, damaged by accident, rusty, faded, non-reflective, not legible, etc.

DATE OF WORK - In these three spaces record the month, day, and year on which the work was accomplished.

## **SUMMARY**

The information gathered in accordance with the instructions provided in this chapter will need to be transcribed onto coding forms. No additional field data is required to operate and maintain the sign information in an up to date fashion. The following chapter provides instructions on how to properly code the information gathered in the field and how to use SCSIS in general.

## INTRODUCTION

The objective of this chapter is to provide the user with the necessary instructions that will enable him to transcribe the field data into acceptable form and that will explain how to use the capabilities and options that exist within SCSIS.

Command Syntax discusses how to access the seven major functional capabilities of SCSIS and how to control the program flow in general. Each command has a certain number of items that need to be identified before processing can begin. This information is passed to the program through Parameter cards.

Coding instructions for the Parameter cards are given separately for each command. Examples of proper application of each of the commands appear in this chapter also.

## COMMAND SYNTAX

To prompt one of the various capabilities of SCSIS, an input record is coded with a command which identifies the desired processing category. Once a command is recognized, the program will then expect a series of Parameter cards followed by a Program Terminator card. After the Program Terminator card is processed, either another command can be issued or the program can be normally terminated.

### Command Card

A command is a mnemonic consisting of a character string which must appear on the Command card. The Command card is always followed by at least one Parameter card.

There are seven SCSIS commands which are recognized by the program. The necessary coding of the Command card is described as follows.



<u>Field</u>	<u>Columns</u>	<u>Description</u>
<u>1</u>	<u>1-7</u>	SCSIS Command, left-justified. Code one of the following: ROUTE -- Build original street network file. SIGN -- Build original sign inventory file. NETWORK -- Update street network file. UPDATE -- Update sign inventory file. LIST -- List selected records from sign inventory file. MUTCD -- Compare sign characteristic fields of selected records from the current sign inventory file with a set of standard values. COPY -- Copy historical sign inventory file onto magnetic tape.

A command can be properly identified with as little as the first two characters of the mnemonic.

#### Command Terminator Card

This card must be present to exit normally from a particular command. It appears after a complete series of Parameter cards and is always immediately followed by a Command card or a Program Terminator card. In any program run, there is always a one-to-one correspondence between the Command cards and the Command Terminator cards.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
<u>1</u>	<u>1-2</u>	Code the following: 99 - Terminate current command

The documentation of the Command Terminator card is repeated in the Parameter Card Syntax section so that the location of this card relative to the other Parameter cards could be identified for each command.

#### Program Terminator Card

The Program Terminator card is always the last record of the data file which is input to SCSIS. It stops execution of SCSIS and causes a normal exit to job control.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
<u>1</u>	<u>1-4</u>	Code the following: EOD $\backslash$ -- End of data file

## PARAMETER CARD SYNTAX

The series of cards which follow each Command card are called Parameter cards. The Parameter cards are used to transmit field data and to indicate the specific action that is desired from an individual command request.

The type and number of these cards vary greatly among the different commands. The following discussion explains and illustrates Parameter card preparation for each SCSIS.

### 1. Command: ROUTE

The ROUTE command is used only to develop the initial inventory network description files, which consist of two distinct files for each sector: (1) the inventory route file, and (2) the reference cross street file. When the ROUTE command is used, the network data for an entire sector must be input since any network information previously stored for that sector is effectively destroyed.

The ROUTE command is not used to update network files. This can be done easily using the NETWORK command which can also be used to list the contents of the network files. This command is also described later in this chapter.

The field information necessary to describe the street network is obtained from the sign inventory forms. A special coding form shown in Figure 3-1 has been developed to aid in coding the street network information. The coding form can be used to complete the Inventory Route cards, Reference Cross Street cards, Block Length cards, and First Sign Number cards. A discussion of each ROUTE command parameter card type follows.

#### Sector Request Card

This card identifies which street network files are to be created.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Number of the first sector whose street network files are to be created, right-justified.
2	4-5	Number of the last sector whose street network files are to be created, right-justified.



Field 1 is the only field in the Sector Request card which must be coded. The value coded is equal to the smallest sector number which is to be processed in a particular ROUTE request. Sectors will be processed in an ascending sequential order up to and including the sector number coded in field 2. If field 2 is left blank, then its value is set equal to the value set in field 1 and thus only one sector would be processed. If field 2 is coded, it must have a value greater than or equal to the value coded in field 1, or a fatal execution error will occur.

#### Inventory Route Card

Placed immediately after the Sector Request card, the inventory route cards must appear in alphabetical order according to the six character street name code which has been assigned to each route inventoried. The remaining parameter cards follow each Inventory Route card and contain descriptive information about the particular inventory route which they follow. There is a maximum of 200 inventory routes that can be coded for each sector.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Sector number
2	3-8	Inventory route name, left-justified
3	14-15	Number of reference cross streets for this inventory route

#### Reference Cross Street Card

The street name codes of the streets that cross the inventory route appear on this card. There are eight fields on this card and multiple cards may be used as necessary to give a complete description. These cards must immediately follow the Inventory Route card of the route which it is describing. A maximum of 50 cross streets can be coded for a particular inventory route in a single sector.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1-8	1-6, 11-16, ..., 71-76	Reference cross street name, left-justified

Field 1 is the southernmost or westernmost reference cross street of the north-south or east-west inventory routes, respectively. Subsequent fields represent the streets in the order they are crossed as the inventory proceeds north or east. Within each inventory route, each cross street must have a unique code. If unusual network configurations exist, this requirement can lead to variances of the codes given to the affected cross street. This case, as well as others, will be further explained by way of example in Chapter 4.

#### Block Length Card

The distance between each reference cross street is entered on the Block Length card. There are 16 fields on each card and the data must appear in the same order as the corresponding street name codes which appear on the Reference Cross Street card. Additional cards must appear in sequence if more than 16 cross streets exist. Up to 49 block lengths can be recorded for a particular route.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1-16	1-5, 6-10, ..., 76-80	Distance, in feet, between each reference cross street, right-justified integer

There will always be one less distance coded on the Block Length card than the number of reference cross streets coded. If an inventory route is discontinuous within a sector then a distance of zero (0) must be coded to represent the distance between the last cross street of the first route segment and the beginning cross street of the second segment.

#### First Sign Number Card

The sign number assigned to the southernmost (north-south streets) or westernmost (east-west streets) sign inventoried for each route subsegment (block) is coded on this card. This information is ordered exactly like the distances on the Block Length card. If no sign is inventoried for the entire block length or if a zero (0) is coded for the block length, code a one (1) in the corresponding field.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1-16	1-5, 6-10, ..., 76-80	Sign number, right-justified integer



### Separator Card

This card must be placed at the end of the street network information coded for each sector.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Code the following: 98 - End of street network data for the sector currently being processed

### Terminator Card

This card is necessary to terminate processing under the ROUTE command. It appears immediately after the final Separator card in street network data deck.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Code the following: 99 - Terminate ROUTE command

Program control is returned to the main program of SCSIS after which another command can be accepted or the program terminated.

## 2. Command: SIGN

The initial current sign inventory files are simply copies of the original sign inventory information. The SIGN command is used to read the coded, original sign information and create the current sign inventory files. The historical sign inventory files are also initialized.

Once the original sign inventory information has been properly coded and accepted into the system by way of a SIGN command, the SIGN command will not normally need to be used again for an inventory system. (See the UPDATE command for procedures on updating the sign inventory files.)

A special form has also been developed to aid in the coding of sign inventory information. This form appears in Figure 3-2. A discussion of each parameter card type follows.

### Sector Request Card

This card identifies which sign inventory files are to be created.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Number of the first sector whose sign inventory files are to be created, right-justified.
2	4-5	Number of the last sector whose sign inventory files are to be created, right-justified.

Field 1 is the only field in the Sector Request card which must be coded. The value coded is equal to the smallest sector number which is to be processed in a particular SIGN request. Sectors will be processed in an ascending sequential order up to and including the sector number coded in field 2. If field 2 is left blank, then its value is set equal to the value set in field 1 and thus only one sector would be processed. If field 2 is coded, it must have a value greater than or equal to the value coded in field 1, or a fatal execution error will occur.

### Sign Inventory Card

The sign inventory information collected in the field and noted on the sign inventory form needs to be transcribed before SCSIS can be used to process the information. A special form, called the sign inventory coding form, has been developed to aid in the proper coding of the original sign inventory information. In the description of each field, the underlined words correspond to the headings that appear on the coding form.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1	<u>Card Number.</u> Code one of the following: 1 -- Original inventory (All signs except street name signs) 2 -- Update of an existing sign installation (Not applicable to the original inventory) 3 -- Original inventory (Street name signs only) 4 -- New sign installation (Not applicable to the original inventory) 5 -- Removal of an existing sign installation (Not applicable to the original inventory)
2	2-3	<u>Sector number</u> of the route inventoried, right-justified.
3	4	<u>Inventory Direction.</u> Code one of the following: N -- North S -- South E -- East W -- West



<u>Field</u>	<u>Columns</u>	<u>Description</u>
4	5-9	<u>Sign Number</u> assigned to each individual sign, right-justified. Range is 1-32,760. Sign number must be unique in the sector and such that the number assigned to the southernmost or westernmost sign in each block has the smallest sign number in that block. (See the explanation of First Sign Number card used in the ROUTE command). Signs north and east of this sign would be assigned numbers in ascending order as they are located. This will permit a data base of sign records which are arranged by sign number in sequential ascending order for each route segment
5	10-15	<u>Inventory Route</u> name which has been assigned to the street being inventoried, left-justified. A master list of city street codes identify the proper character string for each street.
6	16-19	<u>Distance</u> (in feet) from the reference cross street to the sign location, right-justified integer value.
7	20-25	<u>Reference Cross Street</u> name which has been assigned to the street last crossed, left-justified. In general, the proper character string is identified by referring to the master list of city street codes.
8	26	<u>Direction Facing</u> . Code one of the following: N -- Sign faces north S -- Sign faces south E -- Sign faces east W -- Sign faces west U -- Sign faces north and south A -- Sign faces east and west
9	27-28	<u>Distance</u> (in feet) from the reference point indicated in field 10 to the sign location measured laterally, right-justified integer value. Coding not necessary for overhead signs
10	29	<u>Side of Roadway</u> from which the lateral distance is measured. Code one of the following: R -- Right edge of pavement or face of curb. L -- Left edge of pavement or face of curb. O -- Overhead M -- Median
11	30	<u>Number in Assembly</u> of sign being recorded. This value equals one (1) if it is a single sign installation or the uppermost sign on a post which displays more than one sign. Sequentially larger values are recorded for signs appearing lower on the post.

<u>Field</u> 12	<u>Columns</u> 31-43	<u>Description</u>
		<u>MUTCD Number</u> (based on the designations which appear in the <u>Manual on Uniform Traffic Control Devices</u> or otherwise established for each sign type that appears in the inventory) assigned to sign, left-justified with no embedded blank characters. All signs on a particular post must be recorded for only one inventory route. See Appendix A for a list of MUTCD numbers and corresponding legends.
13	44	<u>Sign Shape</u> . Code one of the following: 1 -- Diamond 2 -- Rectangular 3 -- Square 4 -- Octagonal 5 -- Triangular 6 -- Round 7 -- Crossbuck 8 -- Pentagonal 9 -- Trapezoidal 0 -- Other (Use remarks, field 24)
14	45	<u>Sign Color</u> . Code one of the following: 1 -- Black on white 2 -- Black and red on white 3 -- White on black 4 -- White on red 5 -- Red on white 6 -- Green on white 7 -- White on green 8 -- Black on yellow 9 -- White on blue 0 -- Other (Use remarks, field 24)
15	46-47	<u>Horizontal</u> dimension (in inches) of the sign being recorded, right-justified integer value.
16	48-49	<u>Vertical</u> dimension (in inches) of the sign being recorded, right-justified integer value.
17	50	<u>Sign Condition</u> . Code one of the following: 1 -- Good 2 -- Bent 3 -- Defaced 4 -- Faded 5 -- Not legible 6 -- Map cracked, peeling 7 -- Damaged 8 -- Rusty 9 -- Combination 0 -- Other (Use remarks, field 24)
18	51	<u>Sign Reflectivity</u> . Code one of the following: 1 -- Reflective 2 -- Non-reflective



<u>Field</u>	<u>Columns</u>	<u>Description</u>
19	52	<u>Sign Visibility.</u> Code one of the following: 1 -- Easily seen 2 -- Hidden by official sign 3 -- Hidden by advertising sign 4 -- Hidden by brush 5 -- Hidden by tree limbs 6 -- Hidden by parked vehicles 7 -- Hidden because of curve 8 -- Hidden because of hill 9 -- Other (Use remarks, field 24)
20	53-54	<u>Sign Height</u> (in feet x 10) measured to bottom of sign, right-justified integer value. (A sign height of 6.5 feet would be coded 65. If sign height is greater than or equal to 10 feet, code 99 and use remarks, field 24)
21	55	<u>Backing Material.</u> For use on street name signs only. Code one of the following: 1 -- Aluminum 2 -- Steel 3 -- Other (Use remarks, field 24)
22	56	<u>Post Type.</u> Code one of the following: 1 -- Steel sign post 2 -- Wood sign post 3 -- Street name sign post 4 -- Utility pole 5 -- 2" pipe 6 -- U post 7 -- Signal pole 8 -- Other (Use remarks, field 24)
23	57	<u>Post Condition.</u> Code one of the following: 1 -- Good 2 -- Damaged 3 -- Needs plumbing 4 -- Other (Use remarks, field 24)
24	58-72	<u>Remarks/Special Sign Message.</u> No restrictions on the information within this field.
25	73	<u>Sign Change</u> describes the type of work completed. Not applicable to the original inventory. Code one of the following: 1 -- Relocate sign 2 -- Remove sign 3 -- Remove sign and post 4 -- Replace sign 5 -- Replace post 6 -- Replace sign and post 7 -- Reset sign or post 8 -- Install new sign 9 -- Install new sign and post 0 -- Other (Use remarks, field 24)

<u>Field</u>	<u>Columns</u>	<u>Description</u>
26	74	<u>Reason for Change.</u> Reasons for work described in field 25. Not applicable to original inventory. Code one of the following: 1 -- No longer needed 2 -- Vandalism 3 -- Damaged by accident 4 -- Rusty, bent, defaced, etc. 5 -- Faded 6 -- Loss of reflectivity 7 -- Not legible 8 -- Nonconforming to standards 9 -- Other (Use remarks, field 24)
27	75-76	<u>Month.</u> Code an integer value from 1-12 to represent month in which the sign was originally inventoried or the work order was completed, right-justified.
28	77-78	<u>Day.</u> As above to represent day of the month.
29	79-80	<u>Year.</u> As above to represent the last two digits of the year.

The sign inventory cards immediately follow the Sector Request card. The deck of sign inventory cards for each sector must be arranged such that the sign numbers are in ascending order. When more than one sector is processed in a single issuance of the SIGN command, the data for the smallest sector number is read first, followed by the remaining sectors in ascending order up to the highest sector number specified.

Currently there is a maximum of 4,000 sign records which can be read for each sector.

#### Terminator Card

This card is necessary to terminate processing under the SIGN command and is also placed at the end of the information coded for each sector.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Code the following: 99 - End of sign inventory data for the sector currently being processed. Also terminates SIGN command if the sector currently being processed is the last sector scheduled for processing.

Program control is returned to the main program of SCSIS after which another command can be accepted or the program terminated if the last sector to be processed has been processed. Otherwise, the sign inventory data for the next sector will be processed.



### 3. Command: NETWORK

The NETWORK command is used for listing and/or updating the contents of the inventory route files and the reference cross street files.

The most frequent use of this command will be to list the file contents so that a current listing of the street network is always available for inspection. This listing can be a handy reference for checking inventory route and reference cross street name codes and other data contained in the files.

There will be occasions when existing routes are extended or otherwise modified and when new routes are constructed. The changes can easily be incorporated in the street network files through use of the NETWORK command.

A maximum of 20 separate NETWORK commands can be implied with a single issuance of a NETWORK command. This is accomplished by coding complete groupings of the NETWORK parameter cards shown below. The parameter cards which are associated with the NETWORK command are discussed in the following paragraphs.

#### Mode Selection Card

This card indicates the desired action to be taken in a particular network request. It must be present to specify how to handle the data which appears on the location card and the other parameter cards that may follow.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1	Code one of the following: 0 -- List only 2 -- Update file contents of existing route 3 -- Add new route to file

Listings of the street network file are produced by sector only. The listing is formatted for legibility purposes but otherwise it is merely a copy of all the information contained in both the inventory route files and reference cross street files. See Chapter 4 for a more detailed description of the output generated by the NETWORK command.

Any information associated with an existing route which is contained in the street network files may be modified except for the name of the route itself. If a 2 is coded in field 1 and the inventory route coded in field 2 of the Inventory Route card is not found, program execution will terminate. Similarly, program execution will terminate if a 3 is coded in field 1 and the specified route is found to already exist in the inventory route file. A listing is automatically generated for each sector in which there has been a route update or addition at the time the NETWORK command is normally terminated.

#### Inventory Route Card

This card must appear after each Mode Selection card. It identifies the sector and route (if applicable) which is to be listed and/or updated.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Sector number, right-justified.
2	4-9	Inventory route name of the route which is to be updated or added in the inventory route file, left-justified.
3	11-12	Number of reference cross streets associated with the inventory route coded in field 2. This number also equals the number of fields that should be in the Reference Cross Street card(s) which follows. This number must not be greater than 50.

If only a listing of the street network files for a sector is desired in a particular request, then only field 1 need be coded.

The following cards (Reference Cross Street, Block Length, First Sign Number-Current File, First Sign Number-Historical File) are used to indicate changes to be made in the reference cross street files. As such, these cards should not be included if a 0 is coded in field 1 of the Mode Selection card. For additional discussion on coding these cards, please refer to the instruction given for the SIGN command.



### Reference Cross Street Card

This card contains the names of the streets which cross the inventory route coded in the Inventory Route card. The cross streets coded on this card will replace the cross street names which were previously coded for the route in an update process. If a new route is added, then the data on this card will be inserted into the proper record positions within the reference cross street file.

The coding instructions for this card are identical to those which apply to the coding of the Reference Cross Street card used with the SIGN command. The input format is also the same, however, it is repeated below for convenience.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1-8	1-6, 11-16, ..., 71-76	Reference cross street name, left-justified.

### Block Length Card

The distance between each reference cross street is entered on this card. Any original values can be changed as necessary.

The coding instructions for this card are identical to those which apply to the coding of the Block Length card used with the SIGN command. The input format is also the same, however, it is repeated below.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1-16	1-5, 6-10, ..., 76-80	Distance, in feet, between each reference cross, right-justified integer.

### First Sign Number Card - Current File

This sign number currently assigned to the southernmost (north-south streets) or westernmost (east-west streets) sign inventoried for each route subsegment (block) in the current sign inventory file is coded on this card.

The coding instructions for this card are identical to those which apply to the coding of the First Sign Number card used with the SIGN command. The input format is also the same, however, it is repeated below.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1-16	1-5, 6-10, ..., 76-80	Sign number, right-justified integer.

#### First Sign Number Card - Historical File

The sign number currently assigned to the southernmost (north-south streets) or easternmost (east-west streets) sign inventoried for each route subsegment (block) in the historical sign inventory file is coded on this card. This number is available to the user by using the NETWORK command to list the sector of interest.

The coding instructions for this card are identical to those which apply to the coding of the First Sign Number card used in the SIGN command. If there has been no sign update activity (processed work orders) for an entire block length or if a zero (0) is coded for the block length, code a one (1) in the appropriate field.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1-16	1-5, 6-10, ..., 76-80	Sign number, right-justified integer.

#### Terminator Card

This card is necessary to terminate processing under the NETWORK demand. It appears after the last First Sign Number Card - Historical File if the street network files were updated. If only a listing was produced in the request, then the Terminator card is placed after the Inventory Route card.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Code the following: 99 - Terminate NETWORK command

Program control is returned to the main program of SCSIS after which other command can be accepted or the program terminated.



#### 4. Command: UPDATE

Completed work order forms provide the data which is used to keep the current and historical sign inventory files up to date. The UPDATE command is used to process the coded portion of the completed work order.

Work orders are issued to direct and describe the type of work that is to take place at an individual sign location (i.e., the sign number is specified). Likewise, the coding reflects any resultant changes in a sign's characteristics, new sign installations, or sign removals.

The parameter cards and the coding instructions for the UPDATE command are nearly identical to those used for the SIGN command. The discussion below highlights the differences and explains in more detail the actions the UPDATE command can cause.

##### Work Order Card

The coding instructions for this parameter card are identical to those given for preparation of the Sign Inventory card when using the SIGN command. To aid in the proper coding of the work order information, either the boxes at the bottom of the work order form or the sign inventory forms may be used.

The following paragraphs discuss fields of the Work Order card which deserve special explanation in the context of the UPDATE command. For detailed coding instructions of the Work Order card, see the instructions given for the Sign Inventory card mentioned above.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1	Card Number. Code one of the following: 2 -- Update of an existing sign installation. 4 -- New sign installation. 5 -- Removal of an existing sign installation.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
2-5, 7	n.a.	Must be coded the same as in the original inventory if field 1 is coded with a 2 or a 5. If field 1 is coded with a 4, this information will be original. New sign numbers, field 4 must be assigned consistent with the instructions governing the assignment of sign numbers to the original inventory.
6, 8-10	n.a.	These values can be modified when a sign's location or orientation has been changed, providing that the relative order of the signs along the inventory route does not change. In the case where the relative order is affected by sign relocation the relocated sign is first deleted from the system and then added to the system with a new sign number assigned.
11-24	n.a.	Code current information including values which have not changed. (Note: The assembly number, field 11, is changed automatically for other signs which may be affected by adding or deleting signs from a post which has multiple signs.)
25	73	Sign change describes the type of work completed. Code one of the following: 1 -- Relocate sign 2 -- Remove sign 3 -- Remove sign and post 4 -- Replace sign 5 -- Replace post 6 -- Replace sign and post 7 -- Reset sign or post 8 -- Install new sign 9 -- Install new sign and post 0 -- Other (Use remarks, field 24)
26	74	Reason for Change. Reason for the work described in field 25. Code one of the following: 1 -- No longer needed 2 -- Vandalism 3 -- Damaged by accident 4 -- Rusty, bent, defaced, etc. 5 -- Faded 6 -- Loss of reflectivity 7 -- Not legible 8 -- Nonconformity to standards 9 -- Other (Use remarks, field 24)
27-29	n.a.	Code date the work order was completed.



Up to 500 work order cards can be processed with a single UPDATE command. If it is desired to make additional updates, terminate the command and issue another UPDATE command.

For most systems, Work Order cards do not have to be in any particular sequence. However, more efficient processing will be realized if the Work Order cards are grouped according to sector.

#### Terminator Card

This card is necessary to terminate processing under the UPDATE command. It appears after the final Work Order card.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Code the following: 99 - Terminate UPDATE command.

Program control is returned to the main program of SCSIS after which another command can be accepted or the program terminated.

#### 5. Command: LIST

The LIST command is used to list all or selected portions of the current or historical sign inventory data base. The user has extensive control over the listing which is prepared so that concise reports can be developed. Detailed sign record printouts and/or summary tables are available.

The following paragraphs describe the coding requirements of the LIST command parameter cards. Except for Key Cards, each of the parameter cards must be coded and they must appear in the order in which they are presented below. A maximum of 100 separate LIST requests can be implied with a single issuance of the LIST command. This is accomplished by coding complete groupings of the LIST parameter cards shown below.

### Location Card

Under the LIST command, several levels of aggregation are available in terms of specifying the sign location or area which is of interest. The entire sign data base can be processed, a single sector or group of sectors, a single inventory route, a single block or group of blocks of a specified inventory route, or a single sign. The Location card is required and immediately follows the LIST command.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Number of the first sector which is to be processed, right-justified
2	4-5	Number of the last sector which is to be processed, right-justified
3	7-12	Inventory route name, left-justified
4	14-19	Beginning reference cross street name (south or west end), left-justified
5	21-26	Ending reference cross street name (north or east end), left-justified
6	28-32	Sign number

Field 1 is the only field in the Location card which must be coded. The value coded is equal to the smallest sector number which is to be processed in a particular LIST request. Sectors will be processed in an ascending sequential order up to and including the sector number coded in field 2. If field 2 is left blank, then its value is set equal to the value set in field 1 and thus only one sector would be processed. If field 2 is coded, it must have a value greater than or equal to the value coded in field 1, or a fatal execution error will occur.

If sign information is desired only along a particular inventory route, then the name of that route is coded in field 3. Program execution will terminate if the requested route cannot be found in the route file. When an inventory route is coded in field 3, then it is possible to further limit the listing to a particular segment (continuous group of blocks) by coding names of reference cross streets in fields 4 and 5.



In coding fields 4 and 5, the cross streets must be referenced such that the street name coded in field 4 defines the south or west end of the requested route segment and the street name coded in field 5 defines the north or east end. Program execution will be terminated if this convention is violated or a cross-street name is improperly coded.

Field 5 is coded when sign information for only a particular sign number is desired. Fields 3, 4, and 5 should be left blank when field 6 is coded. Field 2 can also be left blank or can be coded with the same sector number that appears in field 1. Similarly, field 6 should be left blank if sign information along an inventory route is desired. Should a nonexistent sign number be specified in field 6, execution will be terminated.

#### File Request Card

Two sets of direct access files are subject to listing through use of the LIST command. This card is required to identify whether a current sign inventory file or a historical sign inventory file is desired.

<u>Field</u>	<u>Column</u>	<u>Description</u>
<u>1</u>	<u>1-2</u>	The desired sign inventory file type. Code one of the following: CU - Current sign inventory file HI - Historical sign inventory file

#### Options Card

This card must be used to indicate any optional keys that may be used to control the type and characteristics of the signs which may be listed, and to specify which output options are desired.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
<u>1</u>	<u>1</u>	Optional listing of all eligible signs record by record. Code one of the following: 0 - List all eligible signs 1 - No individual sign listing desired

<u>Field</u>	<u>Columns</u>	<u>Description</u>
2	2	Optional summary table of sign quantities by sign type (MUTCD designation). Code one of the following: 0 - Provide summary table 1 - Do not provide summary table
3	3	Indicates whether or not any key cards will follow the Options Card in the input stream. Code one of the following: 0 - No key cards 1 - One or more key cards follow
4	4	Indicates whether a group of signs or only a specific sign type (refer to field 5) may be listed. Code one of the following: 0 - Process all signs that have the MUTCD designation specified in field 5 in common 1 - Process all signs that exactly match the MUTCD sign type specified in field 5
5	5-17	Specifies sign type or sign group which is to be eligible for listing. Code the MUTCD number or designation that is desired, left-justified.

For further detail on the information provided in the optional outputs referred to in fields 1 and 2, see the example output reports in Chapter 4. The option in field 3 will be clarified below in the discussion on the Key card. Together, fields 4 and 5 define which MUTCD number will be eligible for listing.

If a one (1) is coded in field 4, then the thirteen character sign type coded in the sign inventory record being examined must match character for character the sign type coded in field 5. If a zero (0) is coded in field 4, then only the characters which precede (to the left of) the first blank character must be matched by the sign record to be eligible for listing. No embedded blanks are allowed in field 5.

#### Key Card

The produced listing can also be limited to signs which have a certain characteristic or set of characteristics specifiable by the user. For the LIST requests which do have characteristics keyed, the sign record being examined must match the values of characteristics coded on the Key card to be eligible for listing.



<u>Field</u>	<u>Columns</u>	<u>Description</u>
<u>1</u>	<u>1-4</u>	A four character mnemonic which identifies the key. Code one of the following: CARD - Card number SHAP - Sign shape COLO - Sign color HORI - Horizontal dimension of sign VERT - Vertical dimension of sign COND - Sign condition REFL - Sign reflectivity VISI - Sign visibility HEIG - Sign mounting height BACK - Backing material POTY - Pole type POCO - Pole condition CHAN - Sign change code REAS - Reason for sign change MO <b>bb</b> - Month DAY <b>b</b> - Day YEAR - Year
2	6-7	Value of key, right-justified. This number is chosen in accordance with the coding instructions for each characteristic in the original sign inventory.

Any number of keys up to the total available can be specified, one per Key card. To end a series of key specifications, enter the characters EN**D****b** in field 1. This will always be the last Key card.

#### Terminator Card

This card is necessary to terminate processing under the LIST command. It appears after the final Key card, if any Key cards are utilized in the final LIST request. Otherwise, it will appear after an Options card.

<u>Fields</u>	<u>Columns</u>	<u>Description</u>
<u>1</u>	<u>1-2</u>	Code the following: 99 - Terminate LIST command

Program control is returned to the main program of SCSIS after which another command can be accepted or the program terminated.

## 6. Command: MUTCD

SCSIS has the capability to scan current sign inventory records and determine if deficiencies or nonconformities exist for most regulatory, warning, and school signs that have MUTCD designations which appear in the manual. The analysis which is performed checks sign condition, shape, color, size, visibility, height, and reflectivity, as well as pole condition. If the MUTCD designation of the sign being analyzed is not recognized, then a further limited analysis is performed. See table A-2 in Appendix A for a complete description of the analysis procedure and the characteristics which have been established for each sign type.

The MUTCD command is used to submit all or selected portions of the current sign inventory data base to the analysis described above. Detailed sign record printouts of the sign records which are found to be deficient or nonconforming may be prepared. A summary table of signing materials and cost estimates is also optionally provided. Appendix B contains the sign material costs which are embedded in the program.

A maximum of 100 separate MUTCD requests can be implied by coding complete groupings of the MUTCD parameter cards. The MUTCD command parameter cards are described in the following paragraphs.

### Location Card

Functioning exactly like the LIST command, several levels of aggregation in terms of the sign location can be specified. The entire current sign inventory can be processed, a single sector or group of sectors, a single inventory route, a single block or group of blocks of a specified inventory route, or a single sign. The Location card is required and immediately follows the MUTCD command.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Number of the first sector which is to be processed, right-justified
2	4-5	Number of the last sector which is to be processed, right-justified
3	7-12	Inventory route name, left-justified



<u>Field</u>	<u>Columns</u>	<u>Description</u>
4	14-19	Beginning reference cross street name (south or west end), left-justified
5	21-26	Ending reference cross street name (north or east end), left-justified
6	28-32	Sign number

For a detailed explanation of how the data on the Location card is interpreted, please see the documentation prepared for the LIST command.

#### Options Card

This card must be used to indicate any optional keys that may be used to control the type and characteristics of the signs which may be listed, and to specify which output options are desired. It is used in much the same way as the Options card which appears after a LIST command.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1	Optional listing of all eligible signs record by record. Code one of the following: 0 - List all eligible signs 1 - No individual sign listing desired
2	2	Optional summary table of sign material quantities and cost estimates by sign type (MUTCD designation). Total material quantities and costs are also prepared. Code one of the following: 0 - Provide summary table 1 - Do not provide summary table
3	3	Indicates whether or not any key cards will follow the Options Card in the input stream. Code one of the following: 0 - No key cards 1 - One or more key cards follow
4	4	Indicates whether a group of signs or only a specific sign type (refer to field 5) may be listed. Code one of the following: 0 - Process all signs that have the MUTCD designation specified in field 5 in common 1 - Process all signs that exactly match the MUTCD sign type specified in field 5

<u>Field</u>	<u>Columns</u>	<u>Description</u>
5	5-17	Specifies sign type or sign group which is to be eligible for listing. Code the MUTCD number or designation that is desired, left-justified.

For further detail on the information provided in the optional outputs referred to in fields 1 and 2, see the examples given in Chapter 4. The option in field 3 will be clarified below in the discussion on the key card. Together, fields 4 and 5 define which MUTCD numbers will be eligible for listing.

If a one (1) is coded in field 4, then the thirteen character sign type coded in the sign inventory record being examined must match character for character the sign type coded in field 5. If a zero (0) is coded in field 4, then only the characters which precede (to the left of) the first blank character must be matched by the sign record to be eligible for listing. No embedded blanks are allowed in field 5.

#### Key Card

The produced listing can also be limited to signs which have a certain deficiency or set of deficiencies specifiable by the user. For the MUTCD requests which do have characteristics keyed, these characteristics of the sign record being examined must fail to match the proper values of the characteristics which are keyed. Non-keyed characteristics are not checked as they normally would be when no keys have been established. For those sign types which do not have a MUTCD designation which appears in the lookup table, only keys specifying sign condition, sign visibility, mounting height, and pole condition will have any effect.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-4	A four character mnemonic which identifies the key. Code one of the following: SHAP - Sign shape COLO - Sign color HORI - Horizontal dimension of sign VERT - Vertical dimension of sign COND - Sign condition REFL - Sign reflectivity VISI - Sign visibility HEIG - Sign mounting height POCO - Pole condition



Any number of keys up to the total available can be specified, one per card. When a 0 is coded in field 3 of the Option Card, all sign characteristics are examined. To end a series of key specifications, enter the characters ENDØ in field 1. This will always be the last Key card.

#### Terminator Card

This card is necessary to terminate processing under the MUTCD command. It appears after the final Key card, if any Key cards are utilized in the final MUTCD request. Otherwise, it will appear after an Options card.

<u>Fields</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Code the following: 99 - Terminate MUTCD command

Program control is returned to the main program of SCSIS after which another command can be accepted or the program terminated.

#### 7. Command: COPY

As previously explained, through the sign updating process a historical sign inventory file is built to maintain information about the history of all signs which have been in the current sign inventory file but have since been updated. After enough time has elapsed and as the number of work orders which have been processed grows, a point will most likely be reached when the historical sign inventories will become large enough to require some action.

The COPY command will copy the contents of the selected historical sign inventory file onto magnetic tape for permanent storage. After the COPY command has been executed on a historical sign inventory file, the file is reinitialized and essentially empty.

Only two parameter cards are necessary to code.

### Sector Request Card

This card identifies which historical sign inventory files are to be moved to permanent storage.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Number of the first sector whose historical sign inventory file is to be moved, right-justified.
2	4-5	Number of the last sector whose historical sign inventory file is to be moved, right-justified.

Field 1 is the only field in the Sector Request card which must be coded. The value coded is equal to the smallest sector number which is to be processed in a particular COPY request. Sectors will be processed in an ascending sequential order up to and including the sector number coded in field 2. If field 2 is left blank, then its value is set equal to the value set in field 1 and thus only one sector would be processed. If field 2 is coded, it must have a value greater than or equal to the value coded in field 1, or a fatal execution error will occur.

### Terminator Card

This card is necessary to terminate processing under the COPY command. It appears immediately after the File Selector card.

<u>Field</u>	<u>Columns</u>	<u>Description</u>
1	1-2	Code the following: 99 - Terminate COPY command

Program control is returned to the main program of SCSIS after which another command can be accepted or the program terminated.

### **SUMMARY**

This chapter has provided the instructions necessary to properly code and assemble input data for each of the SCSIS commands. Chapter 4 illustrates how each of these commands can be used and gives examples of input data streams and output reports generated by SCSIS.



**INTRODUCTION**

The purpose of this chapter is to illustrate some applications of each SCSIS command. Also included in this chapter is information which is helpful in interpreting the various output reports generated by SCSIS.

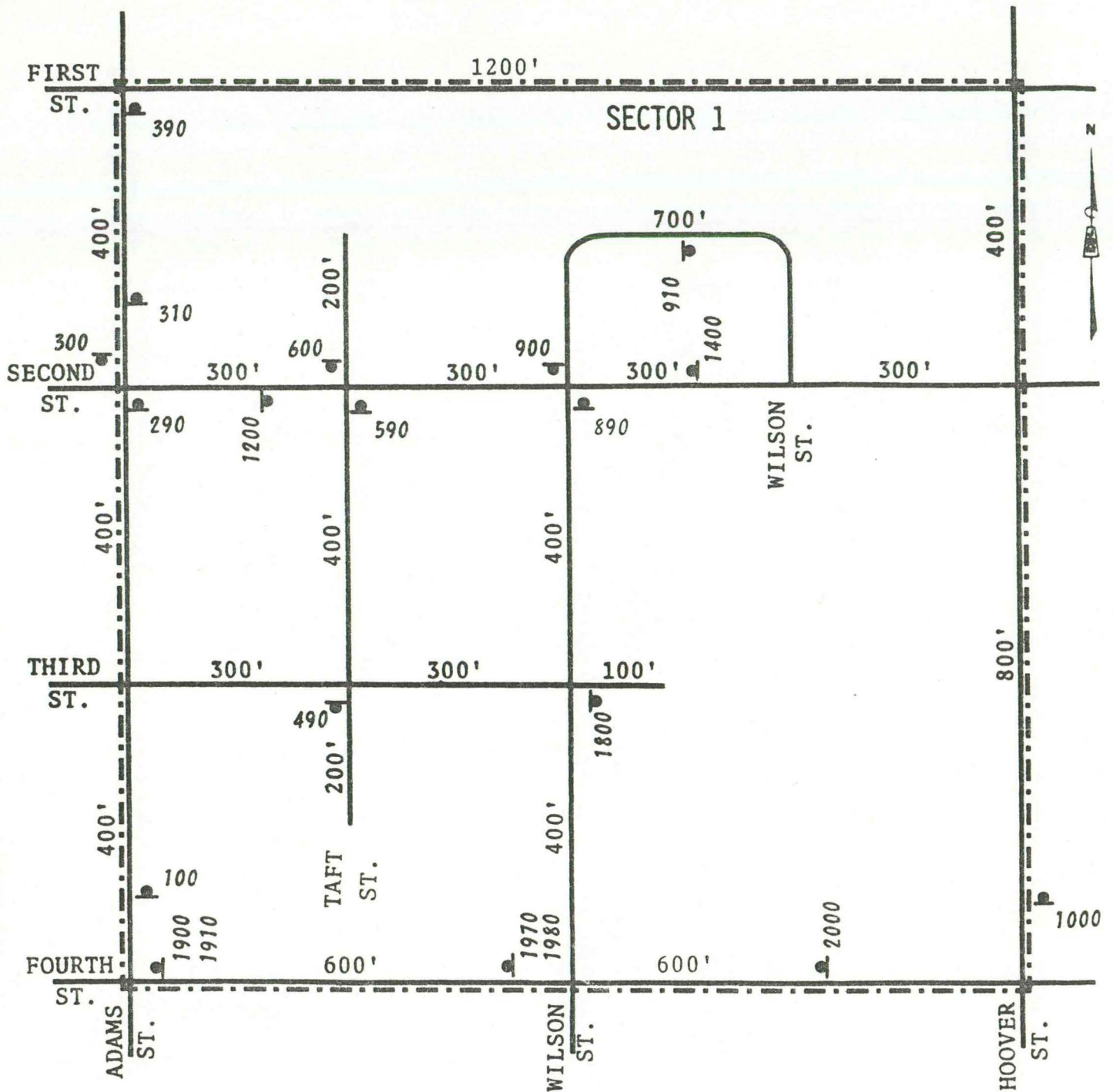
After reviewing this chapter, the user should be able to return to Chapter 3 and select the appropriate commands and code the parameter cards in accordance with the desired result.

**EXAMPLE APPLICATIONS OF SCSIS**

At least one example usage of each command is illustrated in this section of the User's Manual. Each example consists of a brief description of what is to be accomplished in the example application and an explanation of the key elements, followed by a copy of the input data and output records.

Figure 4-1 is a map of a hypothetical sector (labelled Sector 1) which has been developed to serve as a data base to which the example applications can refer. The map shows the sector boundaries, configuration of the street network, block lengths, and the location and sign numbers assigned to signs recorded in the original inventory.

The example applications have been chosen in an attempt to show some typical uses of each command and SCSIS in general. In order to fully understand the interpretation of the output reports it is necessary to proceed through the examples in the order they appear in the text. This is necessary because an example may either depend on activities completed in previous examples or the output report may be affected by what was completed in previous examples. The permanent files for the street and sign inventory are built first, then examples are given which show how to update these files, and then example applications of other SCSIS capabilities are given.



#### LEGEND



SECTOR BOUNDARY



TRAFFIC SIGN(S)

700'

BLOCK LENGTH

490

SIGN NUMBER

EXAMPLE SECTOR MAP

FIGURE 4-1



JOHNSON, BRICKELL, MULCAHY  
and Associates, Inc.  
Consulting Engineers



## 1. Command: ROUTE

The first task after the in-field inventory is complete is to code a description of the street network for each sector. Before anything else can be done with SCSIS, the coded description of the street network must be processed to establish the street network files. This is accomplished by using the ROUTE command.

### EXAMPLE 1A

Code a description of the street network shown in Figure 4-1 and use the ROUTE command to create the permanent street network files.

#### Explanation

The input coding for this example can be followed rather easily by referring to the instructions given for Chapter 3 for the ROUTE command. A couple of suggestions follow.

When a street comes to a dead end within a sector, such as Taft or Third Street in Figure 4-1, a street name code such as DEADN should be used to represent the end of the route. The last letter of the code can be used to further signify which end of the route is being represented. Also, if a street crosses an inventory route more than once, a convenient convention can be used which drops the last letter of the usual code given for the cross street and replaces it with a number. See the coding for Second Street and Wilson Street for examples. Something similar to this must be done to avoid having a street name code appear more than once in the reference cross street file for the same inventory route.

The first portion of the output is an echo print of the street network data that has been slightly reformatted. At the end of the echo print, a summary is provided which indicates the total number of inventory routes and total number of reference cross streets read in for the sector being processed. The second and last portion of the report generated for each sector processed is a listing of the same data, but this time it is read from the direct access media and includes headings and more extensive formatting. The inventory routes should appear in alphabetical order and the pair of numbers that appear to the right of the inventory route name should represent the locations in the reference cross street file of the first and last cross street name listed for that inventory route.

### Input Data

Note: The numeric strings which appear before and after each example input data stream can serve as column identification. They are not a part of the input data.

234567890123456789012345678901234567890123456789012345678901234567890

DATE

```
1 1
1ADAMS 4
FOURTH THIRD SECOND FIRST
400 400 400
100 290 300
1FIRST 2
1ADAMS HOOVER
1200
1
1FOURTH 3
1ADAMS WILSON HOOVER
600 600
1900 2000
1HOOVER 3
FOURTH SECOND FIRST
800 400
1000 1
1SECOND 5
1ADAMS TAFT WILSON1 WILSON2 HOOVER
300 300 300 300
1200 1 1400 1
1TAFT 4
1DEADS THIRD SECOND DEADN
200 400 200
490 590 600
1THIRD 4
1ADAMS TAFT WILSON DEADE
300 300 100
1 1 1800
1WILSON 4
FOURTH THIRD SECON1 SECON2
400 400 700
1 890 900
```

98

99

1234567890123456789012345678901234567890123456789012345678901234567890



ROUTE DATA  
SECTOR NUMBER 1

1	ADAMS	4		
FOURTH	THIRD	SECOND	FIRST	
400	400	400		
100	290	300		
1	FIRST	2		
ADAMS	HOOVER			
1200				
1				
1	FOURTH	3		
ADAMS	WILSON	HOOVER		
600	600			
1900	2000			
1	HOOVER	3		
FOURTH	SECOND	FIRST		
800	400			
1000	1			
1	SECOND	5		
ADAMS	TAFT	WILSON1	WILSON2	HOOVER
300	300	300	300	
1200	1	1400	1	
1	TAFT	4		
DEADS	THIRD	SECOND	DEADN	
200	400	200		
490	590	600		
1	THIRD	4		
ADAMS	TAFT	WILSON	DEADE	
300	300	100		
1	1	1800		
1	WILSON	4		
FOURTH	THIRD	SECON1	SECON2	
400	400	700		
1	890	900		
98		0		

FILE 40 INVENTORY ROUTE QUANTITIES

NROUTE( 1) = 8

FILE 50 CROSS STEET QUANTITIES

NXSTS( 1) = 29



# SECTOR 1 ROUTES

INVENTORY ROUTE ADAMS	1	4		
CROSS STREETS BLOCK LENGTHS	FIRST SIGN	INITIAL	HIST	
FOURTH 400	100		1	
THIRD 400	290		1	
SECOND 400	300		1	
FIRST 0	1		1	

INVENTORY ROUTE FIRST	5	6		
CROSS STREETS BLOCK LENGTHS	FIRST SIGN	INITIAL	HIST	
ADAMS 1200	1		1	
HOOVER 0	1		1	

INVENTORY ROUTE FOURTH	7	9		
CROSS STREETS BLOCK LENGTHS	FIRST SIGN	INITIAL	HIST	
ADAMS 600	1900		1	
WILSON 600	2000		1	
HOOVER 0	1		1	

INVENTORY ROUTE HOOVER	10	12		
CROSS STREETS BLOCK LENGTHS	FIRST SIGN	INITIAL	HIST	
FOURTH 800	1000		1	
SECOND 400	1		1	
FIRST 0	1		1	

INVENTORY ROUTE SECOND	13	17		
CROSS STREETS BLOCK LENGTHS	FIRST SIGN	INITIAL	HIST	
ADAMS 300	1200		1	
TAFT 300	1		1	
WILSO1 300	1400		1	
WILSO2 300	1		1	
HOOVER 0	1		1	

INVENTORY ROUTE TAFT	18	21		
CROSS STREETS BLOCK LENGTHS	FIRST SIGN	INITIAL	HIST	
DEADS 200	490		1	
THIRD 400	590		1	
SECOND 200	600		1	
DEADN 0	1		1	

INVENTORY ROUTE THIRD	22	25		
CROSS STREETS BLOCK LENGTHS	FIRST SIGN	INITIAL	HIST	
ADAMS 300	1		1	
TAFT 300	1		1	
WILSON 100	1800		1	
DEADE 0	1		1	

INVENTORY ROUTE WILSON	26	29		
CROSS STREETS BLOCK LENGTHS	FIRST SIGN	INITIAL	HIST	
FOURTH 400	1		1	
THIRD 400	890		1	
SECON1 700	900		1	
SECON2 0	1		1	

## 2. Command: SIGN

When the street network for a sector has been properly established, the next step is to code and process the original sign inventory information.

### EXAMPLE 2A

Code a description of the signs that are shown in Figure 4-1 and use the SIGN command to create the permanent sign inventory files.

#### Explanation

The sign inventory data shown in the example input data stream was taken from the sign inventory coding forms (not shown). These cards must be arranged in ascending order according to sign number.

Regardless of the actual inventory direction, SCSIS will convert the sign location information into standard form. All signs located on north-south streets will appear to have been inventoried in a northerly direction, and all signs located on east-west streets will appear to have been inventoried in an easterly direction.

In the first part of the output report, images of all the sign inventory records are listed. If the data is not in standard form (i.e. inventory direction is south or west), it is converted to standard form and then listed again immediately below the original. See the data listed for Taft Street for an example of this. The second portion of the report is a copy of the current sign inventory file which was just created. A summary of the number of records written is included at the end.



# Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

SIGN

1 1

1 1N	100ADAMS	120FOURTHS	2R1R2-1(35)	21243061150	32	71582
1 1N	290ADAMS	370THIRD S	6R1R1-1	44242411150	22	71582
1 1N	300ADAMS	15SECONDN10L1R1-1		44242411470	21	71582
1 1N	310ADAMS	100SECONDS	2R1R2-1(25)	21182441170	22	71582
1 1N	390ADAMS	360SECONDS10R1R1-1		44303011170	11	71582
1 1S	490TAFT	20THIRD N10R1W14-1		18303011170	11	71582
1 1S	590TAFT	20SECONDS	5L1R1-1	44242411170	11	71582
1 1S	600TAFT	165DEADN N	5R1R1-1	44242471150	32	71582
1 1N	890WILSON	370THIRD S	5R1R1-1	44242451255	71	71582
1 1N	900WILSON	20SECON1N	5L1R1-1	44242421370	61	71582
1 1E	910WILSON	350SECON1W	2R1W14-4	18303031170	11	71582
1 1S	1000HOOVER	700SECONDS	6L1R2-1(40)	21243011570	51	71582
1 1W	1200SECOND	75TAFT W	5L1S1-1	88363611170	11	71582
1 1W	1400SECOND	150WILSD2E	5R1S1-1	88363611170	11	71582
1 1E	1800THIRD	60WILSONW	5R1W14-1	18303011170	11	71582
3 1W	1900FOURTH	570WILSONE	5R1D3	3 9913111	FT	71582
1 1W	1910FOURTH	570WILSONE	5R2R1-1	44303021170	31	71582
1 1W	1970FOURTH	100WILSONE	5R1I26	29604811180	41PRESIDENTS PARK	71582
1 1W	1980FOURTH	100WILSONE	5R2R7-170	25121811040	41NO PKG SAT-SUN	71582
1 1W	2000FOURTH	280HOOVERE	8R1R7-1	25121821170	11	71582

9

1234567890123456789012345678901234567890123456789012345678901234567890

## SECTOR 1 SIGN INVENTORY DATA

1 1N	100ADAMS	120FOURTHS	2R1R2-1(35)	21243061150032	71582
1 1N	290ADAMS	370THIRD S	6R1R1-1	44242411150022	71582
1 1N	300ADAMS	15SECONDN	10L1R1-1	44242411470021	71582
1 1N	310ADAMS	100SECONDS	2R1R2-1(25)	21182441170022	71582
1 1N	390ADAMS	360SECONDS	10R1R1-1	44303011170011	71582
1 1S	490TAFT	20THIRD	N10R1W14-1	18303011170011	71582
1 1N	490TAFT	180DEADS	N10L1W14-1	18303011170011	71582
1 1S	590TAFT	20SECONDS	5L1R1-1	44242411170011	71582
1 1N	590TAFT	380THIRD S	5R1R1-1	44242411170011	71582
1 1S	600TAFT	165DEADN	N 5R1R1-1	44242471150032	71582
1 1N	600TAFT	35SECONDN	5L1R1-1	44242471150032	71582
1 1N	890WILSON	370THIRD S	5R1R1-1	44242451255071	71582
1 1N	900WILSON	20SECONIN	5L1R1-1	44242421370061	71582
1 1E	910WILSON	350SECON1W	2R1W14-4	18303031170011	71582
1 1S	1000HOOVER	700SECONDS	6L1R2-1(40)	21243011570051	71582
1 1N	1000HOOVER	100FOURTHS	6R1R2-1(40)	21243011570051	71582
1 1W	1200SECOND	75TAFT	W 5L1S1-1	88363611170011	71582
1 1E	1200SECOND	225ADAMS	W 5R1S1-1	88363611170011	71582
1 1W	1400SECOND	150WILSO2E	5R1S1-1	88363611170011	71582
1 1E	1400SECOND	150WILSO1E	5L1S1-1	88363611170011	71582
1 1E	1800THIRD	60WILSONW	5R1W14-1	18303011170011	71582
3 1W	1900FOURTH	570WILSONE	5R1D3	00 0 03009913111 FT	71582
3 1E	1900FOURTH	30ADAMS E	5L1D3	00 0 03009913111 FT	71582
1 1W	1910FOURTH	570WILSONE	5R2R1-1	44303021170031	71582
1 1E	1910FOURTH	30ADAMS E	5L2R1-1	44303021170031	71582
1 1W	1970FOURTH	100WILSONE	5R1I26	29604811180041PRESIDENTS PARK	71582
1 1E	1970FOURTH	500ADAMS E	5L1I26	29604811180041PRESIDENTS PARK	71582
1 1W	1980FOURTH	100WILSONE	5R2R7-170	25121811040041NO PKG SAT-SUN	71582
1 1E	1980FOURTH	500ADAMS E	5L2R7-170	25121811040041NO PKG SAT-SUN	71582
1 1W	2000FOURTH	280HOOVERE	8R1R7-1	25121821170011	71582
1 1E	2000FOURTH	320WILSONE	8L1R7-1	25121821170011	71582
SECTOR	1 COMPLETE				
990	0	0	0 0	00 0 0000 0000	0 0 0

Output Report



# SECTOR 1 SIGN INVENTORY DATA

1 1N	100ADAMS	120FOURTHS	2R1R2-1(35)	21243061150032	71582
1 1N	290ADAMS	370THIRD S	6R1R1-1	44242411150022	71582
1 1N	300ADAMS	15SECONDN	10L1R1-1	44242411470021	71582
1 1N	310ADAMS	100SECONDS	2R1R2-1(25)	21182441170022	71582
1 1N	390ADAMS	360SECONDS	10R1R1-1	44303011170011	71582
1 1N	490TAFT	180DEADS	N10L1W14-1	18303011170011	71582
1 1N	590TAFT	380THIRD S	5R1R1-1	44242411170011	71582
1 1N	600TAFT	35SECONDN	5L1R1-1	44242471150032	71582
1 1N	890WILSON	370THIRD S	5R1R1-1	44242451255071	71582
1 1N	900WILSON	20SECON1N	5L1R1-1	44242421370061	71582
1 1E	910WILSON	350SECON1W	2R1W14-4	18303031170011	71582
1 1N	1000HOOVER	100FOURTHS	6R1R2-1(40)	21243011570051	71582
1 1E	1200SECOND	225ADAMS W	5R1S1-1	88363611170011	71582
1 1E	1400SECOND	150WILSO1E	5L1S1-1	88363611170011	71582
1 1E	1800THIRD	60WILSONW	5R1W14-1	18303011170011	71582
3 1E	1900FOURTH	30ADAMS E	5L1D3	11 FT	71582
1 1E	1910FOURTH	30ADAMS E	5L2R1-1	44303021170031	71582
1 1E	1970FOURTH	500ADAMS E	5L1I26	29604811180041	71582
1 1E	1980FOURTH	500ADAMS E	5L2R7-170	25121811040041	71582
1 1E	2000FOURTH	320WILSONE	8L1R7-1	NO PKG SAT-SUN	71582
				25121821170011	71582

FILE 20 SIGN INVENTORY QUANTITIES

NSIGN( 1) = 20



### 3. Command: NETWORK

As it could possibly happen, let's say that between the time the inventory was taken and the time the street and sign inventory file were created, some changes in the street do occur, the NETWORK command must be used to update the street network files before any new signs can be added to the sign inventory files on the new street segments.

#### EXAMPLE 3A

Prepare a listing of the street network files which reflects the street system shown in Figure 4-1.

#### Explanation

Each time the NETWORK command is issued, the name of the command is printed at the top of the page. This is followed by a summary of the input data which in this case tells us that we want to list Sector 1 street files. The report then lists out the current information contained in the street files which is followed by a summary of the actual file lengths and permissible file lengths.

#### Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

NETWORK

)

1

99

1234567890123456789012345678901234567890123456789012345678901234567890

Output Report

N E T W O R K

\*\*\*\*\*

INPUT DATA RECORD

INVENTORY ROUTE CROSS STREETS

SECTOR MODE

1 0 LIST

\*\*\*\*\*



# SECTOR 1 ROUTE LISTING

INVENTORY ROUTE	CROSS STREETS	ADAMS	BLOCK	LENGTHS	1	CURRENT	4	HISTORICAL
FOURTH		400			100		1	
THIRD		400			290		1	
SECOND		400			300		1	
FIRST		0			1		1	

INVENTORY ROUTE	CROSS STREETS	FIRST	BLOCK	LENGTHS	5	CURRENT	6	HISTORICAL
ADAMS		1200			1		1	
HOOVER		0			1		1	

INVENTORY ROUTE	CROSS STREETS	FOURTH	BLOCK	LENGTHS	7	CURRENT	9	HISTORICAL
ADAMS		600			1900		1	
WILSON		600			2000		1	
HOOVER		0			1		1	

INVENTORY ROUTE	CROSS STREETS	HOOVER	BLOCK	LENGTHS	10	CURRENT	12	HISTORICAL
FOURTH		800			1000		1	
SECOND		400			1		1	
FIRST		0			1		1	

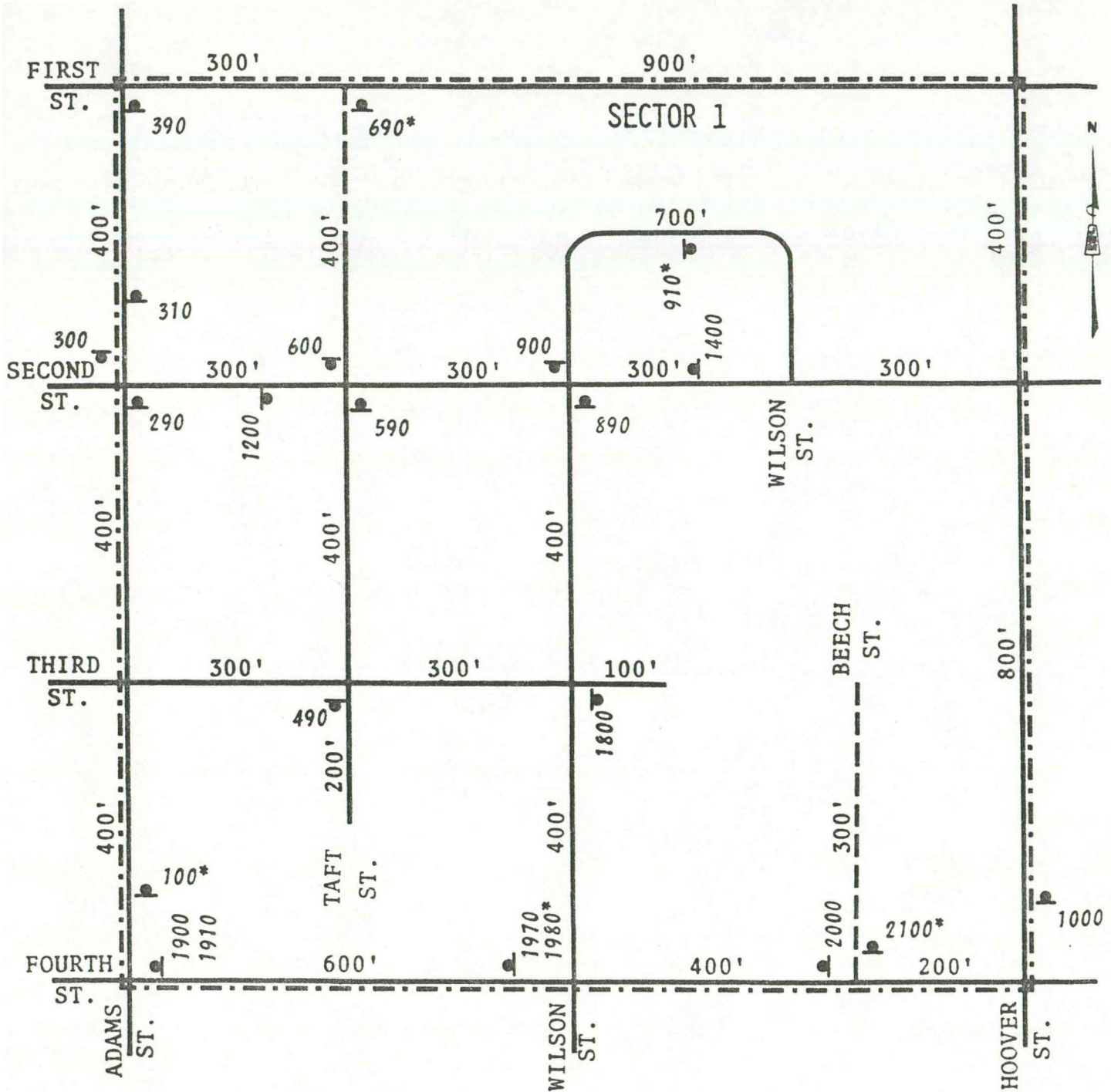
INVENTORY ROUTE	CROSS STREETS	SECOND	BLOCK	LENGTHS	13	CURRENT	17	HISTORICAL
ADAMS		300			1200		1	
TAFT		300			1		1	
WILSON		300			1400		1	
WILSON		300			1		1	
HOOVER		0			1		1	

INVENTORY ROUTE	CROSS STREETS	TAFT	BLOCK	LENGTHS	18	CURRENT	21	HISTORICAL
DEADS		200			490		1	
THIRD		400			590		1	
SECOND		200			600		1	
DEADN		0			1		1	

INVENTORY ROUTE	CROSS STREETS	THIRD	BLOCK	LENGTHS	22	CURRENT	25	HISTORICAL
ADAMS		300			1		1	
TAFT		300			1		1	
WILSON		100			1800		1	
DEADE		0			1		1	

INVENTORY ROUTE	CROSS STREETS	WILSON	BLOCK	LENGTHS	26	CURRENT	29	HISTORICAL
FOURTH		400			1		1	
THIRD		400			890		1	
SECON1		700			900		1	
SECON2		0			1		1	

TOTAL NUMBER OF ROUTES = 8. MAXIMUM CURRENTLY ALLOWED = 140  
 TOTAL NUMBER OF CROSS STREET RECORDS = 29. MAXIMUM CURRENTLY ALLOWED = 3000



# LEGEND

- SECTOR BOUNDARY
- TRAFFIC SIGN(S)
- 700' BLOCK LENGTH
- 490 SIGN NUMBER
- NEW STREET CONSTRUCTION
- \* UPDATED TRAFFIC SIGN

UPDATED  
EXAMPLE SECTOR MAP  
FIGURE 4-2



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and Associates, Inc.  
Consulting Engineers



### EXAMPLE 3B

Note the changes made in the street network which are shown as dashed lines in Figure 4-2. A new street called Beech Street has been added which intersects Fourth Street, and Taft Street has been extended to First Street. Use the NETWORK command to update the permanent street network files so they will now reflect the street network shown in Figure 4-2.

#### Explanation

Since a separate NETWORK command was issued for this example, the command name is printed again at the top of the page. Several separate tasks are accomplished within this use of the command. Taft Street is updated, First Street is updated to show the Taft Street connection, Beech Street is then added to the file, and Fourth Street is updated to include Beech Street as a cross street.

The output report summarizes the input data associated with each requested action. Below each of these requests, a confirmation of the action taken by SCSIS is written as well as the current length of the street network files. After all the requests have been processed, the street network files for each sector which had any updates or additions are listed as if a list request for those sectors had been issued.

Input Data

234567890123456789012345678901234567890123456789012345678901234567890

NETWORK

1 TAFT 4

DEADS	THIRD	SECOND	FIRST
200 400	400		
490 590	600		
1 1	1		

1 FIRST 3

ADAMS	TAFT	HOOVER
300 900		
1 1		
1 1		

1 BEECH 2

FOURTH	DEADN
300	
1	
1	

1 FOURTH 4

ADAMS	WILSON	BEECH	HOOVER
600 400	200		
1900 2000	1		
1 1	1		

9

234567890123456789012345678901234567890123456789012345678901234567890



# NETWORK

\*\*\*\*\*

INPUT DATA RECORD  
INVENTORY ROUTE NUMBER OF  
CROSS STREETS

SECTOR MODE

1 TAFT 4 UPDATE

CROSS STREET FILE DATA

DEADS THIRD SECOND FIRST  
200 400 400  
490 590 600  
1 1 1

\*\*\*\*\*

INVENTORY ROUTE TAFT UPDATED IN SECTOR 1  
TOTAL ROUTES IN FILE NUMBER 13 NOW = 8  
TOTAL CROSS STREETS IN FILE NUMBER 14 NOW = 29

\*\*\*\*\*

INPUT DATA RECORD  
INVENTORY ROUTE NUMBER OF  
CROSS STREETS

SECTOR MODE

1 FIRST 3 UPDATE

CROSS STREET FILE DATA

ADAMS TAFT HOOVER  
300 900  
1 1  
1 1

\*\*\*\*\*

INVENTORY ROUTE FIRST UPDATED IN SECTOR 1  
TOTAL ROUTES IN FILE NUMBER 13 NOW = 8  
TOTAL CROSS STREETS IN FILE NUMBER 14 NOW = 30

\*\*\*\*\*

INPUT DATA RECORD  
INVENTORY ROUTE NUMBER OF  
CROSS STREETS

SECTOR MODE

1 BEECH 2 ADD

CROSS STREET FILE DATA

FOURTH DEADN  
300  
1  
1

\*\*\*\*\*

INVENTORY ROUTE BEECH ADDED TO SECTOR 1  
TOTAL ROUTES IN FILE NUMBER 13 NOW = 9  
TOTAL CROSS STREETS IN FILE NUMBER 14 NOW = 32

\*\*\*\*\*

INPUT DATA RECORD  
INVENTORY ROUTE NUMBER OF  
CROSS STREETS

SECTOR MODE

Output Report

CROSS STREET FILE DATA      1      FOURTH      4      UPDATE

ADAMS	WILSON	BEECH	HOOVER
600	400	200	
1900	2000	1	
1	1	1	

\*\*\*\*\*

INVENTORY ROUTE FOURTH UPDATED IN SECTOR 1  
TOTAL ROUTES IN FILE NUMBER 13 NOW = 9  
TOTAL CROSS STREETS IN FILE NUMBER 14 NOW = 33



# SECTOR 1 ROUTE LISTING

INVENTORY ROUTE	ADAMS	1	4	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
FOURTH	400	100	1	
THIRD	400	290	1	
SECOND	400	300	1	
FIRST	0	1	1	

INVENTORY ROUTE	BEECH	5	6	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
FOURTH	300	1	1	
DEADN	0	1	1	

INVENTORY ROUTE	FIRST	7	9	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
ADAMS	300	1	1	
TAFT	900	1	1	
HOOVER	0	1	1	

INVENTORY ROUTE	FOURTH	10	13	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
ADAMS	600	1900	1	
WILSON	400	2000	1	
BEECH	200	1	1	
HOOVER	0	1	1	

INVENTORY ROUTE	HOOVER	14	16	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
FOURTH	800	1000	1	
SECOND	400	1	1	
FIRST	0	1	1	

INVENTORY ROUTE	SECOND	17	21	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
ADAMS	300	1200	1	
TAFT	300	1	1	
WILSO1	300	1400	1	
WILSO2	300	1	1	
HOOVER	0	1	1	

INVENTORY ROUTE	TAFT	22	25	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
DEADS	200	490	1	
THIRD	400	590	1	
SECOND	400	600	1	
FIRST	0	1	1	

INVENTORY ROUTE	THIRD	26	29	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
ADAMS	300	1	1	
TAFT	300	1	1	
WILSON	100	1800	1	
DEADE	0	1	1	

INVENTORY ROUTE	WILSON	30	33	
CROSS STREETS	BLOCK LENGTHS	CURRENT	HISTORICAL	
FOURTH	400	1	1	
THIRD	400	890	1	

SECON1  
SECON2

700  
0

900  
1

1  
1

TOTAL NUMBER OF ROUTES = 9. MAXIMUM CURRENTLY ALLOWED = 140  
TOTAL NUMBER OF CROSS STREET RECORDS = 33. MAXIMUM CURRENTLY ALLOWED = 3000



#### 4. Command: UPDATE

Most likely there will also be numerous work orders completed between the time a route is inventoried originally and the time the information has been placed on the permanent files. The UPDATE command is used to process all changes in the in-field sign inventory. All necessary information is coded on the work order form.

#### EXAMPLE 4A

Figure 4-2 shows the location of five signs where work orders have been completed since the original sign inventory was completed. Use the UPDATE command to process the work order information so that the information in the current sign inventory file will be up to date.

#### Explanation

The UPDATE command is identified at the top of the page each time the command is given. The input data record echo prints each sign being updated, added, or deleted. Below each input data record, an indication of the activity taken is written. If an existing sign is updated or a new sign is added, then this information consists of a copy of the updated sign information read from the current sign inventory file and should match the input data record above it. If not, this is an indication that the input data record was improperly coded. If a sign has been deleted, then this information should be a message indicating the sign number was not found. (Note: If a sign is updated with an error present in the coding, update the sign again using the same date and write an indication of the error in the remarks field.)

#### Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

#### UPDATE

4 1N	690TAF	360SECONDS	5R1R1-1	44303011170	11NEW SIGN	09 90182
2 1N	100ADAMS	120FOURTHS	2R1R2-1(35)	21243011170	31	63 90782
2 1E	910WILSON	350SECON1W	2R1W14-4	18303011170	11	43 90882
5 1E	1980FOURTH	500ADAMS E	5L2R7-170		SIGN REMOVED	21 90982
4 1N	2100BEECH	30FOURTHS	5R1W14-1	18303011170	11NEW SIGN	09 91282

99

1234567890123456789012345678901234567890123456789012345678901234567890

# U P D A T E

PAGE

Output Report

\*\*\*\*\*  
INPUT DATA RECORD

4 1N 690TAFT 360SECONDS 5R1R1-1 44303011170011NEW SIGN 09 9 182  
\*\*\*\*\*  
4 1N 690TAFT 360SECONDS 5R1R1-1 44303011170011NEW SIGN 09 9 182

\*\*\*\*\*  
INPUT DATA RECORD

2 1N 100ADAMS 120FOURTHS 2R1R2-1(35) 21243011170031 63 9 782  
\*\*\*\*\*  
2 1N 100ADAMS 120FOURTHS 2R1R2-1(35) 21243011170031 63 9 782

\*\*\*\*\*  
INPUT DATA RECORD

2 1E 910WILSON 350SECON1W 2R1W14-4 18303011170011 43 9 882  
\*\*\*\*\*  
2 1E 910WILSON 350SECON1W 2R1W14-4 18303011170011 43 9 882

\*\*\*\*\*  
INPUT DATA RECORD

5 1E 1980FOURTH 500ADAMS E 5L2R7-170 00 0 0000 0000SIGN REMOVED 21 9 982  
\*\*\*\*\*  
COULD NOT FIND SIGN NUMBER 1980

\*\*\*\*\*  
INPUT DATA RECORD

4 1N 2100BEECH 30FOURTHS 5R1W14-1 18303011170011NEW SIGN 09 9 1282  
\*\*\*\*\*  
4 1N 2100BEECH 30FOURTHS 5R1W14-1 18303011170011NEW SIGN 09 9 1282

UPDATE PROGRAM COMPLETE



## 5. Command: LIST

One of the features SCSIS provides are listings of the current and/or historical sign inventory files. Several example applications of the LIST command are given below. The user is reminded that the output reports generated will reflect the most current condition (i.e., the updates accomplished in Example 3B and Example 4A will be recognized).

### EXAMPLE 5A

List the contents of the historical sign inventory file for Sector 1 with no summary report.

#### Explanation

Each time a LIST command is used directly or implied, a heading is prepared which identifies the LIST program and the specific activity requested. In this example, the input data record specifies that all of Sector 1 is the location of interest, and the historical sign inventory file is the file type of interest, and that all signs within that file are to be processed and listed.

The historical file listing that was requested consists of a list of each sign record which will be ordered alphabetically by route name. Within each route, sign records will be listed from south to north (west to east) with a subheading generated each time a new inventory route or reference cross street begins. New inventory routes which begin in the middle of the page are additionally highlighted by asterisks appearing on each side of the inventory route name. The columnar headings which appear across the top of each page identify the information listed for each sign. Instead of listing the numbers that were originally coded to represent sign shape, color, etc., an abbreviation is listed which is more readily identifiable. For a definition of the abbreviations which can appear in the LIST command output reports, see Appendix C. No summary table was requested in this example.

#### Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

LIST  
1  
41  
0100  
99

1234567890123456789012345678901234567890123456789012345678901234567890





ECTOR 1 INVENTORY ROUTE ADAMS  
NVENTORY DIRECTION NORTH  
EFERENCE CROSS STREET FOURTH

SIGN NO	DIST	FACE	LAT DIST	SIDE RDWY	ASS NO	MUTCD NUMBER	SIGN SHAPE	SIGN COLOR	SIGN SIZE HZ VT	SIGN COND	SIGN			BKG MAT	POST TYPE	POST COND	REMARKS/ MESSAGES	SIGN CHANGE	REASON FOR CHANGE	DATE	
											R	VIS	HT							MO	DAY
100	120	S	2	R	1	R2-1(35)	RECT	B/W	24 30	GOOD	Y	OK	7.0		SN	GOOD		RPSP	ACC	9	7

\*\*\*\*\* INVENTORY ROUTE BEECH \*\*\*\*\*  
NVENTORY DIRECTION NORTH  
EFERENCE CROSS STREET FOURTH

2100	30	S	5	R	1	W14-1	DIA	B/Y	30 30	GOOD	Y	OK	7.0		ST	GOOD	NEW SIGN	0	OTHER	9	12
------	----	---	---	---	---	-------	-----	-----	-------	------	---	----	-----	--	----	------	----------	---	-------	---	----

\*\*\*\*\* INVENTORY ROUTE FOURTH \*\*\*\*\*  
NVENTORY DIRECTION EAST  
EFERENCE CROSS STREET ADAMS

1980	500	E	5	L	2	R7-170	RECT	R/W	12 18	GOOD	Y	N	4.0		UT	GOOD	NO PKG SAT-SUN SIGN DELETED	N.A. RMSP	N.A. NONEED	7	15
1980																					

\*\*\*\*\* INVENTORY ROUTE TAFT \*\*\*\*\*  
NVENTORY DIRECTION NORTH  
EFERENCE CROSS STREET SECOND

690	360	S	5	R	1	R1-1	OCT	W/R	30 30	GOOD	Y	OK	7.0		ST	GOOD	NEW SIGN	0	OTHER	9	1
-----	-----	---	---	---	---	------	-----	-----	-------	------	---	----	-----	--	----	------	----------	---	-------	---	---

\*\*\*\*\* INVENTORY ROUTE WILSON \*\*\*\*\*  
NVENTORY DIRECTION EAST  
EFERENCE CROSS STREET SECON1

910	350	W	2	R	1	W14-4	DIA	B/Y	30 30	DEFACE	Y	OK	7.0		ST	GOOD		N.A. RPS	N.A. ACC	7	15
910	350	W	2	R	1	W14-4	DIA	B/Y	30 30	GOOD	Y	OK	7.0		ST	GOOD				9	8

7 RECORDS LISTED  
EQUESTED LISTING COMPLETED

LIST PROGRAM COMPLETE

## EXAMPLE 5B

List all signs in Sector 1 on Adams Street between First Street and Second Street with summary report.

### Explanation

This example shows a listing of the current sign inventory file for a particular street segment. Note that the input data record shows the beginning cross street is the south end of the street segment of interest. Also note that both a file listing and summary table have been requested and that all signs within the specified location are to be processed.

After the record by record listing has been completed, the summary table is prepared. This "SUMMARY SHEET" provides the quantity of each sign type and the total number of signs processed in the request.

### Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

\_IST  
1 ADAMS SECOND FIRST  
DU  
0000  
99

1234567890123456789012345678901234567890123456789012345678901234567890



## LIST

[illegible]

## Output Report

ECTOR 1 INVENTORY ROUTE ADAMS  
VENTORY DIRECTION NORTH  
REFERENCE CROSS STREET SECOND

SIGN NO	DIST	FACE	LAT DIST	SIDE RDWY	ASS NO	MUTCD NUMBER	SIGN SHAPE	SIGN COLOR	SIGN SIZE HZ VT	SIGN COND	SIGN			BKG MAT	POST TYPE	POST COND	REMARKS/ MESSAGES	SIGN CHANGE	REASON FOR CHANGE	DATE		
											R	VIS	HT							MO	DAY	Y
300	15	N	10	L	1	R1-1	OCT	W/R	24 24	GOOD	Y	B	7.0		WO	GOOD		N.A.	N.A.	7	15	8
310	100	S	2	R	1	R2-1(25)	RECT	B/W	18 24	FADED	Y	OK	7.0		WO	DAMAGE		N.A.	N.A.	7	15	8
390	360	S	10	R	1	R1-1	OCT	W/R	30 30	GOOD	Y	OK	7.0		ST	GOOD		N.A.	N.A.	7	15	8

3 RECORDS LISTED



S U M M A R Y S H E E T

MUTCD NUMBER	QUANTITY
--------------	----------

R1-1	2
R2-1(25)	1

TOTAL	3
-------	---

REQUESTED LISTING COMPLETED

LIST PROGRAM COMPLETE

## EXAMPLE 5C

List all 24 inch by 24 inch STOP signs currently in place on Adams Street in Sector 1. Do not print a summary report.

### Explanation

Instead of processing all signs which are in a specified location, this example has restricted the sign type (MUTCD Number) and has also specified the size of the signs which will be listed. Sign type restrictions and other keys which are established in the LIST command parameter cards appear in the input data record printed at the beginning of the report. The format of the report has been discussed in the previous examples.

### Input Data

234567890123456789012345678901234567890123456789012345678901234567890

```
.LIST  
1 ADAMS  
SU  
)111R1-1  
HORI 24  
VERT 24  
END  
99
```

1234567890123456789012345678901234567890123456789012345678901234567890



# LIST

# INPUT DATA RECORD

SECTOR(S)	INVENTORY ROUTE	CROSS STREET	BEGINNING	CROSS STREET	ENDING	SIGN NUMBER

ADAMS

**CURRENT FILE LISTING REQUESTED**

PROCESS ALL SIGNS THAT EXACTLY MATCH THE FOLLOWING SIGN TYPE : RI-1

THAT HAVE THE FOLLOWING CHARACTERISTIC(S)

HORIZONTAL DIMENSION = 24

**HORIZONTAL DIMENSION = 24**

ECTOR 1 INVENTORY ROUTE ADAMS  
 NVENTORY DIRECTION NORTH  
 EREFERENCE CROSS STREET THIRD

SIGN NO	DIST	FACE	LAT DIST	SIDE RDWY	ASS NO	MUTCD	NUMBER	SIGN SHAPE	SIGN COLOR	SIGN SIZE HZ VT	SIGN COND	SIGN R	SIGN VIS	SIGN HT	BKG MAT	POST TYPE	POST COND	REMARKS/ MESSAGES	SIGN CHANGE	REASON FOR CHANGE	DATE MO DAY
290	370	S	6	R	1	R1-1		OCT	W/R	24 24	GOOD	Y	OK	5.0				WO DAMAGE	N.A.	N.A.	7 15

NVENTORY DIRECTION NORTH  
 EREFERENCE CROSS STREET SECOND

300	15	N	10	L	1	R1-1		OCT	W/R	24 24	GOOD	Y	B	7.0			WO GOOD		N.A.	N.A.	7 15
-----	----	---	----	---	---	------	--	-----	-----	-------	------	---	---	-----	--	--	---------	--	------	------	------

2 RECORDS LISTED  
 EQUESTED LISTING COMPLETED  
 IST PROGRAM COMPLETE



## EXAMPLE 5D

Provide a summary report of all signs in Sector 1 which were replaced in July, 1982, because of accident damage. Also list the current status of sign number 2100.

### Explanation

Two separate requests are processed in this example. This has been accomplished by coding two complete series of parameter cards for each request. The Terminator card appears only after the last request.

The reports have been prepared as explained previously.

### Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

\_LIST

1

+I

1010

MO 9

YEAR 82

REAS 3

END

1

2100

DU

0100

99

1234567890123456789012345678901234567890123456789012345678901234567890

Output Report

L I S T

INPUT DATA RECORD  
BEGINNING  
ENDING  
CROSS STREET  
CROSS STREET  
SIGN NUMBER

1  
SUMMARY TABLE REQUESTED

PROCESS ALL SIGNS  
THAT HAVE THE FOLLOWING CHARACTERISTIC(S)  
REASON FOR CHANGE = 3  
MONTH = 9  
YEAR = 82

0 RECORDS LISTED

## S U M M A R Y S H E E T

MUTCD NUMBER	QUANTITY
--------------	----------

R2-1(35)	1
W14-4	1

TOTAL	2
-------	---

REQUESTED LISTING COMPLETED





ECTOR 1 INVENTORY ROUTE BEECH  
 NVENTORY DIRECTION NORTH  
 EREFERENCE CROSS STREET FOURTH

SIGN NO	DIST	FACE	LAT DIST	SIDE RDWY	ASS NO	MUTCD NUMBER	SIGN SHAPE	SIGN COLOR	SIGN SIZE HZ VT	SIGN COND	SIGN R	SIGN VIS	SIGN HT	BKG MAT	POST TYPE	POST COND	REMARKS/ MESSAGES	SIGN CHANGE	REASON FOR CHANGE	DATE MO DAY Y
2100	30	S	5	R	1	W14-1	DIA	B/Y	30 30	GOOD	Y	OK	7.0		ST	GOOD	NEW SIGN	0	OTHER	9 12 8

RECORD LISTED  
 REQUESTED LISTING COMPLETED

IST PROGRAM COMPLETE

## 6. Command: MUTCD

Another SCSIS feature provides the user with the capability of quickly evaluating the in-field sign inventory stock. The evaluation is essentially a check of the individual sign characteristics against the characteristics which they are supposed to possess. The user can specify location, output reports, and various keys similar to the manner utilized for the LIST command. Several example uses of the MUTCD command follow.

### EXAMPLE 6A

Evaluate all signs in Sector 1 and provide a summary table. Do not list individual sign locations.

#### Explanation

The output reports provided by the MUTCD program have the same general format as those prepared by the LIST program. The input data record which indicates the specific request appears first and is followed by a record by record listing and a summary table which are both optional.

The summary table requested in this example shows the number of sign blanks and square feet of reflective sheeting required to replace the deficient signs for each sign type. Sign post quantities and costs are also estimated. All unit costs use a "per each" basis in formulating the line costs.

The unit costs are based on the cost of materials to the City of Sioux City and generalized costs estimated for non-standard size shapes and sizes. This information is shown in Appendix C.

#### Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

MUTCD  
1  
1000  
39

1234567890123456789012345678901234567890123456789012345678901234567890



## Output Report

M U T C D

\*\*\*\*\*

# INPUT DATA RECORD

ENDING  
BEGINNING

SIGN NUMBER

CROSS STREET

CROSS STREET

SECTOR(S) INVENTORY ROUTE

11

SUMMARY TABLE REQUESTED

PROCESS ALL SIGNS

[illegible]

0 RECORDS LISTED

## SUMMARY SHEET

MUTCD NUMBER	ITEM	QUANTITY	UNIT COST	LINE COST
R1-1	SIGN BLANK	4 EA	\$ 6.20	\$ 24.80
	REFL. SHEETING	18.25 SF	\$ 6.00	\$ 24.00
R2-1(25)	SIGN BLANK	1 EA	\$ 7.80	\$ 7.80
	REFL. SHEETING	3.00 SF	\$ 8.10	\$ 8.10
D3	SIGN BLANK	1 EA	\$ 1.57	\$ 1.57
	REFL. SHEETING	1.00 SF	\$ 1.63	\$ 1.63
R7-1	SIGN BLANK	1 EA	\$ 2.30	\$ 2.30
	REFL. SHEETING	1.50 SF	\$ 2.50	\$ 2.50
	ESTIMATED SIGN MATERIAL COST		\$	72.70
	11 FT POST	3 EA	\$ 8.36	\$ 25.08
	13 FT POST	0 EA	\$ 9.69	\$ 0.0
	ESTIMATED SIGN POST COST		\$	25.08
	TOTAL MATERIAL COST		\$	97.78

REQUESTED LISTING COMPLETED

MUTCD PROGRAM COMPLETE

## EXAMPLE 6B

Evaluate all regulatory signs in Sector 1 and list each deficient sign and provide a summary table.

### Explanation

This example shows how a group of signs can be evaluated. In this case, we have requested that all regulatory signs be evaluated by coding a "0" in field 4 and an "R" in field 5 of the Options card.

The individual sign records are listed in this example. The format and headings are slightly different for the MUTCD report, but the abbreviations given for the sign characteristics are identical to those used in the LIST report. Each sign record will have at least one sign characteristic which is labeled with asterisks. The asterisks denote the sign or sign post characteristics which have caused the sign to be identified as deficient.

### Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

MUTCD  
1  
0000R  
99

1234567890123456789012345678901234567890123456789012345678901234567890



M U T C D

INPUT DATA RECORD

SECTOR(S)	INVENTORY ROUTE	BEGINNING CROSS STREET	ENDING CROSS STREET	SIGN NUMBER
-----------	-----------------	------------------------	---------------------	-------------

1 1

SUMMARY TABLE REQUESTED  
PROCESS ALL SIGNS THAT HAVE THE FOLLOWING DESIGNATION IN COMMON : R

Output Report

SIGN NO	INVENTORY ROUTE	DIST	INVENTORY DIRECTION	CROSS STREET	FACE	LAT DIST	SIDE RDWY	ASS NO	MUTCD NUMBER	SHAPE	COLOR	HORZ	VERT	SIGN REFL	COND	VIS	PAGE		2 POLE COND
																	HEIGHT		
L 290	ADAMS	370	NORTH	THIRD	S	6	R	1	R1-1	OCT	W/R	24	24	Y	GOOD	OK	*5.0*	*DAMAGE*	
L 300	ADAMS	15	NORTH	SECOND	N	10	L	1	R1-1	OCT	W/R	24	24	Y	GOOD	*B *	7.0	GOOD	
L 310	ADAMS	100	NORTH	SECOND	S	2	R	1	R2-1(25)	RECT	B/W	*18*	*24*	Y	* FADED*	OK	7.0	*DAMAGE*	
L 1910	FOURTH	30	EAST	ADAMS	E	5	L	2	R1-1	OCT	W/R	30	30	Y	* BENT *	OK	7.0	GOOD	
L 2000	FCURTH	320	EAST	WILSON	E	8	L	1	R7-1	RECT	R/W	12	18	Y	* BENT *	OK	7.0	GOOD	
L 1000	HOOVER	100	NORTH	FOURTH	S	6	R	1	R2-1(40)	RECT	B/W	24	30	Y	GOOD	*T *	7.0	GOOD	
L 600	TAFT	35	NORTH	SECOND	N	5	L	1	R1-1	OCT	W/R	24	24	Y	*DAMAGE*	OK	*5.0*	*DAMAGE*	
L 890	WILSON	370	NORTH	THIRD	S	5	R	1	R1-1	OCT	W/R	24	24	Y	* ILLEG*	*OS*	*5.5*	GOOD	
L 900	WILSON	20	NORTH	SECON1	N	5	L	1	R1-1	OCT	W/R	24	24	Y	* BENT *	*AS*	7.0	GOOD	

9 RECORDS LISTED

## SUMMARY SHEET

MUTCD NUMBER	ITEM	QUANTITY	UNIT COST	LINE COST
R1-1	SIGN BLANK	4 EA	\$ 6.20	\$ 24.80
	REFL. SHEETING	18.25 SF	\$ 6.00	\$ 24.00
R2-1(25)	SIGN BLANK	1 EA	\$ 7.80	\$ 7.80
	REFL. SHEETING	3.00 SF	\$ 8.10	\$ 8.10
R7-1	SIGN BLANK	1 EA	\$ 2.30	\$ 2.30
	REFL. SHEETING	1.50 SF	\$ 2.50	\$ 2.50
		ESTIMATED SIGN MATERIAL COST	\$	69.50
	11 FT POST	3 EA	\$ 8.36	\$ 25.08
	13 FT POST	0 EA	\$ 9.69	\$ 0.0
		ESTIMATED SIGN POST COST	\$	25.08
		TOTAL MATERIAL COST	\$	94.58

REQUESTED LISTING COMPLETED

MUTCD PROGRAM COMPLETE



## EXAMPLE 6C

List all of the STOP signs which have restricted visibility. Do not write summary table.

### Explanation

This example illustrates the use of keys in the MUTCD command. When one or more keys are specified in a MUTCD request, this has the effect of disabling the normal checking process. In these cases, only those values of keyed characteristics are scrutinized while the examination of the other characteristics is preempted. In the output report, notice the sign condition for sign numbers 890 and 900 and the sign height for sign number 890 which have not been labelled with asterisks.

### Input Data

1234567890123456789012345678901234567890123456789012345678901234567890

MUTCD  
1  
0111R1-1  
/ISI  
END  
09

1234567890123456789012345678901234567890123456789012345678901234567890

M U T C D

INPUT DATA RECORD

BEGINNING

CROSS STREET

CROSS STREET

SIGN NUMBER

SECTOR(S) INVENTORY ROUTE

1 1

PROCESS ALL SIGNS THAT EXACTLY MATCH THE FOLLOWING SIGN TYPE : R1-1  
WITH DEFICIENCIES IN THE FOLLOWING AREA(S)  
SIGN VISIBILITY

SIGN NO	INVENTORY ROUTE	DIST	INVENTORY DIRECTION	CROSS STREET	FACE	LAT DIST	SIDE RDWY	ASS NO	MUTCD NUMBER	SHAPE	COLOR	HORZ	VERT	SIGN REFL	COND	VIS	PAGE HEIGHT	2 POLE COND
300	ADAMS	15	NORTH	SECOND	N	10	L	1	R1-1	OCT	W/R	24	24	Y	GOOD	*B *	7.0	GOOD
890	WILSON	370	NORTH	THIRD	S	5	R	1	R1-1	OCT	W/R	24	24	Y	ILLEG	*OS*	5.5	GOOD
900	WILSON	20	NORTH	SECON1	N	5	L	1	R1-1	OCT	W/R	24	24	Y	BENT	*AS*	7.0	GOOD

3 RECORDS LISTED  
REQUESTED LISTING COMPLETED

UTCD PROGRAM COMPLETE



## 7. Command: COPY

After a length of time, the historical sign inventory files may become large enough that it is desired to remove this information from regular SCSIS processing.

### EXAMPLE 7A

Use the COPY command to copy the contents of the historical sign inventory file for Sector 1 onto magnetic tape.

#### Explanation

An image of each sign record is written to the output report from the specified historical sign inventory file. After the file has been copied onto tape, it is then read from the tape and written again to produce a second report. These two reports should be identical.

#### Input Data

.234567890123456789012345678901234567890123456789012345678901234567890

COPY

1

19

1234567890123456789012345678901234567890123456789012345678901234567890

SECTOR 1 HISTORICAL FILE DUMP FROM DISK						
1	1N	100ADAMS	120FOURTHS	2R1R2-1(35)	21243061150032	00 71582
2	1N	100ADAMS	120FOURTHS	2R1R2-1(35)	21243011170031	63 9 782
4	1N	690TAFT	360SECONDS	5R1R1-1	44303011170011NEW SIGN	09 9 182
1	1E	910WILSON	350SECON1W	2R1W14-4	18303031170011	00 71582
2	1E	910WILSON	350SECON1W	2R1W14-4	18303011170011	43 9 882
1	1E	1980FOURTH	500ADAMS E	5L2R7-170	25121811040041NO PKG SAT-SUN	00 71582
5	1	1980FOURTH	0ADAMS	0 0	00 0 0000 0000SIGN DELETED	31 9 982
4	1N	2100BEECH	30FOURTHS	5R1W14-1	18303011170011NEW SIGN	09 91282

SECTOR 1 HISTORICAL FILE DUMP FROM TAPE					
1	IN	100ADAMS	120FOURTHS	2R1R2-1(35)	21243061150032 00 71582
2	IN	100ADAMS	120FOURTHS	2R1R2-1(35)	21243011170031 63 9 782
4	IN	690TFT	360SECONDS	5R1R1-1	44303011170011NEW SIGN 09 9 182
1	1E	910WILSON	350SECON1W	2R1W14-4	18303031170011 00 71582
2	1E	910WILSON	350SECON1W	2R1W14-4	18303011170011 43 9 882
1	1E	1980FOURTH	500ADAMS E	5L2R7-170	25121811040041NO PKG SAT-SUN 00 71582
5	1	1980FOURTH	0ADAMS	0 0	00 0 0000 0000SIGN DELETED 31 9 982
4	IN	2100BEECH	30FOURTHS	5R1W14-1	18303011170011NEW SIGN 09 91282





## APPENDIX A

Various sign types are identified in Table A-1. Each sign type has a MUTCD number assigned to it and its legend identified. The MUTCD numbers which appear in the table are, in general, actual designations which have been taken from the Manual on Uniform Traffic Control Devices although several have been contrived to represent other sign types which are in place in Sioux City.

The list of MUTCD numbers in Table A-1 should be extended to cover all sign types encountered in a particular jurisdiction so that each sign can be referred to consistently.

**TABLE A-1**  
**SIGN CODES**  
Sioux City, Iowa

Regulatory Signs:

MUTCD

Number

Sign Legend

R1-1	Stop
R1-2	Yield
R1-3(3)	3-Way
R1-3(4)	4-Way
R1-4	All Way
R2-1(*)	Speed Limit *
R2-2	Truck Speed
R2-3	Night Speed
R2-4	Minimum Speed
R2-4A	Combination Speed
R2-5A	Reduced Speed Ahead
R2-5B(*)	Reduced Speed *
R2-5C	Speed Zone Ahead
R3-1	No Right Turn (Symbol)
R3-1P	No Right Turn (Plaque)
R3-1A	No Right Turn
R3-2	No Left Turn (Symbol)
R3-2P	No Left Turn (Plaque)
R3-2A	No Left Turn
R3-3	No Turns
R3-4	U-Turn Prohibition
R3-5L	Left Turn Only (Symbol)
R3-5R	Right Turn Only (Symbol)
R3-6L	Optional Left Turn and Through (Symbol)
R3-6R	Optional Right Turn and Through (Symbol)
R3-7L	Left Lane Must Turn Left
R3-7R	Right Lane Must Turn Right



# Regulatory Signs: (continued)

## MUTCD

Number	Sign Legend
R3-8L	Left Turn Only and Optional Left Turn and Through (Symbol)
R3-8R	Right Turn Only and Optional Right Turn and Through (Symbol)
R3-8LL	Double Left Turn Only (Symbol)
R3-8RR	Double Right Turn Only (Symbol)
R4-1	Do Not Pass
R4-2	Pass With Care
R4-3	Slower Traffic Keep Right
R4-5	Trucks Use Right Lane
R4-6	Truck Lane * Feet
R4-7	Keep Right (Symbol)
R4-7P	Keep Right (Plaque)
R4-7A	Keep Right →
R4-7B	Keep Right ↗
R4-8	Keep Left (Symbol)
R4-8P	Keep Left (Plaque)
R4-8A	Keep Left ←
R4-8B	Keep Left ↖
R5-1	Do Not Enter
R5-1A	Wrong Way
R5-2	No Trucks (Symbol)
R5-2P	No Trucks (Plaque)
R5-2A	No Trucks
R5-3	No Motor Vehicles
R5-4	Commercial Vehicles Excluded
R5-5	Vehicles With Lugs Prohibited
R5-6	No Bicycles (Symbol)
R6-1L	One Way ←
R6-1R	One Way →
R6-2L	One Way ←
R6-2R	One Way →
R6-3	Divided Highway - 4 Legged Intersection (Symbol)
R6-3A	Divided Highway - "T" Intersection (Symbol)

## Regulatory Signs: (continued)

## MUTCD

Number	Sign Legend
R8-1	No Parking On Pavement
R8-2	No Parking Except on Shoulder
R8-3	No Parking
R8-3L	No Parking ←
R8-3R	No Parking →
R8-3A	No Parking (Symbol)
R8-4	Emergency Parking Only
R8-5	No Stopping On Pavement
R8-6	No Stopping Except On Shoulder
R8-7	Emergency Stopping Only
R8-8	Do Not Stop On Tracks
R9-1	Walk On Left Facing Traffic
R9-2	Cross Only At Crosswalks
R9-3A	No Pedestrian Crossing
R9-3B	Use Crosswalk →
R9-4	No Hitchhiking
R9-4A	No Hitchhiking (Symbol)
R10-1	Cross On Green Light Only
R10-2	Cross On Walk Signal Only
R10-3	Push Button For Green Light
R10-4	Push Button For Walk Signal
R10-6	Stop Here On Red
R10-7	Do Not Block Intersection
R10-8	Use Lane With Green Arrow
R10-10	Left Turn Signal
R10-11A	No Turn On Red
R10-12	No Right Turn On Red
R11-1	Keep Off Median
R11-2	Road Closed
R11-3(*)	Road Closed * Miles Ahead
	Local Traffic Only
R11-4	Road Closed To Thru Traffic

## Regulatory Signs: (continued)

### MUTCD

Number	Sign Legend
R12-1(*)	Weight Limit * Tons
R12-2(*)	Axle Weight Limit * Tons
R12-3(*)	No Trucks Over * Lbs Empty Weight
R12-4(*)	Weight Limit
	(*) Tons Per Axle
	(*) Tons Gross
R12-5(*)	Weight Limit * (Truck Weight Limit Sign)
R13-1	All Trucks Commercial Vehicles Next Right
R14-1	Truck Route
R15-1	Railroad Crossbuck Sign
R15-2(*)	* Tracks (Number of Tracks Sign)

### Warning Signs:

W1-1L	Turn-Left (Symbol)
W1-1R	Turn-Right (Symbol)
W1-2L	Curve-Left (Symbol)
W1-2R	Curve-Right (Symbol)
W1-3L	Reverse Turn-Left (Symbol)
W1-3R	Reverse Turn-Right (Symbol)
W1-4L	Reverse Curve-Left (Symbol)
W1-4R	Reverse Curve-Right (Symbol)
W1-5L	Winding Road-Left (Symbol)
W1-5R	Winding Road-Right (Symbol)
W1-6	Large Arrow - Single (Symbol)
W1-7	Large Arrow - Double (Symbol)
W1-8	Chevron Alignment (Symbol)
W2-1	Cross Road (Symbol)
W2-2	Side Road (Symbol)
W2-3	Side Road - 45° (Symbol)
W2-4	T-Road (Symbol)
W2-5	Y-Road (Symbol)



Warning Signs: (continued)

MUTCD

Number

Sign Legend

W3-1	Stop Ahead
W3-1A	Stop Ahead (Symbol)
W3-2	Yield Ahead
W3-2A	Yield Ahead (Symbol)
W3-3	Signal Ahead (Symbol)
W3-3P	Signal Ahead (Plaque)
W3-3A	Signal Ahead
W4-1L	Merging Traffic-Left (Symbol)
W4-1R	Merging Traffic-Right (Symbol)
W4-1P	Merge (Plaque)
W4-2L	Pavement Width Transition Left (Symbol)
W4-2R	Pavement Width Transition Right (Symbol)
W5-1	Road Narrows
W5-2	Narrow Bridge
W5-2A	Narrow Bridge (Symbol)
W5-3	One Lane Bridge
W6-1	Divided Highway (Symbol)
W6-1P	Divided Highway (Plaque)
W6-1A	Divided Highway
W6-2	Divided Highway Ends (Symbol)
W6-2P	Divided Highway Ends (Plaque)
W6-2A	Divided Highway Ends
W6-3	Two Way Traffic (Symbol)
W6-3P	Two Way Traffic (Plaque)
W6-3a	Two Way Traffic
W7-1	Hill (Symbol)
W7-1P	Hill (Plaque)
W7-1A	Hill
W7-2	Trucks Use Lower Gear
W7-3	Grade
W7-3A(*)	Next * Miles
W7-3B(*)(*)	* Grade * Miles

Warning Signs: (continued)

MUTCD

Number	Sign Legend
W8-1	Bump
W8-2	Dip
W8-3	Pavement Ends
W8-3A	Pavement Ends (Symbol)
W8-4	Soft Shoulder
W8-5	Slippery When Wet (Symbol)
W8-5P	Slippery When Wet (Plaque)
W9-1L	Left Lane Ends
W9-1R	Right Lane Ends
W9-2L	Lane Ends Merge Left
W9-2R	Lane Ends Merge Right
W10-1	Railroad Advance Warning Sign
W11-1	Bicycle Crossing
W11-2	Advance Pedestrian Crossing (Symbol)
W11A-2	Pedestrian Crossing (Symbol)
W11A-2P	Pedestrian Xing (Plaque)
W12-1	Double Arrow - Down (Symbol)
W12-2(*)	Low Clearance Sign * ft. * in.
W12-2P	Low Clearance (Plaque)
W13-1(*)	Advisory Speed Plate - * M.P.H.
W13-2(*)	Exit * M.P.H.
W13-3(*)	Ramp * M.P.H.
W14-1	Dead End
W14-2	No Outlet
W14-3	No Passing Zone
W14-4	Limited Sight Distance
W15-1	Playground (Symbol)

## Guide Signs:

### MUTCD

Number	Sign Legend
M1-1(*)	Interstate Route Marker I - *
M1-4(*)	U.S. Route Marker U.S. - *
M1-5(*)	County Route Marker Rte. - *
M1-6(*)	State Route Marker I - *
M2-1	Junction Marker
M3-1	North
M3-2	East
M3-3	South
M3-4	West
M4-1	Alternate
M4-2	By-Pass
M4-3	Business
M4-4	Truck
M4-5	To
M4-6	End
M4-7	Temporary
M5-1L	Advance Turn Arrow - Left (Symbol)
M5-1R	Advance Turn Arrow - Right (Symbol)
M5-2L	Advance Turn Arrow - Left 45° (Symbol)
M5-2R	Advance Turn Arrow - Right 45° (Symbol)
M6-1	Directional Arrow - Horizontal (Symbol)
M6-2L	Directional Arrow - Left 45° (Symbol)
M6-2R	Directional Arrow - Right 45° (Symbol)
M6-3	Directional Arrow - Vertical (Symbol)
M6-4	Directional Arrow - Double Horizontal (Symbol)
M6-5L	Directional Arrow - Double Left 45° (Symbol)
M6-5R	Directional Arrow - Double Right 45° (Symbol)
M6-6L	Directional Arrow - Left and Vertical (Symbol)
M6-6R	Directional Arrow - Right and Vertical (Symbol)
M6-7L	Directional Arrow - Left 45° and Vertical (Symbol)
M6-7R	Directional Arrow - Right 45° and Vertical (Symbol)



## Destination Signs:

### MUTCD

<u>Number</u>	<u>Sign Legend</u>
D3(*)	Street Name Sign (* - Street Name)
D4	Municipal Parking Area Sign
D9-2	H (Hospital Symbol)
D9-2V	St. Vincent (Hospital Sign)
D9-2 V(*)L	St. Vincent (*) Blocks
D9-2V(*)R	St. Vincent (*) Blocks
D9-2J	St. Joseph (Hospital Sign)
D9-2J(*)L	St. Joseph (*) Blocks
D9-2J(*)R	St. Joseph (*) Blocks

## Information Signs:

I-20	Neighborhood Watch Area
------	-------------------------

## School Signs:

S1-1	School Advance (Symbol)
S2-1	School Crossing (Symbol)
S3-1	School Bus Stop Ahead
S4-1(*)	School Time Panel (*)
S4-2	When Children Are Present
S4-3	School
S4-4	When Flashing








## Object Markers:

OM-1	Type 1 Object Marker
OM-2	Type 2 Object Marker
OM-3L	Type 3 Object Marker - Left
OM-3R	Type 3 Object Marker - Right

## Delineators:


Del-1	Type 1 Delineator (Circular)
Del-2	Type 2 Delineator (Diamond)
Del-3	Type 3 Delineator (Rectangular)

TABLE A-1  
SUPPLEMENTARY CODES

MUTCD Number	Sign Legend
D3A	Street Indications
D4	Parking  or 
D4-1	Parking
D7-3	Briar Cliff Morningside WIT
D9-2	"H"
D9-2A	Hospital
D9-2B(#)	distance plate ie: (2 blocks)
D9-2(letter)	<u>M</u> Marian <u>J</u> St. Joseph <u>L</u> St. Luke's <u>T</u> Trauma Center <u>V</u> St. Vincent's
D9-20	Entrance (arrow)
I-5A	Airport 
I-8	Sioux City Stockyards
I-10	City Limits Sioux City
I-20	#7 Neighborhood Watch Area
I-21	Bookmobile
I-22	Fly Ash
OM-3L	Object Marker 
OM-3R	Object Marker 
R3-4	 No U Turn
R3-20	

SEE ALSO  
"SIGN CODES"

Supplementary codes: (continued)


MUTCD Number	Sign Legend
R5-1	Do Not Enter
R5-1B	One Way Do Not Enter
R5-3A	All Vehicles Prohibited
R5-10d	No Pedestrians
R6-4	End One Way
R6-4A(*)	distance plaque (*distance in feet)
R6-5	2 Way Traffic Ends
R6-6	Two Way Traffic
R7-1	No Parking Any Time
R7-1a	
R7-2(*)	No Parking *hours
R7-2S	#2 emergency snow route
R7-7	No Parking Bus Stop
R7-7S	No Parking School Bus Stop
R7-7X	Bus Company information
R7-20	No Parking
R7-21	No Parking In Drive
R7-22	No Parking This Side
R7-22A	No Parking This Side of Street
R7-23	No Parking Passenger Loading Zone 3 Minute Limit
R7-24	No Parking Loading Zone (no time limit)
R7-25	#3 No Parking Loading Zone 12 Min. Limit #4 No Parking 12 Min. Loading Zone
R7-26	No Stopping or Standing
R7-27	Parallel Parking Only
R7-27A	Parallel Parking
R7-28	No Parking Here To Corner
R7-29	12 Minute Parking
R7-30	30 Minute Parking
*R7-31(*)	1 Hour Parking 8 AM to 6 PM (* hours) }
*R7-32(*)	2 Hour Parking 8 AM to 6 PM (* hours)
R7-35	Official Cars Only
R7-36	No Parking In Alley
R7-37	No Parking Between Signs
R7-38	Angle Parking












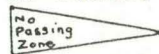
Supplementary codes: (continued)

MUTCD  
Number

Sign Legend

R7-39	 Parking
R7-39A	State Permit Required
R7-39B	This Stall Only
R7-40	Official Police Cars Only
R7-41	No Truck Parking In Lot Police Order
R7-42	No Parking Fire Lane
R7-45	Stall Sign
R10-12	Left Turn Yield On Green
R11-5	Delivery
R11-6	Alley
R12-6	Bridge Ahead (tons)
R14-2	No Thru Trucks
R14-3	Truck Route
R15-1	No Dumping

S1-1	School Advance
S2-1	School Crosswalk

W1-3R	
W1-6R	
W1-6L	
W1-7	
W1-8R	
W1-8L	
W2-3	
W2-6	
W2-7	
W3-1	Stop Ahead
W8-2	Dip
W8-3	Pavement Ends
W14-1	Dead End
W14-2	No Outlet
W14-3	
W15-1A	Playground

W16-1	Emergency Vehicle Entrance
W16-2	Emergency Vehicle Exit Ahead

Supplementary codes: (continued)

<u>MUTCD Number</u>	<u>Sign Legend</u>
W17-1	Caution Turning Buses
W17-2	Gravel Ends (miles)
W18-1	Watch For Children
L Suffix	Left Arrow
R Suffix	Right Arrow
B Suffix	Double Arrow

\*Also use these codes for timed parking with no hours specified.

The values of sign characteristics for selected MUTCD designations appear in Table A-2. These values are coded in a look-up table which is referenced when a sign is checked for condition, conformance, etc., through the use of the MUTCD command.

In addition to the characteristics listed in Table A-2, all sign types are checked for sign mounting height, sign condition, visibility, and post condition. The proper values for these characteristics are as follows.

<u>Check</u> <u>Characters</u>	<u>Number</u> <u>In Assembly</u>	<u>Visibility</u>	<u>Sign</u> <u>Condition</u>	<u>Post</u> <u>Condition</u>	<u>Height</u>
		1	1	1	
	1				65
	2				60
OM-1					40
OM-2					40
OM-3					40

If the characteristics coded for the sign record being checked does not match the corresponding values that are in the table, a flag is set which identifies the sign and/or mounting assembly as deficient. To determine which set of characteristics in the table against which a particular sign will be compared, a match is attempted between the thirteen character MUTCD number contained in the sign record being examined and the check characters that appear in Table A-2. The leftmost check character which is listed in the table corresponds to the leftmost character coded for the MUTCD number field in the sign record. All blank columns in the check characters listed in the table represent locations within the MUTCD number field which must be blank in order for a match to occur. All columns that appear as spaces represent locations which are not checked.



TABLE A-2  
SIGN CHARACTERISTIC CODES  
Sioux City, Iowa

Regulatory Signs:

Check Characters	Shape	Color	Minimum Size		Refl.
			Horz.	Vert.	
R1-1	4	4	24	24	1
R1-2	5	5	36	36	1
R1-3	2	4	12	6	1
R1-4	2	4	18	6	1
R2-1(	2	1	24	30	1
R2-2b	3	1	24	24	1
R2-3b	3	3	24	24	1
R2-4b	2	1	24	30	1
R2-4A	2	1	24	48	1
R2-5A	2	1	24	30	1
R2-5B	2	1	24	30	1
R2-5C	2	1	24	30	1
R3-1b	3	2	24	24	1
R3-1Pb	2	1	24	18	1
R3-1Ab	2	1	24	30	1
R3-2b	3	2	24	24	1
R3-2Pb	2	1	24	18	1
R3-2Ab	2	1	24	30	1
R3-3b	3	1	24	24	1
R3-4b	3	2	24	24	1
R3-5Lb	2	1	30	36	1
R3-5Rb	2	1	30	36	1
R3-6Lb	2	1	30	36	1
R3-6Rb	2	1	30	36	1
R3-7Lb	3	1	30	30	1
R3-7Rb	3	1	30	30	1

TABLE A-2 (Continued)

Check Characters	Shape	Color	Minimum Size		Refl.
			Horz.	Vert.	
R 3-8L <del>bbb</del>	3	1	30	30	1
R 3-8R <del>bbb</del>	3	1	30	30	1
R 3-8LL <del>bb</del>	3	1	30	30	1
R 3-8RR <del>bb</del>	3	1	30	30	1
R 3-9A <del>bbb</del>	2	1	30	36	1
R 3-9B <del>bbb</del>	2	1	24	36	1
R 4-1b	2	1	24	30	1
R 4-2b	2	1	24	30	1
R 4-3b	2	1	24	30	1
R 4-5b	2	1	24	30	1
R 4-6b	2	1	24	30	1
R 4-7b	2	1	24	30	1
R 4-7P	2	1	24	18	1
R 4-7A	2	1	24	30	1
R 4-7B	2	1	24	30	1
R 4-8b	2	1	24	30	1
R 4-8P	2	1	24	18	1
R 4-8A	2	1	24	30	1
R 4-8B	2	1	24	30	1
R 5-1b	3	4	30	30	1
R 5-1A	2	4	36	24	1
R 5-2b	3	2	24	24	1
R 5-2P	2	1	24	18	1
R 5-2A	2	1	24	30	1
R 5-3b	3	1	24	24	1
R 5-4b	2	1	24	30	1
R 5-5b	2	1	24	30	1
R 5-6b	3	2	24	24	1

TABLE A-2 (Continued)

Check Characters	Shape	Color	Minimum Size		Refl.
			Horz.	Vert.	
R6-1	2	1	36	12	1
R6-2	2	1	18	24	1
R6-3	2	1	24	12	1
R7	2		12	18	
R8-1b	2	5	24	30	
R8-2b	2	5	24	30	
R8-3b	2	5	24	30	
R8-3A	3	2	24	24	
R8-3L	2	5	24	30	
R8-3R	2	5	24	30	
R8-4b	2	1	30	24	
R8-5b	2	5	24	30	
R8-6b	2	5	24	30	
R8-7b	2	1	30	24	
R8-8b	3	2	18	18	
R9-1b	2	1	18	24	
R9-2b	2	1	12	18	
R9-3A	3	2	18	18	
R9-3B	2	1	18	12	
R9-4b	2	1	18	24	
R9-4A	3	2	24	24	
R10 1 <del>b</del>	2	1	12	18	
R10 2 <del>b</del>	2	1	12	18	
R10 3 <del>b</del>	2	1	9	12	
R10 4 <del>b</del>	2	1	9	12	
R10 5 <del>b</del>	2	1	12	18	1
R10 6 <del>b</del>	2	1	24	36	1
R10 7 <del>b</del>	2	1	24	30	1
R10 8 <del>b</del>	2	1	24	30	1
R10 10 <del>b</del>	2	1	24	30	1
R10 11Ab	2	1	24	30	1
R10 12 <del>b</del>	2	1	24	30	1



TABLE A-2 (Continued)

Check Characters	Shape	Color	Minimum Size		Refl.
			Horz.	Vert.	
R11 1	2	1	24	30	1
R11 2	2	1	48	30	1
R11 3	2	1	60	30	1
R11 4	2	1	60	30	1
R12 1	2	1	24	30	1
R12 2	2	1	24	30	1
R12 3	2	1	24	36	1
R12 4	2	1	36	24	1
R12 5	2	1	30	36	1
R13 1	2	3	72	48	1
R14 1	2	1	24	18	1
R15 1	7	1	48	9	1
R15 2		1			1
Warning Signs:					
W1-1	1	8	30	30	1
W1-2	1	8	30	30	1
W1-3	1	8	30	30	1
W1-4	1	8	30	30	1
W1-5	1	8	30	30	1
W1-6	2	8	48	24	1
W1-7	2	8	48	24	1
W1-8	2	8	18	24	1

TABLE A-2 (Continued)

Check Characters	Shape	Color	Minimum Size		Refl.
			Horz.	Vert.	
W2-1	1	8	30	30	1
W2-2	1	8	30	30	1
W2-3	1	8	30	30	1
W2-4	1	8	30	30	1
W2-5	1	8	30	30	1
W3-1b	1	8	36	36	1
W3-1A	1	0	36	36	1
W3-2b	1	8	36	36	1
W3-2A	1	0	36	36	1
W3-3b	1	0	36	36	1
W3-3P	2	8	24	18	1
W3-3A	1	8	36	36	1
W4-1L	1	8	30	30	1
W4-1R	1	8	30	30	1
W4-1P	2	8	24	18	1
W4-2L	1	8	36	36	1
W4-2R	1	8	36	36	1
W5-1	1	8	36	36	1
W5-2	1	8	30	30	1
W5-3	1	8	36	36	1
W6-1b	1	8	36	36	1
W6-1P	2	8	24	18	1
W6-1A	1	8	36	36	1
W6-2b	1	8	36	36	1
W6-2P	2	8	24	18	1
W6-2A	1	8	36	36	1
W6-3b	1	8	30	30	1
W6-3P	2	8	24	18	1
W6-3A	1	8	30	30	1

TABLE A-2 (Continued)

Check Characters	Shape	Color	Minimum Size		Refl.
			Horz.	Vert.	
W7-1b	1	8	30	30	1
W7-1P	2	8	24	18	1
W7-1A	1	8	30	30	1
W7-2b	2	8	24	18	1
W7-3b	2	8	24	18	1
W7-3A	2	8	24	18	1
W7-3B	2	8	24	18	1
W8-1b	1	8	30	30	1
W8-2b	1	8	30	30	1
W8-3b	1	8	30	30	1
W8-3A	1	8	36	36	1
W8-4b	1	8	30	30	1
W8-5b	1	8	30	30	1
W8-5P	2	8	24	18	1
W9-1	1	8	30	30	1
W9-2	1	8	36	36	1
W10 1	6	8	36	0	1
W11 1 <del>bbb</del>	1	8	30	30	1
W11 2 <del>bbb</del>	1	8	30	30	1
W11 -2 <del>bb</del>	1	8	30	30	1
W11 -2P <del>b</del>	2	8	24	18	1
W12 b	1	8	24	24	1
W12 (	1	8	36	36	1
W12 P	2	8	24	18	1
W13 1	3	8	18	18	1
W13 2	2	8	48	60	1
W13 3	2	8	48	60	1



TABLE A-2 (Continued)

Check Characters	Shape	Color	Minimum Size		Refl.
			Horz.	Vert.	
W14 1	1	8	30	30	1
W14 2	1	8	30	30	1
W14 3	5	8	48	36	1
W14 4	1	8	30	30	1
W15 1	1	8	36	36	1
Guide Signs:					
M1-1	0	0	24	24	1
M1-4	3	1	24	24	1
M1-5					1
M1-6	3	1	24	24	1
M2-1	2	1	21	15	1
M3-1	2	1	24	12	1
M3-2	2	1	24	12	1
M3-3	2	1	24	12	1
M3-4	2	1	24	12	1
M4-1	2	1	24	12	1
M4-2	2	1	24	12	1
M4-3	2	1	24	12	1
M4-4	2	1	24	12	1
M4-5	2	1	24	12	1
M4-6	2	1	24	12	1
M4-7	2	1	24	12	1
M5-1	2	1	21	15	1
M5-2	2	1	21	15	1

TABLE A-2 (Continued)

Check Characters	Shape	Color	Minimum Size		Refl.
			Horz.	Vert.	
M6-1	2	1	21	15	1
M6-2	2	1	21	15	1
M6-3	2	1	21	15	1
M6-4	2	1	21	15	1
M6-5	2	1	21	15	1
M6-6	2	1	21	15	1
M6-7	2	1	21	15	1
Destination Signs:					
D3	2	7			1
D4	2	6	30	24	1
D9-2b	3	9	24	24	1
School Signs:					
S1-1	8	8	30	30	
S2-1	8	8	30	30	
S3-1	1	8	30	30	1
S4-1	2	2	24	10	1
S4-2	2	2	24	10	1
S4-3	2	8	24	8	
S4-4	2	2	24	10	1
Object Markers:					
OM-1	1		18	18	1
OM-2	2		6	12	1
OM-3	2		12	36	1

## APPENDIX B

Based on a price sheet supplied by the City of Sioux City, material costs shown in Table B-1 were established to be used in SCSIS to estimate costs associated with replacing deficient signs identified through the use of the MUTCD command.

The unit costs which appear in Table B-1 are applicable only to those sign types which match one of the sign types listed in Table A-2. Replacement costs for sign types which do not match are computed by multiplying the size (in square feet) of the sign to be replaced by \$1.63 to determine the unit cost of reflective sheeting and by \$1.57 to determine the unit cost of the replacement sign blank. Unit costs for sign posts are \$8.36 and \$9.69 for 11' and 13' post lengths, respectively.



TABLE B-1  
SIGN MATERIAL COSTS  
Sioux City, Iowa

Sign Shape	Replacement Sign Size		Unit Cost (Each)	
	Horizontal	Vertical	Reflective Sheeting	Sign Blank
Diamond	18	18	\$ 3.65	\$ 3.75
Diamond	24	24	\$ 6.00	\$ 6.20
Diamond	30	30	\$10.15	\$ 9.70
Diamond	36	36	\$18.25	\$14.00
Rectangle	6	12	\$ 0.65	\$ 0.75
Rectangle	9	12	\$ 1.10	\$ 1.25
Rectangle	12	6	\$ 0.65	\$ 0.75
Rectangle	12	18	\$ 2.50	\$ 2.30
Rectangle	12	36	\$ 4.90	\$ 4.60
Rectangle	18	6	\$ 1.00	\$ 1.15
Rectangle	18	12	\$ 2.50	\$ 2.30
Rectangle	18	24	\$ 4.90	\$ 4.60
Rectangle	21	15	\$ 3.60	\$ 3.40
Rectangle	24	8	\$ 1.75	\$ 1.75
Rectangle	24	10	\$ 2.70	\$ 2.55
Rectangle	24	12	\$ 3.25	\$ 3.05
Rectangle	24	18	\$ 4.90	\$ 4.60
Rectangle	24	30	\$ 8.10	\$ 7.80
Rectangle	24	36	\$ 9.75	\$ 9.35
Rectangle	24	48	\$13.00	\$12.50
Rectangle	30	24	\$ 8.10	\$ 7.80
Rectangle	30	36	\$12.20	\$11.70
Rectangle	36	12	\$ 4.90	\$ 4.60
Rectangle	36	24	\$ 9.75	\$ 9.35
Rectangle	48	24	\$13.00	\$12.50
Rectangle	48	30	\$16.25	\$15.60
Rectangle	48	60	\$32.50	\$31.20
Rectangle	60	30	\$20.30	\$19.50
Rectangle	72	48	\$39.00	\$37.45

TABLE B-1 (Continued)

Sign Shape	Replacement Sign Size		Unit Cost (Each)	
	Horizontal	Vertical	Reflective Sheeting	Sign Blank
Square	18	18	\$ 3.65	\$ 3.45
Square	24	24	\$ 6.50	\$ 6.20
Square	30	30	\$10.15	\$ 9.70
Octagon	24	24	\$ 6.00	\$ 6.20
Triangle	36	36	\$ 6.65	\$14.00
Triangle	48	36	\$ 9.05	\$18.70
Round	36		\$13.15	\$14.00
Crossbuck	48	9	\$ 9.80	\$ 9.20
Pentagon	30	30	\$10.15	\$ 9.70

## APPENDIX C

The listing of individual sign record information is an optional report provided by the LIST and MUTCD commands. In these reports, abbreviations have been substituted for the numeric codes that are present in each sign record. This was done to minimize the effort in decoding the report itself.

Initially, the user will probably need an explanation of a few of the abbreviations which were developed. The table in this appendix shows the relationship between the numbers originally coded, the abbreviations which appear in the reports, and the information which is being represented.



TABLE C-1  
EXPLANATION OF ABBREVIATIONS

Sign Shape:

<u>Numeric Code</u>	<u>Abbreviation</u>	<u>Description</u>
1	DIA	Diamond
2	RECT	Rectangle
3	SQR	Square
4	OCT	Octagon
5	TRI	Triangle
6	RND	Round
7	XBK	Crossbuck
8	PENT	Pentagon
9	TRAP	Trapezoid
0	O	Other

Sign Color:

1	B/W	Black on white
2	BR/W	Black and red on white
3	W/B	White on black
4	W/R	White on red
5	R/W	Red on white
6	G/W	Green on white
7	W/G	White on green
8	B/Y	Black on yellow
9	W/BL	White on blue
0	O	Other

Sign Condition:

Numeric

<u>Code</u>	<u>Abbreviation</u>	<u>Description</u>
1	GOOD	Good
2	BENT	Bent
3	DEFACE	Defaced
4	FADED	Faded
5	ILLEG	Not legible
6	MAP/CP	Map cracked, peeling
7	DAMAGE	Damaged
8	RUSTY	Rusty
9	COMB	Combination
0	OTHER	Other

Sign Reflectivity:

1	Y	Reflective
2	N	Non-reflective

Sign Visibility:

1	OK	Easily seen
2	OS	Hidden by official sign
3	AS	Hidden by advertising sign
4	B	Hidden by brush
5	T	Hidden by tree limbs
6	PV	Hidden by parked vehicles
7	CU	Hidden because of curve
8	HI	Hidden because of hill
9	O	Other

Sign Backing Material:

1	A	Aluminum
2	S	Steel
3	O	Other

Post Type:

<u>Numeric Code</u>	<u>Abbreviation</u>	<u>Description</u>
1	ST	Steel sign post
2	WO	Wood sign post
3	SN	Street name sign post
4	UT	Utility post
5	2P	2" pipe
6	U	U post
7	TS	Signal pole
8	O	Other

Post Condition:

1	GOOD	Good
2	DAMAGE	Damaged
3	AWRY	Needs plumbing
4	OTHER	Other

Sign Change:

1	RLS	Relocate sign
2	RMS	Remove sign
3	RMSP	Remove sign and post
4	RPS	Replace sign
5	RPP	Replace post
6	RPSP	Replace sign and post
7	SS	Straighten sign
8	CSHT	Correct sign height
9	IVIS	Improve visibility
0	O	Other



Reason for Change:

<u>Numeric</u>	<u>Abbreviation</u>	<u>Description</u>
<u>Code</u>		
1	NONEED	No longer needed
2	VANDAL	Vandalism
3	ACC	Damaged by accident
4	RBDETC	Rusty, bent, defaced, etc.
5	FADED	Faded
6	LOSSR	Loss of reflectivity
7	ILLEG	Not legible
8	NONCON	Nonconforming to standards
9	OTHER	Other

## SUMMARY

The example applications included in this chapter illustrate the process of creating the initial files which are necessary to use SCSIS, how to use the work order information to update sign information, how to update the street network to accommodate new signs on new streets, and a few examples of how to use the LIST and MUTCD commands to get questions about the City's traffic sign operation answered.

Of course, any combination of commands can be used in a single run of SCSIS. The user is reminded that the last input card of a run is always the Program Terminator card.

## APPENDIX D

Much work remains in the area of error detection and recovery in SCSIS. At this stage of its development, it is common to have a run time error message returned by the system as a result of improper input coding.

Until additional effort is directed towards eliminating this condition, the SCSIS user will need to utilize the appropriate system reference manuals as well as the error messages listed in Table D-1 to help in pinpointing the sources of errors.

The corrective actions which are suggested in Table D-1 omit sources of error which can exist if the original data base has been coded improperly. The user is cautioned to verify each record of the initial data base to make certain that it is correct prior to proceeding with additional processing tasks.



TABLE D-1  
SCSIS ERROR MESSAGES

1. INVENTORY ROUTE XXXXXX ALREADY EXISTS IN FILE NUMBER XXX. REQUESTED ROUTE FILE ADDITION (MODE=3) NOT ACCOMPLISHED. STOP PROCESSING.

Explanation

Attempted to add a new route using a street name code which has already been used in the sector being processed.

- A. Check coding of sector number and inventory route name on the Inventory Route card (NETWORK command).
- B. Check coding of the Mode Selection card (NETWORK command).

2. COULD NOT FIND INVENTORY ROUTE XXXXXX IN FILE NUMBER XXX. REQUESTED UPDATE TO CROSS STREET FILE (MODE=2) NOT ACCOMPLISHED. STOP PROCESSING.

Explanation

Attempted to update the contents of the street inventory file of a route which could not be located in the sector being processed.

- A. See A and B of error message 1.

3. COULD NOT FIND INVENTORY ROUTE XXXXXX IN FILE NUMBER XXX. STOP PROCESSING.

Explanation

The inventory route name has been miscoded on a parameter card associated with the UPDATE, LIST, MUTCD, or NETWORK command.

- A. Check coding of the inventory route name by comparing with the inventory route name which appears on the street inventory files for the particular sector.

4. COULD NOT FIND INVENTORY ROUTE XXXXXX IN FILE NUMBER XXX. SIGN NO = XXXXXX.

Explanation

The inventory route name coded on the Sign Inventory card associated with the SIGN command does not match any inventory route name in the inventory route file for the particular sector.

A. See A of error message 3.

5. COULD NOT FIND DATA FOR SIGN NUMBER XXXXX IN FILE NUMBER XX. STOP PROCESSING.

Explanation

A sign number which has been requested in a current or historical sign inventory file could not be found.

A. If using the LIST command to list a particular sign by specifying the sign number, verify that this sign number does exist.

B. If using the UPDATE command to update or delete an existing sign, verify that the sign number does exist.

6. COULD NOT FIND DATA TO UPDATE FIRST SIGN NUMBER FOR INVENTORY ROUTE XXXXXX, CROSS STREET XXXXXX IN SECTOR XX. POINTER 1 = XXXX POINTER 2 = XXXX

Explanation

The cross street name of a sign in the process of being updated could not be located in the street inventory files.

A. Check coding of cross street name on the Work Order parameter card.



7. COULD NOT FIND CROSS STREETS XXXXXX AND/OR XXXXXX FOR INVENTORY ROUTE XXXXXX IN FILE NUMBER XXX. STOP PROCESSING.

Explanation

The cross street name has been miscoded on a parameter card associated with the LIST, MUTCD, or NETWORK command.

- A. Check coding of the cross street name by comparing with the cross street names which appear on the street inventory files for the particular sector.

8. IMPOSSIBLE TO PROCESS REQUESTED ADDITION TO ROUTE FILE. INVENTORY ROUTE XXXXXX IN SECTOR XX UPDATED. INCREASE RECORD QUANTITY DEFINED FOR FILE NUMBER XXX.

Explanation

The maximum number of records permitted for the file in direct access has been reached.

- A. Change appropriate space parameter and/or DEFINE FILE parameter.

9. IMPOSSIBLE TO PROCESS REQUESTED UPDATE TO ROUTE FILE. INVENTORY ROUTE XXXXXX IN SECTOR XX NOT UPDATED. INCREASE RECORD QUANTITY DEFINED FOR FILE NUMBER XXX.

Explanation

See error message 8.

10. ONLY XX AVAILABLE RECORDS REMAIN FOR FILE NUMBER XX.

Explanation

Warning regarding available space remaining for individual direct access files.

- A. See A of error message 8.



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