SURVEY PROCESSING SOFTWARE (SPS)

Version 3.2.0

User Manual

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Prepared For:

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I. Introduction

Survey Processing Software (SPS), Version 3.2, was developed to provide the Florida Department of Transportation (FDOT) District Offices with software that can transfer data from a variety of highway traffic counters to PCs, perform standards editing, and then transfer summarized classification and count data statistics from their PC to the FDOT mainframe. The software will also download the station inventory from the mainframe to the District PC.

SPS is available in two versions: the *District* version and the *Consultant* version.

District Version

The SPS District version can download station inventory information from the FDOT mainframe and upload summarized count and classification information to the FDOT mainframe.

Consultant Version

The SPS Consultant version does not have mainframe data transfer capabilities but is identical to the District version in all other respects.

Architecture

SPS was created using Microsoft Visual FoxPro, version 6.0. Some components of the system were implemented using Microsoft Visual Basic 6.0 and Microsoft Visual C++ version 6.0.

II. Frequently Asked Questions

Question: WHY WON'T MY FILES LOAD INTO THE DATABASE?

Answer: There are several reasons why this may be happening. You would first want to check that the 10-digit site identification numbers are correct on the file(s) that you are trying to load. Also verify that you have a valid station on your Station Inventory. If those are correct then you may have to check the file format of the data file(s) that you want to load and verify the file format as it is listed in Appendix C. Comparing the file format of the file(s) you are trying to load versus a file that has successfully loaded is also a good troubleshooting practice.

Question: WHY DOES IT SAY ONLY ONE 24-HR BLOCK OF DATA WAS SUMMARIZED WHEN IT WAS A 48-HOUR COUNT?

Answer: If there is more than one file for that station, verify that they all start and stop at the same time. The program is looking for common 24-hr blocks of data for all files. Also check to see if you really have 48-hrs of data in the file.

Question: I CREATED A *.SYN* FILE BUT THERE ARE NO FILES IN THE *.SYN* DIRECTORY.

Answer: In order to have a *.SYN* file that can be moved, stored, or transferred; you must create an ASCII version of the file. If you do not make an ASCII version of the *.SYN* file, you are still able to access the *.SYN* file and print it, but you cannot electronically move or store it. These non-ASCII files are also deleted the next time that you clear the database.

Question: WHY DO I GET A "LANE MISSING" or "INVALID DIRECTION" ERROR FOR MY COUNT WHEN ALL LANES WERE COUNTED?

Answer: Most errors that you receive when loading or editing counts are being based on the coded information in the Station Inventory. Although the data file may be coded correctly, the Station Inventory may not have been updated or is simply incorrect with regards to direction and number of lanes. It is important to check that all of the coding in the Station Inventory is correct and updated to reflect the same coding that is being used in your data files. Counts will not be processed if there are conflicting codes between the Station Inventory and Site Identification used in your data file.

III. SPS Installation Requirements

System Requirements

SPS requires a minimum of 20 MB of system RAM and 50 MB of local hard disk space. A Pentium MMX with a 200 MHz or better clock speed is the minimum CPU required. SPS also requires a 32-bit version of Windows, that is, Windows 95, 98, Millennium, Windows NT 4.0 Service Pack 5+, or any version of Windows 2000.

The District version of SPS requires local FTP access to the FDOT mainframe within the FDOT firewall. No remote mainframe interactions are allowed.

A CD-ROM drive is required to install SPS.

Enhancements to Version 3.2.0

Local Inventory – User can add or delete County-Stations to PTMS. Inventory.

.SYN Files – User can select a specific .SYN File or a group of files to Print.

Archived Data – User are able to deletes Archived Data

Installation

SPS is installed using the SPS Installation CD-ROM. Place the CD-ROM in a CD-ROM drive and, from the Windows Explorer, click on the Setup icon.

The system must be installed in a directory named *SPS*\. Do not change the target directory.

Set Preferences

Allows user to select District Number and select class limits for classes 1,4, & 15. The Default Values for these classes are as follows:

Class 1 = 3%
Class 4 = 5%
Class 15 = 10%

Loading PTMS. Inventory File

From the Windows Menu click on Tools and select on Import PTMS. Inventory from Inventory File. Select directory that contains the PTMS.Inv File, select File and click OK.

Load Variance Factors (Alt+A)

This function allows you to load new variance factors from an external file. When you run this function, you will be prompted to select the new variance factors file from a File Open dialog. Variance factors can only be loaded from the computers (A:) 3 ½“ disk drive.

These consist of minimum and maximum limits for each month with both seasonally factored and axle factored volumes. Sites where the data is collected as per-vehicle data (classification or presence) are compared to the seasonally factored limits while sites where the volume data is collected by axle (one road hose) are compared to the axle factored limits.

In situations where a new station was created, where there is a “0”, or if there is no variance factors entered, it is necessary to input a “1” in the minimum AND maximum seasonal and axle total columns so that it will process the data. These need only be inputted for the selected month or months that the count was actually taken.

From the SPS Main Functions Menu, Select Load Variance Factors Button, when prompted load 3½ disk into drive (A:), that contains the AXT.TXT File for that district. When prompted insert the disk that contains the SVF.TXT File and select OK.

Documentation Conventions

Combined keystrokes are common in the use of the SPS application. For example, **Alt+B** means that you hold the **Alt** key down and press the **B** key simultaneously. **Shift+Click** means that you hold the **Shift** key down and **Click** the left mouse button simultaneously to select a range of files.

General Usage Guidelines

The following general guidelines are, more or less, common sense.

- ✓ ***Never*** shut down the computer by shutting off the power. Always shutdown using the Windows **Start | Shut down…** menu option. If you turn off the computer without following Windows shutdown standards, data corruption may occur.
- ✓ ***Avoid*** blank entries; double check all data entry. Invalid data may skew edit and/or statistical results.
- ✓ ***Ensure*** that the counter you want to load raw data from is on and working before using the Load Raw Data function in SPS.

Running the Application

From the Windows **Start | Programs** menu, choose the FDOT Applications menu option and then double-click on SPS, shown with an FDOT icon.

IV. Main System Menu Functions

The following figure shows the main SPS screen as it is displayed when you run the application.

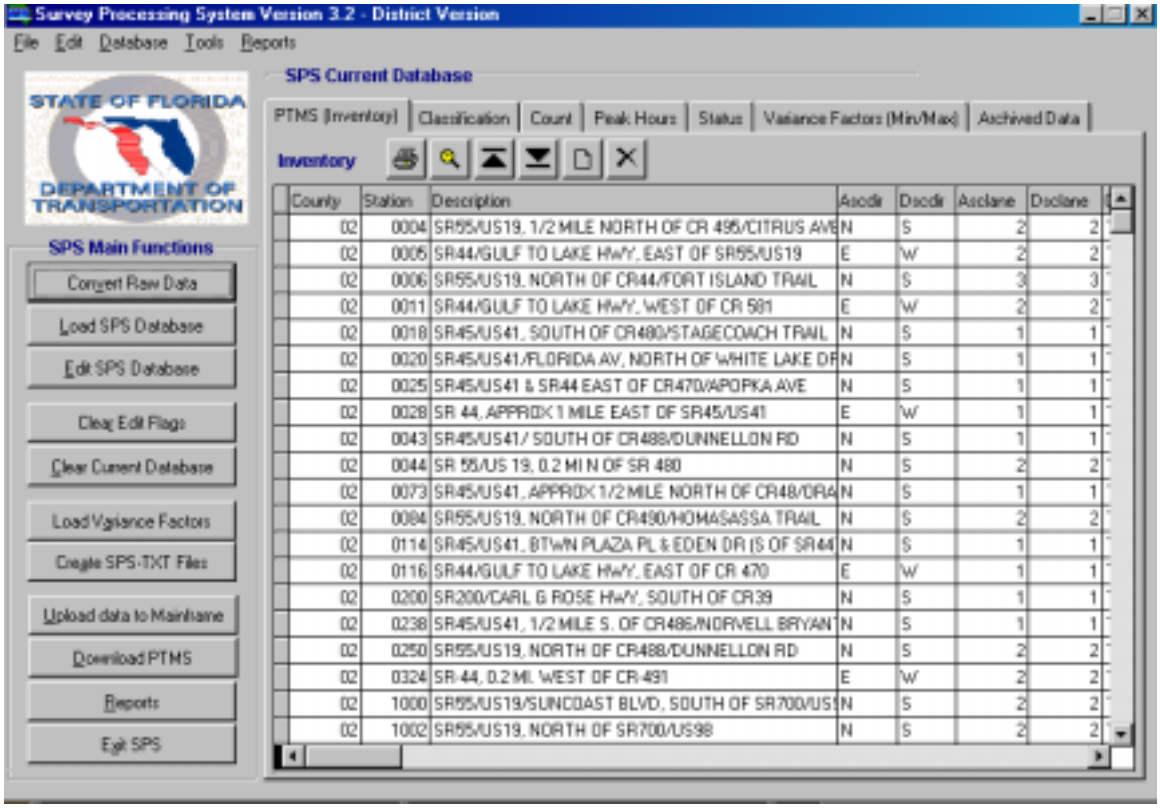


Figure 1: The SPS Main Screen (District Version)

In the main display area is shown the station inventory. This display can be changed to show, respectively, classification counts and summary, volume counts and summary, peak hours, the status of data loads and edits, variance factors, and data archives. You can change this display by clicking on the respective tab.

To the left of the main display area are the primary application function buttons. At the top of the screen are the main system menu functions.

IV.1 Main Screen Menu Functions

At the top of the main screen are the main system menu functions. Many of these menu options duplicate functionality found in the primary function buttons. The primary menu pad is composed of **File, Edit**, **Database**, **Tools**, and **Reports** options. The functions contained within these menu pads are detailed herein.

File options

Menu Function(s)	**Description and Usage**
Set Preferences	Launches a window where you can view or adjust class limits and district number.
Printer Setup	Launches the standard Windows Printer/Page Setup dialog where the printer and its current properties may be set. The available options vary according to the printer installed.
Open/View File	Allows you to open a file in a small window for viewing. You may not open certain files, such as binary or system files.
Print, Copy, Move, Delete File	Allows you to print, make a copy of, move, or delete files. Especially useful for TXT and SYN files.
Quit SPS	Closes the SPS application.

Edit options

Menu Function(s)	**Description and Usage**
Find (Ctrl+F)	Pops up a menu of the fields in the displayed data to find by. You can then enter criteria; the first record in the displayed list matching this criteria will be displayed.

Database options

These menu options have the same functionality as the primary function buttons and are provided simply as an alternate means of running those functions.

Tools options

Most of these menu options have the same functionality as similarly named primary function buttons and are provided simply as an alternate means of running those functions. There are two functions here that are not duplicated elsewhere:

Menu Function(s)	**Description and Usage**
Export PTMS Inventory to .INV File	Creates a file with the extension of .INV that is an export of the current inventory.
Import PTMS Inventory from .INV File	Imports an INV file into the current inventory, replacing any records already there.

The two functions above are primarily used for handing out a valid inventory with the Consultant version of SPS, similar to distributing variance factors.

Reports options

These menu options present submenus for 24-Hour Synopsis Report functions and Record Summary Report functions. These functions are identical to the functions presented in the Reports primary function buttons.

IV.2 Display Function Buttons

Within the main display area are six display-oriented function buttons. These buttons perform the following functions:

Function(s)	***Icon(s)***	***Description***
Print		Prints a report of the data currently displayed. The report can be sent directly to print or previewed on screen. For some reports, you have the option of entering criteria to isolate specific sets of data.
Find (**Ctrl+F**)		Pops up a menu of the fields in the displayed data to find by. You can then enter criteria; the first record in the displayed list matching this criteria will be displayed.
Skip first, skip last		Repositions the display to the first record or last record, respectively.
Add		Add a new record to the displayed table. The cursor will be moved to the first field in the list to enter data.
Delete		Deletes the record currently highlighted on screen. Use this function with caution.
Append (Archive only)		This function allows you to append archived data into the current set of data.

SPS Main Funtions

The buttons to the left of the main display area are the primary application function buttons. These buttons are used to perform the major functions within the application. When running a primary function, the data in the main display is temporarily blanked. The SPS main functions are:

IV.3 Convert Raw Data (Alt+V)

This function allows you to convert data from either a counter connected directly to the PC or from a file that is in a native (usually binary) format. The converted data is then placed into a file or files(s) with an extension of **.EGF** in a **\EGF** subdirectory. These EGF files are used in the next primary function, Load SPS Database.

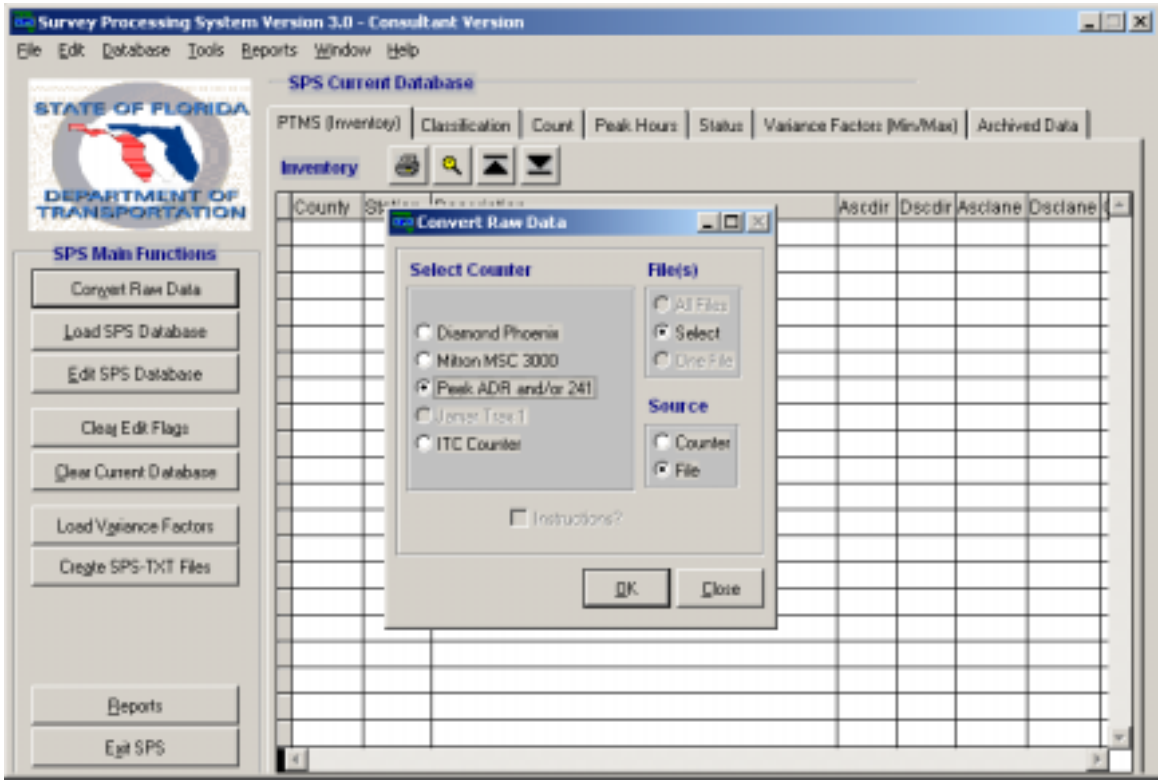


Figure 2: The Convert Raw Data window.

When you have selected this option, the window shown above is displayed. You select the counter, files(s), and source of the raw data. To convert the data from the selected source, choose **OK**. To cancel the operation or otherwise just close the window, select **Close**.

The acceptable brands of counters that can have data converted and directly imported into the database are the Mitron MSC 3000, Diamond Phoenix, ITC, and Peek ADR and 241 counters.

The shortcut to **OK** is the **Enter** key; **Esc** is the shortcut key for **Close**.

The dialog(s) displayed after you have chosen **OK** varies depending on the counter and source. Follow on screen prompts as required.

IV.4 Load SPS Database (Alt+L)

This function allows you to load one or more files in a AGF, TXT, RSR, DAT or PRN format into the main display area. It also organizes all files associated with one count station number into a single file and checks if county station number is in its PTMS Inventory File. This function *does not* perform data edits. Invalid count or classification information is trapped in the next function, Edit SPS Database.

When you choose this option, you are prompted whether or not to clear the database. If you choose **Yes**, a selection window where you may choose which data to clear will appear. You may then choose what Type of Survey, Type of Record or Record Status to clear or you can choose All by clicking OK. If you choose **No** in this window, no data will be cleared and the newly loaded data will be appended to the current set of data. If you choose **Cancel** in this window, the entire load function is aborted.

You are now given a dialog, shown below in Figure 3, which allows you to select one or more files to load. You may choose any or all of the files listed in the Available Files list and you may also change the source directory for the files.

When selecting from either Available or the Selected lists, you may use **Shift+Click** to select a range of files or **Ctrl+Click** to "cherry pick" several files.

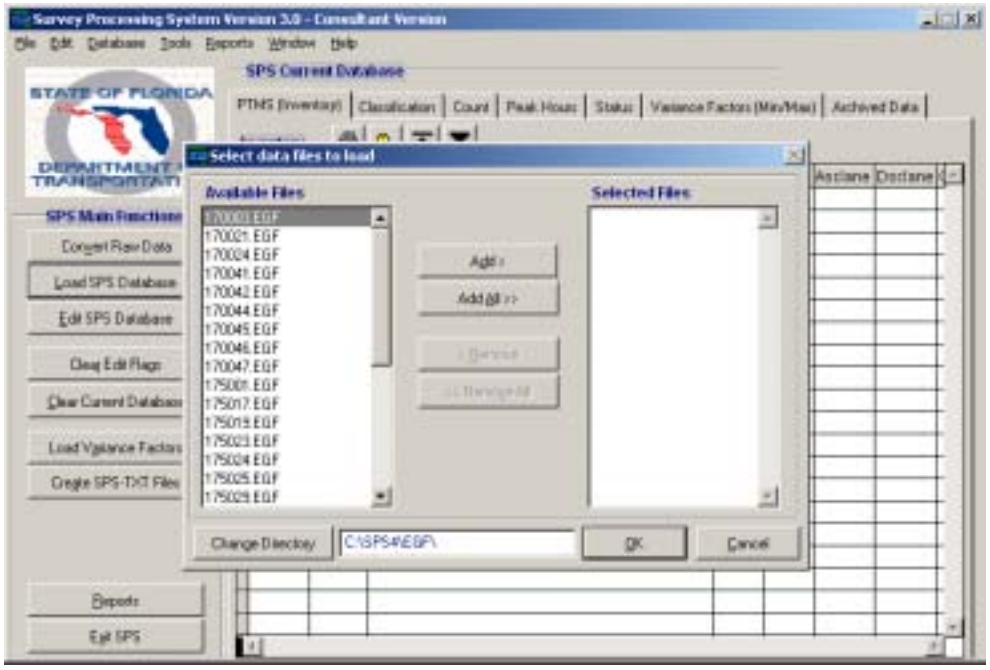


Figure 3: Choosing EGF and/or PRN files to load.

After a file or files have been chosen, selecting **OK** loads that information into the current data set. Choosing **Cancel** aborts loading any information. Upon return from this function, the main display is updated to show the newly loaded additions.

Data that has been loaded has not been subjected to any edit rules, such as directional checks.

Manually Entering Data into Database

Data can be manually entered into either the count or classification summary database, or in the detailed count or classification records database. Data that is entered only into the count or classification summary database can still be uploaded to the mainframe but will not be able to have any edits performed on it. If detailed data is entered into the count or classification records database then it is possible to perform edit checks on the data.

When manually entering a count or classification summary and then uploading the file to the mainframe, it is important that you insert the alphabetic code (N, S, E, W, B) for the direction, otherwise you may need to edit the direction codes on the NCTRAFF file on the mainframe. If you manually enter a numeric direction code, SPS will accept the value that you entered, but doesn't know how to handle it. This is because SPS is expecting to see an alpha direction code that it converts to a numeric code. If SPS sees a numeric direction code, when the data is summarized for transfer to the mainframe, the number is simply ignored and all data after the direction code are shifted to the left several card columns. Consequently, the mainframe load job will not insert any data into the mainframe IMS database because the direction code is missing from the data record. In the NCTRAFF file on the mainframe, you must replace the blanks with the proper numeric direction code (1, 3, 5, or 7). Make sure you tag the proper record with its correct direction.

IV.5 Edit SPS Database (Alt+E)

This function allows you to apply edit rules to data that has been loaded. Edited data in the current data set will not be affected (unless the Clear Edit Flags function has been run; see below).

A window with a list of all county and station combinations found in unedited data will be displayed for selection. This dialog is similar to that shown in *Figure 3*; selections may be made or unmade in the same manner.

The selected data is now processed according to SPS edit rules. These rules and checks include the following:

-Checks that County/Station is valid
-Deletes duplicate records if any are found
-Computes intervals if interval field is zero
-Checks that all lanes are present
-Checks for valid direction
-Chops data into 24-hour blocks
-Checks that no four consecutive hours have the same volume total
-Checks that no directional volumes = 0 between 05:00 and 24:00
-Compares road-hose derived volume data to axle factored minimum and maximum limits
-Compares vehicle derived data to seasonal factored minimum and maximum limits
-Verifies that classification types 1, 4, and 15 are not above specified limits

If a certain edit rule or check is violated, a dialog similar to that shown in *Figure 4*, below, is shown:

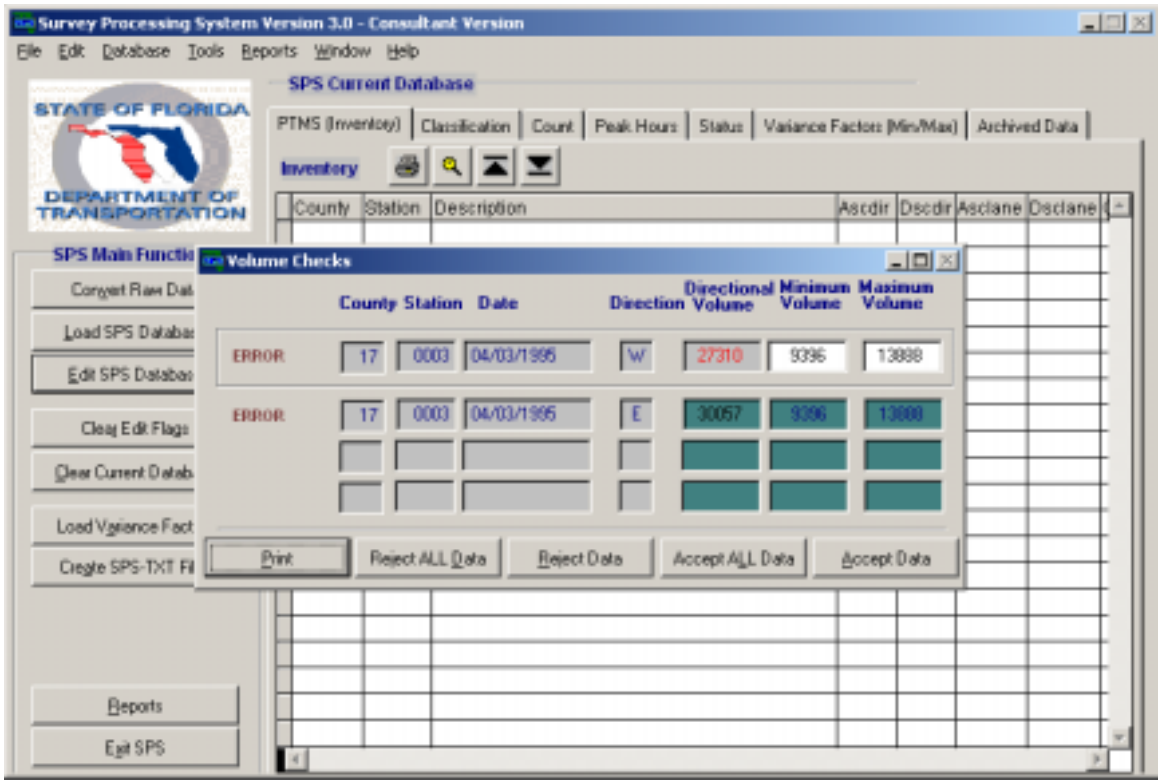


Figure 4: Volume check error while running the Edit SPS Database function

On this screen, you have the option of printing a report of the questionable data, rejecting all data, rejecting the topmost data row, accepting all data, or accepting only the topmost row.

When the edit is completed (which rarely takes more than a few seconds), a window with the status of the edit is show, as seen below in *Figure 5*.

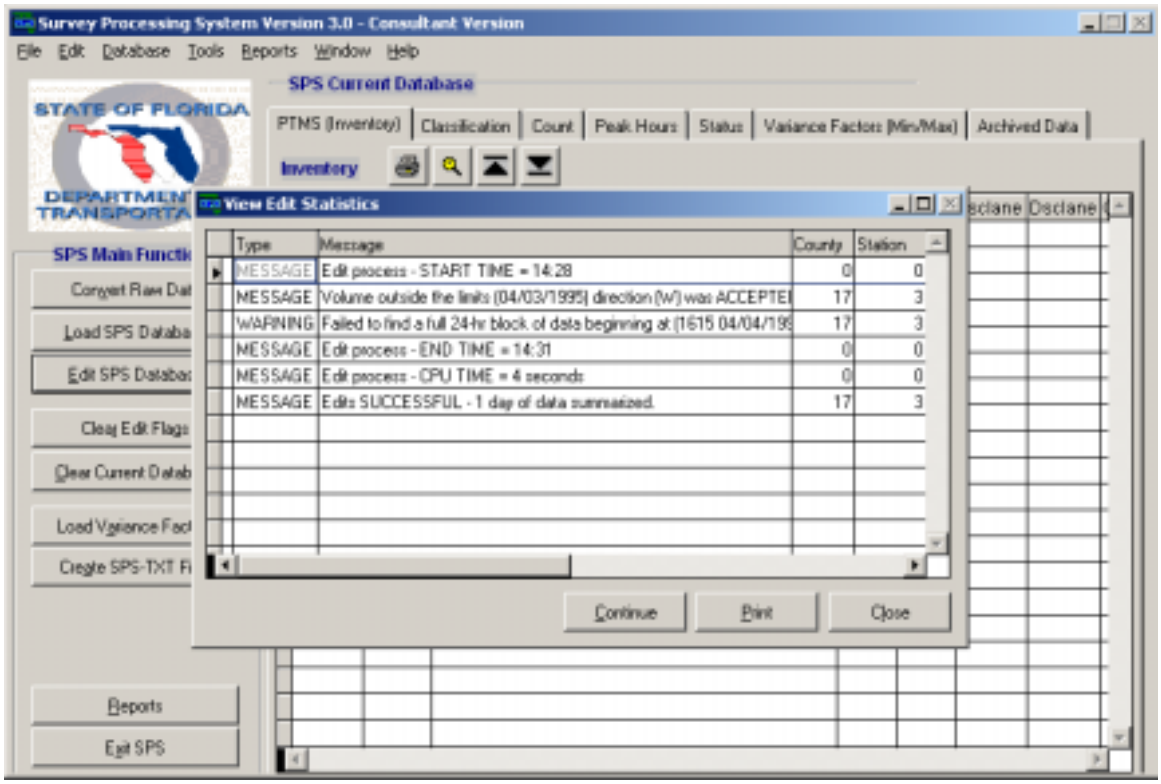


Figure 5: *The edit is complete and the status/statistics are shown.*

The Status Report displays the results of your edits.

The important line in this display is the last line, which tells you if the edits were successful or unsuccessful. Besides volume and directional checks where data was rejected, invalid county/station combinations, counts, and classifications with less than 24 hours of data will result in an edit being unsuccessful.

You have the options of continuing the edit, printing the edit status in a report, or closing the edit process (successful or otherwise) with no further actions. Choosing to continue the edit process allows you to choose 24-hr Synopsis Reports and/or Record Summary Reports. You do not have to create these reports at this time; they can be created through main menu options at any time.

Finally, data that was successfully edited will be displayed in a window where you can choose to print a number of reports on classification, counts, and peak hours. You can close this form without printing any reports, if desired.

IV.6 Clear Edit Flags (Alt+R)

This function allows you to selectively clear the edit flags for edited data from one or more county and station. You can then re-run these records though the Edit SPS Database function after making desired adjustments, additions, or deletions.

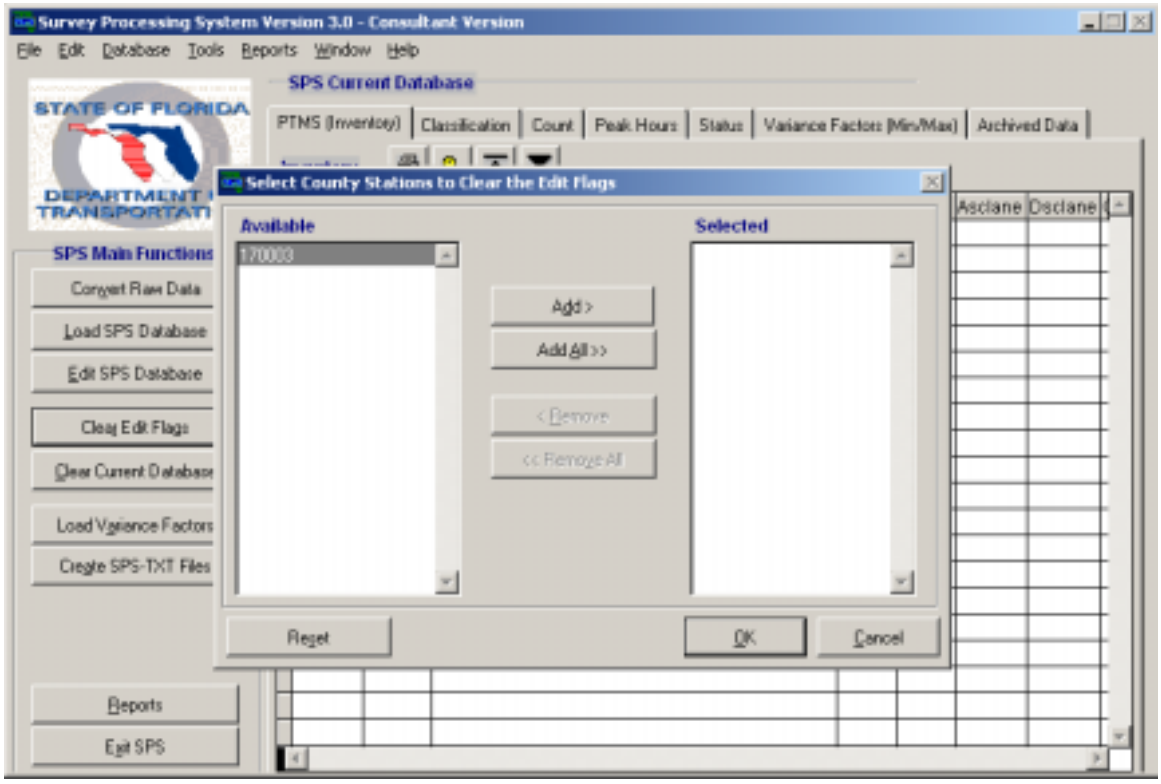


Figure 6: Selecting county/stations to clear in the Clear Edit Flags function.

IV.7 Clear Current Database (Alt+C)

This function allows you to selectively clear any records from the current data set. Selected records are completely removed from the current data set. This function employs the same dialog as used in the Load SPS Database function and operates to the same effect.

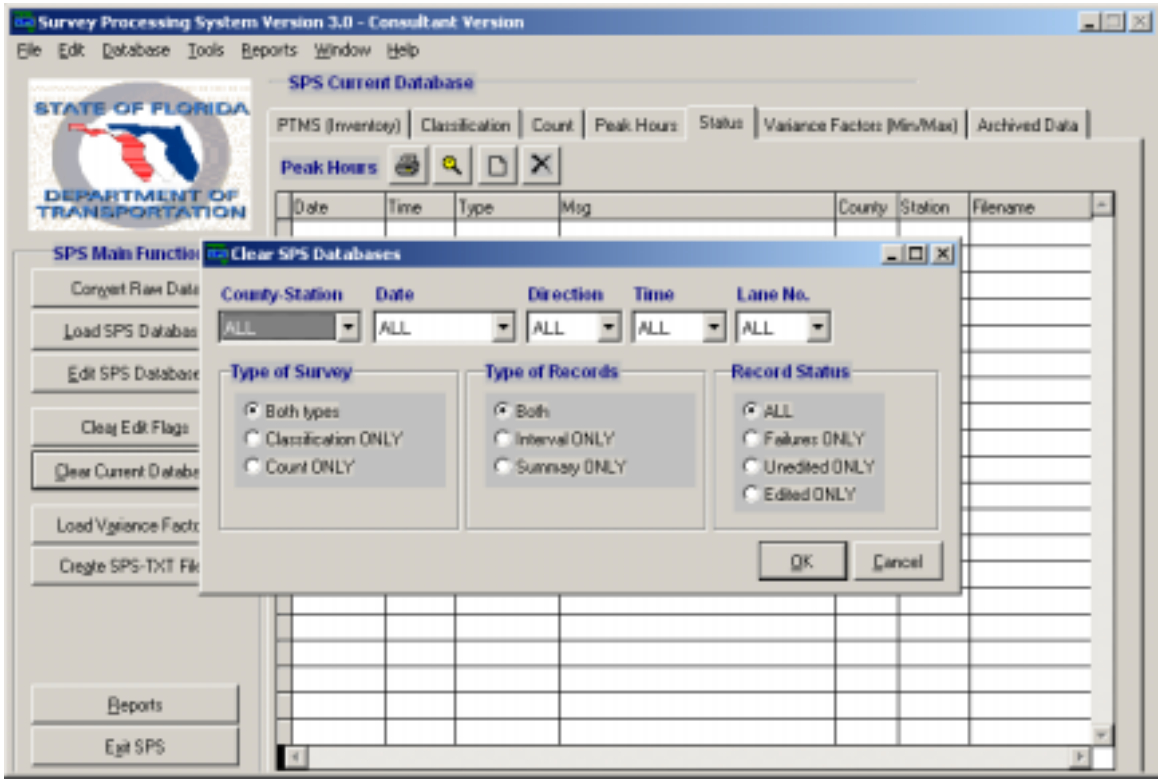


Figure 7: Clear SPS Database selection window

IV.8 Create SPS-TXT Files (Alt+I)

This function allows you to create TXT files by selecting one or more county stations from those in the edited data. This function employs the exact same dialog as shown in *Figure 6*. Creating a TXT file after processing the count allows the user to combine all data files into a single file. This file can be saved and used to load into the database in lieu of the original data files. The file name consists of the 2-digit County Code and 4-digit Station number.

V. Reports (Alt+R)

This function allows you to create or otherwise manipulate 24-Hour Synopsis Reports or Record Summary Reports, as show below.

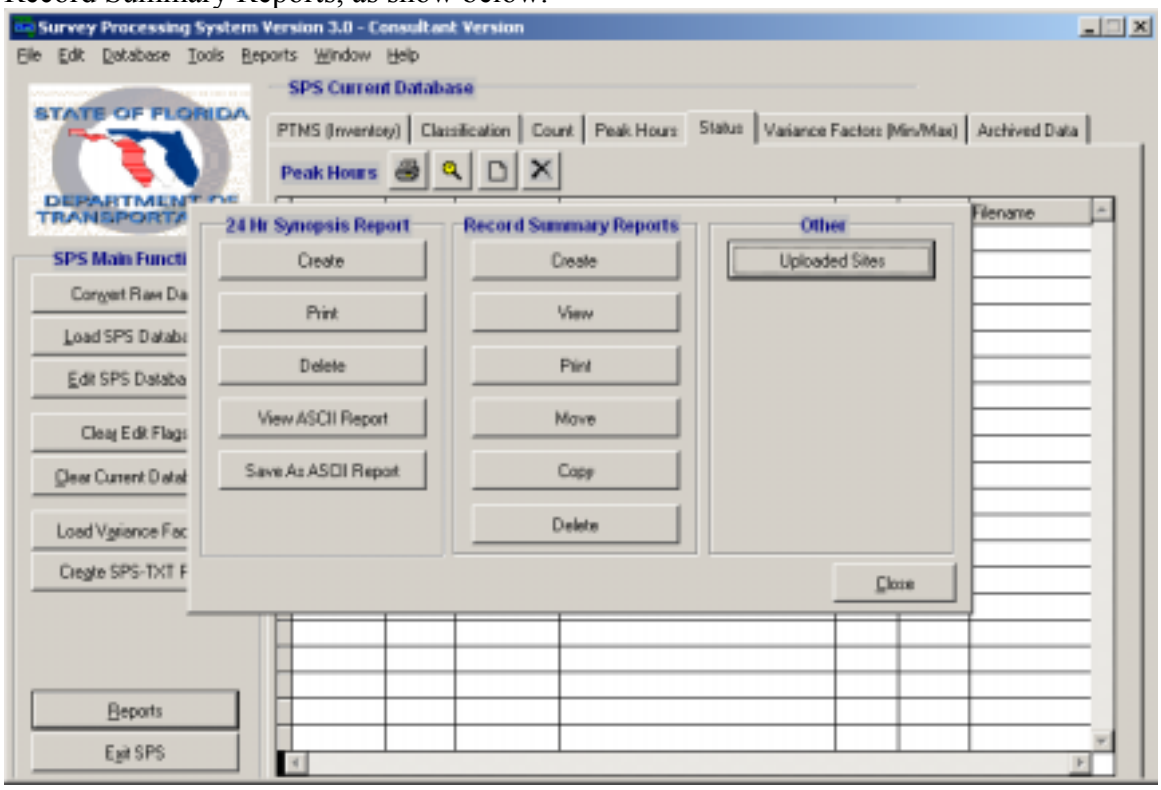


Figure 8: The Reports Window.

V.1 Synopsis Files

This function allows you to create, print, and save detailed reports where count station information such as location, date of count, directional volumes, directional peak hour information, and truck percentages (for sites where classification data was collected) can be quickly retrieved and printed for reference or for filing. To create an actual .SYN file that can be electronically transferred and read by a text editing program, it is required that you select "YES" when you are asked if you want to create an ASCII version of the report. This will allow you to retrieve the files for electronic transfer and storage. Once these reports (ASCII) are created, they are saved in the SYN directory in SPS. The .SYN file name is created and displayed as the 6-digit County and Station Id number, followed by a 4-digit year, 2-digit month, and 2-digit day extension (i.e. 750123-20010928.syn). The year/month/day extension is determined by the date that the count was taken on the count file. This will allow the user to create multiple .SYN files for the same station and not overwrite the previous .SYN file.

If you chose not to save the .SYN file in ASCII format, you may still retrieve, view, and print the .SYN file until the next time you clear the database for input, you just do not have an electronically transferable file.

V.2 Record Summary Report

This function allows you to create, print, and save reports where detailed count station information such as location, date of count, and 15-minute directional volumes and hourly totals, can be quickly retrieved and printed for reference or for filing. Once created, these files can also be used to load into the database instead of the actual data file(s).

Exit SPS (Alt+X)

This function terminates the application, closing SPS.

VI. District Functions

The SPS District version has two more functions related to importing data from and exporting data to the FDOT mainframe.

Upload Data to Mainframe (Alt+U)

This function allows you to create a transfer file, named NCTRAFF.FDF, and then send that file to the FDOT mainframe via File Transfer Protocol once you have provided a valid TSO USERID and password.

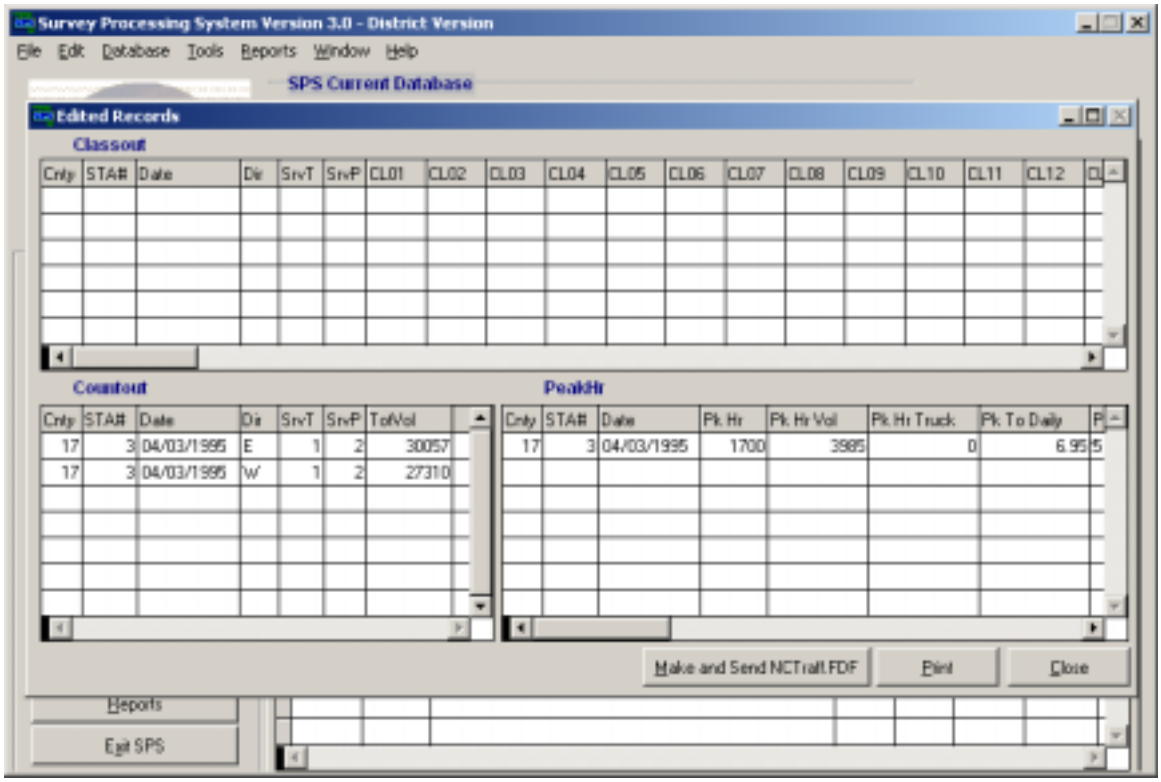


Figure 9: Edit records to prepare to send to mainframe.

Download PTMS (Alt+D)

This function allows you to update the SPS application station and county inventory from the current records for your district on the mainframe. You will need to provide a valid TSO user ID and password.

APPENDICES

APPENDIX A

FIELD DATA COLLECTION SETUP

Field Data Collection Setup

A system has been developed to provide each count with a descriptive code. The code has been established to provide the summary software with information about the count for data processing purposes. Adherence to the identification code scheme described below is essential to the successful processing of the data.

2.1 PROPOSED COUNTER NUMBERING SCHEMES

General Information and Requirements

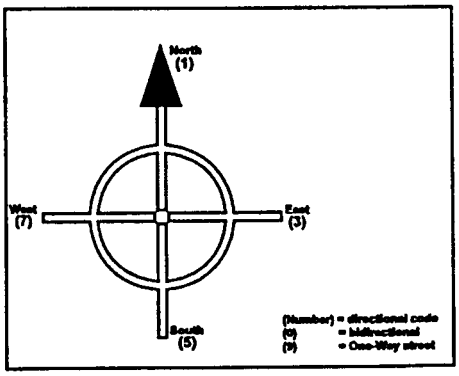
The coding scheme requires the use of a 10 digit code. The first two digits represent the unique county code established by FDOT. The next four digits represent the unique location code which is also established by FDOT. The seventh digit in the sequence represents the directional code. This value use is shown below. The direction describes the travel direction of traffic on the lane immediately adjacent to the counter. The eighth digit represents the total number of lanes being counted by the data collection unit. The ninth digit declares the total number of lanes being counted in the direction described by the seventh digit. The tenth digit assigns a lane number to the first lane being counted in the described direction. A pictorial representation of the number scheme is shown below.

10 digit Code-Number (xx xxxx xxxx)

X1	2 digit County Code
X2	
X3	
X4	4 digit Station Identification Number
X5	
X6	
X7	Direction (on which counter is placed)
X8	Total Numbers of lanes connected to the counter
X9	Number of lanes being counted in described direction
X10	Lane Number of First lane counted

Direction Code (X7)

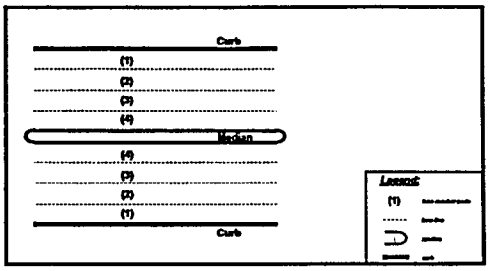
1 = Northbound
3 = Eastbound
5 = Southbound
7 = Westbound
9 = One Way street count
0 = Bi-directional count



The Florida Department of Transportation uses the main compass directions only. This means the numbers 1, 3, 5, 7 will be used in the designation within the 10 digit code for a particular traffic count.

Lane Code (X10)

1 = Lane next to curb
:
:
:
n = Lane next to median (8 is maximum)
9 = Indicator for "Two Way Left Turn Lane" (TWLTL)



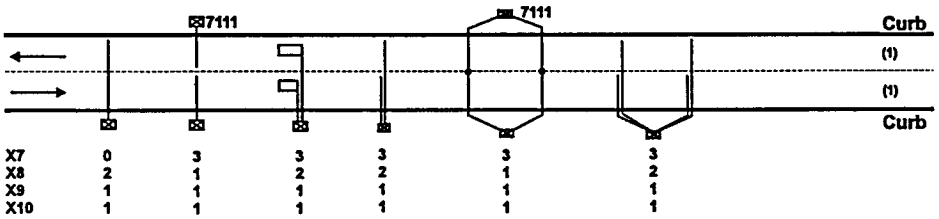
NOTE:

Even though the codes look alike for the different configurations, the software will be able to identify if there are one (1), two (2), three (3) or four (4) rows of collected data.

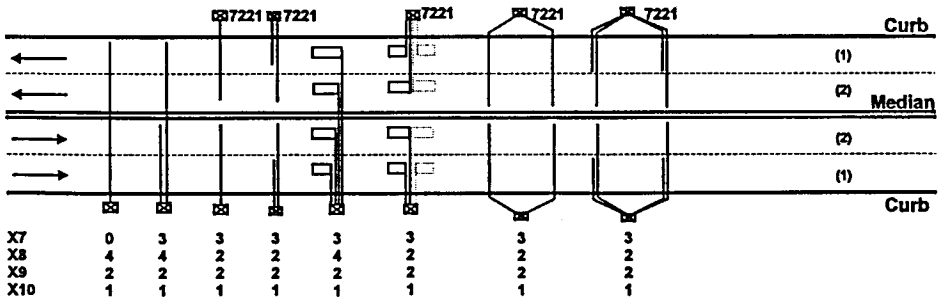
2.2 EXAMPLE IDENTIFICATION CODING SCHEMES

The following graphics will illustrate a wide range of possible traffic count and classification arrangements. They will also provide the corresponding last four digits of the identification code that would apply to each example.

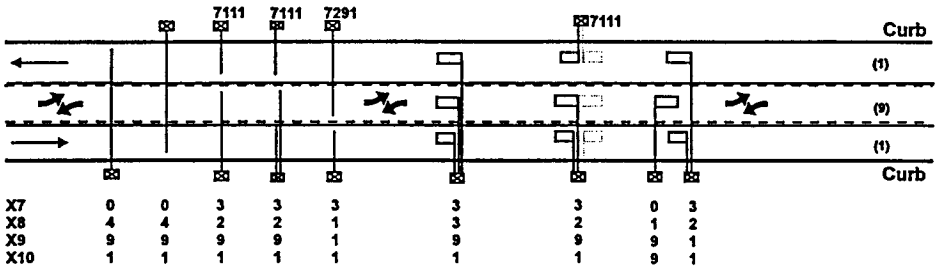
2.2.1 Example: Two Lane Undivided Highway



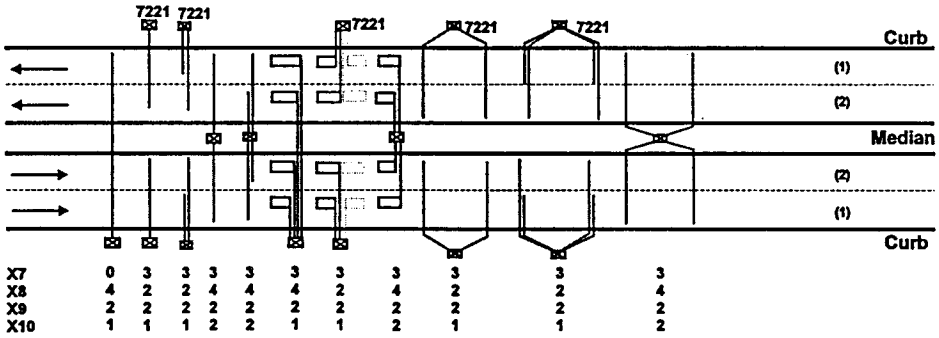
2.2.2 Example: Four Lane Undivided Highway



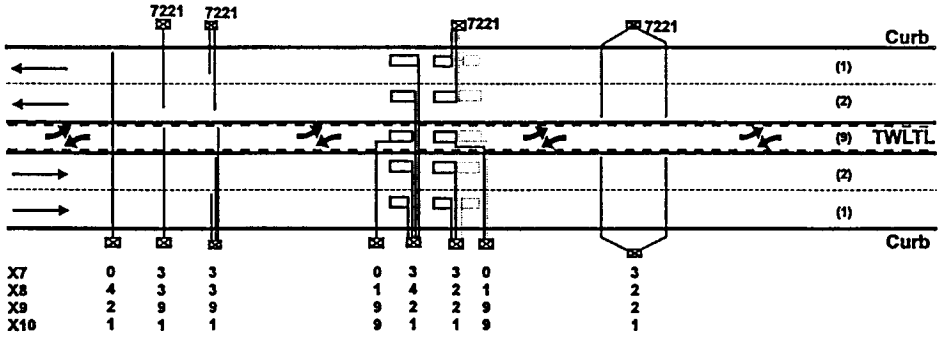
2.2.3 Example: Two Lane Undivided Highway with a Continuous Two Way Left Turn Lane



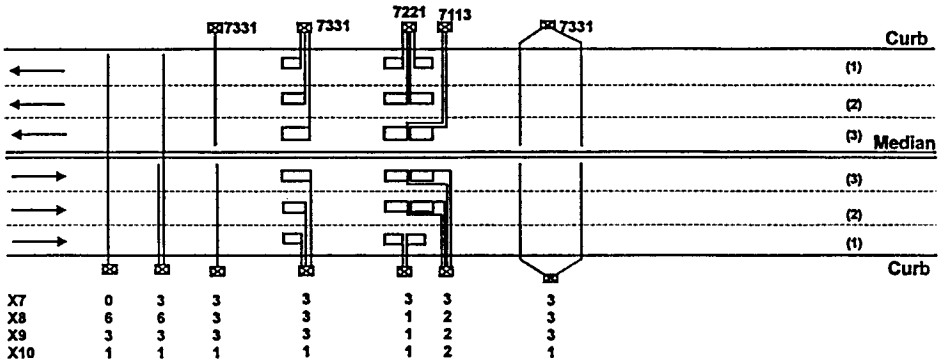
2.2.4 Example: Four Lane Divided Highway



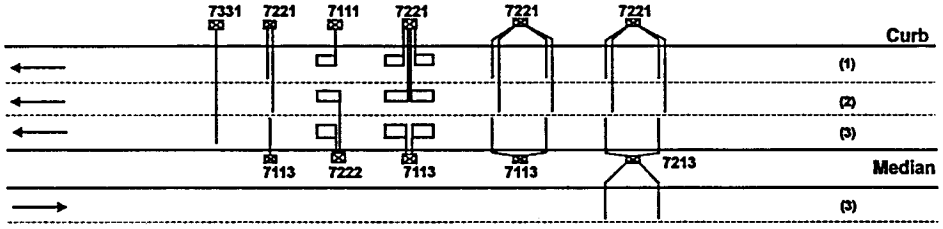
2.2.5 Example: Four Lane Undivided Highway with a Continuous Two Way Left Turn Lane



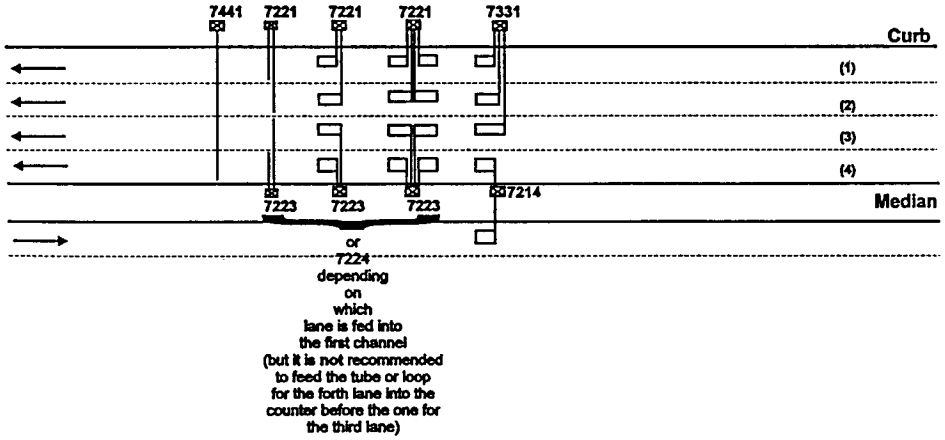
2.2.6 Example: Six Lane Undivided Highway



2.2.7 Example: Six Lane Divided Highway



2.2.8 Example: Eight Lane Divided Highway



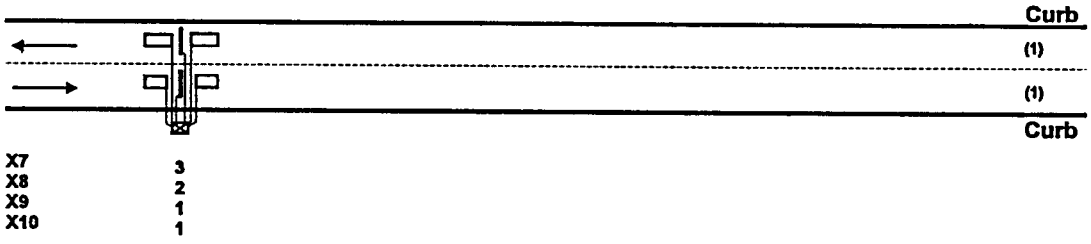
2.3 IDENTIFICATION CODING SCHEME (Loop-Piezo-Loop)

The following description is the coding scheme used for integrating additional configurations, particularly to classify vehicles for 4 lanes within one counter. This is in response to the fact that some districts in Florida established in-pavement sensors with the following configuration:

- Loop - Piezo - Loop

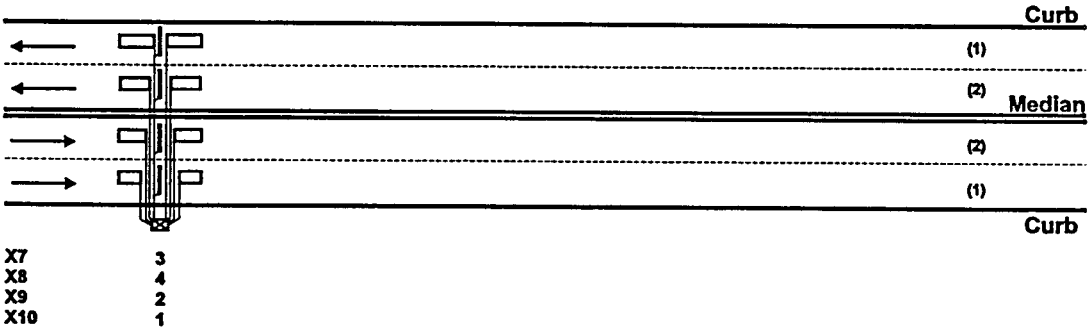
The following graphics illustrate the loop-piezo-loop classification arrangement for several different designs. They will also provide the corresponding last four digits of the identification code that would apply to each example.

2.3.1 Example: Two Lane Undivided Highway



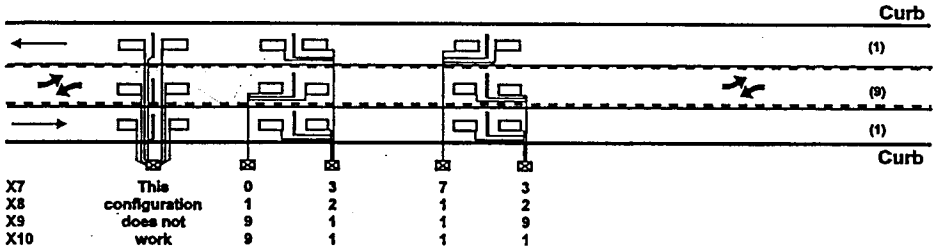
2.3.2 Example: Four Lane Undivided Highway

The coding scheme for four lane divided highway, and eight lane divided, and undivided highway work the same way.

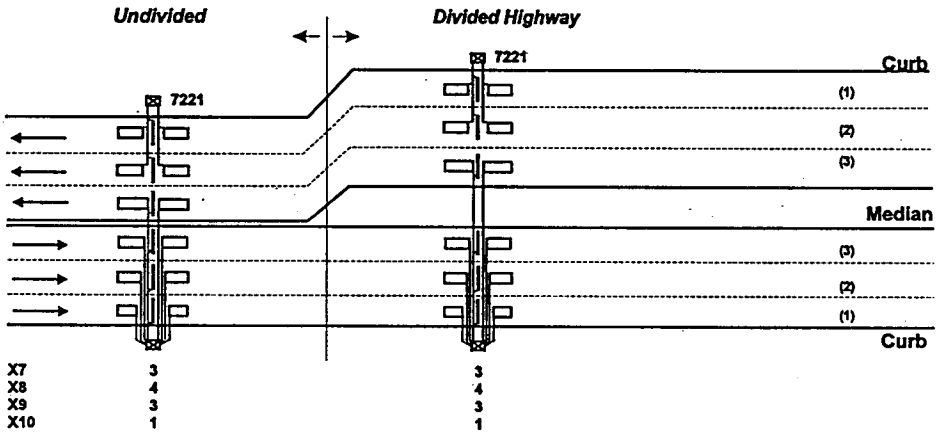


2.3.3 Example: Two Lane Undivided Highway with a Continuous Two Way Left Turn Lane

Four lane undivided highway with a continuous TWLT Lane functions about similarly. The rule is that either one direction and the TWLT-lane are counted with one counter and the other direction with another one or both direction counted with one counter and the TWTL-lane exclusively with another counter.



2.3.4 Example: Six Lane Highway



APPENDIX B

ERROR MESSAGES

Error Messages

Trouble Shooting

The most common errors and how to trouble shoot.

1. **County - Station not found in Inventory**

   To identify this Error Message:

   a. Check the ten digit code in the Count Data to ensure the appropriate code was used.

   b. Check the SPS PTMS. Inventory to ensure the County and Station number is present.

   c. If the County Station number is not present and it is a valid County Station number the user may add this station number to the PTMS. Inventory.

2. **Class lane volume outside the limits**

   a. This message notifies the user that the Class Lane Volume is greater than the specified limits.

   b. The Default Limits for Class 1 = 3%, Class 4 = 5%, and Class 15 = 10% of the total volume.

3. **Volume checks (min) and (max)**

   a. User can compare the directional volume of the count being processed to the minimum and maximum volume for that Count Station. User may elect to Print, Reject or Accept the Data to continued processing.

4. **Missing ASC/DSC direction (x)**

   To identify the cause for this Error Message:

   a. Check the ten digit code in the Count Data to ensure appropriate code was used.

   b. Verify that you have bi-directional data.

   c. Check PTMS Inventory File for that County Station number for the appropriate direction codes.

5. **Invalid direction (x) Date (xx/xx/xxx) Time (xxxx)**

   To correct this problem user needs to:

   a. Check the Data File for the appropriate ten digit code.

   b. Check the SPS PTMS Inventory for that County Station to ensure the appropriate direction code is present.

6. **Missing Lane number (x) direction (x)**

   To identify the cause for this Error Message:

   a. Check the ten digit code in the Data Program Line to ensure the appropriate code was entered.

   b. Check the SPS PTMS. Inventory for that County Station to ensure the appropriate number of lanes are present for each direction.

7. **Invalid lane number (x)**

   To correct this problem user needs to:

   a. Check the ten digit code in the Data Program Line to ensure the appropriate code was entered.

   b. Check the SPS PTMS. Inventory for that County Station to ensure the appropriate number of lanes are present for each direction.

8. **Fail to find a full 24 hr block of data**

   To identify the cause of this Error Message user will need to:

   a. Check the Count Data to ensure that all times for all files starts and ends at the same time.

9. **Data was not found for all lanes for time (xxxx)**

   To identify the cause of this Error Message the user will need to:

   a. Check the Count Data to ensure that all times for all files starts and ends at the same time.

10. **Four consecutive intervals was found to have zeros**

    The cause of this Error Message is usually a result of:

    A) A Hose coming up or extra intervals of data. User will need to check the Count Data to identify problem.

APPENDIX C

FILE FORMATS

Appendix C - File Formats

Specific file formats are provided for the following types of files:

TXT
PRN
MSC/DAT

TXT Format

Classification Surveys:

Field	Length (characters)
County Number	2
Station Number	4
Record Date	8
Direction Code	1
Lane Number	1
Survey Type	1
Survey Program	1
Interval (in minutes)	2
Time (end time of int.)	4
Class 01 Volume	4
Class 02 Volume	4
Class 03 Volume	4
Class 04 Volume	4
Class 05 Volume	4
Class 06 Volume	4
Class 07 Volume	4
Class 08 Volume	4
Class 09 Volume	4
Class 10 Volume	4
Class 11 Volume	4
Class 12 Volume	4
Class 13 Volume	4
Class 14 Volume	4
Class 15 Volume	4
Total Volume Count	6

Volume Counts:

Field	Length (characters)
County Number	2
Station Number	4
Record Date	8
Direction Code	1
Lane Number	1
Survey Type	1
Survey Program	1
Interval (in minutes)	2
Time (end time of int.)	4
Vehicle Volume Count	6

Notes:

- Leading zeros are required.
- One blank space required between each field.
- Carriage return/line feed is required between each field.
- Record time is in 24-hr format with leading zeros (0001-2400)(midnight=2400); it is the end time for the interval
- Record Date is the date corresponding to the end time of each interval. Date change occurs at time 0001.
- Record Date format: YYYYMMDD (all Numeric)

Direction codes	Survey Type codes	Survey Program codes
N…..North	1….Axle Count	2….Portable Coverage Count
S…..South	2….Vehicle Count	
E…..East	3….Class Count	
W….West	4….Speed Count	
B…..Bi-directional		

Lane Numbering:

-Bi-directional surveys use lane number 1.

-Directional surveys (if non-lanal) use lane number 1.

-Directional surveys (if lanal) use lane numbers 1,2,3,… (lane number 1 is the outside lane for the direction of travel)

PRN Format

There will be three header records:

The first record contains Stn Number, Id number, Com Id, Start Time/Date, End Time/Date, Main Interval, lane layout, Number of Lanes, Count Ratio, Number of records and Format Code.

The second record contains peak interval Date and the eight lane direction codes (0 = North, 1 = East, 2 = West, 3 = South)

The third record contains the city, county and location data, three bin descriptor records and varying numbers of data records. These files will consist of fixed length records of ninety characters each.

Record 1 Description

Field	Character/Column #
Station number	1-12
Space	13
Identification number	14-25
Space	26
Classifier Address	27-28
Space	29
Start Time	30-33
Space	34
Start date	35-40
Space	41
End time	42-45
Space	46
End date	47-52
Space	53
Main interval	54-57
Space	58
Lane layout	59-60
Space	61
Number of Lanes	62
Space	63
Count ratio	64-66
Space	67
Space	68
Space	69
Space	70
Number of records	71-75

Format code	76-78
Space	79-88
Carriage return/Line Feed	89-90

Record 2 Description

Field	Character/Column #
Peak Interval 1 start time	1-4
Space	5
Peak Interval 1 end time	6-9
Space	10
Peak Interval 1 period	11-14
Space	15
Peak Interval 2 start time	16-19
Space	20
Peak Interval 2 end time	21-24
Space	25
Peak Interval 2 period	26-29
Space	30
Peak Interval 3 start time	31-34
Space	35
Peak Interval 3 end time	36-39
Space	40
Peak Interval 3 period	41-44
Space	45
Direction codes for each lane	46-53
Space	54-88
Carriage Return/Line Feed	89-90

Lane Layout Codes
0 = One axle sensor (road tube/piezo/aux.)
1 = One loop
2 = Two axle sensors
3 = Two axle sensors with a loop in between
4 = Two loops
5 = Two loops with one axle sensor
6 = One road tube across two lanes, one across one lane

Format Codes
2 = {Same as lane layout}
1 = {0=one piezo board},{1=no piezo board}
0 = {0=English},{1=Metric}

Notes:

- Leading zeros are required when inputting the 10-digit Site Identification Code

DAT/MSC Format

The MSC 3000 Computer Software recordings are stored in a human-readable ASCII text format that can be edited manually if necessary. A file's name consists of the abbreviation of the location for which its contents came followed by the .MSC or .DAT extension. Inside the file are one or more recordings stored in the format described below.

A recording begins with a header containing one or more parameters, each of which is followed by a semicolon (";") and may precede or follow any amount of white space. Parameters may be omitted if not necessary and may occur in any order (with some exceptions). Valid parameters are as follows:

Parameter	Specifies
CHANNEL="number"	Starting channel number

DATASCOK=”value”	Condition of the data checksum: TRUE……if correct FALSE…..if incorrect
DATE=”date”	Date entered by operator as MM/DD/YY
DIRECTION=”value”	Directional letters for each CHANNEL. Must appear after NCHANS.
DIVIDEBY=”number”	Division factor for volume recordings – 1, 2, or 4
EDIT_DATE=”date”	Date of last edit by MM/DD/YY
EDIT_TIME=”time”	Time of last edit as HH:MM
ENDDATE=”date”	Ending date as MM/DD/YY
ENDTIME=”time”	Ending time as HH:MM
INCREMENT=”number”	Speed increment in MPH for speed recordings – 2 or 5
LOCCODE=”location code”	Location code
MACHINE=”number”	Machine number
MIDSPEED=”number”	Midrange speed in MPH for speed recordings – 35, 45, 55 or 65
MODE=”number”	Recorder mode: 1-for speed, 2-for volume, 3- for classification
NCHANS=”number”	Number of channels
NUMBINS=”number”	Number of bins per channel
OPERATOR=”number”	Operator number
PARMCSOK=”value”	Condition of parameter checksum: TRUE……if correct FALSE…..if incorrect
REALTIME=”number”	Time entered into the recorder at setup as HH:MM
SAMPLETIME=”number”	Sampling interval in minutes
SCHEME=”value”	Scheme for classification recordings – F for FHWA scheme “F”
STARTDATE=”date”	Date recording began as MM/DD/YY
STARTTIME=”time”	Time recordings began as HH:MM
SUMMATION=”value”	Whether or not summation was used in the volume recordings: TRUE if summation was used FALSE otherwise
TWOWAY=”value”	Whether or not the two-way mode was used in volume recording: TRUE if two-way mode was used FALSE otherwise

A block of data beginning with a left brace(“(“) and ending with a right brace (“)”), follows the header. The date itself consists of zero or more drops separated by semicolons (“;”) and any amount of white space (spaces, tabs, carriage returns, line feeds and form drops). Each drop contains a list of the counts for each bin separated by any amount of white space.

Comments may be placed anywhere in the file where white space is legal. Text designated as a comment is preceded by a slash and an asterisk (“/*) and followed by an asterisk and a slash (“*/”). Comments are ignored by the MSC 3000 Computer Software. They are not preserved when a recording is modified and rewritten to disk. They remain unchanged during sorting, archiving, unarchiving, and lost file recovery.

APPENDIX D

PTMS. INV. FILE DESCRIPTION

A look at the PTMSDESC.DBF file.

Ptms

County	Station	Descript	Aascdir	Dascdir	Aaclane	Daclane	Cntbydir	Cntbylane	Medlane	Sensortype	Surveypgm	Surveytype	Aatfctrcat	Volctrcat
89	1	SR 714/MARTIN DOWNS BLVD - N. OF FL.TPK ENTRANCE	N	S	2	2	T	T	F	3	2	2	8921	8901
89	2	SR 714/MARTIN DOWNS BLVD - W. OF MAPP RD	E	W	2	2	T	T	F	5	2	3	8921	8901
89	6	SR 76 - E. OF SR 15/700 / PORT MAYACA	E	W	1	1	T	F	F	7	2	1	8904	8927
89	8	SR76 KANNER HWY NE OF SR-710	E	W	1	1	T	F	F	7	2	1	8904	8927
89	11	SR 714/MARTIN DOWNS BLVD - W END OF PALM CITY BR.	E	W	2	2	T	F	F	3	3	2	8921	8901

Detail description on parts of the database.

Aascdir	Dascdir	Aaclane	Daclane
N	S	2	2
E	W	2	2
E	W	1	1
E	W	1	1
E	W	2	2

Each site will have a direction and number of lanes.

Ascending = N or E
Descending = S or W

Cntbydir	Cntbylane	Medlane
T	T	F
T	T	F
T	F	F
T	F	F
T	F	F

Each site will be determine if it was counted by direction, lane or median lane.
T = True
F = False

Sensortype	Surveypgm	Surveytype
3	2	2
5	2	3
7	2	1
7	2	1
3	3	2

Each site will have a unique number for:
Sensortype, Survey program
And Surveytype

See below

The numbers to be use for the Sensortype, Surveytype & Survey program are as follow:

SENSOR TYPE

CODE	DESCRIPTION
0	None Estimate
1	One Loop
2	Two Piezos
3	Two Loops
4	One Loop / Two Piezos
5	Two Loops / One Piezo
7	Road Tubes

SURVEY PROGRAM

CODE	DESCRIPTION
1	PTMS-District
2	PTMS-Consultant
3	PTMS-County
4	PTMS-City
5	TTMS-TSO
6	TTMS-District
7	TTMS-County
8	TTMS-City

SURVEY TYPE

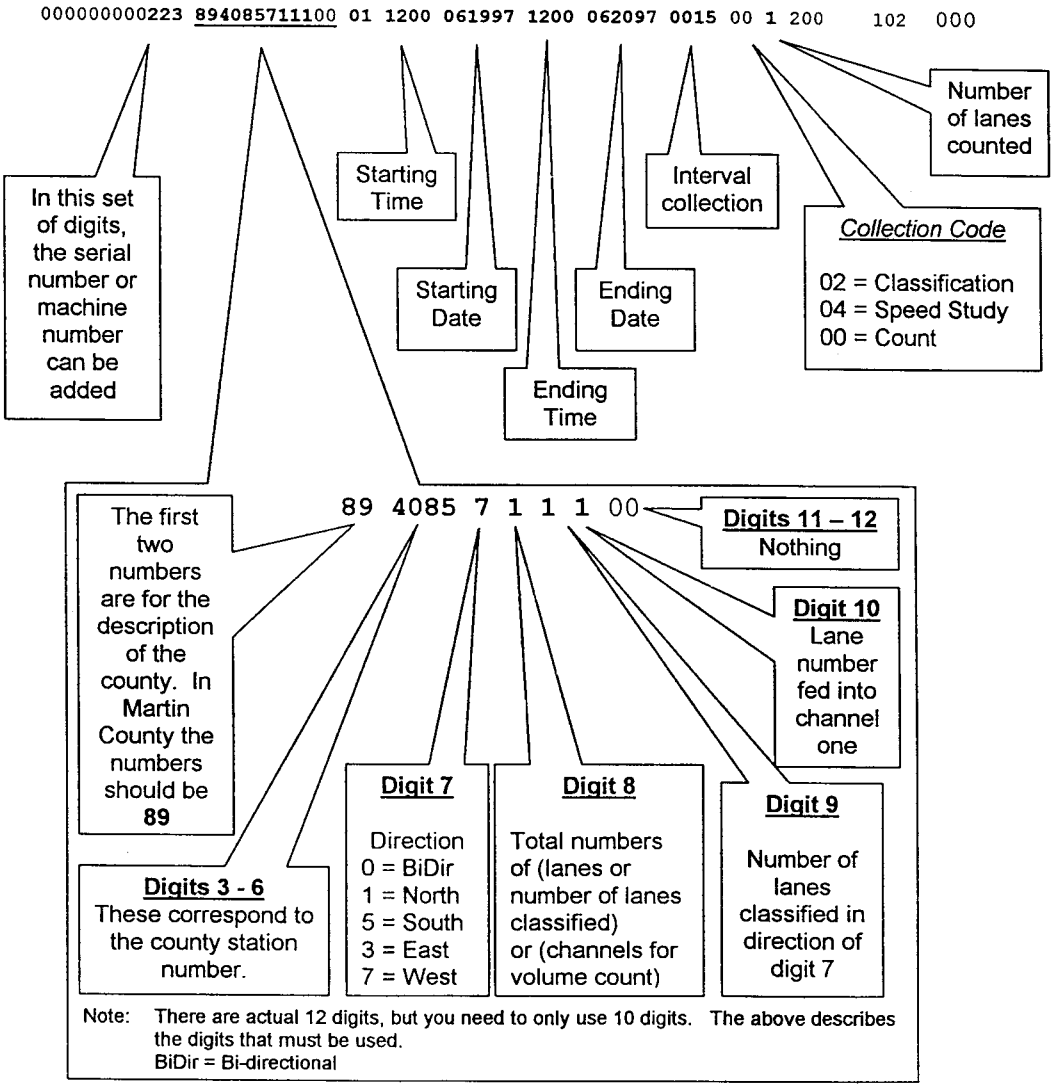
CODE	DESCRIPTION
0	Estimate
1	Axle Count (ADT) 1-Tube
2	Vehicle Count Loops
3	Classification Count Piezo or Tubes (2)
4	Speed Count
5	W.I.M. Count
6	Toll Count

APPENDIX E

PROGRAM LINE

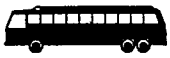
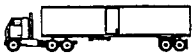
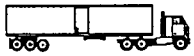
Description of the 10 digit number and program line.

Below is the command line produced when downloading the information from a counter



APPENDIX F

CLASSIFICATION CHART

1 Motorcycles	2 Passenger Cars	3 Two Axle, 4 Tire Single Unit	4 Busses
			
5 Two Axle, 6 Tire Single Unit	**6 Three Axle Single Units**	**7 Four or More Axle Single Trailers**	**8 Four or Less Axle Single Trailers**
			
9 Five Axle Single Trailers	**10 Six or More Axle Single Trailers**	**11 Five or Less Axle Multi-Trailers**	
			
12 Six Axle Multi-Trailers	**13 Seven or More Axle Multi-Trailers**		
			

APPENDIX G

APPENDIX G – GLOSSARY

Abbreviations

AADT ..... Annual Average Daily Traffic
AADW ..... Annual Average Days of the Week
AADWDT ..... Annual Average Weekday Traffic
AAWET ..... Annual Average Weekend Traffic
ADT ..... Average Daily Traffic
ATR ..... Automatic Traffic Recorder
AVC ..... Automatic Vehicle Classifier
AVMT ..... Annual Vehicle Miles Traveled
DEAL ..... Design Equivalent Axle Load
DHV ..... Design Hour Volume
DVMT ..... Daily Vehicle Miles Traveled
ESAL ..... Equivalent Single Axle Load
FARS ..... Fatal Accident Reporting System
IVHS ..... Intelligent Vehicle/Highway Systems
LTPP ..... Long-Term Pavement Performance
MADT ..... Monthly Average Daily Traffic
MADW ..... Monthly Average Days of the Week
MAWDT ..... Monthly Average Weekeday Traffic
MAWET ..... Monthly Average Weekend Traffic
SHRP ..... Strategic Highway Research Program
VMT ..... Vehicle Miles Traveled
WIM ..... Weigh-in-Motion

Definitions

ADJUSTED COUNT
An estimate of a traffic statistic calculated from a base traffic count that has been adjusted by application of axle, seasonal, or other defined factors.

ANNUAL AVERAGE DAILY TRAFFIC (AADT)
The estimate of typical daily traffic on a road segment for all days of the week, Sunday through Saturday, over the period of one year.

ANNUAL AVERAGE DAYS OF THE WEEK
The estimate of typical traffic volume mean statistic for each day of the week, over the period of one year, and calculated from permanent counter data from the sum of Monthly Average Days of the Week (MADWs) for a year divided by the number of (MADWs).

ANNUAL AVERAGE WEEKDAY TRAFFIC (AAWDT)
The estimate of typical traffic over the period of one year, for the days Monday through Friday, calculated from permanent counter data as the sum of Monthly Average Weekday Traffic (MAWDTs) divided by the number of MAWDTs. Friday traffic may be excluded from AAWDT calculation and included in AAWET calculation if these data more closely approximate weekend traffic characteristics.

ANNUAL AVERAGE WEEKEND TRAFFIC (AAWET)
The estimate of typical daily traffic over the period of one year, for the days Saturday through Sunday, calculated for permanent counter data as the sum of Monthly Average Weekday Traffic (MAWETs) divided by the number of MAWETs. Friday traffic may be included in AAWDT calculation if the inclusion of these data does not increase AAWET coefficient of variation.

ANNUAL VEHICLE MILES TRAVELED (AVMT)
Total annual traffic on a road segment, expressed as AADT multiplied by the number of days in the year, multiplied by the road segment.

AVERAGE DAILY TRAFFIC (ADT)
The total traffic volume during a given time period (more than a day and less than a year) divided by the number of days in that period.

AUTOMATIC TRAFFIC RECORDER (ATR)
A device that records a continuous passage of vehicles across a given section of roadway by hours of the day, days of the week or months of the year.

AUTOMATIC TRAFFIC RECORDER (ATR) COUNTS
Base traffic counts recorded at an automatic traffic recorder.

AUTOMATIC VEHICLE CLASSIFIER (AVC)
A device that works in conjunction with computerized electronic equipment that counts and classifies vehicles by type and axle configuration.

AXLE CORRECTION FACTOR
The factor developed to adjust vehicle axle sensor base data for the incidence of vehicles with more than two axles, or the estimate of total axles based on automatic vehicle classification data divided by the total number of vehicles counted.

BASE COUNT
A traffic count that has not been adjusted for axle factors (effects of trucks) or seasonal (day-of-the-week/month-of-the-year) effects.

BASE DATA
The unedited and unadjusted measurements of traffic volume, vehicle classification, and vehicle or axle weight.

CLEAN AIR ACT AMENDMENTS OF 1990
Legislation authorizing the Environmental Protection Agency (EPA) to establish and implement rules, which among other topics concerns mobile pollutant emission sources which affect air quality.

COUNT
The data collected as a result of measuring and recording traffic characteristics such as vehicle volume, classification, speed, weight, or a combination of these characteristics.

COUNT PERIOD
The beginning and ending date and time of traffic characteristic measurement.

COVERAGE COUNT
A traffic count taken as a requirement for system level estimates of traffic. The count is typically short term, and may be volume, classification, or weight in Motion.

DAILY VEHICLE MILES TRAVELED (DVMT)
Annual Average Daily Traffic on a road segment, expressed as AADT, multiplied by the length of the road segment.

DATA OBSOLESCENCE COUNT
A traffic count taken to assure the state road system has been counted within a defined count cycle. The count base is recommended as three years.

DESIGN EQUIVALENT AXLE LOAD (DEAL)
The cumulative loadings the proposed pavement will experience during its design period, expressed as the total number of equivalent 80 kN (18,000 pound) single axle load applications.

DESIGN HOURLY VOLUME (DHV)
The hourly traffic volume used in the design of highways, usually represented by the 30^{th} highest hourly volume of the future year chosen by design.

DESIGN PERIOD
The number of years from the initial application of traffic until the first planned major resurfacing or overlay.

DIURNAL DISTRIBUTION
Periodic distribution of traffic characteristics during a one-day period. The period may vary, but is commonly either in 15 minute or one hour increments. The daily distribution may be for vehicle volume, classification, or gross vehicle weight.

ELECTRICAL CONTACT DETECTORS (TAPE SWITCH)
Consists of a pair of steel strips that are contained in a rubber pad or strip, which is placed on the roadway surface. The weight of a moving vehicle brings the steel strips in to contact, thereby causing an electric current to flow, which triggers the recording device.

EQUIVALENT SINGLE AXLE LOAD (ESAL)
A unit of measurement equating the amount of pavement consumption caused by an axle or group of axles, based on the loaded weight of the axle group, to the consumption caused by a single axle weighing 18,000 lbs.

FATAL ACCIDENT REPORTING SYSTEM (FARS)
National database, which utilizes state reporting to gather and report data on accidents, which result in the loss of human life.

FUNCTIONAL CATEGORY
A type of roadway defined by the type of traffic services provided.

FUNCTIONAL CLASSIFICATION
The grouping of streets and highways into classes, or systems, according to the character of service they are to provide. The recognition that individual roads do not serve travel independently and most travel involves movement through a network of roads is basic to functional classification.

INFRARED/ULTRASONIC DEVICES
An infrared device, which uses a pickup cell, similar to a photoelectric cell, but sensitive to infrared (heat) radiation rather than light. The ultrasonic device uses differing sound frequencies to record the passage of vehicles.

INTELLIGENT VEHICLE HIGHWAY SYSTEM (IVHS)
The application of electronic, computer and communication technology to add efficiency to motor vehicle use and capacity to existing roadways. IVHS research and development may enhance vehicle sensing and recording devices.

INTERSECTION COUNTS
Traffic counts taken at an intersection, either manually or with counters, to study the flow of vehicles through an intersection. Generally, straight movements are recorded with counters, and turning movements are either taken manually or in combination with counters.

LONG-TERM PAVEMENT PERFORMANCE (LTPP)
One of the four research areas of the Strategic Highway Research program. This pavement research is designed as a 20-year program and requires traffic data collection throughout that period.

LOOP DETECTOR
A detector that senses a change in inductance, of its inductive loop sensor, caused by the passage or presence of a vehicle near the sensor.

MAGNETIC DETECTORS
A detector that senses changes in the earth's magnetic field caused by the movement of a vehicle near its sensors.

MANUAL COUNTS
Measurements of traffic characteristics based on human observation, which may or may not be electronically recorded.

MECHANICAL COUNT
Measurement of traffic characteristics by sensors and electronic recording of the measurements, independent of human observations.

MINIMUM TIME INTERVALS
The period in which traffic data should be aggregated. In urban areas, the minimum interval is 15 minutes, indicating data may be aggregated in periods of 15 minutes or less. In rural areas, the minimum time area is 60 minutes, indicating data may be aggregated in one hour or less.

MONTHLY AVERAGE DAILY TRAFFIC (MADT)
The estimate of mean traffic data for a month, calculated by the sum of Monthly Average Days of the Week (MADWs) divided by seven; or in the absence of a MADW for each day of the week, divided by the number MADWs by the month.

MONTHLY AVERAGE DAYS OF THE WEEK (MADWS)
The estimate of traffic volume mean statistic for each day of the week, over the period of one month. It is calculated from edited-accepted counter data as the sum of all traffic for each day of the week (Sunday, Monday and so forth through the week) during the month, divided by the occurrences of that day during that month.

MONTHLY AVERAGE WEEKDAY TRAFFIC (MAWDT)
The estimate of the five-day average of traffic for the period Monday through Friday in each month, calculated as the sum of MADWs for Monday through Friday, divided by five. Friday traffic may be excluded from MAWDT calculation if these data more closely approximate weekend (MAWET) than weekday traffic.

MONTHLY AVERAGE WEEKEND TRAFFIC (MAWET)
The estimate of a two-day average of traffic for the period Saturday through Sunday in each month, calculated by the sum of MADWs for Saturday through Sunday divided by the number of MADWs for Saturday through Sunday during the month. Friday traffic may be included in MAWET calculation if these data more closely approximate weekend than weekday (MAWDT) traffic. If Friday traffic is included, MAWET is the three day average of traffic for the period Friday through Sunday in each month, calculated as the sum of MADWs for Friday through Sunday, divided by three.

NESTED TRAFFIC COUNTS
Traffic monitoring activities that record more than one traffic characteristic, such as volume or vehicle classification or volume, vehicle classification and weight. Nested counts may also refer to use of two or more devices to record the same or different traffic characteristics at the same time.

OPPORTUNITY COST
The cost of not funding an alternative program or project when limited resources are expended by selecting one among competing needs. This concept is helpful in quantifying the impact when resources are not expended on the program or project of greatest cost/benefit.

OVER DESIGN
The difference of costs in a project based on incorrect information, minus costs based on correct information.

PEAK HOUR
A sixty-minute interval that contains the largest volume of traffic for a specific day or “average” day.

PEAK HOUR FACTOR
A measure of demand, which is a fraction of the 24-hour daily volume of traffic, occurring during the highest volume 60-minute period of the day.

PEAK HOUR PEAK DIRECTION
The direction of travel (during the 60-minute peak hour) that contains the highest percentage of travel.

PEAK PERIOD
The highest period of traffic flow during the AM and PM time periods.

PERMANENT COUNT SOLUTIONS
ATRs that are permanently placed at specific locations throughout the regions to record the distribution of variation of traffic flow by hours of the day, days of the week, and months of the year from year to year.

PHOTO – ELECTRIC SENSORS
A source of light (which emits a beam) placed at one side of the road and a photocell placed at the other. The passage of a vehicle obstructs the light beam causes detection by the photocell.

PNEUMATIC ROAD TUBE COUNTERS
Flexible rubber tube at right angles to traffic and connected to a recording unit device, used to detect the passage of vehicle axles.

POLLING
Automated transfer of traffic measurements from permanent counters to a computer for editing and summarization.

PRESENCE DETECTOR
A detector that senses a change in inductance caused by the presence of a vehicle. The most common example of a presence detector is an inductive loop.

PROJECT RELATED COUNT
A traffic count taken to support a roadway or bridge project.

RELIABILITY FACTOR
In the AASHTO Pavement Design Guide, the factor multiplied by Design Equivalent Single Axle Loads to Account for Variability in Traffic and non-traffic data.

ROAD SECTION
Unit of roadway, termini of which are typically defined in relation to a request for traffic characteristics. A road section may consist of more than one road segment.

ROAD SEGMENT
Unit of roadway, the termini of which are defined by various methods among state agencies. Termini may be defined by change in pavement type, structural number, condition rating, or political boundary. Traffic characteristics may be used to define unique road segments.

SEASONAL FACTORS
Parameters used to adjust base counts, which consider travel behavior fluctuations by day of the week and month of the year.

SPECIAL COUNT
A traffic count taken to respond to a request for traffic information, not included as part of the coverage or project-related count plan.

SPECIAL PURPOSE COUNT
A traffic count taken for the specific purpose for better understanding traffic flow characteristics at predetermined sections of the roadway. These may include studying the effects of traffic accidents, roadway closures or traffic re-routing.

STRATEGIC HIGHWAY RESEARCH PROGRAM (SHRP)
A five-year program for pavement and operations research funded by Congress and managed through the National Academy of Sciences. One of the four research areas. Long Term Pavement Performance, is planned as a 20 year program. This program will be continued by the Federal Highway Administration beginning in 1992.

THIRTIETH HIGHEST HOUR (30TH HIGHEST HOUR)
For all edit-accepted hours of data during a one-year period, the 30th highest hourly traffic volume. This volume is commonly used as a representative hour of traffic volume in roadway design.

TRAFFIC PROGRAM
The collection, editing, summarization, reporting, and analysis of traffic volume, classification and weight data.