

Final Report
TNW91-06.4

**TRAFFIC OPERATIONS AT TWO-WAY
STOP-CONTROLLED
INTERSECTIONS**

VOLUME IV

**TDIP:
TRAFFIC DATA INPUT PROGRAM**

by

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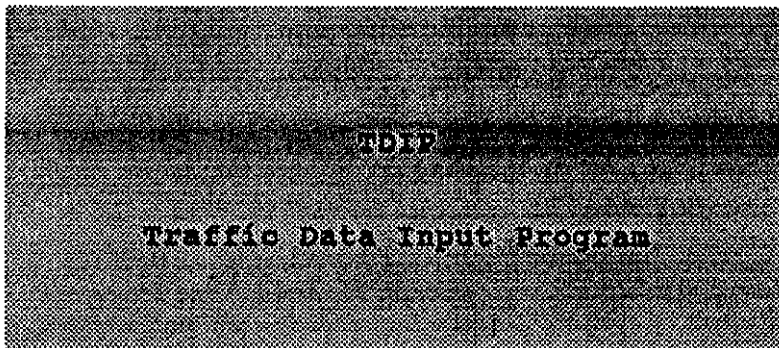
December 1991

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Program **Documentation** and **User's** Manual

Version 3.0

Computer Software to Collect
Traffic Volume and Delay Data



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Programming Language

TDIP was written using **QuickBasic** 4.5, a product of Microsoft Corporation. **QuickPak** Professional, a set of programming tools from Crescent Software, was also used in the development of the program.

Questions or Problems?

Every effort has been made to provide an **easy-to-use**, error-free, and sturdy program. If you have any questions regarding program operation, or if you encounter problems, please contact:

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what is TDIP?

TDIP (Traffic Data Input Program) is a computer program used for collecting traffic volume data and vehicle delay data. TDIP can be used with a standard IBM-compatible personal computer in the office to collect traffic data while observing a videotape of traffic flow at an intersection. TDIP can also be used to collect data directly in the field. In either case, the computer keyboard is used in place of the traditional traffic counterboard.

Once data collection is completed, TDIP saves two kinds of files that can be used for further analysis. The **Master File** is a complete record of the times that each vehicle passed through the intersection, or entered and left a queue at the intersection. The **Summary File** is a summary of vehicle volumes or vehicle delays in 1-minute, 5-minute, and 15-minute increments.

Basic Features

You can use TDIP to:

- **record** vehicle turning movements or vehicle volumes by approach, or
- **record** times that vehicles enter and leave a queue to compute vehicle delay, and
- **save** volume and delay data in ASCII format or **.wk1** format for future data analysis.

New Features

TDIP Version 3.0 includes these new features:

- **A** user-definable key selection so that the data entry process can be optimized for different keyboard layouts.
- **An** additional delay data entry module so that total time in queue and time spent first in line in queue can be calculated separately.
- **An** optional **.wk1** or **.wks** format for direct retrieval into a spreadsheet program.

Traffic Data Input Program

- Easier to use menus.

- .Better readability on laptop computer screens.



Chapter 1. Getting Started With TDIP

Installing and Running TDIP

The TDIP diskette contains four files:

TDIP.EXE is the main executable file.

TDIP.HLP is the help file.

TDIP.KEY is the key stroke definition file.

TDIP_WK1.EXE converts master files into **.wk1** format.

To install TDIP, copy these four files to a directory. You can run TDIP from either a hard disk or a floppy disk.

To run the program, type TDIP. To run the program on a laptop, type TDIP /**B**. TDIP /**B** is a new option that changes the screen colors to black and white and makes viewing the screens on a laptop much easier.

System Requirements

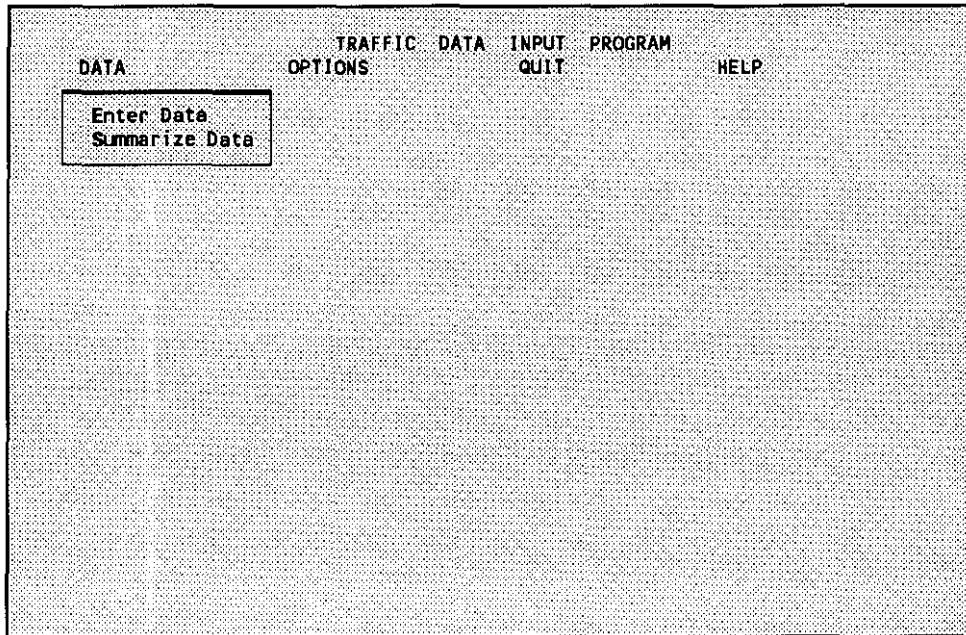
You can run TDIP on any IBM PC or compatible computer with 512K RAM and DOS 3.1 or later.

TDIP requires 150,000 bytes of free disk space on the default directory. This minimum disk space is required so that TDIP has room to store backup files. Thus if you are running TDIP from a floppy disk, it must be at least 720k or larger.

Traffic Data Input Program

Program Menu

The **Program Menu** is shown below. Press the **Left** or **Right Arrow** key to select **DATA**, **OPTIONS**, **QUIT**, or **HELP** from the **Program Menu**. Next, press the **Up** or **Down Arrow** key to highlight your selection, and then press **Enter**. A faster way to make your selection is to simply press the highlighted letter for your choice. Selections under **DATA** or **OPTIONS** will provide you with additional menu choices. Once again, press the **Up** or **Down Arrow** key to highlight your selection, and then press **Enter** or the highlighted letter.



collecting Traffic Volume Data

To collect traffic volume data, follow these nine steps:

Step 1. Select **DATA** from the Program Menu.

Step 2. Select **Enter Data** from the **pull-down** menu.

Step 3. Select **Approach Volumes** from the **pull-down** menu to collect volume data for each approach or **Turning Movements** from the **pull-down** menu to collect turning movement data.

Step 4. Enter the starting and ending times for the study period.

Step 5. Press **S** when the observation period begins. Record each vehicle by pressing the designated key (1-4 for approach volumes or 1-9 and **D**, **E**, or **F** for turning movements) or your customized key set.

Step 6. Press **Q** when the observation period is completed.

Step 7. Enter the file name and the file identifier. Save the complete record of vehicle movement times by pressing **ESC**.

Step 8. Select **Summarize Data** from the **pull-down** menu then choose **In Memory** to save a summary of the volume data in 1-minute, 5-minute, and 15-minute increments.

Step 9. Select **Quit** from the Program Menu then choose **Yes** to exit the program.

Traffic Data Input Program

collecting Vehicle Delay Data

To collect vehicle delay data, follow these nine steps:

Step 1. Select **DATA** from the Program Menu.

Step 2. Select **Enter Data** from the **pulldown** menu.

Step 3. Select **Delay Data** from the **pulldown** menu to collect vehicle delay data or **pap and Delay Data** from the **pulldown** menu to collect vehicle gap delay data.

Step 4. Enter the starting and ending times for the study period.

Step 5. Press **S** when the observation period begins. Record each vehicle by pressing the designated key (**1-S** for delay data or **1-3** for gap delay data) to record the time that each vehicle enters and leaves the queue.

Step 6. Press **Q** when the observation period is completed.

Step 7. Enter the file name and the file identifier. Save the complete record of vehicle movement times by pressing **ESC**,

Step 8. Select **Summarize Data** from the **pulldown** menu then choose **In Memory** to save a summary of the delay data in 1-minute, 5-minute, and 15-minute increments.

Step 9. Select **Quit** from the Program Menu then choose **Yes** to exit the program.

Chapter 1. Getting Started With TDIP

Using This Manual

This manual provides detailed information on using TDIP. The following topics are covered in the manual.

Chapter	Topic
1	Getting started with TDIP
2	An overview of TDIP
3	The main program menu
4	Collecting traffic flow data
5	Collecting vehicle delay data
6	Creating a summary file
7	OPTIONS, QUIT, and HELP
8	Sample output files
9	Program messages
10	Converting master files to .wki format



CHAPTER 2. AN OVERVIEW OF TDIP

What The Program Does

Data collection in the "old days" of traffic engineering often consisted of a technician seated near the curb with a counterboard on his or her lap recording the passing of each vehicle through an intersection. The counterboard registered a running total of volumes by approach or by turning movement. TDIP operates by much the same principle except that now your counterboard is a personal computer. You can either sit in the office observing a videotape or sit in the field with a lap-top computer and record the traffic flow through the intersection.

There are several important improvements with this new process over the traditional "manual count" methodology. First, if you've videotaped traffic flow at the intersection, the videotape is a permanent record of the intersection operation. You can observe special problems or review specific operational situations several times if necessary by simply replaying the videotape. Second, you enter data directly into the computer, thus eliminating errors that often occur when observers transcribe field data sheets several times. Third, while completely automated traffic data collection techniques now exist, the procedure described here is much less costly, thus making available a partly-automated procedure to a greater number of traffic engineering organizations, particularly those with small staffs and budgets.

You can collect two kinds of data with TDIP:

.Approach volumes or turning movements by recording the time that each vehicle passes through the intersection.

-Vehicle delays by recording the time that each vehicle enters and leaves the queue on the intersection approach. The computer compares the times and calculates vehicle

Traffic Data Input Program

delay.

For each data entry method described above, the computer can store the data in two different files, a Master File and a **Summary** File. The Master File is a record of the times that each vehicle enters the intersection or enters and leaves a queue. The **Summary** File is a summary of vehicle volumes or delays in 1-minute, 5-minute, and 15-minute time increments.

After the data is entered and the data file prepared using TDIP, you can use a spreadsheet or other software for statistical analysis of the data.

Chapter 2. An Overview of TDIP

Program Limitations

TDIP limits the total vehicle entries for each approach or turning movement to 1200.

You are limited to 120 minutes of data entry.

You cannot select a time period such that **12:00** midnight is between the beginning and ending times of the study period.

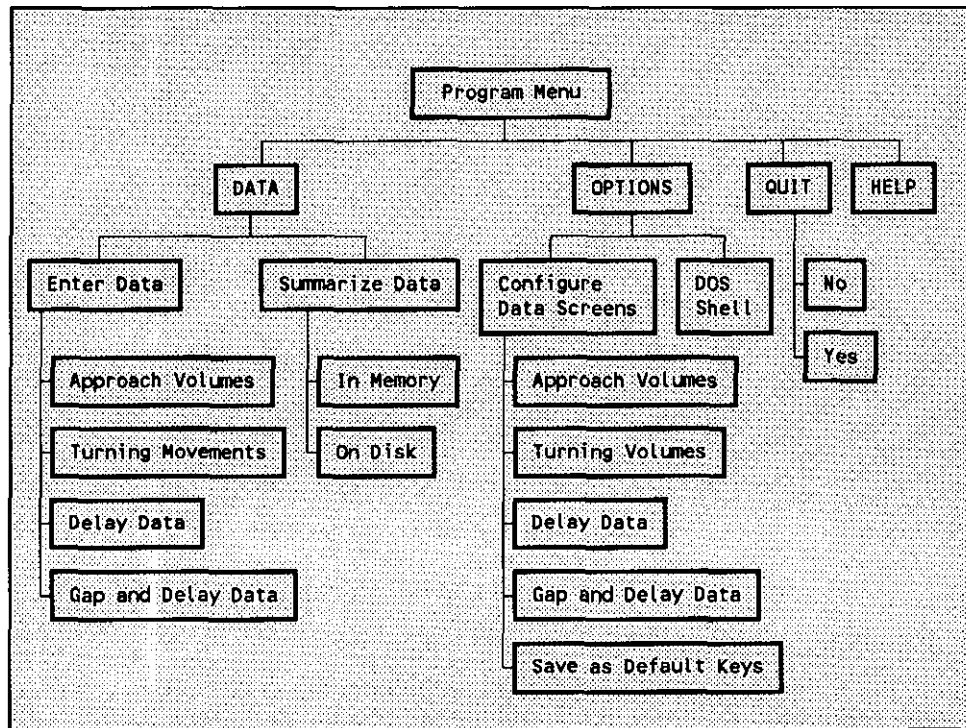
There must be a minimum of 150,000 bytes free on the default drive so that backup files can be saved.

If you run the program from a floppy disk, the diskette must be 720k or larger.

Traffic Data Input Program

Program Structure

The organization and program flow of TDIP is illustrated in the following structure chart:



Special Keys

Special keys are used in a consistent manner for certain specific operations. These special keys are summarized below:

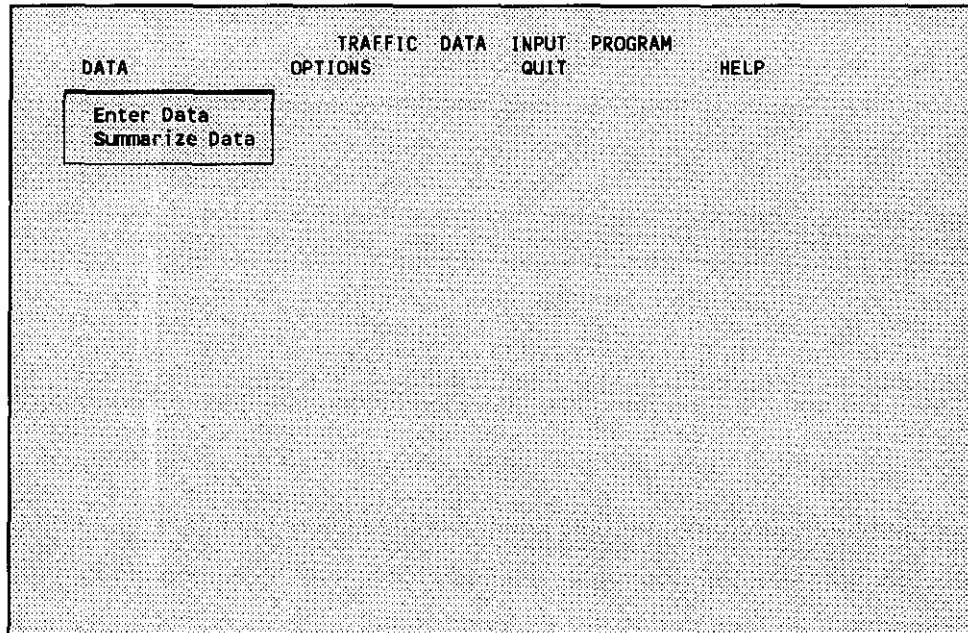
To:	Press:
Exit from a screen	Escape
Complete an entry	Enter
Erase an entry or character	Delete or backspace
Typeover characters	Ins
Select an item from a menu	Up or Down Arrow Key and Enter
Move to a selection on the Program Menu	Right or Left Arrow Key
Move cursor to end of line.	End
Move cursor to beginning of line.	Home

CHAPTER 3. THE MAIN PROGRAM MENU

The first screen displayed by TDIP is the title screen. The second screen is the **Program Menu**.

The cursor is initially set on the DATA menu with Enter Data highlighted.

Use the Right or Left Arrow key to select DATA, OPTIONS, QUIT, or HELP from the Program Menu.

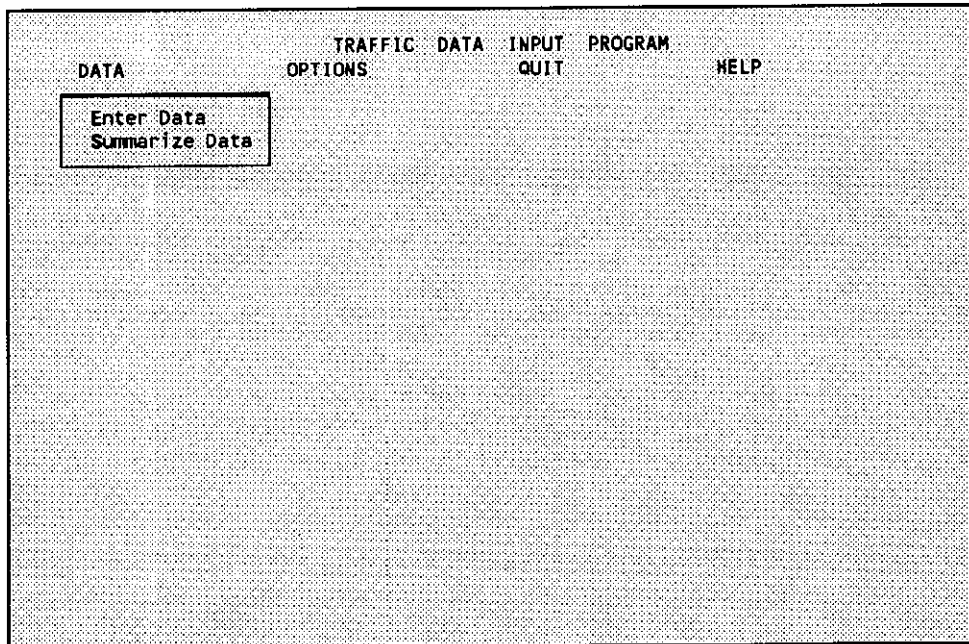


Traffic Data Input Program

Approach Volume and Turning Movement Data

You can collect two kinds of traffic volume data using TDIP, approach volume data and turning movement data. First, activate the DATA menu by pressing the Right or Left Arrow key. Then using the Up or Down Arrow key highlight Enter Data, and press Enter. A faster way to select Enter Data is to simply press E.

Note: If you have executed the wrong choice, press the Esc key to negate the undesired choice and return to the previous menu.



Traffic Data Input Program

Once you have chosen Enter Data, a new menu appears giving you the four choices of data collection: **A**pproach Volumes, Turning Movements, Delay Data, and **G**ap and Delay Data.

The screenshot shows a terminal window titled "TRAFFIC DATA INPUT PROGRAM". Inside the window, the text "Enter Data" is displayed at the top left. Below it is a rectangular menu box with the title "Select Type of Data to Collect". The menu lists four options: "Approach Volumes", "Turning Movements", "Delay Data", and "Gap and Delay Data". The first option, "Approach Volumes", is highlighted with a thick horizontal line.

To collect traffic flow data, choose **A**pproach Volumes or Turning Movements using the Up or **D**own Arrow key to highlight your choice; then press Enter. Alternatively, press A to select **A**pproach Volumes or T to select Turning Movements.

Chapter 4. Collecting Traffic Flow Data

Setting The Beginning and Ending Times

After selecting your data type, another screen automatically appears.

TRAFFIC DATA INPUT PROGRAM

Enter Beginning And Ending Times For Study Period
Formats: hh:mm:ss, hh:mm, h:mm, h:mm:ss

Beginning Time:

Ending Time:

<ENTER> Changes Cursor Location **<ESC>** Saves Times And Exits This Screen

You are now prompted to set the beginning and ending times of the observation period. Whether in the office or in the field, the times you enter here should be those of the actual traffic flow through the intersection.

Note: The program will not function properly if 12:00 midnight falls between the beginning and ending times.

Enter the beginning and ending times in a character string using one of the following formats: **hh:mm:ss**, **h:mm:ss**, **hh:mm**, or **h:mm**. In order for TDIP to operate properly, you must use a 24-hour clock format (military time). For example, enter 7:30 PM as **19:30:00**. The program will accept a maximum time differential of two hours between the starting and ending times. Remember that the ending time must always be greater than the beginning time.

Traffic Data Input Program

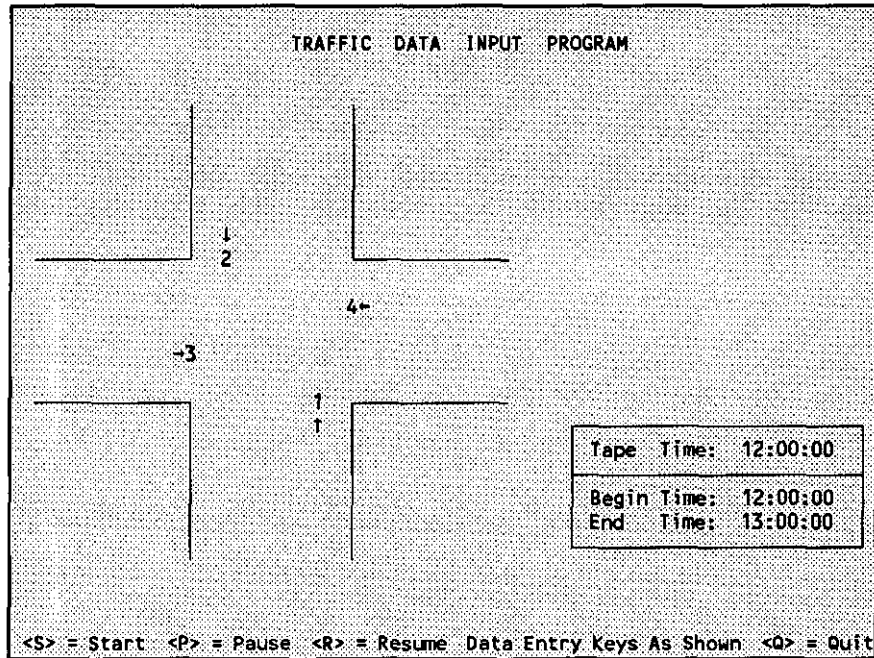
Pressing **Enter** will change the cursor location to the other box, and pressing **Esc** will save the times and exit the screen.

After entering the beginning and ending times, press **Esc**. The program will then advance you directly to the appropriate data collection screen.

Chapter 4. Collecting Traffic Flow Data

Collecting Approach Volume Data

If you select this option, you can record the arrival or departure times of vehicles by approach. The data you enter here can later be used to make a Summary File that will contain the traffic volumes summarized in 1-minute, 5-minute, and 15-minute increments.



If you want to exit this sequence and have not already started TDIP by pressing 8, simply press Q. This will take the program back to the original menu. Once you have started TDIP, the only way to exit the sequence is to continue as described below.

When you begin playing the videotape, press 8 to start the TDIP program. This will synchronize the computer clock with the videotape. When a vehicle enters the intersection, press 1, 2, 3, 4, or the user-defined default keys (see Chapter 7) to note its direction. The program displays a running total of the volumes by approach. If you enter something other than 1, 2, 3, 4, or the user-defined

Traffic Data Input Program

default keys, the computer will beep, and you will have to re-enter the number. Proceed through the videotape until the study period is over.

In the lower right corner of the screen, a box displays the **Tape Time** which is the "**current**" time of the videotape. The **Begin Time** and **End Time** are the beginning and ending times of your study period that you entered previously.

If you need to stop the data entry process for any reason, stop the videotape machine and press P. The computer clock will pause during this time. Press R to re-start the data entry process.

Press Q when you have completed data entry. TDIP will save a backup copy of the data in the default directory. This is done in case computer operation is terminated abnormally. The name of the backup file is **APPROACH.BAK**.

Chapter 4. Collecting Traffic Flow Data

saving Approach Volume Data

The Master File save screen now appears. The cursor appears in the File Name window, and you are given a default drive and path for the Master File output. Edit the drive and path as needed and enter a file name. Append the extension ,PRN (for ASCII format) to the file name to allow easy file importing to a spreadsheet. Press **Enter** when you have finished entering the file name. The program scans all current files to see if the file name exists. If it does exist, the program gives you the opportunity to overwrite the file or select a new file name.

The cursor moves to the File Identifier window. Enter relevant information about the data you have just collected, remembering that your file identifier is limited to the length of the box. This information will appear on the first line of your output file. Ex: street name, city, state data etc. Press **Esc** to exit the window and save the file and identifier.

TRAFFIC DATA INPUT PROGRAM

File Name
==> C:\

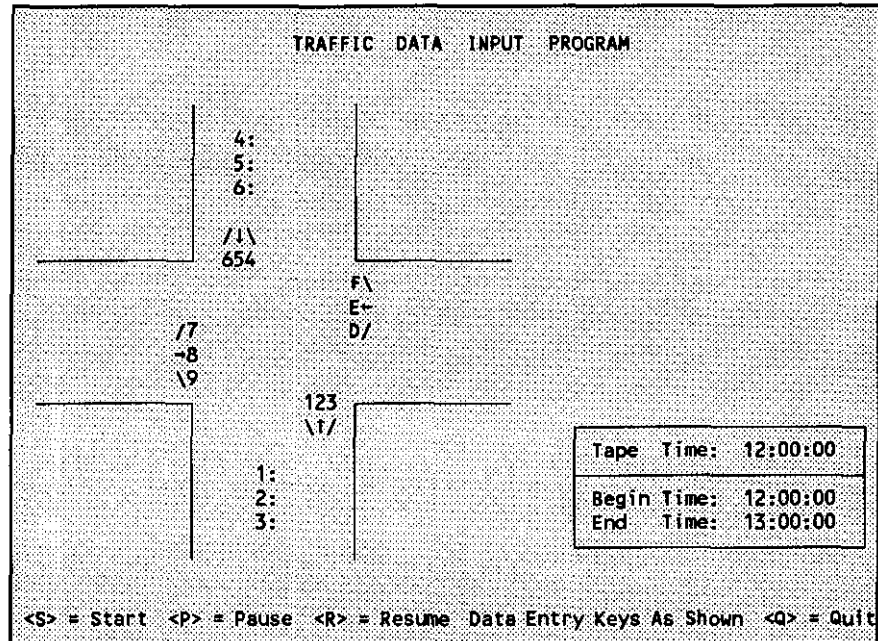
File Identifier Or Header
==>

Name The Master File Using The Format: 'Filename.PRN'
<ENTER> Changes Window Location <ESC> Exits And Saves File

Traffic Data Input Program

Collecting Turning Movement Data

If you select this option, you can enter the departure times by approach and turning movement. The data that you enter here can later be used to create a Summary File that will contain turning movements by approach summarized in 1-minute, 5-minute, and 15-minute increments.



If you want to exit this sequence and have not already started TDIP by pressing **S**, simply press **Q**. This will take the program back to the original menu. Once you have started TDIP, the only way to exit the sequence is to continue as described below.

When you begin playing the videotape, press **S** to start the TDIP program. This will synchronize the computer clock with the videotape. When a vehicle enters the intersection, press 1 through 9, D, E, F, or the user-defined default keys (see Chapter 7) to note its direction. The program displays a running total of the volumes by approach. The computer will beep if you enter something other than these 12 keystrokes, and you will have to re-

Chapter 4. Collecting Traffic Flow Data

enter the number. Proceed through the videotape until the study period is over.

In the lower right corner of the screen, a box displays the Tape Time which is the "current" time of the videotape. The Begin Time and End Time are the beginning and ending times of your study period that you entered previously. If you need to stop the data entry process for any reason, stop the videotape machine and press P. The computer clock will pause during this time. Press R to re-start the data entry process.

Press Q when you have completed data entry. TDIP will save a backup copy of the data in the default directory. This is done in case computer operation is terminated abnormally. The name of the backup file is **TURNING.BAK**.

Traffic Data Input Program

Saving Turning Movement Data

The Master File save screen now appears. The cursor appears in the File Name window, and you are given a default drive and path for the Master File output. Edit the drive and path as needed and enter a file name. Append the extension ,PRN (for ASCII format) to the file name to allow easy file importing to a spreadsheet. Press **Enter** when you have finished entering the file name. The program scans all current files to see if the file name exists. If it does exist, the program gives you the opportunity to overwrite the file or select a new file name.

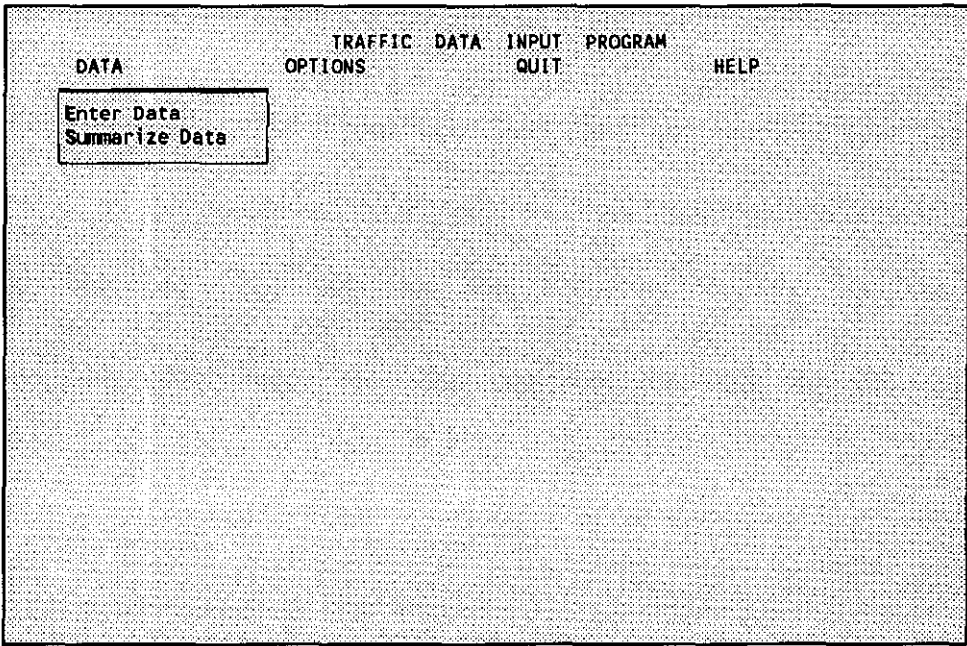
The cursor moves to the File Identifier window. Enter relevant information about the data you have just collected, remembering that your file identifier is limited to the length of the box. This information will appear on the first line of your output file. Ex: street name, city, state data etc. Press **Esc** to exit the window and save the file and identifier.

The screenshot shows a terminal window titled "TRAFFIC DATA INPUT PROGRAM". It contains two input fields. The first field is labeled "File Name" and contains the text "===> C:\". The second field is labeled "File Identifier Or Header" and contains the text "===>". At the bottom of the window, there is a footer with the text: "Name The Master File Using The Format: 'Filename.PRN'", "<ENTER> Changes Window Location", and "<ESC> Exits And Saves File".

CHAPTER 5. COLLECTING VEHICLE DELAY DATA
Delay Data

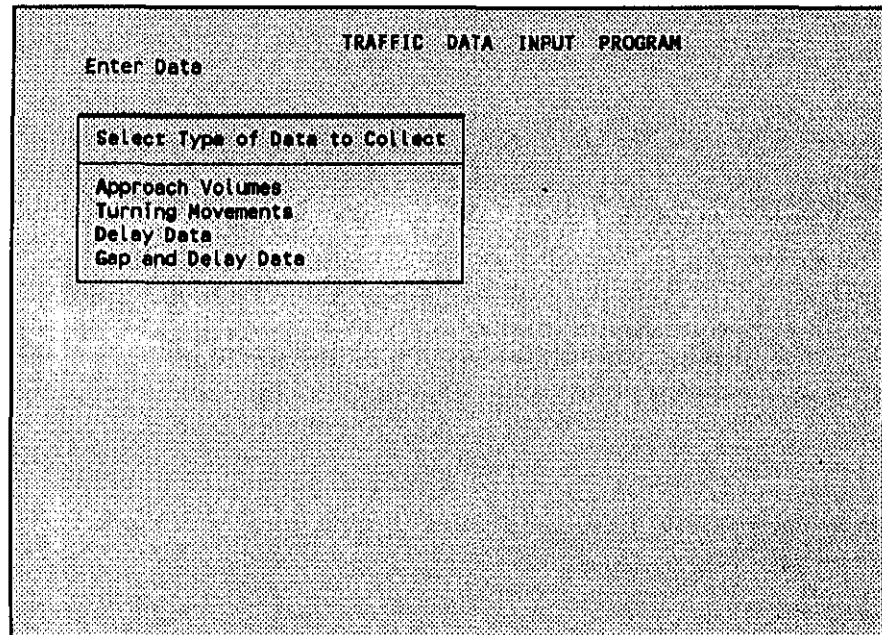
You can collect two kinds of vehicle delay data using TDIP; queue entry and exit data, and vehicle gap and delay data. First, activate the DATA menu by pressing the Right or Left Arrow key. Then using the Up or **Down** Arrow key highlight Enter Data, and press Enter. A faster way to select **Enter** Data is to simply press E.

Note: If you have executed the wrong choice, press the Esc key to negate the undesired choice and return to the previous menu.



Traffic Data Input Program

Once you have chosen Enter Data, a new menu appears giving you the four choices of data collection: **A**pproach Volumes, **T**urning Movements, **D**elay Data, and **G**ap and Delay Data.



The screenshot shows a terminal window titled "TRAFFIC DATA INPUT PROGRAM". Inside the window, the text "Enter Data" is displayed at the top left. Below it, a rectangular menu box is shown with the title "Select Type of Data to Collect". The menu lists four options: "Approach Volumes", "Turning Movements", "Delay Data", and "Gap and Delay Data". The text is rendered in a monospaced font typical of early computer terminals.

To collect vehicle delay data, choose Delay Data or **G**ap and Delay Data using the Up or Down Arrow key to highlight your choice; then press Enter. Alternatively, press the letter **D** to select Delay Data or the letter **G** to select Gap and Delay Data.

Chapter 5. Collecting Vehicle Delay Data

Setting The Beginning and Ending Times

After selecting your data type, another screen automatically appears.

TRAFFIC DATA INPUT PROGRAM

Enter Beginning And Ending Times For Study Period
Formats: hh:mm:ss, hh:mm, h:mm, h:mm:ss

Beginning Time:

Ending Time:

<ENTER> Changes Cursor Location <ESC> Saves Times And Exits This Screen

You are now prompted to set the beginning and ending times of the observation period. Whether in the office or in the field, the times you enter here should be those of the actual traffic flow through the intersection.

Note: The program will not function properly if 12:00 midnight falls between the beginning and ending times.

Enter the beginning and ending times in a character string using one of the following formats: **hh:mm:ss**, **h:mm:ss**, **hh:mm**, or **h:mm**. In order for TDIP to operate properly, you must use a **24-hour clock format** (military time). For example, enter 7:30 PM as **19:30:00**. The program will accept a maximum differential of two hours between the starting and ending times. Remember that the ending time must always be greater than the beginning time.

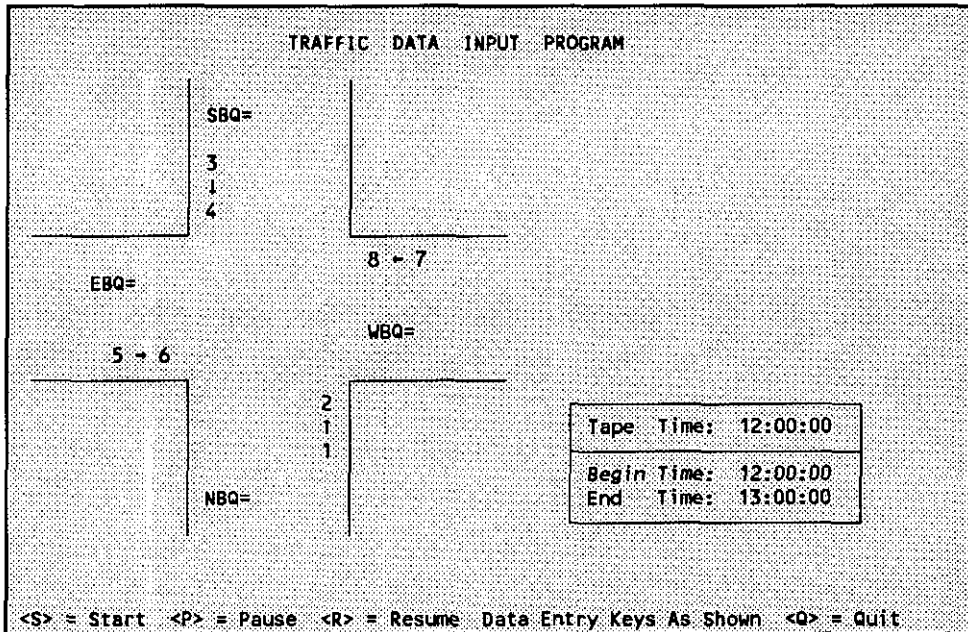
Traffic Data Input Program

Pressing Enter will change the cursor location to the other box, and pressing **Esc** will save the times and exit the screen.

After entering the beginning and ending times, press **Esc**. The program will then advance you directly to the appropriate data collection screen.

Collecting Delay Data

Monitoring both the beginning and ending of the queue is a more difficult process than simply noting approach volumes or turning movements. It is sometimes easier to have two observers available to record the data: one for vehicles entering the queue and one for vehicles leaving the queue.



If you want to exit this sequence and have not already started TDIP by pressing S, simply press Q. This will take the program back to the original menu. Once you have started TDIP, the only way to exit the sequence is to continue as described below.

When you begin playing the videotape, press 8 to start the TDIP program. This will synchronize the computer clock with the videotape. When a vehicle enters the queue, press 1, 3, 5, 7, or the user-defined default keys (see Chapter 7) to note its direction. When a vehicle leaves the queue, press 2, 4, 6, 8, or the user-defined default keys. For example, if you are observing a queue on the northbound approach of the intersection, press 1 when a vehicle enters the queue and 2 when the **vehi-**

Traffic Data Input Program

cle leaves the queue. If you enter something other than 1 through 8 or the user-defined default keys, the computer will beep, and you will have to re-enter the number. Note that the number of vehicles leaving the queue cannot exceed the number entering the queue. The program displays a running total of the volumes as well as the current number of vehicles in each queue. Proceed through the videotape until the study period is over.

In the lower right corner of the screen, a box displays the **Tape Time** which is the "**current**" time of the videotape. The **Begin Time** and **End Time** are the beginning and ending times of your study period that you entered previously.

If you need to stop the data entry process for any reason, stop the videotape machine and press **P**. The computer clock will pause during this time. Press **R** to re-start the data entry process.

Press **Q** when you have completed data entry. TDIP will save a backup copy of the data in the default directory. This is done in case computer operation is terminated abnormally. The name of the backup file is DELAY.BAK.

Chapter 5. Collecting Vehiale Delay Data

saving Delay Data

The Master File's save screen appears next. The cursor appears in the File Name window, and you are given a default drive and path for the Master File output. Edit the drive and path as needed and enter a file name. Append the extension **.PRN** (for ASCII **format**) to the file name to allow easy file importing to a spreadsheet. Press **Enter** when you have finished entering the file name. The program scans all current files to see if the file name exists. If it does exist, the program gives you the opportunity to overwrite the file or select a new file name.

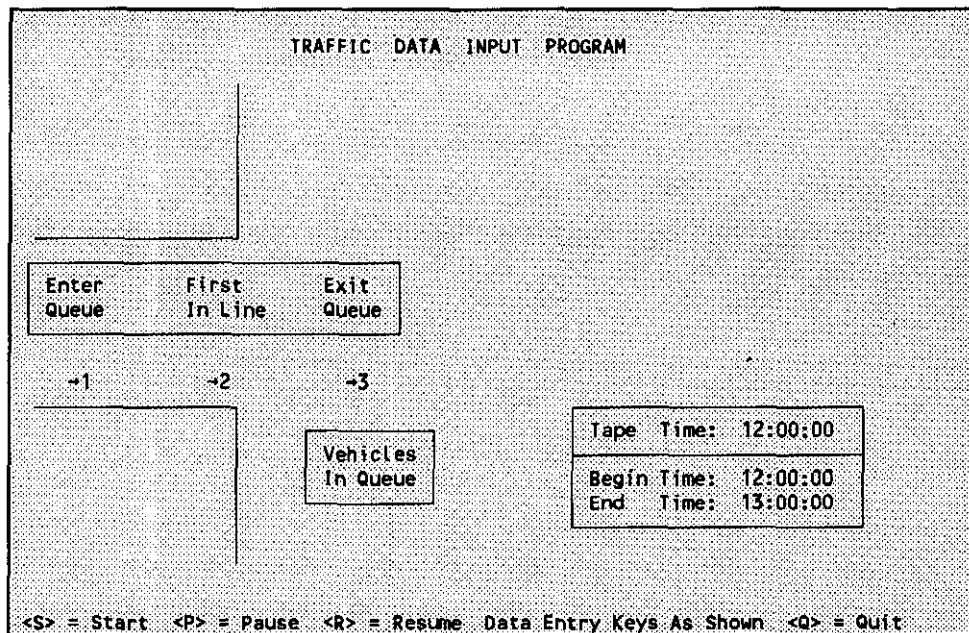
The cursor moves to the File Identifier window. Enter relevant information about the data you have just collected, remembering that your file identifier is limited to the length of the box. This information will appear on the first line of your output file. Ex: street name, city, state data etc. Press **Esc** to exit the window and save the file and identifier.

The screenshot shows a terminal window titled "TRAFFIC DATA INPUT PROGRAM". It contains two input fields. The first field is labeled "File Name" and contains the text "===> C:\". The second field is labeled "File Identifier Or Header" and contains the text "===>". At the bottom of the window, there is a legend: "Name The Master File Using The Format: 'Filename.PRN'", "<ENTER> Changes Window Location", and "<ESC> Exits And Saves File".

Traffic Data Input Program

Collecting Gap and Delay Data

Sometimes you might be required to know not only the length and duration of the queue, but also the average time a vehicle spends in queue and the time a vehicle spends waiting for a gap in traffic once it is first in line. Because for these cases it is necessary to see both the beginning and ending of the queue, the program provides for only one approach at a time.



If you want to exit this sequence and have not already started TDIP by pressing S, simply press Q. This will take the program back to the original menu. Once you have started TDIP, the only way to exit the sequence is to continue as described below.

Note: A maximum of two vehicles may be first in line at the same time.

When you begin playing the videotape, press S to start the TDIP program. This will synchronize the computer clock with the videotape.

Chapter 5. Collecting Vehicle Delay Data

When a vehicle enters the queue, press 1, or the user-defined default key (see Chapter 7). Once a vehicle becomes first in line, press 2, or the user-defined default key.

When a vehicle leaves the queue, press 3, or the user-defined default key. For example, if you are observing a queue on the northbound approach of the intersection, press 1 when a vehicle enters the queue, press 2 when the vehicle reaches the top of the queue and 3 when the vehicle leaves the queue. If you enter something other than 1 through 3 or the user-defined default keys, the computer will beep, and you will have to re-enter the number. The program displays a running total of the volumes as well as the current number of vehicles in queue. Proceed through the videotape until the study period is over.

In the lower right corner of the screen, a box displays the **Tape Time** which is the "**current**" time of the videotape. The **Begin Time** and **End Time** are the beginning and ending times of your study period that you entered previously.

If you need to stop the data entry process for any reason, stop the videotape machine and press P. The computer clock will pause during this time. Press R to re-start the data entry process.

Press Q when you have completed data entry. TDIP will save a backup copy of the data in the default directory. This is done in case computer operation is terminated abnormally. The name of the backup file is **GAP.BAK**.

Traffia Data Input Program

Saving Gap And Delay Data

The Master File's save screen appears next. The cursor appears in the File Name window, and you are given a default drive and path for the Master File output. Edit the drive and path as needed and enter a file name. Append the extension ,PRN (for ASCII format) to the file name to allow easy file importing to a spreadsheet. Press **Enter** when you have finished entering the file name. The program scans all current files to see if the file name exists. If it does exist, the program gives you the opportunity to overwrite the file or select a new file name.

The cursor moves to the File Identifier window. Enter relevant information about the data you have just collected, remembering that your file identifier is limited to the length of the box. This information will appear on the first line of your output file. Ex: street name, city, state data etc. Press **Esc** to exit the window and save the file and identifier.

TRAFFIC DATA INPUT PROGRAM

File Name
===> C:\

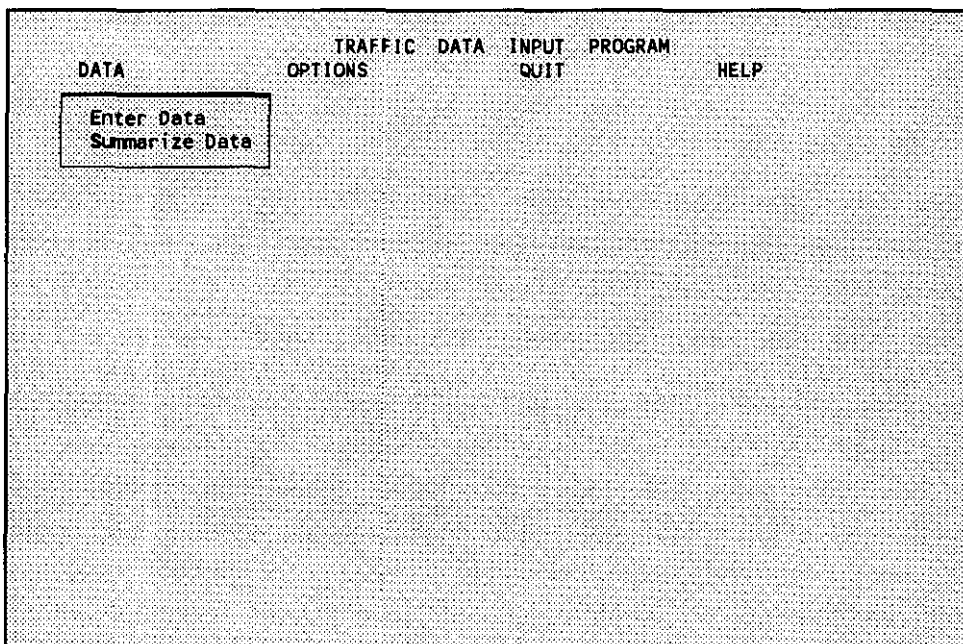
File Identifier Or Header
===>

Name The Master File Using The Format: 'Filename.PRN'
<ENTER> Changes Window Location <ESC> Exits And Saves File

The Summary File

The Summary File contains a summary of vehicle volumes or delay data in three time increments: 1-minute, 5-minutes, and 15-minutes.

When you have completed your observation and data entry, TDIP goes back to the DATA menu. To make a summary file you need to select Summarize Data. Use the Up or Down Arrow key to highlight summarize Data, then press Enter. Alternatively, press **S** to select summarize Data.



Next you are prompted to specify the location of the data you want to summarize. If you just finished entering data you would pick In Memory because the data is still in the computer's memory. If you wish to create a summary file for data that is no longer in memory choose Qn Disk. On Disk retrieves the master file you select back into memory so that you can create a summary file for it.

To make your selection, use the Up or Down Arrow key to highlight In Memory or Qn Disk, and then press Enter. Alternatively, press **I** to select In Memory, or **O** to select Qn Disk.

Traffic Data Input Program

In Memory

The beginning and ending times of your data collection are shown in boxes below the word "File". In the boxes below the word "Summary", enter the beginning and ending times for the period of your desired data summary. Press Enter to move the cursor between boxes. Press Esc to exit the screen and save the beginning and ending data summary times.

Remember that the maximum study period is 120 minutes and you can only exit this screen after you enter the summary times.

TRAFFIC DATA INPUT PROGRAM

Enter Range of SUMMARY TIMES
Formats: hh:mm:ss, hh:mm, h:mm, h:mm:ss
Both Times Must Be Entered Correctly Before Escaping

	File	Summary
Begin Time:	<input type="text" value="12:00:30"/>	<input type="text" value="-"/>
End Time:	<input type="text" value="12:59:27"/>	<input type="text"/>

<ENTER> Changes Window Location **<ESC>** Exits This Screen

Chapter 6. Creating a Summary File

Saving The Summary File

You are then given a default drive and path for the Summary File. Edit the drive and path as needed, and enter a file name. The program then scans all current files to see if the file name exists. If it does exist, the program gives you the opportunity to overwrite the file or select a new name. Append the extension `.PRN` (for ASCII format) to the file name to allow easy file importing to a spreadsheet. Adding the extension `.wk1` or `.wks` allows you to write the **Summary File** directly into spreadsheet format.

The `.wk1` or `.wks` format is a new option. However, TDIP can only write Summary Files in the `.wk1` or `.wks` format. Master Files must be saved in ASCII format and then converted into `.wk1` or `.wks` format with an extra program provided, see Chapter Ten.

When you have finished entering the file name, press **Enter**. The cursor automatically moves to the identifier window. Enter relevant information about the data you have just summarized, remembering that your file identifier is limited to the length of the box. This information will appear on the first line of your output file. Ex: street name, city, state data etc. Press Esc to exit the window and save the Summary File. It may take up to several minutes for TDIP to prepare a Summary File. After completing the Summary File, TDIP will return you back to the main menu.

Traffic Data Input Program

TRAFFIC DATA INPUT PROGRAM

File Name

====> C:\

File Identifier Or Header

====>

Name The Summary File Using The Format: 'Filename.PRN' Or 'Filename.WK1'
<ENTER> Changes Window Location <ESC> Exits And Saves File

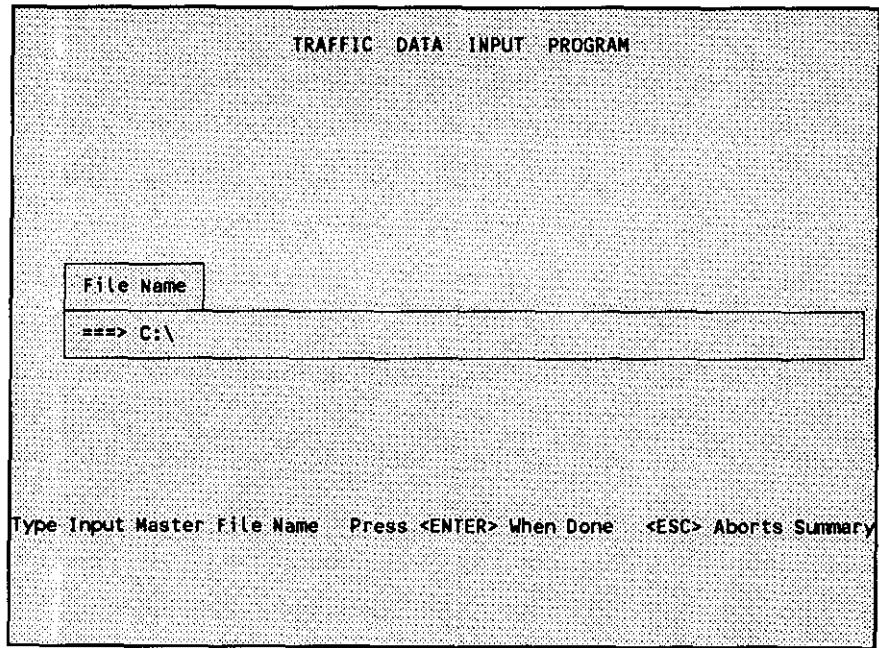
On Disk

TDIP can create a Summary File from either a Master File or backup file that you have previously saved. When you select **On Disk**, TDIP displays a default drive and path for the Master File or backup file. Edit the drive and path as needed, and enter a file name.

Note: TDIP can only read files that are in ASCII format.

Note: If you have data already in memory, TDIP will ask you if you want to overwrite the data in memory.

Press Enter when you are finished entering the filename or Esc if you want to abort the summary.



Traffic Data Input Program

The beginning and ending times of your data collection are shown in boxes below the word "File". In the boxes below the word "Summary", enter the beginning and ending times for the period of your desired data summary. Press Enter to move the cursor between boxes. Press Esc to exit the screen and save the beginning and ending data summary times.

Remember that the maximum study period is 120 minutes and you can only escape this screen after you enter the summary times.

TRAFFIC DATA INPUT PROGRAM		
Enter Range of SUMMARY TIMES Format: hh:mm:ss, hh:mm, h:mm, h:mm:ss Both Times Must Be Entered Correctly Before Escaping		
	File	Summary
Begin Time:	<input type="text" value="12:00:30"/>	<input type="text" value="-"/>
End Time:	<input type="text" value="12:59:27"/>	<input type="text"/>
<ENTER> Changes Window Location		<ESC> Exits This Screen

Chapter 6. Creating a Summary File

Saving The Summary Bile

You are then given a default drive and path for the Summary File. Edit the drive and path as needed, and enter a file name. The program then scans all current files to see if the file name exists. If it does exist, the program gives you the opportunity to overwrite the file or select a new name. Append the extension ,PRN (ASCII) to the file name to allow easy file importing to a spreadsheet. Adding the extension .wk1 or .wks allows you to write the Summary File directly into spreadsheet format.

When you have finished entering the file name, press **Enter**. The cursor automatically moves to the identifier window. Enter relevant information about the data you have just summarized, remembering that your file identifier is limited to the length of the box. This information will appear on the first line of your output file. Example: street name, city, state data etc. Press Esc to exit the window and save the Summary File. It may take up to several minutes for TDIP to prepare a Summary File. After completing the Summary File, TDIP will return you back to the main menu.

TRAFFIC DATA INPUT PROGRAM

File Name
===> C:\

File Identifier Or Header
===>

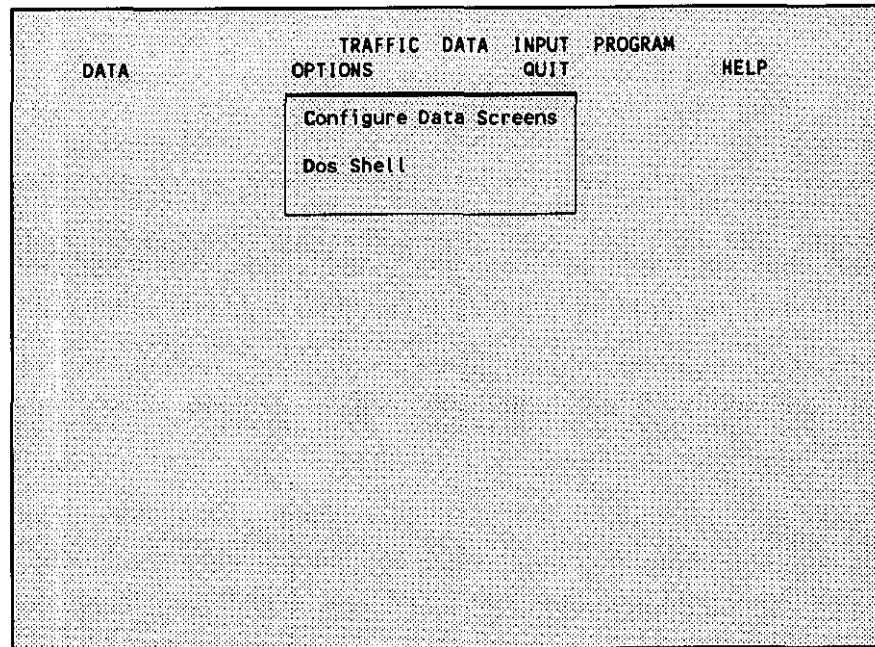
Name The Summary File Using The Format: 'Filename.PRN' Or 'Filename.WK1'
<ENTER> Changes Window Location <ESC> Exits And Saves File

CHAPTER 7. OPTIONS, QUIT AND HELP

TDIP includes three other functions in the Program Menu: **OPTIONS**, **QUIT** and **HELP**.

Options

You can activate the **OPTIONS** menu by pressing the Right or Left Arrow key. Then using the Up or Down Arrow key highlight **Configure Data Screens** or **DOS Shell**. Press Enter to select your highlighted choice. A quicker method is to simply press **C** to select **Configure Data Screens** or press **D** to select **DOS shell**.



Traffic Data Input Program

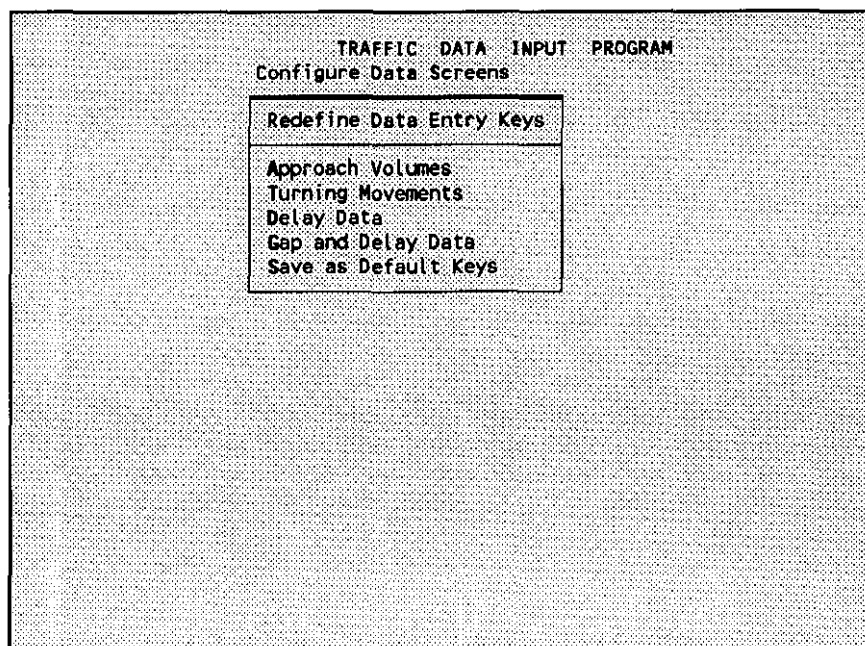
Configure Data Screens

Configure Data Screens allows you to **set** up user-defined default keys (data input strokes) for each of the input data screens. Selecting **configure Data screens** allows you to customize the data entry keys to your preference or according to your keyboard layout.

Use the **Up** or **Down Arrow** key to move the cursor to one of the following options:

Approach Volumes
Turning Volumes
Delay Data
Gap and Delay Data
Save as Default Keys

then press **Enter**. Alternatively, press either **A**, **T**, **D**, **G**, or **S** depending on your choice.

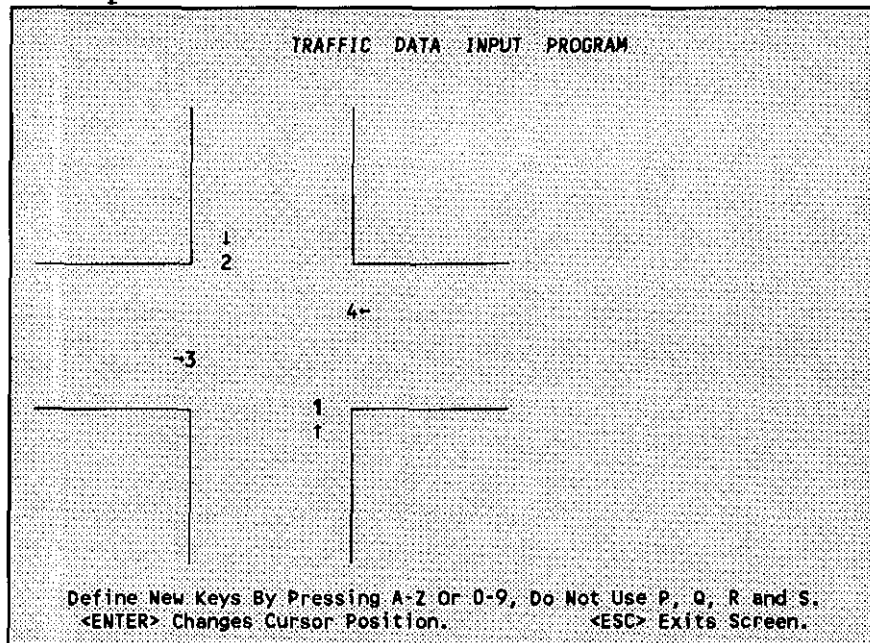


Chapter 7. Options, Quit, and Help

TDIP allows you to change the input key for any position occupied by a reverse video number or letter. You can assign any letter or number to these positions except P, Q, R, and S. Each position must have a distinct letter or number that does not match any of the other positions. Press Enter to change to the next position, and press Esc to exit the screen.

For example, the Approach Volumes Screen is shown below. Number one is in reverse video. Press any valid key stroke to change that position's number or letter. Press Enter to change to another position. Press Esc to exit the screen and save your changes. You may press Esc at this time to return to the main menu without saving the new keys strokes as the future default keys. To save the defined keys strokes, use Up or Down Arrow keys to highlight **save** as Default Keys and press Enter or S. To save the changes, there must be at least 2000 bytes free on the default drive where the TDIP executable files are located.

To set user-default keys for **Turning Volumes**, **Delay Data** and **gap** and Delay Data, follow the same procedures.



Traffic Data Input Program

DOS Shell

DOS shell allows you to exit the program environment. This feature allows you to run other programs, format a disk, or delete files on a disk to make room for the Summary and Master Files. TDIP uses over 400,000 bytes of memory so this may limit your actions when using the **DOS Shell**.

Make sure that you return to the default directory before exiting the **DOS Shell**.

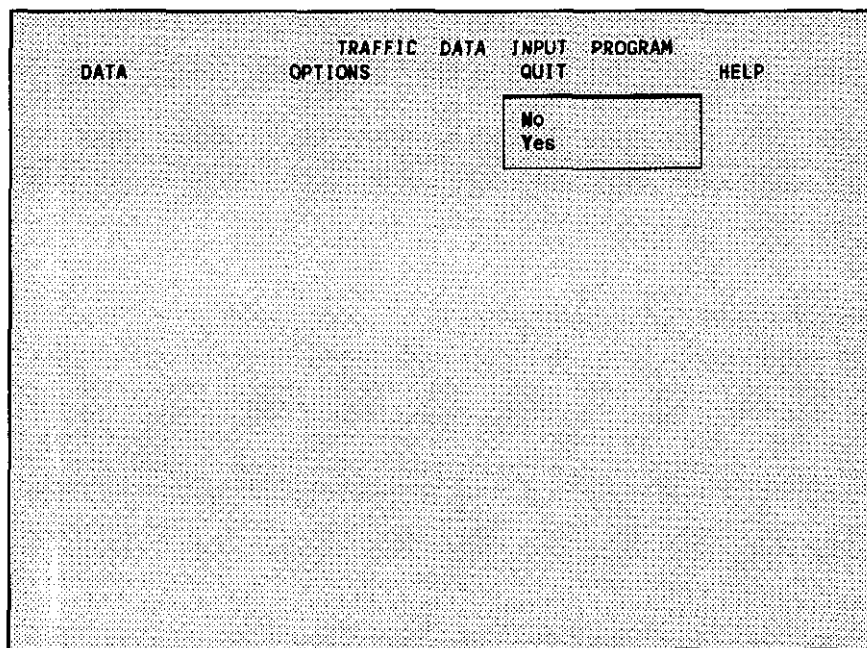
Note: The DOS COMMAND.COM file must be present on the default drive or a path must be set to the directory where the file is located; otherwise the program will crash, and you could lose all the data you have just collected.

Chapter 7. Options, Quit, and Help

Quit

Select **Quit** to exit TDIP.

Using the **Up** or **Down Arrow** key, move the cursor to **Yes** or **No**, then press **Enter**. A quicker method is to press **Y** to select **Yes** or **N** to select **No**.



Help

Help provides information on the operation of the program. Use the **Right** or **Left Arrow** key to highlight **Help**, then press **Enter**. You can scroll the screen up and down by pressing the **Page Up** and **Page Down** keys. Press **Esc** to exit the **Help** screen and return back to the program.

Note: On some compatible PC's, holding down the **Shift** key and pressing **Home** or **End** will lock the Help screen. Pressing **Num Lock** and then pressing one of the cursor keys should unlock the system.

CHAPTER 8. SAMPLE OUTPUT FILES

TDIP produces two kinds of output files, a **Master File** and a **Summary File**. This chapter gives examples of each file.

Example Master File Data

The **Master File** includes the actual **times** entered during the data entry process in a special 24-hour clock format. This format ranges from zero as the beginning of the day (12:00 midnight) to 1.00 as the end of the day (**12:00** midnight, 24 hours later).

An example of the **Master File** for sample Turning Movement data is shown below. The left (L), through (T), and right (R) movements for the northbound, southbound, and eastbound directions are shown here. The westbound direction has been omitted from the figure below because of space limitations.

TDIP12									
1st and State, Boise, Idaho									
NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	
.5029074	.5029176	.506667	.5035431	.5029303	.5029747	.5036271	.5028641	.5028076	
.5030122	.5033556	.509698	.5037497	.5029691	.5030466	.504203	.5033073	.5032564	
.5057865	.5037274	.5115499	.5041706	.5036899	.5044121	.5063453	.5034121	.5040605	
.5059868	.5038438	.5151684	.5042627	.5038215	.5081202	.5078748	.5041502	.5050135	
.506208	.503997	.5160094	.5045978	.5039156	.5105524	.5137736	.5042176	.5051941	
.5067363	.5043117	.5184379	.5046563	.503964	.5128824	.5194409	.5043778	.5055456	
.5070281	.504519	.5194753	.5051229	.5040936	.5190183	.5196095	.5048698	.5065385	
.5087076	.5047478	.5200316	.5056887	.5042354	.5196419	.5197105	.5049493	.5066301	
.5093745	.5048406	.5239736	.5058011	.5044502	.5197213	.5205083	.5053708	.5077121	
.5094508	.5049162	.5262272	.5058628	.5046734	.5266989	.5222985	.5054502	.5077617	

Traffic Data Input Program

An example of the Master File for sample Delay Data is shown below. In this example, delay data has been gathered on the northbound approach only, with the entry (E) and exit (X) times shown for each vehicle. The westbound direction has been omitted from the figure below because of space limitations.

TDIP08					
1st and State, Boise, Idaho					
NBE	NBX	SBE	SBX	EBE	EBX
.52361420	.52369370	.00000000	.00000000	.00000000	.00000000
.52362310	.52370262	.00000000	.00000000	.00000000	.00000000
.52364030	.52373045	.00000000	.00000000	.00000000	.00000000
.52366070	.52377551	.00000000	.00000000	.00000000	.00000000
.52369680	.52379278	.00000000	.00000000	.00000000	.00000000
.52373310	.52380889	.00000000	.00000000	.00000000	.00000000
.52390800	.52392712	.00000000	.00000000	.00000000	.00000000
.52398680	.52400772	.00000000	.00000000	.00000000	.00000000
.52409550	.52412478	.00000000	.00000000	.00000000	.00000000
.52423270	.52425448	.00000000	.00000000	.00000000	.00000000
.52427280	.52436440	.00000000	.00000000	.00000000	.00000000
.52449280	.52452422	.00000000	.00000000	.00000000	.00000000
.52456400	.52459576	.00000000	.00000000	.00000000	.00000000
.52487740	.52492578	.00000000	.00000000	.00000000	.00000000
.52499506	.52504144	.00000000	.00000000	.00000000	.00000000
.52503948	.52509933	.00000000	.00000000	.00000000	.00000000
.52508961	.52514577	.00000000	.00000000	.00000000	.00000000
.52532356	.52536439	.00000000	.00000000	.00000000	.00000000
.52534859	.52538786	.00000000	.00000000	.00000000	.00000000
.52578912	.52585581	.00000000	.00000000	.00000000	.00000000

Chapter 8. Sample Output Files

Example summary File Data

The **Summary** File includes a summary of the vehicle volume or vehicle delay data in 1-minute, 5-minute, and 15-minute increments.

Following is an example of the Summary File for the Turning Movements data shown earlier. Because of limitations, the westbound direction has been omitted from the figure below.

1st and State, Boise									
1 Minute Volumes									
Time	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR
.5027778	2	2	0	0	2	2	0	3	2
.5034722	0	3	0	2	5	0	1	1	1
.5041667	0	4	0	4	4	1	1	2	0
.5048611	0	6	0	1	5	0	0	4	3
.5055556	3	3	0	5	4	0	0	2	0
.50625	1	4	1	3	4	0	1	5	2
.5069445	1	1	0	0	5	0	0	5	0
.5076389	0	3	0	2	4	1	1	1	6
.5083334	1	1	0	5	3	0	0	3	2
.5090278	4	2	1	2	3	0	0	4	3
.5097223	0	2	0	3	6	0	0	2	2
.									
.									
5 Minute Volumes									
Time	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR
.5027778	5	18	0	12	20	3	2	12	6
.50625	7	11	2	12	19	1	2	18	13
.5097222	3	9	1	12	18	2	0	6	12
.5131944	5	10	2	11	24	0	1	13	4
.5166666	7	9	3	22	20	3	3	11	14
.									
.									
15 Minute Volumes									
Time	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR
.5027778	15	38	3	36	57	6	4	36	31
.5131944	19	29	5	45	58	3	7	34	30
.5236111	18	44	8	30	64	5	6	17	38
.5340278	22	59	3	60	53	4	4	21	37
.5444445	27	53	7	37	66	3	8	39	23

Traffic Data Input Program

Following is an example of the **Summary File** for a sample of Delay Data. Note that the total vehicles entering (Envol) and leaving (Exvol) the queue for each time period are given. Also shown is the mean delay for each time period summarized by both entering time and exiting time. The delay is given in seconds.

1st Street and Boise				
1 Minute Volumes				
	NB			
Time	Envol	Delay	Exvol	Delay
0.523611	11	5.64	10	5.41
0.524306	4	3.39	4	4.38
0.525	4	4.26	5	4.20
0.525695	10	7.61	9	6.74
0.526389	6	3.40	7	5.12
0.527083	4	5.50	4	5.50
0.527778	12	7.11	9	6.69
0.528472	5	6.57	7	7.43
0.529167	7	5.24	8	5.33
0.529861	3	4.03	3	4.03
5 Minute Volumes				
	NB			
Time	Envol	Delay	Exvol	Delay
0.523611	35	5.40	35	5.40
0.527083	31	6.09	31	6.09
0.530556	34	6.24	34	6.24
0.534028	34	9.03	33	9.09
0.5375	48	11.02	47	10.65
15 Minute Volumes				
	NB			
Time	Envol	Delay	Exvol	Delay
0.523611	100	5.90	100	5.90
0.534028	118	10.73	118	10.73
0.544445	109	8.08	109	8.08
0.554861	75	6.21	75	6.21
0.565278	8	5.08	8	5.08

This is an example of the Summary File for a sample of Gap and Delay Data. The data is broken up into two categories Entry and Exit. Under Entry are the vehicles that entered the queue, and under Exit are the vehicles that left the queue. Q is the average time it took the vehicles to reach the first in line position. S is the delay the vehicle had once it reached the top of the queue. D is the total delay till departing.

```

1st and Boise, 12:00 Noon

1 Minute Averages
-----Entry-----          -----Exit-----          Entry  Exit
Time      Q      S      D      Q      S      D      Count  Count
.5000000  15.58  2.69  18.27  13.35  2.69  16.04   17     13
.5006945   0.00  0.00  0.00  22.85  2.68  25.53    0      4
.5013889   0.00  0.00  0.00   0.00  0.00  0.00    0      0
.5020834   0.00  0.00  0.00   0.00  0.00  0.00    0      0
.5027778   0.00  0.00  0.00   0.00  0.00  0.00    0      0
.5034723   0.00  0.00  0.00   0.00  0.00  0.00    0      0
.5041667   0.00  0.00  0.00   0.00  0.00  0.00    0      0
..
..
..

5 Minute Averages
-----Entry-----          -----Exit-----          Entry  Exit
Time      Q      S      D      Q      S      D      Count  Count
.5000000  15.58  2.69  18.27  15.58  2.69  18.27   17     17
.5034722   0.00  0.00  0.00   0.00  0.00  0.00    0      0
.5069444   0.00  0.00  0.00   0.00  0.00  0.00    0      0
..
..

15 Minute Averages
-----Entry-----          -----Exit-----          Entry  Exit
Time      Q      S      D      Q      S      D      Count  Count
.5000000  15.58  2.69  18.27  15.58  2.69  18.27   17     17
.5104167   0.00  0.00  0.00   0.00  0.00  0.00    0      0

```


CHAPTER 9. PROGRAM MESSAGES

TDIP provides a number of messages designed to give you the information you need to properly operate the program and to avoid unnecessary problems or loss of data. This chapter lists each program message along with a short explanation of it.

Begin Time Starts After End Time, Press Any Key To

Continue - The beginning time starts after the ending time.

DEFAULT KEY File Corrupted or Missing, Default Keys Loaded

Press Any Key to Continue - The default key file "TDIP.KEY" is not on the program disk or the file is corrupted and keys should be reset and saved. This will not effect normal program operation.

Disk Drive Door open or Disk write Protected, Press Any Key To Continue - Disk drive door is open or disk is write protected. You must re-execute the process after the problem is fixed.

Disk Drive Door Open, Press Any Key to Continue - There is no disk in the drive, disk drive door is open or the disk is write protected.

Do You Want to Overwrite Default Key File, Press Yes <Y> or No <N> - The Default Key (TDIP.KEY) file is present on the program disk. You are asked if you want of overwrite the present file with the keys set in the memory now.

Do You Want To Overwrite File, Press Yes <Y> or No <N> - If you answer yes the program overwrites the existing file data with new data. Answering no, allows you to edit the name so that you will not overwrite the file.

Traffio Data Input Program

Do You Want to overwrite Data in Memory, Press Yes <Y> or No <N> - There is data in the computer memory. If you answer yes, the program erases the data in memory.

Do You Want To Quit? Yes <Y> or NO <N> - This asks you whether you want to leave the TDIP program.

Do You Want To Quit Entering Data? Yes <Y> or NO <N> - This asks you whether you want to quit data input. When you answer Yes the program saves a backup file and prompts you for a Master File name. Answering No keeps the Tape Time running and returns the program back to data input.

Duplicate Keys, Press Any Key To Edit - Two or more of the defined keys have the same letter or number.

EXIT Cannot be Greater Than ENTER - Exit is invalid when the queue is empty. You pressed exit when the queue is empty.

Pile Does Not Exist, Press Any Key To Edit Filename. - The file name requested for input does not exist, the path is incorrect or the drive is incorrect. Edit the file name and try to input it again; if unsuccessful use **DOS Shell** to determine if the file exists.

FILE INCOMPATIBLE WITH DATA INPUT, PRESS ANY KEY TO EXIT - The file you are trying to input is incompatible with the program format.

FIRST Can Not Be Greater Than ENTER - You pressed the Enter key when there were no vehicles in the queue.

FIRST Can Not be Greater than Two Vehicles in LEAVE - There can not be more than two vehicles in the front of the queue. You pressed the first key when there were already two vehicles in front of the queue.

Help File is Not Present On The Default Drive Or Path, Press Any Key to Continue - The help

file is not on the disk containing **TDIP.EXE**. Make sure **TDIP.HLP** is on the same disk as **TDIP.EXE**.

Incorrect Time Format, Press Any Key To Continue - The time entered is not in one of the four specified formats or is not within the time limits.

Invalid Drive, Press Any Key To Edit Filename. - The drive name used does not exist on this computer. Use another correct drive letter.

Invalid File Name, Press Any Key To Continue - File Name is not in DOS format. EX: File.ext, "**File**" has 8 character maximum and the extension "**ext**" has a three character maximum. Press any key and edit the filename.

LEAVE Cannot be Greater than FIRST - You pressed the leave key when there were no vehicles in the queue.

NO Data In Memory, Press Any Key to Continue - The is no data in memory.

Non-Existent File Path, Edit File Path, Press Any Key To Continue. -The file path used does not exist on the drive specified. Edit the path name or press **Esc** to return to the main menu and use **DOS Shell** to check for the correct file path.

Not Enough Room on Disk to Save File, Change Disk or Drive. - There are less than 150,000 bytes free on the disk. Either change disks or the drive, or use **Dos Shell** to delete enough files so there are at least 150,000 bytes free on the disk.

Not Enough Room on Disk to Save File, Press Any Key To Continue - There is not enough disk space to save the default key file.

Not Enough Room on Disk to Save File, Change Disk or Drive

Traffic Data Input Program

Do YOU want to **DOS SHELL**, Yes <Y> or No <N> - The disk you are trying to save a file to does not have enough room. You are asked if you want to go to **DOS SHELL** to erase files if necessary.

Pause Activated - Pause mode activated in Approach Volumes, Turning Volumes, Delay Data and Gap and Delay Data. To resume, type R.

Please Wait! The File Conversion Takes a Few Minutes. - Wait for the file conversion to finish.

Saving BACKUP FILE - Wait for the back up file to be saved.

The Default Drive ?: Has Less Than 150,00 Bytes Free to Write Backup File, Press Any Key To Exit - Not enough room to save backup file on the disk that contains the TDIP program. Delete all extra files not required on that disk to make room for the backup files.

There Are Not At Least 150,000 Bytes Free On Disk To Write Backup File. Do You Want To DOS Shell, <Y> Yes Or <N> No - There are less than 150,000 bytes free on the disk to write backup files. Use **W S Shell**, then delete **non-essential** files or format a new disk. You could also change the disk.

Time is Greater than Two Hours, Press Any Key To Continue - The ending time minus the beginning time is greater than two hours. Edit the times to be within the two hour maximum. Note: The runnina time is limited by the maximum memory of the program not the endina time. Thus the program can run bevond the endina time.

Type EXIT, then Press <Enter> to Return to Program - This is the DOS Shell message displayed after the DOS Shell is initially used. To return to TDIP, type EXIT.

user Near Maximum Memory, Exit Now - The program is five entries or less from **automati-**

cally exiting. The message will continually warn you.

User Exceeded Maximum Memory, Program Exited - You pushed the program to its memory limitation; the program automatically exits to prevent the program from crashing.

WAIT! CALCULATING SUMMARY FILE - Please wait for the Master File to be summarized.

WAIT! READING FILE - Please wait for the Master File data to be read.

WAIT! WRITING SUMMARY FILE - Please wait for the Summary File to be written to the disk.

CHAPTER 10. CONVERTING MASTER FILES TO .WK1 FORMAT

In previous versions of TDIP, some **Master Files** were too long to import into a spreadsheet. To alleviate this problem a new program has been added to convert the Master File to a **.wk1** or **.wks** format. This program, unlike the TDIP program, does not have the same safeguards built into it that would warn you of overwriting a file or of insufficient disk space. It is up to you to check for enough disk space, and whether your file output name exists. If an error occurs during one of the file input processes, restart the program from the beginning.

Type **TDIP_WK1**, then press **Enter**.

The program asks you for an Input file name. The Input File is the file that TDIP will convert from ASCII format to **.wk1** or **.wks** format. Type the Input file name, and then press **Enter**.

The program then asks you for an output file name that must have an extension of **.wk1** or **wks**. The Output File is the file that will contain the converted data in the **.wk1** or **.wks** format. Type the Output file name, and then press **Enter**.

The file conversion might take a few minutes if the file is large.

The file is now written in spreadsheet format.

After the file conversion, the data is in an unprotected form. This might not look right on the screen; however, the unprotected **form** will not effect data manipulation. If you do not like the unprotected format, set **Cell Protect** on the spreadsheet to off, and then block protect the data. This will remove the unprotected symbol from the data, yet will still allow you to manipulate the data.
