TEXAS Model For Intersection Traffic

INSTALLATION INSTRUCTIONS

AND

PRIMER

Note: Some information contained herein does not appear in the user's Guide. File this pamphlet with the Guide* for future reference.*

*"User-Friendly TEXAS Model - Guide to Data Entry," Lee, Clyde E., Randy B. Machemehl, Robert F. Inman, Charlie R. Copeland, Jr., and Wiley M. Sanders, Research Report Number 361-1F, Center for Transportation Research, Bureau of Engineering Research, The University of Texas at Austin, August 1986.

Introduction

This pamphlet has been prepared as a supplement to the user's Guide and provides important instructions for installation and use of the TEXAS Model for Intersection Traffic. The document is composed of four sections which address 1) installation of the system on micro-computers equipped with fixed disks, 2) the use of example data files provided in the installation package, 3) coding and running of example case study problems, and 4) documentation for the animated screen graphics system.

Sections 1 through 3 essentially constitute a primer for TEXAS Model users. All users must work carefully through Section 1 in order to successfully install the package on fixed-disk-equipped micro-computers. Working through at least one of the example data sets of Section 2 and at least one of the example coding problems of Section 3 is strongly advised.

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Section 1

TEXAS Model Fixed Disk Installation Instructions

> Note: Succesful utilization of the TEXAS Model will require the following hardware:
>
> 1. IBM-PC or compatible computer, equipped with fixed disk, and running under DOS 3.1 or greater.
>
> 2. Math co-processor.
>
> 3. Graphics adaptor for your monitor,either IBM color, or enhanced color graphics adaptor or compatible.

These instructions are written assuming that your computer has been switched "on" and you have responded to the DOS prompts for time and date. Now you must follow the step-by-step instructions below:

1. Insert in drive A: the diskette labeled "TEXAS_MDL_1".

2. Type **A:INSTALL.**

   NOTE: The installation program will begin installing on drive C:, which is normally your fixed disk. If you have more than one fixed disk and wish to install TEXAS on your second fixed disk, which is known to DOS as drive D:, type **A:INSTALLD** instead of **A:INSTALL.**

3. Obey the screen prompts and insert diskettes 2 through 6 and ExAMPLES when directed. Then remove the EXAMPLES disk from drive A.

4. At the end of the automatic installation procedure, you will see a screen prompt reminding you that certain modifications or additions must be made to your CONFIG.SYS and AUTOEXEC.BAT files. You can make those modifications in the following manner:

   a. Your CONFIG.SYS file must contain statements specifying that the number of buffers and files which can be concurrently used is 20. If you have a CONFIG.SYS file, it will be located in your root directory. To examine and edit it as necessary follow these instructions:

a.1. Type the command **CD C:** which changes the current directory to the root directory, then type **TYPE CONFIG.SYS** which will cause the CONFIG.SYS file to be displayed on the screen if it exists.

a.2. If the CONFIG.SYS file is displayed skip to item a.5.

a.3. If no CONFIG.SYS file is displayed and text appears telling you that the file could not be found, execute a.1 again to be sure it does not exist.

a.4. If you have confirmed that no CONFIG.SYS file exists, you must create one. You can do this with any text editor, including the DOS line editor called Edlin. To accomplish the task with Edlin, type **EDLIN CONFIG.SYS** which loads Edlin into memory and tells it to create a new file called CONFIG.SYS. Then type **I** for insert, then at the prompt, type **BUFFERS=20** followed by a carriage return then type **FILES=20** followed by a carriage return, followed by holding down the **Ctrl** key and pressing the **Break** key which ends the insert mode. Then type **E** which ends your Edlin session and saves the new file. Skip to item b.

a.5. If your CONFIG.SYS file does appear on the screen, examine it to see if it contains the following two lines:

BUFFERS = 20
FILES = 20

If it contains both BUFFER and FILE statements, and the numbers to the right of the equal sign are 20, your file is okay, no modification is necessary. SKIP TO ITEM b.

a.6. If your CONFIG.SYS file does appear but does not contain either of the two lines shown in item a.5 or if the either of the numbers is less than 20, you must edit the file. You can do this with any text editor, or you can use the DOS line editor called Edlin. To edit your file using Edlin, type **EDLIN CONFIG.SYS** which will load Edlin and your file into memory. Then type **L** which will cause your file to be displayed on the screen with line numbers. Note the line number of the line(s) to be edited and type the number of the first line you wish to edit. The line whose number you typed will be displayed with the line number and another copy of the line number and a colon. It will appear like this if line 2 contained the BUFFERS statement and you typed **2**

2:BUFFERS=6

2:

Now type the correct statement after the colon like this:

2:BUFFERS=6

2:BUFFERS=20

End your instruction with a carriage return and proceed to modify the other line(s) as necessary. Refer to item a.4 if you have forgotten what the two lines should specify.

If you need to add a line to your CONFIG.SYS file, instead of typing the line number of the line to be edited, type **#I** for " Insert after last line", followed by a carriage return and enter the required line(s). To leave the insert mode, hold down the **Ctrl** key and while holding it down, press the **Break** key.

When you have finished inserting or editing, type **E** which will exit Edlin and save your file.

b. Now you must enter or modify your PATH command in your AUTOEXEC.BAT file. You can do this with any chosen editor, or use the DOS resident line editor called Edlin. If you wish to use Edlin, type **EDLIN AUTOEXEC.BAT** which loads Edlin and your AUTOEXEC.BAT file into memory. Then type **L** which will cause your AUTOEXEC.BAT file to be displayed on the screen. Examine the file and search for a line that begins with the characters PATH. If it is present, do as you did in item a. above; type the line number of the line containing the PATH specification. On the second line of the display, after the colon, type all characters exactly as they appear on the top line followed by **;C:\BATCH** followed by a carriage return, followed by **E** which ends the Edlin session and saves your AUTOEXEC.BAT file. If you have no existing path command in your AUTOEXEC.BAT file, and are still using Edlin, type **#I** for "Insert after last line". Then type **PATH C:\BATCH;C:** <u>if DOS is located in your root directory</u>. If DOS is <u>not</u> located in your root directory but it is in a subdirectory, type **PATH C:\BATCH;C:** <u>with the name of the subdirectory following the last backslash and no spaces</u>. Then type **E** to end your Edlin session and save your AUTOEXEC.BAT file.

NOTE: Some application programs like IBM's Fixed Disk Organizer do not allow anything in the AUTOEXEC.BAT file except the commands that it uses and will replace your PATH command the next time you boot your system. If this happens to you, there are several options which can solve the problem. First, you can enter the PATH command directly from DOS just before you enter the TEXAS modeling system. The PATH specification will be in effect until you remove power or reboot the system. The second option could consist of putting your PATH specification into a batch file that you name and executing that batch file before entering the TEXAS Modeling system. This technique offers the advantage of requiring that you remember only a simple batch file name rather than the entire PATH command.

5. This completes installation of the TEXAS modeling system. You must now re-boot your system to cause your specifications for CONFIG.SYS and AUTOEXEC.BAT to become effective. This can be accomplished by holding down the **Ctrl** and **Alt** keys and pressing the **Del** key. Once the system is re-booted you may enter the TEXAS Modeling System by typing **GDVDATA** to enter the first of the pre-processors.

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Happy Computing!!

Section 2

USE OF EXAMPLE DATA FILES PROVIDED IN THE **TEXAS** MODEL INSTALLATION PACKAGE

Demonstration Graphics Files

One of the significant capabilities of the TEXAS Modeling System is the ability to view a simulated intersection operation through animated screen graphics. If this capability is of interest, a quick demonstration might be very desirable. Three demonstration data files have been provided so that you can see the animated graphics in action before learning more about the total system.

If you have completed the installation process as described in the installation instructions you are ready to view the demonstration graphics. This can be accomplished through execution of the following instructions:

1. First, you must determine the type of graphics adapter and monitor you have available for use with the demonstration. If you don't already know, you can type **VIDEOCHK** which is the name of a program which has been installed with the rest of the system. VIDEOCHK will report the type(s) of graphics adapter(s) and monitor(s) which are currently installed.

2. Next, insert in drive A: the diskette labeled TEXAS_MDL_DISPLAY. This diskette contains three files named DISDAT.CG, DISDAT.EG, AND DISDAT.EGM. In each case the DISDAT portion of the file name identifies the files as animated graphics display files and the suffixes identify the type of hardware for which the file has been prepared. The file with suffix CG has been prepared to run on a machine equipped with IBM or compatible color graphics adapter and monitor, while the EG is for IBM or compatible enhanced graphics adapter and enhanced color monitor, and EGM is for enhanced graphics adapter and monochrome monitor. The demonstration files can be expected to operate reliably <u>only</u> on one of these adapter-monitor combinations.

3. Having identified your hardware type in step 1, you are almost ready to view the demonstration. <u>If you have more than one graphics adapter and or more than one monitor connected to your system, be sure to execute whatever hardware or</u>

software actions are necessary to make the chosen adapter-monitor combination become your active adapter-monitor combination. Now type **DISPRO A:DISDAT.CG** if you have IBM or compatible color graphics adapter and monitor, or **DISPRO A:DISDAT.EG** if you have IBM or compatible enhanced graphics adapter and color monitor, etc.

4. The animated graphics screen demonstration will appear on the selected monitor and will have a duration of approximately 2 1/2 minutes. You may view it again by typing DISPRO and you may pause restart the action by pressing any key. When paused, press **S** to restart and pause after a single update, or press any other key to restart and continue.

Example Data Sets

Example files containing both input and output data have been provided for four typical simulation problems. The four example problems consist of four leg intersections controlled by two-way stop signs, semi-actuated signals, three-phase pre-time signals, and three-phase pre-time signals with permissive left-turns. Examples 1 and 2 are the two parts of a before and after study in which an intersection with the same traffic and geometrics, is controlled first by two-way stop signs and then by a semi-actuated signal. Examples 3 and 4 are likewise the parts of a before and after study in which an intersection with the same traffic and geometrics is first controlled by three-phase pre-time signals with protected-only left turns and then protected-permissive left turns.

Pre-processor input files have been installed on your fixed disk if you have followed the instructions for fixed disk installation. Output files for the four examples produced by the pre-processors and the basic model processors themselves have been included on a diskette labeled TEXAS_MDL_EXAMPLES of the installation package.

New users of the TEXAS Modeling System can familiarize themselves with the operation of the system without being required to generate any input data by executing the following sequence of commands:

1. After following the instructions for installing the package, enter the system by typing **GDVDATA** which is the name of the first pre-processor. The Texas Model

banner will appear with GDVDATA and a prompt to "Strike a key when ready".

2. The next prompt which you should see on the screen looks like this:

DO YOU WANT TO USE A FILE FROM THE PERMANENT LIBRARY?

You should respond by typing **N** for no. (Remember that your Caps Lock key should be in the all-capital-letters mode.)

3. The next prompt you should see will look like this:

DO YOU WANT TO USE AN EXISTING DATA FILE?

You should respond by typing **Y** for yes.

4. Next the system will prompt you for the name of the existing data file. You should respond by typing the name of the example data file you wish to use. Since the four example problems only involve two different sets of traffic and intersection geometrics, if you wish to run Example 1 or 2 you should type **GD_PRE.S1** however if you wish to run Example 3 or 4 you should type **GD_PRE.S3** which are the names of the pre-processor files for Examples 1 and 2, or 3 and 4, respectively.

5. The pre-processor will prompt you for any desired changes to the input file. You should respond to the prompts by indicating that no changes are desired.

6. Next, run the geometry and driver-vehicle processors by typing **GDVPRO** which is the name of the batch file that runs these two programs. This operation will take several minutes, so please wait patiently.

7. You should now enter the second pre-processor by typing **SIMDATA** which is the name of the simulation pre-processor.

8. After the Texas Model banner, you will then see a prompt that looks like this:

DO YOU WANT TO USE AN EXISTING SIMULATION DATA FILE?

You should respond by typing **Y** for yes.

9. Next you will see a prompt that says:

KEY IN AN EXISTING DATA FILE NAME:

You should respond by typing the name of the example data file you wish to use. Because all four examples have different traffic control schemes which are input through the simulation processor, there are four different files for the four examples. All have the same name but different two-character suffixes. The names are SIM_PRE.S1, SIM_PRE.S2, SIM_PRE.S3, and SIM_PRE.S4. If you are running Example 1 you should type **SIM_PRE.S1** as the name of the simulation data file, etc.

10. Review the data file and respond to the prompts by indicating that no changes are desired.

11. When complete, you should run the simulation processor by typing **SIMPRO** which is the name of the batch file that controls this operation. After several seconds you will see numbers on the screen which report the status of the simulation. The left column of numbers is the elapsed time into the simulation, while the right column represents the number of vehicles currently being monitored by the simulation processor.

12. You may now examine the output generated by your run by typing **TYPE SIMPLST** which will display the output on the screen or you can type **PRINT SIMPLST** which will send the output to your printer.

13. If you have chosen to run Example 2, 3, or 4 your work has produced a file which can be viewed using the animated graphics processor. If you wish to view the animated graphics produced by these examples, you should do the following:

a. Type **DISPRE** which is the name of the pre-processor that prepares the graphics data for display. This pre-processor will take several minutes to complete its task, so be patient. While you are waiting, you may wish to browse through the documentation for the animated graphics system included as Section 4 in this package.

b. When complete, you may view the graphics by typing **DISPRO** which is the name of the graphics processor.

A plan view of the intersection will appear on your graphics screen followed by the simulated traffic generated by your simulation run.

You may also wish to compare your output files to those provided with the distribution package. Example output files for all processors for the four examples have been provided on a diskette labeled TEXAS_MDL_EXAMPLES. You can examine these files on your monitor or print them using the usual DOS TYPE OR PRINT commands. The files and their descriptions are provided as follows:

File Name	Description
GDV.S1	Converted geometry-driver-vehicle data file, Example 1 and 2
GDV.S3	Converted geometry-driver-vehicle data file, Example 3 and 4
SIM.S1	Converted simulation data file, Example 1
SIM.S2	Converted simulation data file, Example 2
SIM.S3	Converted simulation data file, Example 3
SIM.S4	Converted simulation data file, Example 4
GDVLIST.S1	Output listing from geometry-driver-vehicle pre-processor, Examples 1 and 2
GDVLIST.S3	Output listing from geometry-driver-vehicle pre-processor, Examples 3 and 4
SIMDLIST.S1	Output listing from simulation pre-processor, Example 1
SIMDLIST.S2	Output listing from simulation pre-processor, Example 2
SIMDLIST.S3	Output listing from simulation pre-processor, Example 3
SIMDLIST.S4	Output listing from simulation pre-processor, Example 4
DVLIST.S1	Output listing from driver-vehicle processor, Examples 1 and 2
DVLIST.S3	Output listing from driver-vehicle processor, Examples 3 and 4

GEOLIST.S1	Output listing from geometry processor, Examples 1 and 2
GEOLIST.S3	Output listing from geometry processor, Examples 3 and 4
SIMPLST.S1	Output listing from simulation processor, Example 1
SIMPLST.S2	Output listing from simulation processor, Example 2
SIMPLST.S3	Output listing from simulation processor, Example 3
SIMPLST.S4	Output listing from simulation processor, Example 4

Section 3

STEP-BY STEP
INSTRUCTIONS
FOR
EXAMPLE PROBLEMS

If you have completed your installation process, and have finished experimenting with the example input files, you should be ready to gain experience in inputing data to the pre-processors. Step-by-step coding instructions have been provided on the following pages for the first two example problems described in the previous section. Once again Example 2 is the second part of a before and after study and only traffic control features change from example 1 to 2. Therefore, the coding instructions assume that you will work Example 1 immediately before Example 2.

Example Problem Number 1

I. Background

Work to be done through this example offers the first opportunity for new users to communicate with the TEXAS Model through the keyboard. This example and subsequent examples will be structured around a case study of a 4-leg intersection (4 x 4) located in an urban area. In addition to learning to interact with the model through the keyboard and the CRT screen, the user will have an opportunity to utilize the output from the TEXAS Model as the basis for analyzing traffic behavior and intersection performance under specified conditions.

II. Case Study Scenario I

The urban 4-leg intersection shown in Fig 1 is currently operating under 2-way stop control. Traffic demands upon the intersection have grown steadily, and signalization is now being considered. The indicated traffic values were observed during a recent AM peak traffic period. This scenario will serve as a base condition in the case study.

III. Instructions

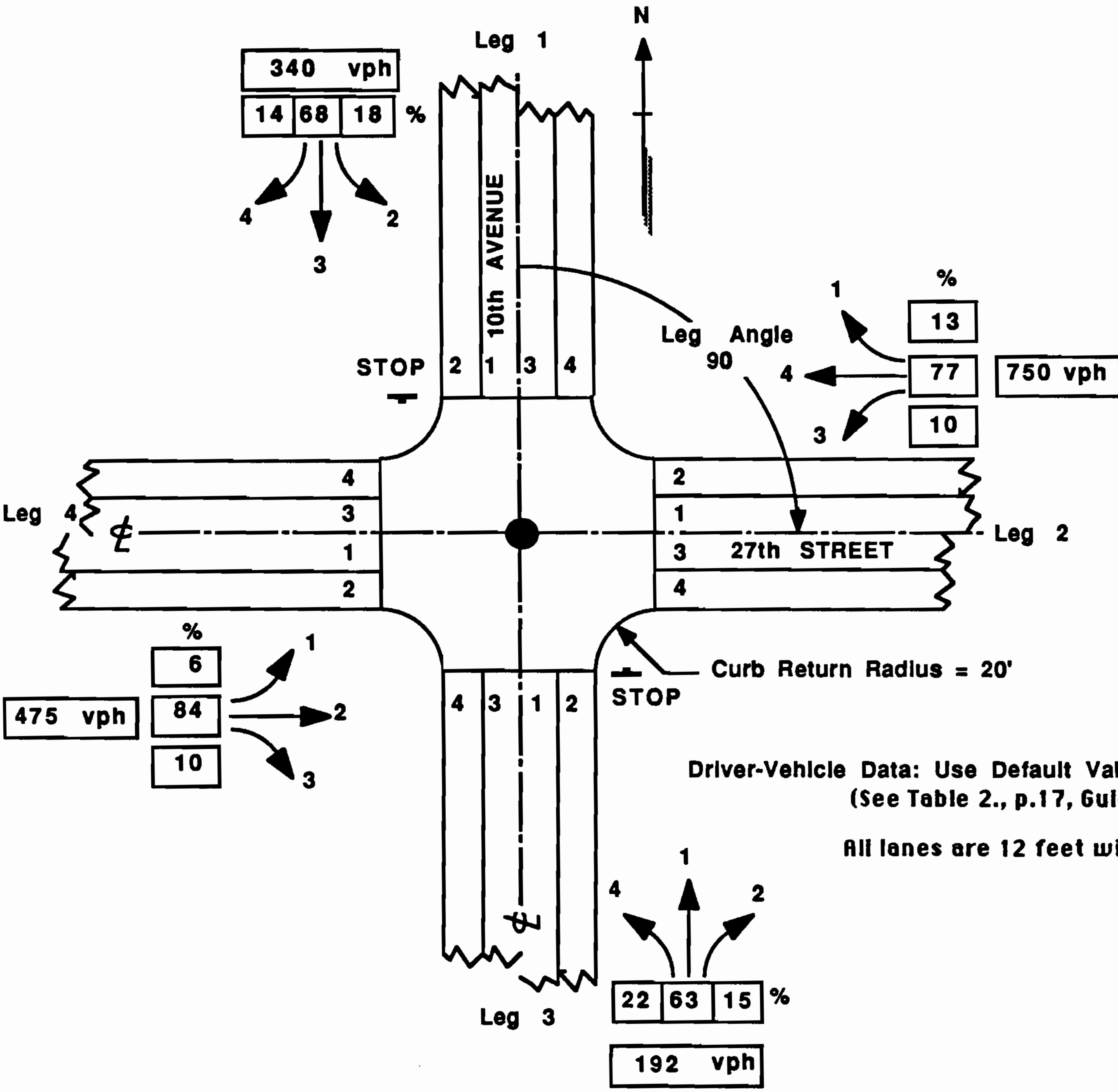
Use the preprocessors GDVDATA and SIMDATA to develop and enter all required input information for the intersection situation that is described in Example I. Initiate a run of the TEXAS Model utilizing this input data.

Specific instructions for Geometry and Driver-Vehicle processors: (GDVDATA)

1. Use the 4 x 4 Permanent Library geometry.
2. Use all default values except for traffic demands.
3. Use the traffic demand shown in Fig 1.

Specific instructions for the Simulation processor: (SIMDATA)

1. Use 2-way stop control as indicated in Fig 1.
2. Use 5-minute start-up and 15-minute run times (defaults).



Driver-Vehicle Data: Use Default Values
(See Table 2., p.17, Guide)

All lanes are 12 feet wide.

Fig 1. Urban 2-way stop intersection, 4 x 4.

STEP-BY-STEP INSTRUCTIONS

CASE STUDY *Example I*

1. Key in **GDVDATA**

2. You will use a file from the Permanent Library.

3. Use the 4X4 Permanent Library file. NOTE: The graphics from this file will appear only once.

4. You will need to copy and revise the file from the Permanent Library with revisions to the traffic data only.

5. Save the revised data.

6. Choose a name for the revised data, using 8 characters or less. (e.g., GDCS1, note that the computer will add a prefix to your file name)WRITE THIS NAME DOWN: ______________________

7. Choose a title for the GDVDATA file as you would like for it to appear on the printout. Key in text title.

8. Use the default values for parameter-option data, for curb return radii, and for geometry on all 4 legs of the intersection.

9. Use the default values for inbound traffic headway frequency- distribution data EXCEPT for volumes (Field 2) on each leg. (Key in **,340** for Leg 1.)

10. Key in the appropriate outbound traffic destination data (percent of the inbound traffic going to various outbound destinations) for each leg. (see Fig 1) (**0,18,68,14** for Leg 1)

THIS COMPLETES DATA ENTRY FOR GDVDATA

11. Key in **GDVPRO**

12. Key in **SIMDATA**

13. No simulation data file exists for this Scenario; therefore, type **N**

14. Key in new data , save and name the file. Write down the name of the file "___________________________________"

15. Use the GDVDATA reference file from 6 above.

16. Edit the title so that it will appear on the printout of the Simulation Processor output as you would like it. (e.g., 2-way Stop) Suggestion: Key in **T(60) = 2-Way Stop**

17. Default values will be used for parameter-option data except Fields 4 and 8. Use commas to indicate the end of data fields that will use default values, and enter "ST" for stop-sign control. (Key in **,,,ST**) Change Field 8 to"YES" so that a data tape for animated graphics display will be written. (Key in **F(8)=Y**)

18. Use default values for all simulation parameter-option data 2.

19. Put stop signs on Legs 1 and 3.

20. Use lane control data without changes.

THIS COMPLETES DATA ENTRY FOR SIMDATA

21. Key in **SIMPRO** to run the simulation processor. The numbers appearing on the screen are the simulation time (in seconds) and the number of vehicles in the simulation. This will continue until the elapsed simulation time reaches 1200 seconds (20 minutes). Your simulation processor output statistics will be written to a file called SIMPLST which you may examine by executing a DOS **TYPE** OR **PRINT** command.

<u>Note:</u> If you wish to verify that your run has produced appropriate statistical information, you may compare it to a "school solution" by excecuting a DOS **TYPE** or **PRINT** of the file SIMPLST.S1 on the diskette labeled TEXAS_MDL_EXAMPLES. That diskette also contains "school solutions" for all input and output files created by all processors. All files pertaining to this example have a file name suffix of S1.(See page 12 of this pamphlet for a complete listing.)

Example Problem Number 2

I. Background

This example is devoted to the second scenario in the case study of traffic operations at the urban intersection that was described in Example 1. The 2-way stop-sign control will be replaced with 2-phase, semi-actuated signal control. A somewhat more detailed description of the signalized intersection situation will be required in order to communicate with the TEXAS Model for the latter control condition. Users will utilize the SIMDATA preprocessor to enter all necessary data interactively in response to prompts and instructions. It would only be necessary to enter the GDVDATA pre-processor if you have processed a data file other than that for Example 1 prior to running Example 2 because SIMDATA will utilize the most recently used GDVDATA file.

II. Case Study Example 2

The 4-leg urban intersection, which was the subject of the case study in Example 1 while operating under 2-way stop-sign control, is now being considered for future operation under 2-phase, semi-actuated signal control in Example 2. The proposed detector configuration and signal timing for Example 2 are shown in Fig 2. Intersection geometry and traffic are the same as for Example 1. By comparing the TEXAS Model outputs from the two scenarios, the effects of this change can be evaluated directly in a before-and-after type comparison.

III. Instructions

Use the preprocessors GDVDATA and SIMDATA to develop and enter all required TEXAS Model input for the intersection situation that is described above as Example 2. Fig 2 serves as a basic sketch of the intersection situation and also contains the proposed signal timing data. Make notes or scratch calculations on this sheet as desired to help you respond appropriately to the prompts and instructions that appear on the screen. Initiate a run of the TEXAS Model for Example 2.

Specific instructions for Driver-Vehicle and Geometry processors: (GDVDATA)
Use the same file which was built for Example I without changes.
You will, therefore, use an existing file.
Specific instructions for the Simulation processor: (SIMDATA)

1. Use 2-phase, semi-actuated signal control.

2. Use the NEMA numbering scheme for traffic phases (see screen prompts or Fig 10, p.42, in the "Guide to Data Entry").

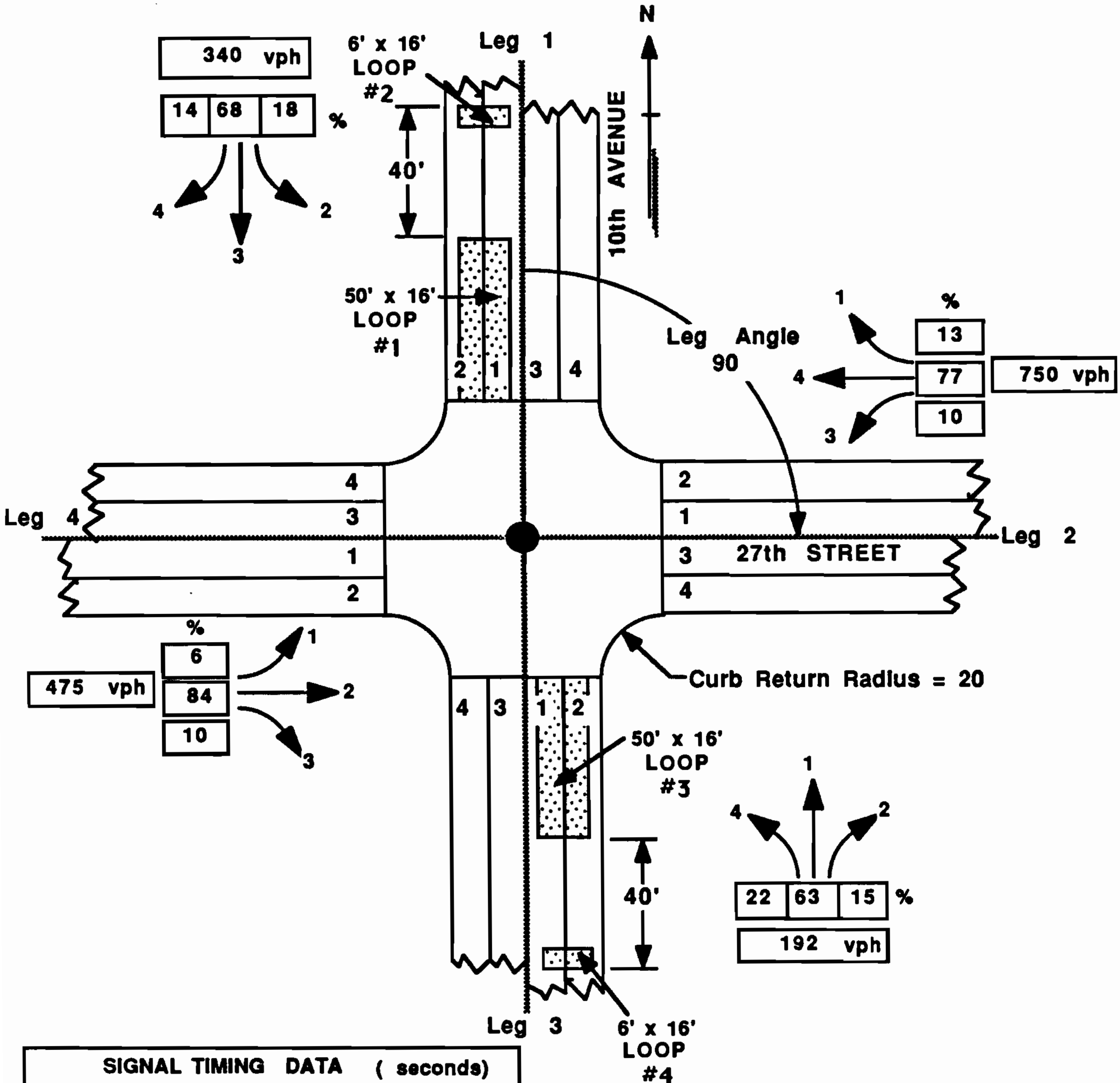
3. Refer to Fig 11, p.46, in the "Guide to Data Entry" for nomenclature related to detector placement. Locate detectors as shown in Fig 2.

4. Connect the detectors appropriately for 2-phase operation.

5. Use the signal timing data shown in Fig 2.

6. Use a 1.0-sec time increment for simulation.

7. Use 5-minute start-up and 15-minute run times.



SIGNAL TIMING DATA (seconds)			
Actuated Phase		Non-Actuated Phase	
Initial Interval	4	Min. Green	20
Vehicle Interval	1	Yellow-Change	3
Max. Extension	25	Red-Clearance	0
Yellow-Change	3		
Red-Clearance	0		

Driver-Vehicle Data: Use Default Values
(See Table 2., p.17, Guide)

All lanes are 12 feet wide.

Fig 2. Urban 4 x 4 Intersection, 2-Phase Semi-Actuated Signal

STEP-BY-STEP INSTRUCTIONS

CASE STUDY *Example 2*

1. Key in **SIMDATA**

2. No data file exists for this Scenario; therefore, in response to the question DO YOU WANT TO USE AN EXISTING SIMULATION DATA FILE? key in N. In response to the question DO YOU WANT TO KEY IN NEW DATA? key in **Y**. (As a shortcut, you may key in **KEY** in response to the first question.)

3. Save the new data. In response to the question DO YOU WANT TO SAVE THE NEW DATA? ,key in **Y**. Choose a name for the new data file, note it here ______________________, and key it in. Confirmation will be displayed.

4. The program will display the title text from the most recently-used GDVDATA file, in this case, STANDARD 4 X 4. Use this file as the reference file; key in **Y** in response to the question.

5. The program will confirm the file name as GDV4 X4 and then display the title text STANDARD 4 X 4 from the reference file. Edit this title for use with the SIMDATA file. For example, you may add the text SEMI-ACTUATED SIGNAL starting at column number 40 by keying in **T(40)=SEMI-ACTUATED SIGNAL**. Key in **HELP** for assistance in editing if necessary. Confirmation will be displayed, and you may respond to the question IS TITLE TEXT OK? by keying in **Y** when you are happy with the title.

6. The field locations for the first eight items of SIMULATION PARAMETER-OPTION DATA: will be displayed in a table on the screen. The data format for each of the 8 data fields is also displayed on the screen following the instruction KEY IN SIMULATION PARAMETER-OPTION DATA:

7. For this scenario, key in simulation parameter-option data as follows: **,,1,SE,,,,Y** This will set Field 3 for a 1.0 second simulation time increment, Field 4 for SEMI-ACTUATED signal control, and Field 8 to YES for the program to prepare data for later use by the animation preprocessor. Confirmation will be displayed. Edit if

necessary, and key in **Y** when correct.

8. SIMULATION PARAMETER-OPTION DATA 2: will be displayed on the screen to show seven additional items needed by the simulation processor. For this scenario, all default values will be used; therefore, press the **ENTER** key in response to the command KEY IN SIMULATION PARAMETER-OPTION DATA 2; Confirmation will be displayed, and you can key in **Y**.

9. You will now be asked DO YOU WANT TO PERMIT RIGHT TURNS ON RED? For this scenario, the response is **Y**.

10. Use LANE CONTROL DATA as contained in the default values for this scenario.

11. The program will now confirm that a SEMI-ACTUATED controller has been chosen and will prompt for additional information that is needed.

12. For this scenario, 2-phase signal control will be used; therefore, enter **2** in response to the command KEY IN THE NUMBER OF CONTROLLER PHASES. Confirm that this is correct by keying in **Y**.

13. The numbering convention for the TRAFFIC PHASES will be displayed in a diagram on the screen, and you will be instructed to make CONTROLLER PHASE A unactuated. You must now KEY IN THE TRAFFIC PHASES TO BE IN CONTROLLER PHASE A. For this scenario, include traffic phases 2 and 6 in controller phase A and traffic phases 4 and 8 in controller phase B. Respond to the prompts as they occur.

14. SEMI-ACTUATED SIGNAL TIMING DATA FOR UNACTUATED CONTROLLER PHASE A; for this scenario will utilize a MINIMUM GREEN INTERVAL of 20 seconds, and the default values for the other timing parameters. Therefore, simply key in **20** and confirmation will be displayed.

15. SEMI-ACTUATED SIGNAL TIMING DATA FOR CONTROLLER PHASE B, for this scenario will use an INITIAL INTERVAL of 4 seconds, a VEHICLE INTERVAL of 1 second, and a MAXIMUM EXTENSION of 25 seconds along with default values for the other parameters

(see Fig 2). To enter these values in the proper fields, key in **4,1,,,25** Confirmation will be displayed. Edit as necessary.

16. Use the GREEN INTERVAL SEQUENCE DATA that are supplied by the program.

17. For this scenario, four detectors will be used (see Fig 2). Key in **4** in response to the prompt.

18. Data for each detector must be supplied. Refer to Fig 2 for the number and location of each detector. Key in the following items in response to the series of screen prompts:

For Detector #	Key in
1	**,,2,,50**
2	**,,2,-84,6**
3	**3,,2,,50**
4	**3,,2,-84,6**

19. For this scenario, all 4 detectors must be connected to Phase B. Key in **1,2,3,4** in response to the prompt and confirm by keying in **Y**.

THIS COMPLETES DATA ENTRY FOR SIMDATA

20. Key in **SIMPRO** to run the simulation processor. Wait for the program to finish. Your statistical output information will be written to a file called SIMPLST and you can examine it by executing a DOS **TYPE** or **PRINT** command.

Note: If you wish to verify that your run has produced appropriate statistical information, you may compare it to a "school solution" by excecuting a DOS **TYPE** or **PRINT** of the of the file SIMPLST.S2 on the diskette labeled TEXAS_MDL_EXAMPLES. That diskette also contains "school solutions" for all input and output files created by all processors. All files pertaining to this example have a file name suffix of S2.(See page 12 of this pamphlet for a complete listing.)

21. Key in **DISPRE** to run the Animation Preprocessor. The numbers appearing on the screen are simulation time in seconds, the number of vehicles in the simulation, and the number of

vehicles in the animation window. This display will continue until the time reaches 300 seconds.

22. Key in **DISPRO** to run the animation processor. This program will draw a plan-view sketch of the intersection , show signal indications by colored dots at the end of each lane line, and display instantaneous vehicle positions. The signal indications and the vehicle positions will be updated for each successive simulation-time interval. Press any key to pause and to restart the animation. Press **S** to restart and pause after a single update. This animation will run for 300 seconds.

SECTION 4

USER INSTRUCTIONS FOR TEXAS MODEL ANIMATION PROCESSOR

The animation processor may be used to produce an animated graphical view of the simulated traffic with a plan view of the intersection shown to scale and traffic operations depicted in real time. A decision to utilize the animation must be made before running the simulation by responding affirmatively to the prompt "Create pollution/display tape?" within the pre-processor "SIMDATA". An affirmative response to this prompt will cause the simulation processor to generate a file consisting of position, velocity, and acceleration data for all simulated vehicles for every simulation time increment. The following instructions are provided assuming that the user has created the appropriate file during the simulation and now wishes to produce an animated graphical view of the simulated intersection traffic operations.

DISPRE and the Pre-Processor

As with all basic processors within the TEXAS model, the Animation Processor requires the use of a pre-processor prior to its use. This pre-processor is most easily accessed through a batch file called DISPRE.BAT. Execution of this file can be accomplished by typing **DISPRE** which simply tells DOS to find and execute a batch file called DISPRE. There are two optional parameters which may be specified for operation of DISPRE.

1. The first optional parameter is the name of the input file which was generated by the simulation processor. If omitted, DISPRE will use the file name for the last simulation processor run which generated a pollution/display file. The default name assigned by the simulation processor to this file is POSDAT and DISPRE will always look for a file called POSDAT unless told otherwise through specification of this parameter. Once a name other than the default is specified, DISPRE will continue to look for the new file name each time it runs unless the simulation processor is used to generate a new POSDAT file in which case it tells DISPRE to look for POSDAT. In other words, specification of this

parameter is not necessary unless the user wishes to have several raw pollution/display files simultaneously available. To accomplish this, the user would rename the file created by the simulation processor called POSDAT after each simulation processor run because each run of the simulation processor will destroy the previous pollution/display file if it is named POSDAT. (For example, if two raw files were to be retained, the first POSDAT produced by the simulation processor could be renamed POSDAT1, and the second could be renamed POSDAT2, or any other name acceptable to DOS.) If specified, the parameter must consist of the complete name including any name extension, for the file to be used. Note, the first optional parameter can be specified while omitting the second (leaving the second blank).

2. The second optional parameter is the name of the output file created by the pre-processor. If omitted, DISPRE will use the default file name DISDAT each time it runs. This effectively means that each DISPRE run destroys any previous animation files if their names have not been changed. Specification of this parameter is not necessary unless the user wishes to have several animation files simultaneously available for display. However, once specified, a new output file name remains in effect until changed by the user or the system is re-booted. Note, the second optional parameter cannot be specified unless the first is also used.

An example of the use of both optional parameters might look like the following, if the name of the input file was RUN99.DAT and the name of the output file was RUN99.CAT:

You would type **DISPRE RUN99.DAT RUN99.CAT** followed by a carriage return.

Users may optionally tailor their graphics by modifying a file called DISPAR which is shipped with the modeling system and installed in the TEXAS subdirectory. Modification of this file which consists of two lines, must be accomplished using a text editor such as the DOS resident Edlin. Specific field specifications for the two lines are as follows:

First line Columns	Data Description	Default Value
1 -10	X coordinate measured from intersection center (in feet) which will appear at center of screen. (For example, if 100 was specified, a location 100 feet to the right of the intersection center would appear at the center of the screen.)	0
11 - 20	Y coordinate measured from intersection center (in feet) which will appear at center of screen.	0
21 - 30	Scale factor: intersection units/ inch on screen	50
31 - 35	Type of display: 0 - Program selects display 1 - Enhanced graphics adaptor and monochrome display 2 -EGA or color adapter and color display 3 - EGA and enhanced color display 4 - VGA with color monitor	0
36 - 40	Reserved for system use	
41 - 50	Time in seconds for display to be shown. Maximum value is the duration of pollution/display file generated by SIMPRO.	Duration of file Generated by SIMPRO

SECOND LINE

Enter the numbers corresponding to the vehicle classes for any vehicle classes which are to be given special graphical representation in the animation. Twelve (12) fields of five columns each are available for the 12 vehicle classes used in the simulation. See Table 2 page 17 of the Users Guide for a description of the 12 vehicle classes. For example, if you wanted vehicle classes 3, 7 and 11 to be given special distinctive representation on the graphics screen you would enter **3 7 11** in columns 5, 10, and 14-15 respectively as your second line. The default for this specification is none, that is, no vehicle classes will be given special graphical representation.

DISPRO and the Animation Processor

Once the pre-processor has generated the data file needed by the basic animation processor, the graphics may be viewed. **Note: Users with more than one display must switch to the display that will be used for the animation before running the animation processor.** Execution of the animation processor can be accomplished by typing the name of the batch file **DISPRO** which manipulates the animated graphics processor. While viewing the animation, users will see " READING DATA" occasionally displayed in the lower right corner of the screen. While "READING DATA" is displayed the machine is reading additional data from the input data file and loading it into memory. *While the display is active, action can be controlled by using function keys:*

Key	*Activity*
F2	*- Pause. When paused, press any key to continue.*
F3	*- While paused, continue for one step, then pause again.*
F4	*- Toggle between forward and reverse display motion*
F5	*- Toggle between normal and high speed display motion*
F6	*- Skip to the end of the animation display data block*
F10	*- Quit*

When all available data has been displayed, the message "PAUSE AT END" will be displayed, in the lower right corner of the screen. The F4 key may be used to reverse and view the animation again. Any key except the F4 key may be used to end the program.