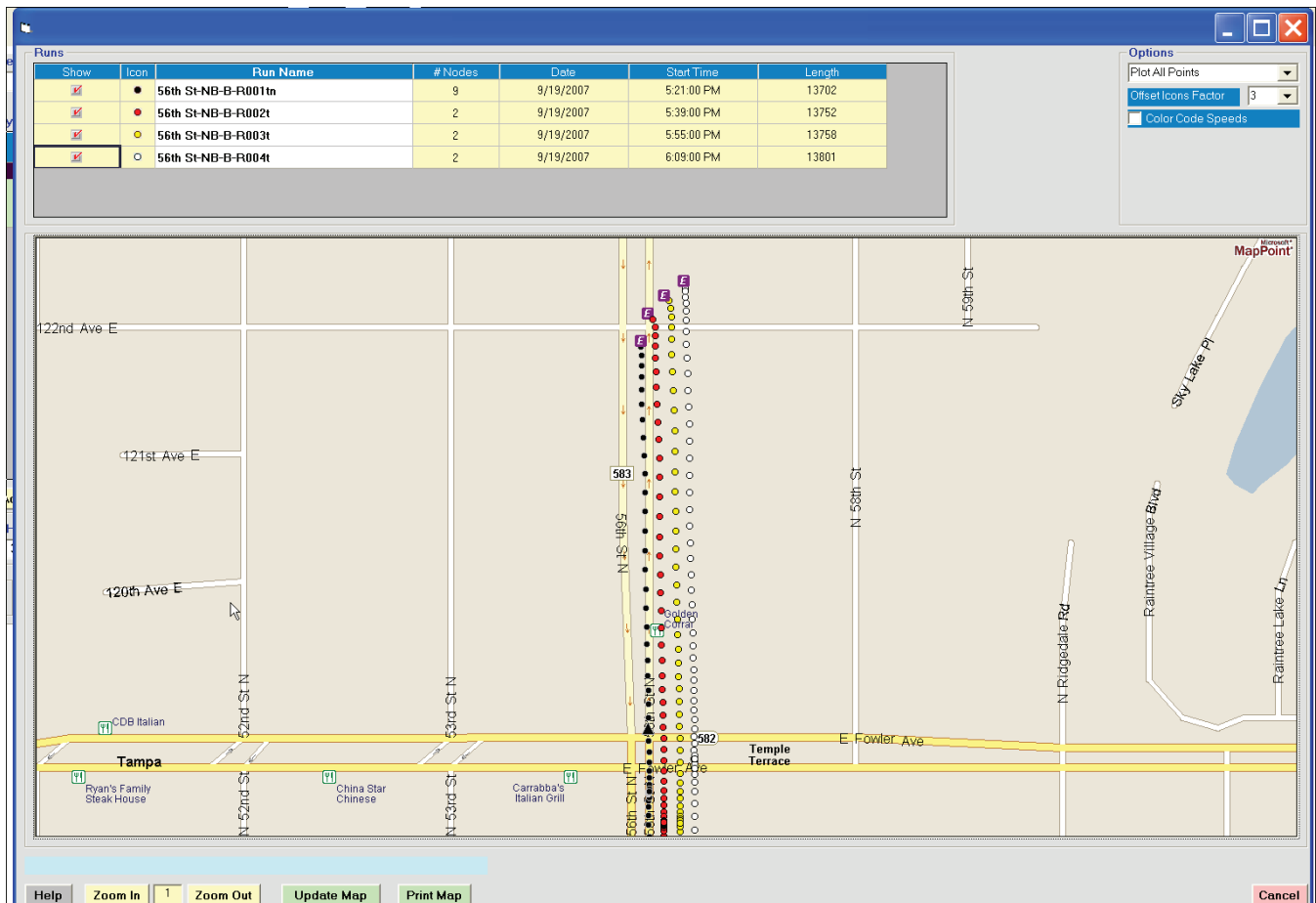


PC-TRAVEL Software Suite

Travel Time and Delay Analysis Software

Quick Start Manual



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You may also contact us by fax at:

1-813-980-0187

or via e-mail at:

support@pc-travel.com

For more information on our products, the latest news in product development, and to download software updates, visit our web site at:

www.pc-travel.com

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Quick Overview (If you really hate manuals)

All files can be downloaded from the Downloads page at www.pc-travel.com

First get GPS2LT2 ready to collect travel time data:

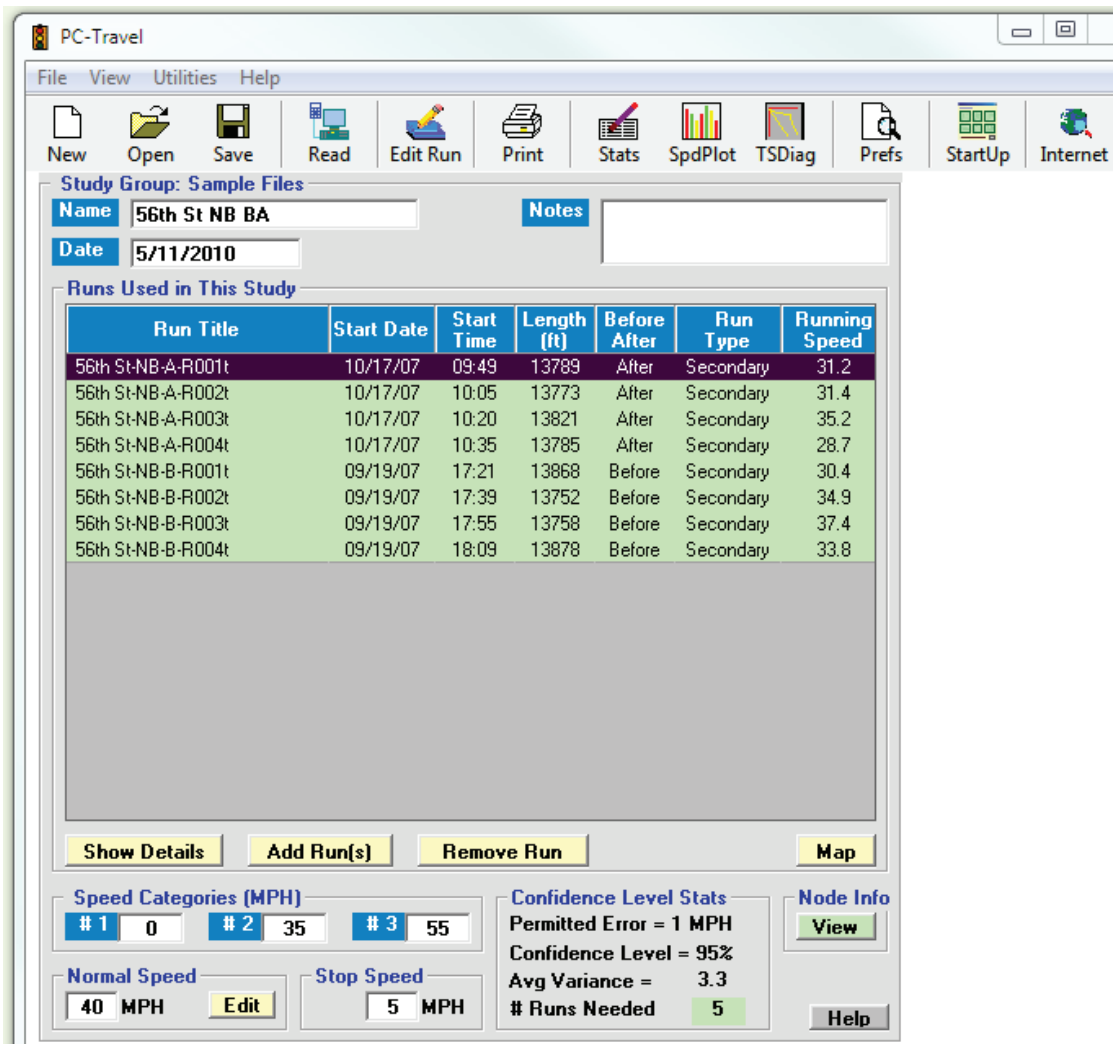
- 1- Download and install GPS2LT2 on your laptop.
- 2- Download and install the appropriate USB device driver for your laptop.
- 3- Find the virtual serial port assigned to the USB port in Device Manager (Ports section)
- 4- Run GPS2LT2 and enter the COM port number found in step 3.
- 5- Enter your serial number into the GPS2LT2 software.

Next get PC-Travel ready to process the field data you collect:

- 1- Download and install PC-Travel on your desktop.
- 2- Download and install TatukGIS Viewer on your desktop.
- 3- Download the maps for the county or counties where your data collection will occur.
- 4- Create a new folder for the map files under the Maps folder of PC-Travel.
- 5- Unzip the map files you downloaded to this new folder.
- 6- Run TatukGIS Viewer and process the shapefiles into a TatukGIS project.
- 7- Save the map project as PCT.ppkgp.
- 8- Enter your serial number into the PC-Travel software.

Introduction to PC-Travel

Welcome to PC-Travel, a Ridge Engineering software program designed to process travel time and delay data. Travel time and delay analysis is a complicated subject and we have not tried to oversimplify it at the expense of the experienced user who wants to get as much from the analysis as possible; yet we have tried to make the software easy to use, even for the occasional user.



Computer Requirements

- Windows XP, Vista, Windows 7
- 64 Megabytes of RAM (although it probably will run in less).
- 10 Megabytes of free space on your hard disk.
- CD-ROM (to install the software only)
- Screen resolution of 800 x 600 or better.

Software Updates

Updated versions of Ridge Engineering software are released periodically and are posted on the PC-Travel support site. Licensed owners of PC-Travel can download updates to the program to make sure they always have the latest version of the software. To download the latest version of PC-Travel, go to www.pc-travel.com and then select **Downloads** from the list of options.

Definitions

Before any discussion of travel time data collection and analysis can begin, you must have a careful understanding of the terms we use and how we use them. This section defines the words used in the program.

Run *A single collection of travel time data.*
For example, when data is collected along an arterial, the user drives to the beginning of the arterial under study, starts data collection, proceeds along the arterial to the end of the study area, and then stops data collection. He has just completed one run. If he turns around and collects data in the other direction, it is another run. All runs are stored as separate files in the program.

Study *A collection of runs.*
When the user collects data, he is making data runs, and when he gets back to the office, he collects those runs into studies. The difference is important because runs can be collected into different studies. For example, a user may make a number of runs at an arterial during one or two days. Back in the office he may create a study with just the morning runs. He may also create a study with all of the runs, which of course use some of the morning runs.

There is one critical rule for studies:

All of the runs in a study must start at the same place, end at the same place, and follow the same route.

Study Group *A folder where related runs and studies are stored.*
This term is specific to the program. Since studies must be created from runs that start in the same place, end in the same place, and go in the same direction, it makes sense to store all runs that fit that criteria in one place on your computer, along with any studies that are created from those runs.

You typically create Study Groups when you first read the run data collected in the field. Since you usually collect at least two sets of runs, one in one direction and another in the opposite direction, you usually will create two Study Groups when you process the field data.

Node *The boundary between two segments of a run.*
Every run has a *starting node*, which is where you start collecting data on a fixed-route study, an *ending node*, which is where you stop collecting data, and several *segment nodes* in between. The user records the location of the nodes by pressing a buttons in the field as the user passes the nodes during a run.

Primary Run *A run that contains node data.*
Most studies have statistics for the entire run plus statistics for segments along the route, separated by nodes. These nodes can be collected in the field but usually are edited in the office on the map.

Secondary Run *A run where node information is not stored.*

Before and After *A way to categorize a group of runs so that two different groups of runs can be compared.*

The terms Before and After are used liberally in the program and these mean only

that the data is summarized into two separate groups so the statistics of each group can be compared. If all of one set of runs are made under the same conditions, they may all be defined as *before* runs. Later, identical runs made under different conditions (after an arterial has been re-timed, for example) may be defined as *after* runs. The program lets you define runs as either before or after and then automatically calculates statistics for the before runs as a group, the after runs as a group, and changes in the various statistics from before to after.

Normal Speed	<p><i>Ideal speed at which the traffic should travel on an arterial.</i></p> <p>The Normal Speed is used in two places in the program. It is used to find Total Delay statistics for runs and studies (see <i>Total Delay, below</i>). It also is plotted on the Time/Space Diagrams to show perfect progression. You set the Normal Speed on the Study Summary screen. As with most ideals, real traffic rarely measures up to the ideal, but it is useful as a guide.</p>
Travel Time	<p><i>The elapsed time to travel between two points, in seconds.</i></p> <p>This is probably the most fundamental of the reported statistics. All run travel times are measured and reported to the nearest second. Study travel times, which are averages of the run travel times, are reported in tenths of second (technically speaking, the tenths of second are not significant in studies with less than about 5 runs, but that is rarely of concern in the vast majority of practical traffic evaluation situations).</p>
Number of Stops	<p><i>A stop is defined as a one-second interval where the speed is less than X MPH for one second when the speed was greater than X MPH in the previous second.</i></p> <p>X is normally 5 MPH but can be set to any speed you want. This speed is called the Stop Speed and is set on the Study Summary screen. Each time the vehicle slows down and crosses the Stop Speed boundary, a stop is counted. The vehicle must speed up faster than the threshold before another stop can be counted.</p>
Average Speed	<p><i>The total distance covered divided by the elapsed time.</i></p> <p>The program calculates the average speed for each section (<i>node to node distance</i>) and also separately calculates a total average speed for the entire route.</p>
Total Delay	<p><i>Difference between actual travel time and ideal travel time.</i></p> <p>Actual travel time is calculated from the data. The ideal travel time is based on the Normal Speed setting on the Study Summary screen.</p>
Time <= X MPH	<p><i>Total time the vehicle spent at or below the given speed.</i></p> <p>The program gives you three speed categories, which you can set for different purposes. You can measure stopped delay (time vehicle is stopped) by setting Category 1 to 0 MPH. You can measure queue delay by setting Category 2 to 7 MPH. The third category might be set to 30 MPH to show how much time vehicles spent in car following mode rather than free flow (assuming free flow speed is 40 or 45 MPH). Many other uses for these three categories are possible, limited only by your imagination.</p>

How to Install, Run, & License PC-Travel

Installation Procedure

Begin the installation by placing the PC-Travel Software Suite CD into your CD drive. If your CD drive is configured for Autoplay, the Installation Options program will start after a few seconds. Otherwise, click on the **Start** button on your Windows desktop. Select **Run** from the list of options and type the command line **X:\Autorun.exe**, where X is the letter of your CD drive. Press **OK** and you will see the Installation Options for the program.

The Installation Options allow you to do a number of things in addition to installing PC-Travel. You can view a copy of this manual, install the other programs in the suite, and check out other Ridge Engineering products. To begin installing PC-Travel, click on Install PC-Travel.

Note: If you downloaded the installation program from the PC-Travel.com support site, then unzip the file you downloaded to a convenient folder and run the Setup.exe file.

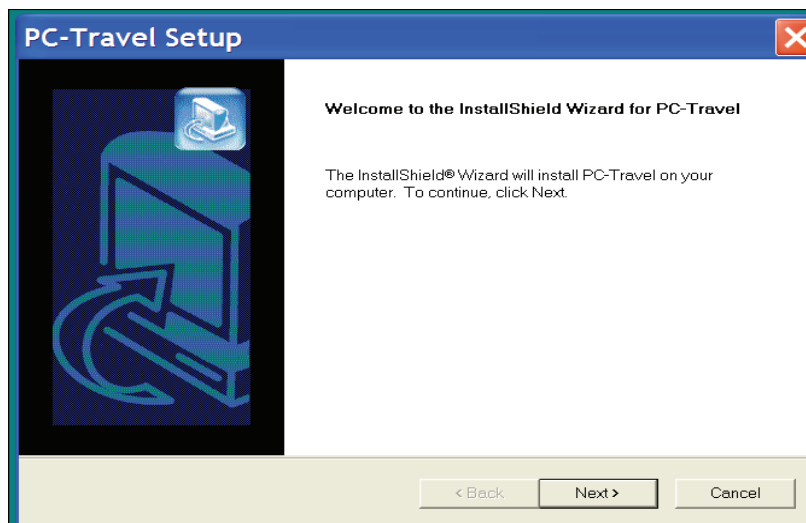
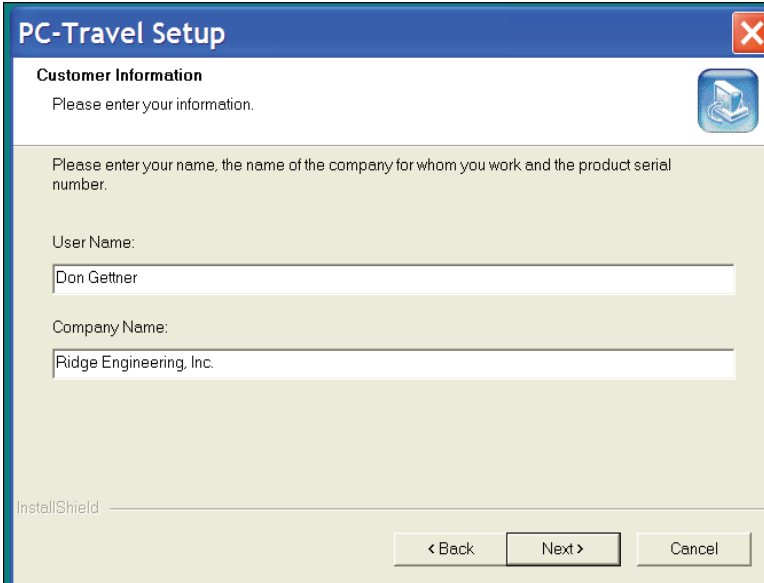


Figure 4-1 — Welcome Screen

The **Welcome** screen reminds you to be sure all other programs are closed before proceeding with the installation. During the installation, files used by the program will be copied to your computer, including some Windows system files. If other programs are open and using some of the files that need to be installed, an error can occur. Make sure you close any programs that obviously are running (especially virus checkers) before you install this or any Windows-based software.

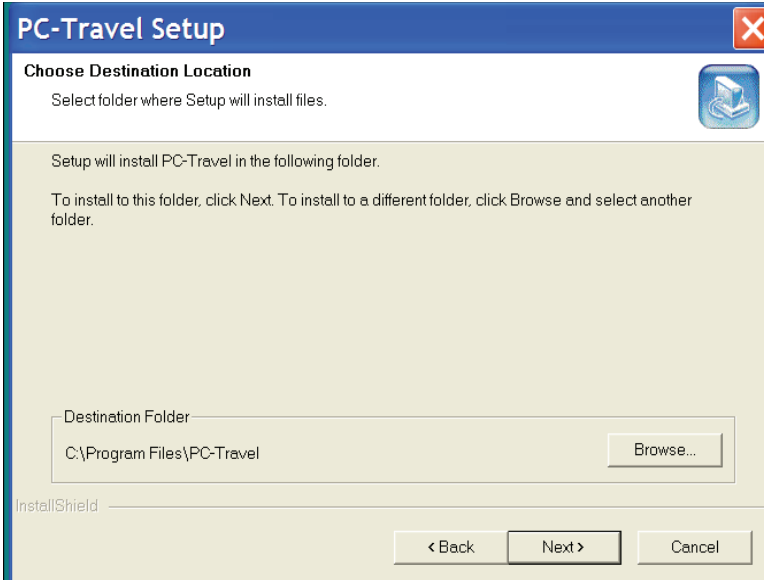
The next screen contains the license information for the program. Please read this information. You must accept the provisions of the license in order to proceed and use the program. The program's license allows you to install the program on multiple computers provided they are in the same location and being used by employees of the entity that purchased the license. This is a very liberal license — many program licenses do not allow you to install the program on more than one computer. We ask that you respect the licensing policy and not abuse the use of this program. If you agree to the license, click Yes to continue.



The screenshot shows a window titled "PC-Travel Setup" with a blue header bar. Below the header, the title "Customer Information" is displayed in bold. Underneath, the text "Please enter your information." is followed by a small blue icon of a computer monitor. A larger instruction reads: "Please enter your name, the name of the company for whom you work and the product serial number." Below this, there are two text input fields. The first is labeled "User Name:" and contains the text "Don Gettner". The second is labeled "Company Name:" and contains the text "Ridge Engineering, Inc.". At the bottom left, the text "InstallShield" is visible. At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

Figure 5-1 — Customer Information

The next screen asks for the User Name and Company Name. Once the information has been entered, click the Next button to continue.



The screenshot shows a window titled "PC-Travel Setup" with a blue header bar. Below the header, the title "Choose Destination Location" is displayed in bold. Underneath, the text "Select folder where Setup will install files." is followed by a small blue icon of a computer monitor. A larger instruction reads: "Setup will install PC-Travel in the following folder. To install to this folder, click Next. To install to a different folder, click Browse and select another folder." Below this, there is a text input field labeled "Destination Folder" containing the text "C:\Program Files\PC-Travel". To the right of this field is a "Browse..." button. At the bottom left, the text "InstallShield" is visible. At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".

Figure 5-2 — Program Destination

The Choose Destination Location screen is used to select the folder where PC-Travel will be installed. The default folder is C:\Program Files\PC-Travel, but you can change this if you like. Click the Browse button and navigate to the folder you want. Once the directory listed is correct, click Next to continue.

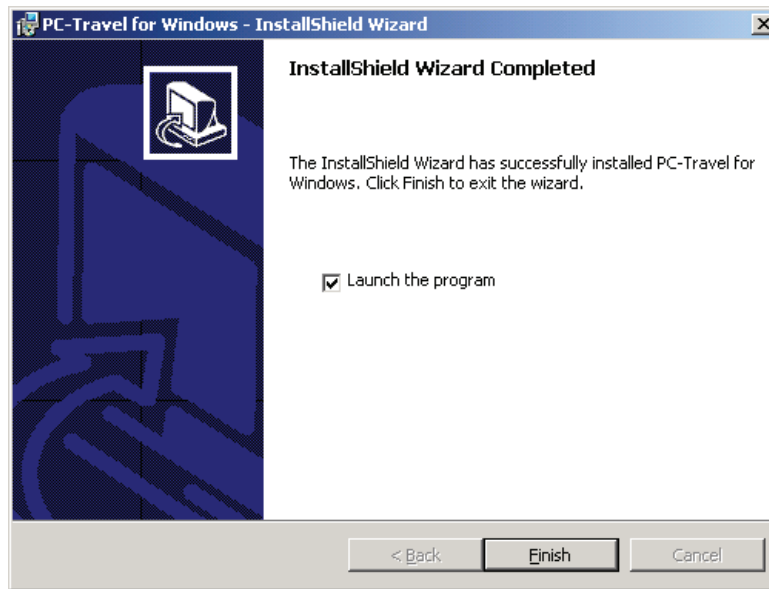


Figure 6-1 — Installation Finished

Once the installation program has enough information, the files will be copied from the CD to your computer. You'll then see a screen that tells you the installation has completed. You may be asked if you want to re-start your computer now. If you get this message, you should re-start your computer before you try to run the program. This will allow any of the System files that were copied during the installation to be loaded properly.

How to Run PC-Travel

Like most Windows programs, there are several ways you can run the software. Here are two:

1) Open an Explorer window (right click on My Computer and select Explore) and find the PC-Travel.exe file, which probably is in the *C:\Program Files\PC-Travel* folder. You will see a screen that looks something like figure 8-1 shown below. Double click on the file **PC-Travel.exe** and the program will run.

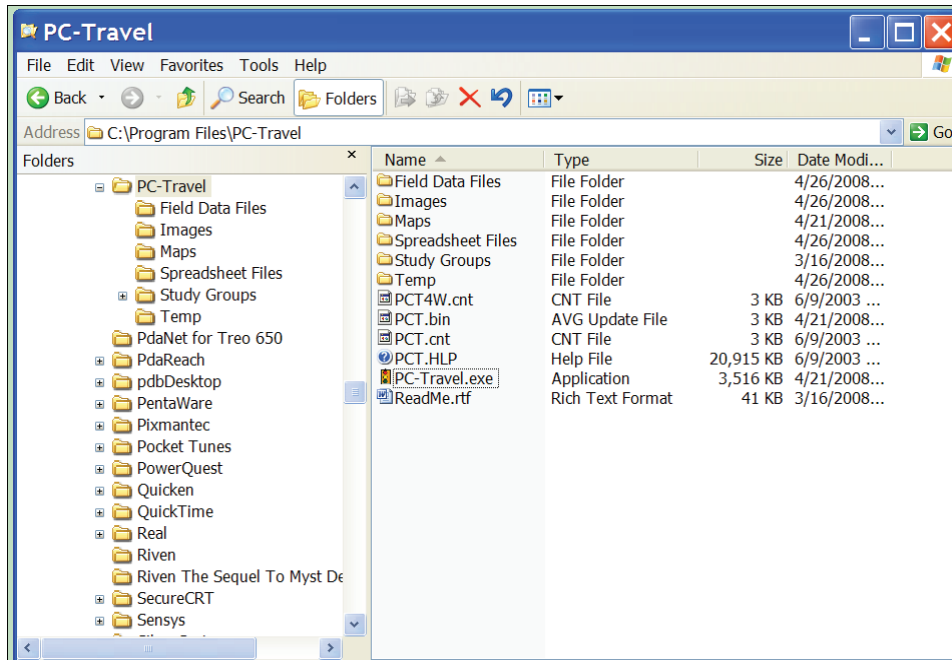


Figure 7-1 — Explorer View

2) Select **Start**, **Programs**, and then **PC-Travel** from the list of programs. There could be a long list, and they may not be in alphabetical order (don't you love Windows?). You will see a display similar to the one shown here. Select **PC-Travel** then click on the second **PC-Travel**. This will run the software.

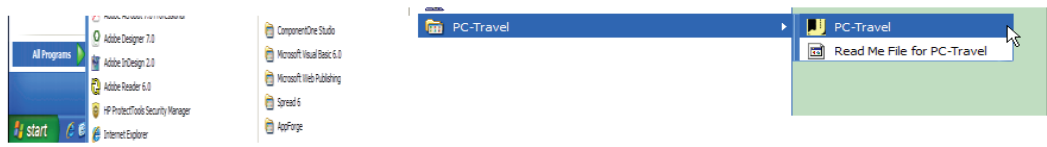


Figure 7-2 — Starting PC Travel

How To Enter Your Serial Number Into PC-Travel.

Run PC-Travel. This brings up the Startup Options screen.

Click on the Start a **New Travel Time Study** button. This brings up the **Main** screen.

Click on the **Help** menu at the top of the screen.

This brings up the screen shown in Figure 8-1.

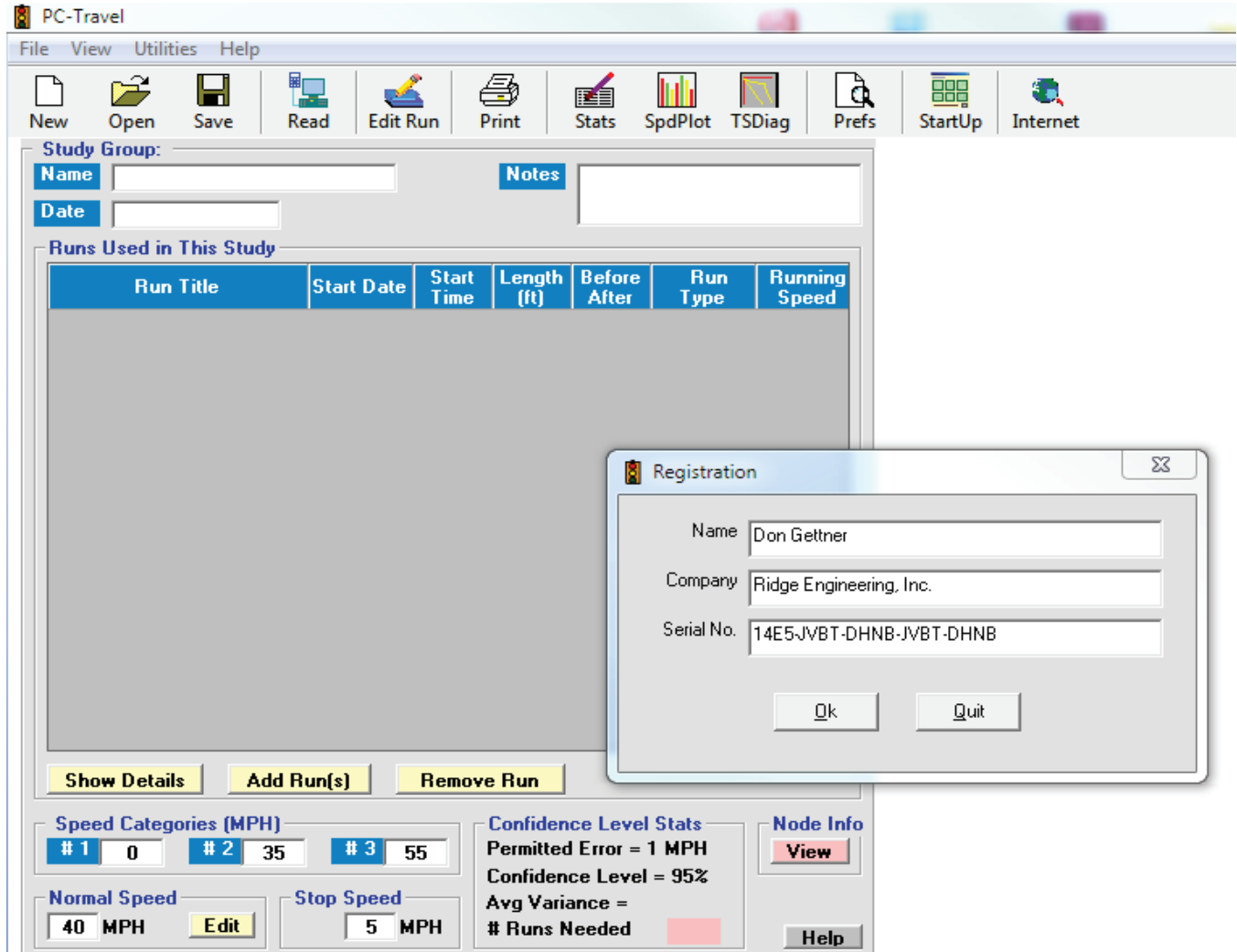


Figure 8-1 — Serial Number Registration

Enter your Name, Company or Organization, and serial number. Make sure you enter the dashes "-" as well; they are part of the serial number.

Use the same serial number for PC-Travel, GPS2LT2, and PC-LOS if you install that.

Click **Ok**. The Registration window should disappear. If there was a problem with the serial number, which is usually just a typo error, the software will show an error message.

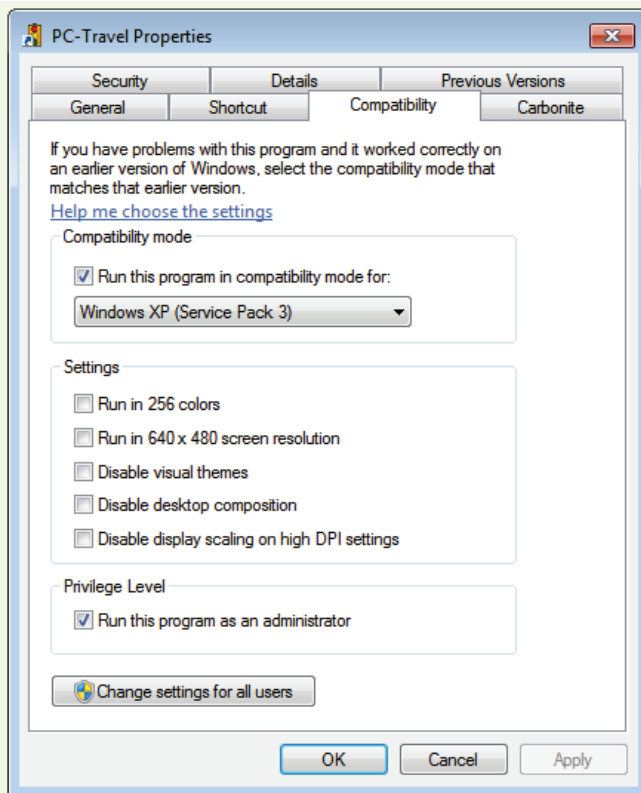
The software is now licensed and ready for use.

Running PC-Travel & GPS2LT2 on Windows 7 Computers

Windows 7 computers can be problematical running programs like PC-Travel. Microsoft, in an effort to protect us from malicious code, makes it difficult to save files to folders in the C:\Program Files\ folders. This is called User Access Control (UAC). Unfortunately, this is what GPS2LT2 and PC-Travel do by default; they store data files and preference files in folders under the C:\Program Files\PC-Travel\. What is disconcerting is the software appears to work but the files can't be found outside of the program. This is because the files are re-directed to a Virtual Store in the Users section of the file system.

There is a relatively simple solution to this problem.

Follow the steps below and AEC won't be an issue for you running GPS2LT2 or PC-Travel.



1- Right click on the shortcut that is installed on the desktop when you install either GPS2LT2 or PC-Travel.

2- Select Properties from the list of options shown. You will see the window shown here.

3- Check the box that says "Run this program in compatibility mode for:"

4- Select the "Windows XP (Service Pack 3) option.

5- Check the box for "Run this program as an administrator". This isn't essential but seems to work better in certain circumstances.

6- Click Ok to save the settings.

When you run GPS2LT2 or PC-Travel the UAC will be disabled and the operating system will not re-direct the files to another part of the file system.

How To Install GPS to Laptop (GPS2LT2)

The GPS Travel Time software allows you to collect travel time data using a GPS receiver and either a laptop computer or netbook.

The basic idea is simple. The GPS receiver outputs data every second. Some of this data includes the speed of the vehicle, which is measured to a surprisingly high degree of accuracy (better than 1 MPH). The laptop or netbook reads the data from the GPS receiver and stores the speed information, plus other information that you input. The PC-Travel software then can read and process these files into travel time studies.

GPS Technology and Receivers

In case you are new to GPS technology, what follows is a brief introduction to the subject. Each GPS receiver is a glorified radio antenna that picks up signals put out by the network of dedicated GPS satellites. Once the receiver gets a signal from three or four satellites, it can compute your position (*latitude and longitude*) anywhere on the planet. Using a little calculus, the receiver can figure out how fast you are moving by monitoring your changes in position.

There are dozens of GPS receivers available, in many different price ranges and with many different features. In general, the best GPS receivers to use with GPS Travel Time do not have dedicated display screens. For our purposes, they just aren't necessary. Since the laptop you are running GPS2LT2 on acts as your display, you don't need one on your GPS unit. If you've already got a GPS receiver with a display and it's supported by GPS Travel Time, that's fine. However, if you're shopping for a GPS unit for the specific purpose of taking travel time data, save yourself some money and opt for something like the simple black receiver shown here. Visit www.pc-travel.com for more information on GPS receivers.



The most important part of the GPS Travel Time set up is the placement of the GPS antenna. In order for the GPS receiver to function properly, it must have a fairly clear view of the sky. This makes GPS reception more difficult in places with numerous tall buildings or dense foliage, and nearly impossible in tunnels.

Since the inside of your car doesn't provide an ideal view of the sky, it is best to have a GPS receiver with an external antenna. This antenna may be the entire receiver, as in the case of the GlobalSat BU-353, or it may plug into the GPS device which would then feed the data to your laptop. Either way, you don't want to be driving around holding your GPS receiver out the window so you don't lose your signal. Most of the external antennas are magnetic, which is very handy when popping it on and off of a car's roof, but a suction cup anchor or fixed mounting bracket would also do the job. Route the cable through a window into your car.

To physically connect with GPS Travel Time, your GPS receiver must have some means to send data to your laptop or netbook. Usually the easiest means to achieve this connection is through a USB port.

The specific information output by GPS receivers will vary from unit to unit. However, there is one standard output format that is supported by nearly every receiver. This format is called NMEA. NMEA outputs are divided into sentences and these sentences are transmitted as ASCII text characters. Often, there are ways to adjust which sentences your receiver transmits. A GPS receiver may default to output its sentences every second, every two seconds, or sometimes every 5 seconds. This time interval may also be changed on most units. PC-Travel requires that your receiver output sentences at one second intervals. ***If you aren't sure if your receiver outputs data in the proper format, visit www.pc-travel.com or give us a call.***

Installation

To install GPS2LT onto your laptop PC, place the Ridge PC-Travel CD into your CD drive. The Installation Options program will start after a few seconds. Otherwise, click on the **Start** button on your Windows desktop. Select **Run** from the list of options and type the command line **X:\setup.exe**, where X is the letter of your CD drive. Press **OK** and you will see the Installation Options for the program. Click **Install GPS to Laptop** to start the installation.

You can also download the GPS2LT2 install file from the Download page of the support site at www.pc-travel.com. Unzip the file you download to a convenient, empty folder and then double click on the Setup.exe file to run the installer.

At the Welcome Screen, click **Next** to start the wizard. You will then be asked whether or not you want to accept the licensing agreement. Click the **Yes** button to accept the agreement and continue with installation.

Fill in the appropriate boxes with your name and your company's name. Click **Next** to proceed.

The setup program needs a location in which to install your GPS2LT software. The default location will install GPS2LT2 to C:\Program Files\GPS2LT2\ of your laptop or netbook. If you do have some reason to change your installation location, click the **Browse** button and select any existing directory for installation.

The fifth screen asks you to choose a folder for GPS2LT's icon. Again, the default shown will almost certainly be okay. Click the **Next** button to continue.

Now, you are able to review any and all of the information that you've entered into the setup wizard. Click the **Back** button should you want to change anything. If everything looks correct, click **Next** to install all of the GPS2LT's files.

Once your GPS2LT software is installed, click the button labeled **Finish** to exit the wizard.

How To Install a USB Serial Driver

The GPS receiver 'talks' to the laptop or netbook via a device driver installed on the laptop. This device driver creates what is called a 'virtual serial port'. GPS2LT2 then connects to the virtual serial port to read the data from the GPS receiver.

Most GPS receivers come with a CD that has a USB Driver on it and these usually work ok. However, we have had some problems with some device drivers not working properly with GPS2LT2, so for that reason **we suggest you don't install the software that came with the GPS receiver**. Instead, install the appropriate driver from the PC-Travel support site at www.pc-travel.com.

There are two drivers on the Downloads page at www.pc-travel.com.

One is for laptops running Windows XP. The other is for laptops running Windows Vista or Windows 7. **Download the appropriate driver and double click on the file to run the installer.** The device driver will be installed on your laptop.

Make sure the GPS receiver is NOT connected to the laptop when you run the installer. This seems to cause problems for some users.

Plug the GPS receiver into a USB port. You should hear a distinctive 'boing' sound that says the computer recognizes that a USB device has been connected. Now you need to determine which 'virtual serial port' number has been assigned to the USB connector you used.

The procedure is different if you have Windows XP, Windows Vista, or Windows 7, but the result is the same. In all cases you want to find the Device Manager screen and then check the COM port number assigned.

Here is the procedure for Windows XP:

- 1- Right click on the My Computer icon that is usually on the desktop.
- 2- Select Properties from the drop down box.
- 3- Click on the "Hardware" tab at the top of the window.
- 4- Click on the Device Manager button.
- 5- Scroll down to the +Ports (COM + LPT) line and click on the plus sign ("+").
- 6- There should be a line that says "HOLUX GPS USB DEVICE (COM5)" or something roughly similar. For example it may say "Prolific Bridge (COM5)". It all depends on what driver you installed. The important number is the 5. Remember this number.

Here is the procedure for Windows 7:

- 1- Click on the Windows Start icon in the lower left corner of the screen.
- 2- Click on Devices and Printers on the right side of the pop up window.
- 3 - You get a list of Devices and Printers. At the bottom is a section for Unspecified. Look for a device that has USB and/or Serial Port in the name. Remember the number that is part of the name.

Each USB port on your laptop will have a different number and will stay the same from session to session. Pick a port, find the number assigned to it, and continue to use that port in the future.

Once you know the COM Port number, you can enter it in GPS2LT2.

Run GPS2LT2. This brings up the first screen shown in Figure 13-1 below.

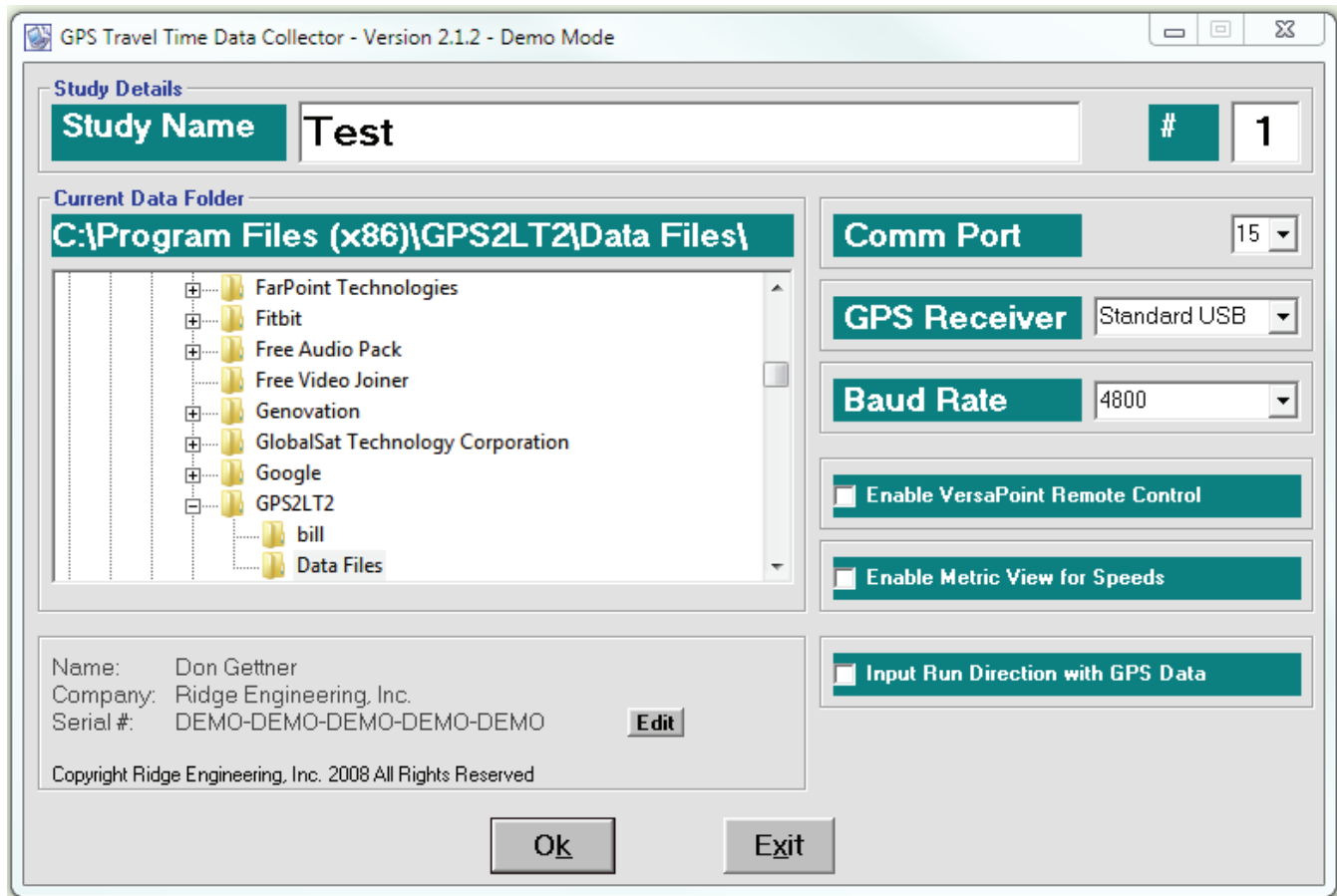


Figure 13-1 GPS2LT2 Settings Screen

Enter the COM number in the Comm Port box. In the example shown here the Comm Port is 15.

Set the GPS Receiver to Standard USB and the Baud Rate to 4800 unless you have been told to use other settings.

Now GPS2LT2 knows how to listen to the GPS receiver.

Enter the Serial Number:

If you haven't done so already, then click on the Edit button which pops up a little window where you can enter the serial number. The serial number is the same for GPS2LT2, PC-Travel, and PC-LOS if you install that.

You are now ready to collect travel time data.

How To Download and Install Maps

The US Government provides Census Data free of charge. Part of this data include TIGER files which contains geographic and cartographic data of the entire country. Not too long ago (March 2008) the format for these files was changed to use standard files called Shapefiles. These files are now called TIGER/Line Shapefiles and can be downloaded for free from the Internet.

This section of the manual will show you how to download the shapefiles for your area and then how to add the symbology to make the shapefiles look good on maps.

Download Shapefiles

Go to <http://www2.census.gov/cgi-bin/shapefiles2009/national-files> (or Google 2009 TIGER/Line Shapefiles). This site has more information than you would ever want or need to know about TIGER shapefiles.

This brings up the screen shown in Figure 14-1.

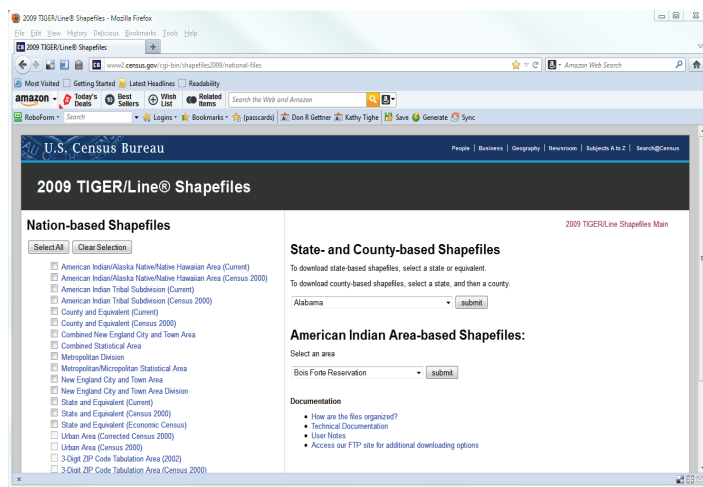


Figure 14-1 Select State Screen

Select your state from the drop down list, then click on the **submit** button.

You will see a similar screen where you can select the County of the data you want from the drop down list. Click on the **submit** button.

Note: All TIGER/Line Shapefiles are organized by County. That is the smallest area you can download.

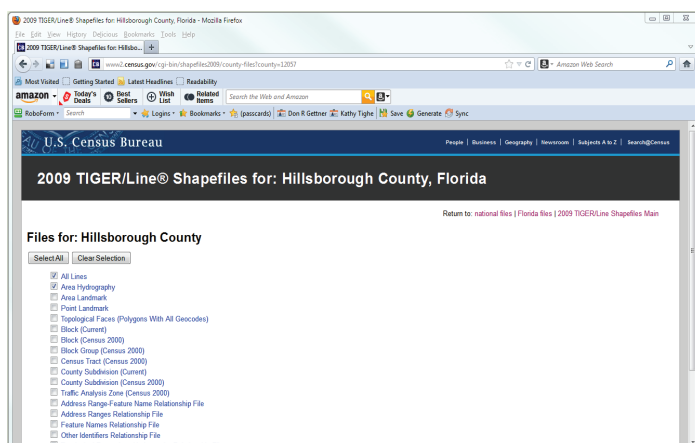


Figure 14-2 Select Properties Screen

This brings up the screen shown here.

This is the list of all of the shapefiles that are available. We only need the first two, **All Lines** and **Area Hydrography**. Click on the checkboxes to select them.

Click on **Download Selected Files**.

You will see a message asking if you want to **Open or Save** the file. Select **Save** then click **Ok**. Then navigate to the **C:\Program Files\PC-Travel\Maps** folder and click on **Save**.

You now should have two zip files in the **Maps** folder.

Unzip Downloaded Files to Maps Folder

Open a Windows Explorer window and navigate to the **Maps** folder where you stored the zip files. Unzip them into the same folder. You can delete the zip files if you wish; you won't need them again. You will have a list of files similar to what is shown in Figure 15-1.

Name	Type	Size	Date Modified
ArcGIS-highways.ini	Configuration Settings	3 KB	5/24/2008 10:0...
ArcGIS-Indmark.ini	Configuration Settings	3 KB	5/24/2008 10:0...
ArcGIS-md_riv.ini	Configuration Settings	3 KB	5/24/2008 10:0...
ArcGIS-md_wat.ini	Configuration Settings	3 KB	5/25/2008 11:2...
ArcGIS-park.ini	Configuration Settings	3 KB	5/24/2008 10:0...
ArcGIS-streets.ini	Configuration Settings	3 KB	5/24/2008 10:0...
ArcGIS-world30.ini	Configuration Settings	3 KB	5/24/2008 10:0...
fe_2007_12057_areawater.dbf	DBF File	1,800...	2/28/2008 10:5...
fe_2007_12057_areawater.prj	PRJ File	1 KB	2/28/2008 10:5...
fe_2007_12057_areawater.shp	SHP File	9,770...	2/28/2008 10:5...
fe_2007_12057_areawater.shp.xml	XML Document	17 KB	2/28/2008 10:5...
fe_2007_12057_areawater.shx	SHX File	86 KB	2/28/2008 10:5...
fe_2007_12057_edges.dbf	DBF File	22,68...	2/28/2008 10:5...
fe_2007_12057_edges.prj	PRJ File	1 KB	2/28/2008 10:5...
fe_2007_12057_edges.shp	SHP File	18,36...	2/28/2008 10:5...
fe_2007_12057_edges.shp.xml	XML Document	42 KB	2/28/2008 10:5...
fe_2007_12057_edges.shx	SHX File	757 KB	2/28/2008 10:5...
Tiger2007-AllLines.ini	Configuration Settings	15 KB	5/27/2008 12:0...
Tiger2007-AreaWater.ini	Configuration Settings	5 KB	5/27/2008 12:0...

Fig 15-1 List of Shapefiles

Note: There are some *.ini* files in the folder starting with *ArcGIS* and with *Tiger2007*. These were copied when *PC-Travel* was installed. We will use the *Tiger2007 ini* files in this section.

There are two sets of shapefiles in the folder. The shapefiles have a very specific naming convention.

A typical file name might be `fe_2009_12057_edges.*`.

The **fe** shows that this is a Census Bureau file.

The **2009** is the version of the files.

The **12057** identifies the geographic extent of the file.

edges is the layer type.

Download and Install TatukGIS Viewer

The GIS engine used in PC-Travel to display shapefiles is made by a Romanian company called TatukGIS. This software integrates into Visual Basic, which is the software used to write PC-Travel. TatukGIS allows programs written in Visual Basic to display maps, interact with the maps, print the maps, and a host of other map related operations. What is nice about this software is that there is no runtime license required, which means that when you buy PC-Travel you don't have to worry about licensing the GIS engine as well. This isn't true for other GIS programs that work with Visual Basic. TatukGIS supports shapefiles natively, which makes it easy to use.

TatukGIS makes a program called **TatukGIS Viewer** which is free for anyone to download and use. Among its many features is the ability to add *symbolology* to shapefiles. What this means is you can use the software to decide how different features look when displayed on maps. We will use TatukGIS Viewer to edit the shapefiles downloaded from the Census Bureau so that they look good on the Map screen in PC-Travel.

Install TatukGIS Viewer

If you have the PC-Travel CD then the install program for TatukGIS Viewer is in the TatukGIS folder on the CD. If you don't have the CD, then you can download the TatukGIS Viewer install program from the www.pc-travel.com support site. Look on the **Downloads** page in the Utilities section.

The installation is a standard Windows type install. Run the installer program and follow the directions. Normally there is no reason not to accept all of the default values. For convenience you should install TatukGIS Viewer on the same computer where you have PC-Travel.

Once you have installed TatukGIS Viewer you can follow the procedure in the next section to edit the shapefiles.

Edit Shapefile Properties In TatukGIS Viewer

Note: These directions assume you have followed the procedures in the previous section and have the shapefiles in the C:\Program Files\PC-Travel\Maps folder. There also should be two .ini files in the Temp folder that were installed when you installed PC-Travel: AllLines.ini and AreaWater.ini.

Run **TatukGIS Viewer**. You will see a screen similar to Figure 16-1.

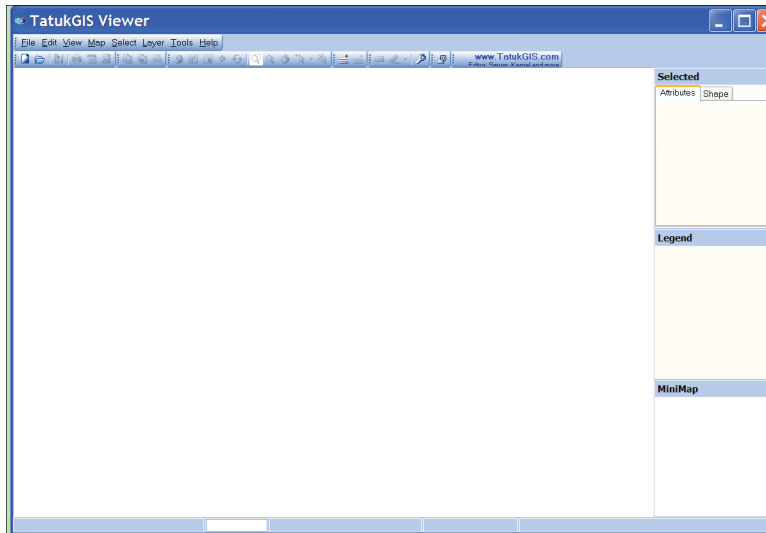


Figure 16-1 TatukGIS Viewer Screen

Note: If a map is displayed then click on **File:New Project** to clear the screen.
If the Legend panel is not visible then click **View:Panels:Legend**.

Each shapefile is loaded as a separate layer to the map. Each layer will be added to the project and then the properties for that layer will be loaded from a prepared .ini file. The order you load the layers is important so follow the sequence shown.

- 1- Click on **Layer:Add** in the menu at the top of the screen.
- 2- Navigate to the **C:\Program Files\PC-Travel\Maps** folder.
- 3- Select **x-AreaWater.shp** where **x** is the prefix of the files in your folder.
- 4- Click **Open**. This usually brings up lots of grey areas. These are all of the water areas in the county.
- 5- Click on **Layer:Load layer properties** in the menu.
- 6- Navigate to the **Temp** folder and select **AreaWater.ini** from the list. The areas turn a light blue.

- 1- Click on **Layer:Add** in the menu at the top of the screen.
- 2- Navigate to the **C:\Program Files\PC-Travel\Maps** folder.
- 4- Select **x-edges.shp** where **x** is the prefix of the files in your folder.
- 5- Click **Open**. This brings up lots of thin, black lines.
- 6- Click on the new layer name (x-edges) in the Legend box on the side of the screen.**
- 7- Click on **Layer:Load layer properties** in the menu.
- 8- Go to the **Temp** folder and select **AllLines.ini**. The lines look more like roads.

Note: Step 6 is highlighted because it is the step that is most often missed. You have to select the layer you want to edit before you load an .ini file.

Note: You can repeat this process with additional counties if you collect data in more than one county. Your map can contain as many counties as you need. Download the shapefiles for each county to one folder as explained on page 14. and repeat steps 1-8 from page 16 for each set of files. However, if you create a map with too many roads, the map will take longer to display when you use the software, although with modern computers this is a minor details. The alternative is to have several map projects for different areas that you can select from when you run PC-Travel. This is a little complicated so call us and we can explain it better.

You now should have a map that looks somewhat like Figure 17-1

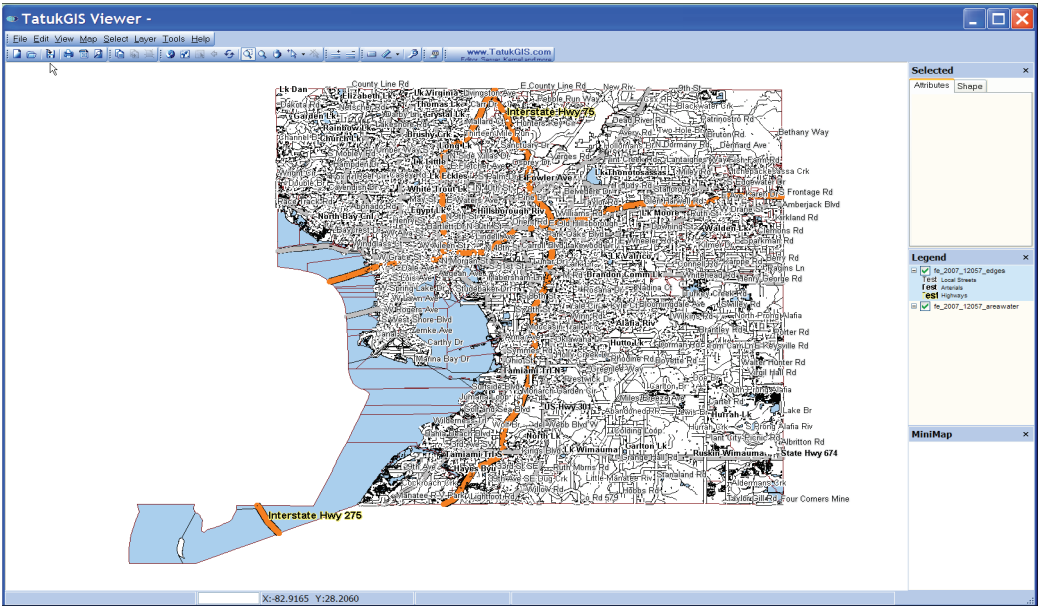


Figure 17-1

We now have the map looking like a decent map, although it may look a cluttered. We will take care of that next.

Load Map Units

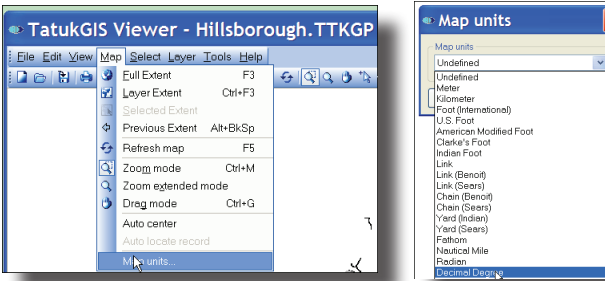


Figure 17-2 Load Map Units

The next step is to set the map units so that the software understands how distances are calculated in the layers that are used in the map.

Click on **Map** in the menu at the top of the screen.

Click on **Map Units** from the drop down box.

Click on the down arrow and select **Decimal Degree** from the long list of options, then click **Ok**.

You probably noticed that the screen greatly simplified so that all you can see are the major highways on the map. This is because there are settings in the project to decide when to show certain road types on the map. In this case the local roads are only shown when you are zoomed in fairly close. This cuts down on the clutter.

Pick Background Color

The maps look a little better if the background color isn't white; you get a little contrast with the roads and text. It is easy to set the background color.

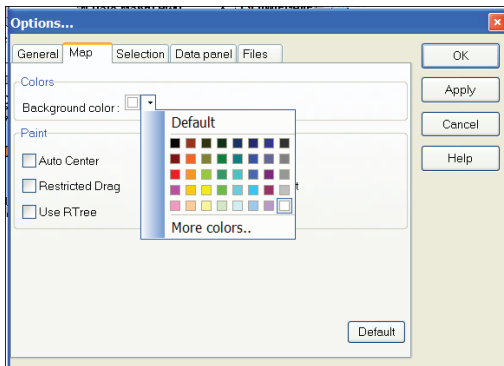


Figure 18-1 Select Background Color

Click on **Tools** on the menu at the top of the screen.

Click on **Options** from the drop down list.

Click on the **Map** tab.

Click on the down arrow in the **Colors** section.

This brings up a screen similar to Fig 18-1. You can pick one of the colors shown but most people like a very soft background color. One option is a very light green background. To set this:

Click on the Light Green square on the bottom row so it is highlighted, then click on the **More Colors** button.

Click on the **Define Custom Colors** button.

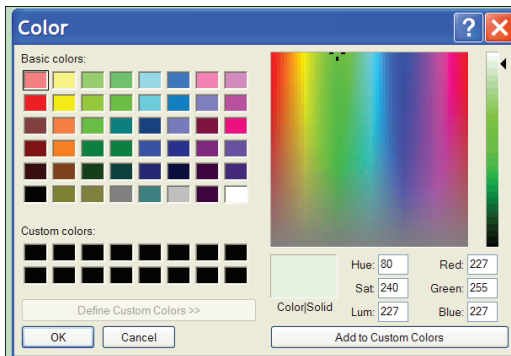


Figure 18-2 Define Custom Color

You will see a screen like Fig 18-2. On the far right is a graduated color scale that starts at white at the top and progresses down to black at the bottom. The little triangle shows the currently selected color. Click on the arrow and drag it up one or two spots so that the arrow is just below the white section.

Click on the **Add to Custom Colors** button then click on **Ok**. This brings you back to the previous screen.

Click on the **Apply** button and the background of the map should change to the new color.

Feel free to experiment to get the color you like. Some people like a light yellow or a light grey. It is up to you.

Save Project File

The next step is to save this project so that PC-Travel can use it.

Click on **File:Save Project As...** in the menu at the top of the screen.

Enter **PCT** in the **File Name** text box, then click **Save**.

This creates a PCT.ttkgp project file in the Maps folder. PC-Travel looks in this folder for the shape files and for the project file that defines the symbology of the layers in the shapefiles.

When you are done you should have the shape files in the Maps folder now and only the .ini files in the Temp folder. Congratulations you have successfully created maps of your area and formatted them to use in PC-Travel.

Misc Notes:

Many users like to create a separate folder for each county or collection of counties that are part of the same map project. This is particularly true for consultants who might have clients in many different parts of one or more states. In this case first create a folder with the name of the county or counties under the Maps folder. Unzip the map files you download from the Internet to this new folder and then follow the directions above. Make sure you save the map project file PCT.ttkgp in the same folder as the shapefiles. Don't save the map project file in another folder and then move it to the new folder. This doesn't work.

The procedures shown here are only one way to get to the same result. If you know a better way, please let us know so we can share the information.

The way the map looks is completely adjustable. If you would like to learn how TatukGIS Viewer works and come up with different symbology for the features, then please feel free to experiment. If you come up with some looks you like, let us know and we will share them with others on the www.pc-travel.com website.

If you do make changes then make sure you save both the .ini for the layer you edit, and the project file. Just make sure you save your project as PCT.ttkgp so that PC-Travel can use it.

How To Learn About PC-Travel: Web Tutorials

Now that you have installed the software and map project files, what next? In the 'old days' there would be another hundred pages to this manual that would explain how to run the software using text and pictures. But that isn't the best way to learn. The best way is to have someone who knows the software show you how the software works. That is what happens on the web tutorials.

Go to www.pc-travel.com. Click on the **Tutorials** link on the left side of the screen. This will bring up the list of available tutorials as shown in the screen shot below. This list will be expanded as new tutorials are added.

Tutorials

Here are a series of tutorials to show you different features of PC-Travel. Click on the **Play** button to load the tutorial, then click on the arrow button in the middle of the window to watch. The controls at the bottom of the tutorial window control the playback. If the window is a little small on your screen try clicking the Full Screen icon next to the Volume control.

<p>Introduction to GPS2LT2</p> <p>This tutorial shows you how to collect travel time data in the field using a GPS receiver and a laptop. (15 minutes).</p>	<div style="background-color: #003366; color: white; padding: 5px 15px; border: 1px solid #003366;">Play</div>
<p>Introduction to PC-Travel</p> <p>This tutorial shows you how to process data collected in the field and create runs, edit those runs on the map, create a study from the runs, and print reports. (25 minutes).</p>	<div style="background-color: #003366; color: white; padding: 5px 15px; border: 1px solid #003366;">Play</div>
<p>How To Add Maps to PC-Travel</p> <p>This tutorial shows you how to download free maps of your county and create a map project to use in PC-Travel. (16 minutes).</p>	<div style="background-color: #003366; color: white; padding: 5px 15px; border: 1px solid #003366;">Play</div>
<p>How To Create and Use a Study Template</p> <p>This tutorial shows you how to create and use a study template, which is a convenient way to add node names and distances to studies made with runs that don't have node information in them. (8 minutes).</p>	<div style="background-color: #003366; color: white; padding: 5px 15px; border: 1px solid #003366;">Play</div>
<p>Introduction to Mapping</p> <p>This tutorial shows you how the mapping feature in PC-Travel can be used to view and edit run data. (25 minutes).</p>	<div style="background-color: #003366; color: white; padding: 5px 15px; border: 1px solid #003366;">Play</div>
<p>New Features Added to Mapping in Version 2.2</p> <p>This tutorial shows several new features added to the mapping screen in PC-Travel. (14 minutes).</p>	<div style="background-color: #003366; color: white; padding: 5px 15px; border: 1px solid #003366;">Play</div>
<p>How To Use a GPS DataLogger with PC-Travel</p> <p>This tutorial shows how you can use a GPS DataLogger, which is a GPS receiver with solid state memory, to collect travel time data without the need for a laptop. The tutorial shows a couple of commercially available dataloggers and shows how to process the data collected with one of them. (15 minutes).</p>	<div style="background-color: #003366; color: white; padding: 5px 15px; border: 1px solid #003366;">Play</div>
<p>Windows 7 and User Access Control</p> <p>This tutorial discusses running PC-Travel under Windows 7 and how Windows UAC causes confusion saving and retrieving data files.</p>	<div style="background-color: #003366; color: white; padding: 5px 15px; border: 1px solid #003366;">Play</div>

If you are new to PC-Travel then certainly watch the first four tutorials. The first two **Introduction to ...** will give you a complete 'walkthrough' of the software so you can see the entire process.

If the section of this manual on creating map projects (pages 14-19) was confusing you can watch the **How To Add Maps To PC-Travel** tutorial which shows the entire process from start to finish.

Some clever PC-Travel users came up with the idea to create what we now call Study Templates as a way to simplify the amount of work needed to create studies in PC-Travel, especially on routes where you will collect a lot of runs and create many different studies. The **How to Create and Use a Study Template** tutorial explains how this works. This is now the recommended way to prepare run files and create studies in PC-Travel.

If have used PC-Travel version 1 and just upgraded to version 2, the two tutorials on the map will be of particular interest to you, since this is the primary difference between versions 1 and 2.

If you don't like the idea of using a laptop in a car then you might like to see how you can use GPS Dataloggers, which are GPS receivers with built in memory to store the data. You don't need a laptop with these receivers. The tutorial **How to Use a GPS DataLogger with PC-Travel** explains how this works.

If you are running Windows 7 with GPS2LT2 and/or PC-Travel then the **Windows 7 and User Access Control** tutorial will give you more information than you ever need to know about how to make programs like PC-Travel, including many other programs you may want to run, work properly. The tutorial expands on the information shown on page 9 of this manual.

If you have a topic for a future tutorial that you think would help other users, let us know.

And as always, if you have any problems or questions about the PC-Travel Software Suite, call or email us.

Field Worksheet

It is a good idea to take notes when you collect data in the field so that if there are any questions about the data when it is processed in the office there is a written record to check.

We created a simple form you can use. Feel free to come up with a version of your own.

The important section is the Runs section. If anything unusual happens during a run, such as congestion that is caused by an accident or a stalled vehicle, anything that isn't really representative of the traffic during that time, then mark it down on the form.

With version 2 of PC-Travel most users don't mark nodes in the field so there isn't any place on this form to write down the node names. If you still like to mark nodes in the field, or if you don't use GPS receivers to collect the data, then you can write the node names on the far right side of the form.

It isn't critical to get the starting time exactly right. Plus or minus a minute or so is fine. The time can be used in case there is some confusion about which direction a particular run was going. With GPS data and editing the data on a map, even this isn't really needed since it is easy to tell the direction of a particular run from the data points that are plotted on the map.

The main use of the form is for unusual events, ones that might explain data that seems odd when you are looking at it back in the office (office weeks or months after collecting the data). Keep that in mind.

On Page 23 is a form with some sample notes to give you an idea what to do. On Page 24 is a blank, full size form you can copy to use for your own studies.

Fill out the top section before you start the runs. Use one sheet for each study.

You could put a rough sketch of the route on the back of the worksheet, especially to show temporary things like work zones.

PC-Travel Field Worksheet

Location: 56th ST Date: 5-11-2011

Operator: Don

Runs:

#	Dir	Time	Comments
<u>1</u>	<u>NB</u>	<u>9:49</u>	
<u>2</u>	<u>SB</u>	<u>9:58</u>	
<u>3</u>	<u>NB</u>	<u>10:05</u>	
<u>4</u>	<u>SB</u>	<u>10:13</u>	
<u>5</u>	<u>NB</u>	<u>10:20</u>	
<u>6</u>	<u>SB</u>	<u>10:28</u>	<u>LIGHT RAIN</u>
<u>7</u>	<u>NB</u>	<u>10:35</u>	<u>"</u>
<u>8</u>	<u>SB</u>	<u>10:42</u>	<u>"</u>
<u>9</u>			
<u>10</u>			
<u>11</u>			
<u>12</u>			
<u>13</u>			
<u>14</u>			
<u>15</u>			

Notes:

LIGHT RAIN FOR LAST 3 RUNS.
DIDN'T SEEM TO AFFECT DRIVERS.

Ridge Engineering, Inc. 877-603-5844
 www.pc-travel.com

Put the direction and starting time at the beginning of each run.

Add any comments at the end of each run.

Remember: The point of the worksheet is to record what happens during the runs so the information can be entered properly and easily into the software back in the office. Also focus on items that might effect the interpretation of the data---odd traffic patterns, weather considerations, accidents, work zones, etc. Ask yourself, "What do I want to remember about these runs 6 months from now?"

PC-Travel Field Worksheet

Location: _____ **Date:** _____

Operator: _____

Runs:

#	Dir	Time	Comments
<u>1</u>	_____	_____	_____
<u>2</u>	_____	_____	_____
<u>3</u>	_____	_____	_____
<u>4</u>	_____	_____	_____
<u>5</u>	_____	_____	_____
<u>6</u>	_____	_____	_____
<u>7</u>	_____	_____	_____
<u>8</u>	_____	_____	_____
<u>9</u>	_____	_____	_____
<u>10</u>	_____	_____	_____
<u>11</u>	_____	_____	_____
<u>12</u>	_____	_____	_____
<u>13</u>	_____	_____	_____
<u>14</u>	_____	_____	_____
<u>15</u>	_____	_____	_____

Notes: