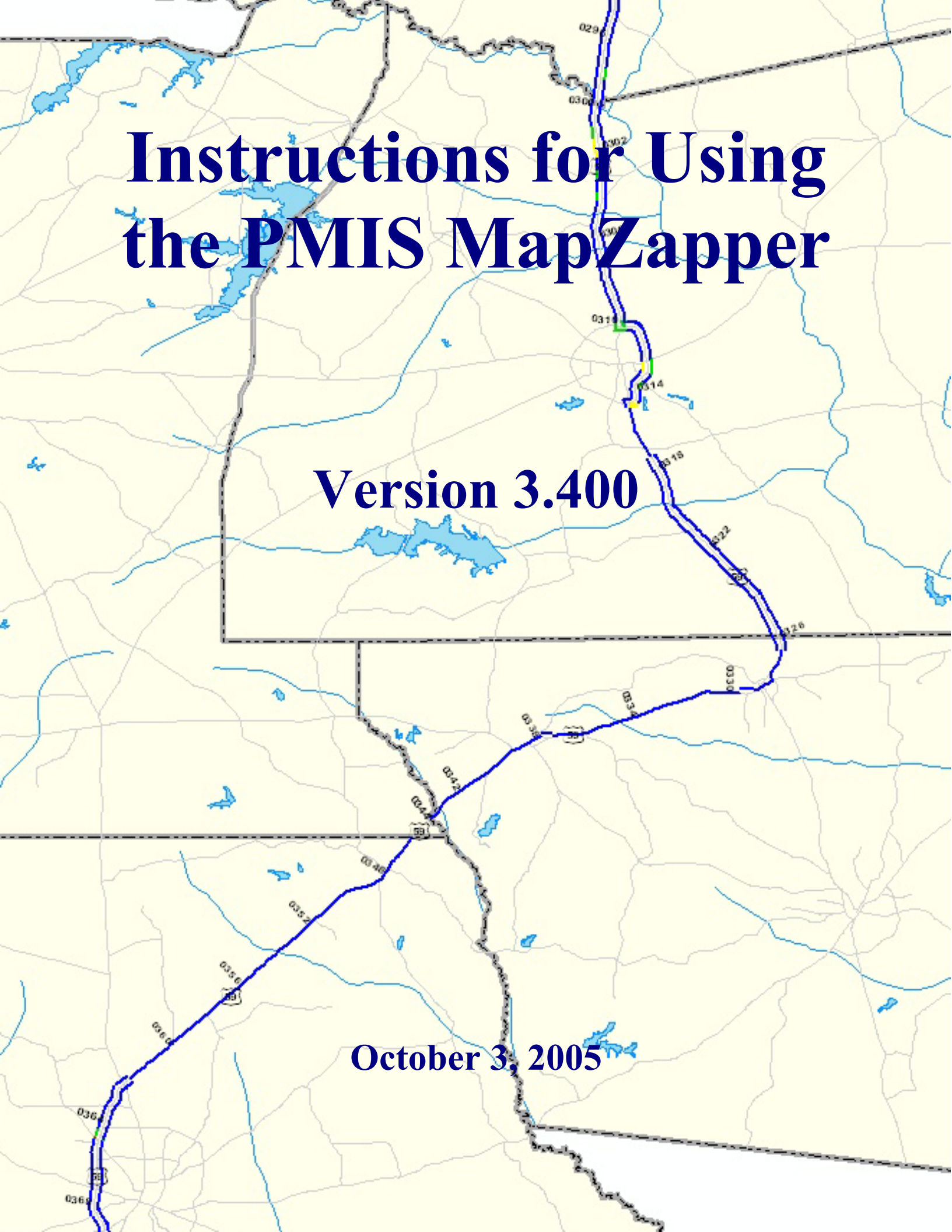


Instructions for Using the PMIS MapZapper

Version 3.400

October 3, 2005

What's New in Version 3.400?

- Makes maps of one or more districts, one or more counties, one or more maintenance sections, one or more PMIS Highway Systems, a selected highway (or part of a highway), one or more roadbeds, and one or more data types.
- PMIS Layout Maker automatically selects page orientation (portrait or landscape) depending on the orientation of the map to be printed.
- Ability to save completed project files in ArcMap (including data) for opening and reuse later without needing to reload MapZapper. The project file can be moved to any other location, so long as the associated 'geodatabase' file is moved with it.
- Fixed a 'bug' in the Utility Score Optimizer program, so that now when mainlane roadbeds are selected, the 'District' percentages will display for mainlane roadbeds only.
- Runs with ArcMap version 9.x only.

Instructions for Using the PMIS MapZapper – Version 3.400

Chapter 1 – Getting Started Using the PMIS MapZapper

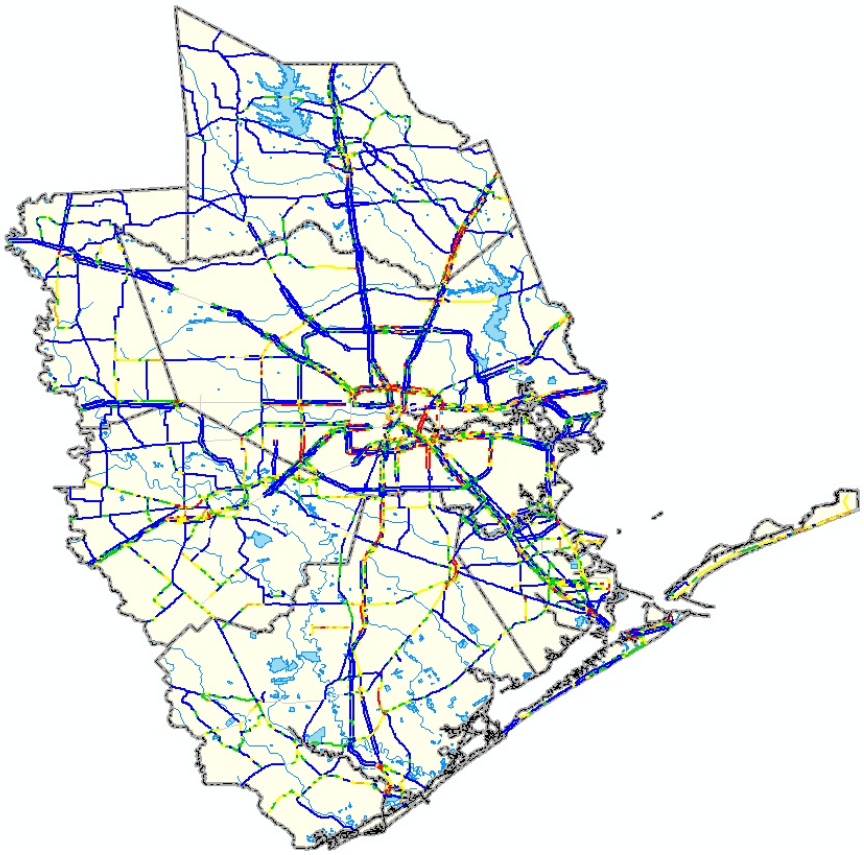
The PMIS MapZapper is a program that produces maps of PMIS data on your TxDOT workstation. You can map just about any type of data currently available in PMIS, such as pavement distress ratings (rutting, cracking, patching, failures, etc.), summary Scores (for Distress, Ride, Condition, Structural Strength, and Skid), and estimated pavement needs. You can also map basic highway inventory information such as Average Daily Traffic (ADT), 18-kip Equivalent Single Axle Loads (18-k ESALs), percent trucks and trucks per day, along with maintenance section and other inventory information. And you can map costs associated with pavement-related maintenance such as in-place base repair, seal coats, and crack sealing.

A complete list of maps that can be produced using the PMIS MapZapper is shown in Appendix A at the back of this document.

The PMIS MapZapper uses a Microsoft Windows graphical point-and-click interface to produce maps using ESRI ArcMap (version 9.x). It also provides a fully-automated way to download PMIS data from the TxDOT mainframe.

- Downloading the PMIS data must be done before any maps can be produced, however it only has to be done once (unless the PMIS data changes).

This is an example of a district map created using the PMIS MapZapper. It shows PMIS Condition Scores for an entire district, color-coded using pre-defined categories.

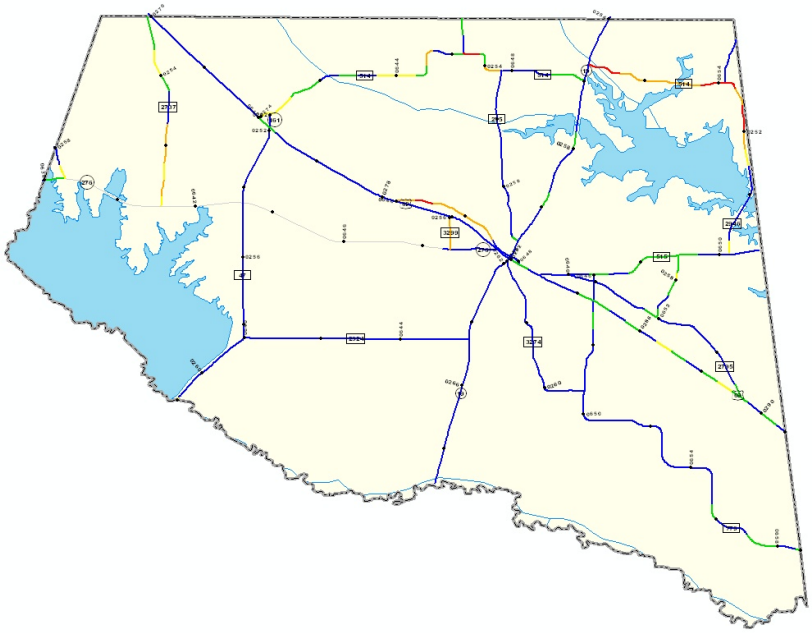


District pavement managers can use the map to identify sections in need of further study and treatment. The map can also be used to document current pavement conditions.

Producing a similar map for previous fiscal years can help document trends in condition, either overall or in a specific area.

Instructions for Using the PMIS MapZapper – Version 3.400

The PMIS MapZapper can also make county maps, to show PMIS data in more detail. County maps are helpful for studying specific projects and for data collection or testing work.



Reference Marker locations are shown by the black dots and numbers. These correspond to Reference Markers in the field. Pavement data such as distress ratings, ride quality, and summary Scores are located by Reference Marker in PMIS, so they can be tied to locations on the road.

Highway number shields, Reference Marker numbers, and Reference Marker dots are initially displayed on maps, but they can be turned off to reduce clutter.

The PMIS MapZapper also produces reports of PMIS ratings and Scores (similar to the Ratings and Scores reports on the mainframe) and raw data reports (similar to those on the mainframe). It produces charts of PMIS Scores for specific pavement sections. It also analyzes PMIS distress and ride quality data and comes up with estimated costs needed to meet the Texas Transportation Commission's goal of having 90 percent of Texas pavements in "good" or better condition by fiscal year 2012.

System and User Requirements

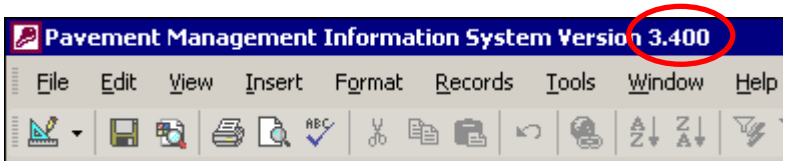
To use the PMIS MapZapper, you need to have the following:

- TxDOT-standard Windows XP workstation
- WININET.DLL file – to download PMIS data
- Active mainframe sign-on key – to download PMIS data
- Microsoft Office XP (including Microsoft Access) – for PMIS data on the workstation
- ESRI ArcMap version 9.x – to make maps
- A basic working knowledge of how to use Microsoft Windows software with a mouse or other pointing device, including use of Single-Click, Double-Click, Ctrl+Click, Shift+Click, and Right-Click actions to select options.

Instructions for Using the PMIS MapZapper – Version 3.400

Installing a New Version

Notes: If you already have a version of PMIS MapZapper (going back to version 2.202), skip this section and go to "Upgrading an Older Version (upgrade database)" for instructions on how to upgrade to version 3.400.



Where is the version number? When you start the PMIS MapZapper, the MS Access window title will change. In the upper left corner, next to the Access key icon will be the window title: "Pavement Management Information System Version" and then a number. The number is the PMIS MapZapper version number.

If you have an earlier version of the PMIS MapZapper (before 2.202), your version will not upgrade directly to 3.400 and you will need to install a full version 3.400.

To get version 3.400 of the PMIS MapZapper, follow these instructions:

1. Start Internet Explorer
2. Click in the Location blank, type **http://cst-648797-d/**, and press the **ENTER** key.
3. On the left side of the screen, under Section Branches, click PMIS
4. On the left side of the screen, under Contents, click PC Programs
5. On the left side of the screen, under PC Programs, click Map Zapper ver. 3.400
6. Internet Explorer will try to download a single executable file 'pmisdb03400.exe' to your hard drive. Use the Save As… window to navigate to a folder on your hard drive and click the Save button when you're done. Internet Explorer will save the download file and then go back to the PC Programs screen on the web page.
7. Close Internet Explorer.
8. Start Windows Explorer and navigate to the folder where you saved the download file. Right-click the 'pmisdb03400.exe' file.
9. Point to 'WinZip' on the drop-down menu.
10. Click 'Extract to here.' The PMIS MapZapper files will be copied to the folder that contains the downloaded executable file.

Your folder should have the 'pmisdb03400.exe' file and three more files:

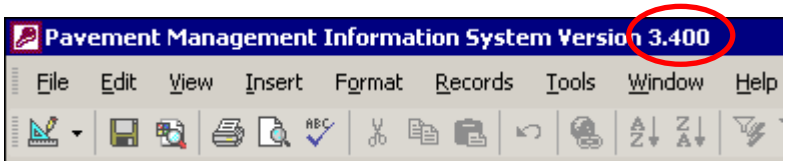
graphs.xls	An MS Excel file used to make charts of PMIS Scores (described later).
pmismzxp.mdb	An MS Access file that contains all of the PMIS MapZapper tables, queries, forms, reports, modules, and programs.
pmismzxpdata.mdb	An MS Access file that contains PMIS data downloaded from the mainframe.

You have now installed a full version 3.400 of the PMIS MapZapper and are ready to download PMIS data from the mainframe. For instructions on how to do that, go to "Chapter 2 – Downloading PMIS Data."

Instructions for Using the PMIS MapZapper – Version 3.400

Upgrading an Older Version (upgrade database)

Note: Follow these instructions only if you already have a version of PMIS MapZapper (version 2.202 or higher); otherwise go to "Getting Started (new version)" for instructions on how to install version 3.400.



Where is the version number? When you start the PMIS MapZapper, the MS Access window title will change. In the upper left corner, next to the Access key icon will be the window title: "Pavement Management Information System Version" and then a number. The number is the PMIS MapZapper version number.

To upgrade an older version of the PMIS MapZapper to 3.400, follow these instructions:

1. Start MS Access. The Microsoft Access window should appear, with the Open an Existing Database radio button selected.
2. Double-click the More Files… selection. The Open window will appear. Navigate to the folder which contains your older version of the PMIS MapZapper.
3. Double-click the 'tqfrmpxx.mdb' file. Two windows will appear: 'Database Last Update' and 'Select Options.'
4. Click the Close button on the 'Database Last Update' button.
5. Double-click Upgrade Application Software in the 'Select Options' window. The 'Database Update' window will appear. The 'Message Center' box will show the PMIS MapZapper version number. It should be 2.202 or higher. At the bottom of the window will be an Upgrade Database button in **dark blue**.
6. Click the **dark blue** Upgrade Database button to start the upgrade process. The button will change color to **dark green** and the 'Message Center' box will then show a series of messages (Upgrading… and …upgraded) as the program files are located and upgraded. This process can take 5-10 minutes, especially when upgrading from older versions, which have to load more updated files. As long as the Upgrade Database button is **dark green** the upgrade is still running. When the upgrade is finished, the 'Message Center' box will show the following message: **Upgrade completed. Your new database version is 3.400.**
7. Click the **X** (Close) button in the upper right corner of the window to close the upgrade and go back to the 'Select Options' window.

You have now completed the upgrade to PMIS MapZapper version 3.400. Your PMIS data (contained in the 'pmismzxpdata.mdb' file) has been retained. If it is current, you can skip ahead to the "Making Maps" part of this document for instructions on how to make maps. If your PMIS data is not current, go to "Chapter 2 – Downloading PMIS Data" for instructions on how to download PMIS data from the mainframe.

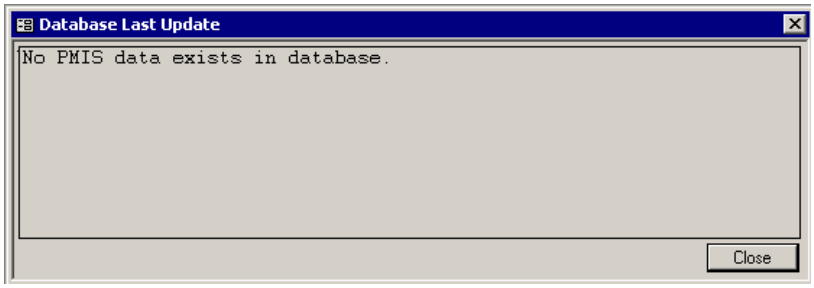
Instructions for Using the PMIS MapZapper – Version 3.400

Starting the PMIS MapZapper

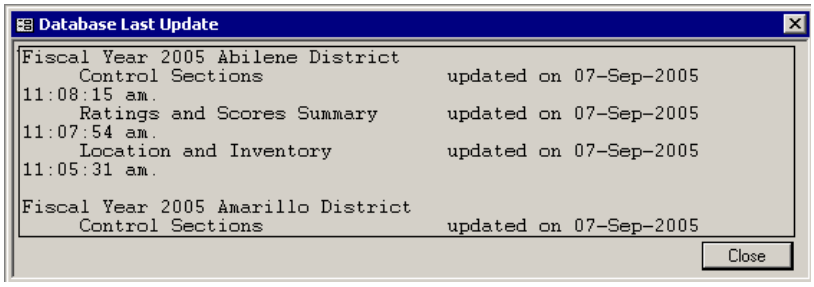
To start the PMIS MapZapper, follow these instructions:

1. Start MS Access. The Microsoft Access window should appear, with the Open an Existing Database radio button selected.
2. Double-click the More Files… selection. The Open window will appear. Navigate to the folder which contains the PMIS MapZapper.
3. Double-click the 'pmismzxp.mdb' file. Two windows will appear: 'Database Last Update' and 'Select Options.'
4. Click the Close button on the 'Database Last Update' button.

If the 'Database Last Update' window reads "No PMIS data exists in database," then you need to download some PMIS data before you can go any further. Please go to "Chapter 2 – Downloading PMIS Data" for instructions on how to download PMIS data.



If the 'Database Last Update' window contains a series of file names and dates, please check them to be sure that you have all of the PMIS data (and GIS data if you want to make maps) that you need. Also be sure to check the dates – you might want to download the data again to get more current information, or you might want to download another fiscal year.



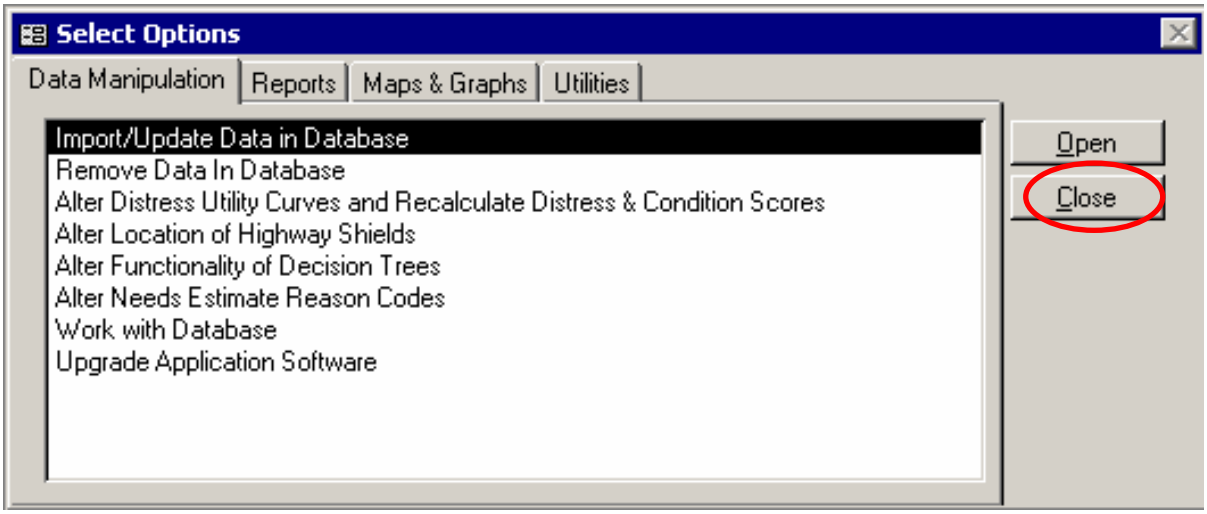
You might also want to delete data from the database to make room for more. If so, please go to the "Removing Data In Database" part of this document for instructions on how to remove PMIS (and other) data from the MapZapper database.

Stopping the PMIS MapZapper

To stop (or close) the PMIS MapZapper, follow these instructions:

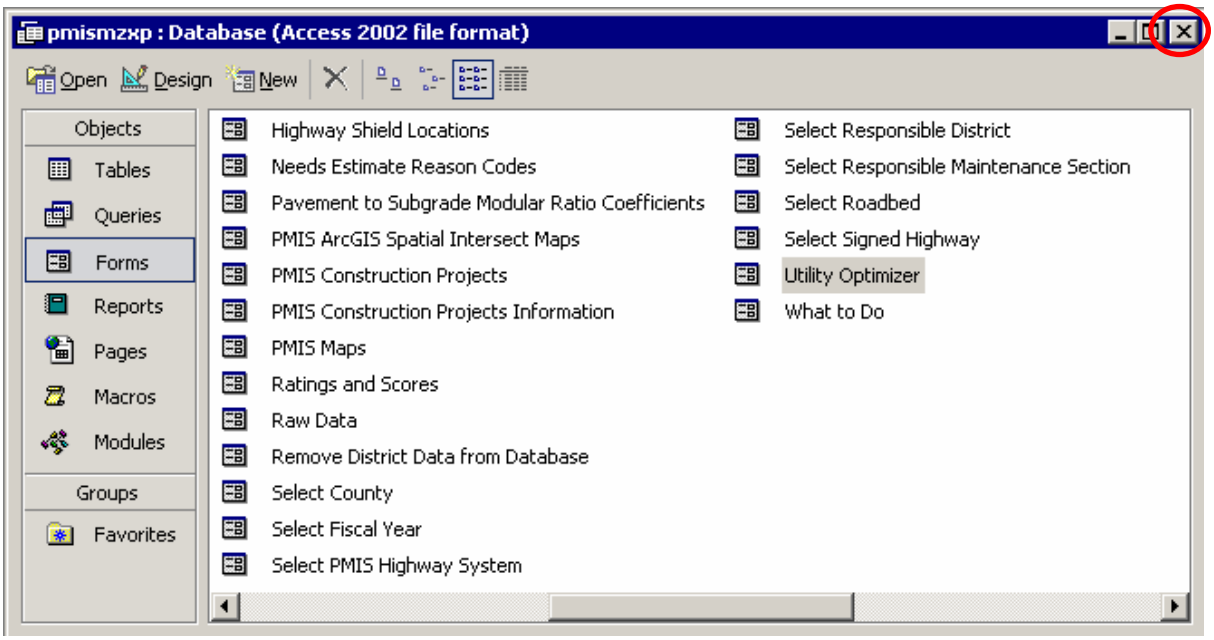
If you are at the Select Options window –

1. Click the Close button on the form. The PMIS MapZapper will close down. If you also want to close Microsoft Access, click the **X** (Close) button in the upper right corner of the Microsoft Access window and Access will close down.



If you are at the Work With Database window (pmismzxp : Database) –

1. Click the **X** (Close) button in the upper right corner of the window. The PMIS MapZapper will close down.



If you are at any other window –

1. Click the **X** (Close) button in the upper right corner of the window. The Select Options window will reappear. Then click the **X** (Close) button in the upper right corner of the Select Options window to close the PMIS MapZapper.

Chapter 2 – Downloading PMIS Data

The PMIS MapZapper uses PMIS data downloaded from the TxDOT mainframe computer. In fact, the MapZapper stores exact copies of the mainframe database files – every record and every field are downloaded. What this means is that you can run Microsoft Access queries to retrieve any kind of PMIS data directly from your workstation, instead of having to learn how to write mainframe computer programs. Even if you don't (or can't) make GIS maps, the ability to query PMIS data makes the MapZapper program very useful.

For users who are new to PMIS, here is an overview of the PMIS data collection process, to help determine when PMIS needs to be downloaded.

Overview of the PMIS Data Collection Process

PMIS data collection begins at the start of the TxDOT fiscal year, September 1. A 'PMIS year' is the same as the TxDOT fiscal year.

PMIS contains data from six different pavement surveys:

- Visual – visual distress survey, rated by certified pavement raters
- Ride – ride quality, measured by calibrated electronic equipment ("Profiler/Rutbar")
- Rut – asphalt rutting, measured by calibrated electronic equipment ("Profiler/Rutbar")
- Texture – surface texture, measured by calibrated electronic equipment ("Profiler/Rutbar")
- Skid – surface friction, measured by calibrated locked-wheel skid trailers
- Deflection – pavement deflection, measured by calibrated Falling Weight Deflectometers.

Visual distress surveys are usually done between September and December of each year. Ride and Rut measurements are usually done between September and February of each year. Texture will be measured in selected districts beginning in FY 2006 (or later) at the same time as Ride and Rut, with the hopes that it will eventually replace most locked-wheel Skid testing. Skid is measured between April and August of each year. Deflection is measured year-round, as needed, especially on candidate rehabilitation projects.

This means that PMIS data changes periodically throughout the fiscal year. In general, though, the main PMIS data types – visual, ride, and rut – will be finished by December, January, or February. You can download current fiscal year data before then, but it might not be complete, depending on how quickly PMIS data is stored for your district. The PMIS MapZapper can be used to track the status of the data collection surveys by periodically downloading data and running any of the various 'Status' maps (for example, the 'Status of Visual Ratings' map).

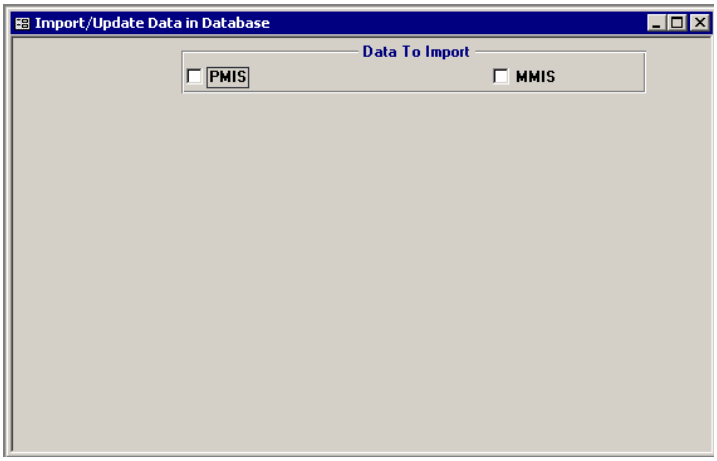
You can download previous years' data at any time, though, and it will be complete.

Instructions for Using the PMIS MapZapper – Version 3.400

Instructions for Downloading PMIS Data

To download PMIS data, start the MapZapper (using the instructions given in "Starting the PMIS MapZapper") and then follow these instructions:

1. Click the Data Manipulation tab, and then double-click 'Import/Update Data in Database.' The 'Data Update' window will appear.



The PMIS MapZapper can download PMIS and MMIS data from the mainframe to the workstation. These types of data are described below:

PMIS Data

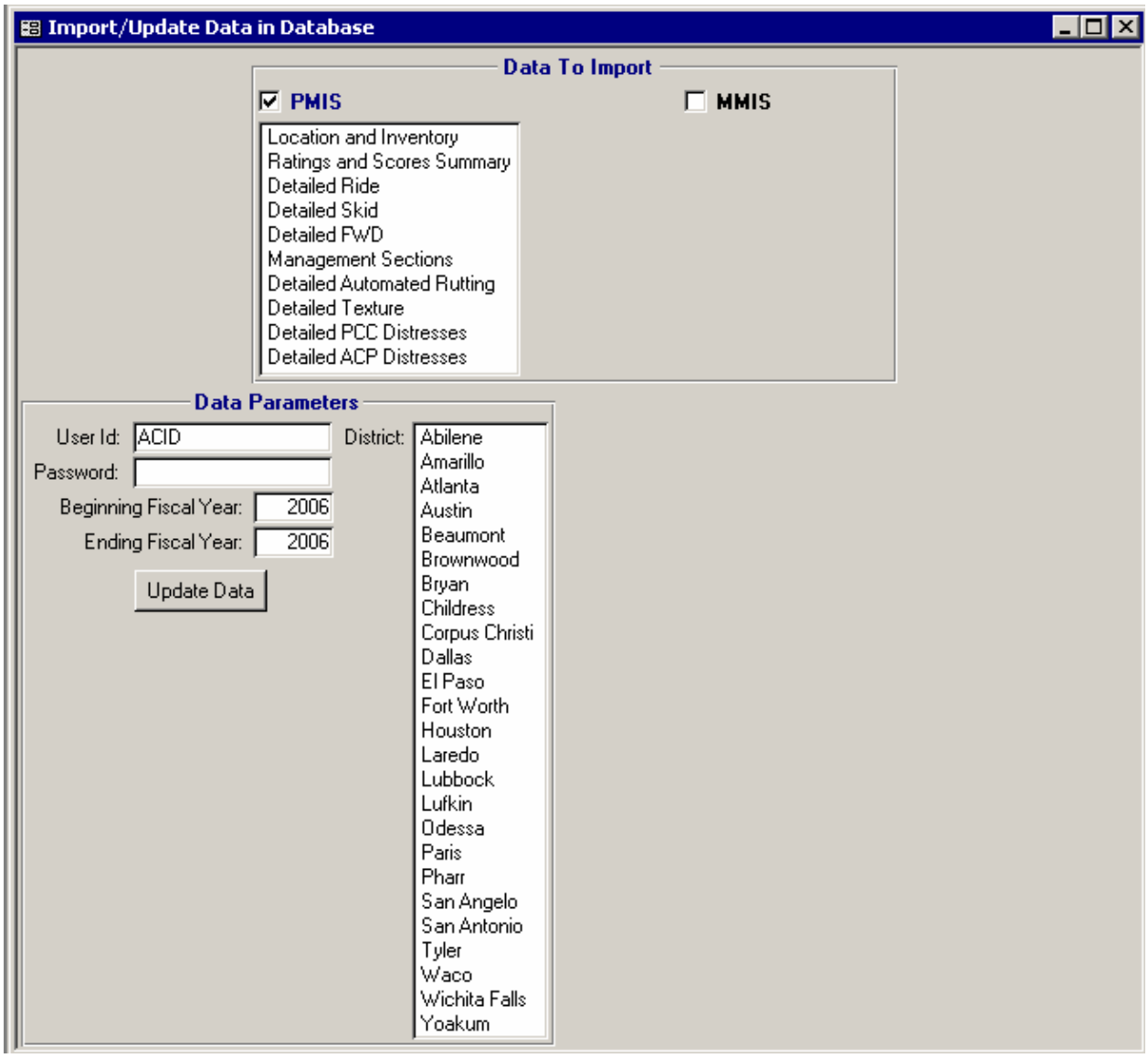
- Location and Inventory – Basic PMIS highway, Reference Marker, traffic, and other information. Downloads automatically when 'PMIS Data' is selected.
- Ratings and Scores Summary – PMIS Distress ratings and all PMIS Scores.
- Detailed Ride – Raw Ride and IRI data, typically stored at 0.1-mile intervals. Also downloads 'Location and Inventory' and 'Ratings and Scores Summary' files for database integrity.
- Detailed Skid – Raw Skid data, typically stored at 0.5-mile intervals. Also downloads 'Location and Inventory' and 'Ratings and Scores Summary' files for database integrity.
- Detailed FWD – Raw Deflection data, typically stored at 0.5-mile intervals. Also downloads'Location and Inventory' and 'Ratings and Scores Summary' files for database integrity.
- Management Sections – PMIS-defined Management Sections, meant to resemble candidate projects made up of one or more 0.5-mile PMIS Data Collection Sections.
- Detailed Automated Rutting – Raw Rut data, typically stored at 0.1-mile intervals. Also downloads'Location and Inventory' and 'Ratings and Scores Summary' files for database integrity.
- Detailed Texture – Raw Texture data, typically stored at 0.1-mile intervals. Also downloads'Location and Inventory' and 'Ratings and Scores Summary' files for database integrity.

MMIS Data

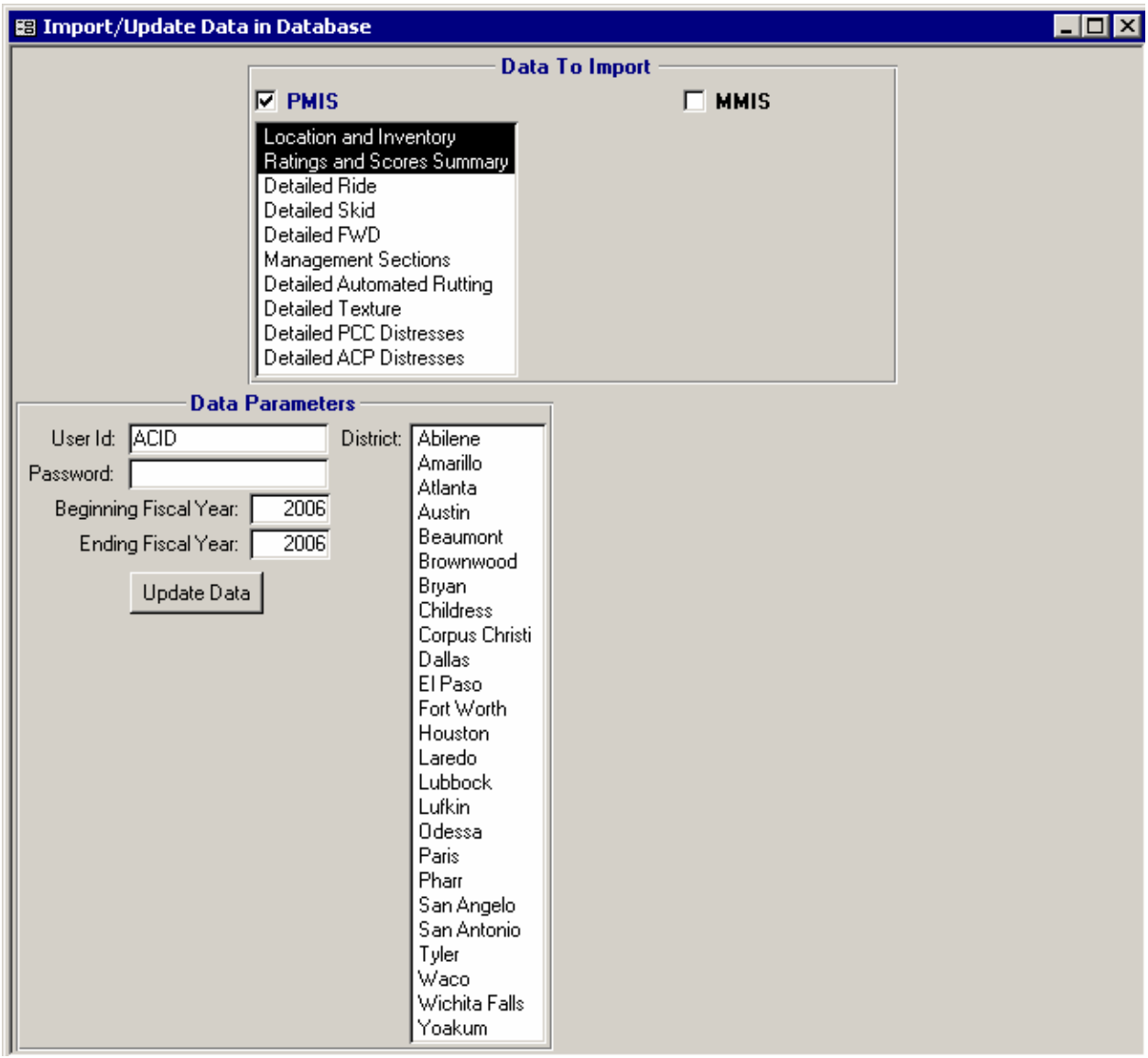
- Pavement Expenditures – Total dollars spent on various types of pavement-related maintenance work (such as in-place base repair, pothole patching, or crack sealing).

Please Note: GIS data for the maps does not have to be specifically downloaded. It will download automatically into the PMIS MapZapper's 'pmistarhegeodb.mdb' file.

2. Click one or both of the check boxes at the top of the form (underneath the 'Data to Import' label) to select types of data to be downloaded. For example, to download PMIS data, click the 'PMIS' box, as shown below:



3. Click the types of files in each box to be downloaded. The typical download for making maps of PMIS data is to click the 'Location and Inventory,' and 'Ratings and Scores Summary,' as shown below:



If you want to make maps of raw data, be sure to also click one or more of the 'Detailed' PMIS file types.

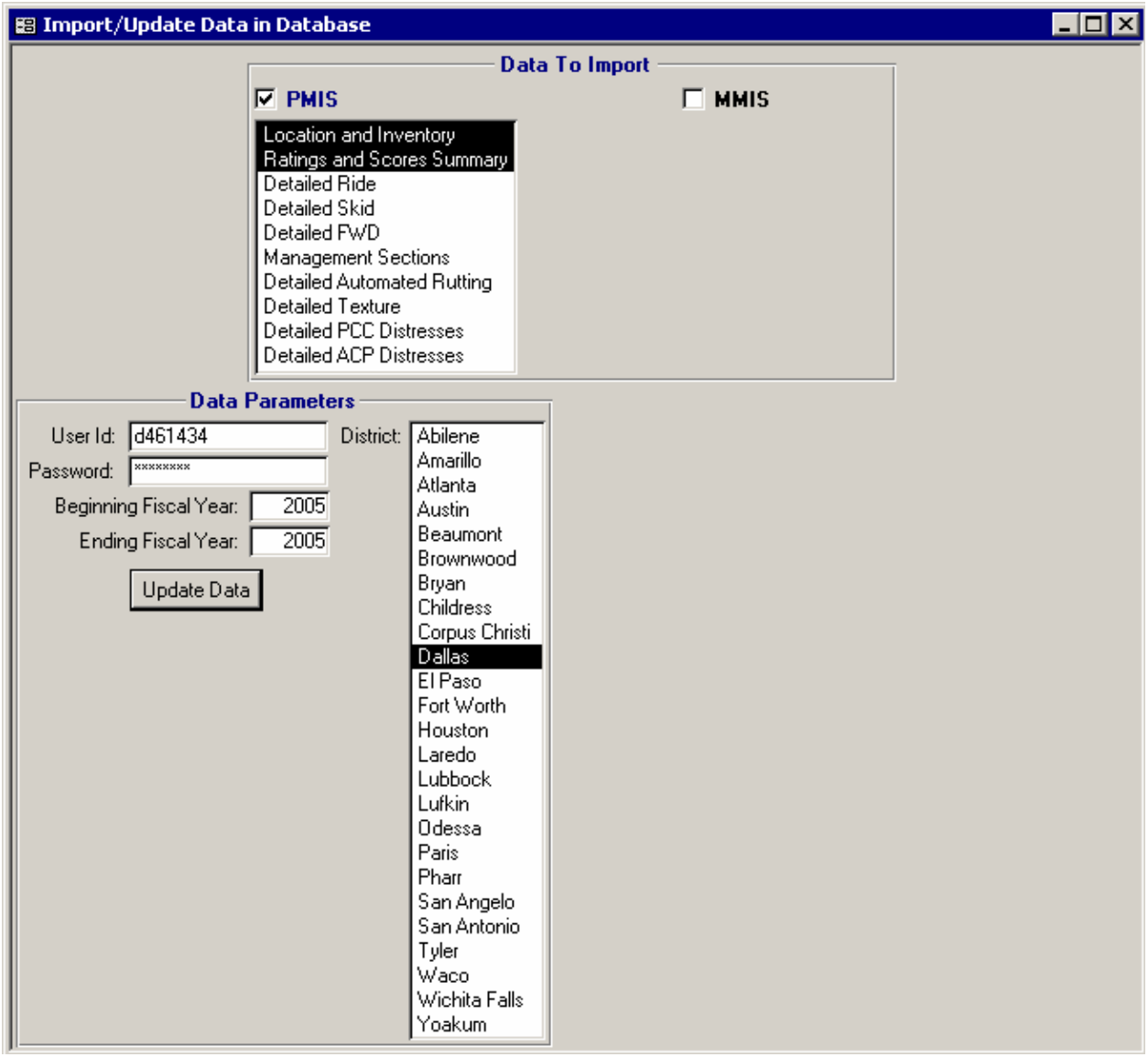
The file types toggle on and off, so clicking a file type the first time turns it on (to be downloaded) and clicking a second time turns it off (not to be downloaded).

Please Note: When downloading PMIS data at the beginning of the current fiscal year, it is a good idea to click only the 'Location and Inventory' file – the 'Ratings and Scores Summary' file will be empty because no data has been stored.

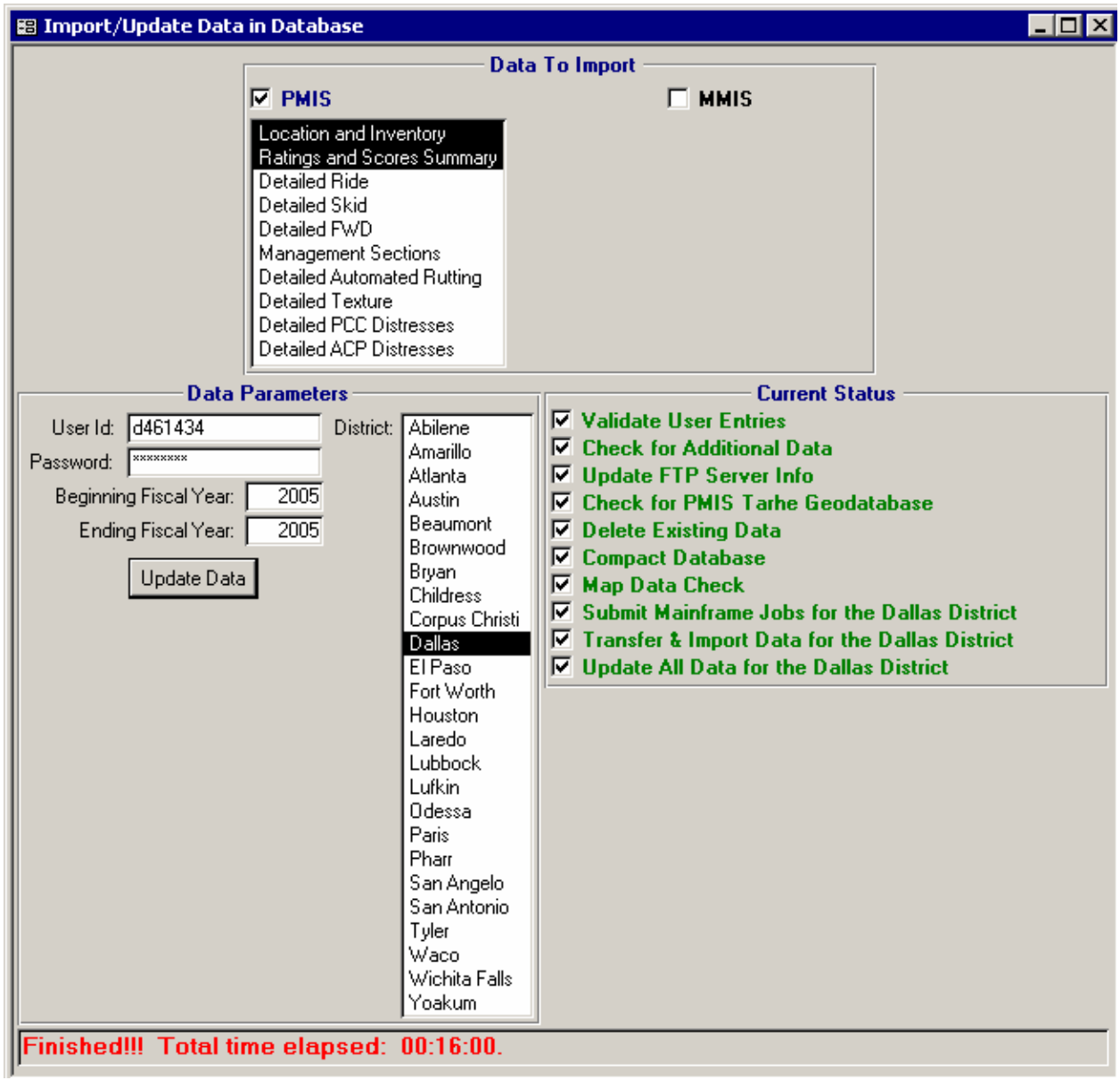
4. Now go to the 'Data Parameters' area. Click in the 'User Id' box and enter your mainframe sign-on key (not the same as your network logon name). Then click in the 'Password' box and enter your mainframe sign-on password. Your mainframe sign-on key will be retained but your password will not be, for security reasons. Then click in the 'Beginning Fiscal Year' box. You can download more than one year of PMIS data at a time by entering different numbers in the 'Beginning Fiscal Year' and 'Ending Fiscal Year' boxes. The 'Beginning Fiscal Year' must be less than or equal to the 'Ending Fiscal Year.'

   You can download data for more than one district at the same time by clicking each district in the 'District' box. The district names toggle on and off, so clicking a district name the first time turns it on (to be downloaded) and clicking a second time turns it off (not to be downloaded).

   For example, to download FY 2005 PMIS data for the Dallas district, fill out the Data Update form as shown below, and then click the 'Update Data' button:



The program will validate your entries and show error messages (that must be fixed) if anything is wrong. Then it will connect to the mainframe using your sign-on key and password, write and run a series of mainframe programs to get the data files to be downloaded, and then download those files using file transfer protocol (FTP). The program will then import those files into a series of Microsoft Access tables that have already been built in your 'pmismzxpdata.mdb' file. A series of status messages will appear in the box at the bottom of the window, and a series of 'Current Status' check boxes will appear on the right side of the window.



Please be patient while the download program runs. Under normal circumstances, it should take about five minutes to download a single year's worth of PMIS data for one district, but it can take longer – as in this example - when the mainframe is very busy (for example, during payroll at the first of the month, or during construction letting).

Very Important Download Note!!!

If the download program should "hang-up" unexpectedly, you can stop it by pressing <Ctrl>+<Break> (that is, by holding down the Ctrl key, pressing the Break key, and then releasing the Ctrl key). That will stop the program and let you go to another task.

DO NOT press <Ctrl>+<Alt>+<Del>, or use the Windows XP Task Manager, or turn the computer off to stop the download program. These methods will suspend the mainframe download files and cause them to remain 'in-use.' You will not be able to download any more data until these 'in-use' files are purged from the mainframe.

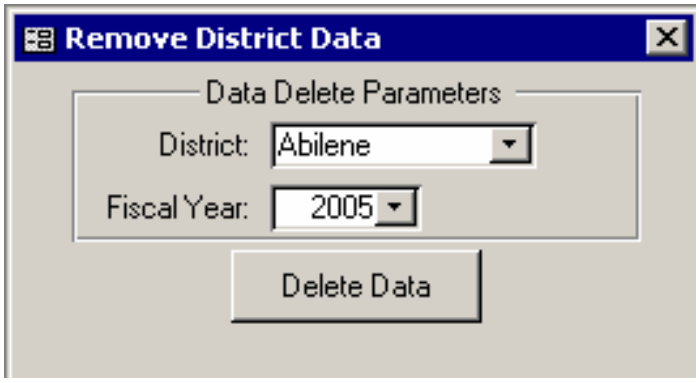
5. Click the **X** (Close) button in the upper right corner of the window to close the window and go back to the 'Select Options' window.

Removing Data in Database

Over time you might build up several years' worth of PMIS data in the MapZapper database. This will make the program run more slowly because it has to search through more data to find what it needs. To free up space and make the program run faster, you can remove "old" data from the database. This will not delete data from the mainframe, though, so you could download the data again later.

To remove PMIS (and other) data from the MapZapper database, follow the instructions below:

1. Start the PMIS MapZapper, if you have not already done so, and get to the 'Select Options' window.
2. Click the Data Manipulation tab, and then double-click 'Remove Data In Database.' The 'Remove District Data' window will appear.



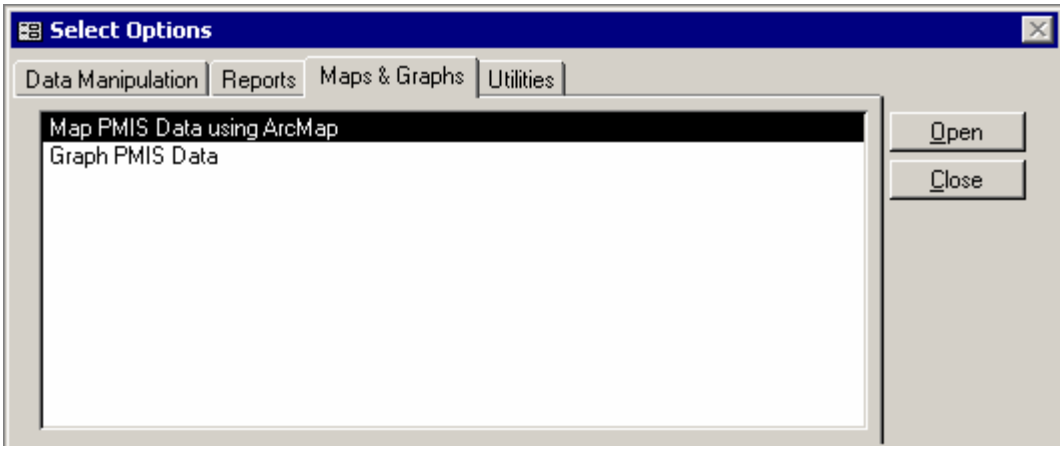
3. Use the 'District' and 'Fiscal Year' drop-down boxes to select the district and fiscal year of the data that you want to remove. You can only remove one district and fiscal year at a time.
4. Click the Delete Data button. A confirmation box will appear, asking if you really want to delete the data. If you want to stop, click the 'No' button to go back to Step 3; otherwise click the 'Yes' button to begin deleting the data. The MapZapper will delete all PMIS, TPP, and MMIS data files for the selected district and fiscal year. It will also delete all map geodatabase data for that district. There is no confirmation message when the deletion is finished, **except** if there is no more data to delete, in which case a 'Warning! Warning!' box will appear (as shown here). Click 'OK' to get rid of this box.

5. If you want to remove another district and fiscal year, go back to step 3; otherwise click the **5** (Close) button in the upper right corner of the window to close the window and go back to the 'Select Options' window.

Chapter 3 – Making Maps

To make maps of PMIS data, follow the instructions below:

1. Start the PMIS MapZapper, if you have not already done so, and get to the 'Select Options' window.



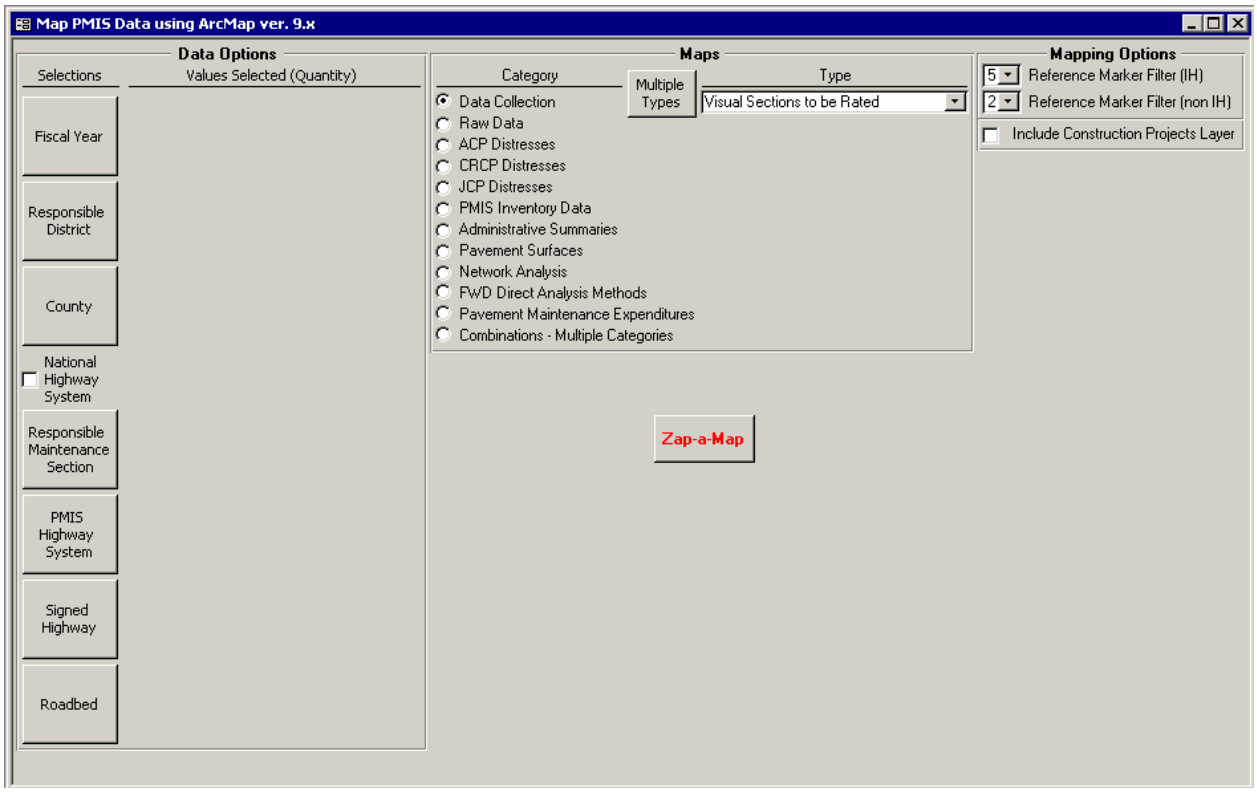
2. Click the Maps & Graphs tab. Two options are available, as shown below:

   - **Map PMIS Data using ArcMap** makes maps of PMIS data using ESRI ArcMap GIS software (version 9.x). ArcMap is the currently accepted TxDOT program for making GIS maps.
   - **Graph PMIS Data** produces line charts of PMIS Scores for selected highways. For more information on this option, please go to the "Graph PMIS Data" section of this document.

Very Important Note!!!

Creating maps in Version 3.400 is substantially different than in prior versions of the PMIS MapZapper. Prior versions only allowed maps of a single county or a single district. Version 3.400 lets you make maps of one or more districts, one or more counties, one or more maintenance sections, one or more PMIS Highway Systems, a selected highway (or part of a highway), one or more roadbeds, and one or more data types.

3. Double-click 'Map PMIS Data using ArcMap.' The 'Map PMIS Data using ArcMap ver. 9.x' window will appear:



This window is divided into three areas: 'Data Options,' 'Maps,' and 'Mapping Options.'

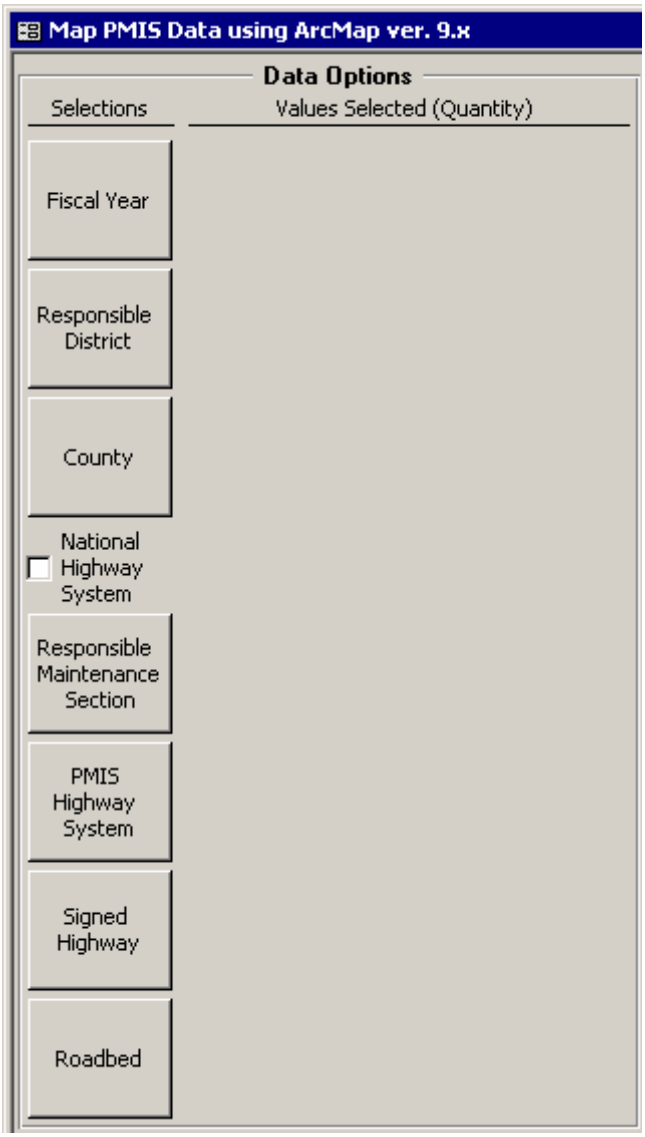
- **Data Options** controls which data are to be put onto the map (for example, one district or two counties or three PMIS Highway Systems). This is the most significant change in Version 3.400.
- **Maps** shows the types of maps that can be produced. You can pick one or more map types (for example, Distress Score, Ride Score, and Condition Score).
- **Mapping Options** controls the display of Reference Markers and Construction Projects (from the PMIS Utility Score Optimizer) on the map.

Note for Users of Previous Versions: The options for 'Soils Layer' and 'City Limits Layer' no longer appear because they are included in each map automatically. The option for 'Rating Cycle' now appears whenever a map type is selected.

The following pages explain how to use the 'Data Options,' 'Maps,' and 'Mapping Options' areas to make maps.

'Data Options' – Selecting Data to Put on the Map

The 'Data Options' area lets you select which data to put on the map (for example, one or more districts, one or more counties, one or more maintenance sections, etc.).



To use the 'Data Options' area, follow these steps:

4. Click the 'Fiscal Year' button. Click one of the fiscal years in the list (FY 2005 in this example, below).

5. Click the 'Finished' button to make the box go away.

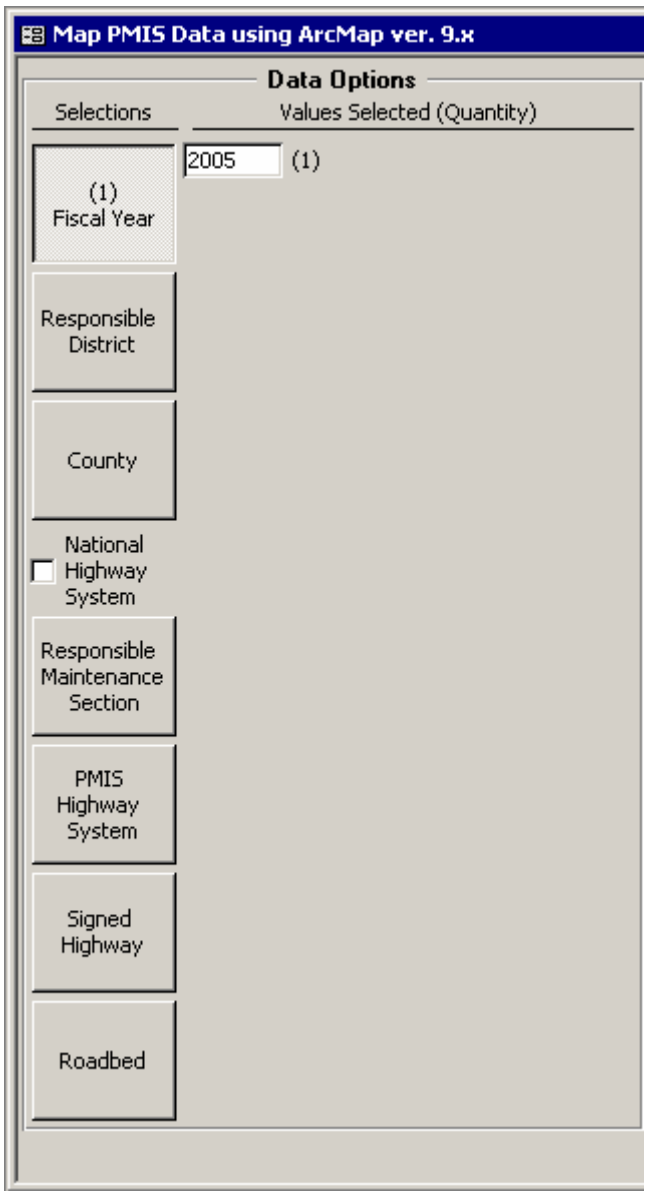
It is not possible to select multiple fiscal years, even if you have data downloaded for them. The box will go away and '2005' will show up next to the 'Fiscal Year' button to indicate that it has been selected. The '(1)' next to the box shows that it was the first item selected.

Fiscal Year **must always** be the first item selected.

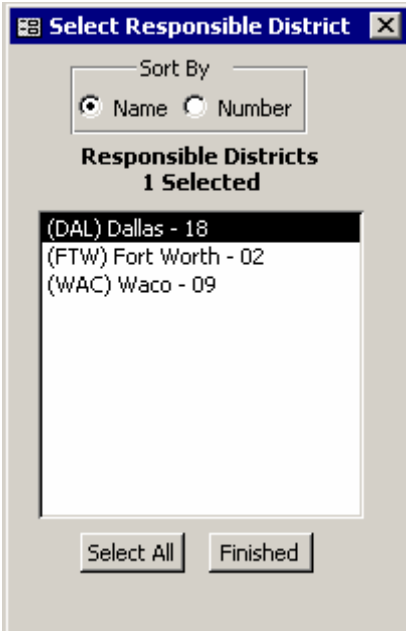
The next six buttons in the 'Data Options' area – 'Responsible District,' 'County,' 'Responsible Maintenance Section,' 'PMIS Highway System,' 'Signed Highway,' and 'Roadbed' – allow single or multiple selections. They can also be selected in combination (for example, the mainlane roadbeds of an Interstate highway in two or more counties).

The 'National Highway System' (NHS) check box (between 'County' and 'Responsible Maintenance Section') lets you restrict the map to NHS sections only.

The next six pages explain how to use these buttons in the 'Data Options' area.



To Select a Single District:



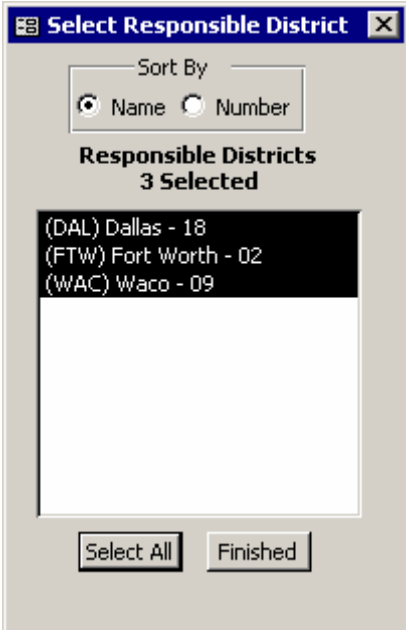
- Click the 'Responsible District' button. The box will list all districts that you have downloaded for the previously-selected Fiscal Year.
- Click a single district.

You can click the 'Name' or 'Number' radio buttons in the 'Sort By' area to sort the districts by name or number, respectively. Sort by 'Name' is the default.

- Click the 'Finished' button to make the box go away.

This example shows Dallas district selected.

To Select Multiple Districts:



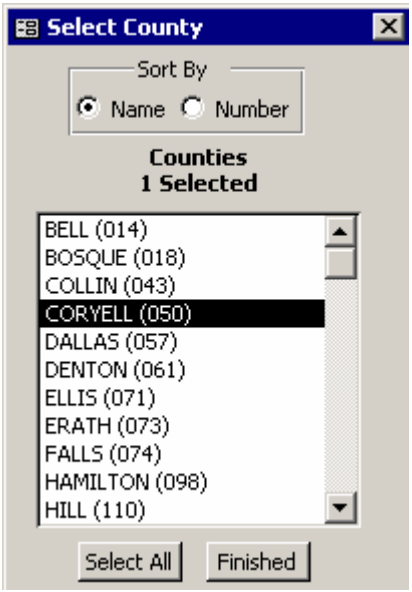
- Click the 'Responsible District' button. The box will list all districts that you have downloaded for the previously-selected Fiscal Year.
- Click more than one district, either one at a time or by using the Shift+Click combination to select districts that are adjacent on the list (for example, Dallas and Fort Worth).

You can click the 'Name' or 'Number' radio buttons in the 'Sort By' area to sort the districts by name or number, respectively. Sort by 'Name' is the default.

- Click the 'Select All' button to choose all of the available districts (in this example, Dallas, Fort Worth, and Waco).
- Click the 'Finished' button to make the box go away.

This example shows Dallas, Fort Worth, and Waco districts selected.

To Select a Single County:



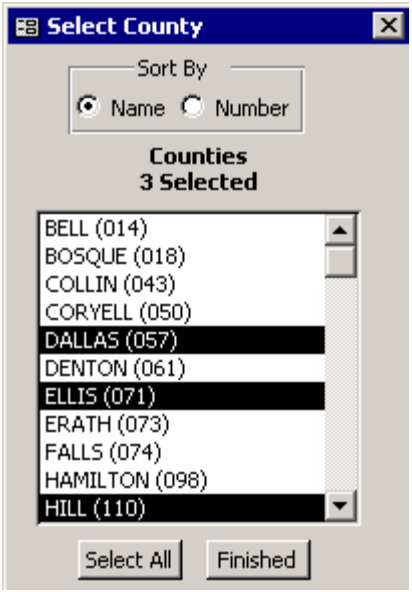
- Click the 'County' button. The box will list all counties that you have downloaded for the previously-selected Fiscal Year. If you have downloaded data for more than one district, this will be a very long list.
- Click a single county.

You can click the 'Name' or 'Number' radio buttons in the 'Sort By' area to sort the counties by name or number, respectively. Sort by 'Name' is the default.

- Click the 'Finished' button to make the box go away.

This example shows Coryell county selected.

To Select Multiple Counties:



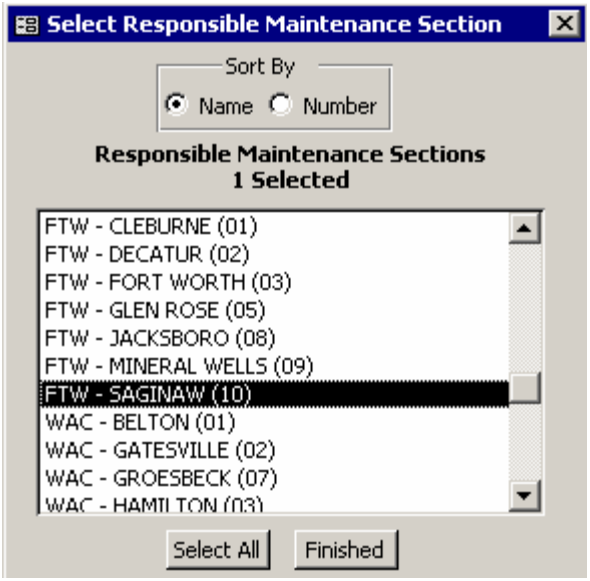
- Click the 'County' button. The box will list all counties that you have downloaded for the previously-selected Fiscal Year. If you have downloaded data for more than one district, this will be a very long list.
- Click more than one county, either one at a time or by using the Shift+Click combination to select counties that are adjacent on the list (for example, Bell and Bosque).

You can click the 'Name' or 'Number' radio buttons in the 'Sort By' area to sort the counties by name or number, respectively. Sort by 'Name' is the default.

- Click the 'Select All' button to choose all of the available counties.
- Click the 'Finished' button to make the box go away.

This example shows Dallas, Ellis, and Hill counties selected.

To Select a Single Maintenance Section:



- Click the 'Responsible Maintenance Section' button. The box will list all maintenance sections that you have downloaded for the previously-selected Fiscal Year. If you have downloaded data for more than one district, this will be a very long list.

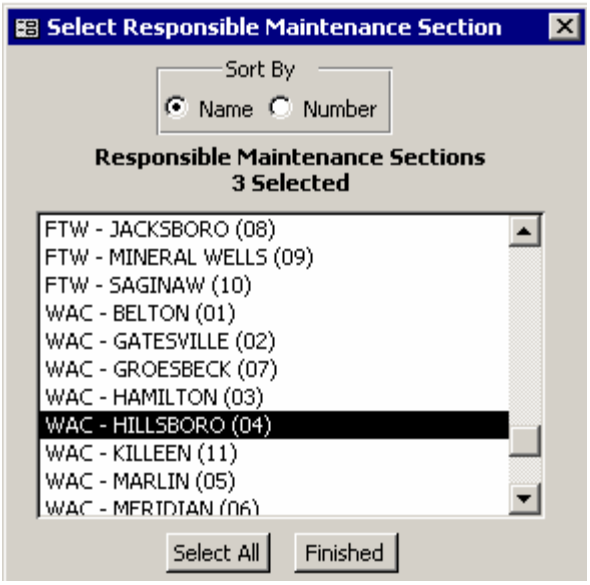
- Click a single maintenance section.

You can click the 'Name' or 'Number' radio buttons in the 'Sort By' area to sort the maintenance sections by name or number, respectively. Sort by 'Name' is the default.

- Click the 'Finished' button to make the box go away.

This example shows Saginaw maintenance section selected.

To Select Multiple Maintenance Sections:



- Click the 'Responsible Maintenance Section' button. The box will list all maintenance sections that you have downloaded for the previously-selected Fiscal Year. If you have downloaded data for more than one district, this will be a very long list.

- Click more than one maintenance section, either one at a time or by using the Shift+Click combination to select maintenance sections that are adjacent on the list (for example, Saginaw and Belton).

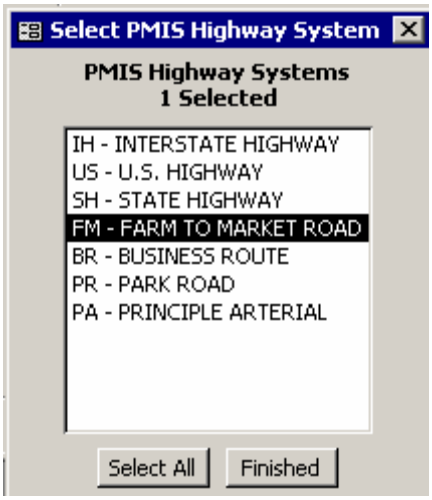
You can click the 'Name' or 'Number' radio buttons in the 'Sort By' area to sort the maintenance sections by name or number, respectively. Sort by 'Name' is the default.

- Click the 'Select All' button to choose all of the available maintenance sections.

- Click the 'Finished' button to make the box go away.

This example shows the Waxahachie, Cleburne, and Hillsboro maintenance sections selected.

To Select a Single PMIS Highway System:



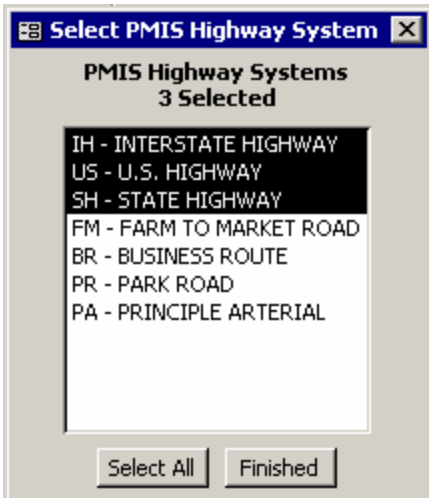
- Click the 'PMIS Highway System' button. The box will list all PMIS Highway Systems that you have downloaded for the previously-selected Fiscal Year.
- Click a single PMIS Highway System.

PMIS Highway System values are sorted in order of importance to the overall TxDOT-maintained network.

- Click the 'Finished' button to make the box go away.

This example shows the FM system selected. This selection will include FM, RM, RR, FS, RS, and RU routes.

To Select Multiple PMIS Highway Systems:



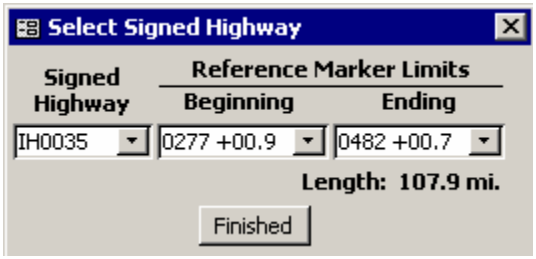
- Click the 'PMIS Highway System' button. The box will list all PMIS Highway Systems that you have downloaded for the previously-selected Fiscal Year.
- Click more than one PMIS Highway System, either one at a time or by using the Shift+Click combination to select counties that are adjacent on the list (for example, FM and BR).

PMIS Highway System values are sorted in order of importance to the overall TxDOT-maintained network.

- Click the 'Select All' button to choose all of the available counties.
- Click the 'Finished' button to make the box go away.

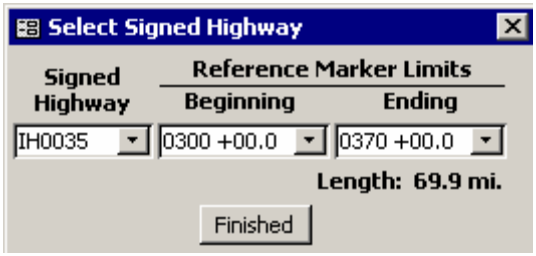
This example shows the IH, US, and SH systems selected. This selection will include the following types of routes: IH, US, UA, UP, SH, SL, SA, and SS.

To Select a Single Highway:



- Click the 'Signed Highway' button. The box will list all of the highways that you have downloaded for the previously-selected Fiscal Year. Even for a single district, this will be a very long list.
- Click a single Signed Highway in the 'Signed Highway' drop-down list. This example shows IH 35 in the Dallas, Fort Worth, and Waco districts (which were downloaded previously). Please note that this does not include IH 35E and IH 35W – they are separate highways.

The Signed Highway values are sorted alphabetically, so Business Routes show up at the top and US highways show up at the bottom.



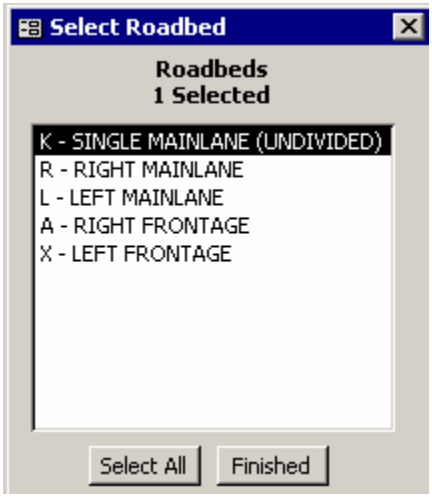
- Click the 'Beginning' and 'Ending' drop-down boxes to select only a part of the Signed Highway. The "part" of the Signed Highway can cross county lines or even district lines. This example shows a part of IH 35 from Reference Marker 300 (Bell County) to Reference Marker 370 (Hill County). The 'Length' line below the 'Ending' drop-down box shows that the selected part of IH 35 is 69.9 miles long.
- Click the 'Finished' button to make the box go away.

To Select Multiple Highways:

It is not possible to select multiple highways in the MapZapper at this time, but you can make a map with all of the highways and then go into ArcMap and filter down to only those highways that you want.

This problem comes up most often when dealing with highways that have very long concurrencies. For example, to get all of "US 287" in the Wichita Falls district, the map would need to include parts of IH 44, US 81, and US 82, along with US 287.

To Select a Single Roadbed:



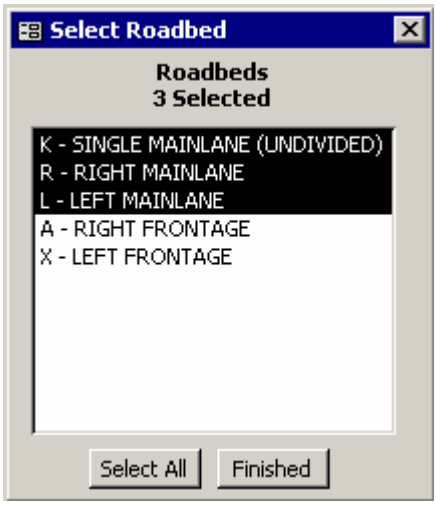
- Click the 'Roadbed' button. The box will list all roadbeds that you have downloaded for the previously-selected Fiscal Year.
- Click a single Roadbed.

Roadbed values are sorted in order of undivided first, then mainlanes, then frontage roads.

- Click the 'Finished' button to make the box go away.

This example shows Roadbed 'K' (single mainlane – undivided) selected.

To Select Multiple Roadbeds:



- Click the 'Roadbed' button. The box will list all roadbeds that you have downloaded for the previously-selected Fiscal Year.
- Click more than one Roadbed, either one at a time or by using the Shift+Click combination to select Roadbeds that are adjacent on the list (for example, A and X).
- Click the 'Select All' button to choose all of the available roadbeds.
- Click the 'Finished' button to make the box go away.

This example shows how to select mainlanes only (Roadbeds 'K,' and 'R,' 'L').

This is the end of the instructions on how to use the 'Data Options' area.

'Maps' – Selecting the Type of Map to Make

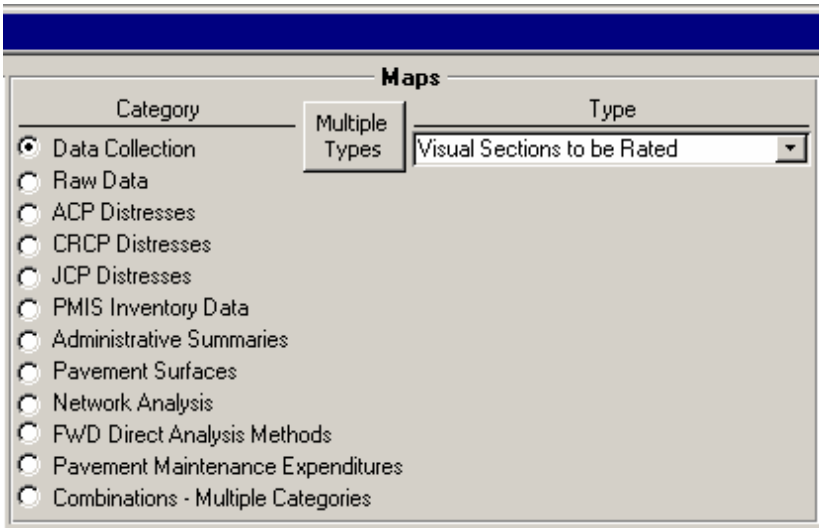
The 'Maps' area lets you put one or more types of data on a map (for example, Shallow Rutting; or Distress Score, Ride Score, and Condition Score).

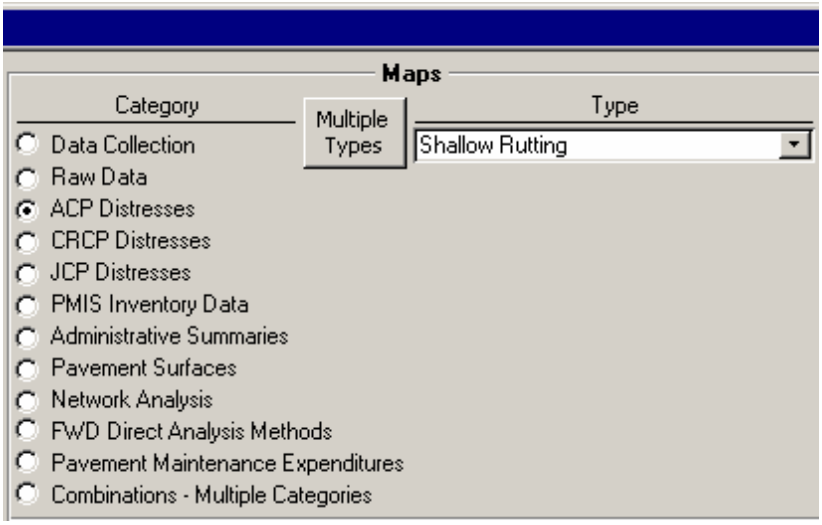
To use the 'Maps' area, follow these steps:

6. Click on one of the 'Category' radio buttons to pick the general type of map to make. Appendix A lists all of the map categories and which maps are in each category.

- To put one type of data on a map, click the arrow in the 'Type' drop-down box and click a type of data in the list.

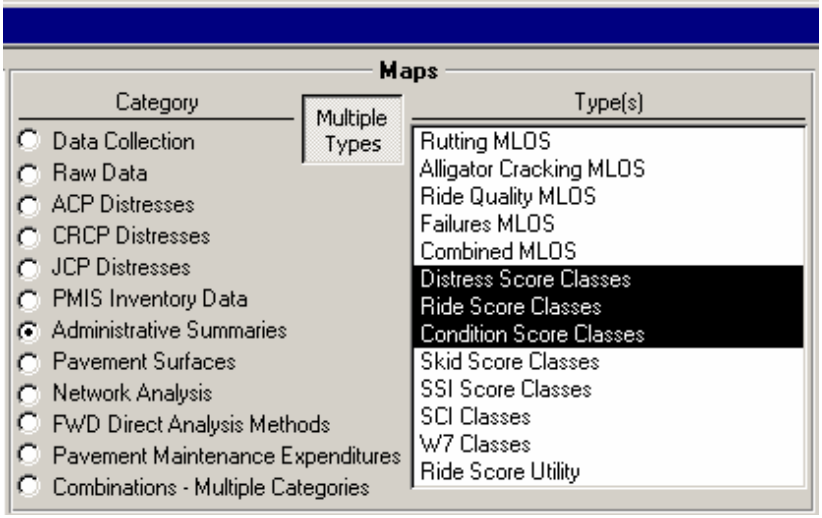
This example shows Shallow Rutting selected.



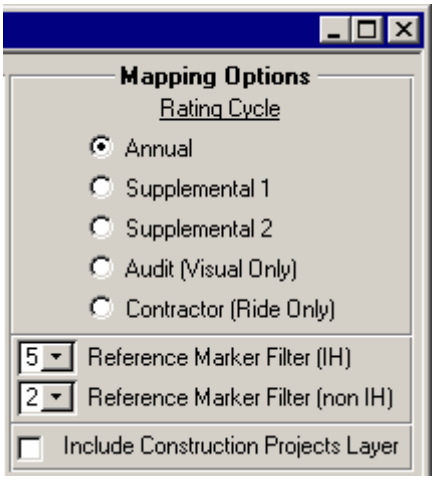


- To put more than one type of data on a map, click the 'Multiple Types' button and then click types of data from the 'Type' drop-down list. Use Shift+Click to select adjacent data types. Use Ctrl+Click to select non-adjacent data types.

This example shows Distress Score, Ride Score, and Condition Score selected.



'Mapping Options' – Displaying Reference Markers and Construction Projects



The 'Mapping Options' area lets you control Reference Marker placement and the display of construction projects (from the PMIS Utility Score Optimizer) on the map. It also controls the 'Rating Cycle' of PMIS data on the map.

To use the 'Mapping Options' area, follow these steps:

7. Click one of the 'Rating Cycle' radio buttons. 'Rating Cycle' describes the purpose of the PMIS data, as listed below:

+ **Annual –** The 'basic' (or first) PMIS rating or measurement, usually done each Fall, except for Skid and Deflection which can be done at other times of the year. Annual data is used in the PMIS annual report, *Condition of Texas Pavements*, and other statewide analyses.
+ **Supplemental 1 –** A first "extra" PMIS rating or measurement done to supplement the Annual data already stored. Supplemental 1 can be done without an Annual rating, though, if the Annual rating was not done for some reason.
+ **Supplemental 2 –** A second "extra" PMIS rating or measurement done to supplement the Annual data already stored. Supplemental 2 can be done without an Annual rating if the Annual rating was not done for some reason. It can also be done without a Supplemental 1, but that would not make much sense.
+ **Audit (Visual only) –** A second visual rating for a PMIS section, performed by a separate team of raters. Comparison of Annual and Audit visual distress ratings give an idea of the reliability of the Annual ratings and are used for acceptance (payment) of the Annual ratings. Audit ratings are done for Visual only.
+ **Contractor (Ride only) –** A second ride measurement for a PMIS section, usually performed as part of a construction project being built using the TxDOT "Ride Quality for Pavement Surfaces" specification (Item 585). Storing the Contractor data is important because it can be used to document "initial" ride quality, and thus give an idea of the performance of the construction project (in terms of ride quality) over time. Contractor measurements are done for Ride only.

The next step is to control how Reference Markers will be displayed on the map. Reference Markers are used to locate specific sections of pavement in the field. Reference Markers on Interstate highways are located every mile; on non-Interstate highways, they are located every two miles (more or less).

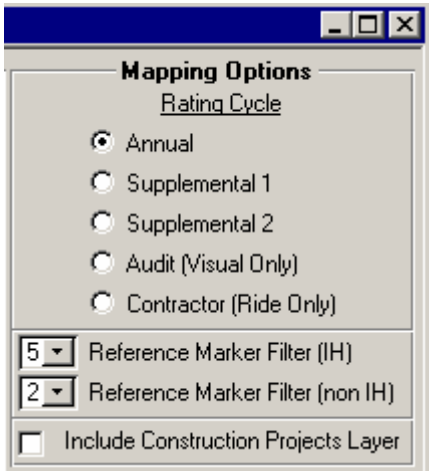
The 'Reference Marker Filters' in the MapZapper control how often Reference Marker labels will be put on the map. In the example above, every fifth IH Reference Marker and every second non-IH Reference Marker will be labeled on the map. This means that IH Reference Markers will be labeled by five (5 times 1-mile spacing for IH) and non-IH Reference Markers will be labeled by four (2 times 2-mile spacing for non-IH).

The minimum value for both drop-down boxes is one (thus, labels by one for IH, and labels by two for non-IH). The maximum value for both drop-down boxes is ten (thus, labels by 10 for IH, and labels by 20 for non-IH).

8. To change the Reference Marker spacing on the map, click the Reference Marker drop-down boxes and select one of the numbers (from 1 to 10) that appear:

9. Click the 'Construction Projects' check box to show highway sections that have been designated as construction projects in the 'Utility Score Optimizer' (to be described in Chapter 5 of this documentation).

This is the end of the instructions on how to use the 'Mapping Options' area.



10. Click the 'Zap-a-Map' button at the bottom to begin making the PMIS map.

The program will launch ArcMap and you should soon see the map being built layer by layer. At the bottom of the screen will be a status bar with a series of blue boxes – this means that the map is still being built and has not finished yet. You can also check the bottom of the ArcMap window for an icon of a globe – if the globe icon is spinning, the map is still building.

Please be patient while the program builds the map. Unless an error occurs, the map should finish in 30 seconds or more. District maps can take one minute or more to build.

Very Important Mapping Note!!!

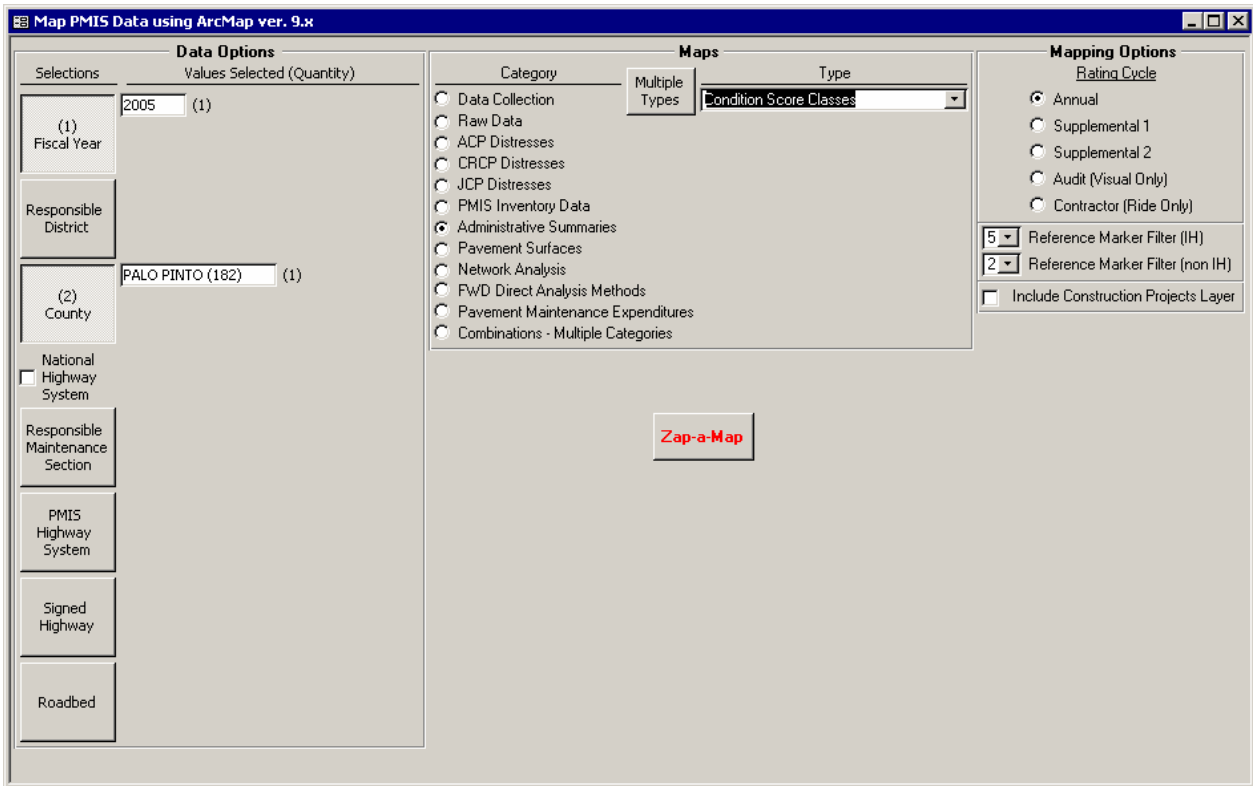
If the mapping program should "hang-up" unexpectedly, you can stop it by pressing <Ctrl>+<Break> (that is, by holding down the Ctrl key, pressing the Break key, and then releasing the Ctrl key). That will stop the program and let you go to another task.

DO NOT press <Ctrl>+<Alt>+<Del>, or use the Windows XP Task Manager, or turn the computer off to stop the mapping program.

The following pages show examples of various types of maps that you can make using Version 3.400.

Example 1 – Single-County Map

Here is an example of a single-county map (FY 2005, Palo Pinto county, Condition Score):



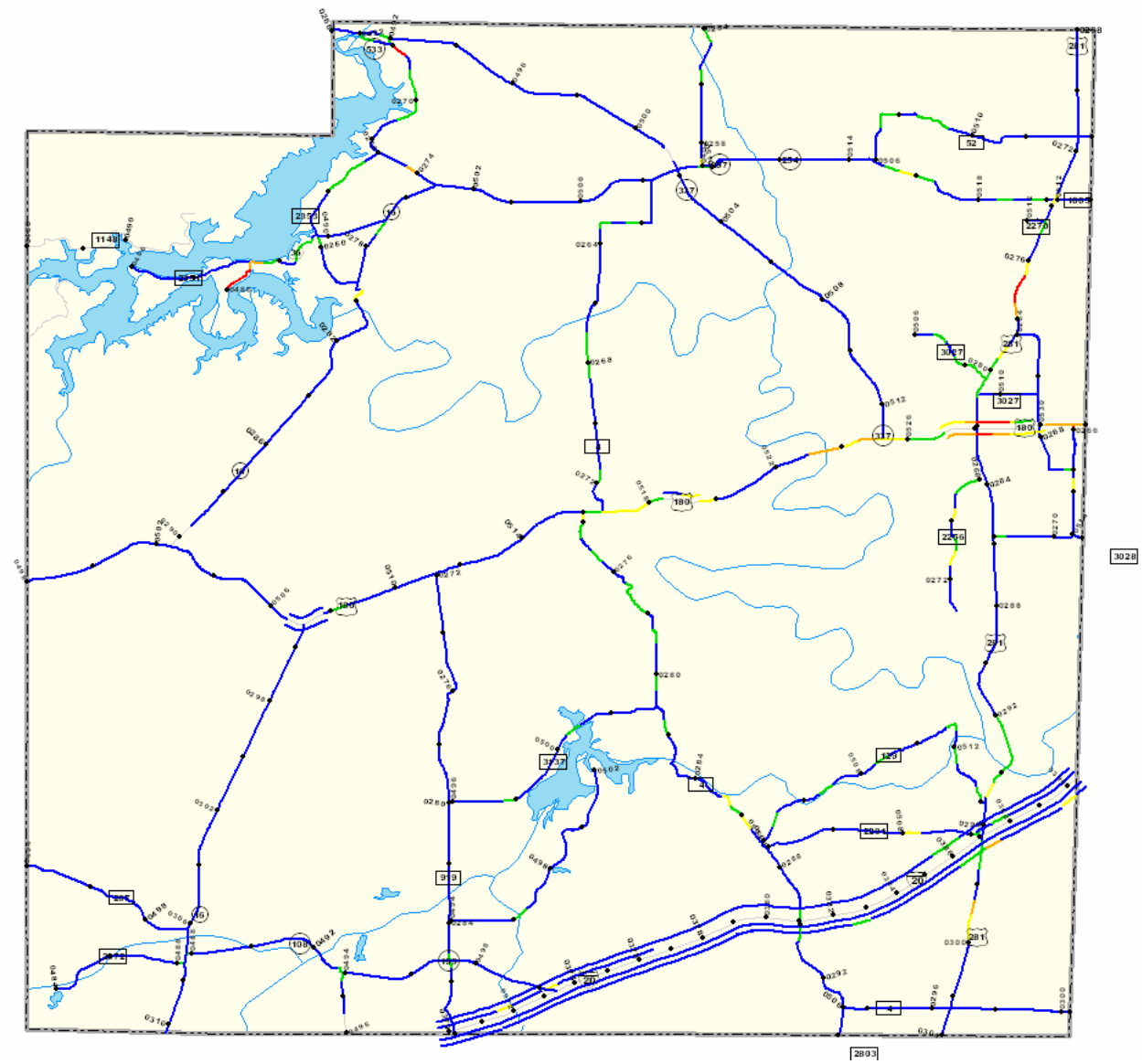
In this example, you don't need to click the 'Responsible District' button. 'Fiscal Year' and 'County' are enough to select the correct data for the map.

If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

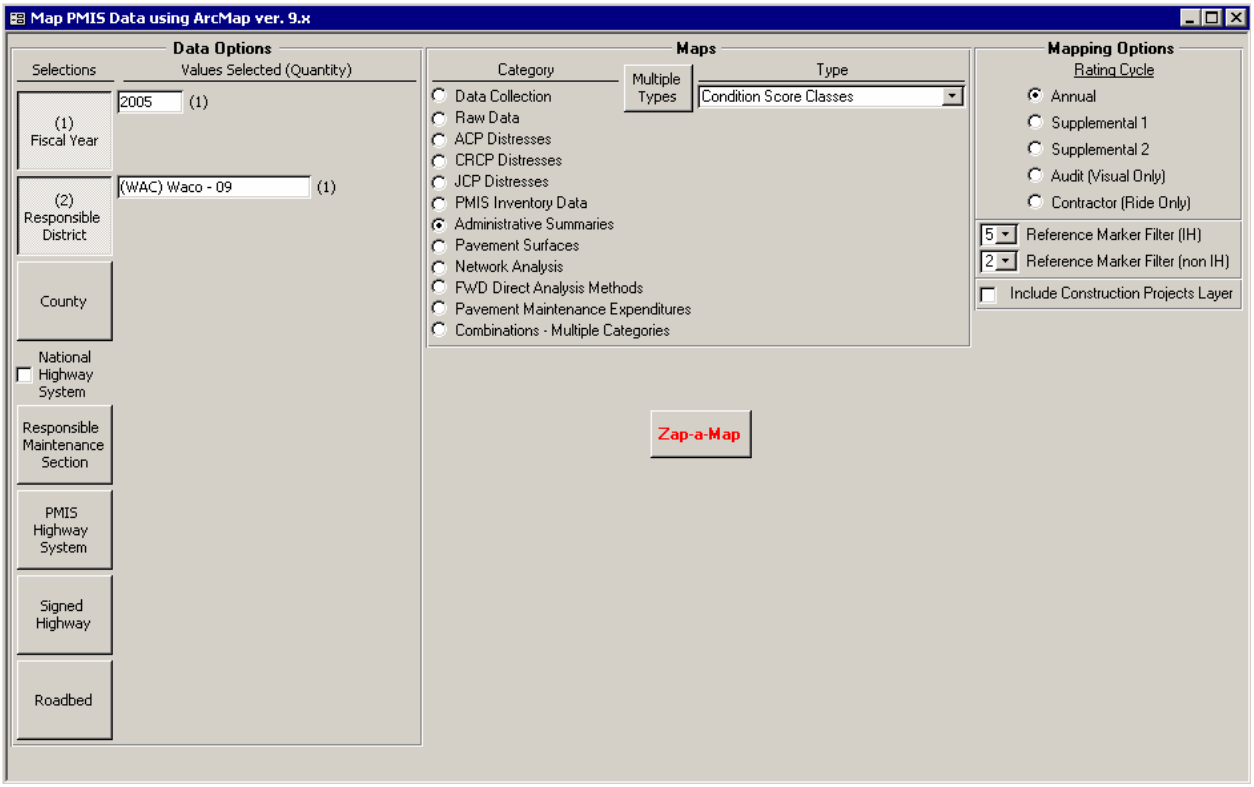
The single-county map will then appear, as shown below:



In Version 3.400, the Reference Marker numbers show up as numbers perpendicular to the highway, instead of in rectangular boxes as in previous versions.

Example 2 – Single-District Map

Here is an example of a single-district map (FY 2005, Waco district, Condition Score):

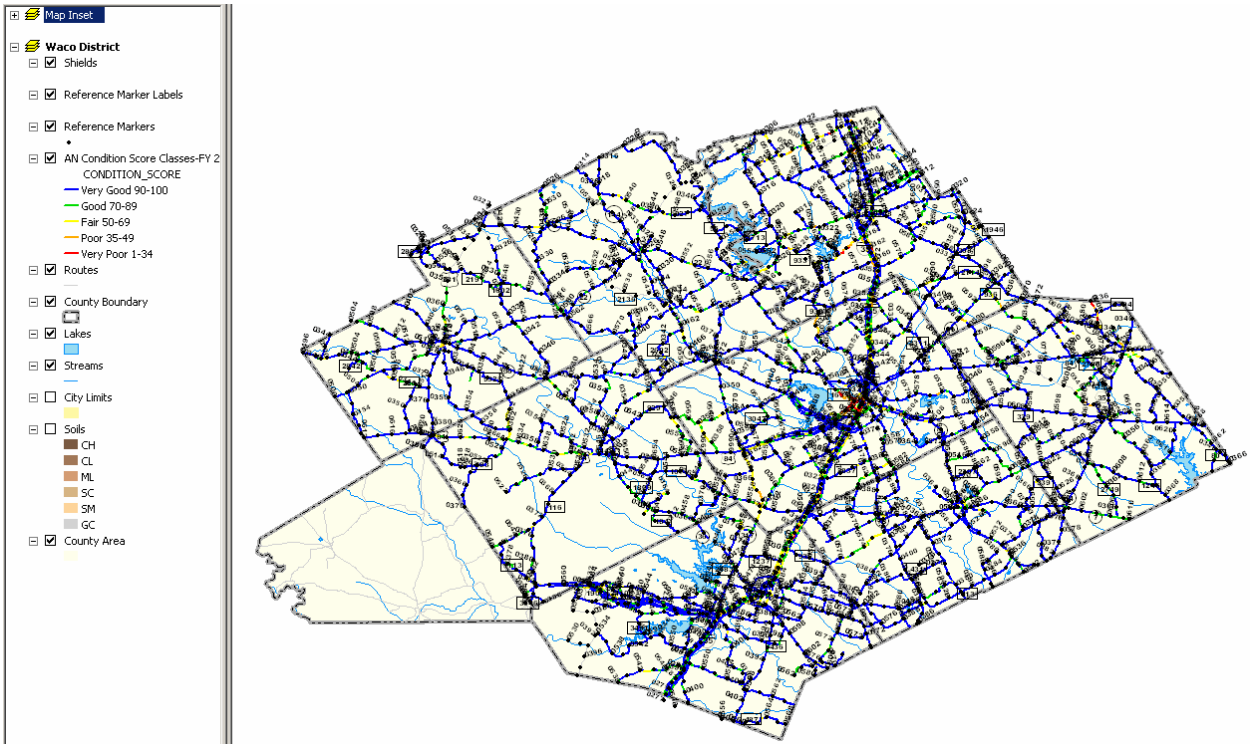


If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

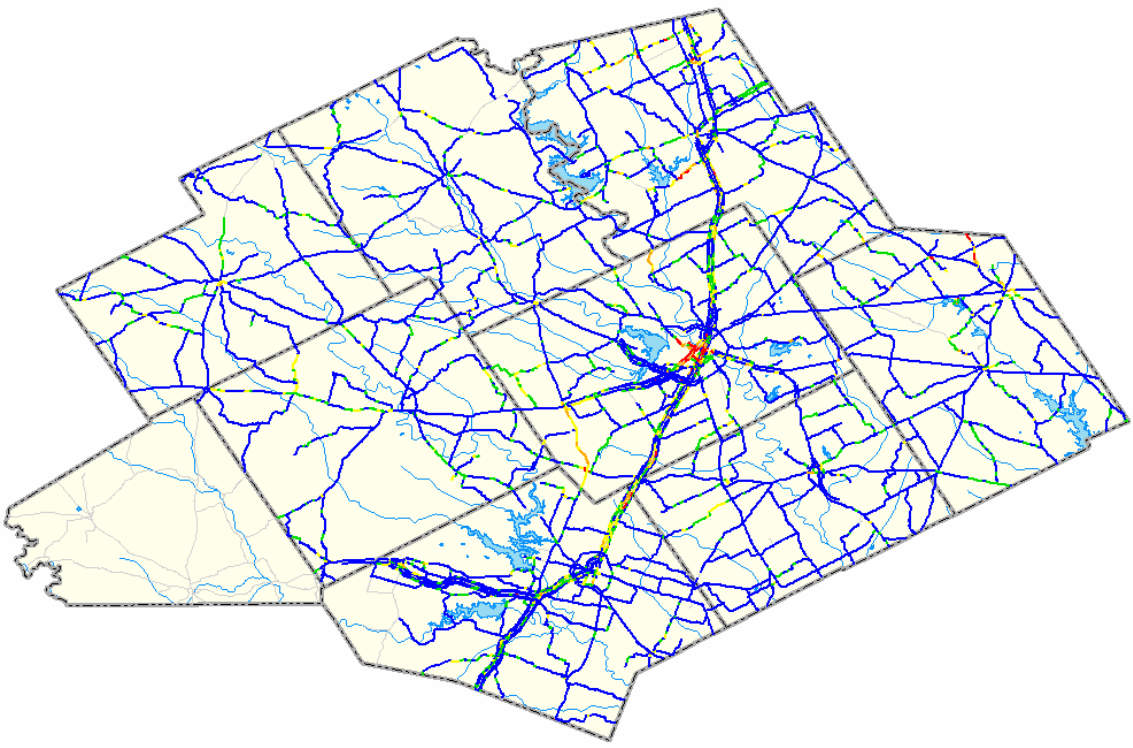
To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

The single-district map will then appear, as shown below:



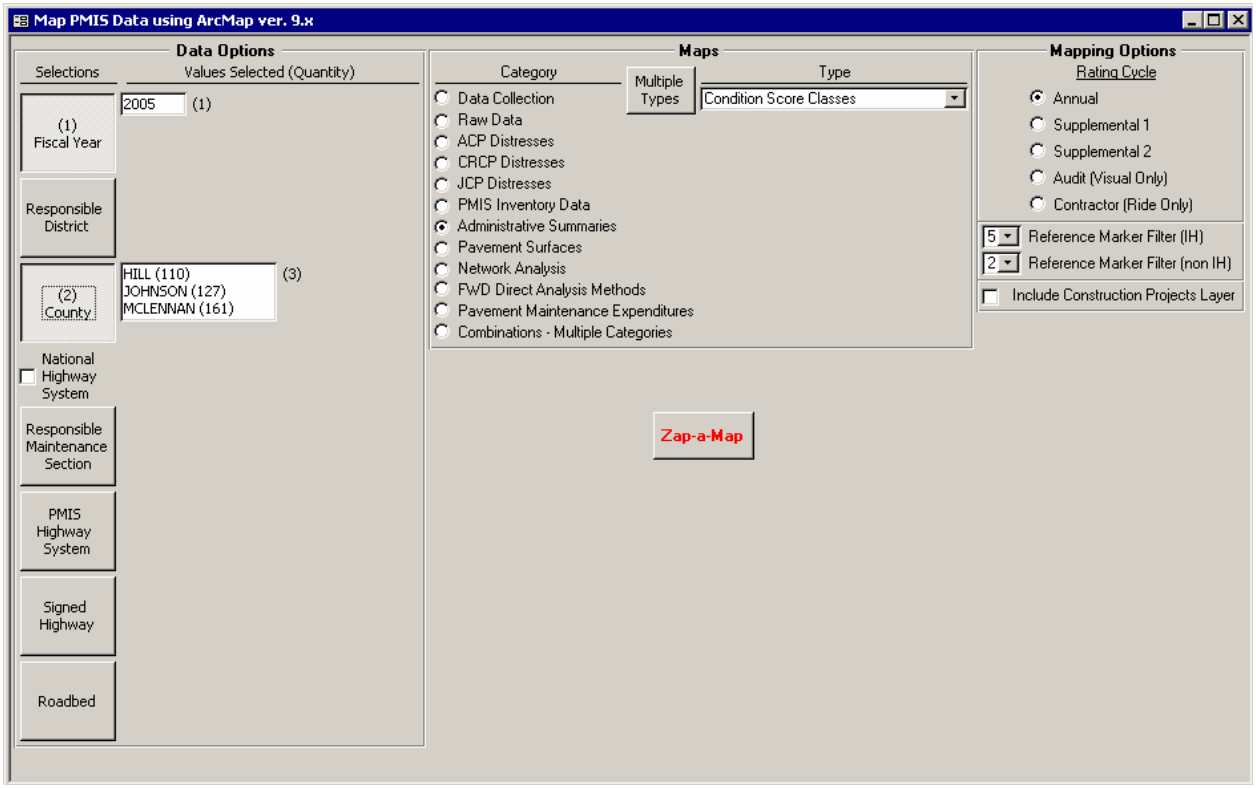
The Reference Markers, Reference Marker dots, and Shields come on by default. Click each of the three layer check boxes to turn them off and make the map easier to view:



Example 3 – Multiple-County Map

Version 3.400 supports creation of multiple-county maps, even if the counties are in more than one district, and even if the counties are not adjacent.

Here is an example of a multiple-county map (FY 2005; McLennan, Hill, and Johnson counties, Condition Score).



In this example, you don't need to click the 'Responsible District' button. 'Fiscal Year' and 'County' are enough to select the correct data for the map.

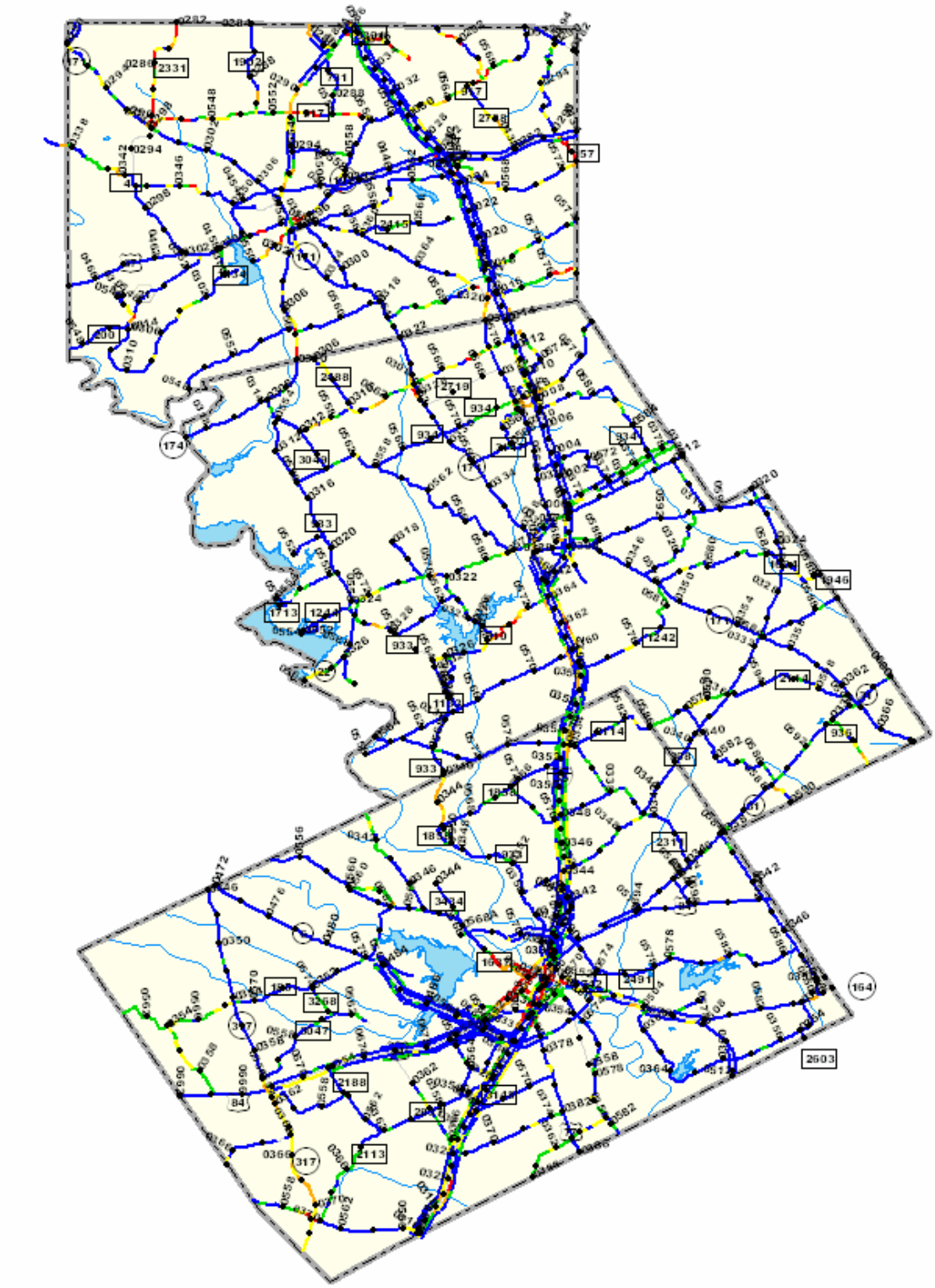
- Click to select the first county and then use Ctrl+Click to select the other two counties, otherwise you will only get one county.

If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

The multiple-county map will then appear, as shown below:

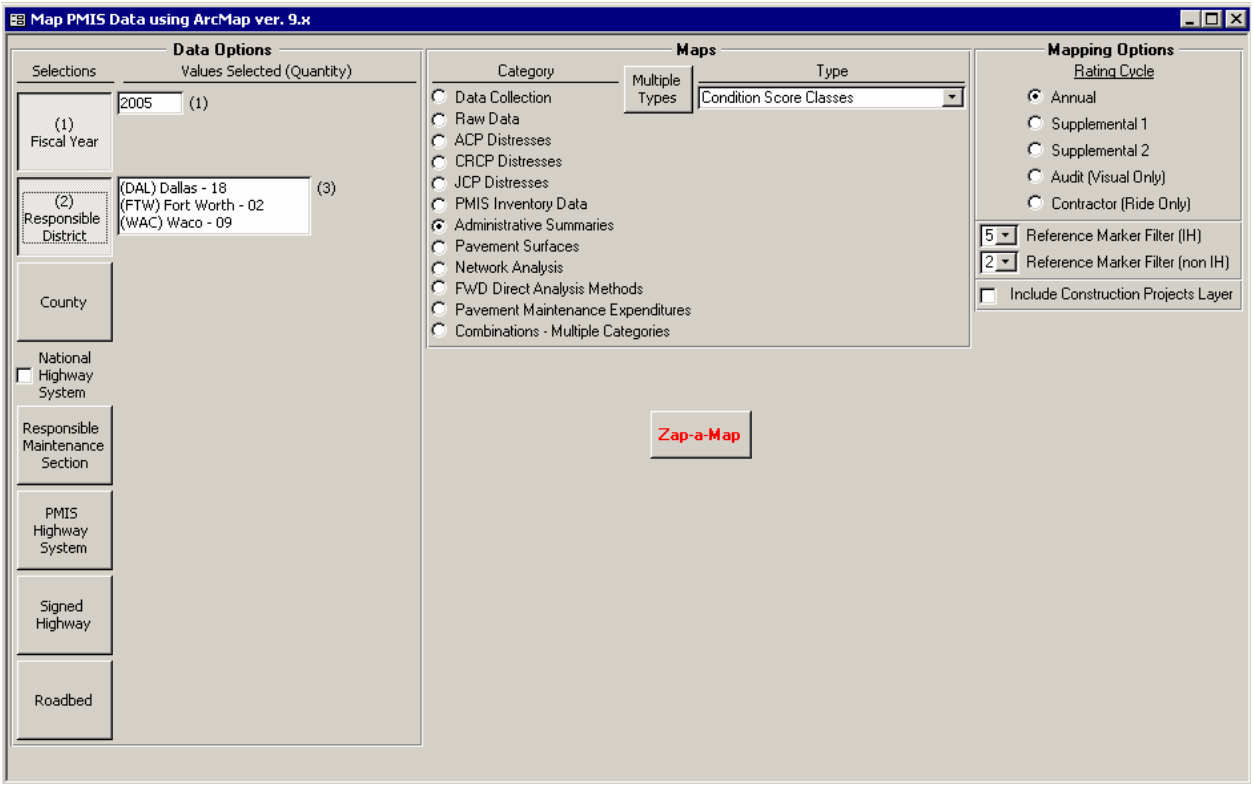


This example has the Reference Markers, Reference Marker dots, and highway Shields turned on, but you can turn them off in ArcMap to make the map easier to view.

Example 4 – Multiple-District Map

Version 3.400 supports creation of multiple-district maps, even if the districts are not adjacent.

Here is an example of a multiple-district map (FY 2005; Dallas, Fort Worth, and Waco districts, Condition Score).



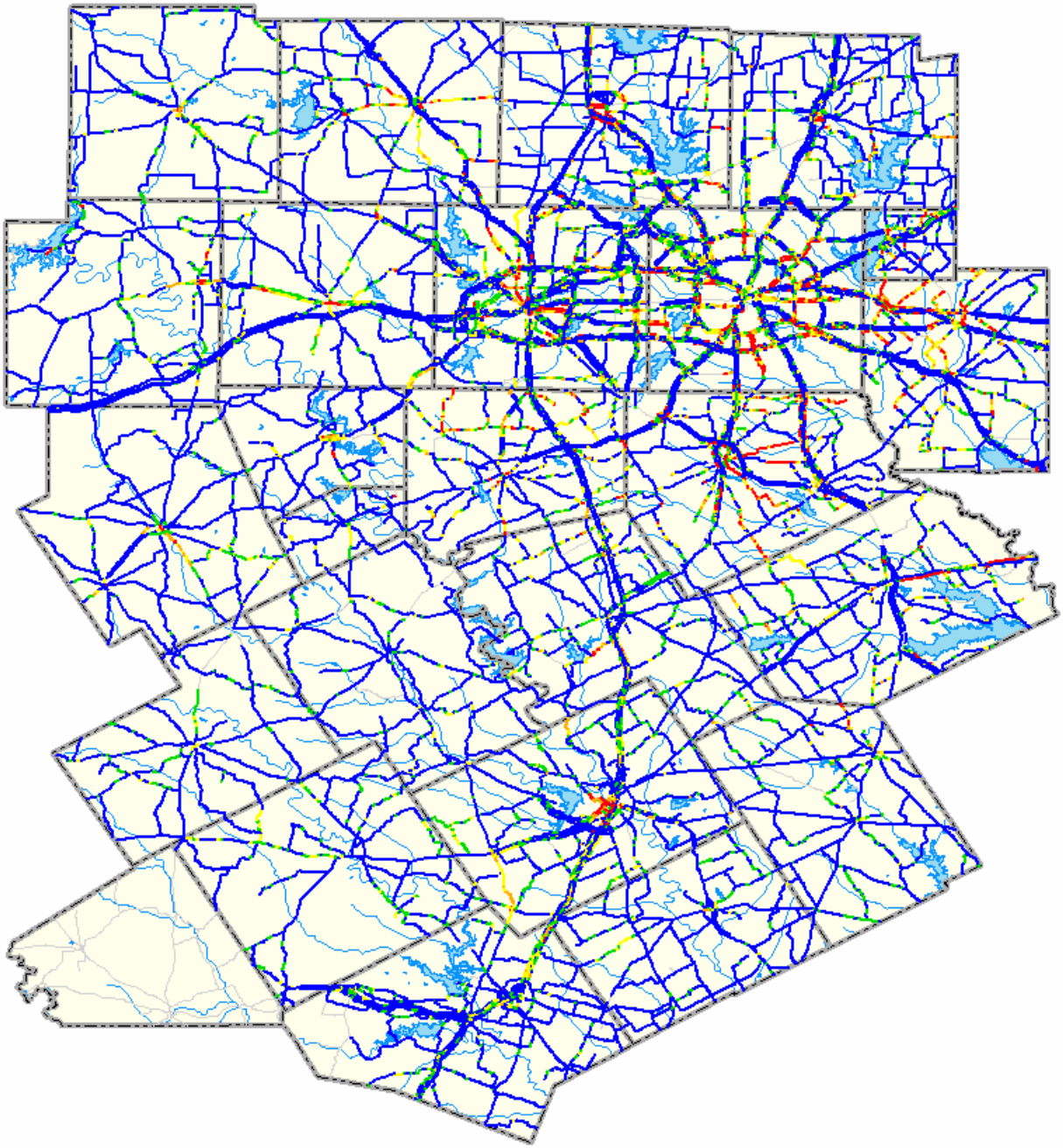
In this example, there are only three districts available, so you can click the 'Select All' button and then the 'Finished' button instead of having to click the districts one or more at a time.

If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

The multiple-district map will then appear, as shown below:

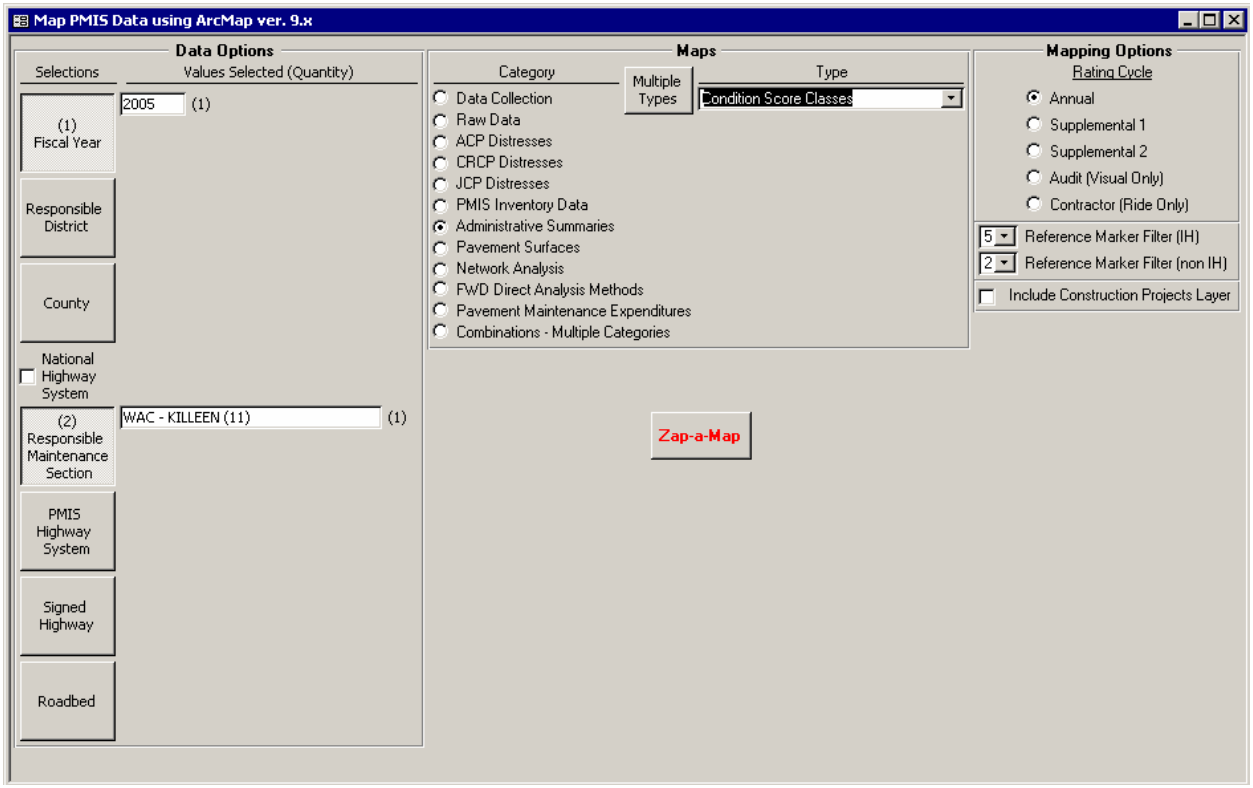


This example has the Reference Markers, Reference Marker dots, and highway Shields turned off to make the map easier to view. District boundaries do not display in Version 3.400, though, so for multiple-district maps you have to know where the district boundaries are.

Example 5 – Single-Maintenance Section Map

Version 3.400 supports creation of single-maintenance section maps, even if the maintenance section includes more than one county or only part of one county.

Here is an example of a single-maintenance section map (FY 2005, Killeen maintenance section, Condition Score).

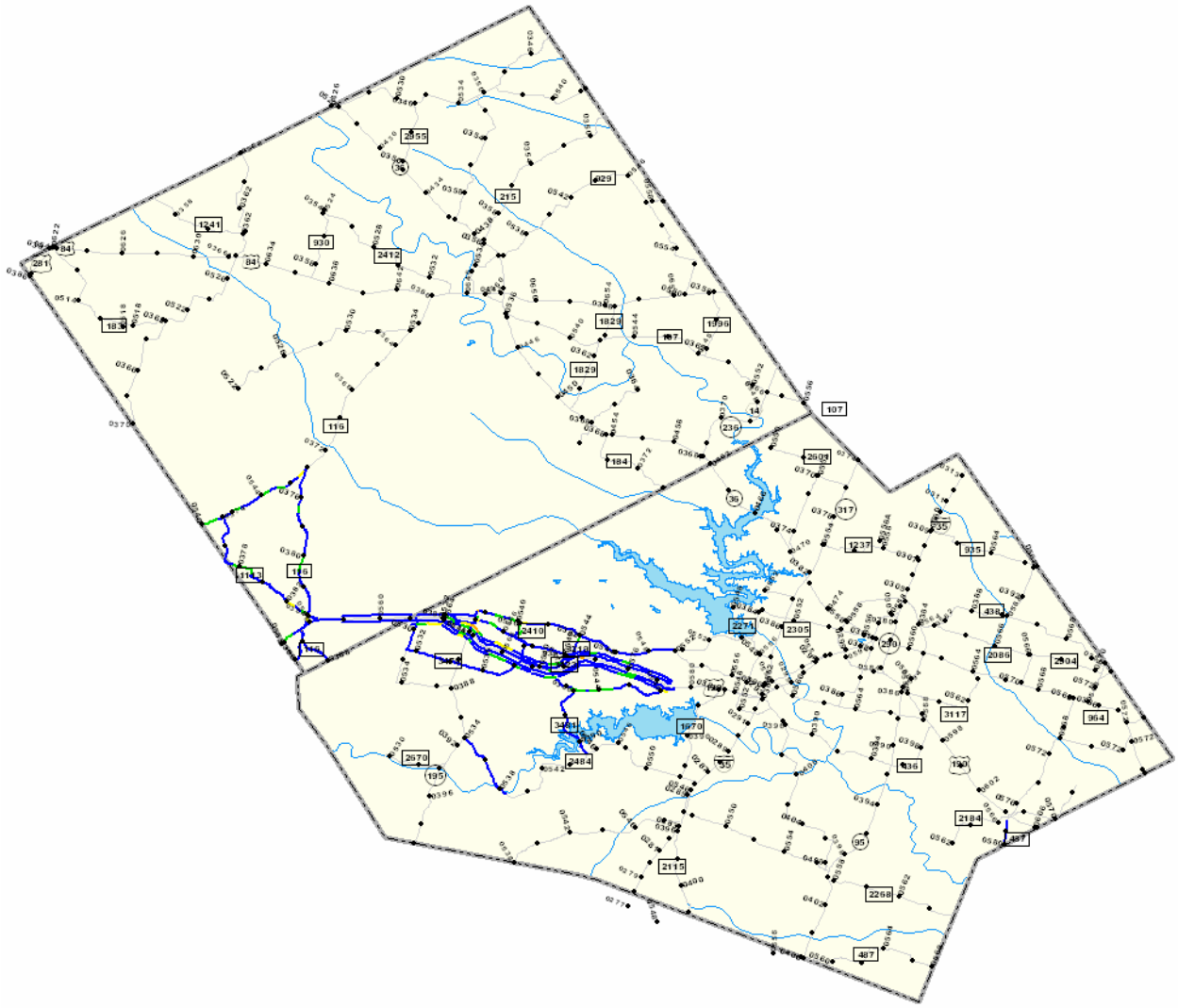


If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

The single-maintenance section map will then appear, as shown below:



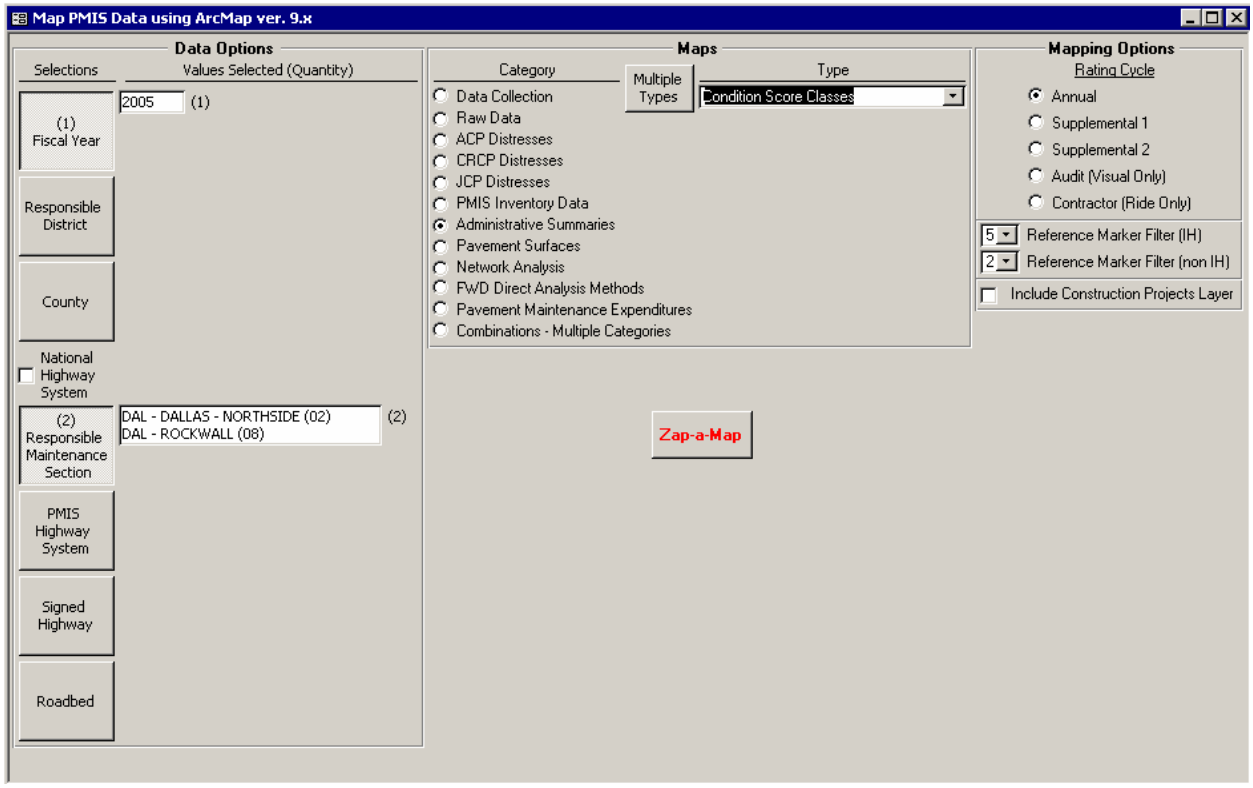
This maintenance section has highways in two counties, and only those highways in the maintenance section are highlighted with Condition Scores. Version 3.400 does not display maintenance section boundaries because they are not specifically defined anywhere.

This map can be helpful in finding highways that are not defined in the proper maintenance section. If there are such highways, they must be corrected in the Texas Reference Marker (TRM) system by the end of July to show up in PMIS for the next fiscal year (which begins in September).

Example 6 – Multiple-Maintenance Section ("Area Office") Map

Version 3.400 supports creation of multiple-maintenance section maps, even if the maintenance sections are not adjacent. You can thus make an Area Office map by selecting the multiple maintenance sections within the Area Office.

Here is an example of a multiple-maintenance section map (FY 2005; Northside and Rockwall maintenance sections; Condition Score).

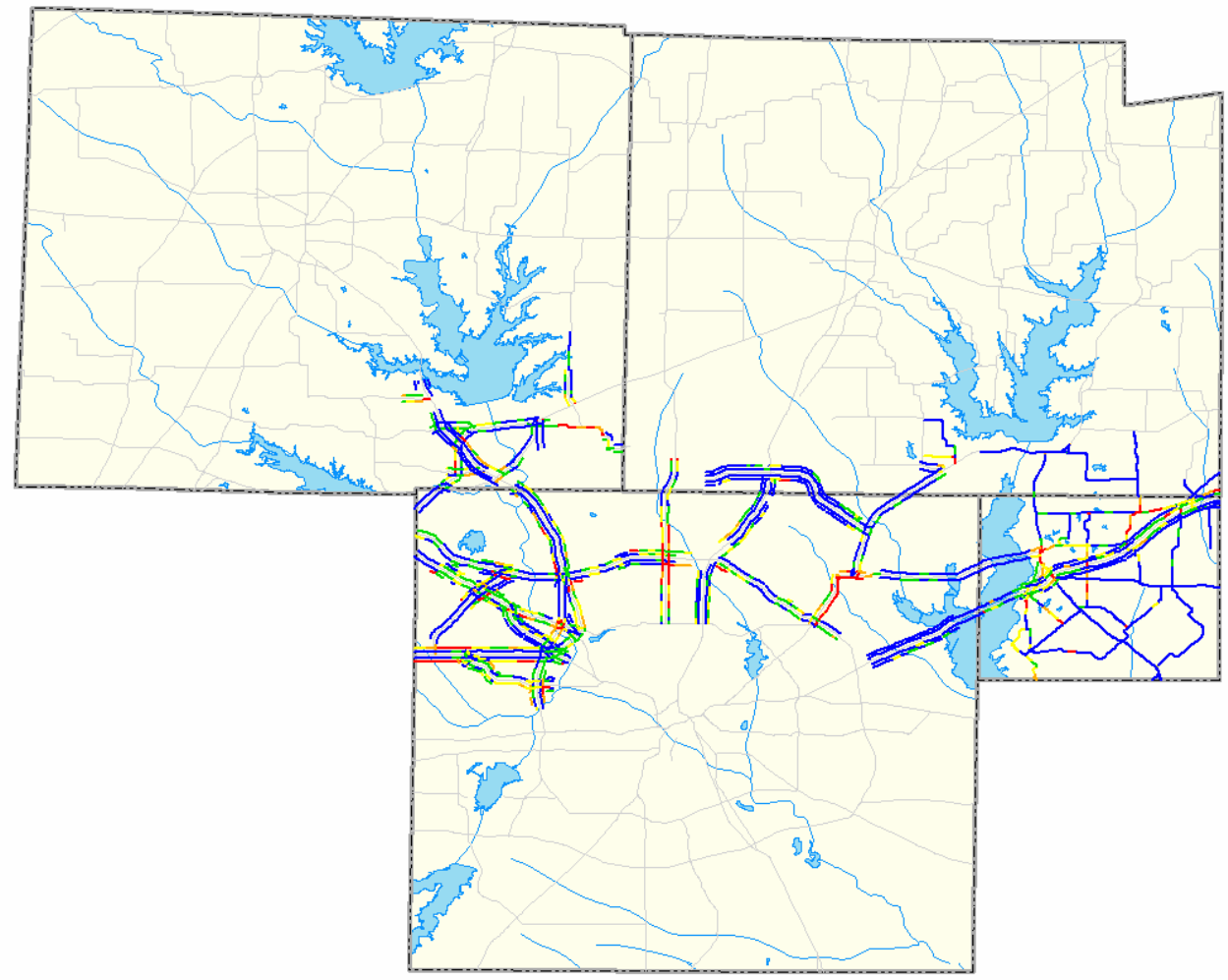


If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

The multiple-maintenance section map will then appear, as shown below:



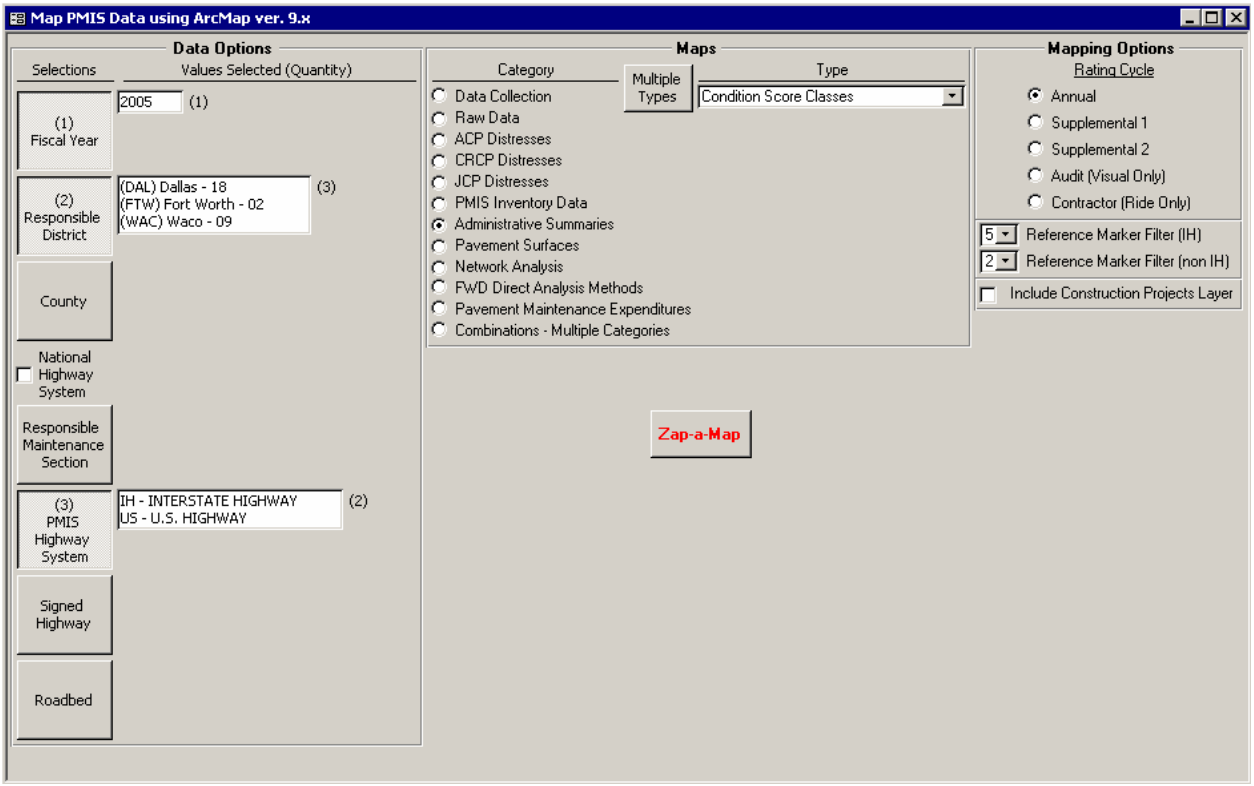
These two maintenance sections have highways in four counties, and only those highways in the maintenance sections are highlighted with Condition Scores. Version 3.400 does not display maintenance section boundaries because they are not specifically defined anywhere.

This map can be helpful in finding highways that are not defined in the proper maintenance section. If there are such highways, they must be corrected in the Texas Reference Marker (TRM) system by the end of July to show up in PMIS for the next fiscal year (which begins in September).

Example 7 – PMIS Highway System Map

Version 3.400 supports creation of maps showing one or more PMIS Highway Systems.

Here is an example of a multiple-PMIS Highway System map for multiple districts (FY 2005; Dallas, Fort Worth, and Waco districts; IH and US highway systems; Condition Score).

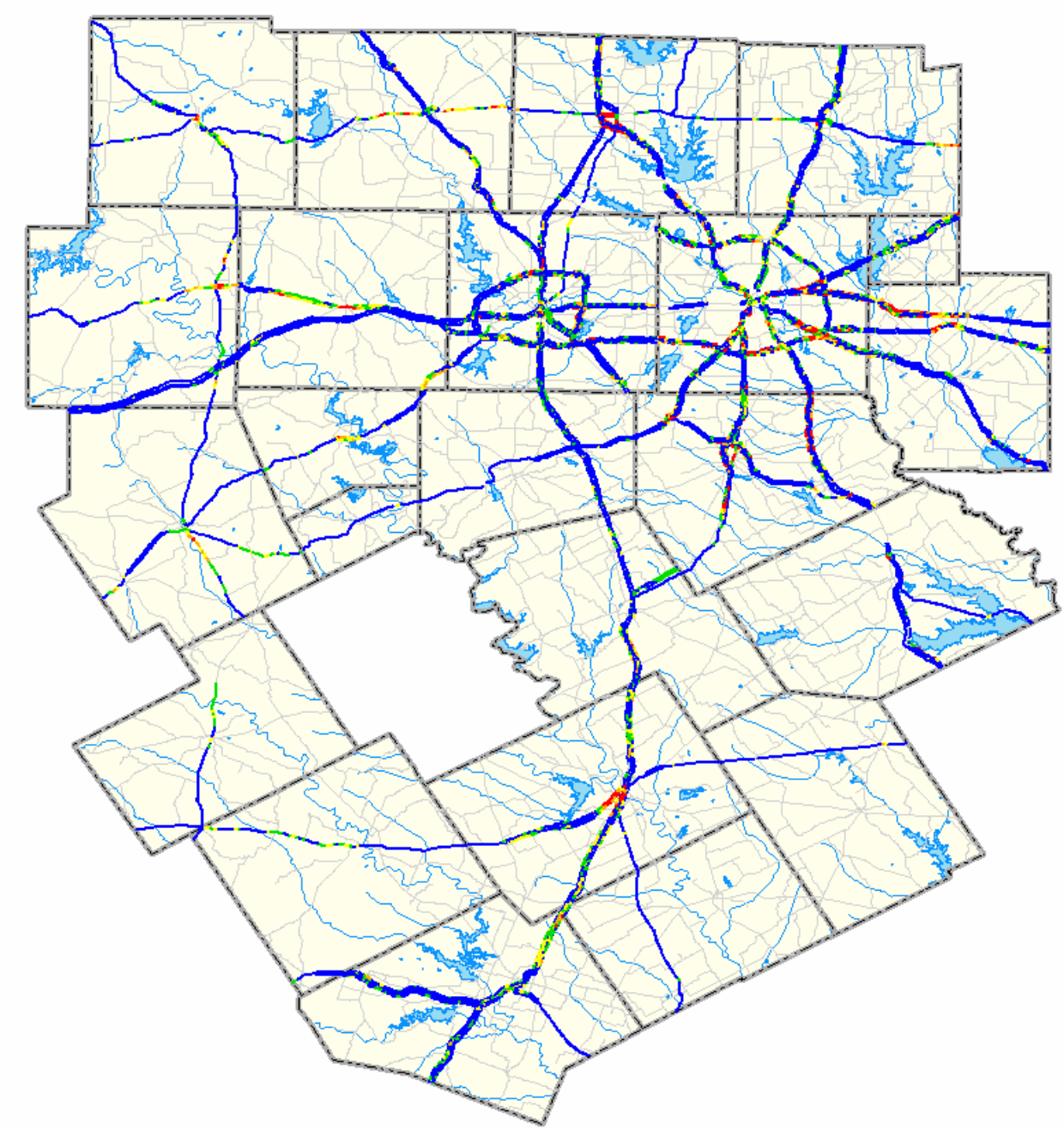


If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

The multiple-PMIS Highway System map will then appear, as shown below:

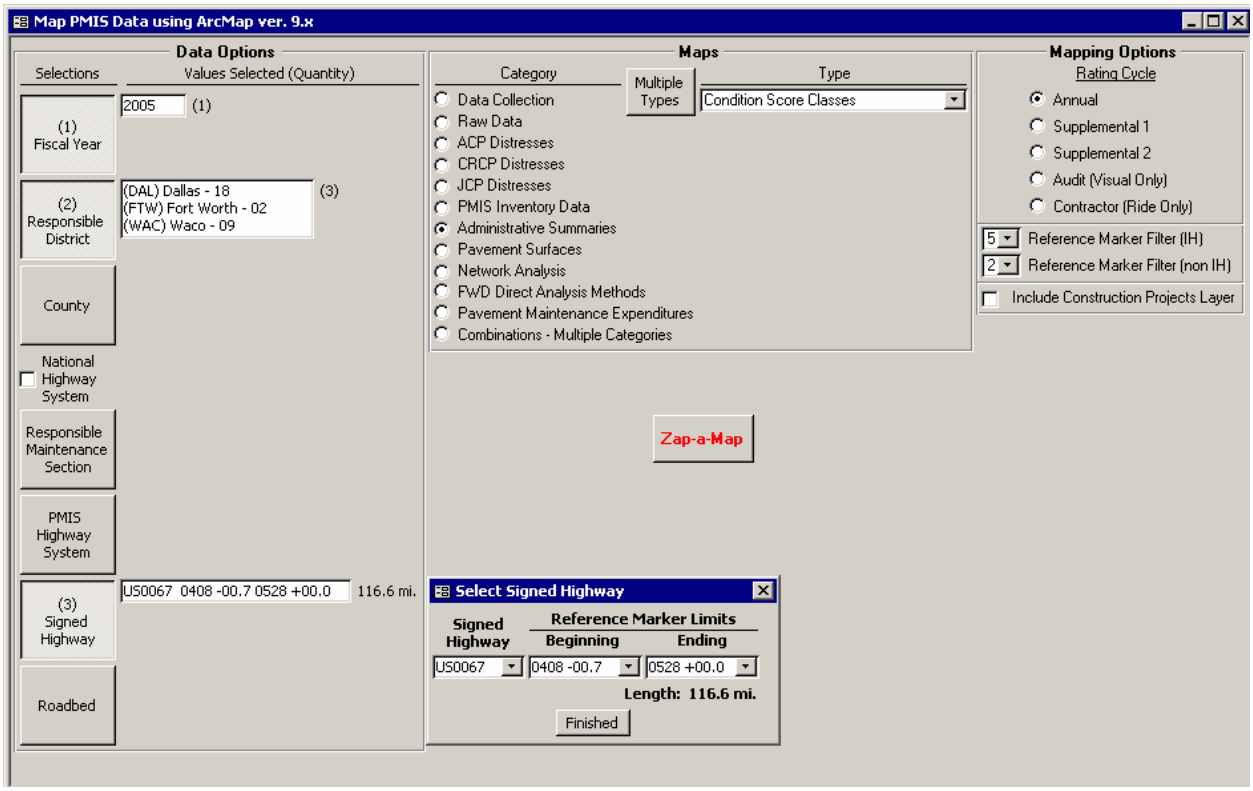


There is a gap in the map for Bosque county because it does not have any IH or US highways. Version 3.400 made the map by first identifying only those counties in the selected districts (Dallas, Fort Worth, and Waco) that had IH or US highways, and then "clipping" those counties onto a map of all statewide highways. It then placed all available PMIS data (Condition Scores) onto those highways.

Example 8 – Signed Highway Map

Version 3.400 supports creation of maps for a single Signed Highway. These maps can be helpful for multi-county, or even multi-district, corridor studies. If you know actual Reference Marker limits (for example, for a particular Control-Section), you can map only that part of the single Signed Highway.

Here is an example of a Signed Highway map (FY 2005; Dallas, Fort Worth, and Waco districts; US 67; Condition Score).



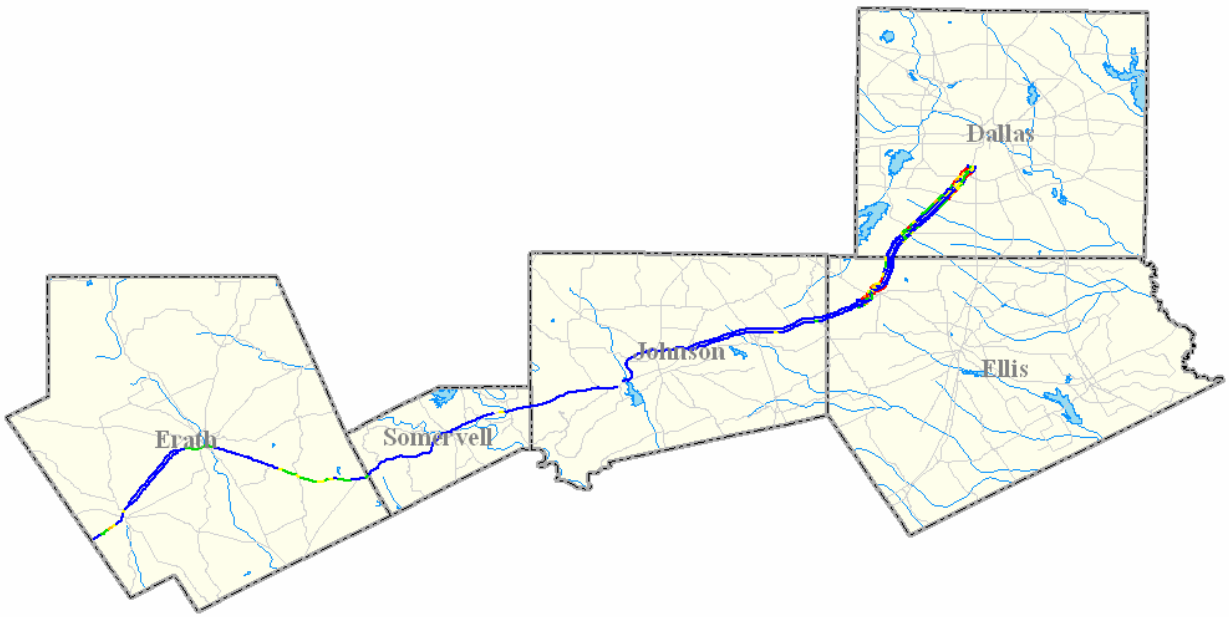
Note that the 'Select Signed Highway' box shows the beginning and ending Reference Marker limits and the length of US 67 in the selected districts. You can select other (shorter) segments of US 67 using the 'Beginning' and 'Ending' drop-down boxes.

If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

The Signed Highway map will then appear, as shown below:



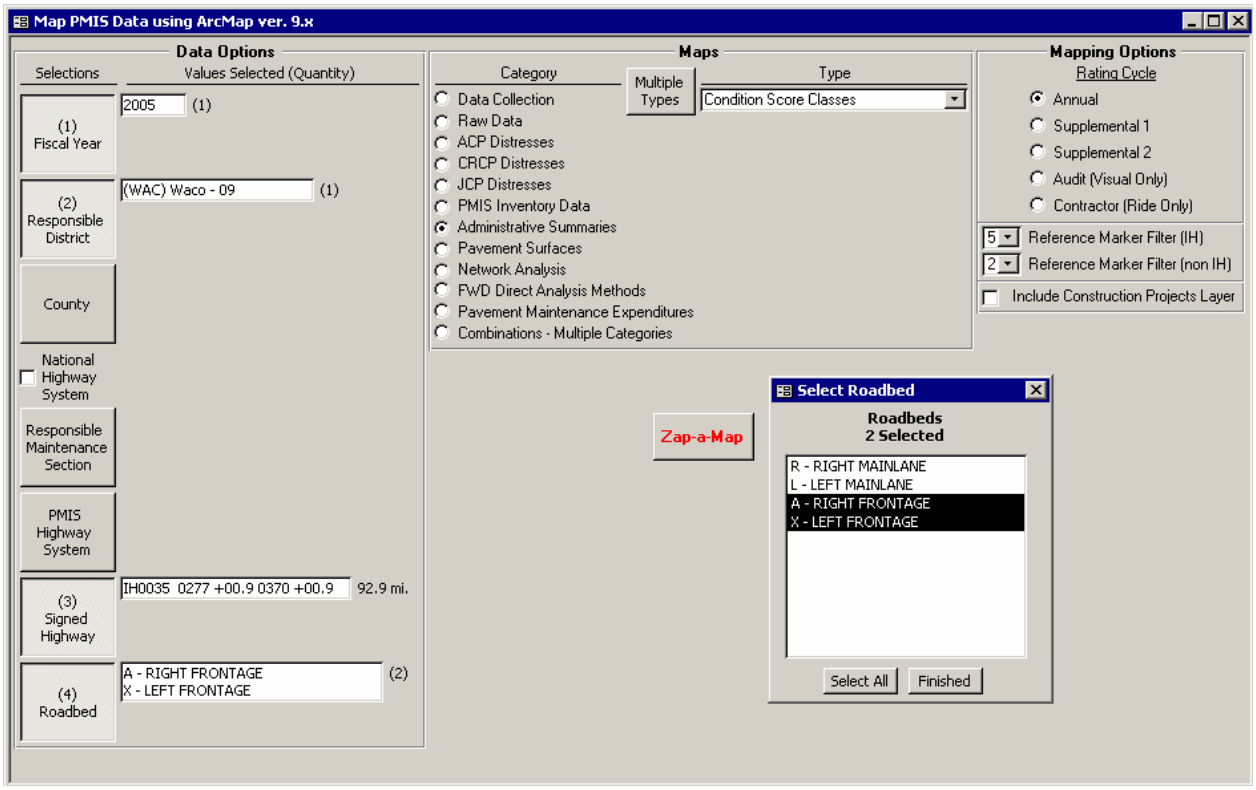
Note that US 67 does not extend all the way across Dallas county on the map. This is because US 67 joins with IH 35E south of downtown Dallas and then runs concurrent with IH 30 to the east. In fact, Rockwall county (east of Dallas county) does not even show up on the map even though US 67 runs concurrent with IH 30 all the way across the county.

This example illustrates a limitation of the single Signed Highway map when displaying PMIS data for major highways. However, the single Signed Highway map is very useful for corridor studies on highways that do not have "gaps" caused by concurrencies.

Example 9 – Roadbed Map

Version 3.400 supports creation of single- and multiple-roadbed maps. You can also combine Roadbeds to make maps for mainlanes only (Roadbeds 'K,' 'L,' and 'R') or for frontage roads only (Roadbeds 'A' and 'X').

Here is an example of a multiple-Roadbed map (FY 2005; Waco district; IH 35; frontage roads only; Condition Score).



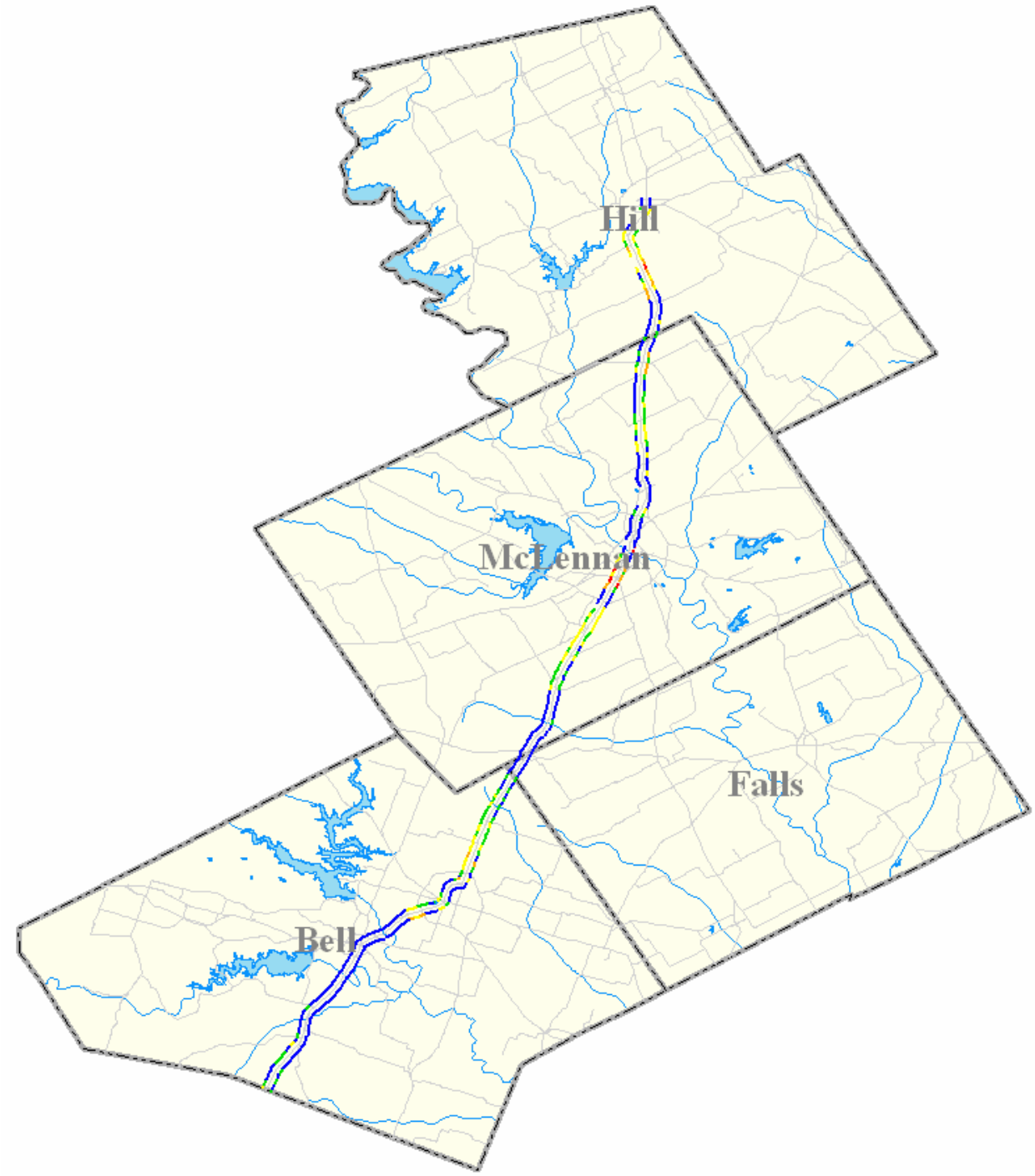
Please note that Roadbed 'K' (single mainlane, undivided) does not show up in the 'Select Roadbed' box because IH 35 does not have any 'K' Roadbeds.

If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Condition Score Classes' item in the 'Type' drop-down box
- Click the 'Zap-a-Map' button.

The multiple-roadbed map will then appear, as shown below:

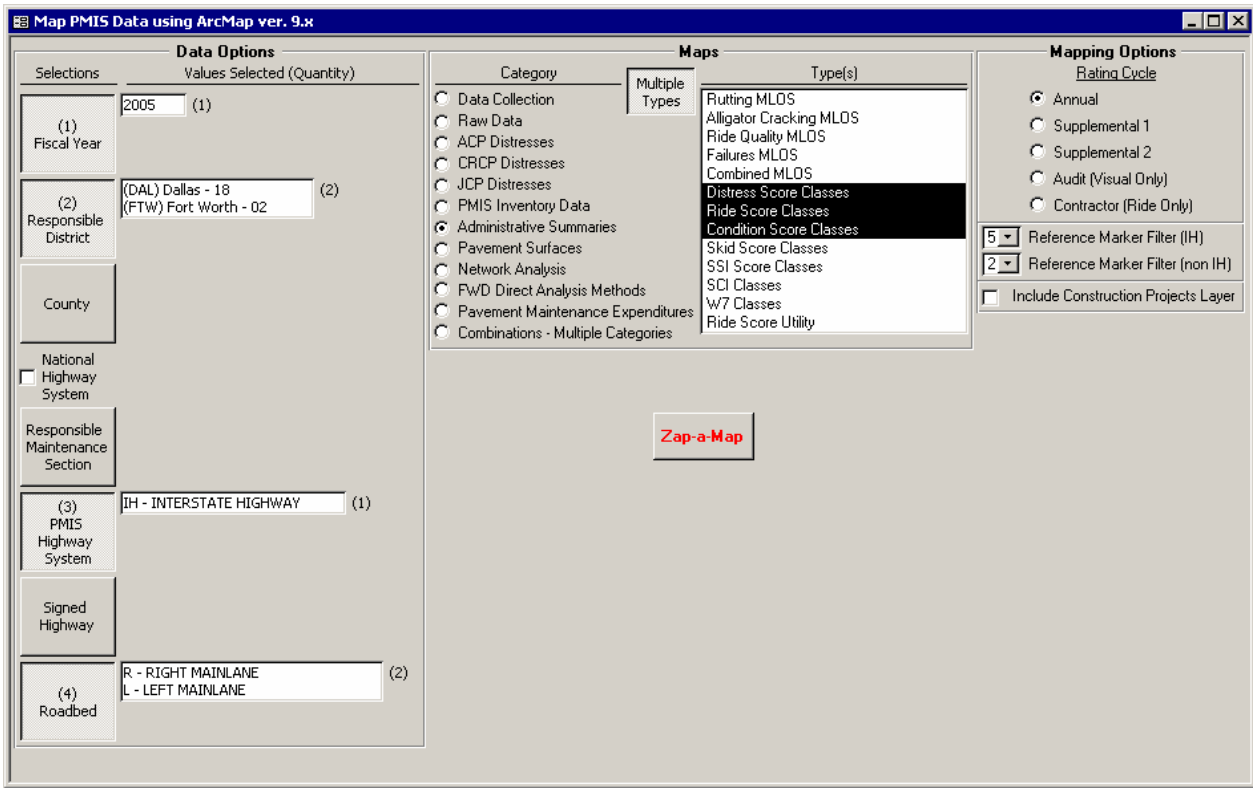


Note that the map does not include frontage roads for IH 35E and IH 35W in Hill county because only IH 35 was selected. To get IH 35 E and IH 35W on this map would require using the 'PMIS Highway System' button ('IH') instead of the 'Signed Highway' button.

Example 10 – Multiple Data Types Map

Version 3.400 supports putting more than one data type on the same map. This option is helpful for making maps of similar types of data (for example, all PMIS Scores or all ACP distress ratings).

Here is an example of making a map with multiple data types (FY 2005; Dallas and Fort Worth districts; IH system; mainlanes only; Distress Score, Ride Score, and Condition Score).

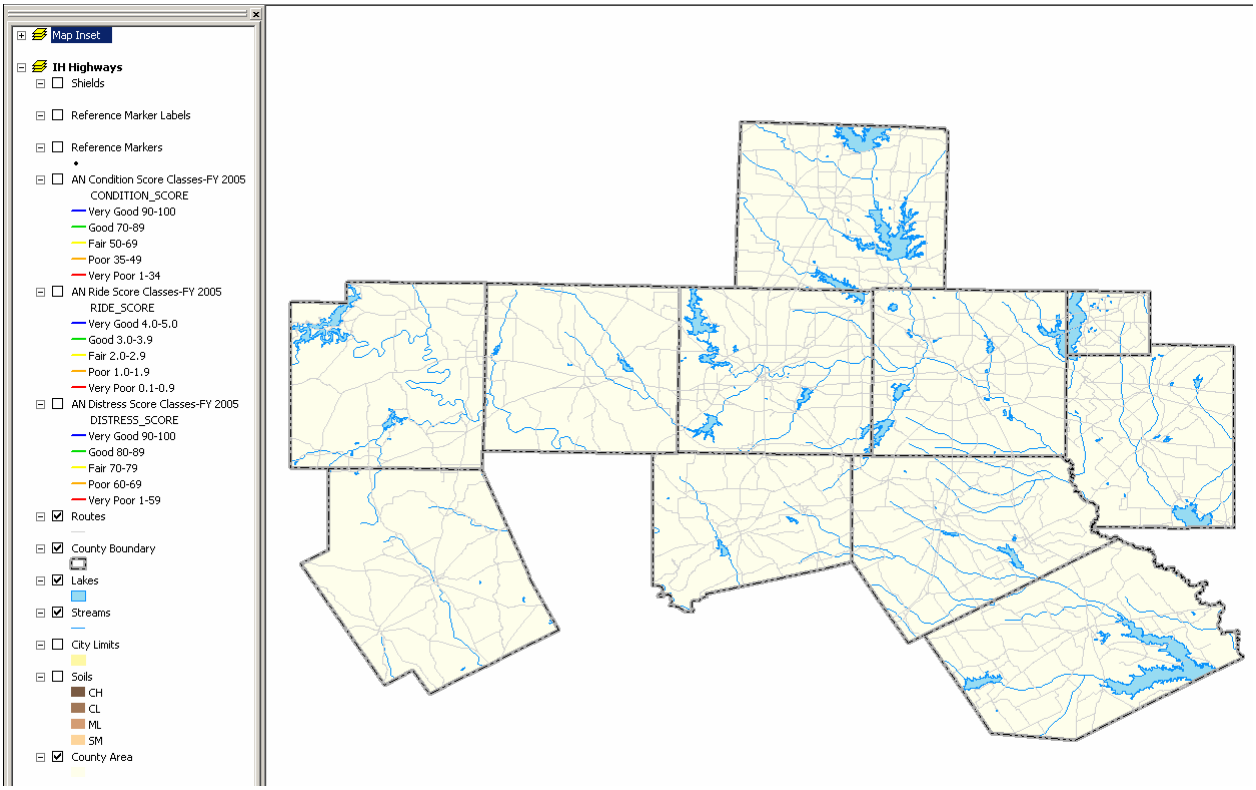


If you accidentally click the wrong button in the 'Data Options' area, click the 'Finished' button to make the pop-up box go away, and then click the button to make the selection go away.

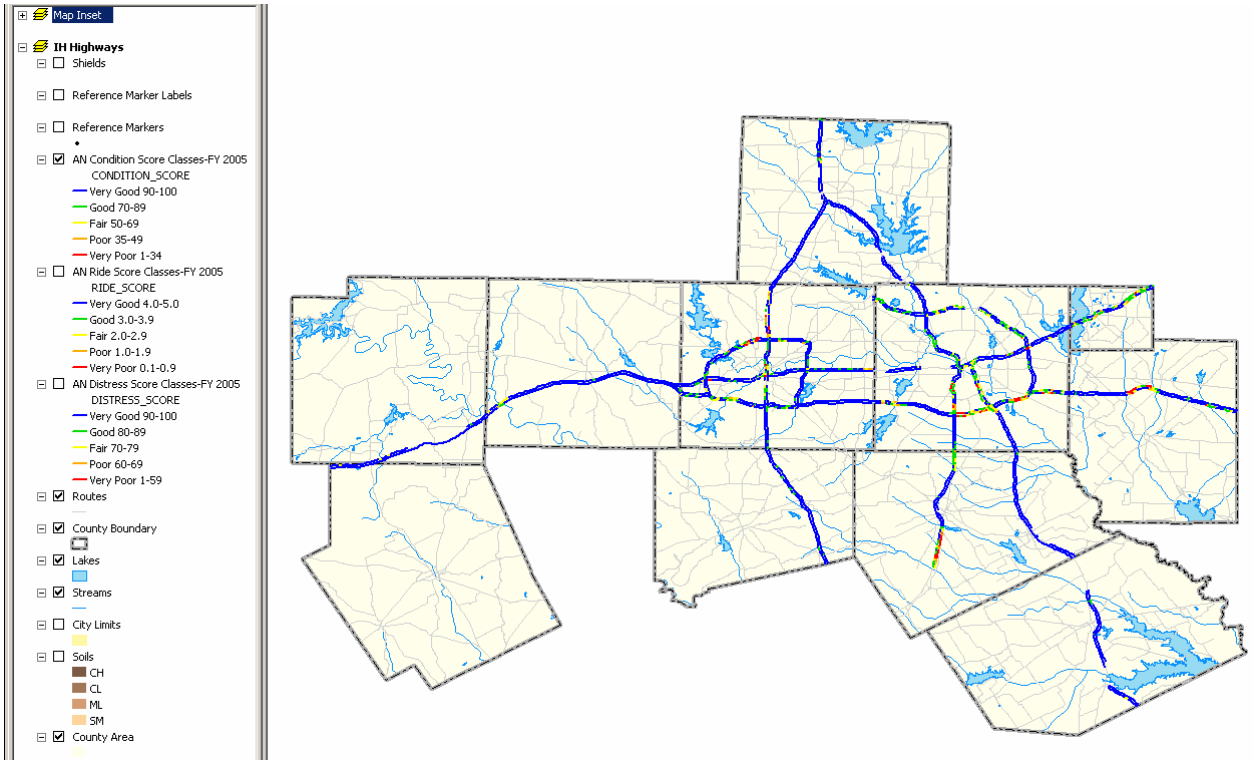
To make the rest of the map, follow these steps:

- Click the 'Administrative Summaries' radio button
- Click the 'Multiple Types' button
- Click the 'Distress Score Classes' item in the 'Type' drop-down box
- Use Ctrl+Click on 'Ride Score Classes' and then use Ctrl+Click on 'Condition Score Classes' **or** use Shift+Click on 'Condition Score Classes' to select it and 'Ride Score Classes'
- Click the 'Zap-a-Map' button.

The multiple-data type map will then appear but no PMIS data will display, as shown below:



To display one of the PMIS data types, click the layer check box on the left side. For example, to display Condition Scores, click the 'AN Condition Score Classes-FY 2005' box.



This is the end of the 'Making Maps' instructions. If you want to print the map, go to the 'Printing Maps – Creating Map Layouts' part of this document.

If you want to save the ArcMap file to be used at another time, go to the 'Saving Map Project Files' part of this document.

If you're ready to close ArcMap, click the **X** (Close) button in the upper right corner of the window to close ArcMap (click 'No' when asked to save changes). You can go back to the PMIS MapZapper window to make other maps.

If you're finished using the PMIS MapZapper, follow the instructions in the 'Stopping the PMIS MapZapper' part of this document.

Instructions for Using the PMIS MapZapper – Version 3.400

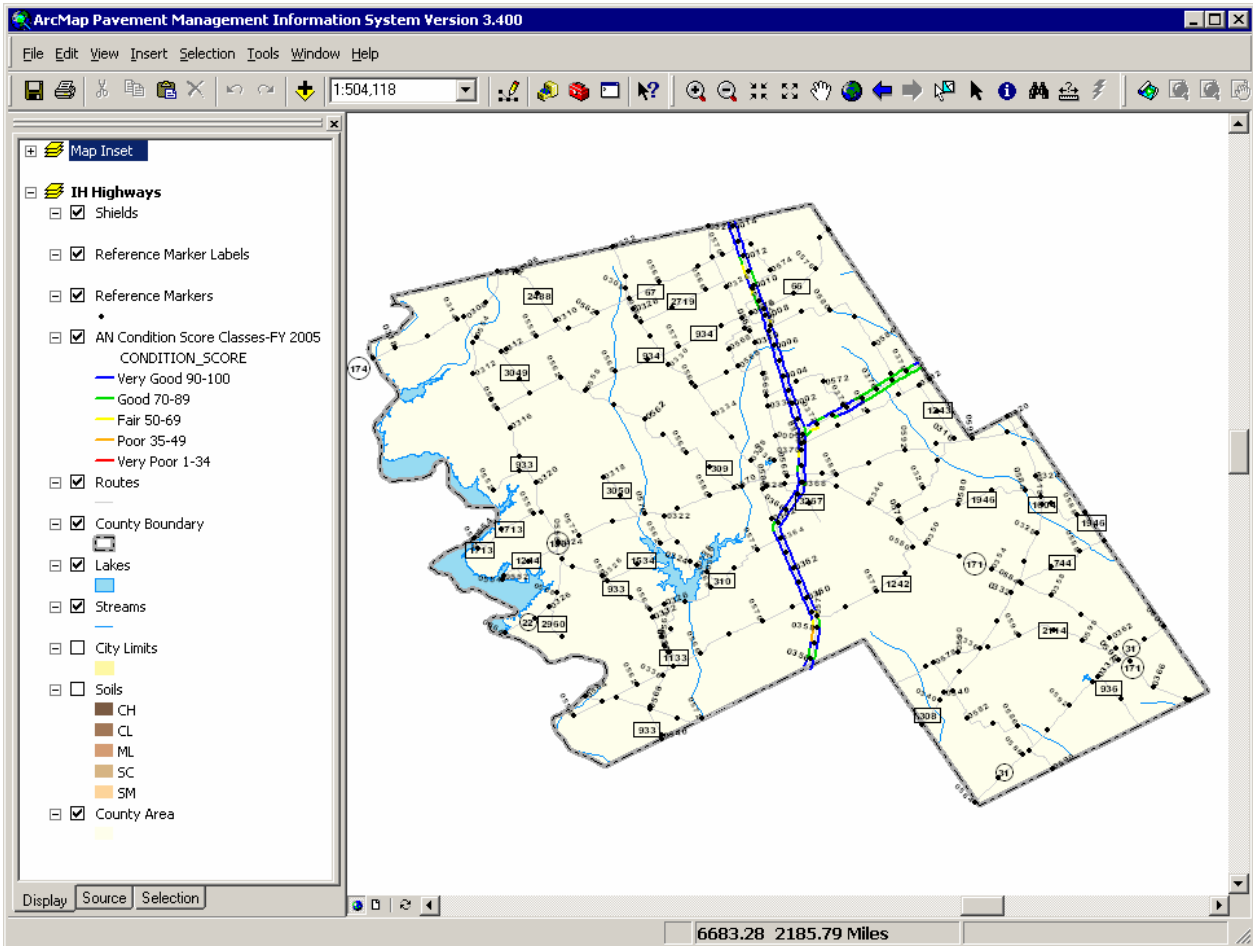
Saving Map Project Files

Version 3.400 improves the ability to save map project files. You can now save and reuse maps that you have made earlier without having to rerun PMIS MapZapper. The saved project file (called a "map document" in ArcMap) can be opened later in ArcMap, and it will retain all of the PMIS data used to produce the original map.

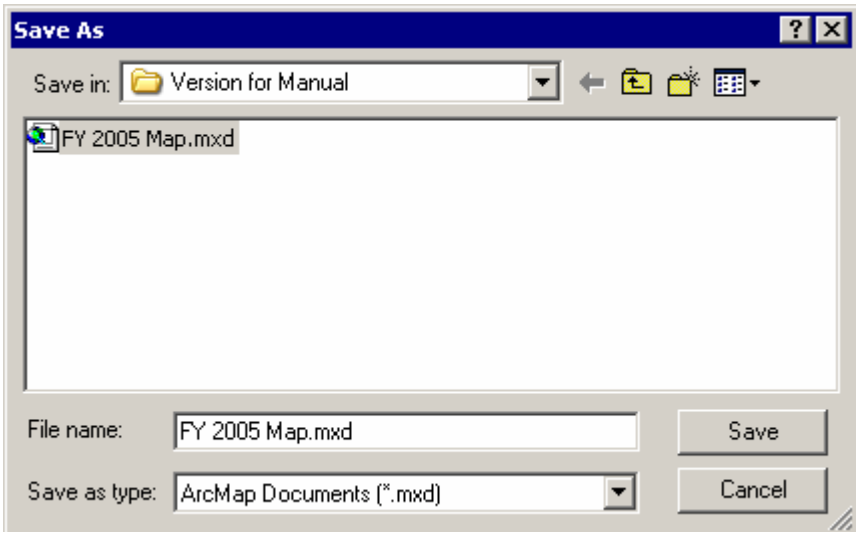
The Version 3.400 improvement is that the map project file (and it's associated data file) can be moved to any other folder or hard drive (that has ArcMap). Previous versions required that the project file not be moved.

Here are instructions on how to save map project files created using PMIS MapZapper:

1. Start the PMIS MapZapper and make a PMIS map, if you have not already done so.
2. Go to ArcMap and make it the active window. This example shows a Hill county Condition Score map for IH mainlanes.
3. Click the 'Save PMIS Project' button in the upper left corner of the map window. This button looks like a black computer diskette. 



4. When the 'Save As' window comes up, navigate to the folder where you want to save the map project file. **DO NOT** save the file to the system's 'temp' folder on your computer or else the file will be erased the next time you make a PMIS map! It is a good idea to save the file to a folder near (but not the same as) your PMIS MapZapper folder.



5. Type a filename for the project. You don't need to add the ArcMap 'mxd' extension.
6. Click the 'Save' button to save the file. PMIS MapZapper will save the ArcMap file and will also create a geodatabase file (in this example it will be named 'FY 2005 Map Geodb.mdb') containing all of the PMIS data used to make it.

The 'mxd' file can now be opened in ArcMap like any other 'mxd' file – you don't have to rerun PMIS MapZapper to produce the maps in this file (unless the PMIS data changes, in which case you will need to open PMIS MapZapper, download the data, and make the map again).

Please Note: If you need to move the 'mxd' file to another location, be sure to move the geodatabase 'mdb' file along with it to the same place or else the project file will not work. In this example, move the 'FY 2005 Map.mxd' file **and** the 'FY 2005 Map Geodb.mdb' file. To open the map file at some other time, start ArcMap and open the 'mxd' file **or** start Windows Exploer and double-click the 'mxd' file.

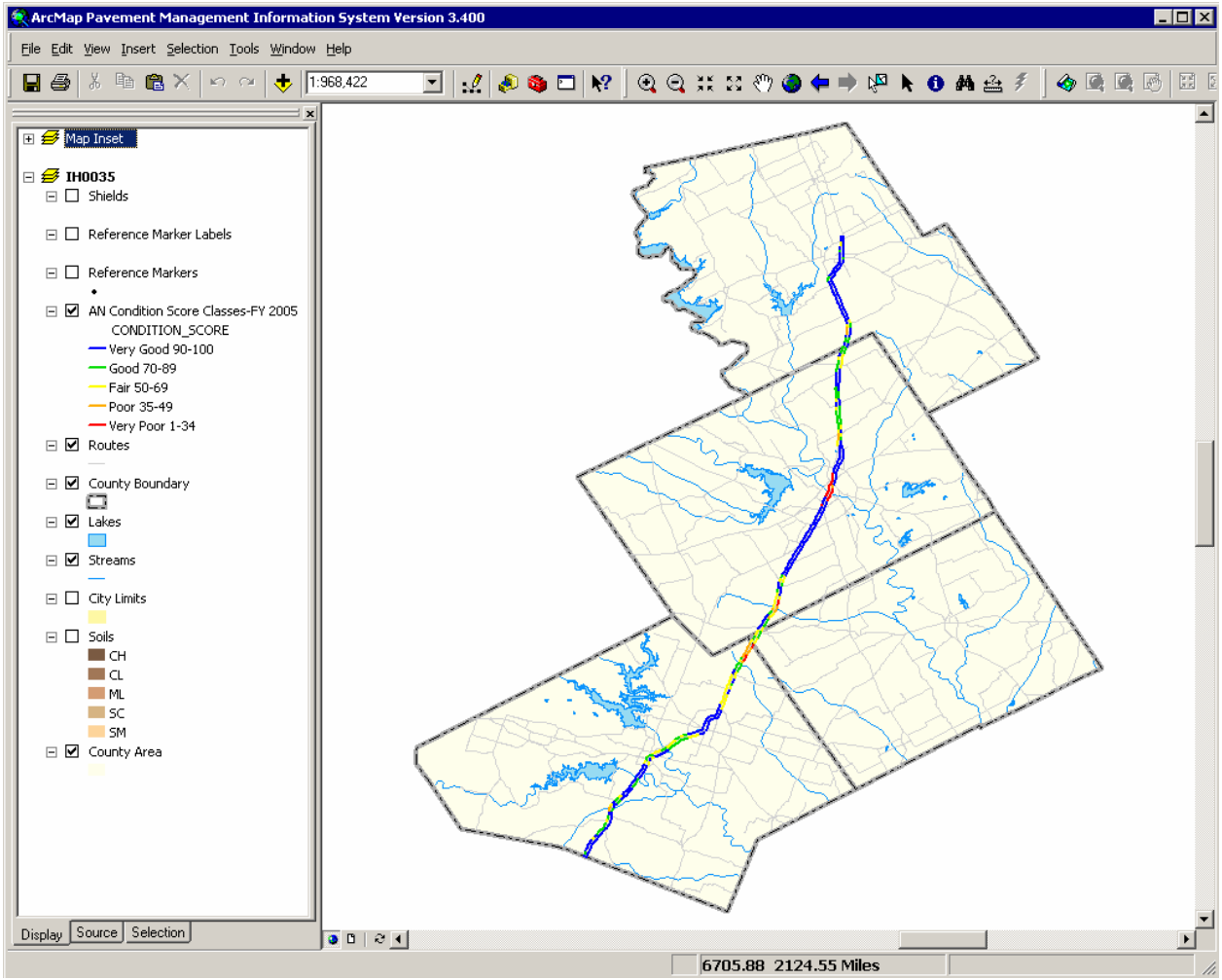
This is the end of the 'Saving Map Project Files' instructions. If you want to print the map, go to the 'Printing Maps – Creating Map Layouts' part of this document.

If you're ready to close ArcMap, click the **X** (Close) button in the upper right corner of the window to close ArcMap (click 'No' when asked to save changes). You can go back to the PMIS MapZapper window to make other maps. If you're finished using the PMIS MapZapper, follow the instructions in the 'Stopping the PMIS MapZapper' part of this document.

Chapter 4 – Printing Maps Using the PMIS Layout Maker

You can print maps created using the PMIS MapZapper, by following the instructions below:

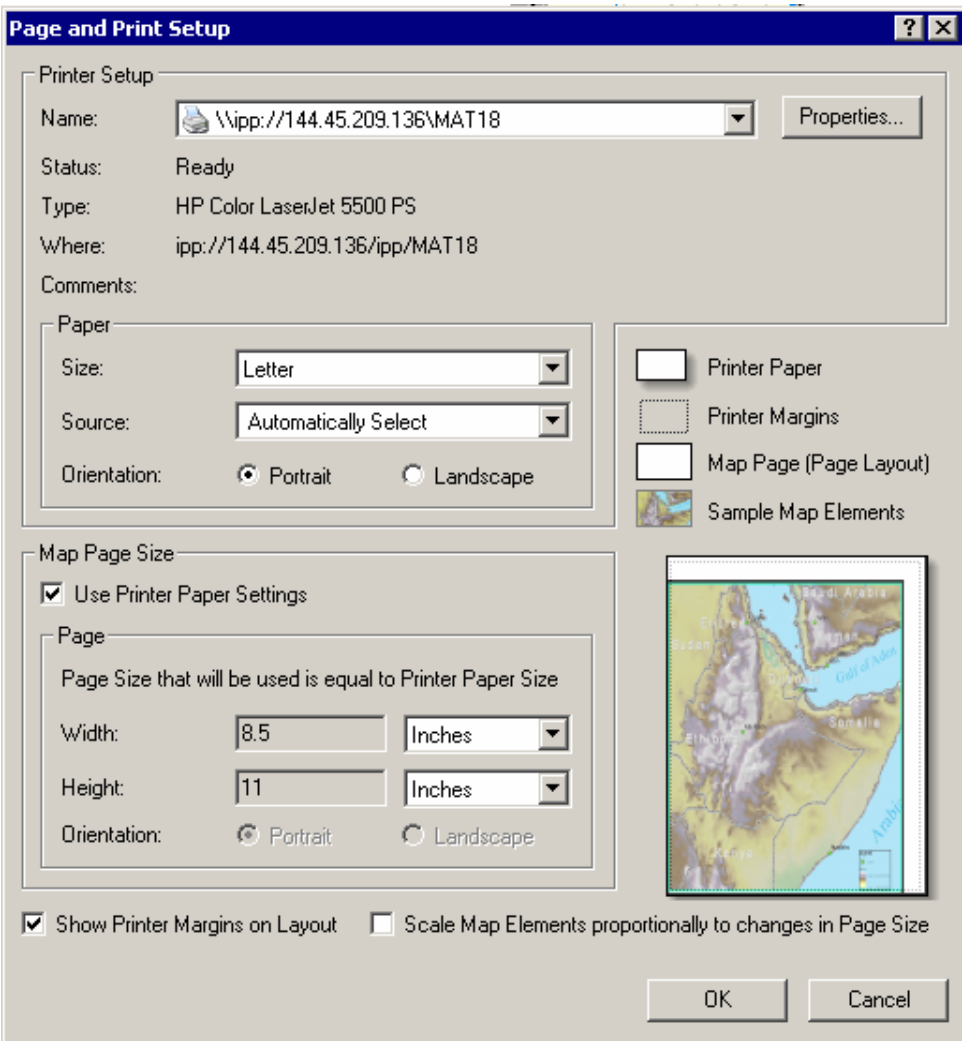
1. Start the PMIS MapZapper and make a PMIS map, if you have not already done so.
2. Go to ArcMap and make it the active window. This example shows an IH 35 map, mainlanes only, for the Waco district.
3. Click the 'PMIS Layout Maker' button at the left of the map window.  This button looks like a partially-unrolled map.



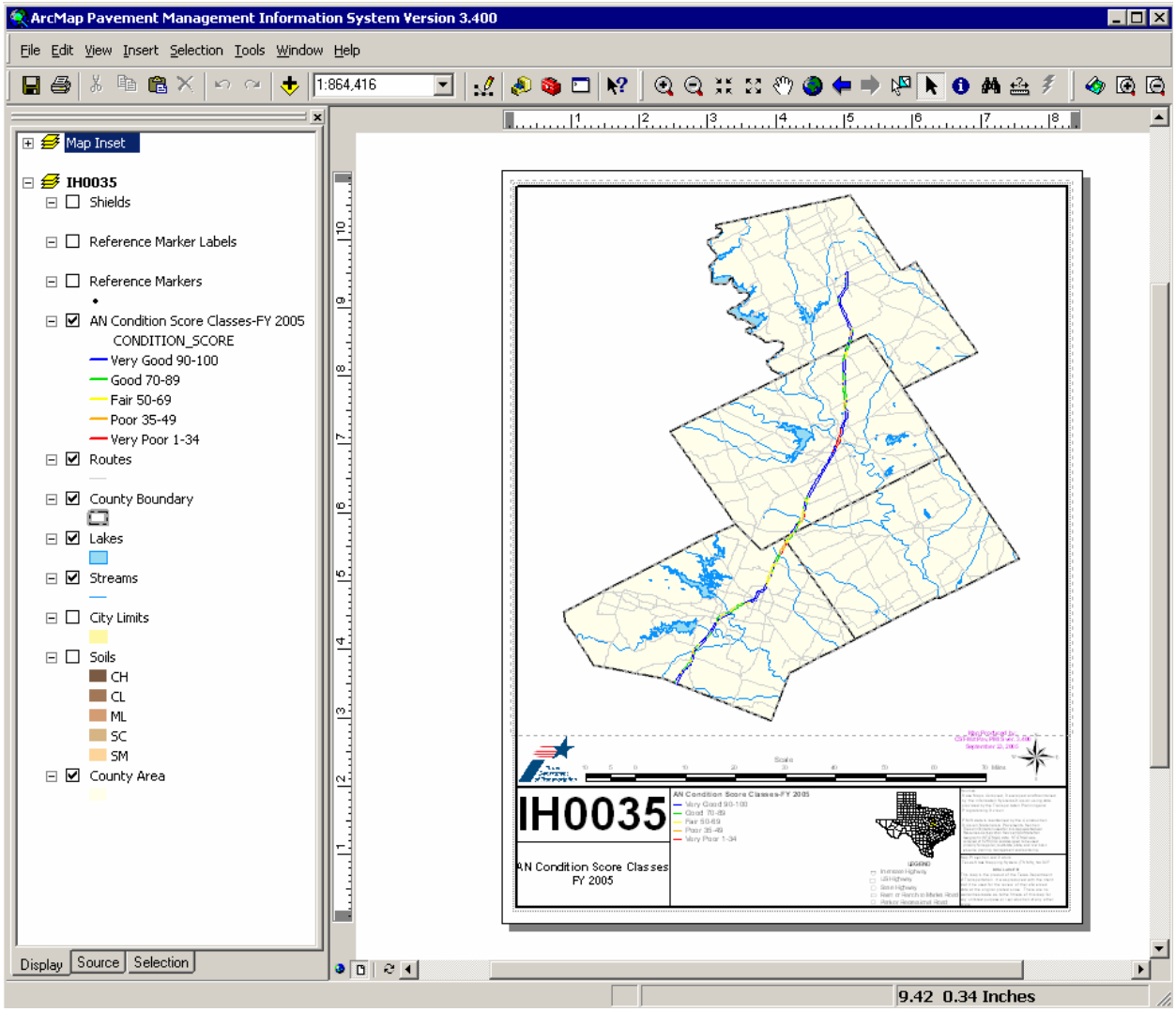
The Page and Print Setup window will appear. This is where you can change the printer, page size, and page orientation. There are other options in the window that can be changed, but usually do not need to be changed.

A Version 3.400 improvement is that the PMIS Layout Maker sizes the orientation (portrait or landscape) to best fit the map area. You can still change the page orientation, though.

4. Make whatever changes you need to make, and then click the 'OK' button.



ArcMap will produce a version of the map that is ready for printing.

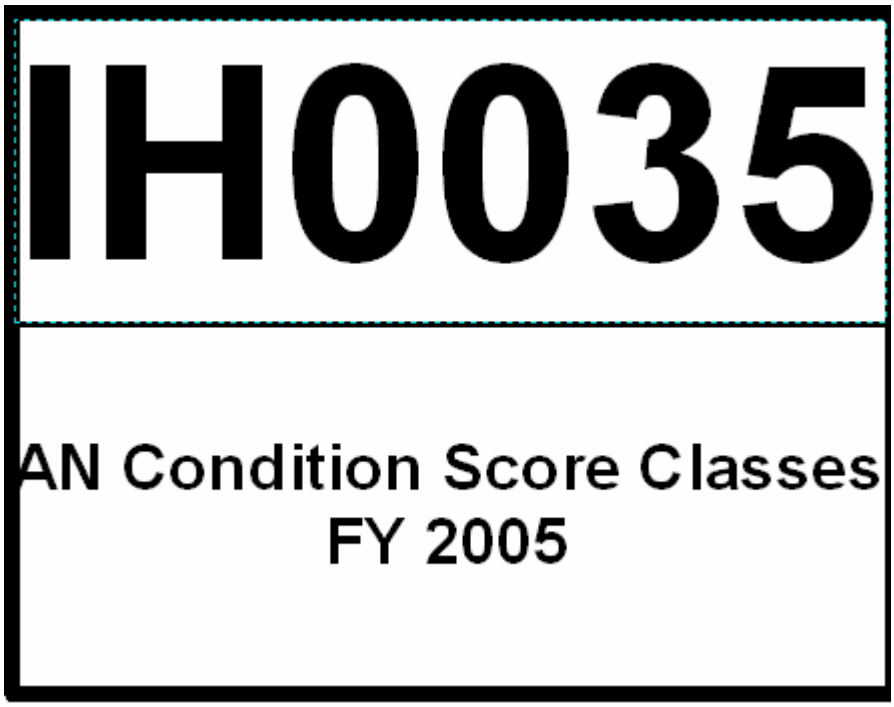


The map includes an 'IH0035' label to show the specific highway selected. It also includes a small inset State map with the selected counties shown in yellow (which is difficult to see in this example).

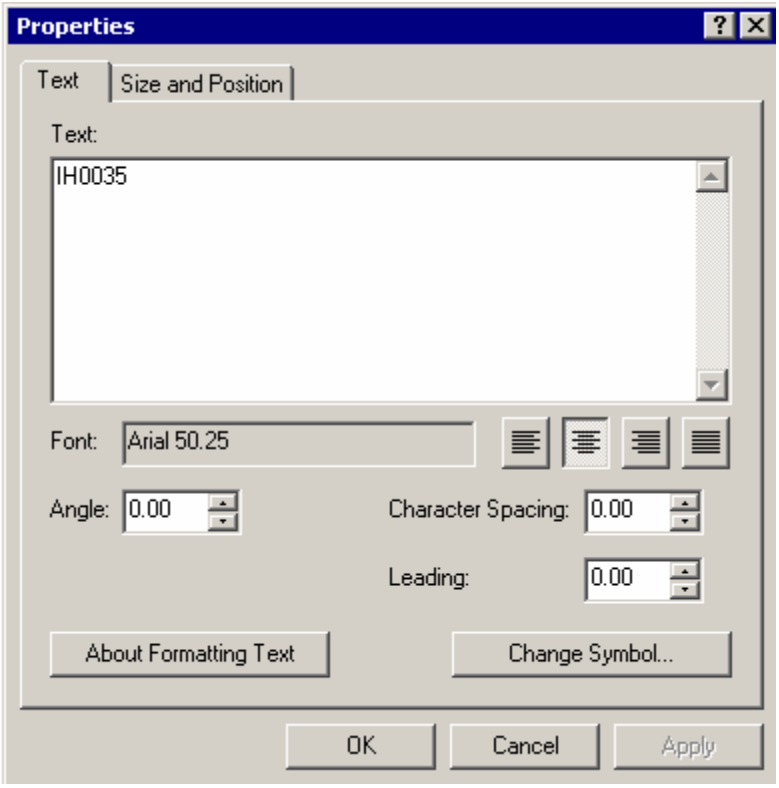
5. Click the 'Print' button near the top of the window to bring up the 'Print' window.
6. Click 'OK' to print the map.

You can change the 'IH0035' label on the map to include a note about 'mainlanes only.'

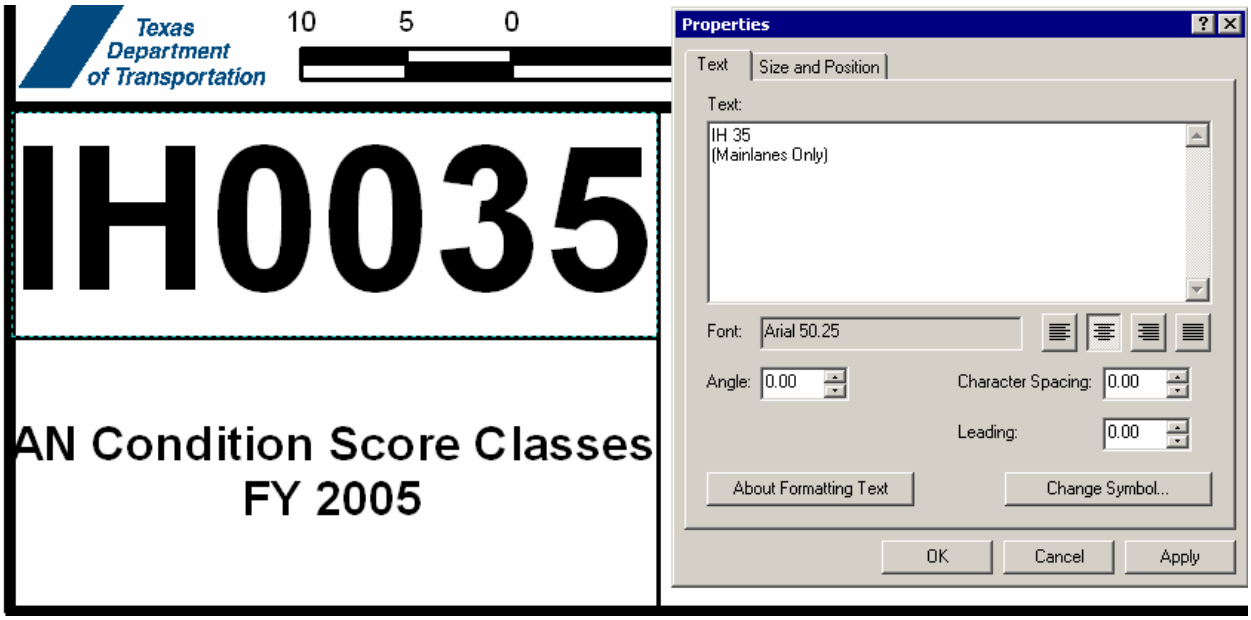
- Click twice (but not too quickly) on the 'IH0035' label on the map. Be sure that the light-blue dashed box shows up around the 'IH0035' label before continuing or else you will end up changing the frame around the entire map.



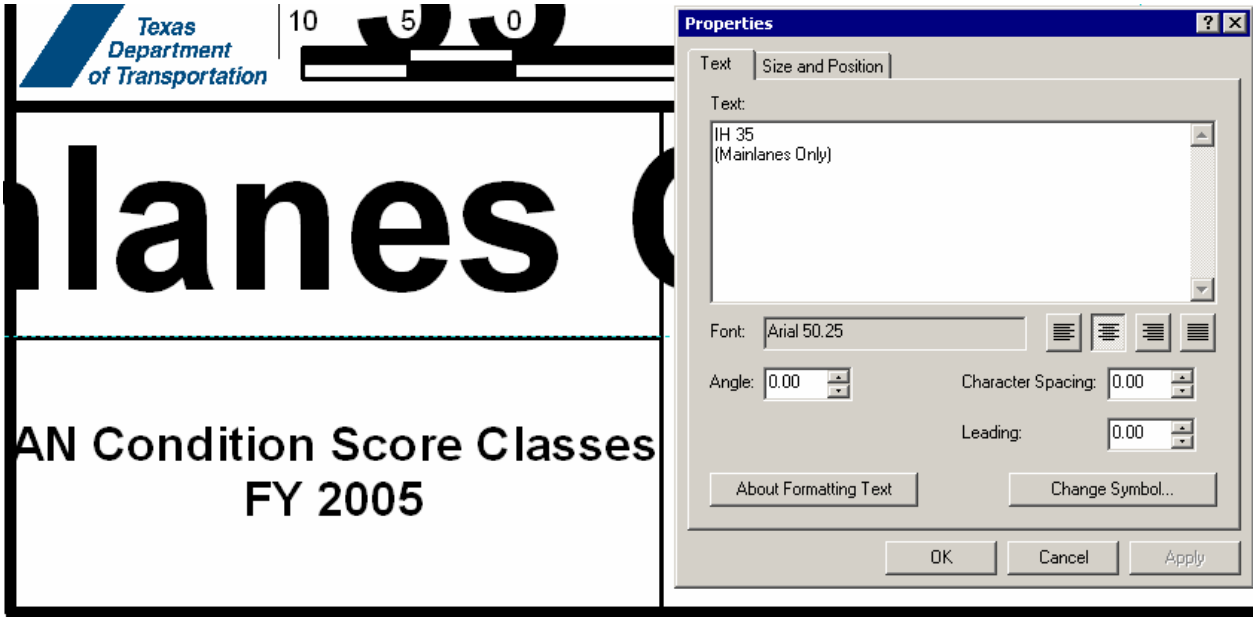
- Right-click the 'IH0035' label and click the 'Properties…' item in the pop-up list. Click the 'Text' tab, if necessary, to show the 'IH0035' title.



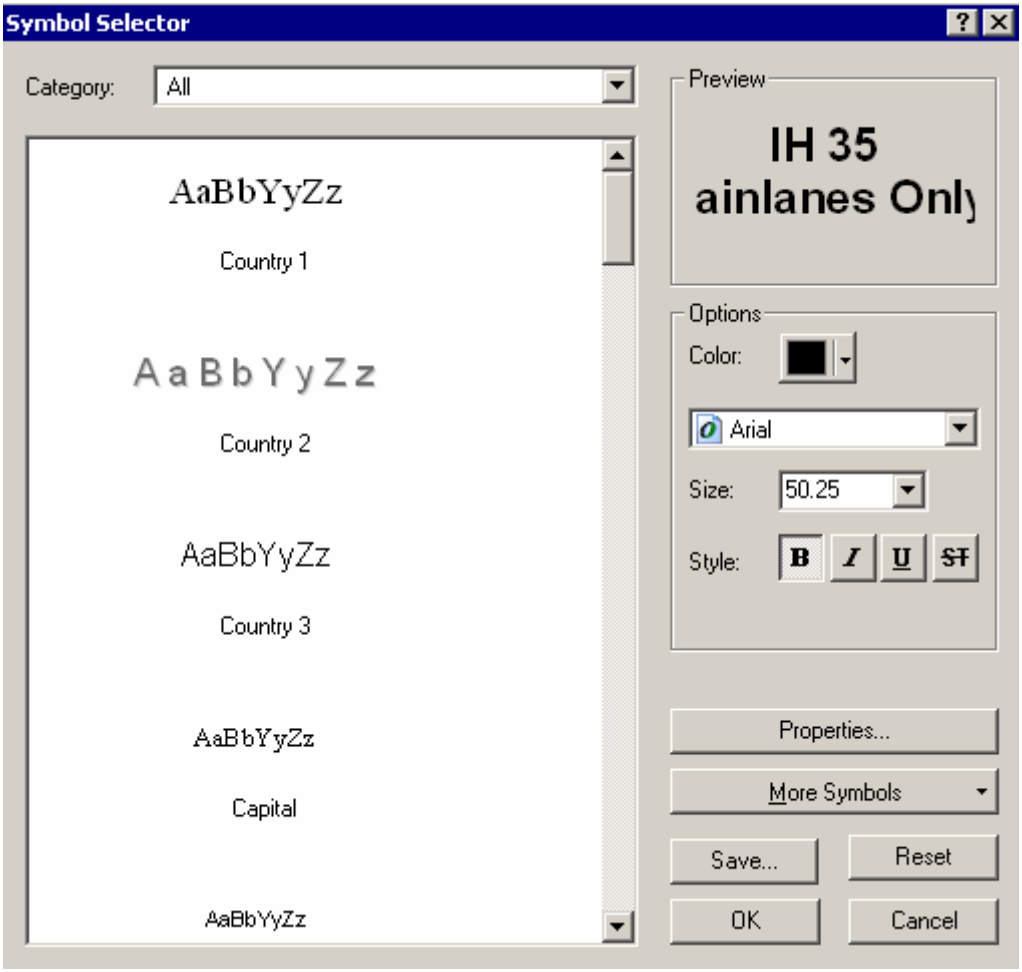
- Type in new text. Use the **Enter** key to add another line.



- Click the 'Apply' button to test the new text on the map. It will probably be too big (as it is in this example).

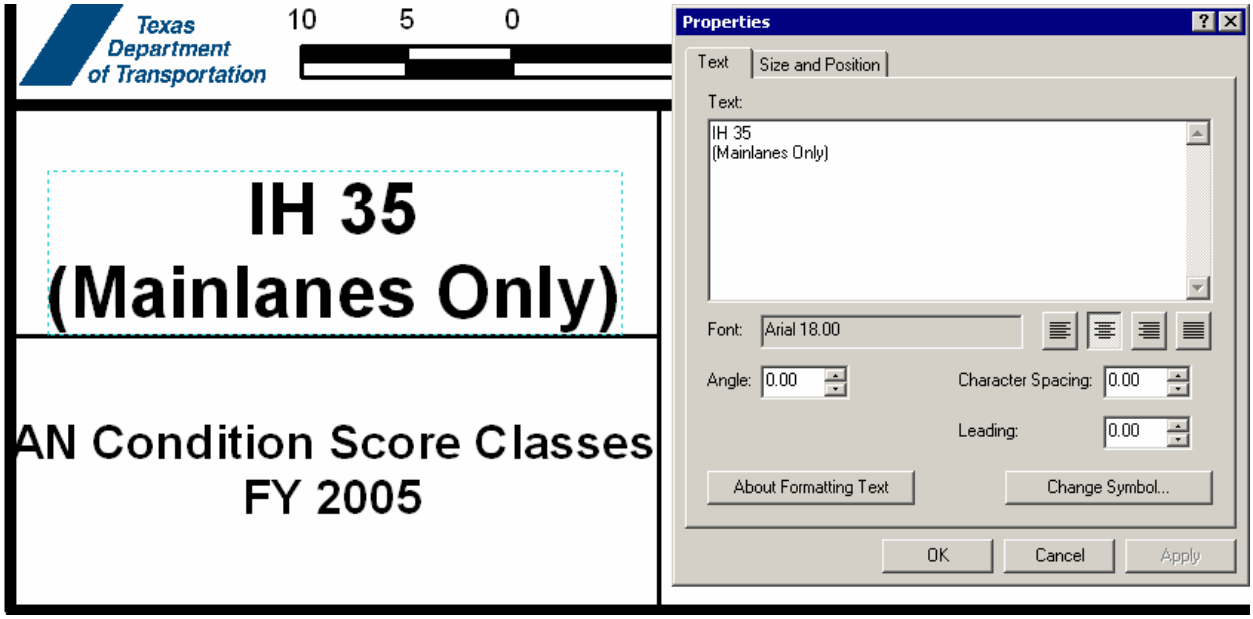


- Click the 'Change Symbol…' button to reduce the size of the text. Go to the 'Size' drop-down list and click '18' to change the text size from 50.25 points to 18 points.



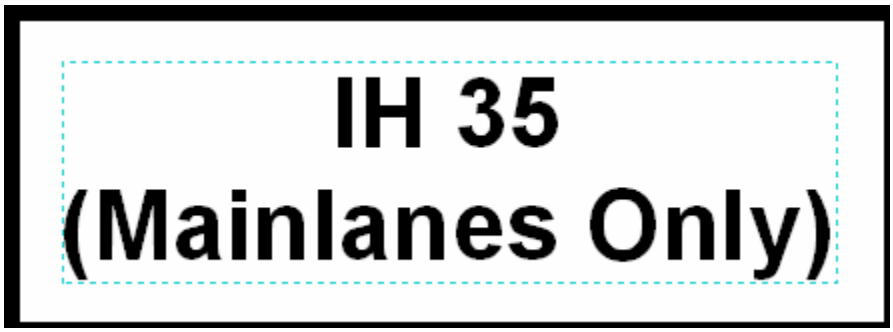
- Click the 'OK' button to make the 'Symbol Selector' box go away.

- Click the 'Apply' button to test the size of the new text. It fits in the box now but is not centered vertically within the box.



- Click the 'OK' button to finish changing the size of the text. Note that the light-blue dashed box is still present, showing that the text is still selected for editing.

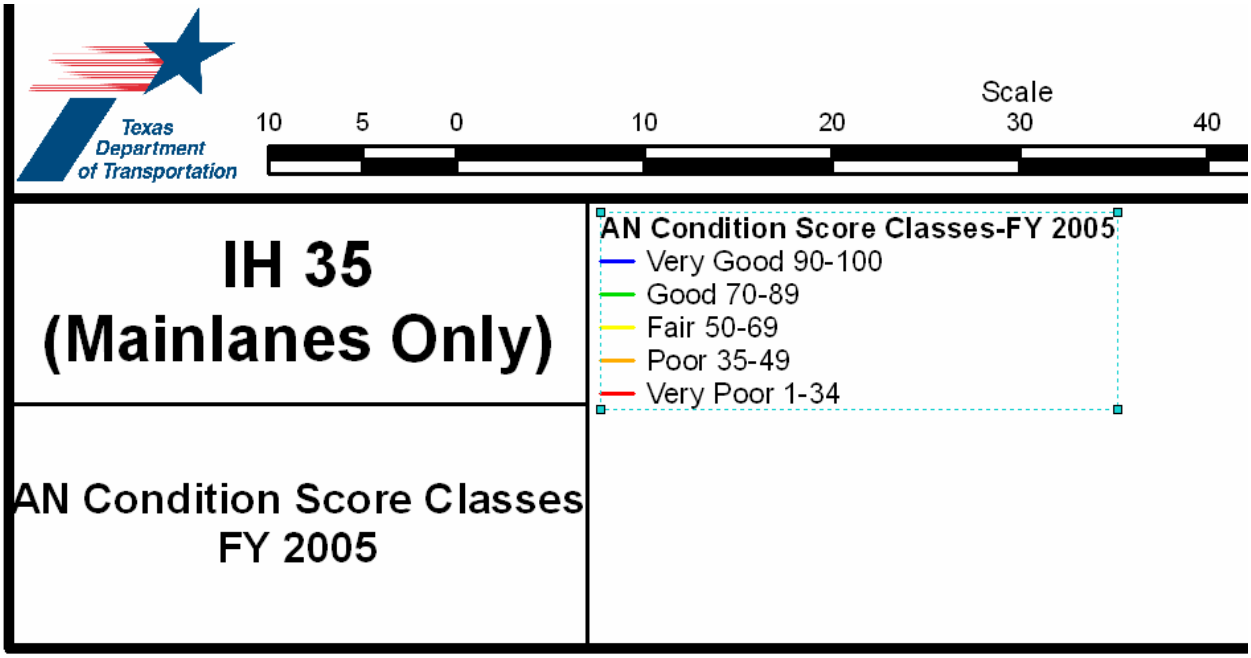
- Use the up-arrow (↑) key to move the text upwards until it is more closely centered vertically within the box.



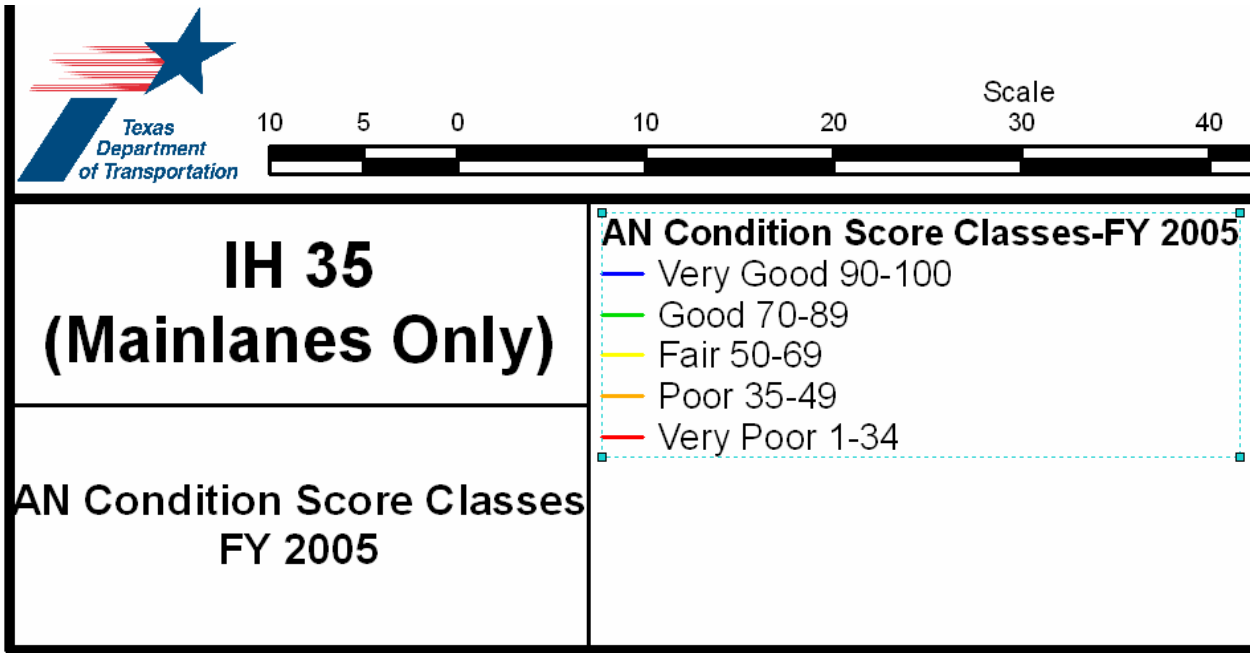
- Press the **Esc** key when finished.

You can make the legend text bigger to make it easier to read.

- Click twice (but not too quickly) on the 'AN Condition Score Classes-FY 2005' label on the map. Be sure that the light-blue dashed box shows up around the legend before continuing or else you will end up changing the frame around the entire map.

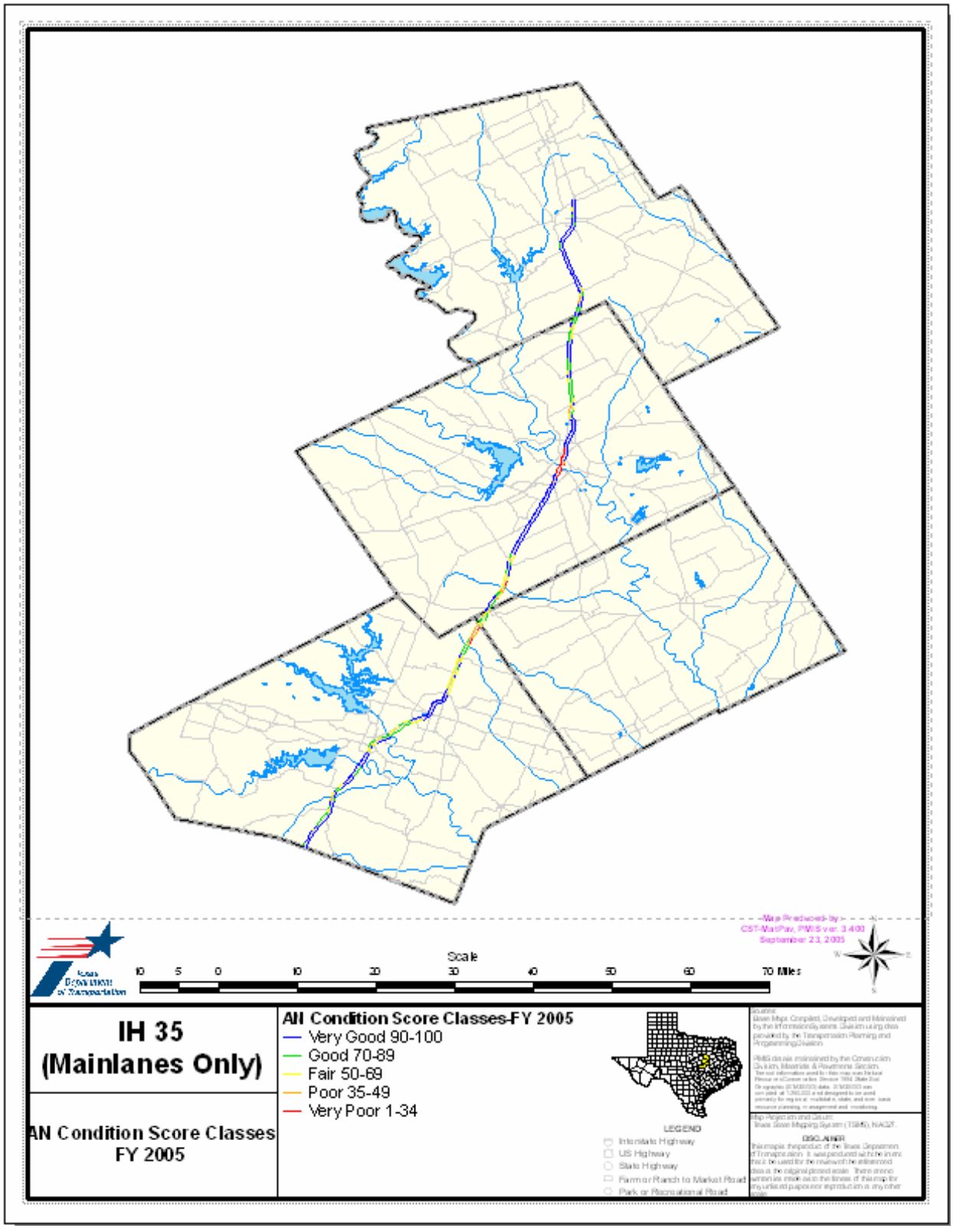


- Click and drag the lower-right light-blue box corner to make the legend text bigger.



- Press the **Esc** key when finished.

Now the map layout looks like this:



This is the end of the basic instructions for printing maps using the PMIS Layout Maker. To close the program and go to another task, click the **X** (Close) button in the upper right corner of the window to close ArcMap (click 'No' when asked to save changes). You can go back to the PMIS MapZapper window to make other maps.

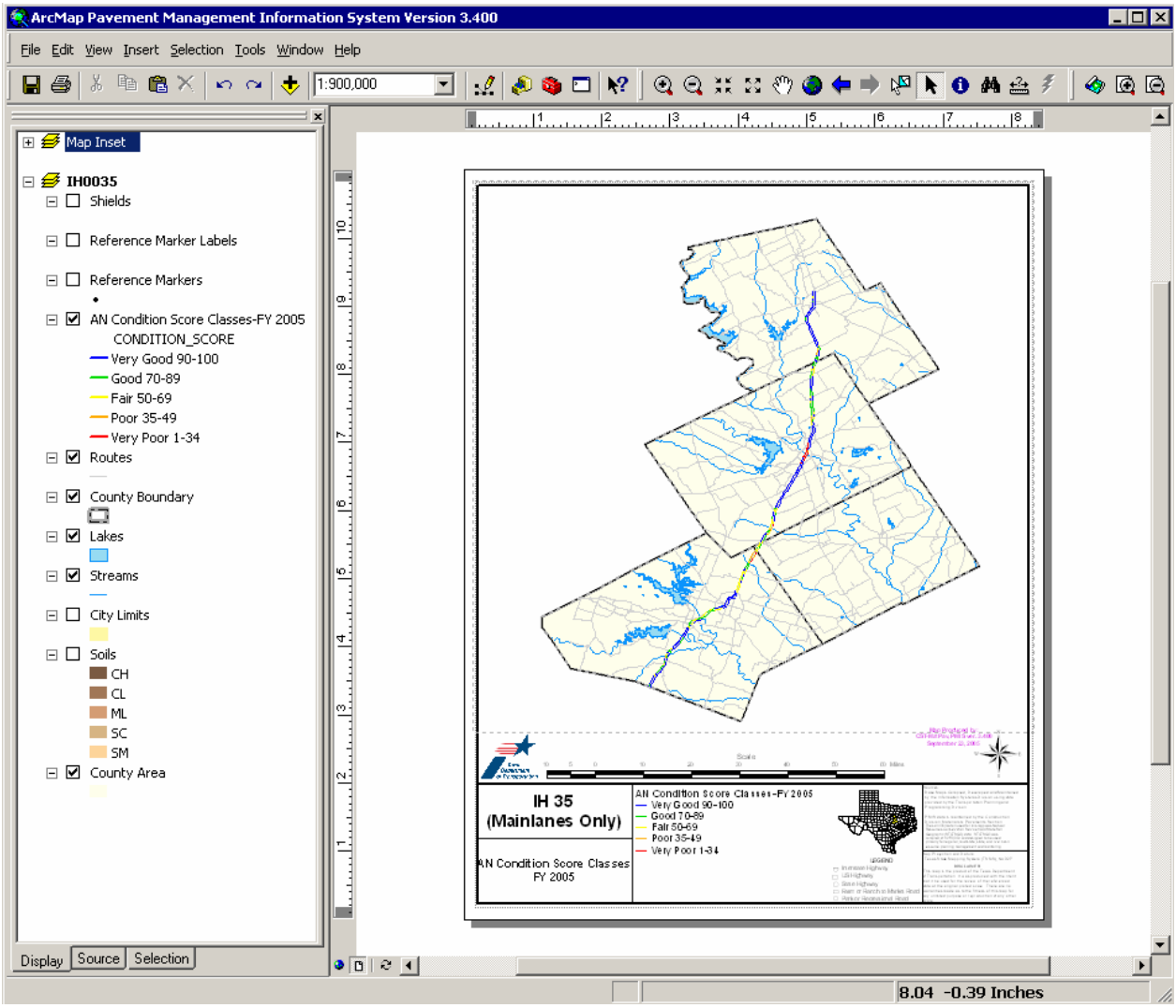
If you're finished using the PMIS MapZapper, follow the instructions in the 'Stopping the PMIS MapZapper' part of this document.

Changing Page Size and Orientation Using the PMIS Layout Maker

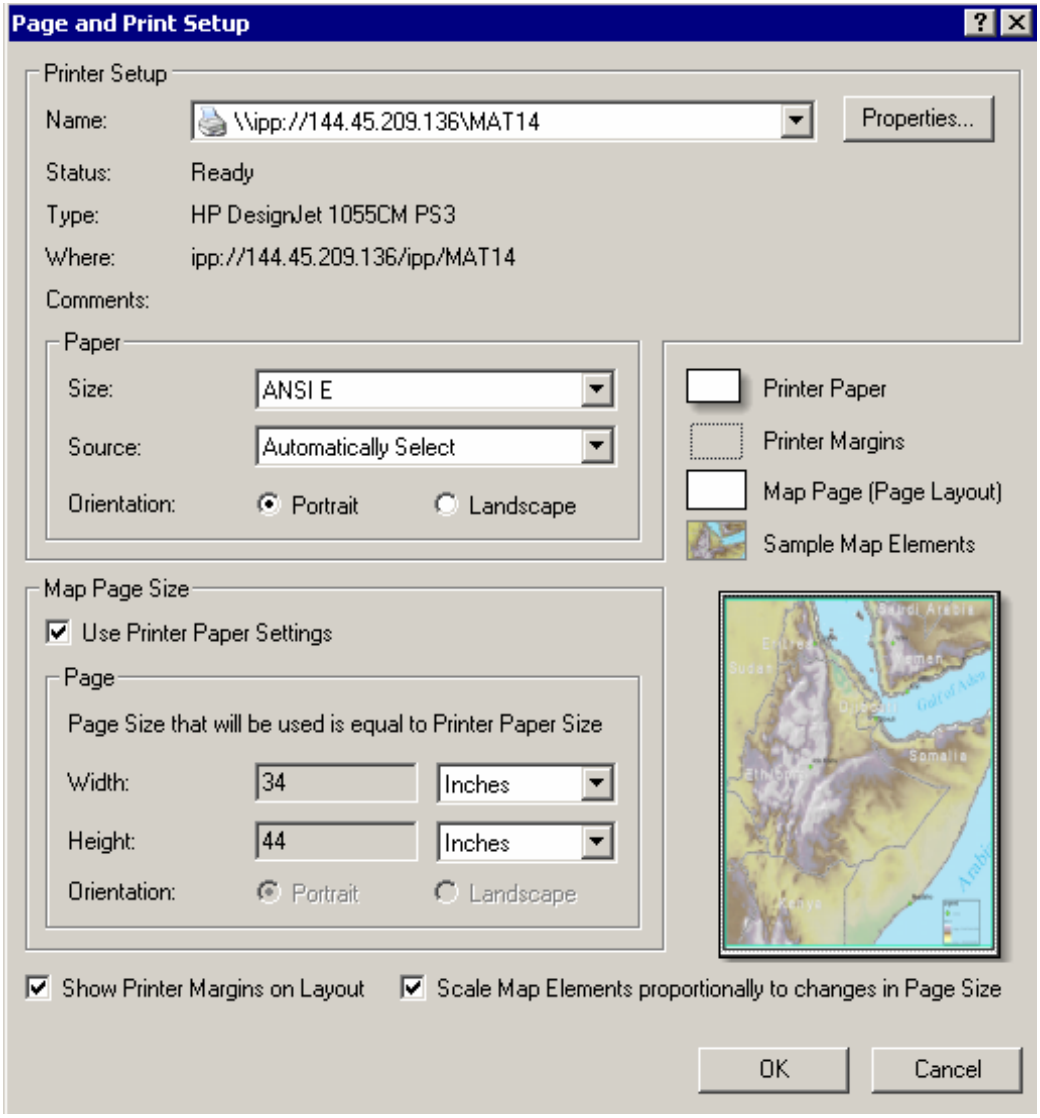
One of the advantages of using ArcMap with the PMIS MapZapper is that you can change the page size and orientation of a map without having to rerun the map. For example, if you make a map with 8.5x11 portrait orientation and then decide to use it for presentation in a large meeting room, you can change the map size (maybe to E-size 34x44 portrait orientation) without having to rerun the map.

Here are instructions on how to change the paper size and orientation without rerunning the map:

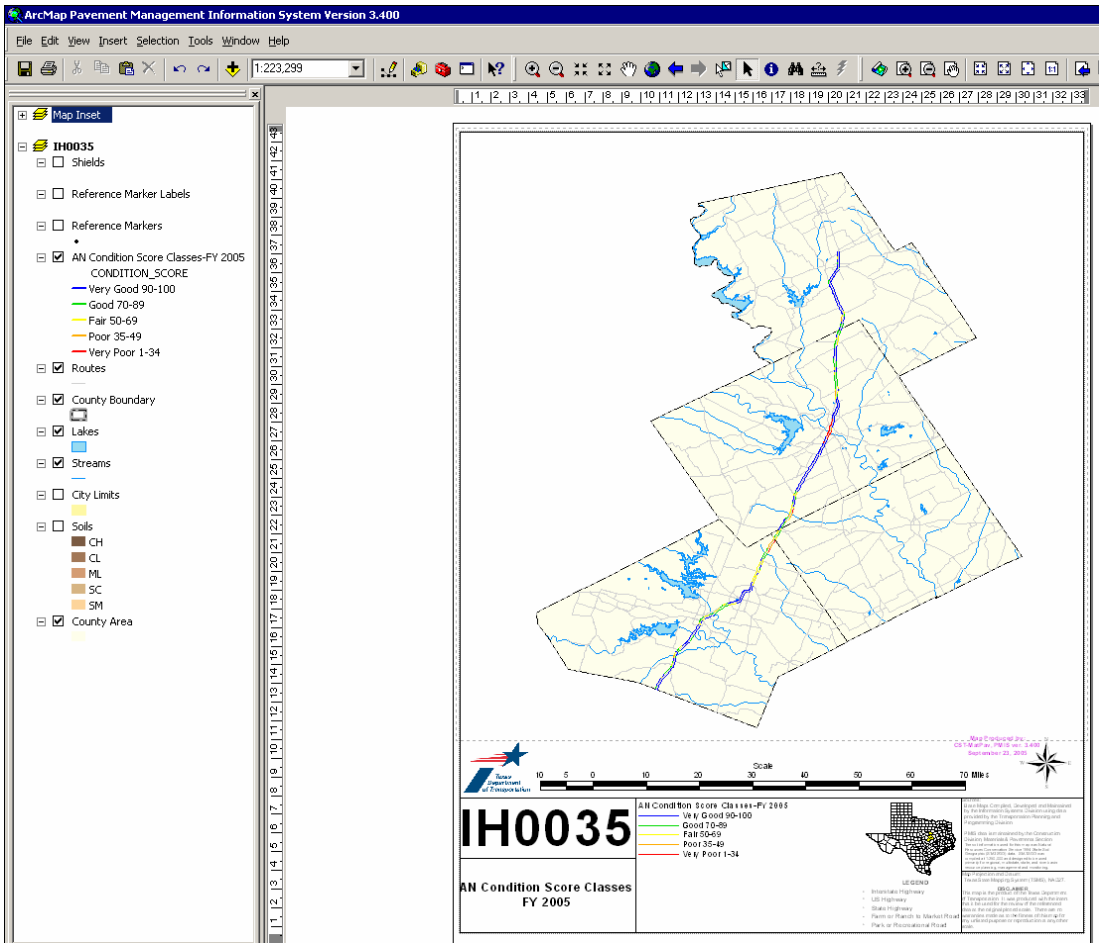
1. Use the PMIS Layout Maker to make a map that can be printed, if you have not already done so. The example below is the 8.5x11 portrait orientation map of Waco district, IH 35 mainlanes that was produced earlier.



2. To change the paper to E-size 34x44, click the 'PMIS Layout Maker' button  (the partially-unrolled map icon) on the toolbar. The Page Setup window will appear.
3. Go to the 'Name' drop-down box and select a printer that can print an E-sized map. Click the 'Printer Page Size' drop-down box and choose 'ANSI E – 34x44 in.' The 'Page Orientation' radio button is already selected for Portrait, so leave that unchanged. Then click the 'OK' button.



4. ArcMap will redraw the map with the page expanded to E-size, 34x44 inches, portrait orientation. Please note that the horizontal ruler has been resized to 34 inches and the vertical ruler has been resized to 44 inches. The larger map is now ready to print. **Please note** that resizing the page size redraws the entire map page, so any title changes or legend changes (such as done on the previous pages) are lost.
5. Click the 'Print' button near the top of the window to bring up the 'Print' window.
6. Click 'OK' to print the map.



This is the end of the instructions on changing page size and orientation using the PMIS Layout Maker.

Chapter 5 – Utility Score Optimizer

The PMIS MapZapper also analyzes distress and ride quality data and comes up with estimated costs needed to meet the Texas Transportation Commission's goal of having 90 percent of Texas pavements in "good" or better condition. "Good or better condition" means a PMIS Condition Score of 70 or above.

The Utility Score Optimizer can appear overly-complex at first glance, so a brief "big picture" overview is given below.

The Big Picture…

A pavement section can have a PMIS Condition Score less than 70 because of too much distress or too much roughness (low ride quality) or both. For example, an ACP section can have too much Deep Rutting or too many Failures; a CRCP section can have too many Punchouts; or a JCP section can be too rough. Each pavement distress type (and ride quality) has weighting factors which lower the Condition Score as the distress or ride quality worsens.

These weighting factors are known as **Utility Values** in PMIS. "Utility" may be thought of as the value of the service provided by the pavement in use with a particular level of damage. PMIS utility values range from 0.0 (least valuable) to 1.0 (most valuable). All other things being equal, whenever the utility value for one distress type or ride quality on a PMIS section drops below 0.7, that section will have a Condition Score below 70 – and thus will fall below the "good or better condition" standard.

The simplest approach – and that used by the Utility Score Optimizer – is to search for any PMIS section that has a single distress type or ride quality utility value below 0.7. "Fixing" that distress type or ride quality will raise the PMIS section's Condition Score above 70 and thus make progress towards the 90 percent goal. Fixing enough of these sections (statewide or in a district) will meet the pavement condition goal.

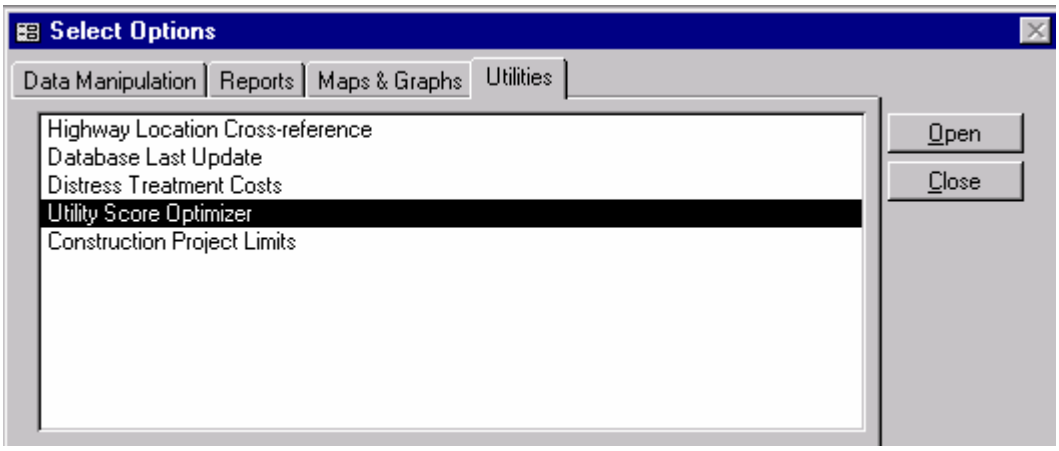
It is possible for a PMIS section to have multiple distress types – none of which have utility values below 0.7 – that combine to drop the Condition Score below 70. The Utility Score Optimizer **does not** consider "fixing" these sections. Usually these sections are less than ten percent of the total lane mileage, so the "90 percent good or better" goal can be met without fixing those sections.

PMIS Condition Scores are influenced by traffic and speed limit, so those factors must be considered when estimating funding needs. It typically takes more expensive treatments to repair distress or ride quality under high traffic because of the increased traffic loading.

Instructions for Using the Utility Score Optimizer

To use the Utility Score Optimizer, follow the instructions below:

1. Start the PMIS MapZapper, if you have not already done so, and get to the 'Select Options' window.
2. Click the Utilities tab. Five options are available, as shown below:

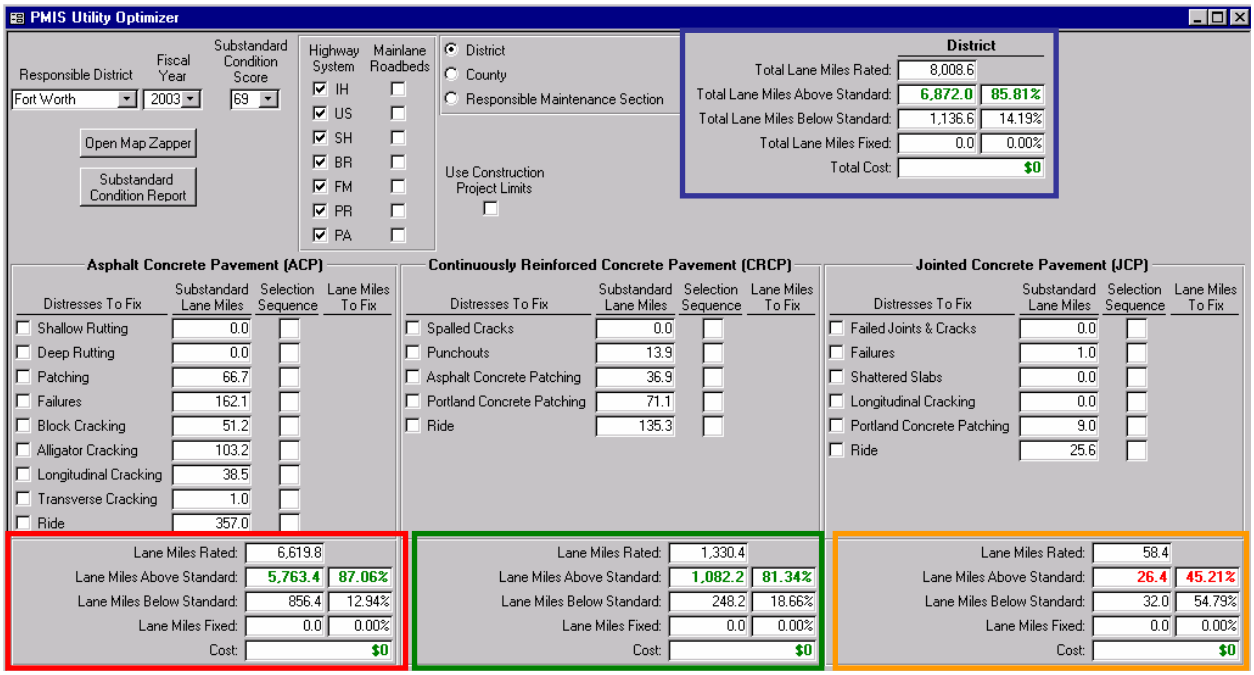


- **Highway Location Cross-reference** gives a way to convert PMIS Reference Marker limits to Control-Sections, Distance From Origin (DFO) values used to make the maps, and milepoints (used in existing TxDOT road inventory log sheets. You must download the Control Section data (under 'TPP Data') before this option will work.
- **Database Last Update** shows the window that displays when each data type was downloaded. This is the same window that shows up when you start the PMIS MapZapper. This is useful for checking the age of your PMIS and other data, to see if another download is needed to get data that is more current.
- **Distress Treatment Costs** is used with the 'Utility Score Optimizer.' You can use this program to define how each distress type (and ride quality) will be repaired and how much the repair will cost, in dollars per lane mile. **Please Note:** completing this window can take several minutes. There are four possible repair treatments (Preventive Maintenance, Light Rehab, Medium Rehab, and Heavy Rehab) for each distress type and ride quality, and each has to be selected for three traffic categories (Low, Medium, and High) for each of 10 pavement types. However, once completed, the 'Utility Score Optimizer' will use your treatment types and costs to estimate the funding needed to bring your mileage up to the Texas Transportation Commission's "90 percent good or better" pavement condition goal.
- **Utility Score Optimizer** determines the percentage of lane miles in a district that fall below the Texas Transportation Commission's ten-year goal of 90 percent good or better, and the estimated cost for one year of bringing that mileage up above the goal. This estimated funding is above and beyond existing funding (routine maintenance, preventive maintenance, and rehabilitation), and covers pavement-related costs only.
- **Construction Project Limits** lets you designate sections of pavement under construction for use in the 'Utility Score Optimizer.'

3. Double-click 'Utility Score Optimizer.' The program will start by reading data for the first district and fiscal year in the database. In most cases, there is only one district and one fiscal year – for example, Fort Worth in FY 2003 – in the database. The program will then determine the percentage of lane miles in the district which are below the 90 percent good or better pavement condition goal. It will also group the mileage and percentages by pavement type (ACP, CRCP, and JCP), and summarize the results.

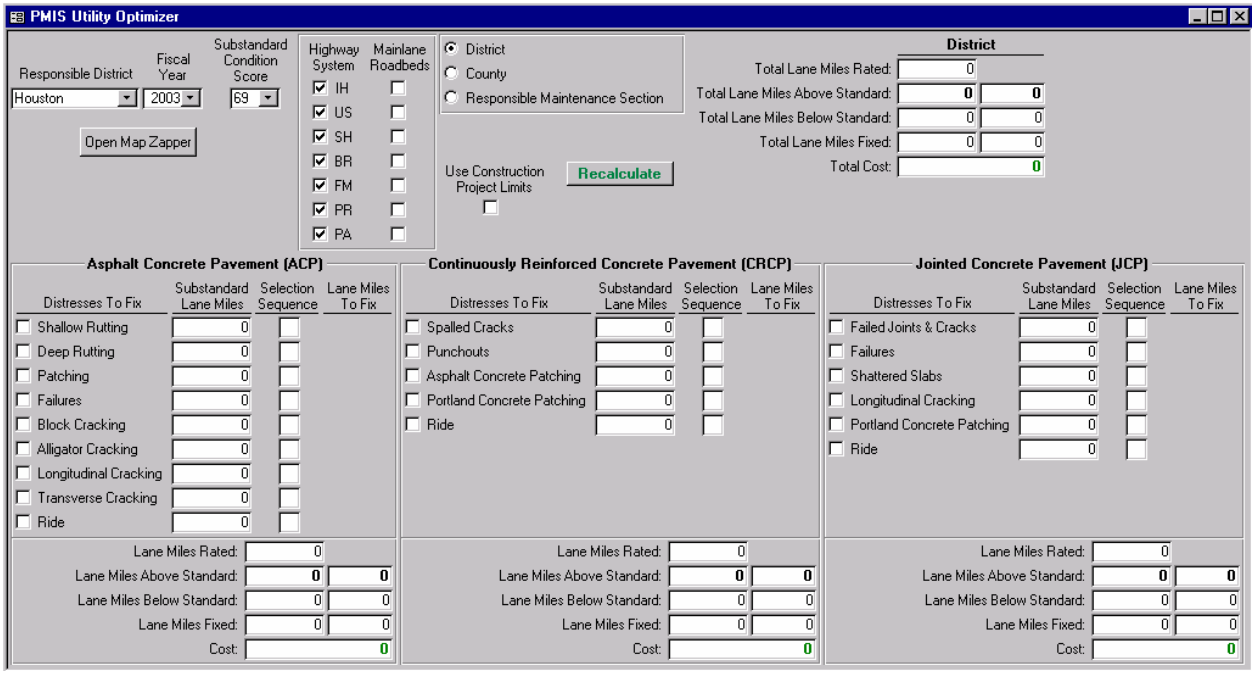
   This example shows FY 2003 results for the Fort Worth district. The upper right corner (in the blue box) shows the overall results for the district. 85.81 percent of the lane miles are above the standard (that is, are in good condition or better), while 14.19 percent of the lane miles are not. The total cost is zero because no treatments have been selected yet to raise the percentage above 90. The blank space to the right of the district totals gives room to show county and maintenance section totals, when the program is run for those areas.

   The bottom half of the example (in the red, green, and orange boxes) show summary totals for the three major pavement types. 87.06 percent of ACP lane miles are above the standard, 81.34 percent of CRCP lane miles are above the standard, and 45.21 percent of JCP lane miles are above the standard.

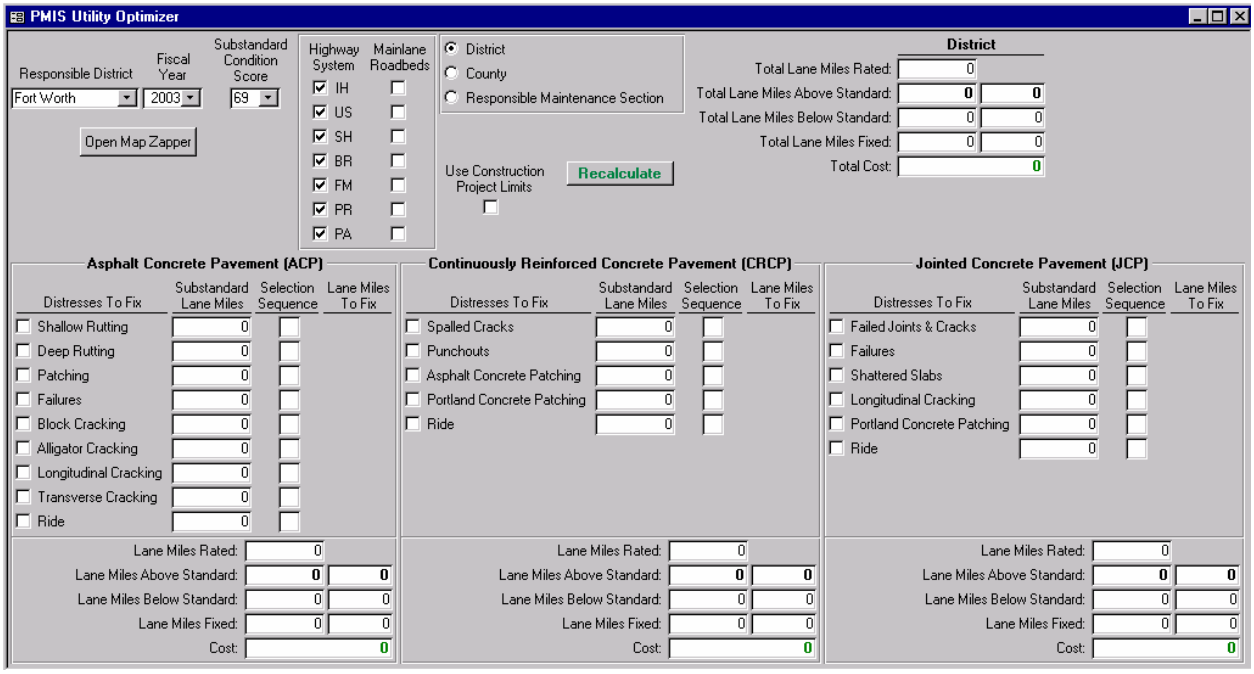


In this example, the district is not above the 90 percent goal. Getting above the goal involves use of the rest of the PMIS Utility Optimizer window.

4. To select another district or fiscal year to be analyzed, click the 'Responsible District' and 'Fiscal Year' drop-down boxes in the upper left corner of the window. A 'Recalculate' button will appear on the form. Click the 'Recalculate' button to show the results for the new district (this will not be done in the example given here, though).



5. Click the 'Substandard Condition Score' drop-down box if you want to change the criterion for defining "good or better." All PMIS sections less than or equal to the selected Condition Score will be marked as being below the standard. **Please Note:** the Texas Transportation Commission's standard is "Condition Score below 70" (less than or equal to 69), so this drop-down box should not be changed except under special circumstances.
6. Click the 'Highway System' check boxes to select one or more highway systems to be analyzed. The default setting is to analyze all systems, but you can analyze one or more systems by themselves (for example, IH and US). Click a box to turn it off (not analyze the system) and click a box again to turn it back on.
7. Click the 'Mainlane Roadbeds' check boxes to analyze mainlane roadbeds only for a specific highway system. The default setting is to analyze all roadbeds (mainlanes and frontage roads), so all check boxes are turned off. Click a box to turn it on (analyze mainlanes only) and click it again to turn it off. **Please Note:** you can click the 'Recalculate' button at any time to analyze the results so far.



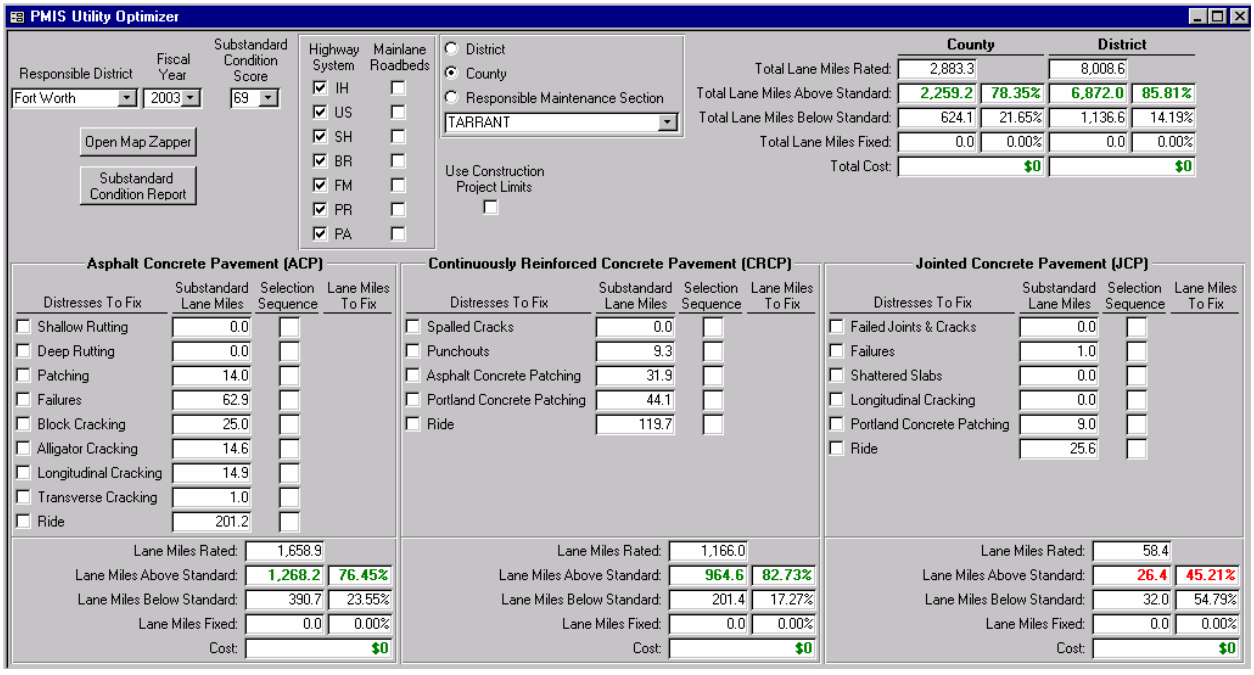
8. Next is a series of three radio buttons that determine whether to analyze mileage for the entire district, or for a single county or maintenance section. Click the 'County' radio button and a list of counties in the district will appear in the drop-down box; then select one of the counties; then click the 'Recalculate' button and PMIS will calculate mileages and percentages just for that county.

   A series of 'County' boxes will appear to the left of the 'District' boxes to let you compare the county to the entire district. In this example, 78.35 percent of the lane miles in Tarrant county are above the standard, compared to 85.81 percent of the lane miles in the entire Fort Worth district.

   You can also click the 'Responsible Maintenance Section' radio button and select a maintenance section from the drop-down box, in which case a series of 'Maintenance Section' boxes will appear to the left of the 'District' boxes.

   The remaining steps in this section will select 'District' instead of 'County,' to go back to the entire districtwide summary.

   Please Note: PMIS assumes that all maintenance sections are properly defined. Maintenance section changes need to be stored in the Texas Reference Marker (TRM) system by the end of July to show up in the next fiscal year's PMIS database (for example, changes stored in TRM by the end of July 2003 will show up in August 2003 for the FY 2004 PMIS database).

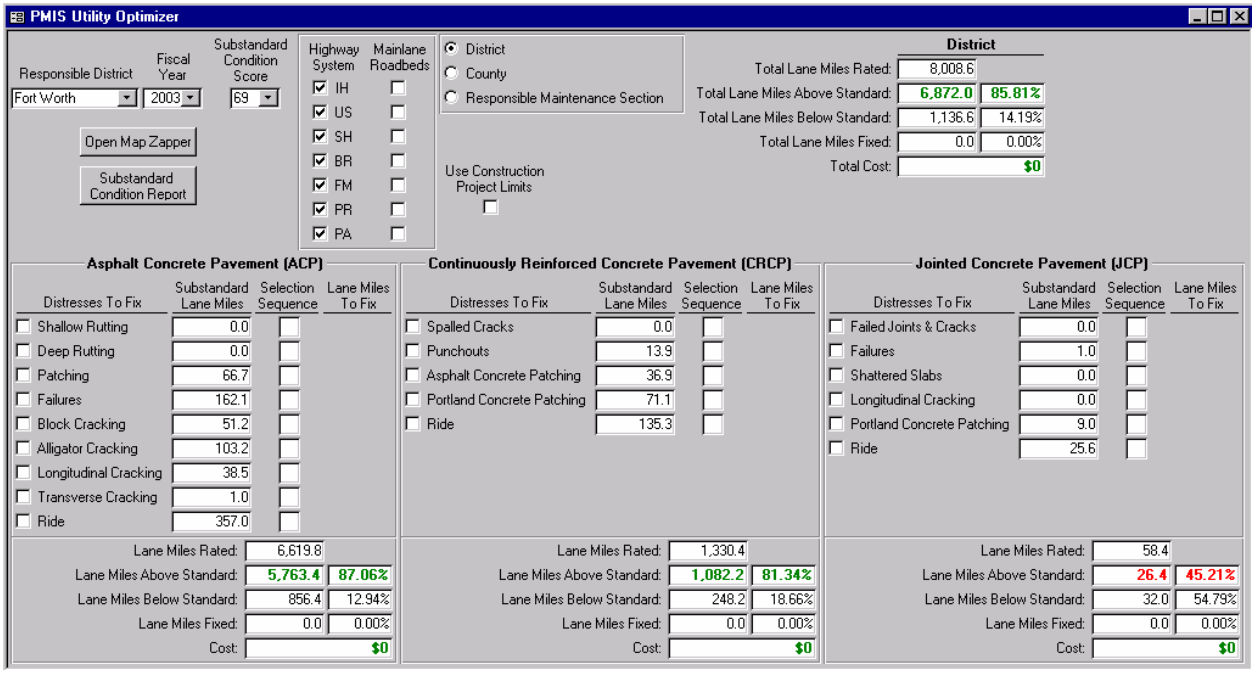


9. The next part of the Utility Score Optimizer window is the 'Use Construction Project Limits' check box. The default setting is to have the box unchecked – that is, to ignore user-defined construction projects and use the original PMIS data in the analysis. Clicking the box turns it on and alters the PMIS data used in the analysis.

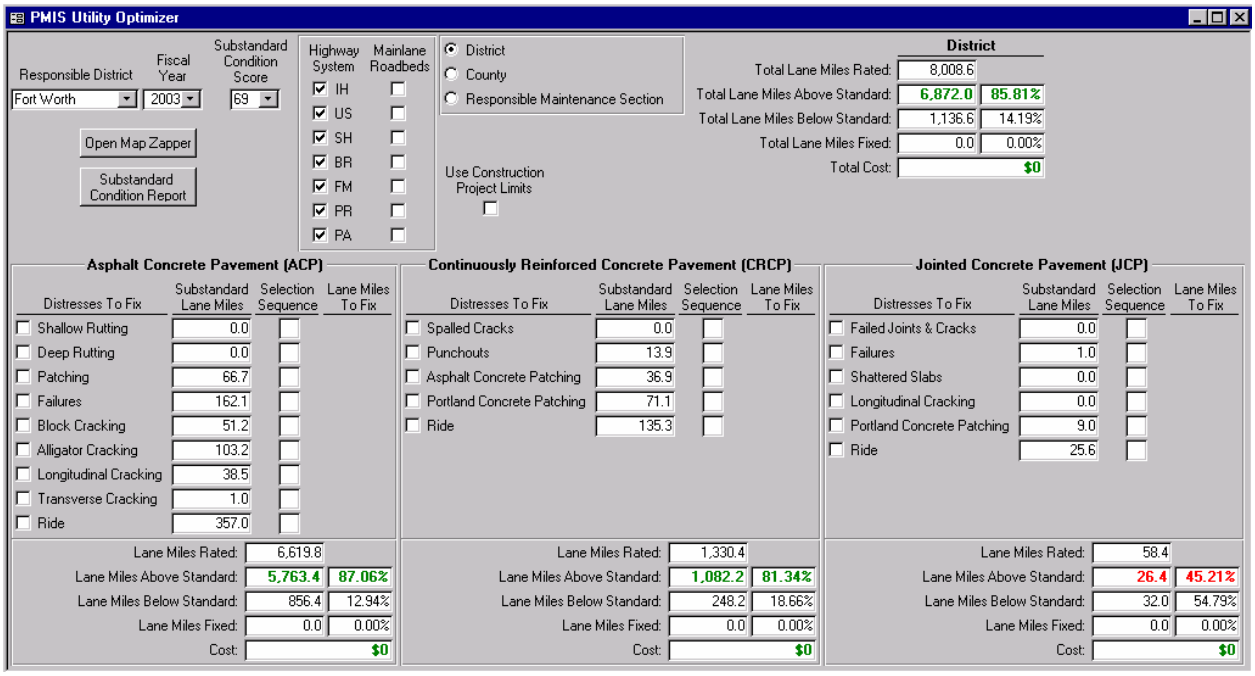
   If you have defined construction projects and click the 'Use Construction Project Limits' box, the Utility Score Optimizer will look at each construction project and reset the Distress and Ride utility values to 1.000, depending on whether you have chosen to fix Distress, fix Ride, or fix both. This simulates repair of the project and will increase the percentage of lane miles above the Condition Score standard. This means – among other things – that if you have a list of already-proposed projects for letting, you can use the Utility Score Optimizer to determine if those projects will be enough to meet the Condition Score goal.

   If you have not defined construction projects but would like to, please refer to the 'Defining Construction Projects for Use in the Utility Score Optimizer' part of this documentation for instructions.

   The rest of this example will continue with 'Use Construction Project Limits' not selected.



10. The next step in using the Utility Score Optimizer is to determine which distress types need to be fixed first. To do this, click the 'Substandard Condition Report' button shown below:



This produces a one-page report that lists the number of lane miles of each PMIS distress type (and ride quality) with a utility value less than 0.7. The '0.7' utility value is actually based on the 'Substandard Condition Score' drop-down box, so if you select a different Substandard Condition Score (for example, 60) the utility value will change (for example, to 0.6).

The distress types and ride quality values are sorted based on which one should be treated first. In this example, ACP Ride Quality needs to be fixed first (357.0 lane miles), then CRCP Ride Quality (135.3 lane miles), then ACP Failures (162.1 lane miles), and so on.

Texas Department of Transportation

Pavement Management Information System (PMIS)

Fort Worth District FY2003

PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All
Mainlane Roadbeds:
All Roadbeds: IH, US, SH, BR, FM, PR, PA
Construction Project Limits Used: No

Utility	Overall Utility Average	Substandard Utility (<0.70) Lane Miles	Traffic Utility Average (ADT * Speed Limit)			Highway Systems Utility Average						
			1-27,500 LOW	27,501-165,000 MEDIUM	> 165,000 HIGH	IH	US	SH	BR	FM	PR	PA
ACP Ride	73.11	357.0	83.52	81.62	70.66	75.24	83.03	73.12	54.46	73.91	37.49	
CRCP Ride	71.23	135.3	93.09	63.63	71.71	77.03	78.26	66.17	57.66	55.25		
ACP Failures	91.11	162.1	85.19	87.81	92.16	87.87	96.62	94.29	90.56	86.16	95.23	
JCP Ride	52.69	25.6	59.04	59.72	33.31	59.04		44.09	38.95			
CRCP Portland Concrete Patching	84.87	71.1	78.23	89.39	84.53	80.49	74.86	90.90	97.90	99.53		
ACP Alligator Cracking	91.97	103.2	96.04	92.00	91.73	95.45	90.65	91.60	92.07	91.89	98.16	
ACP Patching	93.92	66.7	91.71	90.63	94.77	94.68	90.07	95.65	96.04	93.17	100.00	
CRCP Asphalt Concrete Patching	90.02	36.9	80.36	100.00	89.25	86.46	84.70	95.24	98.89	96.81		
ACP Block Cracking	95.60	51.2	97.01	96.81	95.26	97.83	94.65	93.74	93.72	97.94	100.00	
ACP Longitudinal Cracking	94.60	38.5	96.57	97.63	93.82	93.92	94.48	92.88	94.50	96.59	100.00	
JCP Portland Concrete Patching	83.14	9.0	80.52	76.89	98.71	74.34		99.95	98.31			
CRCP Punchouts	94.46	13.9	77.84	94.07	94.63	93.72	90.78	96.05	94.86	100.00		
JCP Failures	96.80	1.0	90.15	98.39	96.84	99.86		85.40	95.85			
ACP Transverse Cracking	98.89	1.0	99.75	99.42	98.72	99.45	99.36	97.87	97.86	99.87	98.73	
ACP Deep Rutting	99.68	0.0	99.53	99.08	99.82	99.69	99.78	100.00	100.00	99.19	99.85	
ACP Shallow Rutting	99.35	0.0	98.78	98.57	99.56	98.54	99.51	99.73	99.80	98.99	98.16	
CRCP Spalled Cracks	99.70	0.0	99.66	99.61	99.70	99.67	99.84	99.45	99.99	99.97		
JCP Failed Joints & Cracks	98.55	0.0	90.78	99.80	100.00	98.24		97.97	100.00			
JCP Longitudinal Cracks	97.67	0.0	95.38	97.19	100.00	96.85		98.04	100.00			
JCP Shattered Slabs	99.97	0.0	100.00	99.94	100.00	100.00		99.80	100.00			

Pavement Type	Lane Miles				Percent Substandard
	Rated		Substandard		
Asphalt Concrete	6,619.8	82.66%	856.4	75.35%	12.94%
Continuously Reinforced Concrete	1,330.4	16.61%	248.2	21.84%	18.66%
Jointed Concrete	58.4	0.73%	32.0	2.82%	54.79%
Total:	8,008.6		1,136.6		14.19%
					85.81%

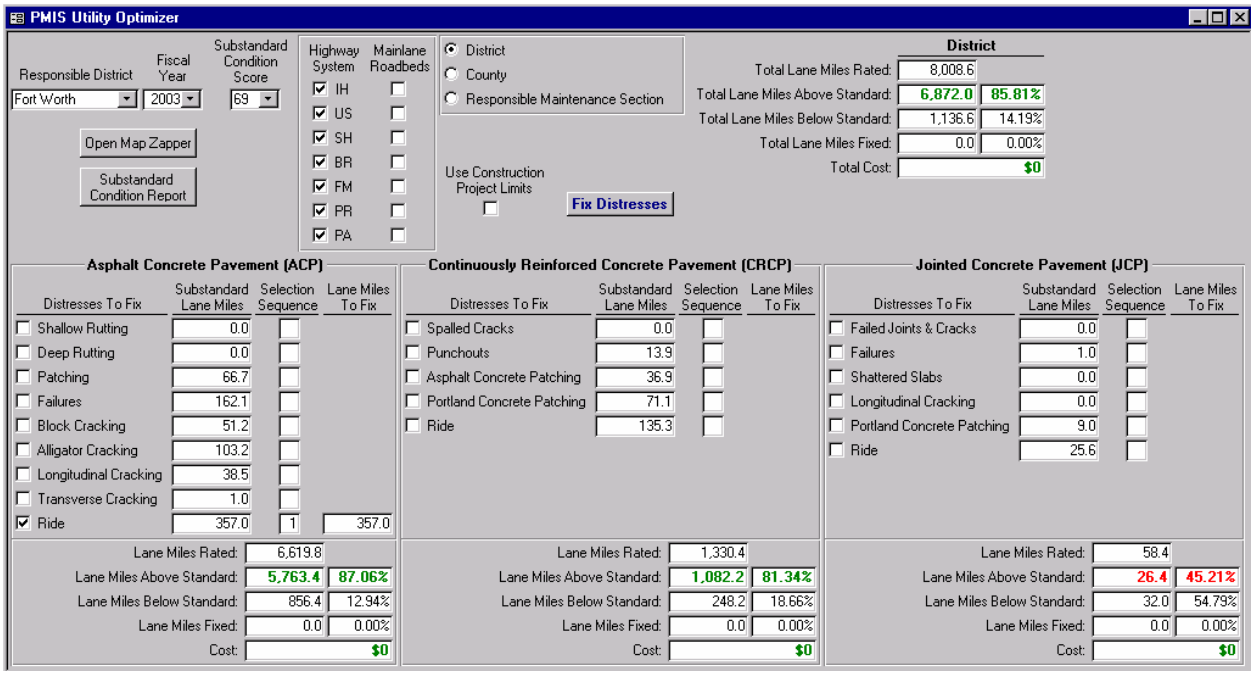
The list is not sorted by the number of lane miles to be fixed, though. Thus 25.6 lane miles of JCP Ride Quality is shown needing repair before 71.1 lane miles of CRCP Concrete Patches.

The actual sort of the distress types and ride quality is based on multiplying the average utility to be gained (100 minus the value in the 'Average' column) by the number of lane miles to be fixed (in the 'Substandard Utility Lane Miles' column). This sort gives a measure of total effectiveness – that is, which distress type to be treated will give the most improvement (in utility) for the most lane miles. For example, fixing the ACP Ride Quality will produce a gain of 26.89 in utility (100 – 73.11) for 357.0 lane miles, for a total improvement of 9599.73.

Now you can use the Substandard Condition Scores report to simulate fixing the distress types and ride quality to get above the 90 percent "good or better" goal.

11. To 'fix' the first item on the list, ACP Ride Quality, go to the 'Asphalt Concrete Pavement' portion of the Utility Score Optimizer window and click the 'Ride' check box. A number '1' appears in the 'Selection Sequence' column check box next to 'Ride' to indicate that this is the first distress type to be fixed.

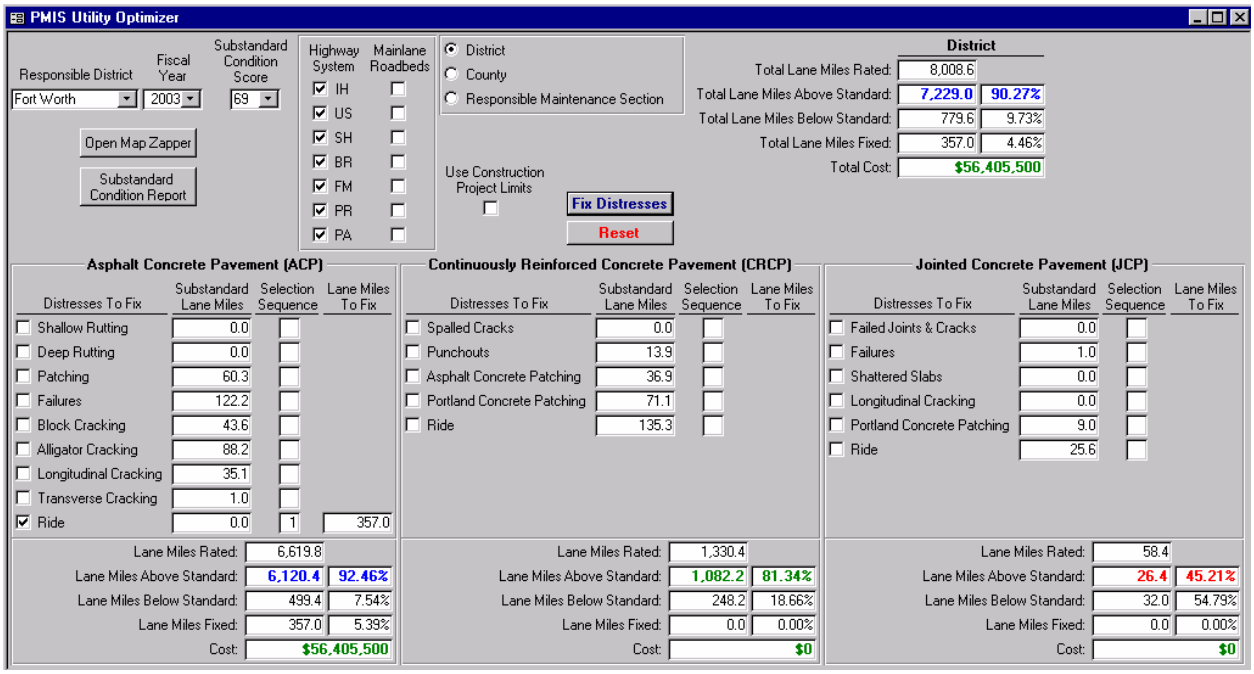
    The number of lane miles to be fixed appears in the box to the right. The current value – 357.0 – is taken from the Substandard Condition Report run earlier. You can 'fix' a different amount of mileage by clicking in the box and typing another number. This option is helpful if money is limited and you want to see the results of fixing less mileage. The mileage will be fixed based on the product of Average Daily Traffic and Speed Limit (highest first).



12. Then click the 'Fix Distresses' button in the middle of the window.

The program will search for all PMIS sections in the district with ACP Ride Quality utility values less than 0.7 – 357.0 lane miles total – and reset all of the utility values (not just Ride) for those sections to 1.0. This simulates a rehabilitation of the mileage in which all distress and ride problems are repaired.

Results are shown below:



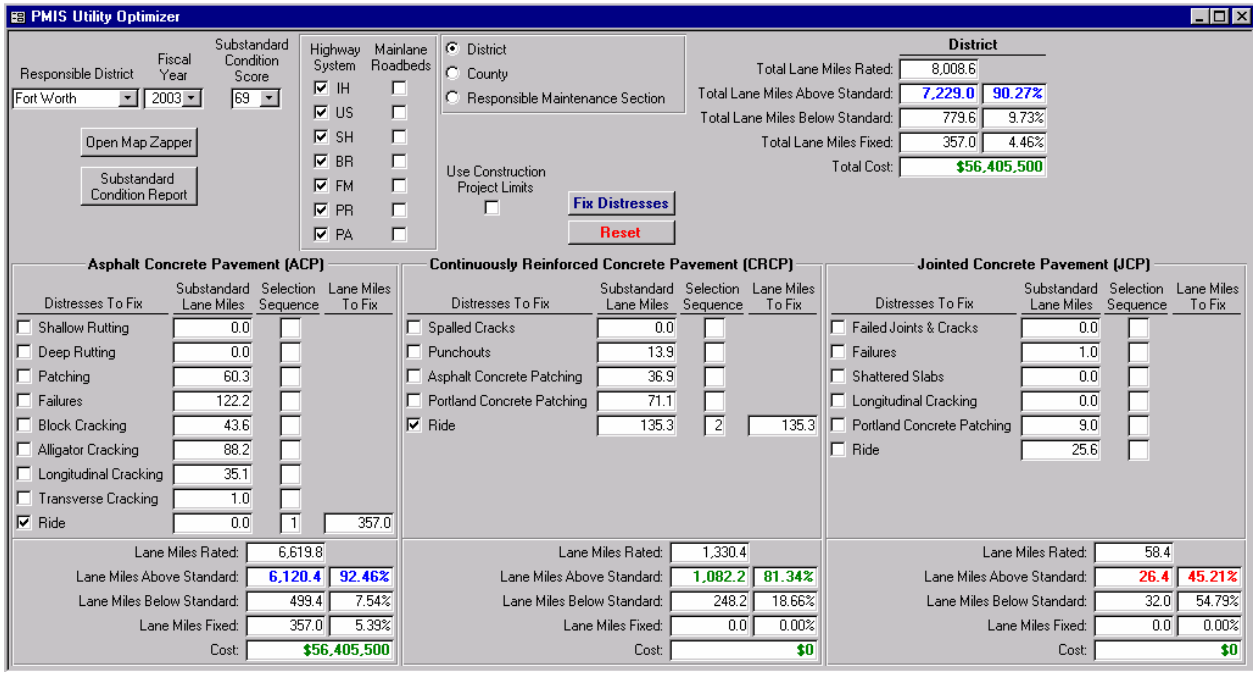
Substandard ACP Ride Quality lane miles have been reduced from 357.0 lane miles to 0.0. Other ACP distress types which were on those lane miles have also been fixed. For example, ACP Patching has been reduced from 66.7 lane miles to 60.3 lane miles; ACP Failures have been reduced from 162.1 lane miles to 122.2 lane miles; and so on.

Fixing the ACP Ride Quality cost $56,405,500. It raised the ACP mileage to 92.46 percent above standard. It also raised the district total to 90.27 percent above standard. Thus, fixing just ACP Ride Quality with rehab has raised the district above the Commission's 90 percent pavement condition goal but has cost $56 million above and beyond current funding.

Again, this is pavement-related cost only, so the actual project total will be higher.

13. To fix the next distress type on the list, CRCP Ride Quality, go to the 'Continuously Reinforced Concrete Pavement' portion of the window and click the 'Ride' check box. A number '2' appears in the 'Selection Sequence' column check box next to 'Ride' to indicate that this is the second distress type to be fixed.

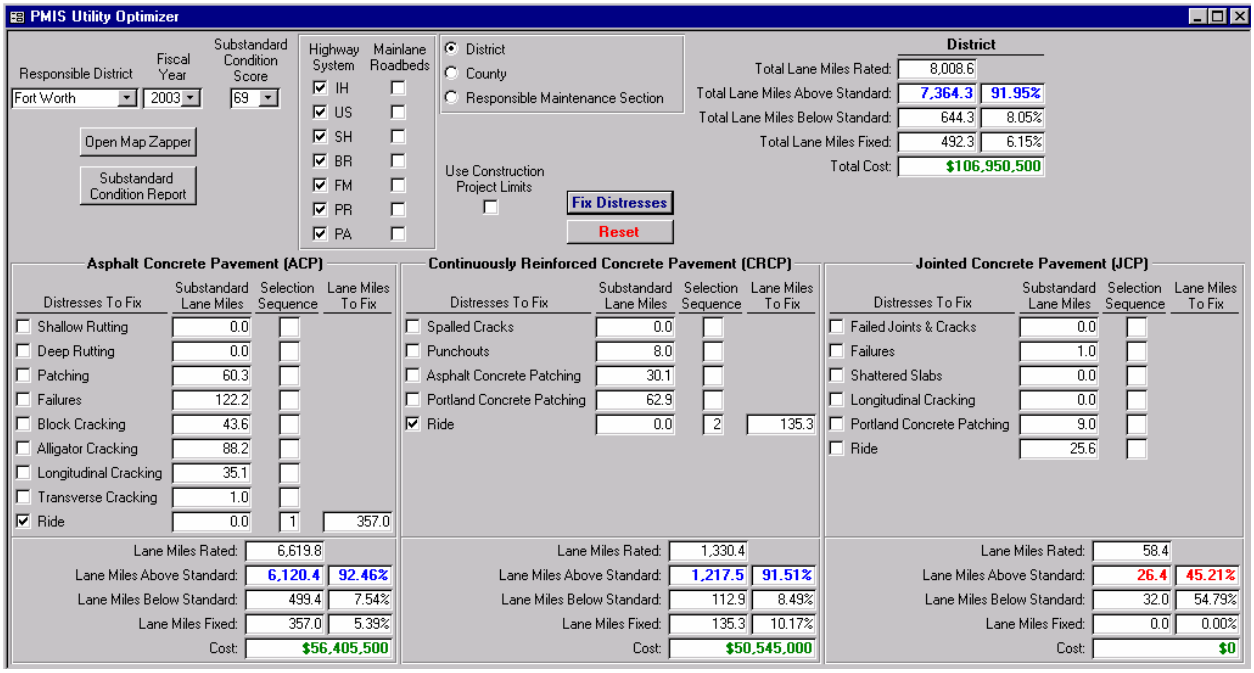
    The number of lane miles to be fixed appears in the box to the right. The current value – 135.3 – is taken from the Substandard Condition Report run earlier. You can 'fix' a different amount of mileage by clicking in the box and typing another number. This option is helpful if you don't expect to have enough money to fix all of the mileage that needs to be fixed. The mileage will be fixed based on the product of Average Daily Traffic and Speed Limit (highest first).



14. Then click the 'Fix Distresses' button in the middle of the window to fix the CRCP Ride Quality sections.

The program will search for all PMIS sections in the district with CRCP Ride Quality utility values less than 0.7 – 135.3 lane miles total – and reset all of the utility values (not just Ride) for those sections to 1.0. This simulates a rehabilitation of the mileage in which all distress and ride problems are repaired.

Results are shown below:

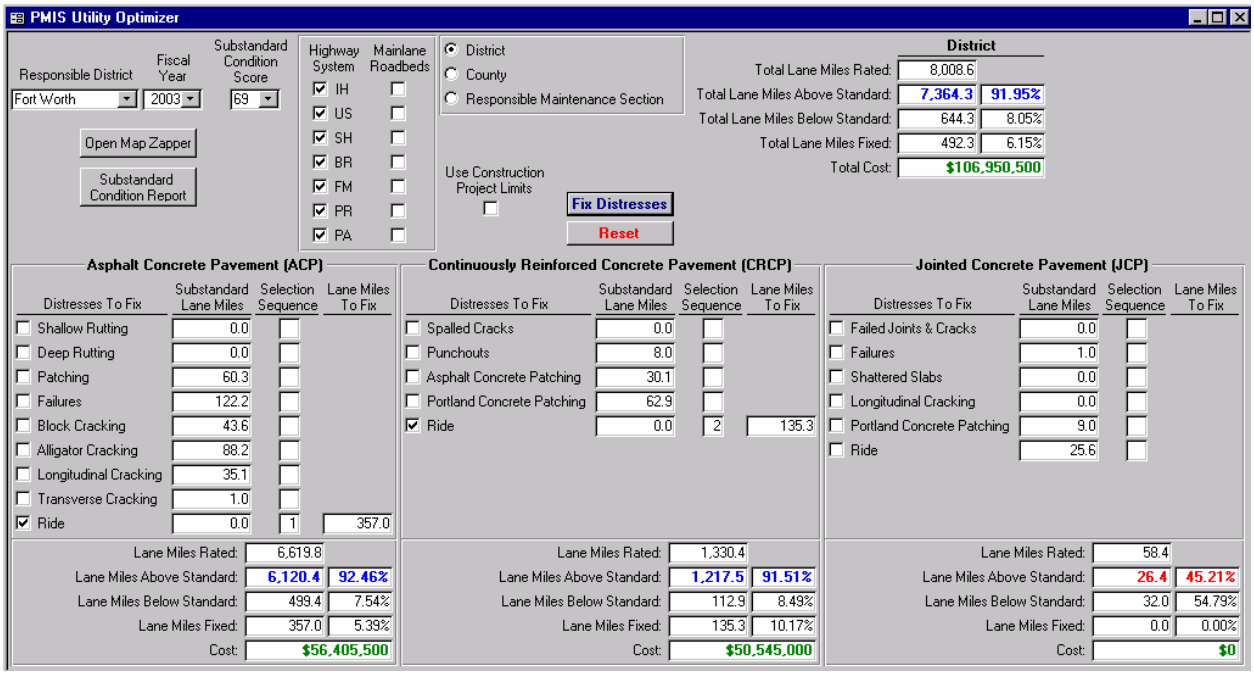


The ACP results (92.46 percent for $56,405,500) have been retained. The program has now added the CRCP mileage into the results, dropping the CRCP Ride Quality lane miles from 135.3 lane miles to zero. Other CRCP distress types which were on those lane miles have also been fixed. For example, CRCP Punchouts have been reduced from 13.9 lane miles to 8.0 lane miles; and CRCP Concrete Patches have been reduced from 71.1 lane miles to 62.9 lane miles.

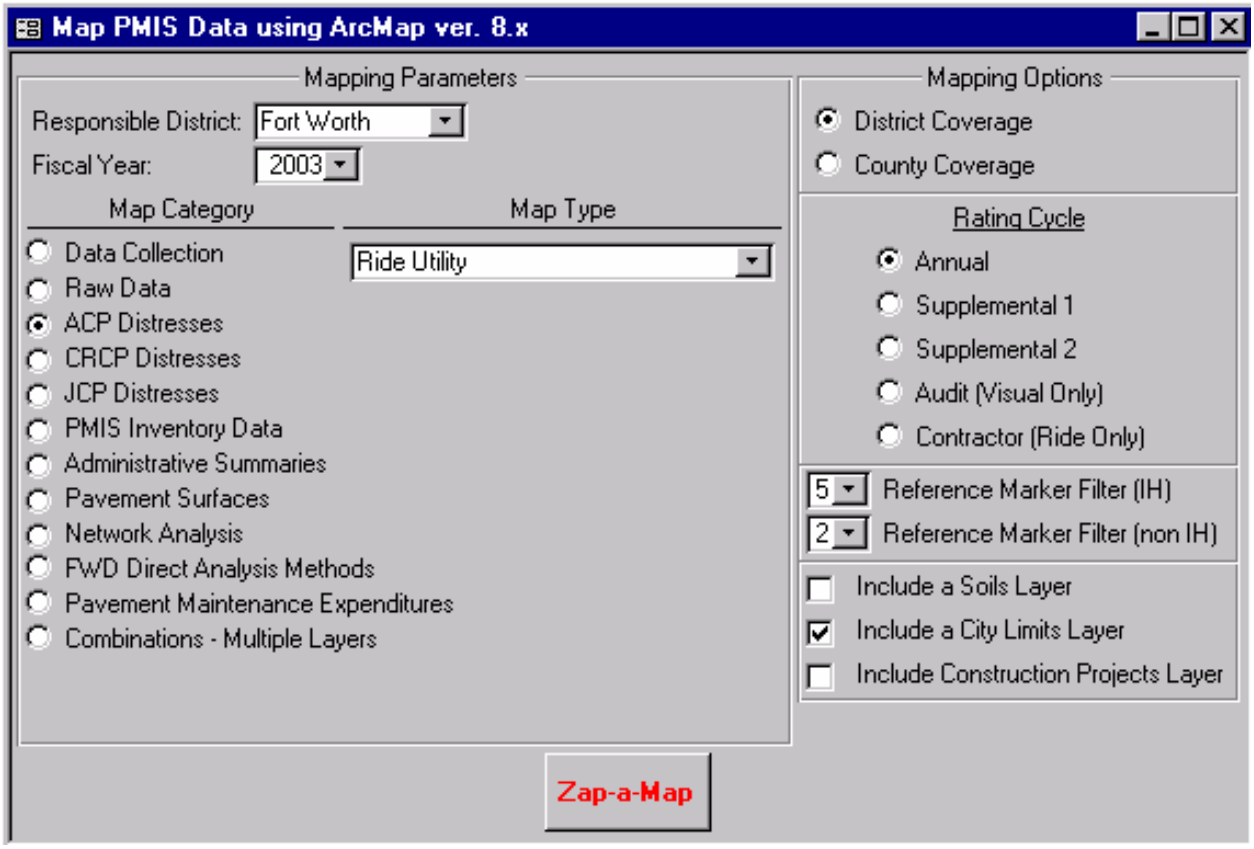
Fixing the CRCP Ride Quality cost $50,545,000. This cost is on top of the ACP cost already estimated. The district is now up to 91.95 percent above standard for a cost of $106,950,500 above and beyond current funding.

Again, this is pavement-related cost only, so the actual project total will be higher.

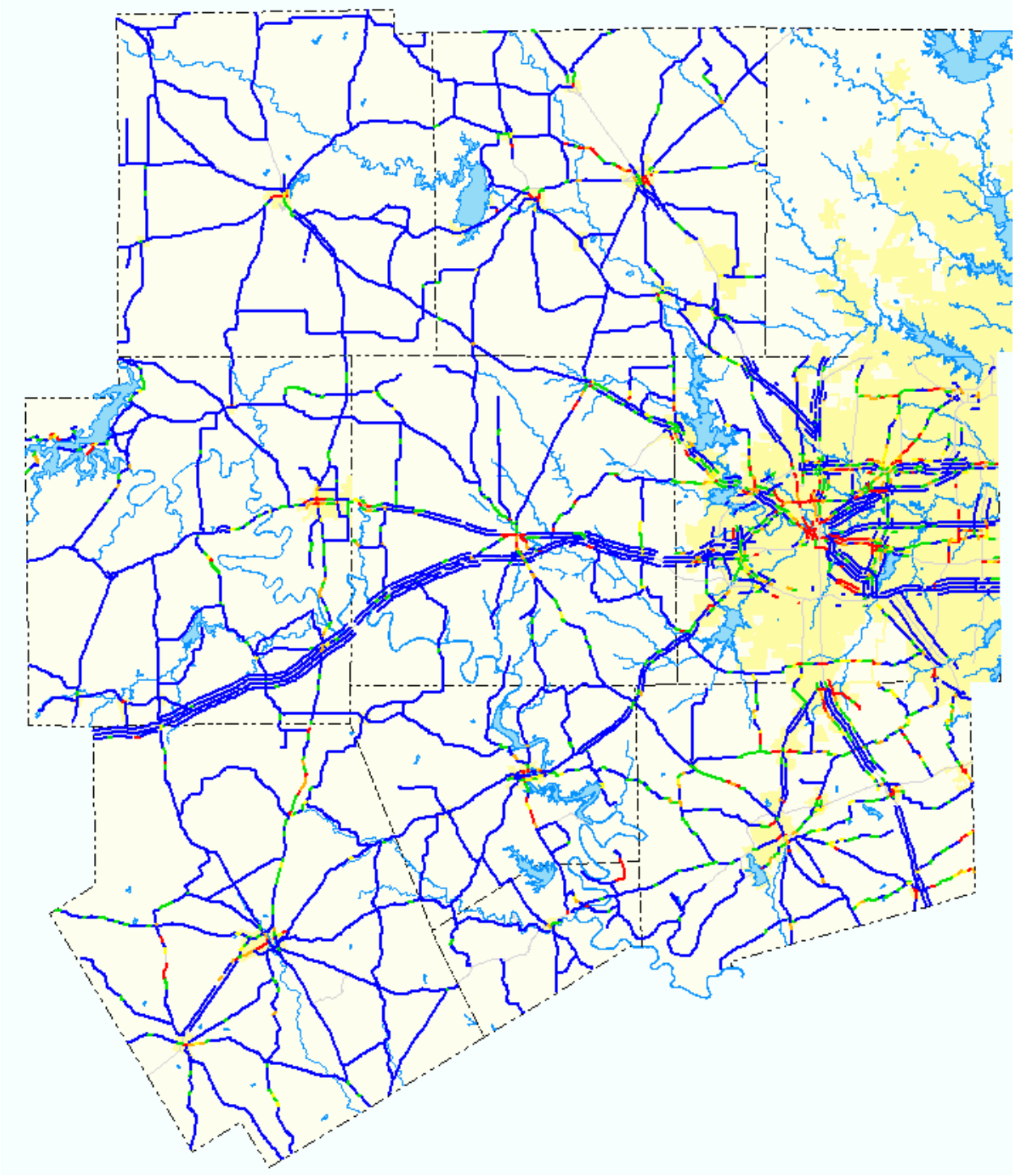
15. To make a map of the sections to be treated, click the 'Open MapZapper' button.



16. The PMIS MapZapper window will appear, as described earlier. To show the ACP Ride Quality lane miles to be fixed, click the 'ACP Distresses' radio button, and click 'Ride Utility' in the 'Map Type' drop-down box. Be sure that the other settings are correct, and then click the 'Zap-a-Map' button to make the map.



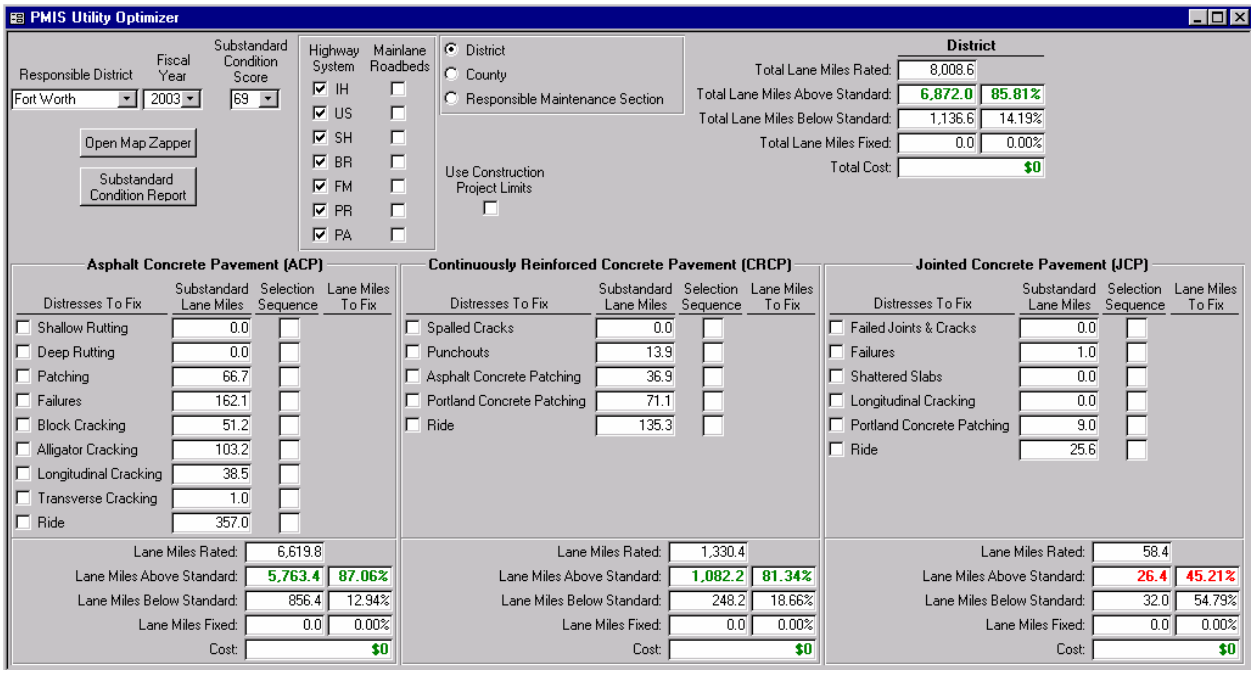
17. ArcMap will start and in a few minutes will produce the district map, as shown below. The red areas show PMIS sections with ACP Ride Quality utility less than 0.7 to be fixed.



This is the end of the basic instructions for the Utility Score Optimizer.

Defining Construction Projects for Use in the Utility Score Optimizer

As mentioned earlier, the Utility Score Optimizer window has a 'Use Construction Project Limits' check box that lets you control how construction projects are handled in the analysis.



There are four types of construction projects used in the Utility Score Optimizer:

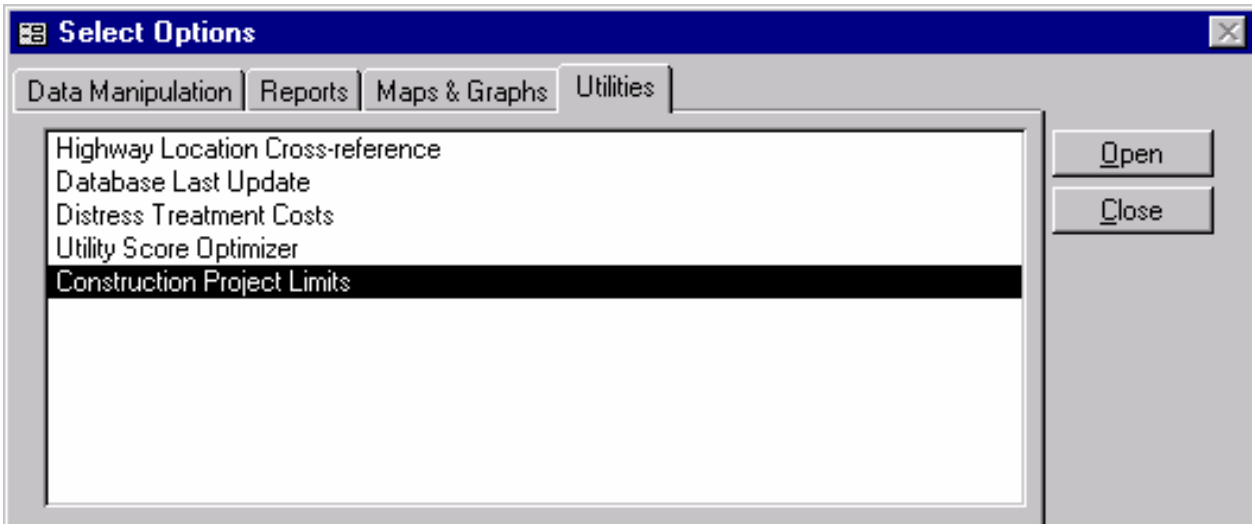
1. **Completed –** The project has just been finished but has not been rated or measured in PMIS.
2. **In Progress –** The project is underway and has not been finished yet.
3. **Scheduled –** The project has not started yet but is on the construction letting schedule.
4. **Proposed –** The project is not on the construction letting schedule but is being considered to make progress towards the Condition Score goal.

There is built-in flexibility in the definition of these categories, because the Utility Score Optimizer actually treats all of them the same way. The categories have mainly been defined to make it easier to tie projects to district letting schedules and actual work on the ground. The most important thing about the categories is to be consistent when using them. For example, you might define the "In Progress" category to include projects that have been let but have not actually broken ground – while someone else might choose to define such projects as "Scheduled" instead.

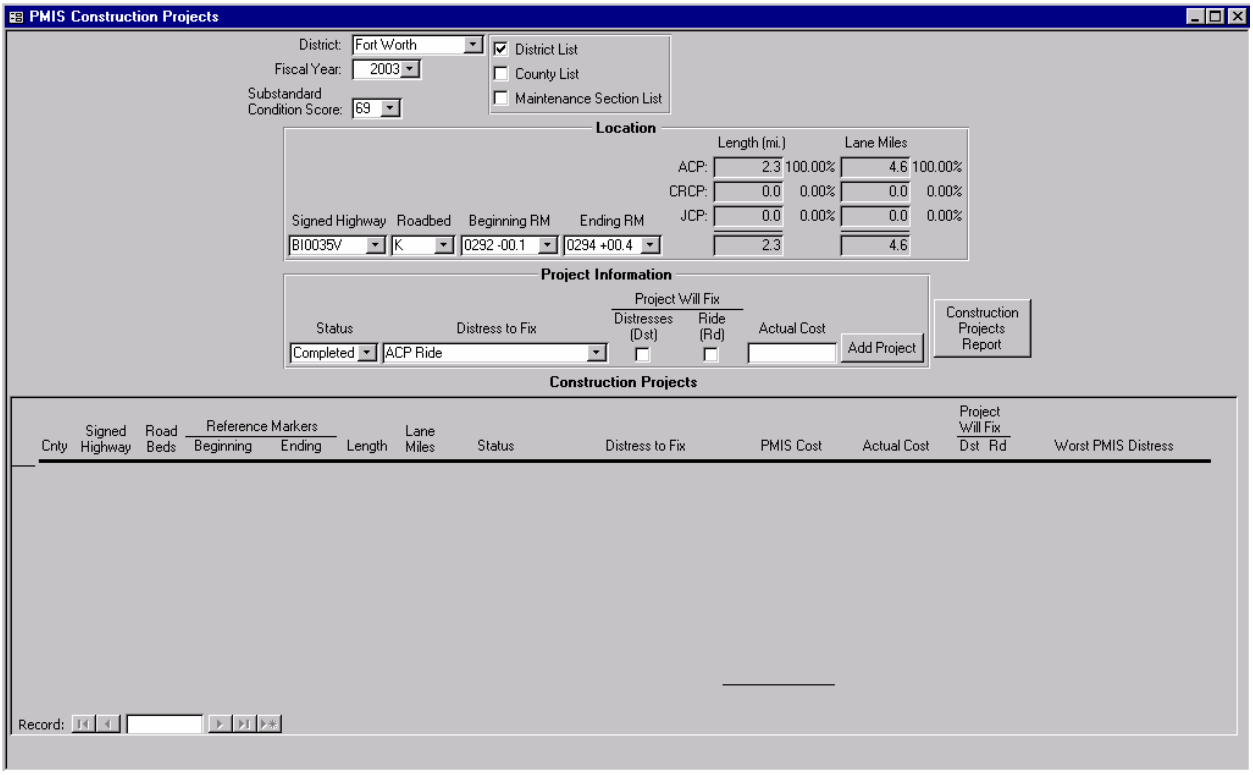
Instructions for Using the PMIS MapZapper – Version 3.400

You must define some construction projects in the PMIS MapZapper before using the 'Use Construction Project Limits' check box. To do this, please follow these instructions.

1. If you're in the Utility Score Optimizer window, close it and get back to the 'Select Options' window.
2. Go to the 'Utilities' tab and click 'Construction Project Limits.'

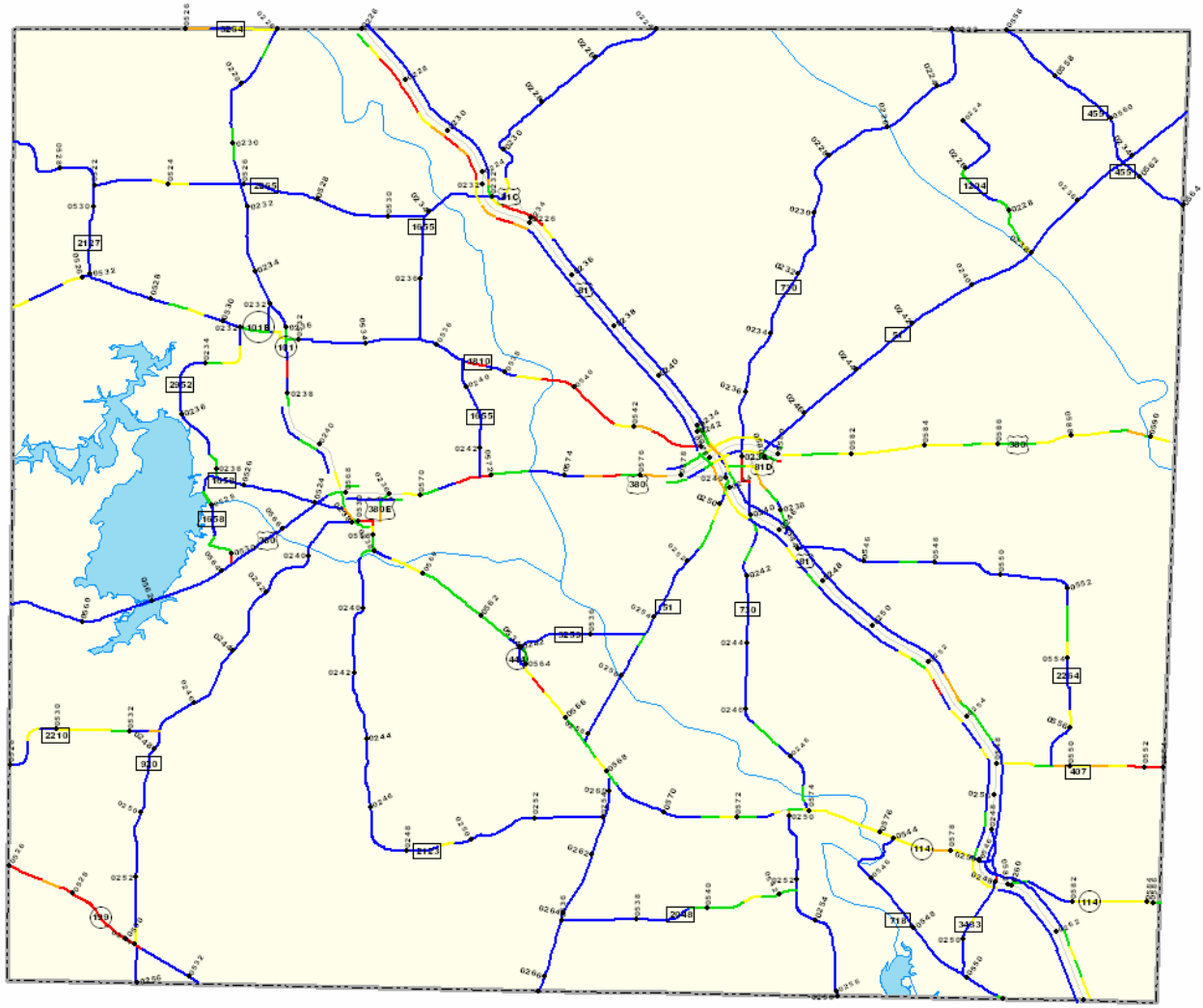


3. Click the 'Open' button. The 'PMIS Construction Projects' window will appear, as shown below:

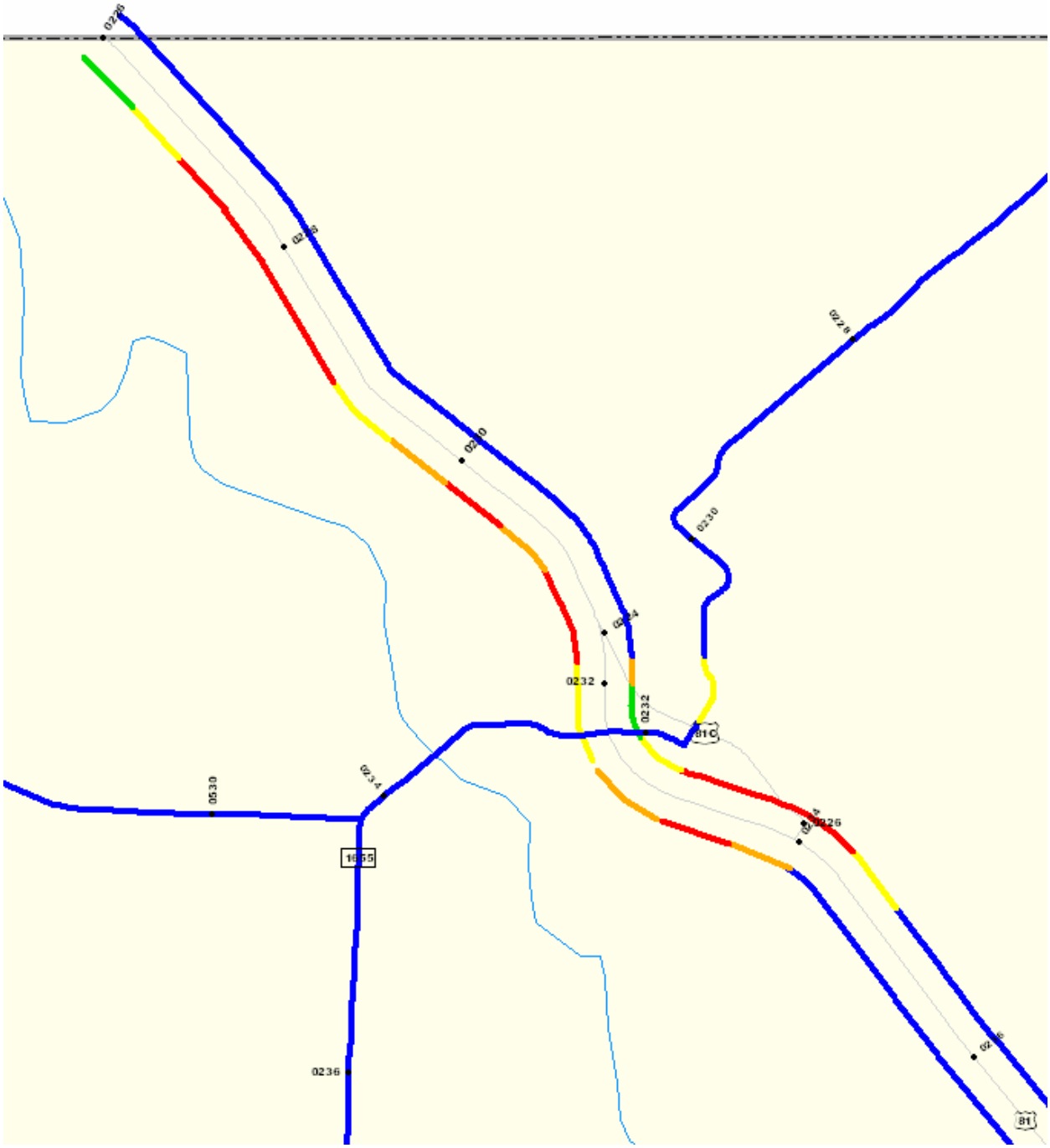


As an example, consider selecting several projects in Wise County to improve the PMIS Condition Scores.

Here is a map of PMIS Condition Scores in Wise County for FY 2003. There are several pavement sections in red showing "substandard" Condition Scores below the Commission's standard. This example will zoom in to various parts of the county and select projects to be analyzed in the Utility Score Optimizer.

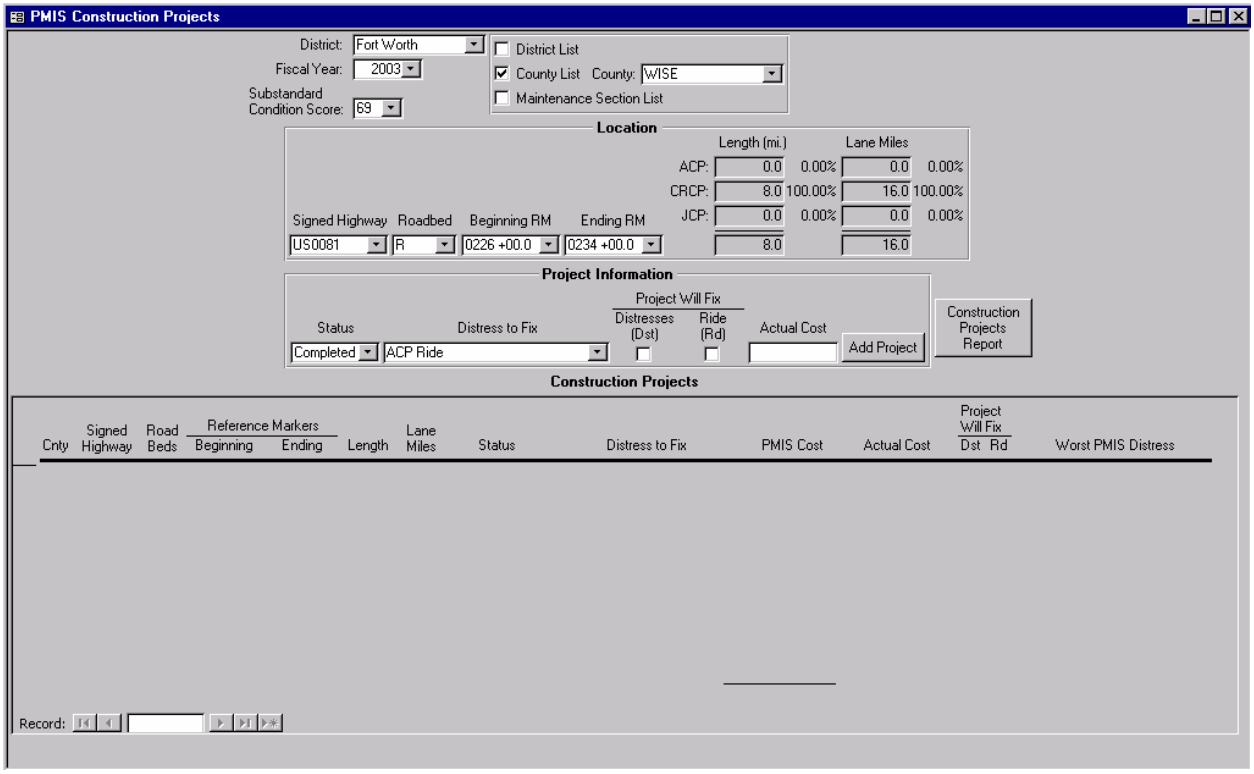


Here is a portion of US 81, southbound mainlanes (Roadbed = 'R'), that has several yellow, orange, and red PMIS sections between the north county line and Reference Marker 234.



4. To define this portion of US 81 as a construction project, go to the 'PMIS Construction Projects' window; select 'Fort Worth' district; select '2003' fiscal year; keep '69' as the substandard Condition Score; and select 'Wise' county.

5. Now go to the 'Location' area and select 'US 81' highway; 'R' roadbed; '226+00.0' as the Beginning Reference Marker; and '234+00.0' as the Ending Reference Marker, as shown below:



If you want to check the validity of the section selected, check the 'Length' and 'Lane Miles' boxes to see if the values make sense. These values will change when you change Highway, Roadbed, and Reference Marker limits.

Also, please note that the Utility Score Optimizer also shows pavement type mileages for the selected project. This project is all CRCP.

An important feature of the 'PMIS Construction Projects' window is that it gives you an idea which values are valid, based on your available data and selections. There is no need to type values into any of the boxes – you can point and click and select values provided and they will be valid.

This feature is especially important for values such as 'Highway,' 'Roadbed,' 'Beginning RM,' and 'Ending RM.' The program window will only show you Highways, Roadbeds, and Reference Markers that are valid for the District, County, or Maintenance Section that you select.

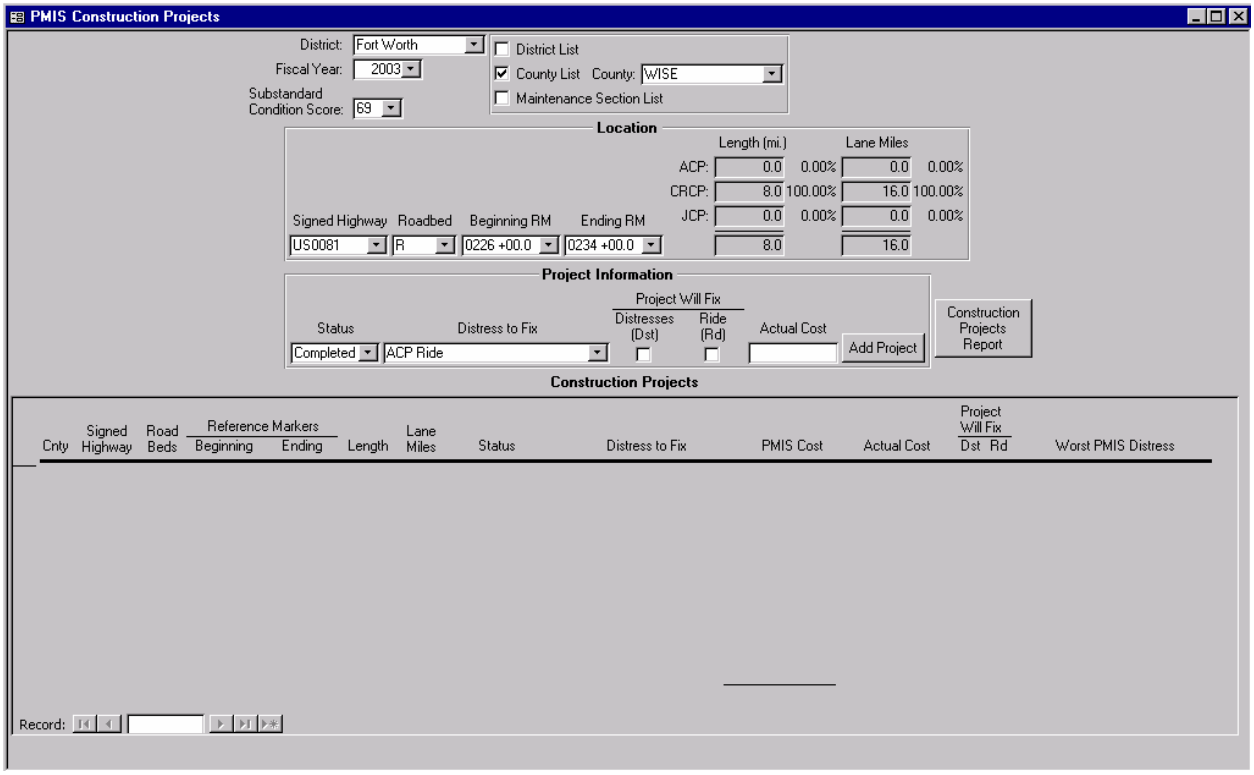
6. Now go to the 'Project Information' area to provide information about the US 81 project. In the 'Status' drop-down box, select the status of the project – 'Completed,' 'In Progress,' 'Scheduled,' or 'Proposed.'

   As far as the Utility Score Optimizer analysis is concerned, it does not matter what the Status of the project is – it will either be considered in the analysis or not, depending on your selection in the 'Use Construction Project Limits' box in the Utility Score Optimizer window. However, there is a report you can print later on which will separate the projects by Status. Also, you can keep the projects separated to match letting schedules, construction project status reports, and other district planning documents.

7. Now go to the 'Distress to Fix' drop-down box and select the type of distress to be fixed. This will determine the type of repair treatment and the unit cost (in dollars per lane mile) to compute total cost of the project.

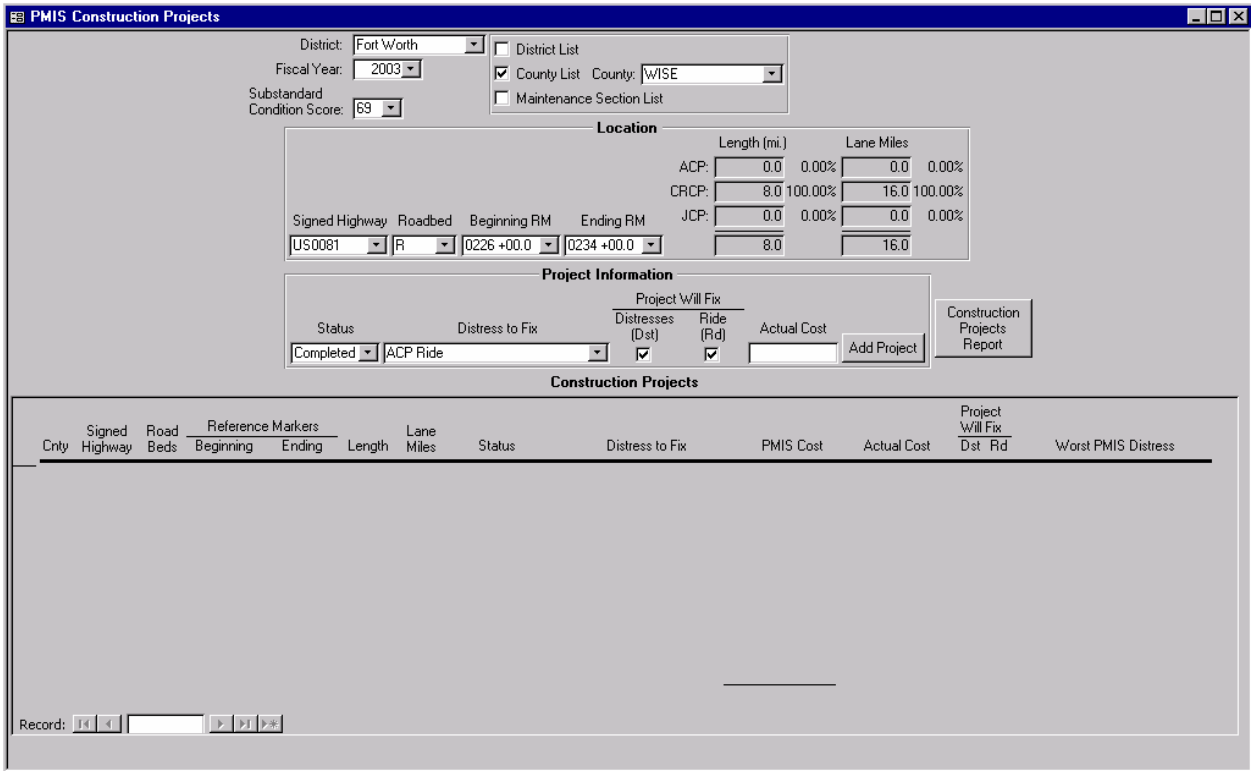
   You can guess the selection at first – later on the program will give you an idea of the worst distress for the entire project. Or you can pick one of the distress types (or ride quality) from the Substandard Condition Report.

   As a test, the example below has selected 'ACP Ride' as the distress to fix, even though the project is all CRCP (this will be corrected later in the example):



8. Now go to the 'Project Will Fix' check boxes. Most projects fix distress and ride, but some projects (like crack sealing, seal coats, and level-ups) only fix one. Check one or both of the boxes depending on the nature of the project.

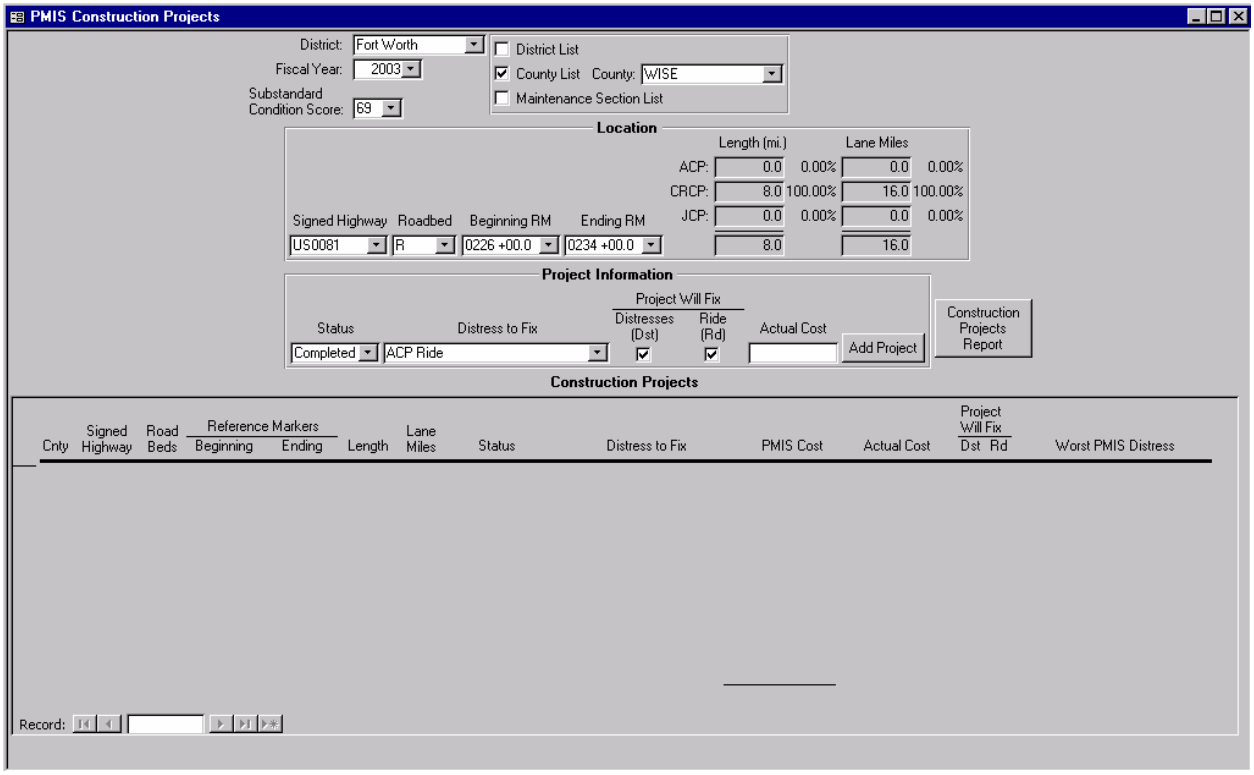
   This selection controls how the distress and ride utility values will be analyzed if you check the 'Use Construction Project Limits' check box back in the Utility Score Optimizer. If you check the 'Distresses' check box here, the distress utility values will be set to 1.0000; if you check the 'Ride' check box here, the ride utility value will be set to 1.0000; and if you check both of the check boxes here, the distress and ride utility values will be set to 1.0000.



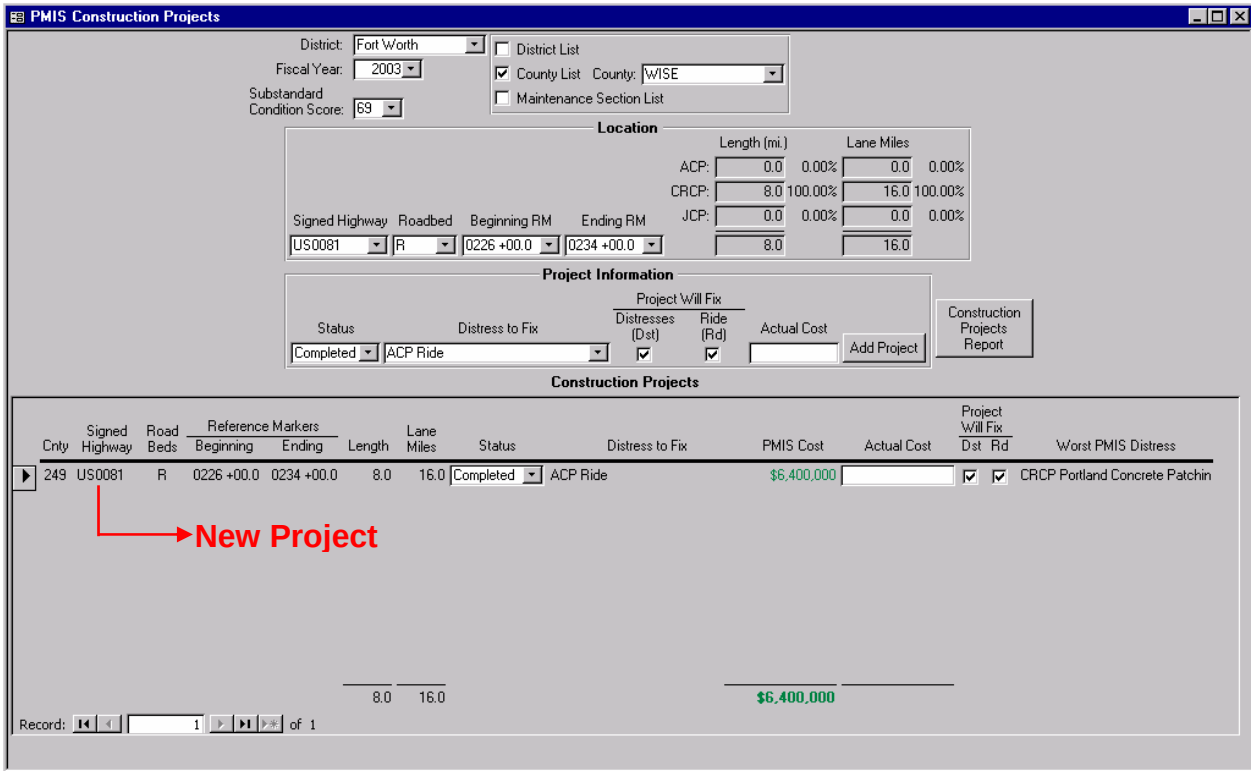
9. Now go to the 'Actual Cost' box. If you would like to enter an actual cost for the project (for example, estimated cost before letting or actual bid cost from letting), you can enter the total here. This total can be pavement cost only or it can be total project cost.

   This is an optional item, so it can be left blank. If you leave this box blank, the Utility Score Optimizer will use the unit cost (dollars per lane mile) for the 'Distress to Fix' value as the cost to use in computing the cost of the project.

   In this example, leave the 'Actual Cost' box blank.



10. You are through entering information for this project. Look over the entries you have made, fix any mistakes or make any needed changes, and then click the 'Add Project' button. The project will be added to the list, as shown below:

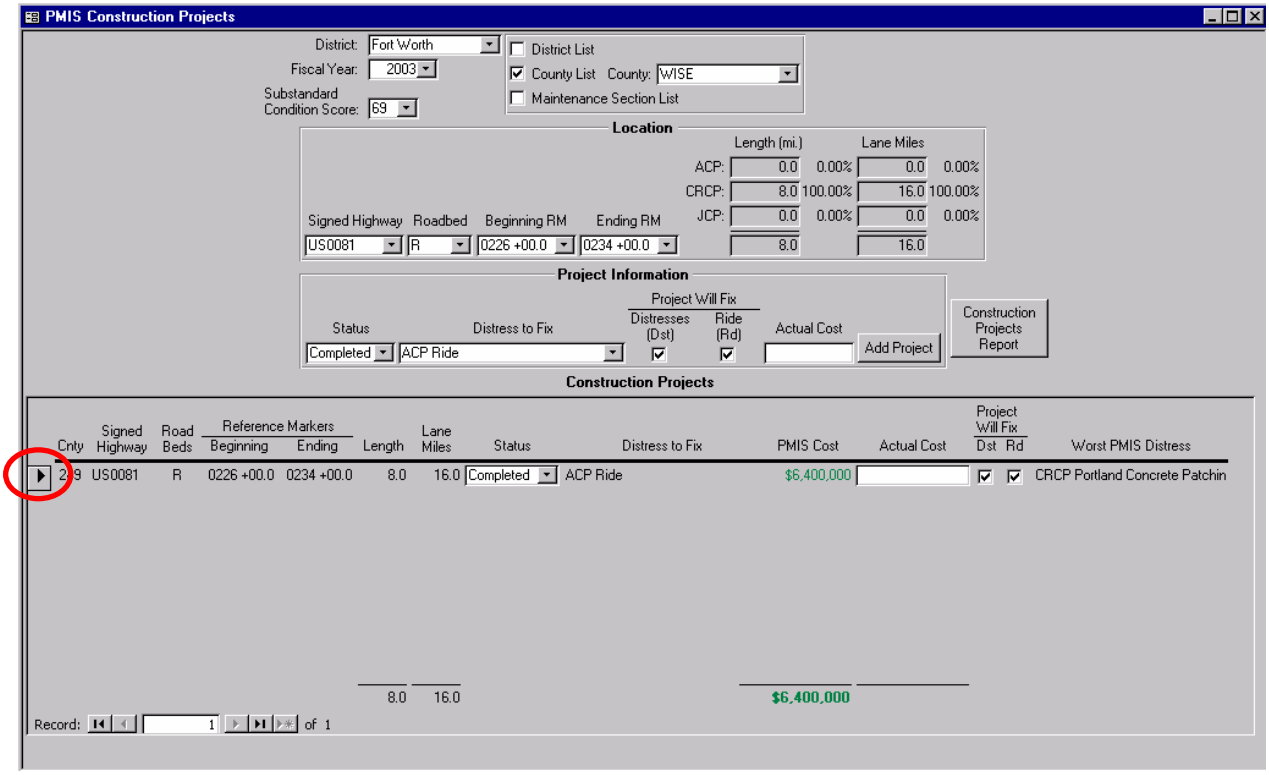


The estimated cost of this project is $6,400,000, based on the unit cost per lane mile to fix ACP Ride Quality.

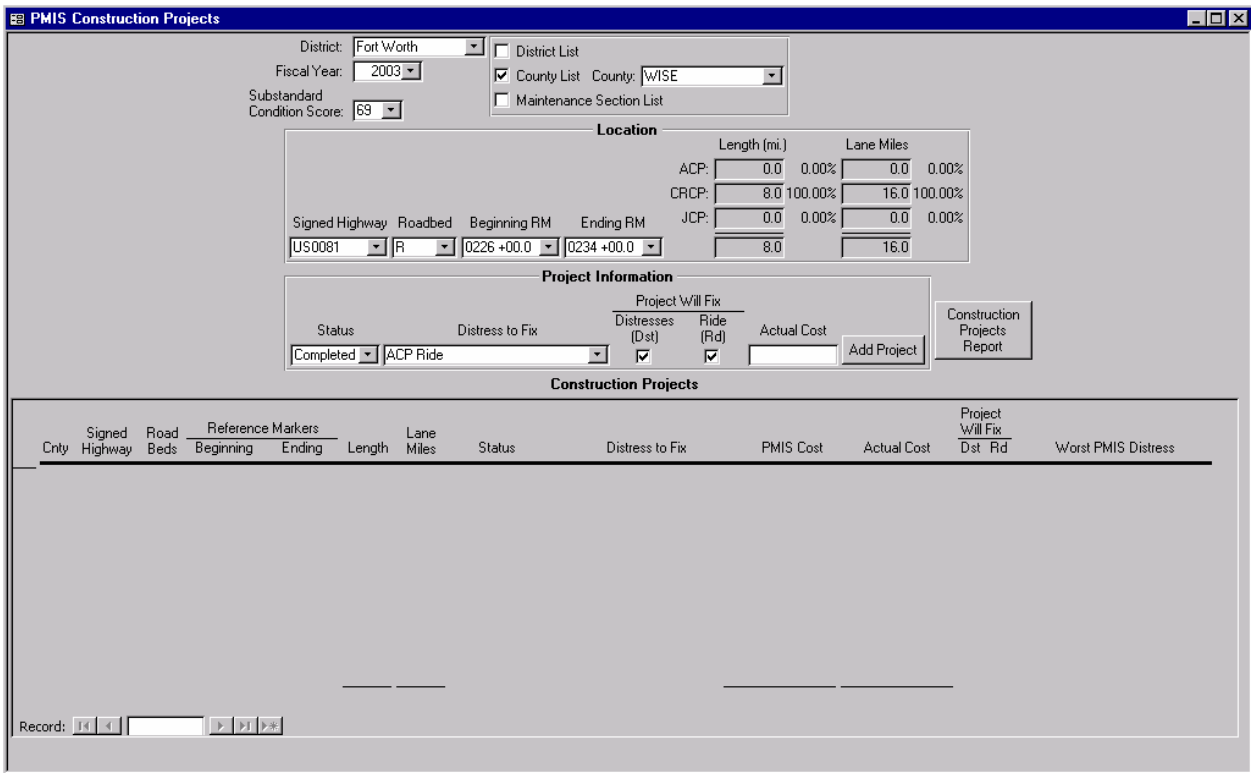
As mentioned earlier, the 'Distress to Fix' entry can be changed. In this example, ACP Ride Quality was fixed, but CRCP Portland Concrete Patching was actually the worst distress type on the project as a whole. In fact, this project is CRCP pavement type along its entire length!

To fix this problem, delete the construction project and redefine it as fixing CRCP Portland Concrete Patching. **Please Note:** the 'Distress to Fix' and 'Worst PMIS Distress' do not have to match, but the estimated cost will be more reliable and make more sense if they do.

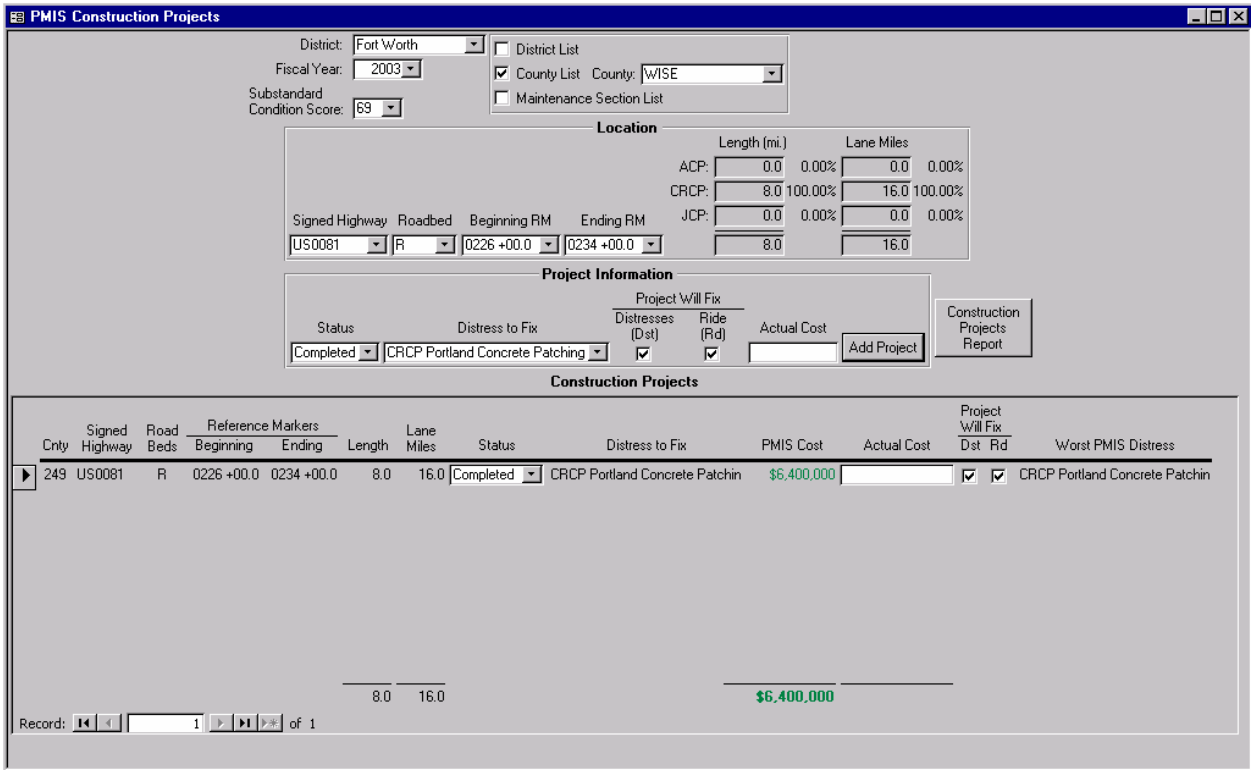
11. Click the right-pointing arrow button (circled below) to highlight the construction project.



12. Press the **Delete** key to delete the construction project. The project has been deleted.

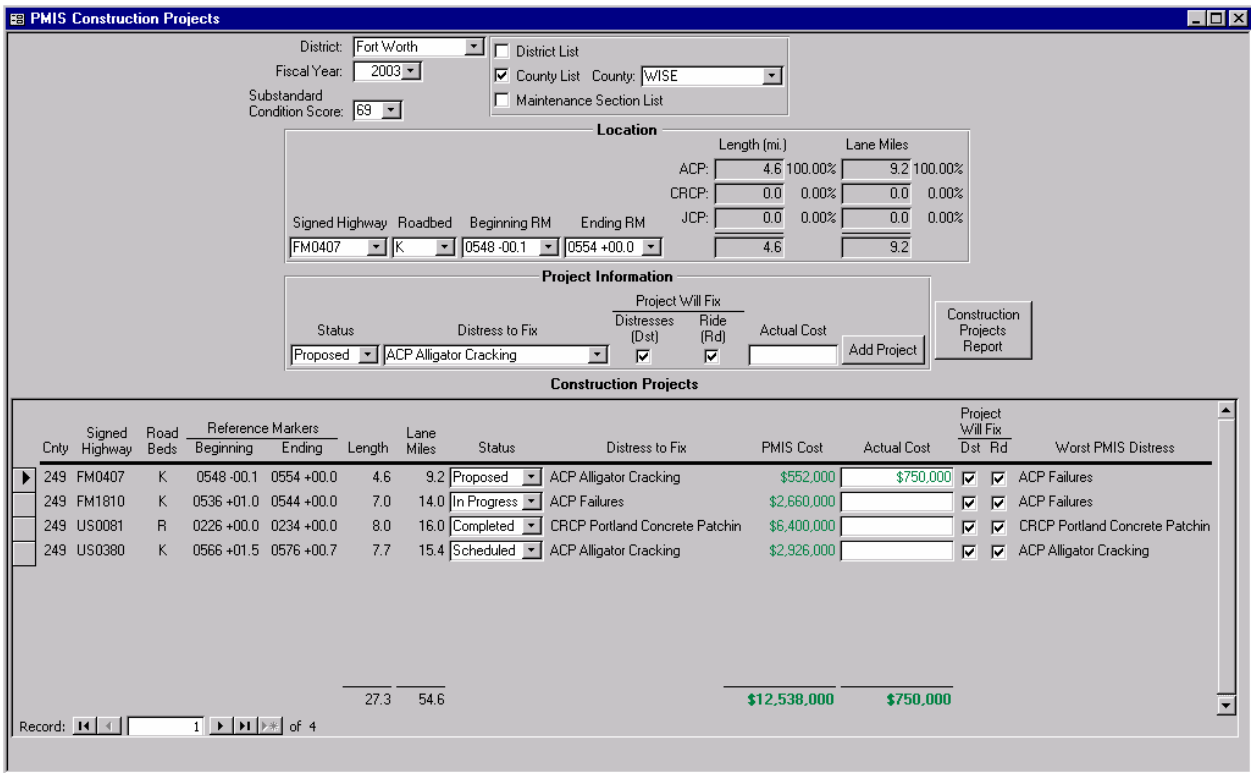


13. Enter the Signed Highway, Roadbed, and Reference Marker limits for the US 81 project again, and be sure to select 'CRCP Portland Concrete Patching' in the 'Distress to Fix' drop-down list.
14. Click both of the 'Project Will Fix' check boxes for distress and ride.
15. Click the 'Add Project' button to add the project to the list.



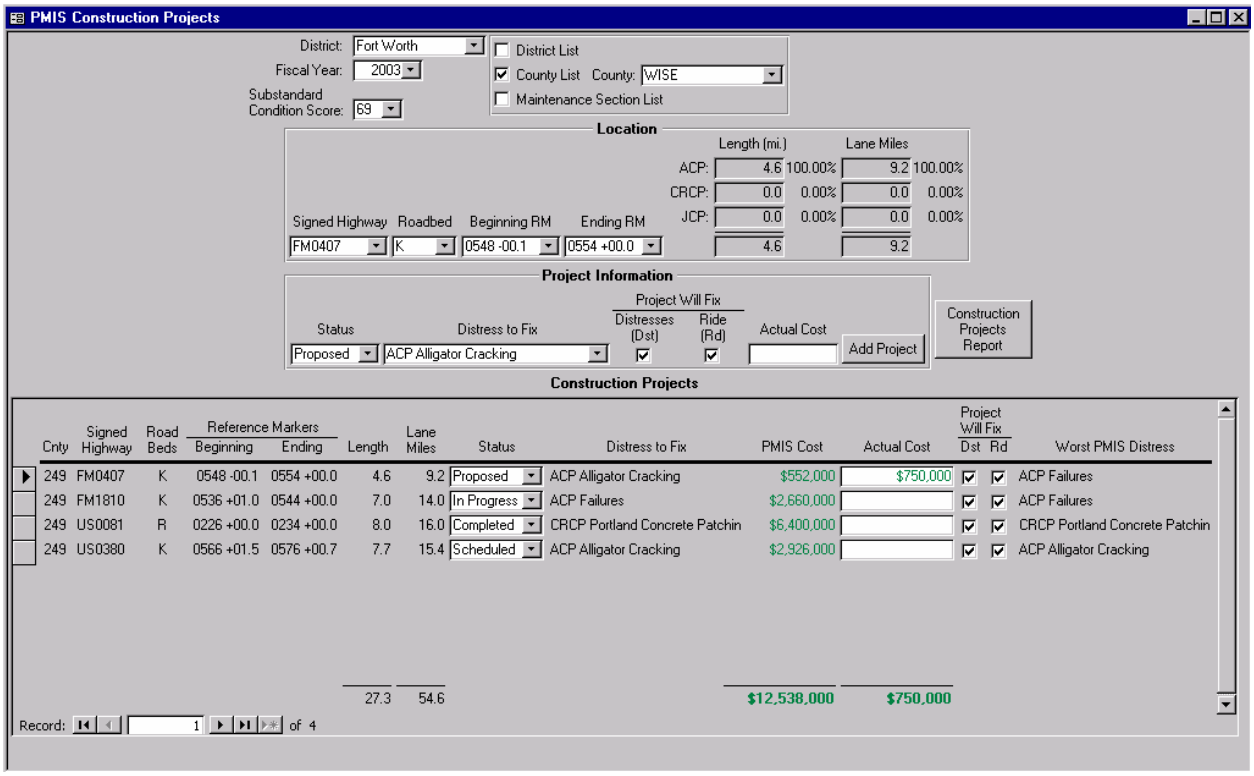
The construction project has now been defined for use in the Utility Score Optimizer.

To finish this example, here are four proposed construction projects for Wise County.



Type ‘750000’ in the ‘Actual Cost’ box to enter the $750,000 cost for the FM 407 project. The form will show the PMIS cost for comparison purposes.

16. To list the newly-defined construction projects in a report, click the 'Construction Projects Report' button.



The report prints one or more pages for each of the four types of project status: 'Completed,' 'In Progress,' 'Scheduled,' and 'Proposed.'

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Texas Department of Transportation

Pavement Management Information System (PMIS)

Completed Construction Projects

Fort Worth District

Based on Fiscal Year 2003 PMIS Data

County	Highway	Road Bed	Reference Markers From	Reference Markers To	Roadbed Miles	Lane Miles	PMIS Cost	Actual Cost	Distress To Fix
249	US0081	R	0226 +00.0	0234 +00.0	8.0	16.0	$6,400,000		CRCP Portland Concrete Patchin
				Total:	8.0	16.0	$6,400,000		

Page 2 of 4

Texas Department of Transportation

Pavement Management Information System (PMIS)

In Progress Construction Projects

Fort Worth District

Based on Fiscal Year 2003 PMIS Data

County	Highway	Road Bed	Reference Markers From	Reference Markers To	Roadbed Miles	Lane Miles	PMIS Cost	Actual Cost	Distress To Fix
249	FM1810	K	0536 +01.0	0544 +00.0	7.0	14.0	$2,660,000		ACP Failures
				Total:	7.0	14.0	$2,660,000		

Texas Department of Transportation

Pavement Management Information System (PMIS)

Proposed Construction Projects

Fort Worth District

Based on Fiscal Year 2003 PMIS Data

County	Highway	Road Bed	Reference Markers From	Reference Markers To	Roadbed Miles	Lane Miles	PMIS Cost	Actual Cost	Distress To Fix
249	FM0407	K	0548 -00.1	0554 +00.0	4.6	9.2	$552,000	$750,000	ACP Alligator Cracking
				Total:	4.6	9.2	$552,000	$750,000	

Texas Department of Transportation

Pavement Management Information System (PMIS)

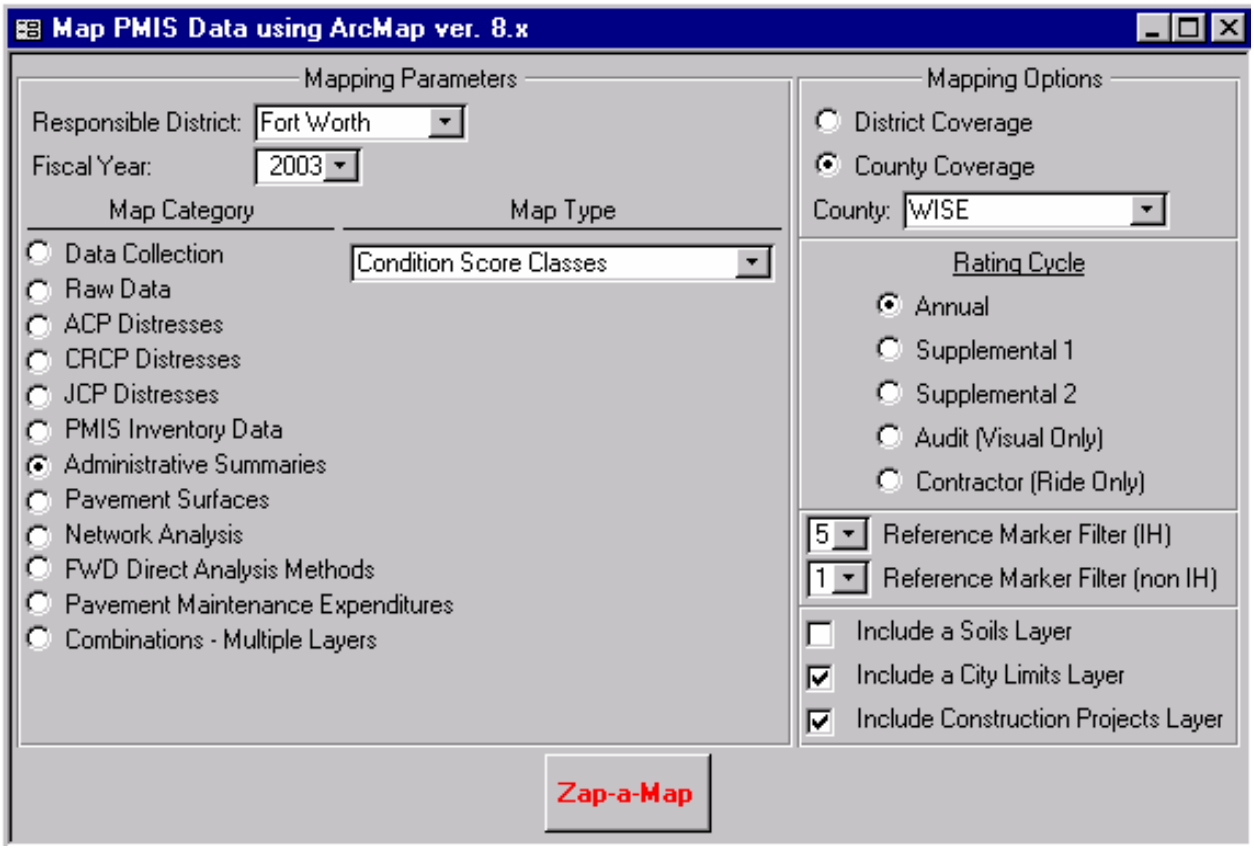
Scheduled Construction Projects

Fort Worth District

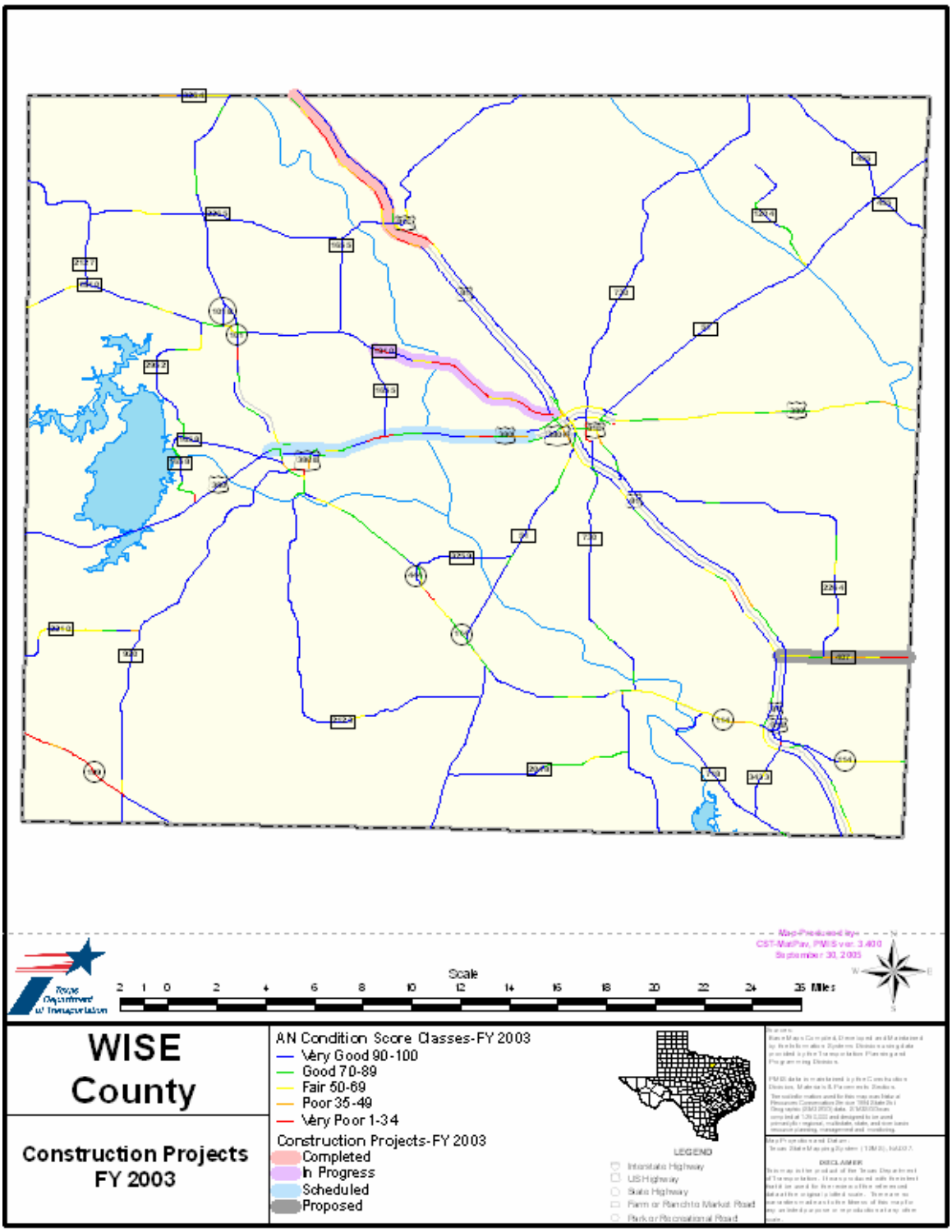
Based on Fiscal Year 2003 PMIS Data

County	Highway	Road Bed	Reference Markers From	Reference Markers To	Roadbed Miles	Lane Miles	PMIS Cost	Actual Cost	Distress To Fix
249	US0380	K	0566 +01.5	0576 +00.7	7.7	15.4	$2,926,000		ACP Alligator Cracking
				Total:	7.7	15.4	$2,926,000		

17. To produce a county map with the projects shown, close the PMIS Construction Projects window by clicking the **X** (Close) buttonn; then go to the MapZapper window and fill out the form. Be sure to click the 'Include Construction Projects Layer,' as shown below:

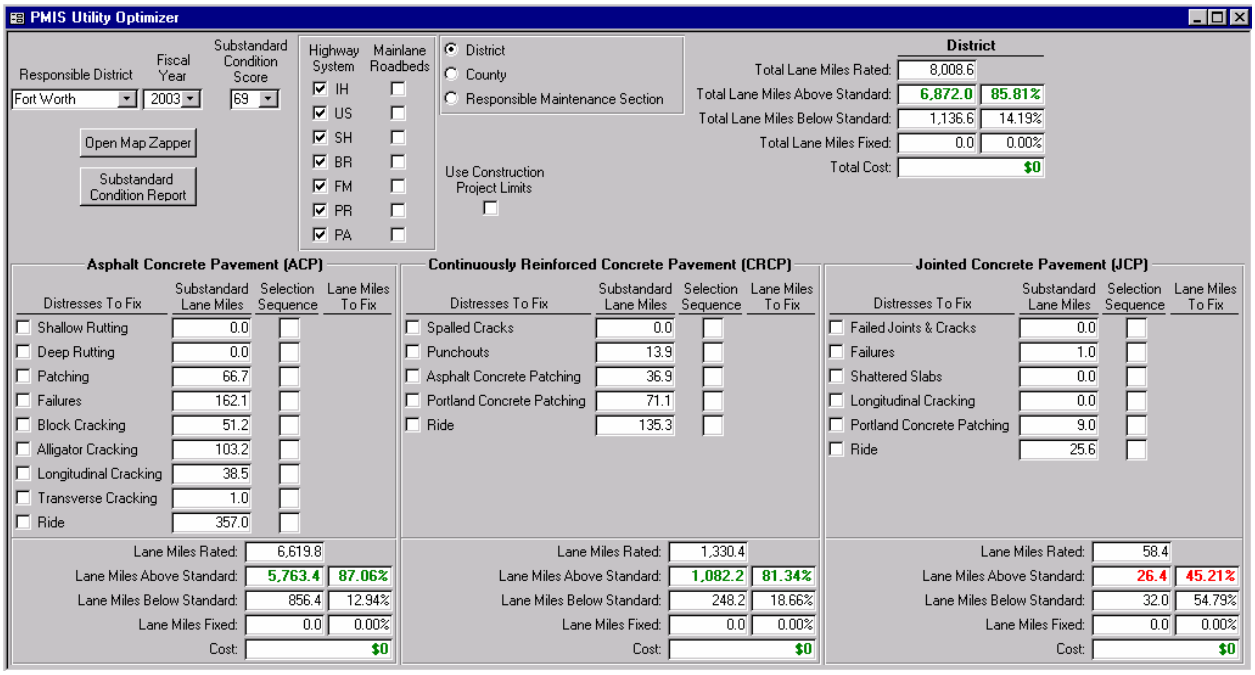


This is the initial Condition Score map, with the four newly-defined construction projects shown underneath the Condition Scores. The color-coded values for each type of project status are shown in the map legend. Although the projects cover many PMIS sections below the 70 Condition Score goal (color-coded in yellow, orange, and red), there are some PMIS sections above 70 included.



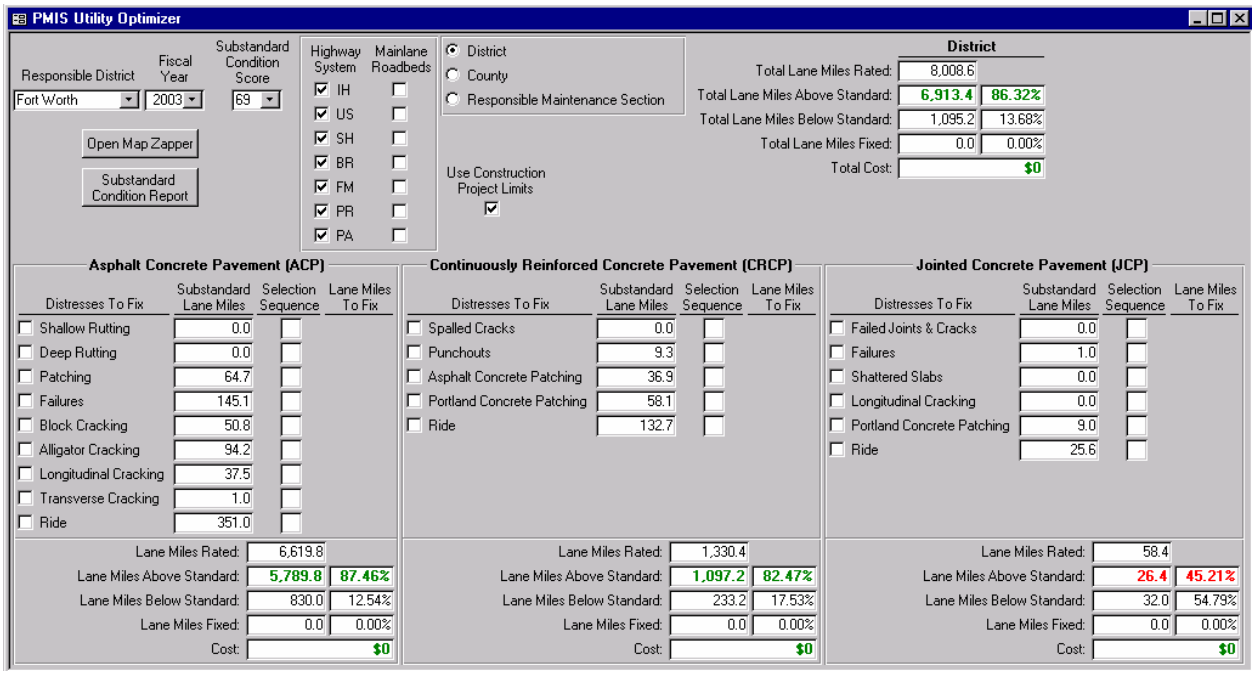
Now you can go to the Utility Score Optimizer to see what results these projects will have on the overall Condition Score goal.

18. Go back to Access (you can close ArcMap, minimize it, or leave it running) and close the MapZapper window. The Select Options window will appear again.
19. Go to the Utility Score Optimizer window. This shows the original 85.81 percent of the district lane miles above the Condition Score goal.



20. Click the 'Use Construction Projects Limits' check box; then click the 'Recalculate' button when it appears.

    Now the district's overall condition has improved to 86.32 percent above the Condition Score goal, just by using the four construction projects defined in Wise county. As mentioned earlier, the Utility Score Optimizer has taken the PMIS sections within those project limits and reset the utility values to 1.0000 (depending on whether the proposed treatments were defined to treat distress, ride, or both).



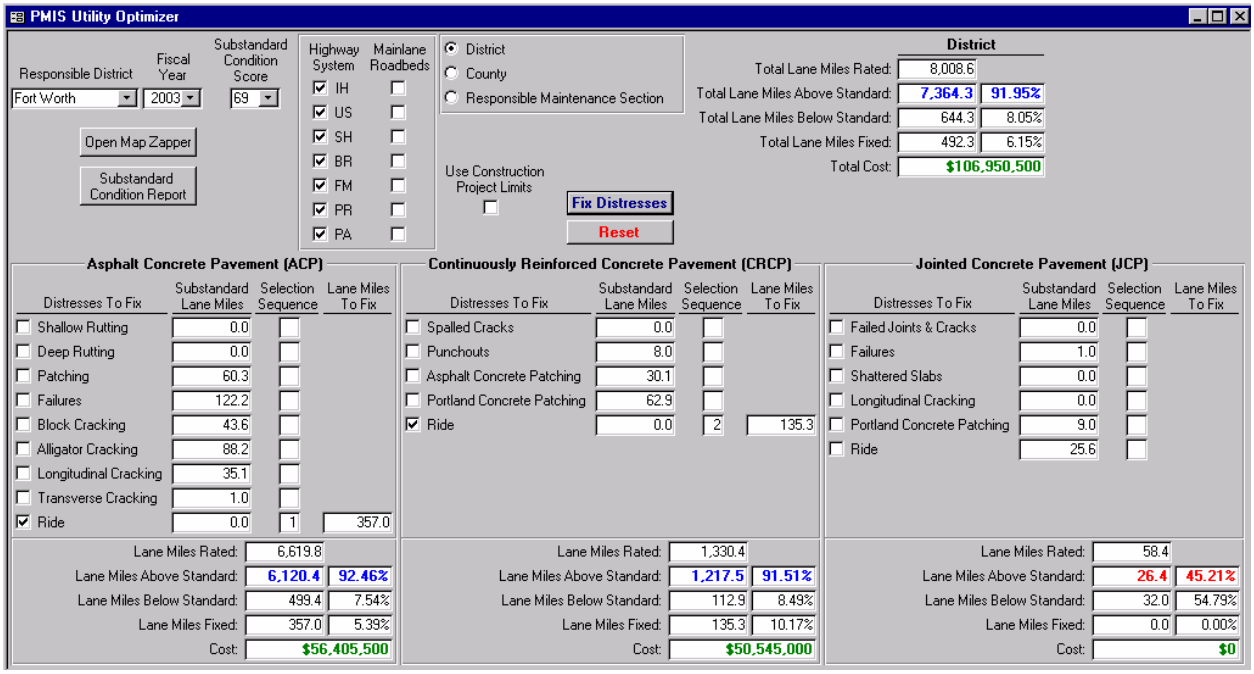
You have flexibility in how you enter and analyze these construction projects. You can enter the projects incrementally, by status, and determine the results of each group of projects on the overall Condition Score goal.

For example, you could take the FY 2003 PMIS data and compute the percentage of lane miles above the 70 Condition Score standard. Then you could define all 'Completed' construction projects for the summer of FY 2003 – this would be the "best case" scenario for the beginning of FY 2004, assuming no deterioration of the remaining mileage (which admittedly is not realistic). You could then define the 'In Progress' projects and re-run the percentages, then define the 'Scheduled' projects and re-run the percentages, then finally define the 'Proposed' projects and re-define the percentages – comparing the percentages after each group of projects to look for changes. Such an incremental analysis could give insight on which projects provide the most improvement for the least money.

This is the end of the instructions on defining construction projects for use in the Utility Score Optimizer.

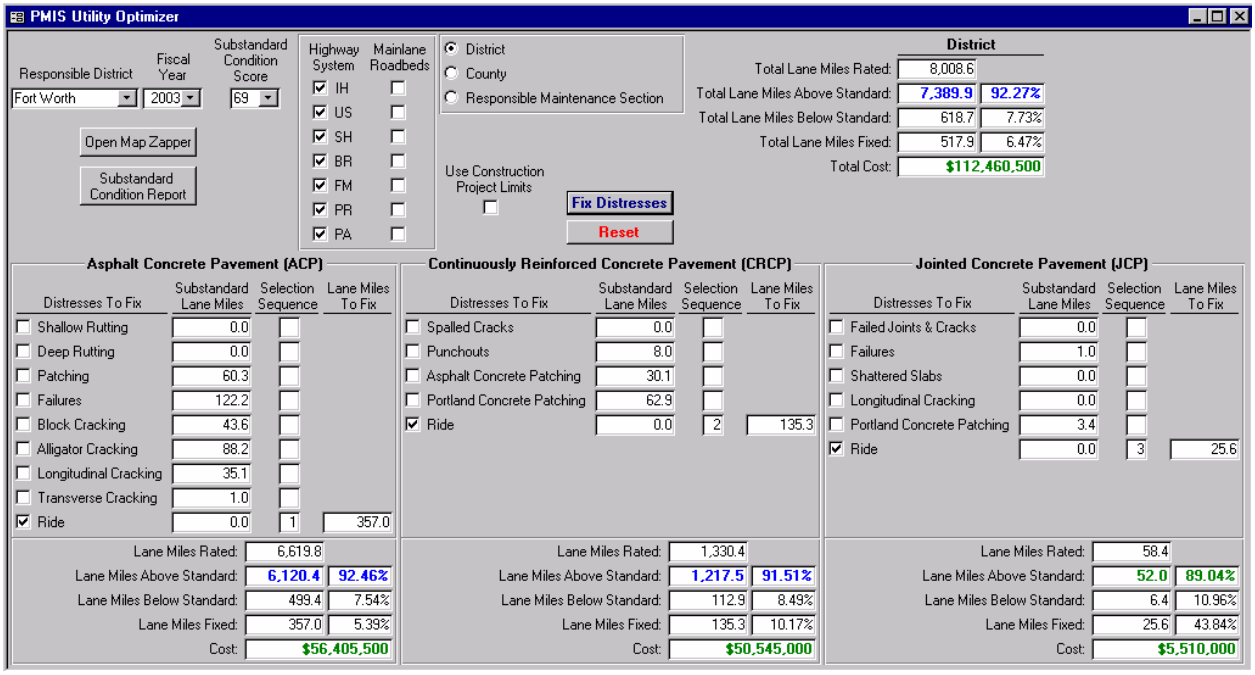
Other Notes About the Utility Score Optimizer…

You can click the 'Reset' button in the middle of the window to remove all fixes and set the lane miles and costs back to zero.



To save time, you can select multiple distress types (and ride quality) at the same time, and then click 'Fix Distresses' once to see the results. Here is an example of a districtwide ride quality work program which fixes ACP first, then CRCP, and then JCP.

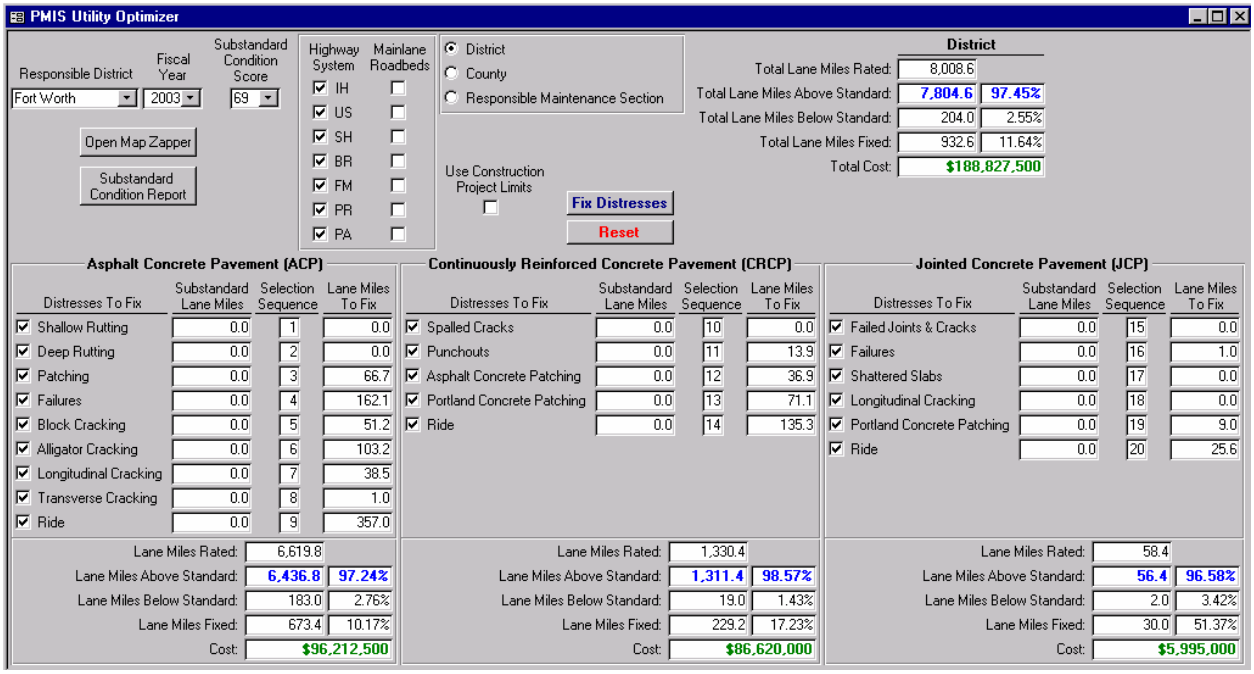
This work program raises the district up to 92.27 percent above the standard, but costs $112,460,500 to fix 517.9 lane miles.



These Utility Score Optimizer costs are one-year costs. They assume that all mileage will be fixed in one year. These costs also do not include ongoing preventive maintenance and routine maintenance costs needed to preserve the mileage that is already above the standard. Thus, the Utility Score Optimizer estimates additional costs above and beyond current amounts.

As mentioned earlier, a PMIS section can have a Condition Score less than 70 even though none of the distress types or ride quality has a utility value less than 0.7. For the Utility Score Optimizer, this means that 'fixing' all of the distress types and ride quality will not necessarily bring the district total to 100 percent above the standard.

This is illustrated by the example below:

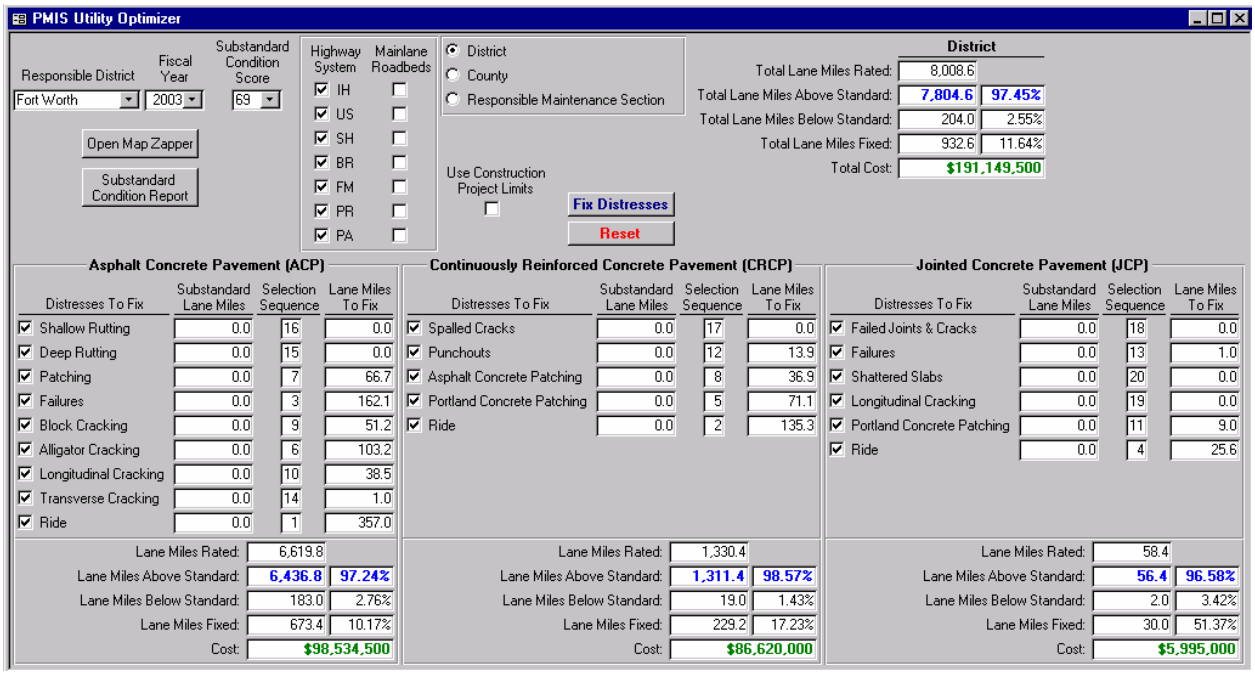


The example shows a total of $188,827,500 needed to fix all of the distress and ride utility values less than 0.7. This brings 97.45 percent of the lane miles for the district above the standard – the remaining 2.55 percent of the mileage that is below standard is because of multiple distress types or ride quality which have utility values above 0.7 but combine to produce Condition Score below 70.

Fixing the distress types and ride quality in a different order can give different results.

As an example, fixing all of the distress types and ride quality in the order suggested by the Substandard Condition Report gets the district up to the same 97.45 percent above the standard, but costs more money ($191,149,500 compared to $188,827,500 in the previous example). This is because "top priority" distress types are usually more expensive, and if they have many lane miles to fix then that will increase the total cost. Fixing lower priority distress can sometimes give similar results for less money, even if more mileage has to be "fixed."

Thus, "worst first" is not always the most cost effective way to meet a specific pavement goal.



If you want to find "below standard" sections, you can go to the PMIS MapZapper window, run a Condition Score Classes map, and look for the sections with Condition Score less than 70. You can also run a Critical Values Ratings and Scores to list sections with Condition less than 70. Instructions for running the Critical Values Ratings and Scores report are included in the 'Running Ratings and Scores Reports' part of this document.

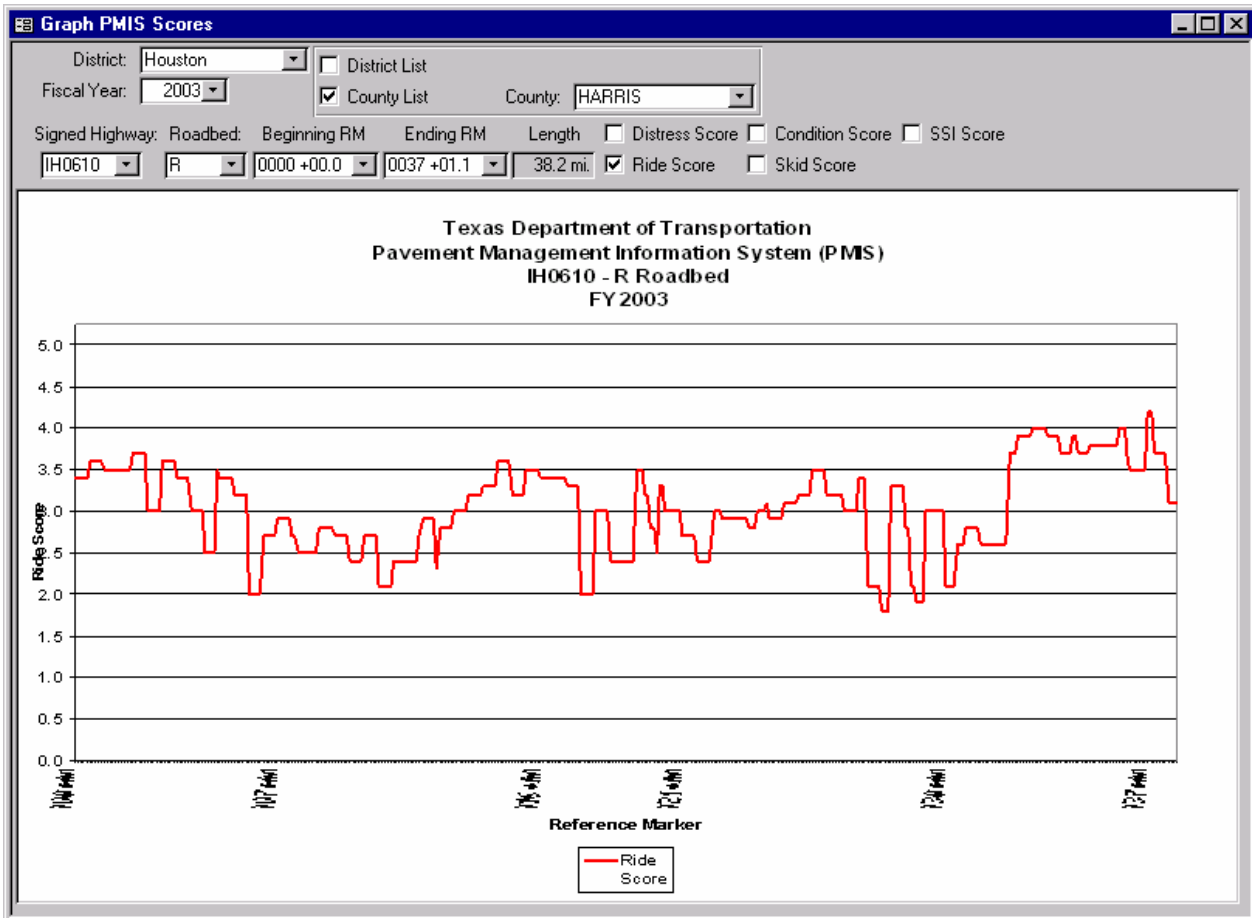
This is the end of the other notes about the Utility Score Optimizer.

Chapter 6 – Graph PMIS Scores

This program uses Microsoft Excel to produce graphs of PMIS Scores for any highway. For example, you can plot Ride Scores for the inside mainlanes (Roadbed = R) of IH 610 in the Houston district and locate spot sections that might need improvement.

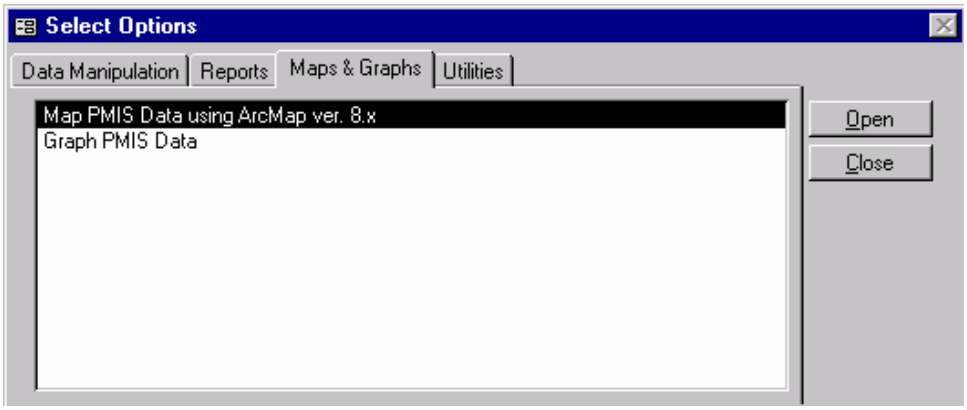
The program options – 'District,' 'Fiscal Year,' 'District List,' 'County List,' 'Signed Highway,' 'Roadbed,' 'Beginning RM,' and 'Ending RM' – are all based on the data that you have downloaded into the PMIS MapZapper database. All you have to do is point and click to select values that have already been validated for use in the chart.

The program does not chart raw data, however, so it is not yet possible to get extremely detailed views (0.1-mile) of specific pavement sections, but the program does give a first-level look to define areas that might need closer study.

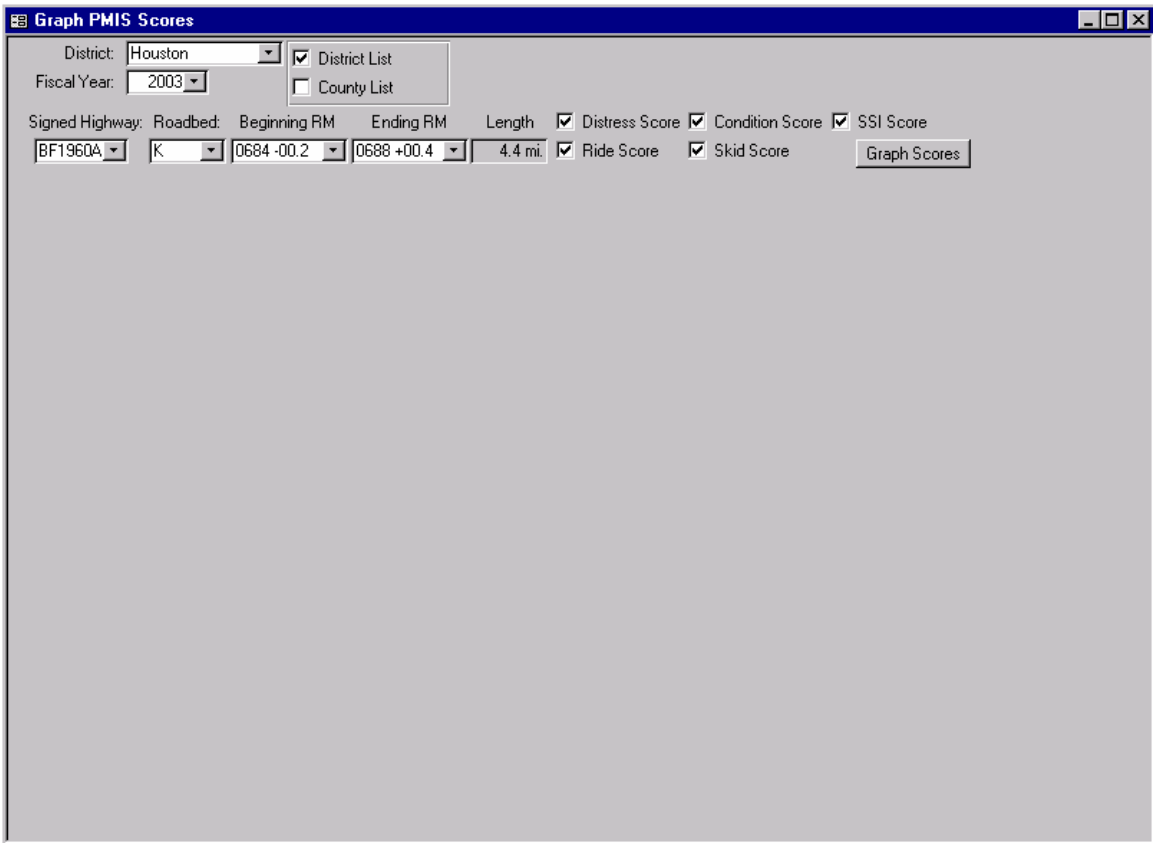


To use the Graph PMIS Scores program, follow the instructions below:

1. Start the PMIS MapZapper, if you have not already done so, and get to the 'Select Options' window.
2. Click the Maps & Graphs tab.



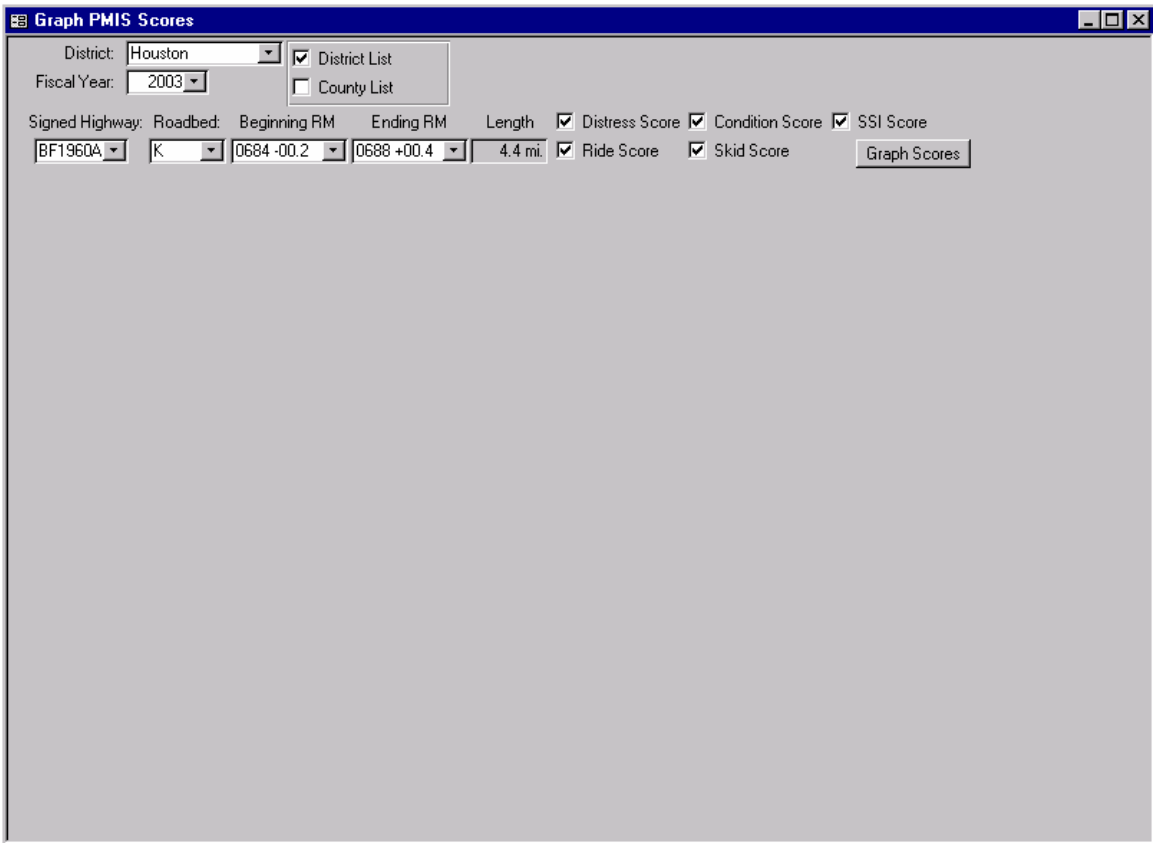
3. Double-click 'Graph PMIS Data.' The Graph PMIS Scores window will appear. This window allows selection of a highway or parts of a highway within a district or county for graphing.



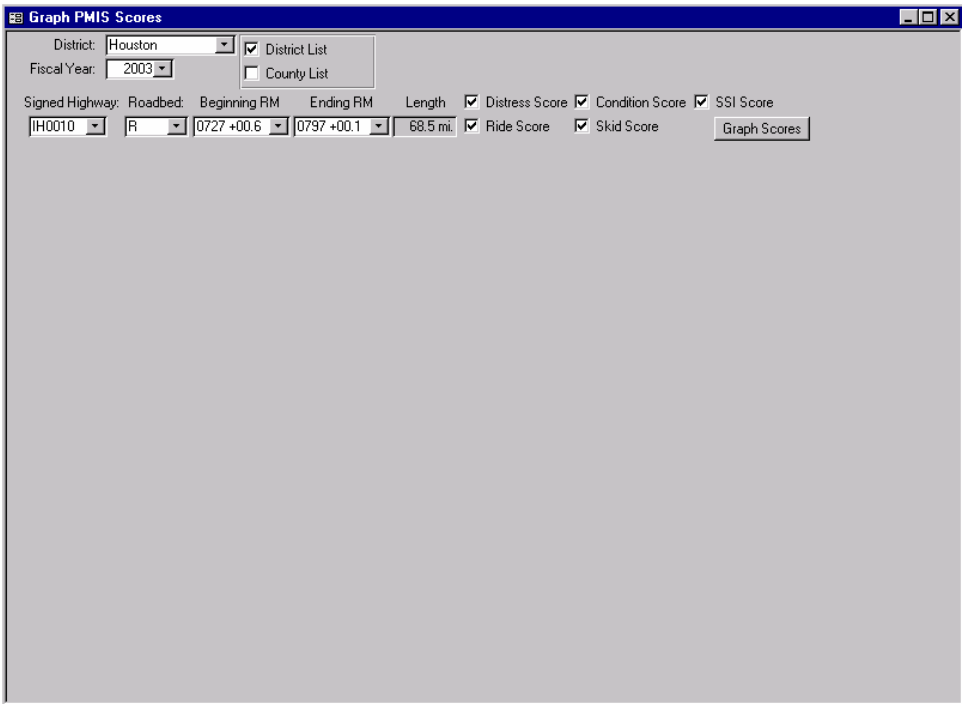
An important feature of the Graph PMIS Scores window is that it gives you an idea which values are valid, based on your available data and selections. There is no need to type values into any of the boxes – you can point and click and select values provided and they will run.

This feature is especially important for values such as 'Signed Highway' and 'Roadbed.' The Graph PMIS Scores window will only show you Highways and Roadbeds that are valid for the Responsible District or County that you select.

In this example, 'Beginning RM' and 'Ending RM' are shown for the beginning and ending of Roadbed 'K' of BF 1960A in the entire Houston district (county not specified). This is not a very long road – only 4.4 miles (as shown in the 'Length' box) – so it might not be obvious that this is the entire road.



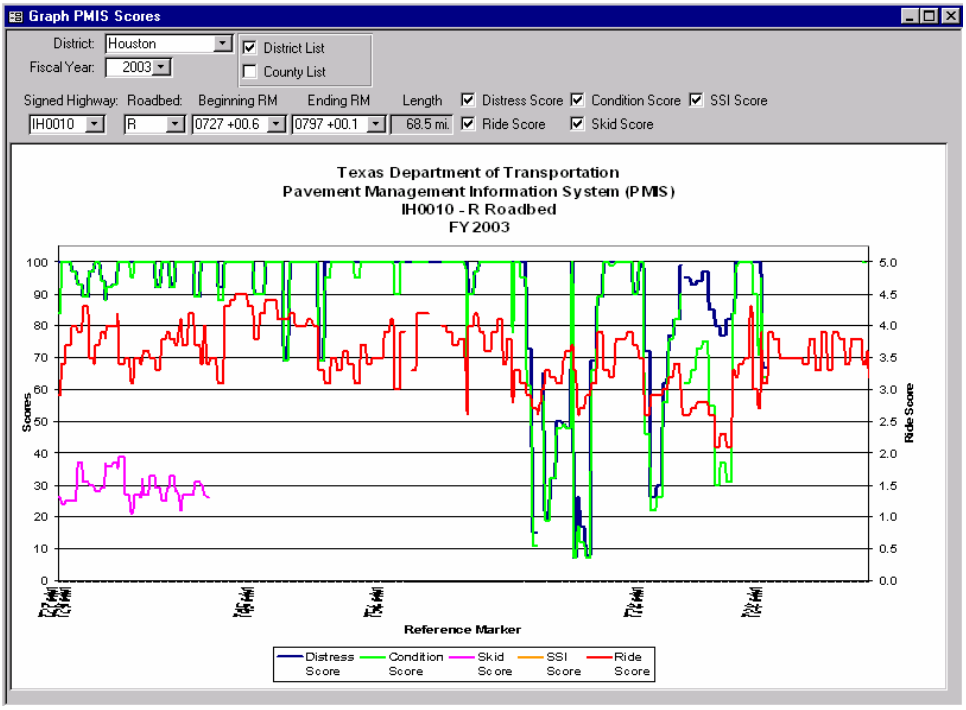
To see a longer road, select 'IH0010' from the 'Signed Highway' drop-down box and select 'R' from the 'Roadbed' drop-down box, as shown below:



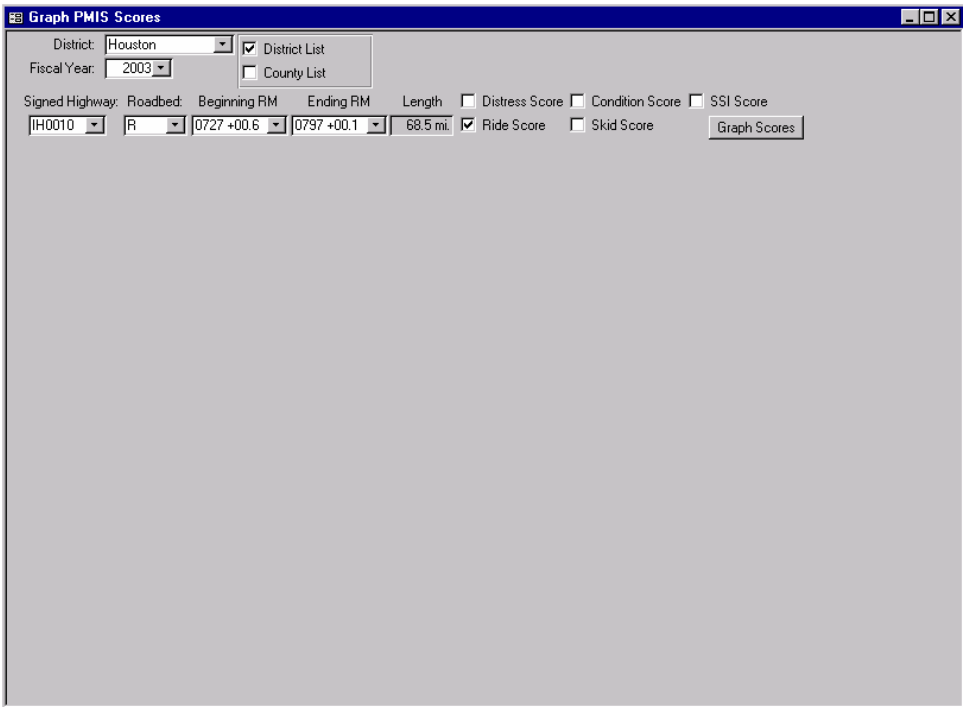
This is a much longer road – 68.5 miles – as shown in the 'Length' box. It runs through the entire district from the Yoakum district line at the west end (Beginning RM 727 +00.6) to the Beaumont district line at the east end (Ending RM 797 +00.1).

Click the 'Graph Scores' button to graph the PMIS Scores for IH 10 in the entire Houston district.

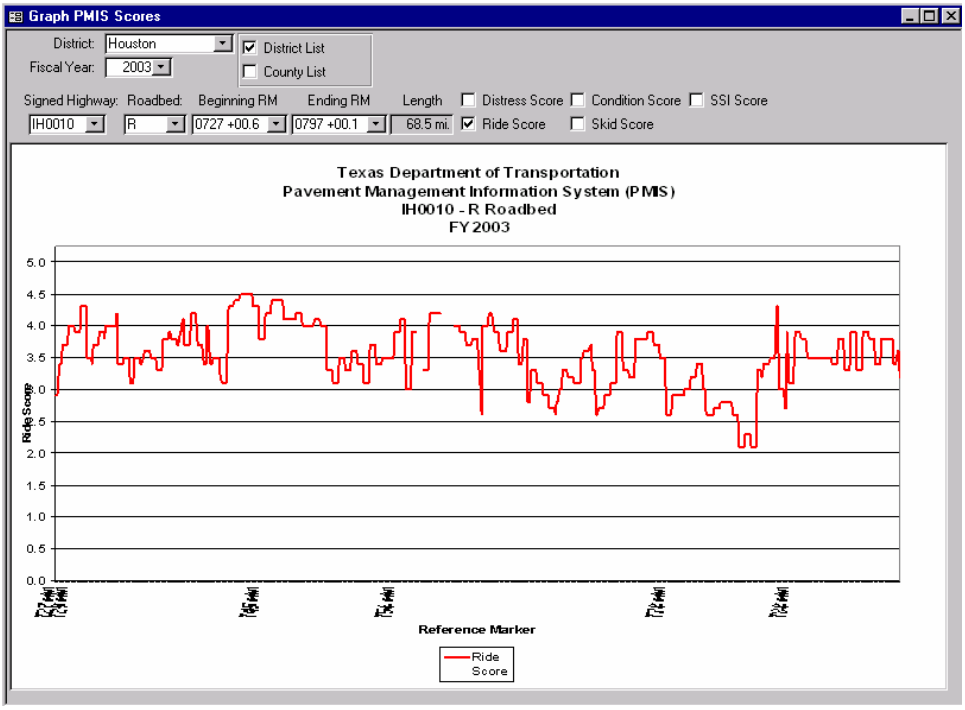
This graph is quite cluttered because the program is displaying four of the five PMIS Scores (SSI Scores are not present on this route).



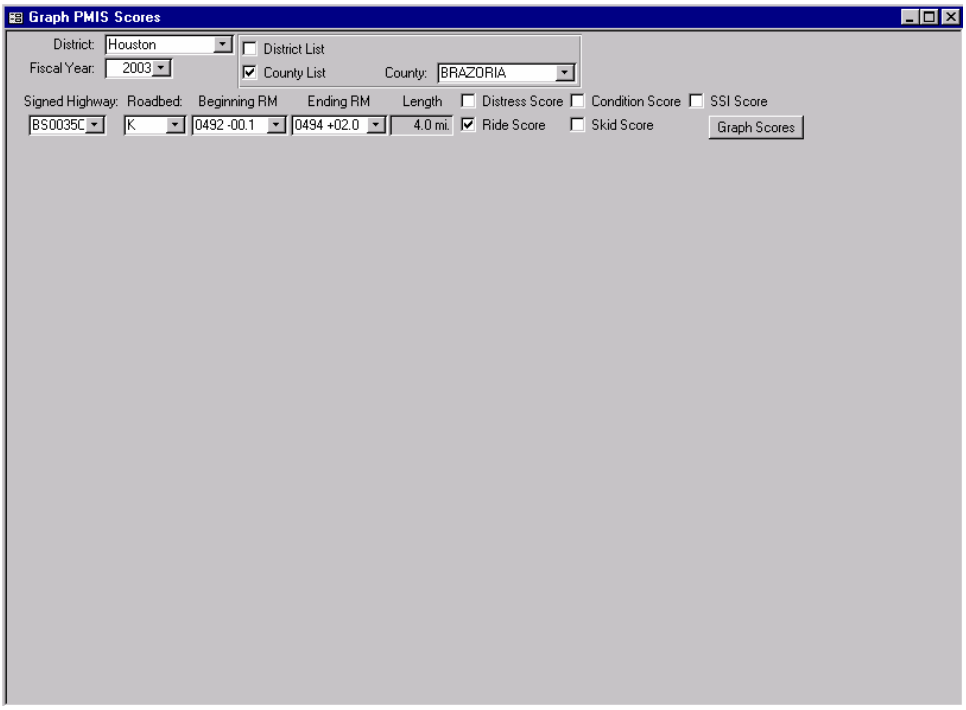
To make the graph easier to read, you can click one or more of the PMIS Score check boxes on the right. Click the 'Graph Scores' button to redraw the graph.



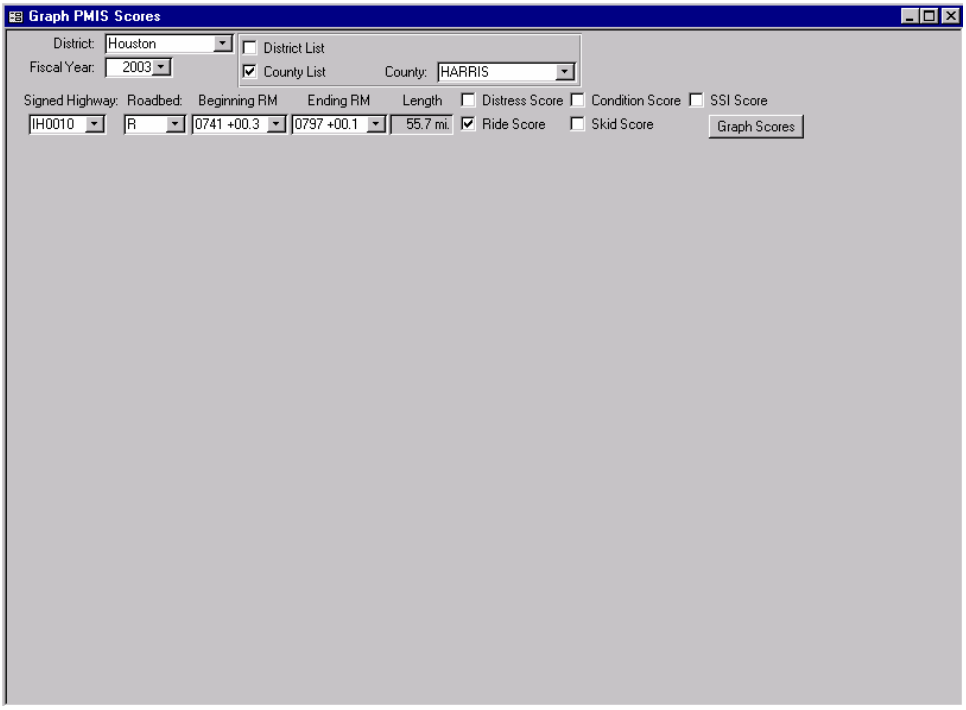
The graph now displays only Ride Scores for IH 10, Roadbed R (eastbound mainlanes), for the entire Houston district.



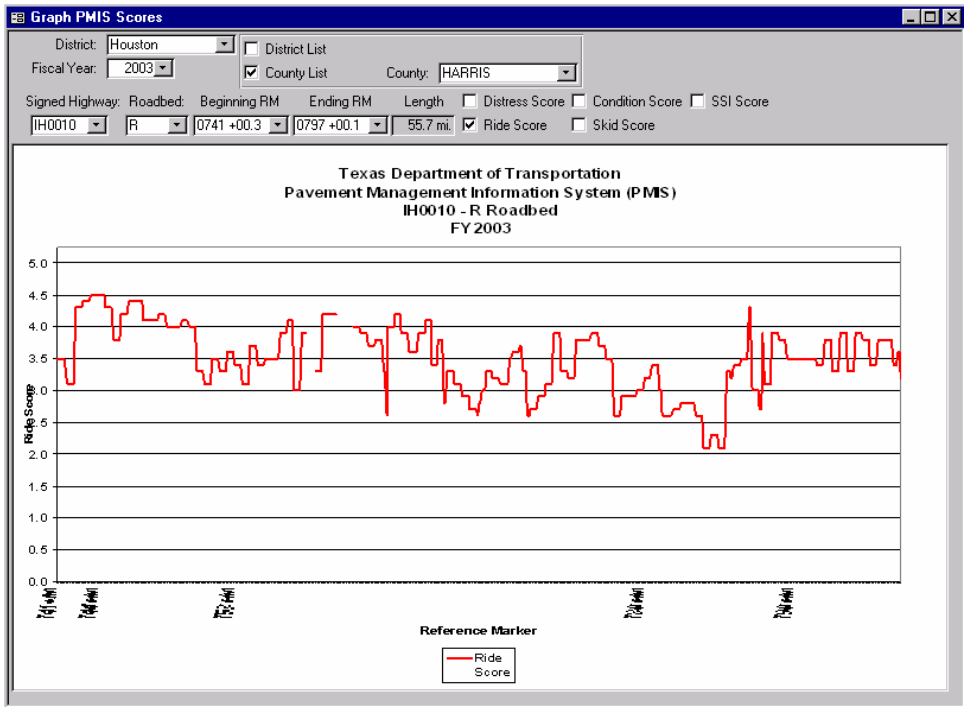
To narrow down the mileage shown on the chart, click the 'County List' check box.



Select ‘County’ Harris, ‘Signed Highway’ IH0010, and ‘Roadbed’ R, then click the ‘Graph Scores’ button to redraw the graph.



The program has now zoomed the chart in for only the IH 10 Roadbed R mileage which is in Harris county.



This is the end of the instructions on running the ‘Graph PMIS Data’ portion of the PMIS MapZapper.

Chapter 7 – Ratings and Scores Reports

The PMIS MapZapper can produce reports which list distress ratings and Scores for each PMIS section in the database. These reports can be run for a single year, for multiple years, and for user-specified "critical values" (for example, Distress Score less than 60).

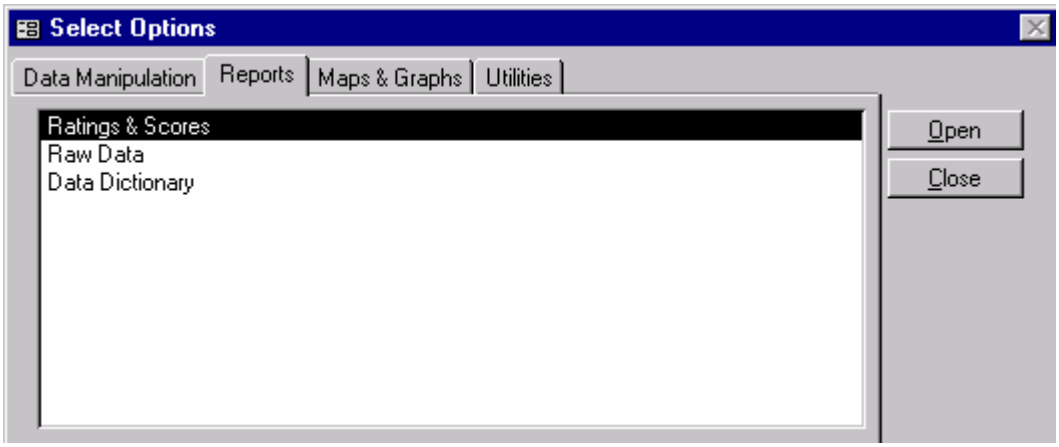
The Ratings and Scores reports are helpful because they give a quick way to locate and diagnose pavement problems. Experienced review of the report results can even suggest corrective treatments. The Single-Year reports can help identify current problems. The Multi-Year reports can show trends of how a particular section got to where it is today. The Critical Value reports can identify candidate sections for particular types of treatments (for example, crack sealing or spot patching).

For those familiar with PMIS on the mainframe, the MapZapper Ratings and Scores program can run all of the mainframe Ratings and Scores reports:

- Single-Year Ratings & Scores (with selectable data types)
- Single-Year Ratings & Scores by Increasing Condition Score (Ride Version)
- Single-Year Ratings & Scores by Increasing Condition Score (IRI Version)
- Critical Value Ratings & Scores (Ride Version)
- Critical Value Ratings & Scores (IRI Version)
- Multi-Year Ratings & Scores (Ride Version)
- Multi-Year Ratings & Scores (IRI Version).

To use the Ratings and Scores report program, follow the instructions below:

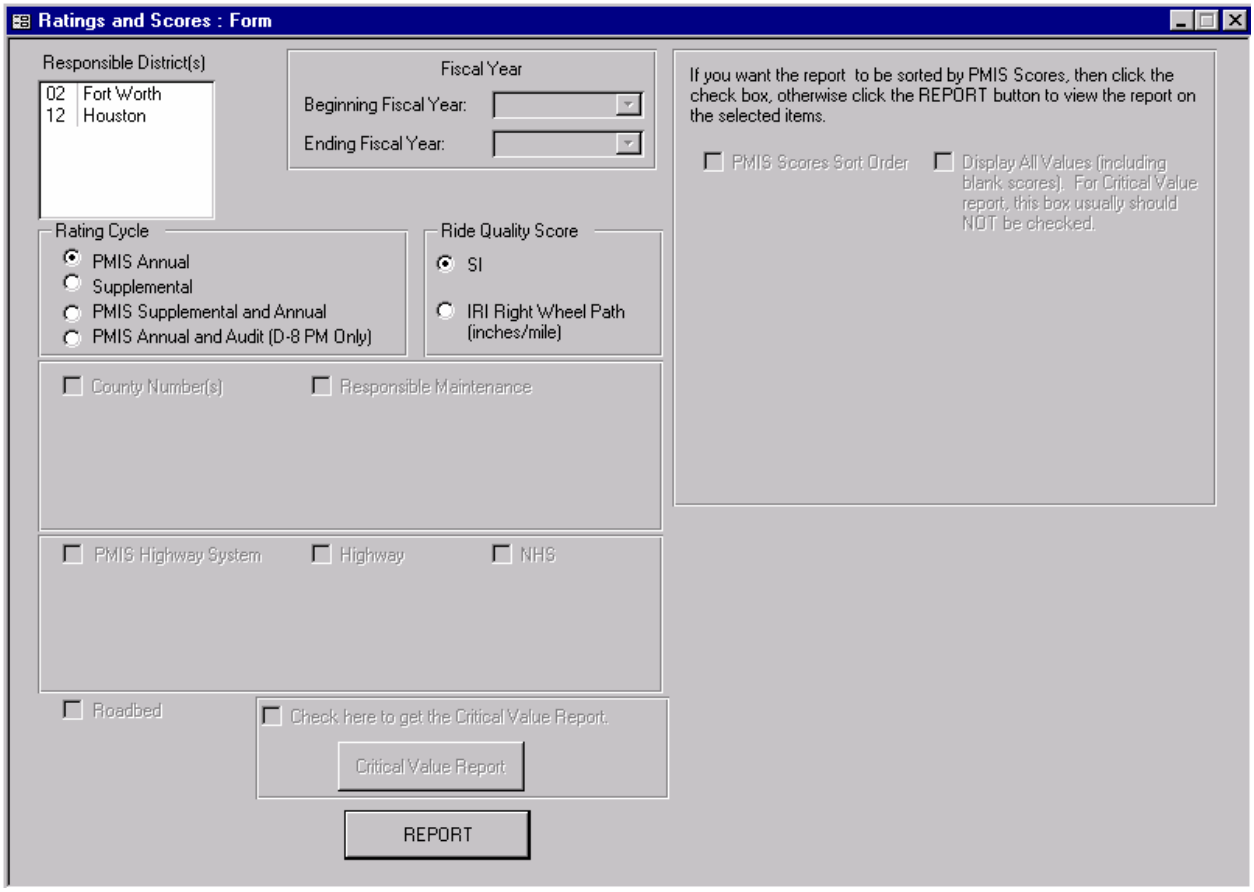
1. Start the PMIS MapZapper, if you have not already done so, and get to the 'Select Options' window.
2. Click the Reports tab.



3. Double-click 'Ratings & Scores.' The Ratings and Scores window will appear. This window combines all of the mainframe Ratings and Scores reports into one report.

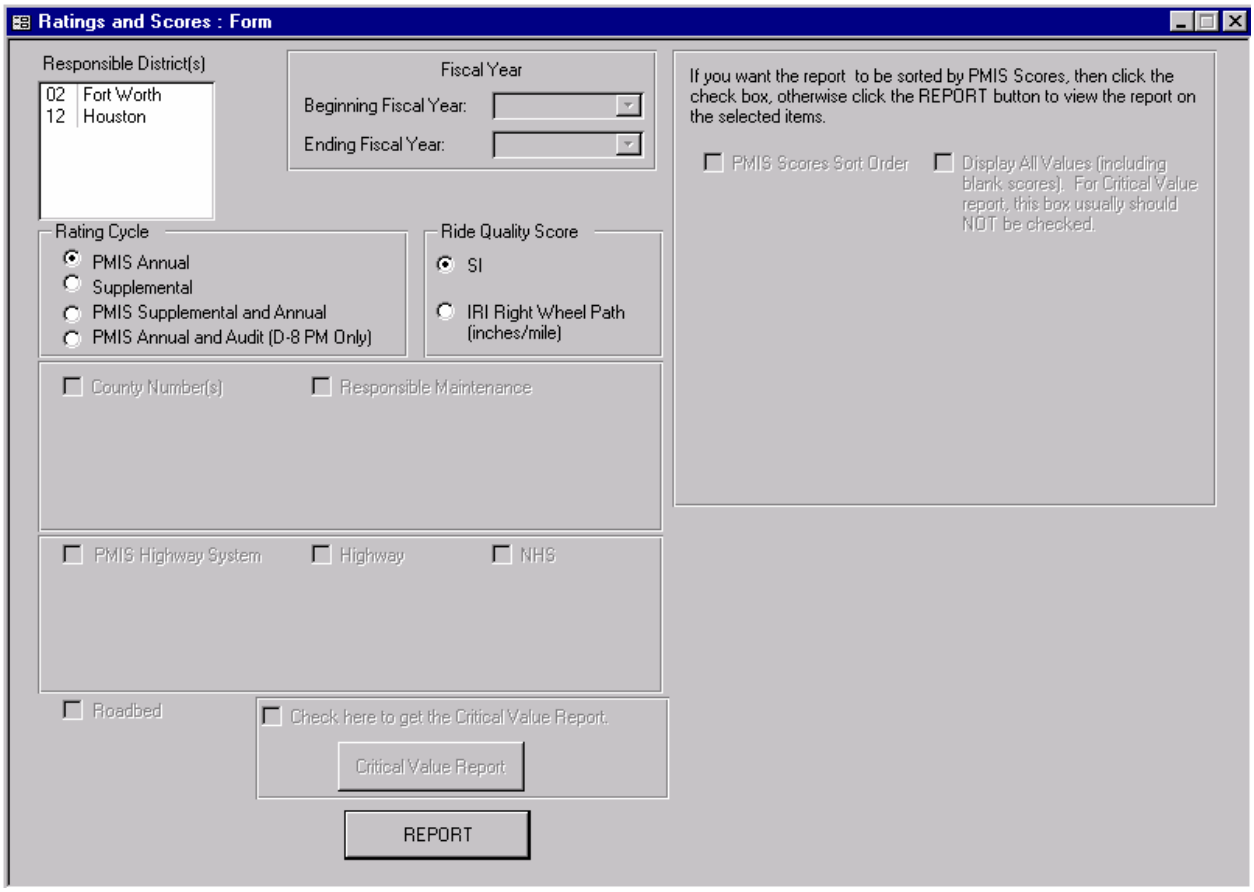
   As with the mainframe version, you can select one or more districts, one or more fiscal years, and one or more counties, but only one maintenance section. You can also run the report for a single PMIS Highway System (IH, US, SH, FM, BR, PR, and PA), a single Highway, National Highway System (NHS) routes only, or for a single Roadbed (including mainlanes only or frontage roads only). Finally, you must select one of the PMIS 'Rating Cycle' values and a 'Ride Quality Score' to print.

   Unlike the mainframe version, you can sort by any PMIS Score, instead of by Condition Score only. You can sort Scores increasing or decreasing, and you can also control whether or not to display blank Scores when sorting (the mainframe version prints blank Condition Scores at the front of the report because of the increasing sort, which prints blanks first).



4. The first four parts of the Ratings and Scores window are required: Responsible District(s), Fiscal Year, Rating Cycle, and Ride Quality Score. You must enter values for these items to run a report. You can then click the 'Report' button to run a report.

   The district list toggles on and off, so clicking a district the first time turns it on (selects it to be reported) and clicking a second time turns it off (not selected to be reported). You can select more than one district, but only if you have downloaded more than one district into the MapZapper database.



Please Note: Running a report in this way, without additional options, can produce hundreds of pages of printout. For example, running Fort Worth district, FY 2003, PMIS Annual rating cycle, and SI for ride quality, produces a 357-page report. A similar report for Houston district produces a 351-page report.

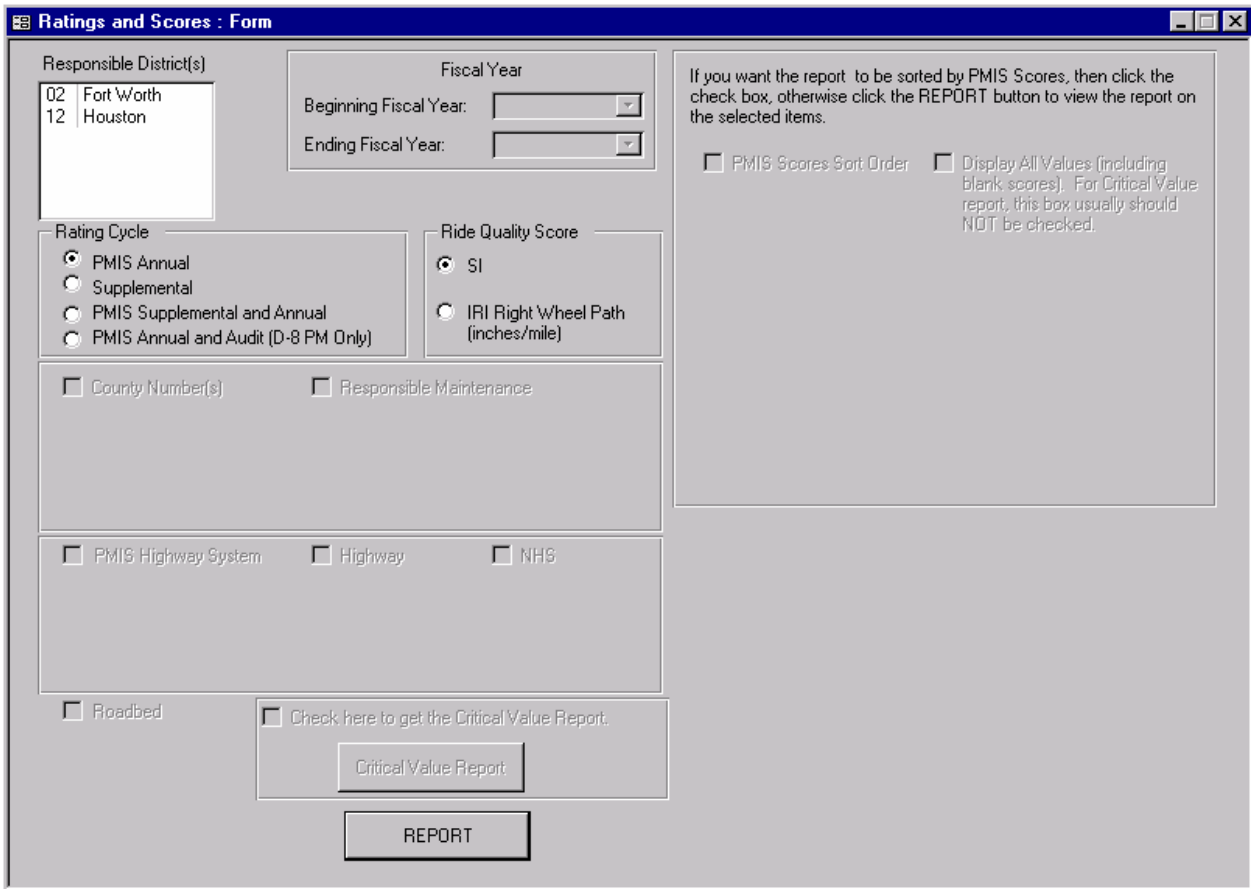
This is the end of the basic instructions for the Ratings and Scores reports. The remaining pages of this chapter will show the various optional selections and how they work together.

Selecting Pre-Validated Values

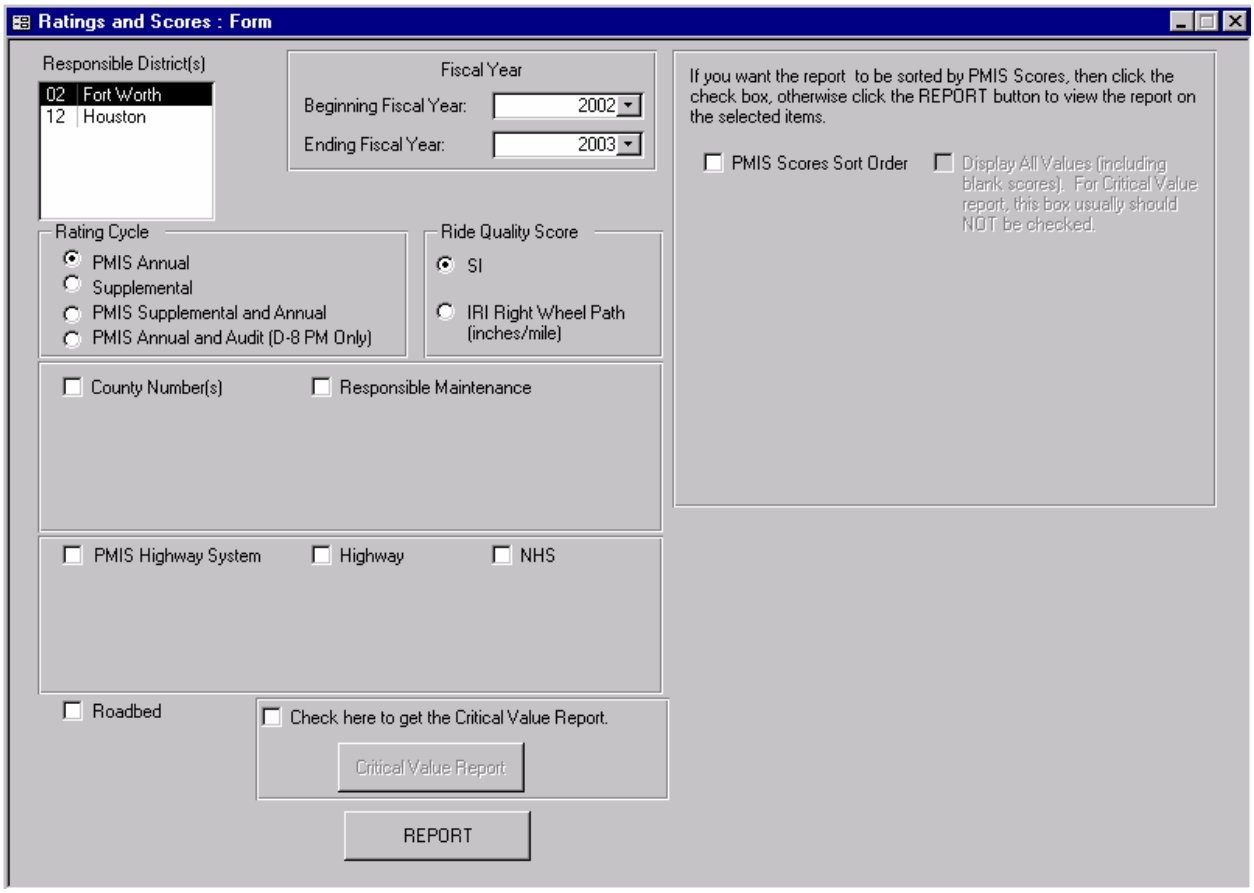
An important feature of the Ratings and Scores window is that it gives you an idea which values are valid, based on your available data and selections. There is no need to type values into any of the boxes – you can point and click and select values provided and they will run.

This feature is especially important for values such as 'Highway' and 'Roadbed.' The Ratings and Scores window will only show you Highways and Roadbeds that are valid for the Responsible District(s), Counties, or Maintenance Section that you select.

In this example, 'Beginning Fiscal Year' and 'Ending Fiscal Year' are not shown because the 'Responsible District(s)' value has not been selected yet. As soon as the 'Responsible District(s)' value has been selected, available values for 'Beginning Fiscal Year' and 'Ending Fiscal Year' will appear.



Here is an example of how the Ratings and Scores window provides valid values for use in the report. Fort Worth has been selected as the Responsible District, and the Fiscal Year values changed automatically to '2002' and '2003' because those were the years downloaded into the MapZapper database for Fort Worth. Rating Cycle and Ride Quality Score were left at their default values of 'PMIS Annual' and 'SI,' respectively.

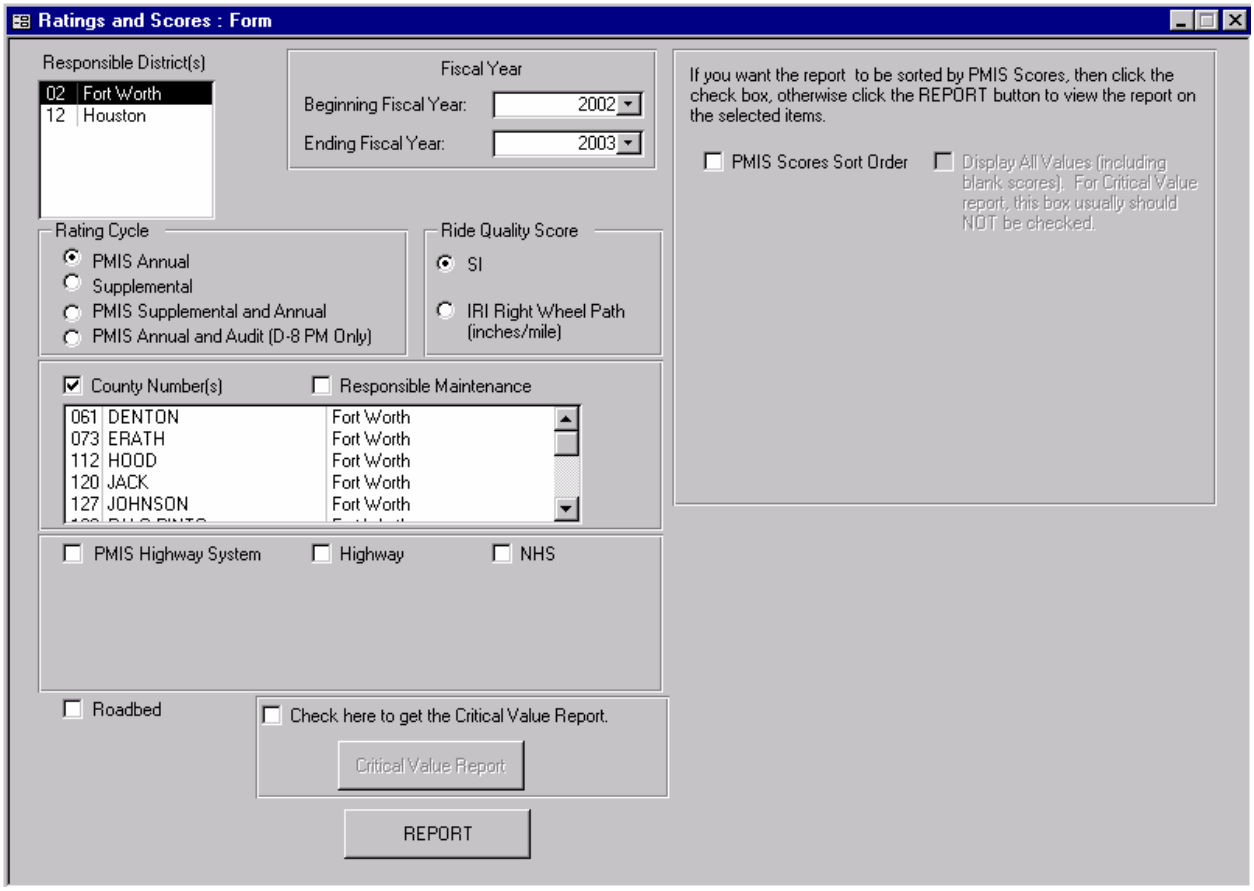


Selecting County Number(s)

Click the 'County Number(s)' check box to list PMIS ratings and Scores for one or more counties. The drop-down box shows county number, county name, and district name (used when more than one district is selected from the 'Responsible District(s)' list).

The County Number(s) list toggles on and off, so clicking a county the first time turns it on (selected to be reported) and clicking the county a second time turns it off (not selected to be reported). You can select more than one county.

It is possible for counties to show up that are not within the geographical boundaries of the district. This happens whenever the 'extra' county has mileage maintained by the 'Responsible District' selected on the form. In this example, Denton county (in the Dallas district) shows up because it has some mileage actually maintained by the Fort Worth district.

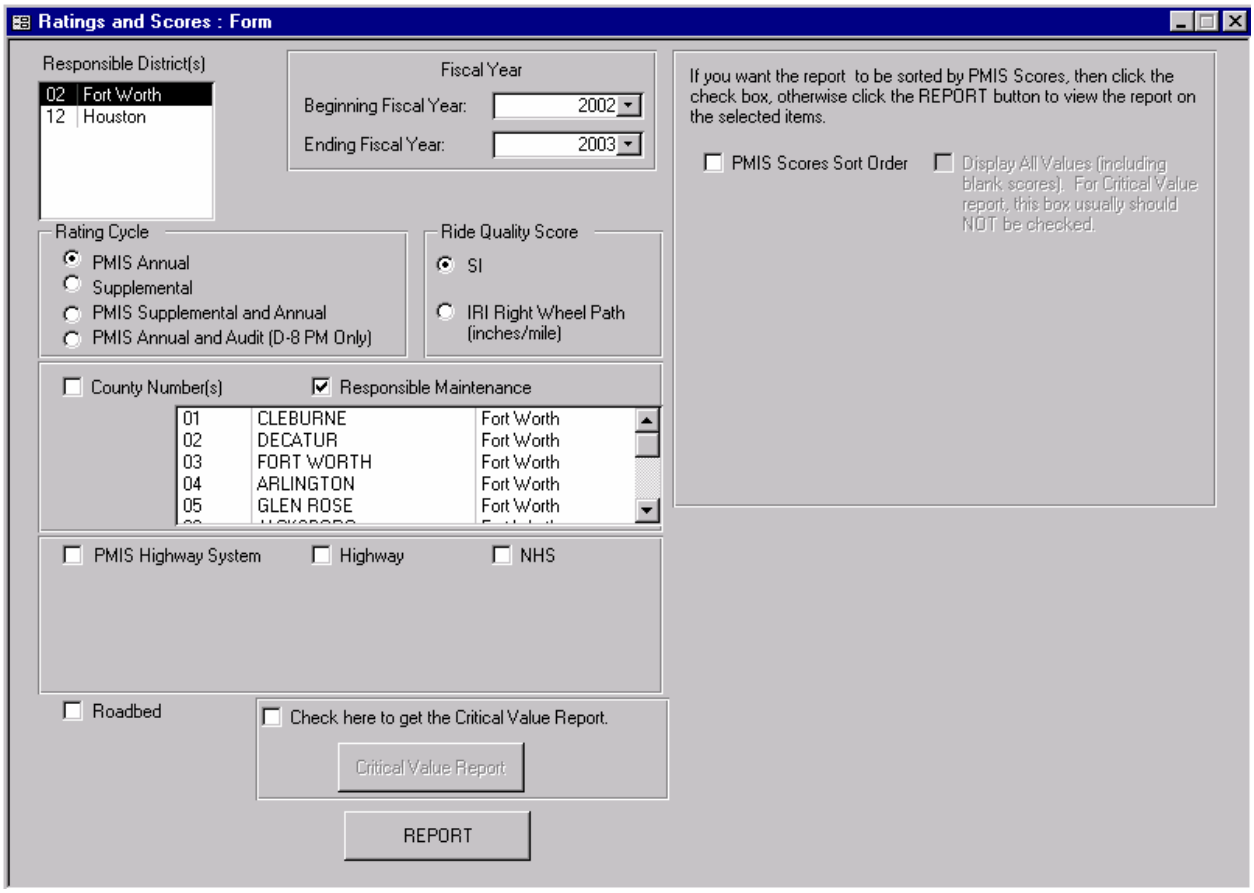


Please Note: You cannot select 'County Number(s)' and 'Responsible Maintenance' at the same time. You can leave both of them blank, or select one or the other.

Selecting Maintenance Section

Click the 'Responsible Maintenance' check box to list PMIS ratings and Scores for a particular maintenance section. The drop-down box shows maintenance section number, maintenance section name, and district name (used when more than one district is selected from the 'Responsible District(s)' list).

The Responsible Maintenance list toggles on and off, so clicking a maintenance section the first time turns it on (selected to be reported) and clicking the maintenance section a second time turns it off (not selected to be reported). You can only select one maintenance section.

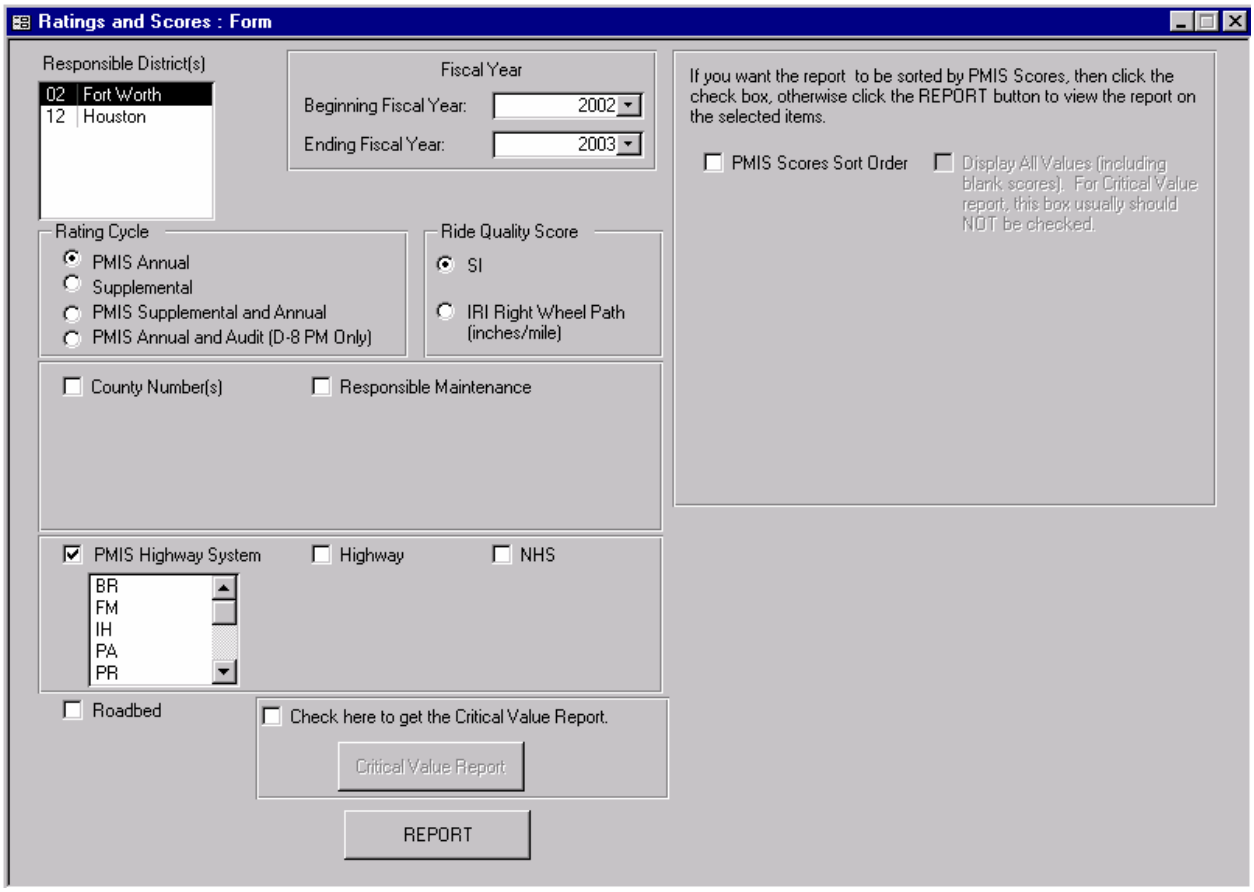


Please Note: You cannot select 'Responsible Maintenance' and 'County Number(s)' at the same time. You can leave both of them blank, or select one or the other.

The Responsible Maintenance list assumes that all maintenance section numbers, names, and mileages have been defined correctly in the Texas Reference Marker (TRM) system. If you find mistakes in the list, they will need to be corrected in TRM by the end of July so they will show up in the next fiscal year's PMIS database.

Selecting PMIS Highway System

Click the 'PMIS Highway System' check box to list ratings and Scores for a particular PMIS Highway System. PMIS Highway System combines the detailed highway system designations into commonly-used groups. For example, PMIS Highway System 'BR' combines Business Interstate (BI), Business U.S. (BU), Business State (BS), and Business Farm or Ranch (BF) into a single system for Business Routes.

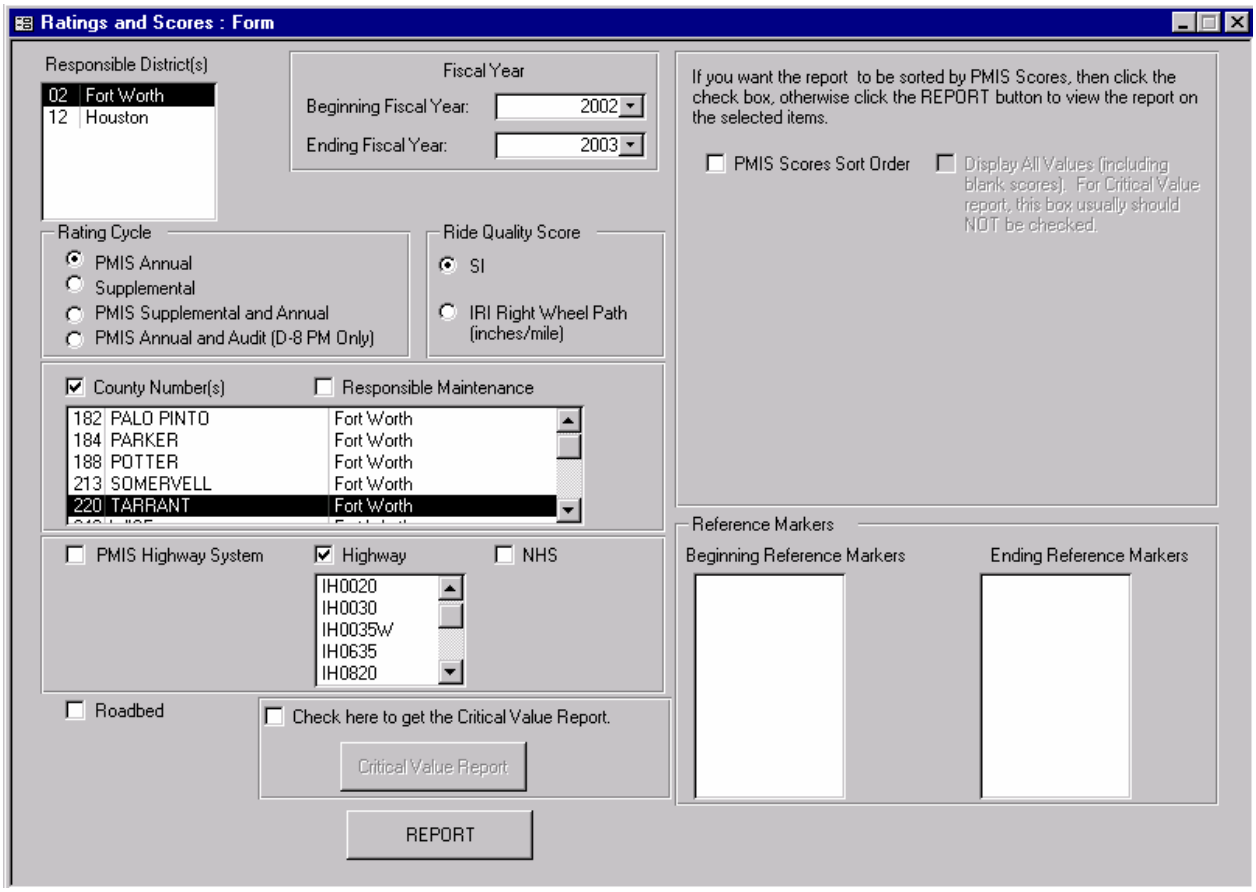


Please Note: You cannot select 'PMIS Highway System' and 'Highway' at the same time. You can leave both of them blank, or select one or the other.

Selecting Highway

Click the 'Highway' check box to list PMIS ratings and Scores for a particular highway. The program will search for all highways in the database for the district, county, or maintenance section selected.

This example has scrolled down into the 'Highway' list to show all of the Interstate highways in Tarrant county.

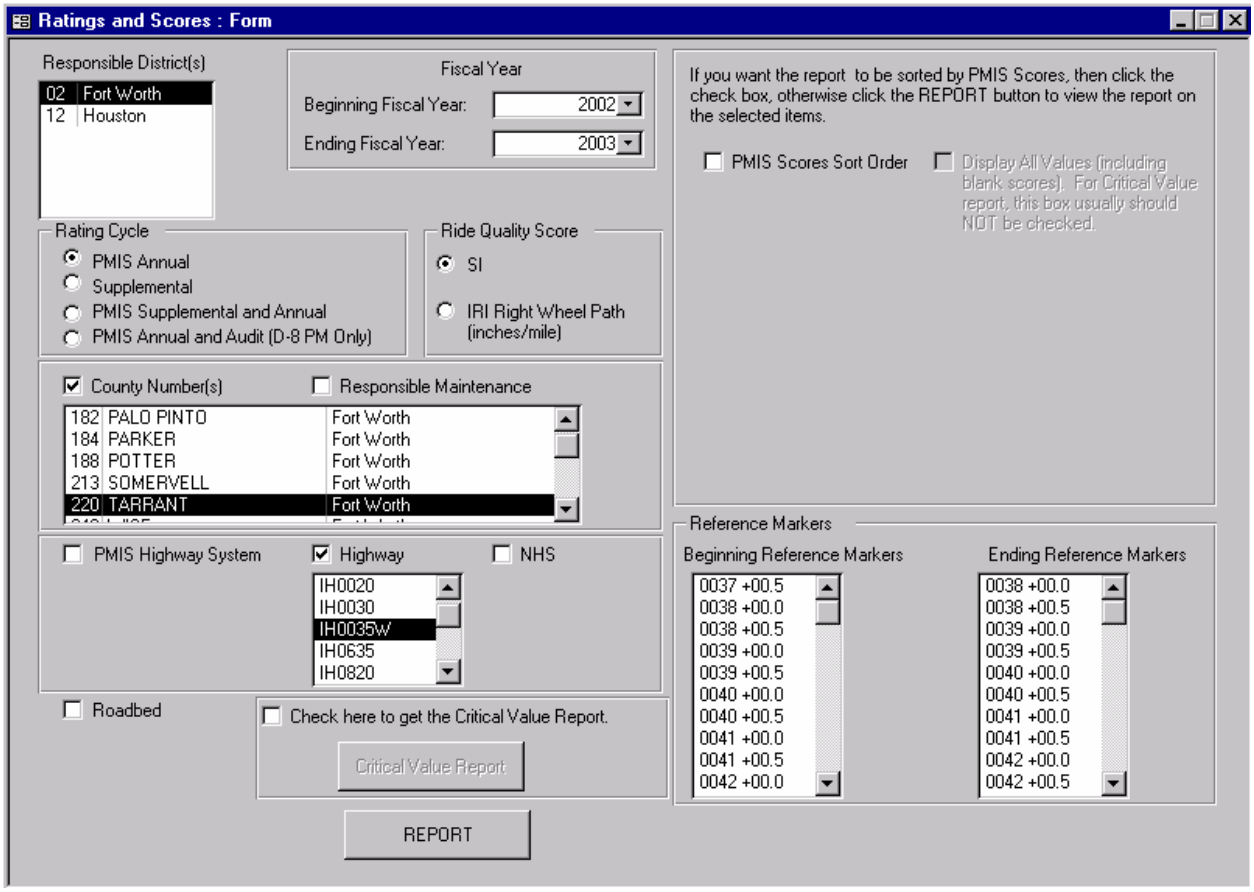


Please Note: You cannot select 'Highway' and 'PMIS Highway System' at the same time. You can leave both of them blank, or select one or the other.

Selecting Reference Marker Limits (Beginning and Ending)

When you select a highway from the 'Highway' drop-down list (IH 35W in this example), the program will display valid values for 'Beginning Reference Markers' and 'Ending Reference Markers.' These values come directly from the PMIS database that you have downloaded. You can select a value from each of the drop-down boxes to list ratings and scores for a particular part of the highway.

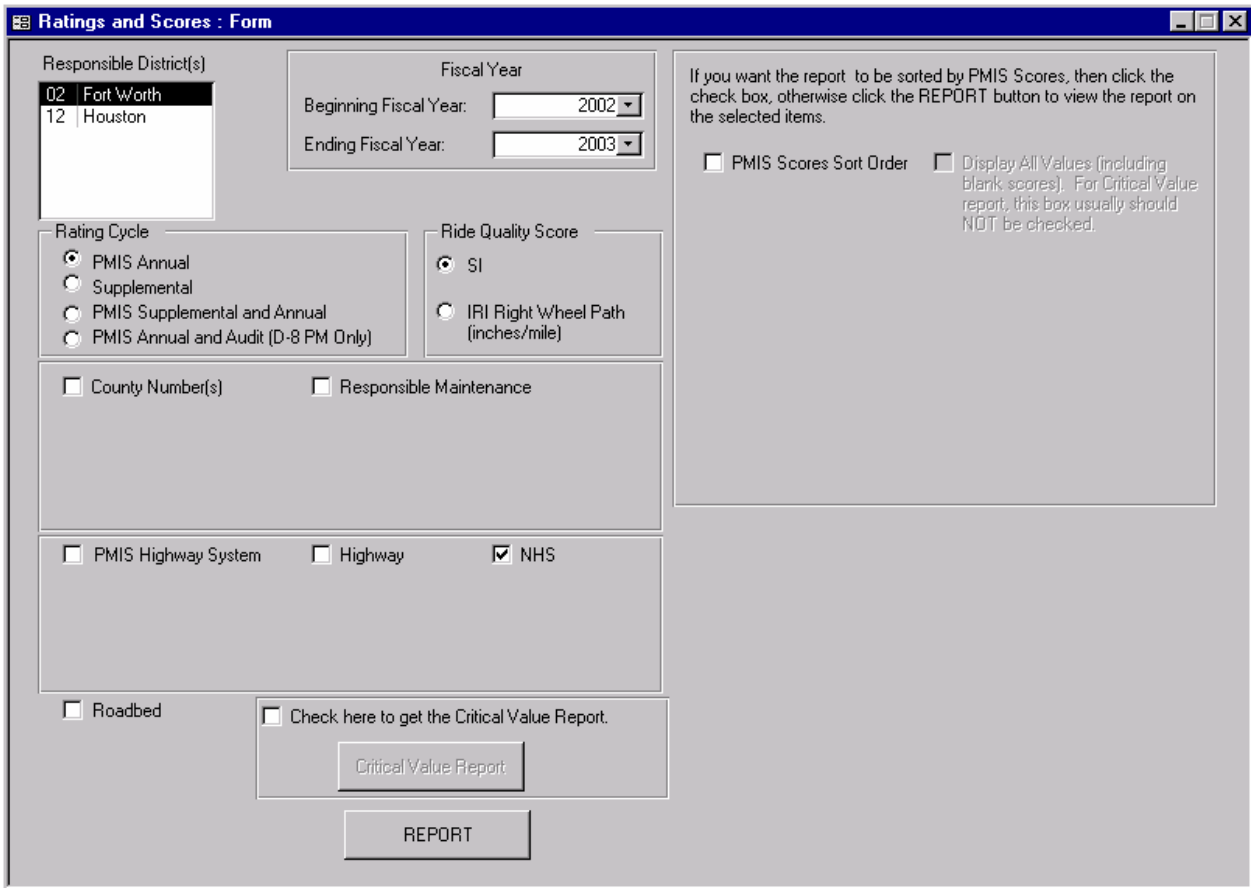
The 'Beginning Reference Marker' value must be less than the 'Ending Reference Marker' value. If you try to go backwards ('Ending' less than 'Beginning'), the program will give an error message and you'll have to select other values.



Selecting National Highway System (NHS) Routes

Click the 'NHS' check box to have the program list PMIS ratings and Scores only for sections on the National Highway System.

The National Highway System (NHS) is a comprehensive Federal-aid system that includes the Interstate System and other routes important to the nation's economy, defense, and mobility. By definition, all Interstate Highway mainlanes are on the NHS. Congress officially designated and approved the system of NHS routes in December, 1995.



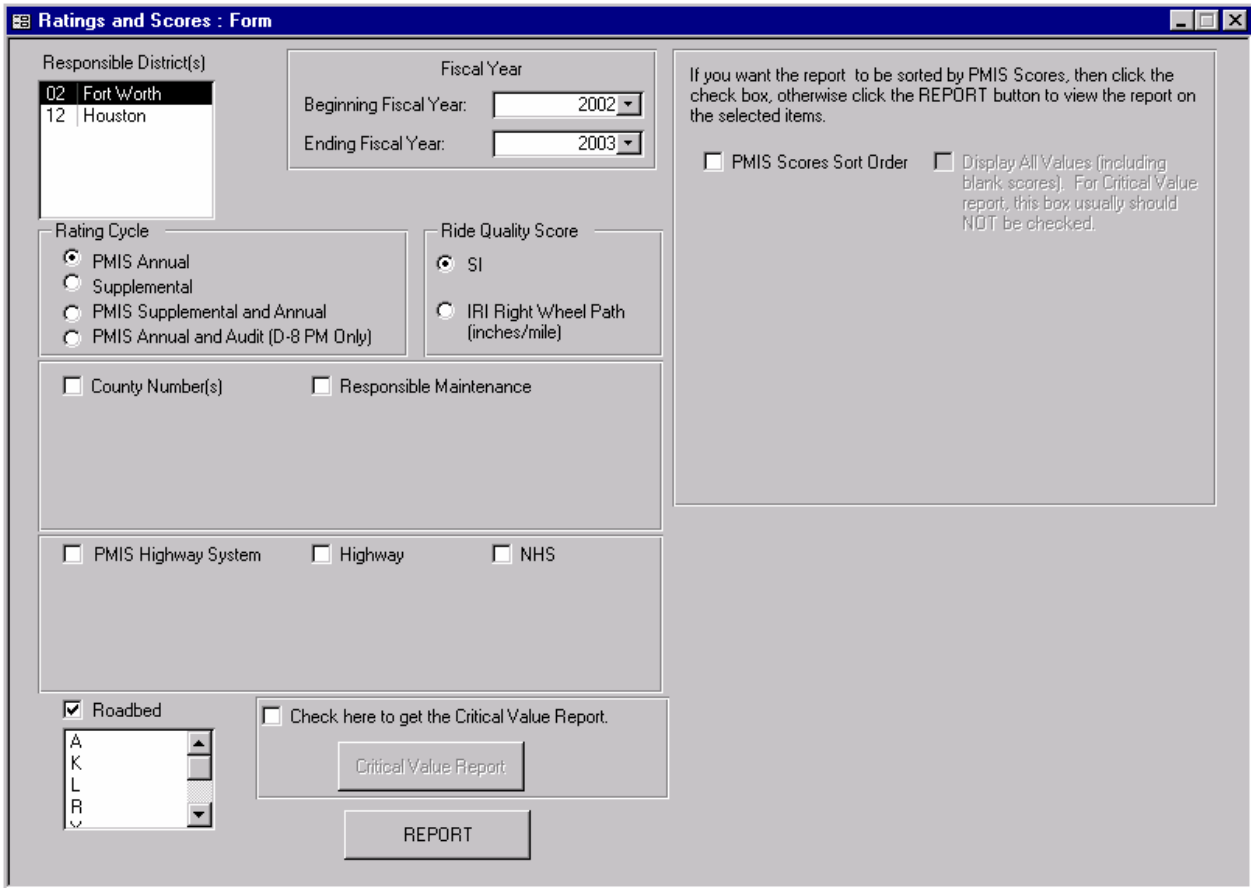
Please Note: You can select 'NHS' by itself, or with 'PMIS Highway System' or with 'Highway.'

Selecting Roadbed

Click the 'Roadbed' check box to have the program list PMIS ratings and Scores only for specific roadbeds. Valid Roadbed values are:

K Mainlanes, Undivided highway
L Mainlanes, Left
R Mainlanes, Right
X Frontage Roads, Left
A Frontage Roads, Right
M Mainlanes only (K, L, and R)
F Frontage Roads only (X and A).

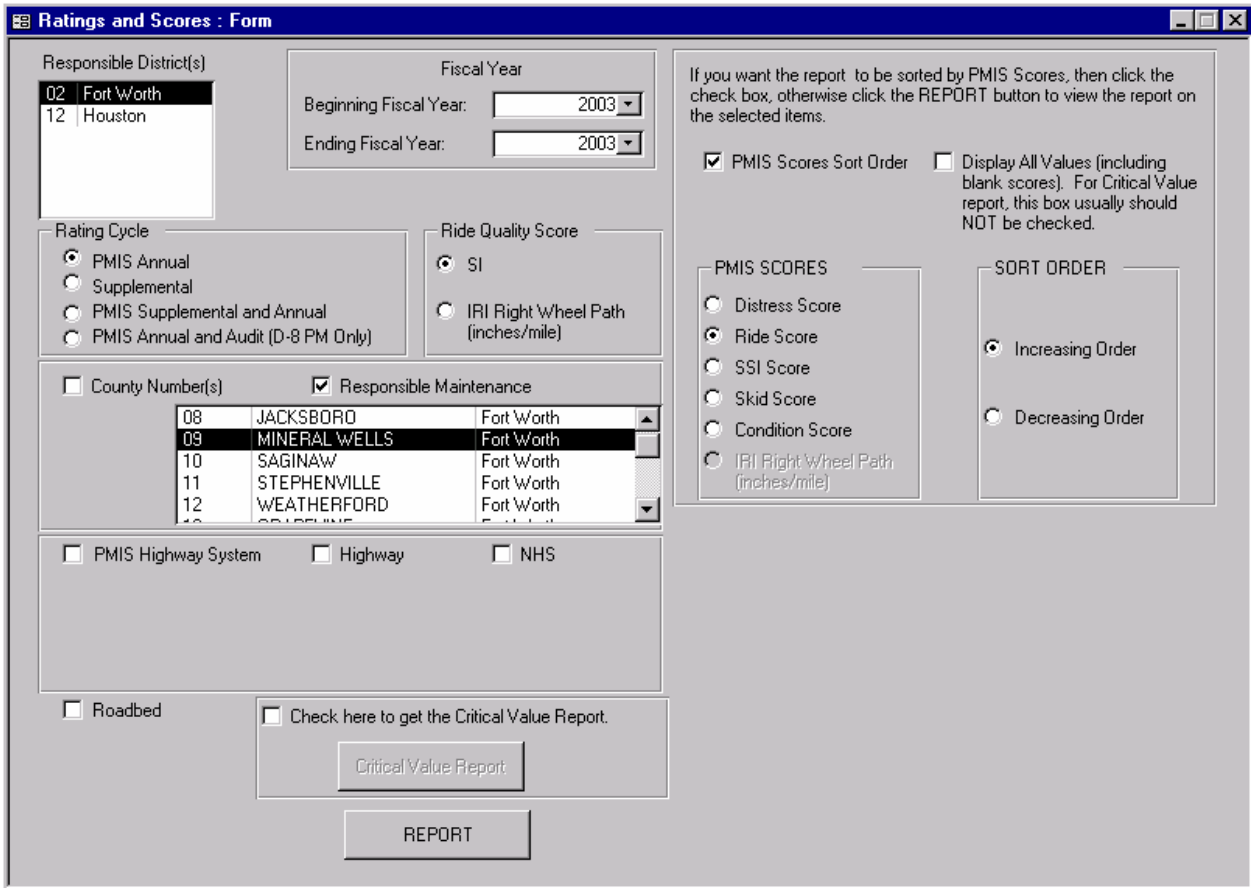
where 'left' and 'right' are based on facing in the direction of increasing Reference Markers (northbound or eastbound for IH, and usually southbound or eastbound for non-IH).



Sorting by PMIS Score

You can also sort by one of the PMIS Scores, in increasing or decreasing order. Increasing order is useful for finding the worst PMIS sections in a particular area or highway (they will display first), while decreasing order is useful for finding the best PMIS sections in a particular area or highway (they will display first).

This is an example for the Mineral Wells maintenance section of the Fort Worth district, FY 2003, sorted by increasing Ride Score. This report will show the roughest PMIS sections (lowest Ride Scores) first. The 'Display All Values' check box has not been selected, so blank Ride Scores will not print out on the report.



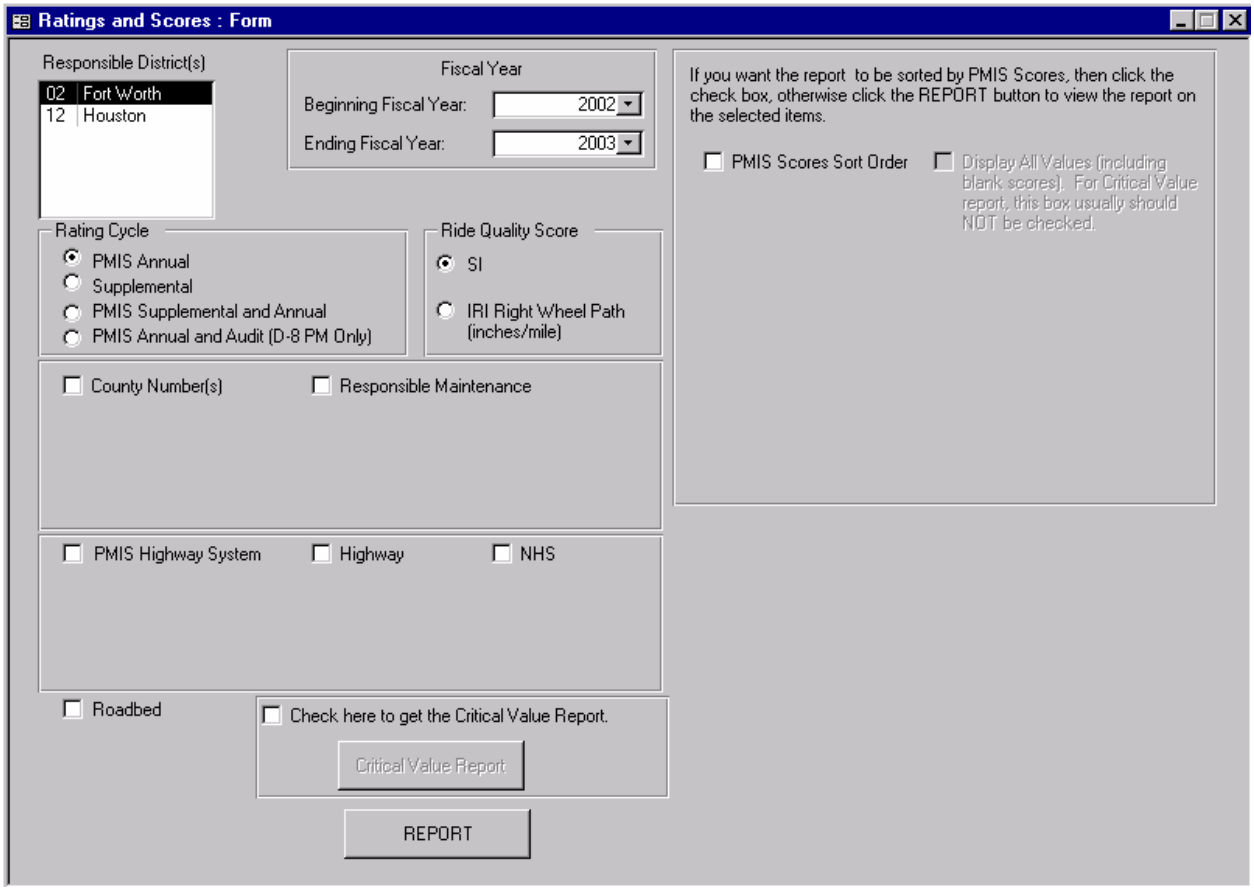
Please Note: Sorting PMIS Scores only works for a single fiscal year. If you have multiple fiscal years selected and check the 'PMIS Scores Sort Order' check box, the program will give an error message and you'll have to change to a single fiscal year.

Running a Multi-Year Ratings and Scores Report

The Multi-Year Ratings and Scores report lets you see trends in condition over time. For example, a PMIS section with low Ride Score this year might have been much smoother for the last few years – the sudden drop in ride quality might have been caused by rapid distress or some other factor that can be treated.

To run a Multi-Year Ratings and Scores report, select a 'Beginning Fiscal Year' value less than the 'Ending Fiscal Year' value, as shown in the example below.

Select values for 'Rating Cycle' and 'Ride Quality Score' that you want, and any other of the optional values below that you want to list; then click the 'Report' button at the bottom of the window.

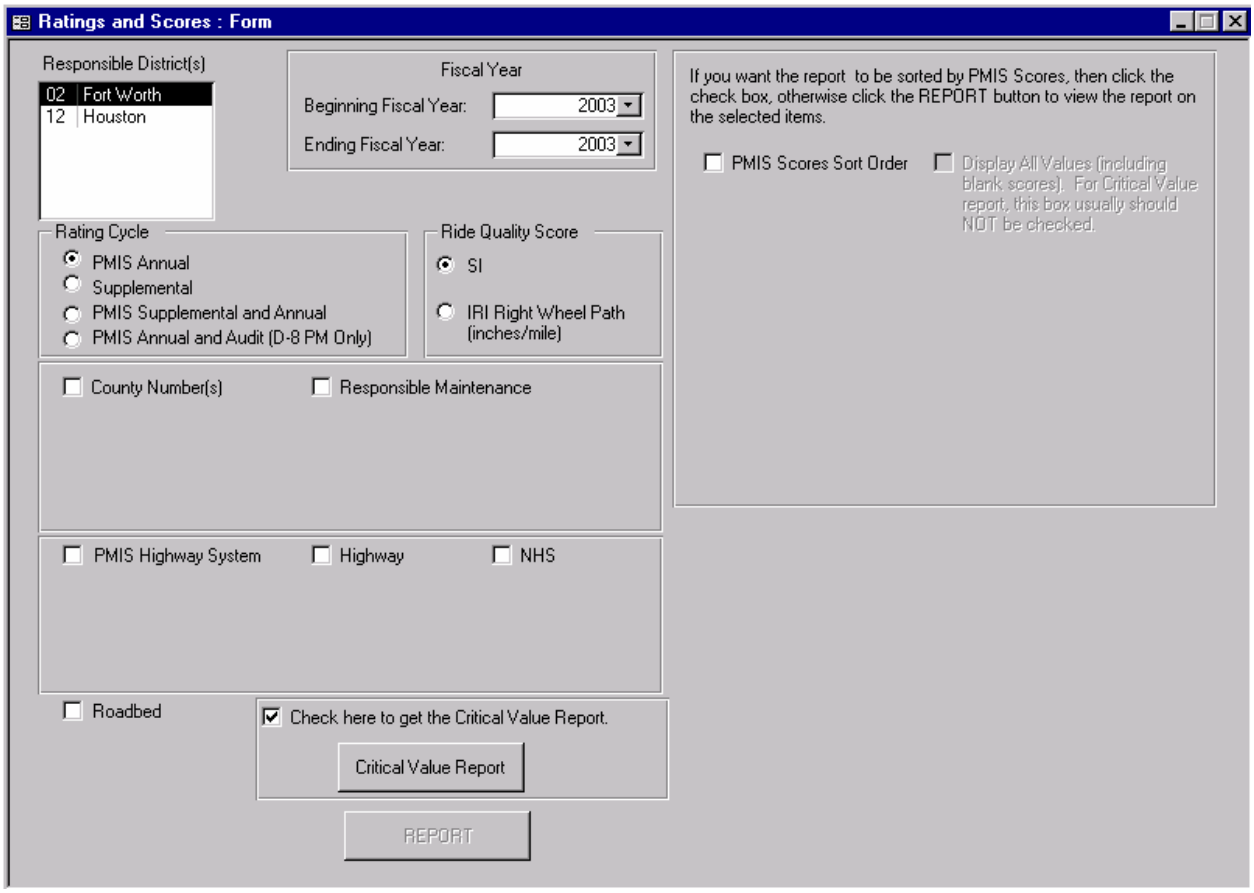


Please Note: You must download at least two years of PMIS data from the mainframe to be able to run a Multi-Year Ratings and Scores report. The PMIS data years do not have to be consecutive, though.

Running a Critical Value Ratings and Scores Report

The Critical Value Ratings and Scores report lets you search for PMIS sections that have specific values ("critical values"). For example, you can search for all PMIS sections with a Distress Score less than 60. You can also search for combinations of values, such as all PMIS sections with high traffic and rough ride (you define "high traffic" and "rough ride").

To run a Critical Value Ratings and Scores report, fill out the rest of the Ratings and Scores window the way you want; then click the 'Check here to get the Critical Value Report' check box; then click the 'Critical Value Report' button.



Please Note: The Critical Value Ratings and Scores report can only be run for a single year. If you have multiple fiscal years selected and try to run the report, the program will give an error message and you'll have to change the fiscal years or run a Multi-Year report.

The Critical Values window will appear. The window has four boxes and two buttons.

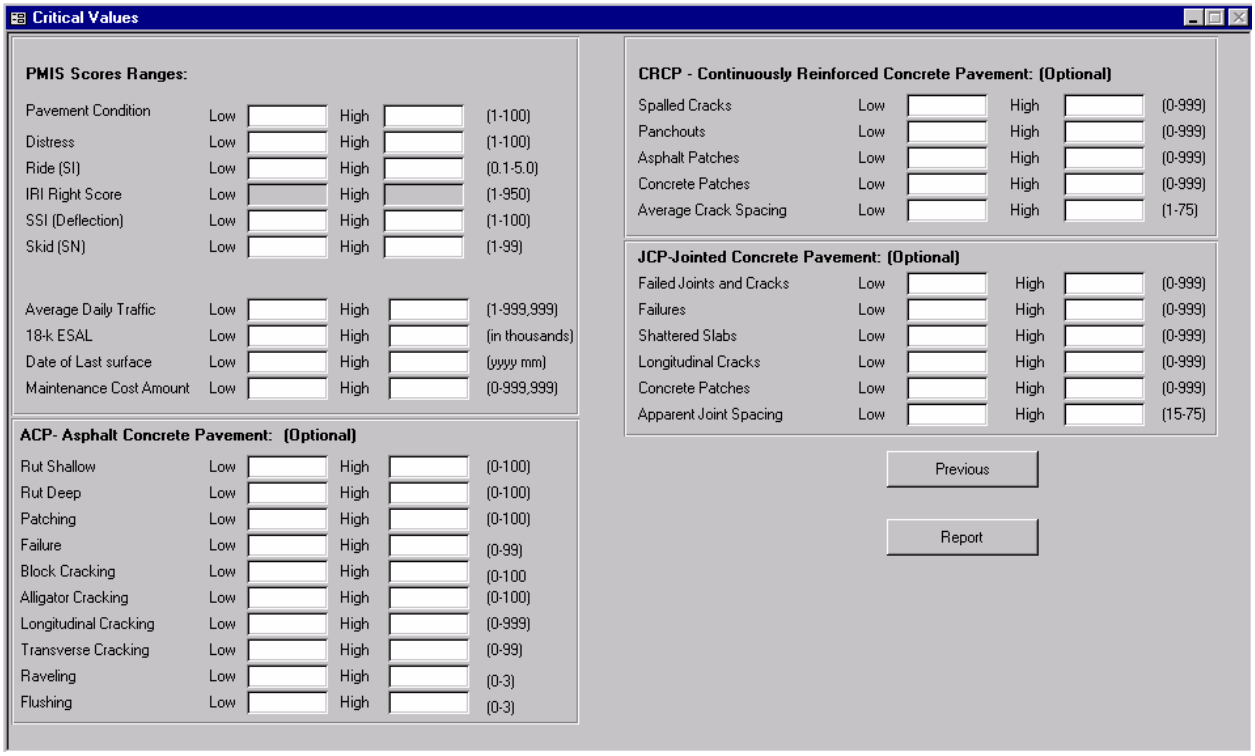
The 'PMIS Scores Ranges' box is for selecting ranges ('Low' and 'High') of PMIS Scores to report. The 'IRI Right Score' has gray boxes because 'IRI Right Wheel Path' was not selected on the previous window. When it is selected, the 'IRI Right Wheel Path' boxes will display in white and the 'Ride (SI)' boxes will display in gray.

You can also enter traffic and other values in the 'PMIS Scores Ranges' area. Valid values, examples, or other help are shown for each item.

The other three boxes let you select pavement distress types for ACP, CRCP, and JCP.

The 'Previous' button lets you go back to the previous Ratings and Scores window to make other selections.

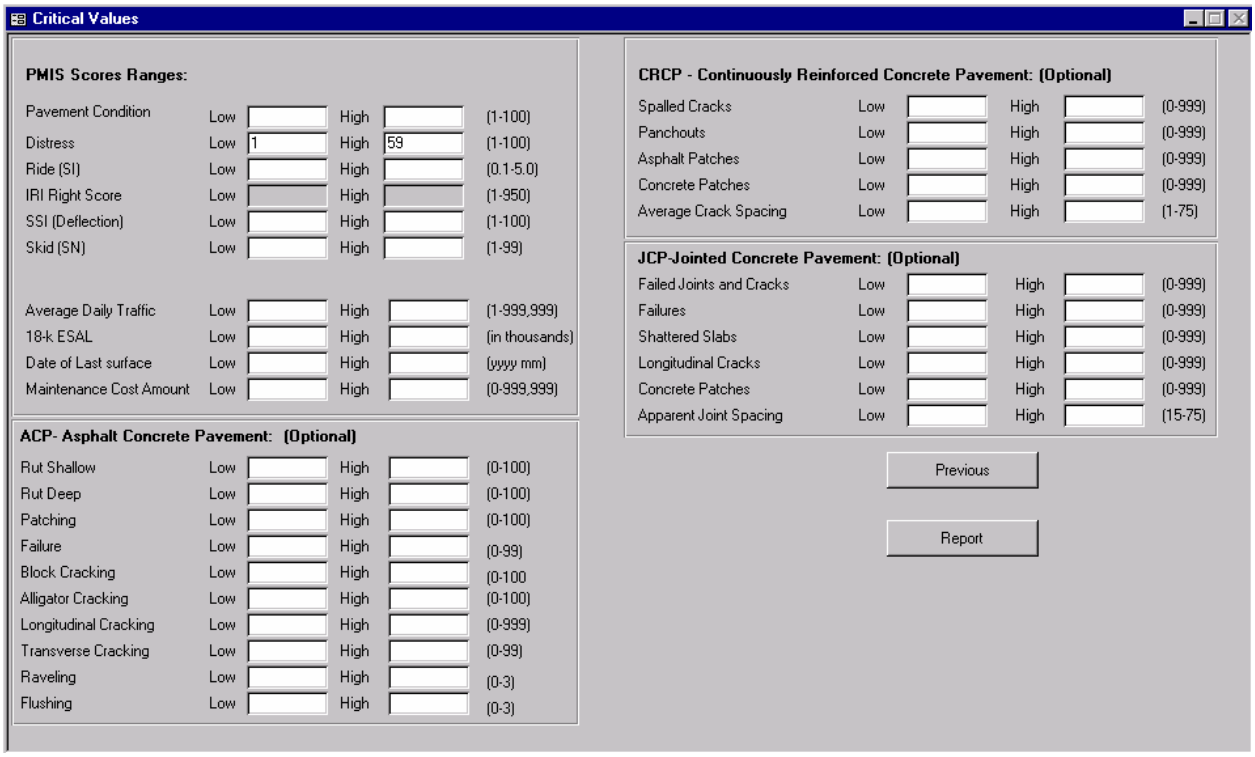
The 'Report' button runs the Critical Value Ratings and Scores report.



Please Note: If you click the 'Report' button now, without selecting anything in the window, the program will give an error message and you'll have to either select some values or click the 'Previous' button to go back to the previous window.

You can enter valid 'Low' and 'High' values for any of the window items. For example, to list PMIS sections with Distress Score less than 60, enter '1' and '59' in the 'Distress' blanks, as shown below, and then click 'Report' to run the report.

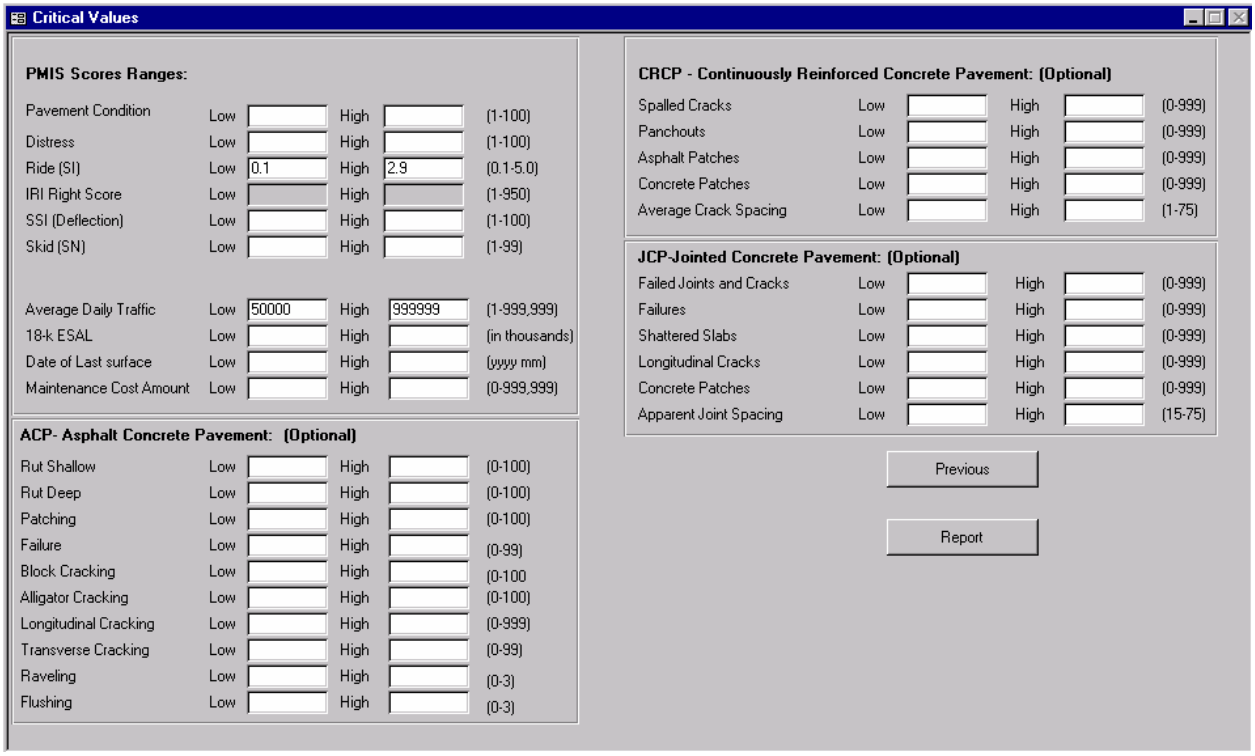
Entering '60' instead of '59' would include Distress Scores of 60 in the report.



You can click in each box to enter the values or press the **Tab** key to go forward from blank to blank. You can also use **Shift+Tab** (press and hold down the **Shift** key, press and release the **Tab** key, then release the **Shift** key) to go backwards from blank to blank. To use **Shift+Tab** to go back multiple blanks, press and hold down the **Shift** key, press and release the **Tab** key until you get to the blank where you want to stop, then release the **Shift** key.

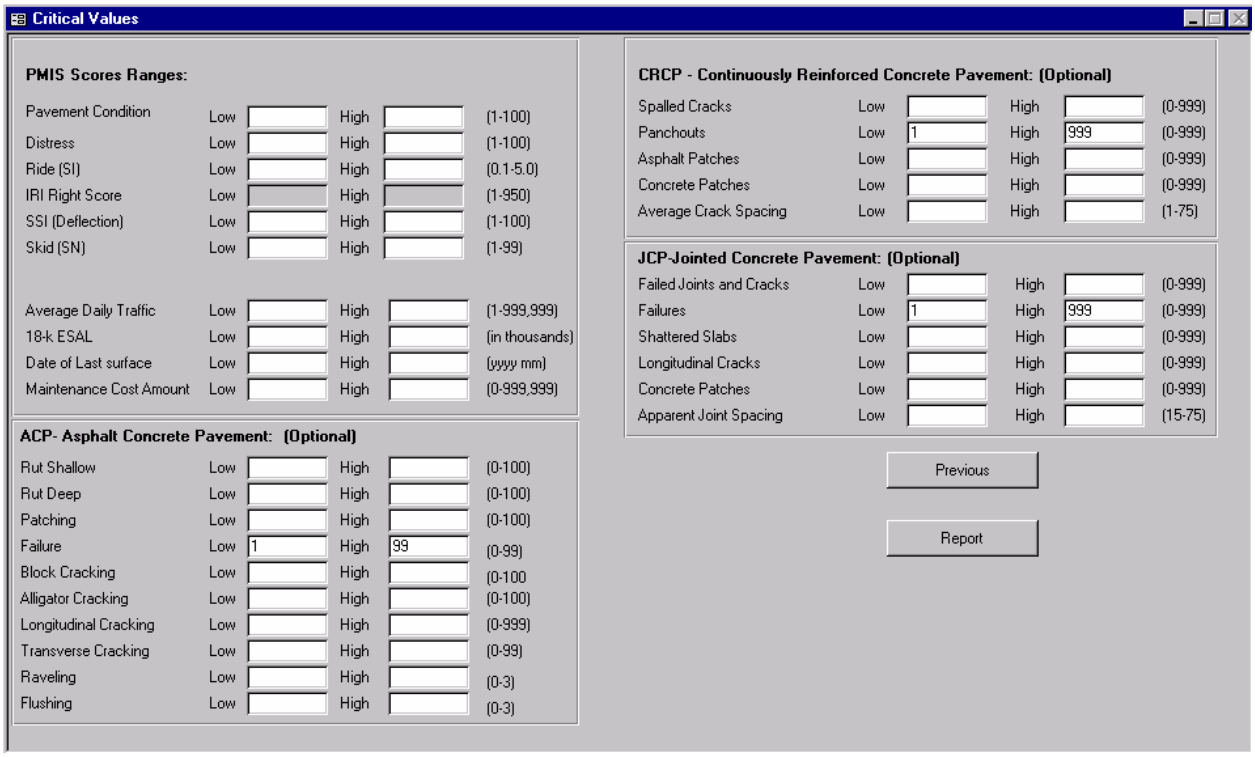
You can also search for combinations of values, such as all PMIS sections with high traffic and rough ride, as shown in the example below. Items in the 'PMIS Scores Ranges' box are joined by "and" logic – all specified values must be met for the PMIS section to be listed.

In this example, a section must have Ride Score between 0.1 and 2.9 and must have Average Daily Traffic of 50,000 vehicles per day or higher to be listed on the report.



Items in the other three boxes (ACP, CRCP, and JCP) are joined by "or" logic – any one of the specified values must be met for the PMIS section to be listed.

In this example, a section must have ACP Failures, CRCP Punchouts, or JCP Failures to be listed on the report. Thus, the report gives a quick list of pavement sections with failure-type distress, to be patched with either asphalt or concrete.

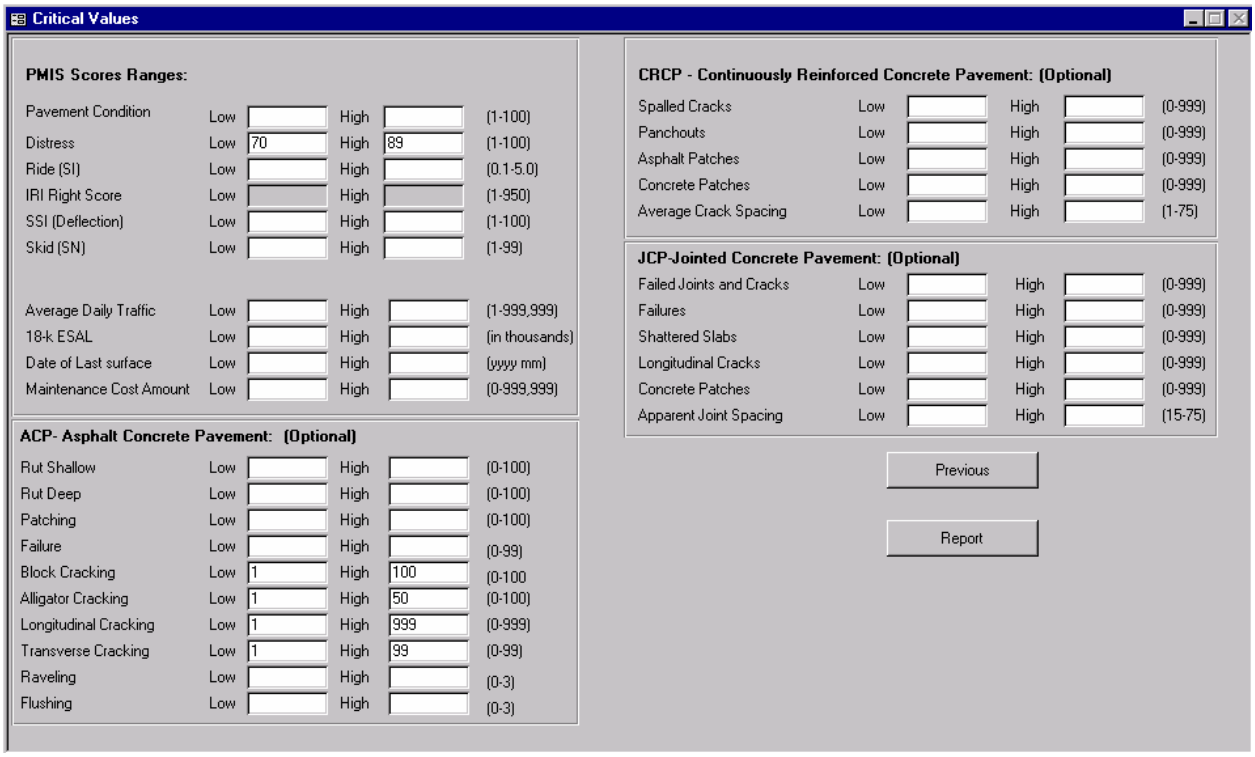


Please Note: Entering zero for the 'Low' value of a distress type in this example would not make sense because the report would then include sections with no distress.

You can also use a combination of PMIS Score ranges and pavement distress types to identify candidate sections for particular types of treatments.

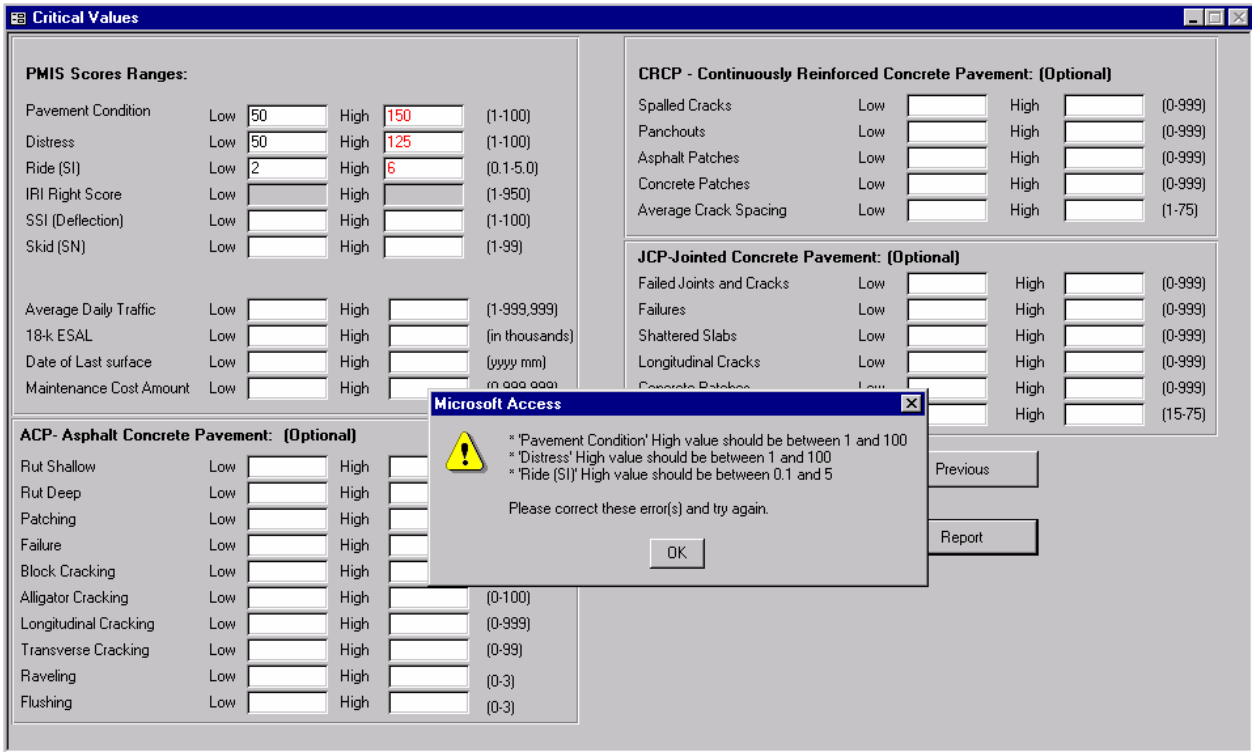
This example shows window entries for a possible crack sealing program on asphalt pavements. The Distress Score range of 70 to 89 is chosen to exclude sections that have so much distress that they probably need structural rehabilitation. The Alligator Cracking range of 1 to 50 percent is chosen for a similar reason.

Using the 'PMIS Score Ranges' box with any of the pavement distress boxes means that the program will search for sections that meet <u>all</u> of the 'PMIS Score Ranges' values and <u>any</u> of the pavement distress box values. In this example, the program will list sections with PMIS Distress Score between 70 and 89 <u>and any</u> of the four distress types specified in the 'ACP' box.



If you make a mistake while entering critical values and then click the 'Report' button, the program will give an error message, tell you the values that are in error, give the valid ranges, and highlight the problem entries in red.

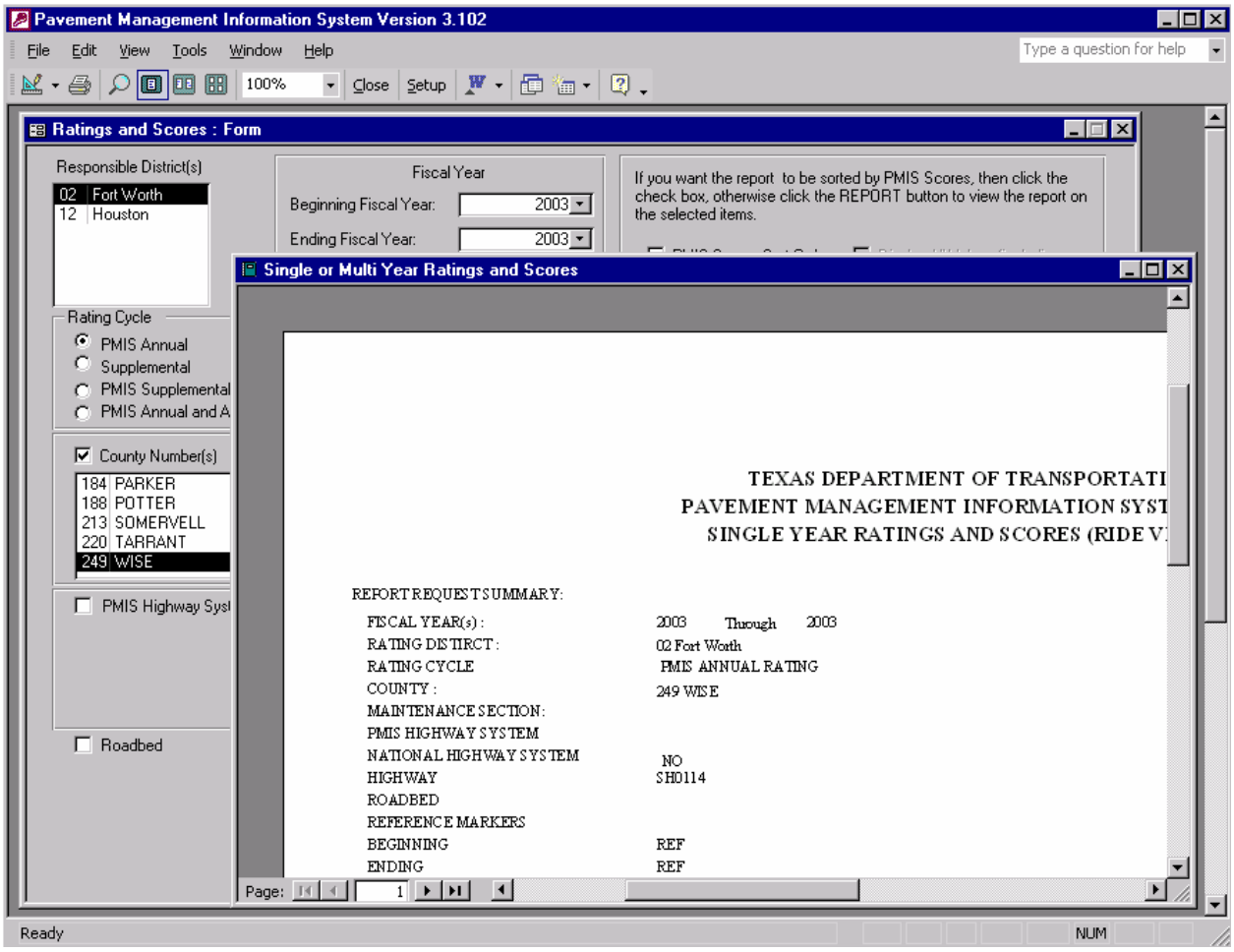
Click the 'OK' button to clear the error box, then click in the box (or boxes) and enter valid values. Then click the 'Report' button again to run the report.



Example: Single-Year Ratings and Scores Report

When you click the 'Report' button for a Single-Year Ratings and Scores report, the program will run for about a minute (or less, depending on the amount of data reported) and then display a report results window, as shown below.

Click the 'Maximize' button in the upper right corner of the report results window to make it easier to read. Then click the Zoom drop-down box in the Access menu and select 'Fit.' This will put the entire first page on the screen. You can then use the **Page Down** and **Page Up** keys to go through the report.



The first page (page 1 of 5 in this example) of the report is a cover page, showing all of the selections that you made to run the report. This example shows a Single-Year Ratings and Scores report for FY 2003, Fort Worth district, PMIS Annual ratings, for Wise county, SH 114.

TEXAS DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT INFORMATION SYSTEM (PMIS)
SINGLE YEAR RATINGS AND SCORES (RIDE VERSION)

June 17, 2003 08:54
Page 1 of 5

REPORT REQUEST SUMMARY:

FISCAL YEAR(s) :	2003 Through 2003
RATING DISTRICT :	02 Fort Worth
RATING CYCLE	PMIS ANNUAL RATING
COUNTY :	249 WISE
MAINTENANCE SECTION:	
PMIS HIGHWAY SYSTEM	
NATIONAL HIGHWAY SYSTEM	NO
HIGHWAY	SH0114
ROADBED	
REFERENCE MARKERS	
BEGINNING	REF
ENDING	REF

REPORT SORT SEQUENCE:
RESPONSIBLE DISTRICT
COUNTY NUMBER
RESPONSIBLE MAINT SECTION
HIGHWAY
ROADBED
BEGINNING REFERENCE MARKERS
RATING CYCLE

The next page (page 2 of 5 in this example) shows the number of PMIS sections, total roadbed miles, and total lane miles reported for each county, and for the entire report. This page is especially useful for Critical Value reports to show how many sections and miles fit a particular category.

June 17, 2003 09:05
Page 2 of 5

For Responsible District: Fort Worth, County: WISE, Fiscal Year: 2003
60 Pavement sections found
27.20 Roadbed miles found
61.80 Lane miles found

For this report:
60 Total pavement sections found
27.20 Total roadbed miles found
61.80 Total lane miles found

The remaining pages of the report (starting with page 3 of 5 in this example) show the PMIS ratings and scores. The report is sorted by Maintenance Section number and not by Reference Marker, so there might be some skips in the route, but for the most part the sections are listed from beginning (lowest Reference Marker) to end (highest Reference Marker).

TEXAS DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT INFORMATION SYSTEM (PMIS)
SINGLE YEAR RATINGS AND SCORES (RIDE VERSION)

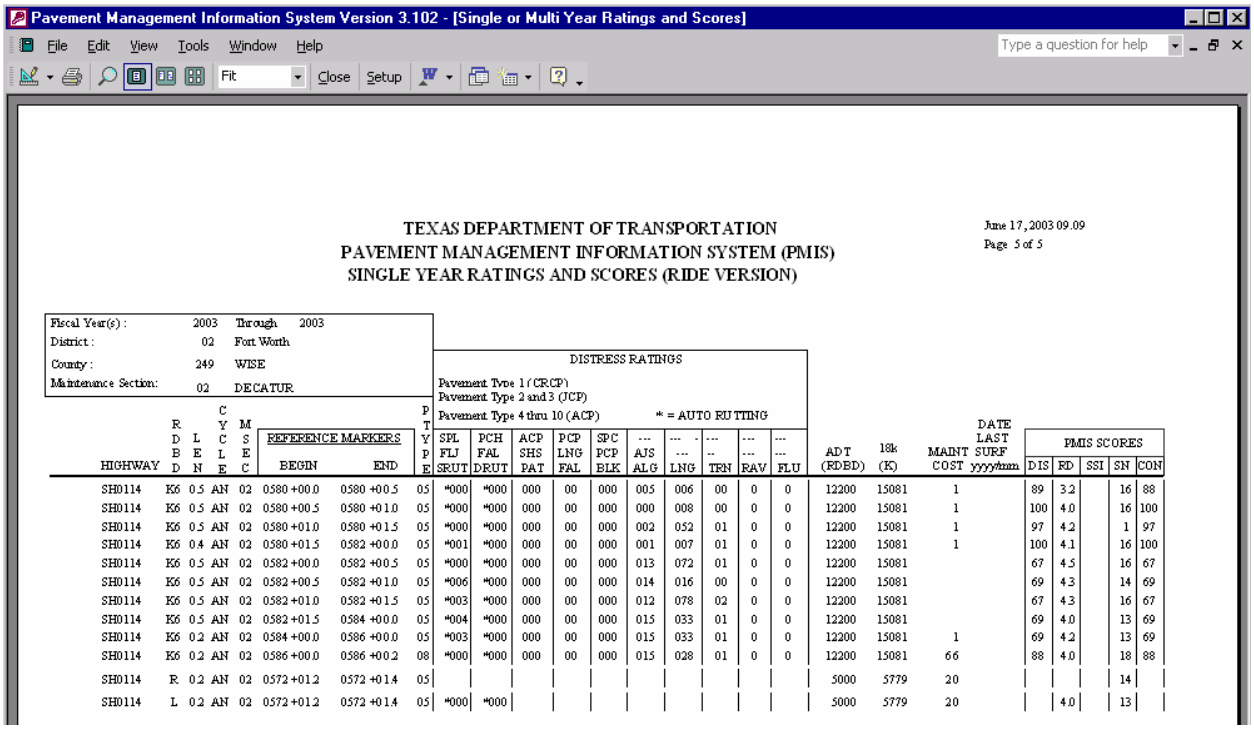
June 17, 2003 09.05
Page 3 of 5

Fiscal Year(s) : 2003 Through 2003
District : 02 Fort Worth
County : 249 WISE
Maintenance Section: 02 DECATUR

DISTRESS RATINGS
Pavement Type 1 (CRCP)
Pavement Type 2 and 3 (JCP)
Pavement Type 4 thru 10 (ACP) * = AUTO RUTTING

HIGHWAY	RDBD	LEN	CYCLE	MSEC	REFERENCE MARKERS BEGIN	REFERENCE MARKERS END	PTYPE	SPL FLJ SRUT	PCH FAL DRUT	ACP SHS PAT	PCP LNG FAL	SPC PCP BLK	--- AJS ALG	--- --- LNG	--- – TRN	--- --- RAV	-- -- FLU	ADT (RDBD)	18k (K)	MAINT COST	DATE LAST SURF yyyy/mm	PMIS SCORES DIS	RD	SSI	SN	CON
SH0114	K1	0.5	AN	02	0558 -01.8	0558 -01.3	01	000	000	000	000	05						8000	14305	51		100	2.8		9	78
SH0114	K6	0.5	AN	02	0558 -01.3	0558 -00.8	05	*008	*001	000	00	000	013	026	00	0	0	14000	13538	51		69	2.5		30	41
SH0114	K6	0.5	AN	02	0558 -00.8	0558 -00.3	05	*000	*000	000	01	000	006	028	00	0	0	14000	13538	51		78	3.7		11	78
SH0114	K6	0.3	AN	02	0558 -00.3	0558 +00.0	05	*001	*000	000	00	000	003	011	00	0	0	9800	11740	30		96	2.5		15	57
SH0114	K6	0.5	AN	02	0558 +00.0	0558 +00.5	05	*000	*000	000	00	000	007	026	00	0	0	9800	11740	1		83	4.2		18	83
SH0114	K6	0.5	AN	02	0558 +00.5	0558 +01.0	05	*000	*000	000	00	000	004	026	00	0	0	7600	10983	1		93	4.3		20	93
SH0114	K6	0.5	AN	02	0558 +01.0	0558 +01.5	05	*000	*000	000	00	000	014	040	00	0	0	7600	10983	1		69	4.2		13	69
SH0114	K6	0.5	AN	02	0558 +01.5	0560 +00.0	05	*000	*000	000	00	000	066	032	00	0	0	7600	10983	1		53	4.4		18	53
SH0114	K6	0.5	AN	02	0560 +00.0	0560 +00.5	05	*000	*000	000	00	000	014	028	00	0	0	7600	10983	1		70	4.4		12	70
SH0114	K6	0.5	AN	02	0560 +00.5	0560 +01.0	05	*000	*000	000	00	000	012	034	00	0	0	7600	10983	1		73	4.7		16	73
SH0114	K6	0.5	AN	02	0560 +01.0	0560 +01.5	05	*000	*000	000	00	000	011	027	00	0	0	7600	10983	1		74	4.7		16	74
SH0114	K6	0.5	AN	02	0560 +01.5	0562 +00.0	05	*000	*000	000	00	000	008	022	00	0	0	9200	12068	1		81	4.7		13	81
SH0114	K6	0.5	AN	02	0562 +00.0	0562 +00.5	05	*000	*000	000	00	000	010	007	00	0	0	9200	12068	1		76	4.7		12	76
SH0114	K6	0.5	AN	02	0562 +00.5	0562 +01.0	05	*000	*000	000	00	000	006	013	00	0	0	9200	12068	1		86	4.8		10	86
SH0114	K6	0.5	AN	02	0562 +01.0	0562 +01.5	05	*000	*000	000	00	000	004	030	00	0	0	9200	12068	1		93	4.2		16	93
SH0114	K6	0.5	AN	02	0562 +01.5	0564 +00.0	05	*000	*000	000	00	000	014	027	00	0	0	7800	11138	1		70	4.4		20	70
SH0114	K6	0.5	AN	02	0564 +00.0	0564 +00.5	05	*000	*000	000	00	000	016	033	00	0	0	7800	11138	1		68	4.4		16	68
SH0114	K6	0.5	AN	02	0564 +00.5	0564 +01.0	05	*000	*000	000	00	100	027	019	00	0	0	6900	10536	1		34	4.4		22	34
SH0114	K6	0.5	AN	02	0564 +01.0	0564 +01.5	05	*001	*000	004	00	000	060	021	00	0	0	6900	10536	1		52	3.9		13	52
SH0114	K6	0.5	AN	02	0564 +01.5	0566 +00.0	05	*000	*000	000	00	000	047	042	00	0	0	6900	10536	1		55	3.8		16	55
SH0114	K6	0.5	AN	02	0566 +00.0	0566 +00.5	05	*000	*000	000	00	000	009	020	00	0	0	6900	10536	1		78	4.5		16	78
SH0114	K6	0.5	AN	02	0566 +00.5	0566 +01.0	05	*000	*000	000	00	000	012	020	00	0	0	6900	10536	1		73	4.3		16	73
SH0114	K6	0.5	AN	02	0566 +01.0	0566 +01.5	05	*000	*000	000	00	000	012	020	00	0	0	10200	12721	1		73	3.9		14	73
SH0114	K6	0.5	AN	02	0566 +01.5	0568 +00.0	05	*000	*000	000	00	000	028	016	00	0	0	10200	12721	1		60	3.7		16	60

Click the 'Print' button on the toolbar if you want to print the report; otherwise click the 'Close' button to go back to the Ratings and Scores window.



TEXAS DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT INFORMATION SYSTEM (PMIS)
SINGLE YEAR RATINGS AND SCORES (RIDE VERSION)

June 17, 2003 09.09
Page 5 of 5

Fiscal Year(s): 2003 Through 2003
District: 02 Fort Worth
County: 249 WISE
Maintenance Section: 02 DECATUR

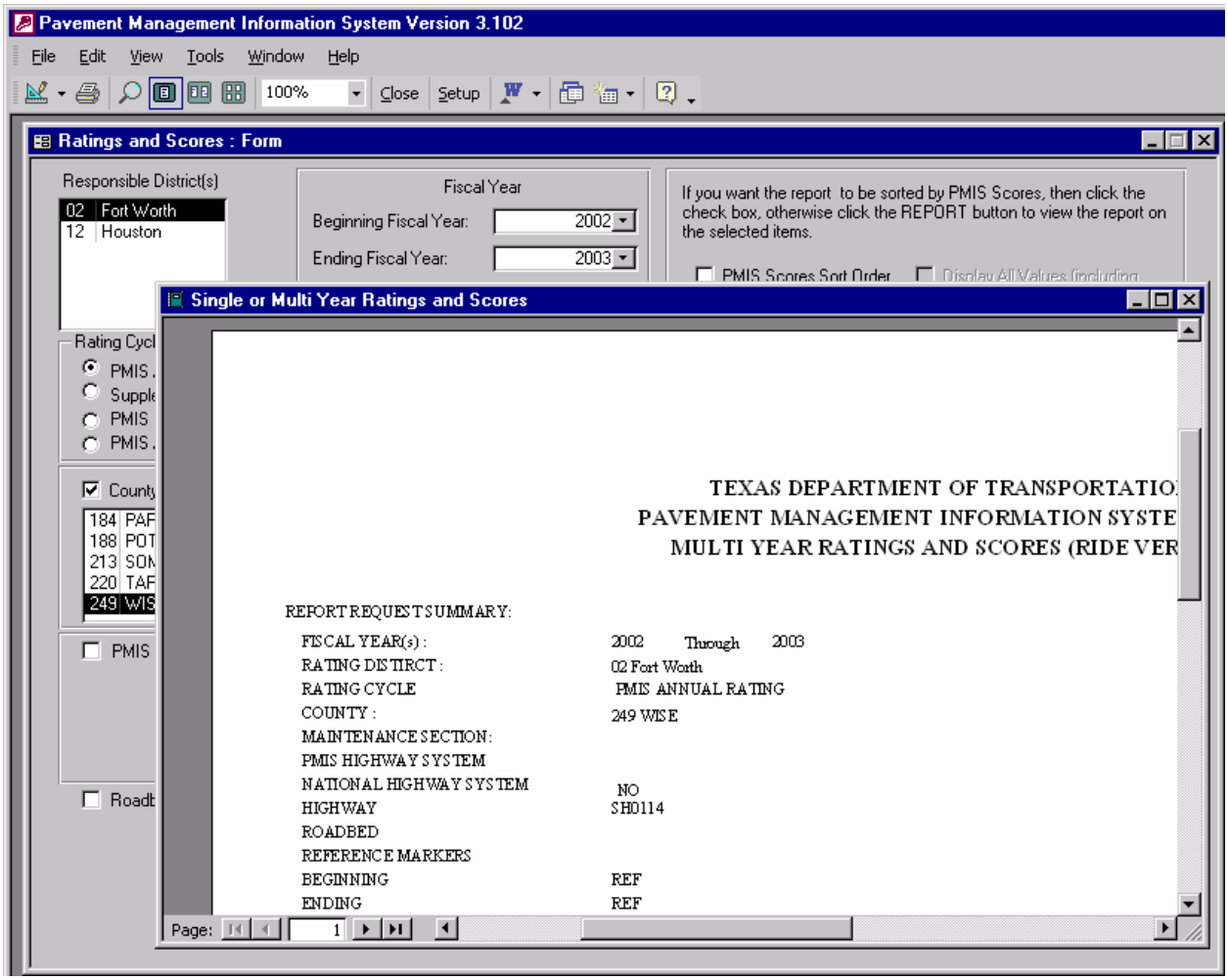
DISTRESS RATINGS
Pavement Type 1 (CRCP)
Pavement Type 2 and 3 (JCP)
Pavement Type 4 thru 10 (ACP) * = AUTO RUTTING

HIGHWAY	RDBD	LEN	CYCLE	MSEC	REFERENCE MARKERS BEGIN	REFERENCE MARKERS END	PTYPE	SPL FLJ SRUT	PCH FAL DRUT	ACP SHS PAT	PCP LNG FAL	SPC PCP BLK	--- AJS ALG	--- --- LNG	--- -- TRN	--- --- RAV	--- --- FLU	ADT (FDBD)	18k (K)	MAINT COST	DATE LAST SURF yyyymm	PMIS SCORES DIS	RD	SSI	SN	CON
SH0114	K6	0.5	AN	02	0580 +00.0	0580 +00.5	05	*000	*000	000	00	000	005	006	00	0	0	12200	15081	1		89	3.2		16	88
SH0114	K6	0.5	AN	02	0580 +00.5	0580 +01.0	05	*000	*000	000	00	000	000	008	00	0	0	12200	15081	1		100	4.0		16	100
SH0114	K6	0.5	AN	02	0580 +01.0	0580 +01.5	05	*000	*000	000	00	000	002	052	01	0	0	12200	15081	1		97	4.2		1	97
SH0114	K6	0.4	AN	02	0580 +01.5	0582 +00.0	05	*001	*000	000	00	000	001	007	01	0	0	12200	15081	1		100	4.1		16	100
SH0114	K6	0.5	AN	02	0582 +00.0	0582 +00.5	05	*000	*000	000	00	000	013	072	01	0	0	12200	15081			67	4.5		16	67
SH0114	K6	0.5	AN	02	0582 +00.5	0582 +01.0	05	*006	*000	000	00	000	014	016	00	0	0	12200	15081			69	4.3		14	69
SH0114	K6	0.5	AN	02	0582 +01.0	0582 +01.5	05	*003	*000	000	00	000	012	078	02	0	0	12200	15081			67	4.3		16	67
SH0114	K6	0.5	AN	02	0582 +01.5	0584 +00.0	05	*004	*000	000	00	000	015	033	01	0	0	12200	15081			69	4.0		13	69
SH0114	K6	0.2	AN	02	0584 +00.0	0586 +00.0	05	*003	*000	000	00	000	015	033	01	0	0	12200	15081	1		69	4.2		13	69
SH0114	K6	0.2	AN	02	0586 +00.0	0586 +00.2	08	*000	*000	000	00	000	015	028	01	0	0	12200	15081	66		88	4.0		18	88
SH0114	R	0.2	AN	02	0572 +01.2	0572 +01.4	05											5000	5779	20					14	
SH0114	L	0.2	AN	02	0572 +01.2	0572 +01.4	05	*000	*000									5000	5779	20			4.0		13	

Example: Multi-Year Ratings and Scores Report

When you click the 'Report' button for a Multi-Year Ratings and Scores report, the program will run for about a minute (or less, depending on the amount of data reported) and then display a report results window, as shown below.

Click the 'Maximize' button in the upper right corner of the report results window to make it easier to read. Then click the Zoom drop-down box in the Access menu and select 'Fit.' This will put the entire first page on the screen. You can then use the **Page Down** and **Page Up** keys to go through the report.



The first page (page 1 of 8 in this example) of the report is a cover page, showing all of the selections that you made to run the report. This example shows a Multi-Year Ratings and Scores report for FY 2002 through FY 2003, Fort Worth district, PMIS Annual ratings, for Wise county, SH 114.

TEXAS DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT INFORMATION SYSTEM (PMIS)
MULTI YEAR RATINGS AND SCORES (RIDE VERSION)

June 17, 2003 09.17
Page 1 of 8

REPORT REQUEST SUMMARY:

FISCAL YEAR(s) :	2002 Through 2003
RATING DISTIRCT :	02 Fort Worth
RATING CYCLE	PMIS ANNUAL RATING
COUNTY :	249 WISE
MAINTENANCE SECTION:	
PMIS HIGHWAY SYSTEM	
NATIONAL HIGHWAY SYSTEM	NO
HIGHWAY	SH0114
ROADBED	
REFERENCE MARKERS	
BEGINNING	REF
ENDING	REF

REPORT SORT SEQUENCE:
RESPONSIBLE DISTRICT
COUNTY NUMBER
RESPONSIBLE MAINT SECTION
HIGHWAY
ROADBED
BEGINNING REFERENCE MARKERS
RATING CYCLE

The next page (page 2 of 8 in this example) shows the number of PMIS sections, total roadbed miles, and total lane miles reported for each county, and for the entire report. This page is especially useful for Critical Value reports to show how many sections and miles fit a particular category, but it also useful here to show that the same number of sections and miles were rated in both years.

June 17, 2003 09.26
Page 2 of 8

For Responsible District: Fort Worth, County: WISE, Fiscal Year: 2002
60 Pavement sections found
27.20 Roadbed miles found
61.80 Lane miles found

For Responsible District: Fort Worth, County: WISE, Fiscal Year: 2003
60 Pavement sections found
27.20 Roadbed miles found
61.80 Lane miles found

For this report:
120 Total pavement sections found
54.40 Total roadbed miles found
123.60 Total lane miles found

The remaining pages of the report (starting with page 3 of 8 in this example) show the PMIS ratings and scores for two consecutive years. It is possible to see slight increases in distress (especially Alligator Cracking and Longitudinal Cracking) in FY 2003. There also seems to have been noticeable pavement-related maintenance expenditures in FY 2002 for the first part of the highway (which is actually based on FY 2001 maintenance work).

The report is sorted by Maintenance Section number and not by Reference Marker, so there might be some skips in the route, but for the most part the sections are listed from beginning (lowest Reference Marker) to end (highest Reference Marker).

TEXAS DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT INFORMATION SYSTEM (PMIS)
MULTI YEAR RATINGS AND SCORES (RIDE VERSION)

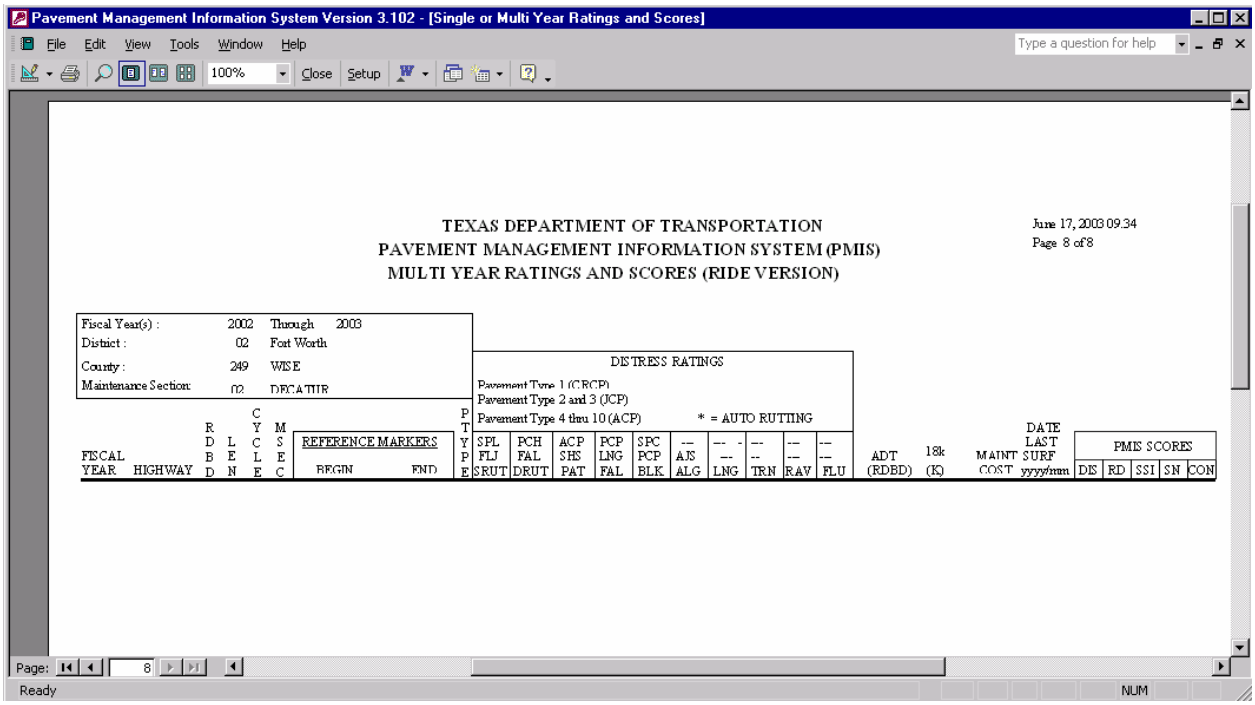
June 17, 2003 09:28
Page 3 of 8

Fiscal Year(s): 2002 Through 2003
District: 02 Fort Worth
County: 249 WISE
Maintenance Section: 02 DECATUR

DISTRESS RATINGS
Pavement Type 1 (CRCP)
Pavement Type 2 and 3 (JCP)
Pavement Type 4 thru 10 (ACP) * = AUTO RUTTING

FISCAL YEAR	HIGHWAY	RDBD	LEN	CYCLE	MSEC	REFERENCE MARKERS BEGIN	REFERENCE MARKERS END	PTYPE	SPL FLJ SRUT	PCH FAL DRUT	ACP SHS PAT	PCP LNG FAL	SPC PCP BLK	--- AJS ALG	--- --- LNG	--- – TRN	--- --- RAV	--- --- FLU	ADT (RDBD)	18k (K)	MAINT COST	DATE LAST SURF yyyy/mm	PMIS SCORES DIS	RD	SSI	SN	CON
2002	SH0114	K1	0.5	AN	02	0558 -01.8	0558 -01.3	01	000	000	000	000	04						8000	14305	12880		100	3.0	100		90
2003	SH0114	K1	0.5	AN	02	0558 -01.8	0558 -01.3	01	000	000	000	000	05						8000	14305	51		100	2.8		9	78
2002	SH0114	K6	0.5	AN	02	0558 -01.3	0558 -00.8	05	*005	*000	000	00	000	003	026	00	0	0	14000	13538	12880		96	3.3	88		96
2003	SH0114	K6	0.5	AN	02	0558 -01.3	0558 -00.8	05	*008	*001	000	00	000	013	026	00	0	0	14000	13538	51		69	2.5		30	41
2002	SH0114	K6	0.5	AN	02	0558 -00.8	0558 -00.3	05	*003	*000	000	01	000	006	019	00	0	0	14000	13538	12880		78	3.7	100		78
2003	SH0114	K6	0.5	AN	02	0558 -00.8	0558 -00.3	05	*000	*000	000	01	000	006	028	00	0	0	14000	13538	51		78	3.7		11	78
2002	SH0114	K6	0.3	AN	02	0558 -00.3	0558 +00.0	05	*008	*002	000	00	000	000	000	00	0	0	9800	11740	7728		97	3.5	100		97
2003	SH0114	K6	0.3	AN	02	0558 -00.3	0558 +00.0	05	*001	*000	000	00	000	003	011	00	0	0	9800	11740	30		96	2.5		15	57
2002	SH0114	K6	0.5	AN	02	0558 +00.0	0558 +00.5	05	*001	*000	000	00	000	000	000	00	0	0	9800	11740	16		100	4.5	100		100
2003	SH0114	K6	0.5	AN	02	0558 +00.0	0558 +00.5	05	*000	*000	000	00	000	007	026	00	0	0	9800	11740	1		83	4.2		18	83
2002	SH0114	K6	0.5	AN	02	0558 +00.5	0558 +01.0	05	*000	*000	000	00	000	002	003	00	0	0	7600	10983	16		99	4.4	100		99
2003	SH0114	K6	0.5	AN	02	0558 +00.5	0558 +01.0	05	*000	*000	000	00	000	004	026	00	0	0	7600	10983	1		93	4.3		20	93
2002	SH0114	K6	0.5	AN	02	0558 +01.0	0558 +01.5	05	*004	*000	000	00	000	002	012	00	0	0	7600	10983	16		99	4.2	100		99
2003	SH0114	K6	0.5	AN	02	0558 +01.0	0558 +01.5	05	*000	*000	000	00	000	014	040	00	0	0	7600	10983	1		69	4.2		13	69
2002	SH0114	K6	0.5	AN	02	0558 +01.5	0560 +00.0	05	*001	*000	000	00	000	007	021	00	0	0	7600	10983	16		83	4.6	88		83
2003	SH0114	K6	0.5	AN	02	0558 +01.5	0560 +00.0	05	*000	*000	000	00	000	066	032	00	0	0	7600	10983	1		53	4.4		18	53
2002	SH0114	K6	0.5	AN	02	0560 +00.0	0560 +00.5	05	*000	*000	000	00	000	000	007	00	0	0	7600	10983	16		100	4.5	100		100
2003	SH0114	K6	0.5	AN	02	0560 +00.0	0560 +00.5	05	*000	*000	000	00	000	014	028	00	0	0	7600	10983	1		70	4.4		12	70
2002	SH0114	K6	0.5	AN	02	0560 +00.5	0560 +01.0	05	*000	*000	000	00	000	001	005	00	0	0	7600	10983	16		100	4.7	100		100
2003	SH0114	K6	0.5	AN	02	0560 +00.5	0560 +01.0	05	*000	*000	000	00	000	012	034	00	0	0	7600	10983	1		73	4.7		16	73
2002	SH0114	K6	0.5	AN	02	0560 +01.0	0560 +01.5	05	*000	*000	000	00	000	001	001	00	0	0	7600	10983	16		100	4.7	100		100
2003	SH0114	K6	0.5	AN	02	0560 +01.0	0560 +01.5	05	*000	*000	000	00	000	011	027	00	0	0	7600	10983	1		74	4.7		16	74
2002	SH0114	K6	0.5	AN	02	0560 +01.5	0562 +00.0	05	*000	*000	000	00	000	000	008	00	0	0	9200	12068	16		100	4.7	100		100
2003	SH0114	K6	0.5	AN	02	0560 +01.5	0562 +00.0	05	*000	*000	000	00	000	008	022	00	0	0	9200	12068	1		81	4.7		13	81

Click the 'Print' button on the toolbar if you want to print the report; otherwise click the 'Close' button to go back to the Ratings and Scores window.

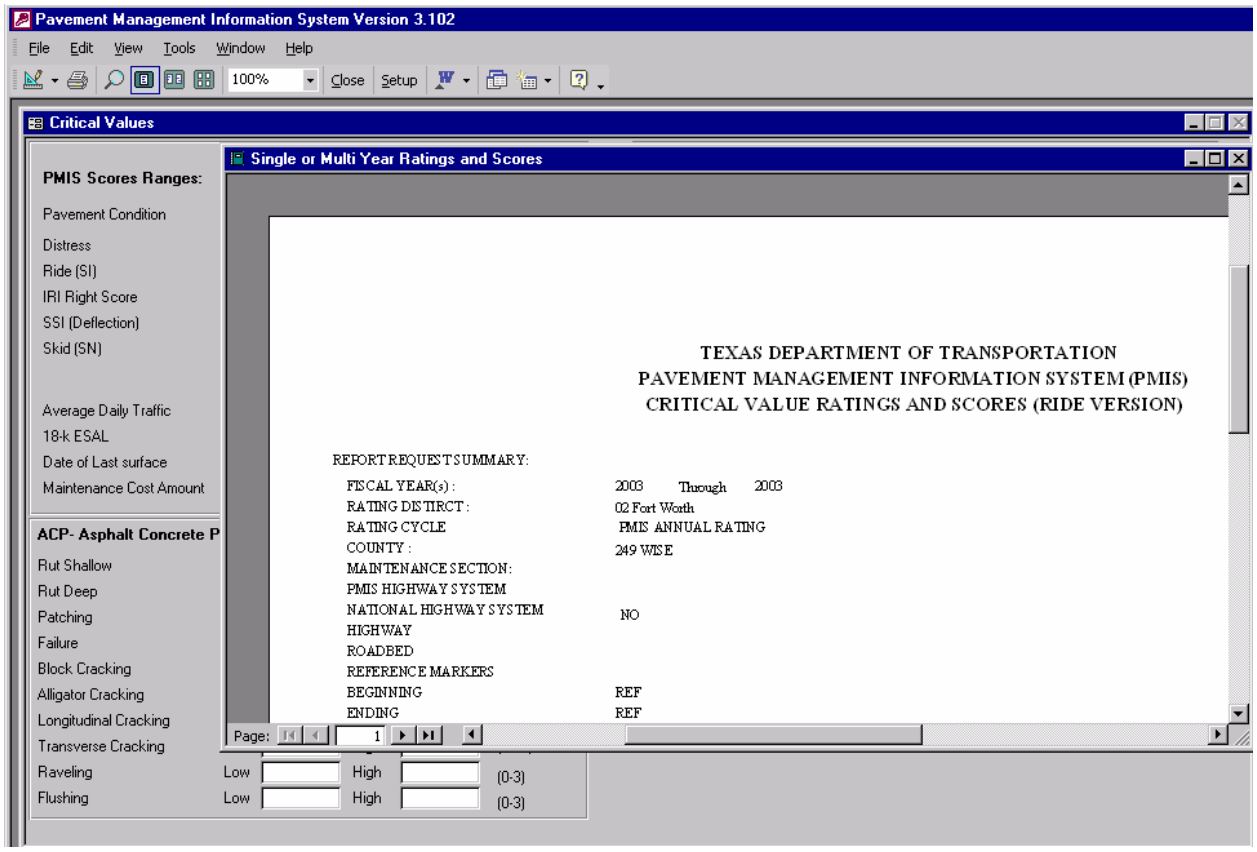


Please Note: This ending page with headings but no data is not a sign of missing data. It only shows up when the last section of data prints at the very bottom of the previous page.

Example: Critical Value Ratings and Scores Report

When you click the 'Report' button for a Critical Value Ratings and Scores report, the program will run for about a minute (or less, depending on the amount of data reported) and then display a report results window, as shown below.

Click the 'Maximize' button in the upper right corner of the report results window to make it easier to read. Then click the Zoom drop-down box in the Access menu and select 'Fit.' This will put the entire first page on the screen. You can then use the **Page Down** and **Page Up** keys to go through the report.



The first page (page 1 of 10 in this example) of the report is a cover page, showing all of the selections that you made to run the report. This example shows a Critical Value Ratings and Scores report for FY 2003, Fort Worth district, PMIS Annual ratings, for Wise county, listing all sections with PMIS Condition Score less than 70.

TEXAS DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT INFORMATION SYSTEM (PMIS)
CRITICAL VALUE RATINGS AND SCORES (RIDE VERSION)

June 17, 2003 10.09
Page 1 of 10

REPORT REQUEST SUMMARY:

FISCAL YEAR(s) :	2003 Through 2003
RATING DISTRICT :	02 Fort Worth
RATING CYCLE	PMIS ANNUAL RATING
COUNTY :	249 WISE
MAINTENANCE SECTION:	
PMIS HIGHWAY SYSTEM	
NATIONAL HIGHWAY SYSTEM	NO
HIGHWAY	
ROADBED	
REFERENCE MARKERS	
BEGINNING	REF
ENDING	REF

REPORT SORT SEQUENCE:
RESPONSIBLE DISTRICT
COUNTY NUMBER
RESPONSIBLE MAINT SECTION
HIGHWAY
ROADBED
BEGINNING REFERENCE MARKERS
RATING CYCLE

PMIS SCORES:

PAVEMENT CONDITION	(Low)	1	(High)	69
DISTRESS	(Low)		(High)	
RIDE (SI)	(Low)		(High)	
STRUCTURAL STRENGTH	(Low)		(High)	
SKID (SN)	(Low)		(High)	
AVERAGE DAILY TAFFIC	(Low)		(High)	
18-K ESAL	(Low)		(High)	
DATE OF LAST SURFACE	(Low)		(High)	
MAINT. COST AMOUNT	(Low)		(High)	

ACP- FLEXIBLE PAVEMENT:

RUT SHALLOW	(Low)	(High)	RUT DEEP	(Low)	(High)
PATCHING	(Low)	(High)	FAILURES	(Low)	(High)
BLK CRACKING	(Low)	(High)	ALG CRACKING	(Low)	(High)
LNG CRACKING	(Low)	(High)	TRN CRACKING	(Low)	(High)
RAVELING	(Low)	(High)	FLUSHING	(Low)	(High)

CRCP - CONTINUOUSLY REINFORCED CONCRETE PAVEMENT:

SPL CRACKS	(Low)	(High)	PUNCHOUTS	(Low)	(High)
ASPH PATCHES	(Low)	(High)	CON PATCHES	(Low)	(High)
AVG CRK SPC	(Low)	(High)			

JCP - JOINTED CONCRETE PAVEMENT:

FL JNT CRK	(Low)	(High)	FAILURES	(Low)	(High)
SHAT SLABS	(Low)	(High)	LNG CRACKS	(Low)	(High)
CON PATCHES	(Low)	(High)	APP JCT SPC	(Low)	(High)

The next page (page 2 of 10 in this example) shows the number of PMIS sections, total roadbed miles, and total lane miles reported for each county, and for the entire report. This page shows 163 sections, 76.40 roadbed miles, and 159.60 lane miles with Condition Score less than 70 in Wise county for FY 2003.

June 17, 2003 10.17
Page 2 of 10

For Responsible District: Fort Worth, County: WISE, Fiscal Year: 2003
163 Pavement sections found
76.40 Roadbed miles found
159.60 Lane miles found

For this report:
163 Total pavement sections found
76.40 Total roadbed miles found
159.60 Total lane miles found

The remaining pages of the report (starting with page 3 of 10 in this example) show the PMIS ratings and scores, but only for those sections with Condition Score less than 70.

The report is sorted by Maintenance Section number and not by Reference Marker, so there might be some skips in a particular route, but for the most part the sections are listed from beginning (lowest Reference Marker) to end (highest Reference Marker) if they all meet the specified criteria.

TEXAS DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT INFORMATION SYSTEM (PMIS)
CRITICAL VALUE RATINGS AND SCORES (RIDE VERSION)

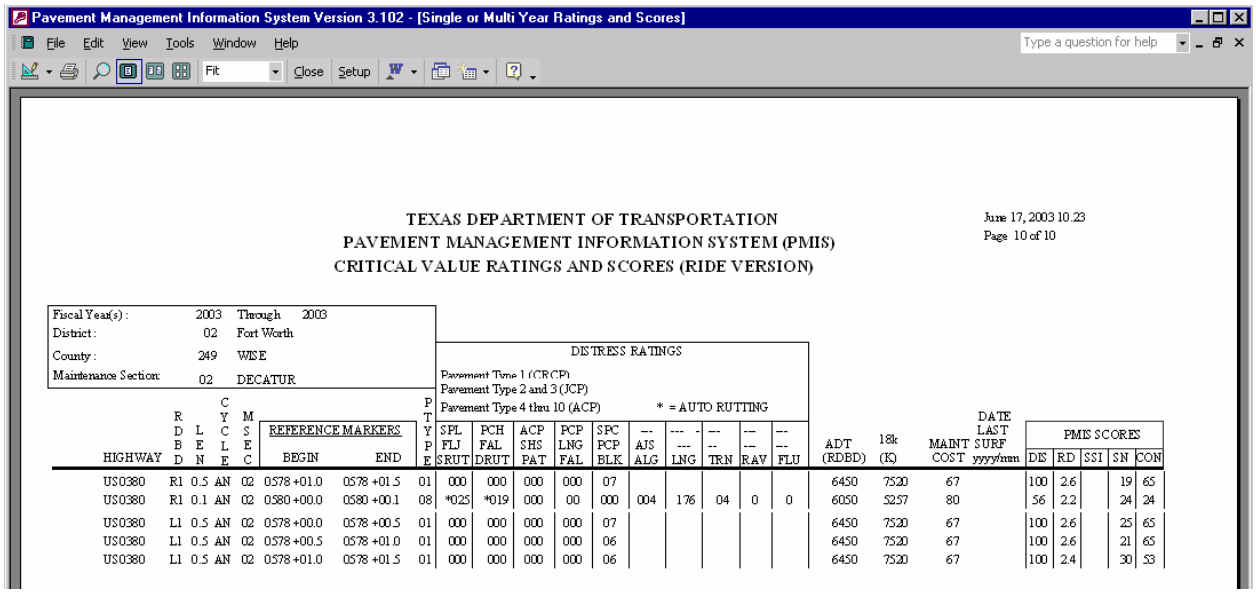
June 17, 2003 10.20
Page 3 of 10

Fiscal Year(s): 2003 Through 2003
District: 02 Fort Worth
County: 249 WISE
Maintenance Section: 02 DECATUR

DISTRESS RATINGS
Pavement Type 1 (CRCP)
Pavement Type 2 and 3 (JCP)
Pavement Type 4 thru 10 (ACP) * = AUTO RUTTING

HIGHWAY	RDBD	LEN	CYCLE	MSEC	REFERENCE MARKERS BEGIN	REFERENCE MARKERS END	PTYPE	SPL FLJ SRUT	PCH FAL DRUT	ACP SHS PAT	PCP LNG FAL	SPC PCP BLK	-- AJS ALG	-- -- LNG	-- -- TRN	-- -- RAV	-- -- FLU	ADT (RDBD)	18k (K)	MAINT COST	DATE LAST SURF yyyy/mm	PMIS SCORES DIS	RD	SSI	SN	CON
BS0101B	K1	0.6	AN	02	0232 +01.0	0232 +01.6	06	*003	*000	000	01	008	023	017	00	0	0	1200	487			50	2.8			50
BS0114H	K6	0.6	AN	02	0530 +00.0	0530 +00.6	05	*000	*000	021	03	008	018	023	02	0	0	5200	258			25	1.9		19	7
BU0081D	K6	0.5	AN	02	0234 +00.5	0234 +01.0	05	*006	*000	000	00	100	000	000	00	0	0	880	429	2160		55	2.9		18	55
BU0081D	K6	0.5	AN	02	0234 +02.0	0234 +02.5	05	*001	*000	000	00	000	003	010	00	0	0	6400	6384	2160		96	2.4		19	51
BU0081D	K6	0.5	AN	02	0234 +02.5	0234 +03.0	05	*000	*000	003	00	000	025	073	03	0	0	3100	840	2160		55	2.6			36
BU0081E	K6	0.2	AN	02	0248 +01.5	0248 +01.7	08	*001	*000	000	00	000	000	000	00	0	0	2500	806	185		100	1.5			33
BU0380E	K1	0.5	AN	02	0236 +00.5	0236 +01.0	05	*010	*000	000	00	000	003	022	00	0	0	5400	259	796		92	2.1			35
FM0051	K1	0.5	AN	02	0250 +00.0	0250 +00.5	05	*001	*000	000	00	004	018	024	00	0	0	9500	4452	48		63	4.1			63
FM0407	K1	0.5	AN	02	0548 +00.0	0548 +00.5	10	*009	*001	011	00	000	001	011	00	0	0	3000	1901	17455		79	2.4		16	67
FM0407	K1	0.5	AN	02	0548 +00.5	0548 +01.0	10	*016	*000	040	00	000	001	011	00	0	1	3000	1901	17455		59	3.6		18	59
FM0407	K1	0.5	AN	02	0548 +01.5	0550 +00.0	10	*015	*004	025	02	000	004	007	00	0	1	2800	1512	17455		41	2.8			41
FM0407	K1	0.5	AN	02	0550 +00.0	0550 +00.5	10	*017	*003	015	01	000	003	006	00	0	1	2800	1512	17101		60	2.8		10	60
FM0407	K1	0.5	AN	02	0550 +00.5	0550 +01.0	10	*019	*005	027	02	000	004	029	00	0	1	2800	1512	17101		38	2.6		10	37
FM0407	K1	0.5	AN	02	0550 +01.0	0550 +01.5	10	*015	*011	015	01	000	002	004	00	0	1	2800	1512	17101		53	2.7		10	53
FM0407	K1	0.5	AN	02	0550 +01.5	0552 +00.0	10	*019	*016	016	03	000	010	004	00	0	1	2800	1512	17101		21	3.2		23	21
FM0407	K1	0.5	AN	02	0552 +00.0	0554 +00.0	10	*009	*008	014	05	000	012	004	00	0	1	2800	1512	12376		19	2.8		21	19
FM0730	K6	0.5	AN	02	0238 +00.0	0238 +00.5	10	*004	*003	027	00	000	005	007	00	0	0	3800	2644	583		61	2.1			23
FM0730	K6	0.5	AN	02	0238 +00.5	0238 +01.0	10	*003	*002	017	00	000	002	016	00	0	0	3800	2644	583		74	1.6		21	14
FM0730	K6	0.2	AN	02	0250 -00.2	0250 +00.0	05	*001	*000	000	00	000	000	000	00	0	1	5300	3431	147		100	2.1		21	38
FM0920	K1	0.5	AN	02	0252 +01.5	0254 +00.0	06	*000	*000	000	02	000	000	000	00	0	0	1300	494			69	3.1			69

Click the 'Print' button on the toolbar if you want to print the report; otherwise click the 'Close' button to go back to the Ratings and Scores window.



TEXAS DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT INFORMATION SYSTEM (PMIS)
CRITICAL VALUE RATINGS AND SCORES (RIDE VERSION)

June 17, 2003 10.23
Page 10 of 10

Fiscal Year(s): 2003 Through 2003
District: 02 Fort Worth
County: 249 WISE
Maintenance Section: 02 DECATUR

DISTRESS RATINGS
Pavement Type 1 (CRCP)
Pavement Type 2 and 3 (JCP)
Pavement Type 4 thru 10 (ACP) * = AUTO RUTTING

HIGHWAY	RDBD	LEN	CYCLE	MSEC	REFERENCE MARKERS BEGIN	REFERENCE MARKERS END	PTYPE	SPL FLJ SRUT	PCH FAL DRUT	ACP SHS PAT	PCP LNG FAL	SPC PCP BLK	AJS ALG	--- --- LNG	-- -- TRN	-- -- RAV	-- -- FLU	ADT (RDBD)	18k (K)	MAINT COST	DATE LAST SURF yyyy/mm	PMIS SCORES DIS	RD	SSI	SN	CON
US0380	R1	0.5	AN	02	0578+01.0	0578+01.5	01	000	000	000	000	07						6450	7520	67		100	2.6		19	65
US0380	R1	0.1	AN	02	0580+00.0	0580+00.1	08	*025	*019	000	00	000	004	176	04	0	0	6050	5257	80		56	2.2		24	24
US0380	L1	0.5	AN	02	0578+00.0	0578+00.5	01	000	000	000	000	07						6450	7520	67		100	2.6		25	65
US0380	L1	0.5	AN	02	0578+00.5	0578+01.0	01	000	000	000	000	06						6450	7520	67		100	2.6		21	65
US0380	L1	0.5	AN	02	0578+01.0	0578+01.5	01	000	000	000	000	06						6450	7520	67		100	2.4		30	53

This is the end of the instructions on running Ratings and Scores reports from the PMIS MapZapper.

Chapter 8 – Raw Data Reports

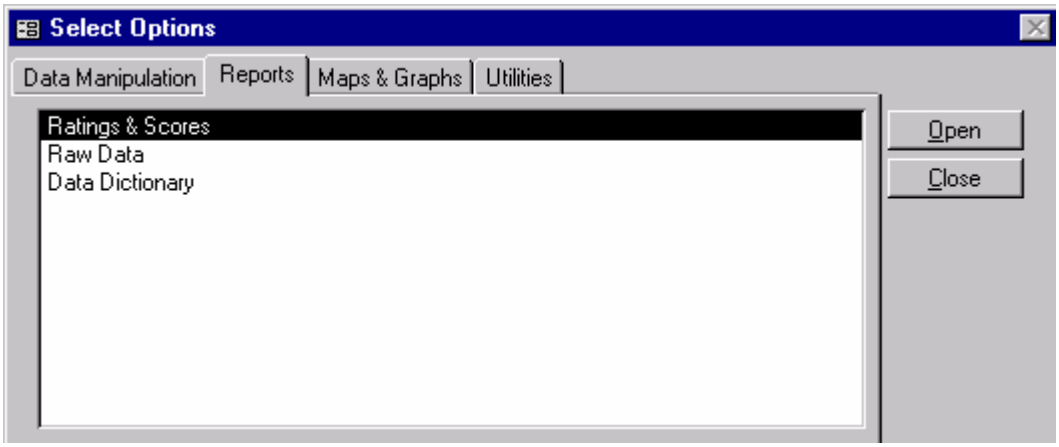
Version 3.400 can produce reports which list raw PMIS data collected at intervals shorter than the usual 0.5-mile data collection section length. These 'raw data' reports are useful when trying to identify localized pavement problems that might not always show up in the 0.5-mile section lists of ratings and scores.

For those familiar with PMIS on the mainframe, the PMIS MapZapper can produce raw data reports similar to those on the mainframe, for the following data types:

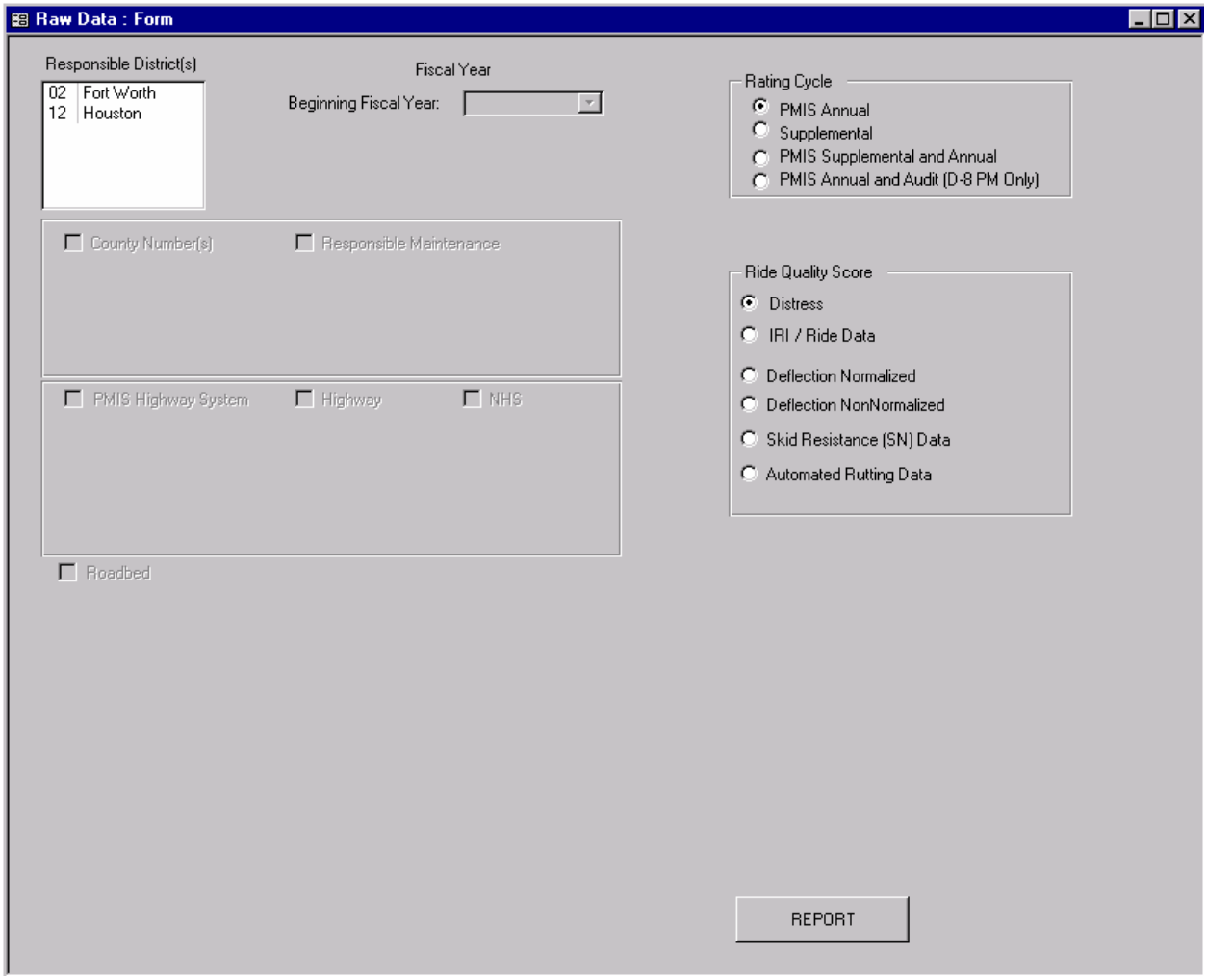
- Distress
- IRI/Ride
- Deflection, Normalized
- Deflection, Non-Normalized
- Skid
- Automated Rutting.

Here are some brief instructions on how to use the Raw Data reports.

1. Start the PMIS MapZapper, if you have not already done so, and get to the 'Select Options' window.
2. Click the Reports tab.



3. Double-click 'Raw Data.' The Raw Data reports window will appear.



The Raw Data reports work in much the same way as the Ratings and Scores reports (described in Chapter 7) do. Additional documentation on the Raw Data reports will be provided at a later date, to be determined...

This is the end of the instructions on running Raw Data reports from the PMIS MapZapper.

Chapter 9 – PMIS Data Dictionary Reports

Version 3.400 includes a series of data dictionary reports for each of the main PMIS database files. These files are:

- Location and Inventory – Basic PMIS highway, Reference Marker, traffic, and other information.
- Ratings and Scores Summary – PMIS Distress ratings and all PMIS Scores.
- Detailed Ride – Raw Ride and IRI data, typically stored at 0.1-mile intervals.
- Detailed Skid – Raw Skid data, typically stored at 0.5-mile intervals.
- Detailed FWD – Raw Deflection data, typically stored at 0.5-mile intervals.
- Management Sections – PMIS-defined Management Sections, meant to resemble candidate projects made up of one or more 0.5-mile PMIS Data Collection Sections.
- Detailed Automated Rutting – Raw Rut data, typically stored at 0.1-mile intervals.
- Detailed Texture – Raw Texture data, typically stored at 0.1-mile intervals.

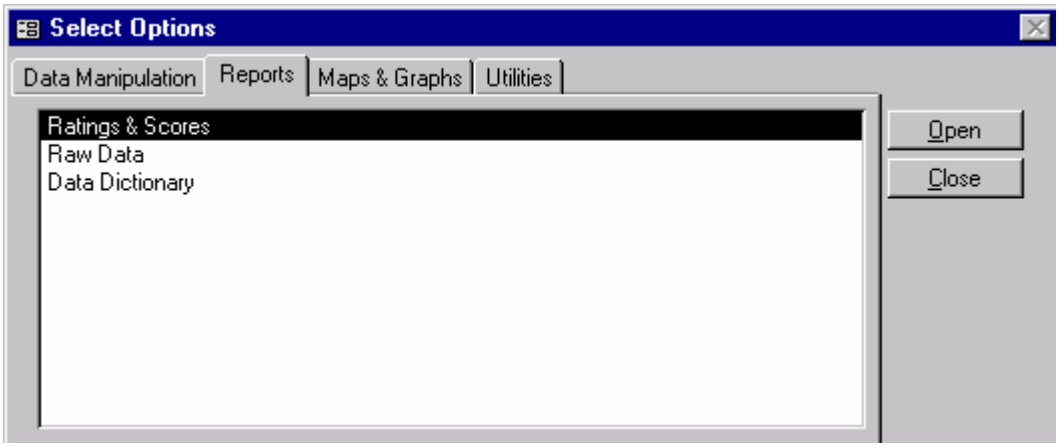
These files are exactly the same as those on the mainframe PMIS.

Data dictionary reports are helpful for getting basic information about what's in the PMIS database. For example, what is the definition of Distress Score? What are valid values of Ride Score? What kind of maintenance cost information is in PMIS?

Data dictionary reports also contain detailed information helpful when writing computer programs or other analysis routines for PMIS data.

Here are some brief instructions on how to use the Data Dictionary Reports.

1. Start the PMIS MapZapper, if you have not already done so, and get to the 'Select Options' window.
2. Click the Reports tab.



3. Double-click 'Data Dictionary.' The Data Dictionary window will appear.

4. Click the 'Table' check box to list the PMIS database tables that can be reported.
5. Click the 'Report' button to run the data dictionary.

Data Dictionary Report

Table Name: Location and Inventory/PMIS_DATA_COLLECTION_SECTION

The fields are listed in the order they physically appear in the table

Field Name	Format	Length
FISCAL_YEAR	N	4.00

THIS IS THE FISCAL YEAR IN WHICH THE DATA COLLECTION CYCLE BEGINS.
A COLLECTION CYCLE IS USUALLY FROM SEPTEMBER THROUGH JANUARY FOR RIDE
AND VISUAL DISTRESS.

Field Name	Format	Length
RESPONSIBLE_DISTRICT	A	2.00

THE DISTRICT RESPONSIBLE FOR RATING AND MAINTAINING THE DATA COLLECTION
SECTION. IN SOME RARE CASES, ONE DISTRICT MAY HAVE A HIGHWAY WITHIN
ITS BOUNDARIES BUT FOR REASONS OF CONVENIENCE ANOTHER DISTRICT WILL
ACTUALLY PERFORM WORK ON IT.

SEE TRM MAINTENANCE-FOREMAN-NBR

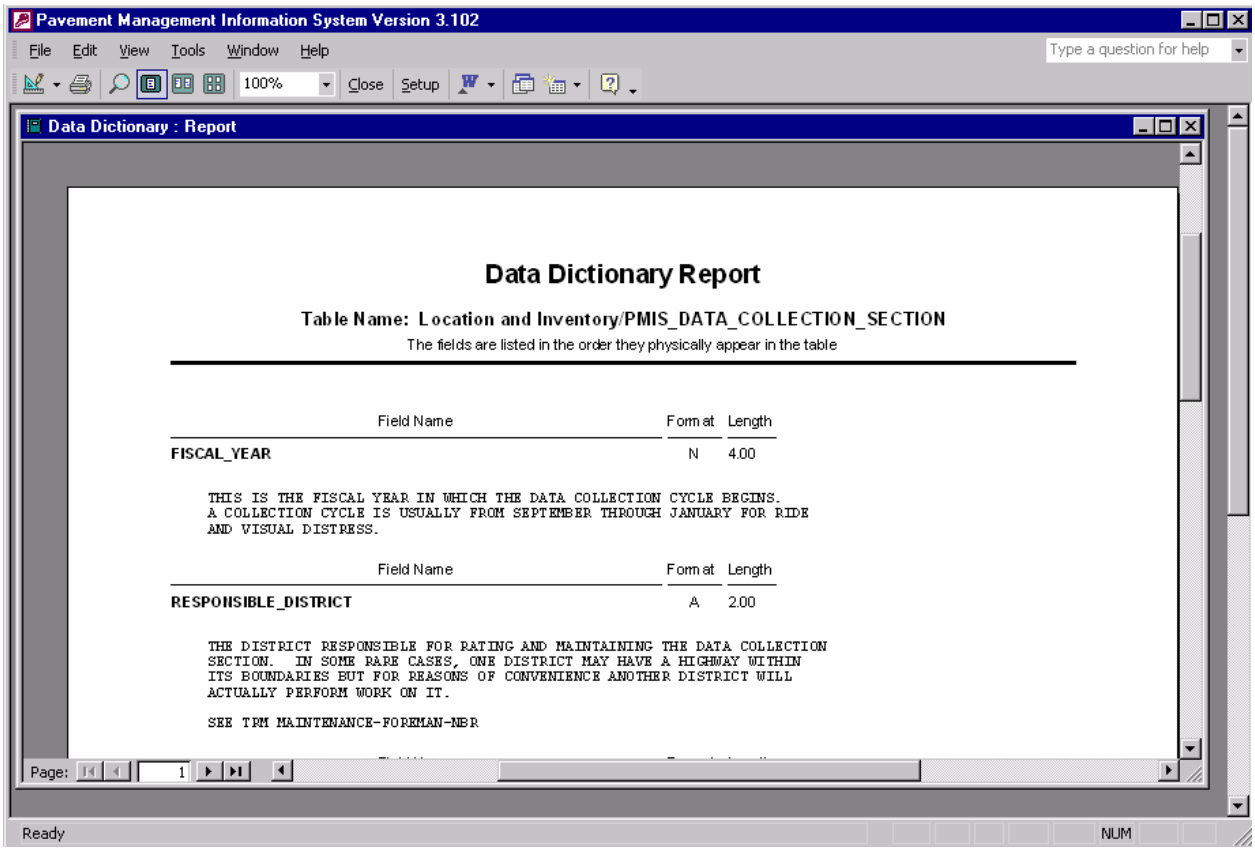
Field Name	Format	Length
COUNTY_NBR	A	3.00

IDENTIFIES ONE OF THE 254 GEOGRAPHIC DIVISIONS WITHIN THE STATE OF
TEXAS (TXDOT COUNTY NUMBER).

3 CHARACTERS IN FORMAT - XXX WITH RANGES 001 THRU 254.

SEE TRM COUNTY-NBR

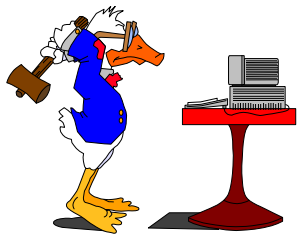
6. Click the 'Print' button on the toolbar if you want to print the report; otherwise click the 'Close' button to go back to the Data Dictionary window.



This is the end of the instructions on running PMIS Data Dictionary reports from the PMIS MapZapper.

Chapter 10 – For More Information…

For more information about the PMIS MapZapper, or to suggest additional types of maps or reports to be added, please contact:



Bryan E. Stampley, P.E.	phone: (512) 465-3676	e-mail: bstample
Craig Cox	phone: (512) 465-3682	e-mail: ccox2
Gunalini Kanthasamy	phone: (512) 465-7948	e-mail: gkantha

Appendix A – List of Available Maps

Version 3.400 of the PMIS MapZapper can produce 309 types of maps, by district or by county, as listed below:

Data Collection (13 Maps):

- Visual Sections to be Rated
- Ride/Rut Sections to be Rated
- Deflection Sections to be Rated
- Skid Sections to be Rated
- Texture Sections to be Rated
- Audit Sections to be Rated
- Status of Visual Ratings (available for 'Sections to be Rated' or 'All Sections')
- Status of Ride/Rut Ratings (available for 'Sections to be Rated' or 'All Sections')
- Status of Visual, Ride and Rut Ratings (available for 'Sections to be Rated' or 'All Sections')
- Status of Skid Ratings (available for 'Sections to be Rated' or 'All Sections')
- Status of Texture Ratings (available for 'Sections to be Rated' or 'All Sections')
- Status of Deflection Ratings (available for 'Sections to be Rated' or 'All Sections')
- Status of Audit Ratings (available for 'Sections to be Rated' or 'All Sections')

Raw Data (12 Maps):

- Ride Classes (must download detailed Ride data first)
- IRI Classes, Right Wheelpath (must download detailed Ride data first)
- IRI Classes, Left Wheelpath (must download detailed Ride data first)
- IRI Classes, Average (must download detailed Ride data first)
- Skid Classes (must download detailed Skid data first)
- SCI Classes (must download detailed FWD data first)
- Shallow Rutting Classes (must download detailed Automated Rutting data first)
- Shallow Rutting Classes, Right Wheelpath (must download detailed Automated Rutting data first)
- Shallow Rutting Classes, Left Wheelpath (must download detailed Automated Rutting data first)
- Deep Rutting Classes (must download detailed Automated Rutting data first)
- Deep Rutting Classes, Right Wheelpath (must download detailed Automated Rutting data first)
- Deep Rutting Classes, Left Wheelpath (must download detailed Automated Rutting data first)

ACP Distress (19 Maps):

- Shallow Rutting
- Deep Rutting
- Patching
- Failures
- Block Cracking
- Alligator Cracking
- Longitudinal Cracking
- Transverse Cracking
- Raveling
- Flushing
- Shallow Rutting Utility
- Deep Rutting Utility
- Patching Utility
- Failures Utility
- Block Cracking Utility
- Alligator Cracking Utility
- Longitudinal Cracking Utility
- Transverse Cracking Utility
- Ride Utility

CRCP Distress (10 Maps):

- Spalled Cracks
- Punchouts
- Asphalt Patches
- Concrete Patches
- Average Crack Spacing
- Spalled Cracks Utility
- Punchouts Utility
- Asphalt Patches Utility
- Concrete Patches Utility
- Ride Utility

JCP Distress (12 Maps):

- Failed Joints and Cracks
- Failures
- Shattered Slabs
- Slabs with Longitudinal Cracking
- Concrete Patches
- Apparent Joint Spacing
- Failed Joints and Cracks Utility
- Failures Utility
- Shattered Slabs Utility
- Slabs with Longitudinal Cracking Utility
- Concrete Patches Utility
- Ride Utility

PMIS Inventory Data (15 Maps):

- Roadbeds
- Maintenance Costs
- 18-kip ESALs
- ADT
- Functional Systems
- Pavement Types
- Detail Pavement Types
- Truck Traffic Percentages
- Trucks per Day
- NHS Routes
- Sections Under Construction
- Number of Lanes
- Maintenance Sections
- Surface Age
- Traffic Classes

Administrative Summaries (13 Maps):

- Rutting MLOS
- Alligator Cracking MLOS
- Ride Quality MLOS
- Failures MLOS
- Combined MLOS
- Distress Score Classes
- Ride Score Classes
- Condition Score Classes
- Skid Score Classes
- SSI Score Classes
- SCI Classes
- W7 Classes
- Ride Score Utility

Pavement Surfaces (161 Maps):

- Other Surface
- Type C Hot-Mix
- Type D Hot-Mix
- Superpave (½ inch topsize)
- Superpave (¾ inch topsize)
- Superpave (other topsize)
- CMHB (coarse matrix, high binder)
- SMA (stone mastic asphalt)
- Porous Friction Course

Pavement Surfaces (161 Maps, continued):

- Regular Continuous Reinforced Concrete (CRCP)
- Recycled Continuous Reinforced Concrete (CRCP)
- Bonded Continuous Reinforced Concrete (CRCP)
- Unbonded Continuous Reinforced Concrete (CRCP)
- Regular Jointed Reinforced Concrete (JRCP)
- Recycled Jointed Reinforced Concrete (JRCP)
- Bonded Jointed Reinforced Concrete (JRCP)
- Unbonded Jointed Reinforced Concrete (JRCP)
- Regular Jointed Plain Concrete (JCP)
- Recycled Jointed Plain Concrete (JCP)
- Bonded Jointed Plain Concrete (JCP)
- Unbonded Jointed Plain Concrete (JCP)
- Regular Other Asphalt Overlay > 5½ inches
- Regular Type C Hot-Mix > 5½ inches
- Regular Type D Hot-Mix > 5½ inches
- Regular Superpave (½ inch topsize) > 5½ inches
- Regular Superpave (¾ inch topsize) > 5½ inches
- Regular Superpave (other topsize) > 5½ inches
- Regular CMHB > 5½ inches
- Regular SMA > 5½ inches
- Regular Porous Friction Course > 5½ inches
- Recycled Other Asphalt Overlay > 5½ inches
- Recycled Type C Hot-Mix > 5½ inches
- Recycled Type D Hot-Mix > 5½ inches
- Recycled Superpave (½ inch topsize) > 5½ inches
- Recycled Superpave (¾ inch topsize) > 5½ inches
- Recycled Superpave (other topsize) > 5½ inches
- Recycled CMHB > 5½ inches
- Recycled SMA > 5½ inches
- Recycled Porous Friction Course > 5½ inches
- Regular Other Asphalt Overlay 2½ - 5½ inches
- Regular Type C Hot-Mix 2½ - 5½ inches
- Regular Type D Hot-Mix 2½ - 5½ inches
- Regular Superpave (½ inch topsize) 2½ - 5½ inches
- Regular Superpave (¾ inch topsize) 2½ - 5½ inches
- Regular Superpave (other topsize) 2½ - 5½ inches
- Regular CMHB 2½ - 5½ inches
- Regular SMA 2½ - 5½ inches
- Regular Porous Friction Course 2½ - 5½ inches
- Recycled Other Asphalt Overlay 2½ - 5½ inches
- Recycled Type C Hot-Mix 2½ - 5½ inches
- Recycled Type D Hot-Mix 2½ - 5½ inches

Pavement Surfaces (161 Maps, continued):

- Recycled Superpave (½ inch topsize) 2½ - 5½ inches
- Recycled Superpave (¾ inch topsize) 2½ - 5½ inches
- Recycled Superpave (other topsize) 2½ - 5½ inches
- Recycled CMHB 2½ - 5½ inches
- Recycled SMA 2½ - 5½ inches
- Recycled Porous Friction Course 2½ - 5½ inches
- Regular Other Asphalt Overlay thickness unknown
- Regular Type C Hot-Mix thickness unknown
- Regular Type D Hot-Mix thickness unknown
- Regular Superpave (½ inch topsize) thickness unknown
- Regular Superpave (¾ inch topsize) thickness unknown
- Regular Superpave (other topsize) thickness unknown
- Regular CMHB (coarse matrix, high binder) thickness unknown
- Regular SMA (stone mastic asphalt) thickness unknown
- Regular Porous Friction Course thickness unknown
- Recycled Other Asphalt Overlay thickness unknown
- Recycled Type C Hot-Mix thickness unknown
- Recycled Type D Hot-Mix thickness unknown
- Recycled Superpave (½ inch topsize) thickness unknown
- Recycled Superpave (¾ inch topsize) thickness unknown
- Recycled Superpave (other topsize) thickness unknown
- Recycled CMHB (coarse matrix, high binder) thickness unknown
- Recycled SMA (stone mastic asphalt) thickness unknown
- Recycled Porous Friction Course thickness unknown
- Regular Other Asphalt Overlay < 2½ inches
- Regular Type C Hot-Mix < 2½ inches
- Regular Type D Hot-Mix < 2½ inches
- Regular Superpave (½ inch topsize) < 2½ inches
- Regular Superpave (¾ inch topsize) < 2½ inches
- Regular Superpave (other topsize) < 2½ inches
- Regular CMHB < 2½ inches
- Regular SMA < 2½ inches
- Regular Porous Friction Course < 2½ inches
- Recycled Other Asphalt Overlay < 2½ inches
- Recycled Type C Hot-Mix < 2½ inches
- Recycled Type D Hot-Mix < 2½ inches
- Recycled Superpave (½ inch topsize) < 2½ inches
- Recycled Superpave (¾ inch topsize) < 2½ inches
- Recycled Superpave (other topsize) < 2½ inches
- Recycled CMHB < 2½ inches
- Recycled SMA < 2½ inches
- Recycled Porous Friction Course < 2½ inches

Pavement Surfaces (161 Maps, continued):

- Regular CRCP with asphalt or seal coat overlay
- Recycled CRCP with asphalt or seal coat overlay
- Bonded CRCP with asphalt or seal coat overlay
- Unbonded CRCP with asphalt or seal coat overlay
- Regular JRCP or JCP with asphalt or seal coat overlay
- Recycled JRCP or JCP with asphalt or seal coat overlay
- Bonded JRCP or JCP with asphalt or seal coat overlay
- Unbonded JRCP or JCP with asphalt or seal coat overlay
- Regular Surface Treatment
- Recycled Surface Treatment
- Bonded Surface Treatment
- Unbonded Surface Treatment
- Regular Fog Seal
- Recycled Fog Seal
- Bonded Fog Seal
- Unbonded Fog Seal
- Regular 1-Course Surface Treatment
- Recycled 1-Course Surface Treatment
- Bonded 1-Course Surface Treatment
- Unbonded 1-Course Surface Treatment
- Regular 2-Course Surface Treatment
- Recycled 2-Course Surface Treatment
- Bonded 2-Course Surface Treatment
- Unbonded 2-Course Surface Treatment
- Regular Slurry Seal
- Recycled Slurry Seal
- Bonded Slurry Seal
- Unbonded Slurry Seal
- Regular Rubberized Chip Seal
- Recycled Rubberized Chip Seal
- Bonded Rubberized Chip Seal
- Unbonded Rubberized Chip Seal
- Regular Microsurfacing
- Recycled Microsurfacing
- Bonded Microsurfacing
- Unbonded Microsurfacing
- Regular Plant Mix Seal
- Recycled Plant Mix Seal
- Bonded Plant Mix Seal
- Unbonded Plant Mix Seal
- Regular Limestone Rock Asphalt
- Recycled Limestone Rock Asphalt

- Bonded Limestone Rock Asphalt
- Unbonded Limestone Rock Asphalt

Pavement Surfaces (161 Maps, continued):

- Regular Whitetopping > 8 inches
- Recycled Whitetopping > 8 inches
- Bonded Whitetopping > 8 inches
- Unbonded Whitetopping > 8 inches
- Regular Thin Whitetopping 4-8 inches
- Recycled Thin Whitetopping 4-8 inches
- Bonded Thin Whitetopping 4-8 inches
- Unbonded Thin Whitetopping 4-8 inches
- Regular Ultra-Thin Whitetopping < 4 inches
- Recycled Ultra-Thin Whitetopping < 4 inches
- Bonded Ultra-Thin Whitetopping < 4 inches
- Unbonded Ultra-Thin Whitetopping < 4 inches
- Regular Aggregate
- Recycled Aggregate
- Bonded Aggregate
- Unbonded Aggregate
- Regular Brick or Block
- Recycled Brick or Block
- Bonded Brick or Block
- Unbonded Brick or Block
- Regular Unknown
- Recycled Unknown
- Bonded Unknown
- Unbonded Unknown

Network Analysis (1 Map):

- Needs Estimate

FWD Direct Analysis Methods (4 Maps):

- Pavement Remaining Life
- Pavement Modulus (must download detailed FWD data)
- Subgrade Modulus (must download detailed FWD data)
- Minimum Deflection Ratio (must download detailed FWD data)

Pavement Maintenance Expenditures (49 Maps):
(must download MMIS Pavement Expenditure Data)

- Base Remove & Replace or In-Place Repair
- Levelup or Overlay
- Seal Cracks & Joints
- Seal Coat
- Strip, Spot, Fog or Skeet Seal
- Pothole Repair
- Adding or Widening
- Milling or Planing
- Edge Repair
- Treat Bleeding Pavement
- Slab Stabilization/Jacking
- Blowups and Stress Relief
- Repair Spalling
- FC110 Base Removal/Replacement (English units)
- FC120 Base In-Place Repair (English units)
- FC211 Leveling/Overlay With Laydown (English units)
- FC212 Leveling/Overlay With Blade (English units)
- FC213 Leveling by Hand (English units)
- FC220 Sealing Cracks (Metric units)
- FC225 Sealing Cracks (English units)
- FC231 Aggregate Seal Coat (English units)
- FC232 Aggregate Strip/Spot Seal (English units)
- FC233 Fog Seal (English units)
- FC235 Fog Seal (Metric units)
- FC241 Potholes, Semi-Permanent Repair
- FC242 Potholes, Permanent Repair
- FC245 Adding/Widening Pavement (English units)
- FC252 Milling/Planing (English units)
- FC260 Treat Bleeding Pavement (English units)
- FC265 Treat Bleeding Pavement (Metric units)
- FC270 Edge Repair (English units)
- FC315 Slab Stabilization/Jacking
- FC320 Cleaning and Sealing Cracks (Metric units)
- FC325 Cleaning and Sealing Cracks (English units)
- FC330 Blowups and Stress Relief
- FC340 Repair Spalling (Metric units)
- FC345 Repair Spalling (English units)
- FC360 Full Depth Removal/Replacement (English units)

Pavement Maintenance Expenditures (49 Maps, continued):
(must download MMIS Pavement Expenditure Data)

- FC850 Base Removal/Replacement (Metric units)
- FC851 Base In-Place Repair (Metric units)
- FC852 Leveling/Overlay With Laydown (Metric units)
- FC853 Leveling/Overlay With Blade (Metric units)
- FC854 Leveling by Hand (Metric units)
- FC857 Aggregate Seal Coat (Metric units)
- FC858 Aggregate Strip/Spot Seal (Metric units)
- FC861 Adding/Widening Pavement (Metric units)
- FC862 Milling/Planing (Metric units)
- FC863 Edge Repair (Metric units)
- FC864 Full Depth Removal/Replacement (Metric units)

Appendix B – Flowchart of PMIS MapZapper Menus and Windows

Filename – PMISMZXP.MDB

Select Options window
- Data Manipulation tab
  - Import/Update Data in Database
  - Remove Data In Database
  - Alter Distress Utility Curves and Recalculate Distress & Condition Scores
  - Alter Location of Highway Shields
  - Alter Functionality of Decision Trees
  - Alter Needs Estimate Reason Codes
  - Work with Database
  - Upgrade Application Software
- Reports tab
  - Ratings & Scores
  - Raw Data
  - Data Dictionary
- Maps & Graphs tab
  - Map PMIS Data using ArcMap ver. 9.x
  - Graph PMIS Data
- Utilities tab
  - Highway Location Cross-reference
  - Database Last Update
  - Distress Treatment Costs
  - Utility Score Optimizer
  - Construction Project Limits