

Florida Department of Transportation Engineering \ CADD Systems Office

FDOT2010 Drainage

The Drainage Menu top to bottom.

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Chapter 1 Overview

Objectives

In this chapter you will learn about:

- Understanding the notation used to describe navigating the menu structure
- Accessing the Drainage portion of the FDOT Menu

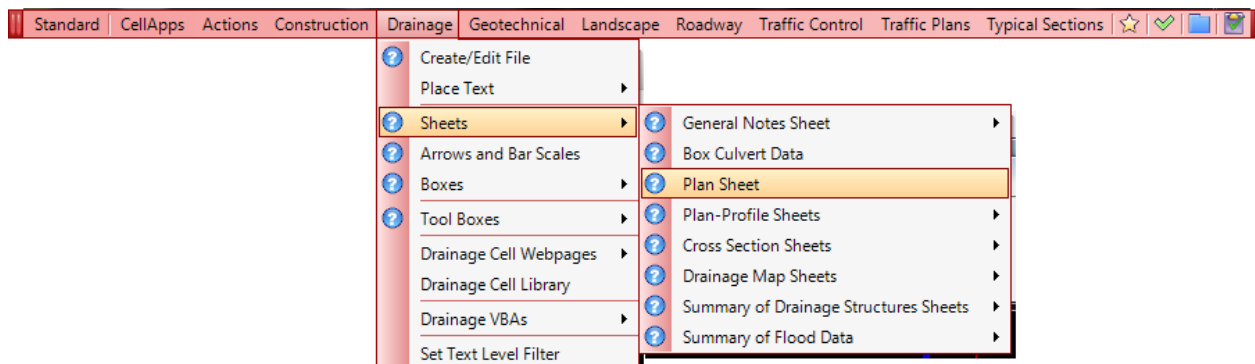
Introduction

This workbook is designed for use with the dataset provided for you in this lab. If you would like a copy if it please e-mail James Worley at the Florida Department of Transportation (james.worley@dot.state.fl.us) and he will send you a copy of the dataset as quickly as possible. This workbook will explain the basic use of all the parts of the new FDOT Drainage Menu available for use on the FDOT Menu bar.

Standard Notation

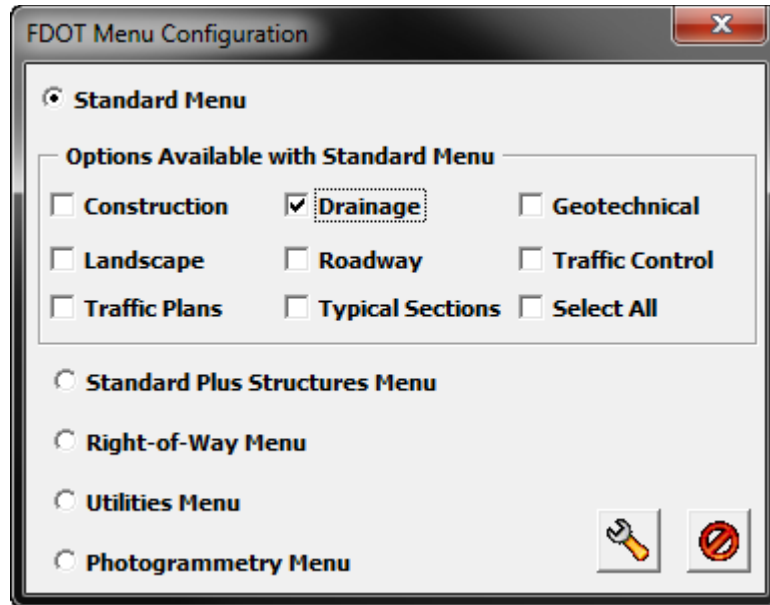
In this workbook you will see words in **Bold** or *Italics* that indicate an item of interest or a level on the menu tree. You will also see the > symbol used to indicate going down one level on a menu. This will be the standard followed in this workbook. Such as:

FDOT Menu > Drainage>Sheets>Plan Sheet would represent clicking on the Plan Sheet option in the Sheets sub-menu from the Drainage dropdown of the FDOT Menu.



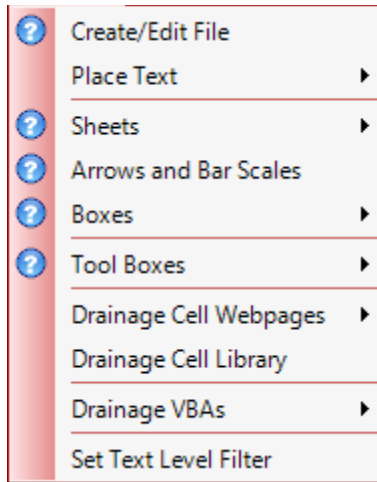
FDOT Menu

The term **FDOT Menu** is used in this workbook to describe the suite of software delivered to you by FDOT Engineering / CADD Systems Office i.e. FDOT2004, FDOT2008 and so on. To access the **Drainage** portion of this menu you must have the FDOT Menu Configuration set with at least the Drainage Option selected (you may also have as many other options selected as you wish).



Once you have this set up correctly you should see the **Drainage** menu available to you on in the **FDOT Menu**. From this point on it is as simple as clicking on the **Drainage** dropdown to access all the options it holds.

This is a close-up of the main **Drainage** dropdown:



You will notice that some of the options have arrows that indicate at least one sub-menu is available in the menu structure. All you have to do to get the next level of the menu to appear is to move your mouse over the option and the next level will appear for you to access. Once you find the selection you are looking for you just left click on the selection and the action it triggers will begin.

Chapter 2 Create/Edit File & Place Text

Objectives

In this chapter you will learn about:

Using the **Create/Edit File** tool to create files in your drainage project

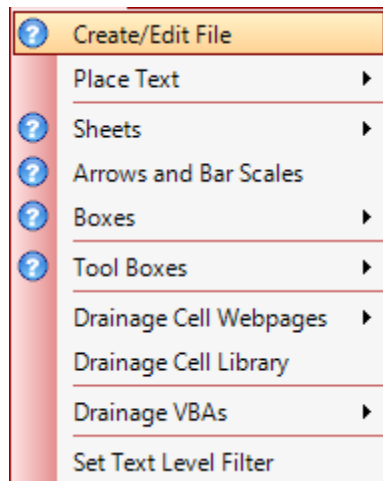
Using the **Place Text Label at Annotation Scale** to place text and the **Change Text Scale Current Scale** tool to change the scale of the text you placed

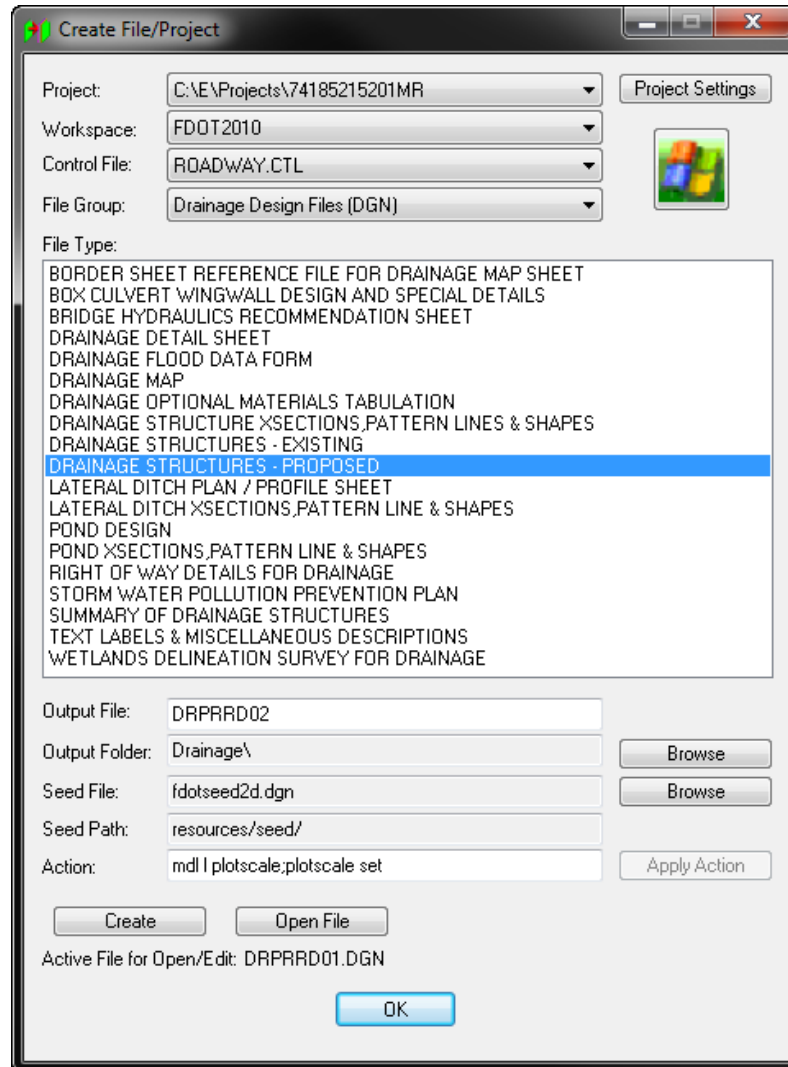
Introduction

Use of the tools covered in this chapter will aid in compliance with the standards necessary for electronic submittal of your project. The tools have been designed to take the guesswork out of file creation and text placement. The tools name files according to the standards and place them in the proper folder within you project structure. The tools also set text attributes so they conform to the standards. After you complete the exercises in this chapter you should be able to easily use these tools.

Create/Edit File

The **Create/Edit File** tool is the first selection on the **Drainage** menu.

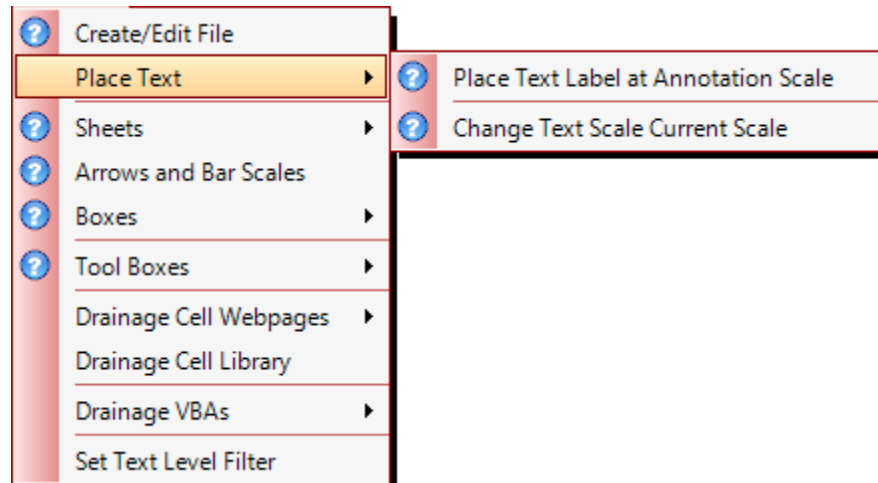




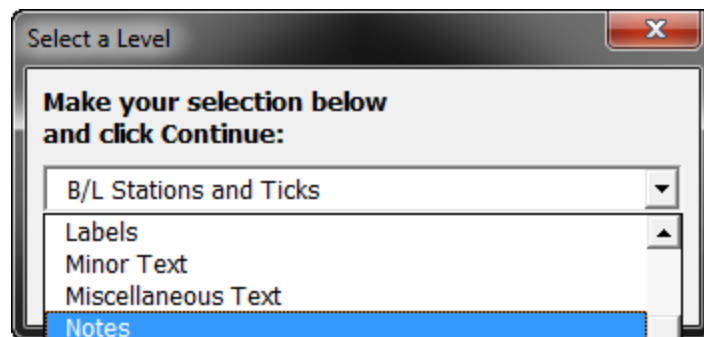
This tool allows you to create new files for your drainage project that will be placed in the proper location within your project directory structure and will be created with the proper seed file. Use of this tool helps to eliminate problems later on with compliance to standards that are necessary for electronic delivery. The file names are automatically incremented based on the highest numbered file of a particular type within the target directory i.e. DRPRRD01.DGN, DRPRRD02 and so on.

Place Text

The **Place Text** tool is used to place miscellaneous text in your design file and change text placed by **FDOT Menu** tools scale.



Place Text Label at Annotation Scale places text at the current annotation scale. This command also automatically sets the font and text element attributes and allows the user to select the text level. When this menu option is selected, the **Select a Level** dialog displays. Use the drop down list to select the text level and then click continue to activate the place text command.

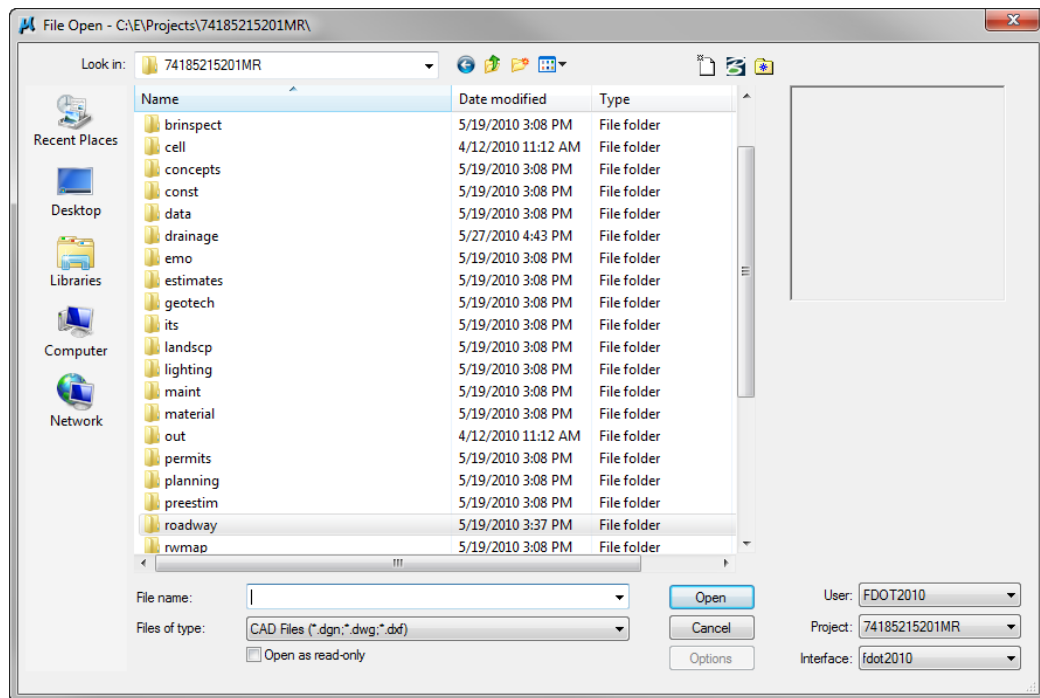


Change Text Scale Current Scale changes existing annotation text scale so that it is equal to the current plot scale. This command only works on text placed with the **FDOT Menu** text annotation tools.

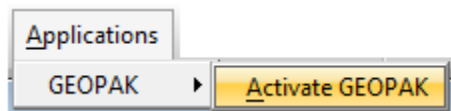
Exercise 2.1

In this exercise you will create a drainage plan file and a drainage cross section file in the drainage directory of the sample project.

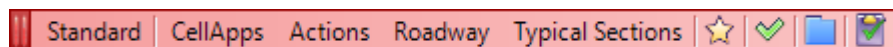
Begin by opening **MicroStation** using the **FDOT2010** icon. It is critical to use the icon to insure you are in the proper workspace. Once **MicroStation** is done loading you need to be sure you are in the proper project. In the lower right-hand corner of the **File Manager** dialog box, you will see **User:**, **Project:** and **Interface:** dropdown menus. Make sure they look like the ones in the illustration below.



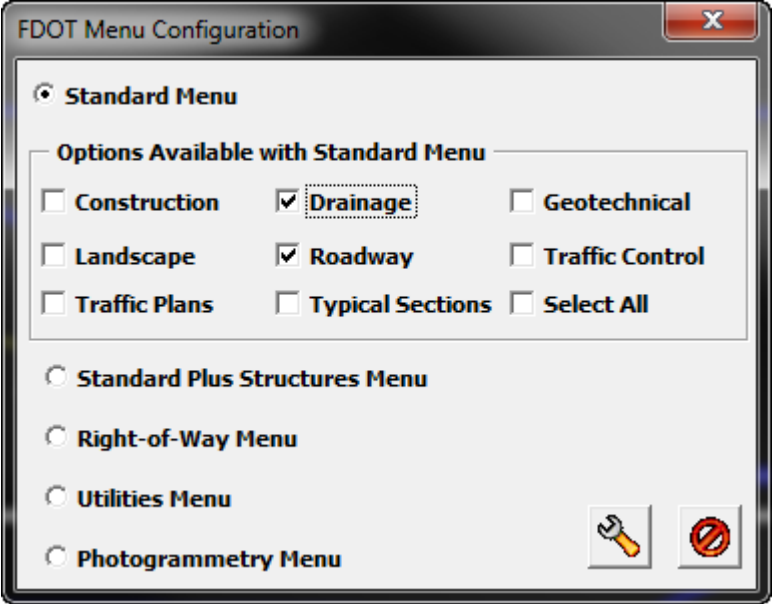
Now navigate to the **Roadway** folder and open the **DSGNRD01.DGN** file. Once the file is open you will need to ensure that **GEOPAK** is loaded by checking the **Applications** menu in the **MicroStation File Menu**.



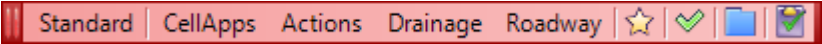
After this you must make sure that the **Drainage** dropdown menu is available in the **FDOT2010** suite menu. If for some reason it is not, you will need to left-click on the **Standard** dropdown menu to enable the **Drainage** dropdown menu.



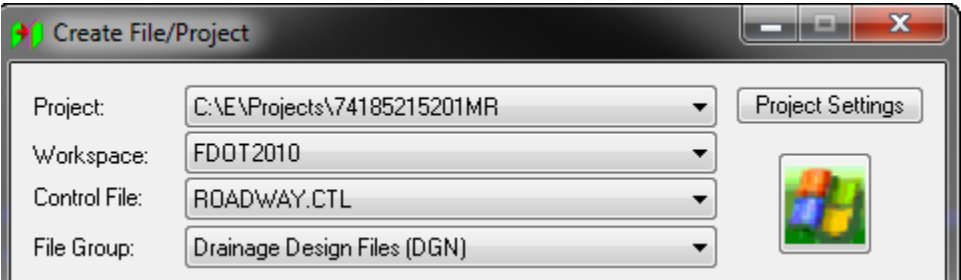
Left-clicking on **Standard** will open the dropdown menu where you will need to left-click on the **Configuration** option. This will open the **FDOT Menu Configuration** dialog box. Make sure that the radio button in front of **Standard Menu** is on and select the options you wish to have available to you in the **FDOT Menu**. For this exercise you will need the **Drainage** and **Roadway** menus at a minimum.



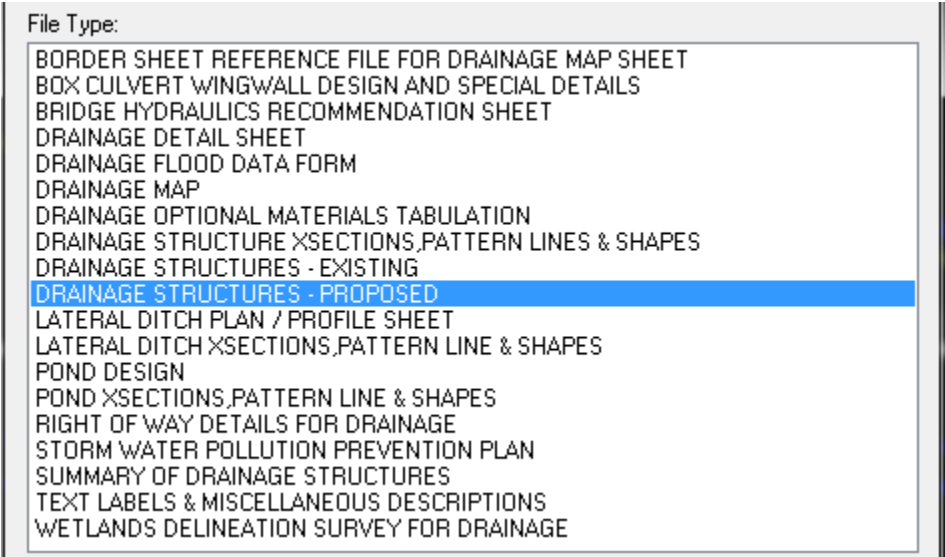
Left-click on the **Update Menu** button in the lower right corner of the **FDOT Menu Configuration** dialog box. This will cause **MicroStation** to restart and the **FDOT Menu** will now have the proper configuration for this exercise.



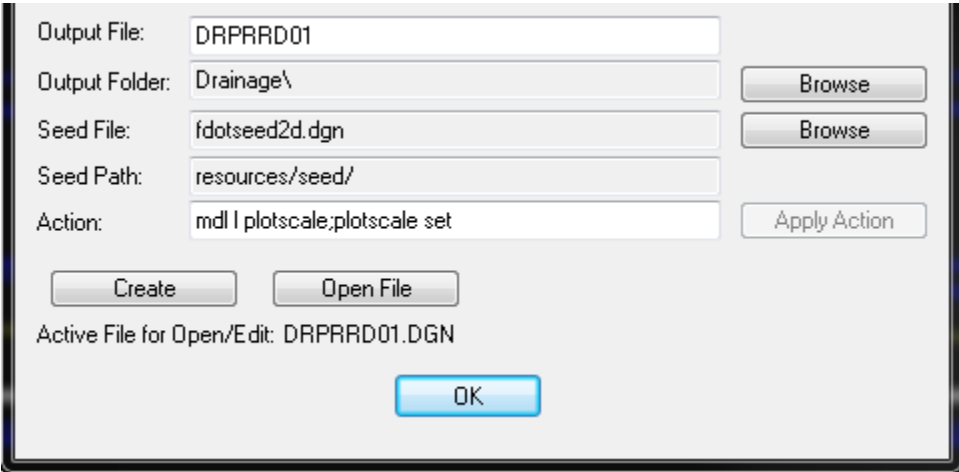
Now left-click on **Drainage** to open the dropdown menu for access to the **Create/Edit File** option. The dialog box will open and you will be able to set it up for your project. Verify that the **Project:**, **Workspace:**, **Control File:** and **File Group:** dropdowns are set like the illustration for this exercise.



The **File Type:** list box is where you will find all of the files that you should need for a drainage project. Locate **DRAINAGE STRUCTURES – PROPOSED** in the **File Type:** list box and left-click on the entry.



Once you have done this check the dialog box for the **Output File:**, **Output Folder:**, **Seed File:**, **Seed Path:** and **Action:** text fields match the illustration below.

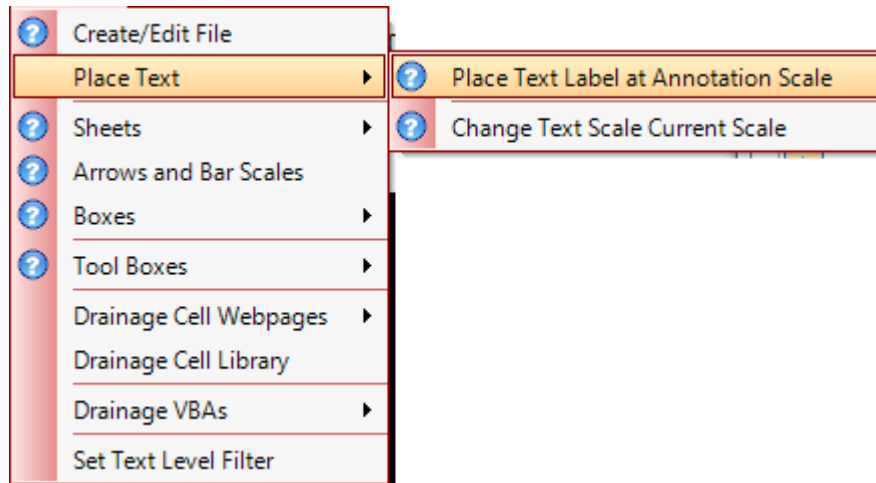


Now left-click on the **Create** button. The file will be created and the filename will increment so that you could create the next proposed drainage structure plan file if needed. To complete this exercise locate **DRAINAGE STRUCTURE XSECTIONS, PATTERN LINES & SHAPES** and create a drainage cross section file.

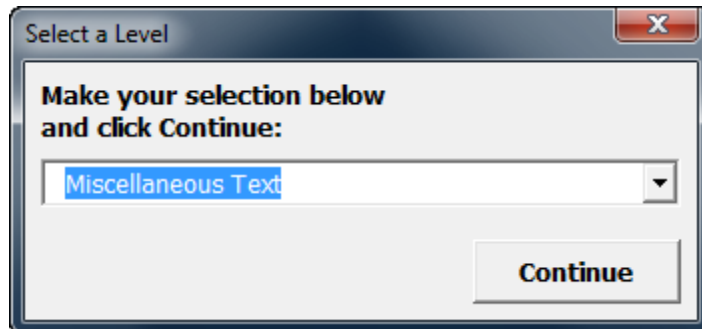
Exercise 2.2

In this exercise you will open the plan file and place text in that file.

To begin this exercise open the file **C:\E\Projects\74185215201MR\DRPRRD01.DGN**. Next left-click on the **Place Text Label at Annotation Scale** tool (**FDOT Menu > Drainage>Place Text> Place Text Label at Annotation Scale**).

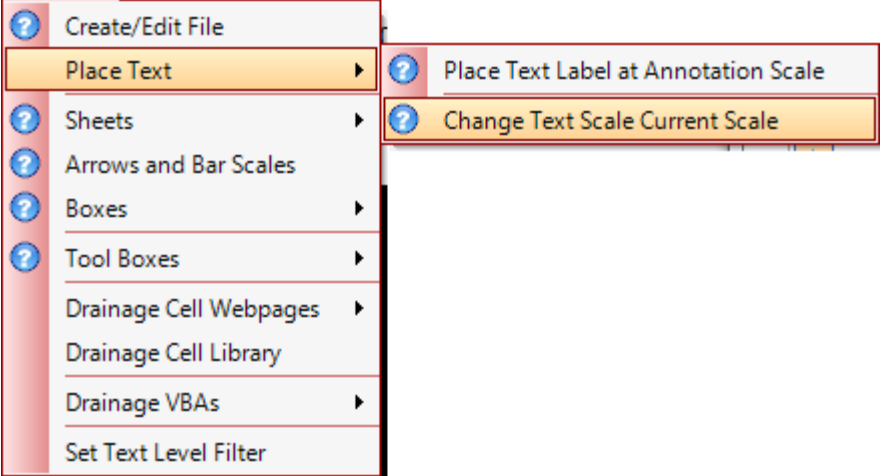


Now you will be presented with a dropdown list in the **Select a Level** dialog box. For this exercise choose **Miscellaneous Text** from the dropdown list and left-click the **Continue** button.



This will set all the needed text attributes and bring up the **Text Editor** dialog box. Enter some text in this box and left-click anywhere in the plan file to place the text. Restart the tool and try this again with another selection from the dropdown list. Notice how the attributes of the text are different every time you change the selection you choose from the dropdown list.

Let's use the **Change Text Scale Current Scale** tool to change the scale of the text you placed. First change the plot scale by going to **FDOT Menu>Actions>Set Plot Scale of File**. Change the plot scale to 10 less than it currently is at this time. Now left-click on the **Change Text Scale Current Scale** tool.



Notice all the text you placed just got smaller. Try using this tool again after changing the plot scale of the file to twice what it is now. This tool will change all the text placed by FDOT Menu tools size based on the current plot scale.

Chapter 3 Sheets

Objectives

In this chapter you will learn about:

Using the **Sheets** sub-menu to place various types of sheet border cells

Introduction

The **Sheets** sub-menu has multiple options that allow you to place a number of different sheet border cells into your drainage files. Use of this tool will help promote compliance with the set standards required for electronic delivery. After you complete the exercises in this chapter you should be able to easily use these tools located on this sub-menu.

Sheets>General Notes Sheet

The **General Notes Sheet** option allows you to place a general notes border and place text that is contained in pre-configured text files you can save with your project once they have been customized for that project.

Sheets>Box Culvert Data

This option is no longer valid and will be removed from the menu in future releases of the FDOT Menu Suite.

Sheets>Plan Sheet

This option allows you to place a plan sheet border cell into your drainage project file.

Sheets>Plan-Profile Sheets

By left-clicking on the **Plan-Profile Sheets** option in the **Sheets** sub-menu you gain access to multiple placement options and tools for placing and manipulating various plan and profile sheets as well as profile information. In particular the **Label Profiles** tool allows automated labeling of your profile cells.

Sheets>Cross Section Sheets

Choosing the **Cross Section Sheets** option in the **Sheets** sub-menu will give you access to multiple placement options for different cross section border cells as well as tools for placing slope labels on lines and reviewing current cross sections in a movie format.

Sheets>Drainage Map Sheets

The **Drainage Map Sheets** option allows you to place a drainage map sheet border cell and gives access to a tool that places pre-configured **Drainage Map Notes** text from a text file that can be saved within your drainage project directory.

Sheets>Summary of Drainage Structures Sheets

This sub-menu option allows you to place two types of drainage structure summary border cells. It also has tools to manipulate and place data found in specifically a named Excel file within your drainage project directory.

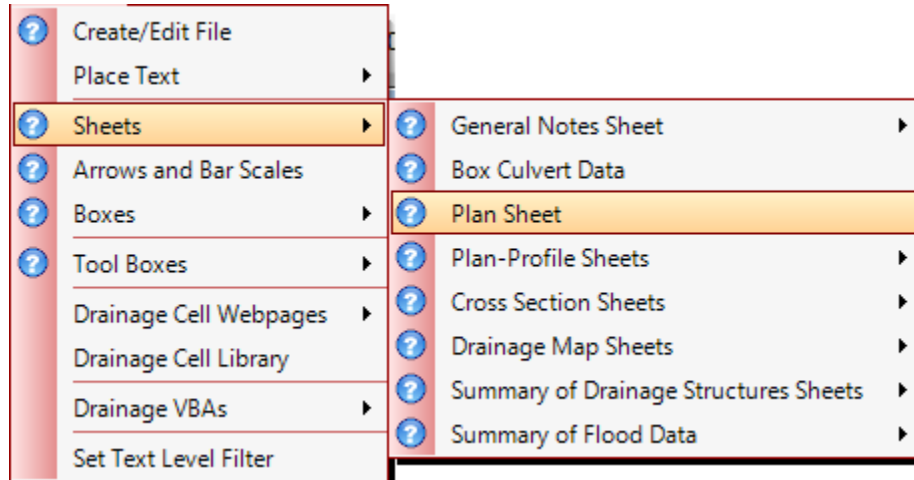
Sheets>Summary of Flood Data

The **Summary of Flood Data** option on the **Sheets** sub-menu is used to place a flood data border cell and populate it with information found in a specifically named Excel file located in your drainage project directory.

Exercise 3.1

In this exercise you will place a drainage plan sheet in the **DRPRRD01.DGN** file you created earlier. Then you will place various other sheet border cells within the file to familiarize yourself with the cell placement tools in the **Sheets** sub-menu.

To start this exercise make sure you are in the **DRPRRD01.DGN** file you created earlier. Left-click on **Plan Sheet** in the **Sheets** sub-menu.

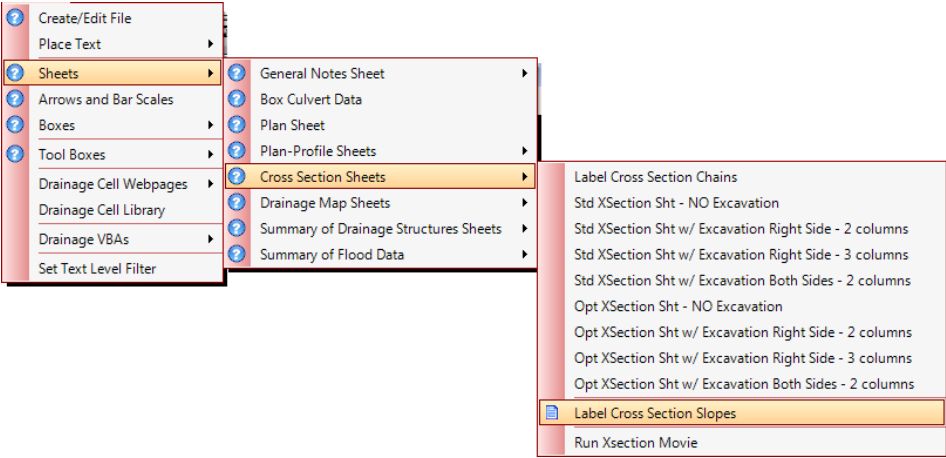


This will activate placement of a plan sheet border cell. Left-click anywhere in the open file to place the cell. Now zoom out and place some of the other border cells that are available in this section of the menu to familiarize yourself with these tools.

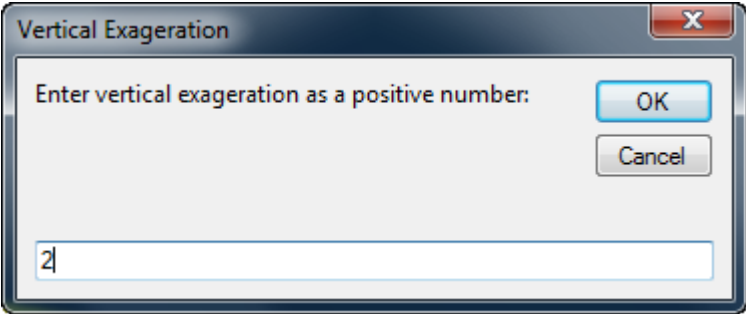
Exercise 3.2

In this exercise you will label the slope of lines within a drainage file and place text from pre-configured text files located within your drainage project directory.

Start this exercise by zooming to an open area of the current file. Place a line at a random slope from left to right on your screen. Now activate the **Label Cross Section Slopes** tool under the **Cross Section Sheets** option of the **Sheets** sub-menu.



The **Vertical Exaggeration** dialog box will pop up. This prompt is needed to establish the scale factor of your current cross section file (i.e. 20:10 is a 2). Once you have entered this number left-click on the **OK** button.



Now left-click anywhere on the line you just placed and left-click in the open to accept. You should see the slope of the line labeled at the midpoint of the line. You may need to zoom in or out to be able to read the text.

Chapter 4 Arrows and Bar Scales & Boxes

Objectives

In this chapter you will learn about:

Using the **Arrows and Bar Scales** tool to create symbols in your drainage project files

Using the **Boxes** sub-menu to place summary boxes and data in your drainage files

Introduction

After you complete the exercises in this chapter you should be able to easily use the tools in these sub-menus.

Arrows and Bar Scales

The **Arrows and Bar Scales** tool box is used to place symbols and text into your drainage design files. There is an icon bar that is launched by left-clicking on the menu item.

Boxes>Place Text

Place Text on the **Boxes** sub-menu is used to place text notes on your drainage file. This tool automatically sets the text attributes to the proper setting upon use.

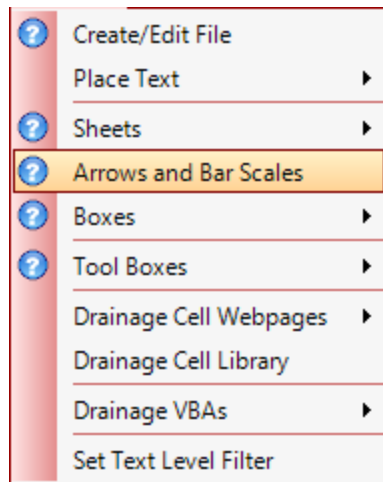
Boxes>Ditch Pavement and Sodding

This tool has options to place a summary box in the drainage file or place data in an already available summary box. All of the remaining options on the **Boxes** sub-menu do this as well. Some options have the ability to place more than one kind of summary box under their initial entry. All behave in exactly the same manner as the **Ditch Pavement and Sodding** tool does.

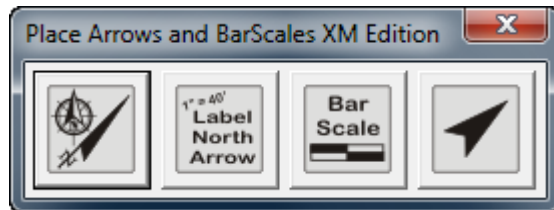
Exercise 4.1

In this exercise you will place a north arrow and a scale bar in the current file in the drainage directory of the sample project.

To begin this exercise you need to activate the **Arrows and Bar Scales** icon bar by left-clicking on the appropriate option in the **Drainage** menu.



This action will bring up the **Arrows and Bar Scales** icon bar.

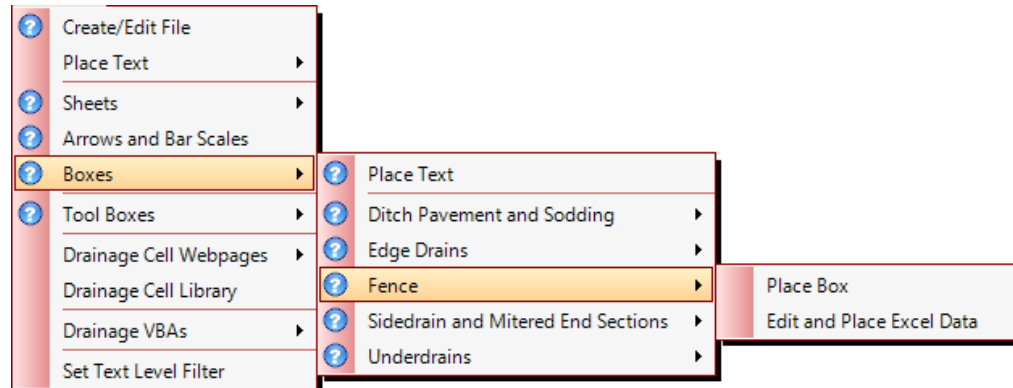


Use the icon to the far left to place a north arrow in the current file by left-clicking on the icon and then left-clicking somewhere in the file. Zoom to a distance that makes it easy to see the arrow you just placed. Now use the next icon to the right to label your north arrow. Next left-click on the bar scale icon and place the bar scale somewhere in your drainage file. The final icon can be used to add a terminator symbol to the end of any line in your file.

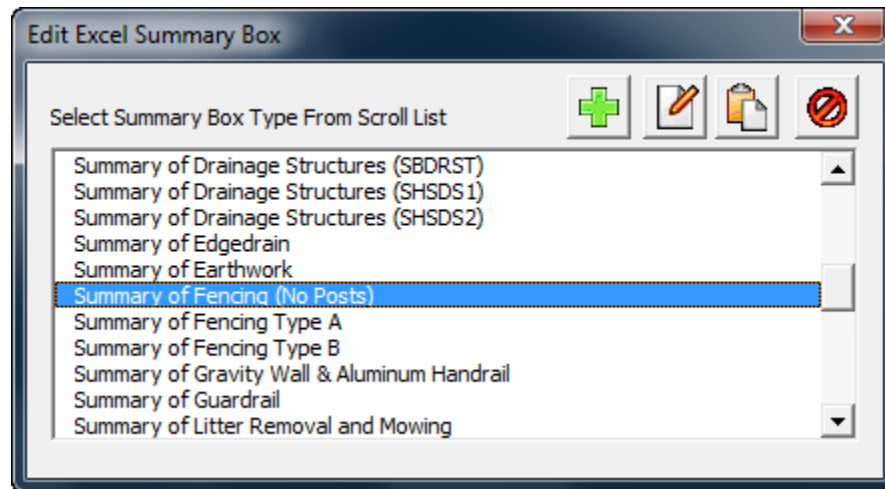
Exercise 4.2

In this exercise you will place multiple summary boxes in your file and then place data from an Excel file into these boxes.

First go to **Drainage>Boxes>Fence>Place Box** and place the summary box in the file.



After that go to **Drainage>Boxes>Fence>Edit and Place Excel Data** and you will see the **Edit Excel Summary Box** dialog box pop up. Make sure the selection it is pointing to matches the box you have placed and hit the **Edit Input** icon (second one from the left).



Now you will see the Excel file open on your screen. Fill in a couple of the lines and save the changes. Once you have saved the changes left-click on the **Place Text** icon. Snap to the upper left corner of the summary box's data entry area and left-click. Now try some of the other summary boxes until you are more comfortable with their function.

Chapter 5 Tool Boxes

Objectives

In this chapter you will learn about:

Using the **Tool Boxes** sub menu to access multiple tool boxes within your drainage project

Introduction

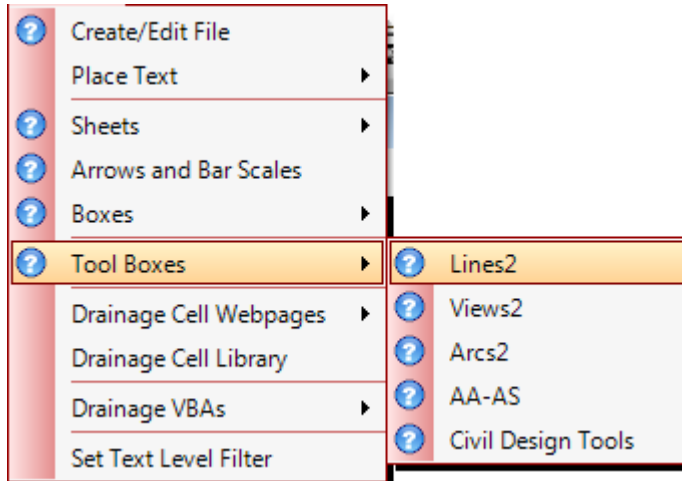
There are a number of specialized tools available through this menu option. It has everything from different ways to draw a line to specialized tools for civil design. After you complete the exercise in this chapter you should be able to easily use these tools.

Tool Boxes

Tool Boxes is a sub menu that allows access to tool bars containing specialized tools for the designer to use in their work on their drainage project.

Exercise 5.1

In this exercise you use multiple tools from the tool bars accessed through the **Tool Bar** sub-menu. You will place lines and other elements into the current file using these tools.



When you left-click on that option you will see the tool bar pop up.



Use a couple of the tools to place some lines to familiarize yourself with these using these tool bars.

Chapter 6 Drainage Cell Webpages & Drainage Cell Libraries

Objectives

In this chapter you will learn about:

Using the **Drainage Cell Webpages** tool to place cells in the files in your drainage project

Using the **Drainage Cell Libraries** tool to access the drainage cell libraries to place cells in your drainage project files.

Introduction

After you complete the exercises in this chapter you should be able to easily place cells in your drainage files from the drainage cell libraries.

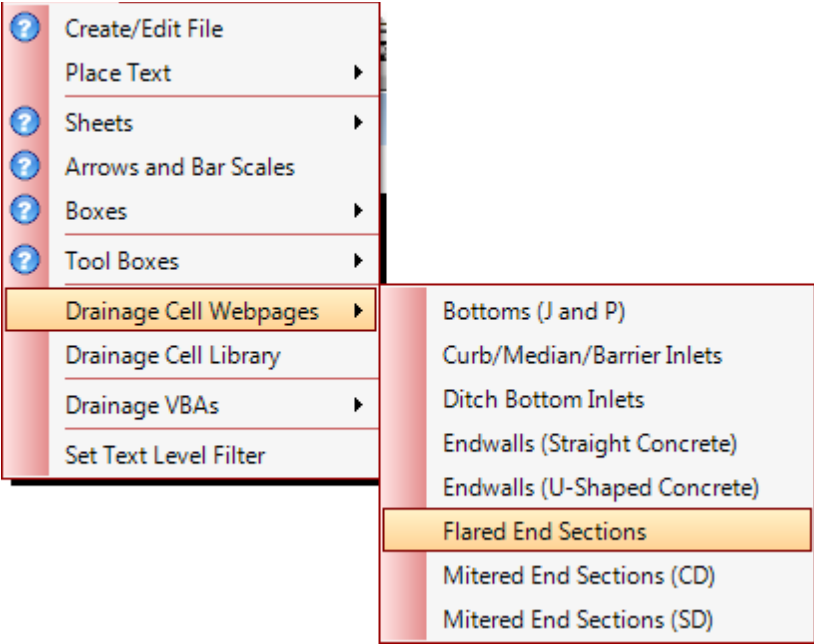
Drainage Cell Webpages

This tool activates the browser and brings up a webpage with graphic representations of the cells within a grouping you choose. You are then able to left-click on this graphic to place the cell in the file,

Exercise 6.1

In this exercise you will place cells in a file in the drainage directory of the sample project.

First this is to go to **Drainage>Drainage Cell Webpages>Flared End Sections** and place some of them randomly in the file.



After you have done this choose a few different categories and place a few cells from each of them. Using the **Drainage Cell Library** tool open the current drainage cell library and place a few cell from it into the file.

Chapter 7 Drainage VBAs

Objectives

In this chapter you will learn about:

Using the **Drainage VBAs** made available in the FDOT2010 Suite

Introduction

After you complete the exercises in this chapter you should be able to easily use these VBAs to automate some of the tasks associated with completing a drainage project.

Drainage VBAs>Draw Drainage Pattern Lines

This tool allows you to automate the drawing of the pattern lines at the drainage structures in your drainage plan file. It draws the lines in the specified model in the specified file when the VBA is run.

Drainage VBAs>Drainage Stub-out Report for Xsections

This creates a report file that the drainage cross section criteria must have in order to run drainage structure cross sections.

Drainage VBAs>Drainage Storm Sewer Tabs

Drainage Storm Sewer Tabs is used to generate the needed report in a special format laid down by the FDOT Drainage Technical Advisory Committee. It does require a GDF file, a drainage preference file and a drainage report file. It also allows the input of project specific information that will be displayed on the Excel file when done.

Drainage VBAs>Drainage Spread Tabulation

Drainage Spread Tabulation is used to generate the needed report in a special format laid down by the FDOT Drainage Technical Advisory Committee. It does require a GDF file, a drainage preference file and a drainage report file. It also allows the input of project specific information that will be displayed on the Excel file when done.

Drainage VBAs>Inlet Balloons

This VBA is used to place Inlet Balloons in plan view.

Drainage VBAs>FDOT Summary of Drainage Structures

This VBA has two parts. The first part works with a GDF file and generates an Excel file that is saved to the specified location and can have any name you wish to use. The second part takes that file or any properly formatted Excel file and makes drawing sheets out of it in the current file.

Exercise 7.1

In this exercise you will each of the drainage VBAs in order to familiarize yourself with their function.

